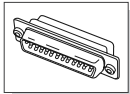


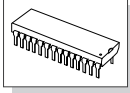
Section Reference Index



Connectors, Cable Assemblies, IC Sockets 12-132



A



Semiconductors, ICs, Transistors, Diodes, Rectifiers . . . 133-239



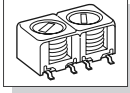
B



Crystals, Oscillators 240-253



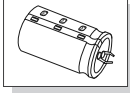
C



Inductors, Coils, Filters 254-280



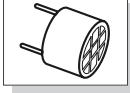
D



Capacitors 281-348

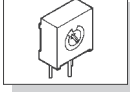


E



Audio, Buzzers, Microphones, Speakers 349-352

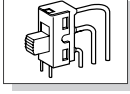
F



Resistors, Potentiometers, Thermistors, ZNRs. 353-400



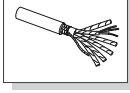
G



Switches, Relays, Electromechanical 401-449



H



Wire, Cable, and Accessories 450-458

I



Prototyping, Tools, Solder, Test Equipment. 459-492



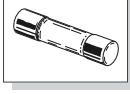
J



Batteries 493-500



K



Fuses 501-515

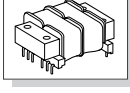


L



Fans 516-521

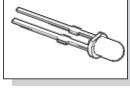
M



Transformers, Power Supplies 522-546



N



Optoelectronics, LEDs, LCDs, Lasers, Displays 547-584



O

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

FEATURES:

- Polarized aluminum electrolytic capacitors, non-solid
Axial leads, cylindrical aluminum case, insulated with a blue sleeve
Case Ø10mm x 30mm to 21mm x 40 mm with pressure relief
Taped versions up to case Ø15mm x 30 mm available for automatic insertion
Charge and discharge proof
Extra long useful life: 4,000 hours at 125°C, high reliability
Extended temperature range: 125°C (usable up to 150°C)
Miniaturized, high CV-product per unit volume

APPLICATIONS:

- Automotive, industrial and telecommunication
Smoothing, filtering, coupling, decoupling, timing
For use after very long storage (10 years) without voltage applied
Portable and mobile equipment (small size, low mass)
Low mounting height boards, vibration and shock resistant
Outdoor applications, e.g. aera amplifiers

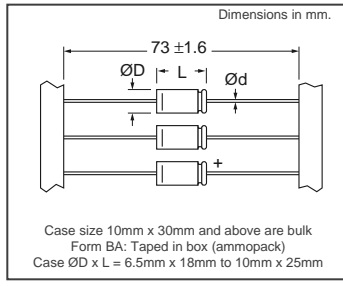


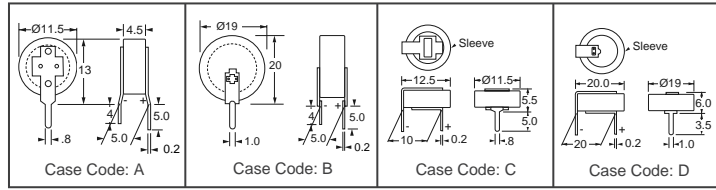
Table with 2 columns: DESCRIPTION and VALUE. Contains technical specifications such as Case sizes, Rated capacitance, Tolerance on CR, Rated voltage range, Category temperature range, Endurance test, Useful life, Shelf life at 0 V, 125°C, Based on sectional specification, and Climatic category.

Main product catalog table with columns for WV (VDC), Cap (µF), Leakage Curr (µA), tan δ, Ripple Curr (mA), Dimensions (mm), Digi-Key Part No., Pricing (1, 10, 100), Digi-Key Part No., Pricing (500, 1,000, 5,000, 10,000), and Philips Part No. The table lists numerous capacitor models with their respective specifications.

* "CT" stands for Cut Tape; "TB" stands for Tape and Box; "BK" stands for Bulk.

Panasonic SG Series Gold Capacitors

Electric Double Layer Capacitors



Loading with Moisture:
The capacitor shall meet the limits for "High Temperature Loading" after 500 hours exposure at +55°C/90 to 95%RH with 5.5V DC applied.

Shelf Life:
The capacitor shall meet the limits for "High Temperature Loading" after 1,000 hours exposure at +70°C with no voltage applied.

Specifications:

| | |
|-------------------------|------------------------|
| Operating Temp. Range: | -25 to +70°C |
| Rated Working Voltage: | 5.5V DC |
| Nom. Capacitance Range: | 0.022F to 1.0F (+20°C) |
| Capacitance Tolerance: | -20% to +80% |

Temperature Characteristics:

| | |
|----------------------------------|----------------|
| Capacitance Change -25°C & 70°C: | ≤ ±30% at 20°C |
| Internal Resistance -25°C: | ≤5X at 20°C |
| Inflow Current at 70°C: | ≤4X at 20°C |

Load Life Characteristics:

(after 1000 hrs. with rated voltage of 5.5V DC applied at 70°C.)

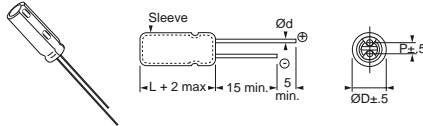
| | |
|----------------------|----------------------------------|
| Capacitance Change: | ≤ ±30% of initial measured value |
| Internal Resistance: | ≤4X of initial specified value |
| Inflow Current: | ≤2X of initial specified value |

| Case Code | WV DC | Nominal Capacitance (F) | Inflow Current* (µA) | Internal Resistance Ω (1KHz) | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|-------------------|-------|-------------------------|----------------------|------------------------------|-------------------|---------|-------|--------|---------|--------------------|-----------|--------------|
| | | | | | | 1 | 10 | 100 | 1,000 | | 5,000 | 10,000 |
| <i>Vertical</i> | | | | | | | | | | | | |
| A | 5.5 | 0.047 | 70 | 120 | P6971-ND | 2.48 | 21.27 | 166.61 | 1066.00 | 992.00/M | 927.00/M | EEC-S5R5V473 |
| A | 5.5 | 0.10 | 100 | 75 | P6972-ND | 2.48 | 21.27 | 166.61 | 1066.00 | 992.00/M | 927.00/M | EEC-S5R5V104 |
| A | 5.5 | 0.22 | 165 | 75 | P6973-ND | 2.69 | 23.05 | 180.56 | 1155.00 | 1075.00/M | 1004.00/M | EEC-S5R5V224 |
| B | 5.5 | 0.47 | 215 | 30 | P6974-ND | 6.41 | 54.94 | 430.33 | 2754.00 | 2561.00/M | 2394.00/M | EEC-S5R5V424 |
| B | 5.5 | 1.0 | 315 | 30 | P6975-ND | 6.41 | 54.94 | 430.33 | 2754.00 | 2561.00/M | 2394.00/M | EEC-S5R5V105 |
| <i>Horizontal</i> | | | | | | | | | | | | |
| C | 5.5 | 0.047 | 70 | 120 | P6977-ND | 2.48 | 21.27 | 166.61 | 1066.00 | 992.00/M | 927.00/M | EEC-S5R5H473 |
| C | 5.5 | 0.10 | 100 | 75 | P6978-ND | 2.48 | 21.27 | 166.61 | 1066.00 | 992.00/M | 927.00/M | EEC-S5R5H104 |
| C | 5.5 | 0.22 | 165 | 75 | P6979-ND | 2.69 | 23.05 | 180.56 | 1155.00 | 1075.00/M | 1004.00/M | EEC-S5R5H224 |
| D | 5.5 | 0.47 | 215 | 30 | P6980-ND | 6.41 | 54.94 | 430.33 | 2754.00 | 2561.00/M | 2394.00/M | EEC-S5R5H474 |
| D | 5.5 | 1.0 | 315 | 30 | P6981-ND | 6.41 | 54.94 | 430.33 | 2754.00 | 2561.00/M | 2394.00/M | EEC-S5R5H105 |

* Inflow current is measured after 30 minutes application of rated working voltage. In use, current will decrease to several µA level after approx. 10 hrs. application of rated working voltage.

Panasonic AL Series Gold Capacitors

Electric Double Layer Capacitors



Specifications:

| | |
|-------------------------|----------------------|
| Operating Temp. Range: | -40 to +70°C |
| Rated Working Voltage: | 2.5V DC |
| Nom. Capacitance Range: | 0.22F to 10F (+20°C) |
| Capacitance Tolerance: | -20% to +80% |

Temperature Characteristics:

| | |
|----------------------------------|----------------|
| Capacitance Change -25°C & 70°C: | ≤ ±30% at 20°C |
| Internal Resistance -40°C: | ≤3X at 20°C |
| Inflow Current at 70°C: | ≤3X at 20°C |

Load Life Characteristics:

(after 1000 hrs. with rated voltage of 2.5V DC applied at 70°C.)

| | |
|----------------------|----------------------------------|
| Capacitance Change: | ≤ ±30% of initial measured value |
| Internal Resistance: | ≤2X of initial specified value |
| Inflow Current: | ≤2X of initial specified value |

Shelf Life:

The capacitor shall meet the limits for "High Temperature Loading" after 1,000 hours exposure at +70°C with no voltage applied.

Loading with Moisture:

The capacitor shall meet the limits for "High Temperature Loading" after 500 hours exposure at +55°C/90 to 95%RH with 2.5V DC applied.

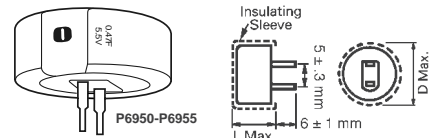
| WV DC | Capacitance (F) | Inflow Current* (mA) | Internal Resistance Ω (1KHz) | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|-------|-----------------|----------------------|------------------------------|-----------------|----|-----|-----|-------------------|---------|-------|--------|---------|--------------------|-----------|-------------|
| | | | | øD | L | ød | P | | 1 | 10 | 100 | 1,000 | | 5,000 | 10,000 |
| 2.5 | 0.33 | 0.12 | 1.7 | 6.8 | 21 | 0.7 | 2.5 | P6961-ND | 3.27 | 27.99 | 219.25 | 1403.00 | 1305.00/M | 1219.00/M | EEC-A0EL334 |
| 2.5 | 0.47 | 0.14 | 1.3 | 8.0 | 22 | 0.7 | 3.5 | P6962-ND | 3.48 | 29.84 | 233.72 | 1496.00 | 1391.00/M | 1300.00/M | EEC-A0EL474 |
| 2.5 | 1.0 | 0.18 | 1.0 | 8.0 | 22 | 0.7 | 3.5 | P6963-ND | 3.58 | 30.64 | 240.04 | 1536.00 | 1429.00/M | 1335.00/M | EEC-A0EL105 |
| 2.5 | 1.5 | 0.20 | 0.7 | 12.5 | 23 | 0.8 | 5.0 | P6964-ND | 3.91 | 33.53 | 262.67 | 1681.00 | 1563.00/M | 1461.00/M | EEC-A0EL155 |
| 2.5 | 2.2 | 0.23 | 0.5 | 12.5 | 23 | 0.8 | 5.0 | P6965-ND | 4.13 | 35.41 | 277.41 | 1775.00 | 1651.00/M | 1543.00/M | EEC-A0EL225 |
| 2.5 | 3.3 | 0.30 | 0.3 | 12.5 | 23 | 0.8 | 5.0 | P6966-ND | 4.50 | 38.57 | 302.15 | 1933.00 | 1798.00/M | 1681.00/M | EEC-A0EL335 |
| 2.5 | 4.7 | 0.44 | 0.2 | 12.5 | 35 | 0.8 | 5.0 | P6967-ND | 5.27 | 45.19 | 354.00 | 2265.00 | 2107.00/M | 1969.00/M | EEC-A0EL475 |
| 2.5 | 10 | 0.60 | 0.1 | 18.0 | 35 | 0.8 | 7.5 | P6969-ND | 7.51 | 64.38 | 504.29 | 3227.00 | 3001.00/M | 2805.00/M | EEC-A0EL106 |

* Inflow current is measured after 90 minutes application of rated working voltage. In use, current will decrease to several µA level after approx. 10 hrs. application of rated working voltage.

Panasonic NF Series Gold Capacitors

Wet Type Electric Double Layer Capacitors

Gold capacitors provide super large capacitance by unique electrode and miniaturization technology meeting the trend of compactness. Suitable for a memory back-up for CMOS type RAM in microcomputers.

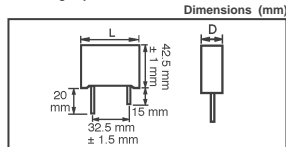


Features:

- A long period memory backup is available by excellent self-discharging characteristics.
- Low profile design is 9.5 mm maximum in height and has a standardized 5 mm terminal spacing.
- Superior to primary or secondary batteries in operating temperature range, charge/discharge characteristics, long time reliability and performance stability.

Features:

- Can be added in most typical microcomputer circuits.
- Memory backup from a second up to a month.
- Minimum self-discharging.
- High reliability, and more convenience than batteries.
- Cubic shape design. Compact design allows maximum density, easy mounting on PC Board.
- Very good stability over repeated charge/discharge cycles.



Specifications:

| | P6950-P6955 | P6956 |
|------------------------|--------------|--------------|
| Operating Temp. Range: | -25° ~ +70°C | -25° ~ +70°C |
| Surge Voltage: | 6.3 VDC | 6.3 VDC |
| Capacitance Tolerance: | -20 ~ +80% | -20 ~ +40% |

Temperature Characteristics:

| | P6950-P6955 | P6956 |
|----------------------------|----------------------|----------------------|
| Capacitance Change: | ±30% at 20°C | ±30% at 20°C |
| Internal Resistance -25°C: | less than 5x at 20°C | less than 3x at 20°C |
| Leakage Current at 70°C: | less than 4x at 20°C | less than 3x at 20°C |

Load Life Characteristics:

(after 1000 hrs. with rated voltage applied at 70°C.)

| | P6950-P6955 | P6956 |
|----------------------|--------------|--------------|
| Capacitance Change: | ±30% | ±30% |
| Internal Resistance: | less than 4x | less than 2x |
| Leakage Current: | less than 2x | less than 2x |

| WV DC | Cap. Farads | Cap. Range | Inflow Current* µA (30 min.) | Internal Resistance V (1KHz) | Dimensions (mm) | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|-------|-------------|-----------------|------------------------------|------------------------------|-----------------|------|-------------------|---------|--------|--------|---------|--------------------|-----------|--------------|
| | | | | | L | D | | 1 | 10 | 100 | 1,000 | | 5,000 | 10,000 |
| 5.5 | 0.033 | 0.0264 ~ 0.0594 | 57 | 150 | 7.5 | 13.5 | P6950-ND | 2.93 | 25.14 | 196.93 | 1260.00 | 1172.00/M | 1095.00/M | EEC-F5R5U333 |
| 5.5 | 0.047 | 0.0376 ~ 0.0846 | 69 | 120 | 7.5 | 13.5 | P6951-ND | 2.51 | 21.50 | 168.45 | 1078.00 | 1003.00/M | 937.00/M | EEC-F5R5U473 |
| 5.5 | 0.1 | 0.08 ~ 0.18 | 100 | 75 | 7.5 | 13.5 | P6952-ND | 2.69 | 23.05 | 180.56 | 1155.00 | 1075.00/M | 1004.00/M | EEC-F5R5U104 |
| 5.5 | 0.33 | 0.264 ~ 0.594 | 182 | 40 | 8.0 | 21.5 | P6953-ND | 6.36 | 54.48 | 426.76 | 2731.00 | 2540.00/M | 2374.00/M | EEC-F5R5U334 |
| 5.5 | 0.47 | 0.376 ~ 0.846 | 216 | 30 | 8.0 | 21.5 | P6954-ND | 6.13 | 52.55 | 411.64 | 2634.00 | 2450.00/M | 2290.00/M | EEC-F5R5U474 |
| 5.5 | 1.0 | 0.8 ~ 1.8 | 315 | 30 | 8.0 | 21.5 | P6955-ND | 6.13 | 52.55 | 411.64 | 2634.00 | 2450.00/M | 2290.00/M | EEC-F5R5U105 |
| 5.5 | 3.3 | 2.64 ~ 4.62 | 440* | 2.5 | 42.5 | 15.0 | P6956-ND | 11.98 | 102.72 | 804.60 | 5148.00 | 4789.00/M | 4475.00/M | EEC-W5R5D335 |

* Inflow current after 60 minutes.

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic SU Series

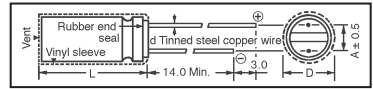
Miniature Radial Lead Aluminum Electrolytic Capacitors

FEATURES:

- Operating Temperature Range: -40 ~ +85°C.
- Capacitance Tolerance: ±20%.

PANASONIC SU CROSS REFERENCES

- Elna: RE2; IC: RAR; Marcon: SEM;
 Nichicon: LB/VX; Rubycon: TWSS;
 Sprague: 501D/513D; UCC: SME.



| WV (VDC) | Cap. (µF) | Current Leakage (µA) | E.S.R. (Ω) | tan δ | Ripple Current (mA) rms | Dimensions (mm) | | | | Digi-Key Part No. | 1 | 10 | 100 | Pricing | 500 | 1,000 | 5,000 | Panasonic Part No. | | | | | | | | |
|----------|-----------|----------------------|------------|-------|-------------------------|-----------------|------|------|------|-------------------|----------|----------|----------|----------|----------|----------|----------|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 6.3 | 100 | 6.3 | 3.65 | 0.22 | 130 | 11.0 | 5.0 | 2.0 | .5 | P6201-ND | 20 | 1.30 | 9.10 | 27.00 | 38.00 | 34.00M | 34.00M | ECE-A1UJ101 | | | | | | | | |
| | 10 | 33 | 3.3 | 9.55 | 0.19 | 60 | 11.0 | 5.0 | 2.0 | .5 | P6212-ND | 18 | 1.23 | 8.62 | 24.64 | 36.00 | 32.00M | 32.00M | ECE-A1AU330 | | | | | | | |
| | | 16 | 22 | 3.5 | 12.1 | 0.16 | 75 | 11.0 | 5.0 | 2.0 | .5 | P6224-ND | 19 | 1.25 | 8.75 | 25.00 | 36.00 | 33.00M | 33.00M | ECE-A1CU220 | | | | | | |
| | | | 25 | 22 | 5.5 | 10.6 | 0.14 | 90 | 11.0 | 5.0 | 2.0 | .5 | P6236-ND | 20 | 1.30 | 9.10 | 27.00 | 38.00 | 34.00M | 34.00M | ECE-A1EU220 | | | | | |
| | | | | 35 | 22 | 3.0 | 42.4 | 0.12 | 35 | 11.0 | 5.0 | 2.0 | .5 | P6247-ND | 18 | 1.23 | 8.62 | 24.64 | 36.00 | 32.00M | 32.00M | ECE-A1VU470 | | | | |
| | | | | | 50 | 0.47 | 3.0 | 35.3 | 0.10 | 5 | 11.0 | 5.0 | 2.0 | .5 | P6259-ND | 18 | 1.23 | 8.62 | 24.64 | 36.00 | 32.00M | 32.00M | ECE-A1HUR47 | | | |
| | | | | | | 63 | 0.47 | 3.0 | 318 | 0.09 | 5 | 11.0 | 5.0 | 2.0 | .5 | P6274-ND | 20 | 1.34 | 9.41 | 26.88 | 39.00 | 35.00M | 35.00M | ECE-A1JU470 | | |
| | | | | | | | 100 | 0.47 | 3.0 | 283 | 0.08 | 10 | 11.0 | 5.0 | 2.0 | .5 | P6288-ND | 21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00M | 36.00M | ECE-A2AUR47 | |
| | | | | | | | | 160 | 0.47 | 3.0 | 256 | 0.16 | 11 | 11.2 | 6.3 | 2.5 | .5 | P6415-ND | 38 | 3.03 | 21.76 | 68.54 | 101.00 | 98.00M | 98.00M | ECE-A2CUR47 |
| | | | | | | | | | 250 | 1 | 3.0 | 298 | 0.18 | 18 | 11.2 | 6.3 | 2.5 | .5 | P6184-ND | 67 | 5.38 | 38.98 | 114.24 | 181.00 | 175.00M | 175.00M |
| 450 | | | | | | | | | | 1 | 4.4 | 332 | 0.20 | 19 | 12.5 | 10.0 | 5.0 | .6 | P6193-ND | 79 | 6.32 | 45.80 | 134.23 | 213.00 | 205.00M | 205.00M |

* P6198-KIT-ND Digi-Key® SU Series Capacitors Kit 10 each of values denoted. 150 total pieces. Included notebook style storage case and bin storage guide 549.95

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic® M Series Radial Lead Aluminum Electrolytic Capacitors

PANASONIC M SERIES CROSS REFERENCES

Nichicon: VR; Chemicon: SMG;
 Marcon: DSM; Rubycon: YK;
 Elna: RES; Nitsuko: MK;
 Sanyo: HC/HPC

FEATURES:

- Miniaturized size version for general purpose use
- Life: 2000 hours at +85°C
- Vent construction for ≥φ6.3 mm products

SPECIFICATIONS:

| | | |
|-----------------------------|------------------|-----------------|
| Operating Temperature Range | -40°C to +85°C | -25°C to +85°C |
| Rated Working Voltage Range | 6.3 to 100 V DC | 160 to 450 V DC |
| Nominal Capacitance Range | 0.33 to 22000 μF | 1 to 470 μF |

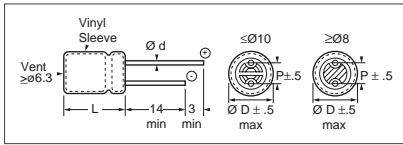
Capacitance Tolerance: ±20% (120 Hz, +20°C)

| | | |
|-----------------|---|---|
| Leakage Current | ≤ 0.03 CV or 4 (μA) after 1 minute ≤ 0.01 CV or 3 (μA) after 2 minutes Whichever is greater measured with rated working voltage at +20°C. | ≤ 0.06 CV + 10 (μA) after 2 minutes application of rated working voltage at +20°C. |
|-----------------|---|---|

tan δ: (at 120 Hz, +20°C)

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| tan δ | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.11 | 0.10 | 0.16 | 0.18 | 0.18 | 0.20 | 0.20 | 0.20 |

For capacitance value > 1000 μF, add 0.02 per every 1000 μF.



Low Temperature Characteristics: Impedance ratio max. at 120 Hz

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
|-------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| -25°C/+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 6 | 6 |
| -40°C/+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | — | — | — | — | — | — |

For capacitance value >1000 μF, add 0.5 per every 1000 μF for -25°C/+20°C.
 add 1.0 per every 1000 μF for -40°C/+20°C.

Ripple Current: 120 Hz, +85°C

| | | | | |
|--------------------------------|-------|-----|-----|-----|
| Frequency (Hz) | 50/60 | 120 | 1k | 10k |
| Correction Factor (Multiplier) | 0.7 | 1 | 1.3 | 1.7 |

Endurance:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|--------------------------|---------------------------------|--------------------------------|
| Duration | 2000 Hours | Leakage Current | ≤ initial specified value |
| Ambient Temperature | +85°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | Rated DC Working Voltage | tan δ | ≤ 150% initial specified value |

Shelf Life:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|------------|---------------------------------|--------------------------------|
| Duration | 1000 Hours | Leakage Current | ≤ initial specified value |
| Ambient Temperature | +85°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | — | tan δ | ≤ 150% initial specified value |

| WV (VDC) | Cap (μF) | Leakage Current (μA) | tan δ max. | Ripple Current (mA) rms | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | | |
|----------|----------|----------------------|------------|-------------------------|-----------------|------|------|-----|-------------------|----------|-------|--------|--------|---------|--------------------|------------|------------|
| | | | | | ØD | L | P | Ød | | 1 | 10 | 100 | 500 | 1,000 | 5,000 | | |
| 6.3 | 100 | 6.3 | 0.28 | 130 | 5 | 11 | 2.0 | 0.5 | P5111-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-0JM101 | |
| | 220 | 13.8 | 0.28 | 240 | 5 | 11 | 2.0 | 0.5 | P5112-ND | .25 | 1.68 | 11.76 | 33.60 | 49.00 | 44.00/M | ECA-0JM221 | |
| | 330 | 20.7 | 0.28 | 300 | 6.3 | 11.2 | 2.5 | 0.5 | P5113-ND | .26 | 1.97 | 14.20 | 39.31 | 61.00 | 57.00/M | ECA-0JM331 | |
| | 470 | 29.6 | 0.28 | 380 | 6.3 | 11.2 | 2.5 | 0.5 | P5114-ND | .31 | 2.32 | 16.74 | 46.37 | 72.00 | 67.00/M | ECA-0JM471 | |
| | 1000 | 63.0 | 0.28 | 580 | 8 | 11.5 | 3.5 | 0.6 | P5115-ND | .38 | 3.00 | 21.76 | 63.78 | 101.00 | 98.00/M | ECA-0JM102 | |
| | 2200 | 138.6 | 0.30 | 890 | 10 | 16 | 5.0 | 0.6 | P5116-ND | .59 | 4.75 | 34.43 | 100.91 | 160.00 | 154.00/M | ECA-0JM222 | |
| | 3300 | 207.9 | 0.32 | 1020 | 10 | 20 | 5.0 | 0.6 | P5117-ND | .78 | 6.24 | 45.24 | 132.60 | 211.00 | 203.00/M | ECA-0JM332 | |
| | 4700 | 296.1 | 0.34 | 1170 | 12.5 | 20 | 5.0 | 0.6 | P5118-ND | 1.13 | 9.05 | 65.61 | 192.30 | 305.00 | 294.00/M | ECA-0JM472 | |
| | 6800 | 428.4 | 0.38 | 1270 | 12.5 | 25 | 5.0 | 0.6 | P5119-ND | 1.23 | 10.74 | 82.86 | 245.50 | 408.00 | 393.00/M | ECA-0JM682 | |
| | 10000 | 630.0 | 0.46 | 1450 | 16 | 25 | 7.5 | 0.8 | P5120-ND | 1.75 | 15.33 | 118.24 | 350.34 | 582.00 | 561.00/M | ECA-0JM103 | |
| | 15000 | 945.0 | 0.56 | 1700 | 16 | 31.5 | 7.5 | 0.8 | P5121-ND | 2.19 | 18.78 | 156.52 | 469.56 | 814.00 | 789.00/M | ECA-0JM153 | |
| | 22000 | 1386.0 | 0.70 | 1900 | 18 | 35.5 | 7.5 | 0.8 | P5122-ND | 3.14 | 26.88 | 224.00 | 672.00 | 1165.00 | 1129.00/M | ECA-0JM223 | |
| | 10 | 100 | 10.0 | 0.24 | 150 | 5 | 11 | 2.0 | 0.5 | P5123-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-1AM101 |
| | | 220 | 22.0 | 0.24 | 250 | 6.3 | 11.2 | 2.5 | 0.5 | P5124-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1AM221 |
| 330 | | 33.0 | 0.24 | 330 | 6.3 | 11.2 | 2.5 | 0.5 | P5125-ND | .31 | 2.32 | 16.74 | 46.37 | 72.00 | 67.00/M | ECA-1AM331 | |
| 470 | | 47.0 | 0.24 | 400 | 8 | 11.5 | 3.5 | 0.6 | P5126-ND | .37 | 2.77 | 20.02 | 55.44 | 86.00 | 80.00/M | ECA-1AM471 | |
| 1000 | | 100.0 | 0.24 | 630 | 10 | 12.5 | 5.0 | 0.6 | P5127-ND | .44 | 3.52 | 25.52 | 74.80 | 119.00 | 114.00/M | ECA-1AM102 | |
| 2200 | | 220.0 | 0.26 | 920 | 10 | 20 | 5.0 | 0.6 | P5128-ND | .73 | 5.80 | 42.05 | 123.25 | 196.00 | 189.00/M | ECA-1AM222 | |
| 3300 | | 330.0 | 0.28 | 1090 | 12.5 | 20 | 5.0 | 0.6 | P5129-ND | 1.08 | 8.65 | 62.69 | 183.74 | 292.00 | 281.00/M | ECA-1AM332 | |
| 4700 | | 470.0 | 0.30 | 1200 | 12.5 | 25 | 5.0 | 0.6 | P5130-ND | 1.16 | 10.11 | 78.02 | 231.17 | 384.00 | 370.00/M | ECA-1AM472 | |
| 6800 | | 680.0 | 0.34 | 1400 | 16 | 25 | 7.5 | 0.8 | P5131-ND | 1.63 | 14.23 | 109.77 | 325.25 | 541.00 | 520.00/M | ECA-1AM682 | |
| 10000 | | 1000.0 | 0.42 | 1600 | 16 | 31.5 | 7.5 | 0.8 | P5132-ND | 1.96 | 16.77 | 139.72 | 419.16 | 727.00 | 704.00/M | ECA-1AM103 | |
| 15000 | | 1500.0 | 0.52 | 1850 | 18 | 35.5 | 7.5 | 0.8 | P5133-ND | 3.02 | 25.87 | 215.60 | 646.80 | 1121.00 | 1087.00/M | ECA-1AM153 | |
| 16 | | 10 | 3.0 | 0.20 | 30 | 5 | 11 | 2.0 | 0.5 | P5134-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1CM100 |
| | 22 | 3.5 | 0.20 | 75 | 5 | 11 | 2.0 | 0.5 | P5135-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1CM220 | |
| | 33 | 5.2 | 0.20 | 110 | 5 | 11 | 2.0 | 0.5 | P5136-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1CM330 | |
| | 47 | 7.5 | 0.20 | 130 | 5 | 11 | 2.0 | 0.5 | P5137-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1CM470 | |
| | 100 | 16.0 | 0.20 | 180 | 5 | 11 | 2.0 | 0.5 | P5138-ND | .24 | 1.60 | 11.20 | 32.00 | 46.00 | 42.00/M | ECA-1CM101 | |
| | 220 | 35.2 | 0.20 | 280 | 6.3 | 11.2 | 2.5 | 0.5 | P5139-ND | .29 | 2.16 | 15.60 | 43.20 | 67.00 | 62.00/M | ECA-1CM221 | |
| | 330 | 52.8 | 0.20 | 350 | 8 | 11.5 | 3.5 | 0.6 | P5140-ND | .34 | 2.57 | 18.53 | 51.30 | 80.00 | 74.00/M | ECA-1CM331 | |
| | 470 | 75.2 | 0.20 | 440 | 8 | 11.5 | 3.5 | 0.6 | P5141-ND | .35 | 2.80 | 20.30 | 59.50 | 95.00 | 91.00/M | ECA-1CM471 | |
| | 1000 | 160.0 | 0.20 | 680 | 10 | 16 | 5.0 | 0.6 | P5142-ND | .54 | 4.32 | 31.32 | 91.80 | 146.00 | 140.00/M | ECA-1CM102 | |
| | 2200 | 352.0 | 0.22 | 1000 | 12.5 | 20 | 5.0 | 0.6 | P5143-ND | 1.13 | 9.05 | 65.61 | 192.30 | 305.00 | 294.00/M | ECA-1CM222 | |
| | 3300 | 528.0 | 0.24 | 1200 | 12.5 | 25 | 5.0 | 0.6 | P5144-ND | 1.14 | 10.01 | 77.22 | 228.80 | 380.00 | 366.00/M | ECA-1CM332 | |
| | 4700 | 752.0 | 0.26 | 1360 | 16 | 25 | 7.5 | 0.8 | P5145-ND | 1.56 | 13.69 | 105.57 | 312.80 | 520.00 | 500.00/M | ECA-1CM472 | |
| | 6800 | 1088.0 | 0.30 | 1600 | 16 | 31.5 | 7.5 | 0.8 | P5146-ND | 2.00 | 17.14 | 142.80 | 428.40 | 743.00 | 720.00/M | ECA-1CM682 | |
| | 10000 | 1600.0 | 0.38 | 1800 | 18 | 35.5 | 7.5 | 0.8 | P5147-ND | 2.98 | 25.57 | 213.08 | 639.24 | 1108.00 | 1074.00/M | ECA-1CM103 | |
| | 25 | 10 | 3.0 | 0.16 | 50 | 5 | 11 | 2.0 | 0.5 | P5148-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1EM100 |
| | | 22 | 5.5 | 0.16 | 90 | 5 | 11 | 2.0 | 0.5 | P5149-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1EM220 |
| | | 33 | 8.2 | 0.16 | 110 | 5 | 11 | 2.0 | 0.5 | P5150-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1EM330 |
| | | 47 | 11.7 | 0.16 | 130 | 5 | 11 | 2.0 | 0.5 | P5151-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-1EM470 |
| | | 100 | 25.0 | 0.16 | 180 | 6.3 | 11.2 | 2.5 | 0.5 | P5152-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1EM101 |
| | | 220 | 55.0 | 0.16 | 310 | 8 | 11.5 | 3.5 | 0.6 | P5153-ND | .37 | 2.77 | 20.02 | 55.44 | 86.00 | 80.00/M | ECA-1EM221 |
| 330 | | 82.5 | 0.16 | 390 | 8 | 11.5 | 3.5 | 0.6 | P5154-ND | .35 | 2.80 | 20.30 | 59.50 | 95.00 | 91.00/M | ECA-1EM331 | |
| 470 | | 117.5 | 0.16 | 480 | 10 | 12.5 | 5.0 | 0.6 | P5155-ND | .47 | 3.72 | 26.97 | 79.05 | 126.00 | 121.00/M | ECA-1EM471 | |
| 1000 | | 250.0 | 0.16 | 850 | 10 | 20 | 5.0 | 0.6 | P5156-ND | .77 | 6.16 | 44.66 | 130.90 | 208.00 | 200.00/M | ECA-1EM102 | |
| 2200 | | 550.0 | 0.18 | 1200 | 12.5 | 25 | 5.0 | 0.6 | P5157-ND | 1.12 | 9.80 | 75.60 | 224.00 | 372.00 | 358.00/M | ECA-1EM222 | |
| 3300 | | 825.0 | 0.20 | 1300 | 16 | 25 | 7.5 | 0.8 | P5158-ND | 1.58 | 13.86 | 106.92 | 316.80 | 527.00 | 507.00/M | ECA-1EM332 | |
| 4700 | | 1175.0 | 0.22 | 1500 | 16 | 31.5 | 7.5 | 0.8 | P5159-ND | 2.12 | 18.21 | 151.76 | 455.28 | 789.00 | 765.00/M | ECA-1EM472 | |
| 6800 | | 1700.0 | 0.26 | 1750 | 18 | 35.5 | 7.5 | 0.8 | P5160-ND | 3.12 | 26.75 | 222.88 | 668.64 | 1159.00 | 1123.00/M | ECA-1EM682 | |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

| WV (VDC) | Cap (μF) | Leakage Current (μA) | tan δ max. | Ripple Current (mA) rms | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|----------|----------|----------------------|------------|-------------------------|-----------------|------|-----|----------|-------------------|----------|-------|--------|--------------------|----------|------------|------------|
| | | | | | øD | L | P | ød | | 1 | 10 | 100 | | 500 | 1,000 | 5,000 |
| 35 | 10 | 3.5 | 0.14 | 60 | 5 | 11 | 2.0 | 0.5 | P5161-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1VM100 |
| | 22 | 7.7 | 0.14 | 95 | 5 | 11 | 2.0 | 0.5 | P5162-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1VM220 |
| | 33 | 11.5 | 0.14 | 110 | 5 | 11 | 2.0 | 0.5 | P5163-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-1VM330 |
| | 47 | 16.4 | 0.14 | 130 | 5 | 11 | 2.0 | 0.5 | P5164-ND | .23 | 1.55 | 10.85 | 31.00 | 45.00 | 40.00/M | ECA-1VM470 |
| | 100 | 35.0 | 0.14 | 210 | 6.3 | 11.2 | 2.5 | 0.5 | P5165-ND | .29 | 2.16 | 15.60 | 43.20 | 67.00 | 62.00/M | ECA-1VM101 |
| | 220 | 77.0 | 0.14 | 350 | 8 | 11.5 | 3.5 | 0.6 | P5166-ND | .35 | 2.80 | 20.30 | 59.50 | 95.00 | 91.00/M | ECA-1VM221 |
| | 330 | 115.5 | 0.14 | 440 | 10 | 12.5 | 5.0 | 0.6 | P5167-ND | .50 | 3.99 | 28.91 | 84.73 | 135.00 | 130.00/M | ECA-1VM331 |
| | 470 | 164.5 | 0.14 | 550 | 10 | 16 | 5.0 | 0.6 | P5168-ND | .58 | 4.64 | 33.64 | 98.60 | 157.00 | 151.00/M | ECA-1VM471 |
| | 1000 | 350.0 | 0.14 | 900 | 12.5 | 20 | 5.0 | 0.6 | P5169-ND | 1.17 | 9.36 | 67.86 | 198.90 | 316.00 | 304.00/M | ECA-1VM102 |
| | 2200 | 770.0 | 0.16 | 1250 | 16 | 25 | 7.5 | 0.8 | P5170-ND | 1.66 | 14.53 | 112.05 | 332.00 | 552.00 | 531.00/M | ECA-1VM222 |
| 50 | 3300 | 1155.0 | 0.18 | 1400 | 16 | 31.5 | 7.5 | 0.8 | P5171-ND | 2.16 | 18.51 | 154.28 | 462.84 | 802.00 | 778.00/M | ECA-1VM332 |
| | 4700 | 1645.0 | 0.20 | 1600 | 18 | 35.5 | 7.5 | 0.8 | P5172-ND | 3.24 | 27.79 | 231.56 | 694.68 | 1204.00 | 1167.00/M | ECA-1VM472 |
| | 0.33 | 3.0 | 0.12 | 4.4 | 5 | 11 | 2.0 | 0.5 | P5349-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1HMR33 |
| | 0.47 | 3.0 | 0.12 | 5 | 5 | 11 | 2.0 | 0.5 | P5173-ND | .19 | 1.29 | 9.02 | 25.76 | 37.00 | 33.00/M | ECA-1HMR47 |
| | 1.0 | 3.0 | 0.12 | 10 | 5 | 11 | 2.0 | 0.5 | P5174-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1HM010 |
| | 2.2 | 3.0 | 0.12 | 20 | 5 | 11 | 2.0 | 0.5 | P5175-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1HM2R2 |
| | 3.3 | 3.0 | 0.12 | 35 | 5 | 11 | 2.0 | 0.5 | P5176-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1HM3R3 |
| | 4.7 | 3.0 | 0.12 | 45 | 5 | 11 | 2.0 | 0.5 | P5177-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1HM4R7 |
| | 10 | 5.0 | 0.12 | 65 | 5 | 11 | 2.0 | 0.5 | P5178-ND | .18 | 1.20 | 8.40 | 24.00 | 35.00 | 31.00/M | ECA-1HM100 |
| | 22 | 11.0 | 0.12 | 100 | 5 | 11 | 2.0 | 0.5 | P5179-ND | .20 | 1.30 | 9.10 | 26.00 | 38.00 | 34.00/M | ECA-1HM220 |
| 63 | 33 | 16.5 | 0.12 | 110 | 5 | 11 | 2.0 | 0.5 | P5180-ND | .24 | 1.60 | 11.20 | 32.00 | 46.00 | 42.00/M | ECA-1HM330 |
| | 47 | 23.5 | 0.12 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | P5181-ND | .28 | 1.85 | 12.95 | 37.00 | 54.00 | 48.00/M | ECA-1HM470 |
| | 100 | 50.0 | 0.12 | 250 | 8 | 11.5 | 3.5 | 0.6 | P5182-ND | .34 | 2.57 | 18.53 | 51.30 | 80.00 | 74.00/M | ECA-1HM101 |
| | 220 | 110.0 | 0.12 | 400 | 10 | 12.5 | 5.0 | 0.6 | P5183-ND | .47 | 3.72 | 26.97 | 79.05 | 126.00 | 121.00/M | ECA-1HM221 |
| | 330 | 165.0 | 0.12 | 500 | 10 | 16 | 5.0 | 0.6 | P5184-ND | .67 | 5.38 | 38.98 | 114.24 | 181.00 | 175.00/M | ECA-1HM331 |
| | 470 | 235.0 | 0.12 | 650 | 10 | 20 | 5.0 | 0.6 | P5185-ND | .80 | 6.40 | 46.40 | 136.00 | 216.00 | 208.00/M | ECA-1HM471 |
| | 1000 | 500.0 | 0.12 | 1050 | 12.5 | 25 | 5.0 | 0.6 | P5186-ND | 1.20 | 10.47 | 80.73 | 239.20 | 398.00 | 383.00/M | ECA-1HM102 |
| | 2200 | 1100.0 | 0.14 | 1300 | 16 | 31.5 | 7.5 | 0.8 | P5187-ND | 2.16 | 18.55 | 154.56 | 463.68 | 804.00 | 779.00/M | ECA-1HM222 |
| | 3300 | 1650.0 | 0.16 | 1500 | 18 | 35.5 | 7.5 | 0.8 | P5188-ND | 3.41 | 29.27 | 243.88 | 731.64 | 1268.00 | 1229.00/M | ECA-1HM332 |
| | 100 | 10 | 6.3 | 0.11 | 70 | 5 | 11 | 2.0 | 0.5 | P5189-ND | .22 | 1.46 | 10.19 | 29.12 | 42.00 | 38.00/M |
| 22 | | 13.8 | 0.11 | 105 | 5 | 11 | 2.0 | 0.5 | P5190-ND | .24 | 1.60 | 11.20 | 32.00 | 46.00 | 42.00/M | ECA-1JM220 |
| 33 | | 20.7 | 0.11 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | P5191-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00/M | ECA-1JM330 |
| 47 | | 29.6 | 0.11 | 160 | 6.3 | 11.2 | 2.5 | 0.5 | P5192-ND | .34 | 2.52 | 18.20 | 50.40 | 78.00 | 73.00/M | ECA-1JM470 |
| 100 | | 63.0 | 0.11 | 270 | 8 | 11.5 | 3.5 | 0.6 | P5193-ND | .37 | 2.92 | 21.17 | 62.05 | 99.00 | 95.00/M | ECA-1JM101 |
| 220 | | 138.6 | 0.11 | 450 | 10 | 16 | 5.0 | 0.6 | P5194-ND | .66 | 5.24 | 38.00 | 111.38 | 177.00 | 170.00/M | ECA-1JM221 |
| 330 | | 207.9 | 0.11 | 550 | 10 | 20 | 5.0 | 0.6 | P5195-ND | .86 | 6.90 | 50.02 | 146.61 | 233.00 | 224.00/M | ECA-1JM331 |
| 470 | | 296.1 | 0.11 | 750 | 12.5 | 20 | 5.0 | 0.6 | P5196-ND | 1.06 | 9.25 | 71.37 | 211.46 | 352.00 | 338.00/M | ECA-1JM471 |
| 1000 | | 630.0 | 0.11 | 1100 | 16 | 25 | 7.5 | 0.8 | P5197-ND | 1.94 | 17.01 | 131.24 | 388.86 | 646.00 | 622.00/M | ECA-1JM102 |
| 2200 | | 1386.0 | 0.13 | 1400 | 18 | 35.5 | 7.5 | 0.8 | P5198-ND | 3.39 | 29.10 | 242.48 | 727.44 | 1261.00 | 1222.00/M | ECA-1JM222 |
| 160 | 0.47 | 3.0 | 0.10 | 10 | 5 | 11 | 2.0 | 0.5 | P5199-ND | .22 | 1.46 | 10.19 | 29.12 | 42.00 | 38.00/M | ECA-2AMR47 |
| | 1.0 | 3.0 | 0.10 | 20 | 5 | 11 | 2.0 | 0.5 | P5305-ND | .22 | 1.46 | 10.19 | 29.12 | 42.00 | 38.00/M | ECA-2AM010 |
| | 2.2 | 3.0 | 0.10 | 30 | 5 | 11 | 2.0 | 0.5 | P5306-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-2AM2R2 |
| | 3.3 | 3.3 | 0.10 | 40 | 5 | 11 | 2.0 | 0.5 | P5307-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-2AM3R3 |
| | 4.7 | 4.7 | 0.10 | 50 | 5 | 11 | 2.0 | 0.5 | P5308-ND | .21 | 1.40 | 9.80 | 28.00 | 41.00 | 36.00/M | ECA-2AM4R7 |
| | 10 | 10.0 | 0.10 | 70 | 5 | 11 | 2.0 | 0.5 | P5309-ND | .29 | 1.95 | 13.65 | 39.00 | 57.00 | 51.00/M | ECA-2AM100 |
| | 22 | 22.0 | 0.10 | 115 | 6.3 | 11.2 | 2.5 | 0.5 | P5310-ND | .33 | 2.48 | 17.88 | 49.50 | 77.00 | 72.00/M | ECA-2AM220 |
| | 33 | 33.0 | 0.10 | 145 | 8 | 11.5 | 3.5 | 0.6 | P5311-ND | .41 | 3.11 | 22.43 | 62.10 | 97.00 | 90.00/M | ECA-2AM330 |
| | 47 | 47.0 | 0.10 | 180 | 8 | 11.5 | 3.5 | 0.6 | P5312-ND | .43 | 3.40 | 24.65 | 72.25 | 115.00 | 111.00/M | ECA-2AM470 |
| | 100 | 100.0 | 0.10 | 350 | 10 | 16 | 5.0 | 0.6 | P5313-ND | .75 | 5.96 | 43.21 | 126.65 | 201.00 | 194.00/M | ECA-2AM101 |
| 250 | 220 | 220.0 | 0.10 | 550 | 12.5 | 20 | 5.0 | 0.6 | P5314-ND | 1.16 | 10.19 | 78.62 | 232.96 | 387.00 | 373.00/M | ECA-2AM221 |
| | 330 | 330.0 | 0.10 | 700 | 12.5 | 25 | 5.0 | 0.6 | P5315-ND | 1.59 | 13.96 | 107.65 | 318.98 | 530.00 | 510.00/M | ECA-2AM331 |
| | 470 | 470.0 | 0.10 | 900 | 16 | 25 | 7.5 | 0.8 | P5316-ND | 2.08 | 17.81 | 148.40 | 445.20 | 772.00 | 748.00/M | ECA-2AM471 |
| | 1000 | 1000.0 | 0.10 | 1300 | 18 | 35.5 | 7.5 | 0.8 | P5317-ND | 3.94 | 33.73 | 281.12 | 843.36 | 1462.00 | 1417.00/M | ECA-2AM102 |
| | 1.0 | 19.6 | 0.16 | 36 | 6.3 | 11.2 | 2.5 | 0.5 | P5318-ND | .40 | 2.97 | 21.48 | 59.47 | 93.00 | 86.00/M | ECA-2CM010 |
| | 2.2 | 31.1 | 0.16 | 53 | 6.3 | 11.2 | 2.5 | 0.5 | P5319-ND | .41 | 3.07 | 22.20 | 61.49 | 96.00 | 89.00/M | ECA-2CM2R2 |
| | 3.3 | 41.6 | 0.16 | 66 | 6.3 | 11.2 | 2.5 | 0.5 | P5320-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-2CM3R3 |
| | 4.7 | 55.1 | 0.16 | 78 | 6.3 | 11.2 | 2.5 | 0.5 | P5321-ND | .39 | 3.14 | 22.74 | 66.64 | 106.00 | 102.00/M | ECA-2CM4R7 |
| | 10 | 103.0 | 0.16 | 105 | 10 | 12.5 | 5.0 | 0.6 | P5322-ND | .52 | 4.12 | 29.88 | 87.58 | 139.00 | 134.00/M | ECA-2CM100 |
| | 22 | 221.0 | 0.16 | 175 | 10 | 16 | 5.0 | 0.6 | P5323-ND | .72 | 5.78 | 41.90 | 122.81 | 195.00 | 188.00/M | ECA-2CM220 |
| 450 | 33 | 326.0 | 0.16 | 235 | 10 | 20 | 5.0 | 0.6 | P5324-ND | 1.03 | 8.24 | 59.76 | 175.17 | 278.00 | 268.00/M | ECA-2CM330 |
| | 47 | 461.0 | 0.16 | 320 | 12.5 | 20 | 5.0 | 0.6 | P5325-ND | 1.15 | 10.07 | 77.72 | 230.27 | 383.00 | 368.00/M | ECA-2CM470 |
| | 100 | 970.0 | 0.16 | 515 | 12.5 | 25 | 5.0 | 0.6 | P5326-ND | 1.73 | 15.13 | 116.73 | 345.86 | 575.00 | 553.00/M | ECA-2CM101 |
| | 220 | 2122.0 | 0.16 | 830 | 16 | 31.5 | 7.5 | 0.8 | P5327-ND | 2.51 | 21.54 | 179.48 | 538.44 | 933.00 | 905.00/M | ECA-2CM221 |
| | 330 | 3178.0 | 0.16 | 1090 | 18 | 31.5 | 7.5 | 0.8 | P5328-ND | 3.51 | 30.07 | 250.60 | 751.80 | 1303.00 | 1263.00/M | ECA-2CM331 |
| | 470 | 4522.0 | 0.16 | 1440 | 18 | 40 | 7.5 | 0.8 | P5329-ND | 4.52 | 38.74 | 322.84 | 968.52 | 1679.00 | 1627.00/M | ECA-2CM471 |
| | 1.0 | 25.0 | 0.18 | 34 | 6.3 | 11.2 | 2.5 | 0.5 | P5330-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-2EM010 |
| | 2.2 | 43.0 | 0.18 | 50 | 6.3 | 11.2 | 2.5 | 0.5 | P5331-ND | .38 | 3.00 | 21.76 | 63.78 | 101.00 | 98.00/M | ECA-2EM2R2 |
| | 3.3 | 59.5 | 0.18 | 72 | 8 | 11.5 | 3.5 | 0.6 | P5332-ND | .46 | 3.72 | 26.96 | 79.02 | 125.00 | 121.00/M | ECA-2EM3R3 |
| | 4.7 | 80.5 | 0.18 | 86 | 8 | 11.5 | 3.5 | 0.6 | P5333-ND | .50 | 3.96 | 28.71 | 84.15 | 134.00 | 129.00/M | ECA-2EM4R7 |
| 10 | 160.0 | 0.18 | 110 | 10 | 16 | 5.0 | 0.6 | P5334-ND | .67 | 5.32 | 38.57 | 113.05 | 180.00 | 173.00/M | ECA-2EM100 | |
| 1000 | 22 | 340.0 | 0.18 | 180 | 10 | 20 | 5.0 | 0.6 | P5335-ND | 1.10 | 8.80 | | | | | |

Panasonic® M Series Radial Lead Aluminum Electrolytic Capacitors

Ammo Box Packaging

PANASONIC M SERIES CROSS REFERENCES

Nichicon: VR; Chemicon: SMG;
Marcon: DSM; Rubycon: YK; Elna: RE3;
Nitsuko: MK; Sanyo: HC/HPC

FEATURES: • Miniaturized size version for general purpose use • Life: 2000 hours at +85°C • Vent construction for ≥ 06.3 mm products

SPECIFICATIONS:

| | | |
|-----------------------------|----------------------|------------------|
| Operating Temperature Range | -40°C to +85°C | -25°C to +85°C |
| Rated Working Voltage Range | 6.3 to 50 V DC | 160 to 450 V DC |
| Nominal Capacitance Range | 0.47 to 2200 μ F | 1 to 470 μ F |

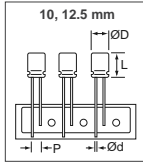
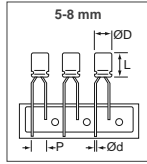
Capacitance Tolerance: $\pm 20\%$ (120 Hz, +20°C)

| | | |
|-----------------|--|---|
| Leakage Current | ≤ 0.03 CV or 4 (μ A) after 1 minute | ≤ 0.06 CV + 10 (μ A) after 2 minutes application of rated working voltage at +20°C. |
| | ≤ 0.01 CV or 3 (μ A) after 2 minutes Whichever is greater measured with rated working voltage at +20°C. | |

$\tan \delta$: (at 120 Hz, +20°C)

| | | | | | | | | | | | | | | |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| V.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| $\tan \delta$ | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.11 | 0.10 | 0.16 | 0.18 | 0.18 | 0.20 | 0.20 | 0.20 |

For capacitance value > 1000 μ F, add 0.02 per every 1000 μ F.



Low Temperature Characteristics: Impedance ratio max. at 120 Hz

| | | | | | | | | | | | | | | |
|-------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| V.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| -25°C/+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 5 | 6 | 6 |
| -40°C/+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 | — | — | — | — | — | — |

For capacitance value > 1000 μ F, add 0.5 per every 1000 μ F for -25°C/+20°C.
add 1.0 per every 1000 μ F for -40°C/+20°C.

Ripple Current: 120 Hz, +85°C

| | | | | |
|--------------------------------|-------|-----|-----|-----|
| Frequency (Hz) | 50/60 | 120 | 1k | 10k |
| Correction Factor (Multiplier) | 0.7 | 1 | 1.3 | 1.7 |

Endurance:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|--------------------------|---------------------------------|--------------------------------------|
| Duration | 2000 Hours | Leakage Current | \leq initial specified value |
| Ambient Temperature | +85°C | Capacitance Change | $\pm 20\%$ of initial measured value |
| Applied Voltage | Rated DC Working Voltage | $\tan \delta$ | $\leq 150\%$ initial specified value |

Shelf Life:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|------------|---------------------------------|--------------------------------------|
| Duration | 1000 Hours | Leakage Current | \leq initial specified value |
| Ambient Temperature | +85°C | Capacitance Change | $\pm 20\%$ of initial measured value |
| Applied Voltage | — | $\tan \delta$ | $\leq 150\%$ initial specified value |

| VV (VDC) | Cap (μ F) | Leakage Current (μ A) | $\tan \delta$ max. | Ripple Current (mA) rms | ϕ D | Dimensions (mm) L P ϕ d | Digi-Key Part No. | 500 | Pricing 1,000 | 2,000 | Panasonic Part No. | |
|----------|----------------|----------------------------|--------------------|-------------------------|----------|------------------------------|-------------------|-----|---------------|--------|--------------------|--------------|
| 6.3 | 220 | 13.8 | 0.28 | 240 | 5 | 11 | 5.0 | 0.5 | — | — | 44.00/M | ECA-0JM221B |
| | 220 | 13.8 | 0.28 | 240 | 5 | 11 | 2.5 | 0.5 | — | — | 44.00/M | ECA-0JM221I |
| | 470 | 29.6 | 0.28 | 380 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 66.00/M | ECA-0JM471B |
| | 470 | 29.6 | 0.28 | 380 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 66.00/M | ECA-0JM471I |
| | 1000 | 63 | 0.28 | 580 | 8 | 11.5 | 5.0 | 0.6 | — | 96.00 | — | ECA-0JM102B |
| | 1000 | 63 | 0.28 | 580 | 8 | 11.5 | 3.5 | 0.6 | — | 96.00 | — | ECA-0JM102BJ |
| | 2200 | 138.6 | 0.3 | 890 | 10 | 16 | 5.0 | 0.6 | — | — | 145.00/M | ECA-0JM222B |
| | 3300 | 207.9 | 0.32 | 1020 | 10 | 20 | 5.0 | 0.6 | — | — | 200.00/M | ECA-0JM332B |
| | 4700 | 296.1 | 0.34 | 1170 | 12.5 | 20 | 5.0 | 0.6 | — | — | 274.00/M | ECA-0JM472B |
| | 10 | 100 | 10 | 0.24 | 150 | 5 | 11 | 5.0 | 0.5 | — | — | 37.00/M |
| 100 | | 10 | 0.24 | 150 | 5 | 11 | 2.5 | 0.5 | — | — | 37.00/M | ECA-1AM101I |
| 220 | | 22 | 0.24 | 250 | 5 | 11 | 5.0 | 0.5 | — | — | 50.00/M | ECA-1AM221B |
| 220 | | 22 | 0.24 | 250 | 5 | 11 | 2.5 | 0.5 | — | — | 50.00/M | ECA-1AM221I |
| 330 | | 33 | 0.24 | 330 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 66.00/M | ECA-1AM331B |
| 330 | | 33 | 0.24 | 330 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 66.00/M | ECA-1AM331I |
| 470 | | 47 | 0.24 | 400 | 8 | 11.5 | 5.0 | 0.6 | — | 78.00 | — | ECA-1AM471B |
| 470 | | 47 | 0.24 | 400 | 8 | 11.5 | 3.5 | 0.6 | — | 78.00 | — | ECA-1AM471BJ |
| 1000 | | 100 | 0.24 | 630 | 10 | 12.5 | 5.0 | 0.6 | — | 73.50 | — | ECA-1AM102B |
| 2200 | | 220 | 0.26 | 920 | 10 | 20 | 5.0 | 0.6 | — | 117.00 | — | ECA-1AM222B |
| 16 | 100 | 16 | 0.2 | 180 | 5 | 11 | 5.0 | 0.5 | — | — | 44.00/M | ECA-1CM101B |
| | 100 | 16 | 0.2 | 180 | 5 | 11 | 2.5 | 0.5 | — | — | 44.00/M | ECA-1CM101I |
| | 220 | 35.2 | 0.2 | 280 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 66.00/M | ECA-1CM221B |
| | 220 | 35.2 | 0.2 | 280 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 66.00/M | ECA-1CM221I |
| | 330 | 52.8 | 0.3 | 350 | 8 | 11.5 | 5.0 | 0.6 | — | 78.00 | — | ECA-1CM331B |
| | 330 | 52.8 | 0.3 | 350 | 8 | 11.5 | 3.5 | 0.6 | — | 78.00 | — | ECA-1CM331BJ |
| | 470 | 75.2 | 0.2 | 440 | 8 | 11.5 | 5.0 | 0.6 | — | 96.00 | — | ECA-1CM471B |
| | 470 | 75.2 | 0.2 | 440 | 8 | 11.5 | 3.5 | 0.6 | — | 96.00 | — | ECA-1CM471BJ |
| | 1000 | 160 | 0.2 | 680 | 10 | 16 | 5.0 | 0.6 | — | — | 144.00/M | ECA-1CM102B |
| | 2200 | 352 | 0.22 | 1000 | 12.5 | 20 | 5.0 | 0.6 | — | 90.50 | — | ECA-1CM222B |
| 25 | 47 | 11.7 | 0.16 | 130 | 5 | 11 | 5.0 | 0.5 | — | — | 37.00/M | ECA-1EM470B |
| | 47 | 11.7 | 0.16 | 130 | 5 | 11 | 2.5 | 0.5 | — | — | 37.00/M | ECA-1EM470I |
| | 100 | 25 | 0.16 | 180 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 50.00/M | ECA-1EM101B |
| | 100 | 25 | 0.16 | 180 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 50.00/M | ECA-1EM101I |
| | 220 | 55 | 0.16 | 310 | 8 | 11.5 | 5.0 | 0.6 | — | 78.00 | — | ECA-1EM221B |
| | 220 | 55 | 0.16 | 310 | 8 | 11.5 | 3.5 | 0.6 | — | 78.00 | — | ECA-1EM221BJ |
| | 330 | 82.5 | 0.16 | 390 | 8 | 11.5 | 5.0 | 0.6 | — | 96.00 | — | ECA-1EM331B |
| | 330 | 82.5 | 0.16 | 390 | 8 | 11.5 | 3.5 | 0.6 | — | 96.00 | — | ECA-1EM331BJ |
| | 470 | 117.5 | 0.16 | 480 | 10 | 12.5 | 5.0 | 0.6 | — | 77.00 | — | ECA-1EM471B |
| | 1000 | 250 | 0.16 | 850 | 10 | 20 | 5.0 | 0.6 | — | 124.50 | — | ECA-1EM102B |
| 35 | 33 | 11.5 | 0.14 | 110 | 5 | 11 | 5.0 | 0.5 | — | — | 37.00/M | ECA-1VM330B |
| | 33 | 11.5 | 0.14 | 110 | 5 | 11 | 2.5 | 0.5 | — | — | 37.00/M | ECA-1VM330I |
| | 47 | 16.4 | 0.14 | 130 | 5 | 11 | 5.0 | 0.5 | — | — | 44.00/M | ECA-1VM470B |
| | 47 | 16.4 | 0.14 | 130 | 5 | 11 | 2.5 | 0.5 | — | — | 44.00/M | ECA-1VM470I |
| | 100 | 35 | 0.14 | 210 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 66.00/M | ECA-1VM101B |
| | 100 | 35 | 0.14 | 210 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 66.00/M | ECA-1VM101I |
| | 220 | 77 | 0.14 | 350 | 8 | 11.5 | 5.0 | 0.6 | — | 96.00 | — | ECA-1VM221B |
| | 220 | 77 | 0.14 | 350 | 8 | 11.5 | 3.5 | 0.6 | — | 96.00 | — | ECA-1VM221BJ |
| | 330 | 115.5 | 0.14 | 440 | 10 | 12.5 | 5.0 | 0.6 | — | 77.00 | — | ECA-1VM331B |
| | 470 | 164.5 | 0.14 | 550 | 10 | 16 | 5.0 | 0.6 | — | 96.00 | — | ECA-1VM471B |
| 1000 | 350 | 0.14 | 900 | 12.5 | 20 | 5.0 | 0.6 | — | 189.50 | — | ECA-1VM102B | |
| 50 | 0.47 | 3 | 0.12 | 5 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HMR47B |
| | 0.47 | 3 | 0.12 | 5 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HMR47I |
| | 1 | 3 | 0.12 | 10 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HM010B |
| | 1 | 3 | 0.12 | 10 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HM010I |
| | 2.2 | 3 | 0.12 | 20 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HM2R2B |
| | 2.2 | 3 | 0.12 | 20 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HM2R2I |
| | 3.3 | 3 | 0.12 | 35 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HM3R3B |
| | 3.3 | 3 | 0.12 | 35 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HM3R3I |
| | 4.7 | 3 | 0.12 | 45 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HM4R7B |
| | 4.7 | 3 | 0.12 | 45 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HM4R7I |
| 50 | 10 | 5 | 0.12 | 65 | 5 | 11 | 5.0 | 0.5 | — | — | 34.00/M | ECA-1HM100B |
| | 10 | 5 | 0.12 | 65 | 5 | 11 | 2.5 | 0.5 | — | — | 34.00/M | ECA-1HM100I |
| | 22 | 11 | 0.12 | 100 | 5 | 11 | 5.0 | 0.5 | — | — | 37.00/M | ECA-1HM220B |
| | 22 | 11 | 0.12 | 100 | 5 | 11 | 2.5 | 0.5 | — | — | 37.00/M | ECA-1HM220I |
| | 33 | 16.5 | 0.12 | 110 | 5 | 11 | 5.0 | 0.5 | — | — | 44.00/M | ECA-1HM330B |
| | 33 | 16.5 | 0.12 | 110 | 5 | 11 | 2.5 | 0.5 | — | — | 44.00/M | ECA-1HM330I |
| | 47 | 23.5 | 0.12 | 130 | 6.3 | 11.2 | 5.0 | 0.5 | — | — | 54.00/M | ECA-1HM470B |
| | 47 | 23.5 | 0.12 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | — | — | 54.00/M | ECA-1HM470I |
| | 100 | 50 | 0.12 | 250 | 8 | 11.5 | 5.0 | 0.6 | — | 78.00 | — | ECA-1HM101B |
| | 100 | 50 | 0.12 | 250 | 8 | 11.5 | 3.5 | 0.6 | — | 78.00 | — | ECA-1HM101BJ |
| 50 | 220 | 11 | 0.12 | 400 | 10 | 12.5 | 5.0 | 0.6 | — | 77.00 | — | ECA-1HM221B |
| | 330 | 165 | 0.12 | 500 | 10 | 16 | 5.0 | 0.6 | — | 104.00 | — | ECA-1HM331B |
| | 470 | 235 | 0.12 | 650 | 10 | 20 | 5.0 | 0.6 | — | 133.50 | — | ECA-1HM471B |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic® Z Series

Miniature Aluminum Electrolytic Capacitors

±20%, Low Leakage, Low Impedance

SPECIFICATIONS:

- Operating Temperature: -40°C to +85°C
- Rated Working Voltage: 6.3 to 50VDC
- Rated Capacitance: 0.1 to 2200μF
- Capacitance Tolerance: ±20%
- Leakage Current: $I = 0.002CV + 1$ (mA) max.

Where, I: d-c leakage current (μA)
V: rated capacitance (μF)
C: d-c rated working voltage (V)

Leakage current is measured after 2-minute application of the rated d-c working voltage.

Surge Voltage:

| Working Voltage | Surge Voltage |
|-----------------|---------------|
| 6.3 V DC | 8 V DC |
| 10 | 13 |
| 16 | 20 |
| 25 | 32 |
| 50 | 63 |

Surge voltage listed above is applied to the capacitor in series with 1,000 ohms resistor at a cycle of 0.5 minute "ON" and 4.5 minute "OFF" repeating 1,000 times at 25°C ± 10°C. After the test, the capacitor should meet the following limits.

| | |
|--------------------|---|
| Capacitance change | Within ±10% of the initial measured value |
| tan δ | Less than 150% of the initial specified value |
| DC leakage current | Less than the initial specified value |

tan δ. (Dissipation Factor) Max.

| Working Volt. | tan δ | D.F. |
|---------------|-------|------|
| 6.3 V DC | 0.20 | 20% |
| 10 | 0.17 | 17 |
| 16 | 0.13 | 13 |
| 25 | 0.10 | 10 |
| 50 | 0.08 | 8 |

0.06 for 1μF or less.

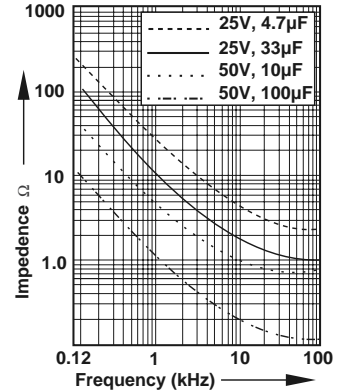
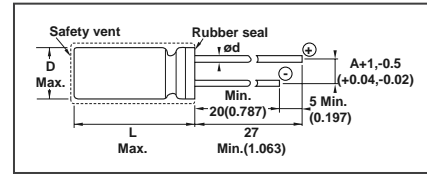
Low Temperature Stability:

Maximum impedance ratio against +20°C at 120Hz

| Working Volt. | -25°C/+20°C | -40°C/+20°C |
|---------------|-------------|-------------|
| 6.3V | 3 | 5 |
| 10 | 2 | 4 |
| 16 | 2 | 3 |
| 25 | 1.5 | 2 |
| 50 | 1.5 | 2 |

Load Life: After 2,000 hour application of d-c working voltage at +85°C with specified r-m-s ripple current, the measurements should meet the following requirements.

| | |
|--------------------|---|
| Capacitance change | Within ±20% of the initial measured value |
| tan δ | Less than 200% of the initial specified value |
| DC leakage current | Less than the initial specified value |



PANASONIC Z CROSS REFERENCES

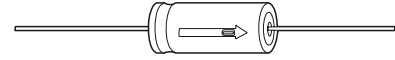
IC: RLR; Sprague: 30D; UCC: SX

Panasonic/Matsushita Electric has announced a change in the Corporate Trademark. Present trademark: . New trademark: .

| Rating WV DC | Cap. μF | Dimensions mm (inch) | | | | Max. RMS Rip. Cur. (mA) @ 120 Hz 85°C | Max. Leakage Current μA | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|--------------------|------------|-------------------------|--------------|-------------|-------------|---|----------------------------------|----------------------|----------|-------|-------|-----------------------|----------|----------|--------------|
| | | D | L | A | d | | | | 1 | 10 | 100 | | | | |
| 6.3 | 220 | 10.0 (3.94) | 12.5 (0.492) | 5.0 (0.197) | 0.6 (0.024) | 250 | 3.7 | P6601-ND | .39 | 3.00 | 23.97 | 179.00 | 171.00/M | 155.00/M | ECE-A6Z220 |
| | 330 | 10.0 (3.94) | 16 (0.630) | 5.0 (0.197) | 0.6 (0.024) | 320 | 5.0 | P6602-ND | .42 | 3.22 | 25.76 | 192.00 | 184.00/M | 166.00/M | ECE-A6Z330 |
| | 470 | 10.0 (3.94) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 380 | 6.7 | P6603-ND | .43 | 3.28 | 26.21 | 196.00 | 187.00/M | 169.00/M | ECE-A6Z470 |
| | 1000 | 12.5 (4.92) | 25 (1.024) | 5.0 (0.197) | 0.6 (0.024) | 530 | 13.0 | P6604-ND | .67 | 5.15 | 41.22 | 308.00 | 294.00/M | 266.00/M | ECE-A6Z1000 |
| | 2200 | 16.0 (6.30) | 25 (1.024) | 7.5 (2.95) | 0.8 (0.032) | 800 | 27.4 | P6605-ND | .97 | 7.45 | 59.58 | 445.00 | 426.00/M | 384.00/M | ECE-A6Z2200 |
| 10 | 22 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 60 | 1.5 | P6606-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A10Z22 |
| | 33 | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 80 | 1.7 | P6607-ND | .24 | 1.88 | 15.01 | 112.00 | 107.00/M | 97.00/M | ECE-A10Z33 |
| | 47 | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 100 | 1.9 | P6608-ND | .24 | 1.88 | 15.01 | 112.00 | 107.00/M | 97.00/M | ECE-A10Z47 |
| | 100 | 8.0 (3.15) | 11.5 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 160 | 3.0 | P6609-ND | .30 | 2.30 | 18.37 | 137.00 | 131.00/M | 119.00/M | ECE-A10Z100 |
| | 220 | 10.0 (3.94) | 16 (0.630) | 5.0 (0.197) | 0.6 (0.024) | 250 | 5.4 | P6610-ND | .42 | 3.22 | 25.76 | 192.00 | 184.00/M | 166.00/M | ECE-A10Z220 |
| 16 | 330 | 10.0 (3.94) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 340 | 7.6 | P6611-ND | .44 | 3.42 | 27.33 | 204.00 | 195.00/M | 176.00/M | ECE-A10Z330 |
| | 470 | 12.5 (4.92) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 400 | 10.4 | P6612-ND | .60 | 4.65 | 37.18 | 277.00 | 266.00/M | 240.00/M | ECE-A10Z470 |
| | 1000 | 12.5 (4.92) | 25 (1.024) | 5.0 (0.197) | 0.6 (0.024) | 580 | 21.0 | P6613-ND | .72 | 5.52 | 44.13 | 329.00 | 315.00/M | 285.00/M | ECE-A10Z1000 |
| | 2200 | 16.0 (6.30) | 31.5 (1.299) | 7.5 (2.95) | 0.8 (0.032) | 850 | 45.0 | P6614-ND | 1.16 | 8.93 | 71.46 | 533.00 | 510.00/M | 461.00/M | ECE-A10Z2200 |
| | 25 | 6.8 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 30 | 1.3 | P6615-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M |
| 10 | | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 40 | 1.4 | P6616-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A16Z10 |
| 22 | | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 70 | 1.7 | P6617-ND | .24 | 1.88 | 15.01 | 112.00 | 107.00/M | 97.00/M | ECE-A16Z22 |
| 33 | | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 90 | 2.1 | P6618-ND | .26 | 1.99 | 15.90 | 119.00 | 114.00/M | 103.00/M | ECE-A16Z33 |
| 47 | | 8.0 (3.15) | 11.5 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 110 | 2.5 | P6619-ND | .30 | 2.30 | 18.37 | 137.00 | 131.00/M | 119.00/M | ECE-A16Z47 |
| 33 | 100 | 10.0 (3.94) | 12.5 (0.492) | 5.0 (0.197) | 0.6 (0.024) | 220 | 4.2 | P6620-ND | .39 | 3.00 | 23.97 | 179.00 | 171.00/M | 155.00/M | ECE-A16Z100 |
| | 220 | 10.0 (3.94) | 16 (0.630) | 5.0 (0.197) | 0.6 (0.024) | 320 | 8.1 | P6621-ND | .44 | 3.42 | 27.33 | 204.00 | 195.00/M | 176.00/M | ECE-A16Z220 |
| | 330 | 10.0 (3.94) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 405 | 11.6 | P6622-ND | .60 | 4.65 | 37.18 | 277.00 | 266.00/M | 240.00/M | ECE-A16Z330 |
| | 470 | 12.5 (4.92) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 480 | 16.1 | P6623-ND | .68 | 5.26 | 42.11 | 314.00 | 301.00/M | 272.00/M | ECE-A16Z470 |
| | 1000 | 16.0 (6.30) | 25 (1.024) | 7.5 (2.95) | 0.8 (0.032) | 700 | 33.0 | P6624-ND | .85 | 6.55 | 52.42 | 391.00 | 374.00/M | 338.00/M | ECE-A16Z1000 |
| 50 | 2200 | 18.0 (7.09) | 31.5 (1.299) | 7.5 (2.95) | 0.8 (0.032) | 1000 | 71.4 | P6625-ND | 1.53 | 11.76 | 94.08 | 702.00 | 672.00/M | 607.00/M | ECE-A16Z2200 |
| | 3.3 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 20 | 1.2 | P6626-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A25Z3R3 |
| | 4.7 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 25 | 1.3 | P6627-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A25Z4R7 |
| | 6.8 | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 35 | 1.4 | P6628-ND | .21 | 1.65 | 13.22 | 99.00 | 94.00/M | 85.00/M | ECE-A25Z68R |
| | 10 | 6.3 (2.48) | 11.2 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 45 | 1.5 | P6629-ND | .24 | 1.88 | 15.01 | 112.00 | 107.00/M | 97.00/M | ECE-A25Z10 |
| 75 | 22 | 8.0 (3.15) | 11.5 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 80 | 2.1 | P6630-ND | .27 | 2.04 | 16.35 | 122.00 | 117.00/M | 105.00/M | ECE-A25Z22 |
| | 33 | 8.0 (3.15) | 11.5 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 110 | 2.7 | P6631-ND | .30 | 2.30 | 18.37 | 137.00 | 131.00/M | 119.00/M | ECE-A25Z33 |
| | 47 | 10.0 (3.94) | 12.5 (0.492) | 5.0 (0.197) | 0.6 (0.024) | 140 | 3.4 | P6632-ND | .37 | 2.88 | 23.07 | 172.00 | 165.00/M | 149.00/M | ECE-A25Z47 |
| | 100 | 10.0 (3.94) | 16 (0.630) | 5.0 (0.197) | 0.6 (0.024) | 230 | 6.0 | P6633-ND | .42 | 3.25 | 25.98 | 194.00 | 186.00/M | 168.00/M | ECE-A25Z100 |
| | 220 | 12.5 (4.92) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 400 | 12.0 | P6634-ND | .62 | 4.73 | 37.86 | 283.00 | 270.00/M | 244.00/M | ECE-A25Z220 |
| 100 | 330 | 12.5 (4.92) | 25 (1.024) | 5.0 (0.197) | 0.6 (0.024) | 500 | 17.5 | P6635-ND | .72 | 5.52 | 44.13 | 329.00 | 315.00/M | 285.00/M | ECE-A25Z330 |
| | 470 | 16.0 (6.30) | 25 (1.024) | 7.5 (2.95) | 0.8 (0.032) | 600 | 24.5 | P6636-ND | .85 | 6.55 | 52.42 | 391.00 | 374.00/M | 338.00/M | ECE-A25Z470 |
| | 1000 | 16.0 (6.30) | 31.5 (1.299) | 7.5 (2.95) | 0.8 (0.032) | 850 | 51.0 | P6637-ND | 1.38 | 10.58 | 84.67 | 632.00 | 605.00/M | 546.00/M | ECE-A25Z1000 |
| | 0.1 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | — | 1.1 | P6638-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z1R1 |
| | 0.15 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | — | 1.1 | P6639-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z2R15 |
| 150 | 0.22 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | — | 1.1 | P6640-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z2R22 |
| | 0.33 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | — | 1.1 | P6641-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z3R33 |
| | 0.47 | 5.0 (0.197) | 11.2 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 10 | 1.1 | P6642-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z4R7 |
| | 0.68 | 5.0 (0.197) | 11.5 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 10 | 1.1 | P6643-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z6R8 |
| | 1.0 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 10 | 1.1 | P6644-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z1 |
| 200 | 1.5 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 10 | 1.2 | P6645-ND | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z1R5 |
| | 2.2 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 18 | 1.3 | P6646-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z2R2 |
| | 3.3 | 5.0 (0.197) | 11 (0.433) | 2.0 (0.079) | 0.5 (0.020) | 25 | 1.4 | P6647-ND* | .18 | 1.40 | 11.20 | 84.00 | 80.00/M | 72.00/M | ECE-A50Z3R3 |
| | 4.7 | 6.3 (2.48) | 11 (0.433) | 2.5 (0.098) | 0.6 (0.024) | 35 | 1.5 | P6648-ND* | .24 | 1.88 | 15.01 | 112.00 | 107.00/M | 97.00/M | ECE-A50Z4R7 |
| | 6.8 | 8.0 (3.15) | 11.5 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 45 | 1.7 | P6649-ND | .28 | 2.13 | 17.02 | 127.00 | 122.00/M | 110.00/M | ECE-A50Z6R8 |
| 250 | 10 | 8.0 (3.15) | 11 (0.433) | 3.5 (0.138) | 0.6 (0.024) | 60 | 2.0 | P6650-ND* | .30 | 2.30 | 18.37 | 137.00 | 131.00/M | 119.00/M | ECE-A50Z10 |
| | 22 | 10.0 (3.94) | 12.5 (0.492) | 5.0 (0.197) | 0.6 (0.024) | 100 | 3.2 | P6651-ND* | .40 | 3.11 | 24.86 | 186.00 | 178.00/M | 160.00/M | ECE-A50Z22 |
| | 33 | 10.0 (3.94) | 16 (0.630) | 5.0 (0.197) | 0.6 (0.024) | 140 | 4.3 | P6652-ND* | .42 | 3.22 | 25.76 | 192.00 | 184.00/M | 166.00/M | ECE-A50Z33 |
| | 47 | 10.0 (3.94) | 20 (0.827) | 5.0 (0.197) | 0.6 (0.024) | 180 | 5.7 | P6653-ND* | .44 | | | | | | |

Panasonic® NHE

Miniature Axial Lead Aluminum Electrolytic Capacitors

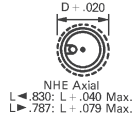
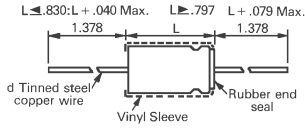


Specifications

NHE series has been introduced to meet the requirements of use over wide temperature range of -55°C ~ +105°C with same case size as SU series.

Features:

- **Reduced case size, same as SU series**
- 2,000 hours load life at 105°C
- **(1,000 hours for products of 8mm dia. or less)**
- **Anti-solvent Freon TE, TES, TP-35**
- **Operating Temperature Range:** -55°C ~ +105°C
- **Rated Working Voltage Range:** 6.3 ~ 100V DC
- **Rated Capacitance:** 0.1 ~ 15,000μF
- **Capacitance Tolerance:** ±20% (at 20°C, 120Hz)
- **tan δ (at 20°C, 120Hz)**



| Size Code | Dimensions (mm) D x L x d |
|-----------|------------------------------|
| AA | 4.5 x 10.5 x 0.6 |
| A | 5 x 12.5 x 0.6 |
| B | 6.3 x 12.5 x 0.6 |
| C | 6.3 x 16 x 0.6 |
| D | 8 x 16 x 0.6 |
| E | 8 x 20 x 0.6 |
| F | 10 x 20 x 0.6 |
| G | 10 x 25 x 0.6 |
| H | 12.5 x 25 x 0.8 |
| I | 12.5 x 31.5 x 0.8 |
| J | 16 x 25 x 0.8 |
| K | 16 x 31.5 x 0.8 |
| L | 16 x 40 x 0.8 |
| M | 18 x 40 x 0.8 |

**PANASONIC NHE
CROSS REFERENCES:**
Elna: RE3 Marcon: BSM
Nichicon: VT Ruby-con: SSP
UCC: KME.

• *Not recommended for new design.*

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|-------|------|------|------|------|------|------|------|------|
| tan δ | 0.28 | 0.22 | 0.19 | 0.16 | 0.13 | 0.10 | 0.09 | 0.07 |

Add 0.02 per 1,000μF for capacitors with more than 1,000μF.

DC Leakage current:

$I = 0.01 \text{ CV or } 3\mu\text{A}$, whichever is greater
where $I = \text{DC leakage current in } \mu\text{A}$
 $C = \text{rated capacitance in } \mu\text{F}$
 $V = \text{rated working voltage in V}$

DC leakage current shall be measured after 2 minutes application of the DC rated working voltage through the 1,000 ohms resistor at 20°C

Load life:

After following load life test with DC voltage and ripple current applied (the sum of DC and ripple peak voltage shall not exceed the rated voltage), the capacitors shall meet following limits.

$\phi 5, \phi 6, \phi 8 \dots\dots\dots 1,000 \text{ hours at } +105^\circ\text{C}$
 $\phi 10 \sim \phi 18 \dots\dots\dots 2,000 \text{ hours at } +105^\circ\text{C}$

Measurement shall be performed after 2 hours exposure at room temperature.

| | |
|--------------------|---|
| Capacitance change | Within ±20% of the initial measured value |
| tan δ | Less than 200% of the initial specified value |
| DC leakage current | Less than the initial specified value |

Shelf life:

After storage for 1,000 hours at +105°C with no voltage applied, the capacitors shall meet the following limits.

| | |
|--------------------|---|
| Capacitance change | Within ±20% of the initial measured value |
| tan δ | Less than 200% of the initial specified value |
| DC leakage current | Less than the initial specified value |

Measurement shall be performed after 2 hours exposure at room temperature.

Stability at low temperature:

Impedance ratio against value at +20°C, at 120Hz.

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|-------------------|-----|----|----|----|----|----|----|-----|
| Z(-125°C)/Z(20°C) | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Z(-40°C)/Z(20°C) | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 |
| Z(-55°C)/Z(20°C) | 12 | 10 | 8 | 6 | 6 | 6 | 6 | 6 |

Add 0.5 (-25°C) or 1.0 (-40°C, -50°C) per 1,000μF for capacitors with more than 1,000μF.

Maximum Permissible Ripple Current:

| W.V. (V.DC) | Capacitance (μF) | Frequency (Hz) | | | | |
|-------------|------------------|----------------|-----|------|------|------|
| | | 60 | 120 | 1K | 10K | 100K |
| 6.3 | 0.1 ~ 330 | 0.85 | 1 | 1.30 | 1.40 | 1.55 |
| f | 470 ~ 3300 | 0.95 | 1 | 1.15 | 1.20 | 1.25 |
| 50 | 4700 ~ | 0.95 | 1 | 1.10 | 1.20 | 1.20 |
| 63 | 0.47 ~ 33 | 0.75 | 1 | 1.55 | 1.65 | 1.80 |
| f | 47 ~ 220 | 0.75 | 1 | 1.40 | 1.60 | 1.65 |
| 100 | 330 ~ | 0.80 | 1 | 1.30 | 1.35 | 1.40 |

Temperature multiplier

| Temp. (C) | 85 | 105 |
|------------|------|-----|
| Multiplier | 1.75 | 1 |

To get a permissible current at given frequency and temperature, multiply the ripple current at 105°C, 100kHz with the above multipliers.

However, there is a possibility that reverse voltage is rated to the capacitors at low frequency. So ripple current shall be calculated by using the above mentioned multiplier, or by using the following formula, whichever is greater.

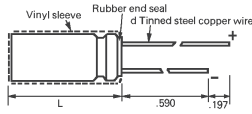
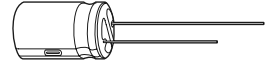
$$I_p = \pi \times C \times V_N \times 2 \times 10^{-4}$$

$I_p = \text{Max. ripple current (A rms); } f = \text{Frequency (Hz); } C = \text{Rated capacitance (}\mu\text{F); } V_N = \text{Working voltage (V.DC)}$

Cleaning Solvents & Conditions:

| Solvents | Conditions |
|-------------|---------------------------------|
| Freon TE | Vapor, ultra sonic or immersion |
| Freon TES | cleaning, for 5 minutes |
| Freon TP-35 | at 40°C |

| WV | μF | Case | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. |
|-----------|--------|------|-------------------|---------|-------|--------|---------|-----------|-----------|--------------------|
| | | | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | |
| 6.3 (8) | 100 | B | P5400-ND | .54 | 4.75 | 41.13 | 190.00 | 180.00/M | 164.00/M | ECE-BOJGE101 |
| | 220 | C | P5401-ND | .68 | 5.96 | 51.69 | 238.00 | 226.00/M | 207.00/M | ECE-BOJGE221 |
| | 330 | D | P5402-ND | .90 | 7.94 | 68.80 | 317.00 | 300.00/M | 275.00/M | ECE-BOJGE331 |
| | 2,200 | H | P5405-ND | 2.12 | 18.21 | 142.65 | 910.00 | 861.00/M | 788.00/M | ECE-BOJGE222 |
| | 3,300 | H | P5406-ND | 2.22 | 19.05 | 149.23 | 952.00 | 901.00/M | 825.00/M | ECE-BOJGE332 |
| 10 (13) | 15,000 | M | P5410-ND | 5.63 | 48.25 | 377.96 | 2411.00 | 2281.00/M | 2089.00/M | ECE-BOJGE153 |
| | 33 | B | P5412-ND | .54 | 4.75 | 41.13 | 190.00 | 180.00/M | 164.00/M | ECE-B1AGE330 |
| | 220 | C | P5415-ND | .85 | 7.52 | 65.16 | 301.00 | 284.00/M | 260.00/M | ECE-B1AGE221 |
| | 330 | D | P5416-ND | .95 | 8.40 | 72.80 | 336.00 | 318.00/M | 291.00/M | ECE-B1AGE331 |
| | 470 | D | P5417-ND | .99 | 8.74 | 75.71 | 349.00 | 330.00/M | 303.00/M | ECE-B1AGE471 |
| 16 (20) | 2,000 | H | P5419-ND | 2.19 | 18.75 | 146.87 | 937.00 | 886.00/M | 812.00/M | ECE-B1AGE222 |
| | 22 | B | P5424-ND | .60 | 5.33 | 46.23 | 213.00 | 202.00/M | 185.00/M | ECE-B1CGE220 |
| | 33 | B | P5425-ND | .61 | 5.38 | 46.59 | 215.00 | 203.00/M | 186.00/M | ECE-B1CGE330 |
| | 47 | C | P5426-ND | .84 | 7.43 | 64.43 | 297.00 | 281.00/M | 257.00/M | ECE-B1CGE470 |
| | 100 | C | P5427-ND | .85 | 7.48 | 64.79 | 299.00 | 283.00/M | 259.00/M | ECE-B1CGE101 |
| 25 (32) | 4,700 | K | P5434-ND | 3.83 | 32.79 | 256.88 | 1639.00 | 1550.00/M | 1420.00/M | ECE-B1CGE472 |
| | 6,800 | L | P5435-ND | 4.65 | 39.85 | 312.16 | 1991.00 | 1884.00/M | 1725.00/M | ECE-B1CGE682 |
| | 4.7 | A | P5436-ND | .51 | 4.49 | 38.95 | 180.00 | 170.00/M | 156.00/M | ECE-B1EGE477 |
| | 10 | A | P5437-ND | .51 | 4.49 | 38.95 | 180.00 | 170.00/M | 156.00/M | ECE-B1EGE100 |
| | 22 | B | P5438-ND | .60 | 5.29 | 45.86 | 212.00 | 200.00/M | 183.00/M | ECE-B1EGE220 |
| 35 (44) | 47 | C | P5440-ND | .85 | 7.52 | 65.16 | 301.00 | 284.00/M | 260.00/M | ECE-B1EGE470 |
| | 100 | C | P5441-ND | .85 | 7.52 | 65.16 | 301.00 | 284.00/M | 260.00/M | ECE-B1EGE101 |
| | 1,000 | H | P5445-ND | 2.20 | 18.88 | 147.92 | 944.00 | 893.00/M | 817.00/M | ECE-B1EGE102 |
| | 4,700 | M | P5448-ND | 5.28 | 45.26 | 354.53 | 2262.00 | 2140.00/M | 1959.00/M | ECE-B1EGE472 |
| | 33 | C | P5452-ND | .84 | 7.43 | 64.43 | 297.00 | 281.00/M | 257.00/M | ECE-B1VGE330 |
| 50 (63) | 47 | C | P5453-ND | .84 | 7.43 | 64.43 | 297.00 | 281.00/M | 257.00/M | ECE-B1VGE470 |
| | 330 | F | P5456-ND | 1.77 | 15.15 | 118.70 | 757.00 | 716.00/M | 656.00/M | ECE-B1VGE331 |
| | 1,000 | I | P5458-ND | 2.49 | 21.34 | 167.13 | 1066.00 | 1009.00/M | 924.00/M | ECE-B1VGE102 |
| | 2,200 | K | P5459-ND | 3.70 | 31.68 | 248.20 | 1583.00 | 1498.00/M | 1372.00/M | ECE-B1VGE222 |
| | 0.1 | A | P5461-ND | .50 | 4.45 | 38.58 | 178.00 | 168.00/M | 154.00/M | ECE-B1HGE0R1 |
| 63 (79) | 0.33 | A | P5463-ND | .51 | 4.54 | 39.31 | 181.00 | 172.00/M | 157.00/M | ECE-B1HGER33 |
| | 0.47 | A | P5464-ND | .51 | 4.54 | 39.31 | 181.00 | 172.00/M | 157.00/M | ECE-B1HGER47 |
| | 1.0 | A | P5465-ND | .51 | 4.54 | 39.31 | 181.00 | 172.00/M | 157.00/M | ECE-B1HGE010 |
| | 10 | C | P5469-ND | .84 | 7.43 | 64.43 | 297.00 | 281.00/M | 257.00/M | ECE-B1HGE100 |
| | 33 | C | P5471-ND | .87 | 7.64 | 66.25 | 306.00 | 289.00/M | 265.00/M | ECE-B1HGE330 |
| 100 (125) | 47 | C | P5472-ND | .88 | 7.77 | 67.34 | 311.00 | 294.00/M | 269.00/M | ECE-B1HGE470 |
| | 100 | D | P5473-ND | .99 | 8.78 | 76.08 | 351.00 | 332.00/M | 304.00/M | ECE-B1HGE101 |
| | 220 | F | P5474-ND | 1.83 | 15.72 | 123.18 | 786.00 | 743.00/M | 681.00/M | ECE-B1HGE221 |
| | 2.2 | A | P5479-ND | .51 | 4.49 | 38.95 | 180.00 | 170.00/M | 156.00/M | ECE-B1JGE2R2 |
| | 3.3 | B | P5480-ND | .52 | 4.62 | 40.04 | 185.00 | 175.00/M | 160.00/M | ECE-B1JGE3R3 |
| 100 (125) | 10 | C | P5482-ND | .84 | 7.39 | 64.06 | 296.00 | 280.00/M | 256.00/M | ECE-B1JGE100 |
| | 220 | G | P5487-ND | 1.93 | 16.56 | 129.76 | 828.00 | 783.00/M | 717.00/M | ECE-B1JGE221 |
| | 1.0 | A | P5492-ND | .51 | 4.54 | 39.31 | 181.00 | 172.00/M | 157.00/M | ECE-B2AGE010 |
| | 2.2 | B | P5493-ND | .61 | 5.42 | 46.96 | 217.00 | 205.00/M | 188.00/M | ECE-B2AGE2R2 |
| | 3.3 | C | P5494-ND | .79 | 6.97 | 60.42 | 279.00 | 264.00/M | 241.00/M | ECE-B2AGE3R3 |
| 100 (125) | 4.7 | C | P5495-ND | .84 | 7.43 | 64.43 | 297.00 | 281.00/M | 257.00/M | ECE-B2AGE477 |
| | 22 | D | P5497-ND | .98 | 8.61 | 74.62 | 344.00 | 326.00/M | 298.00/M | ECE-B2AGE220 |
| | 100 | GE | P5500-ND | 2.00 | 17.17 | 134.50 | 858.00 | 812.00/M | 743.00/M | ECE-B2AGE101 |
| | 330 | J | P5502-ND | 3.48 | 29.80 | 233.46 | 1489.00 | 1409.00/M | 1290.00/M | ECE-B2AGE331 |



| Size Code | Dimensions (mm) D x L x A x d |
|-----------|----------------------------------|
| A | 5 x 11 x 2.0 x 0.5 |
| B | 6.3 x 11.2 x 2.5 x 0.5 |
| C | 8 x 11.5 x 3.5 x 0.6 |
| D | 8 x 12.5 x 3.5 x 0.6 |
| E | 10 x 12.5 x 5.0 x 0.6 |
| F | 10 x 16 x 5.0 x 0.6 |
| G | 10 x 20 x 5.0 x 0.6 |
| H | 12.5 x 20 x 5.0 x 0.6 |
| I | 12.5 x 25 x 5.0 x 0.6 |
| J | 16 x 25 x 7.5 x 0.8 |
| K | 16 x 31.5 x 7.5 x 0.8 |
| L | 18 x 35.5 x 7.5 x 0.8 |



PANASONIC NHE
CROSS REFERENCES:
Elna: RE3
Marcon: BSM
Nichicon: VT
Rubycon: SSP
UCC: KME.

Specifications:

NHE series has been introduced to meet the requirements of use over wide temperature range of -55 ~ +105°C with same case size as SU series.

Features:

- Reduced case size, same as SU series
- 2,000 hours load life at 105°C (1,000 hours for products of 8mm dia. or less)
- Anti-solvent Freon TE, TES, TP-35
- Operating Temperature Range: -55 ~ +105°C
- Rated Working Voltage Range: 6.3 ~ 100V DC
- Rated Capacitance: 0.1 ~ 15,000μF
- Capacitance Tolerance: ±20% (at 20°C, 120 Hz)
- tan δ (at 20°C, 120 Hz)

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|-------|------|------|------|------|------|------|------|------|
| tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.07 |

Add 0.02 per 1,000μF for capacitors with more than 1,000μF.

DC Leakage current:

1 = 0.01 CV or 3μA, whichever is greater
where 1 = DC leakage current in μA
C = rated capacitance in μF
V = rated working voltage in V

DC leakage current shall be measured after 2 minutes application of the DC rated working voltage through the 1,000 ohms resistor at 20°C

Load life:

After following load life test with DC voltage and ripple current applied (the sum of DC and ripple peak voltage shall not exceed the rated voltage), the capacitors shall meet following limits.
φ5, φ6, φ8 1,000 hours at +105°C
φ10 ~ φ18 2,000 hours at +105°C
Measurement shall be performed after 2 hours exposure at room temperature.

Add 0.5 (-25°C) or 1.0 (-40°C, -50°C) per 1,000μF for capacitors with more than 1,000μF.

| Capacitance change | tan δ | DC leakage current |
|---|---|---------------------------------------|
| Within ±20% of the initial measured value | Less than 200% of the initial specified value | Less than the initial specified value |

Shelf life:

After storage for 1,000 hours at +105°C with no voltage applied, the capacitors shall meet the following limits.

| Capacitance change | tan δ | DC leakage current |
|---|---|---------------------------------------|
| Within ±20% of the initial measured value | Less than 200% of the initial specified value | Less than the initial specified value |

Measurement shall be performed after 2 hours exposure at room temperature.

Stability at low temperature

Impedance ratio against value at +20°C, at 120 Hz.

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|-------------------|-----|----|----|----|----|----|----|-----|
| Z(-125°C)/Z(20°C) | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 |
| Z(-40°C)/Z(20°C) | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 |
| Z(-55°C)/Z(20°C) | 12 | 10 | 8 | 6 | 6 | 6 | 6 | 6 |

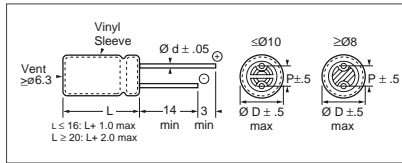
Add 0.5 (-25°C) or 1.0 (-40°C, -50°C) per 1,000 μF for capacitors with more than 1,000 μF.

| WV | μF | Case | Digi-Key Part No. | 1 | 10 | 100 | Pricing 500 | 1,000 | 5,000 | Panasonic Part No. | |
|-----------|-------|-------------|-------------------|----------|--------|--------|-------------|---------|--------------|--------------------|--------------|
| 6.3 (8) | 2.20 | 47 | A P5202-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A0JGE10 | |
| | | 100 | A P5203-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A0JGE47 | |
| | | 220 | B P5204-ND | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00M | ECE-A0JGE221 | |
| | | 330 | B P5205-ND | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00M | ECE-A0JGE331 | |
| | | 470 | D P5206-ND | .47 | 3.76 | 27.26 | 79.90 | 127.00 | 122.00M | ECE-A0JGE471 | |
| | 10.00 | 1,000 | E | P5207-ND | .66 | 5.29 | 38.33 | 112.34 | 172.00 | 172.00M | ECE-A0JGE102 |
| | | 2,200 | F | P5208-ND | .74 | 5.96 | 43.20 | 224.90 | 374.00 | 360.00M | ECE-A0JGE222 |
| | | 3,300 | H | P5209-ND | 1.14 | 10.00 | 77.11 | 228.48 | 380.00 | 366.00M | ECE-A0JGE332 |
| | | 4,700 | J | P5210-ND | 1.78 | 15.60 | 120.36 | 356.61 | 593.00 | 571.00M | ECE-A0JGE472 |
| | | 6,800 | J | P5211-ND | 1.90 | 16.62 | 128.22 | 379.90 | 632.00 | 608.00M | ECE-A0JGE682 |
| 10 (13) | 2.20 | 22 | A P5212-ND | 2.12 | 18.18 | 151.48 | 454.44 | 788.00 | 763.00M | ECE-A0JGE103 | |
| | | 33 | A P5213-ND | 3.08 | 26.38 | 219.80 | 659.40 | 1143.00 | 1108.00M | ECE-A0JGE153 | |
| | | 47 | A P5214-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1AGE220 | |
| | | 100 | A P5215-ND | .26 | 1.92 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1AGE330 | |
| | | 220 | A P5216-ND | .26 | 1.92 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1AGE470 | |
| | 3.30 | 100 | A P5217-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A1AGE101 | |
| | | 220 | B P5218-ND | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00M | ECE-A1AGE221 | |
| | | 330 | C P5219-ND | .52 | 4.12 | 29.88 | 87.58 | 139.00 | 134.00M | ECE-A1AGE331 | |
| | | 470 | D P5220-ND | .58 | 4.66 | 33.78 | 99.01 | 157.00 | 151.00M | ECE-A1AGE471 | |
| | | 1,000 | F P5221-ND | .74 | 5.96 | 43.20 | 131.38 | 209.00 | 201.00M | ECE-A1AGE102 | |
| 16 (20) | 2.20 | 2,200 | H P5222-ND | 1.12 | 9.76 | 75.30 | 223.10 | 371.00 | 357.00M | ECE-A1AGE222 | |
| | | 3,300 | I P5223-ND | 1.29 | 11.33 | 87.39 | 258.94 | 430.00 | 414.00M | ECE-A1AGE332 | |
| | | 4,700 | J P5224-ND | 1.86 | 16.31 | 125.80 | 372.74 | 620.00 | 596.00M | ECE-A1AGE472 | |
| | | 6,800 | K P5225-ND | 2.05 | 17.61 | 146.72 | 444.16 | 763.00 | 739.00M | ECE-A1AGE682 | |
| | | 10,000 | L P5226-ND | 2.86 | 24.53 | 204.40 | 613.20 | 1063.00 | 1030.00M | ECE-A1AGE103 | |
| | 3.30 | 10 | A P5227-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1CGE100 | |
| | | 22 | A P5228-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1CGE220 | |
| | | 33 | A P5229-ND | .26 | 1.92 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1CGE330 | |
| | | 47 | A P5230-ND | .27 | 2.02 | 14.56 | 40.32 | 63.00 | 58.00M | ECE-A1CGE470 | |
| | | 100 | B P5231-ND | .34 | 2.52 | 18.20 | 50.40 | 78.00 | 73.00M | ECE-A1CGE101 | |
| 10.00 | 220 | C P5232-ND | .51 | 4.08 | 29.58 | 86.70 | 138.00 | 133.00M | ECE-A1CGE221 | | |
| | 330 | D P5233-ND | .58 | 4.66 | 33.78 | 99.01 | 157.00 | 151.00M | ECE-A1CGE331 | | |
| | 470 | F P5234-ND | .66 | 5.29 | 38.28 | 112.34 | 178.00 | 172.00M | ECE-A1CGE471 | | |
| | 1,000 | G P5235-ND | .91 | 7.26 | 52.62 | 152.22 | 245.00 | 236.00M | ECE-A1CGE102 | | |
| | 2,200 | I P5236-ND | 1.30 | 11.41 | 88.00 | 260.74 | 433.00 | 417.00M | ECE-A1CGE222 | | |
| 25 (32) | 3.30 | 3,300 | J P5237-ND | 1.86 | 16.27 | 125.50 | 371.84 | 618.00 | 596.00M | ECE-A1CGE332 | |
| | | 4,700 | K P5238-ND | 2.07 | 17.77 | 148.12 | 444.36 | 770.00 | 747.00M | ECE-A1CGE472 | |
| | | 6,800 | L P5239-ND | 2.88 | 24.66 | 205.52 | 616.56 | 1069.00 | 1036.00M | ECE-A1CGE682 | |
| | | 10 | A P5240-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1EGE100 | |
| | | 22 | A P5241-ND | .26 | 1.92 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1EGE220 | |
| | 10.00 | 33 | A P5242-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A1EGE330 | |
| | | 47 | A P5243-ND | .28 | 2.07 | 14.95 | 41.40 | 64.00 | 60.00M | ECE-A1EGE470 | |
| | | 100 | B P5244-ND | .36 | 2.70 | 19.50 | 54.00 | 84.00 | 78.00M | ECE-A1EGE101 | |
| | | 220 | D P5245-ND | .56 | 4.44 | 32.19 | 94.35 | 150.00 | 144.00M | ECE-A1EGE221 | |
| | | 330 | E P5246-ND | .66 | 5.29 | 38.33 | 112.34 | 178.00 | 172.00M | ECE-A1EGE331 | |
| 35 (44) | 4.70 | 4,700 | F P5247-ND | .77 | 6.18 | 44.82 | 131.38 | 209.00 | 201.00M | ECE-A1HGE471 | |
| | | 1,000 | H P5248-ND | 1.12 | 9.84 | 75.90 | 228.92 | 374.00 | 360.00M | ECE-A1HGE102 | |
| | | 2,200 | J P5249-ND | 1.90 | 16.58 | 127.92 | 374.01 | 630.00 | 606.00M | ECE-A1HGE222 | |
| | | 3,300 | K P5250-ND | 2.12 | 18.18 | 151.48 | 454.44 | 788.00 | 763.00M | ECE-A1HGE332 | |
| | | 4,700 | L P5251-ND | 3.05 | 26.14 | 217.84 | 653.52 | 1133.00 | 1093.00M | ECE-A1HGE472 | |
| | 10.00 | 4.7 | A P5252-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1VGE4R7 | |
| | | 10 | A P5253-ND | .26 | 1.92 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1VGE100 | |
| | | 22 | A P5254-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A1VGE220 | |
| | | 33 | A P5255-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A1VGE330 | |
| | | 47 | B P5256-ND | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00M | ECE-A1VGE470 | |
| 35 (44) | 100 | C P5257-ND | .52 | 4.12 | 29.88 | 87.58 | 139.00 | 134.00M | ECE-A1HGE101 | | |
| | 220 | E P5258-ND | .67 | 5.33 | 38.65 | 113.29 | 180.00 | 173.00M | ECE-A1HGE221 | | |
| | 330 | F P5259-ND | .76 | 6.05 | 43.85 | 128.52 | 204.00 | 197.00M | ECE-A1VGE331 | | |
| | 470 | G P5260-ND | .89 | 7.12 | 51.64 | 151.37 | 240.00 | 232.00M | ECE-A1HGE471 | | |
| | 1,000 | I P5261-ND | 1.32 | 11.56 | 89.21 | 264.32 | 439.00 | 423.00M | ECE-A1VGE102 | | |
| 50 (63) | 2.20 | 2,200 | K P5262-ND | 2.14 | 18.38 | 153.16 | 459.48 | 796.00 | 772.00M | ECE-A1VGE332 | |
| | | 3,300 | L P5263-ND | 3.07 | 26.28 | 218.96 | 658.88 | 1139.00 | 1104.00M | ECE-A1HGE332 | |
| | | 0.1 | A P5264-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGE0R1 | |
| | | 0.22 | A P5265-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGER22 | |
| | | 0.33 | A P5266-ND | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGER33 | |
| | 10.00 | 0.47 | A P5267-ND* | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGER47 | |
| | | 1.0 | A P5268-ND* | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGE010 | |
| | | 2.2 | A P5269-ND* | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGE2R2 | |
| | | 3.3 | A P5270-ND* | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGE3R3 | |
| | | 4.7 | A P5271-ND* | .26 | 1.92 | 13.83 | 38.30 | 60.00 | 55.00M | ECE-A1HGE4R7 | |
| 35 (44) | 10 | A P5272-ND* | .26 | 1.94 | 13.98 | 38.70 | 60.00 | 56.00M | ECE-A1HGE100 | | |
| | 22 | A P5273-ND* | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00M | ECE-A1HGE220 | | |
| | 33 | B P5274-ND* | .36 | 2.72 | 19.66 | 54.43 | 85.00 | 79.00M | ECE-A1HGE330 | | |
| | 47 | B P5275-ND* | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00M | ECE-A1HGE470 | | |
| | 100 | F P5276-ND* | 1.24 | 11.78 | 90.72 | 268.80 | 447.00 | 430.00M | ECE-A1HGE010 | | |
| 63 (79) | 3.30 | 220 | F P5277-ND* | .79 | 6.32 | 45.80 | 134.23 | 213.00 | 205.00M | ECE-A1HGE221 | |
| | | 330 | G P5278-ND* | .94 | 7.48 | 54.24 | 158.98 | 253.00 | 243.00M | ECE-A1HGE331 | |
| | | 470 | H P5279-ND* | 1.17 | 10.27 | 79.23 | 234.75 | 390.00 | 376.00M | ECE-A1HGE471 | |
| | | 1,000 | J P5280-ND* | 1.94 | 17.01 | 131.24 | 388.86 | 646.00 | 622.00M | ECE-A1HGE102 | |
| | | 2,200 | L P5281-ND* | 3.16 | 27.05 | 225.40 | 676.20 | 1172.00 | 1136.00M | ECE-A1HGE222 | |
| | 10.00 | 4.7 | A P5282-ND | .26 | 1.97 | 14.20 | 39.31 | 61.00 | 57.00M | ECE-A1JGE4R7 | |
| | | 10 | A P5283-ND | .27 | 2.02 | 14.56 | 40.32 | 63.00 | 58.00M | ECE-A1JGE100 | |
| | | 22 | B P5284-ND | .35 | 2.62 | 18.93 | 52.42 | 82.00 | 76.00M | ECE-A1JGE220 | |
| | | 33 | B P5285-ND | .36 | 2.72 | 19.66 | 54.43 | 85.00 | 79.00M | ECE-A1JGE330 | |
| | | 47 | C P5286-ND | .54 | 4.35 | 31.51 | 92.34 | 147.00 | 141.00M | ECE-A1JGE470 | |
| 63 (79) | 100 | E P5287-ND | .68 | 5.40 | 39.15 | 114.75 | 182.00 | 176.00M | ECE-A1JGE101 | | |
| | 220 | G P5288-ND | .94 | 7.53 | 54.57 | 159.94 | 254.00 | 245.00M | ECE-A1JGE221 | | |
| | 330 | H P5289-ND | 1.19 | 10.39 | 80.14 | 237.44 | 395.00 | 380.00M | ECE-A1JGE331 | | |
| | 470 | I P5290-ND | 1.76 | 14.48 | 117.78 | 360.72 | 595.00 | 578.00M | ECE-A1JGE471 | | |
| | 1,000 | K P5291-ND | 2.22 | 19.05 | 158.76 | 478.28 | 826.00 | 800.00M | ECE-A1JGE102 | | |
| 100 (125) | 0.47 | A P529 | | | | | | | | | |

Panasonic® NHG Series Radial Lead Aluminum Electrolytic Capacitors

PANASONIC NHG SERIES
CROSS REFERENCES
Nippon Chemicon: KMG
Nichicon VZ; Elna: RJ4;
Rubycon: YXA

FEATURES:
• Compact size (same case size with series M).
• Life: 1000 ~ 2000 hours at +105°C



Ripple Current: 120 Hz, +105°C

| W.V. (V.DC) | Cap (µF) | Frequency (Hz) | | | | |
|-------------|-----------|----------------|-----|------|------|------|
| | | 60 | 120 | 1k | 10k | 100k |
| 6.3 ~ 100 | ~ 33 | 0.75 | 1 | 1.55 | 1.80 | 2.00 |
| | 47 ~ 470 | 0.80 | 1 | 1.35 | 1.50 | 1.50 |
| | 1000 ~ | 0.85 | 1 | 1.10 | 1.15 | 1.15 |
| 160 ~ 450 | 1.0 ~ 330 | 0.80 | 1 | 1.35 | 1.50 | 1.50 |

SPECIFICATIONS:

| | | |
|-----------------------------|-----------------|-----------------|
| Operating Temperature Range | -55 to +105°C | -25 to +105°C |
| Rated Working Voltage Range | 6.3 to 100 V.DC | 160 to 450 V.DC |
| Nominal Capacitance Range | 0.1 to 22000 µF | 1.0 to 330 µF |

Capacitance Tolerance: ±20% (120 Hz, +20°C)

| Leakage Current | I ≤ 0.01 CV (µA) or 3 (µA) Which ever is greater after 2 minutes application of rated working voltage at +20°C. | I ≤ 0.06 CV + 10 (µA) after 2 minutes application of rated working voltage at +20°C. |
|-----------------|--|---|
|-----------------|--|---|

tan δ: (at 120 Hz, +20°C)

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 250 | 450 |
|------------|------|------|------|------|------|------|------|------|------|------|------|
| tan δ max. | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.15 | 0.15 | 0.24 |

For capacitance value > 1000 µF, add 0.02 per every 1000 µF.

Endurance:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|--------------------------|---------------------------------|--------------------------------|
| Duration | 2000 Hours* | Leakage Current | ≤ initial specified value |
| Ambient Temperature | +105°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | Rated DC Working Voltage | tan δ | ≤ 200% initial specified value |

* 1000 Hours for ≤ 08mm products.

Shelf Life:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|------------|---------------------------------|--------------------------------|
| Duration | 1000 Hours | Leakage Current | ≤ initial specified value |
| Ambient Temperature | +105°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | — | tan δ | ≤ 200% initial specified value |

| WV (VDC) | Cap µF | D.C.L. (+20°C) (µA) max. | tan δ max. | Ripple Current (mA) rms | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | | |
|----------|--------|--------------------------|------------|-------------------------|-----------------|------|-----|-----|-------------------|----------|-------|--------|--------|---------|--------------------|-------------|-------------|
| | | | | | øD | L | P | ød | | 1 | 10 | 100 | 500 | 1,000 | | 5,000 | |
| 6.3 | 100 | 6.3 | 0.28 | 91 | 5 | 11 | 2.0 | 0.5 | P5505-ND | .29 | 1.96 | 13.72 | 39.20 | 57.00 | 51.00/M | ECA-0JHG101 | |
| | 220 | 13.8 | 0.28 | 140 | 5 | 11 | 2.0 | 0.5 | P5506-ND | .28 | 2.12 | 15.29 | 42.34 | 66.00 | 61.00/M | ECA-0JHG221 | |
| | 330 | 20.7 | 0.28 | 190 | 6.3 | 11.2 | 2.5 | 0.5 | P5507-ND | .36 | 2.72 | 19.66 | 54.43 | 85.00 | 79.00/M | ECA-0JHG331 | |
| | 470 | 29.6 | 0.28 | 230 | 6.3 | 11.2 | 2.5 | 0.5 | P5508-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-0JHG471 | |
| | 1000 | 63.0 | 0.28 | 380 | 8 | 11.5 | 3.5 | 0.6 | P5509-ND | .52 | 4.17 | 30.21 | 88.54 | 141.00 | 135.00/M | ECA-0JHG102 | |
| | 2200 | 138.6 | 0.30 | 710 | 10 | 16 | 5.0 | 0.6 | P5510-ND | .83 | 6.63 | 48.07 | 140.90 | 224.00 | 215.00/M | ECA-0JHG222 | |
| | 3300 | 207.9 | 0.32 | 840 | 10 | 20 | 5.0 | 0.6 | P5511-ND | 1.14 | 9.09 | 65.93 | 193.26 | 307.00 | 296.00/M | ECA-0JHG332 | |
| | 4700 | 296.1 | 0.34 | 1090 | 12.5 | 20 | 5.0 | 0.6 | P5512-ND | 1.11 | 9.68 | 74.69 | 221.31 | 368.00 | 354.00/M | ECA-0JHG472 | |
| | 6800 | 428.4 | 0.38 | 1350 | 12.5 | 25 | 5.0 | 0.6 | P5513-ND | 1.51 | 13.17 | 101.61 | 301.06 | 501.00 | 482.00/M | ECA-0JHG682 | |
| | 10000 | 630.0 | 0.46 | 1650 | 16 | 25 | 7.5 | 0.8 | P5514-ND | 1.88 | 16.13 | 134.40 | 403.20 | 699.00 | 677.00/M | ECA-0JHG103 | |
| | 15000 | 945.0 | 0.56 | 2010 | 16 | 31.5 | 7.5 | 0.8 | P5515-ND | 2.69 | 23.08 | 192.36 | 577.08 | 1000.00 | 969.00/M | ECA-0JHG153 | |
| | 22000 | 1386.0 | 0.70 | 2350 | 18 | 35.5 | 7.5 | 0.8 | P5516-ND | 3.85 | 33.03 | 275.24 | 825.72 | 1431.00 | 1387.00/M | ECA-0JHG223 | |
| 10 | 100 | 10.0 | 0.24 | 110 | 5 | 11 | 2.0 | 0.5 | P5517-ND | .25 | 1.86 | 13.47 | 37.30 | 58.00 | 54.00/M | ECA-1AHG101 | |
| | 220 | 22.0 | 0.24 | 170 | 6.3 | 11.2 | 2.5 | 0.5 | P5518-ND | .32 | 2.42 | 17.47 | 48.38 | 75.00 | 70.00/M | ECA-1AHG221 | |
| | 330 | 33.0 | 0.24 | 200 | 6.3 | 11.2 | 2.5 | 0.5 | P5519-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-1AHG331 | |
| | 470 | 47.0 | 0.24 | 250 | 8 | 11.5 | 3.5 | 0.6 | P5520-ND | .43 | 3.45 | 25.01 | 73.30 | 116.00 | 112.00/M | ECA-1AHG471 | |
| | 1000 | 100.0 | 0.24 | 460 | 10 | 12.5 | 5.0 | 0.6 | P5521-ND | .66 | 5.29 | 38.33 | 112.34 | 178.00 | 172.00/M | ECA-1AHG102 | |
| | 2200 | 220.0 | 0.26 | 760 | 10 | 20 | 5.0 | 0.6 | P5522-ND | 1.06 | 8.47 | 61.39 | 179.93 | 286.00 | 275.00/M | ECA-1AHG222 | |
| | 3300 | 330.0 | 0.28 | 1000 | 12.5 | 20 | 5.0 | 0.6 | P5523-ND | 1.06 | 9.25 | 71.37 | 211.46 | 352.00 | 338.00/M | ECA-1AHG332 | |
| | 4700 | 470.0 | 0.30 | 1260 | 12.5 | 25 | 5.0 | 0.6 | P5524-ND | 1.42 | 12.47 | 96.16 | 284.93 | 474.00 | 456.00/M | ECA-1AHG472 | |
| | 6800 | 680.0 | 0.34 | 1570 | 16 | 25 | 7.5 | 0.8 | P5525-ND | 1.99 | 17.44 | 134.57 | 398.72 | 663.00 | 638.00/M | ECA-1AHG682 | |
| | 10000 | 1000.0 | 0.42 | 1890 | 16 | 31.5 | 7.5 | 0.8 | P5526-ND | 2.40 | 20.56 | 171.36 | 514.08 | 891.00 | 864.00/M | ECA-1AHG103 | |
| | 15000 | 1500.0 | 0.52 | 2180 | 18 | 35.5 | 7.5 | 0.8 | P5527-ND | 3.71 | 31.79 | 264.88 | 794.64 | 1377.00 | 1335.00/M | ECA-1AHG153 | |
| | 16 | 47 | 7.5 | 0.20 | 77 | 5 | 11 | 2.0 | 0.5 | P5528-ND | .29 | 1.96 | 13.72 | 39.20 | 57.00 | 51.00/M | ECA-1CHG470 |
| 100 | | 16.0 | 0.20 | 110 | 5 | 11 | 2.0 | 0.5 | P5529-ND | .28 | 2.12 | 15.29 | 42.34 | 66.00 | 61.00/M | ECA-1CHG101 | |
| 220 | | 35.2 | 0.20 | 180 | 6.3 | 11.2 | 2.5 | 0.5 | P5530-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-1CHG221 | |
| 330 | | 52.8 | 0.20 | 260 | 8 | 11.5 | 3.5 | 0.6 | P5531-ND | .43 | 3.45 | 25.01 | 73.30 | 116.00 | 112.00/M | ECA-1CHG331 | |
| 470 | | 75.2 | 0.20 | 310 | 8 | 11.5 | 3.5 | 0.6 | P5532-ND | .53 | 4.21 | 30.53 | 89.49 | 142.00 | 137.00/M | ECA-1CHG471 | |
| 1000 | | 160.0 | 0.20 | 560 | 10 | 16 | 5.0 | 0.6 | P5533-ND | .82 | 6.54 | 47.42 | 138.99 | 221.00 | 213.00/M | ECA-1CHG102 | |
| 2200 | | 352.0 | 0.22 | 920 | 12.5 | 20 | 5.0 | 0.6 | P5534-ND | 1.11 | 9.68 | 74.69 | 221.31 | 368.00 | 354.00/M | ECA-1CHG222 | |
| 3300 | | 528.0 | 0.24 | 1170 | 12.5 | 25 | 5.0 | 0.6 | P5535-ND | 1.54 | 13.45 | 103.72 | 307.33 | 511.00 | 492.00/M | ECA-1CHG332 | |
| 4700 | | 752.0 | 0.26 | 1480 | 16 | 25 | 7.5 | 0.8 | P5536-ND | 1.84 | 15.76 | 131.32 | 393.96 | 683.00 | 662.00/M | ECA-1CHG472 | |
| 6800 | | 1088.0 | 0.30 | 1780 | 16 | 31.5 | 7.5 | 0.8 | P5537-ND | 2.50 | 21.44 | 178.64 | 535.92 | 929.00 | 900.00/M | ECA-1CHG682 | |
| 10000 | | 1600.0 | 0.38 | 2060 | 18 | 35.5 | 7.5 | 0.8 | P5538-ND | 3.67 | 31.42 | 261.80 | 785.40 | 1361.00 | 1319.00/M | ECA-1CHG103 | |
| 25 | | 47 | 11.7 | 0.16 | 91 | 5 | 11 | 2.0 | 0.5 | P5539-ND | .25 | 1.86 | 13.47 | 37.30 | 58.00 | 54.00/M | ECA-1EHG470 |
| | 100 | 25.0 | 0.16 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | P5540-ND | .32 | 2.42 | 17.47 | 48.38 | 75.00 | 70.00/M | ECA-1EHG101 | |
| | 220 | 55.0 | 0.16 | 230 | 8 | 11.5 | 3.5 | 0.6 | P5541-ND | .43 | 3.45 | 25.01 | 73.30 | 116.00 | 112.00/M | ECA-1EHG221 | |
| | 330 | 82.5 | 0.16 | 310 | 8 | 11.5 | 3.5 | 0.6 | P5542-ND | .53 | 4.21 | 30.53 | 89.49 | 142.00 | 137.00/M | ECA-1EHG331 | |
| | 470 | 117.5 | 0.16 | 380 | 10 | 12.5 | 5.0 | 0.6 | P5543-ND | .70 | 5.60 | 40.60 | 119.00 | 189.00 | 182.00/M | ECA-1EHG471 | |
| | 1000 | 250.0 | 0.16 | 680 | 10 | 20 | 5.0 | 0.6 | P5544-ND | 1.13 | 9.00 | 65.28 | 191.35 | 304.00 | 293.00/M | ECA-1EHG102 | |
| | 2200 | 550.0 | 0.18 | 1090 | 12.5 | 25 | 5.0 | 0.6 | P5545-ND | 1.46 | 12.78 | 98.58 | 292.10 | 486.00 | 467.00/M | ECA-1EHG222 | |
| | 3300 | 825.0 | 0.20 | 1400 | 16 | 25 | 7.5 | 0.8 | P5546-ND | 1.81 | 15.52 | 129.36 | 388.08 | 673.00 | 652.00/M | ECA-1EHG332 | |
| | 4700 | 1175.0 | 0.22 | 1750 | 16 | 31.5 | 7.5 | 0.8 | P5547-ND | 2.65 | 22.75 | 189.56 | 568.68 | 986.00 | 955.00/M | ECA-1EHG472 | |
| | 6800 | 1700.0 | 0.26 | 2040 | 18 | 35.5 | 7.5 | 0.8 | P5548-ND | 3.83 | 32.83 | 273.56 | 820.68 | 1423.00 | 1379.00/M | ECA-1EHG682 | |
| | 35 | 33 | 11.5 | 0.14 | 75 | 5 | 11 | 2.0 | 0.5 | P5549-ND | .25 | 1.86 | 13.47 | 37.30 | 58.00 | 54.00/M | ECA-1VHG330 |
| | | 47 | 16.4 | 0.14 | 90 | 5 | 11 | 2.0 | 0.5 | P5550-ND | .28 | 2.12 | 15.29 | 42.34 | 66.00 | 61.00/M | ECA-1VHG470 |
| 100 | | 35.0 | 0.14 | 150 | 6.3 | 11.2 | 2.5 | 0.5 | P5551-ND | .36 | 2.87 | 20.79 | 60.93 | 97.00 | 93.00/M | ECA-1VHG101 | |
| 220 | | 77.0 | 0.14 | 270 | 8 | 11.5 | 3.5 | 0.6 | P5552-ND | .53 | 4.21 | 30.53 | 89.49 | 142.00 | 137.00/M | ECA-1VHG221 | |
| 330 | | 115.5 | 0.14 | 350 | 10 | 12.5 | 5.0 | 0.6 | P5553-ND | .70 | 5.60 | 40.60 | 119.00 | 189.00 | 182.00/M | ECA-1VHG331 | |
| 470 | | 164.5 | 0.14 | 460 | 10 | 16 | 5.0 | 0.6 | P5554-ND | .87 | 6.94 | 50.34 | 147.56 | 234.00 | 226.00/M | ECA-1VHG471 | |
| 1000 | | 350.0 | 0.14 | 810 | 12.5 | 20 | 5.0 | 0.6 | P5555-ND | 1.22 | 10.70 | 82.56 | 244.61 | 407.00 | 391.00/M | ECA-1VHG102 | |
| 2200 | | 770.0 | 0.16 | 1260 | 16 | 25 | 7.5 | 0.8 | P5556-ND | 1.90 | 16.26 | 135.52 | 406.56 | 705.00 | 683.00/M | ECA-1VHG222 | |
| 3300 | | 1155.0 | 0.18 | 1610 | 16 | 31.5 | 7.5 | 0.8 | P5557-ND | 2.70 | 23.15 | 192.92 | 578.76 | 1003.00 | 972.00/M | ECA-1VHG332 | |
| 4700 | | 1645.0 | 0.20 | 1910 | 18 | 35.5 | 7.5 | 0.8 | P5558-ND | 4.05 | 34.74 | 289.52 | 868.56 | 1506.00 | 1459.00/M | ECA-1VHG472 | |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

| WV (VDC) | Cap μ F | D.C.L. ($\pm 20^{\circ}$ C) (μ A) max. | tan δ max. | Ripple Current (mA) rms | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|----------|-------------|--|-------------------|-------------------------|-----------------|------|-----|----------|-------------------|----------|--------|--------|--------------------|-----------|-------------|-------------|
| | | | | | ϕ D | L | P | ϕ d | | 1 | 10 | 100 | | 500 | 1,000 | 5,000 |
| 50 | 0.1 | 3.0 | 0.12 | 1.1 | 5 | 11 | 2.0 | 0.5 | P5559-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHG0R1 |
| | 0.22 | 3.0 | 0.12 | 2.3 | 5 | 11 | 2.0 | 0.5 | P5560-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHGR22 |
| | 0.33 | 3.0 | 0.12 | 3.5 | 5 | 11 | 2.0 | 0.5 | P5561-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHGR33 |
| | 0.47 | 3.0 | 0.12 | 5 | 5 | 11 | 2.0 | 0.5 | P5562-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHGR47 |
| | 1.0 | 3.0 | 0.12 | 10 | 5 | 11 | 2.0 | 0.5 | P5563-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHG010 |
| | 2.2 | 3.0 | 0.12 | 18 | 5 | 11 | 2.0 | 0.5 | P5564-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHG2R2 |
| | 3.3 | 3.0 | 0.12 | 22 | 5 | 11 | 2.0 | 0.5 | P5565-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHG3R3 |
| | 4.7 | 3.0 | 0.12 | 26 | 5 | 11 | 2.0 | 0.5 | P5566-ND | .29 | 1.90 | 13.33 | 38.08 | 55.00 | 50.00/M | ECA-1HHG4R7 |
| | 10 | 5.0 | 0.12 | 39 | 5 | 11 | 2.0 | 0.5 | P5567-ND | .29 | 1.96 | 13.72 | 39.20 | 57.00 | 51.00/M | ECA-1HHG100 |
| | 22 | 11.0 | 0.12 | 65 | 5 | 11 | 2.0 | 0.5 | P5568-ND | .25 | 1.86 | 13.47 | 37.30 | 58.00 | 54.00/M | ECA-1HHG220 |
| | 33 | 16.5 | 0.12 | 90 | 5 | 11 | 2.0 | 0.5 | P5569-ND | .28 | 2.12 | 15.29 | 42.34 | 66.00 | 61.00/M | ECA-1HHG330 |
| | 47 | 23.5 | 0.12 | 110 | 6.3 | 11.2 | 2.5 | 0.5 | P5570-ND | .34 | 2.52 | 18.20 | 50.40 | 78.00 | 73.00/M | ECA-1HHG470 |
| | 100 | 50.0 | 0.12 | 180 | 8 | 11.5 | 3.5 | 0.6 | P5571-ND | .43 | 3.45 | 25.01 | 73.30 | 116.00 | 112.00/M | ECA-1HHG101 |
| | 220 | 110.0 | 0.12 | 330 | 10 | 12.5 | 5.0 | 0.6 | P5572-ND | .70 | 5.60 | 40.60 | 119.00 | 189.00 | 182.00/M | ECA-1HHG221 |
| | 330 | 165.0 | 0.12 | 410 | 10 | 16 | 5.0 | 0.6 | P5573-ND | .94 | 7.48 | 54.24 | 158.98 | 253.00 | 243.00/M | ECA-1HHG331 |
| | 470 | 235.0 | 0.12 | 530 | 10 | 20 | 5.0 | 0.6 | P5574-ND | 1.20 | 9.63 | 69.83 | 204.68 | 325.00 | 313.00/M | ECA-1HHG471 |
| | 1000 | 500.0 | 0.12 | 950 | 12.5 | 25 | 5.0 | 0.6 | P5575-ND | 1.61 | 14.07 | 108.56 | 321.66 | 535.00 | 515.00/M | ECA-1HHG102 |
| | 2200 | 1100.0 | 0.14 | 1470 | 16 | 31.5 | 7.5 | 0.8 | P5576-ND | 2.70 | 23.15 | 192.92 | 578.76 | 1003.00 | 972.00/M | ECA-1HHG222 |
| | 3300 | 1650.0 | 0.16 | 1770 | 18 | 35.5 | 7.5 | 0.8 | P5577-ND | 4.14 | 35.52 | 295.96 | 887.88 | 1539.00 | 1492.00/M | ECA-1HHG332 |
| | 63 | 10 | 6.3 | 0.10 | 46 | 5 | 11 | 2.0 | 0.5 | P5578-ND | .27 | 2.02 | 14.56 | 40.32 | 63.00 | 58.00/M |
| 22 | | 13.8 | 0.10 | 71 | 5 | 11 | 2.0 | 0.5 | P5579-ND | .28 | 2.12 | 15.29 | 42.34 | 66.00 | 61.00/M | ECA-1JHG220 |
| 33 | | 20.7 | 0.10 | 100 | 6.3 | 11.2 | 2.5 | 0.5 | P5580-ND | .36 | 2.72 | 19.66 | 54.43 | 85.00 | 79.00/M | ECA-1JHG330 |
| 47 | | 29.6 | 0.10 | 120 | 6.3 | 11.2 | 2.5 | 0.5 | P5581-ND | .39 | 3.14 | 22.74 | 66.64 | 106.00 | 102.00/M | ECA-1JHG470 |
| 100 | | 63.0 | 0.10 | 215 | 10 | 12.5 | 5.0 | 0.6 | P5582-ND | .55 | 4.39 | 31.83 | 93.30 | 148.00 | 143.00/M | ECA-1JHG101 |
| 220 | | 138.6 | 0.10 | 335 | 10 | 16 | 5.0 | 0.6 | P5583-ND | .92 | 7.35 | 53.27 | 156.13 | 248.00 | 239.00/M | ECA-1JHG221 |
| 330 | | 207.9 | 0.10 | 510 | 10 | 20 | 5.0 | 0.6 | P5584-ND | 1.21 | 9.68 | 70.16 | 205.63 | 327.00 | 314.00/M | ECA-1JHG331 |
| 470 | | 296.1 | 0.10 | 640 | 12.5 | 20 | 5.0 | 0.6 | P5585-ND | 1.29 | 11.33 | 87.39 | 258.94 | 430.00 | 414.00/M | ECA-1JHG471 |
| 1000 | | 630.0 | 0.10 | 930 | 16 | 25 | 7.5 | 0.8 | P5586-ND | 2.09 | 17.91 | 149.24 | 447.72 | 776.00 | 752.00/M | ECA-1JHG102 |
| 2200 | | 1386.0 | 0.12 | 1610 | 18 | 35.5 | 7.5 | 0.8 | P5587-ND | 4.24 | 36.36 | 302.96 | 908.88 | 1575.00 | 1527.00/M | ECA-1JHG222 |
| 100 | 0.47 | 3.0 | 0.08 | 9 | 5 | 11 | 2.0 | 0.5 | P5588-ND | .26 | 1.97 | 14.20 | 39.31 | 61.00 | 57.00/M | ECA-2AHGR47 |
| | 1.0 | 3.0 | 0.08 | 14 | 5 | 11 | 2.0 | 0.5 | P5589-ND | .26 | 1.97 | 14.20 | 39.31 | 61.00 | 57.00/M | ECA-2AHG010 |
| | 2.2 | 3.0 | 0.08 | 21 | 5 | 11 | 2.0 | 0.5 | P5590-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00/M | ECA-2AHG2R2 |
| | 3.3 | 3.3 | 0.08 | 31 | 5 | 11 | 2.0 | 0.5 | P5591-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00/M | ECA-2AHG3R3 |
| | 4.7 | 4.7 | 0.08 | 38 | 5 | 11 | 2.0 | 0.5 | P5592-ND | .28 | 2.07 | 14.92 | 41.33 | 64.00 | 60.00/M | ECA-2AHG4R7 |
| | 10 | 10.0 | 0.08 | 54 | 6.3 | 11.2 | 2.5 | 0.5 | P5593-ND | .36 | 2.67 | 19.29 | 53.42 | 83.00 | 77.00/M | ECA-2AHG100 |
| | 22 | 22.0 | 0.08 | 93 | 6.3 | 11.2 | 2.5 | 0.5 | P5594-ND | .41 | 3.32 | 24.04 | 70.45 | 112.00 | 108.00/M | ECA-2AHG220 |
| | 33 | 33.0 | 0.08 | 130 | 8 | 11.5 | 3.5 | 0.6 | P5595-ND | .52 | 4.17 | 30.21 | 88.54 | 141.00 | 135.00/M | ECA-2AHG330 |
| | 47 | 47.0 | 0.08 | 165 | 10 | 12.5 | 5.0 | 0.6 | P5596-ND | .64 | 5.11 | 37.03 | 108.53 | 172.00 | 166.00/M | ECA-2AHG470 |
| | 100 | 100.0 | 0.08 | 265 | 10 | 20 | 5.0 | 0.6 | P5597-ND | 1.12 | 8.96 | 64.96 | 190.40 | 302.00 | 291.00/M | ECA-2AHG101 |
| | 220 | 220.0 | 0.08 | 440 | 12.5 | 25 | 5.0 | 0.6 | P5598-ND | 1.45 | 12.70 | 97.98 | 290.30 | 483.00 | 464.00/M | ECA-2AHG221 |
| | 330 | 330.0 | 0.08 | 540 | 16 | 25 | 7.5 | 0.8 | P5599-ND | 1.98 | 17.37 | 133.96 | 396.93 | 660.00 | 635.00/M | ECA-2AHG331 |
| | 470 | 470.0 | 0.08 | 715 | 16 | 25 | 7.5 | 0.8 | P5850-ND | 2.52 | 21.57 | 179.76 | 539.28 | 935.00 | 906.00/M | ECA-2AHG471 |
| | 1000 | 1000.0 | 0.08 | 985 | 18 | 35.5 | 7.5 | 0.8 | P5851-ND | 5.12 | 43.85 | 365.40 | 1096.20 | 1900.00 | 1842.00/M | ECA-2AHG102 |
| 160 | 1.0 | 19.6 | 0.15 | 17 | 6.3 | 11.2 | 2.5 | 0.5 | P5852-ND | .43 | 3.40 | 24.68 | 72.35 | 115.00 | 111.00/M | ECA-2CHG010 |
| | 2.2 | 31.1 | 0.15 | 25 | 6.3 | 11.2 | 2.5 | 0.5 | P5853-ND | .48 | 3.81 | 27.61 | 80.92 | 129.00 | 124.00/M | ECA-2CHG2R2 |
| | 3.3 | 41.6 | 0.15 | 36 | 6.3 | 11.2 | 2.5 | 0.5 | P5854-ND | .51 | 4.08 | 29.56 | 86.63 | 138.00 | 132.00/M | ECA-2CHG3R3 |
| | 4.7 | 55.1 | 0.15 | 43 | 6.3 | 11.2 | 2.5 | 0.5 | P5855-ND | .55 | 4.44 | 32.16 | 94.25 | 150.00 | 144.00/M | ECA-2CHG4R7 |
| | 10 | 106.0 | 0.15 | 70 | 10 | 12.5 | 5.0 | 0.6 | P5856-ND | .72 | 5.78 | 41.90 | 122.81 | 195.00 | 188.00/M | ECA-2CHG100 |
| | 22 | 221.0 | 0.15 | 130 | 10 | 20 | 5.0 | 0.6 | P5857-ND | 1.01 | 8.11 | 58.79 | 172.31 | 274.00 | 264.00/M | ECA-2CHG220 |
| | 33 | 326.0 | 0.15 | 180 | 10 | 20 | 5.0 | 0.6 | P5858-ND | 1.00 | 8.78 | 67.74 | 200.70 | 334.00 | 321.00/M | ECA-2CHG330 |
| | 47 | 461.0 | 0.15 | 220 | 12.5 | 20 | 5.0 | 0.6 | P5859-ND | 1.31 | 11.49 | 88.60 | 262.53 | 436.00 | 420.00/M | ECA-2CHG470 |
| | 100 | 970.0 | 0.15 | 335 | 16 | 25 | 7.5 | 0.8 | P5860-ND | 1.94 | 16.93 | 130.64 | 387.07 | 644.00 | 619.00/M | ECA-2CHG101 |
| | 220 | 2122.0 | 0.15 | 540 | 16 | 31.5 | 7.5 | 0.8 | P5861-ND | 2.89 | 24.73 | 206.08 | 618.24 | 1072.00 | 1039.00/M | ECA-2CHG221 |
| 330 | 3178.0 | 0.15 | 705 | 18 | 31.5 | 7.5 | 0.8 | P5862-ND | 4.34 | 37.16 | 309.68 | 929.04 | 1610.00 | 1561.00/M | ECA-2CHG331 | |
| 250 | 1.0 | 25.0 | 0.15 | 17 | 6.3 | 11.2 | 2.5 | 0.5 | P5863-ND | .50 | 4.03 | 29.23 | 85.68 | 136.00 | 131.00/M | ECA-2EHG010 |
| | 2.2 | 43.0 | 0.15 | 29 | 6.3 | 11.2 | 2.5 | 0.5 | P5864-ND | .53 | 4.21 | 30.53 | 89.49 | 142.00 | 137.00/M | ECA-2EHG2R2 |
| | 3.3 | 59.5 | 0.15 | 42 | 8 | 11.5 | 3.5 | 0.6 | P5865-ND | .66 | 5.24 | 38.00 | 111.38 | 177.00 | 170.00/M | ECA-2EHG3R3 |
| | 4.7 | 80.5 | 0.15 | 50 | 8 | 11.5 | 3.5 | 0.6 | P5866-ND | .75 | 6.00 | 43.52 | 127.57 | 203.00 | 195.00/M | ECA-2EHG4R7 |
| | 10 | 160.0 | 0.15 | 88 | 10 | 16 | 5.0 | 0.6 | P5867-ND | 1.00 | 8.02 | 58.14 | 170.41 | 271.00 | 261.00/M | ECA-2EHG100 |
| | 22 | 340.0 | 0.15 | 155 | 12.5 | 20 | 5.0 | 0.6 | P5868-ND | 1.15 | 10.07 | 77.72 | 230.27 | 383.00 | 368.00/M | ECA-2EHG220 |
| | 33 | 505.0 | 0.15 | 190 | 12.5 | 20 | 5.0 | 0.6 | P5869-ND | 1.40 | 12.23 | 94.35 | 279.55 | 465.00 | 447.00/M | ECA-2EHG330 |
| 450 | 47 | 715.0 | 0.15 | 230 | 12.5 | 25 | 5.0 | 0.6 | P5870-ND | 1.84 | 16.11 | 124.29 | 368.26 | 612.00 | 589.00/M | ECA-2EHG470 |
| | 100 | 1510.0 | 0.15 | 365 | 16 | 31.5 | 7.5 | 0.8 | P5871-ND | 2.81 | 24.06 | 200.48 | 601.44 | 1042.00 | 1010.00/M | ECA-2EHG101 |
| | 1.0 | 37.0 | 0.20 | 18 | 8 | 11.5 | 3.5 | 0.6 | P5872-ND | .78 | 6.23 | 45.15 | 132.33 | 210.00 | 202.00/M | ECA-2WHG010 |
| | 2.2 | 69.4 | 0.20 | 29 | 10 | 12.5 | 5.0 | 0.6 | P5873-ND | .87 | 6.99 | 50.67 | 148.51 | 236.00 | 227.00/M | ECA-2WHG2R2 |
| | 3.3 | 99.1 | 0.20 | 41 | 10 | 16 | 5.0 | 0.6 | P5874-ND | 1.15 | 9.18 | 66.58 | 195.16 | 310.00 | 298.00/M | ECA-2WHG3R3 |
| | 4.7 | 136.0 | 0.20 | 49 | 10 | 20 | 5.0 | 0.6 | P5875-ND | 1.28 | 11.17 | 86.18 | 255.36 | 425.00 | 409.00/M | ECA-2WHG4R7 |
| | 10 | 280.0 | 0.20 | 75 | 12.5 | 20 | 5.0 | 0.6 | P5876-ND | 1.74 | 15.25 | 117.63 | 348.54 | 579.00 | 558.00/M | ECA-2WHG100 |
| 22 | 604.0 | 0.20 | 115 | 16 | 25 | 7.5 | 0.8 | P5877-ND | 2.36 | 20.19 | 168.28 | 504.84 | 875.00 | 848.00/M | ECA-2WHG220 | |
| 33 | 901.0 | 0.20 | 155 | 16 | 31.5 | 7.5 | 0.8 | P5878-ND | 3.18 | 27.22 | 226.80 | 680.40 | 1179.00 | 1143.00/M | ECA-2WHG330 | |

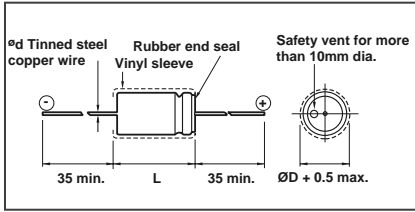
E

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic HFS Series 105° Low Impedance

Axial Lead Aluminum Electrolytic Capacitors



| | | | | | | |
|--------------------|---|-----|-----|----|------|-----|
| Body Dia. ϕD | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
| Lead Dia. ϕd | | | 0.6 | | | 0.8 |

FEATURES:

- Miniaturized version of HF series
- Low impedance at high frequency and low temperature
- Long life
 - $\phi 5 \sim \phi 8$ 1,000 hours at +105°C
 - $\phi 10 \sim \phi 16$ 2,000 hours at +105°C
- Anti-solvent for Freon TMS, TE, TES, WD602, TP-35
- Safety vent construction (Case dia $\phi D \triangleright 10mm$)

SPECIFICATIONS:

- Operating temperature range: -55°C ~ +105°C
- Rated working voltage range: 10 ~ 63V DC

- Rated capacitance: 0.47 ~ 4,700 μ F
- Capacitance tolerance: (at 120 Hz, +20°C) -20 ~ +20%
- $\tan \delta$: (at 120 Hz, +20°C) Add 0.02 per 1,000 μ F for more than 1,000 μ F items.

| | | | | | | |
|---------------|------|------|------|------|------|------|
| W.V. | 10 | 16 | 25 | 35 | 50 | 63 |
| $\tan \delta$ | 0.17 | 0.13 | 0.10 | 0.09 | 0.08 | 0.08 |

Effective Series Resistance

E.S.R. shall be calculated in the formula,
 $E.S.R. = \tan \delta / \omega C$
 where E.S.R. = in Ω
 C = minimum capacitance in tolerance in Farad.

DC leakage current:

1 = 0.002 CV + 2 μ A max.
 where 1 = DC leakage current in μ A
 C = rated capacitance in μ F
 V = rated working voltage in V

DC leakage current shall be measured after 2 minutes application of the DC rated working voltage through the 1,000 ohm resistor at 20°C

Load life:

After the following load life test with DC voltage and ripple current applied (the sum of DC and ripple peak voltage shall not exceed the rated working voltage), the measurements shall meet the following limits.

- $\phi 5, \phi 6, \phi 8$ 1,000 hours at +105°C
 - $\phi 10, \phi 12.5, \phi 16$ 2,000 hours at +105°C
- Measurements shall be performed after 2 hours exposure at room temperature.

Capacitance change: Within $\pm 20\%$ of the initial measured value $\tan \delta$: Less than 200% of the initial specified value DC leakage current: Less than the initial specified value

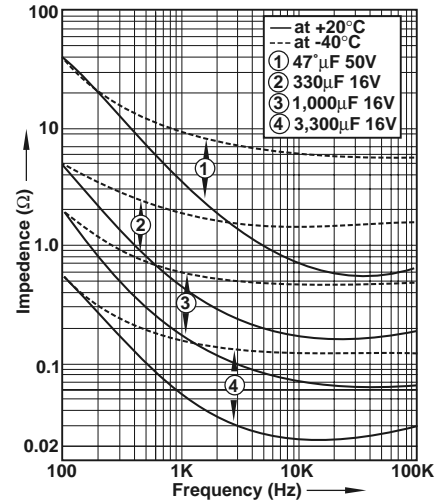
Ripple current is measured @:120Hz/85°C.

HFS Series is a newly developed product which provides good performance for the application of switch-mode power supply output with smaller sizes than HF Series.

PANASONIC HFS CROSS REFERENCES

Note: Crosses Are Not Axial Leaded.

Elna: RSG; Marcon: AFM; Nichicon: PC; Rubycon: GIA; Sprague: 510D; UCC: KMC.



• Not recommended for new design.

| WV (V) | Cap. (μ F) | Dimensions (mm) | | | Leakage Current (μ A) | $\tan \delta$ | Max. Imp. (Ohms) | Ripple Current (mA Rms) | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|--------|-----------------|-----------------|------|------|----------------------------|---------------|------------------|-------------------------|-------------------|---------|--------|---------|----------|-----------|--------------------|--------------|
| | | D | L | d | | | | | | 1 | 10 | 100 | 1,000 | 5,000 | | 10,000 |
| 10 | 33 | 6.3 | 10.5 | 0.6 | 2.7 | 0.17 | 5.0 | 122 | P1301-ND | .71 | 6.12 | 47.90 | 304.00 | 287.00/M | 265.00/M | ECE-B1AFS330 |
| | 47 | 6.3 | 10.5 | 0.6 | 2.9 | 0.17 | 2.5 | 153 | P1302-ND | .69 | 5.88 | 46.06 | 293.00 | 276.00/M | 255.00/M | ECE-B1AFS470 |
| | 220 | 8 | 16 | 0.6 | 6.4 | 0.17 | 1.00 | 360 | P1304-ND | .89 | 7.59 | 59.48 | 378.00 | 357.00/M | 329.00/M | ECE-B1AFS221 |
| | 470 | 8 | 20 | 0.6 | 11.4 | 0.17 | 0.34 | 680 | P1306-ND | 1.03 | 8.80 | 68.96 | 438.00 | 413.00/M | 381.00/M | ECE-B1AFS471 |
| | 1000 | 10 | 25 | 0.6 | 22.0 | 0.17 | 0.20 | 1120 | P1307-ND | 1.89 | 16.23 | 127.13 | 807.00 | 762.00/M | 703.00/M | ECE-B1AFS102 |
| | 2200 | 16 | 25 | 0.8 | 46.0 | 0.19 | 0.10 | 2050 | P1308-ND | 3.02 | 25.87 | 202.66 | 1287.00 | 1215.00/M | 1120.00/M | ECE-B1AFS222 |
| 16 | 3300 | 16 | 31.5 | 0.8 | 68.0 | 0.21 | 0.075 | 2700 | P1309-ND | 3.49 | 29.90 | 234.25 | 1488.00 | 1404.00/M | 1295.00/M | ECE-B1AFS332 |
| | 4700 | 16 | 40 | 0.8 | 96.0 | 0.23 | 0.068 | 3000 | P1310-ND | 4.19 | 35.92 | 281.36 | 1787.00 | 1686.00/M | 1555.00/M | ECE-B1AFS472 |
| | 22 | 6.3 | 10.5 | 0.6 | 2.7 | 0.13 | 5.0 | 100 | P1311-ND | .72 | 6.18 | 48.43 | 308.00 | 290.00/M | 268.00/M | ECE-B1CFS220 |
| | 33 | 6.3 | 10.5 | 0.6 | 3.1 | 0.13 | 2.5 | 100 | P1312-ND | .69 | 5.88 | 46.06 | 293.00 | 276.00/M | 255.00/M | ECE-B1CFS330 |
| | 220 | 8 | 16 | 0.6 | 9.0 | 0.13 | 0.50 | 500 | P1315-ND | .92 | 7.86 | 61.59 | 391.00 | 369.00/M | 340.00/M | ECE-B1CFS221 |
| | 330 | 8 | 20 | 0.6 | 12.5 | 0.13 | 0.34 | 680 | P1316-ND | 1.02 | 8.74 | 68.43 | 435.00 | 410.00/M | 378.00/M | ECE-B1CFS331 |
| 25 | 1000 | 12.5 | 25 | 0.8 | 34.0 | 0.13 | 0.16 | 1350 | P1318-ND | 2.23 | 19.08 | 149.50 | 949.00 | 896.00/M | 826.00/M | ECE-B1CFS102 |
| | 4.7 | 5 | 10.5 | 0.6 | 2.2 | 0.10 | 7.0 | 44 | P1321-ND | .68 | 5.81 | 45.53 | 289.00 | 273.00/M | 252.00/M | ECE-B1EFS47R |
| | 22 | 6.3 | 10.5 | 0.6 | 3.1 | 0.10 | 2.5 | 150 | P1323-ND | .69 | 5.95 | 46.59 | 296.00 | 279.00/M | 257.00/M | ECE-B1EFS220 |
| | 33 | 6.3 | 16 | 0.6 | 3.7 | 0.10 | 1.8 | 180 | P1324-ND | .72 | 6.15 | 48.17 | 306.00 | 289.00/M | 266.00/M | ECE-B1EFS330 |
| | 47 | 6.3 | 16 | 0.6 | 4.4 | 0.10 | 1.8 | 220 | P1325-ND | .74 | 6.38 | 50.01 | 318.00 | 300.00/M | 276.00/M | ECE-B1EFS470 |
| | 100 | 8 | 16 | 0.6 | 7.0 | 0.10 | 1.00 | 360 | P1326-ND | .89 | 7.59 | 59.48 | 378.00 | 357.00/M | 329.00/M | ECE-B1EFS101 |
| 35 | 330 | 10 | 20 | 0.6 | 18.5 | 0.10 | 0.25 | 900 | P1328-ND | 1.77 | 15.19 | 118.97 | 756.00 | 713.00/M | 657.00/M | ECE-B1EFS331 |
| | 470 | 10 | 25 | 0.6 | 25.5 | 0.10 | 0.20 | 1120 | P1329-ND | 1.96 | 16.77 | 131.34 | 834.00 | 787.00/M | 726.00/M | ECE-B1EFS471 |
| | 1000 | 16 | 25 | 0.8 | 52.0 | 0.10 | 0.10 | 2050 | P1330-ND | 3.07 | 26.28 | 205.82 | 1307.00 | 1234.00/M | 1137.00/M | ECE-B1EFS102 |
| | 4.7 | 5 | 10.5 | 0.6 | 2.3 | 0.09 | 7.0 | 44 | P1333-ND | .68 | 5.81 | 45.53 | 289.00 | 273.00/M | 252.00/M | ECE-B1VFS47R |
| | 10 | 6.3 | 10.5 | 0.6 | 2.7 | 0.09 | 2.5 | 100 | P1334-ND | .69 | 5.91 | 46.32 | 294.00 | 278.00/M | 256.00/M | ECE-B1VFS100 |
| | 22 | 6.3 | 16 | 0.6 | 3.5 | 0.09 | 1.8 | 160 | P1335-ND | .74 | 6.35 | 49.74 | 316.00 | 298.00/M | 275.00/M | ECE-B1VFS220 |
| 50 | 33 | 8 | 16 | 0.6 | 4.3 | 0.09 | 1.8 | 193 | P1336-ND | .86 | 7.36 | 57.64 | 366.00 | 345.00/M | 319.00/M | ECE-B1VFS330 |
| | 47 | 8 | 16 | 0.6 | 5.2 | 0.09 | 1.00 | 360 | P1337-ND | .86 | 7.36 | 57.64 | 366.00 | 345.00/M | 319.00/M | ECE-B1VFS470 |
| | 470 | 12.5 | 25 | 0.8 | 34.9 | 0.09 | 0.16 | 1350 | P1341-ND | 2.32 | 19.89 | 155.81 | 990.00 | 934.00/M | 861.00/M | ECE-B1VFS471 |
| | 1000 | 16 | 31.5 | 0.8 | 72.0 | 0.09 | 0.10 | 2050 | P1342-ND | 3.69 | 31.62 | 247.67 | 1573.00 | 1484.00/M | 1369.00/M | ECE-B1VFS102 |
| | 1.0 | 5 | 10.5 | 0.6 | 2.1 | 0.08 | 5.0 | 17 | P1345-ND | .65 | 5.54 | 43.43 | 276.00 | 260.00/M | 240.00/M | ECE-B1HFS010 |
| | 2.2 | 5 | 10.5 | 0.6 | 2.2 | 0.08 | 3.5 | 34 | P1346-ND | .65 | 5.54 | 43.43 | 276.00 | 260.00/M | 240.00/M | ECE-B1HFS2R2 |
| 63 | 10 | 6.3 | 16 | 0.6 | 3.0 | 0.08 | 2.5 | 110 | P1349-ND | .69 | 5.88 | 46.06 | 293.00 | 276.00/M | 255.00/M | ECE-B1HFS100 |
| | 47 | 8 | 16 | 0.6 | 6.7 | 0.08 | 1.00 | 360 | P1352-ND | .88 | 7.56 | 59.22 | 376.00 | 355.00/M | 327.00/M | ECE-B1HFS470 |
| | 100 | 8 | 20 | 0.6 | 12.0 | 0.08 | 0.34 | 680 | P1353-ND | 1.03 | 8.80 | 68.96 | 438.00 | 413.00/M | 381.00/M | ECE-B1HFS101 |
| | 220 | 12.5 | 25 | 0.8 | 24.0 | 0.08 | 0.20 | 1120 | P1354-ND | 2.25 | 19.32 | 151.34 | 961.00 | 907.00/M | 836.00/M | ECE-B1HFS221 |
| | 1000 | 16 | 40 | 0.8 | 102.0 | 0.08 | 0.075 | 2700 | P1357-ND | 4.39 | 37.60 | 294.52 | 1871.00 | 1765.00/M | 1628.00/M | ECE-B1HFS102 |
| | 4.7 | 6.3 | 10.5 | 0.6 | 2.6 | 0.08 | 3.0 | 72 | P1362-ND | .69 | 5.95 | 46.59 | 296.00 | 279.00/M | 257.00/M | ECE-B1JFS47R |
| 10 | 6.3 | 16 | 0.6 | 3.3 | 0.08 | 2.5 | 120 | P1363-ND | .73 | 6.22 | 48.69 | 309.00 | 292.00/M | 269.00/M | ECE-B1JFS100 | |
| 22 | 8 | 16 | 0.6 | 4.8 | 0.08 | 1.8 | 360 | P1364-ND | .87 | 7.43 | 58.17 | 369.00 | 349.00/M | 321.00/M | ECE-B1JFS220 | |
| 33 | 8 | 16 | 0.6 | 6.2 | 0.00 | 1.00 | 360 | P1365-ND | .89 | 7.59 | 59.48 | 378.00 | 357.00/M | 329.00/M | ECE-B1JFS330 | |
| 220 | 12.5 | 25 | 0.8 | 29.7 | 0.08 | 0.20 | 1120 | P1368-ND | 2.35 | 20.16 | 157.92 | 1003.00 | 946.00/M | 873.00/M | ECE-B1JFS221 | |

1-800-344-4539

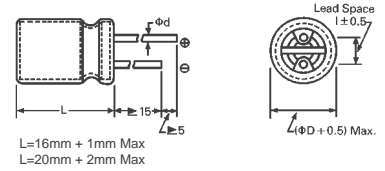
218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic HFQ Series

Radial-Lead Aluminum Electrolytic Capacitors

Operating Temperature Range: -55°C to +105°C.
Capacitance Tolerance: ±20% (120Hz, +20°C).

- Features:
- Significantly low impedance per unit volume.
 - Life of 2,000 hours at +105°C.
 - Complete line from long and narrow styles to thin styles frees set designing.
 - Anti-Solvent: Freon TE, TES, or TP-35 Freon solvent.



| WV | Cap. (μF) | Dimensions (mm) | | | | Max. Ripple Current (mA) rms | Max. Impedance 100kHz, +20°C (Ohms) | Digi-Key Part No. | 1 | 10 | 100 | Pricing | | | Panasonic Part No. | | | |
|-----|-----------|-----------------|----|------|------|------------------------------|-------------------------------------|-------------------|----------|----------|----------|---------|---------|---------|--------------------|-------------|-------------|-------------|
| | | D | L | d | l | | | | | | | 1,000 | 5,000 | 10,000 | | | | |
| 6.3 | 68 | 4 | 11 | 0.45 | 1.5 | 120 | 1.0 | P5601-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-0JFQ680 | | | |
| | 100 | 5 | 11 | 0.5 | 2 | 175 | 0.65 | P5602-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-0JFQ101 | | | |
| | 10 | 39 | 4 | 11 | 0.45 | 1.5 | 120 | 1.0 | P5632-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-1AFQ470 | | |
| | | 68 | 5 | 11 | 0.5 | 2 | 175 | 0.65 | P5633-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-1AFQ320 | | |
| | | 16 | 27 | 8 | 12.5 | 0.6 | 3.5 | 445 | 0.17 | P5668-ND | .40 | 3.47 | 27.18 | 173.00 | 163.00/M | 150.00/M | ECA-1CFQ271 | |
| | | | 33 | 8 | 15 | 0.6 | 3.5 | 575 | 0.12 | P5669-ND | .51 | 4.39 | 34.39 | 218.00 | 206.00/M | 190.00/M | ECA-1CFQ331 | |
| | | | 25 | 27 | 4 | 11 | 0.45 | 1.5 | 120 | 1.0 | P5694-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-1EFQ270 |
| | | | | 33 | 5 | 11 | 0.5 | 2 | 175 | 0.65 | P5695-ND | .23 | 1.98 | 15.53 | 99.00 | 93.00/M | 86.00/M | ECA-1EFQ380 |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic® EB Series

Radial Lead Type Capacitor for High Ripple Long Life Applications (High Voltage)

FEATURES: • High Ripple (High Frequency) • Life Time: 105°C 5000 hours

MAIN APPLICATION: • Electronic Ballast, Power supply

SPECIFICATIONS:

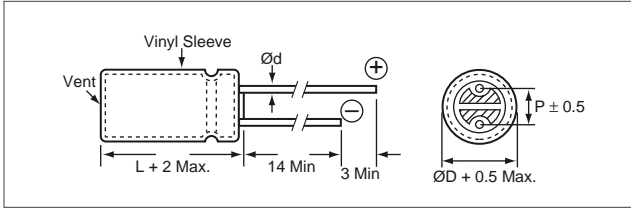
Operating Temperature Range: -25 to +105°C

Rated Working Voltage Range: 160 to 450 V.DC

Nominal Capacitance Range: 10 to 330 µF

Capacitance Tolerance: ±20% (120 Hz, +20°C)

Leakage Current: I ≤ 0.06 CV + 10 (µA) after 2 minutes application of rated working voltage at +20°C.



| | | | | | | |
|---|------|------|------|------|------|------|
| Working Voltage: | 160 | 200 | 250 | 350 | 400 | 450 |
| Dissipation Factor-max. (at 120 Hz, +20°C): | 0.15 | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 |
| Temperature Char. Z(-25°C)/Z(+20°C): (Impedance ratio at 120Hz) | 3 | 3 | 3 | 6 | 6 | 6 |

Ripple Current Frequency Multiplier:

| | | | | |
|-----------|----------------|------|-----------|------------|
| W.V. | Frequency (Hz) | | | |
| | 120 | 1k | 10k - 30k | 30k - 100k |
| 160 ~ 250 | 0.55 | 0.85 | 0.90 | 1.00 |
| 350 ~ 450 | 0.50 | 0.80 | 0.90 | 1.00 |

Endurance:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|----------------------------|---------------------------------|--------------------------------|
| Duration | 5000 Hours | DC Leakage Current | ≤ initial specified value |
| Ambient Temperature | +105°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | ≤ Rated DC Working Voltage | Dissipation Factor | ≤ 200% initial specified value |

Shelf Life:

| Test Conditions | | Post Test Requirements at +20°C | |
|---------------------|------------|---------------------------------|--------------------------------|
| Duration | 1000 Hours | DC Leakage Current | ≤ initial specified value |
| Ambient Temperature | +105°C | Capacitance Change | ±20% of initial measured value |
| Applied Voltage | — | Dissipation Factor | ≤ 200% initial specified value |

| WV (VDC) | Cap (µF) | D.C.L. (+20°C/2mm) (µA) max. | DF (120Hz/20°C) max. | Ripple Current (100kHz/+105°C) (mA) rms max. | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. | |
|----------|----------|------------------------------|----------------------|--|-----------------|------|-----|----------|-------------------|----------|--------|---------|-----------|-----------|--------------|--------------------|-------------|
| | | | | | ØD | L | P | Ød | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 160 | 22 | 221.2 | 0.15 | 470 | 10 | 20 | 5.0 | 0.6 | P5900-ND | .89 | 7.63 | 59.75 | 379.00 | 358.00/M | 330.00/M | EEU-EB2C220 | |
| | 33 | 326.8 | 0.15 | 470 | 10 | 20 | 5.0 | 0.6 | P5901-ND | 1.10 | 9.44 | 73.96 | 470.00 | 443.00/M | 409.00/M | EEU-EB2C330 | |
| | 47 | 461.2 | 0.15 | 600 | 12.5 | 20 | 5.0 | 0.6 | P5902-ND | 1.44 | 12.36 | 96.86 | 615.00 | 581.00/M | 535.00/M | EEU-EB2C470 | |
| | 68 | 662.8 | 0.15 | 750 | 12.5 | 25 | 5.0 | 0.6 | P5903-ND | 1.78 | 15.25 | 119.49 | 759.00 | 716.00/M | 660.00/M | EEU-EB2C680 | |
| | 68 | 662.8 | 0.15 | 750 | 16 | 20 | 7.5 | 0.8 | P5904-ND | 1.96 | 16.80 | 131.60 | 836.00 | 789.00/M | 727.00/M | EEU-EB2C680S | |
| | 100 | 970.0 | 0.15 | 1060 | 16 | 25 | 7.5 | 0.8 | P5905-ND | 2.12 | 18.18 | 142.39 | 904.00 | 853.00/M | 787.00/M | EEU-EB2C101 | |
| | 100 | 970.0 | 0.15 | 1060 | 18 | 20 | 7.5 | 0.8 | P5906-ND | 2.39 | 20.50 | 160.55 | 1020.00 | 962.00/M | 887.00/M | EEU-EB2C101S | |
| | 150 | 1450.0 | 0.15 | 1280 | 16 | 31.5 | 7.5 | 0.8 | P5907-ND | 2.72 | 23.28 | 182.40 | 1158.00 | 1093.00/M | 1008.00/M | EEU-EB2C151 | |
| | 150 | 1450.0 | 0.15 | 1280 | 18 | 25 | 7.5 | 0.8 | P5908-ND | 2.99 | 25.60 | 200.56 | 1274.00 | 1202.00/M | 1108.00/M | EEU-EB2C151S | |
| | 220 | 2122.0 | 0.15 | 1280 | 16 | 31.5 | 7.5 | 0.8 | P5909-ND | 3.31 | 28.39 | 222.40 | 1413.00 | 1333.00/M | 1229.00/M | EEU-EB2C221 | |
| 220 | 2122.0 | 0.15 | 1280 | 18 | 25 | 7.5 | 0.8 | P5910-ND | 3.56 | 30.54 | 239.25 | 1520.00 | 1434.00/M | 1322.00/M | EEU-EB2C221S | | |
| 330 | 3178.0 | 0.15 | 1690 | 18 | 31.5 | 7.5 | 0.8 | P5911-ND | 3.99 | 34.20 | 267.94 | 1702.00 | 1606.00/M | 1481.00/M | EEU-EB2C331 | | |
| 200 | 22 | 274.0 | 0.15 | 470 | 10 | 20 | 5.0 | 0.6 | P5912-ND | 1.05 | 9.00 | 70.54 | 448.00 | 423.00/M | 390.00/M | EEU-EB2D220 | |
| | 33 | 406.0 | 0.15 | 600 | 12.5 | 20 | 5.0 | 0.6 | P5913-ND | 1.32 | 11.29 | 88.44 | 562.00 | 530.00/M | 489.00/M | EEU-EB2D330 | |
| | 47 | 574.0 | 0.15 | 600 | 12.5 | 20 | 5.0 | 0.6 | P5914-ND | 1.59 | 13.64 | 106.86 | 679.00 | 640.00/M | 591.00/M | EEU-EB2D470 | |
| | 68 | 826.0 | 0.15 | 750 | 12.5 | 25 | 5.0 | 0.6 | P5915-ND | 2.19 | 18.75 | 146.87 | 933.00 | 880.00/M | 812.00/M | EEU-EB2D680 | |
| | 68 | 826.0 | 0.15 | 750 | 16 | 20 | 7.5 | 0.8 | P5916-ND | 2.40 | 20.60 | 161.34 | 1025.00 | 967.00/M | 892.00/M | EEU-EB2D680S | |
| | 100 | 1210.0 | 0.15 | 1060 | 16 | 25 | 7.5 | 0.8 | P5917-ND | 2.78 | 23.79 | 186.35 | 1184.00 | 1117.00/M | 1030.00/M | EEU-EB2D101 | |
| | 100 | 1210.0 | 0.15 | 1060 | 18 | 20 | 7.5 | 0.8 | P5918-ND | 3.05 | 26.17 | 205.03 | 1302.00 | 1229.00/M | 1133.00/M | EEU-EB2D101S | |
| | 150 | 1810.0 | 0.15 | 1280 | 16 | 31.5 | 7.5 | 0.8 | P5919-ND | 3.29 | 28.22 | 221.09 | 1404.00 | 1325.00/M | 1222.00/M | EEU-EB2D151 | |
| | 150 | 1810.0 | 0.15 | 1280 | 18 | 25 | 7.5 | 0.8 | P5920-ND | 3.63 | 31.08 | 243.46 | 1546.00 | 1459.00/M | 1345.00/M | EEU-EB2D151S | |
| | 220 | 2650.0 | 0.15 | 1690 | 18 | 31.5 | 7.5 | 0.8 | P5921-ND | 4.48 | 38.37 | 300.57 | 1909.00 | 1801.00/M | 1661.00/M | EEU-EB2D221 | |
| 250 | 22 | 340.0 | 0.15 | 560 | 12.5 | 20 | 5.0 | 0.6 | P5922-ND | 1.26 | 10.82 | 84.75 | 538.00 | 508.00/M | 468.00/M | EEU-EB2E220 | |
| | 33 | 505.0 | 0.15 | 560 | 12.5 | 20 | 5.0 | 0.6 | P5923-ND | 1.53 | 13.14 | 102.91 | 654.00 | 617.00/M | 569.00/M | EEU-EB2E330 | |
| | 47 | 715.0 | 0.15 | 710 | 12.5 | 25 | 5.0 | 0.6 | P5924-ND | 2.01 | 17.27 | 135.28 | 859.00 | 811.00/M | 748.00/M | EEU-EB2E470 | |
| | 47 | 715.0 | 0.15 | 710 | 16 | 20 | 7.5 | 0.8 | P5925-ND | 2.21 | 18.95 | 148.44 | 943.00 | 890.00/M | 820.00/M | EEU-EB2E470S | |
| | 68 | 1030.0 | 0.15 | 990 | 16 | 25 | 7.5 | 0.8 | P5926-ND | 2.66 | 22.78 | 178.45 | 1133.00 | 1070.00/M | 986.00/M | EEU-EB2E680 | |
| | 68 | 1030.0 | 0.15 | 990 | 18 | 20 | 7.5 | 0.8 | P5927-ND | 2.92 | 25.03 | 196.08 | 1245.00 | 1175.00/M | 1084.00/M | EEU-EB2E680S | |
| | 100 | 1510.0 | 0.15 | 1200 | 16 | 31.5 | 7.5 | 0.8 | P5928-ND | 3.29 | 28.22 | 221.09 | 1404.00 | 1325.00/M | 1222.00/M | EEU-EB2E101 | |
| | 100 | 1510.0 | 0.15 | 1200 | 18 | 25 | 7.5 | 0.8 | P5929-ND | 3.63 | 31.08 | 243.46 | 1546.00 | 1459.00/M | 1345.00/M | EEU-EB2E101S | |
| | 150 | 2260.0 | 0.15 | 1470 | 18 | 31.5 | 7.5 | 0.8 | P5930-ND | 3.99 | 34.20 | 267.94 | 1702.00 | 1606.00/M | 1481.00/M | EEU-EB2E151 | |
| | 350 | 10 | 220.0 | 0.20 | 270 | 10 | 20 | 5.0 | 0.6 | P5931-ND | 1.20 | 10.32 | 80.80 | 513.00 | 484.00/M | 447.00/M | EEU-EB2V100 |
| 22 | | 472.0 | 0.20 | 350 | 12.5 | 20 | 5.0 | 0.6 | P5932-ND | 1.59 | 13.64 | 106.86 | 679.00 | 640.00/M | 591.00/M | EEU-EB2V220 | |
| 33 | | 703.0 | 0.20 | 480 | 16 | 20 | 7.5 | 0.8 | P5933-ND | 2.50 | 21.44 | 167.92 | 1067.00 | 1006.00/M | 928.00/M | EEU-EB2V330S | |
| 47 | | 997.0 | 0.20 | 640 | 16 | 25 | 7.5 | 0.8 | P5934-ND | 3.09 | 26.48 | 207.40 | 1317.00 | 1243.00/M | 1146.00/M | EEU-EB2V470 | |
| 47 | | 997.0 | 0.20 | 640 | 18 | 20 | 7.5 | 0.8 | P5935-ND | 3.39 | 29.10 | 227.93 | 1448.00 | 1366.00/M | 1260.00/M | EEU-EB2V470S | |
| 68 | | 1438.0 | 0.20 | 780 | 16 | 31.5 | 7.5 | 0.8 | P5936-ND | 3.62 | 31.01 | 242.93 | 1543.00 | 1456.00/M | 1343.00/M | EEU-EB2V680 | |
| 68 | | 1438.0 | 0.20 | 780 | 18 | 25 | 7.5 | 0.8 | P5937-ND | 3.98 | 34.10 | 267.15 | 1697.00 | 1601.00/M | 1476.00/M | EEU-EB2V680S | |
| 100 | | 2110.0 | 0.20 | 970 | 18 | 31.5 | 7.5 | 0.8 | P5938-ND | 5.16 | 44.25 | 346.63 | 2202.00 | 2078.00/M | 1916.00/M | EEU-EB2V101 | |
| 400 | | 10 | 250.0 | 0.24 | 250 | 10 | 20 | 5.0 | 0.6 | P5939-ND | 1.33 | 11.39 | 89.22 | 567.00 | 535.00/M | 493.00/M | EEU-EB2G100 |
| | | 22 | 538.0 | 0.24 | 410 | 12.5 | 25 | 5.0 | 0.6 | P5940-ND | 2.07 | 17.77 | 139.23 | 884.00 | 834.00/M | 769.00/M | EEU-EB2G220 |
| | 22 | 538.0 | 0.24 | 410 | 16 | 20 | 7.5 | 0.8 | P5941-ND | 2.29 | 19.59 | 153.45 | 975.00 | 920.00/M | 848.00/M | EEU-EB2G220S | |
| | 33 | 802.0 | 0.24 | 600 | 16 | 25 | 7.5 | 0.8 | P5942-ND | 3.09 | 26.48 | 207.40 | 1317.00 | 1243.00/M | 1146.00/M | EEU-EB2G330 | |
| | 33 | 802.0 | 0.24 | 600 | 18 | 20 | 7.5 | 0.8 | P5943-ND | 3.39 | 29.10 | 227.93 | 1448.00 | 1366.00/M | 1260.00/M | EEU-EB2G330S | |
| | 47 | 1138.0 | 0.24 | 730 | 16 | 31.5 | 7.5 | 0.8 | P5944-ND | 3.92 | 33.63 | 263.46 | 1673.00 | 1579.00/M | 1456.00/M | EEU-EB2G470 | |
| 450 | 47 | 1138.0 | 0.24 | 730 | 18 | 25 | 7.5 | 0.8 | P5945-ND | 4.32 | 36.99 | 289.78 | 1840.00 | 1737.00/M | 1601.00/M | EEU-EB2G470S | |
| | 10 | 280.0 | 0.24 | 310 | 12.5 | 20 | 5.0 | 0.6 | P5946-ND | 1.76 | 15.05 | 117.91 | 749.00 | 707.00/M | 652.00/M | EEU-EB2W100 | |
| | 22 | 604.0 | 0.24 | 560 | 16 | 25 | 7.5 | 0.8 | P5947-ND | 2.96 | 25.33 | 198.45 | 1260.00 | 1189.00/M | 1097.00/M | EEU-EB2W220 | |
| | 22 | 604.0 | 0.24 | 560 | 18 | 20 | 7.5 | 0.8 | P5948-ND | 3.25 | 27.89 | 218.46 | 1387.00 | 1309.00/M | 1207.00/M | EEU-EB2W220S | |
| | 33 | 901.0 | 0.24 | 680 | 16 | 31.5 | 7.5 | 0.8 | P5949-ND | 3.65 | 31.32 | 245.30 | 1558.00 | 1470.00/M | 1356.00/M | EEU-EB2W330 | |
| | 33 | 901.0 | 0.24 | 680 | 18 | 25 | 7.5 | 0.8 | P5950-ND | 4.02 | 34.47 | 270.04 | 1715.00 | 1618.00/M | 1492.00/M | EEU-EB2W330S | |
| | 47 | 1279.0 | 0.24 | 850 | 18 | 31.5 | 7.5 | 0.8 | P5951-ND | 4.79 | 41.03 | 321.37 | 2041.00 | 1926.00/M | 1776.00/M | EEU-EB2W470 | |

1-800-344-4539

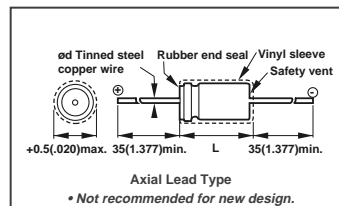
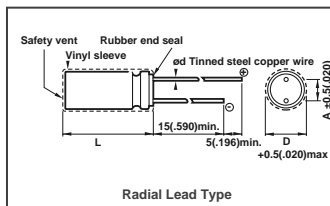
218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic HF/HFU

High Frequency Miniature Electrolytic Capacitors

SPECIFICATIONS:
 Operating temp. range: -55 ~ 105°C. High ripple current: Approx. 2 times compared to standard type. Impedance & tan δ: 300% max. of the initial specified value. Very low impedance at high frequency. Stable characteristics in low temperature range. Leakage current: Less than the initial specified value. Long life at high temperature: 2000 hours at +105°C HF series.

2000 hours at +105°C HFU series. Capacitance tolerance: (at 120Hz/20°C) ±20% (HF Series); ±10% (HFU series).
PANASONIC HF CROSS REFERENCES
 Elna: RSA; Marion: SFM; Nichicon: PX; Rubycon: G2A; Sprague: 672D/673D; UCC: SXC.



| WV (V) | Cap. (µF) | Dimensions (mm) | | | | Current Leakage (µA) | tan 120 Hz +20°C | ESR 100 kHz +20°C | Ripple Current (A/rms) | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | | |
|-------------------------|--------------------------|-----------------|------|------|-----|----------------------|------------------|-------------------|------------------------|-------------------|-----------|-------|--------|--------------------|-----------|-----------|-------------|-------------|
| | | D | L | A | d | | | | | | 1 | 10 | 100 | | 1,000 | 5,000 | 10,000 | |
| Radial Lead Type | | | | | | | | | | | | | | | | | | |
| 10 | 47 | 6.3 | 11.2 | 2.5 | 0.6 | 3.0 | 0.10 | 1.80 | 0.20 | P6737-ND† | .65 | 5.58 | 43.69 | 277.00 | 262.00/M | 241.00/M | ECE-A1AF470 | |
| | 100 | 8 | 11.5 | 3.5 | 0.6 | 4.0 | 0.10 | 1.50 | 0.30 | P6738-ND† | .74 | 6.35 | 49.74 | 316.00 | 298.00/M | 275.00/M | ECE-A1AF101 | |
| | 220 | 10 | 16 | 5.0 | 0.6 | 6.4 | 0.15 | 0.22 | 0.68 | P6718-ND | .89 | 7.59 | 59.48 | 378.00 | 357.00/M | 329.00/M | ECE-A1AF221 | |
| | 330 | 10 | 20 | 5.0 | 0.6 | 8.6 | 0.15 | 0.18 | 0.90 | P6719-ND | 1.11 | 9.51 | 74.49 | 473.00 | 446.00/M | 412.00/M | ECE-A1AF331 | |
| | 470 | 12.5 | 20 | 5.0 | 0.6 | 11.4 | 0.15 | 0.14 | 1.25 | P6720-ND | 1.37 | 11.73 | 91.86 | 583.00 | 551.00/M | 508.00/M | ECE-A1AF471 | |
| | 1000 | 12.5 | 25 | 5.0 | 0.6 | 22.0 | 0.15 | 0.10 | 1.75 | P6703-ND | 1.53 | 13.14 | 102.91 | 654.00 | 617.00/M | 569.00/M | ECE-A1AF102 | |
| | 2200 | 16 | 31.5 | 7.5 | 0.8 | 46.0 | 0.15 | 0.05 | 3.30 | P6704-ND | 2.77 | 23.72 | 185.82 | 1180.00 | 1114.00/M | 1027.00/M | ECE-A1AF222 | |
| | 16 | 22 | 6.3 | 11.2 | 2.5 | 0.6 | 2.8 | 0.10 | 1.80 | 0.20 | P6739-ND† | .67 | 5.24 | 41.06 | 261.00 | 246.00/M | 227.00/M | ECE-A1CF220 |
| | | 33 | 6.3 | 11.2 | 2.5 | 0.6 | 3.1 | 0.10 | 1.80 | 0.20 | P6740-ND† | .66 | 5.68 | 44.48 | 283.00 | 267.00/M | 246.00/M | ECE-A1CF330 |
| | | 47 | 8 | 11.5 | 3.5 | 0.6 | 3.5 | 0.10 | 1.50 | 0.30 | P6741-ND† | .72 | 6.15 | 48.17 | 306.00 | 289.00/M | 266.00/M | ECE-A1CF470 |
| 100 | | 10 | 12.5 | 5.0 | 0.6 | 5.2 | 0.10 | 0.30 | 0.50 | P6705-ND | .84 | 7.22 | 56.59 | 359.00 | 339.00/M | 313.00/M | ECE-A1CF101 | |
| 220 | | 10 | 16 | 5.0 | 0.6 | 9.0 | 0.10 | 0.22 | 0.68 | P6706-ND | .96 | 8.27 | 64.75 | 411.00 | 388.00/M | 358.00/M | ECE-A1CF221 | |
| 330 | | 10 | 20 | 5.0 | 0.6 | 12.6 | 0.10 | 0.18 | 0.90 | P6707-ND | 1.23 | 10.58 | 82.91 | 527.00 | 497.00/M | 458.00/M | ECE-A1CF331 | |
| 470 | | 12.5 | 20 | 5.0 | 0.6 | 17.9 | 0.10 | 0.14 | 1.25 | P6708-ND | 1.46 | 12.50 | 97.91 | 622.00 | 587.00/M | 541.00/M | ECE-A1CF471 | |
| 1000 | | 16 | 25 | 7.5 | 0.8 | 34.0 | 0.10 | 0.07 | 2.44 | P6709-ND* | 1.94 | 16.67 | 130.55 | 829.00 | 782.00/M | 721.00/M | ECE-A1CF102 | |
| 2200 | | 18 | 31.5 | 7.5 | 0.8 | 72.4 | 0.10 | 0.03 | 4.00 | P6710-ND* | 3.59 | 30.78 | 241.09 | 1531.00 | 1445.00/M | 1332.00/M | ECE-A1CF222 | |
| 25 | | 1.0 | 6.3 | 11.2 | 2.5 | 0.6 | 2.1 | 0.05 | 1.80 | 0.08 | P6742-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1EF101 |
| | 2.2 | 6.3 | 11.2 | 2.5 | 0.6 | 2.2 | 0.05 | 1.80 | 0.08 | P6743-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1EF2R2 | |
| | 3.3 | 6.3 | 11.2 | 2.5 | 0.6 | 2.2 | 0.05 | 1.80 | 0.08 | P6744-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1EF3R3 | |
| | 4.7 | 6.3 | 11.2 | 2.5 | 0.6 | 2.3 | 0.05 | 1.80 | 0.10 | P6745-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1EF4R7 | |
| | 10 | 6.3 | 11.2 | 2.5 | 0.6 | 2.3 | 0.05 | 1.80 | 0.15 | P6746-ND† | .61 | 5.24 | 41.06 | 261.00 | 246.00/M | 227.00/M | ECE-A1EF100 | |
| | 22 | 8 | 11.5 | 3.5 | 0.6 | 3.1 | 0.05 | 1.50 | 0.30 | P6747-ND† | .65 | 5.58 | 43.69 | 277.00 | 262.00/M | 241.00/M | ECE-A1EF220 | |
| | 33 | 8 | 11.5 | 3.5 | 0.6 | 3.7 | 0.05 | 1.50 | 0.30 | P6748-ND† | .72 | 6.15 | 48.17 | 306.00 | 289.00/M | 266.00/M | ECE-A1EF330 | |
| | 47 | 10 | 12.5 | 5.0 | 0.6 | 4.3 | 0.08 | 0.50 | 0.30 | P6711-ND | .81 | 6.92 | 54.22 | 344.00 | 325.00/M | 300.00/M | ECE-A1HF470 | |
| | 100 | 10 | 16 | 5.0 | 0.6 | 7.0 | 0.08 | 0.22 | 0.68 | P6721-ND | .91 | 7.80 | 61.06 | 388.00 | 368.00/M | 337.00/M | ECE-A1EF101 | |
| | 220 | 12.5 | 20 | 5.0 | 0.6 | 13.0 | 0.08 | 0.14 | 1.25 | P6713-ND | 1.33 | 11.42 | 89.49 | 568.00 | 536.00/M | 495.00/M | ECE-A1EF221 | |
| 35 | 330 | 12.5 | 25 | 5.0 | 0.6 | 18.5 | 0.08 | 0.10 | 1.75 | P6714-ND | 1.53 | 13.14 | 102.91 | 654.00 | 617.00/M | 569.00/M | ECE-A1EF331 | |
| | 470 | 16 | 25 | 7.5 | 0.8 | 25.5 | 0.08 | 0.07 | 2.44 | P6715-ND | 2.17 | 18.58 | 145.55 | 924.00 | 872.00/M | 804.00/M | ECE-A1EF471 | |
| | 1000 | 16 | 31.5 | 7.5 | 0.8 | 52.0 | 0.08 | 0.05 | 3.30 | P6716-ND | 2.77 | 23.72 | 185.82 | 1180.00 | 1114.00/M | 1027.00/M | ECE-A1EF102 | |
| | 33 | 10 | 12.5 | 5.0 | 0.6 | 4.3 | 0.07 | 0.30 | 0.50 | P6717-ND | .71 | 6.05 | 47.38 | 301.00 | 284.00/M | 262.00/M | ECE-A1VF330 | |
| | 47 | 10 | 16 | 5.0 | 0.6 | 5.3 | 0.07 | 0.22 | 0.68 | P6722-ND | .86 | 7.39 | 57.90 | 368.00 | 347.00/M | 320.00/M | ECE-A1VF470 | |
| | 100 | 10 | 20 | 5.0 | 0.6 | 9.0 | 0.07 | 0.18 | 0.90 | P6723-ND | 1.12 | 9.61 | 75.28 | 478.00 | 451.00/M | 416.00/M | ECE-A1VF101 | |
| | 220 | 12.5 | 25 | 5.0 | 0.6 | 17.4 | 0.07 | 0.10 | 1.75 | P6724-ND | 1.53 | 13.14 | 102.91 | 654.00 | 617.00/M | 569.00/M | ECE-A1VF221 | |
| | 330 | 16 | 25 | 7.5 | 0.8 | 25.1 | 0.07 | 0.07 | 2.44 | P6725-ND | 2.11 | 18.08 | 141.60 | 899.00 | 849.00/M | 783.00/M | ECE-A1VF331 | |
| | 470 | 16 | 31.5 | 7.5 | 0.8 | 34.9 | 0.07 | 0.05 | 3.30 | P6726-ND* | 2.77 | 23.72 | 185.82 | 1180.00 | 1114.00/M | 1027.00/M | ECE-A1VF471 | |
| | 50 | 1.0 | 8 | 11.5 | 3.5 | 0.6 | 2.1 | 0.05 | 1.50 | 0.10 | P6749-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1HF010 |
| 2.2 | | 8 | 11.5 | 3.5 | 0.6 | 2.3 | 0.05 | 1.50 | 0.10 | P6750-ND† | .58 | 4.97 | 38.95 | 247.00 | 233.00/M | 215.00/M | ECE-A1HF2R2 | |
| 3.3 | | 8 | 11.5 | 3.5 | 0.6 | 2.4 | 0.05 | 1.50 | 0.10 | P6751-ND† | .58 | 5.17 | 40.53 | 257.00 | 243.00/M | 224.00/M | ECE-A1HF3R3 | |
| 4.7 | | 8 | 11.5 | 3.5 | 0.6 | 2.5 | 0.05 | 1.50 | 0.20 | P6752-ND† | .62 | 5.44 | 41.85 | 266.00 | 251.00/M | 231.00/M | ECE-A1HF4R7 | |
| 10 | | 10 | 12.5 | 5.0 | 0.6 | 6.7 | 0.06 | 0.18 | 0.90 | P6805-ND | .98 | 8.37 | 65.54 | 416.00 | 393.00/M | 362.00/M | ECE-A1HF470 | |
| 47 | | 8 | 11.5 | 3.5 | 0.6 | 3.0 | 0.05 | 1.50 | 0.30 | P6753-ND† | .69 | 5.95 | 46.59 | 296.00 | 279.00/M | 257.00/M | ECE-A1HF100 | |
| 22 | | 10 | 12.5 | 5.0 | 0.6 | 4.2 | 0.06 | 0.30 | 0.50 | P6754-ND* | .77 | 6.62 | 51.85 | 329.00 | 311.00/M | 287.00/M | ECE-A1HF220 | |
| 33 | | 10 | 16 | 5.0 | 0.6 | 5.3 | 0.06 | 0.22 | 0.68 | P6727-ND | .86 | 7.39 | 57.90 | 368.00 | 347.00/M | 320.00/M | ECE-A1HF330 | |
| 100 | | 12.5 | 25 | 5.0 | 0.6 | 12.0 | 0.06 | 0.10 | 1.75 | P6729-ND | 1.47 | 12.60 | 98.70 | 627.00 | 592.00/M | 545.00/M | ECE-A1HF101 | |
| 220 | | 16 | 25 | 7.5 | 0.8 | 24.0 | 0.06 | 0.07 | 2.44 | P6730-ND* | 2.09 | 17.94 | 140.55 | 893.00 | 842.00/M | 777.00/M | ECE-A1HF221 | |
| 63 | 330 | 16 | 31.5 | 7.5 | 0.8 | 35.0 | 0.06 | 0.05 | 3.30 | P6731-ND | 2.77 | 23.72 | 185.82 | 1180.00 | 1114.00/M | 1027.00/M | ECE-A1HF331 | |
| | 22 | 10 | 16 | 5.0 | 0.6 | 4.8 | 0.05 | 0.22 | 0.68 | P6732-ND | .86 | 7.39 | 57.90 | 368.00 | 347.00/M | 320.00/M | ECE-A1JF220 | |
| | 33 | 10 | 16 | 5.0 | 0.6 | 6.2 | 0.05 | 0.22 | 0.68 | P6733-ND | 1.07 | 9.14 | 71.59 | 455.00 | 429.00/M | 396.00/M | ECE-A1JF330 | |
| | 47 | 10 | 20 | 5.0 | 0.6 | 7.9 | 0.05 | 0.18 | 0.90 | P6734-ND | 1.23 | 10.58 | 82.91 | 527.00 | 497.00/M | 458.00/M | ECE-A1JF470 | |
| | 100 | 12.5 | 25 | 5.0 | 0.6 | 14.6 | 0.05 | 0.10 | 1.75 | P6735-ND | 1.68 | 14.41 | 112.91 | 717.00 | 677.00/M | 624.00/M | ECE-A1JF101 | |
| | 220 | 16 | 31.5 | 7.5 | 0.8 | 29.7 | 0.05 | 0.05 | 3.30 | P6736-ND | 2.77 | 23.72 | 185.82 | 1180.00 | 1114.00/M | 1027.00/M | ECE-A1JF221 | |
| | Axial Lead Type † | | | | | | | | | | | | | | | | | |
| | 10 | 47 | 6.3 | 16 | — | 0.6 | 3.0 | 0.10 | 1.80 | 0.20 | P6755-ND† | 1.48 | 12.67 | 99.23 | 630.00 | 595.00/M | 548.00/M | ECE-B1AF470 |
| | | 100 | 8 | 16 | — | 0.6 | 4.0 | 0.10 | 1.50 | 0.30 | P6756-ND† | 1.59 | 13.64 | 106.86 | 671.00 | 631.00/M | 581.00/M | ECE-B1AF101 |
| | | 220 | 10 | 20 | — | 0.6 | 6.4 | 0.15 | 0.22 | 0.68 | P6757-ND | 1.83 | 15.72 | 123.18 | 782.00 | 738.00/M | 681.00/M | ECE-B1AF221 |
| 330 | | 10 | 25 | — | 0.6 | 8.6 | 0.15 | 0.18 | 0.90 | P6758-ND | 2.00 | 17.10 | 133.97 | 851.00 | 803.00/M | 740.00/M | ECE-B1AF331 | |
| 470 | | 12.5 | 25 | — | 0.8 | 11.4 | 0.15 | 0.14 | 1.25 | P6759-ND | 2.73 | 23.39 | 183.19 | 1163.00 | 1098.00/M | 1012.00/M | ECE-B1AF471 | |
| 1000 | | 16 | 25 | — | 0.8 | 22.0 | 0.15 | 0.10 | 1.75 | P6760-ND | 3.45 | 29.57 | 231.62 | 1471.00 | 1388.00/M | 1280.00/M | ECE-B1AF102 | |
| 16 | | 33 | 6.3 | 16 | — | 0.6 | 3.1 | 0.10 | 1.80 | 0.20 | P6763-ND† | 1.48 | 12.67 | 99.23 | 630.00 | 595.00/M | 548.00/M | ECE-B1CF330 |
| | 47 | 8 | 16 | — | 0.6 | 3.5 | 0.10 | 1.50 | 0.30 | P6764-ND† | 1.67 | 14.31 | 112.12 | 712.00 | 672.00/M | 620.00/M | ECE-B1CF470 | |
| | 100 | 10 | 16 | — | 0.6 | 5.2 | 0.10 | 1.00 | 0.30 | P6765-ND† | 1.81 | 15.56 | 121.86 | 774.00 | 730.00/M | 673.00/M | ECE-B1CF101 | |
| | 220 | 10 | 20 | — | 0.6 | 9.0 | 0.10 | 0.22 | 0.68 | P6766-ND | 1.99 | 17.07 | 133.71 | 849.00 | 801.00/M | 739.00/M | ECE-B1CF221 | |
| | 330 | 10 | 25 | — | 0.6 | 12.6 | 0.10 | 0.18 | 0.90 | P6767-ND | 2.73 | 23.39 | 183.19 | 1163.00 | 1098.00/M | 1012.00/M | ECE-B1CF3 | |

FEATURES:

• Low impedance • Long life: 1000 - 5000 hours at +105°C

SPECIFICATIONS:

• Operating Temperature Range: -55 to +105°C • Rated Working Voltage Range: 6.3 to 63V DC • Nominal Capacitance Range: 1.0 to 15000µF • Capacitance Tolerance: ±20% (120Hz, +20°C) • Leakage Current: $I \leq 0.01CV$ or 3 (µA) whichever is greater measured after 2 minutes application of rated working voltage at +20°C

• tan δ (120 Hz, +20°C)

| Working voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|---------------------|------|------|------|------|------|------|------|
| tan δ max. | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |

For capacitance value > 1000µF, add 0.02 per every 1000µF.

• Impedance at High Frequency: Refer to standard product table (100kHz, +20°C) • Ripple Current: Refer to standard product table (100kHz, +105°C)

Endurance:

Test Conditions — Duration: 1000 hours (for Ø4 - Ø6.3mm), 2000 hours (for Ø8mm), 3000 hours (for Ø10mm), 5000 hours (for Ø12.5mm-) • Ambient Temperature: +105°C ±2°C • Applied Voltage: DC voltage with maximum permissible ripple current specified at +105°C (the sum of the DC voltage and super-imposed peak AC voltage for maximum permissible ripple current should be equal to rated DC working voltage.)

Post Test Requirements at +20°C — Leakage Current: ≤ Initial specified value • Capacitance change: ±20% of initial measured value • tan δ: ≤ 200% of initial specified value

Shelf Life:

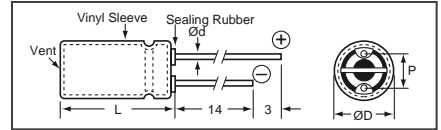
Test Conditions — Duration: 1000 hours • Ambient Temperature: +105°C ±2°C • Applied Voltage: (none)

Post Test Requirements at +20°C — Leakage Current: ≤ Initial specified value • Capacitance change: ±20% of initial measured value • tan δ: ≤ 200% of initial specified value

• Body Color: Black Blue • Marking Color: Gold

Frequency Correction Factor for Ripple Current

| W.V. (V DC) | Cap. (µF) | Frequency (Hz) | | | | |
|----------------|--------------|----------------|------|------|------|------|
| | | 60 | 120 | 1K | 10K | 100K |
| 6.3 - 63 | 1.0 - 330 | 0.55 | 0.65 | 0.85 | 0.90 | 1.00 |
| | 390 - 1000 | 0.70 | 0.75 | 0.90 | 0.95 | 1.00 |
| | 1200 - 2200 | 0.75 | 0.80 | 0.90 | 0.95 | 1.00 |
| | 2700 - 15000 | 0.80 | 0.85 | 0.95 | 1.00 | 1.00 |



| W.V. (V) | Cap. (µF) | Dimensions (mm) | | | | Leakage Current (+20°C) (2 min) (µA) Max | tan δ (120Hz) (+20°C) Max | Impedance (100kHz) (+20°C) (Ω) Max | Ripple Current (100kHz) (+105°C) (mA) rms max. | Digi-Key Part No. | Pricing | | | | Panasonic Part No. |
|-------------|--------------|-----------------|------|-----|--------|--|------------------------------------|---|--|----------------------|---------|--------|---------|--------------|-----------------------|
| | | ØD | L | P | Ød | | | | | | 1 | 10 | 100 | 1,000 | |
| 6.3 | 100 | 5 | 11 | 2.0 | 0.5 | 6.3 | 0.22 | 0.80 | 175 | P10195-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC0J101 |
| | 150 | 5 | 15 | 2.0 | 0.5 | 9.4 | 0.22 | 0.50 | 235 | P10196-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC0J151 |
| | 330 | 6.3 | 11.2 | 2.5 | 0.5 | 20.7 | 0.22 | 0.35 | 290 | P10197-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC0J331S |
| | 820 | 8 | 15 | 3.5 | 0.6 | 51.6 | 0.22 | 0.085 | 730 | P10198-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC0J821L |
| | 1000 | 10 | 12.5 | 5.0 | 0.6 | 63.0 | 0.22 | 0.090 | 755 | P10199-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC0J100 |
| | 1200 | 8 | 20 | 3.5 | 0.6 | 75.6 | 0.22 | 0.065 | 995 | P10200-ND | .62 | 4.41 | 34.55 | 220.50 | EEU-FC0J122L |
| | 1200 | 10 | 16 | 5.0 | 0.6 | 75.6 | 0.22 | 0.068 | 1050 | P10201-ND | .67 | 4.74 | 37.13 | 237.00 | EEU-FC0J122 |
| | 1500 | 10 | 20 | 5.0 | 0.6 | 94.5 | 0.22 | 0.052 | 1220 | P10202-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC0J152 |
| | 1500 | 12.5 | 15 | 5.0 | 0.6 | 94.5 | 0.22 | 0.065 | 1205 | P10203-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC0J152S |
| | 2200 | 10 | 25 | 5.0 | 0.6 | 138.6 | 0.24 | 0.045 | 1440 | P10204-ND | .86 | 6.06 | 47.47 | 303.00 | EEU-FC0J222 |
| | 2200 | 16 | 15 | 7.5 | 0.8 | 138.6 | 0.24 | 0.043 | 1690 | P10205-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC0J222S |
| | 3300 | 12.5 | 20 | 5.0 | 0.6 | 207.9 | 0.26 | 0.038 | 1655 | P10206-ND | 1.12 | 7.89 | 61.81 | 394.50 | EEU-FC0J332 |
| | 3300 | 18 | 15 | 7.5 | 0.8 | 207.9 | 0.26 | 0.038 | 2000 | P10207-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC0J332S |
| | 3900 | 12.5 | 25 | 5.0 | 0.6 | 245.7 | 0.26 | 0.030 | 1945 | P10208-ND | 1.36 | 9.60 | 75.20 | 480.00 | EEU-FC0J392 |
| | 4700 | 12.5 | 30 | 5.0 | 0.8 | 296.1 | 0.28 | 0.025 | 2310 | P10209-ND | 1.49 | 10.53 | 82.49 | 526.50 | EEU-FC0J472 |
| | 4700 | 16 | 20 | 7.5 | 0.8 | 296.1 | 0.28 | 0.029 | 2205 | P10210-ND | 1.62 | 11.43 | 89.54 | 571.50 | EEU-FC0J472S |
| | 5600 | 12.5 | 35 | 5.0 | 0.8 | 352.8 | 0.30 | 0.022 | 2510 | P10211-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC0J562L |
| | 6800 | 12.5 | 40 | 5.0 | 0.8 | 428.4 | 0.32 | 0.018 | 2655 | P10212-ND | 1.94 | 13.68 | 107.16 | 684.00 | EEU-FC0J682L |
| | 6800 | 16 | 25 | 7.5 | 0.8 | 428.4 | 0.32 | 0.022 | 2555 | P10213-ND | 2.05 | 14.49 | 113.51 | 724.50 | EEU-FC0J682 |
| | 6800 | 18 | 20 | 7.5 | 0.8 | 428.4 | 0.32 | 0.028 | 2490 | P10214-ND | 2.21 | 15.60 | 122.20 | 780.00 | EEU-FC0J682S |
| | 10000 | 16 | 35.5 | 7.5 | 0.8 | 630.0 | 0.40 | 0.016 | 3150 | P10215-ND | 2.72 | 19.17 | 150.17 | 958.50 | EEU-FC0J103S |
| 10000 | 18 | 25 | 7.5 | 0.8 | 630.0 | 0.40 | 0.020 | 2740 | P10216-ND | 2.72 | 19.17 | 150.17 | 958.50 | EEU-FC0J103 | |
| 15000 | 18 | 35.5 | 7.5 | 0.8 | 945.0 | 0.50 | 0.015 | 3680 | P10217-ND | 3.54 | 24.96 | 195.52 | 1248.00 | EEU-FC0J153 | |
| 10 | 82 | 5 | 11 | 2.0 | 0.5 | 8.2 | 0.19 | 0.80 | 175 | P10218-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1A820 |
| | 100 | 5 | 15 | 2.0 | 0.5 | 10.0 | 0.19 | 0.50 | 235 | P10219-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1A101 |
| | 220 | 6.3 | 11.2 | 2.5 | 0.5 | 22.0 | 0.19 | 0.35 | 290 | P10220-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1A221S |
| | 470 | 8 | 11.5 | 3.5 | 0.6 | 47.0 | 0.19 | 0.117 | 555 | P10221-ND | .46 | 3.24 | 25.38 | 162.00 | EEU-FC1A471 |
| | 680 | 8 | 15 | 3.5 | 0.6 | 68.0 | 0.19 | 0.085 | 730 | P10222-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC1A681L |
| | 680 | 10 | 12.5 | 5.0 | 0.6 | 68.0 | 0.19 | 0.090 | 755 | P10223-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC1A681 |
| | 1000 | 8 | 20 | 3.5 | 0.6 | 82.0 | 0.19 | 0.065 | 995 | P10224-ND | .62 | 4.41 | 34.55 | 220.50 | EEU-FC1A102L |
| | 1000 | 10 | 16 | 5.0 | 0.6 | 100.0 | 0.19 | 0.068 | 1050 | P10225-ND | .67 | 4.74 | 37.13 | 237.00 | EEU-FC1A102 |
| | 1200 | 10 | 20 | 5.0 | 0.6 | 120.0 | 0.19 | 0.052 | 1220 | P10226-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC1A122 |
| | 1200 | 12.5 | 15 | 5.0 | 0.6 | 120.0 | 0.19 | 0.065 | 1205 | P10227-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC1A122S |
| | 1500 | 10 | 25 | 5.0 | 0.6 | 150.0 | 0.19 | 0.045 | 1440 | P10228-ND | .86 | 6.06 | 47.47 | 303.00 | EEU-FC1A152 |
| | 1800 | 16 | 15 | 7.5 | 0.8 | 180.0 | 0.19 | 0.043 | 1690 | P10229-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC1A182S |
| | 2200 | 12.5 | 20 | 5.0 | 0.6 | 220.0 | 0.21 | 0.038 | 1655 | P10230-ND | 1.12 | 7.89 | 61.81 | 394.50 | EEU-FC1A222 |
| | 2700 | 12.5 | 25 | 5.0 | 0.6 | 270.0 | 0.21 | 0.030 | 1945 | P10231-ND | 1.36 | 9.60 | 75.20 | 480.00 | EEU-FC1A272 |
| | 2700 | 18 | 15 | 7.5 | 0.8 | 270.0 | 0.21 | 0.038 | 2000 | P10232-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1A272S |
| | 3300 | 12.5 | 30 | 5.0 | 0.8 | 330.0 | 0.23 | 0.025 | 2310 | P10233-ND | 1.49 | 10.53 | 82.49 | 526.50 | EEU-FC1A332 |
| | 3300 | 16 | 20 | 7.5 | 0.8 | 330.0 | 0.23 | 0.029 | 2205 | P10234-ND | 1.62 | 11.46 | 89.77 | 573.00 | EEU-FC1A332S |
| | 3900 | 12.5 | 35 | 5.0 | 0.8 | 390.0 | 0.23 | 0.022 | 2510 | P10235-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1A392L |
| | 4700 | 12.5 | 40 | 5.0 | 0.8 | 470.0 | 0.25 | 0.018 | 2655 | P10236-ND | 1.94 | 13.68 | 107.16 | 684.00 | EEU-FC1A472L |
| | 4700 | 16 | 25 | 7.5 | 0.8 | 470.0 | 0.25 | 0.022 | 2555 | P10237-ND | 2.05 | 14.49 | 113.51 | 724.50 | EEU-FC1A472 |
| | 5600 | 18 | 20 | 7.5 | 0.8 | 560.0 | 0.27 | 0.028 | 2490 | P10238-ND | 2.21 | 15.60 | 122.20 | 780.00 | EEU-FC1A562S |
| 6800 | 16 | 31.5 | 7.5 | 0.8 | 680.0 | 0.29 | 0.018 | 3010 | P10239-ND | 2.49 | 17.61 | 137.95 | 880.50 | EEU-FC1A682 | |
| 6800 | 18 | 25 | 7.5 | 0.8 | 680.0 | 0.29 | 0.020 | 2740 | P10240-ND | 2.62 | 18.51 | 145.00 | 925.50 | EEU-FC1A682S | |
| 10000 | 18 | 35.5 | 7.5 | 0.8 | 1000.0 | 0.37 | 0.015 | 3680 | P10241-ND | 3.54 | 24.96 | 195.52 | 1248.00 | EEU-FC1A103 | |
| 16 | 68 | 5 | 11 | 2.0 | 0.5 | 10.8 | 0.16 | 0.80 | 175 | P10242-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1C680 |
| | 82 | 5 | 15 | 2.0 | 0.5 | 13.1 | 0.16 | 0.50 | 235 | P10243-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1C820 |
| | 120 | 6.3 | 11.2 | 2.5 | 0.5 | 19.2 | 0.16 | 0.35 | 290 | P10244-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1C121 |
| | 180 | 6.3 | 15 | 2.5 | 0.5 | 28.8 | 0.16 | 0.25 | 400 | P10245-ND | .36 | 2.55 | 19.98 | 127.50 | EEU-FC1C181 |
| | 330 | 8 | 11.5 | 3.5 | 0.6 | 52.8 | 0.16 | 0.117 | 555 | P10246-ND | .46 | 3.24 | 25.38 | 162.00 | EEU-FC1C331 |
| | 470 | 8 | 15 | 3.5 | 0.6 | 75.2 | 0.16 | 0.085 | 730 | P10247-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC1C471L |
| | 470 | 10 | 12.5 | 5.0 | 0.6 | 75.2 | 0.16 | 0.090 | 755 | P10248-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC1C471 |
| | 680 | 8 | 20 | 3.5 | 0.6 | 108.8 | 0.16 | 0.065 | 995 | P10249-ND | .62 | 4.41 | 34.55 | 220.50 | EEU-FC1C681L |
| | 680 | 10 | 16 | 5.0 | 0.6 | 108.8 | 0.16 | 0.068 | 1050 | P10250-ND | .67 | 4.74 | 37.13 | 237.00 | EEU-FC1C681 |
| | 820 | 10 | 20 | 5.0 | 0.6 | 131.2 | 0.16 | 0.052 | 1220 | P10251-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC1C821 |
| | 820 | 12.5 | 15 | 5.0 | 0.6 | 131.2 | 0.16 | 0.065 | 1205 | P10252-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC1C821S |
| | 1000 | 10 | 25 | 5.0 | 0.6 | 160.0 | 0.16 | 0.045 | 1440 | P10253-ND | .86 | 6.06 | 47.47 | 303.00 | EEU-FC1C102 |
| | 1500 | 12.5 | 20 | 5.0 | 0.6 | 240.0 | 0.16 | 0.038 | 1655 | P10254-ND | 1.12 | 7.89 | 61.81 | 394.50 | EEU-FC1C152 |
| | 1500 | 10.0 | 30 | 5.0 | 0.6 | 240.0 | 0.16 | 0.035 | 1815 | P10255-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC1C152L |
| | 1800 | 18 | 15 | 7.5 | 0.8 | 288.0 | 0.16 | 0.038 | 2000 | P10256-ND | 1.70 | 12.03 | 94.24 | | |

| W.V. (V) | Cap. (μ F) | Dimensions (mm) | | | | Leakage Current (+20°C) (2 min) (μ A) Max | tan δ (120Hz) (+20°C) Max | Impedance (100kHZ) (+20°C) (Ω) Max | Ripple Current (100kHZ) (+105°C) (mA) rms max. | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | |
|-------------|--------------------|-----------------|------|------|-----------------|--|---|--|--|----------------------|-----------|--------|---------|--------------|-----------------------|--------------|
| | | \varnothing D | L | P | \varnothing d | | | | | | 1 | 10 | 100 | 1,000 | | |
| 25 | 47 | 5 | 11 | 2.0 | 0.5 | 11.7 | 0.14 | 0.80 | 175 | P10267-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1E470 | |
| | 56 | 5 | 15 | 2.0 | 0.5 | 14.0 | 0.14 | 0.50 | 235 | P10268-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1E560 | |
| | 100 | 6.3 | 11.2 | 2.5 | 0.5 | 25.0 | 0.14 | 0.35 | 290 | P10269-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1E101 | |
| | 120 | 6.3 | 15 | 2.5 | 0.5 | 30.0 | 0.14 | 0.25 | 400 | P10270-ND | .36 | 2.55 | 19.98 | 127.50 | EEU-FC1E121 | |
| | 220 | 8 | 11.5 | 3.5 | 0.6 | 55.0 | 0.14 | 0.117 | 555 | P10271-ND | .46 | 3.24 | 25.38 | 162.00 | EEU-FC1E221 | |
| | 330 | 8 | 15 | 3.5 | 0.6 | 82.5 | 0.14 | 0.085 | 730 | P10272-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC1E331L | |
| | 330 | 10 | 12.5 | 5.0 | 0.6 | 82.5 | 0.14 | 0.090 | 755 | P10273-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC1E331 | |
| | 470 | 8 | 20 | 3.5 | 0.6 | 117.5 | 0.14 | 0.065 | 995 | P10274-ND | .62 | 4.41 | 34.55 | 220.50 | EEU-FC1E471L | |
| | 470 | 10 | 16 | 5.0 | 0.6 | 117.5 | 0.14 | 0.068 | 1050 | P10275-ND | .67 | 4.74 | 37.13 | 237.00 | EEU-FC1E471 | |
| | 560 | 12.5 | 15 | 5.0 | 0.6 | 140.0 | 0.14 | 0.065 | 1205 | P10276-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC1E561S | |
| | 680 | 10 | 20 | 5.0 | 0.6 | 170.0 | 0.14 | 0.052 | 1220 | P10277-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC1E681 | |
| | 1000 | 12.5 | 20 | 5.0 | 0.6 | 250.0 | 0.14 | 0.038 | 1655 | P10278-ND | 1.12 | 7.89 | 61.81 | 394.50 | EEU-FC1E102 | |
| | 1000 | 16 | 15 | 7.5 | 0.8 | 250.0 | 0.14 | 0.043 | 1690 | P10279-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC1E102S | |
| | 1200 | 18 | 15 | 7.5 | 0.8 | 300.0 | 0.14 | 0.038 | 2000 | P10280-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1E122S | |
| | 1500 | 12.5 | 25 | 5.0 | 0.6 | 375.0 | 0.14 | 0.030 | 1945 | P10281-ND | 1.36 | 9.60 | 75.20 | 480.00 | EEU-FC1E152 | |
| 35 | 1500 | 16 | 20 | 7.5 | 0.8 | 375.0 | 0.14 | 0.029 | 2205 | P10282-ND | 1.62 | 11.46 | 89.77 | 573.00 | EEU-FC1E152S | |
| | 1800 | 12.5 | 30 | 5.0 | 0.8 | 450.0 | 0.14 | 0.025 | 2310 | P10283-ND | 1.49 | 10.53 | 82.49 | 526.50 | EEU-FC1E182L | |
| | 2200 | 12.5 | 35 | 5.0 | 0.8 | 550.0 | 0.16 | 0.022 | 2510 | P10284-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1E222 | |
| | 2200 | 18 | 20 | 7.5 | 0.8 | 550.0 | 0.16 | 0.028 | 2490 | P10285-ND | 2.21 | 15.60 | 122.20 | 780.00 | EEU-FC1E222S | |
| | 2700 | 16 | 25 | 7.5 | 0.8 | 675.0 | 0.16 | 0.022 | 2555 | P10286-ND | 2.05 | 14.49 | 113.51 | 724.50 | EEU-FC1E272 | |
| | 3300 | 16 | 31.5 | 7.5 | 0.8 | 825.0 | 0.18 | 0.018 | 3010 | P10287-ND | 2.49 | 17.61 | 137.95 | 880.50 | EEU-FC1E332 | |
| | 3300 | 18 | 25 | 7.5 | 0.8 | 825.0 | 0.18 | 0.020 | 2740 | P10288-ND | 2.62 | 18.51 | 145.00 | 925.50 | EEU-FC1E332S | |
| | 4700 | 18 | 35.5 | 7.5 | 0.8 | 1175.0 | 0.20 | 0.015 | 3680 | P10289-ND | 3.54 | 24.96 | 195.52 | 1248.00 | EEU-FC1E472 | |
| | 35 | 33 | 5 | 11 | 2.0 | 0.5 | 11.5 | 0.12 | 0.80 | 175 | P10290-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1V330 |
| | | 39 | 5 | 15 | 2.0 | 0.5 | 13.6 | 0.12 | 0.50 | 235 | P10291-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1V390 |
| | | 68 | 6.3 | 11.2 | 2.5 | 0.5 | 23.8 | 0.12 | 0.35 | 290 | P10292-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1V680 |
| | | 82 | 6.3 | 15 | 2.5 | 0.5 | 28.7 | 0.12 | 0.25 | 400 | P10293-ND | .36 | 2.55 | 19.98 | 127.50 | EEU-FC1V820 |
| | | 100 | 8 | 11.5 | 3.5 | 0.6 | 35.0 | 0.12 | 0.117 | 555 | P10294-ND | .46 | 3.24 | 25.38 | 162.00 | EEU-FC1V101 |
| | | 150 | 8 | 11.5 | 3.5 | 0.6 | 52.5 | 0.12 | 0.117 | 555 | P10295-ND | .46 | 3.24 | 25.38 | 162.00 | EEU-FC1V151 |
| | | 220 | 8 | 15 | 3.5 | 0.6 | 77.0 | 0.12 | 0.085 | 730 | P10296-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC1V221L |
| 220 | | 10 | 12.5 | 5.0 | 0.6 | 77.0 | 0.12 | 0.090 | 755 | P10297-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC1V221 | |
| 330 | | 8 | 20 | 3.5 | 0.6 | 115.5 | 0.12 | 0.065 | 995 | P10298-ND | .62 | 4.41 | 34.55 | 220.50 | EEU-FC1V331L | |
| 330 | | 10 | 16 | 5.0 | 0.6 | 115.5 | 0.12 | 0.068 | 1050 | P10299-ND | .67 | 4.74 | 37.13 | 237.00 | EEU-FC1V331 | |
| 390 | | 12.5 | 15 | 5.0 | 0.6 | 136.5 | 0.12 | 0.065 | 1205 | P10300-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC1V391S | |
| 470 | | 10 | 20 | 5.0 | 0.6 | 164.5 | 0.12 | 0.052 | 1220 | P10301-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC1V471 | |
| 680 | | 12.5 | 20 | 5.0 | 0.6 | 238.0 | 0.12 | 0.038 | 1655 | P10302-ND | 1.12 | 7.89 | 61.81 | 394.50 | EEU-FC1V681 | |
| 680 | | 16 | 15 | 7.5 | 0.8 | 238.0 | 0.12 | 0.043 | 1690 | P10303-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC1V681S | |
| 820 | | 18 | 15 | 7.5 | 0.8 | 287.0 | 0.12 | 0.038 | 2000 | P10304-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1V821 | |
| 50 | 1000 | 12.5 | 25 | 5.0 | 0.6 | 350.0 | 0.12 | 0.030 | 1945 | P10305-ND | 1.36 | 9.60 | 75.20 | 480.00 | EEU-FC1V102 | |
| | 1200 | 12.5 | 30 | 5.0 | 0.8 | 420.0 | 0.12 | 0.025 | 2310 | P10306-ND | 1.49 | 10.53 | 82.49 | 526.50 | EEU-FC1V122L | |
| | 1500 | 12.5 | 35 | 5.0 | 0.8 | 525.0 | 0.12 | 0.022 | 2510 | P10307-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1V152L | |
| | 1500 | 16 | 25 | 7.5 | 0.8 | 525.0 | 0.12 | 0.022 | 2555 | P10308-ND | 2.05 | 14.49 | 113.51 | 724.50 | EEU-FC1V152 | |
| | 2200 | 16 | 31.5 | 7.5 | 0.8 | 770.0 | 0.14 | 0.018 | 3010 | P10309-ND | 2.49 | 17.61 | 137.95 | 880.50 | EEU-FC1V222 | |
| | 2200 | 18 | 25 | 7.5 | 0.8 | 770.0 | 0.14 | 0.020 | 2740 | P10310-ND | 2.62 | 18.51 | 145.00 | 925.50 | EEU-FC1V222S | |
| | 3300 | 18 | 35.5 | 7.5 | 0.8 | 1155.0 | 0.16 | 0.015 | 3680 | P10311-ND | 3.54 | 24.96 | 195.52 | 1248.00 | EEU-FC1V332 | |
| | 50 | 1.0 | 5 | 11 | 2.0 | 0.5 | 0.5 | 0.10 | 2.40 | 20 | P10312-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H1R0 |
| | | 2.2 | 5 | 11 | 2.0 | 0.5 | 1.1 | 0.10 | 1.30 | 45 | P10313-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H2R2 |
| | | 3.3 | 5 | 11 | 2.0 | 0.5 | 1.6 | 0.10 | 1.30 | 65 | P10314-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H3R3 |
| | | 4.7 | 5 | 11 | 2.0 | 0.5 | 2.3 | 0.10 | 1.30 | 95 | P10315-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H4R7 |
| | | 10 | 5 | 11 | 2.0 | 0.5 | 5.0 | 0.10 | 1.30 | 125 | P10316-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H100L |
| | | 15 | 5 | 11 | 2.0 | 0.5 | 7.5 | 0.10 | 1.30 | 145 | P10317-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H150 |
| | | 22 | 5 | 11 | 2.0 | 0.5 | 11.0 | 0.10 | 1.30 | 155 | P10318-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1H220 |
| | | 27 | 5 | 15 | 2.0 | 0.5 | 13.5 | 0.10 | 0.90 | 215 | P10319-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1H270 |
| 33 | | 6.3 | 11.2 | 2.5 | 0.5 | 16.5 | 0.10 | 0.60 | 260 | P10320-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1H330 | |
| 47 | | 6.3 | 11.2 | 2.5 | 0.5 | 23.5 | 0.10 | 0.60 | 260 | P10321-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1H470 | |
| 56 | | 6.3 | 15 | 2.5 | 0.5 | 28.0 | 0.10 | 0.40 | 360 | P10322-ND | .36 | 2.55 | 19.98 | 127.50 | EEU-FC1H560 | |
| 100 | | 10 | 12.5 | 5.0 | 0.6 | 50.0 | 0.10 | 0.162 | 615 | P10323-ND | .61 | 4.29 | 33.61 | 214.50 | EEU-FC1H101 | |
| 180 | | 8 | 20 | 3.5 | 0.6 | 90.0 | 0.10 | 0.120 | 860 | P10324-ND | .55 | 3.90 | 30.55 | 195.00 | EEU-FC1H181L | |
| 220 | | 10 | 20 | 5.0 | 0.6 | 110.0 | 0.10 | 0.090 | 1030 | P10325-ND | .79 | 5.61 | 43.95 | 280.50 | EEU-FC1H221 | |
| 220 | | 12.5 | 15 | 5.0 | 0.6 | 110.0 | 0.10 | 0.110 | 1150 | P10326-ND | .91 | 6.42 | 50.29 | 321.00 | EEU-FC1H221S | |
| 390 | 16 | 15 | 7.5 | 0.8 | 195.0 | 0.10 | 0.080 | 1610 | P10327-ND | 1.28 | 9.06 | 70.97 | 453.00 | EEU-FC1H391S | | |
| 470 | 12.5 | 25 | 5.0 | 0.6 | 235.0 | 0.10 | 0.050 | 1832 | P10328-ND | 1.36 | 9.60 | 75.20 | 480.00 | EEU-FC1H471 | | |
| 560 | 18 | 15 | 7.5 | 0.8 | 280.0 | 0.10 | 0.068 | 1900 | P10329-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1H561S | | |
| 680 | 12.5 | 30 | 5.0 | 0.8 | 340.0 | 0.10 | 0.040 | 2215 | P10330-ND | 1.49 | 10.53 | 82.49 | 526.50 | EEU-FC1H681L | | |
| 680 | 16 | 20 | 7.5 | 0.8 | 340.0 | 0.10 | 0.048 | 1835 | P10331-ND | 1.62 | 11.46 | 89.77 | 573.00 | EEU-FC1H681 | | |
| 820 | 12.5 | 35 | 5.0 | 0.8 | 410.0 | 0.10 | 0.034 | 2285 | P10332-ND | 1.70 | 12.03 | 94.24 | 601.50 | EEU-FC1H821L | | |
| 1000 | 16 | 25 | 7.5 | 0.8 | 500.0 | 0.10 | 0.034 | 2235 | P10333-ND | 2.05 | 14.49 | 113.51 | 724.50 | EEU-FC1H102 | | |
| 1500 | 16 | 35.5 | 7.5 | 0.8 | 750.0 | 0.10 | 0.025 | 2790 | P10334-ND | 2.72 | 19.17 | 150.17 | 958.50 | EEU-FC1H152L | | |
| 2200 | 18 | 35.5 | 7.5 | 0.8 | 1100.0 | 0.12 | 0.023 | 3100 | P10335-ND | 3.54 | 24.96 | 195.52 | 1248.00 | EEU-FC1H222 | | |
| 63 | 12 | 5 | 11 | 2.0 | 0.5 | 7.5 | 0.08 | 2.00 | 145 | P10336-ND | .28 | 1.95 | 15.28 | 97.50 | EEU-FC1J120 | |
| | 18 | 5 | 15 | 2.0 | 0.5 | 11.3 | 0.08 | 1.30 | 200 | P10337-ND | .28 | 2.01 | 15.75 | 100.50 | EEU-FC1J180 | |
| | 22 | 6.3 | 11.2 | 2.5 | 0.5 | 13.8 | 0.08 | 1.00 | 240 | P10338-ND | .31 | 2.19 | 17.16 | 109.50 | EEU-FC1J220 | |
| | 39 | 6.3 | 15 | 2.5 | 0.5 | 24.5 | 0.08 | 0.70 | 330 | P10339-ND | .36 | 2.55 | 19.98 | 127.50 | EEU-FC1J390 | |
| | 47 | 8 | 11.5 | 3.5 | 0.6 | 29.6 | 0.08 | 0.342 | 405 | P10340-ND | .46 | | | | | |

Panasonic FA Series Capacitors

Features:
 • Smaller than series HFQ • Low impedance • Long life: 3500 - 7000 hours at +105°C

Specifications:
 • Operating Temperature Range: -55 to +105°C • Rated Working Voltage Range: 6.3 to 63V DC • Nominal Capacitance Range: 68 to 15000µF • Capacitance Tolerance: ±20% (120Hz, +20°C) • Leakage Current: I ≤ 0.01CV (µA) after 2 minutes application of rated working voltage at +20°C

• tan δ (120Hz, +20°C)

| Working voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|---------------------|------|------|------|------|------|------|------|
| tan δ max. | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |

For capacitance value > 1000µF, add 0.02 to above chart for every 1000µF increase.

• Impedance at High Frequency: Refer to standard products table.

(100kHz, +20°C) • Ripple Current: Refer to standard products table.
 (100kHz, +105°C)

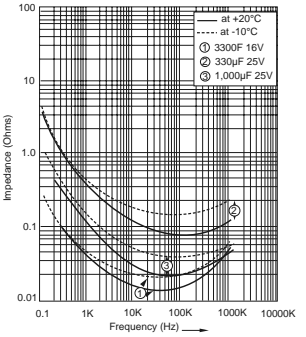
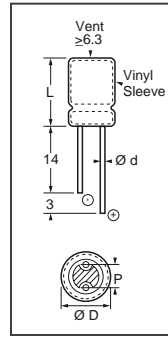
Endurance:
 Test Conditions — Ambient Temperature: +105°C ±2°C • Applied Voltage: DC voltage with maximum permissible ripple current specified at +105°C (the sum of the DC voltage and super-imposed peak AC voltage for maximum permissible ripple current should be equal to rated DC working voltage.)

Post Test Requirements at +20°C — Leakage Current: ≤ Initial specified value • **Capacitance change:** ±20% of initial measured value • **tan δ:** ≤200% of initial specified value

Shelf Life:

Test Conditions — Duration: 1000 hours • Ambient Temperature: +105°C ±2°C • Applied Voltage: (none)

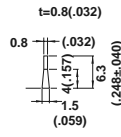
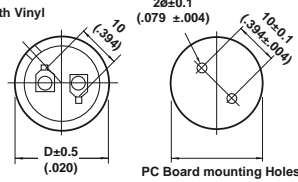
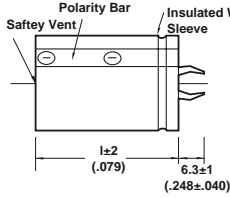
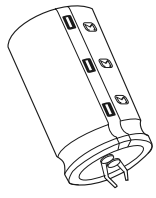
Post Test Requirements at +20°C: Same as limits listed for "Endurance", as shown above.



| W.V. (V) | Cap. (µF) | Dimensions (mm) | | | | Leakage Current (+20°C) (2 min) (µA) Max | tan δ (120Hz) (+20°C) Max | Impedance (100kHz) (+20°C) (Ω) Max | Ripple Current (100kHz) (+105°C) (mA) rms max. | Life Hours @ 105°C | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|----------|-----------|-----------------|------|-----|--------|--|---------------------------|------------------------------------|--|--------------------|-------------------|---------|--------|---------|-----------|--------------|--------------------|
| | | ØD | L | P | Ød | | | | | | | 1 | 10 | 100 | 1,000 | 5,000 | |
| 10 | 390 | 8 | 11.5 | 3.5 | 0.6 | 39.0 | 0.19 | 0.117 | 555 | 3500 | P5601A-ND | .49 | 4.36 | 37.75 | 174.00 | 165.00/M | EEU-FA1A391 |
| | 680 | 8 | 15 | 3.5 | 0.6 | 68.0 | 0.19 | 0.085 | 730 | 5000 | P5602A-ND | .62 | 5.43 | 47.09 | 217.00 | 206.00/M | EEU-FA1A681L |
| | 680 | 10 | 12.5 | 5 | 0.6 | 68.0 | 0.19 | 0.090 | 755 | 4000 | P5603A-ND | .66 | 5.82 | 50.46 | 233.00 | 220.00/M | EEU-FA1A681 |
| | 1000 | 8 | 20 | 3.5 | 0.6 | 100.0 | 0.19 | 0.065 | 995 | 5000 | P5604A-ND | .71 | 6.25 | 54.19 | 250.00 | 237.00/M | EEU-FA1A102 |
| | 1200 | 10 | 20 | 5 | 0.6 | 120.0 | 0.19 | 0.052 | 1220 | 6000 | P5605A-ND | .86 | 7.55 | 65.41 | 302.00 | 285.00/M | EEU-FA1A122 |
| | 1500 | 10 | 25 | 5 | 0.6 | 150.0 | 0.19 | 0.045 | 1440 | 7000 | P5606A-ND | .97 | 8.54 | 74.00 | 341.00 | 323.00/M | EEU-FA1A152 |
| | 2200 | 10 | 30 | 5 | 0.6 | 220.0 | 0.19 | 0.035 | 1815 | 7000 | P5607A-ND | 1.15 | 10.18 | 88.21 | 407.00 | 385.00/M | EEU-FA1A222 |
| | 2700 | 12.5 | 25 | 5 | 0.6 | 270.0 | 0.19 | 0.034 | 1945 | 7000 | P5608A-ND | 1.45 | 12.77 | 110.63 | 510.00 | 483.00/M | EEU-FA1A272 |
| | 3300 | 12.5 | 30 | 5 | 0.6 | 330.0 | 0.19 | 0.025 | 2310 | 7000 | P5609A-ND | 1.60 | 14.15 | 122.59 | 565.00 | 535.00/M | EEU-FA1A332L |
| | 3900 | 12.5 | 35 | 5 | 0.5 | 390.0 | 0.19 | 0.022 | 2510 | 7000 | P5610A-ND | 1.82 | 16.04 | 139.04 | 641.00 | 607.00/M | EEU-FA1A392 |
| | 4700 | 12.5 | 40 | 5 | 0.8 | 470.0 | 0.19 | 0.018 | 2655 | 7000 | P5657A-ND | 2.09 | 18.41 | 159.59 | 736.00 | 697.00/M | EEU-FA1A472L |
| | 4700 | 16 | 25 | 7.5 | 0.8 | 470.0 | 0.19 | 0.022 | 2555 | 7000 | P5611A-ND | 2.19 | 19.36 | 167.81 | 774.00 | 732.00/M | EEU-FA1A472 |
| 16 | 270 | 8 | 11.5 | 3.5 | 0.6 | 43.2 | 0.16 | 0.117 | 555 | 3500 | P5612A-ND | .50 | 4.40 | 38.12 | 176.00 | 166.00/M | EEU-FA1C271 |
| | 470 | 8 | 15 | 3.5 | 0.6 | 75.2 | 0.16 | 0.085 | 730 | 5000 | P5613A-ND | .62 | 5.43 | 47.09 | 217.00 | 206.00/M | EEU-FA1C471L |
| | 470 | 10 | 12.5 | 5 | 0.6 | 75.2 | 0.16 | 0.090 | 755 | 4000 | P5614A-ND | .66 | 5.87 | 50.83 | 234.00 | 222.00/M | EEU-FA1C471 |
| | 560 | 10 | 16 | 5 | 0.6 | 89.6 | 0.16 | 0.068 | 950 | 6000 | P5615A-ND | .73 | 6.47 | 56.06 | 259.00 | 245.00/M | EEU-FA1C561 |
| | 680 | 8 | 20 | 3.5 | 0.6 | 108.8 | 0.16 | 0.065 | 995 | 5000 | P5616A-ND | .70 | 6.21 | 53.82 | 248.00 | 235.00/M | EEU-FA1C681 |
| | 820 | 10 | 20 | 5 | 0.6 | 131.2 | 0.16 | 0.052 | 1220 | 6000 | P5617A-ND | .86 | 7.59 | 65.78 | 303.00 | 287.00/M | EEU-FA1C821 |
| | 820 | 12.5 | 15 | 5 | 0.6 | 131.2 | 0.16 | 0.060 | 1205 | 5000 | P5618A-ND | .97 | 8.58 | 74.38 | 343.00 | 325.00/M | EEU-FA1C821S |
| | 1000 | 10 | 25 | 5 | 0.6 | 160.0 | 0.16 | 0.045 | 1440 | 7000 | P5619A-ND | .98 | 8.63 | 74.75 | 345.00 | 326.00/M | EEU-FA1C102 |
| | 1200 | 12.5 | 20 | 5 | 0.6 | 192.0 | 0.16 | 0.038 | 1655 | 7000 | P5620A-ND | 1.16 | 10.26 | 88.95 | 410.00 | 388.00/M | EEU-FA1C122 |
| | 1500 | 10 | 30 | 5 | 0.6 | 240.0 | 0.16 | 0.035 | 1815 | 7000 | P5621A-ND | 1.16 | 10.22 | 88.58 | 409.00 | 387.00/M | EEU-FA1C152 |
| | 1800 | 12.5 | 25 | 5 | 0.6 | 288.0 | 0.16 | 0.034 | 1945 | 7000 | P5622A-ND | 1.41 | 12.46 | 108.01 | 498.00 | 471.00/M | EEU-FA1C182 |
| | 2200 | 12.5 | 30 | 5 | 0.8 | 352.0 | 0.16 | 0.025 | 2310 | 7000 | P5623A-ND | 1.62 | 14.32 | 124.09 | 572.00 | 542.00/M | EEU-FA1C222L |
| 2200 | 16 | 20 | 7.5 | 0.8 | 352.0 | 0.16 | 0.025 | 2305 | 7000 | P5624A-ND | 1.71 | 15.05 | 130.44 | 602.00 | 569.00/M | EEU-FA1C222 | |
| 2700 | 12.5 | 35 | 5 | 0.8 | 432.0 | 0.16 | 0.022 | 2510 | 7000 | P5625A-ND | 1.84 | 16.26 | 140.90 | 650.00 | 615.00/M | EEU-FA1C272 | |
| 3300 | 12.5 | 40 | 5 | 0.8 | 528.0 | 0.16 | 0.018 | 2655 | 7000 | P5626A-ND | 2.11 | 18.59 | 161.09 | 743.00 | 703.00/M | EEU-FA1C332L | |
| 5600 | 16 | 40 | 7.5 | 0.8 | 896.0 | 0.16 | 0.015 | 3360 | 7000 | P5658A-ND | 3.35 | 29.58 | 256.39 | 1183.00 | 1119.00/M | EEU-FA1C562L | |
| 25 | 330 | 8 | 15 | 3.5 | 0.6 | 82.5 | 0.14 | 0.085 | 730 | 5000 | P5627A-ND | .60 | 5.26 | 45.60 | 210.00 | 199.00/M | EEU-FA1E331L |
| | 330 | 10 | 12.5 | 5 | 0.6 | 82.5 | 0.14 | 0.090 | 755 | 4000 | P5628A-ND | .67 | 5.91 | 51.20 | 236.00 | 223.00/M | EEU-FA1E331 |
| | 390 | 10 | 16 | 5 | 0.6 | 97.5 | 0.14 | 0.068 | 950 | 6000 | P5629A-ND | .74 | 6.56 | 56.81 | 262.00 | 248.00/M | EEU-FA1E391 |
| | 470 | 8 | 20 | 3.5 | 0.6 | 117.5 | 0.14 | 0.065 | 995 | 5000 | P5630A-ND | .69 | 6.12 | 53.07 | 245.00 | 232.00/M | EEU-FA1E471 |
| | 560 | 10 | 20 | 5 | 0.6 | 140.0 | 0.14 | 0.052 | 1220 | 6000 | P5631A-ND | .88 | 7.76 | 67.28 | 310.00 | 294.00/M | EEU-FA1E561 |
| | 560 | 12.5 | 15 | 5 | 0.6 | 140.0 | 0.14 | 0.060 | 1205 | 5000 | P5632A-ND | .98 | 8.63 | 74.75 | 345.00 | 326.00/M | EEU-FA1E561S |
| | 680 | 10 | 25 | 5 | 0.6 | 170.0 | 0.14 | 0.045 | 1440 | 7000 | P5633A-ND | .98 | 8.67 | 75.12 | 347.00 | 328.00/M | EEU-FA1E681 |
| | 1000 | 10 | 30 | 5 | 0.6 | 250.0 | 0.14 | 0.035 | 1815 | 7000 | P5634A-ND | 1.17 | 10.35 | 89.70 | 414.00 | 391.00/M | EEU-FA1E102L |
| | 1000 | 12.5 | 20 | 5 | 0.6 | 250.0 | 0.14 | 0.038 | 1655 | 7000 | P5634A-ND | 1.23 | 10.87 | 94.19 | 434.00 | 411.00/M | EEU-FA1E102 |
| | 1500 | 12.5 | 30 | 5 | 0.8 | 375.0 | 0.14 | 0.025 | 2310 | 7000 | P5635A-ND | 1.70 | 14.96 | 129.69 | 598.00 | 566.00/M | EEU-FA1E152L |
| | 2200 | 12.5 | 40 | 5 | 0.8 | 550.0 | 0.14 | 0.018 | 2655 | 7000 | P5660A-ND | 2.22 | 19.62 | 170.06 | 784.00 | 742.00/M | EEU-FA1E222L |
| | 2200 | 16 | 25 | 7.5 | 0.8 | 550.0 | 0.14 | 0.022 | 2555 | 7000 | P5636A-ND | 2.26 | 19.92 | 172.67 | 797.00 | 754.00/M | EEU-FA1E222 |
| 3900 | 16 | 40 | 7.5 | 0.8 | 975.0 | 0.14 | 0.015 | 3360 | 7000 | P5661A-ND | 3.34 | 29.45 | 255.27 | 1178.00 | 1114.00/M | EEU-FA1E392L | |
| 4700 | 18 | 35.5 | 7.5 | 0.8 | 1175.0 | 0.14 | 0.015 | 3680 | 7000 | P5637A-ND | 3.89 | 34.28 | 297.13 | 1371.00 | 1297.00/M | EEU-FA1E472 | |
| 5600 | 18 | 40 | 7.5 | 0.8 | 1400.0 | 0.14 | 0.014 | 3735 | 7000 | P5662A-ND | 4.40 | 38.86 | 336.75 | 1553.00 | 1470.00/M | EEU-FA1E562 | |
| 35 | 120 | 8 | 11.5 | 3.5 | 0.6 | 52.5 | 0.12 | 0.117 | 555 | 3500 | P5638A-ND | .51 | 4.49 | 38.87 | 179.00 | 170.00/M | EEU-FA1V151 |
| | 250 | 8 | 15 | 3.5 | 0.6 | 77.0 | 0.12 | 0.085 | 730 | 5000 | P5639A-ND | .60 | 5.30 | 45.97 | 212.00 | 201.00/M | EEU-FA1V221L |
| | 270 | 10 | 16 | 5 | 0.6 | 94.5 | 0.12 | 0.068 | 950 | 6000 | P5640A-ND | .75 | 6.64 | 57.56 | 266.00 | 251.00/M | EEU-FA1V271 |
| | 330 | 8 | 20 | 3.5 | 0.6 | 115.5 | 0.12 | 0.065 | 995 | 5000 | P5641A-ND | .70 | 6.17 | 53.45 | 247.00 | 233.00/M | EEU-FA1V331 |
| | 390 | 10 | 20 | 5 | 0.6 | 136.5 | 0.12 | 0.052 | 1220 | 6000 | P5642A-ND | .88 | 7.81 | 67.65 | 312.00 | 295.00/M | EEU-FA1V391 |
| | 390 | 12.5 | 15 | 5 | 0.6 | 136.5 | 0.12 | 0.060 | 1205 | 5000 | P5643A-ND | .99 | 8.75 | 75.87 | 350.00 | 331.00/M | EEU-FA1V391S |
| | 470 | 10 | 25 | 5 | 0.6 | 164.5 | 0.12 | 0.045 | 1440 | 7000 | P5644A-ND | 1.00 | 8.80 | 76.25 | 352.00 | 333.00/M | EEU-FA1V471 |
| | 680 | 10 | 30 | 5 | 0.6 | 238.0 | 0.12 | 0.035 | 1815 | 7000 | P5663A-ND | 1.20 | 10.57 | 91.57 | 422.00 | 400.00/M | EEU-FA1V681L |
| | 1000 | 12.5 | 25 | 5 | 0.6 | 350.0 | 0.12 | 0.034 | 1945 | 7000 | P5645A-ND | 1.52 | 13.46 | 116.61 | 538.00 | 509.00/M | EEU-FA1V102 |
| | 1200 | 12.5 | 35 | 5 | 0.8 | 525.0 | 0.12 | 0.022 | 2510 | 7000 | P5646A-ND | 1.74 | 15.35 | 133.06 | 614.00 | 581.00/M | EEU-FA1V122L |
| | 1500 | 12.5 | 35 | 5 | 0.8 | 525.0 | 0.12 | 0.022 | 2510 | 7000 | P5644A-ND | 1.97 | 17.42 | 151.00 | 697.00 | 659.00/M | EEU-FA1V152L |
| | 1800 | 12.5 | 40 | 5 | 0.8 | 630.0 | 0.12 | 0.018 | 2655 | 7000 | P5647A-ND | 2.25 | 19.84 | 171.93 | 793.00 | 750.00/M | EEU-FA1V182L |
| 2200 | 16 | 35.5 | 7.5 | 0.8 | 770.0 | 0.12 | 0.016 | 3150 | 7000 | P5648A-ND | 3.05 | 26.91 | 233.22 | 1076.00 | 1018.00/M | EEU-FA1V222 | |
| 3300 | 18 | 35.5 | 7.5 | 0.8 | 1155.0 | 0.12 | 0.015 | 3680 | 7000 | P5649A-ND | 3.98 | 35.10 | 304.23 | 1403.00 | 1328.00/M | EEU-FA1V332 | |
| 50 | 82 | 8 | 11.5 | 3.5 | 0.6 | 41.0 | 0.10 | 0.234 | 485 | 3500 | P5650A-ND | | | | | | |

Panasonic® TS-Series Large Aluminum Electrolytic Capacitors

CROSS REFERENCES



| PANASONIC TSU | | | PANASONIC TSNH | | |
|---------------------|-----------------|-----------------|-----------------|---------------------|----------|
| Elna: LP | Marcon: FTW/FHW | Nichicon: UB/PS | Rubycon: LP/RP | Sprague: 80D | UCC: NMA |
| PANASONIC TSUP | | | PANASONIC TSHA | | |
| Matsushita: TSUP | Nichichemi: SMH | Nichicon: LO | Rubycon: USP | Marcon: DWF & CEFHW | UCC: SMH |
| Sprague: 82D | | | ICI: LPR/LUG | Mepeco: 3487 | |
| Elna: LPS(LP) | | | Marcon: FTU/FHU | | |
| Nichicon: GH/G/GM | | | Rubycon: XLP/XP | | |
| Sprague: 81D | | | UCC: KM | | |
| Matsushita: TSHA | | | Nichichemi: KMH | | |
| Nichicon: GO | | | Rubycon: MPX | | |
| Marcon: DUF & CEFHU | | | UCC: KM | | |
| Sprague: 81D | | | Mepeco: 3488 | | |

Specifications:

- **TSW Series: Standard Type** (16 ~ 250V/ -40 ~ +85°C/220 ~ 15,000µF)
- **TSU Series: Miniaturized Type** (16 ~ 450V/ -40 ~ +85°C/100 ~ 47,000µF)
- **TSUP Series: Large Can Type** (16 ~ 250V/ -40 ~ +85°C/180 ~ 68,000µF)
- **TSNH Series: 105°C Type** (16 ~ 100V/ -40 ~ +105°C/470 ~ 33,000µF)
- **TSHA Series: Large Can Type** (10 ~ 250V/ -40 ~ +105°C/180 ~ 68,000µF)
- **TSHB Series: Large Can Type** (200 ~ 450V/ -40 ~ +105°C/82 ~ 2,200µF)
- **Capacitance Tolerance (at 120Hz):**

| Type: | TSW | TSU | TSUP | TSNH | TSHA | TSHB |
|-------|------------|------|------|------|------|------|
| Tol.: | -10 ~ +30% | ±20% | ±20% | ±20% | ±20% | ±20% |

Surge Voltage & Surge Voltage Test: The DC surge voltage is the maximum voltage to which the capacitor should be subjected. The surge voltage listed below is applied in series with a 1,000 ohm resistor at a cycle of 0.5 minutes "ON" and 4.5 minutes "OFF", repeated 1,000 times at 25°C.

| Rated DC Voltage: | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 160 | 200 | 250 | 400 | 450 |
|-------------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Surge Voltage: | 20 | 32 | 44 | 63 | 79 | 100 | 125 | 200 | 250 | 300 | 450 | 500 |

After the test, the capacitor shall meet the following limits: Capacitance change of ±20% of initial measured value; DC leakage current less than initial limits; and D.F. less than 150% of initial limits.

| W.V. DC | Cap. (µF) | Max. DC (mA) Leakage Current | 85° (rms) Ripple Current (120Hz) A | Dimensions (mm) | | Digi-Key Part No. | Pricing | | Panasonic Part No. | |
|---|-----------|------------------------------|------------------------------------|-----------------|----------|-------------------|---------|--------|--------------------|---------------|
| | | | | D | L | | 1 | 100 | | |
| TSW General Purpose +85°C (Not recommended for new design. Use TSUTSUP series) | | | | | | | | | | |
| 35 | 1000 | 0.35 | 1.35 | 22 | 25 | P6511-ND | 1.90 | 16.32 | 127.84 | ECE-T35R102SW |
| TSU General Purpose +85°C | | | | | | | | | | |
| 16 | 4700 | 0.75 | 2.0 | 22 | 25 | P6445-ND | 2.54 | 21.78 | 170.65 | ECE-S1CU472D |
| | 6800 | 0.98 | 2.3 | 22 | 31.5 | P6446-ND | 3.13 | 26.85 | 210.33 | ECE-S1CU682E |
| | 10000 | 1.20 | 3.0 | 22 | 40 | P6447-ND | 3.60 | 30.83 | 241.52 | ECE-S1CU103G |
| | 22000 | 1.77 | 4.6 | 25 | 50 | P6420-ND | 5.96 | 51.09 | 400.18 | ECE-S1CU223N |
| | 33000 | 2.17 | 5.2 | 30 | 50 | P6421-ND | 8.26 | 70.78 | 554.47 | ECE-S1CU333U |
| | 47000 | 2.6 | 5.4 | 35 | 51 | P6422-ND | 10.66 | 91.38 | 715.85 | ECE-S1CU473Z |
| 25 | 3300 | 0.82 | 2.0 | 22 | 25 | P6448-ND | 3.11 | 26.67 | 208.92 | ECE-S1EU332D |
| | 4700 | 1.02 | 2.0 | 22 | 31.5 | P6449-ND | 3.59 | 26.48 | 207.45 | ECE-S1EU472E |
| | 6800 | 1.23 | 2.9 | 22 | 40 | P6475-ND | 3.08 | 30.66 | 240.16 | ECE-S1EU682G |
| | 10000 | 1.6 | 3.4 | 25 | 40 | P6480-ND | 4.41 | 37.83 | 296.32 | ECE-S1EU103M |
| | 22000 | 2.22 | 5.3 | 30 | 50 | P6423-ND | 8.40 | 72.00 | 564.01 | ECE-S1EU223U |
| | 33000 | 2.72 | 5.8 | 35 | 51 | P6424-ND | 11.33 | 97.13 | 760.83 | ECE-S1EU333Z |
| 35 | 2200 | 0.77 | 1.8 | 22 | 25 | P6481-ND | 3.22 | 27.57 | 215.97 | ECE-S1VU222D |
| | 3300 | 1.01 | 2.2 | 22 | 40 | P6482-ND | 3.26 | 27.90 | 218.55 | ECE-S1VU332E |
| | 4700 | 1.21 | 2.5 | 22 | 40 | P6483-ND | 3.45 | 29.58 | 231.71 | ECE-S1VU472G |
| | 6800 | 1.46 | 3.0 | 25 | 40 | P6484-ND | 4.41 | 37.83 | 296.32 | ECE-S1VU682M |
| | 10000 | 1.77 | 3.8 | 30 | 40 | P6485-ND | 5.57 | 47.71 | 373.73 | ECE-S1VU103T |
| | 15000 | 2.17 | 4.7 | 35 | 50 | P6425-ND | 7.51 | 64.35 | 504.04 | ECE-S1VU153U |
| 22000 | 2.63 | 5.1 | 40 | 51 | P6426-ND | 10.45 | 89.58 | 701.67 | ECE-S1VU223Z | |
| 50 | 2200 | 0.99 | 1.9 | 22 | 31.5 | P6486-ND | 3.19 | 27.36 | 214.32 | ECE-S1HU222E |
| | 3300 | 1.11 | 2.2 | 22 | 40 | P6487-ND | 3.46 | 29.68 | 232.53 | ECE-S1HU332G |
| | 4700 | 1.45 | 2.7 | 25 | 40 | P6488-ND | 4.32 | 37.03 | 290.05 | ECE-S1HU472M |
| | 6800 | 1.74 | 3.3 | 30 | 40 | P6489-ND | 5.78 | 49.56 | 388.18 | ECE-S1HU682T |
| | 10000 | 2.12 | 4.3 | 30 | 50 | P6427-ND | 7.77 | 66.64 | 522.03 | ECE-S1HU103U |
| | 15000 | 2.59 | 4.7 | 35 | 51 | P6428-ND | 11.50 | 98.59 | 772.28 | ECE-S1HU153Z |
| 63 | 1000 | 0.63 | 1.5 | 22 | 25 | P6490-ND | 3.28 | 28.08 | 219.96 | ECE-S1JU102D |
| | 2200 | 1.11 | 1.9 | 22 | 40 | P6491-ND | 3.75 | 32.12 | 251.61 | ECE-S1JU222G |
| | 3300 | 1.36 | 2.4 | 25 | 40 | P6492-ND | 4.82 | 41.34 | 323.85 | ECE-S1JU332M |
| | 4700 | 1.63 | 2.9 | 25 | 50 | P6493-ND | 6.07 | 52.06 | 407.81 | ECE-S1JU472N |
| | 6800 | 1.96 | 3.8 | 30 | 50 | P6494-ND | 8.08 | 69.22 | 542.20 | ECE-S1JU682U |
| | 10000 | 2.38 | 4.2 | 35 | 51 | P6495-ND | 11.59 | 99.32 | 778.00 | ECE-S1JU103Z |
| 100 | 470 | 0.47 | 1.2 | 22 | 25 | P6496-ND | 3.60 | 30.84 | 241.58 | ECE-S2AU471D |
| | 680 | 0.68 | 1.4 | 22 | 31.5 | P6497-ND | 4.22 | 27.60 | 216.17 | ECE-S2AU681E |
| | 1000 | 1.00 | 1.5 | 22 | 40 | P6498-ND | 4.47 | 38.35 | 300.41 | ECE-S2AU102G |
| | 2200 | 1.40 | 2.3 | 25 | 50 | P6499-ND | 7.36 | 63.13 | 494.50 | ECE-S2AU222N |
| | 3300 | 1.72 | 3.0 | 30 | 50 | P6494-ND | 10.30 | 88.25 | 691.31 | ECE-S2AU332U |
| | 4700 | 2.05 | 3.4 | 35 | 51 | P6430-ND | 13.78 | 118.15 | 925.48 | ECE-S2AU472Z |
| 200 | 220 | 0.62 | 1.15 | 22 | 31.5 | P6540-ND | 3.21 | 27.49 | 215.35 | ECE-S2DU221E |
| | 470 | 0.91 | 1.7 | 25 | 40 | P6542-ND | 4.61 | 39.50 | 309.40 | ECE-S2DU471M |
| | 680 | 1.10 | 2.15 | 30 | 40 | P6544-ND | 6.26 | 53.66 | 420.35 | ECE-S2DU681T |
| | 1000 | 1.34 | 2.8 | 35 | 40 | P6546-ND | 8.40 | 72.00 | 564.01 | ECE-S2DU102Y |
| | 220 | 0.70 | 1.15 | 22 | 40 | P6548-ND | 3.79 | 32.50 | 254.61 | ECE-S2EU221G |
| | 330 | 0.86 | 1.4 | 25 | 40 | P6549-ND | 4.90 | 42.04 | 329.30 | ECE-S2EU331M |
| 250 | 470 | 1.02 | 1.7 | 30 | 40 | P6551-ND | 6.58 | 56.38 | 441.61 | ECE-S2EU471T |
| | 680 | 1.23 | 2.15 | 30 | 50 | P6553-ND | 8.40 | 72.00 | 564.01 | ECE-S2EU681U |
| | 1000 | 1.5 | 2.8 | 35 | 51 | P6431-ND | 10.90 | 93.40 | 731.66 | ECE-S2EU102Z |
| | 68 | 0.49 | .44 | 25 | 25 | P6432-ND | 3.54 | 30.38 | 237.98 | ECE-S2GU680J |
| | 100 | 0.6 | .59 | 25 | 31.5 | P6433-ND | 4.28 | 36.68 | 287.32 | ECE-S2GU101K |
| | 220 | 0.88 | .95 | 30 | 40 | P6435-ND | 7.28 | 62.40 | 488.77 | ECE-S2GU211G |
| 400 | 47 | 0.43 | .37 | 25 | 25 | P6438-ND | 3.58 | 30.66 | 240.16 | ECE-S2UW470J |
| | 68 | 0.52 | .48 | 25 | 31.5 | P6439-ND | 4.15 | 35.60 | 278.87 | ECE-S2UW680K |
| | 100 | 0.63 | .66 | 30 | 31.5 | P6440-ND | 5.55 | 47.57 | 372.64 | ECE-S2UW101R |
| | 220 | 0.94 | 1.2 | 35 | 40 | P6442-ND | 9.35 | 80.11 | 627.53 | ECE-S2UW211Y |
| | 330 | 1.15 | 1.4 | 35 | 51 | P6443-ND | 12.36 | 105.97 | 830.07 | ECE-S2UW331Z |

Ripple Voltage: The sum of the DC voltage plus the AC peak ripple voltage shall not exceed the rated DC voltage and there shall be no application of reversed voltage.

Ripple Current (mA):

| Frequency (Hz): | 50Hz | 60Hz | 120Hz | 500Hz | 1KHz | 10 ~ 50KHz |
|-----------------|------|------|-------|-------|------|------------|
| 16V ~ 100V: | 0.93 | 0.95 | 1.0 | 1.05 | 1.06 | 1.15 |
| 160V ~ 450V: | 0.75 | 0.8 | 1.0 | 1.2 | 1.25 | 1.4 |

D.C. Leakage Current: Measurements shall be made at rated working voltage at 20°C. The voltage shall be applied to the capacitor for a minimum period of 5 minutes before reading the leakage current. Maximum leakage current shall not exceed the value given by the following formula: 16 ~ 100V: in case of C X V = 100,000µFV I = 0.01CVµA max. in case of C X V = 100,000µFV I = 3 x C x VµA max. 160 ~ 450V: I = 3 x C x VµA max. where I = leakage current in mA, C = rated capacitance in µF V = DC rated WV in volts.

Load Life Test: The capacitor shall be subjected to application of the DC rated voltage with full rated ripple current in the specified ambient temperature for the specified life period. The capacitor shall then be removed from the test chamber and stabilized at room temperature. After reaching temperature stability, the capacitor shall not exceed the following specified values listed: Capacitance change within ±20% of the initial measured value. D.F. 150% of the initial limits. DC leakage current 5 initial limits. Load life for each series is as follows: TSW, TSU: 1,000 hrs. at 85°C; TSNH: 2,000 hrs. at 105°C.

| W.V. DC | Cap. (µF) | Max. DC (mA) Leakage Current | 85° (rms) Ripple Current (120Hz) A | Dimensions (mm) | | Digi-Key Part No. | Pricing | | Panasonic Part No. | |
|---|-----------|------------------------------|------------------------------------|-----------------|------|-------------------|---------|-------|--------------------|---------------|
| | | | | D | L | | 1 | 100 | | |
| TSUP Miniaturized Size General Purpose +85°C | | | | | | | | | | |
| 16 | 6800 | 0.98 | 3.15 | 20 | 25 | P6858-ND | 3.31 | 27.99 | 203.55 | ECC-S1CP682AA |
| | 8200 | 1.08 | 3.47 | 20 | 30 | P6859-ND | 3.46 | 29.25 | 212.75 | ECC-S1CP822AA |
| | 10000 | 1.20 | 3.78 | 20 | 35 | P6860-ND | 3.67 | 31.06 | 225.86 | ECC-S1CP103AA |
| | 10000 | 1.20 | 3.78 | 25 | 25 | P6861-ND | 3.17 | 26.81 | 195.00 | ECC-S1CP103CA |
| | 12000 | 1.31 | 4.52 | 20 | 35 | P6862-ND | 4.24 | 35.86 | 260.82 | ECC-S1CP123AA |
| | 12000 | 1.31 | 4.52 | 25 | 25 | P6863-ND | 3.52 | 29.79 | 216.66 | ECC-S1CP123CA |
| 25 | 15000 | 1.46 | 5.26 | 20 | 40 | P6864-ND | 4.65 | 39.37 | 286.35 | ECC-S1CP153AA |
| | 15000 | 1.46 | 5.26 | 25 | 30 | P6865-ND | 3.94 | 33.33 | 242.42 | ECC-S1CP153CA |
| | 18000 | 1.60 | 5.57 | 22 | 40 | P6866-ND | 4.24 | 35.86 | 260.82 | ECC-S1CP183BA |
| | 18000 | 1.60 | 5.57 | 25 | 30 | P6867-ND | 4.43 | 37.48 | 272.55 | ECC-S1CP183CA |
| | 22000 | 1.77 | 6.10 | 22 | 45 | P6868-ND | 4.80 | 40.64 | 295.55 | ECC-S1CP223BA |
| | 22000 | 1.77 | 6.10 | 30 | 30 | P6869-ND | 5.35 | 45.24 | 329.00 | ECC-S1CP223DA |
| 35 | 27000 | 1.97 | 6.31 | 25 | 45 | P6870-ND | 5.63 | 47.66 | 346.61 | ECC-S1CP273CA |
| | 27000 | 1.97 | 6.31 | 30 | 35 | P6871-ND | 6.08 | 51.49 | 374.44 | ECC-S1CP273DA |
| | 33000 | 2.17 | 6.84 | 25 | 50 | P6872-ND | 6.55 | 55.41 | 403.00 | ECC-S1CP333CA |
| | 33000 | 2.17 | 6.84 | 35 | 30 | P6873-ND | 7.21 | 61.04 | 443.90 | ECC-S1CP333EA |
| | 39000 | 2.36 | 6.94 | 30 | 45 | P6874-ND | 7.55 | 63.91 | 464.83 | ECC-S1CP393DA |
| | 39000 | 2.36 | 6.94 | 35 | 35 | P6875-ND | 7.71 | 65.21 | 474.26 | ECC-S1CP393EA |
| 50 | 47000 | 2.60 | 7.47 | 30 | 50 | P6876-ND | 8.69 | 73.50 | 534.52 | ECC-S1CP473DA |
| | 47000 | 2.60 | 7.47 | 35 | 40 | P6877-ND | 8.87 | 75.08 | 546.02 | ECC-S1CP473EA |
| | 56000 | 2.83 | 8.73 | 35 | 45 | P6878-ND | 10.08 | 85.26 | 620.08 | ECC-S1CP563EA |
| | 68000 | 3.12 | 9.05 | 35 | 50 | P6879-ND | 11.74 | 99.30 | 722.20 | ECC-S1CP683EA |
| | 4700 | 1.02 | 3.05 | 20 | 25 | P6880-ND | 3.30 | 27.96 | 203.32 | ECC-S1EP472AA |
| | 5600 | 1.12 | 3.36 | 20 | 30</ | | | | | |

Panasonic TS-Series Large Aluminum Electrolytic Capacitors, (cont.)

| W.V. DC | Cap. (µF) | Max. DC (mA) Leakage Current | 85° (rms) Ripple Current (120Hz) A | Dimensions (mm) | | Digi-Key Part No. | Pricing | Panasonic Part No. | | |
|---|--|------------------------------|------------------------------------|-----------------|----------|-------------------|----------|--------------------|---------------|---------------|
| | | | | D | L | | | | | |
| TSUP Miniaturized Size General Purpose +85°C (cont.) | | | | | | | | | | |
| 35 | 27000 | 2.91 | 6.84 | 35 | 45 | P6923-ND | 10.91 | 92.28 | 671.14 | ECO-S1VP273EA |
| | 33000 | 3.22 | 7.15 | 35 | 50 | P6924-ND | 13.69 | 115.87 | 842.72 | ECO-S1VP333EA |
| | 2200 | 0.99 | 2.26 | 20 | 25 | P6925-ND | 3.53 | 29.89 | 217.35 | ECO-S1HP222AA |
| | 2700 | 1.10 | 2.52 | 20 | 30 | P6926-ND | 3.82 | 32.32 | 235.06 | ECO-S1HP272AA |
| | 3300 | 1.21 | 2.73 | 20 | 35 | P6927-ND | 4.11 | 34.76 | 252.77 | ECO-S1HP332AA |
| | 3300 | 1.21 | 2.73 | 25 | 25 | P6928-ND | 3.34 | 28.27 | 205.60 | ECO-S1HP332CA |
| | 3900 | 1.32 | 2.75 | 20 | 40 | P6929-ND | 4.41 | 37.99 | 271.17 | ECO-S1HP392AA |
| | 3900 | 1.32 | 2.75 | 25 | 25 | P6930-ND | 3.66 | 30.93 | 224.94 | ECO-S1HP392CA |
| | 4700 | 1.45 | 3.03 | 22 | 35 | P6931-ND | 3.83 | 32.40 | 235.60 | ECO-S1HP472BA |
| | 4700 | 1.45 | 3.03 | 30 | 25 | P6932-ND | 4.41 | 37.29 | 271.17 | ECO-S1HP472BA |
| | 5600 | 1.58 | 3.42 | 22 | 40 | P6933-ND | 4.30 | 36.37 | 264.50 | ECO-S1HP562BA |
| | 5600 | 1.58 | 3.42 | 30 | 30 | P6934-ND | 4.86 | 41.14 | 299.23 | ECO-S1HP562DA |
| 50 | 6800 | 1.74 | 3.85 | 22 | 50 | P6935-ND | 4.92 | 41.64 | 302.80 | ECO-S1HP682BA |
| | 6800 | 1.74 | 3.85 | 30 | 30 | P6936-ND | 5.48 | 46.37 | 337.20 | ECO-S1HP682DA |
| | 8200 | 1.92 | 4.41 | 25 | 45 | P6937-ND | 5.73 | 48.45 | 352.36 | ECO-S1HP822CA |
| | 8200 | 1.92 | 4.41 | 30 | 35 | P6938-ND | 6.18 | 52.28 | 380.19 | ECO-S1HP822DA |
| | 10000 | 2.12 | 4.97 | 25 | 50 | P6939-ND | 6.64 | 56.21 | 408.80 | ECO-S1HP103CA |
| | 10000 | 2.12 | 4.97 | 35 | 30 | P6940-ND | 7.35 | 62.17 | 452.18 | ECO-S1HP103DA |
| | 12000 | 2.32 | 5.58 | 30 | 45 | P6941-ND | 8.02 | 67.90 | 493.81 | ECO-S1HP123DA |
| | 12000 | 2.32 | 5.58 | 35 | 35 | P6942-ND | 8.21 | 69.48 | 505.31 | ECO-S1HP123EA |
| | 15000 | 2.59 | 6.44 | 30 | 50 | P6943-ND | 9.87 | 83.52 | 607.43 | ECO-S1HP153EA |
| | 15000 | 2.59 | 6.44 | 35 | 40 | P6944-ND | 10.02 | 84.78 | 616.60 | ECO-S1HP153EA |
| | 18000 | 2.84 | 6.94 | 35 | 45 | P6945-ND | 12.13 | 102.65 | 746.58 | ECO-S1HP183EA |
| | 22000 | 3.15 | 7.57 | 35 | 50 | P6946-ND | 14.71 | 124.47 | 905.20 | ECO-S1HP223EA |
| 100 | 1000 | 0.94 | 1.96 | 20 | 35 | P6947-ND | 4.30 | 36.37 | 264.50 | ECO-S2AP102AA |
| | 1000 | 0.94 | 1.96 | 25 | 25 | P6948-ND | 4.27 | 36.14 | 262.80 | ECO-S2AP102CA |
| | 1200 | 1.03 | 2.31 | 20 | 40 | P6949-ND | 5.65 | 47.82 | 347.76 | ECO-S2AP122AA |
| | 1500 | 1.16 | 2.57 | 22 | 40 | P6950-ND | 4.49 | 37.95 | 276.03 | ECO-S2AP152BA |
| | 1500 | 1.16 | 2.57 | 22 | 40 | P6951-ND | 5.01 | 42.38 | 308.20 | ECO-S2AP152DA |
| | 1500 | 1.16 | 2.57 | 30 | 25 | P6992-ND | 5.08 | 47.18 | 343.16 | ECO-S2AP152EA |
| | 1800 | 1.27 | 2.84 | 22 | 45 | P6993-ND | 5.58 | 47.18 | 343.16 | ECO-S2AP182BA |
| | 1800 | 1.27 | 2.84 | 30 | 30 | P6101-ND | 6.14 | 51.96 | 377.89 | ECO-S2AP182DA |
| | 2200 | 1.40 | 3.14 | 22 | 50 | P6102-ND | 6.25 | 52.91 | 384.79 | ECO-S2AP222BA |
| | 2200 | 1.40 | 3.14 | 30 | 30 | P6103-ND | 6.79 | 57.48 | 418.00 | ECO-S2AP222DA |
| | 2700 | 1.55 | 3.71 | 25 | 45 | P6104-ND | 7.35 | 62.17 | 452.18 | ECO-S2AP272CA |
| | 2700 | 1.55 | 3.71 | 30 | 35 | P6105-ND | 7.80 | 65.97 | 479.78 | ECO-S2AP272DA |
| 200 | 3300 | 1.72 | 4.06 | 25 | 50 | P6106-ND | 8.56 | 72.39 | 526.47 | ECO-S2AP332CA |
| | 3300 | 1.72 | 4.06 | 30 | 40 | P6107-ND | 9.00 | 76.18 | 554.07 | ECO-S2AP332DA |
| | 3900 | 1.83 | 4.54 | 35 | 45 | P6108-ND | 10.17 | 85.08 | 621.64 | ECO-S2AP392CA |
| | 3900 | 1.87 | 4.54 | 35 | 35 | P6109-ND | 10.36 | 87.66 | 637.56 | ECO-S2AP392EA |
| | 4700 | 2.05 | 5.13 | 30 | 50 | P6110-ND | 11.82 | 100.02 | 727.40 | ECO-S2AP472DA |
| | 4700 | 2.05 | 5.13 | 35 | 40 | P6111-ND | 12.05 | 101.99 | 741.75 | ECO-S2AP472EA |
| | 5600 | 2.24 | 5.75 | 35 | 45 | P6112-ND | 14.17 | 119.86 | 871.70 | ECO-S2AP562EA |
| | 6800 | 2.47 | 6.60 | 35 | 50 | P6113-ND | 17.08 | 144.51 | 1051.00 | ECO-S2AP682EA |
| | 270 | 0.69 | 1.41 | 20 | 30 | P6114-ND | 3.88 | 32.80 | 238.51 | ECO-S2DP271AA |
| | 270 | 0.69 | 1.41 | 22 | 25 | P6115-ND | 2.94 | 24.89 | 181.01 | ECO-S2DP271BA |
| | 330 | 0.77 | 1.56 | 20 | 35 | P6116-ND | 4.14 | 35.07 | 255.07 | ECO-S2DP331AA |
| | 330 | 0.77 | 1.56 | 25 | 25 | P6117-ND | 3.39 | 28.68 | 208.61 | ECO-S2DP331CA |
| 390 | 0.83 | 1.68 | 25 | 40 | P6118-ND | 4.81 | 40.95 | 291.14 | ECO-S2DP391BA | |
| 390 | 0.83 | 1.68 | 25 | 25 | P6119-ND | 3.69 | 31.25 | 227.24 | ECO-S2DP391CA | |
| 470 | 0.91 | 1.85 | 22 | 35 | P6120-ND | 3.84 | 32.51 | 236.44 | ECO-S2DP471BA | |
| 470 | 0.91 | 1.85 | 30 | 25 | P6121-ND | 4.41 | 37.29 | 271.17 | ECO-S2DP471DA | |
| 560 | 1.00 | 2.43 | 22 | 40 | P6122-ND | 4.33 | 36.65 | 266.57 | ECO-S2DP561BA | |
| 560 | 1.00 | 2.43 | 30 | 25 | P6123-ND | 4.90 | 41.43 | 301.30 | ECO-S2DP561DA | |
| 400 | 680 | 1.10 | 2.68 | 22 | 45 | P6124-ND | 4.92 | 41.64 | 302.80 | ECO-S2DP681BA |
| | 680 | 1.10 | 2.68 | 30 | 30 | P6125-ND | 5.50 | 46.55 | 338.56 | ECO-S2DP681DA |
| | 820 | 1.21 | 2.93 | 25 | 45 | P6126-ND | 5.69 | 48.13 | 350.06 | ECO-S2DP821CA |
| | 820 | 1.21 | 2.93 | 35 | 25 | P6127-ND | 6.36 | 53.86 | 391.69 | ECO-S2DP821EA |
| | 1000 | 1.34 | 3.25 | 25 | 50 | P6128-ND | 6.65 | 56.21 | 408.80 | ECO-S2DP102CA |
| | 1000 | 1.34 | 3.25 | 30 | 40 | P6129-ND | 7.15 | 62.17 | 452.18 | ECO-S2DP102EA |
| | 1200 | 1.46 | 3.50 | 30 | 45 | P6130-ND | 7.76 | 65.69 | 477.71 | ECO-S2DP122DA |
| | 1200 | 1.46 | 3.50 | 35 | 35 | P6131-ND | 7.95 | 67.27 | 489.21 | ECO-S2DP122EA |
| | 1500 | 1.64 | 3.87 | 30 | 50 | P6132-ND | 9.38 | 79.38 | 577.30 | ECO-S2DP152DA |
| | 1500 | 1.64 | 3.87 | 35 | 40 | P6133-ND | 9.57 | 80.96 | 588.80 | ECO-S2DP152EA |
| | 1800 | 1.80 | 4.32 | 35 | 45 | P6134-ND | 11.04 | 93.42 | 679.42 | ECO-S2DP182EA |
| | 2200 | 1.98 | 4.92 | 35 | 50 | P6135-ND | 13.13 | 111.13 | 808.20 | ECO-S2DP222EA |
| 500 | 68 | 0.49 | 0.76 | 20 | 30 | P6136-ND | 3.92 | 33.17 | 241.27 | ECO-S2PG680AA |
| | 68 | 0.49 | 0.76 | 22 | 25 | P6137-ND | 3.05 | 25.81 | 187.68 | ECO-S2PG680BA |
| | 82 | 0.54 | 0.83 | 20 | 35 | P6138-ND | 4.22 | 35.70 | 259.67 | ECO-S2PG820AA |
| | 82 | 0.54 | 0.83 | 22 | 30 | P6139-ND | 3.28 | 27.83 | 201.71 | ECO-S2PG820BA |
| | 100 | 0.60 | 0.92 | 20 | 40 | P6140-ND | 4.52 | 38.23 | 278.07 | ECO-S2PG101AA |
| | 100 | 0.60 | 0.92 | 25 | 25 | P6141-ND | 3.75 | 31.76 | 231.00 | ECO-S2PG101CA |
| | 120 | 0.65 | 1.02 | 20 | 40 | P6142-ND | 4.90 | 41.43 | 301.30 | ECO-S2PG121CA |
| | 120 | 0.65 | 1.02 | 25 | 30 | P6143-ND | 4.14 | 35.07 | 255.07 | ECO-S2PG121EA |
| | 150 | 0.73 | 1.16 | 22 | 40 | P6144-ND | 4.44 | 37.60 | 273.47 | ECO-S2GP151BA |
| | 150 | 0.73 | 1.16 | 30 | 25 | P6145-ND | 5.01 | 42.38 | 308.20 | ECO-S2GP151DA |
| | 180 | 0.80 | 1.44 | 22 | 45 | P6146-ND | 5.05 | 42.73 | 310.73 | ECO-S2GP181BA |
| | 180 | 0.80 | 1.44 | 30 | 30 | P6147-ND | 5.61 | 47.50 | 345.46 | ECO-S2GP181DA |
| 600 | 220 | 0.88 | 1.49 | 22 | 50 | P6148-ND | 5.80 | 49.08 | 356.96 | ECO-S2GP221BA |
| | 220 | 0.88 | 1.49 | 30 | 30 | P6149-ND | 6.34 | 53.65 | 390.20 | ECO-S2GP221DA |
| | 270 | 0.98 | 1.68 | 25 | 45 | P6150-ND | 6.90 | 58.37 | 424.35 | ECO-S2GP271CA |
| | 270 | 0.98 | 1.67 | 35 | 30 | P6151-ND | 7.54 | 63.83 | 464.20 | ECO-S2GP271EA |
| | 330 | 1.08 | 1.90 | 30 | 40 | P6152-ND | 8.03 | 67.98 | 494.40 | ECO-S2GP331DA |
| | 330 | 1.08 | 1.90 | 35 | 35 | P6153-ND | 8.25 | 69.83 | 507.84 | ECO-S2GP331EA |
| | 390 | 1.18 | 2.13 | 30 | 45 | P6154-ND | 9.31 | 78.75 | 572.70 | ECO-S2GP391DA |
| | 390 | 1.18 | 2.13 | 35 | 40 | P6155-ND | 9.49 | 80.33 | 584.20 | ECO-S2GP391EA |
| | 470 | 1.30 | 2.39 | 35 | 45 | P6156-ND | 10.96 | 92.73 | 674.40 | ECO-S2GP471EA |
| | 560 | 1.41 | 2.69 | 35 | 50 | P6157-ND | 12.89 | 109.04 | 793.04 | ECO-S2GP561EA |
| | TSNH Long Life and High Ripple Current +105°C | | | | | | | | | |
| | 16 | 4700 | 0.75 | 2.0* | 22 | 31.5 | P6450-ND | 1.10 | 26.59 | 208.27 |
| 6800 | | 0.98 | 2.4* | 22 | 40 | P6451-ND | 3.52 | 30.17 | 236.34 | ECE-S1CG682G |
| 10000 | | 1.2 | 2.9* | 25 | 40 | P6452-ND | 4.14 | 35.50 | 278.05 | ECE-S1CG103M |
| 15000 | | 1.46 | 3.5* | 25 | 50 | P6453-ND | 5.18 | 44.37 | 347.57 | ECE-S1CG153N |
| 22000 | | 1.77 | 4.2* | 30 | 50 | P6454-ND | 7.25 | 62.12 | 486.59 | ECE-S1CG223U |
| 33000 | | 2.17 | 4.8* | 35 | 51 | P6455-ND | 10.56 | 90.55 | 709.21 | ECE-S1CG332E |
| 3300 | | 0.86 | 1.7* | 22 | 31.5 | P6456-ND | 3.07 | 26.27 | 205.87 | ECE-S1EG103E |
| 4700 | | 1.02 | 2.2* | 22 | 40 | P6457-ND | 3.31 | 28.40 | 222.44 | ECE-S1EG472G |
| 6800 | | 1.23 | 2.6* | 25 | 40 | P6458-ND | 4.35 | 37.27 | 291.95 | ECE-S1EG682M |
| 10000 | | 1.50 | 3.1* | 25 | 50 | P6459-ND | 5.38 | 46.14 | 361.47 | ECE-S1EG103N |
| 22000 | | 2.22 | 4.0* | 35 | 51 | P6461-ND | 10.98 | 94.10 | 737.11 | ECE-S1EG223Z |
| 35 | | 2200 | 0.77 | 1.6* | 22 | 31.5 | P6462-ND | 2.91 | 24.92 | 195.18 |
| | 2200 | 0.77 | 1.6* | 25 | 25 | P6589-ND | 2.97 | 25.44 | 199.27 | ECE-S1VG222J |
| | 3300 | 1.01 | 1.8* | 22 | 40 | P6463-ND | 3.31 | 28.40 | 222.44 | ECE-S1VG332G |
| | 4700 | 1.21 | 2.3* | 25 | 40 | P6464-ND | 3.90 | 33.44 | 261.97 | ECE-S1VG472M |
| | 6800 | 1.46 | 2.9* | 25 | 50 | P6465-ND | 4.78 | 40.99 | 321.12 | ECE-S1VG682N |
| | 10000 | 1.77 | 3.5* | 30 | 50 | P6466-ND | 6.47 | 55.47 | 434.52 | ECE-S1VG103U |
| | 15000 | 2.17 | 3.9* | 35 | 51 | P6467-ND | 9.32 | 79.87 | 625.62 | ECE-S1VG153Z |
| | 50 | 2200 | 0.99 | 1.9 | 22 | 40 | P6469-ND | 3.27 | | |

Panasonic TS-Series Large Aluminum Electrolytic Capacitors, (cont.)

| W.V. DC | Cap. (µF) | Max. DC (mA) Leakage Current | 105° (rms) Ripple Current (120Hz) A | Dimensions (mm) | | Digi-Key Part No. | Pricing | Panasonic Part No. |
|--|-----------|------------------------------|-------------------------------------|-----------------|----------|-------------------|---------------------|--------------------|
| | | | | D | L | | | |
| TSHA Miniaturized Size, Long Life and High Ripple Current +105°C (cont.) | | | | | | | | |
| 50 | 8200 | 1.92 | 3.60 | 35 | 35 | P6689-ND | 6.54 55.31 402.27 | ECO-S1HA822EA |
| | 10000 | 2.12 | 4.00 | 30 | 50 | P6690-ND | 7.36 62.30 453.10 | ECO-S1HA103DA |
| | 10000 | 2.12 | 4.00 | 35 | 40 | P6691-ND | 7.53 63.69 463.20 | ECO-S1HA103EA |
| | 12000 | 2.32 | 4.50 | 35 | 45 | P6692-ND | 8.50 71.94 523.20 | ECO-S1HA123EA |
| | 15000 | 2.59 | 4.80 | 35 | 50 | P6693-ND | 10.15 85.89 624.68 | ECO-S1HA153EA |
| | 560 | 0.70 | 1.10 | 20 | 30 | P6694-ND | 3.97 33.62 244.49 | ECO-S2AA561AA |
| | 600 | 0.70 | 1.10 | 22 | 25 | P6695-ND | 3.37 28.56 207.69 | ECO-S2AA561BA |
| | 820 | 0.85 | 1.40 | 20 | 35 | P6696-ND | 4.31 36.50 265.42 | ECO-S2AA821AA |
| | 820 | 0.85 | 1.40 | 25 | 25 | P6697-ND | 3.56 30.14 219.19 | ECO-S2AA821BA |
| | 1000 | 0.94 | 1.70 | 20 | 40 | P6698-ND | 4.50 38.11 277.15 | ECO-S2AA102AA |
| 100 | 1000 | 0.94 | 1.70 | 25 | 30 | P6699-ND | 3.94 33.33 242.42 | ECO-S2AA102CA |
| | 1200 | 1.03 | 1.80 | 22 | 40 | P6700-ND | 4.37 36.97 268.87 | ECO-S2AA122BA |
| | 1200 | 1.03 | 1.80 | 30 | 25 | P6701-ND | 4.94 41.78 303.83 | ECO-S2AA122DA |
| | 1500 | 1.16 | 2.10 | 22 | 45 | P6702-ND | 5.43 45.92 333.96 | ECO-S2AA152BA |
| | 1500 | 1.16 | 2.10 | 35 | 25 | P6712-ND | 6.18 52.28 380.19 | ECO-S2AA152EA |
| | 1800 | 1.27 | 2.30 | 25 | 45 | P6728-ND | 6.02 50.95 370.53 | ECO-S2AA182CA |
| | 1800 | 1.27 | 2.30 | 35 | 30 | P6806-ND | 6.97 58.98 428.95 | ECO-S2AA182EA |
| | 2200 | 1.40 | 2.60 | 25 | 50 | P6994-ND | 6.75 57.11 415.38 | ECO-S2AA222CA |
| | 2200 | 1.40 | 2.60 | 35 | 30 | P6995-ND | 7.72 65.34 475.18 | ECO-S2AA222EA |
| | 2700 | 1.55 | 2.90 | 30 | 45 | P6807-ND | 8.75 74.07 538.66 | ECO-S2AA272EA |
| 200 | 2700 | 1.55 | 2.90 | 35 | 35 | P6808-ND | 8.97 75.87 551.77 | ECO-S2AA272EA |
| | 3300 | 1.72 | 3.20 | 30 | 50 | P6809-ND | 9.89 83.68 608.58 | ECO-S2AA332DA |
| | 3300 | 1.72 | 3.20 | 35 | 40 | P6810-ND | 10.38 87.79 638.48 | ECO-S2AA332EA |
| | 3900 | 1.87 | 3.60 | 35 | 45 | P6811-ND | 11.65 98.54 716.68 | ECO-S2AA392EA |
| | 4700 | 2.05 | 3.80 | 35 | 50 | P6812-ND | 13.34 112.90 821.10 | ECO-S2AA472EA |
| | 220 | 0.62 | 1.00 | 20 | 30 | P6813-ND | 3.46 29.25 212.75 | ECO-S2DA221AA |
| | 220 | 0.62 | 1.00 | 22 | 25 | P6814-ND | 3.17 26.81 195.00 | ECO-S2DA221BA |
| | 270 | 0.69 | 1.10 | 20 | 35 | P6815-ND | 4.11 34.79 253.00 | ECO-S2DA271AA |
| | 270 | 0.69 | 1.10 | 25 | 25 | P6816-ND | 3.44 29.70 223.64 | ECO-S2DA271BA |
| | 330 | 0.77 | 1.20 | 20 | 40 | P6817-ND | 4.44 37.60 273.47 | ECO-S2DA331AA |
| 400 | 330 | 0.77 | 1.20 | 25 | 25 | P6818-ND | 3.88 32.86 239.00 | ECO-S2DA331CA |
| | 390 | 0.83 | 1.30 | 22 | 35 | P6820-ND | 4.01 33.97 247.02 | ECO-S2DA391BA |
| | 390 | 0.83 | 1.30 | 30 | 25 | P6821-ND | 4.58 38.74 281.75 | ECO-S2DA391DA |
| | 470 | 0.91 | 1.40 | 22 | 40 | P6822-ND | 4.45 37.62 273.60 | ECO-S2DA471BA |
| | 470 | 0.91 | 1.40 | 30 | 25 | P6822-ND | 5.03 42.54 309.35 | ECO-S2DA471DA |
| | 560 | 1.00 | 1.50 | 22 | 45 | P6823-ND | 5.07 42.88 311.88 | ECO-S2DA561BA |
| | 560 | 1.00 | 1.50 | 30 | 30 | P6824-ND | 5.63 47.66 346.61 | ECO-S2DA561DA |
| | 680 | 1.10 | 1.70 | 25 | 40 | P6825-ND | 5.79 48.96 356.04 | ECO-S2DA681CA |
| | 680 | 1.10 | 1.70 | 30 | 30 | P6826-ND | 6.21 52.55 382.22 | ECO-S2DA681EA |
| | 820 | 1.21 | 2.00 | 25 | 50 | P6827-ND | 6.51 55.11 403.80 | ECO-S2DA821CA |
| 200 | 820 | 1.21 | 2.00 | 35 | 30 | P6830-ND | 7.21 61.04 443.90 | ECO-S2DA821EA |
| | 1000 | 1.34 | 2.20 | 30 | 45 | P6831-ND | 7.68 64.96 472.40 | ECO-S2DA102DA |
| | 1000 | 1.34 | 2.20 | 35 | 35 | P6832-ND | 7.89 66.79 485.76 | ECO-S2DA102EA |
| | 1200 | 1.46 | 2.30 | 30 | 50 | P6833-ND | 9.02 76.34 555.22 | ECO-S2DA122DA |
| | 1200 | 1.46 | 2.30 | 35 | 40 | P6834-ND | 9.17 77.63 564.60 | ECO-S2DA122EA |
| | 1500 | 1.64 | 2.50 | 35 | 50 | P6835-ND | 10.90 92.26 671.00 | ECO-S2DA152EA |
| | 56 | 0.44 | 0.51 | 20 | 30 | P6836-ND | 4.07 34.44 250.47 | ECO-S2GA560AA |
| | 56 | 0.44 | 0.51 | 22 | 25 | P6837-ND | 3.34 28.27 205.60 | ECO-S2GA560BA |
| | 68 | 0.49 | 0.56 | 20 | 35 | P6838-ND | 4.41 37.29 271.17 | ECO-S2GA680AA |
| | 68 | 0.49 | 0.56 | 25 | 25 | P6839-ND | 3.64 30.83 224.20 | ECO-S2GA680CA |
| 82 | 0.54 | 0.64 | 20 | 40 | P6840-ND | 4.59 38.87 282.67 | ECO-S2GA820CA | |
| 400 | 82 | 0.54 | 0.64 | 25 | 25 | P6841-ND | 3.84 32.51 236.44 | ECO-S2GA820EA |
| | 100 | 0.60 | 0.69 | 22 | 35 | P6842-ND | 3.98 33.69 245.00 | ECO-S2GA101BA |
| | 100 | 0.60 | 0.69 | 25 | 30 | P6843-ND | 4.18 35.39 257.37 | ECO-S2GA101CA |
| | 120 | 0.65 | 0.75 | 22 | 40 | P6844-ND | 4.56 38.58 280.60 | ECO-S2GA121BA |
| | 120 | 0.65 | 0.75 | 30 | 25 | P6845-ND | 5.11 43.20 314.20 | ECO-S2GA121DA |
| | 150 | 0.73 | 0.82 | 22 | 50 | P6846-ND | 5.35 45.29 329.36 | ECO-S2GA151BA |
| | 150 | 0.73 | 0.82 | 30 | 30 | P6847-ND | 5.92 50.06 364.09 | ECO-S2GA151DA |
| | 180 | 0.80 | 0.90 | 25 | 45 | P6848-ND | 6.22 52.59 382.49 | ECO-S2GA181CA |
| | 180 | 0.80 | 0.90 | 35 | 25 | P6849-ND | 6.90 58.35 424.35 | ECO-S2GA181EA |
| | 220 | 0.88 | 1.00 | 25 | 50 | P6850-ND | 7.35 62.17 452.18 | ECO-S2GA221CA |
| 200 | 220 | 0.88 | 1.00 | 35 | 30 | P6851-ND | 8.02 67.90 493.81 | ECO-S2GA221EA |
| | 270 | 0.98 | 1.10 | 30 | 45 | P6852-ND | 8.78 74.26 540.04 | ECO-S2GA271DA |
| | 270 | 0.98 | 1.10 | 35 | 35 | P6853-ND | 8.97 75.87 551.77 | ECO-S2GA271EA |
| | 330 | 1.08 | 1.20 | 30 | 50 | P6854-ND | 10.25 86.72 630.66 | ECO-S2GA331DA |
| | 330 | 1.08 | 1.20 | 35 | 40 | P6855-ND | 10.40 87.97 639.80 | ECO-S2GA331EA |
| | 390 | 1.18 | 1.30 | 35 | 45 | P6856-ND | 11.87 100.41 730.25 | ECO-S2GA391EA |
| | 470 | 1.30 | 1.40 | 35 | 50 | P6857-ND | 13.71 116.03 843.87 | ECO-S2GA471EA |

| W.V. DC | Cap. (µF) | Max. DC (mA) Leakage Current | 105° (rms) Ripple Current (120Hz) A | Dimensions (mm) | | Digi-Key Part No. | Pricing | Panasonic Part No. |
|---|-----------|------------------------------|-------------------------------------|-----------------|----|-------------------|---------------------|--------------------|
| | | | | D | L | | | |
| TSHB Compact Size, Long Life and High Ripple Current +105°C | | | | | | | | |
| 50 | 390 | 0.83 | 1.30 | 22 | 30 | P10106-ND | 4.34 36.71 267.01 | ECO-S2DB391BA |
| | 390 | 0.83 | 1.30 | 25 | 25 | P10107-ND | 4.55 38.47 279.78 | ECO-S2DB391CA |
| | 470 | 0.91 | 1.40 | 22 | 35 | P10108-ND | 4.83 40.90 297.47 | ECO-S2DB471BA |
| | 470 | 0.91 | 1.40 | 25 | 30 | P10109-ND | 5.04 42.63 310.02 | ECO-S2DB471CA |
| | 560 | 1.00 | 1.50 | 30 | 25 | P10110-ND | 6.09 51.56 374.98 | ECO-S2DB561DA |
| | 820 | 1.21 | 2.00 | 25 | 45 | P10111-ND | 7.08 59.88 435.46 | ECO-S2DB821CA |
| | 820 | 1.21 | 2.00 | 35 | 25 | P10112-ND | 7.81 66.07 480.48 | ECO-S2DB821EA |
| | 1000 | 1.34 | 2.20 | 25 | 50 | P10113-ND | 7.22 61.11 444.42 | ECO-S2DB102CA |
| | 1000 | 1.34 | 2.20 | 35 | 30 | P10114-ND | 7.95 67.30 489.44 | ECO-S2DB102EA |
| | 1200 | 1.46 | 2.30 | 30 | 40 | P10115-ND | 8.40 71.09 516.99 | ECO-S2DB122DA |
| 100 | 1200 | 1.46 | 2.30 | 35 | 35 | P10116-ND | 8.60 72.81 529.54 | ECO-S2DB122EA |
| | 1500 | 1.64 | 2.50 | 30 | 50 | P10117-ND | 10.15 85.90 624.74 | ECO-S2DB152DA |
| | 1500 | 1.64 | 2.50 | 35 | 40 | P10118-ND | 10.36 87.63 637.28 | ECO-S2DB152EA |
| | 1800 | 1.80 | 2.70 | 35 | 45 | P10119-ND | 11.95 101.09 735.17 | ECO-S2DB182EA |
| | 2200 | 1.98 | 2.90 | 35 | 50 | P10120-ND | 14.27 120.74 878.08 | ECO-S2DB222EA |
| | 330 | 0.86 | 1.20 | 25 | 30 | P10121-ND | 5.22 44.20 321.44 | ECO-S2EB331CA |
| | 390 | 0.93 | 1.30 | 30 | 25 | P10122-ND | 6.24 52.82 384.16 | ECO-S2EB391DA |
| | 470 | 1.02 | 1.40 | 22 | 50 | P10123-ND | 6.40 54.15 393.79 | ECO-S2EB471BA |
| | 470 | 1.02 | 1.40 | 30 | 30 | P10124-ND | 6.89 58.30 424.03 | ECO-S2EB471CA |
| | 560 | 1.12 | 1.50 | 25 | 45 | P10125-ND | 7.30 61.75 449.12 | ECO-S2EB561CA |
| 250 | 560 | 1.12 | 1.50 | 35 | 25 | P10126-ND | 8.04 68.01 494.59 | ECO-S2EB561EA |
| | 680 | 1.23 | 1.70 | 25 | 50 | P10127-ND | 8.60 72.81 529.54 | ECO-S2EB681CA |
| | 680 | 1.23 | 1.70 | 35 | 30 | P10128-ND | 8.81 74.54 542.08 | ECO-S2EB681EA |
| | 820 | 1.35 | 2.00 | 30 | 45 | P10129-ND | 9.99 84.52 614.66 | ECO-S2EB821CA |
| | 820 | 1.35 | 2.00 | 35 | 35 | P10130-ND | 10.19 86.24 627.20 | ECO-S2EB821EA |
| | 1000 | 1.50 | 2.20 | 30 | 50 | P10131-ND | 10.11 85.56 622.27 | ECO-S2EB102DA |
| | 1000 | 1.50 | 2.20 | 35 | 40 | P10132-ND | 10.32 87.32 635.04 | ECO-S2EB102EA |
| | 1200 | 1.64 | 2.30 | 35 | 45 | P10133-ND | 11.74 99.36 722.62 | ECO-S2EB122EA |
| | 1500 | 1.83 | 2.50 | 35 | 50 | P10134-ND | 14.19 120.06 873.15 | ECO-S2EB152EA |
| | 400 | 82 | 0.54 | 0.64 | 22 | 30 | P10135-ND | 3.95 33.45 244.26 |
| 100 | | 0.60 | 0.69 | 22 | 30 | P10136-ND | 4.32 36.59 266.11 | ECO-S2GB101BA |
| 100 | | 0.60 | 0.69 | 25 | 25 | P10137-ND | 4.53 38.27 278.66 | ECO-S2GB101CA |
| 120 | | 0.65 | 0.75 | 22 | 35 | P10138-ND | 4.94 41.76 303.74 | ECO-S2GB121BA |
| 120 | | 0.65 | 0.75 | 25 | 30 | P10139-ND | 5.14 43.49 316.29 | ECO-S2GB121CA |
| 150 | | 0.73 | 0.82 | 22 | 40 | P10140-ND | 5.79 49.00 356.38 | ECO-S2GB151BA |
| 150 | | 0.73 | 0.82 | 30 | 25 | P10141-ND | 6.40 54.15 393.79 | ECO-S2GB151DA |
| 180 | | 0.80 | 0.90 | 22 | 45 | P10142-ND | 6.73 56.95 414.18 | ECO-S2GB181BA |
| 180 | | 0.80 | 0.90 | 30 | 30 | P10143-ND | 7.22 61.11 444.42 | ECO-S2GB181DA |
| 220 | | 0.88 | 1.00 | 25 | 45 | P10144-ND | 7.95 67.30 489.44 | ECO-S2GB221CA |
| 500 | 220 | 0.88 | 1.00 | 35 | 25 | P10145-ND | 8.69 73.49 534.46 | ECO-S2GB221EA |
| | 270 | 0.98 | 1.10 | 25 | 50 | P10146-ND | 9.50 80.39 584.64 | ECO-S2GB271CA |
| | 270 | 0.98 | 1.10 | 35 | 30 | P10147-ND | 9.70 82.11 597.18 | ECO-S2GB271EA |
| | 330 | 1.08 | 1.20 | 30 | 45 | P10148-ND | 11.09 93.82 682.30 | ECO-S2GB331DA |
| | 330 | 1.08 | 1.20 | 35 | 35 | P10149-ND | 11.29 95.57 695.07 | ECO-S2GB331EA |
| | 390 | 1.18 | 1.30 | 30 | 50 | P10150-ND | 11.99 101.49 738.08 | ECO-S2GB391CA |
| | 390 | 1.18 | 1.30 | 35 | 40 | P10151-ND | 12.85 108.69 790.50 | ECO-S2GB391EA |
| | 470 | 1.30 | 1.40 | 35 | 45 | P10152-ND | 14.84 125.60 913.4 | |

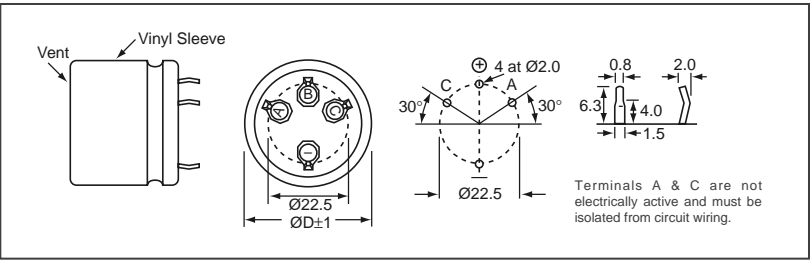
Panasonic T-UP Series Snap-In Capacitors

FEATURES:

- 4 terminal mounting provides stability and keyed polarity
- Replaces T-U series with higher capacitance and ripple current per case size
- General purpose rated at 85°C, 2000 hour endurance
- 35 and 40 mm diameter case sizes up to 80 mm in length
- Top vent construction

| | | |
|------------------------------|---|---------------|
| Rated Working Voltage | 16 ~ 250 VDC | 350 ~ 450 VDC |
| Operating Temperature | -40 ~ +85°C | -25 ~ +85°C |
| Nominal Capacitance | 1500 ~ 120000µF | 470 ~ 1800µF |
| Endurance | 2000 hours at +85°C with maximum specified ripple current | |

| | | | | | | | | | | | | |
|--------------------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Rated DC Voltage: | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 200 | 250 | 350 | 400 | 450 |
| Surge Voltage: | 20 | 32 | 44 | 63 | 79 | 100 | 125 | 250 | 300 | 400 | 450 | 500 |



| Working Volt. DC | Cap (µF) | Size (mm) D X L | Max. 85°C Ripple (Arms) | | Max. 20°C, 120Hz ESR (Ω) | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|------------------|----------|-----------------|-------------------------|-----------|--------------------------|-------------------|---------|--------|--------|--------|---------|--------------------|
| | | | 120 Hz | 10k-50kHz | | | 1 | 5 | 10 | 25 | 50 | |
| 16 | 68000 | 35 x 50 | 9.05 | 10.41 | 0.018 | P10000-ND | 9.71 | 46.60 | 89.31 | 213.57 | 388.30 | ECE-T1CP683EA |
| | 82000 | 35 x 60 | 9.94 | 11.43 | 0.018 | P10001-ND | 11.45 | 54.97 | 105.36 | 251.94 | 456.08 | ECE-T1CP823EA |
| | 82000 | 40 x 50 | 10.29 | 11.83 | 0.019 | P10003-ND | 11.63 | 55.82 | 106.98 | 255.82 | 465.14 | ECE-T1CP823FA |
| | 100000 | 35 x 80 | 11.00 | 12.65 | 0.019 | P10002-ND | 14.68 | 70.45 | 135.03 | 322.91 | 587.10 | ECE-T1CP104EA |
| | 100000 | 40 x 60 | 11.36 | 13.06 | 0.020 | P10004-ND | 13.94 | 66.90 | 128.23 | 306.64 | 557.54 | ECE-T1CP104FA |
| | 120000 | 40 x 80 | 12.42 | 14.28 | 0.018 | P10005-ND | 17.09 | 82.04 | 157.24 | 376.01 | 683.65 | ECE-T1CP124FA |
| 25 | 47000 | 35 x 50 | 8.00 | 9.20 | 0.017 | P10006-ND | 9.63 | 46.22 | 88.59 | 211.84 | 385.17 | ECE-T1EP473EA |
| | 56000 | 35 x 60 | 8.64 | 9.94 | 0.017 | P10007-ND | 11.28 | 54.16 | 103.81 | 248.25 | 451.36 | ECE-T1EP563EA |
| | 56000 | 40 x 50 | 8.96 | 10.30 | 0.018 | P10009-ND | 11.46 | 55.00 | 105.41 | 252.07 | 458.30 | ECE-T1EP563FA |
| | 68000 | 35 x 80 | 9.44 | 10.86 | 0.017 | P10008-ND | 14.38 | 69.03 | 132.30 | 316.38 | 575.23 | ECE-T1EP683EA |
| | 68000 | 40 x 60 | 9.76 | 11.22 | 0.018 | P10010-ND | 13.67 | 65.61 | 125.76 | 300.73 | 546.78 | ECE-T1EP683FA |
| | 100000 | 40 x 80 | 11.68 | 13.43 | 0.018 | P10011-ND | 19.57 | 93.95 | 180.06 | 430.58 | 782.88 | ECE-T1EP104FA |
| 35 | 33000 | 35 x 50 | 7.15 | 8.22 | 0.018 | P10012-ND | 10.52 | 50.48 | 96.75 | 231.37 | 420.67 | ECE-T1VP333EA |
| | 39000 | 35 x 60 | 7.94 | 9.13 | 0.015 | P10013-ND | 11.94 | 57.29 | 109.81 | 262.60 | 477.46 | ECE-T1VP393EA |
| | 39000 | 40 x 50 | 7.79 | 9.16 | 0.017 | P10015-ND | 12.84 | 61.65 | 118.16 | 282.56 | 513.74 | ECE-T1VP393FA |
| | 47000 | 35 x 80 | 9.53 | 10.96 | 0.015 | P10014-ND | 15.22 | 73.06 | 140.03 | 334.86 | 608.83 | ECE-T1VP473EA |
| | 47000 | 40 x 60 | 8.58 | 9.87 | 0.017 | P10016-ND | 14.42 | 69.22 | 132.66 | 317.24 | 576.80 | ECE-T1VP473FA |
| | 56000 | 40 x 80 | 10.17 | 11.70 | 0.017 | P10017-ND | 17.65 | 84.71 | 162.37 | 388.26 | 705.94 | ECE-T1VP563FA |
| 50 | 22000 | 35 x 50 | 7.57 | 8.71 | 0.023 | P10018-ND | 11.42 | 54.84 | 105.10 | 251.33 | 456.96 | ECE-T1HP223EA |
| | 27000 | 35 x 60 | 8.31 | 9.56 | 0.018 | P10019-ND | 12.47 | 59.86 | 114.74 | 274.37 | 498.85 | ECE-T1HP273EA |
| | 27000 | 40 x 50 | 8.12 | 9.34 | 0.021 | P10021-ND | 13.38 | 64.20 | 123.06 | 294.26 | 535.02 | ECE-T1HP273FA |
| | 33000 | 35 x 80 | 9.23 | 10.51 | 0.015 | P10020-ND | 16.10 | 77.28 | 148.12 | 354.20 | 644.00 | ECE-T1HP333EA |
| | 33000 | 40 x 60 | 8.86 | 10.19 | 0.018 | P10022-ND | 15.23 | 73.13 | 140.16 | 335.17 | 609.39 | ECE-T1HP333FA |
| | 39000 | 40 x 80 | 9.79 | 11.26 | 0.015 | P10023-ND | 18.59 | 89.23 | 171.02 | 408.96 | 743.57 | ECE-T1HP393FA |
| 63 | 12000 | 35 x 50 | 7.15 | 8.22 | 0.035 | P10024-ND | 8.93 | 42.89 | 82.20 | 195.57 | 357.39 | ECE-T1JP123EA |
| | 15000 | 35 x 60 | 7.71 | 8.87 | 0.028 | P10025-ND | 10.72 | 51.46 | 98.64 | 235.87 | 428.85 | ECE-T1JP153EA |
| | 15000 | 40 x 50 | 7.53 | 8.66 | 0.033 | P10027-ND | 11.54 | 55.40 | 106.18 | 253.92 | 461.66 | ECE-T1JP153FA |
| | 18000 | 35 x 80 | 9.41 | 10.82 | 0.023 | P10026-ND | 13.43 | 64.47 | 123.57 | 295.50 | 537.26 | ECE-T1JP183EA |
| | 18000 | 40 x 60 | 8.28 | 9.52 | 0.028 | P10028-ND | 12.85 | 61.69 | 118.24 | 282.74 | 514.08 | ECE-T1JP183FA |
| | 22000 | 40 x 80 | 9.97 | 11.47 | 0.023 | P10029-ND | 15.86 | 76.14 | 145.93 | 348.96 | 634.48 | ECE-T1JP223FA |
| 80 | 8200 | 35 x 50 | 5.83 | 6.70 | 0.051 | P10030-ND | 9.83 | 47.19 | 90.44 | 216.28 | 393.23 | ECE-T1KP822EA |
| | 10000 | 35 x 60 | 6.38 | 7.34 | 0.041 | P10031-ND | 11.85 | 56.89 | 109.04 | 260.75 | 474.10 | ECE-T1KP103EA |
| | 10000 | 40 x 50 | 6.56 | 7.54 | 0.041 | P10033-ND | 12.68 | 60.84 | 116.62 | 278.86 | 507.02 | ECE-T1KP103FA |
| | 12000 | 35 x 80 | 6.92 | 7.96 | 0.035 | P10032-ND | 14.79 | 70.98 | 136.04 | 325.31 | 591.47 | ECE-T1KP123EA |
| | 12000 | 40 x 60 | 7.29 | 8.38 | 0.035 | P10034-ND | 14.27 | 68.52 | 131.32 | 314.04 | 570.98 | ECE-T1KP123FA |
| | 15000 | 40 x 80 | 8.93 | 10.27 | 0.028 | P10035-ND | 17.78 | 85.36 | 163.60 | 391.22 | 711.31 | ECE-T1KP153FA |
| 100 | 6800 | 35 x 50 | 6.60 | 7.59 | 0.049 | P10036-ND | 13.30 | 63.84 | 122.36 | 292.60 | 532.00 | ECE-T2AP682EA |
| | 8200 | 35 x 60 | 7.05 | 8.12 | 0.040 | P10037-ND | 14.73 | 70.72 | 135.55 | 324.14 | 589.34 | ECE-T2AP822EA |
| | 8200 | 40 x 50 | 7.28 | 8.37 | 0.040 | P10039-ND | 15.70 | 75.36 | 144.44 | 345.39 | 627.98 | ECE-T2AP822FA |
| | 10000 | 35 x 80 | 7.74 | 8.90 | 0.033 | P10038-ND | 18.95 | 90.95 | 174.32 | 416.85 | 757.90 | ECE-T2AP103EA |
| | 10000 | 40 x 60 | 7.97 | 9.17 | 0.033 | P10040-ND | 18.16 | 87.14 | 167.03 | 399.41 | 726.21 | ECE-T2AP103FA |
| | 12000 | 40 x 80 | 8.65 | 9.95 | 0.026 | P10041-ND | 22.27 | 106.92 | 204.92 | 490.03 | 890.96 | ECE-T2AP123FA |
| 200 | 2200 | 35 x 50 | 4.92 | 6.89 | 0.113 | P10042-ND | 10.63 | 51.02 | 97.78 | 233.83 | 425.15 | ECE-T2DP222EA |
| | 2700 | 35 x 60 | 5.41 | 7.57 | 0.092 | P10043-ND | 11.13 | 53.42 | 102.40 | 244.86 | 445.20 | ECE-T2DP272EA |
| | 2700 | 40 x 50 | 5.41 | 7.57 | 0.092 | P10045-ND | 12.55 | 60.24 | 115.46 | 276.09 | 501.98 | ECE-T2DP272FA |
| | 3300 | 35 x 80 | 5.90 | 8.26 | 0.075 | P10044-ND | 14.93 | 71.66 | 137.35 | 328.45 | 597.18 | ECE-T2DP332EA |
| | 3300 | 40 x 60 | 5.90 | 8.26 | 0.075 | P10046-ND | 13.55 | 65.04 | 124.65 | 298.08 | 541.97 | ECE-T2DP332FA |
| | 3900 | 40 x 80 | 6.40 | 8.96 | 0.064 | P10047-ND | 17.25 | 82.80 | 158.71 | 379.52 | 690.03 | ECE-T2DP392FA |
| 250 | 1500 | 35 x 50 | 4.04 | 5.66 | 0.166 | P10048-ND | 11.00 | 52.82 | 101.24 | 242.09 | 440.16 | ECE-T2EP152EA |
| | 1800 | 35 x 60 | 4.49 | 6.29 | 0.138 | P10049-ND | 12.09 | 58.05 | 111.26 | 266.05 | 483.73 | ECE-T2EP182EA |
| | 1800 | 40 x 50 | 4.49 | 6.29 | 0.138 | P10051-ND | 12.23 | 58.72 | 112.55 | 269.13 | 489.33 | ECE-T2EP182FA |
| | 2200 | 35 x 80 | 4.94 | 6.92 | 0.113 | P10050-ND | 15.22 | 73.06 | 140.03 | 334.86 | 608.83 | ECE-T2EP222EA |
| | 2200 | 40 x 60 | 4.94 | 6.92 | 0.113 | P10052-ND | 14.72 | 70.65 | 135.42 | 323.83 | 588.78 | ECE-T2EP222FA |
| | 2700 | 40 x 80 | 5.39 | 7.55 | 0.092 | P10053-ND | 18.08 | 86.77 | 166.31 | 397.69 | 723.07 | ECE-T2EP272FA |
| 350 | 680 | 35 x 50 | 2.96 | 4.14 | 0.366 | P10054-ND | 10.94 | 52.52 | 100.67 | 240.73 | 437.70 | ECE-T2VP681EA |
| | 1000 | 35 x 60 | 3.19 | 4.47 | 0.249 | P10055-ND | 14.31 | 68.68 | 131.63 | 314.78 | 572.32 | ECE-T2VP102EA |
| | 1000 | 40 x 50 | 3.19 | 4.47 | 0.249 | P10057-ND | 14.37 | 68.97 | 132.20 | 316.13 | 574.78 | ECE-T2VP102FA |
| | 1200 | 35 x 80 | 3.64 | 5.10 | 0.207 | P10056-ND | 17.96 | 86.23 | 165.28 | 395.23 | 718.59 | ECE-T2VP122EA |
| | 1200 | 40 x 60 | 3.64 | 5.10 | 0.207 | P10058-ND | 16.20 | 77.75 | 149.02 | 356.36 | 647.92 | ECE-T2VP122FA |
| | 1800 | 40 x 80 | 4.10 | 5.74 | 0.136 | P10059-ND | 24.37 | 116.95 | 224.16 | 536.04 | 974.62 | ECE-T2VP182FA |
| 400 | 560 | 35 x 50 | 2.69 | 3.77 | 0.444 | P10060-ND | 10.77 | 51.68 | 99.05 | 236.85 | 430.64 | ECE-T2GP561EA |
| | 680 | 35 x 60 | 2.93 | 4.10 | 0.366 | P10061-ND | 12.85 | 61.69 | 118.24 | 282.74 | 514.08 | ECE-T2GP681EA |
| | 820 | 40 x 50 | 3.18 | 4.45 | 0.303 | P10063-ND | 14.19 | 68.10 | 130.53 | 312.13 | 567.50 | ECE-T2GP821FA |
| | 1000 | 35 x 80 | 3.42 | 4.79 | 0.249 | P10062-ND | 17.82 | 85.55 | 163.96 | 392.08 | 712.88 | ECE-T2GP102EA |
| | 1000 | 40 x 60 | 3.42 | 4.79 | 0.249 | P10064-ND | 16.06 | 77.11 | 147.79 | 353.40 | 642.54 | ECE-T2GP102FA |
| | 1500 | 40 x 80 | 3.91 | 5.47 | 0.166 | P10065-ND | 24.83 | 119.19 | 228.44 | 546.27 | 993.22 | ECE-T2GP152FA |
| 450 | 470 | 35 x 50 | 2.53 | 3.54 | 0.529 | P10066-ND | 11.82 | 56.74 | 108.76 | 260.08 | 472.86 | ECE-T2WP471EA |
| | 560 | 35 x 60 | 2.76 | 3.86 | 0.444 | P10067-ND | 12.33 | 59.16 | 113.40 | 271.16 | 493.02 | ECE-T2WP561EA |
| | 680 | 40 x 50 | 2.99 | 4.19 | 0.366 | P10069-ND | 15.67 | 75.22 | 144.18 | 344.78 | 626.86 | ECE-T2WP681FA |
| | 820 | 35 x 80 | 3.22 | 4.51 | 0.303 | P10068-ND | 19.80 | 95.02 | 182.12 | 435.51 | 791.84 | ECE-T2WP821EA |
| | 820 | 40 x 60 | 3.22 | 4.51 | 0.303 | P10070-ND | 17.81 | 85.48 | 163.83 | 391.78 | 712.32 | ECE-T2WP821FA |
| | 1200 | 40 x 80 | 3.45 | 4.83 | 0.207 | P10071-ND | 27.37 | 131.36 | 251.78 | 602.08 | 1094.69 | ECE-T2WP122FA |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

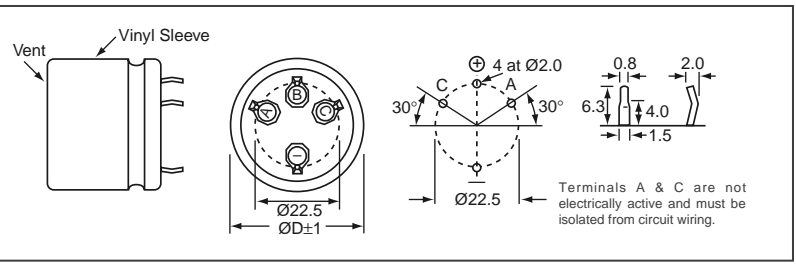
Panasonic **NEW!** T-HA Series Snap-In Capacitors

FEATURES:

- 4 terminal mounting provides stability and keyed polarity
- Replaces T-NHE series with higher capacitance and ripple current per case size
- Industrial grade with 2000 hour endurance at 105°C
- 35 and 40 mm diameter case sizes up to 80 mm in length
- Top vent construction

| Rated Working Voltage | 16 ~ 250 VDC | 350 ~ 450 VDC |
|-----------------------|---|---------------|
| Operating Temperature | -40 ~ +105°C | -25 ~ +105°C |
| Nominal Capacitance | 1200 ~ 120000µF | 470 ~ 1500µF |
| Endurance | 2000 hours at +105°C with maximum specified ripple current | |

| Rated DC Voltage: | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 200 | 250 | 350 | 400 | 450 |
|-------------------|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|
| Surge Voltage: | 20 | 32 | 44 | 63 | 79 | 100 | 125 | 250 | 300 | 400 | 450 | 500 |



| Working Volt. DC | Cap (µF) | Size (mm) D X L | Max. 85°C Ripple (Arms) | | Max. 20°C, 120Hz ESR (Ω) | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|------------------|----------|-----------------|-------------------------|-----------|--------------------------|-------------------|---------|--------|--------|--------|---------|--------------------|
| | | | 120 Hz | 10k-50kHz | | | 1 | 5 | 10 | 25 | 50 | |
| 16 | 56000 | 35 x 50 | 6.00 | 6.90 | 0.018 | P10612-ND | 12.42 | 59.63 | 114.29 | 273.30 | 496.90 | ECE-T1CA563EA |
| | 68000 | 35 x 60 | 6.62 | 7.61 | 0.017 | P10613-ND | 14.04 | 67.37 | 129.12 | 308.77 | 561.40 | ECE-T1CA683EA |
| | 68000 | 40 x 50 | 7.29 | 8.38 | 0.019 | P10614-ND | 14.10 | 67.69 | 129.74 | 310.26 | 564.10 | ECE-T1CA833EA |
| | 82000 | 40 x 60 | 7.29 | 8.38 | 0.017 | P10615-ND | 15.97 | 76.64 | 146.90 | 351.29 | 638.70 | ECE-T1CA823FA |
| | 100000 | 35 x 80 | 8.03 | 9.23 | 0.015 | P10616-ND | 16.73 | 80.28 | 153.87 | 367.95 | 669.00 | ECE-T1CA104EA |
| | 120000 | 40 x 80 | 8.79 | 10.11 | 0.014 | P10617-ND | 19.08 | 91.57 | 175.51 | 419.71 | 763.10 | ECE-T1CA124FA |
| 25 | 33000 | 35 x 50 | 5.50 | 6.33 | 0.020 | P10618-ND | 11.64 | 55.87 | 107.09 | 256.08 | 465.60 | ECE-T1EA333EA |
| | 47000 | 35 x 60 | 6.56 | 7.54 | 0.017 | P10619-ND | 13.97 | 67.03 | 128.48 | 307.23 | 558.60 | ECE-T1EA473EA |
| | 47000 | 40 x 50 | 6.47 | 7.44 | 0.019 | P10620-ND | 14.06 | 67.46 | 129.31 | 309.21 | 562.20 | ECE-T1EA473FA |
| | 56000 | 35 x 80 | 7.25 | 8.34 | 0.017 | P10621-ND | 14.93 | 71.66 | 137.36 | 328.46 | 597.20 | ECE-T1EA563EA |
| | 56000 | 40 x 60 | 7.17 | 8.25 | 0.015 | P10622-ND | 15.82 | 75.94 | 145.54 | 348.04 | 632.80 | ECE-T1EA563FA |
| | 82000 | 40 x 80 | 8.68 | 9.98 | 0.014 | P10623-ND | 18.86 | 90.53 | 173.51 | 414.92 | 754.40 | ECE-T1EA823FA |
| 35 | 22000 | 35 x 50 | 5.00 | 5.75 | 0.026 | P10624-ND | 11.93 | 57.26 | 109.76 | 262.46 | 477.20 | ECE-T1VA223EA |
| | 27000 | 35 x 60 | 5.53 | 6.36 | 0.021 | P10625-ND | 13.43 | 64.45 | 123.53 | 295.41 | 537.10 | ECE-T1VA273EA |
| | 27000 | 40 x 50 | 5.44 | 6.26 | 0.025 | P10626-ND | 13.54 | 64.99 | 124.57 | 297.88 | 541.60 | ECE-T1VA273FA |
| | 33000 | 40 x 60 | 6.61 | 7.60 | 0.020 | P10627-ND | 15.32 | 73.52 | 144.92 | 336.99 | 612.70 | ECE-T1VA333FA |
| | 39000 | 35 x 80 | 6.52 | 7.50 | 0.015 | P10628-ND | 15.76 | 75.64 | 140.97 | 346.67 | 630.30 | ECE-T1VA393EA |
| | 47000 | 40 x 80 | 7.79 | 8.96 | 0.014 | P10629-ND | 17.94 | 86.11 | 165.05 | 394.68 | 717.60 | ECE-T1VA473FA |
| 50 | 15000 | 35 x 50 | 4.80 | 5.52 | 0.033 | P10630-ND | 12.01 | 57.66 | 110.52 | 264.28 | 480.50 | ECE-T1HA153EA |
| | 18000 | 35 x 60 | 5.27 | 6.06 | 0.028 | P10631-ND | 13.43 | 64.45 | 123.53 | 295.41 | 537.10 | ECE-T1HA183EA |
| | 22000 | 40 x 50 | 5.15 | 5.92 | 0.026 | P10632-ND | 14.80 | 71.04 | 136.16 | 325.60 | 592.00 | ECE-T1HA233EA |
| | 27000 | 35 x 80 | 6.16 | 7.08 | 0.018 | P10633-ND | 17.17 | 82.40 | 157.94 | 377.69 | 686.70 | ECE-T1HA273EA |
| | 27000 | 40 x 60 | 6.05 | 6.96 | 0.021 | P10634-ND | 17.02 | 81.71 | 156.61 | 374.50 | 680.90 | ECE-T1HA273FA |
| | 39000 | 40 x 80 | 7.55 | 8.68 | 0.015 | P10635-ND | 22.03 | 105.76 | 202.70 | 484.72 | 881.30 | ECE-T1HA393FA |
| 63 | 12000 | 35 x 50 | 4.40 | 5.06 | 0.035 | P10636-ND | 12.66 | 60.78 | 116.50 | 278.58 | 506.50 | ECE-T1JA123EA |
| | 15000 | 35 x 60 | 4.92 | 5.66 | 0.028 | P10637-ND | 14.55 | 69.82 | 133.81 | 319.99 | 581.80 | ECE-T1JA153EA |
| | 15000 | 40 x 50 | 4.80 | 5.52 | 0.033 | P10638-ND | 14.60 | 70.06 | 134.27 | 321.09 | 583.80 | ECE-T1JA153FA |
| | 18000 | 35 x 80 | 5.79 | 6.66 | 0.023 | P10639-ND | 15.61 | 74.94 | 143.64 | 343.48 | 624.50 | ECE-T1JA183EA |
| | 18000 | 40 x 60 | 5.39 | 6.20 | 0.028 | P10640-ND | 16.55 | 79.42 | 152.21 | 363.99 | 661.80 | ECE-T1JA183FA |
| | 27000 | 40 x 80 | 6.59 | 7.58 | 0.018 | P10641-ND | 20.16 | 96.76 | 185.45 | 443.47 | 806.30 | ECE-T1JA273FA |
| 80 | 6800 | 35 x 50 | 3.90 | 4.49 | 0.061 | P10642-ND | 12.55 | 60.25 | 115.48 | 276.16 | 502.10 | ECE-T1KA682EA |
| | 8200 | 35 x 60 | 4.39 | 5.05 | 0.051 | P10643-ND | 14.26 | 68.45 | 131.19 | 313.72 | 570.40 | ECE-T1KA822EA |
| | 8200 | 40 x 50 | 4.29 | 4.93 | 0.051 | P10644-ND | 14.30 | 68.63 | 131.54 | 314.55 | 571.90 | ECE-T1KA822FA |
| | 10000 | 35 x 80 | 4.88 | 5.61 | 0.041 | P10645-ND | 15.40 | 73.92 | 141.68 | 338.80 | 616.00 | ECE-T1KA103EA |
| | 10000 | 40 x 60 | 4.73 | 5.44 | 0.041 | P10646-ND | 16.33 | 78.38 | 150.24 | 359.26 | 653.20 | ECE-T1KA103FA |
| | 15000 | 40 x 80 | 5.97 | 6.87 | 0.028 | P10647-ND | 19.86 | 95.33 | 182.71 | 436.92 | 794.40 | ECE-T1KA153FA |
| 100 | 4700 | 35 x 50 | 3.80 | 4.37 | 0.071 | P10648-ND | 13.38 | 64.21 | 123.07 | 294.31 | 535.10 | ECE-T2AA472EA |
| | 5600 | 35 x 60 | 4.06 | 4.67 | 0.059 | P10649-ND | 15.73 | 75.48 | 144.67 | 345.95 | 629.00 | ECE-T2AA562EA |
| | 6800 | 40 x 50 | 4.57 | 5.26 | 0.049 | P10650-ND | 16.87 | 80.96 | 155.18 | 371.09 | 674.70 | ECE-T2AA682FA |
| | 8200 | 35 x 80 | 5.15 | 5.92 | 0.040 | P10651-ND | 18.17 | 87.19 | 167.12 | 399.63 | 726.60 | ECE-T2AA822EA |
| | 8200 | 40 x 60 | 5.02 | 5.77 | 0.040 | P10652-ND | 19.57 | 93.91 | 180.00 | 430.43 | 782.60 | ECE-T2AA822FA |
| | 12000 | 40 x 80 | 6.44 | 7.41 | 0.028 | P10653-ND | 23.96 | 115.00 | 220.41 | 527.07 | 958.30 | ECE-T2AA123FA |
| 200 | 2200 | 35 x 50 | 2.90 | 4.06 | 0.113 | P10654-ND | 13.45 | 64.56 | 123.74 | 295.90 | 538.00 | ECE-T2DA222EA |
| | 2700 | 35 x 60 | 3.65 | 5.11 | 0.092 | P10655-ND | 15.34 | 73.62 | 141.11 | 337.43 | 613.50 | ECE-T2DA272EA |
| | 2700 | 40 x 50 | 3.55 | 4.97 | 0.092 | P10656-ND | 15.57 | 74.72 | 143.22 | 342.49 | 622.70 | ECE-T2DA272FA |
| | 3300 | 35 x 80 | 4.52 | 6.33 | 0.075 | P10657-ND | 16.61 | 79.74 | 152.84 | 365.48 | 664.50 | ECE-T2DA332EA |
| | 3300 | 40 x 60 | 4.40 | 6.18 | 0.075 | P10658-ND | 17.18 | 82.45 | 158.03 | 377.91 | 687.10 | ECE-T2DA332FA |
| | 4700 | 40 x 80 | 5.76 | 8.06 | 0.053 | P10659-ND | 21.28 | 102.12 | 195.73 | 468.05 | 851.00 | ECE-T2DA472FA |
| 250 | 1200 | 35 x 50 | 2.30 | 3.22 | 0.207 | P10660-ND | 13.62 | 65.35 | 125.26 | 299.53 | 544.60 | ECE-T2EA122EA |
| | 1500 | 35 x 60 | 2.57 | 3.60 | 0.166 | P10661-ND | 15.70 | 75.34 | 144.39 | 345.29 | 627.80 | ECE-T2EA152EA |
| | 1800 | 40 x 50 | 3.15 | 4.41 | 0.138 | P10662-ND | 17.55 | 84.25 | 161.48 | 386.16 | 702.10 | ECE-T2EA182FA |
| | 2200 | 35 x 80 | 3.75 | 5.25 | 0.113 | P10663-ND | 18.97 | 91.03 | 174.48 | 417.23 | 758.60 | ECE-T2EA222EA |
| | 2200 | 40 x 60 | 3.68 | 5.15 | 0.113 | P10664-ND | 19.57 | 93.95 | 180.07 | 430.60 | 782.90 | ECE-T2EA222FA |
| | 3300 | 40 x 80 | 4.68 | 5.80 | 0.075 | P10665-ND | 25.55 | 122.65 | 235.08 | 562.16 | 1022.10 | ECE-T2EA332FA |
| 350 | 680 | 35 x 50 | 2.15 | 3.01 | 0.366 | P10666-ND | 14.05 | 67.44 | 129.26 | 309.10 | 562.00 | ECE-T2VA681EA |
| | 820 | 35 x 60 | 2.65 | 3.71 | 0.303 | P10667-ND | 15.41 | 73.98 | 141.80 | 339.08 | 616.50 | ECE-T2VA821EA |
| | 820 | 40 x 50 | 2.65 | 3.71 | 0.303 | P10668-ND | 16.22 | 77.83 | 149.18 | 356.73 | 648.60 | ECE-T2VA821FA |
| | 1200 | 35 x 80 | 3.22 | 4.51 | 0.207 | P10669-ND | 20.13 | 96.60 | 185.15 | 442.75 | 805.00 | ECE-T2VA122EA |
| | 1200 | 40 x 60 | 3.22 | 4.51 | 0.207 | P10670-ND | 19.98 | 95.90 | 183.82 | 439.56 | 799.20 | ECE-T2VA122FA |
| | 1500 | 40 x 80 | 3.75 | 5.25 | 0.166 | P10671-ND | 23.13 | 111.00 | 212.75 | 508.75 | 925.00 | ECE-T2VA152FA |
| 400 | 560 | 35 x 50 | 1.80 | 2.52 | 0.444 | P10672-ND | 14.22 | 68.27 | 130.85 | 312.90 | 568.90 | ECE-T2GA561EA |
| | 680 | 40 x 50 | 2.17 | 3.04 | 0.366 | P10673-ND | 16.52 | 79.28 | 151.96 | 363.39 | 660.70 | ECE-T2GA681FA |
| | 820 | 35 x 60 | 2.44 | 3.42 | 0.303 | P10674-ND | 17.42 | 83.59 | 160.22 | 383.13 | 696.60 | ECE-T2GA821EA |
| | 1000 | 35 x 80 | 3.00 | 4.20 | 0.249 | P10675-ND | 20.63 | 99.01 | 189.77 | 453.81 | 825.10 | ECE-T2GA102EA |
| | 1000 | 40 x 60 | 3.00 | 4.20 | 0.249 | P10676-ND | 20.43 | 98.08 | 187.98 | 449.52 | 817.30 | ECE-T2GA102FA |
| | 1200 | 40 x 80 | 3.30 | 4.62 | 0.207 | P10677-ND | 23.10 | 110.89 | 212.54 | 508.26 | 924.10 | ECE-T2GA122FA |
| 450 | 470 | 35 x 50 | 1.74 | 2.44 | 0.529 | P10678-ND | 15.06 | 72.30 | 138.58 | 331.38 | 602.50 | ECE-T2WA471EA |
| | 560 | 35 x 60 | 2.15 | 3.01 | 0.444 | P10679-ND | 16.52 | 79.31 | 152.01 | 363.50 | 660.90 | ECE-T2WA561EA |
| | 560 | 40 x 50 | 2.10 | 2.94 | 0.444 | P10680-ND | 17.39 | 83.46 | 159.97 | 382.53 | 695.50 | ECE-T2WA561FA |
| | 680 | 40 x 60 | 2.50 | 3.78 | 0.303 | P10681-ND | 19.32 | 92.75 | 177.77 | 425.10 | 772.90 | ECE-T2WA681EA |
| | 820 | 35 x 80 | 2.70 | 3.50 | 0.303 | P10682-ND | 21.88 | 105.01 | 201.27 | 481.31 | 875.10 | ECE-T2WA821EA |
| | 1000 | 40 x 80 | 3.50 | 4.90 | 0.249 | P10683-ND | 24.79 | 118.97 | 228.02 | 545.27 | 991.40 | ECE-T2WA102FA |

1-800-344-4539

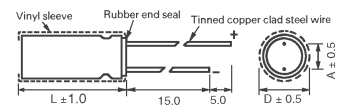
218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic KA-Series Miniature Aluminum Electrolytic Capacitors

| Rating WV DC | µF | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. | |
|--------------------|-----|--------------------|-----|---------|----------------------|----------|-------|--------|---------|---------|--------------|-----------------------|--------------|
| | | D | L | A | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 6.3 | 22 | 4.0 | 7.0 | 1.5 | P800-ND | .12 | 1.02 | 7.96 | 51.00 | 48.00/M | 44.00/M | ECE-A0JKA220 | |
| | 33 | 4.0 | 7.0 | 1.5 | P801-ND | .11 | .96 | 7.52 | 48.00 | 45.00/M | 42.00/M | ECE-A0JKA330 | |
| | 47 | 4.0 | 7.0 | 1.5 | P802-ND | .12 | 1.00 | 7.79 | 50.00 | 47.00/M | 43.00/M | ECE-A0JKA470 | |
| | 100 | 5.0 | 7.0 | 2.0 | P803-ND* | .13 | 1.16 | 9.05 | 58.00 | 54.00/M | 50.00/M | ECE-A0JKA101 | |
| | 220 | 6.3 | 7.0 | 2.5 | P829-ND | .17 | 1.44 | 11.32 | 72.00 | 68.00/M | 63.00/M | ECE-A0JKA221 | |
| | 330 | 8.0 | 7.0 | 3.5 | P830-ND | .25 | 2.12 | 16.60 | 106.00 | 99.00/M | 92.00/M | ECE-A0JKA331 | |
| | 10 | 22 | 4.0 | 7.0 | 1.5 | P804-ND | .11 | .96 | 7.54 | 48.00 | 45.00/M | 42.00/M | ECE-A1KA220 |
| 33 | | 4.0 | 7.0 | 1.5 | P805-ND | .12 | 1.00 | 7.79 | 50.00 | 47.00/M | 43.00/M | ECE-A1KA330 | |
| 47 | | 5.0 | 7.0 | 2.0 | P806-ND | .12 | 1.05 | 8.23 | 53.00 | 49.00/M | 46.00/M | ECE-A1KA470 | |
| 100 | | 6.3 | 7.0 | 2.5 | P831-ND | .15 | 1.32 | 10.34 | 66.00 | 62.00/M | 58.00/M | ECE-A1KA101 | |
| 220 | | 8.0 | 7.0 | 3.5 | P832-ND | .25 | 2.10 | 16.45 | 105.00 | 99.00/M | 92.00/M | ECE-A1KA221 | |
| 16 | | 10 | 4.0 | 7.0 | 1.5 | P807-ND | .10 | .87 | 6.82 | 44.00 | 41.00/M | 38.00/M | ECE-A1CKA100 |
| | | 22 | 4.0 | 7.0 | 1.5 | P808-ND | .11 | .96 | 7.52 | 48.00 | 45.00/M | 42.00/M | ECE-A1CKA220 |
| | 33 | 5.0 | 7.0 | 2.0 | P809-ND* | .13 | 1.16 | 9.05 | 58.00 | 54.00/M | 50.00/M | ECE-A1CKA330 | |
| | 47 | 5.0 | 7.0 | 2.0 | P810-ND* | .13 | 1.14 | 8.93 | 57.00 | 54.00/M | 50.00/M | ECE-A1CKA470 | |
| | 100 | 6.3 | 7.0 | 2.5 | P833-ND | .17 | 1.44 | 11.32 | 72.00 | 68.00/M | 63.00/M | ECE-A1CKA101 | |
| | 25 | 4.7 | 4.0 | 7.0 | 1.5 | P812-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1EKA4R7 |
| | | 10 | 4.0 | 7.0 | 1.5 | P813-ND | .11 | .96 | 7.52 | 48.00 | 45.00/M | 42.00/M | ECE-A1EKA100 |
| 22 | | 5.0 | 7.0 | 2.0 | P814-ND | .12 | 1.06 | 8.30 | 53.00 | 50.00/M | 46.00/M | ECE-A1EKA220 | |
| 33 | | 6.3 | 7.0 | 2.5 | P815-ND | .15 | 1.32 | 10.31 | 66.00 | 62.00/M | 57.00/M | ECE-A1EKA330 | |
| 47 | | 6.3 | 7.0 | 2.5 | P834-ND | .17 | 1.44 | 11.28 | 72.00 | 68.00/M | 63.00/M | ECE-A1EKA470 | |
| 35 | | 4.7 | 4.0 | 7.0 | 1.5 | P817-ND* | .10 | .87 | 6.82 | 44.00 | 41.00/M | 38.00/M | ECE-A1VKA4R7 |
| | | 10 | 5.0 | 7.0 | 2.0 | P818-ND* | .12 | 1.05 | 8.23 | 53.00 | 49.00/M | 46.00/M | ECE-A1VKA100 |
| | 22 | 6.3 | 7.0 | 2.5 | P819-ND* | .15 | 1.32 | 10.34 | 66.00 | 62.00/M | 58.00/M | ECE-A1VKA220 | |
| | 33 | 6.3 | 7.0 | 2.5 | P835-ND | .17 | 1.44 | 11.32 | 72.00 | 68.00/M | 63.00/M | ECE-A1VKA330 | |
| | 47 | 8.0 | 7.0 | 3.5 | P836-ND | .25 | 2.12 | 16.60 | 106.00 | 99.00/M | 92.00/M | ECE-A1VKA470 | |
| | 50 | 0.1 | 4.0 | 7.0 | 1.5 | P820-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA0R1 |
| | | 0.22 | 4.0 | 7.0 | 1.5 | P821-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA0R2 |
| 0.33 | | 4.0 | 7.0 | 1.5 | P822-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA0R3 | |
| 0.47 | | 4.0 | 7.0 | 1.5 | P823-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA0R4 | |
| 1.0 | | 4.0 | 7.0 | 1.5 | P824-ND* | .10 | .87 | 6.82 | 44.00 | 41.00/M | 38.00/M | ECE-A1HKA010 | |
| 2.2 | | 4.0 | 7.0 | 1.5 | P825-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA2R2 | |
| 3.3 | | 4.0 | 7.0 | 1.5 | P826-ND* | .10 | .90 | 7.04 | 45.00 | 42.00/M | 39.00/M | ECE-A1HKA3R3 | |
| 4.7 | | 4.0 | 7.0 | 1.5 | P827-ND* | .11 | .96 | 7.54 | 48.00 | 45.00/M | 42.00/M | ECE-A1HKA4R7 | |
| 10 | | 5.0 | 7.0 | 2.0 | P828-ND* | .13 | 1.14 | 8.93 | 57.00 | 54.00/M | 50.00/M | ECE-A1HKA100 | |
| 22 | | 6.3 | 7.0 | 2.5 | P837-ND | .17 | 1.44 | 11.32 | 72.00 | 68.00/M | 63.00/M | ECE-A1HKA220 | |
| 33 | 8.0 | 7.0 | 3.5 | P838-ND | .25 | 2.12 | 16.60 | 106.00 | 99.00/M | 92.00/M | ECE-A1HKA330 | | |

* P835-KIT-ND Digi-Key® KA-Series Capacitors Kit 10 each of parts indicated. (160 total pieces) Notebook style storage case \$29.95

The KA-Series is a tantalum substitute for many applications.



- Operating Temperature Range: -40°C to +85°C.
- Rated DC Voltage Range: 6.3 to 63VDC.
- Rated Capacitance Range: 1.0 to 100µF.
- Capacitance Tolerance: ±20%.
- tan δ: Max. at 120Hz.

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 |
|-------|------|-----|------|------|------|------|------|
| tan δ | 0.24 | 0.2 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |

• DC Leakage Current, Max.: After 5 minutes application of the DC working voltage, I=0.01 C V or 3µA, whichever is greater.

• Load Life: 1,000 hours application of the rated DC working voltage at +85°C, the capacitor shall meet the following limits:

| Capacitance Change | Within ±20% of the initial measured value | | | | | | | |
|--------------------|---|---|--|--|--|--|--|--|
| | tan δ | Less than 200% of the initial specified value | | | | | | |
| DC Leakage Current | Less than the initial specified value | | | | | | | |

• Stability at Low and High Temperature: Impedance ratio at 120Hz -25/20°C, -40/20°C.

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 |
|----------|-----|----|----|----|----|----|
| -25/20°C | 4 | 3 | 2 | 2 | 2 | 2 |
| -40/20°C | 8 | 6 | 4 | 4 | 3 | 3 |

• Shelf Life: After 1,000 hours storage without load at +85°C, the capacitor shall meet the above "Load life".

• Others shall be in accordance with JIS-C-5141 (1976).

PANASONIC K CROSS REFERENCES:

Elna: RC2, IC: R55, Marcon: SSM, Nichicon: SR/SA, Rubycon: MS7, UCC: SRG/SRA

Panasonic KG-Series Miniature Aluminum Electrolytic Capacitors 105°C

| Rating WV/DC | µF | Size Code | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. | |
|-----------------|------|--------------|----------------------|---------|-------|--------|----------|----------|--------------|-----------------------|--------------|
| | | | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 6.3 | 22 | A | P900-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A0JKG220 | |
| | 33 | B | P901-ND | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A0JKG330 | |
| | 47 | B | P902-ND | .21 | 1.72 | 13.55 | 74.00 | 70.00/M | 64.00/M | ECE-A0JKG470 | |
| | 68 | C | P903-ND | .23 | 1.88 | 14.78 | 81.00 | 76.00/M | 70.00/M | ECE-A0JKG680 | |
| | 100 | C | P904-ND* | .27 | 2.20 | 17.25 | 94.00 | 89.00/M | 81.00/M | ECE-A0JKG101 | |
| | 220 | D | P941-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A0JKG221 | |
| | 10 | 22 | A | P905-ND | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1AKG220 |
| 33 | | B | P906-ND | .22 | 1.80 | 14.17 | 77.00 | 73.00/M | 67.00/M | ECE-A1AKG330 | |
| 47 | | C | P907-ND | .23 | 1.92 | 15.09 | 82.00 | 78.00/M | 71.00/M | ECE-A1AKG470 | |
| 68 | | C | P908-ND | .27 | 2.20 | 17.25 | 94.00 | 89.00/M | 81.00/M | ECE-A1AKG680 | |
| 100 | | C | P942-ND | .32 | 2.67 | 20.94 | 114.00 | 108.00/M | 99.00/M | ECE-A1AKG101 | |
| 16 | | 6.8 | A | P909-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1CKG6R8 |
| | | 10 | A | P910-ND | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1CKG100 |
| | 15 | A | P911-ND | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1CKG150 | |
| | 22 | B | P912-ND | .22 | 1.80 | 14.17 | 77.00 | 73.00/M | 67.00/M | ECE-A1CKG220 | |
| | 33 | C | P913-ND* | .24 | 2.00 | 15.71 | 86.00 | 81.00/M | 74.00/M | ECE-A1CKG330 | |
| | 47 | C | P914-ND* | .26 | 2.12 | 16.63 | 91.00 | 86.00/M | 79.00/M | ECE-A1CKG470 | |
| | 68 | D | P943-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1CKG680 | |
| 100 | D | P944-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1CKG101 | | |
| 25 | 6.8 | A | P915-ND* | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1EKG6R8 | |
| | 10 | A | P916-ND* | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1EKG100 | |
| | 15 | B | P917-ND | .22 | 1.84 | 14.48 | 79.00 | 75.00/M | 68.00/M | ECE-A1EKG150 | |
| | 22 | B | P918-ND* | .23 | 1.88 | 14.78 | 81.00 | 76.00/M | 70.00/M | ECE-A1EKG220 | |
| | 33 | C | P919-ND | .28 | 2.31 | 18.17 | 99.00 | 94.00/M | 86.00/M | ECE-A1EKG330 | |
| | 47 | D | P945-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1EKG470 | |
| | 68 | D | P946-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1EKG680 | |
| 35 | 4.7 | A | P920-ND* | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1VKG4R7 | |
| | 6.8 | A | P921-ND | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1VKG6R8 | |
| | 10 | B | P922-ND* | .21 | 1.76 | 13.86 | 76.00 | 71.00/M | 65.00/M | ECE-A1VKG100 | |
| | 15 | C | P923-ND | .28 | 2.31 | 18.17 | 99.00 | 94.00/M | 86.00/M | ECE-A1VKG150 | |
| | 22 | C | P924-ND* | .29 | 2.35 | 18.48 | 101.00 | 95.00/M | 87.00/M | ECE-A1VKG220 | |
| | 33 | D | P947-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1VKG330 | |
| | 47 | D | P948-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1VKG470 | |
| 50 | 0.1 | A | P925-ND* | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R1 | |
| | 0.15 | A | P926-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R15 | |
| | 0.22 | A | P927-ND* | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R22 | |
| | 0.33 | A | P928-ND* | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R33 | |
| | 0.47 | A | P929-ND* | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R47 | |
| | 0.8 | A | P930-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R68 | |
| | 1 | A | P931-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG010 | |
| | 1.5 | A | P932-ND | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG015 | |
| | 2.2 | A | P933-ND* | .19 | 1.57 | 12.32 | 67.00 | 64.00/M | 58.00/M | ECE-A1HKG0R22 | |
| | 3.3 | A | P934-ND* | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1HKG0R33 | |
| 50 | 4.7 | A | P935-ND* | .20 | 1.65 | 12.94 | 71.00 | 67.00/M | 61.00/M | ECE-A1HKG4R7 | |
| | 6.8 | B | P936-ND | .22 | 1.84 | 14.48 | 79.00 | 75.00/M | 68.00/M | ECE-A1HKG6R8 | |
| | 10 | C | P937-ND* | .29 | 2.35 | 18.48 | 101.00 | 95.00/M | 87.00/M | ECE-A1HKG100 | |
| | 15 | C | P938-ND | .29 | 2.39 | 18.79 | 102.00 | 97.00/M | 89.00/M | ECE-A1HKG150 | |
| | 22 | D | P939-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1HKG220 | |
| | 33 | D | P940-ND | .48 | 3.92 | 30.80 | 168.00 | 159.00/M | 145.00/M | ECE-A1HKG330 | |

* P900-KIT-ND Digi-Key® KG-Series Capacitors Kit 10 each of parts indicated. (180 pieces total) Notebook style storage case \$34.95

The KG-Series is a tantalum substitute for many applications.

Features: • Height is 7mm. • Anti-solvent in Freon.

Operating Temperature Range: -55°C to +105°C.

Capacitance Tolerance: ±20% at 120Hz, +20°C.

DC Leakage Current: I=0.01CV or 3µA after 2 min. (whichever is greater).

tan δ (120Hz/120°C):

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 |
|--------------|------|------|------|------|------|------|
| tan δ (max.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 |

Low Temperature Impedance Stability at 120Hz:

| W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 |
|-------------------|-----|----|----|----|----|----|
| Z(-25°C)/Z(+20°C) | 3 | 2 | 2 | 2 | 2 | 2 |
| Z(-40°C)/Z(+20°C) | 6 | 5 | 3 | 3 | 3 | 3 |
| Z(-55°C)/Z(+20°C) | 8 | 6 | 4 | 4 | 4 | 4 |

Load Life: After 1,000 hours application of DC rated working voltage at +105°C, the capacitor shall meet the following limits.

Capacitance change: < ±20% of the initial measured value.

tan δ: < 200% of the initial specified value.

Panasonic® KS Capacitors

Features:

- Low profile 5mm height for Ø3 ~ Ø8 mm

Specifications:

- **Operating Temperature Range:** -40° to +85°C • **Rated Working Voltage Range:** 4 to 50V DC
- **Nominal Capacitance Range:** 0.1 to 330µF • **Capacitance Tolerance:** ±20% (120Hz, +20°C)
- **Leakage Current:** $I \leq 0.01CV$ or 3 (µA), whichever is greater measured after 2 minutes application of rated working voltage at +20°C

- **tan δ:** (120Hz, +20°C)

| Working voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
|---------------------|------|------|------|------|------|------|------|
| tan δ max. | 0.35 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 |

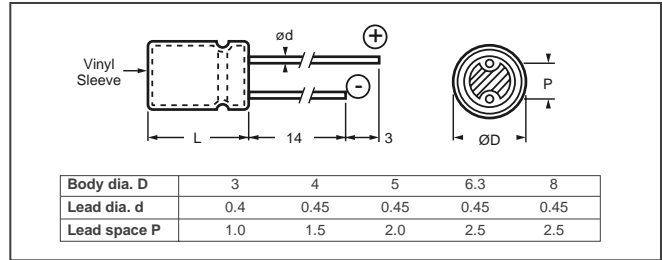
- **Characteristics at Low Temperature:** Impedance ratio max. at 120Hz

| Working voltage (V) | 4 | 6.3 | 10 | 16 | 25 | 35 | 50 |
|---------------------|----|-----|----|----|----|----|----|
| -25°C/+25°C | 7 | 4 | 3 | 2 | 2 | 2 | 2 |
| -40°C/+20°C | 15 | 8 | 6 | 4 | 4 | 3 | 3 |

Endurance:

- **Test Conditions** — Duration: 1000 hours • Ambient Temperature: +85°C • Applied Voltage: Rated DC working voltage

- **Post Test Requirements at +20°C** — Leakage Current: ≤ Initial specified value • Capacitance Change: ±20% of initial measured value (4V: ±30%) • tan δ: ≤ 200% of initial specified value



Shelf Life:

- **Test Conditions** — Duration: 1000 hours • Ambient Temperature: +85°C • Applied voltage: (None).

- **Post Test Requirements at +20°C** — Leakage Current: ≤ Initial specified value • Capacitance Change: ±20% of initial measured value (4V: ±30%) • tan δ: ≤ 200% of initial specified value

Panasonic KS Cross Reference:

Nippon Chemi-Con: SRE, Nichicon: MA, Elna: RC3, Rubycon: MS5, Marcon: LSM

Recommended Applications:

AV (TV, Audio, Video), Office, Home Appliance

| W.V (V.DC) | Cap. (µF) | D.C.L. (+20°C/2 min) | tan δ (120Hz/+20°C) | Ripple Current | Dimensions(mm) | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. |
|---------------|--------------|-------------------------|------------------------|-------------------|----------------|-----|---------|----------------------|---------|--------|----------|--------------|-----------------------|
| | | | | | ØD | L | P | | 10 | 100 | 1,000 | 5,000 | |
| 4 | 22 | 3.0 | 0.35 | 19 | 3 | 5 | 1.0 | P950-ND | 1.80 | 14.17 | 77.00 | 73.00/M | ECE-A0GKK220 |
| | 33 | 3.0 | 0.35 | 26 | 4 | 5 | 1.5 | P951-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A0GKS330 |
| | 47 | 3.0 | 0.35 | 34 | 4 | 5 | 1.5 | P952-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A0GKS470 |
| | 100 | 4.0 | 0.35 | 61 | 5 | 5 | 2.0 | P953-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A0GKS101 |
| | 220 | 8.8 | 0.35 | 82 | 6.3 | 5 | 2.5 | P954-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A0GKS221 |
| 6.3 | 22 | 3.0 | 0.24 | 29 | 4 | 5 | 1.5 | P955-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECEA0JKS220 |
| | 33 | 3.0 | 0.24 | 38 | 5 | 5 | 2.0 | P956-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A0JKS330 |
| | 47 | 3.0 | 0.24 | 46 | 5 | 5 | 2.0 | P957-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A0JKS470 |
| | 100 | 6.3 | 0.24 | 71 | 6.3 | 5 | 2.5 | P958-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A0JKS101 |
| | 330 | 20.7 | 0.24 | 130 | 8 | 5 | 2.5 | P959-ND | 2.94 | 23.10 | 126.00 | 119.00/M | ECE-A0JKS331 |
| 10 | 22 | 3.0 | 0.20 | 35 | 5 | 5 | 2.0 | P960-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A1AKS220 |
| | 33 | 3.3 | 0.20 | 43 | 5 | 5 | 2.0 | P961-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A1AKS330 |
| | 47 | 4.7 | 0.20 | 65 | 6.3 | 5 | 2.5 | P962-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1AKS470 |
| | 100 | 10.0 | 0.20 | 80 | 6.3 | 5 | 2.5 | P963-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1AKS101 |
| | 220 | 22.0 | 0.20 | 120 | 8 | 5 | 2.5 | P964-ND | 3.29 | 25.87 | 141.00 | 133.00/M | ECE-A1AKS221 |
| 16 | 10 | 3.0 | 0.16 | 20 | 3 | 5 | 1.0 | P965-ND | 1.80 | 14.17 | 77.00 | 73.00/M | ECE-A1CKK100 |
| | 10 | 3.0 | 0.16 | 28 | 4 | 5 | 1.5 | P966-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1CKS100 |
| | 22 | 3.5 | 0.16 | 39 | 5 | 5 | 2.0 | P967-ND | 1.44 | 11.28 | 61.00 | 58.00/M | ECE-A1CKS220 |
| | 33 | 5.2 | 0.16 | 60 | 6.3 | 5 | 2.5 | P968-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1CKS330 |
| | 47 | 7.5 | 0.16 | 70 | 6.3 | 5 | 2.5 | P969-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1CKS470 |
| 100 | 16.0 | 0.16 | 91 | 8 | 5 | 2.5 | P970-ND | 3.14 | 24.64 | 134.00 | 127.00/M | ECE-A1CKS101 | |
| 25 | 2.2 | 3.0 | 0.14 | 8 | 3 | 5 | 1.0 | P971-ND | 1.80 | 14.17 | 77.00 | 73.00/M | ECE-A1EKK2R2 |
| | 3.3 | 3.0 | 0.14 | 10 | 3 | 5 | 1.0 | P972-ND | 1.80 | 14.17 | 77.00 | 73.00/M | ECE-A1EKK3R3 |
| | 4.7 | 3.0 | 0.14 | 12 | 3 | 5 | 1.0 | P973-ND | 1.80 | 14.17 | 77.00 | 73.00/M | ECE-A1EKK4R7 |
| | 4.7 | 3.0 | 0.14 | 22 | 4 | 5 | 1.5 | P974-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1EKS4R7 |
| | 10 | 3.0 | 0.14 | 28 | 5 | 5 | 2.0 | P975-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A1EKS100 |
| 35 | 2.2 | 5.5 | 0.14 | 55 | 6.3 | 5 | 2.5 | P976-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1EKS220 |
| | 3.3 | 8.2 | 0.14 | 65 | 6.3 | 5 | 2.5 | P977-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1EKS330 |
| | 3.3 | 3.0 | 0.12 | 16 | 4 | 5 | 1.5 | P978-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1VKS3R3 |
| | 4.7 | 3.0 | 0.12 | 22 | 4 | 5 | 1.5 | P979-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1VKS4R7 |
| | 10 | 3.5 | 0.12 | 30 | 5 | 5 | 2.0 | P980-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A1VKS100 |
| 50 | 2.2 | 7.7 | 0.12 | 60 | 6.3 | 5 | 2.5 | P981-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1VKS220 |
| | 3.3 | 11.6 | 0.12 | 65 | 8 | 5 | 2.5 | P982-ND | 3.14 | 24.64 | 134.00 | 127.00/M | ECE-A1VKS330 |
| | 4.7 | 16.4 | 0.12 | 85 | 8 | 5 | 2.5 | P983-ND | 3.25 | 25.56 | 139.00 | 132.00/M | ECE-A1VKS470 |
| | 0.1 | 3.0 | 0.10 | 1 | 4 | 5 | 1.5 | P984-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS0R1 |
| | 0.1 | 3.0 | 0.10 | 1 | 3 | 5 | 1.0 | P985-ND | 2.16 | 16.94 | 92.00 | 87.00/M | ECE-A1HKK0R1 |
| 50 | 0.22 | 3.0 | 0.10 | 2 | 4 | 5 | 1.5 | P986-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS22 |
| | 0.22 | 3.0 | 0.10 | 2 | 3 | 5 | 1.0 | P987-ND | 2.16 | 16.94 | 92.00 | 87.00/M | ECE-A1HKKR22 |
| | 0.33 | 3.0 | 0.10 | 3 | 4 | 5 | 1.5 | P988-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS33 |
| | 0.33 | 3.0 | 0.10 | 3 | 3 | 5 | 1.0 | P989-ND | 2.16 | 16.94 | 92.00 | 87.00/M | ECE-A1HKKR33 |
| | 0.47 | 3.0 | 0.10 | 5 | 4 | 5 | 1.5 | P990-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS47 |
| | 0.47 | 3.0 | 0.10 | 5 | 3 | 5 | 1.0 | P991-ND | 2.16 | 16.94 | 92.00 | 87.00/M | ECE-A1HKKR47 |
| | 1.0 | 3.0 | 0.10 | 8 | 3 | 5 | 1.0 | P992-ND | 2.16 | 16.94 | 92.00 | 87.00/M | ECE-A1HKK010 |
| | 1.0 | 3.0 | 0.10 | 10 | 4 | 5 | 1.5 | P993-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS010 |
| | 2.2 | 3.0 | 0.10 | 16 | 4 | 5 | 1.5 | P994-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS2R2 |
| | 3.3 | 3.0 | 0.10 | 16 | 4 | 5 | 1.5 | P995-ND | 1.29 | 10.16 | 55.00 | 52.00/M | ECE-A1HKS3R3 |
| | 4.7 | 3.0 | 0.10 | 23 | 5 | 5 | 2.0 | P996-ND | 1.49 | 11.70 | 64.00 | 60.00/M | ECE-A1HKS4R7 |
| | 10 | 5.0 | 0.10 | 35 | 6.3 | 5 | 2.5 | P997-ND | 1.84 | 14.48 | 79.00 | 75.00/M | ECE-A1HKS100 |
| | 22 | 11.0 | 0.10 | 60 | 8 | 5 | 2.5 | P998-ND | 2.67 | 20.94 | 114.00 | 108.00/M | ECE-A1HKS220 |

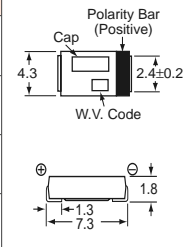
1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic CD Series Speciality Polymer Aluminum Electrolytic Chip Capacitors, Surface Mount

FEATURES: • Low profile type (1.8mm Height) of D size. • Low impedance at high frequency (10kHz-10MHz) as low as ceramic capacitors (Reduced ESR due to an applying speciality polymer with high conductivity). • Excellent noise-absorbent characteristics. • Surface mount (Reflow soldering method avail.). • Very stable capacitance, impedance and ESR against temp. • Excellent endurance characteristics due to adoption of solid electrolyte. **SPECIFICATIONS:** • **Operating Temp. Range:** -40°C ~ +105°C. • **Capacitance Tolerance:** ±20% (120Hz/20°C). • **DC Leakage Current:** ≤ 0.04CV or 3µA after 2 minutes (whichever is greater). • **tan δ:** ≤ 0.06 (120Hz/20°C). • **Surge Voltage:** Rated Working Voltage x 1.25. • **Endurance:** After applying rated working voltage for 1000 hours at +105°C, and then being stabilized at +20°C, capacitor shall meet following limits: Capacitance Change (±10% of initial measured value). Tan δ and DC leakage current (initial specified value). • **Damp Heat, Steady State:** (After storing for 500 hours at +60°C, 90-95% R.H.) Capacitance Change (+40%, initial measured value, -20% (6.3V: +50%, -20%). Tan δ ≤ 200% initial specified value. DC leakage current (initial specified value).

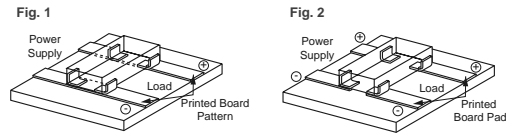
| W.V. | Cap. (µF) | Impedance (400kHz/20°C) | Ripple Current * (100kHz/20~100°C) | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | Panasonic Part No. |
|------|-----------|-------------------------|------------------------------------|-------------------|------------------|-------|--------|-------------------|---------------------|----------|----------|--------------------|
| | | | | | 1 | 10 | 100 | | 3,500 | 7,000 | 14,000 | |
| 6.3 | 10 | 0.13Ω | 1 Ar.m.s | PCE3157CT-ND | 2.28 | 19.01 | 164.73 | PCE3157TR-ND | 760.00/M | 710.00/M | 659.00/M | EEF-CDJ100R |
| | 22 | 0.09Ω | 1.3 Ar.m.s | PCE3158CT-ND | 2.49 | 20.76 | 179.96 | PCE3158TR-ND | 831.00/M | 775.00/M | 720.00/M | EEF-CDJ220R |
| | 33 | 0.06Ω | 1.6 Ar.m.s | PCE3159CT-ND | 2.70 | 22.48 | 194.84 | PCE3159TR-ND | 899.00/M | 839.00/M | 779.00/M | EEF-CDJ330R |
| 8 | 8.2 | 0.14Ω | 1 Ar.m.s | PCE3161CT-ND | 2.28 | 19.01 | 164.73 | PCE3161TR-ND | 760.00/M | 710.00/M | 659.00/M | EEF-CDJ470R |
| | 15 | 0.11Ω | 1.3 Ar.m.s | PCE3162CT-ND | 2.49 | 20.76 | 179.96 | PCE3162TR-ND | 831.00/M | 775.00/M | 720.00/M | EEF-CDK150R |
| | 22 | 0.09Ω | 1.6 Ar.m.s | PCE3163CT-ND | 2.70 | 22.48 | 194.84 | PCE3163TR-ND | 899.00/M | 839.00/M | 779.00/M | EEF-CDK220R |
| 12.5 | 4.7 | 0.18Ω | 1 Ar.m.s | PCE3165CT-ND | 2.28 | 19.01 | 164.73 | PCE3165TR-ND | 760.00/M | 710.00/M | 659.00/M | EEF-CDK82R2R |
| | 10 | 0.13Ω | 1 Ar.m.s | PCE3166CT-ND | 2.49 | 20.76 | 179.96 | PCE3166TR-ND | 831.00/M | 775.00/M | 720.00/M | EEF-CDK1B100R |
| | 15 | 0.11Ω | 1.3 Ar.m.s | PCE3167CT-ND | 2.70 | 22.48 | 194.84 | PCE3167TR-ND | 899.00/M | 839.00/M | 779.00/M | EEF-CDK1B150R |
| 16 | 2.2 | 0.26Ω | 1 Ar.m.s | PCE3169CT-ND | 2.28 | 19.01 | 164.73 | PCE3169TR-ND | 760.00/M | 710.00/M | 659.00/M | EEF-CDK1B220R |
| | 4.7 | 0.18Ω | 1 Ar.m.s | PCE3170CT-ND | 2.49 | 20.76 | 179.96 | PCE3170TR-ND | 831.00/M | 775.00/M | 720.00/M | EEF-CD1C2R7R |
| | 6.8 | 0.15Ω | 1 Ar.m.s | PCE3171CT-ND | 2.70 | 22.48 | 194.84 | PCE3171TR-ND | 899.00/M | 839.00/M | 779.00/M | EEF-CD1C6R8R |
| | 8.2 | 0.14Ω | 1 Ar.m.s | PCE3172CT-ND | 2.90 | 24.20 | 209.72 | PCE3172TR-ND | 968.00/M | 903.00/M | 839.00/M | EEF-CD1C8R2R |



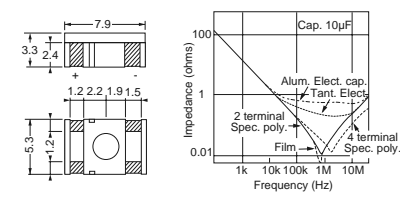
*Must be corrected for frequency using the Frequency Correction Factor (Sine wave current, Ambient temp.: Room temp. to 100°C): 10k(0.6), 20k(0.7), 50k(0.8), 100k(1.0), 250k(1.1), 500k(1.2), and 1M(1.3).

SP/CB Series Speciality Polymer Aluminum Electrolytic Capacitors, Surface Mount

FEATURES: • Excellent noise-absorbent characteristics • Surface mountable (Flow and reflow soldering method available) • Very stable capacitance, impedance and ESR against temperature • Excellent endurance characteristics due to an adoption of solid electrolyte. **SPECIFICATIONS:** • **Operating Temperature Range:** -40°C ~ +105°C. • **Capacitance Tolerance:** ±20% (120Hz/20°C). • **Leakage Current:** 1 ≤ 0.04 CV or 3µA after 2 min. • **tan δ:** ≤ 0.06 (120Hz/20°C). • **Permissible Current Between Terminals with Same Polarity:** 2A DC max (This shall be applicable only when each terminal is landed individually as shown in Fig. 2). • **Surge Voltage:** Rated working voltage x 1.25. • **Endurance:** After applying rated working voltage for 1000 hours at +105°C, and then being stabilized at +20°C, capacitor shall meet the following limits: Capacitance Change (±10% of initial measured value); tan, Impedance and DC Leakage Current (Initial specified value)



| Rated W.V. (VDC) | Nom. Cap. (µF) | Digi-Key Part No. | Cut Tape Pricing | Tape & Reel Pricing | | | Panasonic Part No. |
|------------------|----------------|-------------------|------------------|---------------------|--------|---------------|--------------------|
| | | | | 1 | 10 | 100 | |
| 6.3 | 10 | PCS1100BCT-ND | 2.02 | 16.84 | 145.95 | PCS1100BTR-ND | 675.00/M |
| | 22 | PCS1220BCT-ND | 2.45 | 20.44 | 177.13 | PCS1220BTR-ND | 820.00/M |
| | 33 | PCS1330BCT-ND | 2.98 | 24.85 | 215.38 | PCS1330BTR-ND | 997.00/M |
| 8 | 8.2 | PCS18R2BCT-ND | 2.02 | 16.84 | 145.95 | PCS18R2BTR-ND | 675.00/M |
| | 15 | PCS150BCT-ND | 2.45 | 20.44 | 177.13 | PCS150BTR-ND | 820.00/M |
| | 22 | PCS1220BCT-ND | 2.98 | 24.85 | 215.38 | PCS1220BTR-ND | 997.00/M |
| 12.5 | 4.7 | PCE2101BK-ND* | 2.70 | 22.51 | 202.58 | PCE2101TR-ND | 1354.00/M |
| | 16 | PCS34R7BCT-ND | 2.45 | 20.44 | 177.13 | PCS34R7BTR-ND | 820.00/M |
| | 6.8 | PCS36R8BCT-ND | 2.98 | 24.85 | 215.38 | PCS36R8BTR-ND | 997.00/M |
| 16 | 2.7 | PCE2102BK-ND* | 2.70 | 22.51 | 202.58 | PCE2102TR-ND | 1354.00/M |

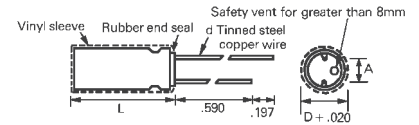


*Bulk

Bi-Polar Aluminum Electrolytic Capacitors

This bi-polar miniature aluminum electrolytic capacitor is ideal for reversal circuit of DC voltage. This series is the miniaturized case size and expanded products range from previous series. **FEATURES:** • Close capacitance tolerance (±20%). • Compact size. • Stable characteristics at -40 ~ +85°C. **SPECIFICATIONS:** • Operating temperature range:

-40°C ~ +85°C • Rated DC working voltage range: 6.3 ~ 50V DC • Rated capacitance range: 0.47 ~ 1000 µF • Capacitance tolerance: ±20% • DC leakage current: I = 0.03 CV + 3 (µA) (After 5 minutes application of DC working voltage at +20°C) • tan δ: max. at 120 Hz/20°C



| WV | Cap. (µF) | Max. Leakage (µA) | tan δ (120Hz/20°C) | Ripple Current (mA) rms | D | Dimensions L A d | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|-----|-----------|-------------------|--------------------|-------------------------|------|------------------|-------------------|---------|-------|--------|--------|--------------------|----------|--------------|
| | | | | | | | | 1 | 10 | 100 | 1,000 | | | |
| 6.3 | 33 | 9.3 | 0.30 | 60 | 5 | 11 2 0.5 | P1100-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A0JN330S |
| | 47 | 11.9 | 0.30 | 100 | 6.3 | 11.2 2.5 0.6 | P1101-ND | .47 | 4.03 | 31.58 | 201.00 | 187.00/M | 175.00/M | ECE-A0JN470S |
| | 100 | 21.9 | 0.30 | 160 | 8 | 11.5 3.5 0.6 | P1102-ND | .53 | 4.57 | 35.80 | 227.00 | 212.00/M | 198.00/M | ECE-A0JN101S |
| | 220 | 44.6 | 0.30 | 250 | 10 | 12.5 5 0.6 | P1103-ND | .83 | 7.12 | 55.80 | 354.00 | 330.00/M | 308.00/M | ECE-A0JN221S |
| | 330 | 65.4 | 0.30 | 320 | 10 | 16 5 0.6 | P1104-ND | .88 | 7.53 | 58.96 | 374.00 | 348.00/M | 326.00/M | ECE-A0JN331S |
| | 470 | 91.9 | 0.30 | 380 | 10 | 20 5 0.6 | P1105-ND | 1.09 | 9.37 | 73.43 | 466.00 | 434.00/M | 406.00/M | ECE-A0JN471S |
| | 1000 | 192.0 | 0.30 | 530 | 12.5 | 25 5 0.6 | P1106-ND | 1.49 | 12.80 | 100.28 | 637.00 | 593.00/M | 554.00/M | ECE-A0JN102S |
| 10 | 22 | 9.6 | 0.25 | 60 | 5 | 11 2 0.5 | P1107-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1AN220S |
| | 33 | 12.9 | 0.25 | 80 | 6.3 | 11.2 2.5 0.6 | P1108-ND | .47 | 4.00 | 31.32 | 199.00 | 185.00/M | 173.00/M | ECE-A1AN330S |
| | 47 | 17.7 | 0.25 | 100 | 6.3 | 11.2 2.5 0.6 | P1109-ND | .49 | 4.20 | 32.90 | 209.00 | 194.00/M | 182.00/M | ECE-A1AN470S |
| | 100 | 33.0 | 0.25 | 160 | 10 | 12.5 5 0.6 | P1110-ND | .62 | 5.34 | 41.85 | 266.00 | 247.00/M | 231.00/M | ECE-A1AN101S |
| | 220 | 69.0 | 0.25 | 250 | 10 | 16 5 0.6 | P1111-ND | .91 | 7.83 | 61.33 | 389.00 | 362.00/M | 339.00/M | ECE-A1AN221S |
| | 330 | 102.0 | 0.25 | 340 | 10 | 20 5 0.6 | P1112-ND | .95 | 8.16 | 63.96 | 407.00 | 378.00/M | 353.00/M | ECE-A1AN331S |
| | 1000 | 303.0 | 0.25 | 580 | 16 | 25 7.5 0.8 | P1114-ND | 1.66 | 14.21 | 111.33 | 706.00 | 658.00/M | 615.00/M | ECE-A1AN102S |
| 16 | 10 | 7.8 | 0.20 | 40 | 5 | 11 2 0.5 | P1115-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1CN100S |
| | 22 | 13.6 | 0.20 | 70 | 6.3 | 11.2 2.5 0.6 | P1116-ND | .47 | 4.00 | 31.32 | 199.00 | 185.00/M | 173.00/M | ECE-A1CN220S |
| | 33 | 18.9 | 0.20 | 90 | 6.3 | 11.2 2.5 0.6 | P1117-ND | .50 | 4.30 | 33.69 | 214.00 | 199.00/M | 186.00/M | ECE-A1CN330S |
| | 47 | 25.6 | 0.20 | 110 | 8 | 11.5 3.5 0.6 | P1118-ND | .55 | 4.70 | 36.85 | 234.00 | 218.00/M | 204.00/M | ECE-A1CN470S |
| | 100 | 51.0 | 0.20 | 200 | 10 | 12.5 5 0.6 | P1119-ND | .83 | 7.12 | 55.80 | 354.00 | 330.00/M | 308.00/M | ECE-A1CN101S |
| | 220 | 102.6 | 0.20 | 320 | 10 | 20 5 0.6 | P1120-ND | .95 | 8.16 | 63.96 | 406.00 | 378.00/M | 353.00/M | ECE-A1CN221S |
| | 330 | 161.4 | 0.20 | 405 | 12.5 | 20 5 0.6 | P1121-ND* | 1.29 | 11.05 | 86.59 | 550.00 | 512.00/M | 479.00/M | ECE-A1CN331S |
| 25 | 470 | 228.6 | 0.20 | 480 | 12.5 | 25 5 0.6 | P1122-ND* | 1.49 | 12.80 | 100.28 | 637.00 | 593.00/M | 554.00/M | ECE-A1CN471S |
| | 1000 | 483.0 | 0.20 | 700 | 16 | 25 7.5 0.8 | P1123-ND* | 2.29 | 19.66 | 153.97 | 978.00 | 910.00/M | 851.00/M | ECE-A1CN102S |
| | 4.7 | 6.6 | 0.15 | 25 | 5 | 11 2 0.5 | P1124-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1EN477S |
| | 10 | 10.5 | 0.15 | 45 | 5 | 11 2 0.5 | P1125-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1EN100S |
| | 22 | 19.5 | 0.15 | 80 | 6.3 | 11.2 2.5 0.6 | P1126-ND | .49 | 4.23 | 33.16 | 211.00 | 196.00/M | 183.00/M | ECE-A1EN220S |
| | 33 | 27.8 | 0.15 | 110 | 8 | 11.5 3.5 0.6 | P1127-ND | .55 | 4.70 | 36.85 | 234.00 | 218.00/M | 204.00/M | ECE-A1EN330S |
| | 47 | 38.3 | 0.15 | 140 | 10 | 12.5 5 0.6 | P1128-ND | .68 | 5.85 | 45.80 | 291.00 | 271.00/M | 253.00/M | ECE-A1EN470S |
| 50 | 100 | 78.0 | 0.15 | 230 | 10 | 16 5 0.6 | P1129-ND | .81 | 6.96 | 54.48 | 346.00 | 322.00/M | 301.00/M | ECE-A1EN101S |
| | 220 | 168.0 | 0.15 | 400 | 12.5 | 25 5 0.6 | P1130-ND* | 1.24 | 10.65 | 83.43 | 530.00 | 493.00/M | 461.00/M | ECE-A1EN221S |
| | 0.47 | 3.7 | 0.15 | 10 | 5 | 11 2 0.5 | P1131-ND* | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1HN477S |
| | 1.0 | 4.5 | 0.15 | 10 | 5 | 11 2 0.5 | P1132-ND* | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1HN101S |
| | 2.2 | 6.3 | 0.15 | 18 | 5 | 11 2 0.5 | P1133-ND* | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1HN2R2S |
| | 3.3 | 8.0 | 0.15 | 25 | 5 | 11 2 0.5 | P1134-ND* | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A1HN3R3S |
| | 4.7 | 10.0 | 0.15 | 35 | 6.3 | 11.2 2.5 0.6 | P1135-ND* | .48 | 4.13 | 32.37 | 206.00 | 191.00/M | 179.00/M | ECE-A1HN4R7S |
| 100 | 10 | 18.0 | 0.15 | 60 | 8 | 11.5 3.5 0.6 | P1136-ND* | .62 | 5.34 | 41.85 | 266.00 | 247.00/M | 231.00/M | ECE-A1HN100S |
| | 22 | 36.0 | 0.15 | 100 | 10 | 12.5 5 0.6 | P1137-ND* | .81 | 6.96 | 54.48 | 346.00 | 322.00/M | 301.00/M | ECE-A1HN220S |
| | 33 | 52.5 | 0.15 | 140 | 10 | 16 5 0.6 | P1138-ND* | .95 | 8.16 | 63.96 | 406.00 | 378.00/M | 353.00/M | ECE-A1HN330S |
| | 47 | 73.5 | 0.15 | 180 | 10 | 20 5 0.6 | P1139-ND* | .95 | 8.16 | 63.96 | 406.00 | 378.00/M | 353.00/M | ECE-A1HN470S |
| | 100 | 153.0 | 0.15 | 320 | 12.5 | 25 5 0.6 | P1140-ND* | 1.45 | 12.47 | 97.65 | 620.00 | 577.00/M | 540.00/M | ECE-A1HN101S |

*P1141-KIT-ND Digi-Key® Bi-Polar Capacitors Kit 10 each of parts listed above. Notebook style storage case and bin storage guide included. \$89.95

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic Bi-Polar Series SU Capacitors

FEATURES:

- Ideal for circuits where polarity is not constant or reverse voltage is applied when switches are turned on or off.
- Life: 2000 hours at +85°C.

SPECIFICATIONS:

Operating Temp. Range: -40°C to +85°C.

Capacitance Tolerance: ±20% (120Hz, +20°C).

Leakage Current: $I \leq 0.03CV + 3(\mu A)$ after 5 minutes application of rated working voltage at +20°C.

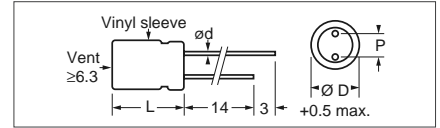
Low Temperature Characteristics: Impedance ratio max. at 120Hz. Following specified values.

| Working Volt. | 6.3V | 10V | 16V | 25V | 35V | 50V |
|---------------|------|-----|-----|-----|-----|-----|
| -25°C/+20°C | 4 | 3 | 2 | 2 | 2 | 2 |
| -40°C/+20°C | 8 | 6 | 4 | 4 | 4 | 3 |

ENDURANCE:

Test Conditions: Duration: 2000 hours. Ambient Temperature: +85°C. Applied Voltage: Rated DC working voltage to each polarity for 1000 hours.

Post Test Requirements: +20°C. Leakage Current: ≤ Initial specified value. Capacitance Change: ±20% of initial measured value. tan δ: ≤150% of initial specified value.



SHELF LIFE:

Test Conditions: Duration: 1000 hours. Ambient Temperature: +85°C. Applied Voltage: none

Post Test Requirements (+20°C): Same limits for "Endurance".

| WV | Cap. (μF) | D.C.L. (+20°C/5min.) [μA] max. | tan δ (120Hz/+20°C) (max.) | Ripple Current (mA) rms | Dimensions | | | | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|------|-----------|--------------------------------|----------------------------|-------------------------|------------|------|-----|----------|-------------------|----------|--------|---------|--------------------|-----------|--------------|--------------|
| | | | | | D | L | P | d | | 1 | 10 | 100 | | 1,000 | 5,000 | 10,000 |
| 6.3 | 33 | 9.2 | 0.30 | 80 | 5 | 11 | 2.0 | 0.5 | P1141-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M | ECE-A0JN330U |
| | 47 | 11.8 | 0.30 | 90 | 5 | 11 | 2.0 | 0.5 | P1142-ND | .21 | 1.81 | 14.21 | 90.00 | 84.00/M | 79.00/M | ECE-A0JN470U |
| | 100 | 21.9 | 0.30 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | P1143-ND | .28 | 2.39 | 18.69 | 119.00 | 110.00/M | 103.00/M | ECE-A0JN101U |
| | 220 | 44.5 | 0.30 | 200 | 8 | 11.5 | 3.5 | 0.6 | P1144-ND | .34 | 2.92 | 22.90 | 145.00 | 135.00/M | 127.00/M | ECE-A0JN221U |
| | 330 | 65.3 | 0.30 | 250 | 8 | 11.5 | 3.5 | 0.6 | P1145-ND | .43 | 3.70 | 28.95 | 184.00 | 171.00/M | 160.00/M | ECE-A0JN331U |
| | 470 | 91.8 | 0.30 | 310 | 10 | 12.5 | 5.0 | 0.6 | P1146-ND | .62 | 5.31 | 41.59 | 264.00 | 246.00/M | 230.00/M | ECE-A0JN471U |
| | 1000 | 192.0 | 0.30 | 430 | 10 | 20 | 5.0 | 0.6 | P1147-ND | .86 | 7.39 | 57.90 | 368.00 | 342.00/M | 320.00/M | ECE-A0JN102U |
| | 2200 | 418.8 | 0.30 | 660 | 12.5 | 25 | 5.0 | 0.6 | P1148-ND | 1.24 | 10.62 | 83.17 | 528.00 | 492.00/M | 460.00/M | ECE-A0JN222U |
| | 3300 | 626.7 | 0.30 | 760 | 16 | 25 | 7.5 | 0.8 | P1149-ND | 1.67 | 14.31 | 112.12 | 712.00 | 663.00/M | 620.00/M | ECE-A0JN332U |
| | 4700 | 891.3 | 0.30 | 1170 | 16 | 31.5 | 7.5 | 0.8 | P1150-ND | 2.37 | 20.33 | 159.24 | 1011.00 | 941.00/M | 880.00/M | ECE-A0JN472U |
| | 6800 | 1288.2 | 0.30 | 1450 | 18 | 35.5 | 7.5 | 0.8 | P1151-ND | 3.23 | 27.72 | 217.14 | 1379.00 | 1283.00/M | 1200.00/M | ECE-A0JN682U |
| | 10 | 22 | 9.6 | 0.25 | 60 | 5 | 11 | 2.0 | 0.5 | P1152-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M |
| 33 | | 12.9 | 0.25 | 80 | 5 | 11 | 2.0 | 0.5 | P1153-ND | .21 | 1.81 | 14.21 | 90.00 | 84.00/M | 79.00/M | ECE-A1AN330U |
| 47 | | 17.1 | 0.25 | 90 | 5 | 11 | 2.0 | 0.5 | P1154-ND | .24 | 2.08 | 16.32 | 104.00 | 96.00/M | 90.00/M | ECE-A1AN470U |
| 100 | | 33.0 | 0.25 | 130 | 6.3 | 11.2 | 2.5 | 0.5 | P1155-ND | .59 | 5.07 | 39.74 | 252.00 | 235.00/M | 220.00/M | ECE-A1AN101U |
| 220 | | 69.0 | 0.25 | 200 | 8 | 11.5 | 3.5 | 0.6 | P1156-ND | .42 | 3.60 | 28.16 | 179.00 | 166.00/M | 156.00/M | ECE-A1AN221U |
| 330 | | 102.0 | 0.25 | 280 | 10 | 16 | 5.0 | 0.6 | P1157-ND | .56 | 4.84 | 37.90 | 241.00 | 224.00/M | 209.00/M | ECE-A1AN331U |
| 470 | | 144.0 | 0.25 | 340 | 10 | 16 | 5.0 | 0.6 | P1158-ND | .81 | 6.92 | 54.22 | 344.00 | 320.00/M | 300.00/M | ECE-A1AN471U |
| 1000 | | 303.0 | 0.25 | 470 | 12.5 | 20 | 5.0 | 0.6 | P1159-ND | 1.11 | 9.48 | 74.22 | 471.00 | 439.00/M | 410.00/M | ECE-A1AN102X |
| 2200 | | 663.0 | 0.25 | 690 | 16 | 25 | 7.5 | 0.8 | P1160-ND | 1.62 | 13.88 | 108.70 | 690.00 | 642.00/M | 601.00/M | ECE-A1AN222U |
| 3300 | | 993.0 | 0.25 | 1090 | 16 | 31.5 | 7.5 | 0.8 | P1161-ND | 2.32 | 19.86 | 155.55 | 988.00 | 919.00/M | 860.00/M | ECE-A1AN332U |
| 4700 | | 1413.0 | 0.25 | 1200 | 18 | 35.5 | 7.5 | 0.8 | P1162-ND | 3.23 | 27.72 | 217.14 | 1379.00 | 1283.00/M | 1200.00/M | ECE-A1AN472U |
| 16 | | 10 | 7.8 | 0.20 | 40 | 5 | 11 | 2.0 | 0.5 | P1163-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M |
| | 22 | 13.5 | 0.20 | 60 | 5 | 11 | 2.0 | 0.5 | P1164-ND | .21 | 1.81 | 14.21 | 90.00 | 84.00/M | 79.00/M | ECE-A1CN220U |
| | 33 | 18.8 | 0.20 | 80 | 5 | 11 | 2.0 | 0.5 | P1165-ND | .25 | 2.12 | 16.58 | 105.00 | 98.00/M | 92.00/M | ECE-A1CN330U |
| | 47 | 25.5 | 0.20 | 100 | 6.3 | 11.2 | 2.5 | 0.5 | P1166-ND | .31 | 2.69 | 21.06 | 134.00 | 124.00/M | 116.00/M | ECE-A1CN470U |
| | 100 | 51.0 | 0.20 | 180 | 8 | 11.5 | 3.5 | 0.6 | P1167-ND | .42 | 3.56 | 27.90 | 177.00 | 165.00/M | 154.00/M | ECE-A1CN101U |
| | 220 | 108.6 | 0.20 | 260 | 10 | 12.5 | 5.0 | 0.6 | P1168-ND | .56 | 4.84 | 37.90 | 241.00 | 224.00/M | 209.00/M | ECE-A1CN221X |
| | 330 | 161.4 | 0.20 | 330 | 10 | 16 | 5.0 | 0.6 | P1169-ND | .75 | 6.45 | 50.53 | 321.00 | 299.00/M | 279.00/M | ECE-A1CN331U |
| | 470 | 228.6 | 0.20 | 380 | 10 | 20 | 5.0 | 0.6 | P1170-ND | 1.02 | 8.77 | 68.70 | 436.00 | 406.00/M | 380.00/M | ECE-A1CN471U |
| | 1000 | 483.0 | 0.20 | 560 | 12.5 | 25 | 5.0 | 0.6 | P1171-ND | 1.45 | 12.47 | 97.65 | 620.00 | 577.00/M | 540.00/M | ECE-A1CN102U |
| | 2200 | 1059.0 | 0.20 | 750 | 16 | 31.5 | 7.5 | 0.8 | P1172-ND | 2.21 | 18.95 | 148.44 | 943.00 | 877.00/M | 820.00/M | ECE-A1CN222U |
| | 3300 | 1587.0 | 0.20 | 900 | 18 | 35.5 | 7.5 | 0.8 | P1173-ND | 3.23 | 27.72 | 217.14 | 1379.00 | 1283.00/M | 1200.00/M | ECE-A1CN332U |
| | 25 | 3.3 | 5.4 | 0.15 | 20 | 5 | 11 | 2.0 | 0.5 | P1174-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M |
| 4.7 | | 6.5 | 0.15 | 25 | 5 | 11 | 2.0 | 0.5 | P1175-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M | ECE-A1EN4R7U |
| 10 | | 10.5 | 0.15 | 45 | 5 | 11 | 2.0 | 0.5 | P1176-ND | .21 | 1.81 | 14.21 | 90.00 | 84.00/M | 79.00/M | ECE-A1EN100U |
| 22 | | 19.5 | 0.15 | 60 | 5 | 11 | 2.0 | 0.5 | P1177-ND | .24 | 2.08 | 16.32 | 104.00 | 96.00/M | 90.00/M | ECE-A1EN220X |
| 33 | | 27.7 | 0.15 | 90 | 6.3 | 11.2 | 2.5 | 0.5 | P1178-ND | .32 | 2.76 | 21.58 | 137.00 | 128.00/M | 119.00/M | ECE-A1EN330U |
| 47 | | 38.2 | 0.15 | 110 | 6.3 | 11.2 | 2.5 | 0.5 | P1179-ND | .40 | 3.46 | 27.11 | 172.00 | 160.00/M | 150.00/M | ECE-A1EN470U |
| 100 | | 78.0 | 0.15 | 180 | 8 | 11.5 | 3.5 | 0.6 | P1180-ND | .54 | 4.60 | 36.06 | 229.00 | 213.00/M | 199.00/M | ECE-A1EN101U |
| 220 | | 168.0 | 0.15 | 320 | 10 | 16 | 5.0 | 0.6 | P1181-ND | .70 | 6.01 | 47.11 | 299.00 | 278.00/M | 260.00/M | ECE-A1EN221U |
| 330 | | 250.5 | 0.15 | 350 | 12.5 | 20 | 5.0 | 0.6 | P1182-ND | .94 | 8.10 | 63.43 | 403.00 | 375.00/M | 351.00/M | ECE-A1EN331U |
| 470 | | 355.5 | 0.15 | 430 | 12.5 | 20 | 5.0 | 0.6 | P1183-ND | 1.35 | 11.56 | 90.54 | 575.00 | 535.00/M | 500.00/M | ECE-A1EN471U |
| 1000 | | 753.0 | 0.15 | 680 | 16 | 25 | 7.5 | 0.8 | P1184-ND | 2.16 | 18.48 | 144.76 | 919.00 | 856.00/M | 800.00/M | ECE-A1EN102U |
| 2200 | | 1653.0 | 0.15 | 900 | 18 | 35.5 | 7.5 | 0.8 | P1185-ND | 3.34 | 28.63 | 224.25 | 1424.00 | 1325.00/M | 1239.00/M | ECE-A1EN222U |
| 35 | 4.7 | 7.9 | 0.15 | 30 | 5 | 11 | 2.0 | 0.5 | P1186-ND | .21 | 1.78 | 13.95 | 89.00 | 82.00/M | 77.00/M | ECE-A1VN4R7U |
| | 10 | 13.5 | 0.15 | 43 | 5 | 11 | 2.0 | 0.5 | P1187-ND | .24 | 2.08 | 16.32 | 104.00 | 96.00/M | 90.00/M | ECE-A1VN100U |
| | 22 | 26.1 | 0.15 | 80 | 6.3 | 11.2 | 2.5 | 0.5 | P1188-ND | .33 | 2.79 | 21.85 | 139.00 | 129.00/M | 121.00/M | ECE-A1VN220U |
| | 33 | 37.6 | 0.15 | 100 | 8 | 11.5 | 3.5 | 0.6 | P1189-ND | .42 | 3.60 | 28.16 | 179.00 | 166.00/M | 156.00/M | ECE-A1VN330U |
| | 47 | 52.3 | 0.15 | 120 | 8 | 11.5 | 3.5 | 0.6 | P1190-ND | .54 | 4.60 | 36.06 | 229.00 | 213.00/M | 199.00/M | ECE-A1VN470U |
| | 100 | 108.0 | 0.15 | 230 | 10 | 16 | 5.0 | 0.6 | P1191-ND | .70 | 6.01 | 47.11 | 299.00 | 278.00/M | 260.00/M | ECE-A1VN101U |
| | 220 | 234.0 | 0.15 | 360 | 12.5 | 20 | 5.0 | 0.6 | P1192-ND | .97 | 8.30 | 65.01 | 413.00 | 384.00/M | 359.00/M | ECE-A1VN221U |
| | 330 | 349.5 | 0.15 | 450 | 12.5 | 20 | 5.0 | 0.6 | P1193-ND | 1.24 | 10.62 | 83.17 | 528.00 | 492.00/M | 460.00/M | ECE-A1VN331U |
| | 470 | 496.5 | 0.15 | 590 | 12.5 | 25 | 5.0 | 0.6 | P1194-ND | 1.78 | 15.25 | 119.49 | 759.00 | 706.00/M | 660.00/M | ECE-A1VN471U |
| 50 | 0.47 | 3.7 | 0.15 | 10 | 5 | 11 | 2.0 | 0.5 | P1195-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M | ECE-A1HN47U |
| | 1 | 4.5 | 0.15 | 10 | 5 | 11 | 2.0 | 0.5 | P1196-ND | .20 | 1.68 | 13.16 | 84.00 | 78.00/M | 73.00/M | ECE-A1HN010U |
| | 2.2 | 6.3 | 0.15 | 18 | 5 | 11 | 2.0 | 0.5 | P1197-ND | .21 | 1.81 | 14.21 | 90.00 | 84.00/M | 79.00/M | ECE-A1HN2R2U |
| | 3.3 | 7.9 | 0.15 | 25 | 5 | 11 | 2.0 | 0.5 | P1198-ND | .22 | 1.92 | 15.00 | 95.00 | 89.00/M | 83.00/M | ECE-A1HN3R3U |
| | 4.7 | 10.0 | 0.15 | 30 | 5 | 11 | 2.0 | 0.5 | P1199-ND | .23 | 1.98 | 15.53 | 99.00 | 92.00/M | 86.00/M | ECE-A1HN4R7U |
| | 10 | 18.0 | 0.15 | 50 | 6.3 | 11.2 | 2.5 | 0.5 | P1280-ND | .32 | 2.76 | 21.58 | 137.00 | 128.00/M | 119.00/M | ECE-A1HN100U |
| | 22 | 36.0 | 0.15 | 90 | 8 | 11.5 | 3.5 | 0.6 | P1281-ND | .43 | 3.70 | 28.95 | 184.00 | 171.00/M | 160.00/M | ECE-A1HN220U |
| | 33 | 52.5 | 0.15 | 110 | 8 | 11.5 | 3.5 | 0.6 | P1282-ND | .54 | 4.60 | 36.06 | 229.00 | 213.00/M | 199.00/M | ECE-A1HN330U |
| | 47 | 73.5 | 0.15 | 140 | 10 | 12.5 | 5.0 | 0.6 | P1283-ND | .73 | 6.25 | 48.96 | 311.00 | 289.00/M | 271.00/M | ECE-A1HN470U |
| | 100 | 153.0 | 0.15 | 250 | 10 | 20 | 5.0 | 0.6 | P1284-ND | 1.00 | 8.53 | 66.85 | 425.00 | 395.00/M | 369.00/M | ECE-A1HN101U |
| | 220 | 333.0 | 0.15 | 360 | 12.5 | 25 | 5.0 | 0.6 | P1285-ND | 1.35 | 11.56 | 90.54 | 575.00 | 535.00/M | 500.00/M | ECE-A1HN221U |
| | 330 | 498.0 | 0.15 | 450 | 16 | 25 | 7.5 | 0.8 | P1286-ND | 1.78 | 15.25 | 119.49 | 759.00 | 706.00/M | 660.00/M | ECE-A1HN331U |
| 470 | 708.0 | 0.15 | 590 | 16 | 31.5 | 7.5 | 0.8 | P1287-ND | 2.53 | 21.71 | 170.03 | 1080.00 | 1005.00/M | 940.00/M | ECE-A1HN471U | |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic VV/TA/VA/VS/HA/HB/FC Series Aluminum Electrolytic Capacitors, Surface Mount Type

FEATURES:

- Surface Mount Type
- High CV Volumetric Efficiency
- Tape and Reel Packaging for Automatic Placement
- Anti-solvent: Freon-TÉ, TES, TP-35

SPECIFICATIONS:

Operating Temp. Range: TA Series: -40°C to +125°C
 VV/HA/HB/FC Series: -40°C to +105°C
 VA/VS/BS-BP Series: -40 to +85°C

Capacitance Tolerance: ±20% (120Hz, +20°C).

Leakage Current: $I \leq 0.01CV$ or $3(\mu A)$ whichever is greater measured after a 2 min. application of rated working voltage at +20°C.

Tangent of Loss Angle: $\tan \delta \leq$ Following specified values (120Hz, +20°C).

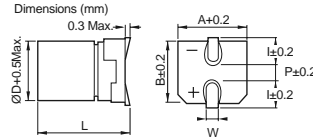
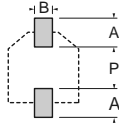
| Working Volt. | Series | 4.0V | 6.3V | 10V | 16V | 25V | 35V | 50V |
|---------------|-------------|----------|------|------|------|------|------|------|
| | | VV/VA/VS | 0.35 | 0.26 | 0.20 | 0.16 | 0.14 | 0.12 |
| tan δ | TA | — | — | 0.32 | 0.24 | 0.21 | 0.18 | 0.18 |
| | HA | — | 0.30 | 0.22 | 0.16 | 0.14 | 0.12 | 0.12 |
| | HB | 0.50 | 0.30 | 0.22 | 0.16 | 0.14 | 0.12 | 0.12 |
| FC | — | 0.26 | 0.19 | 0.16 | 0.14 | 0.12 | — | — |
| | VS Bi-polar | — | 0.52 | 0.40 | 0.32 | 0.28 | 0.24 | 0.24 |

Low Temperature Characteristics: Impedance ratio (120Hz) \leq Following specified values.

| Working Volt. | Series | 4.0V | 6.3V | 10V | 16V | 25V | 35V | 50V |
|---------------|--------|----------|------|-----|-----|-----|-----|-----|
| | | VV/VA/VS | 7 | 4 | 3 | 2 | 2 | 2 |
| Impe-120Hz | TA | — | — | 8 | 5 | 4 | 3 | 3 |
| | | — | — | 14 | 12 | 10 | 8 | 8 |
| | | — | — | — | — | — | — | — |
| dance | HB/HA | 15 | 8 | 6 | 4 | 4 | 3 | 3 |
| | | — | 2 | 2 | 2 | 2 | 2 | — |
| 120Hz | FC | — | 3 | 3 | 3 | 3 | 3 | — |
| | | — | — | — | — | — | — | — |

Land/Pad dimensions as mounting guideline.

| Case Code | P | A | B |
|-----------|-----|-----|-----|
| A | 0.6 | 2.2 | 1.5 |
| B | 1.0 | 2.5 | 1.6 |
| C | 1.5 | 2.8 | 1.6 |
| D | 2.2 | 3.0 | 1.6 |
| E | 2.2 | 4.5 | 1.6 |
| F | 3.2 | 4.0 | 2.0 |
| G | 4.6 | 4.3 | 2.0 |



| Series | Case Code | D | L | A | B | I | W | P |
|--------|-----------|------|------|------|------|-----|----------|-----|
| | | VV | B | 4 | 5.4 | 4.3 | 4.3 | 1.8 |
| TA | D | 6.3 | 5.4 | 6.6 | 6.6 | 2.4 | 0.5-0.8 | 2.2 |
| | E | 8.0 | 6.2 | 8.3 | 9.5 | 3.4 | 0.65±0.1 | 2.2 |
| | F | 8.0 | 10.2 | 8.3 | 10.0 | 3.4 | 0.90±0.2 | 3.2 |
| VA | G | 10.0 | 10.2 | 10.3 | 10.3 | 3.5 | 0.90±0.2 | 4.6 |
| | B | 4.0 | 5.7 | 4.3 | 4.3 | 1.8 | 0.5-0.8 | 1.0 |
| VS | C | 5.0 | 5.7 | 5.3 | 5.3 | 2.2 | 0.5-0.8 | 1.5 |
| | D | 6.3 | 5.7 | 5.3 | 5.3 | 2.2 | 0.5-0.8 | 1.5 |

| Series | Case Code | D | L | A | B | I | W | P |
|------------|-----------|------------|------|------|----------|-----|-----------|-----|
| | | VA (cont.) | D | 6.3 | 5.7 | 6.6 | 6.6 | 2.4 |
| HA | E | 8.0 | 6.2 | 8.3 | 8.3 | 3.4 | 0.5-0.8 | 2.2 |
| | F | 8.0 | 10.2 | 8.3 | 8.3 | 2.9 | 0.7-1.0 | 3.2 |
| | G | 10.0 | 10.2 | 10.3 | 10.3 | 3.2 | 0.7-1.0 | 4.6 |
| HB | B | 4.0 | 5.4 | 4.3 | 4.3 | 1.8 | 0.5-0.8 | 1.0 |
| | C | 5.0 | 5.4 | 5.3 | 5.3 | 2.2 | 0.5-0.8 | 1.5 |
| | D | 6.3 | 5.4 | 6.6 | 6.6 | 2.4 | 0.5-0.8 | 2.2 |
| VS | A | 3.0 | 5.4 | 3.3 | 3.3 | 1.5 | 0.45-0.75 | 0.6 |
| | B | 4.0 | 5.4 | 4.3 | 4.3 | 1.8 | 0.5-0.8 | 1.0 |
| | C | 5.0 | 5.4 | 5.3 | 5.3 | 2.2 | 0.5-0.8 | 1.5 |
| | D | 6.3 | 5.4 | 6.6 | 6.6 | 2.4 | 0.5-0.8 | 2.2 |
| FC | D2 | 6.3 | 5.7 | 6.6 | 6.6 | 2.4 | 0.5-0.8 | 2.2 |
| | B | 4 | 5.4 | 4.3 | 4.3 | 1.8 | 0.55-0.75 | 1.0 |
| | C | 5 | 5.4 | 5.3 | 5.3 | 2.2 | 0.55-0.75 | 1.5 |
| | D | 6.3 | 5.4 | 6.6 | 6.6 | 2.4 | 0.55-0.75 | 1.5 |
| VS-BIPOLAR | E | 8 | 6.2 | 8.3 | 8.3 | 3.4 | 0.55-0.75 | 2.2 |
| | F | 8 | 10.2 | 8.3 | 8.3 | 3.4 | 0.7-1.1 | 3.1 |
| | G | 10 | 10.2 | 10.3 | 10.3 | 3.5 | 0.7-1.1 | 4.6 |
| | B | 4 | 5.4 | 4.3 | 5.5 Max. | 1.8 | 0.55-0.75 | 1.0 |
| VS-BIPOLAR | C | 5 | 5.4 | 5.3 | 6.5 Max. | 2.2 | 0.55-0.75 | 1.5 |
| | D | 6.3 | 5.4 | 6.6 | 7.8 Max. | 2.6 | 0.55-0.75 | 1.8 |

| Rated W.V. (VDC) | Nom. Cap (µF) | Max. Leakage Current (µA) | Size Code | Max. Ripple Current 120Hz, 105°C (mA rms) | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | Panasonic Part No. | | | |
|---|---------------|---------------------------|-----------|---|-------------------|------------------|--------|--------|-------------------|---------------------|----------|----------|--------------------|----------|---------------|---------------|
| | | | | | | 10 | 100 | 500 | | 500 | 1,000 | 2,000 | | 5,000 | 6,000 | |
| <i>VV Series: -40°C to +105°C (2000 Hour Life) - NOT RECOMMENDED FOR NEW DESIGN</i> | | | | | | | | | | | | | | | | |
| 6.3 | 100 | 6.3 | D | 71 | PCE1002CT-ND | 4.91 | 42.51 | 163.50 | — | — | — | — | ECE-V0JV101SP | | | |
| 16 | 10 | 3.0 | B | 28 | PCE1003CT-ND | 3.40 | 29.47 | 113.36 | PCE1003TR-ND | — | 148.00/M | — | ECE-V1CV100SR | | | |
| 50 | 0.15 | 3.0 | B | 1.5 | PCE1010CT-ND | 3.40 | 29.47 | 113.36 | PCE1010TR-ND | — | 148.00/M | — | ECE-V1HRV15SR | | | |
| | 0.22 | 3.0 | B | 2.3 | PCE1012CT-ND | 3.40 | 29.47 | 113.36 | PCE1012TR-ND | — | 148.00/M | — | ECE-V1HRV22SR | | | |
| | 3.3 | 3.0 | B | 18 | PCE1019CT-ND | 3.40 | 29.47 | 113.36 | PCE1019TR-ND | — | 148.00/M | — | ECE-V1HRV33SR | | | |
| | — | — | — | — | — | — | — | — | — | — | — | — | — | | | |
| <i>TA Automotive Series: -40°C to +125°C (1000 Hour Life)</i> | | | | | | | | | | | | | | | | |
| 10 | 100 | 10 | E | 62 | PCE3143CT-ND | 11.56 | 107.38 | 413.00 | PCE3143TR-ND | — | 496.00 | — | 463.00/M | — | EEV-TA1A1010P | |
| | 220 | 22 | F | 93 | PCE3144CT-ND | 15.25 | 141.60 | — | PCE3144TR-ND | 348.50 | 654.00 | — | — | — | EEV-TA1A221P | |
| | 330 | 33 | G | 118 | PCE3145CT-ND | 22.11 | 205.30 | — | PCE3145TR-ND | 505.50 | 948.00 | — | — | — | EEV-TA1A331P | |
| 16 | 100 | 16 | F | 89 | PCE3146CT-ND | 15.25 | 141.60 | — | PCE3146TR-ND | 348.50 | 654.00 | — | — | — | EEV-TA1C101P | |
| | 220 | 35.2 | G | 113 | PCE3147CT-ND | 22.11 | 205.30 | — | PCE3147TR-ND | 505.50 | 948.00 | — | — | — | EEV-TA1C221P | |
| 25 | 47 | 11.8 | E | 56 | PCE3148CT-ND | 11.56 | 107.38 | 413.00 | PCE3148TR-ND | — | 496.00 | — | 463.00/M | — | EEV-TA1E470P | |
| | 100 | 25 | F | 84 | PCE3149CT-ND | 15.25 | 141.60 | — | PCE3149TR-ND | 348.50 | 654.00 | — | — | — | EEV-TA1E101P | |
| 35 | 33 | 11.6 | E | 53 | PCE3150CT-ND | 11.56 | 107.38 | 413.00 | PCE3150TR-ND | — | 496.00 | — | 463.00/M | — | EEV-TA1V330P | |
| | 47 | 16.5 | F | 79 | PCE3151CT-ND | 15.25 | 141.60 | — | PCE3151TR-ND | 348.50 | 654.00 | — | — | — | EEV-TA1V470P | |
| | 100 | 3.5 | G | 101 | PCE3152CT-ND | 22.11 | 205.30 | — | PCE3152TR-ND | 505.50 | 948.00 | — | — | — | EEV-TA1V101P | |
| 50 | 10 | 5 | E | 25 | PCE3153CT-ND | 11.56 | 107.38 | 413.00 | PCE3153TR-ND | — | 496.00 | — | 463.00/M | — | EEV-TA1H100P | |
| | 22 | 11 | E | 50 | PCE3154CT-ND | 11.56 | 107.38 | 413.00 | PCE3154TR-ND | — | 496.00 | — | 463.00/M | — | EEV-TA1H220P | |
| | 33 | 16.5 | F | 74 | PCE3155CT-ND | 15.25 | 141.60 | — | PCE3155TR-ND | 348.50 | 654.00 | — | — | — | EEV-TA1H330P | |
| | 47 | 23.5 | G | 94 | PCE3156CT-ND | 22.11 | 205.30 | — | PCE3156TR-ND | 505.50 | 948.00 | — | — | — | EEV-TA1H470P | |
| <i>VA General Purpose Series: -40°C to +85°C (1000 Hour Life)</i> | | | | | | | | | | | | | | | | |
| 4.0 | 33 | 3.0 | B | 26 | PCE2023CT-ND | 3.07 | 26.57 | 102.00 | PCE2023TR-ND | — | — | — | 123.00/M | — | 115.00/M | ECE-V0GA330R |
| | 47 | 3.0 | B | 34 | PCE2024CT-ND | 3.07 | 26.57 | 102.00 | PCE2024TR-ND | — | — | — | 123.00/M | — | 115.00/M | ECE-V0GA470R |
| | 100 | 4.0 | C | 61 | PCE2025CT-ND | 3.57 | 30.94 | 119.00 | PCE2025TR-ND | — | 143.00 | — | 134.00/M | — | — | ECE-V0GA101P |
| | 220 | 8.8 | D | 82 | PCE2026CT-ND | 4.12 | 35.67 | 137.00 | PCE2026TR-ND | — | 165.00 | — | 155.00/M | — | — | ECE-V0GA221P |
| 6.3 | 22 | 3.0 | B | 29 | PCE2000CT-ND† | 3.07 | 26.57 | 102.00 | PCE2000TR-ND | — | — | 123.00/M | — | 115.00/M | ECE-V0JA220R | |
| | 33 | 3.0 | C | 38 | PCE2001CT-ND | 4.41 | 38.22 | 147.00 | PCE2001TR-ND | — | 177.00 | — | 166.00/M | — | — | ECE-V0JA330P |
| | 47 | 3.0 | C | 46 | PCE2002CT-ND† | 3.57 | 30.94 | 119.00 | PCE2002TR-ND | — | — | — | 134.00/M | — | — | ECE-V0JA470P |
| | 100 | 6.3 | D | 71 | PCE2003CT-ND† | 4.12 | 35.67 | 137.00 | PCE2003TR-ND | — | 165.00 | — | 155.00/M | — | — | ECE-V0JA101P |
| 10 | 22 | 3.0 | C | 35 | PCE2004CT-ND | 3.91 | 33.85 | 130.00 | PCE2004TR-ND | — | 157.00 | — | 147.00/M | — | — | ECE-V1AA220P |
| | 33 | 3.3 | C | 43 | PCE2005CT-ND† | 3.57 | 30.94 | 119.00 | PCE2005TR-ND | — | 143.00 | — | 134.00/M | — | — | ECE-V1AA330P |
| | 47 | 4.7 | D | 65 | PCE2006CT-ND | 4.24 | 36.76 | 141.50 | PCE2006TR-ND | — | 170.00 | — | 159.00/M | — | — | ECE-V1AA470P |
| | 100 | 10.0 | D | 73 | PCE2009CT-ND | 4.01 | 34.72 | 133.50 | PCE2009TR-ND | — | 161.00 | — | 150.00/M | — | — | ECE-V1AA101UP |
| 16 | 10 | 3.0 | B | 28 | PCE2007CT-ND† | 3.07 | 26.57 | 102.00 | PCE2007TR-ND | — | — | 123.00/M | — | 115.00/M | ECE-V1CA100R | |
| | 22 | 3.6 | C | 39 | PCE2008CT-ND† | 3.57 | 30.94 | 119.00 | PCE2008TR-ND | — | 143.00 | — | 134.00/M | — | — | ECE-V1CA220P |
| | 33 | 5.3 | D | 60 | PCE2009CT-ND | 4.24 | 36.76 | 141.50 | PCE2009TR-ND | — | 170.00 | — | 159.00/M | — | — | ECE-V1CA330P |
| | 47 | 7.5 | D | 70 | PCE2010CT-ND† | 4.12 | 35.67 | 137.00 | PCE2010TR-ND | — | 165.00 | — | 155.00/M | — | — | ECE-V1CA470P |
| 25 | 4.7 | 3.0 | B | 22 | PCE2011CT-ND | 3.07 | 26.57 | 102.00 | PCE2011TR-ND | — | — | — | 123.00/M | — | 115.00/M | ECE-V1EA47R |
| | 6.8 | 3.0 | B | 25 | PCE2027CT-ND | 3.07 | 26.57 | 102.00 | PCE2027TR-ND | — | — | — | 123.00/M | — | 115.00/M | ECE-V1EA68R |
| | 10 | 3.0 | C | 28 | PCE2012CT-ND | 3.57 | 30.94 | 119.00 | PCE2012TR-ND | — | 143.00 | — | 134.00/M | — | — | ECE-V1EA100P |
| | 22 | 5.5 | D | 55 | PCE2013CT-ND | 4.12 | 35.67 | 137.00 | PCE2013TR-ND | — | 165.00 | — | 155.00/M | — | — | ECE-V1EA220P |
| 35 | 33 | 8.2 | D | 65 | PCE2014CT-ND† | 4.12 | 35.67 | 137.00 | PCE2014TR-ND | —</ | | | | | | |

Panasonic VV/TAVA/VS/HA/HB/FC Series Aluminum Electrolytic Capacitors, Surface Mount Type (cont.)

| Rated W.V. (VDC) | Nom. Cap (µF) | Max. Leakage Current (µA) | Size Code | Max. Ripple Current 120Hz, 105°C (mA rms) | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part No. | |
|--|---------------|---------------------------|-----------|---|--------------------------|------------------|--------|--------|--------------------------|---------------------|----------|----------|----------|--------------------|---------------|
| | | | | | | 10 | 100 | 500 | | 500 | 1,000 | 2,000 | 5,000 | | 6,000 |
| VS General Purpose Low Profile Series: -40°C to +85°C (2000 Hour Life) | | | | | | | | | | | | | | | |
| 4 | 22 | 3 | A | 19 | PCE3051CT-ND | 2.78 | 25.86 | 99.46 | PCE3051TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V0GS220SR |
| | 33 | 3 | B | 26 | PCE3052CT-ND | 2.33 | 21.61 | 83.11 | PCE3052TR-ND | — | — | 100.00/M | — | 94.00/M | ECE-V0GA330SR |
| | 47 | 3 | B | 34 | PCE3053CT-ND | 2.31 | 21.45 | 82.50 | PCE3053TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V0GA470SR |
| | 100 | 4 | C | 61 | PCE3054CT-ND | 2.93 | 25.35 | 97.50 | PCE3054TR-ND | — | 117.00 | — | 110.00/M | — | ECE-V0GA101SP |
| | 220 | 8.8 | D | 82 | PCE3055CT-ND | 3.34 | 28.93 | 111.25 | PCE3055TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V0GA221SP |
| 6.3 | 22 | 3 | B | 29 | PCE3056CT-ND | 2.31 | 21.45 | 82.50 | PCE3056TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V0JA220SR |
| | 47 | 3 | C | 46 | PCE3057CT-ND | 2.93 | 25.35 | 97.50 | PCE3057TR-ND | — | 117.00 | — | 110.00/M | — | ECE-V0JA470SR |
| | 100 | 6.3 | D | 71 | PCE3058CT-ND | 3.34 | 28.93 | 111.25 | PCE3058TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V0JA101SP |
| | 330 | 20.7 | E | 300 | PCE2034CT-ND | 4.84 | 41.93 | 161.50 | PCE2034TR-ND | — | 194.00 | — | 182.00/M | — | ECE-V0JA331P |
| | 470 | 29.6 | F | 380 | PCE2035CT-ND | 6.19 | 53.63 | — | PCE2035TR-ND | 132.00 | 248.00 | — | 232.00/M | — | ECE-V0JA471P |
| | 680 | 42.8 | G | 550 | PCE2036CT-ND | 16.80 | 145.60 | — | PCE2036TR-ND | 358.50 | 674.00 | — | 631.00/M | — | ECE-V0JA681P |
| 10 | 820 | 51.7 | G | 660 | PCE2037CT-ND | 16.80 | 145.60 | — | PCE2037TR-ND | 358.50 | 674.00 | — | 631.00/M | — | ECE-V0JA821P |
| | 1000 | 63.0 | F | 390 | PCE3173CT-ND <i>NEW!</i> | 5.50 | 47.68 | — | PCE3173TR-ND <i>NEW!</i> | 117.50 | 221.00 | — | — | — | ECE-V0JA102UP |
| | 1000 | 63.0 | G | 700 | PCE2038CT-ND | 7.84 | 67.93 | — | PCE2038TR-ND | 167.00 | 314.00 | — | 294.00/M | — | ECE-V0JA102P |
| | 1500 | 94.5 | G | 700 | PCE3174CT-ND <i>NEW!</i> | 6.97 | 60.42 | — | PCE3174TR-ND <i>NEW!</i> | 148.50 | 280.00 | — | — | — | ECE-V0JA152P |
| | 33 | 3.3 | B | 29 | PCE3175CT-ND <i>NEW!</i> | 2.59 | 24.02 | 92.40 | PCE3175TR-ND <i>NEW!</i> | — | — | 111.00/M | — | 104.00/M | ECE-V1AA330WR |
| | 33 | 3.3 | C | 43 | PCE3059CT-ND | 2.98 | 25.86 | 99.46 | PCE3059TR-ND | — | 120.00 | — | 112.00/M | — | ECE-V1AA330SR |
| 16 | 47 | 4.7 | D | 65 | PCE3060CT-ND | 3.43 | 29.76 | 114.45 | PCE3060TR-ND | — | 138.00 | — | 129.00/M | — | ECE-V1AA470SP |
| | 100 | 10.0 | D | 70 | PCE3176CT-ND <i>NEW!</i> | 3.21 | 29.85 | 114.80 | PCE3176TR-ND <i>NEW!</i> | — | 138.00 | — | 129.00/M | — | ECE-V1AA101SP |
| | 220 | 22.0 | E | 280 | PCE2040CT-ND | 4.84 | 41.93 | 161.50 | PCE2040TR-ND | — | 194.00 | — | 182.00/M | — | ECE-V1AA221P |
| | 330 | 33.0 | F | 330 | PCE2041CT-ND | 6.19 | 53.63 | — | PCE2041TR-ND | 132.00 | 248.00 | — | 232.00/M | — | ECE-V1AA331P |
| | 470 | 47.0 | G | 400 | PCE2042CT-ND | 7.97 | 69.08 | — | PCE2042TR-ND | 170.00 | 320.00 | — | 299.00/M | — | ECE-V1AA471P |
| | 470 | 47.0 | F | 330 | PCE3177CT-ND <i>NEW!</i> | 6.30 | 54.60 | — | PCE3177TR-ND <i>NEW!</i> | 134.50 | 253.00 | — | — | — | ECE-V1AA471UP |
| 25 | 1000 | 100.0 | G | 580 | PCE3178CT-ND <i>NEW!</i> | 7.98 | 69.16 | — | PCE3178TR-ND <i>NEW!</i> | 170.00 | 320.00 | — | — | — | ECE-V1AA102P |
| | 10 | 3 | A | 20 | PCE3061CT-ND | 2.78 | 25.86 | 99.50 | PCE3061TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1CS100SR |
| | 10 | 3 | B | 28 | PCE3062CT-ND | 2.31 | 21.45 | 82.50 | PCE3062TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1CA100SR |
| | 22 | 3.5 | B | 28 | PCE3179CT-ND <i>NEW!</i> | 2.59 | 24.02 | 92.40 | PCE3179TR-ND <i>NEW!</i> | — | — | 111.00/M | — | 104.00/M | ECE-V1CA220WR |
| | 22 | 3.5 | C | 39 | PCE3063CT-ND | 2.93 | 25.35 | 97.50 | PCE3063TR-ND | — | 117.00 | — | 110.00/M | — | ECE-V1CA220SR |
| | 33 | 5.2 | C | 35 | PCE3180CT-ND <i>NEW!</i> | 2.98 | 27.66 | 106.40 | PCE3180TR-ND <i>NEW!</i> | — | 128.00 | — | 120.00/M | — | ECE-V1CA330WR |
| 35 | 47 | 7.5 | C | 39 | PCE3181CT-ND <i>NEW!</i> | 2.98 | 27.66 | 106.40 | PCE3181TR-ND <i>NEW!</i> | — | 128.00 | — | 120.00/M | — | ECE-V1CA470WR |
| | 47 | 7.5 | D | 70 | PCE3064CT-ND | 3.34 | 28.93 | 111.25 | PCE3064TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V1CA470SP |
| | 100 | 16.0 | D | 70 | PCE3182CT-ND <i>NEW!</i> | 3.92 | 36.40 | 140.00 | PCE3182TR-ND <i>NEW!</i> | — | 168.00 | — | 158.00/M | — | ECE-V1CA101WP |
| | 100 | 16.0 | E | 200 | PCE2043CT-ND | 4.95 | 42.86 | 165.00 | PCE2043TR-ND | — | 198.00 | — | 186.00/M | — | ECE-V1CA101P |
| | 220 | 35.2 | F | 280 | PCE2044CT-ND | 6.19 | 53.63 | — | PCE2044TR-ND | 132.00 | 248.00 | — | 232.00/M | — | ECE-V1CA221P |
| | 330 | 52.8 | F | 320 | PCE3183CT-ND <i>NEW!</i> | 6.30 | 54.60 | — | PCE3183TR-ND <i>NEW!</i> | 134.50 | 253.00 | — | — | — | ECE-V1CA331UP |
| 50 | 330 | 52.8 | G | 380 | PCE2045CT-ND | 7.97 | 69.08 | — | PCE2045TR-ND | 170.00 | 320.00 | — | 299.00/M | — | ECE-V1CA331P |
| | 470 | 75.2 | F | 320 | PCE3184CT-ND <i>NEW!</i> | 5.50 | 47.68 | — | PCE3184TR-ND <i>NEW!</i> | 117.50 | 221.00 | — | — | — | ECE-V1CA471UP |
| | 470 | 75.2 | G | 420 | PCE2046CT-ND | 7.84 | 67.93 | — | PCE2046TR-ND | 167.00 | 314.00 | — | 294.00/M | — | ECE-V1CA471P |
| | 4.7 | 3 | A | 12 | PCE3065CT-ND | 2.78 | 25.86 | 99.46 | PCE3065TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1EA47SR |
| | 10 | 3 | B | 22 | PCE3066CT-ND | 2.31 | 21.45 | 82.50 | PCE3066TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1EA47SR |
| | 4.7 | 3 | C | 28 | PCE3067CT-ND | 2.93 | 25.35 | 97.50 | PCE3067TR-ND | — | 117.00 | — | 110.00/M | — | ECE-V1EA100SR |
| 75 | 22 | 5.5 | D | 55 | PCE3068CT-ND | 3.34 | 28.93 | 111.25 | PCE3068TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V1EA220SP |
| | 33 | 8.2 | D | 65 | PCE3069CT-ND | 3.34 | 28.93 | 111.25 | PCE3069TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V1EA330SP |
| | 47 | 11.8 | D2 | 70 | PCE3185CT-ND <i>NEW!</i> | 3.92 | 36.40 | 140.00 | PCE3185TR-ND <i>NEW!</i> | — | 168.00 | — | 158.00/M | — | ECE-V1EA470UP |
| | 100 | 25.0 | E | 91 | PCE3186CT-ND <i>NEW!</i> | 4.63 | 42.95 | 165.20 | PCE3186TR-ND <i>NEW!</i> | — | 199.00 | — | 186.00/M | — | ECE-V1EA101UP |
| | 100 | 25.0 | F | 180 | PCE2047CT-ND | 6.29 | 54.55 | — | PCE2047TR-ND | 134.50 | 252.00 | — | 236.00/M | — | ECE-V1EA101P |
| | 220 | 55.0 | F | 140 | PCE3187CT-ND <i>NEW!</i> | 5.50 | 47.68 | — | PCE3187TR-ND <i>NEW!</i> | 117.50 | 221.00 | — | — | — | ECE-V1EA221UP |
| 100 | 220 | 55.0 | G | 150 | PCE2048CT-ND | 7.97 | 69.08 | — | PCE2048TR-ND | 170.00 | 320.00 | — | 299.00/M | — | ECE-V1EA221P |
| | 330 | 82.5 | F | 150 | PCE3188CT-ND <i>NEW!</i> | 5.50 | 47.68 | — | PCE3188TR-ND <i>NEW!</i> | 117.50 | 221.00 | — | — | — | ECE-V1EA331UP |
| | 470 | 117.5 | G | 360 | PCE3189CT-ND <i>NEW!</i> | 6.97 | 60.42 | — | PCE3189TR-ND <i>NEW!</i> | 148.50 | 280.00 | — | — | — | ECE-V1EA471P |
| | 2.2 | 3 | A | 8 | PCE3070CT-ND | 2.78 | 25.86 | 99.46 | PCE3070TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1VS2R2SR |
| | 3.3 | 3 | A | 10 | PCE3071CT-ND | 2.78 | 25.86 | 99.46 | PCE3071TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1VS3R3SR |
| | 4.7 | 3 | B | 22 | PCE3072CT-ND | 2.31 | 21.45 | 82.50 | PCE3072TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1VA4R7SR |
| 150 | 10 | 3.5 | C | 30 | PCE3073CT-ND | 2.93 | 25.35 | 97.50 | PCE3073TR-ND | — | 117.00 | — | 110.00/M | — | ECE-V1VA100SR |
| | 22 | 7.7 | D | 60 | PCE3074CT-ND | 3.34 | 28.93 | 111.25 | PCE3074TR-ND | — | 134.00 | — | 125.00/M | — | ECE-V1VA220SP |
| | 33 | 11.6 | D2 | 65 | PCE3190CT-ND <i>NEW!</i> | 3.92 | 36.40 | 140.00 | PCE3190TR-ND <i>NEW!</i> | — | 168.00 | — | 158.00/M | — | ECE-V1VA330UP |
| | 33 | 11.5 | E | 130 | PCE2049CT-ND | 4.95 | 42.86 | 165.00 | PCE2049TR-ND | — | 198.00 | — | 186.00/M | — | ECE-V1VA330P |
| | 47 | 16.5 | E | 165 | PCE2050CT-ND | 4.84 | 41.93 | 161.50 | PCE2050TR-ND | — | 194.00 | — | 182.00/M | — | ECE-V1VA470P |
| | 100 | 35.0 | F | 140 | PCE3191CT-ND <i>NEW!</i> | 6.30 | 54.60 | — | PCE3191TR-ND <i>NEW!</i> | 134.50 | 253.00 | — | — | — | ECE-V1VA101UP |
| 200 | 100 | 35.0 | G | 210 | PCE2051CT-ND | 7.97 | 69.08 | — | PCE2051TR-ND | 170.00 | 320.00 | — | 299.00/M | — | ECE-V1VA101P |
| | 220 | 77.0 | F | 140 | PCE3192CT-ND <i>NEW!</i> | 5.50 | 5.50 | — | PCE3192TR-ND <i>NEW!</i> | 117.50 | 221.00 | — | — | — | ECE-V1VA221UP |
| | 330 | 115.5 | G | 320 | PCE3193CT-ND <i>NEW!</i> | 6.97 | 6.97 | — | PCE3193TR-ND <i>NEW!</i> | 148.50 | 280.00 | — | — | — | ECE-V1VA331P |
| | 0.1 | 3 | A | 1 | PCE3075CT-ND | 2.78 | 25.86 | 99.46 | PCE3075TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1HS0R1SR |
| | 0.1 | 3 | B | 1 | PCE3076CT-ND | 2.33 | 21.61 | 83.11 | PCE3076TR-ND | — | — | 100.00/M | — | 94.00/M | ECE-V1HA0R1SR |
| | 0.22 | 3 | A | 2 | PCE3077CT-ND | 2.78 | 25.86 | 99.46 | PCE3077TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1HSR22SR |
| 250 | 0.22 | 3 | B | 2 | PCE3078CT-ND | 2.34 | 21.45 | 82.50 | PCE3078TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1HAR22SR |
| | 0.33 | 3 | A | 3 | PCE3079CT-ND | 2.78 | 25.86 | 99.46 | PCE3079TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1HSR33SR |
| | 0.33 | 3 | B | 3 | PCE3080CT-ND | 2.31 | 21.45 | 82.50 | PCE3080TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1HAR33SR |
| | 0.47 | 3 | A | 5 | PCE3081CT-ND | 2.78 | 25.86 | 99.46 | PCE3081TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1HSR47SR |
| | 0.47 | 3 | B | 5 | PCE3082CT-ND | 2.31 | 21.45 | 82.50 | PCE3082TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1HAR47SR |
| | 1 | 3 | A | 8 | PCE3083CT-ND | 2.78 | 25.86 | 99.46 | PCE3083TR-ND | — | — | 120.00/M | — | 112.00/M | ECE-V1HS010SR |
| 350 | 1 | 3 | B | 10 | PCE3084CT-ND | 2.31 | 21.45 | 82.50 | PCE3084TR-ND | — | — | 99.00/M | — | 93.00/M | ECE-V1HA010SR |
| | 2.2 | 3 | A | 10 | PCE3085CT-ND | 3.93 | 36.49 | 140.50 | PCE3085TR-ND | — | 169.00/M | — | 158.00/M | — | ECE-V1HS2R2SR |

Panasonic VV/TA/VA/VS/HA/HB/FC Series Aluminum Electrolytic Capacitors, Surface Mount Type (cont.)

| Rated V.V. (VDC) | Nom. Cap (µF) | Max. Leakage Current (µA) | Size Code | Max. Ripple Current 120Hz, 105°C (mA rms) | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part No. | |
|---|---------------|---------------------------|-----------|---|-------------------|------------------|-------|-------------------|-------------------|---------------------|--------|----------|----------|--------------------|---------------|
| | | | | | | 10 | 100 | 500 | | 500 | 1,000 | 2,000 | 5,000 | | 6,000 |
| HA Long Life Series: -40°C to +105°C (1000 Hour Life) | | | | | | | | | | | | | | | |
| 6.3 | 22 | 3.0 | B | 29 | PCE3000CT-ND | 2.71 | 25.15 | 96.74 | PCE3000TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA0J220R |
| | 47 | 3.0 | C | 46 | PCE3001CT-ND | 3.20 | 29.76 | 114.45 | PCE3001TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA0J470R |
| | 100 | 6.3 | D | 71 | PCE3002CT-ND | 3.92 | 34.01 | 130.80 | PCE3002TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA0J101P |
| | 1000 | 63.0 | F | 300 | PCE3209CT-ND NEW! | 6.34 | 54.96 | — | PCE3209TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA0J1020P |
| | 1500 | 94.5 | G | 480 | PCE3210CT-ND NEW! | 8.02 | 69.52 | — | PCE3210TR-ND NEW! | 171.00 | 322.00 | — | — | — | EEV-HA0J152P |
| 10 | 33 | 3.3 | C | 43 | PCE3003CT-ND | 3.20 | 29.76 | 114.45 | PCE3003TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA1A330R |
| | 100 | 10.0 | D | 71 | PCE3211CT-ND NEW! | 2.90 | 26.94 | 103.60 | PCE3211TR-ND NEW! | — | 125.00 | — | 117.00/M | — | EEV-HA1A101WP |
| | 470 | 47.0 | F | 200 | PCE3212CT-ND NEW! | 5.75 | 49.87 | — | PCE3212TR-ND NEW! | 123.00 | 231.00 | — | — | — | EEV-HA1A471UP |
| 16 | 10 | 3.0 | B | 28 | PCE3004CT-ND | 2.71 | 25.15 | 96.74 | PCE3004TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1C100R |
| | 22 | 3.5 | C | 39 | PCE3005CT-ND | 3.20 | 29.76 | 114.45 | PCE3005TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA1C220R |
| | 47 | 7.5 | D | 70 | PCE3006CT-ND | 3.92 | 34.01 | 130.80 | PCE3006TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA1C470P |
| | 220 | 35.2 | F | 150 | PCE3213CT-ND NEW! | 5.75 | 49.87 | — | PCE3213TR-ND NEW! | 123.00 | 231.00 | — | — | — | EEV-HA1C221UP |
| | 330 | 52.8 | F | 170 | PCE3214CT-ND NEW! | 5.75 | 49.87 | — | PCE3214TR-ND NEW! | 123.00 | 231.00 | — | — | — | EEV-HA1C331UP |
| | 470 | 75.2 | F | 190 | PCE3215CT-ND NEW! | 6.34 | 54.96 | — | PCE3215TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA1C471UP |
| | 470 | 75.2 | G | 340 | PCE3216CT-ND NEW! | 9.20 | 79.72 | — | PCE3216TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-HA1C471P |
| 25 | 4.7 | 3.0 | B | 22 | PCE3007CT-ND | 2.71 | 25.15 | 96.74 | PCE3007TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1E4R7R |
| | 10 | 3.0 | C | 28 | PCE3008CT-ND | 3.20 | 29.76 | 114.45 | PCE3008TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA1E100R |
| | 22 | 5.5 | D | 55 | PCE3009CT-ND | 3.92 | 34.01 | 130.80 | PCE3009TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA1E220P |
| | 33 | 8.2 | D | 65 | PCE3010CT-ND | 3.92 | 34.01 | 130.80 | PCE3010TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA1E330P |
| | 47 | 11.8 | F | 91 | PCE3217CT-ND NEW! | 5.33 | 49.50 | 190.40 | PCE3217TR-ND NEW! | — | 229.00 | — | 215.00/M | — | EEV-HA1E470P |
| | 100 | 25.0 | F | 130 | PCE3218CT-ND NEW! | 7.31 | 63.34 | — | PCE3218TR-ND NEW! | 156.00 | 293.00 | — | — | — | EEV-HA1E101P |
| | 220 | 55.0 | F | 160 | PCE3219CT-ND NEW! | 6.34 | 54.96 | — | PCE3219TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA1E221UP |
| 35 | 330 | 82.5 | F | 180 | PCE3220CT-ND NEW! | 6.34 | 54.96 | — | PCE3220TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA1E331UP |
| | 470 | 117.5 | G | 360 | PCE3221CT-ND NEW! | 8.02 | 69.52 | — | PCE3221TR-ND NEW! | 171.00 | 322.00 | — | — | — | EEV-HA1E471P |
| | 4.7 | 3.0 | B | 22 | PCE3011CT-ND | 2.71 | 25.15 | 96.74 | PCE3011TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1V4R7R |
| | 10 | 3.5 | C | 30 | PCE3012CT-ND | 3.20 | 29.76 | 114.45 | PCE3012TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA1V100R |
| | 22 | 7.7 | D | 60 | PCE3013CT-ND | 3.92 | 34.01 | 130.80 | PCE3013TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA1V220P |
| | 33 | 11.6 | E | 64 | PCE3222CT-ND NEW! | 5.33 | 49.50 | 190.40 | PCE3222TR-ND NEW! | — | 229.00 | — | 215.00/M | — | EEV-HA1V330P |
| | 47 | 16.5 | F | 98 | PCE3223CT-ND NEW! | 7.31 | 63.34 | — | PCE3223TR-ND NEW! | 156.00 | 293.00 | — | — | — | EEV-HA1V470P |
| 50 | 100 | 35.0 | F | 120 | PCE3224CT-ND NEW! | 5.75 | 49.87 | — | PCE3224TR-ND NEW! | 123.00 | 231.00 | — | — | — | EEV-HA1V101UP |
| | 220 | 77.0 | F | 170 | PCE3225CT-ND NEW! | 6.34 | 54.96 | — | PCE3225TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA1V221UP |
| | 220 | 77.0 | G | 210 | PCE3226CT-ND NEW! | 9.20 | 79.72 | — | PCE3226TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-HA1V221P |
| | 330 | 115.5 | G | 250 | PCE3227CT-ND NEW! | 8.02 | 69.52 | — | PCE3227TR-ND NEW! | 171.00 | 322.00 | — | — | — | EEV-HA1V331P |
| | 0.1 | 3.0 | B | 1 | PCE3014CT-ND | 2.71 | 25.15 | 96.74 | PCE3014TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1HR10 R |
| | 0.22 | 3.0 | B | 2 | PCE3015CT-ND | 2.71 | 25.15 | 96.74 | PCE3015TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1HR22R |
| 50 | 0.33 | 3.0 | B | 3 | PCE3016CT-ND | 2.71 | 25.15 | 96.74 | PCE3016TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1HR33R |
| | 0.47 | 3.0 | B | 5 | PCE3017CT-ND | 2.71 | 25.15 | 96.74 | PCE3017TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1HR47R |
| | 1.0 | 3.0 | B | 10 | PCE3018CT-ND | 2.71 | 25.15 | 96.74 | PCE3018TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1H010R |
| | 2.2 | 3.0 | B | 16 | PCE3019CT-ND | 2.71 | 25.15 | 96.74 | PCE3019TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1H2R2R |
| | 3.3 | 3.0 | B | 16 | PCE3020CT-ND | 2.71 | 25.15 | 96.74 | PCE3020TR-ND | — | — | 116.00/M | — | 109.00/M | EEV-HA1H3R3R |
| | 4.7 | 3.0 | C | 23 | PCE3021CT-ND | 3.20 | 29.76 | 114.45 | PCE3021TR-ND | — | 138.00 | — | 129.00/M | — | EEV-HA1H4R7R |
| | 10 | 5.0 | D | 35 | PCE3022CT-ND | 3.92 | 34.01 | 130.80 | PCE3022TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HA1H100P |
| | 22 | 11.0 | E | 70 | PCE3228CT-ND NEW! | 5.33 | 49.50 | 190.40 | PCE3228TR-ND NEW! | — | 229.00 | — | 215.00/M | — | EEV-HA1H220P |
| | 33 | 16.5 | F | 91 | PCE3229CT-ND NEW! | 7.31 | 63.34 | — | PCE3229TR-ND NEW! | 156.00 | 293.00 | — | — | — | EEV-HA1H330P |
| | 47 | 23.5 | F | 95 | PCE3230CT-ND NEW! | 5.75 | 49.87 | — | PCE3230TR-ND NEW! | 123.00 | 231.00 | — | — | — | EEV-HA1H470UP |
| | 100 | 50.0 | F | 110 | PCE3231CT-ND NEW! | 6.34 | 54.96 | — | PCE3231TR-ND NEW! | 135.50 | 254.00 | — | — | — | EEV-HA1H101UP |
| 63 | 100 | 50.0 | G | 120 | PCE3232CT-ND NEW! | 9.20 | 79.72 | — | PCE3232TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-HA1H101P |
| | 220 | 110.0 | G | 150 | PCE3233CT-ND NEW! | 8.02 | 69.52 | — | PCE3233TR-ND NEW! | 171.00 | 322.00 | — | — | — | EEV-HA1H221P |
| | 10 | 6.3 | E | 25 | PCE3234CT-ND NEW! | 4.70 | 43.68 | 168.00 | PCE3234TR-ND NEW! | — | 202.00 | — | 189.00/M | — | EEV-HA1J100P |
| | 22 | 13.9 | F | 30 | PCE3235CT-ND NEW! | 6.43 | 55.69 | — | PCE3235TR-ND NEW! | 137.00 | 258.00 | — | — | — | EEV-HA1J220P |
| | 33 | 20.8 | G | 45 | PCE3236CT-ND NEW! | 8.11 | 70.25 | — | PCE3236TR-ND NEW! | 173.00 | 325.00 | — | — | — | EEV-HA1J330P |
| 100 | 47 | 29.6 | G | 50 | PCE3237CT-ND NEW! | 8.11 | 70.25 | — | PCE3237TR-ND NEW! | 173.00 | 325.00 | — | — | — | EEV-HA1J470P |
| | 3.3 | 3.3 | E | 30 | PCE3238CT-ND NEW! | 4.70 | 43.68 | 168.00 | PCE3238TR-ND NEW! | — | 202.00 | — | 189.00/M | — | EEV-HA2A3R3P |
| | 4.7 | 4.7 | F | 50 | PCE3239CT-ND NEW! | 6.43 | 55.69 | — | PCE3239TR-ND NEW! | 137.00 | 258.00 | — | — | — | EEV-HA2A4R7P |
| | 10 | 10.0 | F | 55 | PCE3240CT-ND NEW! | 6.43 | 55.69 | — | PCE3240TR-ND NEW! | 137.00 | 258.00 | — | — | — | EEV-HA2A100P |
| | 22 | 22.0 | G | 60 | PCE3241CT-ND NEW! | 8.11 | 70.25 | — | PCE3241TR-ND NEW! | 173.00 | 325.00 | — | — | — | EEV-HA2A220P |
| 33 | 33.0 | G | 65 | PCE3242CT-ND NEW! | 8.11 | 70.25 | — | PCE3242TR-ND NEW! | 173.00 | 325.00 | — | — | — | EEV-HA2A330P | |
| HB Long Life High Reliability Series: -40°C to +105°C (2000 Hour Life) | | | | | | | | | | | | | | | |
| 4 | 47 | 3 | B | 34 | PCE3023CT-ND | 3.05 | 28.34 | 109.00 | PCE3023TR-ND | — | — | 131.00/M | — | 123.00/M | EEV-HB0G470R |
| | 100 | 4 | C | 61 | PCE3024CT-ND | 3.66 | 34.01 | 130.80 | PCE3024TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HB0G101R |
| | 220 | 8.8 | D | 82 | PCE3025CT-ND | 4.41 | 38.26 | 147.15 | PCE3025TR-ND | — | 177.00 | — | 166.00/M | — | EEV-HB0G221P |
| 6.3 | 22 | 3 | B | 29.5 | PCE3026CT-ND | 3.05 | 28.34 | 109.00 | PCE3026TR-ND | — | — | 131.00/M | — | 123.00/M | EEV-HB0J220R |
| | 33 | 3 | B | 26 | PCE3027CT-ND | 3.05 | 28.34 | 109.00 | PCE3027TR-ND | — | — | 131.00/M | — | 123.00/M | EEV-HB0J330R |
| | 47 | 3 | C | 46 | PCE3028CT-ND | 3.66 | 34.01 | 130.80 | PCE3028TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HB0J470R |
| | 100 | 6.3 | D | 71 | PCE3029CT-ND | 4.41 | 38.26 | 147.15 | PCE3029TR-ND | — | 177.00 | — | 166.00/M | — | EEV-HB0J101P |
| | 10 | 33 | 3.3 | C | 42 | PCE3030CT-ND | 3.66 | 34.01 | 130.80 | PCE3030TR-ND | — | 157.00 | — | 147.00/M | — |
| 16 | 10 | 3 | B | 28 | PCE3031CT-ND | 3.05 | 28.34 | 109.00 | PCE3031TR-ND | — | — | 131.00/M | — | 123.00/M | EEV-HB1C100R |
| | 22 | 3.5 | C | 39 | PCE3032CT-ND | 3.66 | 34.01 | 130.80 | PCE3032TR-ND | — | 157.00 | — | 147.00/M | — | EEV-HB1C220R |
| | 47 | 7.5 | D | 70 | PCE3033CT-ND | 4.41 | 38.26 | 147.15 | PCE3033TR-ND | — | 177.00 | — | 166.00/M | — | EEV-HB1C470P |
| | 4.7 | 3 | B | 22 | PCE3034CT-ND | 3.05 | 28.34 | 109.00 | PCE3034TR-ND | — | — | 131.00/M | — | 123.00/M | EEV-HB1E4R7R |
| 25 | 6.8 | 3 | B | 25 | PCE3035CT-ND | 2.86 | 26.57 | 102.19 | PCE3035TR-ND | — | — | 123.00/M | — | 115.00/M | EEV-HB1E6R8R |
| | 10 | 3 | C | 28 | PCE3036CT-ND | 5.04 | 46.76 | 179.85 | PCE3036TR-ND | — | 216.00 | — | 203.00/M | — | EEV-HB1E100R |
| | 22 | 5.5 | D | 55 | PCE3037CT-ND | 6.29 | 54.55 | 209.83 | PCE3037TR-ND | — | 252.00 | — | 236.00/M | — | EEV-HB1E220P |
| | 33 | 8.2 | D | 65 | PCE3038CT-ND | 4.41 | 38.26 | 147.15 | PCE3038TR-ND | — | 177.00 | — | 166.00/M | — | EEV-HB1E330P |
| 35 | 10 | 3.5 | C | 28 | PCE3039CT-ND | 3.66 | 34.01 | 130.80 | PCE3039TR-ND | — | | | | | |

Panasonic VV/TA/VA/VS/HA/HB/FC Series Aluminum Electrolytic Capacitors, Surface Mount Type (cont.)

| Rated W.V. (VDC) | Nom. Cap (µF) | Max. Leakage Current (µA) | Size Code | Max. Ripple Current 120Hz, 105°C (mA rms) | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | | Panasonic Part No. | |
|---|---------------|---------------------------|-----------|---|-------------------|-------------------|--------|-------------------|-------------------|---------------------|--------|----------|----------|--------------|--------------------|--------------|
| | | | | | | 10 | 100 | 500 | | 500 | 1,000 | 2,000 | 5,000 | 6,000 | | |
| <i>FC Low Impedance High Reliability Series: -40°C to +105°C (1000 Hour Life)</i> | | | | | | | | | | | | | | | | |
| 6.3 | 22 | 3.0 | B | 50 | PCE3090CT-ND | 3.53 | 32.76 | 126.00 | PCE3090TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC0J220R | |
| | 47 | 3.0 | C | 80 | PCE3091CT-ND | 4.16 | 38.58 | 148.40 | PCE3091TR-ND | — | 179.00 | — | 167.00/M | — | EEV-FC0J470R | |
| | 68 | 4.2 | D | 115 | PCE3092CT-ND | 4.74 | 44.04 | 169.40 | PCE3092TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC0J680P | |
| | 100 | 6.3 | D | 115 | PCE3093CT-ND | 4.74 | 44.04 | 169.40 | PCE3093TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC0J101P | |
| | 220 | 13.8 | E | 150 | PCE3094CT-ND | 6.86 | 63.70 | — | PCE3094TR-ND | — | 295.00 | — | — | — | EEV-FC0J221P | |
| 10 | 330 | 20.7 | F | 180 | PCE3095CT-ND | 9.41 | 81.54 | — | PCE3095TR-ND | 200.50 | 377.00 | — | — | — | EEV-FC0J331P | |
| | 1000 | 63.0 | G | 670 | PCE3243CT-ND NEW! | 11.59 | 100.46 | — | PCE3243TR-ND NEW! | 247.50 | 465.00 | — | — | — | EEV-FC0J102P | |
| | 1500 | 94.5 | G | 670 | PCE3244CT-ND NEW! | 10.12 | 87.72 | — | PCE3244TR-ND NEW! | 216.00 | 406.00 | — | — | — | EEV-FC0J152P | |
| | 10 | 33 | 3.3 | C | 80 | PCE3096CT-ND | 4.16 | 38.58 | 148.40 | PCE3096TR-ND | — | 179.00 | — | 167.00/M | — | EEV-FC1A330R |
| 100 | | 10.0 | E | 150 | PCE3097CT-ND | 6.86 | 63.70 | 245.00 | PCE3097TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1A101P | |
| 150 | | 15.0 | E | 150 | PCE3098CT-ND | 6.86 | 63.70 | 245.00 | PCE3098TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1A151P | |
| 220 | | 22.0 | F | 180 | PCE3099CT-ND | 9.41 | 81.54 | — | PCE3099TR-ND | 200.50 | 377.00 | — | — | — | EEV-FC1A221P | |
| 470 | | 47.0 | G | 220 | PCE3100CT-ND | 11.89 | 103.01 | — | PCE3100TR-ND | 253.50 | 477.00 | — | — | — | EEV-FC1A471P | |
| 1000 | 100.0 | G | 670 | PCE3245CT-ND NEW! | 9.20 | 79.72 | — | PCE3245TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1A102P | | |
| 16 | 10 | 3.0 | B | 50 | PCE3101CT-ND | 3.53 | 32.76 | 126.00 | PCE3101TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1C100R | |
| | 22 | 3.5 | C | 80 | PCE3102CT-ND | 4.16 | 38.58 | 148.40 | PCE3102TR-ND | — | 179.00 | — | 167.00/M | — | EEV-FC1C220R | |
| | 47 | 7.5 | D | 115 | PCE3103CT-ND | 4.74 | 44.04 | 169.40 | PCE3103TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC1C470P | |
| | 68 | 10.8 | E | 150 | PCE3104CT-ND | 6.86 | 63.70 | 245.00 | PCE3104TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1C680P | |
| | 100 | 16.0 | E | 150 | PCE3105CT-ND | 6.86 | 63.70 | 245.00 | PCE3105TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1C101P | |
| 25 | 220 | 35.2 | G | 220 | PCE3106CT-ND | 11.89 | 103.01 | — | PCE3106TR-ND | 253.50 | 477.00 | — | — | — | EEV-FC1C221P | |
| | 330 | 52.8 | G | 220 | PCE3107CT-ND | 11.89 | 103.01 | — | PCE3107TR-ND | 253.50 | 477.00 | — | — | — | EEV-FC1C331P | |
| | 470 | 75.2 | G | 670 | PCE3246CT-ND NEW! | 9.20 | 79.72 | — | PCE3246TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1C471P | |
| | 25 | 6.8 | 3.0 | B | 50 | PCE3108CT-ND | 3.53 | 32.76 | 126.00 | PCE3108TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1E6R8R |
| 22 | | 5.5 | D | 115 | PCE3109CT-ND | 4.74 | 44.04 | 169.40 | PCE3109TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC1E220P | |
| 33 | | 8.2 | D | 115 | PCE3110CT-ND | 4.74 | 44.04 | 169.40 | PCE3110TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC1E330P | |
| 47 | | 11.7 | E | 150 | PCE3111CT-ND | 6.86 | 63.70 | 245.00 | PCE3111TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1E470P | |
| 68 | | 17.0 | F | 180 | PCE3112CT-ND | 9.41 | 81.54 | — | PCE3112TR-ND | 200.50 | 377.00 | — | — | — | EEV-FC1E680P | |
| 35 | 100 | 25.0 | F | 450 | PCE3247CT-ND NEW! | 9.20 | 79.72 | — | PCE3247TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1E101P | |
| | 330 | 82.5 | G | 670 | PCE3248CT-ND NEW! | 9.20 | 79.72 | — | PCE3248TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1E331P | |
| | 470 | 117.5 | G | 670 | PCE3249CT-ND NEW! | 10.12 | 87.72 | — | PCE3249TR-ND NEW! | 216.00 | 406.00 | — | — | — | EEV-FC1E471P | |
| | 35 | 1.0 | 3.0 | B | 50 | PCE3113CT-ND | 3.53 | 32.76 | 126.00 | PCE3113TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1V1R0R |
| 2.2 | | 3.0 | B | 50 | PCE3114CT-ND | 3.53 | 32.76 | 126.00 | PCE3114TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1V2R2R | |
| 3.3 | | 3.0 | B | 50 | PCE3115CT-ND | 3.53 | 32.76 | 126.00 | PCE3115TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1V3R3R | |
| 4.7 | | 3.0 | B | 50 | PCE3116CT-ND | 3.53 | 32.76 | 126.00 | PCE3116TR-ND | — | — | 152.00/M | — | 142.00/M | EEV-FC1V4R7R | |
| 6.8 | | 3.0 | C | 80 | PCE3117CT-ND | 4.16 | 38.58 | 148.40 | PCE3117TR-ND | — | 179.00 | — | 167.00/M | — | EEV-FC1V6R8R | |
| 10 | | 3.5 | C | 80 | PCE3118CT-ND | 4.16 | 38.58 | 148.40 | PCE3118TR-ND | — | 179.00 | — | 167.00/M | — | EEV-FC1V100R | |
| 22 | | 7.7 | D | 115 | PCE3119CT-ND | 4.74 | 44.04 | 169.40 | PCE3119TR-ND | — | 204.00 | — | 191.00/M | — | EEV-FC1V220P | |
| 33 | | 11.5 | E | 150 | PCE3120CT-ND | 6.86 | 63.70 | 245.00 | PCE3120TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1V330P | |
| 47 | | 16.4 | E | 150 | PCE3121CT-ND | 6.86 | 63.70 | 245.00 | PCE3121TR-ND | — | 295.00 | — | 276.00/M | — | EEV-FC1V470P | |
| 100 | | 35.0 | G | 220 | PCE3122CT-ND | 11.89 | 103.01 | — | PCE3122TR-ND | 253.50 | 477.00 | — | — | — | EEV-FC1V101P | |
| 50 | 220 | 77.0 | G | 670 | PCE3250CT-ND NEW! | 9.20 | 79.72 | — | PCE3250TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1V221P | |
| | 330 | 115.5 | G | 670 | PCE3251CT-ND NEW! | 10.12 | 87.72 | — | PCE3251TR-ND NEW! | 216.00 | 406.00 | — | — | — | EEV-FC1V331P | |
| | 50 | 1 | 3.0 | B | 30 | PCE3252CT-ND NEW! | 3.45 | 32.03 | 123.20 | PCE3252TR-ND NEW! | — | — | 148.00/M | — | 139.00/M | EEV-FC1H1R0R |
| | | 2.2 | 3.0 | B | 30 | PCE3253CT-ND NEW! | 3.45 | 32.03 | 123.20 | PCE3253TR-ND NEW! | — | — | 148.00/M | — | 139.00/M | EEV-FC1H2R2R |
| | | 3.3 | 3.0 | B | 30 | PCE3254CT-ND NEW! | 3.45 | 32.03 | 123.20 | PCE3254TR-ND NEW! | — | — | 148.00/M | — | 139.00/M | EEV-FC1H3R3R |
| 4.7 | | 3.0 | C | 50 | PCE3255CT-ND NEW! | 4.08 | 37.86 | 145.60 | PCE3255TR-ND NEW! | — | 175.00 | — | 164.00/M | — | EEV-FC1H4R7R | |
| 10 | | 5.0 | D | 70 | PCE3256CT-ND NEW! | 4.63 | 42.95 | 165.20 | PCE3256TR-ND NEW! | — | 199.00 | — | 186.00/M | — | EEV-FC1H100P | |
| 35 | 22 | 11.0 | E | 120 | PCE3257CT-ND NEW! | 6.70 | 62.24 | 239.40 | PCE3257TR-ND NEW! | — | 288.00 | — | 270.00/M | — | EEV-FC1H220P | |
| | 33 | 16.5 | F | 300 | PCE3258CT-ND NEW! | 9.20 | 79.72 | — | PCE3258TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1H330P | |
| | 47 | 23.5 | G | 500 | PCE3259CT-ND NEW! | 11.59 | 100.46 | — | PCE3259TR-ND NEW! | 247.50 | 465.00 | — | — | — | EEV-FC1H470P | |
| | 100 | 50.0 | G | 500 | PCE3260CT-ND NEW! | 9.20 | 79.72 | — | PCE3260TR-ND NEW! | 196.00 | 369.00 | — | — | — | EEV-FC1H101P | |
| | 220 | 110.0 | G | 500 | PCE3261CT-ND NEW! | 10.12 | 87.72 | — | PCE3261TR-ND NEW! | 216.00 | 406.00 | — | — | — | EEV-FC1H221P | |
| | | | | | — | — | — | — | — | — | — | — | | | | |
| <i>VS BI-POLAR General Purpose Series: -40°C to +85°C (1000 Hour Life)</i> | | | | | | | | | | | | | | | | |
| 6.3 | 22 | 6.0 | C | 29 | PCE3123CT-ND | 4.31 | 40.04 | 154.00 | PCE3123TR-ND | — | 185.00 | — | 174.00/M | — | ECE-V0JA220NR | |
| | 47 | 6.0 | D | 46 | PCE3124CT-ND | 4.86 | 45.14 | 173.60 | PCE3124TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V0JA470NP | |
| 10 | 10 | 6.0 | B | 25 | PCE3125CT-ND | 3.65 | 33.85 | 130.20 | PCE3125TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1AA100NR | |
| | 33 | 6.6 | D | 43 | PCE3126CT-ND | 4.86 | 45.14 | 173.60 | PCE3126TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V1AA330NP | |
| 16 | 4.7 | 6.0 | B | 20 | PCE3127CT-ND | 3.65 | 33.85 | 130.20 | PCE3127TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1CA4R7NR | |
| | 10 | 6.0 | C | 25 | PCE3128CT-ND | 4.31 | 40.04 | 154.00 | PCE3128TR-ND | — | 185.00 | — | 174.00/M | — | ECE-V1CA100NR | |
| | 22 | 7.0 | D | 39 | PCE3129CT-ND | 4.86 | 45.14 | 173.60 | PCE3129TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V1CA220NP | |
| 25 | 3.3 | 6.0 | B | 12 | PCE3130CT-ND | 3.65 | 33.85 | 130.20 | PCE3130TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1EA3R3NR | |
| | 4.7 | 6.0 | C | 21 | PCE3131CT-ND | 4.31 | 40.04 | 154.00 | PCE3131TR-ND | — | 185.00 | — | 174.00/M | — | ECE-V1EA4R7NR | |
| | 10 | 6.0 | D | 28 | PCE3132CT-ND | 4.86 | 45.14 | 173.60 | PCE3132TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V1EA100NP | |
| 35 | 2.2 | 6.0 | B | 12 | PCE3133CT-ND | 3.65 | 33.85 | 130.20 | PCE3133TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1VA2R2NR | |
| | 4.7 | 6.0 | C | 22 | PCE3134CT-ND | 4.31 | 40.04 | 154.00 | PCE3134TR-ND | — | 185.00 | — | 174.00/M | — | ECE-V1VA4R7NR | |
| | 10 | 7.0 | D | 30 | PCE3135CT-ND | 4.86 | 45.14 | 173.60 | PCE3135TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V1VA100NP | |
| 50 | 0.22 | 6.0 | B | 2 | PCE3136CT-ND | 3.65 | 33.85 | 130.20 | PCE3136TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1HAR22NR | |
| | 0.33 | 6.0 | B | 3 | PCE3137CT-ND | 3.65 | 33.85 | 130.20 | PCE3137TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1HAR33NR | |
| | 0.47 | 6.0 | B | 5 | PCE3138CT-ND | 3.65 | 33.85 | 130.20 | PCE3138TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1HAR47NR | |
| | 1 | 6.0 | B | 10 | PCE3139CT-ND | 3.65 | 33.85 | 130.20 | PCE3139TR-ND | — | — | 157.00/M | — | 147.00/M | ECE-V1HA010NR | |
| | 2.2 | 6.0 | C | 16 | PCE3140CT-ND | 4.31 | 40.04 | 154.00 | PCE3140TR-ND | — | 185.00 | — | 174.00/M | — | ECE-V1HA2R2NR | |
| | 3.3 | 6.0 | C | 21 | PCE3141CT-ND | 4.83 | 44.85 | 172.50 | PCE3141TR-ND | — | 208.00 | — | 194.00/M | — | ECE-V1HA3R3NP | |
| | 4.7 | 6.0 | D | 31 | PCE3142CT-ND | 4.86 | 45.14 | 173.60 | PCE3142TR-ND | — | 209.00 | — | 196.00/M | — | ECE-V1HA4R7NP | |

1-800-344-4539

21

Panasonic EF Series

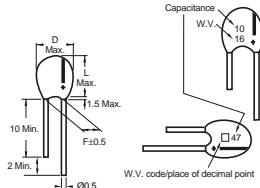
Resin Dipped Solid Tantalum Capacitors

Specifications:

- Operating Temperature Range: -55° to +105°C (4 to 6.3V, -55° to +85°C)
- Rated Working Voltage Range: 6.3 to 50 WV DC
- Rated Capacitance Range: .1 to 330 µF
- Capacitance Tolerance: As Specified
- Leakage Current: I = 0.008 CV or 0.05 µA whichever is greater; I in µA, C in µF, V in volts
- Leads are not less than 0.394" in length

Surge Voltage:

| Working Voltage | Surge Voltage |
|-----------------|---------------|
| 3.15V, DC | 4V, DC |
| 6.3 | 8 |
| 10 | 13 |
| 16 | 20 |
| 25 | 32 |
| 35 | 44 |
| 50 | 63 |



PANASONIC EF CROSS REFERENCES

Sprague: 196D; Kemet: T350/T360; Mepco: 49GS;
 NEC: DN; Nichicon: 599; Hitachi: TSD-3;
 Matsuo: 202; AVX: Tap.

Panasonic Tantalum Capacitors

Assortment of 15 Popular Values — Panasonic Quality

Digi-Key® EF-Series
 Capacitors Kit

F-KIT-ND
 ONLY

\$39.95

180 TANTALUM CAPACITORS. Price includes notebook style storage case and bin storage guide for easy storage and quick access.

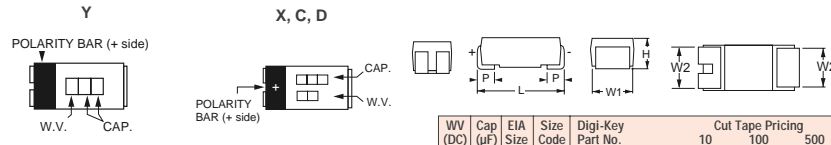
| Voltage Volt. DC | Cap. (µF) | Cap. Tol. (%) | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|---------------------|--------------|------------------|-----------------|------|-----------|----------------------|---------|--------|---------|-----------|-----------|-----------------------|--------------|
| | | | D | L | F | | 1 | 10 | 100 | 1,000 | 5,000 | | 10,000 |
| 6.3 | 4.7 | ±10 | 3.5 | 5.5 | 2.5 | P2011-ND | .29 | 2.52 | 19.74 | 125.00 | 117.00/M | 109.00/M | ECS-F0JE475K |
| | 6.8 | ±10 | 3.5 | 5.5 | 2.5 | P2012-ND | .32 | 2.72 | 21.32 | 135.00 | 126.00/M | 118.00/M | ECS-F0JE685K |
| | 10 | ±10 | 3.7 | 6.5 | 2.5 | P2013-ND | .39 | 3.36 | 26.32 | 167.00 | 156.00/M | 145.00/M | ECS-F0JE106K |
| | 15 | ±10 | 4.0 | 7.0 | 2.5 | P2014-ND | .42 | 3.60 | 28.16 | 179.00 | 166.00/M | 156.00/M | ECS-F0JE156K |
| | 22 | ±10 | 4.5 | 7.0 | 2.5 | P2015-ND | .54 | 4.59 | 35.96 | 228.00 | 212.00/M | 199.00/M | ECS-F0JE226K |
| | 33 | ±10 | 4.7 | 8.0 | 2.5 | P2016-ND | .58 | 5.01 | 39.22 | 249.00 | 232.00/M | 217.00/M | ECS-F0JE336K |
| | 47 | ±20 | 5.2 | 8.5 | 2.5 | P2017-ND | .83 | 7.08 | 55.46 | 352.00 | 328.00/M | 306.00/M | ECS-F0JE476 |
| | 68 | ±20 | 5.5 | 9.5 | 2.5 | P2018-ND | 1.09 | 9.31 | 72.91 | 463.00 | 431.00/M | 403.00/M | ECS-F0JE686 |
| | 100 | ±20 | 6.0 | 11.0 | 2.5 | P2019-ND | 1.72 | 14.72 | 115.28 | 732.00 | 681.00/M | 637.00/M | ECS-F0JE107 |
| | 150 | ±20 | 7.5 | 12.5 | 5.0 | P2020-ND | 3.90 | 33.40 | 261.62 | 1662.00 | 1546.00/M | 1446.00/M | ECS-F0JE157 |
| | 330 | ±20 | 10.0 | 15.5 | 5.0 | P2095-ND | 11.28 | 96.66 | 757.17 | 4809.00 | 4475.00/M | 4184.00/M | ECS-F0JE337 |
| 10 | 2.2 | ±10 | 3.3 | 5.5 | 2.5 | P2022-ND | .26 | 2.22 | 17.37 | 110.00 | 103.00/M | 96.00/M | ECS-F1AE225K |
| | 3.3 | ±10 | 3.5 | 5.5 | 2.5 | P2023-ND | .29 | 2.52 | 19.74 | 125.00 | 117.00/M | 109.00/M | ECS-F1AE335K |
| | 4.7 | ±10 | 3.5 | 5.5 | 2.5 | P2024-ND | .32 | 2.72 | 21.32 | 135.00 | 126.00/M | 118.00/M | ECS-F1AE475K |
| | 6.8 | ±10 | 3.7 | 6.5 | 2.5 | P2025-ND | .36 | 3.09 | 24.21 | 154.00 | 143.00/M | 134.00/M | ECS-F1AE685K |
| | 10 | ±10 | 4.0 | 7.0 | 2.5 | P2026-ND | .49 | 4.20 | 32.90 | 209.00 | 194.00/M | 182.00/M | ECS-F1AE106K |
| | 15 | ±10 | 4.5 | 7.0 | 2.5 | P2027-ND | .49 | 4.20 | 32.90 | 209.00 | 194.00/M | 182.00/M | ECS-F1AE156K |
| | 22 | ±10 | 4.7 | 8.0 | 2.5 | P2028-ND | .71 | 6.09 | 47.71 | 303.00 | 282.00/M | 264.00/M | ECS-F1AE226K |
| | 33 | ±10 | 5.2 | 8.5 | 2.5 | P2029-ND | .86 | 7.38 | 57.81 | 367.00 | 342.00/M | 319.00/M | ECS-F1AE336K |
| | 47 | ±10 | 5.5 | 9.5 | 2.5 | P2030-ND | 1.11 | 9.54 | 74.75 | 475.00 | 442.00/M | 413.00/M | ECS-F1AE476K |
| | 68 | ±20 | 6.0 | 11.0 | 2.5 | P2031-ND | 1.72 | 14.72 | 115.28 | 732.00 | 681.00/M | 637.00/M | ECS-F1AE686 |
| | 100 | ±20 | 7.5 | 12.5 | 5.0 | P2032-ND | 3.90 | 33.40 | 261.62 | 1662.00 | 1546.00/M | 1446.00/M | ECS-F1AE107 |
| 150 | ±20 | 9.0 | 14.5 | 5.0 | P2083-ND | 8.33 | 71.40 | 559.30 | 3552.00 | 3306.00/M | 3091.00/M | ECS-F1AE157 | |
| 16 | 1.0 | ±10 | 3.3 | 5.0 | 2.5 | P2105-ND | .28 | 2.43 | 19.04 | 121.00 | 112.00/M | 105.00/M | ECS-F1CE105K |
| | 1.5 | ±10 | 3.3 | 5.5 | 2.5 | P2033-ND* | .27 | 2.35 | 18.42 | 117.00 | 109.00/M | 102.00/M | ECS-F1CE155K |
| | 2.2 | ±10 | 3.5 | 5.5 | 2.5 | P2034-ND* | .32 | 2.73 | 21.39 | 136.00 | 126.00/M | 118.00/M | ECS-F1CE225K |
| | 3.3 | ±10 | 3.5 | 5.5 | 2.5 | P2035-ND* | .33 | 2.85 | 22.33 | 142.00 | 132.00/M | 123.00/M | ECS-F1CE335K |
| | 4.7 | ±10 | 3.7 | 6.5 | 2.5 | P2036-ND* | .39 | 3.30 | 25.85 | 164.00 | 153.00/M | 143.00/M | ECS-F1CE475K |
| | 6.8 | ±10 | 4.0 | 7.0 | 2.5 | P2037-ND* | .43 | 3.66 | 28.69 | 182.00 | 170.00/M | 159.00/M | ECS-F1CE685K |
| | 10 | ±10 | 4.5 | 7.0 | 2.5 | P2038-ND* | .58 | 4.98 | 39.01 | 248.00 | 231.00/M | 216.00/M | ECS-F1CE106K |
| | 15 | ±10 | 4.7 | 8.0 | 2.5 | P2039-ND* | .69 | 5.88 | 46.06 | 293.00 | 272.00/M | 255.00/M | ECS-F1CE156K |
| | 22 | ±10 | 5.2 | 8.5 | 2.5 | P2040-ND* | .86 | 7.35 | 57.58 | 366.00 | 340.00/M | 318.00/M | ECS-F1CE226K |
| | 33 | ±10 | 5.5 | 9.5 | 2.5 | P2041-ND | 1.12 | 9.58 | 75.01 | 476.00 | 443.00/M | 415.00/M | ECS-F1CE336K |
| | 47 | ±20 | 6.0 | 11.0 | 2.5 | P2042-ND | 1.72 | 14.72 | 115.28 | 732.00 | 681.00/M | 637.00/M | ECS-F1CE476 |
| 68 | ±20 | 7.5 | 12.5 | 5.0 | P2043-ND | 3.90 | 33.40 | 261.62 | 1662.00 | 1546.00/M | 1446.00/M | ECS-F1CE686 | |
| 25 | 1.5 | ±10 | 3.5 | 5.5 | 2.5 | P2044-ND | .29 | 2.52 | 19.74 | 125.00 | 117.00/M | 109.00/M | ECS-F1EE155K |
| | 2.2 | ±10 | 3.5 | 5.5 | 2.5 | P2045-ND | .36 | 3.09 | 24.21 | 154.00 | 143.00/M | 134.00/M | ECS-F1EE225K |
| | 3.3 | ±10 | 3.7 | 6.5 | 2.5 | P2046-ND | .42 | 3.63 | 28.44 | 181.00 | 168.00/M | 157.00/M | ECS-F1EE335K |
| | 4.7 | ±10 | 4.0 | 7.0 | 2.5 | P2047-ND | .55 | 4.71 | 36.90 | 234.00 | 218.00/M | 204.00/M | ECS-F1EE475K |
| | 6.8 | ±10 | 4.5 | 7.0 | 2.5 | P2048-ND | .59 | 5.07 | 39.74 | 252.00 | 235.00/M | 220.00/M | ECS-F1EE685K |
| | 10 | ±10 | 5.2 | 8.5 | 2.5 | P2049-ND | 1.06 | 9.09 | 71.21 | 452.00 | 421.00/M | 394.00/M | ECS-F1EE106K |
| | 15 | ±10 | 5.5 | 9.5 | 2.5 | P2050-ND | 1.12 | 9.61 | 75.28 | 478.00 | 445.00/M | 416.00/M | ECS-F1EE156K |
| | 22 | ±20 | 6.0 | 11.0 | 2.5 | P2051-ND | 1.74 | 14.88 | 116.56 | 740.00 | 689.00/M | 644.00/M | ECS-F1EE226 |
| | 33 | ±20 | 7.5 | 12.5 | 5.0 | P2052-ND | 2.36 | 20.26 | 158.71 | 1008.00 | 938.00/M | 877.00/M | ECS-F1EE336 |
| | 0.1 | ±20 | 3.3 | 5.0 | 2.5 | P2053-ND* | .25 | 2.16 | 16.92 | 107.00 | 100.00/M | 94.00/M | ECS-F1VE104 |
| | 0.15 | ±20 | 3.3 | 5.0 | 2.5 | P2054-ND* | .24 | 2.02 | 15.79 | 100.00 | 93.00/M | 87.00/M | ECS-F1VE154 |
| 0.22 | ±20 | 3.3 | 5.0 | 2.5 | P2055-ND* | .24 | 2.02 | 15.79 | 100.00 | 93.00/M | 87.00/M | ECS-F1VE224 | |
| 0.33 | ±20 | 3.3 | 5.0 | 2.5 | P2056-ND* | .26 | 2.22 | 17.39 | 110.00 | 103.00/M | 96.00/M | ECS-F1VE334 | |
| 0.47 | ±20 | 3.3 | 5.5 | 2.5 | P2057-ND* | .25 | 2.15 | 16.84 | 107.00 | 100.00/M | 93.00/M | ECS-F1VE474 | |
| 0.68 | ±20 | 3.3 | 5.5 | 2.5 | P2058-ND* | .27 | 2.35 | 18.42 | 117.00 | 109.00/M | 102.00/M | ECS-F1VE684 | |
| 1.0 | ±10 | 3.5 | 5.5 | 2.5 | P2059-ND* | .32 | 2.73 | 21.39 | 136.00 | 126.00/M | 118.00/M | ECS-F1VE105K | |
| 1.5 | ±10 | 3.5 | 5.5 | 2.5 | P2060-ND | .33 | 2.79 | 21.85 | 139.00 | 129.00/M | 121.00/M | ECS-F1VE155K | |
| 2.2 | ±10 | 3.7 | 6.5 | 2.5 | P2061-ND | .42 | 3.63 | 28.44 | 181.00 | 168.00/M | 157.00/M | ECS-F1VE225K | |
| 3.3 | ±10 | 4.0 | 7.0 | 2.5 | P2062-ND | .50 | 4.27 | 33.43 | 212.00 | 198.00/M | 185.00/M | ECS-F1VE335K | |
| 4.7 | ±10 | 4.5 | 7.0 | 2.5 | P2063-ND | .65 | 5.55 | 43.48 | 276.00 | 257.00/M | 240.00/M | ECS-F1VE475K | |
| 6.8 | ±10 | 5.2 | 8.5 | 2.5 | P2064-ND | .99 | 8.50 | 66.59 | 423.00 | 394.00/M | 368.00/M | ECS-F1VE685K | |
| 10 | ±10 | 5.5 | 9.5 | 2.5 | P2065-ND | 1.23 | 10.50 | 82.25 | 522.00 | 486.00/M | 455.00/M | ECS-F1VE106K | |
| 15 | ±20 | 6.0 | 11.0 | 2.5 | P2066-ND | 1.78 | 15.25 | 119.49 | 759.00 | 706.00/M | 660.00/M | ECS-F1VE156 | |
| 22 | ±20 | 7.5 | 12.5 | 5.0 | P2101-ND | 2.42 | 20.76 | 162.66 | 1033.00 | 961.00/M | 899.00/M | ECS-F1VE226 | |
| 50 | 0.1 | ±20 | 3.3 | 5.0 | 2.5 | P2067-ND | .26 | 2.22 | 17.37 | 110.00 | 103.00/M | 96.00/M | ECS-F1HE104 |
| | 0.15 | ±20 | 3.3 | 5.0 | 2.5 | P2068-ND | .26 | 2.22 | 17.37 | 110.00 | 103.00/M | 96.00/M | ECS-F1HE154 |
| | 0.22 | ±20 | 3.3 | 5.5 | 2.5 | P2069-ND | .29 | 2.45 | 19.21 | 122.00 | 114.00/M | 106.00/M | ECS-F1HE224 |
| | 0.33 | ±20 | 3.5 | 5.5 | 2.5 | P2070-ND | .29 | 2.45 | 19.21 | 122.00 | 114.00/M | 106.00/M | ECS-F1HE334 |
| | 0.47 | ±20 | 3.7 | 6.5 | 2.5 | P2071-ND | .31 | 2.65 | 20.79 | 132.00 | 123.00/M | 115.00/M | ECS-F1HE474 |
| | 0.68 | ±20 | 3.7 | 6.5 | 2.5 | P2072-ND | .38 | 3.26 | 25.53 | 162.00 | 151.00/M | 141.00/M | ECS-F1HE684 |
| | 1.0 | ±10 | 4.0 | 7.0 | 2.5 | P2073-ND | .51 | 4.41 | 34.55 | 219.00 | 204.00/M | 191.00/M | ECS-F1HE105K |
| | 1.5 | ±10 | 4.5 | 7.0 | 2.5 | P2074-ND | .79 | 6.79 | 53.17 | 338.00 | 314.00/M | 294.00/M | ECS-F1HE155K |
| | 2.2 | ±10 | 4.7 | 8.0 | 2.5 | P2075-ND | .96 | 8.27 | 64.75 | 411.00 | 383.00/M | 358.00/M | ECS-F1HE225K |
| | 3.3 | ±10 | 5.2 | 8.5 | 2.5 | P2076-ND | 1.39 | 11.89 | 93.17 | 592.00 | 551.00/M | 515.00/M | ECS-F1HE335K |
| | 4.7 | ±10 | 5.5 | 9.5 | 2.5 | P2077-ND | 1.84 | 15.76 | 123.44 | 784.00 | 730.00/M | 682.00/M | ECS-F1HE475K |

*Included in F-KIT-ND.

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic TE Series Tantalum Electrolytic Chip Capacitors



| EIA Size | Size Code | L ± 0.2 | W1 ± 0.2 | W2 ± 0.1 | H ± 0.2 | P ± 0.3 |
|----------|-----------|---------|----------|----------|---------|---------|
| A | X | 3.2 | 1.6 | 1.2 | 1.6 | 0.8 |
| B | X | 3.5 | 2.8 | 2.2 | 1.9 | 0.8 |
| C | C | 6.0 | 3.2 | 2.2 | 2.5 | 1.3 |
| D | D | 7.3 | 4.3 | 3.65 | 2.8 | 1.3 |

| Packing Quantity | Size Y, X | 2,000 pieces/reel |
|------------------|-----------|-------------------|
| | Size C, D | 750 pieces/reel |

Features

- Wide capacitance range
- High performance in temperature and frequency characteristics
- Excellent solderability
- Excellent terminal construction against bending of P.W.B
- Low inductance structure

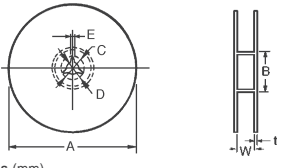
Specifications

Operating Temp. Range: -55 to +125°C • **Capacitance Tolerance:** ±20% at 120Hz, +20°C • **DC Leakage Current:** I ≤ 0.01CV or 0.5μA max. whichever is greater DC leakage current shall be measured after 2 minutes application of rated working voltage at +20°C • **tan δ:** ≤ 3.3μF - 0.04 max., 4.7 - 68μF - 0.06 max., 100μF - 0.08 max. • **Solder Heat Resistance:** The capacitor shall withstand dipping into solder bath for 5 ± 1 sec at 260 ± 5°C • **Moisture Resistance:** Capacitor shall be tested for 500 hours at +40°C and 90-95% R.H. without load After the test, capacitor shall meet the following limits.

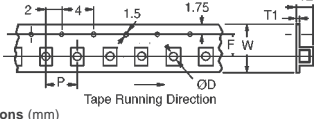
| | |
|-------------|--------------------------------------|
| Cap. change | ± 10% of the initial measured value. |
| DC leakage | ≤ current initial specified value. |
| tan δ | ≤ initial specified value. |

• **Endurance:** After 2000 hours application of DC rated working voltage at +85°C, or derated voltage at +125°C, the capacitor shall meet the following limits.

| | |
|-------------|--|
| Cap. change | ± 10% of the initial measured value. |
| DC leakage | ≤ 125% of the current initial specified value. |
| tan δ | ≤ initial specified value. |



| | ∅A ± 2 | ∅B Min. | C ± 0.5 | D ± 0.8 | E ± 0.5 | W ± 1.5 | I ± 1 |
|-----------|--------|---------|---------|---------|---------|---------|-------|
| 12mm tape | 178 | 50 | 13.0 | 21.0 | 2.0 | 14.0 | 2.0 |
| 8mm tape | 178 | 50 | 13.0 | 21.0 | 2.0 | 10.0 | 2.0 |



| Size Code | W ± 0.3 | A ± 0.2 | B ± 0.2 | P ± 0.1 | T1 ± 0.2 | F ± 0.1 | T2 | ∅D ± 0.1 |
|-----------|---------|---------|---------|---------|----------|---------|-----|----------|
| Y | 8.0 | 1.9 | 3.5 | 4.0 | 1.9 | 3.5 | 0.2 | 1.1 |
| X | 3.7 | 6.4 | 8.0 | 3.0 | 3.0 | | | |
| C | 12.0 | 4.7 | 7.7 | 8.0 | 3.3 | 5.5 | 0.3 | 1.6 |

| W.V. (DC) | Cap (μF) | EIA Size | Size Code | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part Number |
|-----------|----------|----------|-----------|-------------------|------------------|-------|--------|-------------------|---------------------|----------|----------|--------------|-----------------------|
| | | | | | 10 | 100 | 500 | | 3,000 | 6,000 | 12,000 | 24,000 | |
| 6.3 | 3.3 | A | Y | PCS1335CT-ND | 2.33 | 20.15 | 77.50 | PCS1335TR-ND | | 93.00/M | 89.00/M | ECS-TJ0J335R | |
| | 4.7 | A | Y | PCS1475CT-ND | 2.44 | 21.13 | 81.50 | PCS1475TR-ND | | 97.00/M | 93.00/M | ECS-TJ0J475R | |
| | 6.8 | A | Y | PCS1685CT-ND | 2.55 | 22.10 | 85.00 | PCS1685TR-ND | | 101.00/M | 97.00/M | ECS-TJ0J685R | |
| | 10 | A | Y | PCS1106CT-ND | 2.78 | 24.05 | 92.50 | PCS1106TR-ND | | 110.00/M | 106.00/M | ECS-TJ0J106R | |
| | 15 | B | X | PCS1156CT-ND | 3.45 | 29.90 | 115.00 | PCS1156TR-ND | | 137.00/M | 132.00/M | ECS-TJ0J156R | |
| | 22 | B | X | PCS1226CT-ND | 3.56 | 30.88 | 119.00 | PCS1226TR-ND | | 142.00/M | 136.00/M | ECS-TJ0J226R | |
| 10 | 33 | C | C | PCS1336CT-ND | 5.85 | 60.70 | 195.00 | PCS1336TR-ND | 186.00 | 240.00/M | | ECS-TJ0J336R | |
| | 47 | D | D | PCS1476CT-ND | 7.09 | 61.43 | 236.50 | PCS1476TR-ND | 225.00 | 291.00/M | | ECS-TJ0J476R | |
| | 68 | D | D | PCS1686CT-ND | 7.80 | 67.60 | 260.00 | PCS1686TR-ND | 247.50 | 320.00/M | | ECS-TJ0J686R | |
| | 2.2 | A | Y | PCS2225CT-ND | 2.33 | 20.15 | 77.50 | PCS2225TR-ND | | 93.00/M | 89.00/M | ECS-TIAY225R | |
| | 3.3 | A | Y | PCS2335CT-ND | 2.40 | 20.80 | 80.00 | PCS2335TR-ND | | 96.00/M | 91.00/M | ECS-TIAY335R | |
| | 4.7 | A | Y | PCS2475CT-ND | 2.63 | 22.75 | 87.50 | PCS2475TR-ND | | 104.00/M | 100.00/M | ECS-TIAY475R | |
| 16 | 10 | B | X | PCS2106CT-ND | 3.45 | 29.90 | 115.00 | PCS2106TR-ND | | 137.00/M | 132.00/M | ECS-TIAX106R | |
| | 15 | B | X | PCS2156CT-ND | 3.56 | 30.88 | 119.00 | PCS2156TR-ND | | 142.00/M | 136.00/M | ECS-TIAX156R | |
| | 22 | C | C | PCS2226CT-ND | 5.70 | 49.40 | 190.00 | PCS2226TR-ND | 180.75 | 234.00/M | | ECS-TIAC226R | |
| | 33 | D | D | PCS2336CT-ND | 7.09 | 61.43 | 236.50 | PCS2336TR-ND | 225.00 | 291.00/M | | ECS-TIAD336R | |
| | 47 | D | D | PCS2476CT-ND | 7.69 | 66.63 | 256.50 | PCS2476TR-ND | 243.75 | 315.00/M | | ECS-TIAD476R | |
| | 0.68 | A | Y | PCS3684CT-ND | 2.33 | 20.15 | 77.50 | PCS3684TR-ND | | 93.00/M | 89.00/M | ECS-TICV684R | |
| 20 | 1.5 | A | Y | PCS3155CT-ND | 2.33 | 20.15 | 77.50 | PCS3155TR-ND | | 93.00/M | 89.00/M | ECS-TICV155R | |
| | 1.5 | A | Y | PCS3155CT-ND | 2.33 | 20.15 | 77.50 | PCS3155TR-ND | | 93.00/M | 89.00/M | ECS-TICV155R | |
| | 2.2 | A | Y | PCS3225CT-ND | 2.40 | 20.80 | 80.00 | PCS3225TR-ND | | 96.00/M | 91.00/M | ECS-TICV225R | |
| | 3.3 | A | Y | PCS3335CT-ND | 2.63 | 22.75 | 87.50 | PCS3335TR-ND | | 104.00/M | 100.00/M | ECS-TICV335R | |
| | 4.7 | A | Y | PCS3475CT-ND | 2.78 | 24.05 | 92.50 | PCS3475TR-ND | | 110.00/M | 106.00/M | ECS-TICV475R | |
| | 6.8 | B | X | PCS3685CT-ND | 3.45 | 29.90 | 115.00 | PCS3685TR-ND | | 137.00/M | 132.00/M | ECS-TICX685R | |
| 25 | 10 | B | X | PCS3106CT-ND | 3.56 | 30.88 | 119.00 | PCS3106TR-ND | | 142.00/M | 136.00/M | ECS-TICX106R | |
| | 15 | C | C | PCS3156CT-ND | 5.70 | 49.40 | 190.00 | PCS3156TR-ND | 180.75 | 234.00/M | | ECS-TICC156R | |
| | 22 | D | D | PCS3226CT-ND | 7.09 | 61.43 | 236.50 | PCS3226TR-ND | 225.00 | 291.00/M | | ECS-TICD226R | |
| | 33 | D | D | PCS3336CT-ND | 7.69 | 66.63 | 256.50 | PCS3336TR-ND | 243.75 | 315.00/M | | ECS-TICD336R | |
| | 0.68 | A | Y | PCS4684CT-ND | 2.33 | 20.15 | 77.50 | PCS4684TR-ND | | 93.00/M | 89.00/M | ECS-TIDY684R | |
| | 1.5 | A | Y | PCS4155CT-ND | 2.40 | 20.80 | 80.00 | PCS4155TR-ND | | 96.00/M | 91.00/M | ECS-TIDY155R | |
| 35 | 2.2 | B | X | PCS4225CT-ND | 3.30 | 28.60 | 110.00 | PCS4225TR-ND | | 131.00/M | 126.00/M | ECS-TIDX225R | |
| | 3.3 | B | X | PCS4335CT-ND | 3.34 | 28.93 | 111.50 | PCS4335TR-ND | | 133.00/M | 127.00/M | ECS-TIDX335R | |
| | 4.7 | B | X | PCS4475CT-ND | 3.45 | 29.90 | 115.00 | PCS4475TR-ND | | 137.00/M | 132.00/M | ECS-TIDX475R | |
| | 6.8 | C | C | PCS4685CT-ND | 5.29 | 45.83 | 176.50 | PCS4685TR-ND | 168.00 | 217.00/M | | ECS-TIDC685R | |
| | 10 | C | C | PCS4106CT-ND | 5.70 | 49.40 | 190.00 | PCS4106TR-ND | 180.75 | 234.00/M | | ECS-TIDC106R | |
| | 15 | D | D | PCS4156CT-ND | 7.09 | 61.43 | 236.50 | PCS4156TR-ND | 225.00 | 291.00/M | | ECS-TIDD156R | |
| 50 | 2.2 | D | D | PCS4226CT-ND | 7.65 | 66.30 | 255.00 | PCS4226TR-ND | 243.00 | 314.00/M | | ECS-TIDD226R | |
| | 0.47 | A | Y | PCS5474CT-ND1 | 2.40 | 20.80 | 80.00 | PCS5474TR-ND | | 96.00/M | 91.00/M | ECS-TIEY474R | |
| | 1.0 | A | Y | PCS5105CT-ND1 | 2.40 | 20.80 | 80.00 | PCS5105TR-ND | | 96.00/M | 91.00/M | ECS-TIEY105R | |
| | 1.5 | B | X | PCS5155CT-ND1 | 3.34 | 28.93 | 111.50 | PCS5155TR-ND | | 133.00/M | 127.00/M | ECS-TIEY155R | |
| | 2.2 | B | X | PCS5225CT-ND1 | 3.45 | 29.90 | 115.00 | PCS5225TR-ND | | 137.00/M | 132.00/M | ECS-TIEY225R | |
| | 3.3 | B | X | PCS5335CT-ND1 | 3.45 | 29.90 | 115.00 | PCS5335TR-ND | | 137.00/M | 132.00/M | ECS-TIEY335R | |
| 63 | 4.7 | C | C | PCS6475CT-ND1 | 5.40 | 46.80 | 180.00 | PCS6475TR-ND | 171.75 | 222.00/M | | ECS-TIEC475R | |
| | 6.8 | C | C | PCS6685CT-ND1 | 5.85 | 50.70 | 195.00 | PCS6685TR-ND | 186.00 | 240.00/M | | ECS-TIEC685R | |
| | 10 | D | D | PCS6106CT-ND1 | 7.01 | 60.78 | 234.00 | PCS6106TR-ND | 222.75 | 288.00/M | | ECS-TIED106R | |
| | 15 | D | D | PCS6156CT-ND1 | 7.91 | 68.58 | 264.00 | PCS6156TR-ND | 251.25 | 325.00/M | | ECS-TIED156R | |
| | 22 | D | D | PCS6226CT-ND1 | 8.06 | 69.88 | 269.00 | PCS6226TR-ND | 255.75 | 331.00/M | | ECS-TIED226R | |
| | 0.1 | A | Y | PCS6104CT-ND1 | 2.44 | 21.13 | 81.50 | PCS6104TR-ND | | 97.00/M | 93.00/M | ECS-TIYV104R | |
| 100 | 0.15 | A | Y | PCS6154CT-ND1 | 2.44 | 21.13 | 81.50 | PCS6154TR-ND | | 97.00/M | 93.00/M | ECS-TIYV154R | |
| | 2.2 | A | Y | PCS6224CT-ND1 | 2.33 | 20.15 | 77.50 | PCS6224TR-ND | | 93.00/M | 89.00/M | ECS-TIYV224R | |
| | 3.3 | A | Y | PCS6334CT-ND1 | 2.33 | 20.15 | 77.50 | PCS6334TR-ND | | 93.00/M | 89.00/M | ECS-TIYV334R | |
| | 4.7 | A | Y | PCS6474CT-ND1 | 2.33 | 20.15 | 77.50 | PCS6474TR-ND | | 93.00/M | 89.00/M | ECS-TIYV474R | |
| | 6.8 | A | Y | PCS6684CT-ND1 | 2.40 | 20.80 | 80.00 | PCS6684TR-ND | | 96.00/M | 91.00/M | ECS-TIYV684R | |
| | 10 | B | X | PCS6105CT-ND1 | 3.34 | 28.93 | 111.50 | PCS6105TR-ND | | 133.00/M | 127.00/M | ECS-TIYV105R | |
| 160 | 1.5 | B | X | PCS6155CT-ND1 | 3.45 | 29.90 | 115.00 | PCS6155TR-ND | | 137.00/M | 132.00/M | ECS-TIYV155R | |
| | 2.2 | B | X | PCS6225CT-ND1 | 3.45 | 29.90 | 115.00 | PCS6225TR-ND | | 137.00/M | 132.00/M | ECS-TIYV225R | |
| | 3.3 | C | C | PCS6335CT-ND1 | 5.40 | 46.80 | 180.00 | PCS6335TR-ND | 171.75 | 222.00/M | | ECS-TIYV335R | |
| | 4.7 | C | C | PCS6475CT-ND1 | 5.81 | 50.38 | 194.00 | PCS6475TR-ND | 184.50 | 238.00/M | | ECS-TIYV475R | |
| | 6.8 | D | D | PCS6685CT-ND1 | 7.01 | 60.78 | 234.00 | PCS6685TR-ND | 222.75 | 288.00/M | | ECS-TIYV685R | |
| | 10 | D | D | PCS6106CT-ND1 | 7.91 | 68.58 | 264.00 | PCS6106TR-ND | 251.25 | 325.00/M | | ECS-TIYV106R | |

• PCS1-KIT-ND Digi-Key® TE-Series Capacitors Kit 10 each of values denoted (180 total pieces). Notebook style storage case \$89.95
 † PCS2-KIT-ND Digi-Key® TE-Series Capacitors Kit 10 each of values denoted (180 total pieces). Notebook style storage case \$99.95

Panasonic TES Series

Features: • Ultra miniature sizes • Low profile 1.2mm max. height
Specifications: • **Operating Temperature Range:** -55°C to +125°C • **Rated Working Voltage Range:** 2.5 to 20VDC • **Nominal Capacitance Range:** 0.1 to 4.7 μF • **Capacitance Tolerance:** ±20% (120Hz, +20°C) • **Leakage Current:** I ≤ 0.01CV or 0.5 (μA), whichever is greater measured after 2 minutes application of rated working voltage at +20°C • **tan δ:** 0.04 max. for ≤ 3.3μF, 0.08 max. for 2.5WV, 0.10 max. for 2 size • **Characteristics at High and Low Temperature:**

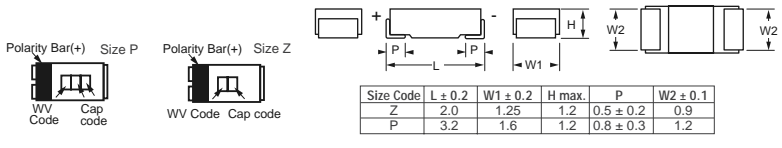
| | | |
|--------|--------------------|---|
| -55°C | Capacitance change | ±12% of initial measured value at +20°C |
| | Leakage current | ≤12.5 times of initial specified value |
| +125°C | Capacitance change | ±15% of initial measured value at +20°C |

Moisture Resistance: • **Test conditions:** — Relative humidity: 90-95% without load • **Ambient temperature:** +40°C • **Duration:** 500 hours. **Post test requirements at +20°C:** • **Leakage current:** ≤ Initial specified value • **Capacitance change:** ±10% of initial measured value • **tan δ:** ≤ Initial specified value
 • **Endurance:** Test Conditions

| Item | Conditions | Derating | Rating |
|---------------------|------------|-------------------------|-----------------------|
| Duration | | 2000 hours | 2000 hours |
| Ambient temperature | | +125°C | +85°C |
| Applied voltage | | Derated working voltage | Rated working voltage |
| Source impedance | | 1Ω/V | 1Ω/V |

| Working voltage [V] DC | 2.5 | 4 | 6.3 | 10 | 16 | 20 |
|-------------------------|-----|-----|-----|-----|----|----|
| Derating voltage [V] DC | 1.6 | 2.5 | 4 | 6.3 | 10 | 13 |

Post test requirements at +20°C: • **Leakage current:** ≤125% of initial specified value • **Capacitance change:** ±10% of initial measured value • **tan δ:** ≤ Initial specified value
 • **Shelf Life:** Test conditions: — Duration 2000 hours, Ambient Temperature +125°C, No applied voltage. Post test requirements at +20°C, same limits for "Endurance" • **Solder Heat Resistance:** The capacitor shall withstand dipping into solder bath for 5 ± 1 seconds at 260 ± 5°C.



| W.V. (DC) | Cap. (μF) | Size Code | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part Number |
|-----------|-----------|-----------|-------------------|------------------|--|--|-------------------|---------------------|--|--|--|-----------------------|
|-----------|-----------|-----------|-------------------|------------------|--|--|-------------------|---------------------|--|--|--|-----------------------|

Panasonic TEH Series

Resin Molded Chip Tantalum Electrolytic Capacitors

Specifications

- Operating temperature range: -55 to +125°C
- Rated working voltage range: 6.3, 10, 16, 25 and 35V DC
- Rated capacitance range: .068 ~ 68μF
- Capacitance tolerance: ±20% at 120Hz, +20°C
- DC leakage current: I = 0.01CV or 0.5μA max. whichever is greater. DC leakage current shall be measured after 2 minutes application of rated working voltage at +20°C.
- tan δ: less than 3.3μF — 0.04 max.; 4.7 ~ 68μF — 0.06 max.
- Stability at low and high temperature:

| | -55°C | +125°C |
|--------------------|------------------------------------|-----------|
| Cap. change | ±12% max. | ±15% max. |
| DC leakage current | 0.1CV or 5μA whichever is greater. | |

Surge voltage test:

| Rated VDC | 6.3 | 10 | 16 | 25 | 35 |
|-----------|-----|----|----|----|----|
| Surge VDC | 8 | 13 | 20 | 30 | 44 |

Capacitor shall withstand the surge test voltage applied through a 1000 ohm resistor at the rate of 1/2 minute "ON", 5-1/2 minutes "OFF", for 1000 successive test cycles at +85°C. After the test, capacitor shall meet the following limits.

| Cap. change | Within ±5% of the initial measured value. |
|--------------------|---|
| DC leakage current | Less than initial specified value. |
| tan δ | Less than initial specified value. |

Humidity test:

Capacitor shall be tested for 500 hours at -40°C and 90-95% R.H. without load. After the test, capacitor shall meet the following limits.

| Cap. change | Within ±10% of the initial measured value. |
|--------------------|--|
| DC leakage current | Less than initial specified value. |
| tan δ | Less than initial specified value. |

Load life test:

After 2000 hours application of DC rated working voltage at +85°C, or derated voltage at +125°C, the capacitor shall meet the following limits.

| W.V. | Derated voltage |
|------|-----------------|
| 6.3 | 4 |
| 10 | 6.3 |
| 16 | 10 |
| 25 | 16 |
| 35 | 22 |

| Cap. change | Within ±10% of the initial measured value. |
|--------------------|--|
| DC leakage current | Less than 125% of the initial specified value. |
| tan δ | Less than initial specified value. |

- Reverse voltage. Reverse voltage shall be less than 5% of the rated working voltage or 1 volt, whichever is smaller.

| Rated working voltage | Reverse voltage |
|-----------------------|-----------------|
| 6.3 V | -0.32 max. |
| 10 V | -0.50 max. |
| 16 V | -0.80 max. |
| 25 V | -1.00 max. |
| 35 V | -1.00 max. |

Test condition
 Temperature: 85 ±2°C
 Charging voltage: DC voltage as shown above.
 Test time: 500 ±12 hours through the resistance or more than 3 times of charging voltage.
 (Example: 1V — more than 3Q)

After this test, capacitor shall meet the value after load life test.

- Cleaning Solvents: The organic solvents such as Freon, 1,1,1-Trichloroethane are acceptable for 5 minutes cleaning. However, Acid and Alkaline solvents shall not be used.

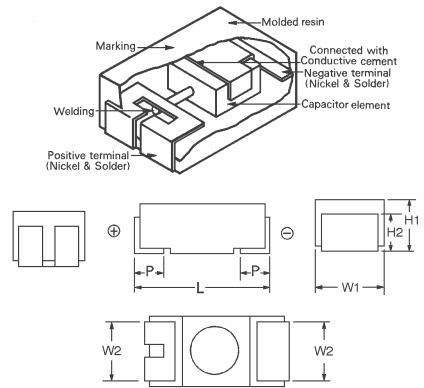
- Solder heat resistance: The capacitor shall withstand dipping into solder bath for 5 ±1 sec at 260 ±5°C.

- Solderability: Lead tabs shall be uniformly covered with solder uniformly on the following conditions.
 Solder bath temp 230 ± 5°C
 Solder dipping time 2 ±0.5 sec. after dipping flux.

- Maximum pressure: When the capacitor is taken and mounted by the mounting machine, pressure given to the capacitor shall not exceed 500g at 1.5mm (0.059 inch) diameter of the tip.

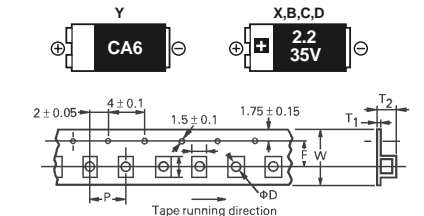
PANASONIC TE CROSS REFERENCES

Sprague: 293D; Kemet: T491; Meppco: 49MC; NEC: SV; Nichicon: F93; Hitachi: TMC; Matsuo: 267.



Dimensions (mm)

| EIA Size | Size Code | L±0.2 | W ₁ ±0.2 | W ₂ ±0.1 | H ₁ ±0.2 | H ₂ Typ. | P±0.3 |
|----------|-----------|-------|---------------------|---------------------|---------------------|---------------------|-------|
| A | Y | 3.2 | 1.6 | 1.2 | 1.6 | 1.0 | 0.8 |
| B | X | 3.5 | 2.8 | 2.2 | 1.9 | 1.2 | 0.8 |
| C | C | 6.0 | 3.2 | 2.2 | 2.5 | 1.5 | 1.3 |
| D | D | 7.3 | 4.3 | 2.4 | 2.8 | 1.6 | 1.3 |

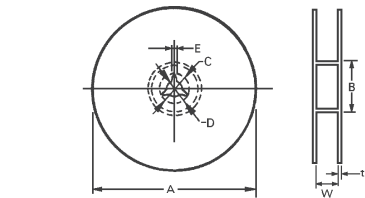


Dimensions (mm)

| Size Code | W±0.3 | A±0.2 | B±0.2 | P±0.1 | T ₁ ±0.2 | F±0.1 | T ₂ | φD±0.1 |
|-----------|-------|-------|-------|-------|---------------------|-------|----------------|--------|
| Y | 1.9 | 3.5 | 4.0 | 1.9 | | 3.5 | 0.2 | 1.1 |
| X | 3.3 | 3.8 | 4.0 | 2.1 | | | | |
| C | 3.7 | 6.4 | 8.0 | 3.0 | | | | |
| D | 4.7 | 7.7 | 8.0 | 3.3 | | 5.5 | 0.3 | 1.6 |

Packing Quantity

| | |
|-----------|-------------------|
| Size Y, X | 2,000 pieces/reel |
| Size C, D | 750 pieces/reel |



Dimensions (mm)

| | φA±2 | φB Min. | C±0.5 | D±0.8 | E±0.5 | W±1.5 | t±0.5 |
|-----------|------|---------|-------|-------|-------|-------|-------|
| 12mm tape | 178 | 50 | 13.0 | 21.0 | 2.0 | 14.0 | 2.0 |
| 8mm tape | 178 | 50 | 13.0 | 21.0 | 2.0 | 10.0 | 2.0 |

| W.V. (D.C.) | Cap. (μF) | EIA Size | Size Code | Digi-Key Part No. | Cut Tape Pricing 10 | 100 | 750 | 1,500 | Tape & Reel Pricing 2,000 | 4,000 | 6,000 | Panasonic Part No. | |
|-------------|-----------|----------|-----------|-------------------|---------------------|-------|--------|----------|---------------------------|----------|----------|--------------------|--------------|
| 6.3 | 3.3 | A | Y | PCT1335CT-ND* | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H0Y335R | |
| | 6.8 | B | X | PCT1685CT-ND* | 3.64 | 31.53 | — | — | 145.00/M | 139.00/M | 137.00/M | ECS-H0X685R | |
| | 15 | C | C | PCT1156CT-ND | 5.59 | 48.43 | 177.75 | 229.00/M | — | — | — | ECS-H0C156R | |
| | 22 | C | C | PCT1226CT-ND* | 5.85 | 50.70 | 186.00 | 240.00/M | — | — | — | ECS-H0C226R | |
| | 47 | D | D | PCT1476CT-ND | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H0D476R | |
| | 68 | D | D | PCT1686CT-ND* | 8.59 | 74.43 | 272.25 | 352.00/M | — | — | — | ECS-H0D686R | |
| 10 | 2.2 | A | Y | PCT2225CT-ND* | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1A475R | |
| | 4.7 | B | X | PCT2475CT-ND* | 3.64 | 31.53 | — | — | 145.00/M | 139.00/M | 137.00/M | ECS-H1A475R | |
| | 10 | C | C | PCT2106CT-ND | 5.59 | 48.43 | 177.75 | 229.00/M | — | — | — | ECS-H1AC106R | |
| | 15 | C | C | PCT2156CT-ND | 5.85 | 50.70 | 186.00 | 240.00/M | — | — | — | ECS-H1AC156R | |
| | 33 | D | D | PCT2336CT-ND | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H1AD336R | |
| | 47 | D | D | PCT2476CT-ND* | 8.48 | 73.45 | 269.25 | 348.00/M | — | — | — | ECS-H1AD476R | |
| 0.68 | 0.68 | A | Y | PCT3684CT-ND* | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1C684R | |
| | 1.0 | A | Y | PCT3105CT-ND* | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1CY105R | |
| | 1.5 | A | Y | PCT3155CT-ND* | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1CY155R | |
| | 2.2 | B | X | PCT3225CT-ND* | 3.64 | 31.53 | — | — | 145.00/M | 139.00/M | 137.00/M | ECS-H1CX225R | |
| | 3.3 | B | X | PCT3335CT-ND* | 3.68 | 31.85 | — | — | 146.00/M | 140.00/M | 138.00/M | ECS-H1CX335R | |
| | 4.7 | C | C | PCT3475CT-ND* | 8.32 | 72.07 | 264.00 | 341.00/M | — | — | — | ECS-H1CC475R | |
| 6.8 | 6.8 | C | C | PCT3685CT-ND* | 5.59 | 48.43 | 177.75 | 229.00/M | — | — | — | ECS-H1CC685R | |
| | 10 | C | C | PCT3106CT-ND | 5.85 | 50.70 | 186.00 | 240.00/M | — | — | — | ECS-H1CC106R | |
| | 22 | D | D | PCT3226CT-ND* | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H1CD226R | |
| | 33 | D | D | PCT3336CT-ND* | 8.48 | 73.45 | 269.25 | 348.00/M | — | — | — | ECS-H1CD336R | |
| | 0.68 | 0.68 | A | Y | PCT4684CT-ND | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1D684R |
| | | 2.2 | B | X | PCT4225CT-ND | 3.64 | 31.53 | — | — | 145.00/M | 139.00/M | 137.00/M | ECS-H1DX225R |
| 4.7 | | C | C | PCT4475CT-ND | 5.59 | 48.43 | 177.75 | 229.00/M | — | — | — | ECS-H1DC475R | |
| 6.8 | | C | C | PCT4685CT-ND | 5.85 | 50.70 | 186.00 | 240.00/M | — | — | — | ECS-H1DC685R | |
| 15 | | D | D | PCT4156CT-ND | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H1DD156R | |
| 0.47 | | 0.47 | A | Y | PCT5474CT-ND† | 2.63 | 22.75 | — | — | 104.00/M | 100.00/M | 99.00/M | ECS-H1E474R |
| | 1.5 | B | X | PCT5155CT-ND† | 3.68 | 31.85 | — | — | 146.00/M | 140.00/M | 138.00/M | ECS-H1EX155R | |
| | 3.3 | C | C | PCT5335CT-ND† | 5.63 | 48.75 | 178.50 | 231.00/M | — | — | — | ECS-H1EC335R | |
| | 10 | D | D | PCT5106CT-ND† | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H1ED106R | |
| | 0.68 | 0.68 | A | Y | PCT6683CT-ND† | 4.20 | 36.40 | — | — | — | — | — | ECS-H1V683R |
| | | .1 | A | Y | PCT6104CT-ND† | 2.74 | 23.73 | — | — | 109.00/M | 104.00/M | 103.00/M | ECS-H1V104R |
| .15 | | A | Y | PCT6154CT-ND† | 2.74 | 23.73 | — | — | 109.00/M | 104.00/M | 103.00/M | ECS-H1V154R | |
| .22 | | A | Y | PCT6224CT-ND† | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1V224R | |
| .33 | | A | Y | PCT6334CT-ND† | 2.55 | 22.10 | — | — | 101.00/M | 97.00/M | 96.00/M | ECS-H1V334R | |
| 0.68 | | .47 | B | X | PCT6474CT-ND† | 3.86 | 33.48 | — | — | 154.00/M | 147.00/M | 145.00/M | ECS-H1VX474R |
| | 0.68 | B | X | PCT6684CT-ND† | 3.86 | 33.48 | — | — | 154.00/M | 147.00/M | 145.00/M | ECS-H1VX684R | |
| | 1.0 | B | X | PCT6105CT-ND† | 3.68 | 31.85 | — | — | 146.00/M | 140.00/M | 138.00/M | ECS-H1VX105R | |
| | 1.5 | C | C | PCT6155CT-ND† | 5.51 | 47.78 | 174.75 | 226.00/M | — | — | — | ECS-H1VC155R | |
| | 2.2 | C | C | PCT6225CT-ND† | 5.63 | 48.75 | 178.50 | 231.00/M | — | — | — | ECS-H1VC225R | |
| | 3.3 | 3.3 | D | D | PCT6335CT-ND† | 6.79 | 58.83 | 215.25 | 278.00/M | — | — | — | ECS-H1VD335R |
| 4.7 | | D | D | PCT6475CT-ND† | 6.90 | 59.80 | 219.00 | 283.00/M | — | — | — | ECS-H1VD475R | |
| 6.8 | | D | D | PCT6685CT-ND† | 7.76 | 67.28 | 246.75 | 318.00/M | — | — | — | ECS-H1VD685R | |

*PCT1-KIT-ND Digi-Key® TEH-Series Capacitors Kit 10 each of values denoted (190 total pieces). Notebook style storage case and bin storage guide included. \$129.95
 †PCT2-KIT-ND Digi-Key® TEH-Series Capacitors Kit 10 each of values denoted (170 total pieces). Notebook style storage case and bin storage guide included. \$119.95

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic B-Series Polyester Capacitors

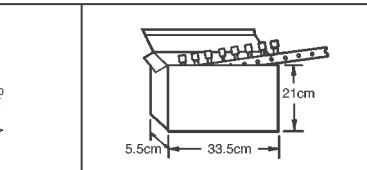
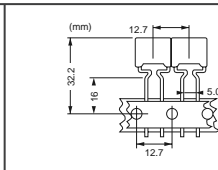
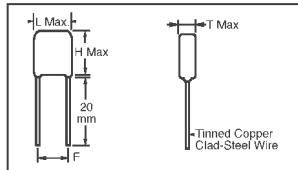
PANASONIC ECO-B CROSS REFERENCE: Sprague: 225P, 418P; Mepco: 71301, 71101, 719D1; TRW: 601PE, 601CA; Packtron: PE, FM; Secor: MFDW, MFDJR; Roederstein: KT1805, KT1806, KT1807, KT1898; Wima: FKS, CSF Thompson: ED (Dip); Rubycon: F2X, F2S, F3U; Nichicon: TDY; Nissei: AMZ, AMX, AMR, AMM.

SPECIFICATIONS: • Operating Temp. Range: -40° ~ +85°C • Rated Voltage: DC 50V, 100V, 200V.
• Capacitance Range: .0001 ~ 0.47µF • Capacitance Tolerance: ±5% (J), ±10% (K) • Dissipation Factor: 1.0% (20°C, 1kHz) • Withstand Voltage: Between Terminals: rated voltage(V, DC) x 250% 1 ~ 5 sec. •

Insulation Resistance: C ≤ 0.33µF: 3000MΩ min. (20°C, 50VDC 60s; ECOB1(F), C > 0.33µF: 1000MΩ µF min. (20°C, 100VDC 60s; ECOB1(F), ECOB2(F)) • **Construction:** Polyester film, non-inductive, epoxy coating.

FEATURES: High volumetric efficiency; non-inductive construction; low-loss, high stability; and epoxy resin coating.

APPLICATIONS: Blocking, by-pass and coupling of DC and signal to VHF range; pulse, logic and timing circuits; light duty pulse forming networks; filter & noise suppression circuits; and general purpose usage.



Panasonic Polyester Capacitors
Digi-Key® B-Series Kit
300 capacitors in all.
P4550-KIT-ND \$29.95
Includes those parts listed below (*).

| | | |
|-----------------------|-----------------------|-----------------------|
| P4551-ND . . . 80 pc. | P4555-ND . . . 30 pc. | P4559-ND . . . 30 pc. |
| P4552-ND . . . 10 pc. | P4556-ND . . . 10 pc. | P4560-ND . . . 10 pc. |
| P4553-ND . . . 20 pc. | P4557-ND . . . 20 pc. | P4561-ND . . . 30 pc. |
| P4554-ND . . . 20 pc. | P4558-ND . . . 20 pc. | P4562-ND . . . 20 pc. |

| Cap. µF | Tolerance | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|---------|-----------|-----------------|---|---|---|-------------------|---------|-----|-------|-------|--------|--------------------|
| | | L | T | H | F | | 10 | 100 | 1,000 | 5,000 | 10,000 | |

| 50WV (Bulk Pkg.) | | | | | | | | | | | | |
|------------------|------|------|-----|------|------|-----------|------|-------|--------|----------|----------|--------------|
| 0001 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4570-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H101KF |
| 00012 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4571-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H121KF |
| 00015 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4572-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H151KF |
| 00018 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4573-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H181KF |
| 00022 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4574-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H221KF |
| 00027 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4575-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H271KF |
| 00033 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4576-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H331KF |
| 00039 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4577-ND | 1.34 | 8.96 | 70.00 | 68.00/M | 61.00/M | ECO-B1H391KF |
| 00047 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4578-ND | 1.02 | 6.94 | 54.00 | 52.00/M | 48.00/M | ECO-B1H471FJ |
| 00056 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4579-ND | 1.04 | 6.94 | 54.00 | 52.00/M | 48.00/M | ECO-B1H561FJ |
| 00068 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4580-ND | 1.04 | 6.94 | 54.00 | 52.00/M | 48.00/M | ECO-B1H681FJ |
| 00082 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4581-ND | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H821FJ |
| 001 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4551-ND* | .90 | 6.00 | 47.00 | 45.00/M | 41.00/M | ECO-B1H102JF |
| 0012 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4552-ND* | .94 | 6.27 | 49.00 | 47.00/M | 43.00/M | ECO-B1H122JF |
| 0015 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4553-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H152JF |
| 0018 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4554-ND* | .90 | 5.99 | 47.00 | 45.00/M | 41.00/M | ECO-B1H182JF |
| 0022 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4555-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H222JF |
| 0027 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4556-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H272JF |
| 0033 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4557-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H332JF |
| 0039 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4558-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H392JF |
| 0047 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4559-ND* | .90 | 6.00 | 47.00 | 45.00/M | 41.00/M | ECO-B1H472JF |
| 0056 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4560-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H562JF |
| 0068 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4561-ND* | .94 | 6.27 | 49.00 | 47.00/M | 43.00/M | ECO-B1H682JF |
| 0082 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4562-ND* | 1.02 | 6.80 | 53.00 | 51.00/M | 47.00/M | ECO-B1H822JF |
| 01 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4582-ND | .96 | 6.40 | 50.00 | 48.00/M | 44.00/M | ECO-B1H103JF |
| 012 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4583-ND | 1.08 | 7.17 | 56.00 | 54.00/M | 49.00/M | ECO-B1H123JF |
| 015 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4584-ND | 1.11 | 7.39 | 58.00 | 56.00/M | 51.00/M | ECO-B1H153JF |
| 018 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4585-ND | 1.14 | 7.62 | 60.00 | 58.00/M | 52.00/M | ECO-B1H183JF |
| 022 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4586-ND | 1.20 | 8.00 | 63.00 | 60.00/M | 55.00/M | ECO-B1H223JF |
| 027 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4587-ND | 1.48 | 9.86 | 77.00 | 74.00/M | 68.00/M | ECO-B1H273JF |
| 033 | ±5% | 7.5 | 3.5 | 6.5 | 5.0 | P4569-ND | 1.75 | 11.65 | 91.00 | 88.00/M | 80.00/M | ECO-B1H333JF |
| 039 | ±5% | 7.5 | 3.5 | 6.5 | 5.0 | P4588-ND | 1.71 | 11.40 | 89.00 | 86.00/M | 78.00/M | ECO-B1H393JF |
| 047 | ±5% | 7.5 | 4.0 | 6.5 | 5.0 | P4589-ND | 1.89 | 12.60 | 98.00 | 95.00/M | 86.00/M | ECO-B1H473JF |
| 056 | ±5% | 8.0 | 4.0 | 7.5 | 5.0 | P4590-ND | 1.92 | 12.77 | 100.00 | 96.00/M | 87.00/M | ECO-B1H563JF |
| 068 | ±5% | 8.0 | 4.0 | 8.5 | 5.0 | P4591-ND | 1.98 | 13.22 | 103.00 | 100.00/M | 91.00/M | ECO-B1H683JF |
| 082 | ±5% | 8.0 | 4.5 | 8.5 | 5.0 | P4592-ND | 2.08 | 13.89 | 109.00 | 105.00/M | 95.00/M | ECO-B1H823JF |
| .1 | ±5% | 8.0 | 4.5 | 9.5 | 5.0 | P4593-ND | 2.28 | 15.20 | 119.00 | 115.00/M | 104.00/M | ECO-B1H104JF |
| .12 | ±5% | 11.0 | 4.5 | 9.5 | 7.5 | P4594-ND | 2.65 | 17.70 | 138.00 | 134.00/M | 121.00/M | ECO-B1H124JF |
| .15 | ±5% | 11.0 | 5.0 | 9.5 | 7.5 | P4595-ND | 2.86 | 19.04 | 149.00 | 144.00/M | 130.00/M | ECO-B1H154JF |
| .18 | ±5% | 11.0 | 5.5 | 10.0 | 7.5 | P4596-ND | 2.99 | 19.94 | 156.00 | 151.00/M | 137.00/M | ECO-B1H184JF |
| .22 | ±5% | 11.0 | 6.0 | 11.0 | 7.5 | P4597-ND | 3.33 | 22.18 | 173.00 | 167.00/M | 152.00/M | ECO-B1H224JF |
| .27 | ±5% | 13.0 | 6.0 | 12.0 | 10.0 | P4598-ND | 4.17 | 27.78 | 217.00 | 210.00/M | 190.00/M | ECO-B1H274JF |
| .33 | ±5% | 13.0 | 6.0 | 13.0 | 10.0 | P4599-ND | 4.50 | 30.02 | 235.00 | 227.00/M | 206.00/M | ECO-B1H334JF |
| .39 | ±5% | 13.0 | 6.5 | 14.0 | 10.0 | P4734-ND | 4.84 | 32.26 | 252.00 | 244.00/M | 221.00/M | ECO-B1H394JF |
| .47 | ±5% | 13.0 | 7.0 | 14.5 | 10.0 | P4735-ND | 5.34 | 35.62 | 287.00 | 279.00/M | 244.00/M | ECO-B1H474JF |

| Cap. µF | Tolerance | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|---------|-----------|-----------------|---|---|---|-------------------|---------|-----|-------|-------|--------|--------------------|
| | | L | T | H | F | | 10 | 100 | 1,000 | 5,000 | 10,000 | |

| 100WV (Bulk Pkg.) | | | | | | | | | | | | |
|-------------------|-----|------|------|------|------|----------|------|-------|--------|----------|----------|-------------|
| .18 | ±5% | 13.0 | 7.5 | 12.5 | 10.0 | P4659-ND | 4.23 | 28.22 | 221.00 | 213.00/M | 193.00/M | ECO-B1184JF |
| .22 | ±5% | 13.0 | 8.0 | 13.0 | 10.0 | P4660-ND | 4.77 | 31.81 | 249.00 | 240.00/M | 218.00/M | ECO-B1224JF |
| .27 | ±5% | 13.0 | 8.5 | 15.0 | 10.0 | P4661-ND | 5.34 | 35.62 | 278.00 | 269.00/M | 244.00/M | ECO-B1274JF |
| .33 | ±5% | 13.0 | 9.0 | 16.0 | 10.0 | P4662-ND | 5.88 | 39.20 | 306.00 | 296.00/M | 268.00/M | ECO-B1334JF |
| .39 | ±5% | 13.0 | 10.5 | 17.0 | 10.0 | P4663-ND | 6.42 | 42.78 | 334.00 | 323.00/M | 293.00/M | ECO-B1394JF |
| .47 | ±5% | 13.0 | 11.5 | 17.5 | 10.0 | P4664-ND | 6.96 | 46.37 | 362.00 | 350.00/M | 318.00/M | ECO-B1474JF |

| Cap. µF | Tolerance | Dimensions (mm) | | | | Digi-Key Part No. | Tape & Box Pricing | | | | | Panasonic Part No. |
|---------|-----------|-----------------|---|---|---|-------------------|--------------------|-------|-------|-------|-------|--------------------|
| | | L | T | H | F | | 500 | 1,000 | 2,000 | 5,000 | 6,000 | |

| 50WV (Ammo Box Pkg.) | | | | | | | | | | | | |
|----------------------|------|-----|-----|-----|-----|-----------|---|---|---------|---|---------|---------------|
| 0001 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4570B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H101KF3 |
| 00012 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4571B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H121KF3 |
| 00015 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4572B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H151KF3 |
| 00018 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4573B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H181KF3 |
| 00022 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4574B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H221KF3 |
| 00027 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4575B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H271KF3 |
| 00033 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4576B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H331KF3 |
| 00039 | ±10% | 6.5 | 3.0 | 5.5 | 5.0 | P4577B-ND | — | — | 77.00/M | — | 74.00/M | ECO-B1H391KF3 |
| 00047 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4578B-ND | — | — | 60.00/M | — | 58.00/M | ECO-B1H471JF3 |
| 00056 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4579B-ND | — | — | 60.00/M | — | 58.00/M | ECO-B1H561JF3 |
| 00068 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4580B-ND | — | — | 60.00/M | — | 58.00/M | ECO-B1H681JF3 |
| 00082 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4581B-ND | — | — | 60.00/M | — | 58.00/M | ECO-B1H821JF3 |
| 001 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4551B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H102JF3 |
| 0012 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4552B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H122JF3 |
| 0015 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4553B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H152JF3 |
| 0018 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4554B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H182JF3 |
| 0022 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4555B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H222JF3 |
| 0027 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4556B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H272JF3 |
| 0033 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4557B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H332JF3 |
| 0039 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4558B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H392JF3 |
| 0047 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4559B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H472JF3 |
| 0056 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4560B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H562JF3 |
| 0068 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4561B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H682JF3 |
| 0082 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4562B-ND | — | — | 56.00/M | — | 54.00/M | ECO-B1H822JF3 |
| 01 | ±5% | 6.5 | 3.0 | 5.5 | 5.0 | P4582B-ND | — | — | 60.00/M | — | 58.00/M | ECO-B1H103JF3 |
| 012 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4583B-ND | — | — | 61.00/M | — | 59.00/M | ECO-B1H123JF3 |
| 015 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4584B-ND | — | — | 63.00/M | — | 61.00/M | ECO-B1H153JF3 |
| 018 | ±5% | 7.0 | 3.0 | 6.0 | 5.0 | P4585B-ND | — | — | 67.00/M | — | | |

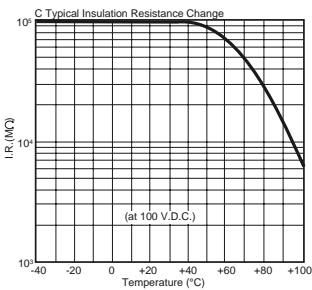
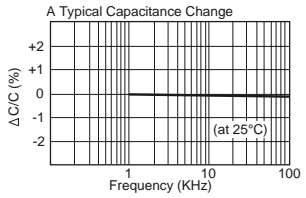
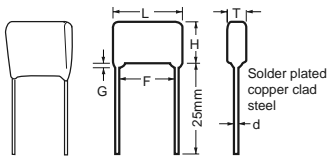
Panasonic P-Series Polypropylene Capacitors

Features: • Wide capacitance range • Close capacitance tolerance • High insulation resistance • Low dissipation factor • Non-inductive const. • Epoxy resin coating
Applications: • Blocking, by-pass and coupling of DC and signal to UHF range • Pulse, logic and timing

circuit: • Light duty pulse forming network • Filter and noise suppression circuit
Electrical Specifications: • Reference Standard: EIAJ RC-3670A • Temperature Range: -40 to +85°C • Dissipation Factor: .1% max. at 1kHz and

25°C • Withstand Voltage: 1-5 seconds at 250% of rated voltage • Insulation Resistance: 45,000 M Ω min., for values less than .33 μ F, 15,000 M Ω / μ F min., for .33 μ F and greater. (Measured after a 2-minute charge at rated voltage and 25°C)

Panasonic ECQ-P Cross References: Sprague: 715P, Westlake: 173/174, Mepeco: 719E/1719H1. Secor: PFDS/PFDR, Roderstein: KP1835, Wima: FKP, CSF Thompson: PL/PS, Rubycon: PP, Nissel: APS/APA



| WV DC | Cap. μ F | Tolerance | Dimensions (mm) | | | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|-------|--------------|-----------|-----------------|------|------|------|-----|-----|-------------------|---------|-------|--------|--------|----------|--------------------|--------------|
| | | | L | T | H | F | G | d | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 50 | .0001 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3101-ND* | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H101JZ |
| 50 | .00012 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3121-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H121JZ |
| 50 | .00015 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3151-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H151JZ |
| 50 | .00018 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3181-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H181JZ |
| 50 | .00022 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3221-ND* | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H221JZ |
| 50 | .00027 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3271-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H271JZ |
| 50 | .00033 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3331-ND* | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H331JZ |
| 50 | .00039 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3391-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H391JZ |
| 50 | .00047 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3471-ND* | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H471JZ |
| 50 | .00056 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3561-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H561JZ |
| 50 | .00068 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3681-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H681JZ |
| 50 | .00082 | 5% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3821-ND | .24 | 2.05 | 17.08 | 102.00 | 95.00/M | 89.00/M | ECQ-P1H821JZ |
| 50 | .001 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3102-ND* | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H102GZ |
| 50 | .0012 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3122-ND | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H122GZ |
| 50 | .0015 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3152-ND | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H152GZ |
| 50 | .0018 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3182-ND | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H182GZ |
| 50 | .0022 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3222-ND* | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H222GZ |
| 50 | .0027 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3272-ND | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H272GZ |
| 50 | .0033 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3332-ND* | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H332GZ |
| 50 | .0039 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3392-ND | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H392GZ |
| 50 | .0047 | 2% | 8.5 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | P3472-ND* | .38 | 3.29 | 27.44 | 164.00 | 152.00/M | 143.00/M | ECQ-P1H472GZ |
| 50 | .0056 | 2% | 8.5 | 4.5 | 8.0 | 5.0 | 1.0 | 0.5 | P3562-ND | .41 | 3.53 | 29.40 | 176.00 | 163.00/M | 153.00/M | ECQ-P1H562GZ |
| 50 | .0068 | 2% | 8.5 | 5.0 | 8.0 | 5.0 | 1.0 | 0.5 | P3682-ND | .41 | 3.53 | 29.40 | 176.00 | 163.00/M | 153.00/M | ECQ-P1H682GZ |
| 50 | .0082 | 2% | 12.0 | 5.5 | 9.0 | 7.5 | 1.0 | 0.6 | P3822-ND | .41 | 3.53 | 29.40 | 176.00 | 163.00/M | 153.00/M | ECQ-P1H822GZ |
| 50 | .01 | 2% | 12.0 | 5.0 | 8.5 | 7.5 | 1.0 | 0.6 | P3103-ND* | .44 | 3.80 | 31.64 | 189.00 | 176.00/M | 164.00/M | ECQ-P1H103GZ |
| 50 | .012 | 2% | 12.0 | 5.5 | 9.0 | 7.5 | 1.0 | 0.6 | P3123-ND | .44 | 3.80 | 31.64 | 189.00 | 176.00/M | 164.00/M | ECQ-P1H123GZ |
| 50 | .015 | 2% | 12.0 | 5.0 | 9.0 | 7.5 | 1.0 | 0.6 | P3153-ND | .44 | 3.80 | 31.64 | 189.00 | 176.00/M | 164.00/M | ECQ-P1H153GZ |
| 50 | .018 | 2% | 12.0 | 5.5 | 9.5 | 7.5 | 1.0 | 0.6 | P3183-ND | .48 | 4.10 | 34.16 | 204.00 | 190.00/M | 177.00/M | ECQ-P1H183GZ |
| 50 | .022 | 2% | 12.0 | 5.5 | 10.5 | 7.5 | 1.0 | 0.6 | P3223-ND | .48 | 4.10 | 34.16 | 204.00 | 190.00/M | 177.00/M | ECQ-P1H223GZ |
| 50 | .027 | 2% | 12.0 | 6.0 | 11.0 | 7.5 | 1.0 | 0.6 | P3273-ND | .50 | 4.27 | 35.56 | 212.00 | 198.00/M | 185.00/M | ECQ-P1H273GZ |
| 50 | .033 | 2% | 12.0 | 6.5 | 11.5 | 7.5 | 1.0 | 0.6 | P3333-ND* | .50 | 4.27 | 35.56 | 212.00 | 198.00/M | 185.00/M | ECQ-P1H333GZ |
| 50 | .039 | 2% | 14.5 | 5.5 | 12.0 | 10.0 | 1.0 | 0.6 | P3393-ND | .54 | 4.64 | 38.64 | 231.00 | 215.00/M | 201.00/M | ECQ-P1H393GZ |
| 50 | .047 | 2% | 14.5 | 6.0 | 12.5 | 10.0 | 1.0 | 0.6 | P3473-ND* | .54 | 4.64 | 38.64 | 231.00 | 215.00/M | 201.00/M | ECQ-P1H473GZ |
| 50 | .056 | 2% | 14.5 | 6.5 | 13.5 | 10.0 | 1.0 | 0.6 | P3563-ND | .60 | 5.17 | 43.12 | 257.00 | 240.00/M | 224.00/M | ECQ-P1H563GZ |
| 50 | .068 | 2% | 14.5 | 7.0 | 14.0 | 10.0 | 1.0 | 0.6 | P3683-ND | .60 | 5.17 | 43.12 | 257.00 | 240.00/M | 224.00/M | ECQ-P1H683GZ |
| 50 | .082 | 2% | 17.0 | 7.0 | 14.0 | 12.5 | 1.0 | 0.6 | P3823-ND | .73 | 6.25 | 52.08 | 311.00 | 289.00/M | 271.00/M | ECQ-P1H823GZ |
| 50 | .1 | 2% | 17.0 | 7.5 | 14.5 | 12.5 | 1.0 | 0.6 | P3104-ND* | .73 | 6.25 | 52.08 | 311.00 | 289.00/M | 271.00/M | ECQ-P1H104GZ |
| 50 | .12 | 2% | 17.0 | 8.5 | 15.5 | 12.5 | 1.0 | 0.6 | P3124-ND | .89 | 7.63 | 63.56 | 379.00 | 353.00/M | 330.00/M | ECQ-P1H124GZ |
| 50 | .15 | 2% | 20.0 | 8.0 | 15.5 | 15.0 | 1.0 | 0.6 | P3154-ND | .89 | 7.63 | 63.56 | 379.00 | 353.00/M | 330.00/M | ECQ-P1H154GZ |
| 50 | .18 | 2% | 20.0 | 9.0 | 16.0 | 15.0 | 1.0 | 0.6 | P3184-ND | 1.08 | 9.27 | 77.28 | 461.00 | 429.00/M | 401.00/M | ECQ-P1H184GZ |
| 50 | .22 | 2% | 20.0 | 9.5 | 17.0 | 15.0 | 1.0 | 0.6 | P3224-ND* | 1.08 | 9.27 | 77.28 | 461.00 | 429.00/M | 401.00/M | ECQ-P1H224GZ |
| 50 | .27 | 2% | 20.0 | 10.5 | 18.0 | 15.0 | 1.0 | 0.6 | P3274-ND | 1.33 | 11.42 | 95.20 | 568.00 | 529.00/M | 495.00/M | ECQ-P1H274GZ |
| 50 | .33 | 2% | 22.5 | 10.0 | 19.5 | 17.5 | 1.0 | 0.8 | P3334-ND* | 1.33 | 11.42 | 95.20 | 568.00 | 529.00/M | 495.00/M | ECQ-P1H334GZ |
| 50 | .39 | 2% | 22.5 | 11.0 | 20.0 | 17.5 | 1.0 | 0.8 | P3394-ND | 1.59 | 13.64 | 113.68 | 679.00 | 632.00/M | 591.00/M | ECQ-P1H394GZ |
| 50 | .47 | 2% | 22.5 | 12.0 | 21.0 | 17.5 | 1.0 | 0.8 | P3474-ND | 1.59 | 13.64 | 113.68 | 679.00 | 632.00/M | 591.00/M | ECQ-P1H474GZ |

* P3100-KIT-ND Digi-Key® P-Series Capacitors Kit 10 each of parts indicated. Notebook style storage and bin, storage guide included. \$69.95

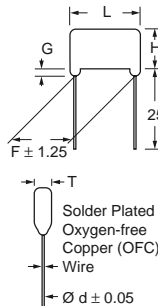
Polypropylene Film Capacitors - ECQP(U)

Non-inductive construction using Polypropylene film with flame retardant epoxy resin coating

Features:
 • Low loss and excellent frequency characteristics
 • Excellent temperature characteristics
 • High insulation resistance

Applications:
 • High frequency and high current circuits
 • General purpose circuit

Electrical Specifications:
 • Reference Standard: EIAJ RC-3670B. Characteristics P
 • Temperature Range: -40 to +85°C. Derating of rated voltage at more than 85°C (rated voltage x 50%)
 • Capacitance Tolerance: \pm 5%
 • Dissipation Factor: 0.1% max. at 1kHz and 20°C
 • Withstand Voltage: 1-5 seconds at 250% of rated voltage between terminals
 • Insulation Resistance: 45,000 M Ω min., for values equal to or less than .33 μ F, 15,000 M Ω / μ F min., for greater than .33 μ F (20°C, 100VDC, 60s)



| WV DC | Cap. μ F | Tolerance | Dimensions (mm) | | | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|--------|--------------|-----------|-----------------|------|------|------|-----|------|-------------------|---------|------|-------|--------|----------|--------------------|-------------|
| | | | L | T | H | F | G | d | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 400 WV | .0082 | 5% | 19.5 | 6.0 | 11.0 | 15.0 | 1.0 | 0.60 | P3475-ND | .41 | 3.53 | 29.40 | 176.00 | 163.00/M | 153.00/M | ECQ-P4822JU |
| | .01 | 5% | 19.5 | 6.5 | 11.5 | 15.0 | 1.0 | 0.60 | P3476-ND | .43 | 3.66 | 30.52 | 182.00 | 170.00/M | 159.00/M | ECQ-P4103JU |
| | .012 | 5% | 19.5 | 6.5 | 13.5 | 15.0 | 1.0 | 0.60 | P3477-ND | .44 | 3.80 | 31.64 | 189.00 | 176.00/M | 164.00/M | ECQ-P4123JU |
| | .015 | 5% | 19.5 | 6.0 | 13.5 | 15.0 | 1.0 | 0.60 | P3478-ND | .46 | 3.96 | 33.04 | 197.00 | 184.00/M | 172.00/M | ECQ-P4153JU |
| | .018 | 5% | 19.5 | 6.0 | 13.5 | 15.0 | 1.0 | 0.60 | P3479-ND | .48 | 4.10 | 34.16 | 204.00 | 190.00/M | 177.00/M | ECQ-P4183JU |
| | .022 | 5% | 19.5 | 6.0 | 13.5 | 15.0 | 1.0 | 0.60 | P3480-ND | .49 | 4.23 | 35.28 | 211.00 | 196.00/M | 183.00/M | ECQ-P4223JU |
| | .027 | 5% | 19.5 | 6.5 | 14.0 | 15.0 | 1.0 | 0.60 | P3481-ND | .51 | 4.33 | 36.12 | 216.00 | 201.00/M | 188.00/M | ECQ-P4273JU |
| | .033 | 5% | 19.5 | 7.0 | 15.0 | 15.0 | 1.0 | 0.60 | P3482-ND | .53 | 4.50 | 37.52 | 224.00 | 208.00/M | 195.00/M | ECQ-P4333JU |
| | .039 | 5% | 19.5 | 7.5 | 16.0 | 15.0 | 1.0 | 0.60 | P3483-ND | .54 | 4.60 | 38.36 | 229.00 | 213.00/M | 199.00/M | ECQ-P4393JU |
| | .047 | 5% | 19.5 | 8.0 | 17.0 | 15.0 | 1.0 | 0.60 | P3484-ND | .59 | 5.07 | 42.28 | 252.00 | 235.00/M | 220.00/M | ECQ-P4473JU |
| | .056 | 5% | 24.5 | 7.0 | 16.0 | 20.0 | 1.5 | 0.80 | P3485-ND | .64 | 5.51 | 45.92 | 274.00 | 255.00/M | 239.00/M | ECQ-P4563JU |
| | .068 | 5% | 24.5 | 7.5 | 16.5 | 20.0 | 1.5 | 0.80 | P3486-ND | .69 | 5.91 | 49.28 | 294.00 | 274.00/M | 256.00/M | ECQ-P4683JU |
| | .082 | 5% | 24.5 | 8.5 | 17.5 | 20.0 | 1.5 | 0.80 | P3487-ND | .74 | 6.35 | 52.92 | 316.00 | 294.00/M | 275.00/M | ECQ-P4823JU |
| | .1 | 5% | 24.5 | 9.0 | 18.0 | 20.0 | 1.5 | 0.80 | P3488-ND | .79 | 6.79 | 56.56 | 338.00 | 314.00/M | 294.00/M | ECQ-P4104JU |
| | .12 | 5% | 24.5 | 10.0 | 19.0 | 20.0 | 1.5 | 0.80 | P3489-ND | .89 | 7.59 | 63.28 | 376.00 | 352.00/M | 329.00/M | ECQ-P4124JU |
| | .15 | 5% | 24.5 | 11.0 | 20.5 | 20.0 | 1.5 | 0.80 | P3490-ND | .99 | 8.50 | 70.84 | 423.00 | 394.00/M | 368.00/M | ECQ-P4154JU |
| | .18 | 5% | 29.5 | 10.5 | 20.0 | 25.0 | 1.5 | 0.80 | P3491-ND | 1.09 | 9.34 | 77.84 | 465.00 | 432.00/M | 404.00/M | ECQ-P4184JU |
| | .22 | 5% | 29.5 | 11.5 | 21.0 | 25.0 | 1.5 | 0.80 | P3492-ND | 1.16 | 9.95 | 82.88 | 495.00 | 460.00/M | 431.00/M | ECQ-P4224JU |
| | .27 | 5% | 29.5 | 13.0 | 22.5 | 25.0 | 1.5 | 0.80 | P34 | | | | | | | |

Panasonic® PPS Film Capacitors - ECHS

Non-inductive construction using PPS film as designed for high heat resistance and high frequency applications.

Features:

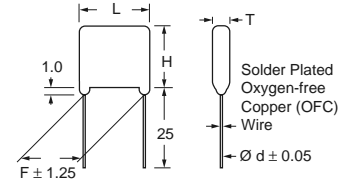
- Wide operating temperature range -40 to +125°C
- Excellent temperature coefficient -100PPM/°C
- Excellent frequency characteristics

Applications:

- Automotive
- Oscillation circuits

Electrical Specifications:

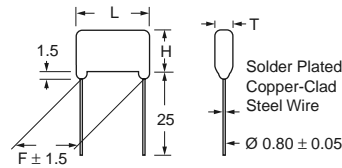
- Temperature Range: -40°C to +125°C
- Rated Voltage: 50V DC, 100V DC
- Capacitance Range: 0.0001 to 0.47µF
- Capacitance Tolerance: ±2%(G) & ±5%(J)
- Dissipation Factor: 0.3% max. at 1kHz and 20°C
- Withstand Voltage: 1-5 seconds at 250% of rated voltage between terminals
- Insulation Resistance: 45,000 MΩ min., for values equal to or less than .33µF, 15,000 MΩ/µF min., for greater than .33µF (20°C, 100VDC, 60s)



| Cap. µF | Dimensions (mm) | | | | | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|-----------------------------|-----------------|------|------|-------|------|-------------------|---------|-------|--------|--------------------|-----------|-----------|--------------|
| | L | T | H | F | d | | 1 | 10 | 100 | | 1,000 | 5,000 | 10,000 |
| 50 WV — 2% Tolerance | | | | | | | | | | | | | |
| .001 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1H102G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H102GZ |
| .0012 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H122G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H122GZ |
| .0015 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H152G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H152GZ |
| .0018 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H182G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H182GZ |
| .0022 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H222G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H222GZ |
| .0027 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H272G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H272GZ |
| .0033 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H332G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H332GZ |
| .0039 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H392G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H392GZ |
| .0047 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H472G-ND | .67 | 5.78 | 48.16 | 288.00 | 272.00/M | 250.00/M | ECH-S1H472GZ |
| .0056 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H562G-ND | .69 | 5.95 | 49.56 | 297.00 | 280.00/M | 257.00/M | ECH-S1H562GZ |
| .0068 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H682G-ND | .71 | 6.12 | 50.96 | 305.00 | 288.00/M | 265.00/M | ECH-S1H682GZ |
| .0082 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1H822G-ND | .73 | 6.25 | 52.08 | 312.00 | 294.00/M | 271.00/M | ECH-S1H822GZ |
| .01 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H103G-ND | .75 | 6.42 | 53.48 | 320.00 | 302.00/M | 278.00/M | ECH-S1H103GZ |
| .012 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H123G-ND | .82 | 7.02 | 58.52 | 350.00 | 330.00/M | 304.00/M | ECH-S1H123GZ |
| .015 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H153G-ND | .89 | 7.63 | 63.56 | 381.00 | 359.00/M | 330.00/M | ECH-S1H153GZ |
| .018 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H183G-ND | .98 | 8.37 | 69.72 | 417.00 | 393.00/M | 362.00/M | ECH-S1H183GZ |
| .022 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H223G-ND | 1.06 | 9.11 | 75.88 | 454.00 | 428.00/M | 394.00/M | ECH-S1H223GZ |
| .027 | 12.0 | 4.5 | 8.5 | 7.5 | 0.60 | PS1H273G-ND | 1.16 | 9.98 | 83.16 | 498.00 | 469.00/M | 432.00/M | ECH-S1H273GZ |
| .033 | 12.0 | 4.5 | 9.0 | 7.5 | 0.60 | PS1H333G-ND | 1.27 | 10.85 | 90.44 | 542.00 | 510.00/M | 470.00/M | ECH-S1H333GZ |
| .039 | 12.0 | 5.0 | 9.5 | 7.5 | 0.60 | PS1H393G-ND | 1.37 | 11.73 | 97.72 | 585.00 | 551.00/M | 508.00/M | ECH-S1H393GZ |
| .047 | 12.0 | 5.0 | 9.5 | 7.5 | 0.60 | PS1H473G-ND | 1.48 | 12.67 | 105.56 | 632.00 | 596.00/M | 548.00/M | ECH-S1H473GZ |
| .056 | 12.0 | 5.5 | 10.0 | 7.5 | 0.60 | PS1H563G-ND | 1.63 | 14.01 | 116.76 | 699.00 | 659.00/M | 607.00/M | ECH-S1H563GZ |
| .068 | 14.5 | 5.0 | 9.5 | 10.00 | 0.60 | PS1H683G-ND | 1.80 | 15.42 | 128.52 | 770.00 | 725.00/M | 668.00/M | ECH-S1H683GZ |
| .082 | 14.5 | 5.5 | 10.0 | 10.00 | 0.60 | PS1H823G-ND | 1.96 | 16.83 | 140.28 | 840.00 | 791.00/M | 729.00/M | ECH-S1H823GZ |
| .1 | 14.5 | 6.0 | 10.5 | 10.00 | 0.60 | PS1H104G-ND | 2.14 | 18.35 | 152.88 | 915.00 | 863.00/M | 794.00/M | ECH-S1H104GZ |
| .12 | 14.5 | 6.5 | 11.0 | 10.00 | 0.60 | PS1H124G-ND | 2.49 | 21.30 | 177.52 | 1063.00 | 1002.00/M | 922.00/M | ECH-S1H124GZ |
| .15 | 17.0 | 6.5 | 11.0 | 12.50 | 0.60 | PS1H154G-ND | 2.85 | 24.46 | 203.84 | 1221.00 | 1150.00/M | 1059.00/M | ECH-S1H154GZ |
| .18 | 17.0 | 6.5 | 12.5 | 12.50 | 0.60 | PS1H184G-ND | 3.21 | 27.48 | 229.04 | 1371.00 | 1292.00/M | 1190.00/M | ECH-S1H184GZ |
| .22 | 17.0 | 7.0 | 13.5 | 12.50 | 0.60 | PS1H224G-ND | 3.63 | 31.08 | 259.00 | 1551.00 | 1461.00/M | 1345.00/M | ECH-S1H224GZ |
| .27 | 17.0 | 7.5 | 14.5 | 12.50 | 0.80 | PS1H274G-ND | 4.10 | 35.11 | 292.60 | 1752.00 | 1651.00/M | 1520.00/M | ECH-S1H274GZ |
| .33 | 17.0 | 8.5 | 15.5 | 12.50 | 0.80 | PS1H334G-ND | 4.60 | 39.45 | 328.72 | 1968.00 | 1855.00/M | 1708.00/M | ECH-S1H334GZ |
| .39 | 17.0 | 9.0 | 16.0 | 12.50 | 0.80 | PS1H394G-ND | 5.10 | 43.68 | 364.00 | 2180.00 | 2054.00/M | 1891.00/M | ECH-S1H394GZ |
| .47 | 17.0 | 10.0 | 16.5 | 12.50 | 0.80 | PS1H474G-ND | 5.64 | 48.35 | 402.92 | 2413.00 | 2273.00/M | 2093.00/M | ECH-S1H474GZ |
| 50 WV — 5% Tolerance | | | | | | | | | | | | | |
| .001 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1H102J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H102JZ |
| .0012 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H122J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H122JZ |
| .0015 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H152J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H152JZ |
| .0018 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H182J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H182JZ |
| .0022 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H222J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H222JZ |
| .0027 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H272J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H272JZ |
| .0033 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H332J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H332JZ |
| .0039 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H392J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H392JZ |
| .0047 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H472J-ND | .30 | 2.55 | 21.28 | 127.00 | 120.00/M | 111.00/M | ECH-S1H472JZ |
| .0056 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H562J-ND | .31 | 2.62 | 21.84 | 131.00 | 123.00/M | 113.00/M | ECH-S1H562JZ |
| .0068 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H682J-ND | .31 | 2.62 | 21.84 | 131.00 | 123.00/M | 113.00/M | ECH-S1H682JZ |
| .0082 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1H822J-ND | .31 | 2.69 | 22.40 | 134.00 | 126.00/M | 116.00/M | ECH-S1H822JZ |
| .01 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H103J-ND | .31 | 2.69 | 22.40 | 134.00 | 126.00/M | 116.00/M | ECH-S1H103JZ |
| .012 | 8.5 | 4.0 | 7.0 | 5.0 | 0.60 | PS1H123J-ND | .36 | 3.06 | 25.48 | 153.00 | 144.00/M | 132.00/M | ECH-S1H123JZ |
| .015 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H153J-ND | .40 | 3.46 | 28.84 | 173.00 | 163.00/M | 150.00/M | ECH-S1H153JZ |
| .018 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H183J-ND | .42 | 3.63 | 30.24 | 181.00 | 171.00/M | 157.00/M | ECH-S1H183JZ |
| .022 | 12.0 | 4.5 | 7.0 | 7.5 | 0.60 | PS1H223J-ND | .50 | 4.27 | 35.56 | 213.00 | 201.00/M | 185.00/M | ECH-S1H223JZ |
| .027 | 12.0 | 4.5 | 8.5 | 7.5 | 0.60 | PS1H273J-ND | .53 | 4.57 | 38.08 | 228.00 | 215.00/M | 198.00/M | ECH-S1H273JZ |
| .033 | 12.0 | 4.5 | 9.0 | 7.5 | 0.60 | PS1H333J-ND | .56 | 4.84 | 40.32 | 241.00 | 227.00/M | 209.00/M | ECH-S1H333JZ |
| .039 | 12.0 | 5.0 | 9.5 | 7.5 | 0.60 | PS1H393J-ND | .58 | 4.97 | 41.44 | 248.00 | 234.00/M | 215.00/M | ECH-S1H393JZ |
| .047 | 12.0 | 5.0 | 9.5 | 7.5 | 0.60 | PS1H473J-ND | .60 | 5.14 | 42.84 | 257.00 | 242.00/M | 223.00/M | ECH-S1H473JZ |
| .056 | 12.0 | 5.5 | 10.0 | 7.5 | 0.60 | PS1H563J-ND | .69 | 5.88 | 49.00 | 293.00 | 276.00/M | 255.00/M | ECH-S1H563JZ |

| Cap. µF | Dimensions (mm) | | | | | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | | |
|------------------------------|-----------------|------|------|-------|------|-------------------|---------|-------|--------|--------------------|-----------|----------|--------------|
| | L | T | H | F | d | | 1 | 10 | 100 | | 1,000 | 5,000 | 10,000 |
| 100 WV — 5% Tolerance | | | | | | | | | | | | | |
| .068 | 14.5 | 5.0 | 9.5 | 10.00 | 0.60 | PS1H683J-ND | .77 | 6.62 | 55.16 | 330.00 | 311.00/M | 287.00/M | ECH-S1H683JZ |
| .082 | 14.5 | 5.5 | 10.0 | 10.00 | 0.60 | PS1H823J-ND | .86 | 7.36 | 61.32 | 367.00 | 346.00/M | 319.00/M | ECH-S1H823JZ |
| .1 | 14.5 | 6.0 | 10.5 | 10.00 | 0.60 | PS1H104J-ND | .94 | 8.06 | 67.20 | 402.00 | 379.00/M | 349.00/M | ECH-S1H104JZ |
| .12 | 14.5 | 6.5 | 11.0 | 10.00 | 0.60 | PS1H124J-ND | 1.13 | 9.64 | 80.36 | 481.00 | 453.00/M | 417.00/M | ECH-S1H124JZ |
| .15 | 17.0 | 6.5 | 11.0 | 12.50 | 0.60 | PS1H154J-ND | 1.32 | 11.32 | 94.36 | 565.00 | 532.00/M | 490.00/M | ECH-S1H154JZ |
| .18 | 17.0 | 6.5 | 12.5 | 12.50 | 0.60 | PS1H184J-ND | 1.52 | 13.04 | 108.64 | 651.00 | 613.00/M | 564.00/M | ECH-S1H184JZ |
| .22 | 17.0 | 7.0 | 13.5 | 12.50 | 0.60 | PS1H224J-ND | 1.73 | 14.82 | 123.48 | 739.00 | 697.00/M | 641.00/M | ECH-S1H224JZ |
| .27 | 17.0 | 7.5 | 14.5 | 12.50 | 0.80 | PS1H274J-ND | 1.91 | 16.33 | 136.08 | 815.00 | 768.00/M | 707.00/M | ECH-S1H274JZ |
| .33 | 17.0 | 8.5 | 15.5 | 12.50 | 0.80 | PS1H334J-ND | 2.12 | 18.18 | 151.48 | 907.00 | 855.00/M | 787.00/M | ECH-S1H334JZ |
| .39 | 17.0 | 9.0 | 16.0 | 12.50 | 0.80 | PS1H394J-ND | 2.38 | 20.43 | 170.24 | 1019.00 | 960.00/M | 884.00/M | ECH-S1H394JZ |
| .47 | 17.0 | 10.0 | 16.5 | 12.50 | 0.80 | PS1H474J-ND | 2.67 | 22.88 | 190.68 | 1142.00 | 1076.00/M | 991.00/M | ECH-S1H474JZ |
| 100 WV — 5% Tolerance | | | | | | | | | | | | | |
| .0001 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1101J-ND | .50 | 4.30 | 35.84 | 215.00 | 202.00/M | 186.00/M | ECH-S1101JZ |
| .00012 | 8.5 | 4.0 | 6.5 | 5.0 | 0.60 | PS1121J-ND | .50 | 4.30 | 35.84 | 215.00 | 202.00/M | 186.00/M | ECH-S1121JZ |
| .00015 | | | | | | | | | | | | | |

Panasonic Metallized Polypropylene Film Capacitors - ECWF(B)



Designed for applications where high current and high frequency are required.

Features:

- Low-loss
- Excellent frequency characteristics
- Flame retardant epoxy resin coating

Applications:

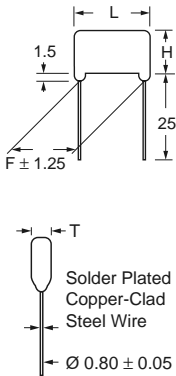
- High frequency and high current circuits (TV, display, monitor, power supply, etc.)

Electrical Specifications:

- Temperature Range: -25°C to +85°C
- Rated Voltage: 250VDC (150Vrms, 250Vp-p)
400VDC (200Vrms, 400Vp-p)
- Capacitance Tolerance: ±5%
- Dissipation Factor:
• .068 to .51µF: 0.05%max. (20°C, 1kHz) 250VDC
• .56 to 4.7µF: 0.1%max. (20°C, 1kHz) 250VDC
• .068 to 4.7µF: 0.2%max. (20°C, 1kHz) 250VDC
• .068 to 1.5µF: 0.1%max. (20°C, 1kHz) 400VDC
- Withstand Voltage: Between terminals - Rated vol. (VDC) x 150% for 60s
- Insulation Resistance:
• 9,000 MΩ min., for values 0.068 to .33µF
• 3,000 MΩ/µF min., for 0.36 to 4.7µF (20°C, 100VDC, 60s)

| VW DC | Cap. µF | Tolerance | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|--------|---------|-----------|-----------------|------|------|-----------|-------------------|---------|--------|---------|-----------|-----------|--------------------|--------------|
| | | | L | T | H | F | | 1 | 10 | 100 | 1,000 | 5,000 | | 10,000 |
| 250 WV | .068 | 5% | 18.0 | 6.0 | 13.0 | 15.0 | PF2683-ND | 1.49 | 12.77 | 106.40 | 637.00 | 600.00/M | 553.00/M | ECWF-F2683JB |
| | .082 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | PF2823-ND | 1.55 | 13.27 | 110.60 | 662.00 | 624.00/M | 575.00/M | ECWF-F2823JB |
| | .1 | 5% | 18.0 | 7.0 | 14.0 | 15.0 | PF2104-ND | 1.58 | 13.51 | 112.56 | 674.00 | 635.00/M | 585.00/M | ECWF-F2104JB |
| | .12 | 5% | 18.0 | 7.5 | 14.5 | 15.0 | PF2124-ND | 1.63 | 14.01 | 116.76 | 699.00 | 659.00/M | 607.00/M | ECWF-F2124JB |
| | .15 | 5% | 18.0 | 8.5 | 15.0 | 15.0 | PF2154-ND | 1.73 | 14.85 | 123.76 | 741.00 | 698.00/M | 643.00/M | ECWF-F2154JB |
| | .18 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | PF2184-ND | 1.76 | 15.12 | 126.00 | 754.00 | 711.00/M | 655.00/M | ECWF-F2184JB |
| | .22 | 5% | 18.0 | 7.0 | 14.0 | 15.0 | PF2224-ND | 1.79 | 15.36 | 127.96 | 766.00 | 722.00/M | 665.00/M | ECWF-F2224JB |
| | .27 | 5% | 18.0 | 8.0 | 14.5 | 15.0 | PF2274-ND | 1.81 | 15.49 | 129.08 | 773.00 | 728.00/M | 671.00/M | ECWF-F2274JB |
| | .33 | 5% | 18.0 | 8.5 | 15.0 | 15.0 | PF2334-ND | 1.83 | 15.66 | 130.48 | 781.00 | 736.00/M | 678.00/M | ECWF-F2334JB |
| | .39 | 5% | 18.0 | 9.0 | 16.0 | 15.0 | PF2394-ND | 1.98 | 17.00 | 141.68 | 848.00 | 799.00/M | 736.00/M | ECWF-F2394JB |
| | .47 | 5% | 23.0 | 8.0 | 15.0 | 20.0 | PF2474-ND | 2.15 | 18.41 | 153.44 | 919.00 | 866.00/M | 797.00/M | ECWF-F2474JB |
| | .56 | 5% | 23.0 | 8.5 | 15.5 | 20.0 | PF2564-ND | 2.26 | 19.35 | 161.28 | 966.00 | 910.00/M | 838.00/M | ECWF-F2564JB |
| | .68 | 5% | 23.0 | 9.5 | 16.5 | 20.0 | PF2684-ND | 2.35 | 20.13 | 167.72 | 1004.00 | 946.00/M | 871.00/M | ECWF-F2684JB |
| | .82 | 5% | 23.0 | 10.5 | 17.0 | 20.0 | PF2824-ND | 2.44 | 20.90 | 174.16 | 1043.00 | 983.00/M | 905.00/M | ECWF-F2824JB |
| | 1.0 | 5% | 23.0 | 11.5 | 18.0 | 20.0 | PF2105-ND | 2.47 | 21.20 | 176.68 | 1058.00 | 997.00/M | 918.00/M | ECWF-F2105JB |
| | 1.2 | 5% | 23.0 | 12.5 | 19.5 | 20.0 | PF2125-ND | 2.58 | 22.11 | 184.24 | 1103.00 | 1039.00/M | 957.00/M | ECWF-F2125JB |
| | 1.5 | 5% | 23.0 | 14.0 | 21.0 | 20.0 | PF2155-ND | 2.87 | 24.56 | 204.68 | 1226.00 | 1155.00/M | 1063.00/M | ECWF-F2155JB |
| | 1.8 | 5% | 28.0 | 12.5 | 21.0 | 25.0 | PF2185-ND | 3.23 | 27.65 | 230.44 | 1380.00 | 1300.00/M | 1197.00/M | ECWF-F2185JB |
| | 2.2 | 5% | 28.0 | 14.0 | 22.5 | 25.0 | PF2225-ND | 3.87 | 33.16 | 276.36 | 1655.00 | 1559.00/M | 1436.00/M | ECWF-F2225JB |
| | 2.7 | 5% | 28.0 | 15.5 | 24.0 | 25.0 | PF2275-ND | 4.30 | 36.86 | 307.16 | 1839.00 | 1733.00/M | 1596.00/M | ECWF-F2275JB |
| 3.3 | 5% | 28.0 | 17.0 | 26.0 | 25.0 | PF2335-ND | 4.65 | 39.82 | 331.80 | 1987.00 | 1872.00/M | 1724.00/M | ECWF-F2335JB | |
| 3.9 | 5% | 33.0 | 16.5 | 25.5 | 30.0 | PF2395-ND | 4.94 | 42.30 | 352.52 | 2111.00 | 1989.00/M | 1831.00/M | ECWF-F2395JB | |
| 4.7 | 5% | 33.0 | 18.0 | 27.0 | 30.0 | PF2475-ND | 5.33 | 45.70 | 380.80 | 2280.00 | 2148.00/M | 1978.00/M | ECWF-F2475JB | |
| 400 | .068 | 5% | 18.0 | 6.5 | 13.0 | 15.0 | PF4683-ND | 1.52 | 13.00 | 101.86 | 650.60 | 606.82/M | 563.48/M | ECWF-F4683JB |
| | .082 | 5% | 18.0 | 7.0 | 13.5 | 15.0 | PF4823-ND | 1.54 | 13.24 | 103.70 | 661.92 | 617.80/M | 573.67/M | ECWF-F4823JB |
| | .1 | 5% | 18.0 | 7.5 | 14.0 | 15.0 | PF4104-ND | 1.57 | 13.47 | 105.54 | 673.68 | 628.77/M | 583.86/M | ECWF-F4104JB |
| | .12 | 5% | 18.0 | 8.0 | 15.0 | 15.0 | PF4124-ND | 1.62 | 13.88 | 108.70 | 693.84 | 647.59/M | 601.33/M | ECWF-F4124JB |
| | .15 | 5% | 18.0 | 8.5 | 15.5 | 15.0 | PF4154-ND | 1.68 | 14.41 | 112.91 | 720.72 | 672.68/M | 624.63/M | ECWF-F4154JB |
| | .18 | 5% | 18.0 | 9.5 | 16.5 | 15.0 | PF4184-ND | 1.70 | 14.55 | 113.97 | 727.44 | 678.95/M | 630.45/M | ECWF-F4184JB |
| | .22 | 5% | 20.0 | 9.5 | 16.5 | 17.0 | PF4224-ND | 1.73 | 14.82 | 116.07 | 740.88 | 691.49/M | 642.10/M | ECWF-F4224JB |
| | .27 | 5% | 20.0 | 10.5 | 17.0 | 17.0 | PF4274-ND | 1.80 | 15.46 | 121.07 | 772.80 | 721.28/M | 669.76/M | ECWF-F4274JB |
| | .33 | 5% | 20.0 | 11.5 | 18.0 | 17.0 | PF4334-ND | 1.99 | 17.07 | 133.71 | 853.44 | 796.55/M | 739.65/M | ECWF-F4334JB |
| | .39 | 5% | 23.0 | 13.5 | 20.5 | 20.0 | PF4394-ND | 2.16 | 18.51 | 145.02 | 925.68 | 863.97/M | 802.26/M | ECWF-F4394JB |
| | .47 | 5% | 23.0 | 14.5 | 21.5 | 20.0 | PF4474-ND | 2.34 | 20.06 | 157.13 | 1002.96 | 936.10/M | 869.24/M | ECWF-F4474JB |
| | .56 | 5% | 23.0 | 15.0 | 22.0 | 20.0 | PF4564-ND | 2.46 | 21.07 | 165.08 | 1053.36 | 983.14/M | 912.92/M | ECWF-F4564JB |
| | .68 | 5% | 23.0 | 14.5 | 21.5 | 20.0 | PF4684-ND | 2.56 | 21.81 | 171.61 | 1095.36 | 1022.34/M | 949.32/M | ECWF-F4684JB |
| | .82 | 5% | 28.0 | 14.0 | 20.5 | 25.0 | PF4824-ND | 2.65 | 22.75 | 178.19 | 1137.36 | 1061.54/M | 985.72/M | ECWF-F4824JB |
| | 1.0 | 5% | 28.0 | 15.0 | 22.0 | 25.0 | PF4105-ND | 2.69 | 23.08 | 180.82 | 1154.16 | 1077.22/M | 1000.28/M | ECWF-F4105JB |
| | 1.2 | 5% | 28.0 | 16.5 | 23.5 | 25.0 | PF4125-ND | 2.81 | 24.09 | 188.71 | 1204.56 | 1124.56/M | 1043.95/M | ECWF-F4125JB |
| | 1.5 | 5% | 28.0 | 18.5 | 25.5 | 25.0 | PF4155-ND | 3.12 | 26.75 | 209.51 | 1337.28 | 1248.13/M | 1158.98/M | ECWF-F4155JB |

Panasonic High Voltage Metallized Polypropylene Film Capacitors - ECWH(V)



Designed for applications where high frequency and high pulse are required.

Features:

- Low-loss and inherent temperature rise
- Excellent electrical characteristics
- Flame-retardant epoxy resin coating

Recommended Applications:

- High pulse circuits (TV, displays, electronic ballast, etc.)

Electrical Specifications:

- Temperature Range: -25°C to +85°C
- Rated Voltage: 1250Vdc
1600Vdc
- Capacitance Tolerance: ±5%
- Dissipation Factor: 0.1% or less at 1kHz
0.2% or less at 10kHz
- Withstand Voltage:
Between terminals - Rated vol. (VDC) x 150% for 60s
Terminal to Enclosure - 1500Vac for 60s
- Insulation Resistance: 30,000 MΩ min., at 500Vdc, 20° for 60s

| VW DC | Cap. µF | Tolerance | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|-------|---------|-----------|-----------------|------|------|-----------|-------------------|---------|--------|---------|-----------|-----------|--------------------|---------------|
| | | | L | T | H | F | | 1 | 10 | 100 | 1,000 | 5,000 | | 10,000 |
| 1250 | .0010 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | P10470-ND | .73 | 6.25 | 48.96 | 312.48 | 291.65/M | 270.82/M | ECWF-H12102JV |
| | .0012 | 5% | 18.0 | 7.0 | 13.5 | 15.0 | P10471-ND | .73 | 6.25 | 48.96 | 312.48 | 291.65/M | 270.82/M | ECWF-H12122JV |
| | .0015 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | P10472-ND | .76 | 6.55 | 51.32 | 327.60 | 305.76/M | 283.92/M | ECWF-H12152JV |
| | .0018 | 5% | 18.0 | 7.0 | 14.0 | 15.0 | P10473-ND | .76 | 6.55 | 51.32 | 327.60 | 305.76/M | 283.92/M | ECWF-H12182JV |
| | .0022 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | P10474-ND | .79 | 6.79 | 53.17 | 339.36 | 316.74/M | 294.12/M | ECWF-H12222JV |
| | .0027 | 5% | 18.0 | 7.0 | 14.0 | 15.0 | P10475-ND | .82 | 7.02 | 55.01 | 351.12 | 327.72/M | 304.31/M | ECWF-H12272JV |
| | .0033 | 5% | 18.0 | 7.5 | 14.5 | 15.0 | P10476-ND | .84 | 7.22 | 56.59 | 361.20 | 337.12/M | 313.04/M | ECWF-H12332JV |
| | .0039 | 5% | 18.0 | 6.0 | 12.5 | 15.0 | P10477-ND | .84 | 7.22 | 56.59 | 361.20 | 337.12/M | 313.04/M | ECWF-H12392JV |
| | .0047 | 5% | 18.0 | 6.0 | 13.0 | 15.0 | P10478-ND | .84 | 7.22 | 56.59 | 361.20 | 337.12/M | 313.04/M | ECWF-H12472JV |
| | .0056 | 5% | 18.0 | 6.5 | 13.5 | 15.0 | P10479-ND | .87 | 7.49 | 58.69 | 374.64 | 349.67/M | 324.69/M | ECWF-H12562JV |
| | .0068 | 5% | 18.0 | 7.0 | 13.5 | 15.0 | P10480-ND | .97 | 8.33 | 65.27 | 416.64 | 388.87/M | 361.09/M | ECWF-H12682JV |
| | .0082 | 5% | 18.0 | 7.5 | 14.0 | 15.0 | P10481-ND | 1.02 | 8.74 | 68.43 | 436.80 | 407.68/M | 378.56/M | ECWF-H12822JV |
| | .010 | 5% | 18.0 | 8.0 | 15.0 | 15.0 | P10482-ND | 1.05 | 8.97 | 70.27 | 448.56 | 418.66/M | 388.76/M | ECWF-H12103JV |
| | .012 | 5% | 18.0 | 8.5 | 15.5 | 15.0 | P10483-ND | 1.10 | 9.41 | 73.70 | 470.40 | 439.04/M | 407.68/M | ECWF-H12123JV |
| | .015 | 5% | 18.0 | 9.5 | 16.0 | 20.0 | P10484-ND | 1.21 | 10.35 | 81.07 | 517.44 | 482.95/M | 448.45/M | ECWF-H12153JV |
| | .018 | 5% | 23.0 | 7.5 | 16.0 | 20.0 | P10485-ND | 1.34 | 11.52 | 90.28 | 576.24 | 537.83/M | 499.41/M | ECWF-H12183JV |
| | .022 | 5% | 23.0 | 8.5 | 16.5 | 20.0 | P10486-ND | 1.47 | 12.57 | 98.44 | 628.32 | 586.44/M | 544.55/M | ECWF-H12223JV |
| | .027 | 5% | 23.0 | 9.0 | 17.5 | 20.0 | P10487-ND | 1.78 | 15.25 | 119.49 | 762.72 | 711.88/M | 661.03/M | ECWF-H12273JV |
| | .033 | 5% | 23.0 | 10.0 | 18.5 | 20.0 | P10488-ND | 1.90 | 16.30 | 127.65 | 814.80 | 760.48/M | 706.16/M | ECWF-H12333JV |
| | .039 | 5% | 23.0 | 10.5 | 19.5 | 20.0 | P10489-ND | 2.04 | 17.51 | 137.13 | 875.28 | 816.93/M | 758.58/M | ECWF-H12393JV |
| .047 | 5% | 23.0 | 11.5 | 20.5 | 20.0 | P10490-ND | 2.30 | 19.69 | 154.24 | 984.48 | 918.85/M | 853.22/M | ECWF-H12473JV | |
| .056 | 5% | 28.0 | 11.5 | 20.5 | 25.0 | P10491-ND | 2.47 | 21.13 | 165.55 | 1056.72 | 986.28/M | 915.83/M | ECWF-H12563JV | |
| .068 | 5% | 28.0 | 12.5 | 21.5 | 25.0 | P10492-ND | 2.81 | 24.12 | 188.98 | 1206.24 | 1125.83/M | 1045.41/M | ECWF-H12683JV | |
| .082 | 5% | 28.0 | 14.0 | 22.5 | 25.0 | P10493-ND | 3.94 | 33.80 | 264.78 | 1690.08 | 1577.41/M | 1464.74/M | ECWF-H12823JV | |
| .10 | 5% | 28.0 | 15.5 | 24.0 | 25.0 | P10494-ND | 4.70 | 40.25 | 315. | | | | | |

Panasonic® V-Series ±5% Stacked Metallized Film Capacitors

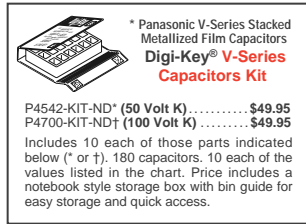
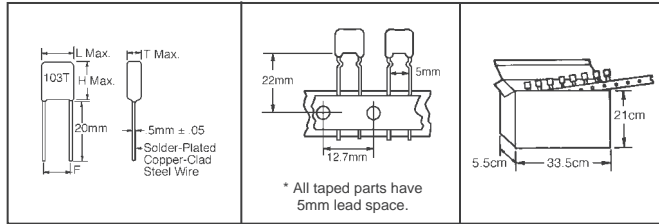
Suitable for Replacement of Monolithic Ceramic Capacitors in Most Cases

FEATURES: • High volumetric efficiency • Low dissipation factor • Stacked and non-inductive construction • Operating temperature range: -40°C to +85°C • Temperature coefficient ΔC: 200 ppm • Dissipation factor (max.): 1.0% • Insulation resistance (25°C): 1000MΩ µF • Self-healing

APPLICATIONS: • Blocking, by-pass and coupling of DC • Pulse, logic and timing circuits • Light duty pulse forming • Filter and noise suppression

PANASONIC EQV-V CROSS REFERENCE
 Sprague: 453P/454P • CSF Thompson: IRD, Siemens: B32509.

(To convert millimeters to inches divide by 25.4.)



| Volts | Cap. µF | Dimensions (mm) | | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|---------------------|---------|-----------------|------|------|-----------|-----------|-------------------|---------|----------|----------|--------------|--------------|--------------------|
| | | L | T | H | F | 10 | | 100 | 1,000 | 5,000 | 10,000 | | |
| <i>Bulk Package</i> | | | | | | | | | | | | | |
| 50 WV | 0.01 | 7.3 | 3.2 | 5.0 | 5.0 | P4513-ND* | 1.26 | 10.50 | 63.00 | 58.00/M | 55.00/M | EQC-V1H103JL | |
| | 0.012 | 7.3 | 3.2 | 5.0 | 5.0 | P4514-ND | 1.32 | 11.00 | 66.00 | 61.00/M | 57.00/M | EQC-V1H123JL | |
| | 0.015 | 7.3 | 3.2 | 5.0 | 5.0 | P4515-ND* | 1.18 | 9.80 | 59.00 | 54.00/M | 51.00/M | EQC-V1H153JL | |
| | 0.018 | 7.3 | 3.2 | 5.0 | 5.0 | P4516-ND | 1.21 | 10.08 | 60.00 | 56.00/M | 52.00/M | EQC-V1H183JL | |
| | 0.022 | 7.3 | 3.2 | 5.0 | 5.0 | P4517-ND* | 1.41 | 11.75 | 70.00 | 65.00/M | 61.00/M | EQC-V1H223JL | |
| | 0.027 | 7.3 | 3.2 | 5.0 | 5.0 | P4518-ND* | 1.44 | 12.00 | 72.00 | 67.00/M | 62.00/M | EQC-V1H273JL | |
| | 0.033 | 7.3 | 3.2 | 5.0 | 5.0 | P4519-ND* | 1.44 | 12.00 | 72.00 | 67.00/M | 62.00/M | EQC-V1H333JL | |
| | 0.039 | 7.3 | 3.2 | 5.0 | 5.0 | P4520-ND | 1.34 | 11.20 | 67.00 | 62.00/M | 58.00/M | EQC-V1H393JL | |
| | 0.047 | 7.3 | 3.2 | 5.0 | 5.0 | P4521-ND* | 1.23 | 10.25 | 61.00 | 57.00/M | 53.00/M | EQC-V1H473JL | |
| | 0.056 | 7.3 | 3.2 | 5.0 | 5.0 | P4522-ND | 1.38 | 11.48 | 69.00 | 64.00/M | 60.00/M | EQC-V1H563JL | |
| | 0.068 | 7.3 | 3.2 | 5.0 | 5.0 | P4523-ND* | 1.59 | 13.25 | 79.00 | 74.00/M | 69.00/M | EQC-V1H683JL | |
| | 0.082 | 7.3 | 3.6 | 5.0 | 5.0 | P4524-ND* | 1.55 | 12.88 | 77.00 | 72.00/M | 67.00/M | EQC-V1H823JL | |
| | 0.1 | 7.3 | 4.0 | 5.0 | 5.0 | P4525-ND* | 1.41 | 11.75 | 70.00 | 65.00/M | 61.00/M | EQC-V1H104JL | |
| | 0.12 | 7.3 | 4.0 | 5.0 | 5.0 | P4526-ND | 1.86 | 15.50 | 93.00 | 86.00/M | 81.00/M | EQC-V1H124JL | |
| | 0.15 | 10.2 | 3.4 | 9.0 | 7.5 | P4538-ND | 1.75 | 14.56 | 87.00 | 81.00/M | 76.00/M | EQC-V1H154JL | |
| | 0.15 | 7.3 | 4.4 | 5.5 | 5.0 | P4665-ND* | 1.75 | 14.56 | 87.00 | 81.00/M | 76.00/M | EQC-V1H154JL | |
| | 0.18 | 7.3 | 4.5 | 5.5 | 5.0 | P4666-ND* | 1.98 | 16.50 | 99.00 | 92.00/M | 86.00/M | EQC-V1H184JL | |
| | 0.22 | 7.3 | 4.8 | 5.5 | 5.0 | P4667-ND | 1.83 | 15.25 | 91.00 | 85.00/M | 79.00/M | EQC-V1H224JL | |
| | 0.27 | 7.3 | 4.6 | 7.0 | 5.0 | P4668-ND* | 2.18 | 18.20 | 109.00 | 101.00/M | 95.00/M | EQC-V1H274JL | |
| | 0.33 | 7.3 | 5.2 | 7.0 | 5.0 | P4669-ND* | 2.70 | 22.50 | 134.00 | 125.00/M | 117.00/M | EQC-V1H334JL | |
| 0.39 | 7.3 | 5.7 | 7.3 | 5.0 | P4670-ND | 3.03 | 25.25 | 151.00 | 140.00/M | 131.00/M | EQC-V1H394JL | | |
| 0.47 | 7.3 | 6.0 | 7.3 | 5.0 | P4671-ND* | 2.91 | 24.25 | 145.00 | 135.00/M | 126.00/M | EQC-V1H474JL | | |
| 0.56 | 7.3 | 5.8 | 10.0 | 5.0 | P4672-ND* | 4.05 | 33.75 | 201.00 | 187.00/M | 175.00/M | EQC-V1H564JL | | |
| 0.68 | 7.3 | 6.5 | 10.0 | 5.0 | P4673-ND* | 4.68 | 39.00 | 233.00 | 217.00/M | 203.00/M | EQC-V1H684JL | | |
| 0.82 | 7.3 | 6.8 | 10.0 | 5.0 | P4674-ND* | 5.61 | 46.75 | 279.00 | 260.00/M | 243.00/M | EQC-V1H824JL | | |
| 1.0 | 7.3 | 8.0 | 11.0 | 5.0 | P4675-ND* | 5.64 | 47.00 | 281.00 | 264.00/M | 244.00/M | EQC-V1H105JL | | |
| 63 WV | 0.18 | 10.2 | 3.5 | 9.0 | 7.5 | P4539-ND | 1.92 | 15.96 | 95.00 | 89.00/M | 83.00/M | EQC-V1J184JM | |
| | 0.22 | 10.2 | 3.5 | 9.0 | 7.5 | P4540-ND | 1.98 | 16.52 | 99.00 | 92.00/M | 86.00/M | EQC-V1J224JM | |
| | 0.27 | 10.2 | 3.5 | 9.0 | 7.5 | P4541-ND | 2.28 | 19.04 | 114.00 | 106.00/M | 99.00/M | EQC-V1J274JM | |
| | 0.33 | 10.2 | 3.8 | 9.0 | 7.5 | P4549-ND | 2.59 | 21.56 | 129.00 | 120.00/M | 112.00/M | EQC-V1J334JM | |
| | 0.39 | 10.2 | 4.0 | 9.0 | 7.5 | P4543-ND | 2.89 | 24.08 | 144.00 | 134.00/M | 125.00/M | EQC-V1J394JM | |
| | 0.47 | 10.2 | 4.5 | 9.0 | 7.5 | P4544-ND | 3.23 | 26.88 | 160.00 | 149.00/M | 140.00/M | EQC-V1J474JM | |
| | 0.56 | 10.2 | 4.9 | 9.0 | 7.5 | P4545-ND | 3.83 | 31.92 | 191.00 | 177.00/M | 166.00/M | EQC-V1J564JM | |
| | 0.68 | 10.2 | 5.5 | 10.0 | 7.5 | P4546-ND | 4.54 | 37.80 | 226.00 | 210.00/M | 196.00/M | EQC-V1J684JM | |
| | 0.82 | 10.2 | 6.1 | 10.0 | 7.5 | P4547-ND | 5.38 | 44.80 | 267.00 | 249.00/M | 233.00/M | EQC-V1J824JM | |
| | 1.0 | 10.2 | 6.9 | 10.0 | 7.5 | P4548-ND | 6.18 | 51.52 | 308.00 | 286.00/M | 268.00/M | EQC-V1J105JM | |
| 100 WV | 0.01 | 7.3 | 3.2 | 7.0 | 5.0 | P4713-ND† | 1.61 | 13.44 | 80.00 | 75.00/M | 70.00/M | EQC-V1103JM | |
| | 0.012 | 7.3 | 3.2 | 7.0 | 5.0 | P4714-ND | 1.61 | 13.44 | 80.00 | 75.00/M | 70.00/M | EQC-V1123JM | |
| | 0.015 | 7.3 | 3.2 | 7.0 | 5.0 | P4715-ND† | 1.61 | 13.44 | 80.00 | 75.00/M | 70.00/M | EQC-V1153JM | |
| | 0.018 | 7.3 | 3.2 | 7.0 | 5.0 | P4716-ND | 1.61 | 13.44 | 80.00 | 75.00/M | 70.00/M | EQC-V1183JM | |
| | 0.022 | 7.3 | 3.2 | 7.0 | 5.0 | P4717-ND† | 1.61 | 13.44 | 80.00 | 75.00/M | 70.00/M | EQC-V1223JM | |
| | 0.027 | 7.3 | 3.2 | 7.0 | 5.0 | P4718-ND† | 1.68 | 14.00 | 84.00 | 78.00/M | 73.00/M | EQC-V1273JM | |
| | 0.033 | 7.3 | 3.2 | 7.0 | 5.0 | P4719-ND† | 1.68 | 14.00 | 84.00 | 78.00/M | 73.00/M | EQC-V1333JM | |
| | 0.039 | 7.3 | 3.2 | 7.0 | 5.0 | P4720-ND† | 1.71 | 14.28 | 85.00 | 79.00/M | 74.00/M | EQC-V1393JM | |
| | 0.047 | 7.3 | 4.0 | 7.0 | 5.0 | P4721-ND† | 1.71 | 14.28 | 85.00 | 79.00/M | 74.00/M | EQC-V1473JM | |
| | 0.056 | 7.3 | 4.2 | 7.0 | 5.0 | P4722-ND† | 1.78 | 14.84 | 89.00 | 82.00/M | 77.00/M | EQC-V1563JM | |
| | 0.068 | 7.3 | 4.5 | 7.0 | 5.0 | P4723-ND† | 1.88 | 15.68 | 94.00 | 87.00/M | 81.00/M | EQC-V1683JM | |
| | 0.082 | 7.3 | 5.0 | 7.0 | 5.0 | P4724-ND† | 1.92 | 15.96 | 95.00 | 89.00/M | 83.00/M | EQC-V1823JM | |
| | 0.1 | 7.3 | 5.8 | 7.0 | 5.0 | P4725-ND† | 1.95 | 16.24 | 97.00 | 90.00/M | 84.00/M | EQC-V1104JM | |
| | 0.12 | 10.0 | 3.4 | 9.0 | 7.5 | P4726-ND | 2.18 | 18.20 | 109.00 | 101.00/M | 95.00/M | EQC-V1124JM | |
| | 0.15 | 10.0 | 3.8 | 9.0 | 7.5 | P4727-ND† | 2.22 | 18.48 | 110.00 | 103.00/M | 96.00/M | EQC-V1154JM | |
| | 0.18 | 10.0 | 4.0 | 9.0 | 7.5 | P4728-ND† | 2.32 | 19.32 | 115.00 | 107.00/M | 100.00/M | EQC-V1184JM | |
| | 0.22 | 10.0 | 4.3 | 9.0 | 7.5 | P4729-ND† | 2.45 | 20.44 | 122.00 | 114.00/M | 106.00/M | EQC-V1224JM | |
| | 0.27 | 10.0 | 5.2 | 10.0 | 7.5 | P4730-ND† | 2.82 | 23.52 | 140.00 | 131.00/M | 122.00/M | EQC-V1274JM | |
| | 0.33 | 10.0 | 5.9 | 10.0 | 7.5 | P4731-ND† | 3.23 | 26.88 | 160.00 | 149.00/M | 140.00/M | EQC-V1334JM | |
| 0.39 | 10.0 | 7.5 | 11.0 | 7.5 | P4732-ND† | 3.56 | 29.68 | 177.00 | 165.00/M | 154.00/M | EQC-V1394JM | | |
| 0.47 | 10.0 | 8.1 | 11.0 | 7.5 | P4733-ND† | 3.96 | 33.04 | 197.00 | 184.00/M | 172.00/M | EQC-V1474JM | | |

| Volts | Cap. µF | Dimensions (mm) | | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|-------------------------|---------|-----------------|------|-----|------------|------------|-------------------|----------|----------|----------|----------|---------------|--------------------|
| | | L | T | H | F | 1,000 | | 2,000 | 5,000 | 6,000 | 10,000 | 26,000 | |
| <i>Ammo Box Package</i> | | | | | | | | | | | | | |
| 50 WV | 0.01 | 7.3 | 3.2 | 7.0 | 5.0 | P4513TB-ND | — | 64.00/M | — | 59.00/M | 55.00/M | 52.00/M | EQC-V1H103JZ3 |
| | 0.012 | 7.3 | 3.2 | 7.0 | 5.0 | P4514TB-ND | — | 64.00/M | — | 59.00/M | 55.00/M | 52.00/M | EQC-V1H123JZ3 |
| | 0.015 | 7.3 | 3.2 | 7.0 | 5.0 | P4515TB-ND | — | 67.00/M | — | 62.00/M | 58.00/M | 55.00/M | EQC-V1H153JZ3 |
| | 0.018 | 7.3 | 3.2 | 7.0 | 5.0 | P4516TB-ND | — | 69.00/M | — | 64.00/M | 60.00/M | 56.00/M | EQC-V1H183JZ3 |
| | 0.022 | 7.3 | 3.2 | 5.0 | 5.0 | P4517TB-ND | — | 70.00/M | — | 65.00/M | 61.00/M | 57.00/M | EQC-V1H223JL3 |
| | 0.027 | 7.3 | 3.2 | 7.0 | 5.0 | P4518TB-ND | — | 72.00/M | — | 67.00/M | 63.00/M | 59.00/M | EQC-V1H273JZ3 |
| | 0.033 | 7.3 | 3.2 | 7.0 | 5.0 | P4519TB-ND | — | 74.00/M | — | 68.00/M | 64.00/M | 60.00/M | EQC-V1H333JZ3 |
| | 0.039 | 7.3 | 3.2 | 5.0 | 5.0 | P4520TB-ND | — | 74.00/M | — | 68.00/M | 64.00/M | 60.00/M | EQC-V1H393JL3 |
| | 0.047 | 7.3 | 3.2 | 7.0 | 5.0 | P4521TB-ND | — | 72.00/M | — | 67.00/M | 63.00/M | 59.00/M | EQC-V1H473JL3 |
| | 0.056 | 7.3 | 3.2 | 5.0 | 5.0 | P4522TB-ND | — | 75.00/M | — | 70.00/M | 65.00/M | 61.00/M | EQC-V1H563JL3 |
| | 0.068 | 7.3 | 3.9 | 7.0 | 5.0 | P4523TB-ND | — | 79.00/M | — | 73.00/M | 68.00/M | 64.00/M | EQC-V1H683JZ3 |
| | 0.082 | 7.3 | 4.1 | 7.0 | 5.0 | P4524TB-ND | — | 84.00/M | — | 78.00/M | 73.00/M | 68.00/M | EQC-V1H823JZ3 |
| | 0.1 | 7.3 | 4.4 | 7.0 | 5.0 | P4525TB-ND | — | 84.00/M | — | 78.00/M | 73.00/M | 68.00/M | EQC-V1H104JZ3 |
| | 0.12 | 7.3 | 4.7 | 7.0 | 5.0 | P4526TB-ND | — | 90.00/M | — | 84.00/M | 79.00/M | 74.00/M | EQC-V1H124JZ3 |
| | 0.15 | 10.0 | 3.4 | 9.0 | 5.0 | P4527TB-ND | 97.00 | — | 90.00/M | — | 84.00/M | — | EQC-V1H154JZ3 |
| | 0.18 | 10.0 | 3.5 | 9.0 | 5.0 | P4528TB-ND | 95.00 | — | 89.00/M | — | 83.00/M | — | EQC-V1H184JZ3 |
| | 0.22 | 10.0 | 3.7 | 9.0 | 5.0 | P4529TB-ND | 100.00 | — | 93.00/M | — | 87.00/M | — | EQC-V1H224JZ3 |
| | 0.27 | 10.0 | 4.0 | 9.0 | 5.0 | P4530TB-ND | 115.00 | — | 107.00/M | — | 100.00/M | — | EQC-V1H274JZ3 |
| | 0.33 | 10.0 | 4.2 | 9.0 | 5.0 | P4531TB-ND | 130.00 | — | 121.00/M | — | 113.00/M | — | EQC-V1H334JZ3 |
| | 0.39 | 10.0 | 4.9 | 9.0 | 5.0 | P4532TB-ND | 144.00 | — | 134.00/M | — | 125.00/M | — | EQC-V1H394JZ3 |
| 0.47 | 10.0 | 5.5 | 10.0 | 5.0 | P4533TB-ND | 159.00 | — | 148.00/M | — | 138.00/M | — | EQC-V1H474JZ3 | |
| 0.56 | 10.0 | 6.1 | 10.0 | 5.0 | P4534TB-ND | 191.00 | — | 177.00/M | — | 166.00/M | — | EQC-V1H564JZ3 | |
| 0.68 | 10.0 | 6.8 | 10.0 | | | | | | | | | | |

Panasonic

Surface Mount Film Capacitors

ECW-U (PEN Film, Standard Type) & ECH-U (PPS Film, High Grade Type)

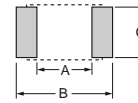
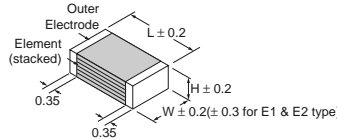


Table with 3 columns: Size Code, Dim. of land (mm) A, B, C. Rows include sizes 0805 (2012), 1206 (3216), 1210 (3225), 1913 (4833), and 2416 (6041).

FEATURES:

- Small in size.
• High moisture resistance.

APPLICATIONS:

Type ECH-U: • Time constant • Filtering • Oscillation and resonance.
Type ECW-U: • Coupling • By-pass • General purpose.

TYPE ECH-U: • Operating Temperature: -55° to +125°C. • Rated Voltage: 16VDC, 50VDC. • Capacitance Tolerance: 5%, 2%. • Withstand Voltage: Between terminals: Rated voltage (VDC) x 175% 1 to 5s. • Dissipation Factor: ≤ 0.6% (20°C, 1kHz). • Insulation Resistance: 16VDC: ≥ 3000MΩ (20°C, 10VDC 60s). 50VDC: ≥ 3000MΩ (20°C, 50VDC 60s). • Soldering Conditions: Flow Soldering: 260°C max., 5sec. max. • Reflow Soldering: 260°C max. and 30 sec. max. at more than 230°C (temp. at cap surface).

TYPE ECW-U: • Operating Temperature: -55° to +105°C. • Rated Voltage: 16VDC, 50VDC. • Capacitance Tolerance: 5%. • Withstand Voltage: Between terminals: Rated Voltage (VDC) x 175% 1 to 5s. • Dissipation Factor: ≤ 1.0% (20°C, 1kHz). • Insulation Resistance: C ≤ 0.33µF: 16VDC: ≥ 3000MΩ (20°C, 10VDC 60s). 50VDC: ≥ 3000MΩ (20°C, 50VDC 60s). C > 0.33µF: 16VDC: 1000MΩ (20°C, 10VDC 60s). • Soldering Conditions: Reflow Soldering: 240°C max. and 30 sec. max. at more than 210°C (temp. at cap surface).

Main product table with columns: Item Code, WV, Cap. µF, Dimensions (L, W, H), Type, Digi-Key Part No., Cut Tape Pricing (10, 100, 500), Digi-Key Part No., Tape & Reel Pricing (2,000, 3,000, 6,000, 12,000), Panasonic Part No. Includes sections for ECW-U (Standard Type - 16WV) 5% Tolerance, ECW-U (Standard Type - 50WV) 5% Tolerance, ECH-U (High Grade Type - 16 WV) 5% Tolerance, and ECH-U (High Grade Type - 50 WV) 5% Tolerance.

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

| Item Code | WV DC | Cap. μ F | Dimensions (± 0.2) | | | Type | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part No. |
|---|-------|--------------|--------------------------|------|-----|------|-------------------|------------------|-------|--------|-------------------|---------------------|----------|----------|----------|--------------------|
| | | | L | W | H | | | 10 | 100 | 500 | | 2,000 | 3,000 | 6,000 | 12,000 | |
| 0805 (2012) Size | 50 | .00039 | 2.0 | 1.25 | 0.8 | J1 | PCF1007CT-ND | 4.20 | 36.40 | 140.00 | PCF1007TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H391JB5 |
| | 50 | .00047 | 2.0 | 1.25 | 0.8 | J1 | PCF1008CT-ND | 4.20 | 36.40 | 140.00 | PCF1008TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H471JB5 |
| | 50 | .00056 | 2.0 | 1.25 | 0.8 | J1 | PCF1009CT-ND | 4.20 | 36.40 | 140.00 | PCF1009TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H561JB5 |
| | 50 | .00068 | 2.0 | 1.25 | 0.8 | J1 | PCF1010CT-ND | 4.20 | 36.40 | 140.00 | PCF1010TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H681JB5 |
| | 50 | .00082 | 2.0 | 1.25 | 0.8 | J1 | PCF1011CT-ND | 4.20 | 36.40 | 140.00 | PCF1011TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H821JB5 |
| | 50 | .001 | 2.0 | 1.25 | 0.8 | J1 | PCF1012CT-ND | 4.20 | 36.40 | 140.00 | PCF1012TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H102JB5 |
| | 50 | .0012 | 2.0 | 1.25 | 0.8 | J1 | PCF1013CT-ND | 4.20 | 36.40 | 140.00 | PCF1013TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H122JB5 |
| | 50 | .0015 | 2.0 | 1.25 | 0.8 | J1 | PCF1014CT-ND | 4.20 | 36.40 | 140.00 | PCF1014TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H152JB5 |
| | 50 | .0018 | 2.0 | 1.25 | 0.8 | J1 | PCF1015CT-ND | 4.20 | 36.40 | 140.00 | PCF1015TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H182JB5 |
| | 50 | .0022 | 2.0 | 1.25 | 0.8 | J1 | PCF1016CT-ND | 4.20 | 36.40 | 140.00 | PCF1016TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H222JB5 |
| 1206 (3216) Size | 50 | .0027 | 2.0 | 1.25 | 0.8 | J1 | PCF1017CT-ND | 4.20 | 36.40 | 140.00 | PCF1017TR-ND | — | 168.00/M | 158.00/M | 146.00/M | ECH-U1H272JB5 |
| | 50 | .0033 | 3.2 | 1.6 | 0.8 | H1 | PCF1018CT-ND | 4.91 | 42.59 | 164.00 | PCF1018TR-ND | — | 197.00/M | 185.00/M | 171.00/M | ECH-U1H332JB5 |
| | 50 | .0039 | 3.2 | 1.6 | 0.8 | H1 | PCF1019CT-ND | 5.04 | 43.68 | 168.00 | PCF1019TR-ND | — | 202.00/M | 189.00/M | 176.00/M | ECH-U1H392JB5 |
| | 50 | .0047 | 3.2 | 1.6 | 0.8 | H1 | PCF1020CT-ND | 5.21 | 45.14 | 173.50 | PCF1020TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H472JB5 |
| | 50 | .0056 | 3.2 | 1.6 | 0.8 | H1 | PCF1021CT-ND | 5.33 | 46.23 | 178.00 | PCF1021TR-ND | — | 214.00/M | 200.00/M | 186.00/M | ECH-U1H562JB5 |
| | 50 | .0068 | 3.2 | 1.6 | 0.8 | H1 | PCF1022CT-ND | 5.50 | 47.68 | 183.50 | PCF1022TR-ND | — | 221.00/M | 207.00/M | 192.00/M | ECH-U1H682JB5 |
| 1210 (3225) Size | 50 | .0082 | 3.2 | 1.6 | 1.0 | H2 | PCF1023CT-ND | 5.59 | 48.41 | 186.00 | PCF1023TR-ND | — | 224.00/M | 210.00/M | 195.00/M | ECH-U1H822JB5 |
| | 50 | .01 | 3.2 | 1.6 | 1.0 | H2 | PCF1024CT-ND | 5.80 | 50.23 | 193.00 | PCF1024TR-ND | — | 232.00/M | 218.00/M | 202.00/M | ECH-U1H103JB5 |
| | 50 | .012 | 3.2 | 2.5 | 1.0 | G1 | PCF1025CT-ND | 5.92 | 51.32 | 197.50 | PCF1025TR-ND | 237.00/M | — | 222.00/M | — | ECH-U1H123JB5 |
| | 50 | .015 | 3.2 | 2.5 | 1.0 | G1 | PCF1026CT-ND | 6.09 | 52.78 | 203.00 | PCF1026TR-ND | 244.00/M | — | 229.00/M | — | ECH-U1H153JB5 |
| | 50 | .018 | 3.2 | 2.5 | 1.4 | G2 | PCF1027CT-ND | 6.26 | 54.24 | 208.50 | PCF1027TR-ND | 251.00/M | — | 235.00/M | — | ECH-U1H183JB5 |
| | 50 | .022 | 3.2 | 2.5 | 1.4 | G2 | PCF1028CT-ND | 6.47 | 56.06 | 215.50 | PCF1028TR-ND | 259.00/M | — | 243.00/M | — | ECH-U1H223JB5 |
| 1913 (4833) Size | 50 | .027 | 3.2 | 2.5 | 1.4 | G2 | PCF1029CT-ND | 6.72 | 58.24 | 224.00 | PCF1029TR-ND | 269.00/M | — | 252.00/M | — | ECH-U1H273JB5 |
| | 50 | .033 | 3.2 | 2.5 | 2.0 | G3 | PCF1030CT-ND | 7.10 | 61.52 | 236.50 | PCF1030TR-ND | 285.00/M | — | 267.00/M | — | ECH-U1H333JB5 |
| | 50 | .039 | 3.2 | 2.5 | 2.0 | G3 | PCF1031CT-ND | 7.39 | 64.06 | 246.50 | PCF1031TR-ND | 296.00/M | — | 278.00/M | — | ECH-U1H393JB5 |
| | 50 | .047 | 4.8 | 3.3 | 1.4 | E1 | PCF1032CT-ND | 7.73 | 66.98 | 257.50 | PCF1032TR-ND | — | 310.00/M | 290.00/M | 269.00/M | ECH-U1H473JB9 |
| | 50 | .056 | 4.8 | 3.3 | 1.4 | E1 | PCF1033CT-ND | 8.23 | 71.34 | 274.50 | PCF1033TR-ND | — | 330.00/M | 309.00/M | 287.00/M | ECH-U1H563JB9 |
| | 50 | .068 | 4.8 | 3.3 | 1.4 | E1 | PCF1034CT-ND | 8.74 | 75.71 | 291.00 | PCF1034TR-ND | — | 350.00/M | 328.00/M | 305.00/M | ECH-U1H683JB9 |
| 1913 (4833) Size | 50 | .082 | 4.8 | 3.3 | 2.0 | E2 | PCF1035CT-ND | 9.41 | 81.54 | 313.50 | PCF1035TR-ND | — | 377.00/M | 353.00/M | 328.00/M | ECH-U1H823JB9 |
| | 50 | .1 | 4.8 | 3.3 | 2.0 | E2 | PCF1036CT-ND | 9.24 | 80.08 | 308.00 | PCF1036TR-ND | — | 371.00/M | 347.00/M | 322.00/M | ECH-U1H104JB9 |
| <i>ECH-U1H (High Grade Type - 50 WV) 2% Tolerance</i> | | | | | | | | | | | | | | | | |
| 0805 (2012) Size | 50 | .0001 | 2.0 | 1.25 | 0.8 | J1 | PCF1089CT-ND | 5.21 | 45.14 | 173.50 | PCF1089TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H101GB5 |
| | 50 | .00012 | 2.0 | 1.25 | 0.8 | J1 | PCF1090CT-ND | 5.21 | 45.14 | 173.50 | PCF1090TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H121GB5 |
| | 50 | .00015 | 2.0 | 1.25 | 0.8 | J1 | PCF1091CT-ND | 5.21 | 45.14 | 173.50 | PCF1091TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H151GB5 |
| | 50 | .00018 | 2.0 | 1.25 | 0.8 | J1 | PCF1092CT-ND | 5.21 | 45.14 | 173.50 | PCF1092TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H181GB5 |
| | 50 | .00022 | 2.0 | 1.25 | 0.8 | J1 | PCF1093CT-ND | 5.21 | 45.14 | 173.50 | PCF1093TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H221GB5 |
| | 50 | .00027 | 2.0 | 1.25 | 0.8 | J1 | PCF1094CT-ND | 5.21 | 45.14 | 173.50 | PCF1094TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H271GB5 |
| | 50 | .00033 | 2.0 | 1.25 | 0.8 | J1 | PCF1095CT-ND | 5.21 | 45.14 | 173.50 | PCF1095TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H331GB5 |
| | 50 | .00039 | 2.0 | 1.25 | 0.8 | J1 | PCF1096CT-ND | 5.21 | 45.14 | 173.50 | PCF1096TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H391GB5 |
| | 50 | .00047 | 2.0 | 1.25 | 0.8 | J1 | PCF1097CT-ND | 5.21 | 45.14 | 173.50 | PCF1097TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H471GB5 |
| | 50 | .00056 | 2.0 | 1.25 | 0.8 | J1 | PCF1098CT-ND | 5.21 | 45.14 | 173.50 | PCF1098TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H561GB5 |
| | 50 | .00068 | 2.0 | 1.25 | 0.8 | J1 | PCF1099CT-ND | 5.21 | 45.14 | 173.50 | PCF1099TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H681GB5 |
| | 50 | .00082 | 2.0 | 1.25 | 0.8 | J1 | PCF1100CT-ND | 5.21 | 45.14 | 173.50 | PCF1100TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H821GB5 |
| | 50 | .001 | 2.0 | 1.25 | 0.8 | J1 | PCF1101CT-ND | 5.21 | 45.14 | 173.50 | PCF1101TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H102GB5 |
| | 50 | .0012 | 2.0 | 1.25 | 0.8 | J1 | PCF1102CT-ND | 5.21 | 45.14 | 173.50 | PCF1102TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H122GB5 |
| | 50 | .0015 | 2.0 | 1.25 | 0.8 | J1 | PCF1103CT-ND | 5.21 | 45.14 | 173.50 | PCF1103TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H152GB5 |
| | 50 | .0018 | 2.0 | 1.25 | 0.8 | J1 | PCF1104CT-ND | 5.21 | 45.14 | 173.50 | PCF1104TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H182GB5 |
| | 50 | .0022 | 2.0 | 1.25 | 0.8 | J1 | PCF1105CT-ND | 5.21 | 45.14 | 173.50 | PCF1105TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H222GB5 |
| | 50 | .0027 | 2.0 | 1.25 | 0.8 | J1 | PCF1106CT-ND | 5.21 | 45.14 | 173.50 | PCF1106TR-ND | — | 209.00/M | 196.00/M | 182.00/M | ECH-U1H272GB5 |
| 1206 (3216) Size | 50 | .0033 | 3.2 | 1.6 | 0.8 | H1 | PCF1107CT-ND | 6.09 | 52.78 | 203.00 | PCF1107TR-ND | — | 244.00/M | 229.00/M | 212.00/M | ECH-U1H332GB5 |
| | 50 | .0039 | 3.2 | 1.6 | 0.8 | H1 | PCF1108CT-ND | 6.22 | 53.87 | 207.00 | PCF1108TR-ND | — | 249.00/M | 233.00/M | 217.00/M | ECH-U1H392GB5 |
| | 50 | .0047 | 3.2 | 1.6 | 0.8 | H1 | PCF1109CT-ND | 6.43 | 55.69 | 214.00 | PCF1109TR-ND | — | 258.00/M | 241.00/M | 224.00/M | ECH-U1H472GB5 |
| | 50 | .0056 | 3.2 | 1.6 | 0.8 | H1 | PCF1110CT-ND | 6.59 | 57.15 | 220.00 | PCF1110TR-ND | — | 264.00/M | 248.00/M | 230.00/M | ECH-U1H562GB5 |
| | 50 | .0068 | 3.2 | 1.6 | 0.8 | H1 | PCF1111CT-ND | 6.80 | 58.97 | 227.00 | PCF1111TR-ND | — | 273.00/M | 256.00/M | 237.00/M | ECH-U1H682GB5 |
| | 50 | .0082 | 3.2 | 1.6 | 1.0 | H2 | PCF1112CT-ND | 6.97 | 60.42 | 232.50 | PCF1112TR-ND | — | 280.00/M | 262.00/M | 243.00/M | ECH-U1H822GB5 |
| 1210 (3225) Size | 50 | .01 | 3.2 | 1.6 | 1.0 | H2 | PCF1113CT-ND | 7.18 | 62.24 | 239.50 | PCF1113TR-ND | — | 288.00/M | 270.00/M | 250.00/M | ECH-U1H103GB5 |
| | 50 | .012 | 3.2 | 2.5 | 1.0 | G1 | PCF1114CT-ND | 7.31 | 63.34 | 243.50 | PCF1114TR-ND | 293.00/M | — | 274.00/M | — | ECH-U1H123GB5 |
| | 50 | .015 | 3.2 | 2.5 | 1.0 | G1 | PCF1115CT-ND | 7.52 | 65.16 | 250.50 | PCF1115TR-ND | 301.00/M | — | 282.00/M | — | ECH-U1H153GB5 |
| | 50 | .018 | 3.2 | 2.5 | 1.4 | G2 | PCF1116CT-ND | 7.73 | 66.98 | 257.50 | PCF1116TR-ND | 310.00/M | — | 290.00/M | — | ECH-U1H183GB5 |
| | 50 | .022 | 3.2 | 2.5 | 1.4 | G2 | PCF1117CT-ND | 8.02 | 69.52 | 267.50 | PCF1117TR-ND | 322.00/M | — | 301.00/M | — | ECH-U1H223GB5 |
| | 50 | .027 | 3.2 | 2.5 | 1.4 | G2 | PCF1118CT-ND | 8.40 | 72.80 | 280.00 | PCF1118TR-ND | 337.00/M | — | 315.00/M | — | ECH-U1H273GB5 |
| 1913 (4833) Size | 50 | .033 | 3.2 | 2.5 | 2.0 | G3 | PCF1119CT-ND | 8.78 | 76.08 | 292.50 | PCF1119TR-ND | 352.00/M | — | 330.00/M | — | ECH-U1H333GB5 |
| | 50 | .039 | 3.2 | 2.5 | 2.0 | G3 | PCF1120CT-ND | 9.20 | 79.72 | 306.50 | PCF1120TR-ND | 369.00/M | — | 345.00/M | — | ECH-U1H393GB5 |
| | 50 | .047 | 4.8 | 3.3 | 1.4 | E1 | PCF1121CT-ND | 9.62 | 83.36 | 320.50 | PCF1121TR-ND | — | 386.00/M | 361.00/M | 335.00/M | ECH-U1H473GB9 |
| | 50 | .056 | 4.8 | 3.3 | 1.4 | E1 | PCF1122CT-ND | 10.21 | 88.45 | 340.00 | PCF1122TR-ND | — | 409.00/M | 383.00/M | 356.00/M | ECH-U1H563GB9 |
| | 50 | .068 | 4.8 | 3.3 | 1.4 | E1 | PCF1123CT-ND | 10.88 | 94.28 | 362.50 | PCF1123TR-ND | — | 436.00/M | 409.00/M | 379.00/M | ECH-U1H683GB9 |

Panasonic ECQ-E(F) Series

Miniaturized Metallized Polyester Film Capacitors

The type ECQ-E(F) series is using a dual side metallized polyester film with high dielectric constant(e) which makes it possible to produce large C-values in small dimensions, and is economical capacitor meeting high requirements for professional circuit design.

FEATURES:

- Self-healing property
- Flame retardant epoxy resin coating

APPLICATIONS:

- Blocking, by-passing, filtering, timing, interference suppression, low phase applications.

SPECIFICATIONS:

Reference standard: JIS C5115, C5151

Operating temperature range: -40°C to +85°C

(+105°C . . . 75% of Rated voltage)

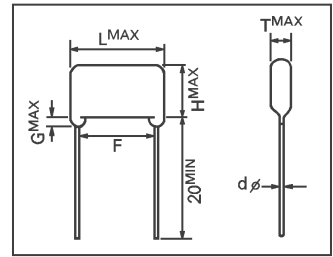
Rated voltage: 100V, 250V, 400V, 630V

Capacitance tolerance: ±10% (K)

Dissipation factor: 1.0% Max. (20°C 1kHz)

Withstand voltage: Rated volt. DC100V ~ 630V (V.DC) X 150% 1 minute between terminals

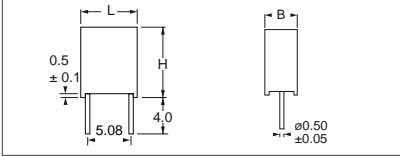
Insulation resistance: DC100V ~ 630V: C ≤ 0.33µF 9,000MΩ Min., C > 0.33µF 3,000Ω/µF Min.



| Working Voltage (VDC) | Capacitance (µF) | Dimensions (mm) | | | | | | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. | |
|-----------------------|------------------|-----------------|------|------|------|-----|-----|-------------------|-----------|-------|--------|---------|-----------|-----------|--------------------|-------------|
| | | L | T | H | F | G | d | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | | |
| 100 | .01 | 7.8 | 4.6 | 7.7 | 5.0 | 1.0 | 0.5 | EF1103-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1103KF | |
| | .012 | 7.8 | 4.5 | 7.6 | 5.0 | 1.0 | 0.5 | EF1123-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1123KF | |
| | .015 | 7.8 | 4.5 | 7.6 | 5.0 | 1.0 | 0.5 | EF1153-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1153KF | |
| | .018 | 7.8 | 4.6 | 7.7 | 5.0 | 1.0 | 0.5 | EF1183-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1183KF | |
| | .022 | 7.8 | 4.9 | 8.0 | 5.0 | 1.0 | 0.5 | EF1223-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1223KF | |
| | .027 | 7.8 | 4.7 | 7.8 | 5.0 | 1.0 | 0.5 | EF1273-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1273KF | |
| | .033 | 7.8 | 4.6 | 7.7 | 5.0 | 1.0 | 0.5 | EF1333-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1333KF | |
| | .039 | 7.8 | 4.9 | 8.0 | 5.0 | 1.0 | 0.5 | EF1393-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1393KF | |
| | .047 | 7.8 | 4.5 | 7.5 | 5.0 | 1.0 | 0.5 | EF1473-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1473KF | |
| | .056 | 7.8 | 4.8 | 7.9 | 5.0 | 1.0 | 0.5 | EF1563-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1563KF | |
| | .068 | 7.8 | 4.8 | 7.9 | 5.0 | 1.0 | 0.5 | EF1683-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1683KF | |
| | .082 | 7.8 | 4.7 | 9.9 | 5.0 | 1.0 | 0.5 | EF1823-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1823KF | |
| | .1 | 7.8 | 5.0 | 10.0 | 5.0 | 1.0 | 0.5 | EF1104-ND | .26 | 2.25 | 18.76 | 112.00 | 106.00/M | 97.00/M | ECQ-E1104KF | |
| | .12 | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF1124-ND | .28 | 2.39 | 19.88 | 119.00 | 112.00/M | 103.00/M | ECQ-E1124KF | |
| | .15 | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF1154-ND | .28 | 2.42 | 20.16 | 121.00 | 114.00/M | 105.00/M | ECQ-E1154KF | |
| | .18 | 10.3 | 4.8 | 7.9 | 7.5 | 1.0 | 0.6 | EF1184-ND | .31 | 2.62 | 21.84 | 131.00 | 123.00/M | 113.00/M | ECQ-E1184KF | |
| | .22 | 10.3 | 4.5 | 12.0 | 7.5 | 1.0 | 0.6 | EF1224-ND | .33 | 2.79 | 23.24 | 139.00 | 142.00/M | 121.00/M | ECQ-E1224KF | |
| | .27 | 10.3 | 4.5 | 12.0 | 7.5 | 1.0 | 0.6 | EF1274-ND | .40 | 3.02 | 25.20 | 152.00 | 151.00/M | 131.00/M | ECQ-E1274KF | |
| | .33 | 10.3 | 6.0 | 10.7 | 7.5 | 1.0 | 0.6 | EF1334-ND | .40 | 3.43 | 28.56 | 171.00 | 161.00/M | 148.00/M | ECQ-E1334KF | |
| | .39 | 10.3 | 6.3 | 11.0 | 7.5 | 1.0 | 0.6 | EF1394-ND | .41 | 3.53 | 29.40 | 176.00 | 166.00/M | 153.00/M | ECQ-E1394KF | |
| | .47 | 10.3 | 6.0 | 12.0 | 7.5 | 1.0 | 0.6 | EF1474-ND | .43 | 3.70 | 30.80 | 184.00 | 174.00/M | 160.00/M | ECQ-E1474KF | |
| | .56 | 12.0 | 5.5 | 10.9 | 10.0 | 1.0 | 0.6 | EF1564-ND | .50 | 4.30 | 35.84 | 215.00 | 202.00/M | 186.00/M | ECQ-E1564KF | |
| | .68 | 12.0 | 6.0 | 11.9 | 10.0 | 1.0 | 0.6 | EF1684-ND | .57 | 4.87 | 40.60 | 243.00 | 229.00/M | 211.00/M | ECQ-E1684KF | |
| | .82 | 12.0 | 6.0 | 13.5 | 10.0 | 1.0 | 0.6 | EF1824-ND | .62 | 5.34 | 44.52 | 267.00 | 251.00/M | 231.00/M | ECQ-E1824KF | |
| | 1.0 | 12.0 | 6.7 | 14.0 | 10.0 | 1.0 | 0.6 | EF1105-ND | .68 | 5.81 | 48.44 | 290.00 | 273.00/M | 252.00/M | ECQ-E1105KF | |
| | 1.2 | 18.5 | 5.5 | 12.8 | 15.0 | 1.0 | 0.6 | EF1125-ND | .78 | 6.72 | 56.00 | 335.00 | 316.00/M | 291.00/M | ECQ-E1125KF | |
| | 1.5 | 18.5 | 6.0 | 13.4 | 15.0 | 1.0 | 0.8 | EF1155-ND | .91 | 7.83 | 65.24 | 391.00 | 368.00/M | 339.00/M | ECQ-E1155KF | |
| | 1.8 | 18.5 | 6.5 | 14.4 | 15.0 | 1.0 | 0.8 | EF1185-ND | 1.02 | 8.70 | 72.52 | 434.00 | 409.00/M | 377.00/M | ECQ-E1185KF | |
| | 2.2 | 18.5 | 7.0 | 15.0 | 15.0 | 1.0 | 0.8 | EF1225-ND | 1.15 | 9.84 | 82.04 | 491.00 | 463.00/M | 426.00/M | ECQ-E1225KF | |
| | 2.7 | 18.5 | 8.0 | 15.8 | 15.0 | 1.0 | 0.8 | EF1275-ND | 1.31 | 11.22 | 93.52 | 560.00 | 528.00/M | 486.00/M | ECQ-E1275KF | |
| | 3.3 | 18.5 | 8.5 | 16.5 | 15.0 | 1.0 | 0.8 | EF1335-ND | 1.66 | 14.25 | 118.72 | 711.00 | 670.00/M | 617.00/M | ECQ-E1335KF | |
| | 3.9 | 26.0 | 7.0 | 16.4 | 22.5 | 1.0 | 0.8 | EF1395-ND | 1.89 | 16.20 | 134.96 | 808.00 | 761.00/M | 701.00/M | ECQ-E1395KF | |
| | 4.7 | 26.0 | 7.5 | 17.0 | 22.5 | 1.0 | 0.8 | EF1475-ND | 2.13 | 18.28 | 152.32 | 912.00 | 859.00/M | 791.00/M | ECQ-E1475KF | |
| | 5.6 | 26.0 | 8.3 | 17.5 | 22.5 | 1.0 | 0.8 | EF1565-ND | 2.53 | 21.71 | 180.88 | 1083.00 | 1020.00/M | 940.00/M | ECQ-E1565KF | |
| | 6.8 | 26.0 | 9.0 | 18.5 | 22.5 | 1.0 | 0.8 | EF1685-ND | 2.88 | 24.66 | 205.52 | 1231.00 | 1159.00/M | 1068.00/M | ECQ-E1685KF | |
| | 8.2 | 26.0 | 10.0 | 20.0 | 22.5 | 1.5 | 0.8 | EF1825-ND | 3.32 | 28.43 | 236.88 | 1418.00 | 1336.00/M | 1231.00/M | ECQ-E1825KF | |
| | 10.0 | 26.0 | 11.5 | 21.0 | 22.5 | 1.5 | 0.8 | EF1106-ND | 3.86 | 33.06 | 275.52 | 1650.00 | 1554.00/M | 1431.00/M | ECQ-E1106KF | |
| | 250 | .01 | 10.3 | 4.3 | 7.4 | 7.5 | 1.0 | 0.6 | EF2103-ND | .25 | 2.16 | 18.00 | 108.00 | 102.00/M | 94.00/M | ECQ-E2103KF |
| | | .012 | 10.3 | 4.4 | 7.5 | 7.5 | 1.0 | 0.6 | EF2123-ND | .23 | 1.98 | 16.52 | 99.00 | 93.00/M | 86.00/M | ECQ-E2123KF |
| | | .015 | 10.3 | 4.4 | 7.5 | 7.5 | 1.0 | 0.6 | EF2153-ND | .23 | 1.98 | 16.52 | 99.00 | 93.00/M | 86.00/M | ECQ-E2153KF |
| .018 | | 10.3 | 4.4 | 7.5 | 7.5 | 1.0 | 0.6 | EF2183-ND | .23 | 1.98 | 16.52 | 99.00 | 93.00/M | 86.00/M | ECQ-E2183KF | |
| .022 | | 10.3 | 4.4 | 7.5 | 7.5 | 1.0 | 0.6 | EF2223-ND | .25 | 2.16 | 18.00 | 108.00 | 102.00/M | 94.00/M | ECQ-E2223KF | |
| .027 | | 10.3 | 4.4 | 7.5 | 7.5 | 1.0 | 0.6 | EF2273-ND | .23 | 1.98 | 16.52 | 99.00 | 93.00/M | 86.00/M | ECQ-E2273KF | |
| .033 | | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF2333-ND | .25 | 2.16 | 18.00 | 108.00 | 102.00/M | 94.00/M | ECQ-E2333KF | |
| .039 | | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF2393-ND | .23 | 1.98 | 16.52 | 99.00 | 93.00/M | 86.00/M | ECQ-E2393KF | |
| .047 | | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF2473-ND | .19 | 1.65 | 13.75 | 82.00 | 78.00/M | 71.00/M | ECQ-E2473KF | |
| .056 | | 10.3 | 4.8 | 7.9 | 7.5 | 1.0 | 0.6 | EF2563-ND | .24 | 2.05 | 17.08 | 102.00 | 96.00/M | 89.00/M | ECQ-E2563KF | |
| .068 | | 10.3 | 4.5 | 7.5 | 7.5 | 1.0 | 0.6 | EF2683-ND | .25 | 2.15 | 17.92 | 107.00 | 101.00/M | 93.00/M | ECQ-E2683KF | |
| .082 | | 10.3 | 4.9 | 8.0 | 7.5 | 1.0 | 0.6 | EF2823-ND | .28 | 2.40 | 20.00 | 120.00 | 113.00/M | 104.00/M | ECQ-E2823KF | |
| .1 | | 10.3 | 5.8 | 8.4 | 7.5 | 1.0 | 0.6 | EF2104-ND | .23 | 2.01 | 16.75 | 100.00 | 94.00/M | 87.00/M | ECQ-E2104KF | |
| .12 | | 10.3 | 6.0 | 9.0 | 7.5 | 1.0 | 0.6 | EF2124-ND | .31 | 2.62 | 21.84 | 131.00 | 123.00/M | 113.00/M | ECQ-E2124KF | |
| .15 | | 10.3 | 6.0 | 10.8 | 7.5 | 1.0 | 0.6 | EF2154-ND | .34 | 2.88 | 24.00 | 144.00 | 135.00/M | 125.00/M | ECQ-E2154KF | |
| .18 | | 12.0 | 5.0 | 10.3 | 10.0 | 1.0 | 0.6 | EF2184-ND | .34 | 2.92 | 24.36 | 146.00 | 137.00/M | 127.00/M | ECQ-E2184KF | |
| .22 | | 12.0 | 5.5 | 10.5 | 10.0 | 1.0 | 0.6 | EF2224-ND | .36 | 3.09 | 25.75 | 154.00 | 145.00/M | 134.00/M | ECQ-E2224KF | |
| .27 | | 12.0 | 6.0 | 11.5 | 10.0 | 1.0 | 0.6 | EF2274-ND | .42 | 3.60 | 29.96 | 179.00 | 169.00/M | 156.00/M | ECQ-E2274KF | |
| .33 | | 12.0 | 6.5 | 12.0 | 10.0 | 1.0 | 0.6 | EF2334-ND | .47 | 4.02 | 33.50 | 201.00 | 189.00/M | 174.00/M | ECQ-E2334KF | |
| .39 | | 18.5 | 4.9 | 12.0 | 15.0 | 1.0 | 0.6 | EF2394-ND | .51 | 4.38 | 36.50 | 219.00 | 206.00/M | 190.00/M | ECQ-E2394KF | |
| .47 | | 18.5 | 5.3 | 12.5 | 15.0 | 1.0 | 0.6 | EF2474-ND | .53 | 4.53 | 37.75 | 226.00 | 213.00/M | 196.00/M | ECQ-E2474KF | |
| .56 | | 18.5 | 5.5 | 13.0 | 15.0 | 1.0 | 0.6 | EF2564-ND | .60 | 5.13 | 42.75 | 256.00 | 241.00/M | 222.00/M | ECQ-E2564KF | |
| .68 | | 18.5 | 6.0 | 13.5 | 15.0 | 1.0 | 0.8 | EF2684-ND | .64 | 5.44 | 45.36 | 272.00 | 256.00/M | 236.00/M | ECQ-E2684KF | |
| .82 | | 18.5 | 6.5 | 14.5 | 15.0 | 1.0 | 0.8 | EF2824-ND | .73 | 6.24 | 52.00 | 311.00 | 293.00/M | 270.00/M | ECQ-E2824KF | |
| 1.0 | | 18.5 | 7.4 | 15.0 | 15.0 | 1.0 | 0.8 | EF2105-ND | .70 | 6.03 | 50.25 | 301.00 | 283.00/M | 261.00/M | ECQ-E2105KF | |
| 1.2 | | 18.5 | 8.0 | 15.9 | 15.0 | 1.0 | 0.8 | EF2125-ND | .83 | 7.12 | 59.36 | 355.00 | 335.00/M | 308.00/M | ECQ-E2125KF | |
| 1.5 | | 18.5 | 9.0 | 16.8 | 15.0 | 1.0 | 0.8 | EF2155-ND | 1.05 | 9.00 | 75.04 | 449.00 | 423.00/M | 390.00/M | ECQ-E2155KF | |
| 1.8 | | 26.0 | 7.5 | 15.5 | 22.5 | 1.0 | 0.8 | EF2185-ND | 1.15 | 9.88 | 82.32 | 493.00 | 464.00/M | 428.00/M | ECQ-E2185KF | |
| 2.2 | | 26.0 | 8.5 | 16.3 | 22.5 | 1.0 | 0.8 | EF2225-ND | 1.31 | 11.19 | 93.25 | 558.00 | 526.00/M | 484.00/M | ECQ-E2225KF | |
| 2.7 | | 26.0 | 9.4 | 17.0 | 22.5 | 1.0 | 0.8 | EF2275-ND | 1.43 | 12.26 | 102.20 | 612.00 | 577.00/M | 531.00/M | ECQ-E2275KF | |
| 3.3 | | 26.0 | 10.3 | 18.0 | 22.5 | 1.5 | 0.8 | | | | | | | | | |

| Working Voltage (VDC) | Capacitance (µF) | Dimensions (mm) | | | | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|-----------------------|------------------|-----------------|------|------|------|------|-----------|-------------------|-----------|--------|---------|-----------|--------------------|-------------|-------------|
| | | L | T | H | F | G | d | | 1 | 10 | 100 | 1,000 | | 5,000 | 10,000 |
| 400 | .068 | 12.0 | 5.4 | 10.5 | 10.0 | 1.0 | 0.6 | EF4683-ND | .42 | 3.63 | 30.24 | 181.00 | 171.00/M | 157.00/M | ECQ-E4683KF |
| | .082 | 12.0 | 5.8 | 11.0 | 10.0 | 1.0 | 0.6 | EF4823-ND | .45 | 3.83 | 31.92 | 191.00 | 180.00/M | 166.00/M | ECQ-E4823KF |
| | .1 | 12.0 | 6.3 | 12.0 | 10.0 | 1.0 | 0.6 | EF4104-ND | .43 | 3.72 | 31.00 | 186.00 | 175.00/M | 161.00/M | ECQ-E4104KF |
| | .12 | 18.5 | 5.0 | 10.0 | 15.0 | 1.0 | 0.6 | EF4124-ND | .50 | 4.27 | 35.56 | 213.00 | 201.00/M | 185.00/M | ECQ-E4124KF |
| | .15 | 18.5 | 5.0 | 12.4 | 15.0 | 1.0 | 0.6 | EF4154-ND | .54 | 4.67 | 38.92 | 233.00 | 220.00/M | 202.00/M | ECQ-E4154KF |
| | .18 | 18.5 | 5.4 | 12.5 | 15.0 | 1.0 | 0.6 | EF4184-ND | .58 | 5.01 | 41.72 | 250.00 | 235.00/M | 217.00/M | ECQ-E4184KF |
| | .22 | 18.5 | 5.9 | 13.0 | 15.0 | 1.0 | 0.6 | EF4224-ND | .64 | 5.52 | 46.00 | 275.00 | 260.00/M | 239.00/M | ECQ-E4224KF |
| | .27 | 18.5 | 6.5 | 14.3 | 15.0 | 1.0 | 0.8 | EF4274-ND | .71 | 6.12 | 51.00 | 305.00 | 288.00/M | 265.00/M | ECQ-E4274KF |
| | .33 | 18.5 | 7.0 | 14.9 | 15.0 | 1.0 | 0.8 | EF4334-ND | .77 | 6.63 | 55.25 | 331.00 | 312.00/M | 287.00/M | ECQ-E4334KF |
| | .39 | 18.5 | 7.5 | 15.4 | 15.0 | 1.0 | 0.8 | EF4394-ND | .80 | 6.89 | 57.40 | 344.00 | 324.00/M | 298.00/M | ECQ-E4394KF |
| | .47 | 18.5 | 7.8 | 17.0 | 15.0 | 1.0 | 0.8 | EF4474-ND | .86 | 7.41 | 61.75 | 370.00 | 348.00/M | 321.00/M | ECQ-E4474KF |
| | .56 | 26.0 | 6.5 | 16.0 | 22.5 | 1.0 | 0.8 | EF4155-ND | .95 | 8.13 | 67.76 | 406.00 | 382.00/M | 352.00/M | ECQ-E4155KF |
| | .68 | 26.0 | 7.0 | 16.5 | 22.5 | 1.0 | 0.8 | EF4684-ND | 1.06 | 9.11 | 75.88 | 454.00 | 428.00/M | 394.00/M | ECQ-E4684KF |
| | .82 | 26.0 | 7.9 | 17.3 | 22.5 | 1.0 | 0.8 | EF4824-ND | 1.16 | 9.91 | 82.60 | 495.00 | 466.00/M | 429.00/M | ECQ-E4824KF |
| | 1.0 | 26.0 | 8.5 | 18.9 | 22.5 | 1.0 | 0.8 | EF4105-ND | 1.27 | 10.89 | 90.72 | 543.00 | 512.00/M | 471.00/M | ECQ-E4105KF |
| | 1.2 | 26.0 | 9.5 | 18.9 | 22.5 | 1.0 | 0.8 | EF4125-ND | 1.86 | 15.96 | 133.00 | 796.00 | 750.00/M | 691.00/M | ECQ-E4125KF |
| | 1.5 | 31.0 | 9.5 | 19.0 | 27.5 | 1.0 | 0.8 | EF4185-ND | 2.01 | 17.19 | 143.25 | 808.00 | 744.00/M | 677.00/M | ECQ-E4185KF |
| | 1.8 | 31.0 | 11.0 | 20.5 | 27.5 | 1.5 | 0.8 | EF4185-ND | 2.28 | 19.56 | 162.96 | 976.00 | 919.00/M | 847.00/M | ECQ-E4185KF |
| | 2.2 | 31.0 | 11.0 | 22.0 | 27.5 | 1.5 | 0.8 | EF4225-ND | 2.72 | 23.28 | 194.00 | 1162.00 | 1094.00/M | 1008.00/M | ECQ-E4225KF |
| | 630 | .01 | 12.0 | 4.5 | 7.5 | 10.0 | 1.0 | 0.6 | EF6103-ND | .34 | 2.94 | 24.50 | 147.00 | 138.00/M | 127.00/M |
| .012 | | 12.0 | 4.5 | 7.8 | 10.0 | 1.0 | 0.6 | EF6123-ND | .35 | 3.03 | 25.20 | 151.00 | 142.00/M | 131.00/M | ECQ-E6123KF |
| .015 | | 12.0 | 5.0 | 8.2 | 10.0 | 1.0 | 0.6 | EF6153-ND | .36 | 3.12 | 26.04 | 156.00 | 147.00/M | 135.00/M | ECQ-E6153KF |
| .018 | | 12.0 | 4.9 | 10.0 | 10.0 | 1.0 | 0.6 | EF6183-ND | .38 | 3.23 | 26.88 | 161.00 | 152.00/M | 140.00/M | ECQ-E6183KF |
| .022 | | 12.0 | 5.3 | 10.5 | 10.0 | 1.0 | 0.6 | EF6223-ND | .41 | 3.48 | 29.00 | 174.00 | 164.00/M | 151.00/M | ECQ-E6223KF |
| .027 | | 12.0 | 5.5 | 10.9 | 10.0 | 1.0 | 0.6 | EF6273-ND | .40 | 3.46 | 28.84 | 173.00 | 163.00/M | 150.00/M | ECQ-E6273KF |
| .033 | | 12.0 | 6.0 | 11.9 | 10.0 | 1.0 | 0.6 | EF6333-ND | .43 | 3.72 | 31.00 | 186.00 | 175.00/M | 161.00/M | ECQ-E6333KF |
| .039 | | 12.0 | 6.0 | 13.4 | 10.0 | 1.0 | 0.6 | EF6393-ND | .42 | 3.63 | 30.24 | 181.00 | 171.00/M | 157.00/M | ECQ-E6393KF |
| .047 | | 12.0 | 6.5 | 13.5 | 10.0 | 1.0 | 0.6 | EF6473-ND | .43 | 3.72 | 31.00 | 186.00 | 175.00/M | 161.00/M | ECQ-E6473KF |
| .056 | | 18.5 | 5.4 | 10.5 | 15.0 | 1.0 | 0.6 | EF6563-ND | .47 | 4.03 | 33.60 | 201.00 | 190.00/M | 175.00/M | ECQ-E6563KF |
| .068 | | 18.5 | 5.8 | 11.0 | 15.0 | 1.0 | 0.6 | EF6683-ND | .51 | 4.33 | 36.12 | 216.00 | 204.00/M | 188.00/M | ECQ-E6683KF |
| .082 | | 18.5 | 6.5 | 12.0 | 15.0 | 1.0 | 0.6 | EF6823-ND | .54 | 4.64 | 38.64 | 231.00 | 218.00/M | 201.00/M | ECQ-E6823KF |
| .1 | | 18.5 | 6.3 | 14.0 | 15.0 | 1.0 | 0.6 | EF6104-ND | .58 | 4.95 | 41.25 | 247.00 | 233.00/M | 214.00/M | ECQ-E6104KF |
| .12 | | 18.5 | 6.3 | 14.5 | 15.0 | 1.0 | 0.8 | EF6124-ND | .64 | 5.48 | 45.64 | 273.00 | 257.00/M | 237.00/M | ECQ-E6124KF |
| .15 | | 18.5 | 7.5 | 15.4 | 15.0 | 1.0 | 0.8 | EF6154-ND | .75 | 6.39 | 53.25 | 319.00 | 300.00/M | 277.00/M | ECQ-E6154KF |
| .18 | | 18.5 | 8.0 | 16.0 | 15.0 | 1.0 | 0.8 | EF6184-ND | .76 | 6.52 | 54.32 | 325.00 | 306.00/M | 282.00/M | ECQ-E6184KF |
| .22 | | 18.5 | 9.0 | 16.5 | 15.0 | 1.0 | 0.8 | EF6224-ND | .86 | 7.41 | 61.75 | 370.00 | 348.00/M | 321.00/M | ECQ-E6224KF |
| .27 | | 26.0 | 7.0 | 16.5 | 22.5 | 1.0 | 0.8 | EF6274-ND | .94 | 8.03 | 66.92 | 401.00 | 378.00/M | 348.00/M | ECQ-E6274KF |
| .33 | | 26.0 | 7.8 | 17.0 | 22.5 | 1.0 | 0.8 | EF6334-ND | 1.05 | 9.04 | 75.32 | 451.00 | 425.00/M | 391.00/M | ECQ-E6334KF |
| .39 | | 26.0 | 8.5 | 17.9 | 22.5 | 1.0 | 0.8 | EF6394-ND | 1.14 | 9.81 | 81.76 | 490.00 | 461.00/M | 425.00/M | ECQ-E6394KF |
| .47 | 26.0 | 9.3 | 18.5 | 22.5 | 1.0 | 0.8 | EF6474-ND | 1.23 | 10.58 | 88.20 | 528.00 | 498.00/M | 458.00/M | ECQ-E6474KF | |
| .56 | 26.0 | 10.0 | 20.0 | 22.5 | 1.5 | 0.8 | EF6564-ND | 1.46 | 12.53 | 104.44 | 625.00 | 589.00/M | 543.00/M | ECQ-E6564KF | |
| .68 | 26.0 | 11.5 | 21.0 | 22.5 | 1.5 | 0.8 | EF6684-ND | 1.89 | 16.20 | 134.96 | 808.00 | 761.00/M | 701.00/M | ECQ-E6684KF | |
| .82 | 31.0 | 11.3 | 20.5 | 27.5 | 1.5 | 0.8 | EF6824-ND | 2.08 | 17.81 | 148.40 | 889.00 | 837.00/M | 771.00/M | ECQ-E6824KF | |
| 1.0 | 31.0 | 12.5 | 21.9 | 27.5 | 1.5 | 0.8 | EF6105-ND | 2.52 | 21.60 | 180.04 | 1078.00 | 1016.00/M | 935.00/M | ECQ-E6105KF | |
| 1.2 | 31.0 | 13.5 | 23.0 | 27.5 | 1.5 | 0.8 | EF6125-ND | 2.67 | 22.85 | 190.40 | 1140.00 | 1074.00/M | 989.00/M | ECQ-E6125KF | |
| 1.5 | 31.0 | 15.3 | 24.7 | 27.5 | 1.5 | 0.8 | EF6155-ND | 3.24 | 27.79 | 231.56 | 1387.00 | 1306.00/M | 1203.00/M | ECQ-E6155KF | |
| 1.8 | 31.0 | 16.8 | 27.0 | 27.5 | 1.5 | 0.8 | EF6185-ND | 2.08 | 19.49 | 173.57 | 1507.00 | 1299.00/M | 1247.00/M | ECQ-E6185KF | |
| 2.2 | 31.0 | 19.5 | 29.0 | 27.5 | 1.5 | 0.8 | EF6225-ND | 4.09 | 35.08 | 292.32 | 1750.00 | 1649.00/M | 1519.00/M | ECQ-E6225KF | |

PHILIPS Metallized Polyester Film Capacitors



Features:

- Low-inductive wound cell of metallized(PETP) film • Potted with blue epoxy resin in a blue flame retardant case • Radial leads of solder-coated wire • Withstand solvents and rinsing liquids • Small stand-off pins to allow removal of solder flux • Suitable for high density packaging

Applications:

- Blocking and coupling • Bypass and energy reservoir applications

SPECIFICATIONS:

- Capacitance range - .001 to 1.0µf • Capacitance tolerance ±5%
- Rated voltage URdc - 63V, 100V, 250V, 400V • Climatic category 55/100/56 • Maximum application temperature 100°C • Rated temperature 85°C • Tangent of loss angle at 10 kHz 100 x 10⁻⁴
- Reference specification - IEC 384-2, DIN 44122, DIN 45910 Draft
- Performance grade - Grade 1 (long life) • Qualified in accordance with CECC 30 401-801

| Working Voltage (VDC) | Capacitance (µF) | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | Philips Part No. |
|-----------------------|------------------|-----------------|--------|--------|-------------------|---------|-------|--------|------------------|
| | | B Max. | H Max. | L Max. | | 10 | 100 | 1,000 | |
| 400 | .0010* | 2.5 | 6.5 | 7.2 | 3001PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 52102 |
| 400 | .0015* | 2.5 | 6.5 | 7.2 | 3002PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 52152 |
| 400 | .0022* | 2.5 | 6.5 | 7.2 | 3003PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 52222 |
| 400 | .0033* | 2.5 | 6.5 | 7.2 | 3004PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 52332 |
| 250 | .0047* | 2.5 | 6.5 | 7.2 | 3005PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 42472 |
| 250 | .0068* | 2.5 | 6.5 | 7.2 | 3006PH-ND | 1.22 | 8.12 | 60.90 | 2222 370 42682 |
| 250 | .010 | 2.5 | 6.5 | 7.2 | 3007PH-ND | 1.25 | 8.30 | 62.25 | 2222 370 42103 |
| 250 | .015 | 3.5 | 8.0 | 7.2 | 3008PH-ND | 1.29 | 8.62 | 64.65 | 2222 370 42153 |
| 250 | .022 | 3.5 | 8.0 | 7.2 | 3009PH-ND | 1.46 | 9.76 | 73.20 | 2222 370 42223 |
| 250 | .033 | 3.5 | 8.0 | 7.2 | 3010PH-ND | 1.71 | 11.38 | 85.35 | 2222 370 42333 |
| 100 | .047 | 2.5 | 6.5 | 7.2 | 3011PH-ND | 1.42 | 9.44 | 70.80 | 2222 370 22473 |
| 100 | .068 | 3.5 | 8.0 | 7.2 | 3012PH-ND | 1.83 | 12.20 | 91.50 | 2222 370 22683 |
| 100 | .10 | 3.5 | 8.0 | 7.2 | 3013PH-ND | 2.07 | 13.82 | 103.65 | 2222 370 22104 |
| 63 | .15 | 3.5 | 8.0 | 7.2 | 3014PH-ND | 1.76 | 11.72 | 87.90 | 2222 370 12154 |
| 63 | .22 | 3.5 | 8.0 | 7.2 | 3015PH-ND | 2.15 | 14.32 | 107.40 | 2222 370 12224 |
| 63 | .33 | 3.5 | 8.0 | 7.2 | 3016PH-ND | 2.72 | 18.16 | 136.20 | 2222 370 12334 |
| 63 | .47 | 4.5 | 9.0 | 7.2 | 3017PH-ND | 3.48 | 23.20 | 174.00 | 2222 370 12474 |
| 63 | .68 | 5.0 | 10.0 | 7.2 | 3018PH-ND | 4.68 | 31.20 | 234.00 | 2222 370 12684 |
| 63 | 1.0 | 6.0 | 11.0 | 7.2 | 3019PH-ND | 5.07 | 33.80 | 253.50 | 2222 370 12105 |

* Marked capacitance values are not CECC qualified

MEPCOPAL / PHILIPS SMD Trimmer Capacitors

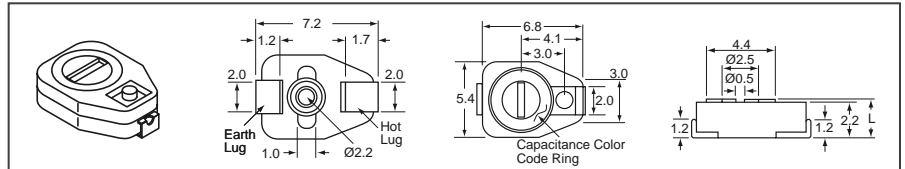
Film Dielectric Capacitors

DESCRIPTION:

SMD trimmer capacitors use a PTE Teflon film dielectric for excellent long-term stability and low temperature coefficient of capacitance. These units consist of brass rotors and stators separated by film dielectric and enclosed in a plastic case.

SPECIFICATIONS:

- Insulation Resistance between Stator and Rotor: 10,000MΩ min.
- Voltage Rating: 100 VDC
- Minimum Q @ 10MHz: 1000
- Temperature Coefficient: -100 ± 100 PPM/°C
- Soldering Maximum: 260°C for 5 seconds
- Operating Temperature Range: -40°C to +85°C
- Effective Angle of Rotation: 360°
- Operating Torque: 20 - 300 g.cm
- Ratio of Maximum to Minimum Torque: Within 3:1.



| Capacitance (pF) | Dim. L (mm) | Color Code | Digi-Key Part No. | Pricing | | | | Philips Part No. | | |
|------------------|-------------|------------|-------------------|-------------|------|-------|--------|------------------|--------|-------------------|
| | | | | 1 | 10 | 100 | 500 | | 1,000 | |
| 0.3 ±0.2 | 5-0.5/±3 | 2.2 | Orange | 2807S505-ND | 1.68 | 14.56 | 131.60 | 560.00 | 980.00 | 2807S0R505NHA4BAA |
| 0.4 ±0.2 | 10-1/±5 | 2.2 | Black | 2807S610-ND | 1.68 | 14.56 | 131.60 | 560.00 | 980.00 | 2807S0R610NHB4BAA |
| 0.5 ±0.3 | 15-0/±7 | 2.4 | Blue | 2807S815-ND | 1.68 | 14.56 | 131.60 | 560.00 | 980.00 | 2807S0R815NHC4BAA |
| 0.7 ±0.3 | 20-0/±10 | 2.55 | Green | 2807S020-ND | 1.68 | 14.56 | 131.60 | 560.00 | 980.00 | 2807S1R020NHD4BAA |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic® M-Series Polyester and Foil Capacitors

Features: High insulation resistance. Non-inductive construction; with tinned copper leads welded to the foils. High peak current capability. Solvent-resistant resin coated body.

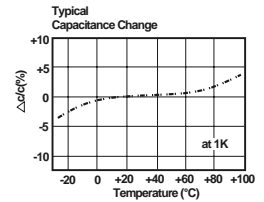
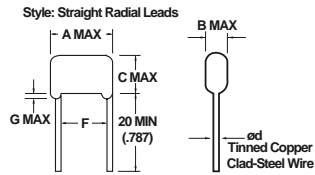
Applications: Blocking, by-pass and coupling of D.C. and signals to VHF range. Pulse, logic and timing circuits. Light-duty pulse forming networks. Filter and noise suppression circuits. General purpose usage.

Specifications: Reference standard: JIS C5113 Characteristic M. Operating temperature range: -40~+85°C. Construction: Polyester film, non-inductive, phenolic/epoxy resin coating, wax impregnation.

Electrical Specifications: Capacitance Tolerance: ±10% (K). Insulation Resistance: Greater than 10,000 MV. Dissipation Factor: Less than 1.0% at 1 KHZ. Dielectric Withstanding Voltage: 250% of rated voltage for 5 seconds. Operating Temperature: -40°C ~+80°C.

PANASONIC ECQ CROSS REFERENCE

Sprague: 225P, 418P; **Mepeco:** 713D1, 711D1, 719D1; **TWR:** 601PE, 601CPE; **Pactron:** PE, FM; **Secor:** MFDN, MFDR; **Roederstein:** KT1805, KT1806, KT1807, KT1808; **Wima:** FKS; **CSF Thompson:** ED (Dip); **Rubycon:** F2X, F2S, F3U; **Nichicon:** TDY; **Nissiei:** AMZ, AMX, AMR, AMM.



Panasonic/Matsushita Electric has announced a change in the Corporate Trademark. Present trademark: ▲. New trademark: Ⓜ.

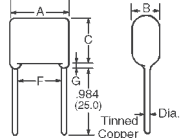
| WV DC | Cap. µF | Dimensions (mm) | | | | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. |
|----------|------------|-----------------|------|------|-------|-----|-----------|----------------------|---------|--------|----------|----------|-------------|-----------------------|
| | | A | B | C | F±125 | G | d | | 10 | 100 | 1,000 | 5,000 | 10,000 | |
| 100 | .056 | 16.0 | 6.0 | 13.5 | 11.5 | 3 | 0.6 | P1021-ND | 1.38 | 11.50 | 69.00 | 64.00/M | 60.00/M | ECQ-M1563KZ |
| | .001 | 9.0 | 5.0 | 9.0 | 5.5 | 2 | 0.6 | P1029-ND* | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2102KZ |
| | .0012 | 9.0 | 5.0 | 9.0 | 5.5 | 2 | 0.6 | P1030-ND | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2122KZ |
| | .0015 | 9.0 | 5.0 | 9.5 | 5.5 | 3 | 0.6 | P1031-ND* | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2152KZ |
| | .0018 | 9.0 | 5.5 | 9.5 | 5.5 | 3 | 0.6 | P1032-ND | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2182KZ |
| | .0022 | 9.0 | 6.0 | 10.0 | 5.5 | 3 | 0.6 | P1033-ND* | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2222KZ |
| | .0027 | 9.0 | 5.0 | 9.0 | 5.5 | 3 | 0.6 | P1034-ND | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2272KZ |
| | .0033 | 9.0 | 5.0 | 9.0 | 5.5 | 3 | 0.6 | P1035-ND* | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2332KZ |
| | .0039 | 12.0 | 5.5 | 9.5 | 7.5 | 3 | 0.6 | P1036-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2392KZ |
| | .0047 | 12.0 | 6.0 | 9.5 | 7.5 | 3 | 0.6 | P1037-ND* | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2472KZ |
| | .0056 | 12.0 | 6.0 | 9.5 | 7.5 | 3 | 0.6 | P1038-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2562KZ |
| | .0068 | 12.0 | 6.0 | 10.5 | 7.5 | 3 | 0.6 | P1039-ND* | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2682KZ |
| | .0082 | 14.0 | 5.5 | 10.0 | 9.5 | 3 | 0.6 | P1040-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M2822KZ |
| | .01 | 14.0 | 6.0 | 10.0 | 9.5 | 3 | 0.6 | P1041-ND* | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2103KZ |
| | .012 | 14.0 | 6.0 | 10.5 | 9.5 | 3 | 0.6 | P1042-ND | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2123KZ |
| | .015 | 14.0 | 6.5 | 11.5 | 9.5 | 3 | 0.6 | P1043-ND* | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2153KZ |
| | .018 | 17.0 | 5.5 | 10.0 | 12.5 | 3 | 0.6 | P1044-ND | 1.32 | 10.97 | 65.00 | 61.00/M | 57.00/M | ECQ-M2183KZ |
| | .022 | 17.0 | 5.5 | 11.0 | 12.5 | 3 | 0.6 | P1045-ND* | 1.44 | 12.04 | 72.00 | 67.00/M | 63.00/M | ECQ-M2233KZ |
| | .027 | 17.0 | 6.0 | 11.0 | 12.5 | 3 | 0.6 | P1046-ND | 1.48 | 12.31 | 73.00 | 68.00/M | 64.00/M | ECQ-M2273KZ |
| | .033 | 17.0 | 6.5 | 11.5 | 12.5 | 3 | 0.6 | P1047-ND* | 1.57 | 13.11 | 78.00 | 73.00/M | 68.00/M | ECQ-M2333KZ |
| .039 | 17.0 | 6.0 | 13.5 | 12.5 | 3 | 0.6 | P1048-ND | 1.64 | 13.64 | 81.00 | 76.00/M | 71.00/M | ECQ-M2393KZ | |
| .047 | 17.0 | 6.5 | 14.0 | 12.5 | 3 | 0.6 | P1049-ND* | 1.67 | 13.91 | 83.00 | 77.00/M | 72.00/M | ECQ-M2473KZ | |
| .056 | 20.0 | 6.5 | 14.0 | 14.5 | 3 | 0.6 | P1050-ND | 1.80 | 14.98 | 89.00 | 83.00/M | 78.00/M | ECQ-M2563KZ | |
| .068 | 20.0 | 7.0 | 14.5 | 14.5 | 3 | 0.6 | P1051-ND* | 1.89 | 15.78 | 94.00 | 88.00/M | 82.00/M | ECQ-M2683KZ | |
| .082 | 20.0 | 7.5 | 15.0 | 15.0 | 3 | 0.6 | P1052-ND | 1.93 | 16.05 | 96.00 | 89.00/M | 83.00/M | ECQ-M2823KZ | |
| .1 | 20.0 | 8.0 | 17.0 | 15.0 | 3 | 0.6 | P1053-ND* | 2.38 | 19.80 | 118.00 | 110.00/M | 103.00/M | ECQ-M2104KZ | |
| .12 | 20.0 | 8.5 | 17.5 | 15.0 | 3 | 0.8 | P1054-ND | 2.82 | 23.54 | 141.00 | 131.00/M | 122.00/M | ECQ-M2124KZ | |
| .15 | 20.0 | 9.5 | 18.5 | 15.0 | 3 | 0.8 | P1055-ND* | 2.79 | 23.27 | 139.00 | 129.00/M | 121.00/M | ECQ-M2154KZ | |
| .18 | 23.0 | 13.0 | 22.0 | 18.5 | 3 | 0.8 | P1056-ND | 4.21 | 35.04 | 209.00 | 195.00/M | 182.00/M | ECQ-M2184KZ | |
| .22 | 23.0 | 14.0 | 23.0 | 18.5 | 3 | 0.8 | P1057-ND* | 4.21 | 35.04 | 209.00 | 195.00/M | 182.00/M | ECQ-M2224KZ | |
| 200 | .001 | 11.0 | 5.5 | 9.5 | 6.5 | 2 | 0.6 | P1058-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4102KZ |
| | .0012 | 11.0 | 6.0 | 10.0 | 6.5 | 2 | 0.6 | P1059-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4122KZ |
| | .0015 | 11.0 | 6.0 | 10.0 | 6.5 | 2 | 0.6 | P1060-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4152KZ |
| | .0018 | 11.0 | 6.0 | 10.0 | 6.5 | 2 | 0.6 | P1061-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4182KZ |
| | .0022 | 11.0 | 6.5 | 10.5 | 6.5 | 2 | 0.6 | P1062-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4222KZ |
| | .0027 | 12.0 | 6.0 | 10.0 | 7.5 | 2 | 0.6 | P1063-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4272KZ |
| | .0033 | 12.0 | 6.5 | 10.5 | 7.5 | 2 | 0.6 | P1064-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4332KZ |
| | .0039 | 12.0 | 6.5 | 10.5 | 7.5 | 2 | 0.6 | P1065-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4392KZ |
| | .0047 | 14.0 | 6.0 | 10.0 | 9.5 | 2 | 0.6 | P1066-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4472KZ |
| | .0056 | 14.0 | 6.0 | 10.0 | 9.5 | 2 | 0.6 | P1067-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4562KZ |
| | .0068 | 14.0 | 6.5 | 10.5 | 9.5 | 3 | 0.6 | P1068-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4682KZ |
| | .0082 | 14.0 | 6.5 | 12.0 | 9.5 | 3 | 0.6 | P1069-ND | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4822KZ |
| | .01 | 14.0 | 7.0 | 12.5 | 9.5 | 3 | 0.6 | P1070-ND† | 1.35 | 11.24 | 67.00 | 62.00/M | 58.00/M | ECQ-M4103KZ |
| | .012 | 17.0 | 6.0 | 12.0 | 12.5 | 3 | 0.6 | P1071-ND | 1.44 | 12.04 | 72.00 | 67.00/M | 63.00/M | ECQ-M4123KZ |
| | .015 | 17.0 | 6.5 | 12.5 | 12.5 | 3 | 0.6 | P1072-ND† | 1.44 | 12.04 | 72.00 | 67.00/M | 63.00/M | ECQ-M4153KZ |
| | .018 | 17.0 | 7.0 | 13.0 | 12.5 | 3 | 0.6 | P1073-ND | 1.54 | 12.84 | 77.00 | 71.00/M | 67.00/M | ECQ-M4183KZ |
| | .022 | 17.0 | 7.5 | 13.5 | 12.5 | 3 | 0.6 | P1074-ND† | 1.57 | 13.11 | 78.00 | 73.00/M | 68.00/M | ECQ-M4223KZ |
| | .027 | 20.0 | 7.0 | 14.5 | 15.0 | 2 | 0.7 | P1075-ND | 1.73 | 14.45 | 86.00 | 80.00/M | 75.00/M | ECQ-M4273KZ |
| | .033 | 20.0 | 7.5 | 15.0 | 15.0 | 2 | 0.7 | P1076-ND† | 1.83 | 15.25 | 91.00 | 85.00/M | 79.00/M | ECQ-M4333KZ |
| | .039 | 20.0 | 8.5 | 16.0 | 15.0 | 3 | 0.7 | P1077-ND | 1.93 | 16.05 | 96.00 | 89.00/M | 83.00/M | ECQ-M4393KZ |
| .047 | 20.0 | 9.0 | 16.5 | 15.0 | 3 | 0.7 | P1078-ND† | 2.05 | 17.12 | 102.00 | 95.00/M | 89.00/M | ECQ-M4473KZ | |
| .056 | 23.0 | 8.5 | 15.5 | 18.0 | 3 | 0.7 | P1079-ND | 2.31 | 19.26 | 115.00 | 107.00/M | 100.00/M | ECQ-M4563KZ | |
| .068 | 23.0 | 9.0 | 16.5 | 18.0 | 3 | 0.7 | P1080-ND† | 2.50 | 20.87 | 125.00 | 116.00/M | 108.00/M | ECQ-M4683KZ | |
| .082 | 24.0 | 9.5 | 17.0 | 18.0 | 3 | 0.8 | P1081-ND | 2.76 | 23.01 | 137.00 | 128.00/M | 120.00/M | ECQ-M4823KZ | |
| .1 | 24.0 | 10.0 | 19.0 | 18.0 | 3 | 0.8 | P1082-ND† | 3.21 | 26.75 | 160.00 | 149.00/M | 139.00/M | ECQ-M4104KZ | |

*M200-KIT-ND Digi-Key® M-Series Capacitors Kit 200 Volt Assortment. 10 each of parts indicated. Notebook style storage case and bin storage guide included. \$29.95
 †M400-KIT-ND Digi-Key® M-Series Capacitors Kit 400 Volt Assortment. 10 each of parts indicated. Notebook style storage case and bin storage guide included. \$29.95

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic® E-Series Metallized Polyester Capacitors



GENERAL SPECIFICATIONS:
ELECTRICAL: Rated Voltage 100 V.D.C., 250 V.D.C., 400 V.D.C., 630 V.D.C. Capacitance Tolerance ±10% (K)
Insulation Resistance: Less than 0.33 μF: 9,000 MΩ; More than 0.33 μF: 3,000 MΩ. Dissipation Factor = 1.0% at 1kHz

Withstanding Voltage Rated Voltage X 1.5 (1 min.)
Operating Temperature -40°C ~ +85°C
PANASONIC ECO-E CROSS REFERENCES:
Sprague: DF/450P/451P/453P;
Westlake: 160/168/185/167/184/186;

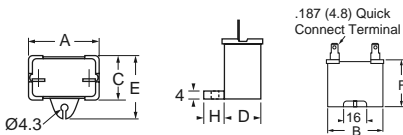
Meppco: 713A1/ 719A1/C280; **TRW:** X601PE/X601CPE;
Packtron: MF/RB; **Secor:** MMKS/MKMR/MMDR;
RIFA: PHE353/PHE354; **Roederstein:** MKT1818/MKT1822;
WIMA: MKS; **CSF Thompson:** MD/MC;
Siemens: B325X-XX; **Rubycon:** MC/MN; **Nichicon:** DDXM.

| Working Voltage | μF | Dimensions (mm) | | | | | Dia. | Digi-Key Part No. | Pricing | | | Panasonic Part No. | | |
|-----------------|------|-----------------|------|------|------|-----|------|-------------------|---------|-------|--------|--------------------|----------|-------------|
| | | A | B | C | F | G | | | 1 | 10 | 100 | | | |
| 100 | .12 | 12.0 | 4.0 | 7.4 | 10.0 | 1.0 | .6 | E1104-ND | 29 | 2.49 | 19.48 | 124.00 | 108.00M | ECQ-E1104KZ |
| | .15 | 12.0 | 4.5 | 7.4 | 10.0 | 1.0 | .6 | E1124-ND | 30 | 2.55 | 20.00 | 127.00 | 111.00M | ECQ-E1124KZ |
| | .18 | 12.0 | 4.5 | 9.5 | 10.0 | 1.0 | .6 | E1154-ND | 31 | 2.62 | 20.53 | 131.00 | 113.00M | ECQ-E1154KZ |
| | .22 | 12.0 | 4.5 | 10.0 | 10.0 | 1.0 | .6 | E1184-ND | 33 | 2.79 | 21.85 | 139.00 | 121.00M | ECQ-E1184KZ |
| | .27 | 17.0 | 4.5 | 10.5 | 10.0 | 1.0 | .6 | E1224-ND | 35 | 2.99 | 23.42 | 149.00 | 129.00M | ECQ-E1224KZ |
| | .33 | 17.0 | 4.5 | 11.0 | 15.0 | 1.0 | .6 | E1334-ND | 38 | 3.29 | 25.79 | 164.00 | 143.00M | ECQ-E1334KZ |
| | .39 | 17.0 | 5.0 | 10.0 | 15.0 | 1.0 | .6 | E1394-ND | 43 | 3.66 | 28.69 | 183.00 | 159.00M | ECQ-E1394KZ |
| | .47 | 17.0 | 5.5 | 11.0 | 15.0 | 1.0 | .6 | E1474-ND | 44 | 3.80 | 29.74 | 189.00 | 164.00M | ECQ-E1474KZ |
| | .56 | 17.0 | 6.5 | 11.5 | 15.0 | 1.0 | .6 | E1564-ND | 47 | 4.00 | 31.32 | 200.00 | 173.00M | ECQ-E1564KZ |
| | .68 | 17.0 | 7.0 | 12.0 | 15.0 | 1.0 | .8 | E1684-ND | 54 | 4.60 | 36.06 | 230.00 | 199.00M | ECQ-E1684KZ |
| 250 | .82 | 17.0 | 7.5 | 13.0 | 15.0 | 1.0 | .8 | E1824-ND | 61 | 5.24 | 41.06 | 262.00 | 227.00M | ECQ-E1824KZ |
| | 1.0 | 17.0 | 8.0 | 14.0 | 15.0 | 1.0 | .8 | E1105-ND | 67 | 5.75 | 45.01 | 287.00 | 249.00M | ECQ-E1105KZ |
| | 1.2 | 17.0 | 8.5 | 16.0 | 15.0 | 1.0 | .8 | E1125-ND | 73 | 6.25 | 49.06 | 312.00 | 271.00M | ECQ-E1125KZ |
| | 1.5 | 25.5 | 7.5 | 14.5 | 22.5 | 1.0 | .8 | E1155-ND | 84 | 7.22 | 56.59 | 360.00 | 313.00M | ECQ-E1155KZ |
| | 1.8 | 25.5 | 8.5 | 16.0 | 22.5 | 1.0 | .8 | E1185-ND | 98 | 8.43 | 66.06 | 421.00 | 365.00M | ECQ-E1185KZ |
| | 2.2 | 25.5 | 9.5 | 16.5 | 22.5 | 1.0 | .8 | E1225-ND | 1.09 | 9.37 | 73.43 | 468.00 | 406.00M | ECQ-E1225KZ |
| | 2.7 | 25.5 | 10.0 | 18.5 | 22.5 | 1.0 | .8 | E1275-ND | 1.24 | 10.62 | 83.17 | 530.00 | 460.00M | ECQ-E1275KZ |
| | 3.3 | 25.5 | 10.0 | 19.0 | 22.5 | 1.0 | .8 | E1335-ND | 1.41 | 12.06 | 94.49 | 602.00 | 522.00M | ECQ-E1335KZ |
| | 3.9 | 30.5 | 11.0 | 19.0 | 27.5 | 1.5 | .8 | E1395-ND | 1.79 | 15.36 | 120.28 | 766.00 | 665.00M | ECQ-E1395KZ |
| | 4.7 | 30.5 | 11.0 | 20.5 | 27.5 | 1.5 | .8 | E1475-ND | 2.03 | 17.40 | 136.34 | 868.00 | 753.00M | ECQ-E1475KZ |
| 400 | 5.6 | 30.5 | 12.5 | 21.0 | 27.5 | 1.5 | .8 | E1565-ND | 2.29 | 19.62 | 153.71 | 979.00 | 849.00M | ECQ-E1565KZ |
| | 6.8 | 30.5 | 13.0 | 24.0 | 27.5 | 1.5 | .8 | E1685-ND | 2.72 | 23.35 | 182.92 | 1165.00 | 1011.00M | ECQ-E1685KZ |
| | 8.2 | 30.5 | 15.0 | 25.0 | 27.5 | 1.5 | .8 | E1825-ND | 3.09 | 26.51 | 207.66 | 1323.00 | 1148.00M | ECQ-E1825KZ |
| | 10.0 | 30.5 | 16.0 | 27.0 | 27.5 | 1.5 | .8 | E1106-ND | 3.57 | 30.58 | 239.51 | 1526.00 | 1324.00M | ECQ-E1106KZ |
| | .01 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2203-ND* | 4.15 | 35.58 | 278.73 | 1776.00 | 1540.00M | ECQ-E2203KZ |
| | .012 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2123-ND* | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2123KZ |
| | .015 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2153-ND | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2153KZ |
| | .018 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2183-ND | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2183KZ |
| | .022 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2223-ND* | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2223KZ |
| | .027 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2273-ND | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2273KZ |
| 630 | .033 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2333-ND* | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2333KZ |
| | .039 | 12.5 | 5.0 | 8.5 | 10.0 | 1.0 | .6 | E2393-ND* | 26 | 2.25 | 17.63 | 112.00 | 97.00M | ECQ-E2393KZ |
| | .047 | 12.5 | 5.0 | 8.0 | 10.0 | 1.0 | .6 | E2473-ND* | 22 | 1.85 | 14.48 | 92.00 | 80.00M | ECQ-E2473KZ |
| | .056 | 12.5 | 5.5 | 8.5 | 10.0 | 1.0 | .6 | E2563-ND | 27 | 2.32 | 18.16 | 116.00 | 100.00M | ECQ-E2563KZ |
| | .068 | 12.5 | 5.5 | 8.5 | 10.0 | 1.0 | .6 | E2683-ND* | 28 | 2.39 | 18.69 | 119.00 | 103.00M | ECQ-E2683KZ |
| | .082 | 12.5 | 5.5 | 10.0 | 10.0 | 1.0 | .6 | E2823-ND | 29 | 2.49 | 19.48 | 124.00 | 108.00M | ECQ-E2823KZ |
| | .10 | 12.5 | 5.5 | 10.5 | 10.0 | 1.0 | .6 | E2104-ND* | 26 | 2.22 | 17.37 | 111.00 | 96.00M | ECQ-E2104KZ |
| | .12 | 17.5 | 5.5 | 10.0 | 15.0 | 1.0 | .8 | E2124-ND | 34 | 2.89 | 22.64 | 144.00 | 125.00M | ECQ-E2124KZ |
| | .15 | 17.5 | 6.0 | 10.5 | 15.0 | 1.0 | .8 | E2154-ND* | 36 | 3.12 | 24.84 | 156.00 | 135.00M | ECQ-E2154KZ |
| | .18 | 17.5 | 6.0 | 10.5 | 15.0 | 1.0 | .8 | E2184-ND | 38 | 3.29 | 25.79 | 164.00 | 143.00M | ECQ-E2184KZ |
| 1000 | .22 | 17.5 | 6.0 | 11.0 | 15.0 | 1.0 | .8 | E2224-ND* | 40 | 3.43 | 26.85 | 171.00 | 148.00M | ECQ-E2224KZ |
| | .27 | 23.0 | 6.0 | 10.5 | 20.0 | 1.0 | .8 | E2274-ND | 46 | 3.96 | 31.06 | 198.00 | 172.00M | ECQ-E2274KZ |
| | .33 | 23.0 | 6.0 | 11.0 | 20.0 | 1.0 | .8 | E2334-ND* | 51 | 4.33 | 33.95 | 216.00 | 188.00M | ECQ-E2334KZ |
| | .39 | 23.0 | 6.5 | 11.5 | 20.0 | 1.0 | .8 | E2394-ND | 54 | 4.67 | 36.58 | 233.00 | 202.00M | ECQ-E2394KZ |
| | .47 | 23.0 | 7.0 | 12.0 | 20.0 | 1.0 | .8 | E2474-ND* | 58 | 5.01 | 39.22 | 250.00 | 217.00M | ECQ-E2474KZ |
| | .56 | 23.0 | 7.5 | 13.0 | 20.0 | 1.0 | .8 | E2564-ND | 64 | 5.48 | 42.80 | 273.00 | 237.00M | ECQ-E2564KZ |
| | .68 | 23.0 | 8.5 | 14.0 | 20.0 | 1.0 | .8 | E2684-ND | 71 | 6.05 | 47.38 | 302.00 | 262.00M | ECQ-E2684KZ |
| | .82 | 31.0 | 7.5 | 13.0 | 27.5 | 1.0 | .8 | E2824-ND | 78 | 6.65 | 52.11 | 332.00 | 288.00M | ECQ-E2824KZ |
| | 1.0 | 31.0 | 8.5 | 14.0 | 27.5 | 1.0 | .8 | E2105-ND* | 82 | 7.06 | 55.27 | 352.00 | 305.00M | ECQ-E2105KZ |
| | 1.2 | 31.0 | 8.5 | 16.0 | 27.5 | 1.0 | .8 | E2125-ND* | 90 | 7.73 | 60.54 | 386.00 | 335.00M | ECQ-E2125KZ |
| 1000 | 1.5 | 31.0 | 9.5 | 17.0 | 27.5 | 1.0 | .8 | E2155-ND* | 1.16 | 9.95 | 77.91 | 496.00 | 431.00M | ECQ-E2155KZ |
| | 1.8 | 31.0 | 9.5 | 18.5 | 27.5 | 1.0 | .8 | E2185-ND | 1.40 | 12.00 | 93.96 | 599.00 | 519.00M | ECQ-E2185KZ |
| | 2.2 | 31.0 | 10.5 | 19.5 | 27.5 | 1.0 | .8 | E2225-ND* | 1.41 | 12.00 | 93.96 | 599.00 | 519.00M | ECQ-E2225KZ |
| | .01 | 14.0 | 5.0 | 8.5 | 10.5 | 1.0 | .6 | E4103-ND | .35 | 3.02 | 23.69 | 151.00 | 142.00M | ECQ-E4103KZ |
| | .012 | 14.0 | 5.5 | 8.5 | 10.5 | 1.0 | .6 | E4123-ND | .35 | 3.02 | 23.69 | 151.00 | 142.00M | ECQ-E4123KZ |
| | .015 | 14.0 | 5.0 | 8.5 | 10.5 | 1.0 | .6 | E4153-ND | .36 | 3.12 | 24.48 | 156.00 | 135.00M | ECQ-E4153KZ |
| | .018 | 14.0 | 5.5 | 8.5 | 10.5 | 1.0 | .6 | E4183-ND | .37 | 3.12 | 24.48 | 156.00 | 135.00M | ECQ-E4183KZ |
| | .022 | 14.0 | 5.5 | 10.0 | 10.5 | 1.0 | .6 | E4223-ND | .36 | 3.16 | 24.74 | 158.00 | 137.00M | ECQ-E4223KZ |
| | .027 | 14.0 | 5.5 | 10.5 | 10.5 | 1.0 | .6 | E4273-ND | .39 | 3.36 | 26.32 | 168.00 | 145.00M | ECQ-E4273KZ |
| | .033 | 14.0 | 6.0 | 11.0 | 10.5 | 1.0 | .6 | E4333-ND | .41 | 3.53 | 27.64 | 176.00 | 153.00M | ECQ-E4333KZ |
| 1000 | .039 | 14.0 | 6.5 | 11.5 | 10.5 | 1.0 | .6 | E4393-ND | .42 | 3.60 | 28.16 | 179.00 | 156.00M | ECQ-E4393KZ |
| | .047 | 14.0 | 7.0 | 12.0 | 10.5 | 1.0 | .6 | E4473-ND | .42 | 3.60 | 28.16 | 179.00 | 156.00M | ECQ-E4473KZ |
| | .056 | 17.0 | 6.5 | 11.0 | 13.5 | 1.0 | .6 | E4563-ND | .45 | 3.86 | 30.27 | 193.00 | 167.00M | ECQ-E4563KZ |
| | .068 | 17.0 | 7.0 | 12.0 | 13.5 | 1.0 | .6 | E4683-ND | .48 | 4.10 | 32.11 | 205.00 | 177.00M | ECQ-E4683KZ |
| | .82 | 17.0 | 7.5 | 12.5 | 13.5 | 1.0 | .6 | E4823-ND | .50 | 4.27 | 33.43 | 213.00 | 185.00M | ECQ-E4823KZ |
| | .10 | 17.0 | 8.0 | 14.5 | 13.5 | 1.0 | .6 | E4104-ND | .49 | 4.20 | 32.60 | 210.00 | 182.00M | ECQ-E4104KZ |
| | .12 | 17.0 | 8.5 | 15.5 | 13.5 | 1.0 | .6 | E4124-ND | .56 | 4.77 | 37.37 | 238.00 | 207.00M | ECQ-E4124KZ |
| | .15 | 17.0 | 9.0 | 16.5 | 13.5 | 1.0 | .6 | E4154-ND | .61 | 5.24 | 41.06 | 262.00 | 227.00M | ECQ-E4154KZ |
| | .18 | 17.0 | 10.0 | 17.0 | 13.5 | 1.0 | .8 | E4184-ND | .65 | 5.58 | 43.69 | 278.00 | 241.00M | ECQ-E4184KZ |
| | .22 | 24.5 | 8.5 | 15.5 | 20.5 | 1.0 | .8 | E4224-ND | .70 | 5.98 | 46.85 | 298.00 | 259.00M | ECQ-E4224KZ |
| 1000 | .27 | 24.5 | 9.0 | 16.5 | 20.5 | 1.0 | .8 | E4274-ND | .77 | 6.62 | 51.85 | 330.00 | 287.00M | ECQ-E4274KZ |
| | .33 | 24.5 | 9.5 | 17.0 | 20.5 | 1.0 | .8 | E4334-ND | .83 | 7.12 | 55.80 | 355.00 | 308.00M | ECQ-E4334KZ |
| | .39 | 29.5 | 9.5 | 16.5 | 25.5 | 1.5 | .8 | E4394-ND | .90 | 7.70 | 61.54 | 386.00 | 335.00M | ECQ-E4394KZ |
| | .47 | 29.5 | 10.0 | 17.5 | 25.5 | 1.5 | .8 | E4474-ND | .97 | 8.33 | 65.27 | 416.00 | 361.00M | ECQ-E4474KZ |
| | .56 | 29.5 | 11.0 | 18.0 | 25.5 | 1.5 | .8 | E4564-ND | 1.06 | 9.11 | 71.33 | 454.00 | 394.00M | ECQ-E4564KZ |
| | .68 | 29.5 | 12. | | | | | | | | | | | |

Panasonic Dry Film AC Capacitors

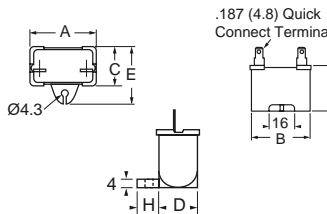
Stack Type

Panasonic's "stack type" construction offers significant reduction in case size (compared to oil-filled can type) with a built-in mounting foot. **Features:** • Compact size compared to oil-filled type capacitors. • 0.187 inch (4.75mm) terminals standard (0.250 inch [6.35mm] available). • 180, 200, 230 are standard voltages. • U.L. 810 (File # E76560) and C.S.A listed. (CSA-C22.2 No. 0-M91 File # LR99617) • JIS standard is available. (JIS C 4908). • Primary applications: refrigeration, motor run, lighting, etc. • Flame retardant plastic case is rated 94 V-0.



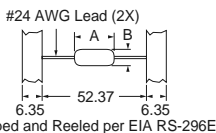
Wound Type

Panasonic's "wound type" construction brings dry film technology to higher voltage and microfarad applications, not available from our "stack type" construction. **Features:** • Replacement for typical oil-filled aluminum or plastic can capacitor. • Compact size—ideal where space is a premium. • Built-in mounting bracket eliminates need for mounting strap. • Meets U.L. 810 (File # E76560). • Primary applications: motor run, lighting, etc. • Terminals: 0.187 inch (4.75mm).



| Voltage VAC | Cap. µF | Dimensions | | | | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | |
|----------------------|---------|------------|------|------|------|------|------|-------------------|----------|------|-------|--------|--------------------|---------------|
| | | A | B | C | D | E | F | | 1 | 10 | 100 | 500 | | |
| Stack Type - SQ Case | | | | | | | | | | | | | | |
| 180 | 7.5 | 39.5 | 38.0 | 17.5 | 16.0 | 28.0 | 30.5 | 11.0 | P9400-ND | 3.38 | 27.00 | 229.50 | 1012.50 | JSU18X755AQF |
| 180 | 10 | 39.5 | 38.0 | 22.0 | 20.5 | 32.5 | 30.5 | 11.0 | P9401-ND | 4.03 | 32.20 | 273.70 | 1207.50 | JSU18X106AQJ |
| 180 | 12 | 39.5 | 38.0 | 22.0 | 20.5 | 34.2 | 32.0 | 13.0 | P9402-ND | 4.50 | 36.00 | 306.00 | 1350.00 | JSU18X126AQH |
| 180 | 15 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 32.0 | 11.0 | P9403-ND | 5.03 | 40.20 | 341.70 | 1507.50 | JSU18X156AQP |
| 180 | 20 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 41.0 | 11.0 | P9404-ND | 6.00 | 48.00 | 408.00 | 1800.00 | JSU18X206AQD |
| 210 | 10 | 39.5 | 38.0 | 22.0 | 20.5 | 34.2 | 32.0 | 13.0 | P9405-ND | 4.15 | 33.20 | 282.20 | 1245.00 | JSU21X106AQB |
| 210 | 12 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 32.0 | 11.0 | P9406-ND | 4.65 | 37.20 | 316.20 | 1395.00 | JSU21X126AQE |
| 210 | 15 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 32.0 | 11.0 | P9407-ND | 5.58 | 44.60 | 379.10 | 1672.50 | JSU21X156AQC |
| 230 | 10 | 39.5 | 38.0 | 22.0 | 20.5 | 34.2 | 32.0 | 13.0 | P9408-ND | 4.88 | 39.00 | 331.50 | 1462.50 | JSU23X106AQH |
| 230 | 12 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 32.0 | 11.0 | P9409-ND | 5.38 | 43.00 | 365.50 | 1612.50 | JSU23X126AQE |
| 230 | 15 | 39.5 | 38.0 | 26.7 | 25.2 | 37.0 | 41.0 | 11.0 | P9410-ND | 6.95 | 55.60 | 472.60 | 2085.00 | JSU23X156AQE |
| Wound Type - Q Case | | | | | | | | | | | | | | |
| 250 | 10 | 49.7 | 48.3 | 24.0 | 22.5 | 34.5 | 34.5 | 11.5 | P9411-ND | 6.68 | 53.40 | 453.90 | 2002.50 | SPU25X106AQSD |
| 250 | 12 | 50.0 | 48.5 | 26.7 | 25.3 | 37.5 | 38.0 | 11.5 | P9412-ND | 7.60 | 60.80 | 516.80 | 2280.00 | SPU25X126AQSA |
| 250 | 15 | 50.0 | 48.5 | 30.5 | 28.8 | 41.0 | 36.0 | 11.5 | P9413-ND | 8.98 | 71.80 | 610.30 | 2692.50 | SPU25X156AQSA |

PHILIPS Axial Ceramic Capacitors



Taped and Reeled per EIA RS-296E

| Size Code | A | B |
|-----------|------------|------------|
| 15 | 3.81mm Max | 2.54mm Max |
| 20 | 5.08mm Max | 3.05mm Max |
| 29 | 7.37mm Max | 3.81mm Max |

MECHANICAL PARAMETERS:

Terminal Strength: 2.2 Kg (5 lbs) Minimum pull to destruction, per Method B5 of RS-198-CII, Test Condition A.

Lead Materials: #24 AWG (.020" ±0.001") Tinned, Copper Clad Steel. 30% Conductivity. Temper: Soft; Tensile Strength: 65000 PSI Max.

Body: Conformally coated Epoxy.

ELECTRICAL PARAMETERS:

Capacitance: Measured @ 1MHz @ 1.0 ±0.2 VRMS @ 25°C for COG types with C ≤1000pF.

Measured @ Khz @ 1.0 ±0.2 VRMS @ 25°C for COG types with C >1000pF. Measured @ 1Khz @ 1.0 VRMS ±2 VRMS @ 25°C for X7R types. Measure @ 1Khz @ .0.5 VRMS ±1 VRMS @ 25°C for Z5U types.

Dissipation Factor: .1% Maximum for COG types, 2.5% Maximum for X7R types and 4.0% for Z5U types; measurement conditions are the same as for capacitance measurement.

Dielectric Strength: Parts are subjected for up to 5 seconds @ 25°C to 250% of Rated Voltage and will exhibit no evidence of breakdown.

Insulation Resistance: When measured @ 25°C and Rated Voltage, the following Minimum Values will be met: 100K MegΩ or 1000ΩF (whichever is less) for COG and X7R types, 10K MegΩ or 1000ΩF (whichever is less) for Z5U types.

Body Insulation: 500VDC Minimum, in accordance with RS-198-CII.

Operating Temperature Range: -55°C to +125°C for COG, -55°C to +125°C for X7R, -55°C to +85°C for Z5U

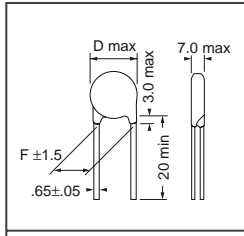
Packaging: Mono-Axial parts are supplied in tape and reel and form per EIA RS-296.

| Type | Volt. | Cap. | Cap. Tol. (%) | Size Code | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing | | Philips Part No. | |
|---------|--------|-------|---------------|-------------|-------------------|------------------|---------|-------------|-------------------|---------------------|----------|------------------|-----------------|
| | | | | | | 10 | 100 | 1000 | | 2,500 | 5,000 | | |
| COG | 100V | 10pf | ±5 | 15 | 1011PHCT-ND | 1.91 | 13.81 | 95.63 | 1011PHTR-ND | — | 63.75/M | 59.50/M | A100U15COGHVVWA |
| | | 15pf | ±5 | 15 | 1012PHCT-ND | 1.91 | 13.81 | 95.63 | 1012PHTR-ND | — | 63.75/M | 59.50/M | A150U15COGHVVWA |
| | | 18pf | ±5 | 15 | 1013PHCT-ND | 1.91 | 13.81 | 95.63 | 1013PHTR-ND | — | 63.75/M | 59.50/M | A180U15COGHVVWA |
| | | 22pf | ±5 | 15 | 1014PHCT-ND | 1.91 | 13.81 | 95.63 | 1014PHTR-ND | — | 63.75/M | 59.50/M | A220U15COGHVVWA |
| | | 27pf | ±5 | 15 | 1015PHCT-ND | 1.91 | 13.81 | 95.63 | 1015PHTR-ND | — | 63.75/M | 59.50/M | A270U15COGHVVWA |
| | | 33pf | ±5 | 15 | 1016PHCT-ND | 1.91 | 13.81 | 95.63 | 1016PHTR-ND | — | 63.75/M | 59.50/M | A330U15COGHVVWA |
| | | 47pf | ±5 | 15 | 1017PHCT-ND | 1.95 | 14.11 | 97.65 | 1017PHTR-ND | — | 65.10/M | 60.76/M | A470U15COGHVVWA |
| | | 68pf | ±5 | 15 | 1018PHCT-ND | 1.99 | 14.37 | 99.45 | 1018PHTR-ND | — | 66.30/M | 61.88/M | A680U15COGHVVWA |
| | | 82pf | ±5 | 15 | 1019PHCT-ND | 2.03 | 14.63 | 101.25 | 1019PHTR-ND | — | 67.50/M | 63.00/M | A820U15COGHVVWA |
| | | 100pf | ±5 | 15 | 1001PHCT-ND | 2.03 | 14.63 | 101.25 | 1001PHTR-ND | — | 67.50/M | 63.00/M | A101U15COGFVWA |
| | 150pf | ±5 | 15 | 1002PHCT-ND | 2.14 | 15.47 | 107.10 | 1002PHTR-ND | — | 71.40/M | 66.64/M | A151U15COGFVWA | |
| | 180pf | ±5 | 15 | 1003PHCT-ND | 2.14 | 15.47 | 107.10 | 1003PHTR-ND | — | 71.40/M | 66.64/M | A181U15COGFVWA | |
| | 220pf | ±5 | 15 | 1004PHCT-ND | 2.14 | 15.47 | 107.10 | 1004PHTR-ND | — | 71.40/M | 66.64/M | A221U15COGFVWA | |
| | 330pf | ±5 | 15 | 1005PHCT-ND | 2.14 | 15.47 | 107.10 | 1005PHTR-ND | — | 71.40/M | 66.64/M | A331U15COGFVWA | |
| | 390pf | ±5 | 15 | 1006PHCT-ND | 2.14 | 15.47 | 107.10 | 1006PHTR-ND | — | 71.40/M | 66.64/M | A391U15COGFVWA | |
| | 470pf | ±5 | 15 | 1007PHCT-ND | 2.14 | 15.47 | 107.10 | 1007PHTR-ND | — | 71.40/M | 66.64/M | A471U15COGFVWA | |
| | 560pf | ±5 | 15 | 1008PHCT-ND | 2.14 | 15.47 | 107.10 | 1008PHTR-ND | — | 71.40/M | 66.64/M | A561U15COGFVWA | |
| | 680pf | ±5 | 15 | 1009PHCT-ND | 2.14 | 15.47 | 107.10 | 1009PHTR-ND | — | 71.40/M | 66.64/M | A681U15COGFVWA | |
| | 1000pf | ±5 | 15 | 1010PHCT-ND | 2.37 | 17.13 | 118.58 | 1010PHTR-ND | — | 79.05/M | 73.78/M | A102U15COGFVWA | |
| | X7R | 100V | 220pf | ±10 | 15 | 1110PHCT-ND | 1.84 | 13.26 | 91.80 | 1110PHTR-ND | — | 61.20/M | 57.12/M |
| 270pf | | | ±10 | 15 | 1111PHCT-ND | 1.84 | 13.26 | 91.80 | 1111PHTR-ND | — | 61.20/M | 57.12/M | A271K15X7RHVVWA |
| 330pf | | | ±10 | 15 | 1112PHCT-ND | 1.84 | 13.26 | 91.80 | 1112PHTR-ND | — | 61.20/M | 57.12/M | A331K15X7RHVVWA |
| 470pf | | | ±10 | 15 | 1113PHCT-ND | 1.84 | 13.26 | 91.80 | 1113PHTR-ND | — | 61.20/M | 57.12/M | A471K15X7RHVVWA |
| 680pf | | | ±10 | 15 | 1114PHCT-ND | 1.84 | 13.26 | 91.80 | 1114PHTR-ND | — | 61.20/M | 57.12/M | A681K15X7RHVVWA |
| 820pf | | | ±10 | 15 | 1115PHCT-ND | 1.84 | 13.26 | 91.80 | 1115PHTR-ND | — | 61.20/M | 57.12/M | A821K15X7RHVVWA |
| .001µf | | | ±10 | 15 | 1116PHCT-ND | 1.84 | 13.26 | 91.80 | 1116PHTR-ND | — | 61.20/M | 57.12/M | A102K15X7RHVVWA |
| .0012µf | | | ±10 | 15 | 1117PHCT-ND | 1.84 | 13.26 | 91.80 | 1117PHTR-ND | — | 61.20/M | 57.12/M | A122K15X7RHVVWA |
| .0015µf | | | ±10 | 15 | 1118PHCT-ND | 1.84 | 13.26 | 91.80 | 1118PHTR-ND | — | 61.20/M | 57.12/M | A152K15X7RHVVWA |
| .0022µf | | | ±10 | 15 | 1119PHCT-ND | 1.84 | 13.26 | 91.80 | 1119PHTR-ND | — | 61.20/M | 57.12/M | A222K15X7RHVVWA |
| .0033µf | | ±10 | 15 | 1101PHCT-ND | 1.87 | 13.52 | 93.60 | 1101PHTR-ND | — | 62.40/M | 58.24/M | A332K15X7RFVWA | |
| .0047µf | | ±10 | 15 | 1102PHCT-ND | 1.87 | 13.52 | 93.60 | 1102PHTR-ND | — | 62.40/M | 58.24/M | A472K15X7RFVWA | |
| .01µf | | ±10 | 15 | 1103PHCT-ND | 1.19 | 8.58 | 59.40 | 1103PHTR-ND | — | 39.60/M | 36.96/M | A103K15X7RFVWA | |
| .015µf | | ±10 | 15 | 1104PHCT-ND | 2.14 | 15.47 | 107.10 | 1104PHTR-ND | — | 71.40/M | 66.64/M | A153K15X7RFVWA | |
| .022µf | | ±10 | 15 | 1105PHCT-ND | 2.37 | 17.13 | 118.58 | 1105PHTR-ND | — | 79.05/M | 73.78/M | A223K15X7RFVWA | |
| .033µf | | ±10 | 15 | 1106PHCT-ND | 2.57 | 18.53 | 128.25 | 1106PHTR-ND | — | 85.50/M | 79.80/M | A333K15X7RFVWA | |
| .047µf | | ±10 | 20 | 1107PHCT-ND | 2.64 | 19.08 | 132.08 | 1107PHTR-ND | — | 88.05/M | 82.18/M | A473K20X7RFVWA | |
| .056µf | | ±10 | 20 | 1108PHCT-ND | 2.87 | 20.74 | 143.55 | 1108PHTR-ND | — | 95.70/M | 89.32/M | A563K20S7RFVWA | |
| .1µf | | ±10 | 29 | 1109PHCT-ND | 3.44 | 24.86 | 172.13 | 1109PHTR-ND | — | 114.75/M | 107.10/M | A104K29X7RFVWA | |
| Z5U | | 50V | .01µf | ±20 | 15 | 1206PHCT-ND | 1.15 | 8.29 | 57.38 | 1206PHTR-ND | — | 38.25/M | 35.70/M |
| | .01µf | | +80, -20 | 15 | 1201PHCT-ND | 1.15 | 8.29 | 57.38 | 1201PHTR-ND | — | 38.25/M | 35.70/M | A103Z15Z5UFVWA |
| | .022µf | | ±20 | 15 | 1207PHCT-ND | 1.38 | 9.95 | 68.85 | 1207PHTR-ND | — | 45.90/M | 42.84/M | A223M15Z5UFVWA |
| | .033µf | | ±20 | 15 | 1208PHCT-ND | 1.38 | 9.95 | 68.85 | 1208PHTR-ND | — | 45.90/M | 42.84/M | A333M15Z5UFVWA |
| | .047µf | | ±20 | 15 | 1209PHCT-ND | 1.45 | 10.50 | 72.68 | 1209PHTR-ND | — | 48.45/M | 45.22/M | A473M15Z5UFVWA |
| | .047µf | | +80, -20 | 15 | 1202PHCT-ND | 1.38 | 9.95 | 68.85 | 1202PHTR-ND | — | 45.90/M | 42.84/M | A473Z15Z5UFVWA |
| | .1µf | | ±20 | 15 | 1210PHCT-ND | 1.15 | 8.29 | 57.38 | 1210PHTR-ND | — | 38.25/M | 35.70/M | A104M15Z5UFVWA |
| | .1µf | | +80, -20 | 15 | 1203PHCT-ND | 1.15 | 8.29 | 57.38 | 1203PHTR-ND | — | 38.25/M | 35.70/M | A104Z15Z5UFVWA |
| | .22µf | | ±20 | 20 | 1211PHCT-ND | 3.02 | 21.84 | 151.20 | 1211PHTR-ND | — | 100.80/M | 94.08/M | A224M20Z5UFVWA |
| | .22µf | | +80, -20 | 20 | 1204PHCT-ND | 2.95 | 21.29 | 147.38 | 1204PHTR-ND | — | 98.25/M | 91.70/M | A224Z20Z5UFVWA |
| | .27µf | | +80, -20 | 29 | 1212PHCT-ND | 2.95 | 21.29 | 147.38 | 1212PHTR-ND | — | 98.25/M | 91.70/M | A274Z29Z5UFVWA |
| | .33µf | | ±20 | 29 | 1213PHCT-ND | 3.06 | 22.10 | 153.00 | 1213PHTR-ND | 112.88/M | 102.00/M | 95.20/M | A334M29Z5UFVWA |
| | .33µf | | +80, -20 | 29 | 1205PHCT-ND | 2.98 | 21.55 | 149.18 | 1205PHTR-ND | 92.82/M | 86.19/M | — | A334Z29Z5UFVWA |
| | .47µf | | +80, -20 | 29 | 1214PHCT-ND | 5.70 | 41.18</ | | | | | | |

Panasonic®

Ceramic Disc Capacitors for Safety Regulations – Type RS

(IEC384-14 2nd Ed. Sub-Class Y2/X1)



The Type RS is recognized by UL and CSA (UL1414 and CSA C22.2 No. 1).

SPECIFICATIONS:

- Operating Temperature Range: -25 to 85°C
- Rated Voltage:

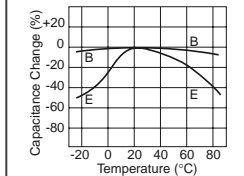
| Applicable Standards | Rated Voltage |
|--|---------------|
| UL, CSA | 125 VAC |
| IEC 384-14 2nd Ed. (EN 132 400) Sub-Class Y2 | 250 VAC |
| IEC 384-14 2nd Ed. (EN 132 400) Sub-Class X1 | 400 VAC |
| IEC 65 5th Ed.: 1985 BSI (BS415: 1990), VDE 560-2, SEV1016 | 400 VAC |

- Dielectric Withstanding Voltage: 2600 VAC (50/60 Hz) for 1 minute
- Capacitance: Within the tolerance, when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Dissipation Factor (tan δ): 0.025 max., when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Insulation Resistance: 10,000 MΩ min. at 500 VDC and 1 minute electrification

Temperature Characteristics:

| Temp. Char. | Cap. Change | Temp. Range |
|-------------|---------------|-------------|
| B/Y5P/2B4 | ±10% Max. | -25 to 85°C |
| E/Y5U/2E4 | +20/-55% Max. | -25 to 85°C |

The reference temperature: 20°C

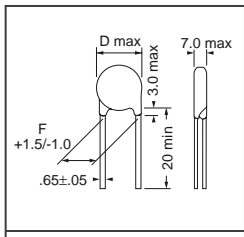


| Nominal Cap. (pF) | Cap. Tol. (%) | Temp. Char. | Dimensions (mm) | | Digi-Key Part No. | Pricing | | | Panasonic Part No. |
|-------------------|---------------|-------------|-----------------|------|-------------------|---------|------|-------|--------------------|
| | | | D | F | | 5 | 10 | 100 | |
| 100 | ±20 | B | 9.5 | 7.5 | P10430-ND | 1.39 | 2.58 | 21.87 | ECK-DRS101MBY |
| 150 | ±20 | B | 9.5 | 7.5 | P10431-ND | 1.39 | 2.58 | 21.87 | ECK-DRS151MBY |
| 220 | ±20 | B | 9.5 | 7.5 | P10432-ND | 1.39 | 2.58 | 21.87 | ECK-DRS221MBY |
| 470 | ±20 | B | 9.5 | 7.5 | P10433-ND | 1.39 | 2.58 | 21.87 | ECK-DRS471MBY |
| 1000 | ±20 | B | 10.0 | 7.5 | P10434-ND | 1.69 | 3.13 | 26.49 | ECK-DRS102MBY |
| 1500 | ±20 | E | 10.0 | 7.5 | P10435-ND | 2.12 | 3.93 | 33.26 | ECK-DRS152MEY |
| 2200 | ±20 | E | 10.5 | 7.5 | P10439-ND | 2.37 | 4.40 | 37.27 | ECK-DRS222MEY |
| 3300 | ±20 | E | 12.5 | 7.5 | P10440-ND | 2.72 | 5.06 | 42.81 | ECK-DRS332MEY |
| 4700 | ±20 | E | 16.5 | 10.0 | P10441-ND | 3.14 | 5.82 | 49.28 | ECK-DRS472MEY |

Panasonic®

Ceramic Disc Capacitors for Safety Regulations – Type NS-A

(IEC384-14 2nd Ed. Sub-Class Y1)



Class II Equipment. The Type NS-A is recognized by UL and CSA (UL1414/250 VAC and CSA C22.2 No. 1).

SPECIFICATIONS:

- Operating Temperature Range: -25 to 85°C
- Rated Voltage:

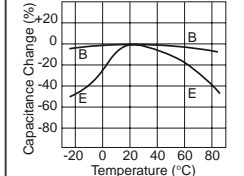
| Applicable Standards | Rated Voltage |
|--|---------------|
| UL | 250 VAC |
| CSA | 125 VAC |
| IEC 384-14 2nd Ed. (EN 132 400) Sub-Class Y1 | 250 VAC |
| SEV 1016 (3300 to 4700 pF) | 250 VAC |
| BSI (BS415: 1990), VDE 560-2, SEV1016 (100 to 2200 pF) | 400 VAC |

- Dielectric Withstanding Voltage: 4000 VAC (50/60 Hz) for 1 minute
- Capacitance: Within the tolerance, when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Dissipation Factor (tan δ): 0.025 max., when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Insulation Resistance: 10,000 MΩ min. at 500 VDC and 1 minute electrification

Temperature Characteristics:

| Temp. Char. | Cap. Change | Temp. Range |
|-------------|---------------|-------------|
| B/Y5P/2B4 | ±10% Max. | -25 to 85°C |
| E/Y5U/2E4 | +20/-55% Max. | -25 to 85°C |

The reference temperature: 20°C

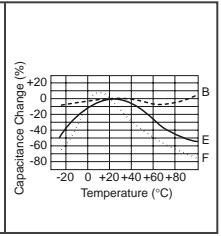
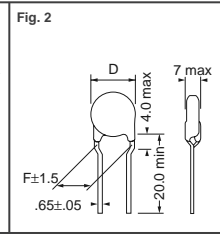
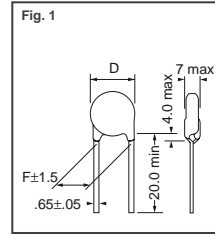


| Nominal Cap. (pF) | Cap. Tol. (%) | Temp. Char. | Dimensions (mm) | | Digi-Key Part No. | Pricing | | | Panasonic Part No. |
|-------------------|---------------|-------------|-----------------|------|-------------------|---------|------|-------|--------------------|
| | | | D | F | | 5 | 10 | 100 | |
| 100 | ±20 | B | 11.0 | 10.0 | P10446-ND | 2.12 | 3.93 | 33.26 | ECK-DNA101MB |
| 150 | ±20 | B | 11.0 | 10.0 | P10447-ND | 2.12 | 3.93 | 33.26 | ECK-DNA151MB |
| 220 | ±20 | B | 11.0 | 10.0 | P10448-ND | 2.39 | 4.44 | 37.58 | ECK-DNA221MB |
| 470 | ±20 | B | 11.0 | 10.0 | P10449-ND | 2.39 | 4.44 | 37.58 | ECK-DNA471MB |
| 1000 | ±20 | B | 11.0 | 10.0 | P10450-ND | 2.67 | 4.95 | 41.89 | ECK-DNA102MB |
| 1500 | ±20 | E | 11.0 | 10.0 | P10451-ND | 2.94 | 5.46 | 46.20 | ECK-DNA152ME |
| 2200 | ±20 | E | 11.0 | 10.0 | P10452-ND | 3.33 | 6.19 | 52.36 | ECK-DNA222ME |
| 3300 | ±20 | E | 13.0 | 10.0 | P10453-ND | 3.84 | 7.13 | 60.37 | ECK-DNA332ME |
| 4700 | ±20 | E | 16.0 | 10.0 | P10454-ND | 4.31 | 8.01 | 67.76 | ECK-DNA472ME |

Panasonic®

Ceramic Disc Capacitors for Safety Regulations – Type TS

(IEC384-14 2nd Ed. Sub-Class Y2/X1)



Approved by UL and CSA for rated voltage 250 VAC.

RECOMMENDED APPLICATIONS:

Noise suppression circuit for switching power supply.

SPECIFICATIONS:

- Operating Temperature Range: -25 to 125°C
- Rated Voltage: 250 VAC
- Voltage Proof: 2600 VAC for 1 minute
- Capacitance: Within the tolerance, when measured at 1 kHz±20%, 1 Vrms and 20°C

- Dissipation Factor (tan δ): 0.025 max., when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Insulation Resistance: 10,000 MΩ min. at 500 VDC and 1 minute electrification
- Temperature Characteristics:

| Temp. Char. | Cap. Change | Temp. Range |
|-------------|---------------|-------------|
| B/Y5P/2B4 | ±10% Max. | -25 to 85°C |
| E/Y5U/2E4 | +20/-55% Max. | -25 to 85°C |
| F/Y5U/2F4 | +30/-80% Max. | -25 to 85°C |

The reference temperature: 20°C

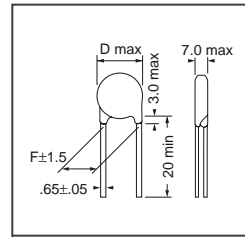
| Fig. | Nominal Cap. (pF) | Cap. Tol. (%) | Temp. Char. | Dimensions (mm) | | Digi-Key Part No. | Pricing | | | Panasonic Part No. |
|------|-------------------|---------------|-------------|-----------------|------|-------------------|---------|------|-------|--------------------|
| | | | | D* | F | | 5 | 10 | 100 | |
| 1 | 100 | ±20 | B | 7.0 | 7.5 | P10455-ND | .88 | 1.64 | 13.86 | ECK-ATS101MB |
| 1 | 150 | ±20 | B | 7.0 | 7.5 | P10456-ND | .88 | 1.64 | 13.86 | ECK-ATS151MB |
| 1 | 220 | ±20 | B | 7.0 | 7.5 | P10457-ND | .88 | 1.64 | 13.86 | ECK-ATS221MB |
| 1 | 330 | ±20 | B | 7.0 | 7.5 | P10458-ND | .88 | 1.64 | 13.86 | ECK-ATS331MB |
| 1 | 470 | ±20 | B | 7.0 | 7.5 | P10459-ND | .88 | 1.64 | 13.86 | ECK-ATS471MB |
| 1 | 680 | ±20 | B | 7.0 | 7.5 | P10460-ND | .88 | 1.64 | 13.86 | ECK-ATS681MB |
| 1 | 1000 | ±20 | E | 7.0 | 7.5 | P10461-ND | .88 | 1.64 | 13.86 | ECK-ATS102ME |
| 1 | 1500 | ±20 | E | 8.0 | 7.5 | P10462-ND | 1.10 | 2.04 | 17.25 | ECK-ATS152ME |
| 1 | 2200 | ±20 | E | 9.0 | 7.5 | P10463-ND | 1.14 | 2.11 | 17.86 | ECK-ATS222ME |
| 2 | 3300 | ±20 | E | 11.5 | 7.5 | P10464-ND | 1.35 | 2.51 | 21.25 | ECK-ATS332ME |
| 1 | 4700 | ±20 | E | 14.0 | 10.0 | P10465-ND | 1.63 | 3.02 | 25.56 | ECK-ATS472ME |
| 2 | 4700 | ±20 | F | 11.5 | 7.5 | P10466-ND | 1.35 | 2.51 | 21.25 | ECK-ATS472MF |
| 1 | 10000 | ±20 | F | 16.0† | 10.0 | P10467-ND | 2.31 | 4.30 | 36.34 | ECK-ATS103MF |
| 2 | 4700 | ±20 | E | 14.0 | 7.5 | P10468-ND | 2.31 | 4.30 | 36.34 | ECK-ATS472ME6 |
| 2 | 10000 | ±20 | F | 16.0† | 7.5 | P10469-ND | 2.31 | 4.30 | 36.34 | ECK-ATS103MF6 |

* D is ± 1.0 unless otherwise noted. † D is ± 1.5.

Panasonic®

Ceramic Disc Capacitors for Safety Regulations – Type NS-B

(IEC384-14 2nd Ed. Sub-Class Y2)



Class I Equipment. The Type NS-B is recognized by UL and CSA (UL1414/250 VAC and CSA C22.2 No. 1).

SPECIFICATIONS:

- Operating Temperature Range: -25 to 85°C
- Rated Voltage:

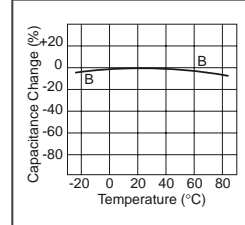
| Applicable Standards | Rated Voltage |
|--|---------------|
| UL | 250 VAC |
| CSA | 125 VAC |
| IEC 384-14 2nd Ed. (EN 132 400) Sub-Class Y2 | 250 VAC |
| SEV 1016 (3300 to 4700 pF) | 250 VAC |
| BSI (BS415: 1990), VDE 560-2, SEV1016 (100 to 2200 pF) | 400 VAC |

- Dielectric Withstanding Voltage: 2600 VAC (50/60 Hz) for 1 minute
- Capacitance: Within the tolerance, when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Dissipation Factor (tan δ): 0.025 max., when measured at 1 kHz ± 20%, 1 Vrms and 20°C
- Insulation Resistance: 10,000 MΩ min. at 500 VDC and 1 minute electrification

Temperature Characteristics:

| Temp. Char. | Cap. Change | Temp. Range |
|-------------|---------------|-------------|
| B/Y5P/2B4 | ±10% Max. | -25 to 85°C |
| E/Y5U/2E4 | +20/-55% Max. | -25 to 85°C |

The reference temperature: 20°C



| Nominal Cap. (pF) | Cap. Tol. (%) | Temp. Char. | Dimensions (mm) | | Digi-Key Part No. | Pricing | | | Panasonic Part No. |
|-------------------|---------------|-------------|-----------------|-----|-------------------|---------|------|-------|--------------------|
| | | | D | F | | 5 | 10 | 100 | |
| 100 | ±20 | B | 10.5 | 7.5 | P10442-ND | 1.23 | 2.29 | 19.40 | ECK-DNB101MB |
| 150 | ±20 | B | 10.5 | 7.5 | P10443-ND | 1.25 | 2.33 | 19.71 | ECK-DNB151MB |
| 220 | ±20 | B | 10.5 | 7.5 | P10445-ND | 1.25 | 2.33 | 19.71 | ECK-DNB221MB |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic Interference Suppressor Capacitors X-Y Series-Metallized Film

Electrical Specifications:

• Operating Temperature Range: -40°C to +85°C (-40°C to +100°C for ECQ-UG) • Capacitance Tolerance: ±20% (M) • Dissipation Factor: Less than 1.0% (at 25°C 1 kHz)

ECQ-UN: Rated Voltage: 250VAC. Standards: UL (UL 1414); Across-The-Line Capacitor. Antenna Coupling and Line-By-Pass Components. File No. E62674. CSA (CSA C22.2); No. 0-M1982, No. 1-M1981. Across-The-Line, antenna-isolation and line-by-pass capacitor. File No. LR35752. VDE (VED0565-1); class X2 File No. 4811.6-4670-1041. SEV (SEV1055); class X, Ref No. 89, 5 50251.05. DEMKO (AFSNIT21); class X2, Ref No. 70726EC. SEMKO (SS4430414); class X2 Ref No. 8602146. NEMKO (NEMKO); class X2 Ref No. E 25082 02. EI (E384-14); class X2, Ref No. 062521 01-14(0.001-0.012µF), Reg No. 062522 01-15(0.015-0.22µF).

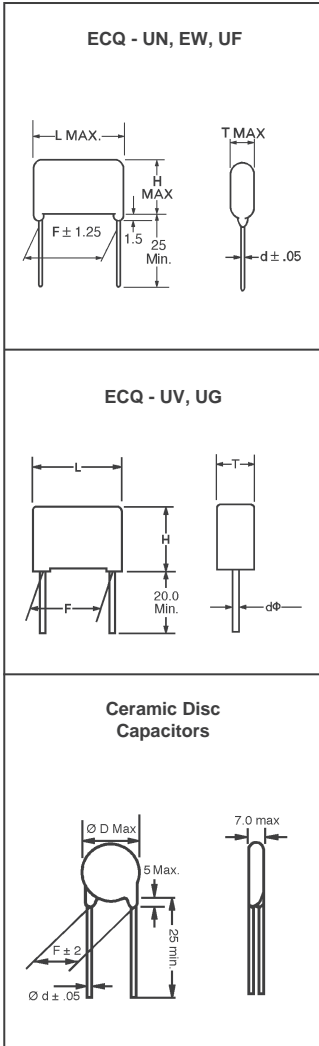
ECQ-EW: Rated Voltage: 250VAC. Standards: UL (UL 1283); Electromagnetic Interference Filters Class X File No. E79502. SEMKO (SS 443 04 14); class X2 Ref No. 8932009. DEMKO (AFSNIT21); class X2 Ref No. 94911EC. VDE (VDE0565-1); class X2 File No. 4811.6-4670-1035.

ECQ-UF: Rated Voltage: 250VAC Standards: SEMKO (SEMKO 101) Reg. No. 61-88271/1-4. DEMKO (AFSNIT 21); class Y/X, Ref No. 61254EC. VDE (VDE 0565-1) class Y/X2, File No. 4811-6-1-4670-1032. BSI (BS415); certified No. 6026. UL (UL1414) Across-The-Line Capacitor & Antenna-Coupling and Line-by-pass. File No. E62674. CSA (CSA C22.2) No. 0-M1982, No.1-M1981, Across-The-Line, Antenna-Isolation & Line-by-Pass Capacitor, File No. LR35752.

ECQ-UV: Rated Voltage: 250VAC Standards: UL (UL1414); Across-The-Line Capacitors. Antenna-Coupling and Line-by-Pass

Components. File No. E62674. (UL1283); Electromagnetic Interference Filters, File No. E79502. CSA (CSA C22.2); Across-The-Line, Antenna-Isolation and Line-by-Pass Capacitor, No. 0-M1982, No. 1-M1981. SEMKO (SS 443 04 14); Class X2/Y Ref No. 8904123. DEMKO (AFSNIT21); Class X2/Y Ref No. 89275EC. NEMKO (NEMKO 132); Class X2 Ref No. 37892, Class Y Ref No. 37894. EI (IEC 38414); Class X2/Y Ref No. 110918-01-02. VDE (VDE 0565-1); Class X2/Y File No. 4811.6-4670-1070. SEV (SEV 1055); Class X ref No. 88, 1 00318,01.

ECQ-UG: Rated Voltage: 275VAC Standards: UL (UL1414); Across-The-Line Capacitors. Antenna-Coupling and Line-by-Pass Components. CSA (Standard C22.2 No. I-94); Across-The-Line Capacitors. Antenna-Isolation and Line-by-Pass Capacitors. SEMKO, DEMKO, NEMKO, FLUKO, VDE, SEV; IEC384-14, 1993, EN132400, Class X2.



| Voltage (VAC) | Cap. (µF) | Dimensions (mm) | | | | | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. |
|---------------|-----------|-----------------|------|-------|------|-----------|-------------------|---------|--------|---------|-----------|---------------|--------------|--------------------|
| | | L | T | H | F | d | | 1 | 10 | 100 | 1,000 | 5,000 | | |
| 250 | 0.0047 | 17.0 | 6.5 | 13.5 | 13.5 | 0.6 | P4600-ND† | .78 | 6.72 | 56.00 | 334.00 | 311.00/M | ECQ-U2A472M | |
| | 0.01 | 17.0 | 7.0 | 14.0 | 13.5 | 0.6 | P4601-ND† | .78 | 6.72 | 56.00 | 334.00 | 311.00/M | ECQ-U2A103M | |
| | 0.047 | 25.5 | 7.0 | 14.0 | 21.5 | 0.6 | P4602-ND† | .99 | 8.50 | 70.84 | 423.00 | 394.00/M | ECQ-U2A473M | |
| | 0.1 | 30.5 | 7.5 | 17.01 | 26.5 | 0.8 | P4603-ND† | 1.22 | 10.42 | 86.80 | 518.00 | 482.00/M | ECQ-U2A104M | |
| | 0.047 | 17.0 | 7.5 | 13.0 | 13.5 | 0.6 | P4604-ND† | .67 | 5.75 | 47.88 | 286.00 | 266.00/M | ECQ-E2A473M | |
| | 0.1 | 24.0 | 8.0 | 13.5 | 20.5 | 0.8 | P4605-ND† | .80 | 6.82 | 56.84 | 339.00 | 316.00/M | ECQ-E2A104M | |
| | 0.22 | 24.0 | 10.5 | 17.5 | 20.5 | 0.8 | P4606-ND† | 1.13 | 9.88 | 80.84 | 481.00 | 448.00/M | ECQ-E2A224M | |
| | 0.47 | 29.0 | 13.0 | 20.5 | 25.5 | 0.8 | P4607-ND† | 1.51 | 12.90 | 107.52 | 642.00 | 597.00/M | ECQ-E2A474M | |
| | 0.0047 | 20.0 | 7.0 | 14.5 | 16.5 | 0.6 | P4608-ND† | .76 | 6.52 | 54.32 | 324.00 | 302.00/M | ECQ-U2A472MF | |
| | 0.01 | 23.0 | 7.5 | 15.0 | 19.5 | 0.6 | P4609-ND† | .80 | 6.82 | 56.84 | 339.00 | 316.00/M | ECQ-U2A103MF | |
| | 0.001 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4617-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A102M | |
| | 0.0012 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4618-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A122M | |
| | 0.0015 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4619-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A152M | |
| | 0.0018 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4620-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A182M | |
| | 0.0022 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4621-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A222M | |
| | 0.0027 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4622-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A272M | |
| | 0.0033 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4623-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A332M | |
| | 0.0039 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4624-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A392M | |
| 0.0047 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4625-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A472M | | |
| 0.0056 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4626-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A562M | | |
| 0.0068 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4627-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A682M | | |
| 0.0082 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4628-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A822M | | |
| 0.01 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4629-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A103M | | |
| 0.012 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4630-ND | .74 | 6.38 | 53.20 | 318.00 | 296.00/M | ECQ-U2A123M | | |
| 0.015 | 17.5 | 4.0 | 10.5 | 15.0 | 0.6 | P4631-ND | .77 | 6.59 | 54.88 | 328.00 | 305.00/M | ECQ-U2A153M | | |
| 0.018 | 17.5 | 4.5 | 10.5 | 15.0 | 0.6 | P4632-ND | .78 | 6.69 | 55.72 | 333.00 | 310.00/M | ECQ-U2A183M | | |
| 0.022 | 17.5 | 4.5 | 10.5 | 15.0 | 0.6 | P4633-ND | .80 | 6.85 | 57.12 | 341.00 | 317.00/M | ECQ-U2A223M | | |
| 0.027 | 17.5 | 4.5 | 13.0 | 15.0 | 0.6 | P4634-ND | .82 | 7.02 | 58.52 | 349.00 | 325.00/M | ECQ-U2A273M | | |
| 0.033 | 17.5 | 4.5 | 13.0 | 15.0 | 0.6 | P4635-ND | .85 | 7.26 | 60.48 | 361.00 | 336.00/M | ECQ-U2A333M | | |
| 0.039 | 17.5 | 5.5 | 12.5 | 15.0 | 0.6 | P4636-ND | .86 | 7.36 | 61.32 | 366.00 | 341.00/M | ECQ-U2A393M | | |
| 0.047 | 17.5 | 5.5 | 12.5 | 15.0 | 0.6 | P4637-ND | .87 | 7.49 | 62.44 | 373.00 | 347.00/M | ECQ-U2A473M | | |
| 0.056 | 17.5 | 7.0 | 14.0 | 15.0 | 0.6 | P4638-ND | .91 | 7.80 | 64.96 | 388.00 | 361.00/M | ECQ-U2A563M | | |
| 0.068 | 17.5 | 7.0 | 14.0 | 15.0 | 0.6 | P4639-ND | .96 | 8.23 | 68.60 | 410.00 | 381.00/M | ECQ-U2A683M | | |
| 0.082 | 17.5 | 8.0 | 15.0 | 15.0 | 0.6 | P4640-ND | .99 | 8.47 | 70.56 | 421.00 | 392.00/M | ECQ-U2A823M | | |
| 0.1 | 17.5 | 8.0 | 15.0 | 15.0 | 0.8 | P4610-ND | .87 | 7.44 | 62.00 | 370.00 | 344.00/M | ECQ-U2A104M | | |
| 0.12 | 25.5 | 6.5 | 16.5 | 22.5 | 0.6 | P4641-ND | 1.10 | 9.44 | 78.68 | 470.00 | 437.00/M | ECQ-U2A124M | | |
| 0.15 | 25.5 | 6.5 | 16.5 | 22.5 | 0.8 | P4611-ND | 1.19 | 10.21 | 85.12 | 508.00 | 473.00/M | ECQ-U2A154M | | |
| 0.18 | 25.5 | 8.5 | 17.0 | 22.5 | 0.6 | P4642-ND | 1.27 | 10.85 | 90.44 | 540.00 | 502.00/M | ECQ-U2A184M | | |
| 0.22 | 25.5 | 8.5 | 17.0 | 22.5 | 0.8 | P4612-ND | 1.24 | 10.62 | 88.50 | 528.00 | 492.00/M | ECQ-U2A224M | | |
| 0.27 | 30.5 | 10.0 | 18.0 | 27.5 | 0.6 | P4643-ND | 1.74 | 14.92 | 124.32 | 742.00 | 691.00/M | ECQ-U2A274M | | |
| 0.33 | 30.5 | 10.0 | 18.0 | 27.5 | 0.8 | P4613-ND | 2.05 | 17.61 | 146.72 | 876.00 | 815.00/M | ECQ-U2A334M | | |
| 0.39 | 30.5 | 12.0 | 20.0 | 27.5 | 0.6 | P4644-ND | 2.29 | 19.59 | 163.24 | 975.00 | 907.00/M | ECQ-U2A394M | | |
| 0.47 | 30.5 | 12.0 | 20.0 | 27.5 | 0.8 | P4614-ND | 2.10 | 17.98 | 149.80 | 894.00 | 832.00/M | ECQ-U2A474M | | |
| 0.56 | 30.5 | 13.5 | 23.5 | 27.5 | 0.6 | P4645-ND | 2.63 | 22.58 | 188.16 | 1123.00 | 1045.00/M | ECQ-U2A564M | | |
| 0.68 | 30.5 | 13.5 | 23.5 | 27.5 | 0.8 | P4615-ND | 2.86 | 24.49 | 204.12 | 1219.00 | 1134.00/M | ECQ-U2A684M | | |
| 0.82 | 30.5 | 16.5 | 26.5 | 27.5 | 0.6 | P4646-ND | 3.27 | 27.99 | 233.24 | 1392.00 | 1296.00/M | ECQ-U2A824M | | |
| 1.0 | 30.5 | 16.5 | 26.5 | 27.5 | 0.8 | P4616-ND | 3.18 | 27.22 | 226.80 | 1354.00 | 1260.00/M | ECQ-U2A105M | | |
| 0.033 | 15.0 | 6.0 | 13.0 | 12.5 | 0.60 | P10520-ND | .79 | 6.79 | 53.17 | 339.36 | 316.74/M | ECQ-U2A333MG | | |
| 0.047 | 15.0 | 6.0 | 13.0 | 12.5 | 0.60 | P10521-ND | .82 | 7.02 | 55.01 | 351.12 | 327.72/M | ECQ-U2A473MG | | |
| 0.068 | 15.0 | 8.0 | 15.0 | 12.5 | 0.60 | P10522-ND | .90 | 7.73 | 60.54 | 386.40 | 360.64/M | ECQ-U2A683MG | | |
| 0.1 | 15.0 | 8.0 | 16.5 | 12.5 | 0.60 | P10523-ND | .91 | 7.76 | 60.80 | 388.08 | 362.21/M | ECQ-U2A104MG | | |
| 0.1 | 17.5 | 6.0 | 15.0 | 15.0 | 0.80 | P10524-ND | .91 | 7.76 | 60.80 | 388.08 | 362.21/M | ECQ-U2A104BC1 | | |
| 0.15 | 17.5 | 8.0 | 16.5 | 15.0 | 0.80 | P10525-ND | 1.13 | 9.64 | 75.54 | 482.16 | 450.02/M | ECQ-U2A154MG | | |
| 0.22 | 17.5 | 9.0 | 17.5 | 15.0 | 0.80 | P10526-ND | 1.17 | 10.01 | 78.43 | 500.64 | 467.27/M | ECQ-U2A224MG | | |
| 0.33 | 25.5 | 9.0 | 18.5 | 22.5 | 0.80 | P10527-ND | 1.93 | 16.56 | 129.76 | 828.24 | 773.03/M | ECQ-U2A334MG | | |
| 0.47 | 25.5 | 10.5 | 20.0 | 22.5 | 0.80 | P10528-ND | 1.98 | 16.93 | 132.65 | 846.72 | 790.28/M | ECQ-U2A474MG | | |
| 0.68 | 25.5 | 12.5 | 22.0 | 22.5 | 0.80 | P10529-ND | 2.69 | 23.05 | 180.56 | 1152.48 | 1075.65/M | ECQ-U2A684MG | | |
| 1.0 | 25.5 | 15.5 | 24.5 | 24.5 | 0.80 | P10530-ND | 2.99 | 25.64 | 200.82 | 1281.84 | 1196.39/M | ECQ-U2A105MG | | |

† P4650-KIT-ND Digi-Key® X-Y Series Capacitors Kit 10 each of all values denoted. (100 total pieces.) Notebook style box included. \$59.95

Panasonic Safety Series Across The Line/Line Bypass Ceramic Disc Capacitors

UL • CSA • BSI • SEMKO • SEV • VDE Approved

| Voltage | Capacitance | Tolerance | Temp. Char. | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | | | Panasonic Part No. |
|--------------------|-------------|-----------|-------------|-----------------|------------|------------|-------------------|---------|------|-------|--------|----------|----------|--------------------|
| | | | | Dia. | Thick-ness | Lead Space | | 1 | 10 | 100 | 1,000 | 5,000 | 10,000 | |
| Class I Equipment | | | | | | | | | | | | | | |
| 125 | 150pf | ±20% | B | 11.0 | 7.0 | 7.5 | P4463-ND | .38 | 2.96 | 21.50 | 158.00 | 153.00/M | 141.00/M | ECK-DNS151MB |
| Class II Equipment | | | | | | | | | | | | | | |
| 125 | 100pf | ±20% | B | 11.0 | 7.0 | 10.0 | P4475-ND | .42 | 3.33 | 24.19 | 178.00 | 172.00/M | 159.00/M | ECK-DNS101MBX |
| 125 | 150pf | ±20% | B | 11.0 | 7.0 | 10.0 | P4476-ND | .42 | 3.33 | 24.19 | 178.00 | 172.00/M | 159.00/M | ECK-DNS151MBX |
| 125 | 220pf | ±20% | B | 11.0 | 7.0 | 10.0 | P4477-ND | .47 | 3.70 | 26.88 | 198.00 | 191.00/M | 177.00/M | ECK-DNS221MBX |
| 125 | 1000pf | ±20% | B | 11.0 | 7.0 | 10.0 | P4479-ND | .53 | 4.19 | 30.46 | 224.00 | 216.00/M | 200.00/M | ECK-DNS102MBX |
| 125 | 3300pf | ±20% | E | 13.0 | 7.0 | 10.0 | P4482-ND | .77 | 6.04 | 43.90 | 324.00 | 312.00/M | 289.00/M | ECK-DNS332MBX |
| 125 | 4700pf | ±20% | E | 16.0 | 7.0 | 10.0 | P4483-ND | .86 | 6.78 | 49.28 | 363.00 | 350.00/M | 324.00/M | ECK-DNS472MBX |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

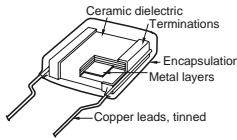
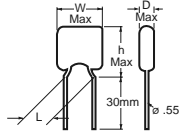
Panasonic[®] Monolithic Ceramic Capacitors Type COG, X7R, Z5U

Features:

- High capacitance per unit volume.
- Suitable for automatic assembly in accordance with IEC standard.
- High reliability and damp heat resistance.
- Non-polar.
- Low-loss.
- Pulse strength.

Applications:

- Data processing.
- Communications engineering.
- Measuring and control equipment.
- Photo industry.
- Entertainment industry.
- Medical engineering.
- Automotive electronic systems.



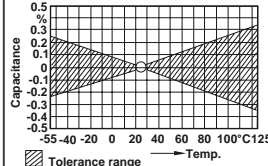
Temperature Range:

COG/X7R: -55 to +125°C.
Z5U: -25 to +85°C.

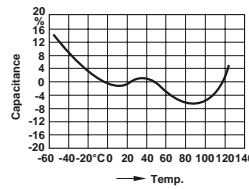
Marking: Rated capacitance, tolerance, manufacturer's logo, ceramic material, voltage

Capacitance Change vs. Temperature

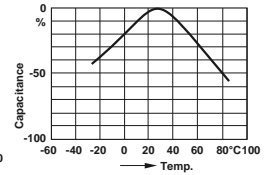
COG Ceramic typical values



X7R Ceramic typical values



Z5U Ceramic typical values



| VDC | Cap. | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. |
|--------------|--------|-----------------|-----|-----|------|-------------------|---------|-------|--------|---------|--------------------|
| | | W* | D* | H* | L | | 1 | 10 | 100 | 1,000 | |
| Type COG ±5% | | | | | | | | | | | |
| 50 | 100pf | 5.0 | 2.5 | 5.5 | 2.5 | P4925-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H101JCA |
| 50 | 120pf | 5.0 | 2.5 | 5.5 | 2.5 | P4926-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H121JCA |
| 50 | 150pf | 5.0 | 2.5 | 5.5 | 2.5 | P4927-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H151JCA |
| 50 | 180pf | 5.0 | 2.5 | 5.5 | 2.5 | P4928-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H181JCA |
| 50 | 220pf | 5.0 | 2.5 | 5.5 | 2.5 | P4929-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H221JCA |
| 50 | 270pf | 5.0 | 2.5 | 5.5 | 2.5 | P4930-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H271JCA |
| 50 | 330pf | 5.0 | 2.5 | 5.5 | 2.5 | P4931-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S1H331JCA |
| 50 | 390pf | 5.0 | 2.5 | 5.5 | 2.5 | P4932-ND | .21 | 1.82 | 14.00 | 83.00 | ECU-S1H391JCA |
| 50 | 470pf | 5.0 | 2.5 | 5.5 | 2.5 | P4933-ND | .21 | 1.82 | 14.00 | 83.00 | ECU-S1H471JCA |
| 50 | 560pf | 5.0 | 2.5 | 5.5 | 2.5 | P4934-ND | .21 | 1.82 | 14.00 | 83.00 | ECU-S1H561JCA |
| 50 | 680pf | 5.0 | 3.1 | 6.5 | 5.0 | P4935-ND | .26 | 2.29 | 17.64 | 105.00 | ECU-S1H681JCB |
| 50 | 820pf | 5.0 | 3.1 | 6.5 | 5.0 | P4936-ND | .26 | 2.29 | 17.64 | 105.00 | ECU-S1H821JCB |
| 50 | 1000pf | 5.0 | 3.1 | 6.5 | 5.0 | P4937-ND | .26 | 2.29 | 17.64 | 105.00 | ECU-S1H102JCB |
| 50 | 1200pf | 5.0 | 3.1 | 6.5 | 5.0 | P4938-ND | .32 | 2.77 | 21.28 | 127.00 | ECU-S1H122JCB |
| 50 | 1500pf | 5.0 | 3.1 | 6.5 | 5.0 | P4939-ND | .32 | 2.77 | 21.28 | 127.00 | ECU-S1H152JCB |
| 50 | 1800pf | 5.0 | 3.1 | 6.5 | 5.0 | P4940-ND | .39 | 3.39 | 26.04 | 155.00 | ECU-S1H182JCB |
| 50 | 2200pf | 5.0 | 3.1 | 6.5 | 5.0 | P4941-ND | .39 | 3.39 | 26.04 | 155.00 | ECU-S1H222JCB |
| 50 | 2700pf | 5.0 | 3.1 | 6.5 | 5.0 | P4942-ND | .52 | 4.51 | 34.72 | 207.00 | ECU-S1H272JCB |
| 50 | 3300pf | 5.0 | 3.1 | 6.5 | 5.0 | P4943-ND | .52 | 4.51 | 34.72 | 207.00 | ECU-S1H332JCB |
| 50 | 4700pf | 5.0 | 3.1 | 6.5 | 5.0 | P4944-ND | .64 | 5.53 | 42.56 | 254.00 | ECU-S1H472JCB |
| 50 | 5600pf | 7.5 | 3.8 | 9.0 | 5.0 | P4945-ND | 1.12 | 9.68 | 74.48 | 444.00 | ECU-S1H562JCB |
| 50 | 6800pf | 7.5 | 3.8 | 9.0 | 5.0 | P4946-ND | 1.12 | 9.68 | 74.48 | 444.00 | ECU-S1H682JCB |
| 50 | 8200pf | 7.5 | 3.8 | 9.0 | 5.0 | P4947-ND | 1.32 | 11.43 | 87.92 | 524.00 | ECU-S1H822JCB |
| 50 | .01µf | 7.5 | 3.8 | 9.0 | 5.0 | P4948-ND | 1.32 | 11.43 | 87.92 | 524.00 | ECU-S1H103JCB |
| 63 | 150pf | 5.0 | 2.5 | 5.5 | 2.54 | P4802-ND | .18 | 1.58 | 12.15 | 72.00 | ECU-S1J151JCA |
| 63 | 180pf | 5.0 | 2.5 | 5.5 | 2.54 | P4803-ND | .18 | 1.58 | 12.15 | 72.00 | ECU-S1J181JCA |
| 63 | 5600pf | 7.5 | 3.8 | 9.0 | 5.08 | P4821-ND | 1.13 | 9.77 | 75.15 | 448.00 | ECU-S1J562JCB |
| 63 | .018µf | 7.5 | 3.8 | 9.0 | 5.08 | P4827-ND | 2.62 | 22.70 | 174.59 | 1041.00 | ECU-S1J183JCB |
| 100 | 10pf | 5.0 | 2.5 | 5.5 | 2.54 | P4837-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A100JCA |
| 100 | 12pf | 5.0 | 2.5 | 5.5 | 2.54 | P4838-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A120JCA |
| 100 | 15pf | 5.0 | 2.5 | 5.5 | 2.54 | P4839-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A150JCA |
| 100 | 18pf | 5.0 | 2.5 | 5.5 | 2.54 | P4840-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A180JCA |
| 100 | 22pf | 5.0 | 2.5 | 5.5 | 2.54 | P4841-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A220JCA |
| 100 | 27pf | 5.0 | 2.5 | 5.5 | 2.54 | P4842-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A270JCA |
| 100 | 33pf | 5.0 | 2.5 | 5.5 | 2.54 | P4843-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A330JCA |
| 100 | 39pf | 5.0 | 2.5 | 5.5 | 2.54 | P4844-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A390JCA |
| 100 | 47pf | 5.0 | 2.5 | 5.5 | 2.54 | P4845-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A470JCA |
| 100 | 56pf | 5.0 | 2.5 | 5.5 | 2.54 | P4846-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A560JCA |
| 100 | 68pf | 5.0 | 2.5 | 5.5 | 2.54 | P4847-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A680JCA |
| 100 | 82pf | 5.0 | 2.5 | 5.5 | 2.54 | P4848-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A820JCA |
| 100 | 100pf | 5.0 | 2.5 | 5.5 | 2.54 | P4849-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A101JCA |
| 100 | 120pf | 5.0 | 2.5 | 5.5 | 2.54 | P4850-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A121JCA |
| 100 | 150pf | 5.0 | 2.5 | 5.5 | 2.54 | P4851-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A151JCA |
| 100 | 180pf | 5.0 | 2.5 | 5.5 | 2.54 | P4852-ND | .18 | 1.57 | 12.04 | 72.00 | ECU-S2A181JCA |
| 100 | 220pf | 5.0 | 3.1 | 6.5 | 5.08 | P4853-ND | .24 | 2.07 | 15.96 | 95.00 | ECU-S2A221JCB |
| 100 | 270pf | 5.0 | 3.1 | 6.5 | 5.08 | P4854-ND | .24 | 2.07 | 15.96 | 95.00 | ECU-S2A271JCB |
| 100 | 330pf | 5.0 | 3.1 | 6.5 | 5.08 | P4855-ND | .24 | 2.07 | 15.96 | 95.00 | ECU-S2A331JCB |
| 100 | 390pf | 5.0 | 3.1 | 6.5 | 5.08 | P4856-ND | .24 | 2.07 | 15.96 | 95.00 | ECU-S2A391JCB |
| 100 | 470pf | 5.0 | 3.1 | 6.5 | 5.08 | P4857-ND | .24 | 2.07 | 15.96 | 95.00 | ECU-S2A471JCB |
| 100 | 560pf | 5.0 | 3.1 | 6.5 | 5.08 | P4858-ND | .29 | 2.48 | 19.04 | 113.00 | ECU-S2A561JCB |
| 100 | 680pf | 5.0 | 3.1 | 6.5 | 5.08 | P4859-ND | .29 | 2.48 | 19.04 | 113.00 | ECU-S2A681JCB |

| VDC | Cap. | Dimensions (mm) | | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. |
|---------------|--------|-----------------|-----|------|------|-------------------|---------|-------|--------|---------|--------------------|
| | | W* | D* | H* | L | | 1 | 10 | 100 | 1,000 | |
| Type COG ±5% | | | | | | | | | | | |
| 100 | 820pf | 5.0 | 3.1 | 6.5 | 5.08 | P4860-ND | .33 | 2.88 | 22.12 | 132.00 | ECU-S2A821JCB |
| 100 | 1000pf | 5.0 | 3.1 | 6.5 | 5.08 | P4861-ND | .33 | 2.88 | 22.12 | 132.00 | ECU-S2A102JCB |
| 100 | 1200pf | 5.0 | 3.1 | 6.5 | 5.08 | P4862-ND | .40 | 3.46 | 26.60 | 159.00 | ECU-S2A122JCB |
| 100 | 1500pf | 5.0 | 3.1 | 6.5 | 5.08 | P4863-ND | .40 | 3.46 | 26.60 | 159.00 | ECU-S2A152JCB |
| 100 | 1800pf | 7.5 | 3.8 | 9.0 | 5.08 | P4864-ND | .80 | 6.92 | 53.20 | 317.00 | ECU-S2A182JCB |
| 100 | 2200pf | 7.5 | 3.8 | 9.0 | 5.08 | P4865-ND | .80 | 6.92 | 53.20 | 317.00 | ECU-S2A222JCB |
| 100 | 2700pf | 7.5 | 3.8 | 9.0 | 5.08 | P4866-ND | .92 | 7.97 | 61.32 | 366.00 | ECU-S2A272JCB |
| 100 | .018µf | 10.0 | 5.0 | 11.5 | 5.08 | P4876-ND | 4.12 | 35.67 | 274.40 | 1636.00 | ECU-S2A183JCB |
| Type X7R ±10% | | | | | | | | | | | |
| 50 | 3300pf | 5.0 | 2.5 | 5.5 | 2.5 | P4949-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S1H332KBA |
| 50 | 4700pf | 5.0 | 2.5 | 5.5 | 2.5 | P4950-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S1H472KBA |
| 50 | 6800pf | 5.0 | 2.5 | 5.5 | 2.5 | P4951-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S1H682KBA |
| 50 | .010µf | 5.0 | 2.5 | 5.5 | 2.5 | P4922-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S1H103KBA |
| 50 | .015µf | 5.0 | 2.5 | 5.5 | 2.5 | P4952-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S1H153KBA |
| 50 | .022µf | 5.0 | 2.5 | 5.5 | 2.5 | P4953-ND | .19 | 1.64 | 12.60 | 75.00 | ECU-S1H223KBA |
| 50 | .033µf | 5.0 | 2.5 | 5.5 | 2.5 | P4954-ND | .24 | 2.04 | 15.68 | 93.00 | ECU-S1H333KBB |
| 50 | .047µf | 5.0 | 2.5 | 5.5 | 2.5 | P4955-ND | .24 | 2.04 | 15.68 | 93.00 | ECU-S1H473KBB |
| 50 | .068µf | 5.0 | 2.5 | 5.5 | 2.5 | P4956-ND | .28 | 2.40 | 18.48 | 110.00 | ECU-S1H683KBB |
| 50 | .10µf | 5.0 | 2.5 | 5.5 | 2.5 | P4923-ND | .32 | 2.77 | 21.28 | 127.00 | ECU-S1H104KBB |
| 50 | .15µf | 5.0 | 2.5 | 5.5 | 2.5 | P4957-ND | .45 | 3.93 | 30.24 | 180.00 | ECU-S1H154KBB |
| 50 | .22µf | 7.5 | 3.8 | 9.0 | 5.0 | P4958-ND | .76 | 6.55 | 50.40 | 300.00 | ECU-S1H224KBB |
| 50 | .33µf | 7.5 | 3.8 | 9.0 | 5.0 | P4959-ND | .93 | 8.04 | 61.88 | 369.00 | ECU-S1H334KBB |
| 50 | .47µf | 7.5 | 3.8 | 9.0 | 5.0 | P4960-ND | 1.20 | 10.37 | 79.80 | 476.00 | ECU-S1H474KBB |
| 50 | .68µf | 7.5 | 3.8 | 9.0 | 5.0 | P4961-ND | 1.66 | 14.38 | 110.60 | 659.00 | ECU-S1H684KBB |
| 50 | 1.0µf | 10.0 | 5.0 | 11.5 | 5.0 | P4962-ND | 2.44 | 21.18 | 162.96 | 971.00 | ECU-S1H105KBB |
| 63 | .15µf | 5.0 | 2.5 | 5.5 | 2.54 | P4888-ND | .46 | 3.97 | 30.51 | 182.00 | ECU-S1J154KBB |
| 100 | 470pf | 5.0 | 2.5 | 5.5 | 2.54 | P4896-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A471KBA |
| 100 | 680pf | 5.0 | 2.5 | 5.5 | 2.54 | P4897-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A681KBA |
| 100 | 1000pf | 5.0 | 2.5 | 5.5 | 2.54 | P4898-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A102KBA |
| 100 | 1500pf | 5.0 | 2.5 | 5.5 | 2.54 | P4899-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A152KBA |
| 100 | 2200pf | 5.0 | 2.5 | 5.5 | 2.54 | P4900-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A222KBA |
| 100 | 3300pf | 5.0 | 2.5 | 5.5 | 2.54 | P4901-ND | .17 | 1.46 | 11.20 | 67.00 | ECU-S2A332KBA |
| 100 | 4700pf | 5.0 | 2.5 | 5. | | | | | | | |

Panasonic Ceramic Disc Capacitors

Type RS, Class 1

Temperature Compensating 50 VDC, 500 VDC

Features: • Wide product range for temperature compensation • Linear temperature coefficient of capacitance • High stability of capacitance and close tolerance • Low loss at wide range of frequency.

Applications: • Temperature compensation of resonant circuit and filters • Where low losses and high stability of capacitance tolerance and high insulation resistance are required

Specifications: Operating Temperature Range; -25 to 85°C • Rated Voltage; 50 VDC, 500 VDC • Dielectric Withstanding Voltage; 300% of the rated voltage for 1 to 5 seconds - No damage occurs when the test voltage is applied between terminals • Capacitance; measured at 1 MHz±20%, 5 Vrms. max. and 20°C - Within the specified tolerance Standard capacitance tolerance; ±0.25 pF (1 to 5 pF), ±0.5 pF (1 to 10 pF), ±1 pF (10pF), ±5% (Over 10 pF NPO), ±10% (Over 10 pF GP) • Q Factor ; Cap. <30 pF: Q≥400+20XC (c: Rated capacitance in pF), Cap≥30 pF: Q≥1000. • Insulation Resistance; Measured at the rated voltage and 1 minute electrification - I.R. ≥ 10000 MΩ. • Temperature Coefficient of Capacitance; Temperature Range: -25 to 85°C, Reference Temperature; 20°C, T.C. = $\frac{\Delta C}{C_0 \times \Delta T}$

Where: C20: Capacitance value in pF at the specified reference temperature of 20 °C. ΔC: Capacitance drifts in pF from the capacitance value at 20 °C. ΔT: The specified temperature range to be measured in °C.

| Capacitance (pF) | Rated temperature Coefficient (ppm/°C) |
|------------------|--|
| | NPO GP |
| 1 to 2 | ±250 +350 |
| 3 | ±120 to |
| 4 and above | ±60 -1000 |

Class 2

High Dielectric Constant 25V DC, 50 V DC, 500 V DC

Features: • Large capacitance in small size • Minimum coating resin on leads

Applications: • Coupling and By-pass, where low losses and high stability of capacitance are not so important

Specifications: • Operating Temperature Range; -25 to 85°C • Rated Voltage; 25 VDC, 50VDC, 500VDC • Dielectric Withstanding Voltage; 250% of the rated voltage for 1 to 5 seconds - no damage occurs when the test voltage is applied between terminals • Capacitance; measured at 1 kHz±10%, 1 Vrms and 20 °C - within the specified tolerance; standard capacitance tolerance [Y5P]; ±10% [Y5V, Z4V]; +80/-20% • Dissipation Factor; [Y5P]; D.F.≤ 0.025 [Y5V, Z4V]; D.F.≤0.05 • Insulation Resistance; measured at the rated voltage and 1 minute electrification - C≤0.02 μF: I.R. ≥ 10000 MΩ - C>0.02 μF: CR products ≥ 200 MΩ • μF • Temperature Characteristics: Cap. Change = $\frac{\Delta C}{C20} \times 100\%$

Where C20: Capacitance value in pF at the specified reference temperature of 20 °C. ΔC: Capacitance drifts in pF from the capacitance value at 20 °C over the specified temperature range.

| Temp. Char. | Max. Cap. Change | Temp. Range |
|-------------|------------------|--------------|
| Y5P | ± 10% | -25 to 85 °C |
| Y5V | +30/-80% | -25 to 85 °C |
| Z4V | +30/-80% | 0 to 70 °C |

Class 1 Safety

Ceramic disc capacitors, Type RS, are recognized by the following safety regulations: • UL1414 (125 VAC) and CSA (125 VAC) • European safety regulations for "Class I" equipment: VDE, SEV, BSI, SEMKO, FIMKO, NEMKO and DEMKO.

Specifications:

| | | | |
|---------------------------------|---|--------------------|-------------|
| Operating Temperature Range | -25 to 85 °V | | |
| Rated Voltage | Applicable Standards | Rated Voltage | |
| | UL, CSA | 125 VAC | |
| | VDE (565-1) | 125 VAC | |
| | VDE (560-2), FIMKO, SEV, BS, SEMKO, NEMKO, DEMKO | 400 VAC, | |
| Dielectric Withstanding Voltage | T.C. | Voltage | |
| | B, E | 2600 VAC for 1 min | |
| | V | 2500 VAC for 1 min | |
| Capacitance | Within the tolerance, when measured at 1 kHz, 5 Vrms max. and 20°C | | |
| Dissipation Factor | B, E: 0.025 max. V: 0.05 max when measured at 1 kHz, 5 Vrms max. and 20°C | | |
| Insulation Resistance | 10000 MΩ min. at 500 VDC, 1 minute | | |
| Temperature Characteristics | T.C. | Cap. Change | Temp. Range |
| | B | ±10% max. | -25 to 85°C |
| | E | +20/-55% max | -25 to 85°C |
| | V | +30/-80% max | 0 to 70°C |
| The reference temperature: 20°C | | | |

| Voltage | Capacitance | Tolerance | Temp. Char. | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|---|-------------|-----------|-------------|-----------------|------------|------------|-------------------|---------|-------|-------|---------|--------------------|---------|---------------|
| | | | | Dia. | Thick-ness | Lead Space | | 10 | 100 | 1,000 | 5,000 | | 10,000 | 25,000 |
| <i>Class 1 Temperature Compensating</i> | | | | | | | | | | | | | | |
| 50 | 10pf | ±0.5pf | GP | 5.0 | 3.5 | 2.5 | P4012A-ND | .63 | 4.93 | 26.00 | 25.00/M | 24.00/M | 22.00/M | ECC-F1H100D |
| 50 | 12pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4013A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H120J |
| 50 | 15pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4014A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H150J |
| 50 | 18pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4015A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H180J |
| 50 | 22pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4016A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H220J |
| 50 | 27pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4017A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H270J |
| 50 | 33pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4018A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H330J |
| 50 | 39pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4019A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H390J |
| 50 | 47pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4020A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H470J |
| 50 | 56pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4021A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H560J |
| 50 | 68pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4022A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H680J |
| 50 | 82pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4023A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H820J |
| 50 | 100pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4024A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H101J |
| 50 | 120pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4025A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H121J |
| 50 | 150pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4026A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H151J |
| 50 | 180pf | ±5% | GP | 5.0 | 3.5 | 2.5 | P4027A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H181J |
| 50 | 220pf | ±5% | GP | 6.5 | 3.5 | 5.0 | P4028A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECC-F1H221J |
| 50 | 270pf | ±5% | GP | 6.5 | 3.5 | 5.0 | P4029A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECC-F1H271J |
| 50 | 330pf | ±5% | GP | 6.5 | 3.5 | 5.0 | P4030A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECC-F1H331J |
| 50 | 390pf | ±5% | GP | 8.0 | 3.5 | 5.0 | P4031A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECC-F1H391J |
| 50 | 470pf | ±5% | GP | 8.0 | 3.5 | 5.0 | P4032A-ND | .94 | 7.39 | 40.00 | 38.00/M | 35.00/M | 33.00/M | ECC-F1H471J |
| 50 | 560pf | ±5% | GP | 9.5 | 3.5 | 5.0 | P4033A-ND | .94 | 7.39 | 40.00 | 38.00/M | 35.00/M | 33.00/M | ECC-F1H561J |
| 50 | 680pf | ±5% | GP | 9.5 | 3.5 | 5.0 | P4034A-ND | .94 | 7.39 | 40.00 | 38.00/M | 35.00/M | 33.00/M | ECC-F1H681J |
| 50 | 820pf | ±5% | GP | 10.5 | 3.5 | 5.0 | P4035A-ND | .94 | 7.39 | 40.00 | 38.00/M | 35.00/M | 33.00/M | ECC-F1H821J |
| 50 | 1000pf | ±5% | GP | 10.5 | 3.5 | 5.0 | P4036A-ND | 1.65 | 12.94 | 69.00 | 67.00/M | 62.00/M | 57.00/M | ECC-F1H102J |
| 50 | 10pf | ±0.5pf | NPO | 5.0 | 3.5 | 2.5 | P4444A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H100DC |
| 50 | 12pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4445A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H120JC |
| 50 | 15pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4446A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H150JC |
| 50 | 18pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4447A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H180JC |
| 50 | 27pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4449A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H270JC |
| 50 | 33pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4450A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H330JC |
| 50 | 39pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4451A-ND | 1.22 | 9.55 | 51.00 | 49.00/M | 46.00/M | 42.00/M | ECC-F1H390JC |
| 50 | 47pf | ±5% | NPO | 5.0 | 3.5 | 2.5 | P4452A-ND | 1.76 | 13.86 | 74.00 | 72.00/M | 66.00/M | 61.00/M | ECC-F1H470JC4 |
| 50 | 56pf | ±5% | NPO | 6.5 | 3.5 | 5.0 | P4453A-ND | 1.76 | 13.86 | 74.00 | 72.00/M | 66.00/M | 61.00/M | ECC-F1H560JC |
| 50 | 68pf | ±5% | NPO | 6.5 | 3.5 | 5.0 | P4454A-ND | 1.76 | 13.86 | 74.00 | 72.00/M | 66.00/M | 61.00/M | ECC-F1H680JC |
| 50 | 82pf | ±5% | NPO | 6.5 | 3.5 | 5.0 | P4455A-ND | 1.76 | 13.86 | 74.00 | 72.00/M | 66.00/M | 61.00/M | ECC-F1H820JC4 |
| 50 | 100pf | ±5% | NPO | 6.5 | 3.5 | 5.0 | P4456A-ND | 2.12 | 16.63 | 89.00 | 86.00/M | 80.00/M | 73.00/M | ECC-F1H101JC4 |
| 50 | 120pf | ±5% | NPO | 8.0 | 3.5 | 5.0 | P4457A-ND | 2.12 | 16.63 | 89.00 | 86.00/M | 80.00/M | 73.00/M | ECC-F1H121JC4 |
| 50 | 150pf | ±5% | NPO | 8.0 | 3.5 | 5.0 | P4458A-ND | 2.35 | 18.48 | 99.00 | 95.00/M | 88.00/M | 81.00/M | ECC-F1H151JC4 |
| 50 | 180pf | ±5% | NPO | 9.5 | 3.5 | 5.0 | P4459A-ND | 2.35 | 18.48 | 99.00 | 95.00/M | 88.00/M | 81.00/M | ECC-F1H181JC4 |
| 50 | 220pf | ±5% | NPO | 9.5 | 3.5 | 5.0 | P4460A-ND | 2.35 | 18.48 | 99.00 | 95.00/M | 88.00/M | 81.00/M | ECC-F1H221JC4 |
| 50 | 270pf | ±5% | NPO | 10.5 | 3.5 | 5.0 | P4461A-ND | 2.35 | 18.48 | 99.00 | 95.00/M | 88.00/M | 81.00/M | ECC-F1H271JC4 |
| 500 | 10pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4000A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H100F5 |
| 500 | 15pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4002A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H150K5 |
| 500 | 18pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4003A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H180K5 |
| 500 | 22pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4004A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H220K5 |
| 500 | 27pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4005A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H270K5 |
| 500 | 33pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4006A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H330K5 |
| 500 | 39pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4007A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H390K5 |
| 500 | 47pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4008A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H470K5 |
| 500 | 56pf | ±10% | GP | 6.0 | 3.5 | 5.0 | P4009A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H560K5 |
| 500 | 68pf | ±10% | GP | 7.0 | 3.5 | 5.0 | P4010A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H680K5 |
| 500 | 82pf | ±10% | GP | 7.0 | 3.5 | 5.0 | P4011A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H820K5 |

1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic Ceramic Disc Capacitors (cont.)

| Voltage | Capacitance | Tolerance | Temp. Char. | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | | Panasonic Part No. | |
|---|-------------|-----------|-------------|-----------------|------------|------------|-------------------|---------|-------|--------|----------|----------|--------------------|---------------|
| | | | | Dia. | Thick-ness | Lead Space | | 10 | 100 | 1,000 | 5,000 | 10,000 | | 25,000 |
| 500 | 10pf | ±0.5pf | NPO | 6.0 | 3.5 | 5.0 | P4400A-ND | 1.06 | 8.32 | 45.00 | 43.00/M | 40.00/M | 37.00/M | ECC-D2H100DC5 |
| 500 | 15pf | ±5% | NPO | 6.0 | 3.5 | 5.0 | P4402A-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D2H150JC5 |
| 500 | 18pf | ±5% | NPO | 6.0 | 3.5 | 5.0 | P4403A-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D2H180JC5 |
| 500 | 22pf | ±5% | NPO | 6.0 | 3.5 | 5.0 | P4404A-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D2H220JC5 |
| 500 | 27pf | ±5% | NPO | 7.0 | 3.5 | 5.0 | P4405A-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D2H270JC5 |
| 500 | 33pf | ±5% | NPO | 7.0 | 3.5 | 5.0 | P4406A-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D2H330JC5 |
| 500 | 39pf | ±5% | NPO | 7.0 | 3.5 | 5.0 | P4407A-ND | 2.00 | 15.71 | 84.00 | 81.00/M | 75.00/M | 69.00/M | ECC-D2H390JC5 |
| 500 | 47pf | ±5% | NPO | 8.5 | 3.5 | 5.0 | P4408A-ND | 2.27 | 17.86 | 96.00 | 92.00/M | 85.00/M | 79.00/M | ECC-D2H470JC5 |
| 500 | 56pf | ±5% | NPO | 8.5 | 3.5 | 5.0 | P4409A-ND | 2.27 | 17.86 | 96.00 | 92.00/M | 85.00/M | 79.00/M | ECC-D2H560JC5 |
| 500 | 68pf | ±5% | NPO | 8.5 | 3.5 | 5.0 | P4410A-ND | 2.31 | 18.17 | 97.00 | 94.00/M | 87.00/M | 80.00/M | ECC-D2H680JC5 |
| 500 | 82pf | ±5% | NPO | 10.0 | 3.5 | 5.0 | P4411A-ND | 3.96 | 31.11 | 167.00 | 161.00/M | 149.00/M | 137.00/M | ECC-D2H820JC5 |
| 500 | 100pf | ±5% | NPO | 10.0 | 3.5 | 5.0 | P4412A-ND | 3.92 | 30.80 | 165.00 | 159.00/M | 147.00/M | 136.00/M | ECC-D2H101JC5 |
| 500 | 120pf | ±5% | NPO | 11.0 | 3.5 | 5.0 | P4413A-ND | 3.96 | 31.11 | 167.00 | 161.00/M | 149.00/M | 137.00/M | ECC-D2H121JC5 |
| 500 | 150pf | ±5% | NPO | 13.0 | 3.5 | 10.0 | P4414A-ND | 4.16 | 32.65 | 175.00 | 169.00/M | 156.00/M | 144.00/M | ECC-D2H151JC5 |
| 500 | 180pf | ±5% | NPO | 13.0 | 3.5 | 10.0 | P4415A-ND | 4.16 | 32.65 | 175.00 | 169.00/M | 156.00/M | 144.00/M | ECC-D2H181JC5 |
| 500 | 220pf | ±5% | NPO | 14.0 | 3.5 | 10.0 | P4416A-ND | 4.16 | 32.65 | 175.00 | 169.00/M | 156.00/M | 144.00/M | ECC-D2H221JC5 |
| <i>Class 2 High Dielectric Constant</i> | | | | | | | | | | | | | | |
| 25 | .01µF | +80, -20% | Z4V | 5.0 | 3.5 | 2.5 | P4300A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECK-F1E103ZV |
| 25 | .022µF | +80, -20% | Z4V | 6.5 | 3.5 | 5.0 | P4303A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECK-F1E223ZV |
| 25 | .033µF | +80, -20% | Z4V | 8.5 | 3.5 | 5.0 | P4305A-ND | .98 | 7.70 | 41.00 | 40.00/M | 37.00/M | 34.00/M | ECK-F1E333ZV |
| 25 | .047µF | +80, -20% | Z4V | 8.5 | 3.5 | 5.0 | P4307A-ND | 1.10 | 8.62 | 46.00 | 45.00/M | 41.00/M | 38.00/M | ECK-F1E473ZV |
| 25 | .1µF | +80, -20% | Z4V | 12.5 | 3.5 | 5.0 | P4201-ND | 2.00 | 15.71 | 84.00 | 81.00/M | 75.00/M | 69.00/M | ECK-F1E104ZV |
| 50 | 100pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4037A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H101KB |
| 50 | 120pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4038A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H121KB |
| 50 | 150pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4039A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H151KB |
| 50 | 180pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4040A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H181KB |
| 50 | 220pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4041A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H221KB |
| 50 | 270pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4042A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H271KB |
| 50 | 330pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4043A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H331KB |
| 50 | 390pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4044A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H391KB |
| 50 | 470pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4045A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H471KB |
| 50 | 560pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4046A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H561KB |
| 50 | 680pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4047A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H681KB |
| 50 | 820pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4048A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H821KB |
| 50 | 1000pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4049A-ND | .82 | 6.47 | 35.00 | 33.00/M | 31.00/M | 28.00/M | ECK-F1H102KB |
| 50 | 1200pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4050A-ND | .82 | 6.47 | 35.00 | 33.00/M | 31.00/M | 28.00/M | ECK-F1H122KB |
| 50 | 1500pf | ±10% | Y5P | 5.0 | 3.5 | 2.5 | P4051A-ND | .82 | 6.47 | 35.00 | 33.00/M | 31.00/M | 28.00/M | ECK-F1H152KB |
| 50 | 1800pf | ±10% | Y5P | 6.5 | 3.5 | 5.0 | P4052A-ND | .82 | 6.47 | 35.00 | 33.00/M | 31.00/M | 28.00/M | ECK-F1H182KB |
| 50 | 2200pf | ±10% | Y5P | 6.5 | 3.5 | 5.0 | P4053A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECK-F1H222KB |
| 50 | 2700pf | ±10% | Y5P | 6.5 | 3.5 | 5.0 | P4054A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECK-F1H272KB |
| 50 | 3300pf | ±10% | Y5P | 8.0 | 3.5 | 5.0 | P4055A-ND | .90 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECK-F1H332KB |
| 50 | 3900pf | ±10% | Y5P | 8.0 | 3.5 | 5.0 | P4056A-ND | .98 | 7.70 | 41.00 | 40.00/M | 37.00/M | 34.00/M | ECK-F1H392KB |
| 50 | 4700pf | ±10% | Y5P | 8.0 | 3.5 | 5.0 | P4057A-ND | .98 | 7.70 | 41.00 | 40.00/M | 37.00/M | 34.00/M | ECK-F1H472KB |
| 50 | 5600pf | ±10% | Y5P | 9.5 | 3.5 | 5.0 | P4058A-ND | .98 | 7.70 | 41.00 | 40.00/M | 37.00/M | 34.00/M | ECK-F1H562KB |
| 50 | 6800pf | ±10% | Y5P | 9.5 | 3.5 | 5.0 | P4059A-ND | 1.88 | 14.78 | 79.00 | 76.00/M | 71.00/M | 65.00/M | ECK-F1H682KB |
| 50 | 1000pf | +80, -20% | Y5V | 4.5 | 3.5 | 2.5 | P4060A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECK-F1H102ZF |
| 50 | 1500pf | +80, -20% | Y5V | 5.0 | 3.5 | 2.5 | P4061A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECK-F1H152ZF |
| 50 | 2200pf | +80, -20% | Y5V | 5.0 | 3.5 | 2.5 | P4062A-ND | .71 | 5.54 | 30.00 | 29.00/M | 27.00/M | 24.00/M | ECK-F1H222ZF |
| 50 | 3300pf | +80, -20% | Y5V | 5.0 | 3.5 | 2.5 | P4063A-ND | .78 | 6.16 | 33.00 | 32.00/M | 29.00/M | 27.00/M | ECK-F1H332ZF |
| 50 | 4700pf | +80, -20% | Y5V | 5.0 | 3.5 | 2.5 | P4064A-ND | .74 | 5.85 | 31.00 | 30.00/M | 28.00/M | 26.00/M | ECK-F1H472ZF |
| 50 | 6800pf | +80, -20% | Y5V | 6.5 | 3.5 | 5.0 | P4065A-ND | .78 | 6.16 | 33.00 | 32.00/M | 29.00/M | 27.00/M | ECK-F1H682ZF |
| 50 | 10000pf | +80, -20% | Y5V | 6.5 | 3.5 | 5.0 | P4066A-ND | .78 | 6.16 | 33.00 | 32.00/M | 29.00/M | 27.00/M | ECK-F1H103ZF |
| 50 | 22000pf | +80, -20% | Y5V | 8.5 | 3.5 | 5.0 | P4067A-ND | 1.80 | 14.17 | 76.00 | 73.00/M | 68.00/M | 62.00/M | ECK-F1H223ZF |
| 500 | 100pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4100A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H101KB5 |
| 500 | 150pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4102A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H151KB5 |
| 500 | 180pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4103A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H181KB5 |
| 500 | 220pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4104A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H221KB5 |
| 500 | 270pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4105A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H271KB5 |
| 500 | 330pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4106A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H331KB5 |
| 500 | 390pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4107A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H391KB5 |
| 500 | 470pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4108A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H471KB5 |
| 500 | 560pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4109A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H561KB5 |
| 500 | 680pf | ±10% | Y5P | 6.0 | 4.0 | 5.0 | P4110A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H681KB5 |
| 500 | 820pf | ±10% | Y5P | 7.0 | 4.0 | 5.0 | P4111A-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H821KB5 |
| 500 | 1000pf | ±10% | Y5P | 7.0 | 4.0 | 5.0 | P4112A-ND | 1.33 | 10.47 | 56.00 | 54.00/M | 50.00/M | 46.00/M | ECC-D2H102KB5 |
| 500 | 1500pf | ±10% | Y5P | 7.0 | 4.0 | 5.0 | P4115A-ND | 1.33 | 10.47 | 56.00 | 54.00/M | 50.00/M | 46.00/M | ECC-D2H152KB5 |
| 500 | 1800pf | ±10% | Y5P | 8.5 | 4.0 | 5.0 | P4116A-ND | 1.33 | 10.47 | 56.00 | 54.00/M | 50.00/M | 46.00/M | ECC-D2H182KB5 |
| 500 | 2200pf | ±10% | Y5P | 8.5 | 4.0 | 5.0 | P4165A-ND | 1.33 | 10.47 | 56.00 | 54.00/M | 50.00/M | 46.00/M | ECC-D2H222KB5 |
| 500 | 2700pf | ±10% | Y5P | 10.0 | 4.0 | 5.0 | P4166A-ND | 1.71 | 13.42 | 72.00 | 69.00/M | 64.00/M | 59.00/M | ECC-D2H272KB5 |
| 500 | 3300pf | ±10% | Y5P | 10.0 | 4.0 | 5.0 | P4167A-ND | 1.68 | 13.20 | 71.00 | 68.00/M | 63.00/M | 58.00/M | ECC-D2H332KB5 |
| 500 | 3900pf | ±10% | Y5P | 11.0 | 4.0 | 5.0 | P4168A-ND | 1.68 | 13.20 | 71.00 | 68.00/M | 63.00/M | 58.00/M | ECC-D2H392KB5 |
| 500 | 4700pf | ±10% | Y5P | 13.0 | 4.0 | 10.0 | P4169A-ND | 2.04 | 16.02 | 86.00 | 83.00/M | 77.00/M | 71.00/M | ECC-D2H472KB5 |
| 500 | 5600pf | ±10% | Y5P | 13.0 | 4.0 | 10.0 | P4170A-ND | 2.04 | 16.02 | 86.00 | 83.00/M | 77.00/M | 71.00/M | ECC-D2H562KB5 |
| 500 | 6800pf | ±10% | Y5P | 14.0 | 4.0 | 10.0 | P4171A-ND | 2.08 | 16.32 | 87.00 | 84.00/M | 78.00/M | 72.00/M | ECC-D2H682KB5 |
| 500 | 8200pf | ±10% | Y5P | 16.0 | 4.0 | 10.0 | P4172A-ND | 2.08 | 16.32 | 87.00 | 84.00/M | 78.00/M | 72.00/M | ECC-D2H822KB5 |
| 500 | 10000pf | ±10% | Y5P | 17.5 | 4.0 | 10.0 | P4198A-ND | 2.08 | 16.32 | 87.00 | 84.00/M | 78.00/M | 72.00/M | ECC-D2H103KB5 |
| <i>RS Safety Type Class 1</i> | | | | | | | | | | | | | | |
| 125 | 150pf | ±20% | B | 9.5 | 7.0 | 7.5 | P4463A-ND | 2.86 | 22.48 | 120.00 | 116.00/M | 108.00/M | 99.00/M | ECK-DRS151MB |
| 125 | 220pf | ±20% | B | 9.5 | 7.0 | 7.5 | P4464A-ND | 2.86 | 22.48 | 120.00 | 116.00/M | 108.00/M | 99.00/M | ECK-DRS221MB |
| 125 | 470pf | ±20% | B | 9.5 | 7.0 | 7.5 | P4465A-ND | 2.86 | 22.48 | 120.00 | 116.00/M | 108.00/M | 99.00/M | ECK-DRS471MB |
| 125 | 1000pf | ±20% | B | 10.0 | 7.0 | 7.5 | P4466A-ND | 3.37 | 26.49 | 142.00 | 137.00/M | 127.00/M | 117.00/M | ECK-DRS102MB |
| 125 | 1500pf | ±20% | E | 10.0 | 7.0 | 7.5 | P4467A-ND | 4.23 | 33.26 | 178.00 | 172.00/M | 159.00/M | 146.00/M | ECK-DRS152ME |
| 125 | 3300pf | ±20% | E | 12.5 | 7.0 | 7.5 | P4469A-ND | 5.45 | 42.81 | 229.00 | 221.00/M | 205.00/M | 188.00/M | ECK-DRS332ME |
| 125 | 4700pf</ | | | | | | | | | | | | | |

Panasonic Ceramic Disc Capacitors

PANASONIC ECC SERIES (CLASS I)

Features:

- Conform to EIA Standard
- Linear temperature coefficient of capacitance
- High stability of capacitance
- Low loss at wide range of frequency

Specifications:

- Operating temperature range: -55°C to +85°C
- Temperature characteristics: Conform to EIA classes GP & NPO. GP: General purpose capacitors with temp. char. between +150 and -1500PPM/8C (EIA U2M char.) NPO: Max. cap. change of ±5% from -55°C to +85°C.

PANASONIC ECK SERIES (CLASS II)

Features:

- Conform to EIA Standard
- Large capacitance in small sizes
- Non-linear temperature coefficient of capacitance
- High temperature stability (for 1-3KV, Y5P char.)
- Low loss at pulse voltage (for pulse circuit only)

Specifications:

- Operating temperature range: -30°C to +85°C (25-500V), -25°C to +125°C (1-3KV)
- Dissipation factor: Y5P: 2.5% max., Y5V and Z4V: 5% max., 1K (tan): 25 x 10⁻³ at 1kHz to 5Vrms, and 20°C
- Temperature characteristics: Per EIA code. Y5P: Max. cap. change of ±10% from -25°C to +85°C, Y5V: Max. cap. change of ±22, -82% from +10°C to +60°C, E: Max. cap. change is +20 - -55% over temp. range of -25°C to +85°C, B: Max. cap. change is ±10% over temp. range of -25°C to +85°C, V: Max. cap. change is +30 - -80% over temp. range of 0°C to +70°C
- Insulation resistance: 10,000 ohms min.
- Dielectric strength: 250V (200% for 1-3KV) of rated voltage for 1-5 sec.

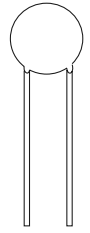
PANASONIC ECF SERIES (CLASS III)

Features:

- SB/SR (Intergranular barrier layer type)
- Linear temperature characteristics of capacitance
- Stable capacitance change over the specified temperature
- Low loss at wide range of frequency
- Cost saving by replacing film capacitors
- SF (Surface barrier layer type)
- Ultra large capacitance in small sizes

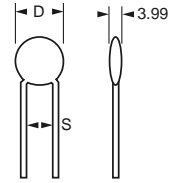
Specifications:

- Operating temperature range: -258°C to +85°C
- Dissipation factor/tan (at 1kHz, 1 ± 0.2 Vrms, 20°C): SR, SB: 1 ± 0.2 V, SF: 0.1 ± 0.2 V; SB, SR: 25 x 10⁻³ max., SF: 75 x 10⁻³ max.
- Insulation resistance (at 20°C): SB, SR, SF: 1,000M ohms or 100M ohms mF, whichever is the smaller
- Temperature characteristics: SB: +10% from -25° to +85°C, SR: ±15% from -25° to +85°C, SF: +30, -85% from -25° to +85°C



| Voltage | Capacitance | Tolerance | Temp. Char. | Dimensions (mm) | | | Digi-Key Part No. | Pricing | | | | Panasonic Part No. | | |
|---------|-------------|-----------|-------------|-----------------|------------|------------|-------------------|---------|-------|--------|----------|--------------------|----------|---------------|
| | | | | Dia. | Thick-ness | Lead Space | | 10 | 100 | 1,000 | 5,000 | | 10,000 | 25,000 |
| 100 | 82pf | ±5% | NPO | 8.0 | 3.5 | 6.35 | P4455-ND | 1.29 | 10.16 | 54.00 | 53.00/M | 49.00/M | 45.00/M | ECC-F2A820JCE |
| 500 | 39pf | ±10% | GP | 5.5 | 3.5 | 6.35 | P4007-ND | .86 | 6.78 | 36.00 | 35.00/M | 32.00/M | 30.00/M | ECC-D2H390KCE |
| 500 | 18pf | ±5% | NPO | 7.0 | 3.5 | 6.35 | P4403-ND | 1.41 | 11.09 | 59.00 | 57.00/M | 53.00/M | 49.00/M | ECC-D2H180JCE |
| 500 | 39pf | ±5% | NPO | 8.5 | 3.5 | 6.35 | P4407-ND | 1.53 | 12.01 | 64.00 | 62.00/M | 57.00/M | 53.00/M | ECC-D2H390JCE |
| 500 | 82pf | ±5% | NPO | 13.0 | 3.5 | 9.5 | P4411-ND | 2.98 | 23.41 | 125.00 | 121.00/M | 112.00/M | 103.00/M | ECC-D2H820JCE |
| 500 | 120pf | ±5% | NPO | 13.0 | 3.5 | 9.5 | P4413-ND | 2.90 | 22.79 | 122.00 | 118.00/M | 109.00/M | 100.00/M | ECC-D2H121JCE |
| 500 | 150pf | ±5% | NPO | 13.0 | 3.5 | 9.5 | P4414-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D2H151JCE |
| 25 | .033µf | +80%-20% | Z4V | 8.5 | 3.5 | 6.35 | P4305-ND | 9.0 | 7.08 | 38.00 | 37.00/M | 34.00/M | 31.00/M | ECC-F1E333ZVE |
| 25 | .047µf | +80%-20% | Z4V | 8.5 | 3.5 | 6.35 | P4307-ND | 1.02 | 8.01 | 43.00 | 41.00/M | 38.00/M | 35.00/M | ECC-F1E473ZVE |
| 25 | .1µf | +80%-20% | Z4V | 12.5 | 3.5 | 5.0 | P4201-ND | 2.00 | 15.71 | 84.00 | 81.00/M | 75.00/M | 69.00/M | ECC-F1E104ZV |
| 100 | 6800pf | +80%-20% | Y5V | 8.0 | 3.5 | 6.35 | P4209-ND | .78 | 6.16 | 33.00 | 32.00/M | 29.00/M | 27.00/M | ECC-F2A682ZFE |
| 500 | 1800pf | ±10% | Y5P | 10.0 | 4.0 | 6.35 | P4115-ND | 1.18 | 9.24 | 50.00 | 48.00/M | 44.00/M | 41.00/M | ECC-D2H182KBE |
| 1K | 100pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4116-ND | 1.96 | 15.40 | 83.00 | 80.00/M | 74.00/M | 68.00/M | ECC-D3A101KBN |
| 1K | 120pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4117-ND | 1.96 | 15.40 | 83.00 | 80.00/M | 74.00/M | 68.00/M | ECC-D3A121KBN |
| 1K | 150pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4118-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D3A151KBN |
| 1K | 180pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4119-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D3A181KBN |
| 1K | 220pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4120-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D3A221KBN |
| 1K | 270pf | ±10% | Y5P | 6.0 | 5.0 | 5.00 | P4121-ND | 1.92 | 15.09 | 81.00 | 78.00/M | 72.00/M | 66.00/M | ECC-D3A271KBN |
| 1K | 330pf | ±10% | Y5P | 8.0 | 5.0 | 5.00 | P4122-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A331KBN |
| 1K | 390pf | ±20% | Y5P | 8.0 | 5.0 | 5.00 | P4123-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A391KBN |
| 1K | 470pf | ±10% | Y5P | 8.0 | 5.0 | 5.00 | P4124-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A471KBN |
| 1K | 560pf | ±10% | Y5P | 8.0 | 5.0 | 5.00 | P4125-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A561KBN |
| 1K | 680pf | ±10% | Y5P | 8.0 | 5.0 | 5.00 | P4126-ND | 2.35 | 18.48 | 99.00 | 95.00/M | 88.00/M | 81.00/M | ECC-D3A681KBN |
| 1K | 820pf | ±10% | Y5P | 10.0 | 5.0 | 5.00 | P4127-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A821KBN |
| 1K | 1000pf | ±10% | Y5P | 10.0 | 5.0 | 5.00 | P4128-ND | 2.51 | 19.71 | 106.00 | 102.00/M | 94.00/M | 87.00/M | ECC-D3A102KBN |
| 1K | 1200pf | ±10% | Y5P | 10.0 | 5.0 | 5.00 | P4129-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D3A122KBN |
| 1K | 1500pf | ±10% | Y5P | 11.0 | 5.0 | 5.00 | P4130-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D3A152KBN |
| 1K | 1800pf | ±10% | Y5P | 11.0 | 5.0 | 5.00 | P4131-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D3A182KBN |
| 1K | 2200pf | ±10% | Y5P | 13.0 | 5.0 | 5.00 | P4199-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D3A222KBP |
| 1K | 2700pf | ±10% | Y5P | 13.0 | 5.0 | 5.00 | P4211-ND | 3.14 | 24.64 | 132.00 | 127.00/M | 118.00/M | 108.00/M | ECC-D3A272KBP |
| 1K | 3300pf | ±10% | Y5P | 13.5 | 5.0 | 10.00 | P4134-ND | 3.53 | 27.72 | 149.00 | 143.00/M | 133.00/M | 122.00/M | ECC-D3A332KBN |
| 1K | 3900pf | ±10% | Y5P | 15.5 | 5.0 | 10.00 | P4135-ND | 4.98 | 39.12 | 210.00 | 202.00/M | 187.00/M | 172.00/M | ECC-D3A392KBN |
| 1K | 4700pf | ±10% | Y5P | 18.0 | 5.0 | 10.00 | P4136-ND | 5.88 | 46.20 | 248.00 | 239.00/M | 221.00/M | 203.00/M | ECC-D3A472KBN |
| 1K | 5600pf | ±10% | Y5P | 18.0 | 5.0 | 10.00 | P4137-ND | 5.88 | 46.20 | 248.00 | 239.00/M | 221.00/M | 203.00/M | ECC-D3A562KBN |
| 1K | 6800pf | ±10% | Y5P | 22.0 | 5.0 | 10.00 | P4138-ND | 8.27 | 64.96 | 348.00 | 336.00/M | 311.00/M | 286.00/M | ECC-D3A682KBN |
| 1K | 8200pf | ±10% | Y5P | 22.0 | 5.0 | 10.00 | P4139-ND | 8.27 | 64.96 | 348.00 | 336.00/M | 311.00/M | 286.00/M | ECC-D3A822KBN |
| 1K | 10000pf | ±10% | Y5P | 22.0 | 5.0 | 10.00 | P4140-ND | 9.41 | 73.92 | 396.00 | 382.00/M | 354.00/M | 325.00/M | ECC-D3A103KBN |
| 2K | 100pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4474A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D101KBP |
| 2K | 120pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4475A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D121KBP |
| 2K | 150pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4476A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D151KBP |
| 2K | 180pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4477A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D181KBP |
| 2K | 220pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4478A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D221KBP |
| 2K | 270pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4479A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D271KBP |
| 2K | 330pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4480A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D331KBP |
| 2K | 390pf | ±10% | Y5P | 7.0 | 5.0 | 7.5 | P4481A-ND | 3.03 | 23.83 | 128.00 | 123.00/M | 114.00/M | 105.00/M | ECC-D3D391KBP |
| 2K | 470pf | ±10% | Y5P | 7.5 | 5.0 | 7.5 | P4482A-ND | 3.26 | 25.60 | 137.00 | 132.00/M | 122.00/M | 113.00/M | ECC-D3D471KBP |
| 2K | 560pf | ±10% | Y5P | 8.0 | 5.0 | 7.5 | P4483A-ND | 3.26 | 25.60 | 137.00 | 132.00/M | 122.00/M | 113.00/M | ECC-D3D561KBP |
| 2K | 680pf | ±10% | Y5P | 9.0 | 5.0 | 7.5 | P4484A-ND | 3.45 | 27.07 | 145.00 | 140.00/M | 130.00/M | 119.00/M | ECC-D3D681KBP |
| 2K | 820pf | ±10% | Y5P | 9.0 | 5.0 | 7.5 | P4485A-ND | 3.45 | 27.07 | 145.00 | 140.00/M | 130.00/M | 119.00/M | ECC-D3D821KBP |
| 2K | 1000pf | ±10% | Y5P | 10.0 | 5.0 | 7.5 | P4486A-ND | 4.19 | 32.96 | 177.00 | 170.00/M | 158.00/M | 145.00/M | ECC-D3D102KBP |
| 2K | 1200pf | ±10% | Y5P | 10.5 | 5.0 | 7.5 | P4487A-ND | 4.76 | 37.37 | 200.00 | 193.00/M | 179.00/M | 164.00/M | ECC-D3D122KBP |
| 2K | 1500pf | ±10% | Y5P | 12.0 | 5.0 | 7.5 | P4488A-ND | 5.54 | 43.55 | 233.00 | 225.00/M | 208.00/M | 192.00/M | ECC-D3D152KBP |
| 2K | 1800pf | ±10% | Y5P | 12.5 | 5.0 | 7.5 | P4489A-ND | 5.54 | 43.55 | 233.00 | 225.00/M | 208.00/M | 192.00/M | ECC-D3D182KBP |
| 2K | 2200pf | ±10% | Y5P | 14.0 | 5.0 | 10.00 | P4490A-ND | 8.54 | 67.09 | 360.00 | 347.00/M | 321.00/M | 295.00/M | ECC-D3D222KBP |
| 2K | 2700pf | ±10% | Y5P | 16.0 | 5.0 | 10.00 | P4491A-ND | 9.03 | 70.91 | 380.00 | 366.00/M | 339.00/M | 312.00/M | ECC-D3D272KBP |
| 2K | 3300pf | ±10% | Y5P | 17.0 | 5.0 | 10.00 | P4492A-ND | 10.90 | 85.63 | 459.00 | 442.00/M | 410.00/M | 377.00/M | ECC-D3D332KBP |
| 2K | 3900pf | ±10% | Y5P | 18.0 | 5.0 | 10.00 | P4493A-ND | 11.57 | 90.92 | 487.00 | 470.00/M | 435.00/M | 400.00/M | ECC-D3D392KBP |
| 2K | 4700pf | ±10% | Y5P | 25.0 | 5.0 | 10.00 | P4494A-ND | 12.66 | 99.46 | 533.00 | 514.00/M | 476.00/M | 438.00/M | ECC-D3D472KBP |
| 2K | 5600pf | ±10% | Y5P | 25.0 | 5.0 | 10.00 | P4495A-ND | 12.66 | 99.46 | 533.00 | 514.00/M | 476.00/M | 438.00/M | ECC-D3D562KBP |
| 2K | 100pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4496A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F101KBP |
| 3K | 120pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4497A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F121KBP |
| 3K | 150pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4498A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F151KBP |
| 3K | 180pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4499A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F181KBP |
| 3K | 220pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4500A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F221KBP |
| 3K | 270pf | ±10% | Y5P | 7.5 | 6.0 | 7.5 | P4501A-ND | 3.11 | 24.42 | 131.00 | 126.00/M | 117.00/M | 108.00/M | ECC-D3F271KBP |
| 3K | 330pf | ±10% | Y5P | 8.0 | 6.0 | 7.5 | P4502A-ND | 3.30 | 25.89 | 139.00 | 134.00/M | 124.00/M | 114.00/M | ECC-D3F331KBP |
| 3K | 390pf | ±10% | Y5P | 9.0 | 6.0 | 7.5 | P4503A-ND | 3.48 | 27.37 | 147.00 | 141.00/M | 131.00/M | 120.00/M | ECC-D3F391KBP |
| 3K | 470pf | ±10% | Y5P | 9.5 | 6.0 | 7.5 | P4504A-ND | 3.75 | 29.43 | 158.00 | 152.00/M | 141.00/M | 130.00/M | ECC-D3F471KBP |
| 3K | 560pf | ±10% | Y5P | 10.0 | 6.0 | 7.5 | P4505A-ND | 4.01 | 31.48 | 169.00 | 163.00/M | 151.00/M | 139.00/M | ECC-D3F561KBP |
| 3K | 680pf | ±10% | Y5P | 11.0 | 6.0 | 7.5 | P4506A-ND | 5.54 | 43.55 | 233.00 | 225.00/M | 208.00/M | 192.00/M | ECC-D3F681KBP |
| 3K | 820pf | ±10% | Y5P | 11.0 | 6.0 | 7.5 | P4507A-ND | 5.54 | 43.55 | 233.00 | 225.00/M | 208.00/M | 192.00/M | ECC-D3F821KBP |

PHILIPS Ceramic Disc Capacitors



| EIA Temperature Coefficient Code | COG | N750 | Y5V | Y5P |
|-------------------------------------|---|---|---------------|---------------|
| Capacitance Temperature Coefficient | 30PPM/°C | -1000PPM/°C (1425PH-ND: ±120ppms) | +22%, -82% | ±10% |
| Operating Temperature Range | -25 to +85°C | -25 to +85°C | -30 to +85°C | -30 to +85°C |
| Tolerance on Capacitance | ±5% | ±5% | +80/-20% | ±10% |
| Q Factor | C ≥ 30pF: Q ≥ 1000 C < 30pF: Q ≥ 400 +20°C | C ≥ 30pF: Q ≥ 1000 C < 30pF: Q ≥ 400 +20°C | — | — |
| Dissipation Factor | — | — | 4.0% max. | 2.5% max. |
| Insulation Resistance | 10000 MΩ | 10000 MΩ min. | 10000 MΩ min. | 10000 MΩ min. |

| Tolerance | Dim. (mm) | | Cap. Value | Digi-Key Part No. | Pricing | | | | Philips Part No. |
|------------------------|-----------|------|------------|-------------------|---------|-------|-------|-------|------------------|
| | D | S | | | 10 | 100 | 500 | 1,000 | |
| Type N750, 100V | | | | | | | | | |
| ±5 | 5.00 | 6.35 | 10pF | 1301PH-ND | .72 | 5.67 | 20.60 | 30.00 | D100D20U2MHA AAC |
| 5% | 5.00 | 6.35 | 12pF | 1302PH-ND | .72 | 5.67 | 20.60 | 30.00 | D120J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 15pF | 1303PH-ND | .72 | 5.67 | 20.60 | 30.00 | D150J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 18pF | 1304PH-ND | .72 | 5.67 | 20.60 | 30.00 | D180J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 22pF | 1305PH-ND | .72 | 5.67 | 20.60 | 30.00 | D220J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 27pF | 1306PH-ND | .72 | 5.67 | 20.60 | 30.00 | D270J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 33pF | 1307PH-ND | .72 | 5.67 | 20.60 | 30.00 | D330J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 39pF | 1308PH-ND | .72 | 5.67 | 20.60 | 30.00 | D390J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 47pF | 1309PH-ND | .72 | 5.67 | 20.60 | 30.00 | D470J20U2MHA AAC |
| 5% | 5.00 | 6.35 | 56pF | 1310PH-ND | .72 | 5.67 | 20.60 | 30.00 | D560J20U2MHA AAC |
| 5% | 6.50 | 6.35 | 68pF | 1311PH-ND | .72 | 5.67 | 20.60 | 30.00 | D680J25U2MHA AAC |
| 5% | 6.50 | 6.35 | 82pF | 1312PH-ND | .72 | 5.67 | 20.60 | 30.00 | D820J25U2MHA AAC |
| 5% | 6.50 | 6.35 | 100pF | 1313PH-ND | .80 | 6.27 | 22.80 | 34.00 | D101J25U2MHA AAC |
| 5% | 6.50 | 6.35 | 120pF | 1314PH-ND | .80 | 6.27 | 22.80 | 34.00 | D121J25U2MHA AAC |
| 5% | 7.37 | 6.35 | 150pF | 1315PH-ND | .80 | 6.27 | 22.80 | 34.00 | D151J29U2MHA AAC |
| 5% | 7.37 | 6.35 | 180pF | 1316PH-ND | .80 | 6.27 | 22.80 | 34.00 | D181J31U2MHA AAC |
| 5% | 10.01 | 6.35 | 220pF | 1317PH-ND | .80 | 6.27 | 22.80 | 34.00 | D221J39U2MHA AAC |
| 5% | 10.01 | 6.35 | 270pF | 1318PH-ND | .89 | 6.96 | 25.30 | 37.00 | D271J39U2MHA AAC |
| 5% | 10.01 | 6.35 | 330pF | 1319PH-ND | .89 | 6.96 | 25.30 | 37.00 | D331J39U2MHA AAC |
| 5% | 11.99 | 6.35 | 390pF | 1320PH-ND | .89 | 6.96 | 25.30 | 37.00 | D391J47U2MHA AAC |
| 5% | 11.99 | 6.35 | 470pF | 1321PH-ND | 1.10 | 8.61 | 31.30 | 46.00 | D471J47U2MHA AAC |
| 5% | 11.99 | 6.35 | 560pF | 1322PH-ND | 1.10 | 8.61 | 31.30 | 46.00 | D561J49U2MHA AAC |
| 5% | 11.99 | 6.35 | 680pF | 1323PH-ND | 1.40 | 11.00 | 40.00 | 59.00 | D681J59U2MHA AAC |
| 5% | 11.99 | 6.35 | 820pF | 1425PH-ND | 1.40 | 11.00 | 40.00 | 59.00 | D821J59U2JHA AAC |
| 5% | 11.99 | 6.35 | 1000pF | 1325PH-ND | 1.40 | 11.00 | 40.00 | 59.00 | D102J69U2MHA AAC |
| Type COG, 100V | | | | | | | | | |
| ±5 | 5.00 | 6.35 | 10pF | 1326PH-ND | .72 | 5.67 | 20.60 | 30.00 | D100D20COGHA AAC |
| 5% | 5.00 | 6.35 | 12pF | 1327PH-ND | .72 | 5.67 | 20.60 | 30.00 | D120J20COGHA AAC |
| 5% | 5.00 | 6.35 | 15pF | 1328PH-ND | .72 | 5.67 | 20.60 | 30.00 | D150J20COGHA AAC |
| 5% | 5.00 | 6.35 | 18pF | 1329PH-ND | .72 | 5.67 | 20.60 | 30.00 | D180J20COGHA AAC |
| 5% | 5.00 | 6.35 | 22pF | 1330PH-ND | .72 | 5.67 | 20.60 | 30.00 | D220J20COGHA AAC |
| 5% | 5.00 | 6.35 | 27pF | 1331PH-ND | .72 | 5.67 | 20.60 | 30.00 | D270J20COGHA AAC |
| 5% | 5.00 | 6.35 | 33pF | 1332PH-ND | .72 | 5.67 | 20.60 | 30.00 | D330J20COGHA AAC |
| 5% | 6.50 | 6.35 | 39pF | 1333PH-ND | .72 | 5.67 | 20.60 | 30.00 | D390J25COGHA AAC |
| 5% | 6.50 | 6.35 | 47pF | 1334PH-ND | .80 | 6.27 | 22.80 | 34.00 | D470J25COGHA AAC |
| 5% | 6.50 | 6.35 | 56pF | 1335PH-ND | .80 | 6.27 | 22.80 | 34.00 | D560J25COGHA AAC |
| 5% | 6.50 | 6.35 | 68pF | 1336PH-ND | .80 | 6.27 | 22.80 | 34.00 | D680J25COGHA AAC |
| 5% | 7.37 | 6.35 | 82pF | 1337PH-ND | .88 | 6.88 | 25.00 | 37.00 | D820J29COGHA AAC |
| 5% | 7.37 | 6.35 | 100pF | 1338PH-ND | .88 | 6.88 | 25.00 | 37.00 | D101J29COGHA AAC |
| 5% | 7.37 | 6.35 | 120pF | 1339PH-ND | .88 | 6.88 | 25.00 | 37.00 | D121J29COGHA AAC |
| 5% | 10.01 | 6.35 | 150pF | 1340PH-ND | 1.10 | 8.66 | 31.50 | 46.00 | D151J39COGHA AAC |
| 5% | 10.01 | 6.35 | 180pF | 1341PH-ND | 1.10 | 8.66 | 31.50 | 46.00 | D181J39COGHA AAC |
| 5% | 10.01 | 6.35 | 220pF | 1342PH-ND | 1.10 | 8.66 | 31.50 | 46.00 | D221J39COGHA AAC |
| 5% | 11.99 | 6.35 | 270pF | 1343PH-ND | 1.36 | 10.70 | 38.90 | 57.00 | D271J47COGHA AAC |
| Type N750, 500V | | | | | | | | | |
| 10% | 5.00 | 6.35 | 10pF | 1344PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D100K20U2MLA AAA |
| 10% | 5.00 | 6.35 | 15pF | 1345PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D150K20U2MLA AAA |
| 10% | 5.00 | 6.35 | 18pF | 1346PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D180K20U2MLA AAA |
| 10% | 5.00 | 6.35 | 22pF | 1347PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D220K20U2MLA AAA |
| 10% | 6.50 | 6.35 | 27pF | 1348PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D270K25U2MLA AAA |
| 10% | 6.50 | 6.35 | 33pF | 1349PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D330K25U2MLA AAA |
| 10% | 6.50 | 6.35 | 39pF | 1350PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D390K25U2MLA AAA |
| 10% | 6.50 | 6.35 | 47pF | 1351PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D470K25U2MLA AAA |
| 10% | 6.50 | 6.35 | 56pF | 1352PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D560K25U2MLA AAA |
| 10% | 7.37 | 6.35 | 68pF | 1353PH-ND | 1.82 | 14.30 | 52.00 | 77.00 | D680K29U2MLA AAA |
| 10% | 7.87 | 6.35 | 82pF | 1354PH-ND | 1.82 | 14.30 | 52.00 | 77.00 | D820K31U2MLA AAA |
| Type COG, 500V | | | | | | | | | |
| ±5 | 5.00 | 6.35 | 10pF | 1355PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D100D20COGLA AAA |
| 5% | 5.00 | 6.35 | 15pF | 1356PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D150J20COGLA AAA |
| 5% | 6.50 | 6.35 | 18pF | 1357PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D180J25COGLA AAA |
| 5% | 6.50 | 6.35 | 22pF | 1358PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D220J25COGLA AAA |
| 5% | 6.50 | 6.35 | 27pF | 1359PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D270J25COGLA AAA |
| 5% | 6.50 | 6.35 | 33pF | 1360PH-ND | 1.72 | 13.48 | 49.00 | 72.00 | D330J25COGLA AAA |
| 5% | 7.37 | 6.35 | 39pF | 1361PH-ND | 1.82 | 14.30 | 52.00 | 77.00 | D390J29COGLA AAA |

| Tolerance | Dim. (mm) | | Cap. Value | Digi-Key Part No. | Pricing | | | | Philips Part No. |
|-----------------------|-----------|------|------------|-------------------|---------|-------|--------|--------|------------------|
| | D | S | | | 10 | 100 | 500 | 1,000 | |
| 5% | 7.37 | 6.35 | 47pF | 1362PH-ND | 2.07 | 16.23 | 59.00 | 87.00 | D470J29COGLA AAA |
| 5% | 7.87 | 9.52 | 56pF | 1363PH-ND | 2.07 | 16.23 | 59.00 | 87.00 | D560J31COGLA BAA |
| 5% | 10.01 | 9.52 | 68pF | 1364PH-ND | 2.07 | 16.23 | 59.00 | 87.00 | D680J39COGLA BAA |
| 5% | 10.01 | 9.52 | 82pF | 1365PH-ND | 2.77 | 21.73 | 79.00 | 116.00 | D820J39COGLA BAA |
| 5% | 10.01 | 9.52 | 100pF | 1366PH-ND | 2.77 | 21.73 | 79.00 | 116.00 | D101J39COGLA BAA |
| 5% | 11.99 | 9.52 | 120pF | 1367PH-ND | 3.82 | 29.98 | 109.00 | 161.00 | D121J47COGLA BAA |
| 5% | 12.45 | 9.52 | 150pF | 1368PH-ND | 3.82 | 29.98 | 109.00 | 161.00 | D151J49COGLA BAA |
| 5% | 14.99 | 9.52 | 180pF | 1369PH-ND | 7.25 | 56.93 | 207.00 | 305.00 | D181J59COGLA BAA |
| 5% | 14.99 | 9.52 | 220pF | 1370PH-ND | 7.25 | 56.93 | 207.00 | 305.00 | D221J59COGLA BAA |
| Type Y5P, 100V | | | | | | | | | |
| 10% | 5.00 | 6.35 | 100pF | 1371PH-ND | .77 | 6.05 | 22.00 | 32.00 | D101K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 120pF | 1372PH-ND | .77 | 6.05 | 22.00 | 32.00 | D121K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 150pF | 1373PH-ND | .77 | 6.05 | 22.00 | 32.00 | D151K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 180pF | 1374PH-ND | .77 | 6.05 | 22.00 | 32.00 | D181K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 220pF | 1375PH-ND | .77 | 6.05 | 22.00 | 32.00 | D221K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 270pF | 1376PH-ND | .77 | 6.05 | 22.00 | 32.00 | D271K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 330pF | 1377PH-ND | .77 | 6.05 | 22.00 | 32.00 | D331K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 390pF | 1378PH-ND | .77 | 6.05 | 22.00 | 32.00 | D391K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 470pF | 1379PH-ND | .77 | 6.05 | 22.00 | 32.00 | D471K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 560pF | 1380PH-ND | .77 | 6.05 | 22.00 | 32.00 | D561K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 680pF | 1381PH-ND | .77 | 6.05 | 22.00 | 32.00 | D681K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 820pF | 1382PH-ND | .77 | 6.05 | 22.00 | 32.00 | D821K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 1000pF | 1383PH-ND | .77 | 6.05 | 22.00 | 32.00 | D102K20Y5PHAA EU |
| 10% | 5.00 | 6.35 | 1200pF | 1384PH-ND | .77 | 6.05 | 22.00 | 32.00 | D122K20Y5PHAA EU |
| 10% | 6.50 | 6.35 | 1500pF | 1385PH-ND | .77 | 6.05 | 22.00 | 32.00 | D152K25Y5PHAA EU |
| 10% | 6.50 | 6.35 | 1800pF | 1386PH-ND | .77 | 6.05 | 22.00 | 32.00 | D182K25Y5PHAA EU |
| 10% | 6.50 | 6.35 | 2200pF | 1387PH-ND | .77 | 6.05 | 22.00 | 32.00 | D222K25Y5PHAA EU |
| 10% | 7.37 | 6.35 | 2700pF | 1388PH-ND | .84 | 6.60 | 24.00 | 35.00 | D272K29Y5PHAA EU |
| 10% | 7.37 | 6.35 | 3300pF | 1389PH-ND | .84 | 6.60 | 24.00 | 35.00 | D332K29Y5PHAA EU |
| 10% | 7.87 | 6.35 | 3900pF | 1390PH-ND | .84 | 6.60 | 24.00 | 35.00 | D392K31Y5PHAA EU |
| 10% | 10.01 | 6.35 | 4700pF | 1391PH-ND | 1.10 | 8.61 | 31.30 | 46.00 | D472K39Y5PHAA EU |
| 10% | 10.01 | 6.35 | 5600pF | 1392PH-ND | 1.10 | 8.61 | 31.30 | 46.00 | D562K39Y5PHAA EU |
| 10% | 10.01 | 6.35 | 6800pF | 1393PH-ND | 1.10 | 8.61 | 31.30 | 46.00 | D682K39Y5PHAA EU |
| Type Y5V, 100V | | | | | | | | | |
| +80/-20 | 5.00 | 6.35 | 1000pF | 1394PH-ND | .77 | 6.05 | 22.00 | 32.00 | D102220Y5VHA AEU |
| +80/-20 | 5.00 | 6.35 | 1500pF | 1395PH-ND | .77 | 6.05 | 22.00 | 32.00 | D152220Y5VHA AEU |
| +80/-20 | 5.00 | 6.35 | 2200pF | 1396PH-ND | .77 | 6.05 | 22.00 | 32.00 | D222220Y5VHA AEU |
| +80/-20 | 5.00 | 6.35 | 3300pF | 1397PH-ND | .77 | 6.05 | 22.00 | 32.00 | D332220Y5VHA AEU |
| +80/-20 | 6.50 | 6.35 | 4700pF | 1398PH-ND | .84 | 6.60 | 24.00 | 35.00 | D472225Y5VHA AEU |
| +80/-20 | 5.00 | 6.35 | 6800pF | 1399PH-ND | .84 | 6.60 | 24.00 | 35.00 | D682220Y5VHA AEU |
| +80/-20 | 7.87 | 6.35 | 0.01µF | 1400PH-ND | .84 | 6.60 | 24.00 | 35.00 | D103231Y5VHA AEU |
| Type Y5P, 500V | | | | | | | | | |
| 10% | 5.00 | 6.35 | 100pF | 1401PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D101K20Y5PLA AEU |
| 10% | 5.00 | 6.35 | 150pF | 1402PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D151K20Y5PLA AEU |
| 10% | 5.00 | 6.35 | 180pF | 1403PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D181K20Y5PLA AEU |
| 10% | 5.00 | 6.35 | 220pF | 1404PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D221K20Y5PLA AEU |
| 10% | 5.00 | 6.35 | 270pF | 1405PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D271K20Y5PLA AEU |
| 10% | 5.00 | 6.35 | 330pF | 1406PH-ND | 1.37 | 10.73 | 39.00 | 57.00 | D331K20Y |

Panasonic Multilayer Ceramic Chip Capacitors 0402, 0603, 0805 & 1206

FEATURES:

- Small in size and wide capacitance range
- Superior humidity characteristic and long life due to the monolithic construction
- Excellent solderability and resistance to soldering heat due to terminals with three layers of silver nickel and solder
- Low self-inductance and excellent frequency characteristic

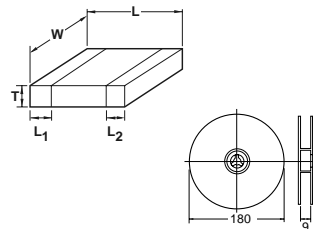
RECOMMENDED APPLICATIONS:

Class 1 (T.C. Type):

Temperature compensations, tuned circuits and filter circuits, where low loss and high stability of capacitance and high insulation resistance are required.

Class 2 (HI-K type):

Coupling and By-pass, where low loss and high stability of capacitance are not so important.



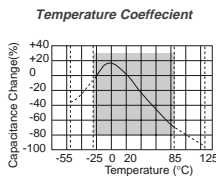
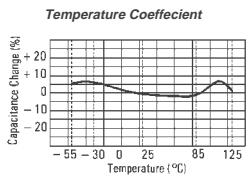
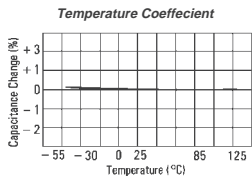
All dimensions shown in mm.

| Size Code (EIA) | L | W | L1 / L2 |
|-----------------|-----------|-----------|-----------|
| "10" Type 0402 | 1.00±0.05 | 0.50±0.05 | 0.20±0.10 |
| "11" Type 0603 | 1.60±0.10 | 0.80±0.10 | 0.30±0.20 |
| "12" Type 0805 | 2.00±0.10 | 1.25±0.10 | 0.50±0.25 |
| "13" Type 1206 | 3.20±0.15 | 1.60±0.15 | 0.80±0.30 |

NPO Type - Class 1:
 * Operating temperature range: -55°C ~+125°C

X7R Type - Class 2:
 * Operating temperature range: -55°C ~+125°C

Y5V Type - Class 2:
 * Operating temperature range: -25°C ~+85°C



| Size Code | Type | WV DC | Cap. | Tolerance | Dim. (mm) T | Digi-Key Part No. | Cut Tape Pricing | | | | Digi-Key Part No. | Tape & Reel Pricing | | | | Panasonic Part No. |
|-----------|------|--------|-------|-----------|---------------|-------------------|------------------|--------|--------|--------|-------------------|---------------------|---------|---------------|---------------|--------------------|
| | | | | | | | 10 | 100 | 500 | 1,000 | | 2,000 | 4,000 | 5,000 | 10,000 | |
| 0402 | NPO | 50 | 0.5pF | ±25pF | 0.5 | PCC0R5CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H0R5CCQ | |
| | | 50 | 1.0pF | ±25pF | 0.5 | PCC010CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H010CCQ | |
| | | 50 | 1.5pF | ±25pF | 0.5 | PCC1R5CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H1R5CCQ | |
| | | 50 | 2.0pF | ±25pF | 0.5 | PCC020CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H020CCQ | |
| | | 50 | 3.0pF | ±25pF | 0.5 | PCC030CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H030CCQ | |
| | | 50 | 4.0pF | ±25pF | 0.5 | PCC040CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H040CCQ | |
| | | 50 | 5.0pF | ±25pF | 0.5 | PCC050CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H050CCQ | |
| | | 50 | 6.0pF | ±5pF | 0.5 | PCC060CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H060DCC | |
| | | 50 | 7.0pF | ±5pF | 0.5 | PCC070CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H070DCC | |
| | | 50 | 8.0pF | ±5pF | 0.5 | PCC080CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H080DCC | |
| | | 50 | 9.0pF | ±5pF | 0.5 | PCC090CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H090DCC | |
| | | 50 | 10pF | ±5pF | 0.5 | PCC100CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H100DCC | |
| | | 50 | 11pF | ±5% | 0.5 | PCC110CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H110JCC | |
| | | 50 | 12pF | ±5% | 0.5 | PCC120CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H120JCC | |
| | | 50 | 13pF | ±5% | 0.5 | PCC130CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H130JCC | |
| | | 50 | 15pF | ±5% | 0.5 | PCC150CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H150JCC | |
| | | 50 | 16pF | ±5% | 0.5 | PCC160CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H160JCC | |
| | | 50 | 18pF | ±5% | 0.5 | PCC180CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H180JCC | |
| | | 50 | 20pF | ±5% | 0.5 | PCC200CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H200JCC | |
| | | 50 | 22pF | ±5% | 0.5 | PCC220CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H220JCC | |
| | | 50 | 24pF | ±5% | 0.5 | PCC240CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H240JCC | |
| | | 50 | 27pF | ±5% | 0.5 | PCC270CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H270JCC | |
| | | 50 | 30pF | ±5% | 0.5 | PCC300CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H300JCC | |
| | | 50 | 33pF | ±5% | 0.5 | PCC330CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H330JCC | |
| | | 50 | 36pF | ±5% | 0.5 | PCC360CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H360JCC | |
| | | 50 | 39pF | ±5% | 0.5 | PCC390CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H390JCC | |
| | | 50 | 43pF | ±5% | 0.5 | PCC430CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H430JCC | |
| | | 50 | 47pF | ±5% | 0.5 | PCC470CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H470JCC | |
| | | 50 | 51pF | ±5% | 0.5 | PCC510CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H510JCC | |
| | | 50 | 56pF | ±5% | 0.5 | PCC560CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H560JCC | |
| | | 50 | 62pF | ±5% | 0.5 | PCC620CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H620JCC | |
| | | 50 | 68pF | ±5% | 0.5 | PCC680CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H680JCC | |
| | | 50 | 75pF | ±5% | 0.5 | PCC750CQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H750JCC | |
| | | 50 | 82pF | ±5% | 0.5 | PCC820CQCT-ND | 4.31 | 28.75 | 100.63 | 143.75 | --- | --- | --- | 83.00/M | ECU-E1H820JCC | |
| | | 50 | 91pF | ±5% | 0.5 | PCC910CQCT-ND | 4.31 | 28.75 | 100.63 | 143.75 | --- | --- | --- | 83.00/M | ECU-E1H910JCC | |
| | | 50 | 100pF | ±5% | 0.5 | PCC101CQCT-ND | 4.31 | 28.75 | 100.63 | 143.75 | --- | --- | --- | 83.00/M | ECU-E1H101JCC | |
| | | 50 | 110pF | ±5% | 0.5 | PCC111CQCT-ND | 4.49 | 29.90 | 104.65 | 149.50 | --- | --- | --- | 87.00/M | ECU-E1H111JCC | |
| | | 50 | 120pF | ±5% | 0.5 | PCC121CQCT-ND | 4.49 | 29.90 | 104.65 | 149.50 | --- | --- | --- | 87.00/M | ECU-E1H121JCC | |
| | | 50 | 130pF | ±5% | 0.5 | PCC131CQCT-ND | 4.66 | 31.05 | 108.68 | 155.25 | --- | --- | --- | 90.00/M | ECU-E1H131JCC | |
| | | 50 | 150pF | ±5% | 0.5 | PCC151CQCT-ND | 4.66 | 31.05 | 108.68 | 155.25 | --- | --- | --- | 90.00/M | ECU-E1H151JCC | |
| | | 50 | 160pF | ±5% | 0.5 | PCC161CQCT-ND | 5.00 | 33.35 | 116.73 | 166.75 | --- | --- | --- | 97.00/M | ECU-E1H161JCC | |
| | | 50 | 180pF | ±5% | 0.5 | PCC181CQCT-ND | 5.26 | 35.08 | 122.76 | 175.38 | --- | --- | --- | 102.00/M | ECU-E1H181JCC | |
| | | 50 | 200pF | ±5% | 0.5 | PCC201CQCT-ND | 5.61 | 37.38 | 130.81 | 186.88 | --- | --- | --- | 108.00/M | ECU-E1H201JCC | |
| | | 50 | 220pF | ±5% | 0.5 | PCC221CQCT-ND | 5.78 | 38.53 | 134.84 | 192.63 | --- | --- | --- | 112.00/M | ECU-E1H221JCC | |
| | | 50 | 100pF | ±10% | 0.5 | PCC1709CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H101KBQ | |
| | | 50 | 120pF | ±10% | 0.5 | PCC1710CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H121KBQ | |
| | | 50 | 150pF | ±10% | 0.5 | PCC1711CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H151KBQ | |
| | | 50 | 180pF | ±10% | 0.5 | PCC1712CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H181KBQ | |
| | | 50 | 220pF | ±10% | 0.5 | PCC1713CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H221KBQ | |
| | | 50 | 270pF | ±10% | 0.5 | PCC1714CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H271KBQ | |
| | 50 | 330pF | ±10% | 0.5 | PCC1715CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H331KBQ | | |
| | 50 | 390pF | ±10% | 0.5 | PCC1716CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H391KBQ | | |
| | 50 | 470pF | ±10% | 0.5 | PCC1717CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H471KBQ | | |
| | 50 | 560pF | ±10% | 0.5 | PCC1718CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H561KBQ | | |
| | 50 | 680pF | ±10% | 0.5 | PCC1719CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H681KBQ | | |
| | 50 | 820pF | ±10% | 0.5 | PCC1720CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H821KBQ | | |
| | 50 | 1000pF | ±10% | 0.5 | PCC1721CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H102KBQ | | |
| | 50 | 1200pF | ±10% | 0.5 | PCC1722CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H122KBQ | | |
| | 50 | 1500pF | ±10% | 0.5 | PCC1723CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H152KBQ | | |
| | 50 | 1800pF | ±10% | 0.5 | PCC1724CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H182KBQ | | |
| | 50 | 2200pF | ±10% | 0.5 | PCC1725CTR-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1H222KBQ | | |
| | 50 | 2700pF | ±10% | 0.5 | PCC1726CTR-ND | 4.31 | 28.75 | 100.63 | 143.75 | --- | --- | --- | 83.00/M | ECU-E1H272KBQ | | |
| | 50 | 3300pF | ±10% | 0.5 | PCC1727CTR-ND | 4.66 | 31.05 | 108.68 | 155.25 | --- | --- | --- | 90.00/M | ECU-E1H332KBQ | | |
| | 50 | 3900pF | ±10% | 0.5 | PCC1728CTR-ND | 4.74 | 31.63 | 110.69 | 158.13 | --- | --- | --- | 92.00/M | ECU-E1H392KBQ | | |
| | 25 | 100pF | ±10% | 0.5 | PCC1702CTR-ND | 3.88 | 25.88 | 90.56 | 129.38 | --- | --- | --- | 75.00/M | ECU-E1E101KBQ | | |
| | 25 | 120pF | ±10% | 0.5 | PCC1703CTR-ND | 3.88 | 25.88 | 90.56 | 129.38 | --- | --- | --- | 75.00/M | ECU-E1E121KBQ | | |
| | 25 | 150pF | ±10% | 0.5 | PCC1704CTR-ND | 3.88 | 25.88 | 90.56 | 129.38 | --- | --- | --- | 75.00/M | ECU-E1E151KBQ | | |
| | 25 | 180pF | ±10% | 0.5 | PCC1705CTR-ND | 3.88 | 25.88 | 90.56 | 129.38 | --- | --- | --- | 75.00/M | ECU-E1E181KBQ | | |
| | 25 | 220pF | ±10% | 0.5 | PCC1706CTR-ND | 3.88 | 25.88 | 90.56 | 129.38 | --- | --- | --- | 75.00/M | ECU-E1E221KBQ | | |
| | 25 | 270pF | ±10% | 0.5 | PCC271BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1E271KBQ | | |
| | 25 | 330pF | ±10% | 0.5 | PCC331BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1E331KBQ | | |
| | 25 | 391pF | ±10% | 0.5 | PCC391BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | --- | --- | --- | 77.00/M | ECU-E1E391KBQ | | |

Panasonic. Multilayer Ceramic Chip Capacitors 0402, 0603, 0805 & 1206, (Cont.)

| Size Code | Type | WV DC | Cap. | Tolerance | Dim. (mm) T | Digi-Key Part No. | Cut Tape Pricing | | | | Digi-Key Part No. | Tape & Reel Pricing | | | Panasonic Part No. | | |
|-----------|---------|-------|---------|----------------|-------------|-------------------|------------------|----------------|--------|---------|-------------------|---------------------|---------------|----------|--------------------|---------|----------------|
| | | | | | | | 10 | 100 | 500 | 1,000 | | 2,000 | 4,000 | 5,000 | | 10,000 | |
| 0402 | X7R | 25 | 1000pF | ±10% | 0.5 | PCC102BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | — | — | — | 77.00/M | ECU-E1E102KBO | | |
| | | 25 | 1200pF | ±10% | 0.5 | PCC122BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | — | — | — | 77.00/M | ECU-E1E122KBO | | |
| | | 25 | 1500pF | ±10% | 0.5 | PCC152BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | — | — | — | 77.00/M | ECU-E1E152KBO | | |
| | | 25 | 1800pF | ±10% | 0.5 | PCC182BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | — | — | — | 77.00/M | ECU-E1E182KBO | | |
| | | 25 | 2200pF | ±10% | 0.5 | PCC222BQCT-ND | 3.97 | 26.45 | 92.58 | 132.25 | — | — | — | 77.00/M | ECU-E1E222KBO | | |
| | | 25 | 2700pF | ±10% | 0.5 | PCC272BQCT-ND | 4.31 | 28.75 | 100.63 | 143.75 | — | — | — | 83.00/M | ECU-E1E272KBO | | |
| | | 25 | 3300pF | ±10% | 0.5 | PCC332BQCT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1E332KBO | | |
| | | 25 | 3900pF | ±10% | 0.5 | PCC392BQCT-ND | 4.83 | 32.20 | 112.70 | 161.00 | — | — | — | 93.00/M | ECU-E1E392KBO | | |
| | | 25 | 4700pF | ±10% | 0.5 | PCC472BQCT-ND | 4.92 | 32.78 | 114.71 | 163.88 | — | — | — | 95.00/M | ECU-E1E472KBO | | |
| | | 25 | 5600pF | ±10% | 0.5 | PCC1707CT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1E562KBO | | |
| | | 25 | 6800pF | ±10% | 0.5 | PCC1708CT-ND | 4.74 | 31.63 | 110.69 | 158.13 | — | — | — | 92.00/M | ECU-E1E682KBO | | |
| | | 16 | 5600pF | ±10% | 0.5 | PCC562BQCT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1C562KBO | | |
| | | 16 | 6800pF | ±10% | 0.5 | PCC682BQCT-ND | 4.83 | 32.20 | 112.70 | 161.00 | — | — | — | 93.00/M | ECU-E1C682KBO | | |
| | | 16 | 8200pF | ±10% | 0.5 | PCC822BQCT-ND | 4.92 | 32.78 | 114.71 | 163.88 | — | — | — | 95.00/M | ECU-E1C822KBO | | |
| | | 16 | 10000pF | ±10% | 0.5 | PCC103BQCT-ND | 5.00 | 33.35 | 116.73 | 166.75 | — | — | — | 97.00/M | ECU-E1C103KBO | | |
| | | 16 | 12000pF | ±10% | 0.5 | PCC1700CT-ND | 4.92 | 32.78 | 114.71 | 163.88 | — | — | — | 95.00/M | ECU-E1C123KBO | | |
| | | 16 | 15000pF | ±10% | 0.5 | PCC1701CT-ND | 4.92 | 32.78 | 114.71 | 163.88 | — | — | — | 95.00/M | ECU-E1C153KBO | | |
| | | 0402 | Y5V | 50 | 1000pF | +80%/−20% | 0.5 | PCC1741CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H102ZFQ |
| | | | | 50 | 1500pF | +80%/−20% | 0.5 | PCC1742CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H152ZFQ |
| | | | | 50 | 2200pF | +80%/−20% | 0.5 | PCC1743CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H222ZFQ |
| | | | | 50 | 3300pF | +80%/−20% | 0.5 | PCC1744CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H332ZFQ |
| | | | | 50 | 4700pF | +80%/−20% | 0.5 | PCC1745CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H472ZFQ |
| | | | | 50 | 6800pF | +80%/−20% | 0.5 | PCC1746CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1H682ZFQ |
| | | | | 50 | 10000pF | +80%/−20% | 0.5 | PCC1747CT-ND | 3.80 | 25.30 | 88.55 | 126.50 | — | — | — | 73.00/M | ECU-E1H103ZFQ |
| | | | | 25 | 1000pF | +80%/−20% | 0.5 | PCC1732CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E102ZFQ |
| | | | | 25 | 1500pF | +80%/−20% | 0.5 | PCC1733CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E152ZFQ |
| | | | | 25 | 2200pF | +80%/−20% | 0.5 | PCC1734CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E222ZFQ |
| | | | | 25 | 3300pF | +80%/−20% | 0.5 | PCC1735CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E332ZFQ |
| | | | | 25 | 4700pF | +80%/−20% | 0.5 | PCC1736CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E472ZFQ |
| | | | | 25 | 6800pF | +80%/−20% | 0.5 | PCC1737CT-ND | 3.54 | 23.58 | 82.51 | 117.88 | — | — | — | 68.00/M | ECU-E1E682ZFQ |
| 25 | 10000pF | | | +80%/−20% | 0.5 | PCC1738CT-ND | 3.80 | 25.30 | 88.55 | 126.50 | — | — | — | 73.00/M | ECU-E1E103ZFQ | | |
| 25 | 15000pF | | | +80%/−20% | 0.5 | PCC1739CT-ND | 4.23 | 28.18 | 98.61 | 140.88 | — | — | — | 82.00/M | ECU-E1E153ZFQ | | |
| 25 | 22000pF | | | +80%/−20% | 0.5 | PCC1740CT-ND | 4.23 | 28.18 | 98.61 | 140.88 | — | — | — | 82.00/M | ECU-E1E223ZFQ | | |
| 16 | 15000pF | | | +80%/−20% | 0.5 | PCC153FQCT-ND | 4.23 | 28.18 | 98.61 | 140.88 | — | — | — | 82.00/M | ECU-E1C153ZFQ | | |
| 16 | 22000pF | | | +80%/−20% | 0.5 | PCC223FQCT-ND | 4.49 | 29.90 | 104.65 | 149.50 | — | — | — | 87.00/M | ECU-E1C223ZFQ | | |
| 16 | 33000pF | | | +80%/−20% | 0.5 | PCC333FQCT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1C333ZFQ | | |
| 16 | 47000pF | | | +80%/−20% | 0.5 | PCC1729CT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1C473ZFQ | | |
| 16 | 68000pF | | | +80%/−20% | 0.5 | PCC1730CT-ND | 4.66 | 31.05 | 108.68 | 155.25 | — | — | — | 90.00/M | ECU-E1C683ZFQ | | |
| 16 | 1µF | | | +80%/−20% | 0.5 | PCC1731CT-ND | 4.50 | 34.50 | 120.75 | 172.50 | — | — | — | 100.00/M | ECU-E1C104ZFQ | | |
| 0603 | NPO | | | 50 | 0.5pF | ±0.25pF | 0.8 | PCC005CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H0R5CCV |
| | | | | 50 | 1pF | ±0.5pF | 0.8 | PCC010CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H10R5CCV |
| | | | | 50 | 1.5pF | ±0.25pF | 0.8 | PCC01R5CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H1R5CCV |
| | | | | 50 | 2pF | ±0.25pF | 0.8 | PCC020CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H020CCV |
| | | | | 50 | 3pF | ±0.25pF | 0.8 | PCC030CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H030CCV |
| | | | | 50 | 4pF | ±0.25pF | 0.8 | PCC040CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H040CCV |
| | | | | 50 | 5pF | ±0.25pF | 0.8 | PCC050CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H050CCV |
| | | | | 50 | 6pF | ±0.5pF | 0.8 | PCC060CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H060CCV |
| | | 50 | 7pF | ±0.5pF | 0.8 | PCC070CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H070CCV | | |
| | | 50 | 8pF | ±0.5pF | 0.8 | PCC080CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H080CCV | | |
| | | 50 | 9pF | ±0.5pF | 0.8 | PCC090CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H090CCV | | |
| | | 50 | 10pF | ±1pF | 0.8 | PCC100CVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H100CCV | | |
| | | 50 | 12pF | ±5% | 0.8 | PCC120ACVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H120JCV | | |
| | | 50 | 15pF | ±5% | 0.8 | PCC150ACVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H150JCV | | |
| | | 50 | 18pF | ±5% | 0.8 | PCC180ACVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H180JCV | | |
| | | 50 | 22pF | ±5% | 0.8 | PCC220ACVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H220JCV | | |
| | | 50 | 27pF | ±5% | 0.8 | PCC270ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H270JCV | | |
| | | 50 | 33pF | ±5% | 0.8 | PCC330ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H330JCV | | |
| | | 50 | 39pF | ±5% | 0.8 | PCC390ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H390JCV | | |
| | | 50 | 47pF | ±5% | 0.8 | PCC470ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H470JCV | | |
| | | 50 | 56pF | ±5% | 0.8 | PCC560ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H560JCV | | |
| | | 50 | 68pF | ±5% | 0.8 | PCC680ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H680JCV | | |
| | | 50 | 82pF | ±5% | 0.8 | PCC820ACVCT-ND | 1.30 | 8.65 | 30.28 | 43.25 | — | 29.00/M | — | — | ECU-V1H820JCV | | |
| | | 50 | 100pF | ±5% | 0.8 | PCC101ACVCT-ND | 1.54 | 10.27 | 35.95 | 51.35 | — | 34.00/M | — | — | ECU-V1H101JCV | | |
| | | 50 | 120pF | ±5% | 0.8 | PCC121ACVCT-ND | 1.54 | 10.27 | 35.95 | 51.35 | — | 34.00/M | — | — | ECU-V1H121JCV | | |
| | | 50 | 150pF | ±5% | 0.8 | PCC151ACVCT-ND | 1.54 | 10.27 | 35.95 | 51.35 | — | 34.00/M | — | — | ECU-V1H151JCV | | |
| | | 50 | 180pF | ±5% | 0.8 | PCC181ACVCT-ND | 1.54 | 10.27 | 35.95 | 51.35 | — | 34.00/M | — | — | ECU-V1H181JCV | | |
| | | 50 | 220pF | ±5% | 0.8 | PCC221ACVCT-ND | 1.54 | 10.27 | 35.95 | 51.35 | — | 34.00/M | — | — | ECU-V1H221JCV | | |
| | | 50 | 270pF | ±5% | 0.8 | PCC271ACVCT-ND | 1.70 | 11.35 | 39.73 | 56.75 | — | 38.00/M | — | — | ECU-V1H271JCV | | |
| | | 50 | 330pF | ±5% | 0.8 | PCC331ACVCT-ND | 1.78 | 11.89 | 41.62 | 59.45 | — | 39.00/M | — | — | ECU-V1H331JCV | | |
| 50 | 390pF | ±5% | 0.8 | PCC391ACVCT-ND | 2.03 | 13.52 | 47.30 | 67.58 | — | 45.00/M | — | — | ECU-V1H391JCV | | | | |
| 50 | 220pF | ±10% | 0.8 | PCC221BVCT-ND | 1.16 | 7.73 | 27.06 | 38.65 | — | 26.00/M | — | — | ECU-V1H221KVB | | | | |
| 50 | 270pF | ±10% | 0.8 | PCC271BVCT-ND | 1.16 | 7.73 | 27.06 | 38.65 | — | 26.00/M | — | — | ECU-V1H271KVB | | | | |
| 50 | 330pF | ±10% | 0.8 | PCC331BVCT-ND | 1.16 | 7.73 | 27.06 | 38.65 | — | 26.00/M | — | — | ECU-V1H331KVB | | | | |
| 50 | 390pF | ±10% | 0.8 | PCC391BVCT-ND | 1.16 | 7.73 | 27.06 | 38.65 | — | 26.00/M | — | — | ECU-V1H391KVB | | | | |
| 50 | 470pF | ±10% | 0.8 | PCC471BVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H471KVB | | | | |
| 50 | 560pF | ±10% | 0.8 | PCC561BVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H561KVB | | | | |
| 50 | 680pF | ±10% | 0.8 | PCC681BVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H681KVB | | | | |
| 50 | 820pF | ±10% | 0.8 | PCC821BVCT-ND | 1.22 | 8.11 | 28.39 | 40.55 | — | 27.00/M | — | — | ECU-V1H821KVB | | | | |
| 50 | 1000pF | ±10% | 0.8 | PCC102BVCT-ND | 1.22 | 8.11 | | | | | | | | | | | |

Panasonic. Multilayer Ceramic Chip Capacitors 0402, 0603, 0805 & 1206, (Cont.)

| Size Code | Type | WV DC | Cap. | Tolerance | Dim. (mm) T | Digi-Key Part No. | Cut Tape Pricing | | | | Digi-Key Part No. | 2,000 | Tape & Reel Pricing | | Panasonic Part No. | |
|-----------|------|---------|-----------|-----------|----------------|-------------------|-------------------|-------|--------|---------------|-------------------|-------------------|---------------------|---------------|--------------------|---------------|
| | | | | | | | 10 | 100 | 500 | 1,000 | | | 5,000 | 10,000 | | |
| 0603 | X7R | 50 | 12000pF | ±10% | 0.8 | PCC1785CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1785TR-ND | — | 40.00M | — | ECJ-1VB1H123K | |
| | | 50 | 15000pF | ±10% | 0.8 | PCC1533BVCT-ND* | 2.11 | 14.06 | 49.19 | 70.28 | PCC1533BVT-ND | — | 47.00M | — | ECU-V1H153KBV | |
| | | 50 | 15000pF | ±10% | 0.8 | PCC1786CT-ND | 1.98 | 13.23 | 46.29 | 66.13 | PCC1786TR-ND | — | 44.00M | — | ECJ-1VB1H153K | |
| | | 25 | 10000pF | ±10% | 0.8 | PCC1763CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1763TR-ND | — | 40.00M | — | ECJ-1VB1E103K | |
| | | 25 | 12000pF | ±10% | 0.8 | PCC1764CT-ND | 1.98 | 13.23 | 46.29 | 66.13 | PCC1764TR-ND | — | 44.00M | — | ECJ-1VB1E123K | |
| | | 25 | 15000pF | ±10% | 0.8 | PCC1765CT-ND | 2.07 | 13.80 | 48.30 | 69.00 | PCC1765TR-ND | — | 46.00M | — | ECJ-1VB1E153K | |
| | | 25 | 18000pF | ±10% | 0.8 | PCC1833BVCT-ND* | 2.35 | 15.68 | 54.86 | 78.38 | PCC1833BVT-ND | — | 52.00M | — | ECU-V1E183KBV | |
| | | 25 | 18000pF | ±10% | 0.8 | PCC1766CT-ND | 2.07 | 13.80 | 48.30 | 69.00 | PCC1766TR-ND | — | 46.00M | — | ECJ-1VB1E183K | |
| | | 25 | 22000pF | ±10% | 0.8 | PCC2233BVCT-ND* | 2.03 | 13.52 | 47.30 | 67.58 | PCC2233BVT-ND | — | 45.00M | — | ECU-V1E223KBV | |
| | | 25 | 22000pF | ±10% | 0.8 | PCC1767CT-ND | 2.16 | 14.38 | 50.31 | 71.88 | PCC1767TR-ND | — | 48.00M | — | ECJ-1VB1E223K | |
| | | 25 | 27000pF | ±10% | 0.8 | PCC1768CT-ND | 2.24 | 14.95 | 52.33 | 74.75 | PCC1768TR-ND | — | 50.00M | — | ECJ-1VB1E273K | |
| | | 25 | 33000pF | ±10% | 0.8 | PCC1769CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1769TR-ND | — | 52.00M | — | ECJ-1VB1E333K | |
| | | 25 | 39000pF | ±10% | 0.8 | PCC1770CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1770TR-ND | — | 52.00M | — | ECJ-1VB1E393K | |
| | | 25 | 47000pF | ±10% | 0.8 | PCC1771CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1771TR-ND | — | 52.00M | — | ECJ-1VB1E473K | |
| | | Y5V | 16 | 10000pF | ±10% | 0.8 | PCC1750CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1750TR-ND | — | 40.00M | — | ECJ-1VB1C103K |
| | | | 16 | 12000pF | ±10% | 0.8 | PCC1751CT-ND | 1.98 | 13.23 | 46.29 | 66.13 | PCC1751TR-ND | — | 44.00M | — | ECJ-1VB1C123K |
| | | | 16 | 15000pF | ±10% | 0.8 | PCC1752CT-ND | 2.16 | 14.38 | 50.31 | 71.88 | PCC1752TR-ND | — | 48.00M | — | ECJ-1VB1C153K |
| | | | 16 | 18000pF | ±10% | 0.8 | PCC1753CT-ND | 2.24 | 14.95 | 52.33 | 74.75 | PCC1753TR-ND | — | 50.00M | — | ECJ-1VB1C183K |
| | | | 16 | 22000pF | ±10% | 0.8 | PCC1754CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1754TR-ND | — | 52.00M | — | ECJ-1VB1C223K |
| | | | 16 | 27000pF | ±10% | 0.8 | PCC1755CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1755TR-ND | — | 52.00M | — | ECJ-1VB1C273K |
| | | | 16 | 33000pF | ±10% | 0.8 | PCC1756CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1756TR-ND | — | 52.00M | — | ECJ-1VB1C333K |
| | | | 16 | 39000pF | ±10% | 0.8 | PCC1757CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1757TR-ND | — | 52.00M | — | ECJ-1VB1C393K |
| | | | 16 | 47000pF | ±10% | 0.8 | PCC1758CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1758TR-ND | — | 52.00M | — | ECJ-1VB1C473K |
| | | | 16 | 56000pF | ±10% | 0.8 | PCC1759CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1759TR-ND | — | 52.00M | — | ECJ-1VB1C563K |
| | | | 16 | 68000pF | ±10% | 0.8 | PCC1760CT-ND | 2.33 | 15.53 | 54.34 | 77.63 | PCC1760TR-ND | — | 52.00M | — | ECJ-1VB1C683K |
| | | | 16 | 82000pF | ±10% | 0.8 | PCC1761CT-ND | 2.67 | 17.83 | 62.39 | 89.13 | PCC1761TR-ND | — | 59.00M | — | ECJ-1VB1C823K |
| | | | 16 | 1.2µF | ±10% | 0.8 | PCC1762CT-ND | 2.67 | 17.83 | 62.39 | 89.13 | PCC1762TR-ND | — | 59.00M | — | ECJ-1VB1C104K |
| | | | 10 | .12µF | ±10% | 0.8 | PCC1906CT-ND NEW! | 3.62 | 24.15 | 84.53 | 120.75 | PCC1906TR-ND NEW! | — | 80.00M | — | ECJ-1VB1A124K |
| | | | 10 | .15µF | ±10% | 0.8 | PCC1748CT-ND | 3.71 | 24.73 | 86.54 | 123.63 | PCC1748TR-ND | — | 82.00M | — | ECJ-1VB1A154K |
| | | | 10 | .18µF | ±10% | 0.8 | PCC1907CT-ND NEW! | 3.71 | 24.73 | 86.54 | 123.63 | PCC1907TR-ND NEW! | — | 82.00M | — | ECJ-1VB1A184K |
| | | | 10 | .22µF | ±10% | 0.8 | PCC1749CT-ND | 3.80 | 25.30 | 88.55 | 126.50 | PCC1749TR-ND | — | 84.00M | — | ECJ-1VB1A224K |
| | | | 6.3 | .27µF | ±10% | 0.8 | PCC1908CT-ND NEW! | 4.83 | 32.20 | 112.70 | 161.00 | PCC1908TR-ND NEW! | — | 107.00M | — | ECJ-1VB0J274K |
| | | | 6.3 | .33µF | ±10% | 0.8 | PCC1909CT-ND NEW! | 4.83 | 32.20 | 112.70 | 161.00 | PCC1909TR-ND NEW! | — | 107.00M | — | ECJ-1VB0J334K |
| | | | 6.3 | .39µF | ±10% | 0.8 | PCC1910CT-ND NEW! | 4.83 | 32.20 | 112.70 | 161.00 | PCC1910TR-ND NEW! | — | 107.00M | — | ECJ-1VB0J394K |
| | | | 6.3 | .47µF | ±10% | 0.8 | PCC1911CT-ND NEW! | 4.83 | 32.20 | 112.70 | 161.00 | PCC1911TR-ND NEW! | — | 107.00M | — | ECJ-1VB0J474K |
| | | | 6.3 | .56µF | ±10% | 0.8 | PCC1912CT-ND NEW! | 5.00 | 33.35 | 116.73 | 166.75 | PCC1912TR-ND NEW! | — | 111.00M | — | ECJ-1VB0J564K |
| | | | 6.3 | .68µF | ±10% | 0.8 | PCC1913CT-ND NEW! | 5.18 | 34.50 | 120.75 | 172.50 | PCC1913TR-ND NEW! | — | 115.00M | — | ECJ-1VB0J684K |
| | | | 6.3 | .82µF | ±10% | 0.8 | PCC1914CT-ND NEW! | 5.18 | 34.50 | 120.75 | 172.50 | PCC1914TR-ND NEW! | — | 115.00M | — | ECJ-1VB0J824K |
| | | | 6.3 | 1µF | ±10% | 0.8 | PCC1915CT-ND NEW! | 5.18 | 34.50 | 120.75 | 172.50 | PCC1915TR-ND NEW! | — | 115.00M | — | ECJ-1VB0J105K |
| | | | 50 | 1000pF | +80%/-20% | 0.8 | PCC1795CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1795TR-ND | — | 21.00M | — | ECU-V1H102ZVF |
| | | | 50 | 1500pF | +80%/-20% | 0.8 | PCC1796CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1796TR-ND | — | 21.00M | — | ECU-V1H152ZVF |
| | | | 50 | 2200pF | +80%/-20% | 0.8 | PCC1797CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1797TR-ND | — | 21.00M | — | ECU-V1H222ZVF |
| | | | 50 | 3300pF | +80%/-20% | 0.8 | PCC1798CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1798TR-ND | — | 21.00M | — | ECU-V1H332ZVF |
| | | | 50 | 4700pF | +80%/-20% | 0.8 | PCC1799CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1799TR-ND | — | 21.00M | — | ECU-V1H472ZVF |
| | | | 50 | 6800pF | +80%/-20% | 0.8 | PCC1800CT-ND | .95 | 6.33 | 22.14 | 31.63 | PCC1800TR-ND | — | 21.00M | — | ECU-V1H682ZVF |
| | | | 50 | 10000pF | +80%/-20% | 0.8 | PCC1801CT-ND | 1.04 | 6.90 | 24.15 | 34.50 | PCC1801TR-ND | — | 23.00M | — | ECJ-1VF1H103Z |
| | | 50 | 15000pF | +80%/-20% | 0.8 | PCC1802CT-ND | 1.21 | 8.05 | 28.18 | 40.25 | PCC1802TR-ND | — | 27.00M | — | ECJ-1VF1H153Z | |
| | | 50 | 22000pF | +80%/-20% | 0.8 | PCC1803CT-ND | 1.38 | 9.20 | 32.20 | 46.00 | PCC1803TR-ND | — | 31.00M | — | ECJ-1VF1H223Z | |
| | 50 | 33000pF | +80%/-20% | 0.8 | PCC1804CT-ND | 1.55 | 10.35 | 36.23 | 51.75 | PCC1804TR-ND | — | 34.00M | — | ECJ-1VF1H333Z | | |
| | 50 | 47000pF | +80%/-20% | 0.8 | PCC1805CT-ND | 1.73 | 11.50 | 40.25 | 57.50 | PCC1805TR-ND | — | 38.00M | — | ECJ-1VF1H473Z | | |
| | 25 | 68000pF | +80%/-20% | 0.8 | PCC1793CT-ND | 1.98 | 13.23 | 46.29 | 66.13 | PCC1793TR-ND | — | 44.00M | — | ECJ-1VF1E683Z | | |
| | 25 | .1µF | +80%/-20% | 0.8 | PCC1794CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1794TR-ND | — | 40.00M | — | ECJ-1VF1E104Z | | |
| | 16 | .1µF | +80%/-20% | 0.8 | PCC1788CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1788TR-ND | — | 40.00M | — | ECJ-1VF1C104Z | | |
| | 16 | .15µF | +80%/-20% | 0.8 | PCC1789CT-ND | 1.81 | 12.08 | 42.26 | 60.38 | PCC1789TR-ND | — | 40.00M | — | ECJ-1VF1C154Z | | |
| | 16 | .22µF | +80%/-20% | 0.8 | PCC1790CT-ND | 1.98 | 13.23 | 46.29 | 66.13 | PCC1790TR-ND | — | 44.00M | — | ECJ-1VF1C224Z | | |
| | 16 | .33µF | +80%/-20% | 0.8 | PCC1791CT-ND | 2.42 | 16.10 | 56.35 | 80.50 | PCC1791TR-ND | — | 53.00M | — | ECJ-1VF1C334Z | | |
| | 16 | .47µF | +80%/-20% | 0.8 | PCC1792CT-ND | 2.93 | 19.55 | 68.43 | 97.75 | PCC1792TR-ND | — | 65.00M | — | ECJ-1VF1C474Z | | |
| | 10 | 1µF | +80%/-20% | 0.8 | PCC1787CT-ND | 3.97 | 26.45 | 92.58 | 132.25 | PCC1787TR-ND | — | 88.00M | — | ECJ-1VF1A105Z | | |
| | 50 | 0.5pF | ±0.25pF | 0.65 | PCC0R5CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC0R5CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H0R5CNC | |
| | 50 | 1.0pF | ±0.25pF | 0.65 | PCC010CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC010CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H010CNC | |
| | 50 | 1.5pF | ±0.25pF | 0.65 | PCC1R5CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC1R5CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H1R5CNC | |
| | 50 | 2.0pF | ±0.25pF | 0.65 | PCC020CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC020CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H020CNC | |
| | 50 | 3.0pF | ±0.25pF | 0.65 | PCC030CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC030CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H030CNC | |
| | 50 | 4.0pF | ±0.25pF | 0.65 | PCC040CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC040CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H040CNC | |
| | 50 | 5.0pF | ±0.25pF | 0.65 | PCC050CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC050CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H050CNC | |
| | 50 | 6.0pF | ±0.5pF | 0.65 | PCC060CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC060CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H060CNC | |
| | 50 | 7.0pF | ±0.5pF | 0.65 | PCC070CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC070CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H070CNC | |
| | 50 | 8.0pF | ±0.5pF | 0.65 | PCC080CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC080CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H080CNC | |
| | 50 | 9.0pF | ±0.5pF | 0.65 | PCC090CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC090CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H090CNC | |
| | 50 | 10pF | ±0.5pF | 0.65 | PCC100CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC100CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H100CNC | |
| | 50 | 12pF | ±5% | 0.65 | PCC120CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC120CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H120CNC | |
| | 50 | 15pF | ±5% | 0.65 | PCC150CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC150CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H150CNC | |
| | 50 | 18pF | ±5% | 0.65 | PCC180CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC180CNTR-ND | — | — | 25.00M | 22.00M | ECU-V1H180CNC | |
| | 50 | 22pF | ±5% | 0.65 | PCC220CNCT-ND* | 1.12 | 7.48 | 26.16 | 37.38 | PCC220CNTR-ND | — | — | | | | |

Panasonic Multilayer Ceramic Chip Capacitors 0402, 0603, 0805 & 1206, (Cont.)

| Size Code | Type | WV DC | Dim. Cap. | Tolerance | (mm) T | Digi-Key Part No. | Cut Tape Pricing | | | | Digi-Key Part No. | Tape & Reel Pricing | | | Panasonic Part No. | | | | | | | |
|-----------|-------|---------|-----------|-----------|-----------|-------------------|------------------|--------------|-------------------|-------------------|-------------------|---------------------|--------------|-------------------|--------------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | | | | | | | 10 | 100 | 500 | 1,000 | | 2,000 | 4,000 | 5,000 | | 10,000 | | | | | | |
| 0805 | X7R | 50 | 1500pF | ±10% | 0.65 | PCC152BNCT-ND* | 1.10 | 7.36 | 25.76 | 36.80 | PCC152BNTR-ND | — | — | 24.00/M | 21.00/M | ECU-V1H152KBN | | | | | | |
| | | 50 | 1800pF | ±10% | 0.65 | PCC182BNCT-ND* | 1.04 | 6.90 | 24.15 | 34.50 | PCC182BNTR-ND | — | — | 23.00/M | 20.00/M | ECU-V1H182KBN | | | | | | |
| | | 50 | 2200pF | ±10% | 0.65 | PCC222BNCT-ND* | 1.10 | 7.36 | 25.76 | 36.80 | PCC222BNTR-ND | — | — | 24.00/M | 21.00/M | ECU-V1H222KBN | | | | | | |
| | | 50 | 2700pF | ±10% | 0.65 | PCC272BNCT-ND* | 1.10 | 7.36 | 25.76 | 36.80 | PCC272BNTR-ND | — | — | 24.00/M | 21.00/M | ECU-V1H272KBN | | | | | | |
| | | 50 | 3300pF | ±10% | 0.65 | PCC332BNCT-ND* | 1.04 | 6.90 | 24.15 | 34.50 | PCC332BNTR-ND | — | — | 23.00/M | 20.00/M | ECU-V1H332KBN | | | | | | |
| | | Y5V | 50 | 3900pF | ±10% | 0.65 | PCC392BNCT-ND* | 1.04 | 6.90 | 24.15 | 34.50 | PCC392BNTR-ND | — | — | 23.00/M | 20.00/M | ECU-V1H392KBN | | | | | |
| | | | 50 | 4700pF | ±10% | 0.65 | PCC472BNCT-ND* | 1.24 | 8.28 | 28.98 | 41.40 | PCC472BNTR-ND | — | — | 27.00/M | 24.00/M | ECU-V1H472KBN | | | | | |
| | | | 50 | 5600pF | ±10% | 0.65 | PCC562BNCT-ND* | 1.17 | 7.82 | 27.37 | 39.10 | PCC562BNTR-ND | — | — | 26.00/M | 23.00/M | ECU-V1H562KBN | | | | | |
| | | | 50 | 6800pF | ±10% | 0.65 | PCC682BNCT-ND* | 1.24 | 8.28 | 28.98 | 41.40 | PCC682BNTR-ND | — | — | 27.00/M | 24.00/M | ECU-V1H682KBN | | | | | |
| | | | 50 | 8200pF | ±10% | 0.65 | PCC822BNCT-ND* | 1.24 | 8.28 | 28.98 | 41.40 | PCC822BNTR-ND | — | — | 27.00/M | 24.00/M | ECU-V1H822KBN | | | | | |
| | | | 1206 | NPO | 50 | 10000pF | ±10% | 0.65 | PCC103BNCT-ND* | 1.31 | 8.74 | 30.59 | 43.70 | PCC103BNTR-ND | — | — | 29.00/M | 25.00/M | ECU-V1H103KBN | | | |
| | | | | | 50 | 12000pF | ±10% | 0.65 | PCC123BGCT-ND* | 1.52 | 10.12 | 35.42 | 50.60 | PCC123BGTR-ND | — | — | 34.00/M | 29.00/M | ECU-V1H123KBN | | | |
| | | | | | 50 | 15000pF | ±10% | 0.65 | PCC153BGCT-ND* | 1.52 | 10.12 | 35.42 | 50.60 | PCC153BGTR-ND | — | — | 34.00/M | 29.00/M | ECU-V1H153KBN | | | |
| | | | | | 50 | 18000pF | ±10% | 0.65 | PCC183BGCT-ND* | 1.52 | 10.12 | 35.42 | 50.60 | PCC183BGTR-ND | — | — | 34.00/M | 29.00/M | ECU-V1H183KBN | | | |
| | | | | | 50 | 22000pF | ±10% | 0.65 | PCC223BGCT-ND* | 1.86 | 12.42 | 43.47 | 62.10 | PCC223BGTR-ND | — | — | 41.00/M | 36.00/M | ECU-V1H223KBN | | | |
| | | | | | NPO | 50 | 27000pF | ±10% | 1.0 | PCC273BGCT-ND* | 2.14 | 14.26 | 49.91 | 71.30 | PCC273BGTR-ND | — | 47.00/M | — | — | — | ECU-V1H273KBN | |
| | | | | | | 50 | 27000pF | ±10% | 0.85 | PCC1833CT-ND | 2.07 | 13.80 | 48.30 | 69.00 | PCC1833TR-ND | — | 46.00/M | — | — | — | ECJ-2VB1H273K | |
| | | | | | | 50 | 33000pF | ±10% | 0.85 | PCC1834CT-ND | 2.24 | 14.95 | 52.33 | 74.75 | PCC1834TR-ND | — | 50.00/M | — | — | — | ECJ-2VB1H333K | |
| | | | | | | 50 | 39000pF | ±10% | 0.85 | PCC1835CT-ND | 2.24 | 14.95 | 52.33 | 74.75 | PCC1835TR-ND | — | 55.00/M | — | — | — | ECJ-2VB1H393K | |
| | | | | | | 50 | 47000pF | ±10% | 1.25 | PCC1836CT-ND | 2.85 | 18.98 | 66.41 | 94.88 | PCC1836TR-ND | 76.00/M | — | — | 55.00/M | — | ECJ-2VB1H473K | |
| | | | | | | Y5V | 50 | 56000pF | ±10% | 1.25 | PCC1837CT-ND | 2.85 | 18.98 | 66.41 | 94.88 | PCC1837TR-ND | 76.00/M | — | — | 55.00/M | — | ECJ-2VB1H563K |
| | | | | | | | 50 | 68000pF | ±10% | 1.25 | PCC1838CT-ND | 2.85 | 18.98 | 66.41 | 94.88 | PCC1838TR-ND | 76.00/M | — | — | 55.00/M | — | ECJ-2VB1H683K |
| | | | | | | | 50 | 82000pF | ±10% | 1.25 | PCC1840CT-ND | 2.85 | 18.98 | 66.41 | 94.88 | PCC1840TR-ND | 76.00/M | — | — | 55.00/M | — | ECJ-2VB1H823K |
| | | | | | | | 25 | 39000pF | ±10% | 0.85 | PCC1819CT-ND | 2.24 | 14.95 | 52.33 | 74.75 | PCC1819TR-ND | — | 50.00/M | — | — | — | ECJ-2VB1E393K |
| | | | | | | | 25 | 47000pF | ±10% | 0.85 | PCC1820CT-ND | 2.42 | 16.10 | 56.35 | 80.50 | PCC1820TR-ND | — | 53.00/M | — | — | — | ECJ-2VB1E473K |
| | | | | | | | 25 | 56000pF | ±10% | 0.85 | PCC1825CT-ND | 2.76 | 18.40 | 64.40 | 92.00 | PCC1825TR-ND | — | 61.00/M | — | — | — | ECJ-2VB1E563K |
| | | | | | | | 25 | 68000pF | ±10% | 0.85 | PCC1826CT-ND | 2.76 | 18.40 | 64.40 | 92.00 | PCC1826TR-ND | — | 61.00/M | — | — | — | ECJ-2VB1E683K |
| | | | | | | | 25 | 82000pF | ±10% | 0.85 | PCC1827CT-ND | 2.76 | 18.40 | 64.40 | 92.00 | PCC1827TR-ND | — | 61.00/M | — | — | — | ECJ-2VB1E823K |
| | Y5V | | | | | | 25 | .1µF | ±10% | 0.85 | PCC1828CT-ND | 2.76 | 18.40 | 64.40 | 92.00 | PCC1828TR-ND | — | 61.00/M | — | — | — | ECJ-2VB1E104K |
| | | | | | | | 25 | .12µF | ±10% | 1.25 | PCC1829CT-ND | 3.02 | 20.13 | 70.44 | 100.63 | PCC1829TR-ND | 81.00/M | — | — | 58.00/M | — | ECJ-2VB1E124K |
| | | | | | | | 25 | .15µF | ±10% | 1.25 | PCC1830CT-ND | 3.11 | 20.70 | 72.45 | 103.50 | PCC1830TR-ND | 83.00/M | — | — | 60.00/M | — | ECJ-2VB1E154K |
| | | | | | | | 25 | .18µF | ±10% | 1.25 | PCC1831CT-ND | 3.19 | 21.28 | 74.46 | 106.38 | PCC1831TR-ND | 85.00/M | — | — | 62.00/M | — | ECJ-2VB1E184K |
| | | | | | | | 25 | .22µF | ±10% | 1.25 | PCC1832CT-ND | 3.97 | 26.45 | 92.58 | 132.25 | PCC1832TR-ND | 106.00/M | — | — | 77.00/M | — | ECJ-2VB1E224K |
| | | Y5V | | | | | 16 | 47000pF | ±10% | 0.85 | PCC1808CT-ND | 2.42 | 16.10 | 56.35 | 80.50 | PCC1808TR-ND | — | 53.00/M | — | — | — | ECJ-2VB1C473K |
| | | | | 16 | | | 56000pF | ±10% | 0.85 | PCC1809CT-ND | 2.76 | 18.40 | 64.40 | 92.00 | PCC1809TR-ND | — | 61.00/M | — | — | — | ECJ-2VB1C563K | |
| | | | | 16 | | | 68000pF | ±10% | 0.85 | PCC1810CT-ND | 3.02 | 20.13 | 70.44 | 100.63 | PCC1810TR-ND | — | 67.00/M | — | — | — | ECJ-2VB1C683K | |
| | | | | 16 | | | 82000pF | ±10% | 0.85 | PCC1811CT-ND | 3.02 | 20.13 | 70.44 | 100.63 | PCC1811TR-ND | — | 67.00/M | — | — | — | ECJ-2VB1C823K | |
| | | | | 16 | | | .1µF | ±10% | 0.85 | PCC1812CT-ND | 3.36 | 22.43 | 78.49 | 112.13 | PCC1812TR-ND | — | 74.00/M | — | — | — | ECJ-2VB1C104K | |
| | | | | Y5V | | | 16 | .12µF | ±10% | 0.85 | PCC1813CT-ND | 3.45 | 23.00 | 80.50 | 115.00 | PCC1813TR-ND | — | 76.00/M | — | — | — | ECJ-2VB1C124K |
| | | | | | 16 | | .15µF | ±10% | 0.85 | PCC1814CT-ND | 3.80 | 25.30 | 88.55 | 126.50 | PCC1814TR-ND | — | 84.00/M | — | — | — | ECJ-2VB1C154K | |
| | | | | | 16 | | .18µF | ±10% | 0.85 | PCC1815CT-ND | 5.61 | 37.38 | 130.81 | 186.88 | PCC1815TR-ND | — | 124.00/M | — | — | — | ECJ-2VB1C184K | |
| | | | | | 16 | | .22µF | ±10% | 0.85 | PCC1816CT-ND | 5.61 | 37.38 | 130.81 | 186.88 | PCC1816TR-ND | — | 124.00/M | — | — | — | ECJ-2VB1C224K | |
| | | | | | 16 | | .27µF | ±10% | 1.25 | PCC1916CT-ND NEW! | 5.52 | 36.80 | 128.80 | 184.00 | PCC1916TR-ND NEW! | 147.00/M | — | — | 107.00/M | — | ECJ-2VB1C274K | |
| | | | | | Y5V | | 16 | .33µF | ±10% | 1.25 | PCC1817CT-ND | 5.69 | 37.95 | 132.83 | 189.75 | PCC1817TR-ND | 152.00/M | — | — | 110.00/M | — | ECJ-2VB1C334K |
| | | | | | | 16 | .39µF | ±10% | 1.25 | PCC1917CT-ND NEW! | 5.52 | 36.80 | 128.80 | 184.00 | PCC1917TR-ND NEW! | 147.00/M | — | — | 107.00/M | — | ECJ-2VB1C394K | |
| | | | | | | 16 | .47µF | ±10% | 1.25 | PCC1818CT-ND | 5.69 | 37.95 | 132.83 | 189.75 | PCC1818TR-ND | 152.00/M | — | — | 110.00/M | — | ECJ-2VB1C474K | |
| | | | | | | 10 | .56µF | ±10% | 1.25 | PCC1918CT-ND NEW! | 9.23 | 61.53 | 215.34 | 307.63 | PCC1918TR-ND NEW! | 246.00/M | — | — | 178.00/M | — | ECJ-2VB1A564K | |
| | | | | | | 10 | .68µF | ±10% | 1.25 | PCC1806CT-ND | 9.49 | 63.25 | 221.38 | 316.25 | PCC1806TR-ND | 253.00/M | — | — | 183.00/M | — | ECJ-2VB1A684K | |
| | | | | | | Y5V | 10 | .82µF | ±10% | 1.25 | PCC1919CT-ND NEW! | 10.18 | 67.85 | 237.48 | 339.25 | PCC1919TR-ND NEW! | 271.00/M | — | — | 197.00/M | — | ECJ-2VB1A824K |
| | | | | | | | 10 | 1µF | ±10% | 1.25 | PCC1807CT-ND | 10.44 | 69.58 | 243.51 | 347.88 | PCC1807TR-ND | 278.00/M | — | — | 202.00/M | — | ECJ-2VB1A105K |
| | | | | | | | 6.3 | 1.2µF | ±10% | 1.25 | PCC1920CT-ND NEW! | 10.61 | 70.73 | 247.54 | 353.63 | PCC1920TR-ND NEW! | 283.00/M | — | — | 205.00/M | — | ECJ-2YB0125K |
| | | | | | | | 6.3 | 1.5µF | ±10% | 1.25 | PCC1921CT-ND NEW! | 11.04 | 73.60 | 257.60 | 368.00 | PCC1921TR-ND NEW! | 294.00/M | — | — | 213.00/M | — | ECJ-2YB0155K |
| 6.3 | 1.8µF | | | | | | ±10% | 1.25 | PCC1922CT-ND NEW! | 11.56 | 77.05 | 269.68 | 385.25 | PCC1922TR-ND NEW! | 308.00/M | — | — | 223.00/M | — | ECJ-2YB0185K | | |
| Y5V | 6.3 | | | | | | 2.2µF | ±10% | 1.25 | PCC1923CT-ND NEW! | 11.99 | 79.93 | 279.74 | 399.63 | PCC1923TR-ND NEW! | 320.00/M | — | — | 232.00/M | — | ECJ-2YB0225K | |
| | 6.3 | | | | | | 2.7µF | ±10% | 1.25 | PCC1924CT-ND NEW! | 12.42 | 82.80 | 289.80 | 414.00 | PCC1924TR-ND NEW! | 331.00/M | — | — | 240.00/M | — | ECJ-2YB0275K | |
| | 6.3 | | | | | | 3.3µF | ±10% | 1.25 | PCC1925CT-ND NEW! | 12.94 | 86.25 | 301.88 | 431.25 | PCC1925TR-ND NEW! | 345.00/M | — | — | 250.00/M | — | ECJ-2YB0335K | |
| | 50 | | | | | | 10000pF | +80%/-20% | 0.6 | PCC1858CT-ND | 1.04 | 6.90 | 24.15 | 34.50 | PCC1858TR-ND | — | — | 23.00/M | 20.00/M | ECJ-2VF1H103Z | | |
| | 50 | 15000pF | | | | | +80%/-20% | 0.6 | PCC1859CT-ND | 1.04 | 6.90 | 24.15 | 34.50 | PCC1859TR-ND | — | — | 23.00/M | 20.00/M | ECJ-2VF1H153Z | | | |
| | 50 | 22000pF | +80%/-20% | | | | 0.6 | PCC1860CT-ND | 1.12 | 7.48 | 26.16 | 37.38 | PCC1860TR-ND | — | — | 25.00/M | 22.00/M | ECJ-2VF1H23Z | | | | |
| | 50 | 33000pF | +80%/-20% | | | | 0.6 | PCC1861CT-ND | 1.21 | 8.05 | 28.18 | 40.25 | PCC1861TR-ND | — | — | 27.00/M | 23.00/M | ECJ-2VF1H154Z | | | | |
| | 50 | 47000pF | +80%/-20% | | | | 0.6 | PCC1862CT-ND | 1.38 | 9.20 | 32.20 | 46.00 | PCC1862TR-ND | — | — | 31.00/M | 27.00/M | ECJ-2VF1H473Z | | | | |
| | Y5V | 50 | 68000pF | | | | +80%/-20% | 0.6 | PCC1863CT-ND | 1.55 | 10.35 | 36.23 | 51.75 | PCC1863TR-ND | — | — | 34.00/M | 30.00/M | ECJ-2VF1H683Z | | | |
| | | 50 | .1µF | +80%/-20% | | | 0.85 | PCC1864CT-ND | 1.90 | 12.65 | 44.28 | 63.25 | PCC1864TR-ND | — | 46.00/M | — | — | — | ECJ-2VF1H104Z | | | |
| | | 50 | .15µF | +80%/-20% | | | 0.85 | PCC1865CT-ND | 2.59 | 17.25 | 60.38 | 86.25 | PCC1865TR-ND | — | 57.00/M | — | — | — | ECJ-2VF1H154Z | | | |
| | | 50 | .22µF | +80%/-20% | | | 0.85 | PCC1866CT-ND | 2.59 | 17.25 | 60.38 | 86.25 | PCC1866TR-ND | — | 57.00/M | — | — | — | ECJ-2VF1H224Z | | | |
| | | 25 | 68000pF | +80%/-20% | | | 0.6 | PCC1852CT-ND | 1.55 | 10.35 | 36.23 | 51.75 | PCC1852TR-ND | — | — | 34.00/M | 30.00/M | ECJ-2VF1E683Z | | | | |
| | | Y5V | 25 | .1µF | | | +80%/-20% | 0.6 | PCC1853CT-ND | 1.90 | 12.65 | 44.28 | 63.25 | PCC1853TR-ND | — | — | 42.00/M | 37.00/M | ECJ-2VF1E104Z | | | |
| | | | 25 | .15µF | +80%/-20% | | 0.6</ | | | | | | | | | | | | | | | |

Panasonic Multilayer Ceramic Chip Capacitors 0402, 0603, 0805 & 1206, (Cont.)

| Size Code | Type | WV DC | Cap. | Tolerance | Dim. (mm) T | Digi-Key Part No. | Cut Tape Pricing | | | | Digi-Key Part No. | Tape & Reel Pricing | | | Panasonic Part No. | |
|-----------|-------|-------|---------|-------------------|-------------|-------------------|------------------|--------|-------------------|--------|-------------------|---------------------|----------|---------------|--------------------|---------------|
| | | | | | | | 10 | 100 | 500 | 1,000 | | 2,000 | 4,000 | 5,000 | | 10,000 |
| 1206 | NPO | 50 | 22pF | ±5% | 0.65 | PCC220CT-ND | 1.63 | 10.87 | 38.05 | 54.35 | PCC220CTR-ND | — | — | 36.00/M | 32.00/M | ECU-V1H220JCM |
| | | 50 | 27pF | ±5% | 0.65 | PCC270CT-ND | 1.63 | 10.87 | 38.05 | 54.35 | PCC270CTR-ND | — | — | 36.00/M | 32.00/M | ECU-V1H270JCM |
| | | 50 | 33pF | ±5% | 0.65 | PCC330CT-ND | 1.63 | 10.87 | 38.05 | 54.35 | PCC330CTR-ND | — | — | 36.00/M | 32.00/M | ECU-V1H330JCM |
| | | 50 | 39pF | ±5% | 0.65 | PCC390CT-ND | 1.63 | 10.88 | 38.08 | 54.40 | PCC390CTR-ND | — | — | 36.00/M | 32.00/M | ECU-V1H390JCM |
| | | 50 | 47pF | ±5% | 0.65 | PCC470CT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC470CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H470JCM |
| | | 50 | 51pF | ±5% | 0.65 | PCC510CT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC510CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H510JCM |
| | | 50 | 56pF | ±5% | 0.65 | PCC560CT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC560CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H560JCM |
| | | 50 | 68pF | ±5% | 0.65 | PCC680CT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC680CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H680JCM |
| | | 50 | 100pF | ±5% | 0.65 | PCC101CT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC101CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H101JCH |
| | | 50 | 120pF | ±5% | 0.65 | PCC121CT-ND | 1.82 | 12.15 | 42.51 | 60.73 | PCC121CTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H121JCH |
| | | 50 | 1000pF | ±5% | 0.65 | PCC102CT-ND | 3.15 | 20.98 | 73.41 | 104.88 | PCC102CTR-ND | — | — | 70.00/M | 61.00/M | ECU-V1H102JCH |
| | | 50 | 220pF | ±10% | 0.65 | PCC221BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC221BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H221KBM |
| | | 50 | 270pF | ±10% | 0.65 | PCC271BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC271BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H271KBM |
| | | 50 | 330pF | ±10% | 0.65 | PCC331BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC331BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H331KBM |
| | | 50 | 390pF | ±10% | 0.65 | PCC391BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC391BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H391KBM |
| | | 50 | 470pF | ±10% | 0.65 | PCC471BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC471BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H471KBM |
| | | 50 | 560pF | ±10% | 0.65 | PCC561BCT-ND | 1.45 | 9.66 | 33.81 | 48.30 | PCC561BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H561KBM |
| | | 50 | 680pF | ±10% | 0.65 | PCC681BCT-ND | 1.44 | 9.62 | 33.65 | 48.08 | PCC681BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H681KBM |
| | | 50 | 820pF | ±10% | 0.65 | PCC821BCT-ND | 1.44 | 9.62 | 33.65 | 48.08 | PCC821BTR-ND | — | — | 32.00/M | 28.00/M | ECU-V1H821KBM |
| | | 50 | 1000pF | ±10% | 0.65 | PCC102BCT-ND | 1.58 | 10.50 | 36.75 | 52.50 | PCC102BTR-ND | — | — | 35.00/M | 30.00/M | ECU-V1H102KBM |
| | | 50 | 1200pF | ±10% | 0.65 | PCC122BCT-ND | 1.58 | 10.50 | 36.75 | 52.50 | PCC122BTR-ND | — | — | 35.00/M | 30.00/M | ECU-V1H122KBM |
| | | 50 | 1500pF | ±10% | 0.65 | PCC152BCT-ND | 1.58 | 10.50 | 36.75 | 52.50 | PCC152BTR-ND | — | — | 35.00/M | 30.00/M | ECU-V1H152KBM |
| | | 50 | 1800pF | ±10% | 0.65 | PCC182BCT-ND | 1.58 | 10.50 | 36.75 | 52.50 | PCC182BTR-ND | — | — | 35.00/M | 30.00/M | ECU-V1H182KBM |
| | | 50 | 2200pF | ±10% | 0.65 | PCC222BCT-ND | 1.58 | 10.50 | 36.75 | 52.50 | PCC222BTR-ND | — | — | 35.00/M | 30.00/M | ECU-V1H222KBM |
| | | 50 | 2700pF | ±10% | 0.65 | PCC272BCT-ND | 1.59 | 10.63 | 37.19 | 53.13 | PCC272BTR-ND | — | — | 35.00/M | 31.00/M | ECU-V1H272KBM |
| | | 50 | 3300pF | ±10% | 0.65 | PCC332BCT-ND | 1.59 | 10.58 | 37.03 | 52.90 | PCC332BTR-ND | — | — | 35.00/M | 31.00/M | ECU-V1H332KBM |
| | | 50 | 3900pF | ±10% | 0.65 | PCC392BCT-ND | 1.75 | 11.64 | 40.74 | 58.20 | PCC392BTR-ND | — | — | 39.00/M | 34.00/M | ECU-V1H392KBM |
| | | 50 | 4700pF | ±10% | 0.65 | PCC472BCT-ND | 1.77 | 11.77 | 41.20 | 58.85 | PCC472BTR-ND | — | — | 39.00/M | 34.00/M | ECU-V1H472KBM |
| | | 50 | 5600pF | ±10% | 0.65 | PCC562BCT-ND | 1.82 | 12.17 | 42.58 | 60.83 | PCC562BTR-ND | — | — | 40.00/M | 35.00/M | ECU-V1H562KBM |
| | | 50 | 6800pF | ±10% | 0.65 | PCC682BCT-ND | 1.88 | 12.57 | 43.98 | 62.83 | PCC682BTR-ND | — | — | 42.00/M | 36.00/M | ECU-V1H682KBM |
| | | 50 | 8200pF | ±10% | 0.65 | PCC822BCT-ND | 1.94 | 12.96 | 45.36 | 64.80 | PCC822BTR-ND | — | — | 43.00/M | 38.00/M | ECU-V1H822KBM |
| | | 50 | 10000pF | ±10% | 0.65 | PCC103BCT-ND | 1.99 | 13.25 | 46.38 | 66.25 | PCC103BTR-ND | — | — | 44.00/M | 38.00/M | ECU-V1H103KBM |
| | | 50 | 12000pF | ±10% | 0.65 | PCC123BCT-ND | 2.10 | 13.98 | 48.91 | 69.88 | PCC123BTR-ND | — | — | 46.00/M | 41.00/M | ECU-V1H123KBM |
| | | 50 | 15000pF | ±10% | 0.65 | PCC153BCT-ND | 2.23 | 14.84 | 51.94 | 74.20 | PCC153BTR-ND | — | — | 49.00/M | 43.00/M | ECU-V1H153KBM |
| | | 50 | 18000pF | ±10% | 0.65 | PCC183BCT-ND | 2.33 | 15.51 | 54.29 | 77.55 | PCC183BTR-ND | — | — | 51.00/M | 45.00/M | ECU-V1H183KBM |
| | | 50 | 22000pF | ±10% | 0.65 | PCC223BCT-ND | 2.45 | 16.32 | 57.12 | 81.60 | PCC223BTR-ND | — | — | 54.00/M | 47.00/M | ECU-V1H223KBM |
| | | 50 | 27000pF | ±10% | 0.65 | PCC273BCT-ND | 2.67 | 17.83 | 62.39 | 89.13 | PCC273BTR-ND | — | — | 59.00/M | 52.00/M | ECU-V1H273KWB |
| | | 50 | 33000pF | ±10% | 0.65 | PCC333BCT-ND | 2.87 | 19.12 | 66.92 | 95.60 | PCC333BTR-ND | — | — | 63.00/M | 55.00/M | ECU-V1H333KWB |
| | | 50 | 39000pF | ±10% | 0.65 | PCC393BCT-ND | 2.93 | 19.51 | 68.29 | 97.55 | PCC393BTR-ND | — | — | 65.00/M | 57.00/M | ECU-V1H393KWB |
| | | 50 | 47000pF | ±10% | 0.65 | PCC473BCT-ND | 3.04 | 20.24 | 70.84 | 101.20 | PCC473BTR-ND | — | — | 67.00/M | 59.00/M | ECU-V1H473KWB |
| | | 50 | .1µF | ±10% | 1.0 | PCC104BCT-ND | 6.08 | 40.54 | 141.89 | 202.70 | PCC104BTR-ND | — | 135.00/M | — | — | ECU-V1H104KWB |
| | | 50 | .1µF | ±10% | 0.85 | PCC1883CT-ND | 3.88 | 25.88 | 90.56 | 129.38 | PCC1883TR-ND | — | 86.00/M | — | — | ECJ-3V1E104K |
| | | 50 | .12µF | ±10% | 0.85 | PCC1884CT-ND | 4.31 | 28.75 | 100.63 | 143.75 | PCC1884TR-ND | — | 95.00/M | — | — | ECJ-3V1E124K |
| | | 50 | .15µF | ±10% | 0.85 | PCC1885CT-ND | 5.00 | 33.35 | 116.73 | 166.75 | PCC1885TR-ND | — | 111.00/M | — | — | ECJ-3V1E154K |
| | | 50 | .18µF | ±10% | 0.85 | PCC1886CT-ND | 5.00 | 33.35 | 116.73 | 166.75 | PCC1886TR-ND | — | 111.00/M | — | — | ECJ-3V1E184K |
| | | 50 | .22µF | ±10% | 0.85 | PCC1887CT-ND | 5.00 | 33.35 | 116.73 | 166.75 | PCC1887TR-ND | — | 111.00/M | — | — | ECJ-3V1E224K |
| | | 50 | .27µF | ±10% | 0.85 | PCC1888CT-ND | 5.00 | 33.35 | 116.73 | 166.75 | PCC1888TR-ND | — | 111.00/M | — | — | ECJ-3V1E274K |
| | | 50 | .33µF | ±10% | 0.85 | PCC1889CT-ND | 5.00 | 33.35 | 116.73 | 166.75 | PCC1889TR-ND | — | 111.00/M | — | — | ECJ-3V1E334K |
| | | 50 | .39µF | ±10% | 1.15 | PCC1890CT-ND | 7.76 | 51.75 | 181.13 | 258.75 | PCC1890TR-ND | — | 207.00/M | — | 150.00/M | ECJ-3V1E394K |
| | | 50 | .47µF | ±10% | 1.15 | PCC1891CT-ND | 9.66 | 64.40 | 225.40 | 322.00 | PCC1891TR-ND | — | 258.00/M | — | 187.00/M | ECJ-3V1E474K |
| 50 | .56µF | ±10% | 1.6 | PCC1926CT-ND NEW! | 9.40 | 62.68 | 219.36 | 313.38 | PCC1926TR-ND NEW! | — | 251.00/M | — | 182.00/M | ECJ-3V1E564K | | |
| 50 | .68µF | ±10% | 1.6 | PCC1892CT-ND | 9.66 | 64.40 | 225.40 | 322.00 | PCC1892TR-ND | — | 258.00/M | — | 187.00/M | ECJ-3Y1E684K | | |
| 50 | .82µF | ±10% | 1.6 | PCC1927CT-ND NEW! | 10.78 | 71.88 | 251.56 | 359.38 | PCC1927TR-ND NEW! | — | 288.00/M | — | 208.00/M | ECJ-3Y1E824K | | |
| 50 | 1µF | ±10% | 1.6 | PCC1893CT-ND | 11.30 | 75.33 | 263.64 | 376.63 | PCC1893TR-ND | — | 301.00/M | — | 216.00/M | ECJ-3Y1E105K | | |
| 16 | .1µF | ±10% | 0.85 | PCC1870CT-ND | 5.35 | 35.65 | 124.78 | 178.25 | PCC1870TR-ND | — | 118.00/M | — | — | ECJ-3V1B104K | | |
| 16 | .12µF | ±10% | 0.85 | PCC1871CT-ND | 5.61 | 37.38 | 130.81 | 186.88 | PCC1871TR-ND | — | 124.00/M | — | — | ECJ-3V1B124K | | |
| 16 | .15µF | ±10% | 0.85 | PCC1872CT-ND | 5.61 | 37.38 | 130.81 | 186.88 | PCC1872TR-ND | — | 124.00/M | — | — | ECJ-3V1B154K | | |
| 16 | .18µF | ±10% | 0.85 | PCC1873CT-ND | 6.12 | 40.83 | 142.89 | 204.13 | PCC1873TR-ND | — | 136.00/M | — | — | ECJ-3V1B184K | | |
| 16 | .22µF | ±10% | 0.85 | PCC1874CT-ND | 6.47 | 43.13 | 150.94 | 215.63 | PCC1874TR-ND | — | 143.00/M | — | — | ECJ-3V1B224K | | |
| 16 | .27µF | ±10% | 0.85 | PCC1875CT-ND | 6.73 | 44.85 | 156.98 | 224.25 | PCC1875TR-ND | — | 149.00/M | — | — | ECJ-3V1B274K | | |
| 16 | .33µF | ±10% | 0.85 | PCC1876CT-ND | 6.99 | 46.58 | 163.01 | 232.88 | PCC1876TR-ND | — | 155.00/M | — | — | ECJ-3V1B334K | | |
| 16 | .39µF | ±10% | 0.85 | PCC1877CT-ND | 7.76 | 51.75 | 181.13 | 258.75 | PCC1877TR-ND | — | 179.00/M | — | — | ECJ-3V1B394K | | |
| 16 | .47µF | ±10% | 0.85 | PCC1878CT-ND | 8.88 | 59.23 | 207.29 | 296.13 | PCC1878TR-ND | — | 197.00/M | — | — | ECJ-3V1B474K | | |
| 16 | .56µF | ±10% | 0.85 | PCC1879CT-ND | 10.01 | 66.70 | 233.45 | 333.50 | PCC1879TR-ND | — | 221.00/M | — | — | ECJ-3V1B564K | | |
| 16 | .68µF | ±10% | 0.85 | PCC1880CT-ND | 11.13 | 74.18 | 259.61 | 370.88 | PCC1880TR-ND | — | 246.00/M | — | — | ECJ-3V1B684K | | |
| 16 | .82µF | ±10% | 1.15 | PCC1891CT-ND | 13.71 | 91.43 | 319.94 | 457.13 | PCC1891TR-ND | — | 366.00/M | — | 265.00/M | ECJ-3V1B824K | | |
| 16 | 1µF | ±10% | 1.15 | PCC1892CT-ND | 15.96 | 106.38 | 372.31 | 531.88 | PCC1892TR-ND | — | 426.00/M | — | 308.00/M | ECJ-3V1B105K | | |
| 16 | 1.2µF | ±10% | 1.6 | PCC1928CT-ND NEW! | 16.56 | 110.40 | 386.40 | 552.00 | PCC1928TR-ND NEW! | — | 442.00/M | — | 320.00/M | ECJ-3Y1B1475K | | |
| 16 | 1.5µF | ±10% | 1.6 | PCC1929CT-ND NEW! | 18.46 | 123.05 | 430.68 | 615.25 | PCC1929TR-ND NEW! | — | 492.00/M | — | 357.00/M | ECJ-3Y1B155K | | |
| 16 | 1.8µF | ±10% | 1.6 | PCC1930CT-ND NEW! | 20.27 | 135.13 | 472.94 | 675.63 | PCC1930TR-ND NEW! | — | 541.00/M | — | 392.00/M | ECJ-3Y1B185K | | |
| 16 | 2.2µF | ±10% | 1.6 | PCC1931CT-ND NEW! | 21.22 | 141.45 | 495.08 | 707.25 | | | | | | | | |

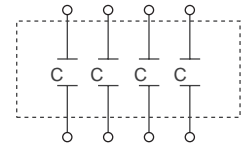
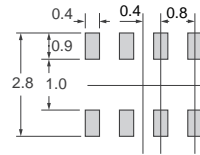
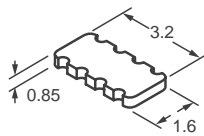
Panasonic **NEW!** Multilayer Ceramic Chip Capacitor Arrays - ECJ-R Series

FEATURES:

- Four elements in a 1206 package
- Compact design (3.2mm x 1.6mm) for high density PWB assembly
- Improvement of placement time on mounting machines

RECOMMENDED APPLICATIONS:

- EMI noise suppression
- Digital noise reduction



| Size Code | Type | WV DC | Cap. | Tolerance | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape & Reel Pricing 4,000 | Panasonic Part No. | |
|-----------|------|---------|--------|-------------|-------------------|------------------|--------|--------|-------------------|---------------------------|--------------------|---------------|
| | | | | | | 1 | 100 | 500 | | | | 1,000 |
| 1206 | NPO | 50 | 10pF | ±1pF | P10580CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10580TR-ND | 119.17/M | ECJ-RVC1H100F |
| | | 50 | 12pF | ±10% | P10581CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10581TR-ND | 119.17/M | ECJ-RVC1H120K |
| | | 50 | 15pF | ±10% | P10582CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10582TR-ND | 119.17/M | ECJ-RVC1H150K |
| | | 50 | 18pF | ±10% | P10583CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10583TR-ND | 119.17/M | ECJ-RVC1H180K |
| | | 50 | 22pF | ±10% | P10584CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10584TR-ND | 119.17/M | ECJ-RVC1H220K |
| | | 50 | 27pF | ±10% | P10585CT-ND | .36 | 30.91 | 128.80 | 221.54 | P10585TR-ND | 144.26/M | ECJ-RVC1H270K |
| | | 50 | 33pF | ±10% | P10586CT-ND | .36 | 30.91 | 128.80 | 221.54 | P10586TR-ND | 144.26/M | ECJ-RVC1H330K |
| | | 50 | 39pF | ±10% | P10587CT-ND | .36 | 30.91 | 128.80 | 221.54 | P10587TR-ND | 144.26/M | ECJ-RVC1H390K |
| | | 50 | 47pF | ±10% | P10588CT-ND | .36 | 30.91 | 128.80 | 221.54 | P10588TR-ND | 144.26/M | ECJ-RVC1H470K |
| | | 50 | 56pF | ±10% | P10589CT-ND | .37 | 31.58 | 131.60 | 226.35 | P10589TR-ND | 147.40/M | ECJ-RVC1H560K |
| | | 50 | 68pF | ±10% | P10590CT-ND | .37 | 31.58 | 131.60 | 226.35 | P10590TR-ND | 147.40/M | ECJ-RVC1H680K |
| | | 50 | 82pF | ±10% | P10591CT-ND | .37 | 31.58 | 131.60 | 226.35 | P10591TR-ND | 147.40/M | ECJ-RVC1H820K |
| | | 50 | 100pF | ±10% | P10592CT-ND | .38 | 32.26 | 134.40 | 231.17 | P10592TR-ND | 150.53/M | ECJ-RVC1H101K |
| | | 50 | 120pF | ±10% | P10593CT-ND | .38 | 32.26 | 134.40 | 231.17 | P10593TR-ND | 150.53/M | ECJ-RVC1H121K |
| | | 50 | 150pF | ±10% | P10594CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10594TR-ND | 153.67/M | ECJ-RVC1H151K |
| | 50 | 180pF | ±10% | P10595CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10595TR-ND | 153.67/M | ECJ-RVC1H181K | |
| | 50 | 220pF | ±10% | P10596CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10596TR-ND | 153.67/M | ECJ-RVC1H221K | |
| | 50 | 270pF | ±10% | P10597CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10597TR-ND | 153.67/M | ECJ-RVC1H271K | |
| | 50 | 330pF | ±10% | P10598CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10598TR-ND | 153.67/M | ECJ-RVC1H331K | |
| | 50 | 390pF | ±10% | P10599CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10599TR-ND | 153.67/M | ECJ-RVC1H391K | |
| | 50 | 470pF | ±10% | P10600CT-ND | .38 | 32.93 | 137.20 | 235.98 | P10600TR-ND | 153.67/M | ECJ-RVC1H471K | |
| | X7R | 50 | 330pF | ±20% | P10601CT-ND | .29 | 25.20 | 105.00 | 180.60 | P10601TR-ND | 117.60/M | ECJ-RVB1H331M |
| | | 50 | 470pF | ±20% | P10602CT-ND | .29 | 25.20 | 105.00 | 180.60 | P10602TR-ND | 117.60/M | ECJ-RVB1H471M |
| | | 50 | 680pF | ±20% | P10603CT-ND | .29 | 25.20 | 105.00 | 180.60 | P10603TR-ND | 117.60/M | ECJ-RVB1H681M |
| | | 50 | 1000pF | ±20% | P10604CT-ND | .29 | 25.20 | 105.00 | 180.60 | P10604TR-ND | 117.60/M | ECJ-RVB1H102M |
| | | 50 | 1500pF | ±20% | P10605CT-ND | .29 | 25.54 | 106.40 | 183.01 | P10605TR-ND | 119.17/M | ECJ-RVB1H152M |
| | | 50 | 2200pF | ±20% | P10606CT-ND | .30 | 25.54 | 106.40 | 183.01 | P10606TR-ND | 119.17/M | ECJ-RVB1H222M |
| | | 50 | 3300pF | ±20% | P10607CT-ND | .30 | 25.87 | 107.80 | 185.42 | P10607TR-ND | 120.74/M | ECJ-RVB1H332M |
| | | 50 | 4700pF | ±20% | P10608CT-ND | .30 | 25.87 | 107.80 | 185.42 | P10608TR-ND | 120.74/M | ECJ-RVB1H472M |
| | | 50 | 6800pF | ±20% | P10609CT-ND | .30 | 25.87 | 107.80 | 185.42 | P10609TR-ND | 120.74/M | ECJ-RVB1H682M |
| 50 | | 10000pF | ±20% | P10610CT-ND | .30 | 25.87 | 107.80 | 185.42 | P10610TR-ND | 120.74/M | ECJ-RVB1H103M | |
| Y5V | | 25 | .1µF | +80%/-20% | P10611CT-ND | .29 | 25.20 | 105.00 | 180.60 | P10611TR-ND | 117.60/M | ECJ-RVF1E104Z |

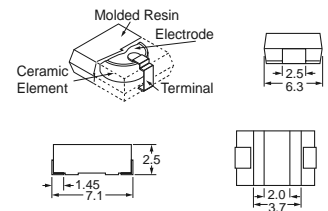
Panasonic High Voltage Ceramic Capacitors (SMD)

Features: • Resin molded type for reflow solderings • High reliability through disc capacitor element molded construction • Excellent "Voltage vs. Temperature Rise" through low loss ceramic dielectric • Temperature stable (SL/GP)

Recommended Applications: • Output circuit of LCD backlighting inverter • Snubber circuit of switching power supply • High volt. circuit

Specifications: • Operating Temperature Range: -25 to 105°C • Dielectric Withstanding Voltage: 200% of the rated voltage for 1-5 seconds • Capacitance: 1MHz, 1-5 Vrms and 20°C • Q or Dissipation Factor: C < 30pF; Q ≥ 400+20 C (C:cap,pF), C ≥ 30 pF; Q ≥ 1000 at 1 MHz, 1-5 Vrms and 20°C • Insulation Resistance: 10000 MΩ min. at 500 VDC & 1 min. electrification • Temperature Coefficient: +350 to -1000 ppm/°C

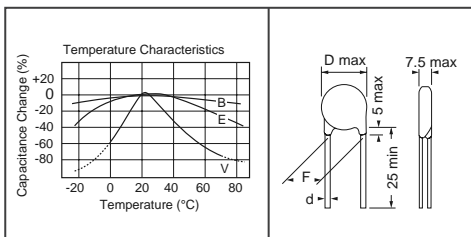
| Voltage | Capacitance | Capac. Tol. % | Temp. Char. | Digi-Key Part No. | Cut Tape Pricing | | | Tape & Reel Pricing | | | Panasonic Part No. | |
|---------|-------------|---------------|-------------|-------------------|------------------|-------|--------|---------------------|-----------|-----------|--------------------|--------------|
| | | | | | 1 | 10 | 100 | 2,000 | 6,000 | 10,000 | | |
| 3KVDC | 10pf | ±5 | SL/GP | PCC100JCT-ND | 2.46 | 19.31 | 140.45 | PCC100JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F100JG |
| 3KVDC | 12pf | ±5 | SL/GP | PCC120JCT-ND | 2.46 | 19.31 | 140.45 | PCC120JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F120JG |
| 3KVDC | 15pf | ±5 | SL/GP | PCC150JCT-ND | 2.46 | 19.31 | 140.45 | PCC150JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F150JG |
| 3KVDC | 18pf | ±5 | SL/GP | PCC180JCT-ND | 2.46 | 19.31 | 140.45 | PCC180JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F180JG |
| 3KVDC | 22pf | ±5 | SL/GP | PCC220JCT-ND | 2.46 | 19.31 | 140.45 | PCC220JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F220JG |
| 3KVDC | 27pf | ±5 | SL/GP | PCC270JCT-ND | 2.46 | 19.31 | 140.45 | PCC270JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F270JG |
| 3KVDC | 33pf | ±5 | SL/GP | PCC330JCT-ND | 2.46 | 19.31 | 140.45 | PCC330JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F330JG |
| 3KVDC | 39pf | ±5 | SL/GP | PCC390JCT-ND | 2.46 | 19.31 | 140.45 | PCC390JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F390JG |
| 3KVDC | 47pf | ±5 | SL/GP | PCC470JCT-ND | 2.46 | 19.31 | 140.45 | PCC470JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F470JG |
| 3KVDC | 56pf | ±5 | SL/GP | PCC560JCT-ND | 2.46 | 19.31 | 140.45 | PCC560JTR-ND | 1404.00/M | 1166.00/M | 1018.00/M | ECC-S3F560JG |



Panasonic Ceramic Disc Capacitors Type GL

UL 1414 • CSA C22.2 APPROVED

Features: Rated 250 VAC. CSA rating: 125 VAC **Applications:** • Antenna coupling • Line-bypass and Across-the-line • Switching surge killer etc.



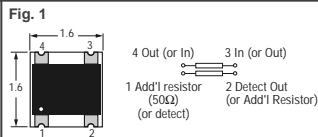
| Voltage | Capacitance | Tolerance | Temp. Char. | Dimensions (mm) | | | Digi-Key Part No. | 1 | 10 | Pricing | | | Panasonic Part No. |
|---------|-------------|------------|-------------|-----------------|-----------|-------|-------------------|------|------|---------|--------|----------|--------------------|
| | | | | Thick. Dia. | Lead Dia. | Space | | | | 100 | 1,000 | 5,000 | |
| 250 | 100pf | ±20% | B | 8.0 | 5.5 | 7.5 | P4484-ND | .38 | 2.99 | 21.73 | 160.00 | 154.00/M | ECK-DGL101MB |
| 250 | 150pf | ±20% | B | 8.0 | 5.5 | 7.5 | P4485-ND | .38 | 2.99 | 21.73 | 160.00 | 154.00/M | ECK-DGL150MB |
| 250 | 220pf | ±20% | B | 8.0 | 5.5 | 7.5 | P4486-ND | .38 | 2.99 | 21.73 | 160.00 | 154.00/M | ECK-DGL221MB |
| 250 | 330pf | ±20% | B | 8.0 | 5.5 | 7.5 | P4487-ND | .38 | 2.99 | 21.73 | 160.00 | 154.00/M | ECK-DGL331MB |
| 250 | 470pf | ±20% | B | 9.0 | 5.5 | 7.5 | P4488-ND | .38 | 2.99 | 21.73 | 160.00 | 154.00/M | ECK-DGL471MB |
| 250 | 680pf | ±20% | B | 9.0 | 5.5 | 7.5 | P4489-ND | .40 | 3.14 | 22.85 | 168.00 | 162.00/M | ECK-DGL681MB |
| 250 | 1000pf | ±20% | E | 9.0 | 5.5 | 7.5 | P4490-ND | .32 | 2.53 | 18.37 | 135.00 | 131.00/M | ECK-DGL102ME |
| 250 | 1500pf | ±20% | E | 11.0 | 5.5 | 7.5 | P4491-ND | .48 | 3.76 | 27.33 | 201.00 | 194.00/M | ECK-DGL152ME |
| 250 | 2200pf | ±20% | E | 12.0 | 5.5 | 7.5 | P4492-ND | .57 | 4.50 | 32.70 | 241.00 | 232.00/M | ECK-DGL222ME |
| 250 | 3300pf | ±20% | E | 15.0 | 5.5 | 10.0 | P4493-ND | .64 | 5.02 | 36.51 | 269.00 | 259.00/M | ECK-DGL332ME |
| 250 | 4700pf | ±20% | E | 17.0 | 5.5 | 10.0 | P4494-ND | .88 | 6.93 | 50.40 | 371.00 | 358.00/M | ECK-DGL472ME |
| 250 | 4700pf | +80%, -20% | V | 12.0 | 5.5 | 7.5 | P4495-ND | .78 | 6.13 | 44.58 | 328.00 | 317.00/M | ECK-DGL472ZV |
| 250 | 10000pf | +80%, -20% | V | 17.0 | 5.5 | 10.0 | P4496-ND | 1.16 | 9.12 | 66.30 | 489.00 | 471.00/M | ECK-DGL103ZV |

1-800-344-4539

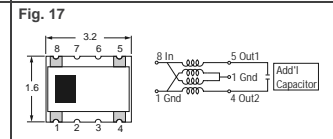
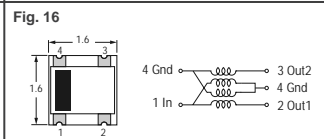
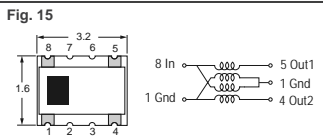
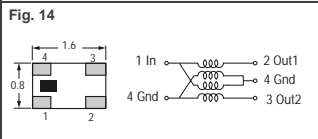
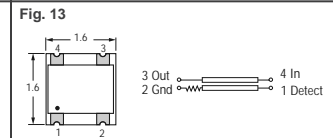
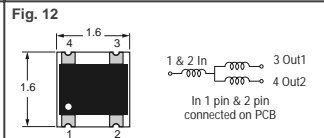
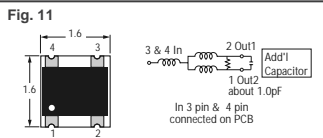
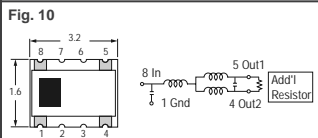
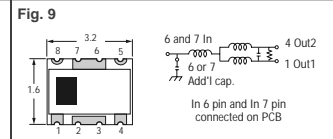
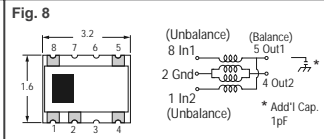
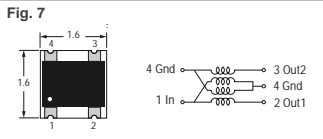
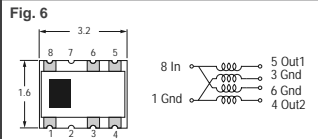
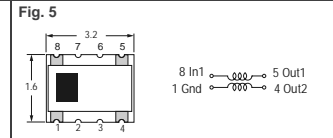
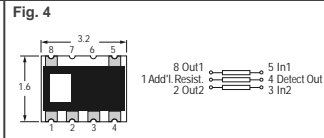
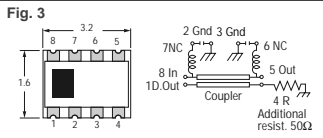
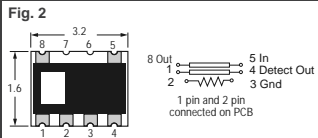
218-681-6674 • FAX: 218-681-3380 • www.digikey.com

Panasonic **NEW!** Hybrid Passive RF/Microwave Devices

Note: All drawings are top view.



These components are especially suited for Mobile Phones (Handsets & Base Stations), Navigation Devices (GPS), Pagers, Mobile Computing (PCs & PDAs), Mobile Data Terminals, Wireless Microphones, Cordless Phones as well as Wireless Local Area Network (WLAN) applications.
SPECIFICATIONS: Operating Temperature: -40°C to +85°C **Soldering:** 230°C for 5 seconds
BALUN: Ultra small, thin, high precision, with ultra-fine geometry baluns to meet your single-ended to double-ended to electronic circuitry interface requirements. Typical Application: Single/Double Ended Mixer, Differential Amp, Matching. **DIRECTIONAL COUPLER:** Miniaturized, high coupling efficiency, low-cost, with ultra-fine geometry directional couplers to meet your most demanding coupling needs. Typical Application: To control transmitted power. **DIRECTIONAL COUPLER with LC FILTER:** A directional coupler having the above same features and benefits, but also incorporating a LC Filter. Typical Application: To control transmitted power while suppressing spurious noise. **POWER DIVIDER:** Miniaturized, high efficiency/low-loss, with ultra-fine geometry, three port power divider to meet your circuitry power handling requirements. Typical Application: To divide internal signals (ex. VCO).



| Description | Fig. | Operating Freq. (Mhz) | Impedance In/Out (ohms) | Insertion Loss (max.) | Difference of Phase (deg.) | Size (mm) | Digi-Key Part No. | Price Each | | | Panasonic Part No. | |
|-------------|------------|-----------------------|-------------------------|-----------------------|----------------------------|-----------|-------------------|-------------|------|------|--------------------|------------|
| | | | | | | | | 1 | 10 | 100 | | |
| Balun | 17 | 130-500 | 50/200 | 3dB | 180±15 | 3.2 x 1.6 | P10702BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1617 | |
| | 15 | 670-900 | 50/200 | 1dB | 180±15 | 3.2 x 1.6 | P10704BK-ND | 1.89 | 1.58 | 1.26 | EHA-FD1615 | |
| | 5 | 700-1300 | 50/50 | 1dB | 180±15 | 3.2 x 1.6 | P10705BK-ND | 1.71 | 1.43 | 1.14 | EHF-FD1618 | |
| | 7 | 750-950 | 50/200 | 1dB | 180±15 | 1.6 x 1.6 | P10703BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1622 | |
| | 7 | 950-1250 | 50/200 | 1dB | 180±15 | 1.6 x 1.6 | P10706BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1620 | |
| | 15 | 1100-1450 | 50/200 | 1dB | 180±15 | 3.2 x 1.6 | P10707BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1621 | |
| | 5 | 1200-2200 | 50/50 | 1dB | 180±15 | 3.2 x 1.6 | P10708BK-ND | 1.71 | 1.43 | 1.14 | EHF-FD1619 | |
| | 6 | 1600-1800 | 50/200 | 1dB | 180±15 | 3.2 x 1.6 | P10709BK-ND | 1.71 | 1.43 | 1.14 | EHA-FD1611 | |
| | 14 | 1600-1950 | 50/200 | 1dB | 180±15 | 1.6 x 0.8 | P10701BK-ND | 2.43 | 2.03 | 1.62 | EHF-FD1750 | |
| | 6 | 1700-1900 | 50/200 | 1dB | 180±15 | 3.2 x 1.6 | P10711BK-ND | 1.71 | 1.43 | 1.14 | EHF-FD1626 | |
| | 16 | 1600-1950 | 50/200 | 1dB | 180±15 | 1.6 x 1.6 | P10710BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1624B | |
| | 16 | 3400-4000 | 50/200 | 2dB | 180±15 | 1.6 x 1.6 | P10712BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1624 | |
| | Dual Balun | 8 | 1800-2000 | 50/50 | 1dB | 180±20 | 3.2 x 1.6 | P10713BK-ND | 1.89 | 1.58 | 1.26 | EHF-FD1631 |

| Description | Fig. | Operating Freq. (Mhz) | Coupling Factor (dB±2) | Insertion Loss (max.) | Isolation (min.) | Volt. Standing Wave Ratio (max.) | Size (mm) | Digi-Key Part No. | Price Each | | | Panasonic Part No. | |
|---------------------|--------------------------|-----------------------|------------------------|-----------------------|------------------|----------------------------------|-----------|-------------------|-------------|------|------|--------------------|------------|
| | | | | | | | | | 1 | 10 | 100 | | |
| Directional Coupler | 2 | 800-1000 | 14 | .35dB | 20dB | 1.3 | 3.2 x 1.6 | P10686BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1736 | |
| | 1 | 800-1000 | 17 | .25dB | 25dB | 1.3 | 1.6 x 1.6 | P10684BK-ND | 1.62 | 1.35 | 1.08 | EHF-FD1540 | |
| | 2 | 800-1000 | 17 | .25dB | 25dB | 1.3 | 3.2 x 1.6 | P10687BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1746 | |
| | 1 | 800-1000 | 20 | .20dB | 25dB | 1.3 | 1.6 x 1.6 | P10692BK-ND | 1.62 | 1.35 | 1.08 | EHF-FD1549 | |
| | 2 | 800-1000 | 20 | .2dB | 28dB | 1.3 | 3.2 x 1.6 | P10685BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1555 | |
| | 2 | 1400-1600 | 17 | .3dB | 23dB | 1.3 | 3.2 x 1.6 | P10688BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1745 | |
| | 2 | 1850-1950 | 14 | .35dB | 20dB | 1.3 | 3.2 x 1.6 | P10689BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1735 | |
| | 2 | 1850-2000 | 17 | .30dB | 21dB | 1.3 | 3.2 x 1.6 | P10690BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1550 | |
| | 1 | 1850-2000 | 14 | .35dB | 20dB | 1.3 | 1.6 x 1.6 | P10691BK-ND* | 1.62 | 1.35 | 1.08 | EHF-FD1541 | |
| | 13 | 800-1000 | 17 | .20dB | 25dB | 1.3 | 1.6 x 1.6 | P10693BK-ND* | 1.71 | 1.43 | 1.14 | EHF-FD1546 | |
| | Dual Directional Coupler | 4 | 800-1000 1850-1959 | 14 | .35dB | 20dB | 1.3 | 3.2 x 1.6 | P10698BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1552 |

* Requires 50 ohm termination resistor

| Description | Fig. | Operating Freq. (Mhz) | Coupling Factor (dB) | Insertion Loss (max.) | 2FO Attenuation (min.) | 3FO Attenuation (min.) | Size (mm) | Digi-Key Part No. | Price Each | | | Panasonic Part No. |
|-----------------------------|------|-----------------------|----------------------|-----------------------|------------------------|------------------------|-----------|-------------------|------------|------|------|--------------------|
| | | | | | | | | | 1 | 10 | 100 | |
| Direct. Coupler w/LC Filter | 3 | 824-849 | 17 | .5dB | 20dB | 18dB | 3.2 x 1.6 | P10694BK-ND | 2.16 | 1.80 | 1.44 | EHF-FD1724 |
| | 3 | 880-915 | 16.5 | .45dB | 20dB | 18dB | 3.2 x 1.6 | P10695BK-ND | 2.16 | 1.80 | 1.44 | EHF-FD1722 |

| Description | Fig. | Operating Freq. (Mhz) | Insertion Loss (max.) | Isolation (min.) | Volt. Standing Wave Ratio (max.) | Size (mm) | Digi-Key Part No. | Price Each | | | Panasonic Part No. |
|---------------|------|-----------------------|-----------------------|------------------|----------------------------------|-----------|-------------------|------------|------|------|--------------------|
| | | | | | | | | 1 | 10 | 100 | |
| Power Divider | 9 | 720-780 | 4.0dB | 18dB | 1.9 | 3.2 x 1.6 | P10715BK-ND | 2.02 | 1.69 | 1.35 | EHF-FD1502 |
| | 10 | 1000-1050 | 4.0dB | 18dB | 1.9 | 3.2 x 1.6 | P10716BK-ND | 2.02 | 1.69 | 1.35 | EHF-FD1508 |
| | 10 | 1546-1630 | 4.0dB | 18dB | 1.9 | 3.2 x 1.6 | P10717BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1503 |
| | 10 | 1607-1685 | 4.0dB | 18dB | 1.7 | 3.2 x 1.6 | P10718BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1506 |
| | 10 | 1720-1790 | 4.0dB | 18dB | 1.9 | 3.2 x 1.6 | P10719BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1513 |
| | 10 | 1890-1920 | 4.0dB | 18dB | 1.9 | 3.2 x 1.6 | P10720BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1507 |
| | 10 | 2100-2200 | 4.0dB | 18dB | 1.7 | 3.2 x 1.6 | P10721BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1509 |
| | 11 | 2500 | 4.0dB | 18dB | 2.1 | 1.6 x 1.6 | P10714BK-ND | 1.93 | 1.61 | 1.29 | EHF-FD1495 |

| Description | Fig. | Operating Freq. (Mhz) | Insertion Loss In/Out (max.) | Insertion Loss In/Out2 (max.) | Divided Level Balance (max.) | Size (mm) | Digi-Key Part No. | Price Each | | | Panasonic Part No. |
|----------------|------|-----------------------|------------------------------|-------------------------------|------------------------------|-----------|-------------------|------------|------|------|--------------------|
| | | | | | | | | 1 | 10 | 100 | |
| Power Splitter | 12 | 650-2000 | 4.0dB | 4.0dB | 2.0dB | 1.6 x 1.6 | P10699BK-ND | 1.71 | 1.43 | 1.14 | EHF-FD1545 |

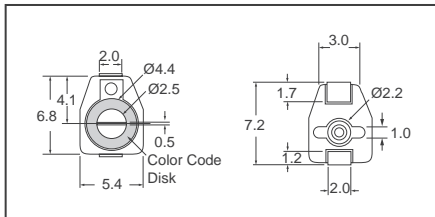
1-800-344-4539

218-681-6674 • FAX: 218-681-3380 • www.digikey.com

NEW! GSX Series SMD Trimmer Capacitors

SPECIFICATIONS:
 • Operating Temperature Range: -25°C to +85°C • Voltage Rating: 100 VDC • Dielectric Withstanding Voltage: 200 VDC • Insulation Resistance: 10⁴ MΩ min. • Torque: 20 to 300 g-cm (0.28 to 4.2 oz-in)

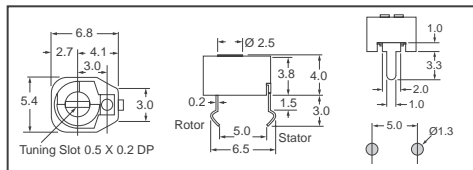
| Capacitance (pF) | TCC (ppm / °C) | Q (min.) 10MHz | Color Code | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape/Reel Pricing 3,000 | Sprague-Goodman Part No. |
|------------------|----------------|----------------|------------|-------------------|------------------|--------|-----|-------------------|-------------------------|--------------------------|
| | | | | | 10 | 100 | 100 | | | |
| 0.4 10.0 | N100 | 1000 | Black | SG2017CT-ND | 14.70 | 126.00 | | SG2017TR-ND | 625.41/M | GSX358 |
| 0.3 5.0 | N100 | 1000 | Orange | SG2018CT-ND | 12.90 | 111.00 | | SG2018TR-ND | 550.00/M | GSX364 |
| 0.5 15.0 | N100 | 1000 | Blue | SG2019CT-ND | 16.30 | 140.00 | | SG2019TR-ND | 700.00/M | GSX365 |
| 0.7 20.0 | N100 | 1000 | Green | SG2020CT-ND | 19.60 | 168.00 | | SG2020TR-ND | 840.00/M | GSX366 |



NEW! GCL Series Trimmer Capacitors

SPECIFICATIONS:
 • Operating Temperature Range: -25°C to 85°C
 • Voltage Rating: 50 VDC
 • Dielectric Withstanding Voltage: 100 VDC
 • Insulation Resistance: 20 x 10⁴ MΩ
 • Torque: 0.21-3 oz-in (15-200 g-cm)

| Capacitance (pF) | TCC (ppm / °C) | Q (min.) 1 MHz | Color Code | Digi-Key Part No. | Pricing | | | Sprague-Goodman Part No. |
|------------------|----------------|----------------|------------|-------------------|---------|------|-------|--------------------------|
| | | | | | 1 | 10 | 100 | |
| 0.7 10.0 | P350 | 1000 | Brown | SG1034-ND | .58 | 5.00 | 35.00 | GCL10000 |
| 0.8 20.0 | P350 | 1000 | Green | SG1035-ND | .58 | 5.00 | 35.00 | GCL20000 |
| 0.9 30.0 | P350 | 1000 | Yellow | SG1036-ND | .85 | 7.30 | 51.00 | GCL30000 |
| 1.0 40.0 | P350 | 1000 | Blue | SG1037-ND | .93 | 8.00 | 56.00 | GCL40000 |



GKG Series Ceramic Trimmer Capacitors

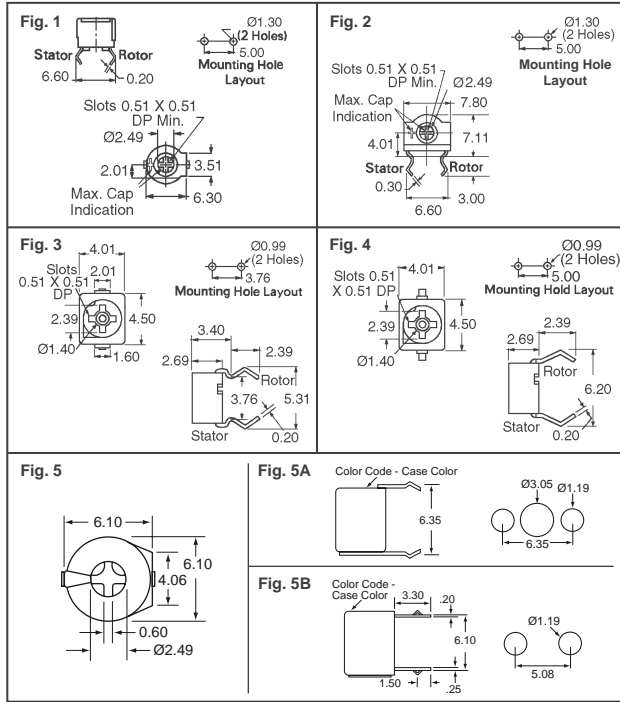
| Fig. | Capacitance (pF) | | TCC (ppm / °C) | Q (min.) | Color Code | Digi-Key Part No. | Pricing | | | Sprague-Goodman Part No. |
|---|------------------|------|----------------|----------|------------|-------------------|---------|-------|--------|--------------------------|
| | Min. | Max. | | | | | 1 | 10 | 100 | |
| <i>Top Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 1 | 2.8 | 10.0 | 0±250 | 300 | White | SG1002-ND | .98 | 8.40 | 77.00 | GKG10011 |
| | 4.0 | 20.0 | N600±300 | 300 | Red | SG1003-ND | .98 | 8.40 | 77.00 | GKG20011 |
| | 5.5 | 30.0 | N750±300 | 200 | Green | SG1004-ND | .98 | 8.40 | 77.00 | GKG30011 |
| | 6.5 | 40.0 | N750±400 | 200 | Yellow | SG1005-ND | .98 | 8.40 | 77.00 | GKG40011 |
| | 8.0 | 50.0 | N1200±600 | 200 | Orange | SG1006-ND | 1.05 | 9.00 | 82.50 | GKG50011 |
| | 10.5 | 60.0 | N1200±600 | 200 | Brown | SG1007-ND | 1.05 | 9.00 | 82.50 | GKG60011 |
| | 12.0 | 70.0 | N1200±600 | 200 | Grey | SG1008-ND | 1.05 | 9.00 | 82.50 | GKG70011 |
| | 20.0 | 90.0 | N1200±600 | 200 | Black | SG1009-ND | 1.05 | 9.00 | 82.50 | GKG90011 |
| <i>Side Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 2 | 12.0 | 70.0 | N1500±600 | 200 | Grey | SG1018-ND | 1.72 | 14.70 | 134.75 | GKG70014 |
| <i>Top Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 3 | 1.7 | 3.0 | 0±200 | 300 | Red Dot | SG1020-ND | .56 | 4.80 | 44.00 | GKG3R021 |
| | 2.5 | 6.0 | 0±200 | 500 | Blue | SG1021-ND | .56 | 4.80 | 44.00 | GKG6R021 |
| | 3.5 | 10.0 | 0±200 | 500 | White | SG1022-ND | .56 | 4.80 | 44.00 | GKG10021 |
| | 5.5 | 20.0 | N900±350 | 500 | Red | SG1023-ND | .56 | 4.80 | 44.00 | GKG20021 |
| | 7.5 | 30.0 | N1100±450 | 300 | Green | SG1024-ND | .56 | 4.80 | 44.00 | GKG30021 |
| | 15.0 | 50.0 | N1700±500 | 300 | Orange | SG1026-ND | .56 | 4.80 | 44.00 | GKG50021 |
| <i>Top Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 4 | 1.7 | 3.0 | 0±200 | 300 | Red Dot | SG1027-ND | .56 | 4.80 | 44.00 | GKG3R024 |
| | 2.5 | 6.0 | 0±200 | 500 | Blue | SG1028-ND | .56 | 4.80 | 44.00 | GKG6R024 |
| | 3.5 | 10.0 | 0±200 | 500 | White | SG1029-ND | .56 | 4.80 | 44.00 | GKG10024 |
| | 5.5 | 20.0 | N900±350 | 500 | Red | SG1030-ND | .56 | 4.80 | 44.00 | GKG20024 |
| | 7.5 | 30.0 | N1100±450 | 300 | Green | SG1031-ND | .56 | 4.80 | 44.00 | GKG30024 |
| | 15.0 | 50.0 | N1700±500 | 300 | Orange | SG1033-ND | .56 | 4.80 | 44.00 | GKG50024 |
| <i>Bottom Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 5A | 1.0 | 3.0 | NPO±250 | 300 | Black | SG3R016-ND | .60 | 5.25 | 45.00 | GKG3R016 |
| | 2.0 | 5.0 | NPO±250 | 300 | Blue | SG5R016-ND | .60 | 5.25 | 45.00 | GKG5R016 |
| | 3.0 | 10.0 | NPO±250 | 300 | White | SG10016-ND | .60 | 5.25 | 45.00 | GKG10016 |
| | 5.0 | 20.0 | N750±250 | 300 | Red | SG20016-ND | .60 | 5.25 | 45.00 | GKG20016 |
| | 6.5 | 30.0 | N1000±500 | 200 | Green | SG30016-ND | .60 | 5.25 | 45.00 | GKG30016 |
| | 7.0 | 40.0 | N2200±800 | 200 | Yellow | SG40016-ND | .60 | 5.25 | 45.00 | GKG40016 |
| 5B | 1.0 | 3.0 | NPO±250 | 300 | Black | SG3R015-ND | .56 | 4.90 | 42.00 | GKG3R015 |
| | 2.0 | 5.0 | NPO±250 | 300 | Blue | SG5R015-ND | .56 | 4.90 | 42.00 | GKG5R015 |
| | 3.0 | 10.0 | NPO±250 | 300 | White | SG10015-ND | .56 | 4.90 | 42.00 | GKG10015 |
| | 5.0 | 20.0 | N750±250 | 300 | Red | SG20015-ND | .56 | 4.90 | 42.00 | GKG20015 |
| | 6.5 | 30.0 | N1000±500 | 200 | Green | SG30015-ND | .56 | 4.90 | 42.00 | GKG30015 |
| | 7.0 | 40.0 | N2200±800 | 200 | Yellow | SG40015-ND | .56 | 4.90 | 42.00 | GKG40015 |
| <i>Top Adjust Ceramic Trimmer Capacitors</i> | | | | | | | | | | |
| 5B | 1.0 | 3.0 | NPO±250 | 300 | Black | SG3R015-ND | .56 | 4.90 | 42.00 | GKG3R015 |
| | 2.0 | 5.0 | NPO±250 | 300 | Blue | SG5R015-ND | .56 | 4.90 | 42.00 | GKG5R015 |
| | 3.0 | 10.0 | NPO±250 | 300 | White | SG10015-ND | .56 | 4.90 | 42.00 | GKG10015 |
| | 5.0 | 20.0 | N750±250 | 300 | Red | SG20015-ND | .56 | 4.90 | 42.00 | GKG20015 |
| | 6.5 | 30.0 | N1000±500 | 200 | Green | SG30015-ND | .56 | 4.90 | 42.00 | GKG30015 |
| | 7.0 | 40.0 | N2200±800 | 200 | Yellow | SG40015-ND | .56 | 4.90 | 42.00 | GKG40015 |

† Marking on bottom of capacitor.

SPECIFICATIONS: • Operating Temperature Range: -25°C to +85°C • Voltage Rating: 100 VDC • Dielectric Withstanding Voltage: 220 VDC • Insulation Resistance: 10⁴ Megohms min.

Tuning Tool

| | | |
|-----------|--|--------|
| SG9007-ND | 5mm Type (SG1002 through SG1019) | \$9.20 |
| SG9005-ND | 4 x 4.5mm Type (SG1020 through SG1033) | \$9.20 |



SURFTRIM® Surface Mount Variable Capacitors

• Sealed Construction • 4 x 4.5 x 2.7mm

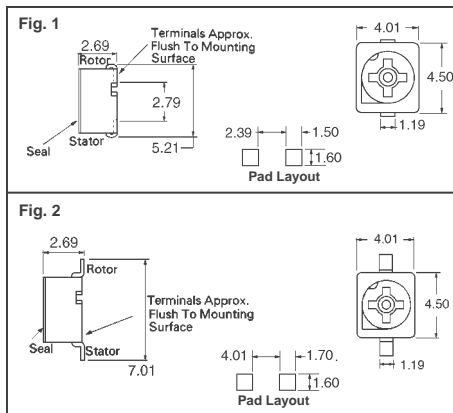
FEATURES:
 • Process seal provides protection against contaminants (flux, solvents, etc.) during production.
 • Designed for vapor phase reflow soldering.

SPECIFICATIONS:
 • Operating Temperature Range: -25°C to 85°C
 • Insulation Resistance: 10⁴ Megohms min.
 • Dielectric Withstanding Voltage: 220 VDC
 • Voltage Rating: 100 VDC
 • Torque: 15 to 100 g-cm (0.2 to 1.39 in.-oz.)

| Fig. | Capacitance (pF) | | TCC (ppm / °C) | Q (min.) 1MHz | Color Code | Digi-Key Part No. | Cut Tape Pricing | | | Digi-Key Part No. | Tape/Reel Pricing 700 | Sprague-Goodman Part No. |
|------|------------------|------|----------------|---------------|------------|-------------------|------------------|-------|-------|-------------------|-----------------------|--------------------------|
| | Min. | Max. | | | | | 5 | 25 | 100 | | | |
| 1 | 1.4 | 3.0 | 0±200 | 300 | Red Dot | SG2000CT-ND | 5.40 | 23.63 | 74.25 | SG2000TR-ND | 313.80 | GKG3R066-07 |
| | 2.0 | 6.0 | 0±200 | 500 | Blue | SG2001CT-ND | 5.40 | 23.63 | 74.25 | SG2001TR-ND | 313.80 | GKG6R066-07 |
| | 3.0 | 10.0 | 0±300 | 500 | White | SG2002CT-ND | 5.40 | 23.63 | 74.25 | SG2002TR-ND | 313.80 | GKG10066-07 |
| | 4.5 | 20.0 | N750±300 | 500 | Red | SG2003CT-ND | 5.40 | 23.63 | 74.25 | SG2003TR-ND | 313.80 | GKG20066-07 |
| | 6.5 | 30.0 | N900±450 | 300 | Green | SG2004CT-ND | 5.40 | 23.63 | 74.25 | SG2004TR-ND | 313.80 | GKG30066-07 |
| | 2 | 1.4 | 3.0 | 0±200 | 300 | Red Dot | SG2007CT-ND | 6.40 | 28.00 | 88.00 | SG2007TR-ND | 371.70 |
| 2.0 | | 6.0 | 0±200 | 500 | Blue | SG2008CT-ND | 6.40 | 28.00 | 88.00 | SG2008TR-ND | 371.70 | GKG6R067-07 |
| 3.0 | | 10.0 | 0±300 | 500 | White | SG2009CT-ND | 6.40 | 28.00 | 88.00 | SG2009TR-ND | 371.70 | GKG10067-07 |
| 4.5 | | 20.0 | N750±300 | 500 | Red | SG2010CT-ND | 6.40 | 28.00 | 88.00 | SG2010TR-ND | 371.70 | GKG20067-07 |
| 6.5 | | 30.0 | N900±450 | 300 | Green | SG2011CT-ND | 6.40 | 28.00 | 88.00 | SG2011TR-ND | 371.70 | GKG30067-07 |

† Marking on bottom of capacitor.

SG9005-ND Tuning Tool \$9.20





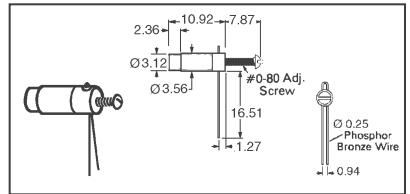
Multiturn PTFE Dielectric Trimmer Capacitors

FEATURES: These trimmer capacitors combine the outstanding electrical properties of PTFE with nonferrous metal parts to provide: • High Q • High DWV • High IR • Excellent Conductivity • Corrosion Resistance • Low DC / Turns Ratio • Excellent Stability

SPECIFICATIONS: Capacitance Range: .25 to 1.5 pF. WVDC: 1250 WVDC. DWV: 2500 VDC for 1-5 sec. Operating Temperature Range: -55°C to 125°C. Initial Q @ 1 MHz: 2000 min. Insulation Resistance: 1 teraohm @ 25°C. Torque: 0.2-3.0 in.-oz.

Tuning Tool SG9005-ND\$9.20

| Digi-Key Part No. | 1 | Pricing 10 | 100 | Sprague-Goodman Part No. |
|-------------------|------|------------|--------|--------------------------|
| SG3029-ND | 2.98 | 25.50 | 233.75 | ER-530-000 |



AIRTRIM® Air Dielectric Multiturn Trimmer Capacitors

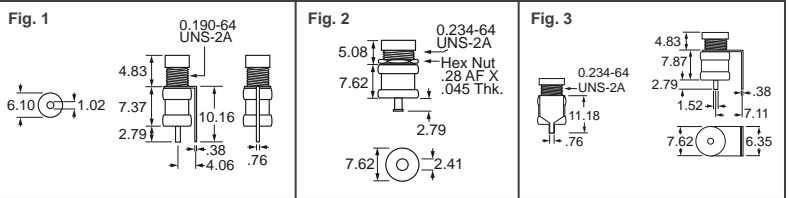
SPECIFICATIONS:

- Operating Temperature Range: -65°C to +125°C
- Working Voltage: 250 VDC
- Test Voltage: 500 VDC
- Insulation Resistance: >10 M Ohms
- Contact Resistance: <0.010
- Q: >5000 at 100 MHz

• **Vibration:** 60g, 10-2000 Hz

• **Shock:** 1500 g, 0.5 ms

APPLICATIONS: Designed for VHF, UHF and microwave applications: amplifiers, oscillators, filters, radar, cable TV, mobile radios and RF appliances.



Tuning Tool

SG9005-ND 4 x 4.5mm Type (For SG4001 - SG4004)\$9.20

SG9007-ND 5mm Type (For SG4010)\$9.20

| Fig. | Capacitance Range (pF) | Torque oz.-in. | TCC (ppm/°C) | Self-Resonant Freq. | Digi-Key Part No. | 1 | Pricing 10 | 100 | Sprague-Goodman Part No. |
|------|------------------------|----------------|--------------|---------------------|-------------------|-------|------------|---------|--------------------------|
| 1 | 0.6 - 6.0 | 0.4 - 4.0 | ±15 ppm/°C | >6 GHz | SG4010-ND | 18.13 | 155.40 | 1424.50 | GAA6R012 |
| 2 | 1.0 - 10.0 | 0.5 - 5.0 | ±15 ppm/°C | >5 GHz | SG4001-ND | 10.08 | 86.40 | 792.00 | GAA10001 |
| 3 | 1.0 - 10.0 | 0.5 - 5.0 | ±15 ppm/°C | >5 GHz | SG4004-ND | 12.08 | 103.50 | 948.75 | GAA10006 |

SURFTRIM® Surface Mount GKP Series Capacitors

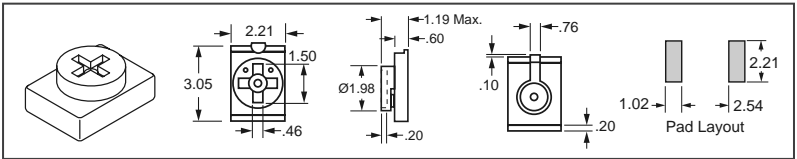
2.2mm x 3.1mm x 1.2mm

FEATURES:

- Thinnest and smallest chip type
- Multilayer construction
- Carrier and reel packaging standard

SPECIFICATIONS:

- Operating Temperature Range: -25°C - 85°C
- Dielectric Withstanding Voltage: 55 VDC
- Insulation Resistance: 10⁴ Megohms min.
- Voltage Rating: 25 VDC
- Torque: 0.14 to 1.39 in.-oz.



Tuning Tool

GTT-11-ND (SG2014 - SG2016)\$2.99

| Capacitance (pF) Min. Max. | TCC (ppm/°C) | Q(min) Code (1 MHz) | Digi-Key Part No. | Cut Tape Pricing 5 25 100 | Digi-Key Part No. | Tape & Reel Pricing 2,000 | Sprague-Goodman Part No. |
|----------------------------|--------------|---------------------|-------------------|---------------------------|-------------------|---------------------------|--------------------------|
| 2.5 6.0 | NPO±500 | 200 | SG2016CT-ND | 8.00 35.00 110.00 | SG2016TR-ND | 600.00/M | GK6P066 |
| 3.0 10.0 | NPO±500 | 200 | SG2014CT-ND | 8.00 35.00 110.00 | SG2014TR-ND | 600.00/M | GK10066 |
| 4.5 20.0 | N750±500 | 200 | SG2015CT-ND | 8.00 35.00 110.00 | SG2015TR-ND | 600.00/M | GK20066 |

Top & Bottom/Side Adjust FILMTRIM® Plastic Dielectric Capacitors

GYA, GYB Series — 8mm; GYC, GYD, GZC, GZD Series — 10mm

FEATURES:

- Compact size • Most stable TCC for single turn trimmers
- Low cost for commercial/industrial applications
- Linear capacitance change vs. rotation
- Typical applications: Mobile radios, transmitters, pagers, electronic games, wireless equipment, CATV

SPECIFICATIONS:

- Dielectric Construction: GYA, GYB, GYC, GYD Series: Polypropylene; GZC and GZD Series: Polycarbonate
- Voltage Rating: 100 WVDC
- Dielectric Withstanding Voltage: 200 VDC

• Operating Temperature: GYA and GYB Series: -40°C to 70°C; GYC, GYD, GZC, GZD Series: -40°C to 85°C

• Contact Resistance: <0.010 Ohm

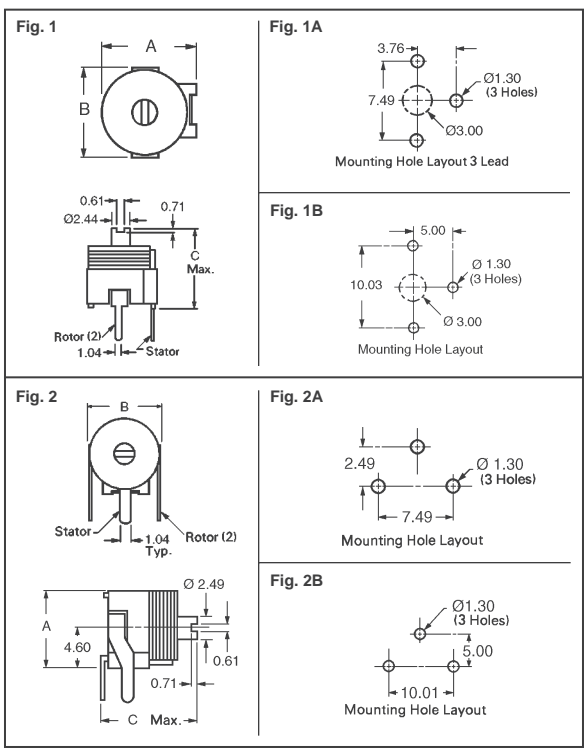
• Insulation Resistance: >10,000 M Ohm

• Torque: GYA and GYB Series: 0.2-3.0 in.-oz.; GYC, GYD, GZC, GZD Series: 0.2-5.5 in.-oz.

• Q (min) @ 1 MHz: GYA, GYB, GYC, GYD Series: 1000; GZC and GZD Series: 200

Tuning Tool SG9004-ND\$10.92

| Fig. | Capacitance (pF) Min. Max. | TCC (ppm/°C) | Dimensions A B C | Color Code | Digi-Key Part No. | 1 | Pricing 10 | 100 | Sprague-Goodman Part No. |
|-------------|----------------------------|----------------|------------------|------------|-------------------|-------|------------|----------|--------------------------|
| 8mm | | | | | | | | | |
| 1A | 1.6 5.0 | ±300 | 8.51 7.87 10.2 | Gray | SG3000-ND | 1.19 | 10.20 | 93.50 | GYA5R000 |
| | 2.0 10.0 | ±300 | 8.51 7.87 10.2 | Yellow | SG3001-ND | 1.19 | 10.20 | 93.50 | GYA10000 |
| | 2.0 15.0 | ±400 | 8.51 7.87 10.2 | Blue | SG3002-ND | 1.30 | 11.10 | 101.75 | GYA15000 |
| | 2.2 22.0 | ±400 | 8.51 7.87 10.2 | Green | SG3003-ND | 1.30 | 11.10 | 101.75 | GYA20000 |
| | 2.3 27.0 | ±350 | 8.51 7.87 10.2 | Red | SG3004-ND | 1.37 | 11.70 | 107.25 | GYA27000 |
| 3.0 36.0 | ±300 | 8.51 7.87 10.2 | Violet | SG3005-ND | 2.00 | 17.10 | 156.75 | GYA36000 | |
| 2A | 1.6 5.0 | ±300 | 8.51 7.87 10.2 | Gray | SG3020-ND | 2.14 | 18.30 | 167.75 | GYB5R000 |
| | 2.0 10.0 | ±300 | 8.51 7.87 10.2 | Yellow | SG3021-ND | 2.14 | 18.30 | 167.75 | GYB10000 |
| | 2.0 15.0 | ±400 | 8.51 7.87 10.2 | Blue | SG3022-ND | 2.28 | 19.50 | 178.75 | GYB15000 |
| | 2.2 22.0 | ±400 | 8.51 7.87 10.2 | Green | SG3023-ND | 2.31 | 19.80 | 181.50 | GYB22000 |
| | 2.3 27.0 | ±350 | 8.51 7.87 10.2 | Red | SG3024-ND | 2.38 | 20.40 | 187.00 | GYB27000 |
| 10mm | | | | | | | | | |
| 1B | 2.0 15.0 | ±400 | 11 10.16 10.2 | Blue | SG3006-ND | 1.68 | 14.40 | 132.00 | GYC15000 |
| | 3.0 20.0 | ±400 | 11 10.16 10.2 | Green | SG3007-ND | 1.68 | 14.40 | 132.00 | GYC20000 |
| | 3.5 40.0 | ±350 | 11 10.16 10.2 | Clear | SG3008-ND | 1.65 | 14.10 | 129.25 | GYC40000 |
| | 4.5 65.0 | ±350 | 11 10.16 10.2 | Yellow | SG3009-ND | 1.68 | 14.40 | 132.00 | GYC65000 |
| 2B | 2.0 15.0 | ±400 | 11 10.16 10.2 | Blue | SG3025-ND | 2.28 | 19.50 | 178.75 | GYD15000 |
| | 3.0 20.0 | ±400 | 11 10.16 10.2 | Green | SG3026-ND | 2.35 | 20.10 | 184.25 | GYD20000 |
| | 3.0 40.0 | ±350 | 11 10.16 10.2 | Clear | SG3027-ND | 2.52 | 21.60 | 198.00 | GYD40000 |
| | 4.5 65.0 | ±350 | 11 10.16 10.2 | Yellow | SG3028-ND | 2.77 | 23.70 | 217.25 | GYD65000 |
| 1B | 8.0 80.0 | ±200 | 11 10.16 11.4 | Red | SG3010-ND | 2.28 | 19.50 | 178.75 | GZC80000 |
| | 9.0 100.0 | ±400 | 11 10.16 11.4 | Violet | SG3011-ND | 3.61 | 30.90 | 283.25 | GZC10100 |
| | 9.0 120.0 | ±350 | 11 10.16 11.4 | Orange | SG3012-ND | 5.36 | 45.90 | 420.75 | GZC12100 |
| | 10.0 150.0 | ±350 | 11 10.16 12.0 | Orange | SG3013-ND | 6.23 | 53.40 | 489.50 | GZC15100 |
| | 10.0 180.0 | ±350 | 11 10.16 12.0 | Orange | SG3014-ND | 7.32 | 62.70 | 574.75 | GZC18100 |
| 2B | 8.0 80.0 | ±200 | 11 10.16 11.4 | Red | SG3015-ND | 3.05 | 26.10 | 239.25 | GZD80000 |
| | 9.0 100.0 | ±400 | 11 10.16 11.4 | Violet | SG3016-ND | 4.55 | 39.00 | 357.50 | GZD10100 |
| | 9.0 120.0 | ±350 | 11 10.16 11.4 | Orange | SG3017-ND | 6.16 | 52.80 | 484.00 | GZD12100 |
| | 10.0 150.0 | ±350 | 11 10.16 12.0 | Orange | SG3018-ND | 6.97 | 59.70 | 547.25 | GZD15100 |
| | 10.0 180.0 | ±350 | 11 10.16 12.0 | Orange | SG3019-ND | 7.77 | 66.60 | 610.50 | GZD18100 |



Electronic Reproduction of
Digi-Key® Catalog #992
April - June, 1999

Digi-Key® Corporation
701 Brooks Avenue South
Thief River Falls, MN 56701-0677

Phone: 1-800-344-4539 or 218-681-6674

Fax: 218-681-3380

Email: webmaster@digikey.com