

# 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°C ~ 85°C Construction: Polyester film, non-inductive, phenolic/epoxy resin coating, wax impregnation.

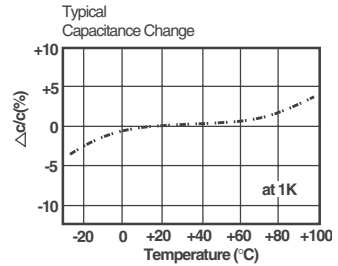
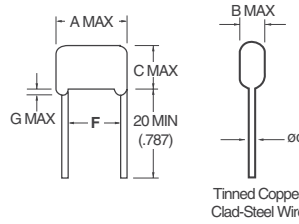
## Electrical Specifications:

Capacitance Tolerance: ±10% (K). Insulation Resistance: Greater than 10,000 mΩ. 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; **Mepco:** 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; **Nissiel:** AMZ, AMX, AMR, AMM.

Style: Straight Radial Leads



| Cap. μF          | Dimensions (mm) |     |      |        |   | Digi-Key Part No. | Pricing |       |        |          | Panasonic Part No. |             |
|------------------|-----------------|-----|------|--------|---|-------------------|---------|-------|--------|----------|--------------------|-------------|
|                  | A               | B   | C    | F±1.25 | G |                   | 10      | 100   | 1,000  | 5,000    |                    | 10,000      |
| <b>200 WV DC</b> |                 |     |      |        |   |                   |         |       |        |          |                    |             |
| .001             | 9.0             | 5.0 | 9.0  | 5.5    | 2 | P1029-ND*         | 1.64    | 13.70 | 82.00  | 76.00/M  | 71.00/M            | ECQ-M2102KZ |
| .0012            | 9.0             | 5.0 | 9.0  | 5.5    | 2 | P1030-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2122KZ |
| .0015            | 9.0             | 5.0 | 9.5  | 5.5    | 3 | P1031-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2152KZ |
| .0018            | 9.0             | 5.5 | 9.5  | 5.5    | 3 | P1032-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2182KZ |
| .0022            | 9.0             | 6.0 | 10.0 | 5.5    | 3 | P1033-ND*         | 1.37    | 11.40 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M2222KZ |
| .0027            | 9.0             | 5.0 | 9.0  | 5.5    | 3 | P1034-ND*         | 1.45    | 12.08 | 72.00  | 67.00/M  | 63.00/M            | ECQ-M2272KZ |
| .0033            | 9.0             | 5.0 | 9.0  | 5.5    | 3 | P1035-ND*         | 1.51    | 12.60 | 75.00  | 70.00/M  | 65.00/M            | ECQ-M2332KZ |
| .0039            | 12.0            | 5.5 | 9.5  | 7.5    | 3 | P1036-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2392KZ |
| .0047            | 12.0            | 6.0 | 9.5  | 7.5    | 3 | P1037-ND*         | 1.45    | 12.05 | 72.00  | 67.00/M  | 63.00/M            | ECQ-M2472KZ |
| .0056            | 12.0            | 6.0 | 9.5  | 7.5    | 3 | P1038-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2562KZ |
| .0068            | 12.0            | 6.0 | 10.5 | 7.5    | 3 | P1039-ND*         | 1.38    | 11.48 | 69.00  | 64.00/M  | 60.00/M            | ECQ-M2682KZ |
| .0082            | 14.0            | 5.5 | 10.0 | 9.5    | 3 | P1040-ND*         | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2822KZ |
| .01              | 14.0            | 6.0 | 10.0 | 9.5    | 3 | P1041-ND*         | 1.57    | 13.08 | 78.00  | 73.00/M  | 68.00/M            | ECQ-M2103KZ |
| .012             | 14.0            | 6.0 | 10.5 | 9.5    | 3 | P1042-ND*         | 1.58    | 13.13 | 78.00  | 73.00/M  | 68.00/M            | ECQ-M2123KZ |
| .015             | 14.0            | 6.5 | 11.5 | 9.5    | 3 | P1043-ND*         | 1.42    | 11.85 | 71.00  | 66.00/M  | 62.00/M            | ECQ-M2153KZ |
| .018             | 17.0            | 5.5 | 10.0 | 12.5   | 3 | P1044-ND*         | 1.72    | 14.35 | 86.00  | 80.00/M  | 75.00/M            | ECQ-M2183KZ |
| .022             | 17.0            | 5.5 | 11.0 | 12.5   | 3 | P1045-ND*         | 1.75    | 14.60 | 87.00  | 81.00/M  | 76.00/M            | ECQ-M2223KZ |
| .027             | 17.0            | 6.0 | 11.0 | 12.5   | 3 | P1046-ND*         | 1.59    | 13.28 | 79.00  | 74.00/M  | 69.00/M            | ECQ-M2273KZ |
| .033             | 17.0            | 6.5 | 11.5 | 12.5   | 3 | P1047-ND*         | 1.70    | 14.13 | 84.00  | 78.00/M  | 73.00/M            | ECQ-M2333KZ |
| .039             | 17.0            | 6.0 | 13.5 | 12.5   | 3 | P1048-ND          | 2.03    | 16.90 | 101.00 | 94.00/M  | 88.00/M            | ECQ-M2393KZ |
| .047             | 17.0            | 6.5 | 14.0 | 12.5   | 3 | P1049-ND*         | 1.80    | 15.03 | 90.00  | 83.00/M  | 78.00/M            | ECQ-M2473KZ |
| .056             | 20.0            | 6.5 | 14.0 | 14.5   | 3 | P1050-ND          | 1.92    | 16.00 | 96.00  | 89.00/M  | 83.00/M            | ECQ-M2563KZ |
| .068             | 20.0            | 7.0 | 14.5 | 14.5   | 3 | P1051-ND*         | 2.03    | 16.90 | 101.00 | 94.00/M  | 88.00/M            | ECQ-M2683KZ |
| .082             | 20.0            | 7.5 | 15.0 | 15.0   | 3 | P1052-ND          | 2.08    | 17.30 | 103.00 | 96.00/M  | 90.00/M            | ECQ-M2823KZ |
| .1               | 20.0            | 8.0 | 17.0 | 15.0   | 3 | P1053-ND*         | 2.88    | 24.00 | 143.00 | 133.00/M | 125.00/M           | ECQ-M2104KZ |

## ◆ RoHS Compliant

\* 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**

| Cap. μF          | Dimensions (mm) |      |      |        |   | Digi-Key Part No. | Pricing |       |        |          | Panasonic Part No. |             |
|------------------|-----------------|------|------|--------|---|-------------------|---------|-------|--------|----------|--------------------|-------------|
|                  | A               | B    | C    | F±1.25 | G |                   | 10      | 100   | 1,000  | 5,000    |                    | 10,000      |
| .12              | 20.0            | 8.5  | 17.5 | 15.0   | 3 | P1054-ND          | 3.04    | 25.35 | 151.00 | 141.00/M | 132.00/M           | ECQ-M2124KZ |
| .15              | 20.0            | 9.5  | 18.5 | 15.0   | 3 | P1055-ND*         | 2.91    | 24.25 | 145.00 | 135.00/M | 126.00/M           | ECQ-M2154KZ |
| .18              | 23.0            | 13.0 | 22.0 | 18.5   | 3 | P1056-ND          | 1.40    | 11.63 | 69.00  | 65.00/M  | 60.00/M            | ECQ-M2184KZ |
| .22              | 23.0            | 14.0 | 23.0 | 18.5   | 3 | P1057-ND*         | 4.32    | 36.00 | 215.00 | 200.00/M | 187.00/M           | ECQ-M2224KZ |
| <b>400 WV DC</b> |                 |      |      |        |   |                   |         |       |        |          |                    |             |
| .001             | 11.0            | 5.5  | 9.5  | 6.5    | 2 | P1058-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4102KZ |
| .0012            | 11.0            | 6.0  | 10.0 | 6.5    | 2 | P1059-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4122KZ |
| .0015            | 11.0            | 6.0  | 10.0 | 6.5    | 2 | P1060-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4152KZ |
| .0018            | 11.0            | 6.0  | 10.0 | 6.5    | 2 | P1061-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4182KZ |
| .0022            | 11.0            | 6.5  | 10.5 | 6.5    | 2 | P1062-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4222KZ |
| .0027            | 12.0            | 6.0  | 10.0 | 7.5    | 2 | P1063-ND          | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4272KZ |
| .0033            | 12.0            | 6.5  | 10.5 | 7.5    | 2 | P1064-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4332KZ |
| .0039            | 12.0            | 6.5  | 10.5 | 7.5    | 2 | P1065-ND          | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4392KZ |
| .0047            | 14.0            | 6.0  | 10.0 | 9.5    | 2 | P1066-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4472KZ |
| .0056            | 14.0            | 6.0  | 10.0 | 9.5    | 2 | P1067-ND          | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4562KZ |
| .0068            | 14.0            | 6.5  | 10.5 | 9.5    | 3 | P1068-ND†         | 1.37    | 11.43 | 68.00  | 63.00/M  | 59.00/M            | ECQ-M4682KZ |
| .0082            | 14.0            | 6.5  | 12.0 | 9.5    | 3 | P1069-ND          | 1.41    | 11.75 | 70.00  | 65.00/M  | 61.00/M            | ECQ-M4822KZ |
| .01              | 14.0            | 7.0  | 12.5 | 9.5    | 3 | P1070-ND†         | 1.41    | 11.75 | 70.00  | 65.00/M  | 61.00/M            | ECQ-M4103KZ |
| .012             | 17.0            | 6.0  | 12.0 | 12.5   | 3 | P1071-ND          | 1.49    | 12.38 | 74.00  | 69.00/M  | 64.00/M            | ECQ-M4123KZ |
| .015             | 17.0            | 6.5  | 12.5 | 12.5   | 3 | P1072-ND†         | 1.49    | 12.38 | 74.00  | 69.00/M  | 64.00/M            | ECQ-M4153KZ |
| .018             | 17.0            | 7.0  | 13.0 | 12.5   | 3 | P1073-ND          | 1.49    | 12.38 | 74.00  | 69.00/M  | 64.00/M            | ECQ-M4183KZ |
| .022             | 17.0            | 7.5  | 13.5 | 12.5   | 3 | P1074-ND†         | 1.64    | 13.65 | 81.00  | 76.00/M  | 71.00/M            | ECQ-M4223KZ |
| .027             | 20.0            | 7.0  | 14.5 | 15.0   | 2 | P1075-ND          | 1.79    | 14.90 | 89.00  | 83.00/M  | 77.00/M            | ECQ-M4273KZ |
| .033             | 20.0            | 7.5  | 15.0 | 15.0   | 2 | P1076-ND†         | 1.90    | 15.85 | 95.00  | 88.00/M  | 82.00/M            | ECQ-M4333KZ |
| .039             | 20.0            | 8.5  | 16.0 | 15.0   | 3 | P1077-ND          | 2.02    | 16.80 | 100.00 | 93.00/M  | 87.00/M            | ECQ-M4393KZ |
| .047             | 20.0            | 9.0  | 16.5 | 15.0   | 3 | P1078-ND†         | 2.17    | 18.08 | 108.00 | 100.00/M | 94.00/M            | ECQ-M4473KZ |
| .056             | 23.0            | 8.5  | 15.5 | 18.0   | 3 | P1079-ND          | 2.35    | 19.58 | 117.00 | 109.00/M | 102.00/M           | ECQ-M4563KZ |
| .068             | 23.0            | 9.0  | 16.5 | 18.0   | 3 | P1080-ND†         | 2.66    | 22.18 | 132.00 | 123.00/M | 115.00/M           | ECQ-M4683KZ |
| .082             | 24.0            | 9.5  | 17.0 | 18.0   | 3 | P1081-ND          | 3.04    | 25.35 | 151.00 | 141.00/M | 132.00/M           | ECQ-M4823KZ |
| .1               | 24.0            | 10.0 | 19.0 | 18.0   | 3 | P1082-ND†         | 3.31    | 27.55 | 164.00 | 153.00/M | 143.00/M           | ECQ-M4104KZ |

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# Panasonic® Metallized Polyester Capacitors – ECQE(C) Type

## Features:

- Box-type construction (case meets UL94V-0 flame classification, meets requirements of IEC950)
- Operating temperature range: -25°C ~ 85°C (105°C) (\*Requires voltage, current and pulse current derating)

## Application:

- Interference suppressor for active circuits

## Electrical Specifications:

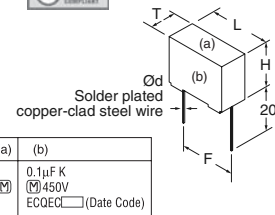
- Rated Voltage: 450VDC

- Capacitance Tolerance: ±10%

- Withstand Voltage: Between Terminals: 1 minute at 150% of rated voltage (The capacitor shall be applied the voltage through a resistor of 2kΩ or more when charged and discharged.) Between Terminal s connected together and case: 1-5 seconds at 200% of rated voltage

- Insulation Resistance Between Terminals: 9,000 MΩ or more (when C≥0.33μF) 3,000 MΩ/μF or more (when C<0.33μF) at 100VDC±15V for 60±5 seconds, at 20°C

- Dissipation Factor: 1.0% or less (measured at a frequency of 1±0.2KHz, at 20°C)



|     |                      |
|-----|----------------------|
| (a) | 0.1μF K              |
| (b) | 450V                 |
| (M) | ECQE□□□□ (Date Code) |

| WV DC | Cap. μF | Toler-ance | Dimensions (mm) |      |      |      |     | Digi-Key Part No. | Price Each |      |      |       | Panasonic Part No. |
|-------|---------|------------|-----------------|------|------|------|-----|-------------------|------------|------|------|-------|--------------------|
|       |         |            | L               | T    | H    | F    | d   |                   | 1          | 10   | 100  | 1,000 |                    |
| 450   | .10     | 10%        | 18.5            | 5.5  | 14.5 | 15.0 | 0.6 | P10755-ND         | .62        | .53  | .44  | .27   | ECQ-E2W104KC       |
|       | .15     | 10%        | 18.5            | 6.0  | 16.5 | 15.0 | 0.6 | P10756-ND         | .75        | .65  | .54  | .32   | ECQ-E2W154KC       |
|       | .22     | 10%        | 18.5            | 7.0  | 18.0 | 15.0 | 0.6 | P10757-ND         | .89        | .77  | .64  | .38   | ECQ-E2W224KC       |
|       | .33     | 10%        | 18.0            | 9.0  | 17.5 | 15.0 | 0.8 | P10758-ND         | 1.10       | .94  | .79  | .47   | ECQ-E2W334KC       |
|       | .47     | 10%        | 18.0            | 9.5  | 17.5 | 15.0 | 0.8 | P10759-ND         | 1.30       | 1.12 | .93  | .56   | ECQ-E2W474KC       |
|       | .68     | 10%        | 25.5            | 10.5 | 20.0 | 22.5 | 0.8 | P10760-ND         | 1.77       | 1.53 | 1.27 | .76   | ECQ-E2W684KC       |
|       | 1.0     | 10%        | 25.5            | 12.5 | 22.0 | 22.5 | 0.8 | P10761-ND         | 2.32       | 2.00 | 1.66 | 1.00  | ECQ-E2W105KC       |
|       | 1.5     | 10%        | 25.5            | 15.5 | 24.5 | 22.5 | 0.8 | P10762-ND         | 3.07       | 2.64 | 2.20 | 1.31  | ECQ-E2W155KC       |
|       | 2.2     | 10%        | 31.0            | 14.0 | 24.5 | 27.5 | 0.8 | P10763-ND         | 4.03       | 3.45 | 2.88 | 1.72  | ECQ-E2W225KC       |

More Product Available Online: [www.digkey.com](http://www.digkey.com)

Toll-Free: 1-800-344-4539 • Phone 218-681-6674 • Fax: 218-681-3380

(T083) 1685

# Panasonic P-Series Polypropylene Capacitors

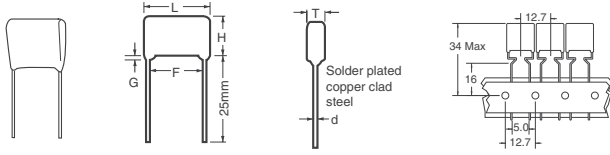
**Features:** • Wide capacitance range • Close capacitance tolerance • High insulation resistance • Low dissipation factor • Non-inductive construction • Epoxy resin coating

**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°C - 85°C • Dissipation Factor:

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

**PANASONIC ECO-P CROSS REF.:** Sprague: 715P Westlake: 173/174 Mepco: 719E1/719H1 Secor: PFDS/PFDR Roderstein: KP1835 Wima: FKP CSF Thompson: PL/PS Rubycon: PP Nisseip: APS/APA.



| WV/DC | Cap. μF | Tolerance | Dimensions - mm |     |      |     |     | Digi-Key Part No. | Tape and Box Pricing |        |        | Panasonic Part No. |              |
|-------|---------|-----------|-----------------|-----|------|-----|-----|-------------------|----------------------|--------|--------|--------------------|--------------|
|       |         |           | L               | T   | H    | F   | d   |                   | 500                  | 1,000  | 5,000  |                    |              |
| 50    | .0001   | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3101TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H101JZ |
|       | .00012  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3121TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H121JZ |
|       | .00015  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3151TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H151JZ |
|       | .00018  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3181TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H181JZ |
|       | .00022  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3221TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H221JZ |
|       | .00027  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3271TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H271JZ |
|       | .00033  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3331TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H331JZ |
|       | .00039  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3391TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H391JZ |
|       | .00047  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3471TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H471JZ |
|       | .00056  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3561TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H561JZ |
|       | .00068  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3681TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H681JZ |
|       | .00082  | 5%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3821TB-ND        | —                    | 138.00 | 133.00 | 99.00              | ECO-P1H821JZ |
|       | .001    | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3102TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H102GZ |
|       | .0012   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3122TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H122GZ |
|       | .0015   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3152TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H152GZ |
|       | .0018   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3182TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H182GZ |
|       | .0022   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3222TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H222GZ |
|       | .0027   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3272TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H272GZ |
|       | .0033   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3332TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H332GZ |
|       | .0039   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3392TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H392GZ |
|       | .0047   | 2%        | 8.5             | 4.5 | 7.5  | 5.0 | 0.5 | P3472TB-ND        | —                    | 193.00 | 187.00 | 144.00             | ECO-P1H472GZ |
|       | .0056   | 2%        | 8.5             | 4.5 | 8.0  | 5.0 | 0.5 | P3562TB-ND        | —                    | 206.00 | 199.00 | 154.00             | ECO-P1H562GZ |
|       | .0068   | 2%        | 8.5             | 4.5 | 8.0  | 5.0 | 0.5 | P3682TB-ND        | —                    | 206.00 | 199.00 | 154.00             | ECO-P1H682GZ |
|       | .0082   | 2%        | 12.0            | 5.5 | 9.0  | 5.0 | 0.6 | P3822TB-ND        | —                    | 221.00 | 214.00 | 164.00             | ECO-P1H822GZ |
|       | .01     | 2%        | 12.0            | 5.0 | 8.5  | 5.0 | 0.6 | P3103TB-ND        | —                    | 221.00 | 214.00 | 164.00             | ECO-P1H103GZ |
|       | .012    | 2%        | 12.0            | 5.5 | 9.0  | 5.0 | 0.6 | P3123TB-ND        | —                    | 221.00 | 214.00 | 164.00             | ECO-P1H123GZ |
|       | .015    | 2%        | 12.0            | 5.0 | 9.0  | 5.0 | 0.6 | P3153TB-ND        | —                    | 221.00 | 214.00 | 164.00             | ECO-P1H153GZ |
|       | .018    | 2%        | 12.0            | 5.5 | 9.5  | 5.0 | 0.6 | P3183TB-ND        | —                    | 238.00 | 230.00 | 176.00             | ECO-P1H183GZ |
|       | .022    | 2%        | 12.0            | 5.5 | 10.5 | 5.0 | 0.6 | P3223TB-ND        | —                    | 238.00 | 230.00 | 176.00             | ECO-P1H223GZ |
|       | .027    | 2%        | 12.0            | 6.0 | 11.0 | 5.0 | 0.6 | P3273TB-ND        | 136.50               | —      | 264.00 | ECO-P1H273GZ       |              |
|       | .033    | 2%        | 12.0            | 6.5 | 11.5 | 5.0 | 0.6 | P3333TB-ND        | 136.50               | —      | 264.00 | ECO-P1H333GZ       |              |

• RoHS Compliant

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

## ECQ-P (Z) Series Polypropylene Film Capacitors

Non-inductive construction using Polypropylene film with epoxy resin coating.

**Features:**

- Excellent temperature and frequency characteristics
- Excellent long term stability

**Applications:**

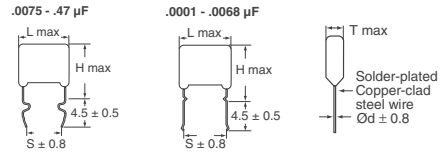
- Dolby circuits
- Oscillation circuits

**Electrical Specifications:**

- Temperature Range: -40°C - 85°C • Rated Voltage: 50VDC, (Voltage derating is required

above 70°. See data sheet for details.)

- Dissipation Factor: 0.1% maximum at 1kHz and 20°
- Withstand Voltage: Between terminals: (VDC) x 250% 1-5 seconds • Insulation Resistance: C < 0.33μF: 45000MΩ minimum C > 0.33μF: 15000MΩ/μF minimum (20°C Rated Voltage - 60s)



| WV/DC | Cap. μF | Tolerance | Dimensions - mm |     |      |     |      | Digi-Key Part No. | Pricing |      |       |        | Panasonic Part No. |
|-------|---------|-----------|-----------------|-----|------|-----|------|-------------------|---------|------|-------|--------|--------------------|
|       |         |           | L               | T   | H    | S   | d    |                   | 1       | 10   | 100   | 1,000  |                    |
| 50    | .0001   | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3889-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H101JZW      |
|       | .00012  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3890-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H121JZW      |
|       | .00015  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3891-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H151JZW      |
|       | .00018  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3892-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H181JZW      |
|       | .00022  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3893-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H221JZW      |
|       | .00027  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3894-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H271JZW      |
|       | .00033  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3895-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H331JZW      |
|       | .00039  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3896-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H391JZW      |
|       | .00047  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3897-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H471JZW      |
|       | .00056  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3898-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H561JZW      |
|       | .00068  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3899-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H681JZW      |
|       | .00082  | 5%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3900-ND          | 23      | 1.94 | 16.20 | 97.20  | ECO-P1H821JZW      |
|       | .0011   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3901-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H102GZW      |
|       | .0012   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3902-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H122GZW      |
|       | .0015   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3903-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H152GZW      |
|       | .0018   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3904-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H182GZW      |
|       | .0022   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3905-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H222GZW      |
|       | .0027   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3906-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H272GZW      |
|       | .0033   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3907-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H332GZW      |
|       | .0039   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3908-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H392GZW      |
|       | .0047   | 2%        | 8.5             | 4.5 | 12.5 | 5.0 | 0.50 | P3909-ND          | 35      | 3.04 | 25.30 | 151.80 | ECO-P1H472GZW      |
|       | .0056   | 2%        | 8.5             | 4.5 | 13.0 | 5.0 | 0.50 | P3910-ND          | 38      | 3.28 | 27.30 | 163.80 | ECO-P1H562GZW      |
|       | .0068   | 2%        | 8.5             | 4.5 | 13.0 | 5.0 | 0.50 | P3911-ND          | 38      | 3.28 | 27.30 | 163.80 | ECO-P1H682GZW      |
|       | .0082   | 2%        | 12.0            | 5.5 | 14.0 | 5.0 | 0.60 | P3912-ND          | 38      | 3.28 | 27.30 | 163.80 | ECO-P1H822GZW      |
|       | .01     | 2%        | 12.0            | 5.0 | 13.5 | 5.0 | 0.60 | P3913-ND          | 41      | 3.55 | 29.60 | 177.60 | ECO-P1H103GZW      |
|       | .012    | 2%        | 12.0            | 5.0 | 14.0 | 5.0 | 0.60 | P3914-ND          | 41      | 3.55 | 29.60 | 177.60 | ECO-P1H123GZW      |
|       | .015    | 2%        | 12.0            | 5.0 | 14.0 | 5.0 | 0.60 | P3915-ND          | 41      | 3.55 | 29.60 | 177.60 | ECO-P1H153GZW      |
|       | .018    | 2%        | 12.0            | 5.5 | 14.5 | 5.0 | 0.60 | P3916-ND          | 45      | 3.86 | 32.20 | 193.20 | ECO-P1H183GZW      |
|       | .022    | 2%        | 12.0            | 5.5 | 15.5 | 5.0 | 0.60 | P3917-ND          | 45      | 3.86 | 32.20 | 193.20 | ECO-P1H223GZW      |
|       | .027    | 2%        | 12.0            | 6.0 | 16.0 | 5.0 | 0.60 | P3918-ND          | 45      | 3.86 | 32.20 | 193.20 | ECO-P1H273GZW      |
|       | .033    | 2%        | 12.0            | 6.5 | 16.5 | 5.0 | 0.60 | P3919-ND          | 47      | 4.04 | 33.63 | 201.75 | ECO-P1H333GZW      |
|       | .039    | 2%        | 14.5            | 5.5 | 17.0 | 5.0 | 0.60 | P3920-ND          | 52      | 4.42 | 36.80 | 220.80 | ECO-P1H393GZW      |

| WV/DC | Cap. μF | Tolerance | Dimensions - mm |      |      |      |      | Digi-Key Part No. | Pricing |       |       |        | Panasonic Part No. |
|-------|---------|-----------|-----------------|------|------|------|------|-------------------|---------|-------|-------|--------|--------------------|
|       |         |           | L               | T    | H    | S    | d    |                   | 1       | 10    | 100   | 1,000  |                    |
| 50    | .0047   | 2%        | 14.5            | 6.0  | 17.5 | 5.0  | 0.60 | P3921-ND          | 60      | 5.14  | 42.85 | 257.10 | ECO-P1H473GZW      |
|       | .0056   | 2%        | 14.5            | 6.5  | 18.5 | 5.0  | 0.60 | P3922-ND          | 60      | 5.14  | 42.85 | 257.10 | ECO-P1H563GZW      |
|       | .0068   | 2%        | 14.5            | 7.0  | 19.0 | 5.0  | 0.60 | P3923-ND          | 60      | 5.14  | 42.85 | 257.10 | ECO-P1H683GZW      |
|       | .0082   | 2%        | 17.0            | 7.0  | 19.0 | 7.5  | 0.60 | P3924-ND          | 60      | 5.14  | 42.85 | 257.10 | ECO-P1H823GZW      |
|       | .01     | 2%        | 17.0            | 7.5  | 19.5 | 7.5  | 0.60 | P3925-ND          | 82      | 7.06  | 58.83 | 352.95 | ECO-P1H104GZW      |
|       | .012    | 2%        | 17.0            | 8.5  | 20.5 | 7.5  | 0.60 | P3926-ND          | 1.03    | 8.81  | 73.45 | 440.70 | ECO-P1H124GZW      |
|       | .015    | 2%        | 20.0            | 8.0  | 20.5 | 10.0 | 0.60 | P3927-ND          | 1.03    | 8.81  | 73.45 | 440.70 | ECO-P1H154GZW      |
|       | .018    | 2%        | 20.0            | 9.0  | 21.0 | 10.0 | 0.60 | P3928-ND          | 1.10    | 9.41  | 78.45 | 470.70 | ECO-P1H184GZW      |
|       | .022    | 2%        | 20.0            | 9.5  | 22.0 | 10.0 | 0.60 | P3929-ND          | 1.32    | 11.31 | 94.28 | 565.65 | ECO-P1H224GZW      |
|       | .027    | 2%        | 20.0            | 10.5 | 23.0 | 10.0 | 0.60 | P3930-ND          | 1.32    | 11.31 | 94.28 | 565.65 | ECO-P1H274GZW      |
|       | .033    | 2%        | 22.5            | 10.0 | 24.5 | 12.5 | 0.80 | P3931-ND          | 1.33    |       |       |        |                    |