

Panasonic

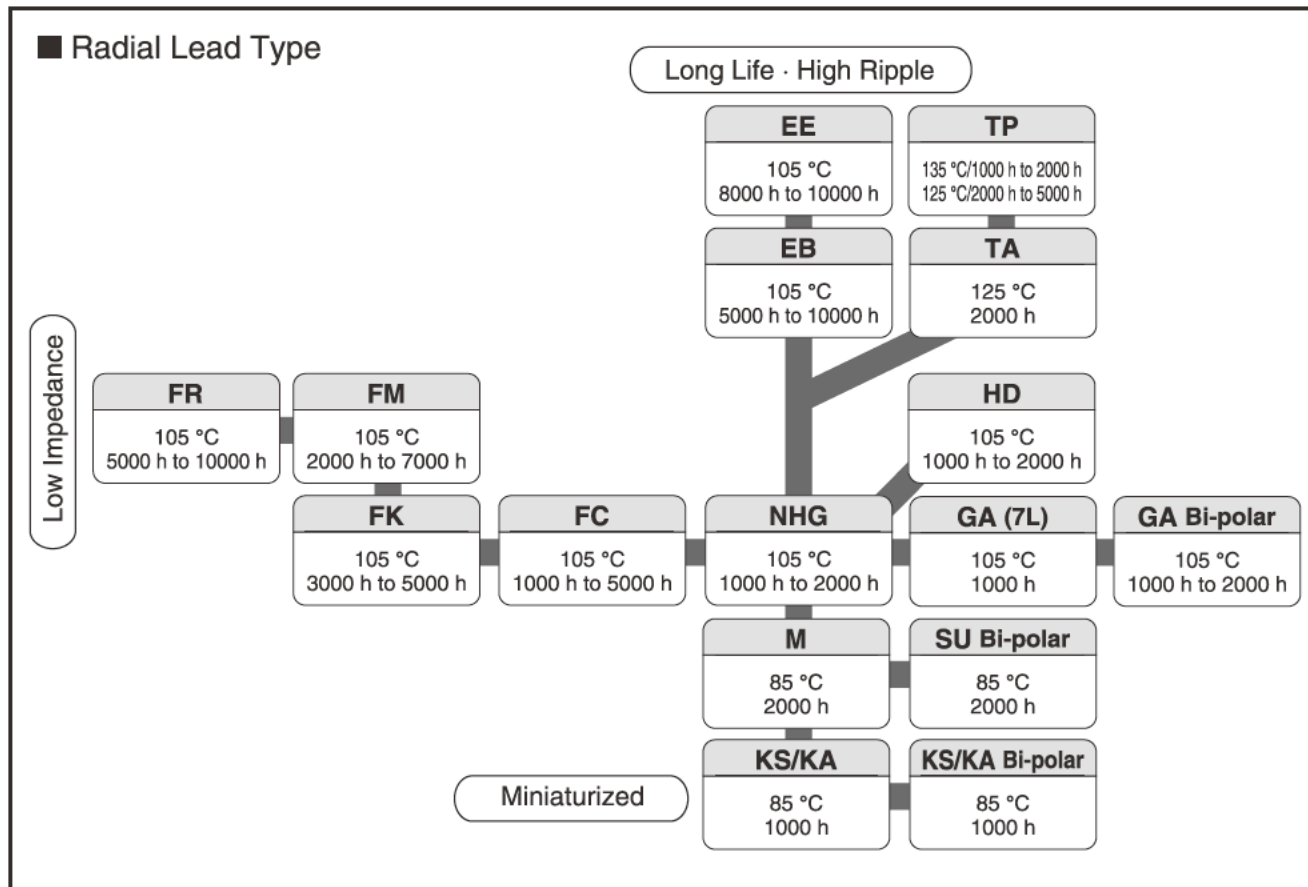
2014

CATALOG

Electrolytic Capacitors
(Radial Lead Type Aluminum Electrolytic Capacitors)



Small can type Aluminum Electrolytic Capacitors



Radial Lead Type

Series: **FC** Type: **A**



■ Features

- Endurance : 105 °C 1000 h to 5000 h
- Low impedance
- AEC-Q200 qualified*
- RoHS directive compliant

■ Specifications

| | | | | | | | | | | |
|---|---|------------------------------------|------|------|------|------|------|------|------|-----------------|
| Category Temp. Range | -55 °C to +105 °C | | | | | | | | | |
| Rated W.V. Range | 6.3 V.DC to 100 V.DC | | | | | | | | | |
| Nominal Cap. Range | 2.2 μF to 15000 μF | | | | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | | | |
| DC Leakage Current | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Whichever is greater) | | | | | | | | | |
| tan δ | W.V. (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120 Hz/+20 °C) |
| | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.07 | |
| For capacitance value $\geq 1000 \mu\text{F}$, add 0.02 per every 1000 μF. | | | | | | | | | | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. Duration : φ4 to φ6.3: 1000 hours, φ8: 2000 hours, φ10: 3000 hours, φ12.5 to φ18: 5000 hours | | | | | | | | | |
| | Capacitance change | ±20 % of initial measured value | | | | | | | | |
| | tan δ | ≤ 200 % of initial specified value | | | | | | | | |
| | DC leakage current | ≤ initial specified value | | | | | | | | |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | | | | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap (μF) | Frequency (Hz) | | | | |
|------------|---------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 6.3 to 100 | 2.2 to 330 | 0.55 | 0.65 | 0.85 | 0.90 | 1.00 |
| | 390 to 1000 | 0.70 | 0.75 | 0.90 | 0.95 | 1.00 |
| | 1200 to 2200 | 0.75 | 0.80 | 0.90 | 0.95 | 1.00 |
| | 2700 to 15000 | 0.80 | 0.85 | 0.95 | 1.00 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

*L≤16 : L±1.0 (*φ8×15, φ16×15, φ18×15 : L±1.5)
L≥20 : L±2.0

| | L≥11 | | | | | | | | L=7 | | | |
|---------------|------|-----|-----|-----|-----|----------|----------|-----|-----|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 4 | 5 | 6.3 | |
| Body Length L | | | | | | 15 to 25 | 30 to 40 | | | | | |
| Lead Dia. φd | 0.45 | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 5.0 | 7.5 | 7.5 | 1.5 | 2.0 | 2.5 |

* This product qualify for AEC-Q200, but it has some deviations.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Case size/ Impedance/ Ripple Current

| W.V(V.DC) Case size (ϕ D×L) | 6.3 V to 35 V | | | 50 V | | | 63 V | | | 100 V | | |
|---|-------------------------------------|--------|---|-------------------------------------|--------|---|-------------------------------------|--------|---|-------------------------------------|--------|---|
| | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s) (/100 kHz) | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s) (/100 kHz) | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s) (/100 kHz) | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s) (/100 kHz) |
| | 20 °C | -10 °C | | 20 °C | -10 °C | | 20 °C | -10 °C | | 20 °C | -10 °C | |
| 4 × 7 | 2.00 | 5.00 | 65 | | | | | | | | | |
| 5 × 7 | 0.950 | 2.40 | 120 | | | | | | | | | |
| 6.3 × 7 | 0.450 | 1.20 | 200 | | | | | | | | | |
| 4 × 11 | 1.30 | 2.60 | 120 | 2.50 | 5.00 | 90 | 3.50 | 7.00 | 80 | | | |
| 5 × 11 | 0.800 | 1.60 | 175 | * | * | * | 2.00 | 4.00 | 145 | 4.10 | 8.20 | 80 |
| 5 × 15 | 0.500 | 1.00 | 235 | 0.900 | 1.80 | 215 | 1.30 | 2.60 | 200 | 2.80 | 5.60 | 90 |
| 6.3 × 11.2 | 0.350 | 0.700 | 290 | 0.600 | 1.20 | 260 | 1.00 | 2.00 | 240 | 1.80 | 3.60 | 114 |
| 6.3 × 15 | 0.250 | 0.500 | 400 | 0.400 | 0.800 | 360 | 0.700 | 1.40 | 330 | 1.10 | 2.20 | 155 |
| 8 × 11.5 | 0.117 | 0.234 | 555 | 0.234 | 0.468 | 485 | 0.342 | 0.684 | 405 | 0.680 | 1.36 | 260 |
| 8 × 15 | 0.085 | 0.170 | 730 | 0.155 | 0.310 | 635 | 0.230 | 0.460 | 535 | 0.450 | 0.900 | 340 |
| 8 × 20 | 0.065 | 0.130 | 995 | 0.120 | 0.240 | 860 | 0.178 | 0.356 | 690 | 0.330 | 0.660 | 455 |
| 10 × 12.5 | 0.090 | 0.180 | 755 | 0.162 | 0.324 | 615 | 0.256 | 0.512 | 535 | 0.530 | 1.06 | 306 |
| 10 × 16 | 0.068 | 0.136 | 1050 | 0.119 | 0.238 | 850 | 0.194 | 0.388 | 600 | 0.360 | 0.720 | 400 |
| 10 × 20 | 0.052 | 0.104 | 1220 | 0.090 | 0.180 | 1030 | 0.147 | 0.294 | 885 | 0.240 | 0.480 | 463 |
| 10 × 25 | 0.045 | 0.090 | 1440 | 0.082 | 0.164 | 1200 | 0.130 | 0.260 | 1050 | 0.210 | 0.420 | 599 |
| 10 × 30 | 0.035 | 0.070 | 1815 | 0.060 | 0.120 | 1610 | 0.090 | 0.180 | 1300 | 0.150 | 0.300 | 698 |
| 12.5 × 15 | 0.065 | 0.130 | 1205 | 0.110 | 0.220 | 1150 | 0.150 | 0.300 | 1020 | 0.230 | 0.460 | 511 |
| 12.5 × 20 | 0.038 | 0.076 | 1655 | 0.063 | 0.126 | 1480 | 0.085 | 0.170 | 1285 | 0.180 | 0.360 | 671 |
| 12.5 × 25 | 0.030 | 0.060 | 1945 | 0.050 | 0.100 | 1832 | 0.070 | 0.140 | 1720 | 0.110 | 0.220 | 807 |
| 12.5 × 30 | 0.025 | 0.050 | 2310 | 0.040 | 0.080 | 2215 | 0.055 | 0.110 | 2090 | 0.098 | 0.196 | 937 |
| 12.5 × 35 | 0.022 | 0.044 | 2510 | 0.034 | 0.068 | 2285 | 0.047 | 0.094 | 2265 | 0.087 | 0.174 | 1040 |
| 12.5 × 40 | 0.018 | 0.036 | 2655 | 0.030 | 0.060 | 2590 | 0.042 | 0.084 | 2560 | 0.072 | 0.144 | 1130 |
| 16 × 15 | 0.043 | 0.086 | 1690 | 0.080 | 0.160 | 1610 | 0.090 | 0.180 | 1410 | 0.140 | 0.280 | 793 |
| 16 × 20 | 0.029 | 0.058 | 2205 | 0.048 | 0.096 | 1835 | 0.059 | 0.118 | 1765 | 0.110 | 0.220 | 995 |
| 16 × 25 | 0.022 | 0.044 | 2555 | 0.034 | 0.068 | 2235 | 0.050 | 0.100 | 2160 | 0.089 | 0.178 | 1170 |
| 16 × 31.5 | 0.018 | 0.036 | 3010 | 0.028 | 0.056 | 2700 | 0.043 | 0.086 | 2670 | 0.062 | 0.124 | 1520 |
| 16 × 35.5 | 0.016 | 0.032 | 3150 | 0.025 | 0.050 | 2790 | 0.036 | 0.072 | 2770 | 0.053 | 0.106 | 1730 |
| 16 × 40 | 0.015 | 0.030 | 3360 | 0.023 | 0.046 | 2845 | 0.030 | 0.060 | 2825 | 0.047 | 0.094 | 1920 |
| 18 × 15 | 0.038 | 0.076 | 2000 | 0.068 | 0.136 | 1900 | 0.086 | 0.172 | 1690 | 0.120 | 0.240 | 917 |
| 18 × 20 | 0.028 | 0.056 | 2490 | 0.042 | 0.084 | 2420 | 0.055 | 0.110 | 2290 | 0.080 | 0.160 | 1230 |
| 18 × 25 | 0.020 | 0.040 | 2740 | 0.029 | 0.058 | 2610 | 0.043 | 0.086 | 2585 | 0.070 | 0.140 | 1420 |
| 18 × 31.5 | 0.016 | 0.032 | 3635 | 0.025 | 0.050 | 3000 | 0.032 | 0.064 | 2950 | 0.062 | 0.124 | 1600 |
| 18 × 35.5 | 0.015 | 0.030 | 3680 | 0.023 | 0.046 | 3100 | 0.030 | 0.060 | 3095 | 0.041 | 0.082 | 1770 |
| 18 × 40 | 0.014 | 0.028 | 3735 | - | - | - | 0.025 | 0.050 | 3205 | 0.036 | 0.072 | 2300 |

*

| Case size (ϕ D×L) | Capacitance (μ F) | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s)(100 kHz) |
|----------------------------|---------------------------|----------------------------------|--------|---------------------------------------|
| | | 20 °C | -10 °C | |
| 5 × 11 | 1.0 | 2.40 | 4.80 | 20 |
| | 2.2 | 1.80 | 3.60 | 45 |
| | 3.3 | 1.30 | 2.60 | 65 |
| | 4.7 | 1.30 | 2.60 | 95 |
| | 10 | 1.30 | 2.60 | 125 |
| | 12 | 1.30 | 2.60 | 135 |
| | 15 | 1.30 | 2.60 | 145 |
| | 18 | 1.30 | 2.60 | 155 |
| | 22 | 1.30 | 2.60 | 155 |

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Should a safety concern arise regarding this product, please be sure to contact us immediately.

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 6.3 | 27 | 4 | 7 | 65 | 2.000 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAFC0J270() | 200 | 2000 |
| | 56 | 5 | 7 | 120 | 0.950 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAFC0J560() | 200 | 2000 |
| | 68 | 4 | 11 | 120 | 1.300 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC0J680()*** | 200 | 2000 |
| | 100 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC0J101() | 200 | 2000 |
| | 120 | 6.3 | 7 | 200 | 0.450 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAFC0J121() | 200 | 2000 |
| | 150 | 5 | 15 | 235 | 0.500 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC0J151()*** | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC0J221() | 200 | 2000 |
| | 270 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC0J271() | 200 | 2000 |
| | 330 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC0J331S() | 200 | 2000 |
| | | 6.3 | 15 | 400 | 0.250 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC0J331()*** | 200 | 2000 |
| | 390 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC0J391() | 200 | 1000 |
| | 470 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC0J471() | 200 | 1000 |
| | 560 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC0J561() | 200 | 1000 |
| | 820 | 8 | 15 | 730 | 0.085 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC0J821L() | 200 | 1000 |
| | | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J821() | 200 | 500 |
| | 1000 | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J102() | 200 | 500 |
| | 1200 | 8 | 20 | 995 | 0.065 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC0J122L() | 200 | 1000 |
| | | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J122() | 200 | 500 |
| | 1500 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J152() | 200 | 500 |
| | | 12.5 | 15 | 1205 | 0.065 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC0J152S() | 200 | 500 |
| | 1800 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J182() | 200 | 500 |
| | 2200 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC0J222() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J222S() | 100 | 250 |
| | 2700 | 10 | 30 | 1815 | 0.035 | 3000 | 0.60 | 5.0 | | | EEUFC0J272L | 100 | |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC0J272() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J272S() | 100 | 250 |
| | 3300 | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC0J332() | 200 | 500 |
| | | 18 | 15 | 2000 | 0.038 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J332S() | 100 | 250 |
| | 3900 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC0J392() | 200 | 500 |
| | 4700 | 12.5 | 30 | 2310 | 0.025 | 5000 | 0.80 | 5.0 | | | EEUFC0J472 | 100 | |
| 16 | | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J472S() | 100 | 250 | |
| 5600 | 12.5 | 35 | 2510 | 0.022 | 5000 | 0.80 | 5.0 | | | EEUFC0J562L | 100 | | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J562() | 100 | 250 | |
| 6800 | 12.5 | 40 | 2655 | 0.018 | 5000 | 0.80 | 5.0 | | | EEUFC0J682L | 100 | | |
| | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J682() | 100 | 250 | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J682S() | 100 | 250 | |
| 8200 | 16 | 31.5 | 3010 | 0.018 | 5000 | 0.80 | 7.5 | | | EEUFC0J822 | 100 | | |
| 10000 | 16 | 35.5 | 3150 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC0J103 | 100 | | |
| | 18 | 25 | 2740 | 0.020 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC0J103S() | 100 | 250 | |
| 12000 | 16 | 40 | 3360 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC0J123L | 100 | | |
| | 18 | 31.5 | 3635 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC0J123 | 50 | | |
| 15000 | 18 | 35.5 | 3680 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC0J153 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 10 | 22 | 4 | 7 | 65 | 2.000 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAFC1A220() | 200 | 2000 |
| | 39 | 5 | 7 | 120 | 0.950 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAFC1A390() | 200 | 2000 |
| | 47 | 4 | 11 | 120 | 1.300 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1A470()*** | 200 | 2000 |
| | 82 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1A820() | 200 | 2000 |
| | | 6.3 | 7 | 200 | 0.450 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAFC1A820() | 200 | 2000 |
| | 100 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1A101S() | 200 | 2000 |
| | | 5 | 15 | 235 | 0.500 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1A101()*** | 200 | 2000 |
| | 150 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1A151() | 200 | 2000 |
| | 180 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1A181() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1A221S() | 200 | 2000 |
| | | 6.3 | 15 | 400 | 0.250 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1A221()*** | 200 | 2000 |
| | 330 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1A331() | 200 | 1000 |
| | 390 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1A391() | 200 | 1000 |
| | 470 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1A471() | 200 | 1000 |
| | 560 | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A561() | 200 | 500 |
| | 680 | 8 | 15 | 730 | 0.085 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1A681L() | 200 | 1000 |
| | | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A681() | 200 | 500 |
| | 820 | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A821() | 200 | 500 |
| | 1000 | 8 | 20 | 995 | 0.065 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1A102L() | 200 | 1000 |
| | | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A102() | 200 | 500 |
| | 1200 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A122() | 200 | 500 |
| | | 12.5 | 15 | 1205 | 0.065 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1A122S() | 200 | 500 |
| | 1500 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1A152() | 200 | 500 |
| | 1800 | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1A182() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A182S() | 100 | 250 |
| | 2200 | 10 | 30 | 1815 | 0.035 | 3000 | 0.60 | 5.0 | | | EEUFC1A222L | 100 | |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1A222() | 200 | 500 |
| | 2700 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1A272() | 200 | 500 |
| | | 18 | 15 | 2000 | 0.038 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A272S() | 100 | 250 |
| | 3300 | 12.5 | 30 | 2310 | 0.025 | 5000 | 0.80 | 5.0 | | | EEUFC1A332 | 100 | |
| 16 | | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A332S() | 100 | 250 | |
| 3900 | 12.5 | 35 | 2510 | 0.022 | 5000 | 0.80 | 5.0 | | | EEUFC1A392L | 100 | | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A392() | 100 | 250 | |
| 4700 | 12.5 | 40 | 2655 | 0.018 | 5000 | 0.80 | 5.0 | | | EEUFC1A472L | 100 | | |
| | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A472() | 100 | 250 | |
| 5600 | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A562() | 100 | 250 | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A562S() | 100 | 250 | |
| 6800 | 16 | 31.5 | 3010 | 0.018 | 5000 | 0.80 | 7.5 | | | EEUFC1A682 | 100 | | |
| | 18 | 25 | 2740 | 0.020 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1A682S() | 100 | 250 | |
| 8200 | 16 | 35.5 | 3150 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1A822L | 100 | | |
| | 18 | 31.5 | 3635 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1A822 | 50 | | |
| 10000 | 18 | 35.5 | 3680 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC1A103 | 50 | | |
| 12000 | 18 | 40 | 3735 | 0.014 | 5000 | 0.80 | 7.5 | | | EEUFC1A123 | 50 | | |

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· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 16 | 15 | 4 | 7 | 65 | 2.000 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAFC1C150() | 200 | 2000 |
| | 27 | 5 | 7 | 120 | 0.950 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAFC1C270() | 200 | 2000 |
| | 39 | 4 | 11 | 120 | 1.30 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1C390()*** | 200 | 2000 |
| | 47 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1C470() | 200 | 2000 |
| | 56 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1C560() | 200 | 2000 |
| | | 6.3 | 7 | 200 | 0.450 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAFC1C560() | 200 | 2000 |
| | 68 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1C680() | 200 | 2000 |
| | 82 | 5 | 15 | 235 | 0.500 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1C820()*** | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1C101() | 200 | 2000 |
| | 120 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1C121() | 200 | 2000 |
| | 180 | 6.3 | 15 | 400 | 0.250 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1C181()*** | 200 | 2000 |
| | 220 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1C221() | 200 | 1000 |
| | 270 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1C271() | 200 | 1000 |
| | 330 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1C331() | 200 | 1000 |
| | 390 | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C391() | 200 | 500 |
| | 470 | 8 | 15 | 730 | 0.085 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1C471L() | 200 | 1000 |
| | | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C471() | 200 | 500 |
| | 560 | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C561() | 200 | 500 |
| | 680 | 8 | 20 | 995 | 0.065 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1C681L() | 200 | 1000 |
| | | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C681() | 200 | 500 |
| | 820 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C821() | 200 | 500 |
| | | 12.5 | 15 | 1205 | 0.065 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1C821S() | 200 | 500 |
| | 1000 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C102S() | 200 | 500 |
| | | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C102() | 200 | 500 |
| | 1200 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1C122() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C122S() | 100 | 250 |
| | 1500 | 10 | 30 | 1815 | 0.035 | 3000 | 0.60 | 5.0 | | | EEUFC1C152L | 100 | |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1C152() | 200 | 500 |
| | 16 | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C152S() | 100 | 250 |
| | 1800 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1C182() | 200 | 500 |
| 18 | | 15 | 2000 | 0.038 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C182S() | 100 | 250 | |
| 2200 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1C222() | 200 | 500 | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C222S() | 100 | 250 | |
| 2700 | 12.5 | 30 | 2310 | 0.025 | 5000 | 0.80 | 5.0 | | | EEUFC1C272L | 100 | | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C272() | 100 | 250 | |
| 3300 | 12.5 | 35 | 2510 | 0.022 | 5000 | 0.80 | 5.0 | | | EEUFC1C332 | 100 | | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C332S() | 100 | 250 | |
| 3900 | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C392() | 100 | 250 | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C392S() | 100 | 250 | |
| 4700 | 16 | 31.5 | 3010 | 0.018 | 5000 | 0.80 | 7.5 | | | EEUFC1C472 | 100 | | |
| | 18 | 25 | 2740 | 0.020 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1C472S() | 100 | 250 | |
| 5600 | 16 | 35.5 | 3150 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1C562L | 100 | | |
| | 18 | 31.5 | 3635 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1C562 | 50 | | |
| 6800 | 16 | 40 | 3360 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC1C682 | 100 | | |
| 8200 | 18 | 35.5 | 3680 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC1C822 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 25 | 10 | 4 | 7 | 65 | 2.000 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAFC1E100() | 200 | 2000 |
| | 22 | 5 | 7 | 120 | 0.950 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAFC1E220() | 200 | 2000 |
| | 27 | 4 | 11 | 120 | 1.30 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1E270()*** | 200 | 2000 |
| | 39 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1E390() | 200 | 2000 |
| | | 6.3 | 7 | 200 | 0.450 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAFC1E390() | 200 | 2000 |
| | 47 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1E470() | 200 | 2000 |
| | 56 | 5 | 15 | 235 | 0.500 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1E560()*** | 200 | 2000 |
| | 82 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1E820() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1E101S() | 200 | 2000 |
| | 120 | 6.3 | 15 | 400 | 0.250 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1E121()*** | 200 | 2000 |
| | 180 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1E181() | 200 | 1000 |
| | 220 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1E221() | 200 | 1000 |
| | 270 | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E271() | 200 | 500 |
| | 330 | 8 | 15 | 730 | 0.085 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1E331L() | 200 | 1000 |
| | | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E331() | 200 | 500 |
| | 390 | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E391() | 200 | 500 |
| | 470 | 8 | 20 | 995 | 0.065 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1E471L() | 200 | 1000 |
| | | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E471() | 200 | 500 |
| | 560 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E561() | 200 | 500 |
| | | 12.5 | 15 | 1205 | 0.065 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1E561S() | 200 | 500 |
| | 680 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E681() | 200 | 500 |
| | 820 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1E821() | 200 | 500 |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1E821S() | 200 | 500 |
| | 1000 | 10 | 30 | 1815 | 0.035 | 3000 | 0.60 | 5.0 | | | EEUFC1E102L | 100 | |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1E102() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E102S() | 100 | 250 |
| | 1200 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1E122() | 200 | 500 |
| | | 18 | 15 | 2000 | 0.038 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E122S() | 100 | 250 |
| | 1500 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1E152() | 200 | 500 |
| | | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E152S() | 100 | 250 |
| 1800 | 12.5 | 30 | 2310 | 0.025 | 5000 | 0.80 | 5.0 | | | EEUFC1E182L | 100 | | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E182() | 100 | 250 | |
| 2200 | 12.5 | 35 | 2510 | 0.022 | 5000 | 0.80 | 5.0 | | | EEUFC1E222 | 100 | | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E222S() | 100 | 250 | |
| 2700 | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E272() | 100 | 250 | |
| 3300 | 16 | 31.5 | 3010 | 0.018 | 5000 | 0.80 | 7.5 | | | EEUFC1E332 | 100 | | |
| | 18 | 25 | 2740 | 0.020 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1E332S() | 100 | 250 | |
| 3900 | 16 | 35.5 | 3150 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1E392L | 100 | | |
| | 18 | 31.5 | 3635 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1E392 | 50 | | |
| 4700 | 18 | 35.5 | 3680 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC1E472 | 50 | | |
| 5600 | 18 | 40 | 3735 | 0.014 | 5000 | 0.80 | 7.5 | | | EEUFC1E562 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 35 | 6.8 | 4 | 7 | 65 | 2.000 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAFC1V6R8() | 200 | 2000 |
| | 12 | 5 | 7 | 120 | 0.950 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAFC1V120() | 200 | 2000 |
| | 18 | 4 | 11 | 120 | 1.300 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1V180()*** | 200 | 2000 |
| | 22 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1V220() | 200 | 2000 |
| | 27 | 5 | 11 | 175 | 0.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1V270() | 200 | 2000 |
| | | 6.3 | 7 | 200 | 0.450 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAFC1V270() | 200 | 2000 |
| | 33 | 5 | 11 | 175 | 0.080 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1V330() | 200 | 2000 |
| | 39 | 5 | 15 | 235 | 0.500 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1V390()*** | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1V470() | 200 | 2000 |
| | 56 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1V560() | 200 | 2000 |
| | 68 | 6.3 | 11.2 | 290 | 0.350 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1V680() | 200 | 2000 |
| | 82 | 6.3 | 15 | 400 | 0.250 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1V820()*** | 200 | 2000 |
| | 100 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1V101() | 200 | 1000 |
| | 120 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1V121() | 200 | 1000 |
| | 150 | 8 | 11.5 | 555 | 0.117 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1V151() | 200 | 1000 |
| | 180 | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V181() | 200 | 500 |
| | 220 | 8 | 15 | 730 | 0.085 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1V221L() | 200 | 1000 |
| | | 10 | 12.5 | 755 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V221() | 200 | 500 |
| | 270 | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V271() | 200 | 500 |
| | 330 | 8 | 20 | 995 | 0.065 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1V331L() | 200 | 1000 |
| | | 10 | 16 | 1050 | 0.068 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V331() | 200 | 500 |
| | 390 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V391() | 200 | 500 |
| | | 12.5 | 15 | 1205 | 0.065 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1V391S() | 200 | 500 |
| | 470 | 10 | 20 | 1220 | 0.052 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V471() | 200 | 500 |
| | 560 | 10 | 25 | 1440 | 0.045 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1V561() | 200 | 500 |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1V561S() | 200 | 500 |
| | 680 | 10 | 30 | 1815 | 0.035 | 3000 | 0.60 | 5.0 | | | EEUFC1V681L | 100 | |
| | | 12.5 | 20 | 1655 | 0.038 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1V681() | 200 | 500 |
| | | 16 | 15 | 1690 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V681S() | 100 | 250 |
| | 820 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1V821L() | 200 | 500 |
| | | 18 | 15 | 2000 | 0.038 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V821() | 100 | 250 |
| | 1000 | 12.5 | 25 | 1945 | 0.030 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1V102() | 200 | 500 |
| | | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V102S() | 100 | 250 |
| 1200 | 12.5 | 30 | 2310 | 0.025 | 5000 | 0.80 | 5.0 | | | EEUFC1V122L | 100 | | |
| | 16 | 20 | 2205 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V122() | 100 | 250 | |
| 1500 | 12.5 | 35 | 2510 | 0.022 | 5000 | 0.80 | 5.0 | | | EEUFC1V152L | 100 | | |
| | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V152() | 100 | 250 | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V152S() | 100 | 250 | |
| 1800 | 12.5 | 40 | 2655 | 0.018 | 5000 | 0.80 | 5.0 | | | EEUFC1V182L | 100 | | |
| | 16 | 25 | 2555 | 0.022 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V182() | 100 | 250 | |
| | 18 | 20 | 2490 | 0.028 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V182S() | 100 | 250 | |
| 2200 | 16 | 31.5 | 3010 | 0.018 | 5000 | 0.80 | 7.5 | | | EEUFC1V222 | 100 | | |
| | 18 | 25 | 2740 | 0.020 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1V222S() | 100 | 250 | |
| 2700 | 16 | 35.5 | 3150 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1V272L | 100 | | |
| | 18 | 31.5 | 3635 | 0.016 | 5000 | 0.80 | 7.5 | | | EEUFC1V272 | 50 | | |
| 3300 | 18 | 35.5 | 3680 | 0.015 | 5000 | 0.80 | 7.5 | | | EEUFC1V332 | 50 | | |
| 3900 | 18 | 40 | 3735 | 0.014 | 5000 | 0.80 | 7.5 | | | EEUFC1V392 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 50 | 1.0 | 5 | 11 | 20 | 2.400 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H1R0()** | 200 | 2000 |
| | 2.2 | 5 | 11 | 45 | 1.800 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 65 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 95 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H4R7() | 200 | 2000 |
| | 10 | 4 | 11 | 90 | 2.500 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1H100()*** | 200 | 2000 |
| | | 5 | 11 | 125 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H100L() | 200 | 2000 |
| | 12 | 5 | 11 | 135 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H120() | 200 | 2000 |
| | 15 | 5 | 11 | 145 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H150() | 200 | 2000 |
| | 18 | 5 | 11 | 155 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H180() | 200 | 2000 |
| | 22 | 5 | 11 | 155 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H220() | 200 | 2000 |
| | 27 | 5 | 15 | 215 | 0.900 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1H270()*** | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 260 | 0.600 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1H330() | 200 | 2000 |
| | 39 | 6.3 | 11.2 | 260 | 0.600 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1H390() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 260 | 0.600 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1H470() | 200 | 2000 |
| | 56 | 6.3 | 15 | 360 | 0.400 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1H560()*** | 200 | 2000 |
| | 68 | 8 | 11.5 | 485 | 0.234 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1H680() | 200 | 1000 |
| | 82 | 8 | 11.5 | 485 | 0.234 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1H820() | 200 | 1000 |
| | 100 | 10 | 12.5 | 615 | 0.162 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H101() | 200 | 500 |
| | 120 | 8 | 15 | 635 | 0.155 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1H121L() | 200 | 1000 |
| | | 10 | 12.5 | 615 | 0.162 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H121() | 200 | 500 |
| | 150 | 10 | 16 | 850 | 0.119 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H151() | 200 | 500 |
| | 180 | 8 | 20 | 860 | 0.120 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1H181L() | 200 | 1000 |
| | | 10 | 16 | 850 | 0.119 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H181() | 200 | 500 |
| | 220 | 10 | 20 | 1030 | 0.090 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H221() | 200 | 500 |
| | | 12.5 | 15 | 1150 | 0.110 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1H221S() | 200 | 500 |
| | 270 | 10 | 25 | 1200 | 0.082 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1H271() | 200 | 500 |
| | 330 | 10 | 30 | 1610 | 0.060 | 3000 | 0.60 | 5.0 | | | EEUFC1H331L | 100 | |
| | | 12.5 | 20 | 1480 | 0.063 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1H331() | 200 | 500 |
| | 390 | 12.5 | 20 | 1480 | 0.063 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1H391() | 200 | 500 |
| | | 16 | 15 | 1610 | 0.080 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H391S() | 100 | 250 |
| 470 | 10 | 30 | 1610 | 0.060 | 3000 | 0.60 | 5.0 | | | EEUFC1H471L | 100 | | |
| | 12.5 | 25 | 1832 | 0.050 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1H471() | 200 | 500 | |
| 560 | 12.5 | 25 | 1832 | 0.050 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1H561() | 200 | 500 | |
| | 18 | 15 | 1900 | 0.068 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H561S() | 100 | 250 | |
| 680 | 12.5 | 30 | 2215 | 0.040 | 5000 | 0.80 | 5.0 | | | EEUFC1H681L | 100 | | |
| | 16 | 20 | 1835 | 0.048 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H681() | 100 | 250 | |
| 820 | 12.5 | 35 | 2285 | 0.034 | 5000 | 0.80 | 5.0 | | | EEUFC1H821L | 100 | | |
| | 18 | 20 | 2420 | 0.042 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H821() | 100 | 250 | |
| 1000 | 12.5 | 40 | 2590 | 0.030 | 5000 | 0.80 | 5.0 | | | EEUFC1H102L | 100 | | |
| | 16 | 25 | 2235 | 0.034 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H102() | 100 | 250 | |
| 1200 | 16 | 31.5 | 2700 | 0.028 | 5000 | 0.80 | 7.5 | | | EEUFC1H122 | 100 | | |
| | 18 | 25 | 2610 | 0.029 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1H122S() | 100 | 250 | |
| 1500 | 16 | 35.5 | 2790 | 0.025 | 5000 | 0.80 | 7.5 | | | EEUFC1H152L | 100 | | |
| 1800 | 16 | 40 | 2845 | 0.023 | 5000 | 0.80 | 7.5 | | | EEUFC1H182L | 100 | | |
| | 18 | 31.5 | 3000 | 0.025 | 5000 | 0.80 | 7.5 | | | EEUFC1H182 | 50 | | |
| 2200 | 18 | 35.5 | 3100 | 0.023 | 5000 | 0.80 | 7.5 | | | EEUFC1H222 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
· Please refer to the page of "Taping Dimensions".

** Please kindly accept last shipment : 31/Mar/2015

*** Please kindly accept last shipment : 30/Jun/2015

Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 63 | 6.8 | 4 | 11 | 80 | 3.500 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEUFC1J6R8()*** | 200 | 2000 |
| | 12 | 5 | 11 | 145 | 2.000 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1J120() | 200 | 2000 |
| | 18 | 5 | 15 | 200 | 1.300 | 1000 | 0.50 | 2.0 | 5.0 | 2.5 | EEUFC1J180()*** | 200 | 2000 |
| | 22 | 6.3 | 11.2 | 240 | 1.000 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1J220() | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 240 | 1.000 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1J330() | 200 | 2000 |
| | 39 | 6.3 | 15 | 330 | 0.700 | 1000 | 0.50 | 2.5 | 5.0 | 2.5 | EEUFC1J390()*** | 200 | 2000 |
| | 47 | 8 | 11.5 | 405 | 0.342 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1J470() | 200 | 1000 |
| | 56 | 8 | 11.5 | 405 | 0.342 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1J560() | 200 | 1000 |
| | 68 | 8 | 11.5 | 405 | 0.342 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1J680() | 200 | 1000 |
| | 82 | 10 | 12.5 | 535 | 0.256 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J820() | 200 | 500 |
| | 100 | 8 | 15 | 535 | 0.230 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1J101L() | 200 | 1000 |
| | | 10 | 12.5 | 535 | 0.256 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J101() | 200 | 500 |
| | 120 | 10 | 16 | 600 | 0.194 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J121() | 200 | 500 |
| | 150 | 8 | 20 | 690 | 0.178 | 2000 | 0.60 | 3.5 | 5.0 | | EEUFC1J151() | 200 | 1000 |
| | 180 | 10 | 20 | 885 | 0.147 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J181() | 200 | 500 |
| | | 12.5 | 15 | 1020 | 0.150 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1J181S() | 200 | 500 |
| | 220 | 10 | 20 | 885 | 0.147 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J221X() | 200 | 500 |
| | | 10 | 25 | 1050 | 0.130 | 3000 | 0.60 | 5.0 | 5.0 | | EEUFC1J221() | 200 | 500 |
| | | 12.5 | 20 | 1285 | 0.085 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1J221S() | 200 | 500 |
| | 270 | 16 | 15 | 1410 | 0.090 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J271() | 100 | 250 |
| | 330 | 10 | 30 | 1300 | 0.090 | 3000 | 0.60 | 5.0 | | | EEUFC1J331L | 100 | |
| | | 12.5 | 20 | 1285 | 0.085 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1J331() | 200 | 500 |
| | 390 | 12.5 | 25 | 1720 | 0.070 | 5000 | 0.60 | 5.0 | 5.0 | | EEUFC1J391() | 200 | 500 |
| | | 18 | 15 | 1690 | 0.086 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J391S() | 100 | 250 |
| | 470 | 12.5 | 30 | 2090 | 0.055 | 5000 | 0.80 | 5.0 | | | EEUFC1J471L | 100 | |
| | | 16 | 20 | 1765 | 0.059 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J471() | 100 | 250 |
| | 560 | 16 | 25 | 2160 | 0.050 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J561() | 100 | 250 |
| | 680 | 12.5 | 35 | 2265 | 0.047 | 5000 | 0.80 | 5.0 | | | EEUFC1J681L | 100 | |
| | | 16 | 25 | 2160 | 0.050 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J681() | 100 | 250 |
| | | 18 | 20 | 2290 | 0.055 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J681S() | 100 | 250 |
| 820 | 12.5 | 40 | 2560 | 0.042 | 5000 | 0.80 | 5.0 | | | EEUFC1J821L | 100 | | |
| | 16 | 31.5 | 2670 | 0.043 | 5000 | 0.80 | 7.5 | | | EEUFC1J821 | 100 | | |
| | 18 | 25 | 2585 | 0.043 | 5000 | 0.80 | 7.5 | 7.5 | | EEUFC1J821S() | 100 | 250 | |
| 1000 | 16 | 31.5 | 2670 | 0.043 | 5000 | 0.80 | 7.5 | | | EEUFC1J102U | 100 | | |
| | 16 | 35.5 | 2770 | 0.036 | 5000 | 0.80 | 7.5 | | | EEUFC1J102 | 100 | | |
| 1200 | 16 | 40 | 2825 | 0.030 | 5000 | 0.80 | 7.5 | | | EEUFC1J122L | 100 | | |
| | 18 | 31.5 | 2950 | 0.032 | 5000 | 0.80 | 7.5 | | | EEUFC1J122 | 50 | | |
| 1500 | 18 | 35.5 | 3095 | 0.030 | 5000 | 0.80 | 7.5 | | | EEUFC1J152 | 50 | | |
| 1800 | 18 | 40 | 3205 | 0.025 | 5000 | 0.80 | 7.5 | | | EEUFC1J182 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

■ Standard Products

Endurance : 105 °C ϕ 4 to ϕ 6.3=1000 h, ϕ 8=2000 h, ϕ 10=3000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (±20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 100 | 5.6 | 5 | 11 | 80 | 4.10 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFC2A5R6() | 200 | 2000 |
| | 8.2 | 5 | 15 | 90 | 2.80 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFC2A8R2()*** | 200 | 2000 |
| | 12 | 6.3 | 11.2 | 114 | 1.80 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFC2A120() | 200 | 2000 |
| | 18 | 6.3 | 15 | 155 | 1.10 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFC2A180()*** | 200 | 2000 |
| | 22 | 8 | 11.5 | 260 | 0.680 | 2000 | 0.6 | 3.5 | 5.0 | | EEUFC2A220() | 200 | 1000 |
| | 33 | 8 | 15 | 340 | 0.450 | 2000 | 0.6 | 3.5 | 5.0 | | EEUFC2A330L() | 200 | 1000 |
| | | 10 | 12.5 | 306 | 0.530 | 3000 | 0.6 | 5.0 | 5.0 | | EEUFC2A330() | 200 | 500 |
| | 39 | 8 | 20 | 455 | 0.330 | 2000 | 0.6 | 5.0 | 5.0 | | EEUFC2A390L() | 200 | 1000 |
| | | 10 | 16 | 400 | 0.360 | 3000 | 0.6 | 5.0 | 5.0 | | EEUFC2A390() | 200 | 500 |
| | 56 | 10 | 20 | 463 | 0.240 | 3000 | 0.6 | 5.0 | 5.0 | | EEUFC2A560() | 200 | 500 |
| | 68 | 10 | 25 | 599 | 0.210 | 3000 | 0.6 | 5.0 | 5.0 | | EEUFC2A680L() | 200 | 500 |
| | | 12.5 | 15 | 511 | 0.230 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFC2A680() | 200 | 500 |
| | 100 | 10 | 30 | 698 | 0.150 | 3000 | 0.6 | 5.0 | | | EEUFC2A101L | 100 | |
| | | 12.5 | 20 | 671 | 0.180 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFC2A101() | 200 | 500 |
| | 120 | 16 | 15 | 793 | 0.140 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A121S() | 100 | 250 |
| | 150 | 12.5 | 25 | 807 | 0.110 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFC2A151() | 200 | 500 |
| | | 18 | 15 | 917 | 0.120 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A151S() | 100 | 250 |
| | 180 | 12.5 | 30 | 937 | 0.098 | 5000 | 0.8 | 5.0 | | | EEUFC2A181L | 100 | |
| | | 16 | 20 | 995 | 0.110 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A181() | 100 | 250 |
| | 220 | 12.5 | 35 | 1040 | 0.087 | 5000 | 0.8 | 5.0 | | | EEUFC2A221L | 100 | |
| | | 16 | 25 | 1170 | 0.089 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A221() | 100 | 250 |
| | 270 | 12.5 | 40 | 1130 | 0.072 | 5000 | 0.8 | 5.0 | | | EEUFC2A271L | 100 | |
| | | 18 | 20 | 1230 | 0.080 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A271S() | 100 | 250 |
| | 330 | 16 | 31.5 | 1520 | 0.062 | 5000 | 0.8 | 7.5 | | | EEUFC2A331 | 100 | |
| 18 | | 25 | 1420 | 0.070 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFC2A331S() | 100 | 250 | |
| 390 | 16 | 35.5 | 1730 | 0.053 | 5000 | 0.8 | 7.5 | | | EEUFC2A391L | 100 | | |
| | 18 | 31.5 | 1600 | 0.062 | 5000 | 0.8 | 7.5 | | | EEUFC2A391 | 50 | | |
| 470 | 16 | 40 | 1920 | 0.047 | 5000 | 0.8 | 7.5 | | | EEUFC2A471 | 100 | | |
| 560 | 18 | 35.5 | 1770 | 0.041 | 5000 | 0.8 | 7.5 | | | EEUFC2A561 | 50 | | |
| 680 | 18 | 40 | 2300 | 0.036 | 5000 | 0.8 | 7.5 | | | EEUFC2A681 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 30/Jun/2015

Radial Lead Type

Series: **FK** Type: **A**

■ Features

- Low impedance (10 % to 30 % less than FC Series)
Miniaturization (30 % to 40 % less than FC Series)
- Endurance : 3000 h to 5000 h at +105 °C
- AEC-Q200 qualified*
- RoHS directive compliant



■ Specifications

| | | | | | | | |
|---|---|------------------------------------|------|------|------|------|-----------------|
| Category Temp. Range | -55 °C to +105 °C | | | | | | |
| Rated W.V. Range | 6.3 V.DC to 35 V.DC | | | | | | |
| Nominal Cap. Range | 180 μF to 12000 μF | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | |
| DC Leakage Current | $I \leq 0.01 CV$ (μA) After 2 minutes | | | | | | |
| tan δ | W.V. | 6.3 | 10 | 16 | 25 | 35 | (120 Hz/+20 °C) |
| | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | |
| Add 0.02 per 1000 μF for products of 1000 μF or more. | | | | | | | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified bellow. Duration : φ8: 3000 hours , φ10: 4000 hours , φ12.5 to φ18: 5000 hours | | | | | | |
| | Capacitance change | ±20 % of initial measured value | | | | | |
| | tan δ | ≤ 200 % of initial specified value | | | | | |
| | DC leakage current | ≤ initial specified value | | | | | |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap (μF) | Frequency (Hz) | | | | |
|------------|---------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 6.3 to 35 | 180 to 330 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| | 390 to 1000 | 0.65 | 0.75 | 0.90 | 0.98 | 1.00 |
| | 1200 to 12000 | 0.75 | 0.80 | 0.95 | 1.00 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

| | 8 | 10 | 12.5 | 16 | 18 |
|---------------|-----|-----|------------|----------|-----|
| Body Dia. φD | 8 | 10 | 12.5 | 16 | 18 |
| Body Length L | — | — | 12.5 to 25 | 30 to 40 | — |
| Lead Dia. φd | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| Lead space F | 3.5 | 5.0 | 5.0 | 5.0 | 7.5 |

* This product qualify for AEC-Q200, but it has some deviations.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

01 May. 2014

■ Case size/Impedance/Ripple current

| Case size (ϕ D×L) | Impedance (Ω)/(100 kHz) | | Ripple Current (mA r.m.s.)/(100 kHz) |
|----------------------------|-------------------------------------|--------|---|
| | +20 °C | -10 °C | +105 °C |
| 8 × 11.5 | 0.090 | 0.180 | 630 |
| 8 × 15 | 0.062 | 0.124 | 860 |
| 8 × 20 | 0.044 | 0.088 | 1220 |
| 10 × 12.5 | 0.063 | 0.126 | 900 |
| 10 × 16 | 0.049 | 0.098 | 1240 |
| 10 × 20 | 0.035 | 0.070 | 1490 |
| 10 × 25 | 0.033 | 0.066 | 1680 |
| 10 × 30 | 0.025 | 0.050 | 2140 |
| 12.5 × 15 | 0.048 | 0.096 | 1400 |
| 12.5 × 20 | 0.029 | 0.058 | 1890 |
| 12.5 × 25 | 0.022 | 0.044 | 2280 |
| 12.5 × 30 | 0.018 | 0.036 | 2720 |
| 12.5 × 35 | 0.016 | 0.032 | 2940 |
| 12.5 × 40 | 0.014 | 0.028 | 3010 |
| 16 × 15 | 0.038 | 0.076 | 1800 |
| 16 × 20 | 0.026 | 0.052 | 2330 |
| 16 × 25 | 0.019 | 0.038 | 2760 |
| 18 × 15 | 0.036 | 0.072 | 2060 |
| 18 × 20 | 0.025 | 0.050 | 2640 |
| 18 × 25 | 0.018 | 0.036 | 2850 |

■ Standard Products

Endurance : 105 °C $\phi 8=3000$ h, $\phi 10=4000$ h, $\phi 12.5$ to $\phi 18=5000$ h

| W.V. | Cap. (±20 %) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|-------|-----------------|-----------|--------|---|--|----------------------|-------------|------------|----------------|----------------|-------------------------|-----------------|
| | | Dia. | Length | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight | Taping *B | | | |
| (V) | (μ F) | (mm) | (mm) | (mA r.m.s.) | (Ω) | (hours) | (mm) | (mm) | (mm) | | (pcs) | (pcs) |
| 6.3 | 680 | 8 | 11.5 | 630 | 0.090 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK0J681() | 200 | 1000 |
| | 1000 | 8 | 15 | 860 | 0.062 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK0J102L() | 200 | 1000 |
| | | 10 | 12.5 | 900 | 0.063 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK0J102() | 200 | 500 |
| | 1500 | 8 | 20 | 1220 | 0.044 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK0J152L() | 200 | 1000 |
| | | 10 | 16 | 1240 | 0.049 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK0J152() | 200 | 500 |
| | 1800 | 12.5 | 15 | 1400 | 0.048 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK0J182S() | 200 | 500 |
| | 2200 | 10 | 20 | 1490 | 0.035 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK0J222() | 200 | 500 |
| | | 10 | 25 | 1680 | 0.033 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK0J222L() | 200 | 500 |
| | 3300 | 10 | 30 | 2140 | 0.025 | 4000 | 0.6 | 5.0 | | EEUFK0J332L | 100 | |
| | | 12.5 | 20 | 1890 | 0.029 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK0J332() | 200 | 500 |
| | | 16 | 15 | 1800 | 0.038 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J332S() | 100 | 250 |
| | 4700 | 12.5 | 25 | 2280 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK0J472() | 200 | 500 |
| | | 18 | 15 | 2060 | 0.036 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J472S() | 100 | 250 |
| | 5600 | 12.5 | 30 | 2720 | 0.018 | 5000 | 0.8 | 5.0 | | EEUFK0J562L | 100 | |
| | | 16 | 20 | 2330 | 0.026 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J562S() | 100 | 250 |
| | 6800 | 12.5 | 35 | 2940 | 0.016 | 5000 | 0.8 | 5.0 | | EEUFK0J682L | 100 | |
| | 8200 | 12.5 | 40 | 3010 | 0.014 | 5000 | 0.8 | 5.0 | | EEUFK0J822L | 100 | |
| | | 16 | 25 | 2760 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J822() | 100 | 250 |
| 18 | | 20 | 2640 | 0.025 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J822S() | 100 | 250 | |
| 12000 | 18 | 25 | 2850 | 0.018 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK0J123S() | 100 | 250 | |
| 10 | 560 | 8 | 11.5 | 630 | 0.090 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1A561() | 200 | 1000 |
| | 820 | 8 | 15 | 860 | 0.062 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1A821L() | 200 | 1000 |
| | | 10 | 12.5 | 900 | 0.063 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1A821() | 200 | 500 |
| | 1200 | 8 | 20 | 1220 | 0.044 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1A122L() | 200 | 1000 |
| | | 10 | 16 | 1240 | 0.049 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1A122() | 200 | 500 |
| | 1500 | 12.5 | 15 | 1400 | 0.048 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1A152S() | 200 | 500 |
| | 1800 | 10 | 20 | 1490 | 0.035 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1A182() | 200 | 500 |
| | | 10 | 25 | 1680 | 0.033 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1A182L() | 200 | 500 |
| | 2700 | 10 | 30 | 2140 | 0.025 | 4000 | 0.6 | 5.0 | | EEUFK1A272L | 100 | |
| | | 12.5 | 20 | 1890 | 0.029 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1A272() | 200 | 500 |
| | | 16 | 15 | 1800 | 0.038 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A272S() | 100 | 250 |
| | 3900 | 12.5 | 25 | 2280 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1A392() | 200 | 500 |
| | | 18 | 15 | 2060 | 0.036 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A392S() | 100 | 250 |
| | 4700 | 12.5 | 30 | 2720 | 0.018 | 5000 | 0.8 | 5.0 | | EEUFK1A472L | 100 | |
| | | 16 | 20 | 2330 | 0.026 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A472S() | 100 | 250 |
| | 5600 | 12.5 | 35 | 2940 | 0.016 | 5000 | 0.8 | 5.0 | | EEUFK1A562L | 100 | |
| | 6800 | 12.5 | 40 | 3010 | 0.014 | 5000 | 0.8 | 5.0 | | EEUFK1A682L | 100 | |
| | | 16 | 25 | 2760 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A682() | 100 | 250 |
| 18 | | 20 | 2640 | 0.025 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A682S() | 100 | 250 | |
| 8200 | 18 | 25 | 2850 | 0.018 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1A822S() | 100 | 250 | |

- When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
- Please refer to the page of "Taping Dimensions".

Standard Products

Endurance : 105 °C ϕ 8=3000 h, ϕ 10=4000 h, ϕ 12.5 to ϕ 18=5000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------------------|--------------|----------------|---|--|----------------------|-------------------|------------------|----------------------|----------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | |
| 16 | 390 | 8 | 11.5 | 630 | 0.090 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1C391() | 200 | 1000 |
| | 680 | 8 | 15 | 860 | 0.062 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1C681L() | 200 | 1000 |
| | | 10 | 12.5 | 900 | 0.063 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1C681() | 200 | 500 |
| | 820 | 8 | 20 | 1220 | 0.044 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1C821L() | 200 | 1000 |
| | 1000 | 10 | 16 | 1240 | 0.049 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1C102() | 200 | 500 |
| | 1200 | 10 | 20 | 1490 | 0.035 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1C122() | 200 | 500 |
| | | 12.5 | 15 | 1400 | 0.048 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1C122S() | 200 | 500 |
| | 1500 | 10 | 25 | 1680 | 0.033 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1C152L() | 200 | 500 |
| | 2200 | 10 | 30 | 2140 | 0.025 | 4000 | 0.6 | 5.0 | | EEUFK1C222L | 100 | |
| | | 12.5 | 20 | 1890 | 0.029 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1C222() | 200 | 500 |
| | | 16 | 15 | 1800 | 0.038 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C222S() | 100 | 250 |
| | 2700 | 12.5 | 25 | 2280 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1C272() | 200 | 500 |
| | | 18 | 15 | 2060 | 0.036 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C272S() | 100 | 250 |
| | 3300 | 12.5 | 30 | 2720 | 0.018 | 5000 | 0.8 | 5.0 | | EEUFK1C332L | 100 | |
| | 3900 | 12.5 | 35 | 2940 | 0.016 | 5000 | 0.8 | 5.0 | | EEUFK1C392L | 100 | |
| | | 16 | 20 | 2330 | 0.026 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C392S() | 100 | 250 |
| | 4700 | 12.5 | 40 | 3010 | 0.014 | 5000 | 0.8 | 5.0 | | EEUFK1C472L | 100 | |
| | | 18 | 20 | 2640 | 0.025 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C472S() | 100 | 250 |
| 5600 | 16 | 25 | 2760 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C562() | 100 | 250 | |
| 6800 | 18 | 25 | 2850 | 0.018 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1C682S() | 100 | 250 | |
| 25 | 270 | 8 | 11.5 | 630 | 0.090 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1E271() | 200 | 1000 |
| | 390 | 8 | 15 | 860 | 0.062 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1E391L() | 200 | 1000 |
| | 470 | 10 | 12.5 | 900 | 0.063 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1E471() | 200 | 500 |
| | 560 | 8 | 20 | 1220 | 0.044 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1E561L() | 200 | 1000 |
| | | 10 | 16 | 1240 | 0.049 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1E561() | 200 | 500 |
| | 820 | 10 | 20 | 1490 | 0.035 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1E821() | 200 | 500 |
| | | 12.5 | 15 | 1400 | 0.048 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1E821S() | 200 | 500 |
| | 1000 | 10 | 25 | 1680 | 0.033 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1E102L() | 200 | 500 |
| | 1200 | 12.5 | 20 | 1890 | 0.029 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1E122() | 200 | 500 |
| | 1500 | 10 | 30 | 2140 | 0.025 | 4000 | 0.6 | 5.0 | | EEUFK1E152L | 100 | |
| | | 16 | 15 | 1800 | 0.038 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E152S() | 100 | 250 |
| | 1800 | 12.5 | 25 | 2280 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1E182() | 200 | 500 |
| | | 18 | 15 | 2060 | 0.036 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E182S() | 100 | 250 |
| | 2200 | 12.5 | 30 | 2720 | 0.018 | 5000 | 0.8 | 5.0 | | EEUFK1E222L | 100 | |
| | | 16 | 20 | 2330 | 0.026 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E222S() | 100 | 250 |
| | 2700 | 12.5 | 35 | 2940 | 0.016 | 5000 | 0.8 | 5.0 | | EEUFK1E272L | 100 | |
| | 3300 | 12.5 | 40 | 3010 | 0.014 | 5000 | 0.8 | 5.0 | | EEUFK1E332L | 100 | |
| | | 16 | 25 | 2760 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E332() | 100 | 250 |
| 18 | | 20 | 2640 | 0.025 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E332S() | 100 | 250 | |
| 4700 | 18 | 25 | 2850 | 0.018 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1E472S() | 100 | 250 | |

- When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
- Please refer to the page of "Taping Dimensions".

■ Standard Products

Endurance : 105 °C φ8=3000 h, φ10=4000 h, φ12.5 to φ18=5000 h

| W.V. | Cap. (±20 %) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|------|-----------------|-----------|--------|---|---|----------------------|-------------------|------------------|----------------------|----------------|-------------------------|-----------------|
| | | Dia. | Length | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | |
| (V) | (μF) | (mm) | (mm) | (mA r.m.s.) | (Ω) | (hours) | (mm) | (mm) | (mm) | | (pcs) | (pcs) |
| 35 | 180 | 8 | 11.5 | 630 | 0.090 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1V181() | 200 | 1000 |
| | 270 | 8 | 15 | 860 | 0.062 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1V271L() | 200 | 1000 |
| | | 10 | 12.5 | 900 | 0.063 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1V271() | 200 | 500 |
| | 390 | 8 | 20 | 1220 | 0.044 | 3000 | 0.6 | 3.5 | 5.0 | EEUFK1V391L() | 200 | 1000 |
| | | 10 | 16 | 1240 | 0.049 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1V391() | 200 | 500 |
| | 560 | 10 | 20 | 1490 | 0.035 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1V561() | 200 | 500 |
| | | 12.5 | 15 | 1400 | 0.048 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1V561S() | 200 | 500 |
| | 680 | 10 | 25 | 1680 | 0.033 | 4000 | 0.6 | 5.0 | 5.0 | EEUFK1V681L() | 200 | 500 |
| | 820 | 12.5 | 20 | 1890 | 0.029 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1V821() | 200 | 500 |
| | 1000 | 10 | 30 | 2140 | 0.025 | 4000 | 0.6 | 5.0 | | EEUFK1V102L | 100 | |
| | | 16 | 15 | 1800 | 0.038 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V102S() | 100 | 250 |
| | 1200 | 12.5 | 25 | 2280 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | EEUFK1V122() | 200 | 500 |
| | | 18 | 15 | 2060 | 0.036 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V122S() | 100 | 250 |
| | 1500 | 12.5 | 30 | 2720 | 0.018 | 5000 | 0.8 | 5.0 | | EEUFK1V152L | 100 | |
| | 1800 | 12.5 | 35 | 2940 | 0.016 | 5000 | 0.8 | 5.0 | | EEUFK1V182L | 100 | |
| | | 16 | 20 | 2330 | 0.026 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V182S() | 100 | 250 |
| | 2200 | 12.5 | 40 | 3010 | 0.014 | 5000 | 0.8 | 5.0 | | EEUFK1V222L | 100 | |
| | | 16 | 25 | 2760 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V222() | 100 | 250 |
| | | 18 | 20 | 2640 | 0.025 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V222S() | 100 | 250 |
| | 3300 | 18 | 25 | 2850 | 0.018 | 5000 | 0.8 | 7.5 | 7.5 | EEUFK1V332S() | 100 | 250 |

- When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
- Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **FM** Type: **A**



■ Features

- Low impedance (40 % to 70 % less than FC Series)
- Endurance : 2000 h to 7000 h at +105 °C
- RoHS directive compliant

■ Attention

Not applicable for automotive

■ Specifications

| | | | | | | | | |
|---|--|---|------|------|------|------|------|------------------------|
| Category Temp. Range | -40 °C to +105 °C | | | | | | | |
| Rated W.V. Range | 6.3 V.DC to 50 V.DC | | | | | | | |
| Nominal Cap. Range | 22 μF to 6800 μF | | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | |
| DC Leakage Current | I ≤ 0.01 CV (μA) After 2 minutes | | | | | | | |
| tan δ | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | (max.) (120 Hz/+20 °C) |
| | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | |
| Add 0.02 per 1000 μF for products of 1000 μF or more. | | | | | | | | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied. (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. | | | | | | | |
| | Duration | | | | | | | |
| | φ5 to φ6.3 : 2000 hours, φ8×11.5 to φ8×15: 3000 hours φ8×20 to φ10×16 : 4000 hours, φ10×20 to φ12.5×20/ φ16×20: 5000 hours φ12.5×25 to φ12.5×35/ φ16×25 : 7000 hours | | | | | | | |
| | Capacitance change | ±25 % of initial measured value (6.3 V to 10 V : ±30 %) | | | | | | |
| | tan δ | ≤ 200 % of initial specified value | | | | | | |
| | DC leakage current | ≤ initial specified value | | | | | | |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap (μF) | Frequency (Hz) | | | | |
|------------|--------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 6.3 to 50 | 22 to 33 | 0.45 | 0.55 | 0.75 | 0.90 | 1.00 |
| | 47 to 330 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| | 390 to 1000 | 0.65 | 0.75 | 0.90 | 0.98 | 1.00 |
| | 1200 to 6800 | 0.75 | 0.80 | 0.95 | 1.00 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

| | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
|---------------|-----|-----|-----|-----|------------|----------|
| Body Dia. φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
| Body Length L | — | — | — | — | 12.5 to 25 | 30 to 40 |
| Lead Dia. φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| Lead space F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

01 May, 2014

■ Case size/Impedance/Ripple current

| W.V.(V.DC) Case size (ϕ D×L) | 6.3 V to 35 V | | | 50 V | | |
|--|-----------------------------------|--------|---------------------------------------|-----------------------------------|--------|---------------------------------------|
| | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) |
| | +20 °C | -10 °C | +105 °C | +20 °C | -10 °C | +105 °C |
| 5 × 11 | 0.300 | 1.000 | 280 | 0.340 | 1.130 | 250 |
| 6.3 × 11.2 | 0.130 | 0.430 | 455 | 0.140 | 0.460 | 405 |
| 8 × 11.5 | 0.056 | 0.168 | 950 | 0.061 | 0.183 | 870 |
| 8 × 15 | 0.041 | 0.123 | 1240 | 0.045 | 0.135 | 1140 |
| 8 × 20 | 0.030 | 0.090 | 1560 | 0.033 | 0.099 | 1430 |
| 10 × 12.5 | 0.038 | 0.114 | 1290 | 0.042 | 0.126 | 1170 |
| 10 × 16 | 0.026 | 0.078 | 1790 | 0.030 | 0.090 | 1650 |
| 10 × 20 | 0.019 | 0.057 | 2180 | 0.023 | 0.069 | 1890 |
| 10 × 25 | 0.018 | 0.054 | 2470 | 0.022 | 0.066 | 2150 |
| 12.5 × 20 | 0.018 | 0.045 | 2600 | 0.022 | 0.055 | 2260 |
| 12.5 × 25 | 0.015 | 0.038 | 3190 | 0.018 | 0.045 | 2660 |
| 12.5 × 30 | 0.013 | 0.033 | 3630 | 0.016 | 0.040 | 3160 |
| 12.5 × 35 | 0.012 | 0.030 | 3750 | 0.014 | 0.035 | 3270 |
| 16 × 20 | 0.017 | 0.043 | 3300 | 0.019 | 0.048 | 2870 |
| 16 × 25 | 0.014 | 0.035 | 3820 | 0.016 | 0.040 | 3320 |

■ Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|---|---|----------------------|-------------------|------------------|----------------------|----------------------|----------------|--------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Long Lead (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 6.3 | 150 | 5 | 11 | 280 | 0.300 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM0J151() | 200 | 2000 |
| | 330 | 6.3 | 11.2 | 455 | 0.130 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM0J331() | 200 | 2000 |
| | 560 | 8 | 11.5 | 950 | 0.056 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM0J561() | 200 | 1000 |
| | 820 | 8 | 15 | 1240 | 0.041 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM0J821L() | 200 | 1000 |
| | 1000 | 10 | 12.5 | 1290 | 0.038 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM0J102() | 200 | 500 |
| | 1200 | 8 | 20 | 1560 | 0.030 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM0J122L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.026 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM0J122() | 200 | 500 |
| | 1500 | 10 | 20 | 2180 | 0.019 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM0J152() | 200 | 500 |
| | 2200 | 10 | 25 | 2470 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM0J222L() | 200 | 500 |
| | 3300 | 12.5 | 20 | 2600 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM0J332() | 200 | 500 |
| | 3900 | 12.5 | 25 | 3190 | 0.015 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM0J392() | 200 | 500 |
| | 4700 | 12.5 | 30 | 3630 | 0.013 | 7000 | 0.8 | 5.0 | | | EEUFM0J472L | 100 | |
| | 5600 | 12.5 | 35 | 3750 | 0.012 | 7000 | 0.8 | 5.0 | | | EEUFM0J562L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM0J562S() | 100 | 250 |
| 6800 | 16 | 25 | 3820 | 0.014 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM0J682() | 100 | 250 | |
| 10 | 100 | 5 | 11 | 280 | 0.300 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM1A101() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 455 | 0.130 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM1A221() | 200 | 2000 |
| | 470 | 8 | 11.5 | 950 | 0.056 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1A471() | 200 | 1000 |
| | 680 | 8 | 15 | 1240 | 0.041 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1A681L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.038 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1A681() | 200 | 500 |
| | 1000 | 8 | 20 | 1560 | 0.030 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM1A102L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.026 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1A102() | 200 | 500 |
| | 1200 | 10 | 20 | 2180 | 0.019 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1A122() | 200 | 500 |
| | 1500 | 10 | 25 | 2470 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1A152L() | 200 | 500 |
| | 2200 | 12.5 | 20 | 2600 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1A222() | 200 | 500 |
| | 3300 | 12.5 | 25 | 3190 | 0.015 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM1A332() | 200 | 500 |
| | 3900 | 12.5 | 30 | 3630 | 0.013 | 7000 | 0.8 | 5.0 | | | EEUFM1A392L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM1A392S() | 100 | 250 |
| | 4700 | 12.5 | 35 | 3750 | 0.012 | 7000 | 0.8 | 5.0 | | | EEUFM1A472L | 100 | |
| 5600 | 16 | 25 | 3820 | 0.014 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM1A562() | 100 | 250 | |
| 16 | 68 | 5 | 11 | 280 | 0.300 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM1C680() | 200 | 2000 |
| | 120 | 6.3 | 11.2 | 455 | 0.130 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM1C121() | 200 | 2000 |
| | 330 | 8 | 11.5 | 950 | 0.056 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1C331() | 200 | 1000 |
| | 470 | 8 | 15 | 1240 | 0.041 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1C471L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.038 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1C471() | 200 | 500 |
| | 680 | 8 | 20 | 1560 | 0.030 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM1C681L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.026 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1C681() | 200 | 500 |
| | 1000 | 10 | 20 | 2180 | 0.019 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1C102() | 200 | 500 |
| | 1200 | 10 | 25 | 2470 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1C122L() | 200 | 500 |
| | 1500 | 12.5 | 20 | 2600 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1C152() | 200 | 500 |
| | 2200 | 12.5 | 25 | 3190 | 0.015 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM1C222() | 200 | 500 |
| | 2700 | 12.5 | 30 | 3630 | 0.013 | 7000 | 0.8 | 5.0 | | | EEUFM1C272L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM1C272S() | 100 | 250 |
| | 3300 | 12.5 | 35 | 3750 | 0.012 | 7000 | 0.8 | 5.0 | | | EEUFM1C332L | 100 | |
| 3900 | 16 | 25 | 3820 | 0.014 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM1C392() | 100 | 250 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
 Should a safety concern arise regarding this product, please be sure to contact us immediately.

01 May, 2014

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|---|---|----------------------|-------------------|------------------|----------------------|----------------------|----------------|--------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Long Lead (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 25 | 47 | 5 | 11 | 280 | 0.300 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM1E470() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 455 | 0.130 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM1E101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 950 | 0.056 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1E221() | 200 | 1000 |
| | 330 | 8 | 15 | 1240 | 0.041 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1E331L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.038 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1E331() | 200 | 500 |
| | 470 | 8 | 20 | 1560 | 0.030 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM1E471L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.026 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1E471() | 200 | 500 |
| | 680 | 10 | 20 | 2180 | 0.019 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1E681() | 200 | 500 |
| | 820 | 10 | 25 | 2470 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1E821L() | 200 | 500 |
| | 1000 | 12.5 | 20 | 2600 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1E102() | 200 | 500 |
| | 1500 | 12.5 | 25 | 3190 | 0.015 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM1E152() | 200 | 500 |
| | 1800 | 12.5 | 30 | 3630 | 0.013 | 7000 | 0.8 | 5.0 | | | EEUFM1E182L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM1E182S() | 100 | 250 |
| 2200 | 12.5 | 35 | 3750 | 0.012 | 7000 | 0.8 | 5.0 | | | EEUFM1E222L | 100 | | |
| 2700 | 16 | 25 | 3820 | 0.014 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM1E272() | 100 | 250 | |
| 35 | 33 | 5 | 11 | 280 | 0.300 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM1V330() | 200 | 2000 |
| | 68 | 6.3 | 11.2 | 455 | 0.130 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM1V680() | 200 | 2000 |
| | 150 | 8 | 11.5 | 950 | 0.056 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1V151() | 200 | 1000 |
| | 220 | 8 | 15 | 1240 | 0.041 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1V221L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.038 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1V221() | 200 | 500 |
| | 330 | 8 | 20 | 1560 | 0.030 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM1V331L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.026 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1V331() | 200 | 500 |
| | 470 | 10 | 20 | 2180 | 0.019 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1V471() | 200 | 500 |
| | 560 | 10 | 25 | 2470 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1V561L() | 200 | 500 |
| | 680 | 12.5 | 20 | 2600 | 0.018 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1V681() | 200 | 500 |
| | 1000 | 12.5 | 25 | 3190 | 0.015 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM1V102() | 200 | 500 |
| | 1200 | 12.5 | 30 | 3630 | 0.013 | 7000 | 0.8 | 5.0 | | | EEUFM1V122L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM1V122S() | 100 | 250 |
| 1500 | 12.5 | 35 | 3750 | 0.012 | 7000 | 0.8 | 5.0 | | | EEUFM1V152L | 100 | | |
| 1800 | 16 | 25 | 3820 | 0.014 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM1V182() | 100 | 250 | |
| 50 | 22 | 5 | 11 | 250 | 0.340 | 2000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFM1H220() | 200 | 2000 |
| | 56 | 6.3 | 11.2 | 405 | 0.140 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFM1H560() | 200 | 2000 |
| | 100 | 8 | 11.5 | 870 | 0.061 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1H101() | 200 | 1000 |
| | 120 | 8 | 15 | 1140 | 0.045 | 3000 | 0.6 | 3.5 | 5.0 | | EEUFM1H121L() | 200 | 1000 |
| | 150 | 10 | 12.5 | 1170 | 0.042 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1H151() | 200 | 500 |
| | 180 | 8 | 20 | 1430 | 0.033 | 4000 | 0.6 | 3.5 | 5.0 | | EEUFM1H181L() | 200 | 1000 |
| | 220 | 10 | 16 | 1650 | 0.030 | 4000 | 0.6 | 5.0 | 5.0 | | EEUFM1H221() | 200 | 500 |
| | 270 | 10 | 20 | 1890 | 0.023 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1H271() | 200 | 500 |
| | 330 | 10 | 25 | 2150 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1H331L() | 200 | 500 |
| | 470 | 12.5 | 20 | 2260 | 0.022 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFM1H471() | 200 | 500 |
| | 560 | 12.5 | 25 | 2660 | 0.018 | 7000 | 0.6 | 5.0 | 5.0 | | EEUFM1H561() | 200 | 500 |
| | 680 | 12.5 | 30 | 3160 | 0.016 | 7000 | 0.8 | 5.0 | | | EEUFM1H681L | 100 | |
| | 820 | 12.5 | 35 | 3270 | 0.014 | 7000 | 0.8 | 5.0 | | | EEUFM1H821L | 100 | |
| 16 | | 20 | 2870 | 0.019 | 5000 | 0.8 | 7.5 | 7.5 | | EEUFM1H821S() | 100 | 250 | |
| 1000 | 16 | 25 | 3320 | 0.016 | 7000 | 0.8 | 7.5 | 7.5 | | EEUFM1H102() | 100 | 250 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

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 Should a safety concern arise regarding this product, please be sure to contact us immediately.

01 May, 2014

Radial Lead Type

Series: **FR** Type: **A**

■ Features

- Low ESR (Same as FM Series)
- Endurance : 5000 h to 10000 h at +105 °C
- RoHS directive compliant

■ Country of origin

Malaysia



■ Attention

Not applicable for automotive

■ Specifications

| | | | | | | | | | | |
|---|--|------|------|------|------|------|------|------|------|-----------------|
| Category Temp. Range | -40 °C to +105 °C | | | | | | | | | |
| Rated W.V. Range | 6.3 V.DC to 100 V.DC | | | | | | | | | |
| Nominal Cap. Range | 4.7 μF to 8200 μF | | | | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | | | |
| DC Leakage Current | I ≤ 0.01 CV (μA) After 2 minutes | | | | | | | | | |
| tan δ | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | (120 Hz/+20 °C) |
| | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | |
| Add 0.02 per 1000 μF for products of 1000 μF or more. | | | | | | | | | | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied. (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. | | | | | | | | | |
| | Duration | | | | | | | | | |
| | φ5×11/ φ6.3×11.2 : 5000 hours | | | | | | | | | |
| | φ8×11.5/ φ10×12.5 : 6000 hours (* Only EEUFR1V331U (φ10×12.5) 5000 hours) | | | | | | | | | |
| | φ8×15/ φ10×16 : 8000 hours, φ8×20 : 9000 hours φ10×20 to φ10×25/ φ12.5×20 to φ12.5×35/ φ16×20 to φ16×25 : 10000 hours | | | | | | | | | |
| Capacitance change | ±25 % of initial measured value (6.3 V to 10 V : ±30 %) | | | | | | | | | |
| tan δ | ≤ 200 % of initial specified value | | | | | | | | | |
| DC leakage current | ≤ initial specified value | | | | | | | | | |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | | | | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap (μF) | Frequency (Hz) | | | | |
|------------|--------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 6.3 to 100 | 4.7 to 33 | 0.45 | 0.55 | 0.75 | 0.90 | 1.00 |
| | 47 to 330 | 0.60 | 0.70 | 0.85 | 0.95 | 1.00 |
| | 390 to 1000 | 0.65 | 0.75 | 0.90 | 0.98 | 1.00 |
| | 1200 to 8200 | 0.75 | 0.80 | 0.95 | 1.00 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

| | | | | | | |
|---------------|-----|-----|-----|-----|------------|----------|
| Body Dia. φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 |
| Body Length L | — | — | — | — | 12.5 to 25 | 30 to 35 |
| Lead Dia. φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 |
| Lead space F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

06 Nov. 2014

■ Case size/Impedance/Ripple current

| W.V.(V.DC) Case size (ϕ D×L) | 6.3 V to 35 V | | | 50 V | | |
|--|-----------------------------------|--------|---------------------------------------|-----------------------------------|--------|---------------------------------------|
| | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) |
| | +20 °C | -10 °C | +105 °C | +20 °C | -10 °C | +105 °C |
| 5 × 11 | 0.300 | 1.000 | 280 | 0.340 | 1.130 | 250 |
| 6.3 × 11.2 | 0.130 | 0.430 | 455 | 0.140 | 0.460 | 405 |
| 8 × 11.5 | 0.056 | 0.168 | 950 | 0.061 | 0.183 | 870 |
| 8 × 15 | 0.041 | 0.123 | 1240 | 0.045 | 0.135 | 1140 |
| 8 × 20 | 0.030 | 0.090 | 1560 | 0.033 | 0.099 | 1430 |
| 10 × 12.5 | 0.043 | 0.114 | 1290 | 0.042 | 0.126 | 1170 |
| 10 × 16 | 0.028 | 0.078 | 1790 | 0.030 | 0.090 | 1650 |
| 10 × 20 | 0.020 | 0.057 | 2180 | 0.023 | 0.069 | 1890 |
| 10 × 25 | 0.018 | 0.054 | 2470 | 0.022 | 0.066 | 2150 |
| 12.5 × 20 | 0.018 | 0.045 | 2600 | 0.022 | 0.055 | 2260 |
| 12.5 × 25 | 0.015 | 0.038 | 3190 | 0.018 | 0.045 | 2660 |
| 12.5 × 30 | 0.013 | 0.033 | 3630 | 0.016 | 0.040 | 3160 |
| 12.5 × 35 | 0.012 | 0.030 | 3750 | 0.014 | 0.035 | 3270 |
| 16 × 20 | 0.017 | 0.043 | 3300 | 0.019 | 0.048 | 2870 |
| 16 × 25 | 0.014 | 0.035 | 3820 | 0.016 | 0.040 | 3320 |

| W.V.(V.DC) Case size (ϕ D×L) | 63 V | | |
|--|-----------------------------------|--------|---------------------------------------|
| | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) |
| | +20 °C | -10 °C | +105 °C |
| 5 × 11 | 0.510 | 2.040 | 175 |
| 6.3 × 11.2 | 0.210 | 0.840 | 284 |
| 8 × 11.5 | 0.092 | 0.368 | 566 |
| 8 × 15 | 0.068 | 0.272 | 741 |
| 8 × 20 | 0.050 | 0.200 | 930 |
| 10 × 12.5 | 0.063 | 0.252 | 761 |
| 10 × 16 | 0.045 | 0.180 | 1073 |
| 10 × 20 | 0.035 | 0.140 | 1229 |
| 10 × 25 | 0.033 | 0.132 | 1500 |
| 12.5 × 20 | 0.033 | 0.125 | 1582 |
| 12.5 × 25 | 0.027 | 0.092 | 1995 |
| 12.5 × 30 | 0.024 | 0.082 | 2528 |
| 12.5 × 35 | 0.021 | 0.071 | 2780 |
| 16 × 20 | 0.029 | 0.093 | 2153 |
| 16 × 25 | 0.024 | 0.074 | 2988 |

| W.V.(V.DC) Case size (ϕ D×L) | 100 V | | |
|--|-----------------------------------|--------|---------------------------------------|
| | Impedance (Ω /100 kHz) | | Ripple Current (mA r.m.s./100 kHz) |
| | +20 °C | -10 °C | +105 °C |
| 10 × 20 | 0.084 | 0.336 | 1500 |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|---|----------------------|-------------------|------------------|----------------------|---------------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *H (mm) |
| 6.3 | 150 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR0J151() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR0J221() | 200 | 2000 |
| | 330 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR0J331() | 200 | 2000 |
| | 470 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR0J471() | 200 | 2000 |
| | 820 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR0J821() | 200 | 1000 |
| | 1000 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR0J102() | 200 | 1000 |
| | 1200 | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR0J122L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.043 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR0J122() | 200 | 500 |
| | 1500 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR0J152L() | 200 | 1000 |
| | 1800 | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR0J182() | 200 | 500 |
| | 2200 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR0J222() | 200 | 500 |
| | 2700 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR0J272L() | 200 | 500 |
| | 3300 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR0J332L() | 200 | 500 |
| | 3900 | 12.5 | 20 | 2600 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR0J392() | 200 | 500 |
| | 4700 | 12.5 | 25 | 3190 | 0.015 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR0J472() | 200 | 500 |
| | 5600 | 12.5 | 30 | 3630 | 0.013 | 10000 | 0.8 | 5.0 | | | EEUFR0J562L | 100 | |
| | 6800 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR0J682L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR0J682S() | 100 | 250 |
| 8200 | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR0J822() | 100 | 250 | |
| 10 | 100 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1A101() | 200 | 2000 |
| | 150 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1A151() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1A221() | 200 | 2000 |
| | 270 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1A271() | 200 | 2000 |
| | 470 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1A471() | 200 | 1000 |
| | 680 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1A681() | 200 | 1000 |
| | 820 | 10 | 12.5 | 1290 | 0.043 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1A821() | 200 | 500 |
| | 1000 | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1A102() | 200 | 500 |
| | | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1A102L() | 200 | 1000 |
| | 1500 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1A152L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1A152() | 200 | 500 |
| | 1800 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1A182() | 200 | 500 |
| | 2200 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1A222L() | 200 | 500 |
| | 3300 | 12.5 | 20 | 2600 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1A332() | 200 | 500 |
| | 3900 | 12.5 | 25 | 3190 | 0.015 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1A392() | 200 | 500 |
| | 4700 | 12.5 | 30 | 3630 | 0.013 | 10000 | 0.8 | 5.0 | | | EEUFR1A472L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1A472S() | 100 | 250 |
| | 5600 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1A562L | 100 | |
| 6800 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1A682L | 100 | | |
| | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1A682() | 100 | 250 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|---|----------------------|-------------------|------------------|----------------------|---------------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *H (mm) |
| 16 | 68 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1C680() | 200 | 2000 |
| | 100 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1C101() | 200 | 2000 |
| | 120 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1C121() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1C221() | 200 | 2000 |
| | 470 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1C471() | 200 | 1000 |
| | 680 | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1C681L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.043 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1C681() | 200 | 500 |
| | 1000 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1C102L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1C102() | 200 | 500 |
| | 1500 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1C152() | 200 | 500 |
| | | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1C152L() | 200 | 500 |
| | 1800 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1C182L() | 200 | 500 |
| | 2200 | 12.5 | 20 | 2600 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1C222() | 200 | 500 |
| | 2700 | 12.5 | 25 | 3190 | 0.015 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1C272() | 200 | 500 |
| | 3300 | 12.5 | 30 | 3630 | 0.013 | 10000 | 0.8 | 5.0 | | | EEUFR1C332L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1C332S() | 100 | 250 |
| | 3900 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1C392L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1C392S() | 100 | 250 |
| | 4700 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1C472L | 100 | |
| | | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1C472() | 100 | 250 |
| 5600 | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1C562() | 100 | 250 | |
| 25 | 47 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1E470() | 200 | 2000 |
| | 68 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1E680() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1E101() | 200 | 2000 |
| | 150 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1E151() | 200 | 2000 |
| | 220 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1E221() | 200 | 1000 |
| | 330 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1E331() | 200 | 1000 |
| | 390 | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1E391L() | 200 | 1000 |
| | 470 | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1E471Y() | 200 | 1000 |
| | | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1E471L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.043 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1E471() | 200 | 500 |
| | 560 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1E561L() | 200 | 1000 |
| | 680 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1E681L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1E681() | 200 | 500 |
| | 820 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E821() | 200 | 500 |
| | 1000 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E102() | 200 | 500 |
| | | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E102L() | 200 | 500 |
| | 1200 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E122L() | 200 | 500 |
| | 1500 | 12.5 | 20 | 2600 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E152() | 200 | 500 |
| | 1800 | 12.5 | 25 | 3190 | 0.015 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1E182() | 200 | 500 |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1E182S() | 100 | 250 |
| | 2200 | 12.5 | 30 | 3630 | 0.013 | 10000 | 0.8 | 5.0 | | | EEUFR1E222L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1E222S() | 100 | 250 |
| | 2700 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1E272L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1E272S() | 100 | 250 |
| | 3300 | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1E332() | 100 | 250 |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
· Please refer to the page of "Taping Dimensions".

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|---|---|----------------------|-------------------|------------------|----------------------|----------------------|----------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 35 | 33 | 5 | 11 | 280 | 0.300 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1V330() | 200 | 2000 |
| | 68 | 6.3 | 11.2 | 455 | 0.130 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1V680() | 200 | 2000 |
| | 100 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1V101() | 200 | 1000 |
| | 180 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1V181() | 200 | 1000 |
| | 220 | 8 | 11.5 | 950 | 0.056 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1V221() | 200 | 1000 |
| | 270 | 8 | 15 | 1240 | 0.041 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1V271L() | 200 | 1000 |
| | | 10 | 12.5 | 1290 | 0.043 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1V271() | 200 | 500 |
| | 330 | 10 | 12.5 | 1330 | 0.043 | 5000 | 0.6 | 5.0 | 5.0 | | EEUFR1V331U() | 200 | 500 |
| | 390 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1V391L() | 200 | 1000 |
| | 470 | 8 | 20 | 1560 | 0.030 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1V471L() | 200 | 1000 |
| | | 10 | 16 | 1790 | 0.028 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1V471() | 200 | 500 |
| | 560 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V561() | 200 | 500 |
| | 680 | 10 | 20 | 2180 | 0.020 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V681() | 200 | 500 |
| | | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V681L() | 200 | 500 |
| | 820 | 10 | 25 | 2470 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V821L() | 200 | 500 |
| | 1000 | 12.5 | 20 | 2600 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V102() | 200 | 500 |
| | 1200 | 12.5 | 25 | 3190 | 0.015 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1V122() | 200 | 500 |
| | 1500 | 12.5 | 30 | 3630 | 0.013 | 10000 | 0.8 | 5.0 | | | EEUFR1V152L | 100 | |
| | | 16 | 20 | 3300 | 0.017 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1V152S() | 100 | 250 |
| | 1800 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1V182L | 100 | |
| | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1V182() | 100 | 250 | |
| 2200 | 12.5 | 35 | 3750 | 0.012 | 10000 | 0.8 | 5.0 | | | EEUFR1V222L | 100 | | |
| | 16 | 25 | 3820 | 0.014 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1V222() | 100 | 250 | |
| 50 | 4.7 | 5 | 11 | 185 | 0.620 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1H4R7() | 200 | 2000 |
| | 10 | 5 | 11 | 250 | 0.340 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1H100() | 200 | 2000 |
| | 22 | 5 | 11 | 250 | 0.340 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1H220() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 405 | 0.140 | 5000 | 0.5 | 2.5 | 5.0 | | EEUFR1H470() | 200 | 2000 |
| | 56 | 6.3 | 11.2 | 405 | 0.140 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1H560() | 200 | 2000 |
| | 100 | 8 | 11.5 | 870 | 0.061 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1H101() | 200 | 1000 |
| | 120 | 8 | 15 | 1140 | 0.045 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1H121L() | 200 | 1000 |
| | 150 | 10 | 12.5 | 1170 | 0.042 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1H151() | 200 | 500 |
| | 180 | 8 | 20 | 1430 | 0.033 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1H181L() | 200 | 1000 |
| | 220 | 10 | 16 | 1650 | 0.030 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1H221() | 200 | 500 |
| | 270 | 10 | 20 | 1890 | 0.023 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1H271() | 200 | 500 |
| | 330 | 10 | 25 | 2150 | 0.022 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1H331L() | 200 | 500 |
| | 470 | 12.5 | 20 | 2260 | 0.022 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1H471() | 200 | 500 |
| | 560 | 12.5 | 25 | 2660 | 0.018 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1H561() | 200 | 500 |
| | 680 | 12.5 | 30 | 3160 | 0.016 | 10000 | 0.8 | 5.0 | | | EEUFR1H681L | 100 | |
| | 820 | 12.5 | 35 | 3270 | 0.014 | 10000 | 0.8 | 5.0 | | | EEUFR1H821L | 100 | |
| | | 16 | 20 | 2870 | 0.019 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1H821S() | 100 | 250 |
| 1000 | 16 | 25 | 3320 | 0.016 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1H102() | 100 | 250 | |
| 63 | 18 | 5 | 11 | 175 | 0.510 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUFR1J180() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 284 | 0.210 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUFR1J470() | 200 | 2000 |
| | 82 | 8 | 11.5 | 566 | 0.092 | 6000 | 0.6 | 3.5 | 5.0 | | EEUFR1J820() | 200 | 1000 |
| | 100 | 8 | 15 | 741 | 0.068 | 8000 | 0.6 | 3.5 | 5.0 | | EEUFR1J101L() | 200 | 1000 |
| | | 10 | 12.5 | 761 | 0.063 | 6000 | 0.6 | 5.0 | 5.0 | | EEUFR1J101() | 200 | 500 |
| | 120 | 8 | 20 | 930 | 0.050 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1J121L() | 200 | 1000 |
| | | 10 | 16 | 1073 | 0.045 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1J121() | 200 | 500 |
| | 150 | 8 | 20 | 930 | 0.050 | 9000 | 0.6 | 3.5 | 5.0 | | EEUFR1J151L() | 200 | 1000 |
| | | 10 | 16 | 1073 | 0.045 | 8000 | 0.6 | 5.0 | 5.0 | | EEUFR1J151() | 200 | 500 |
| | 180 | 10 | 20 | 1229 | 0.035 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J181() | 200 | 500 |
| | 220 | 10 | 25 | 1500 | 0.033 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J221L() | 200 | 500 |
| | | 10 | 20 | 1229 | 0.035 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J271U() | 200 | 500 |
| | 270 | 10 | 25 | 1500 | 0.033 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J271L() | 200 | 500 |
| | | 12.5 | 20 | 1582 | 0.033 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J271() | 200 | 500 |
| | 330 | 12.5 | 20 | 1582 | 0.033 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J331() | 200 | 500 |
| | 390 | 12.5 | 25 | 1995 | 0.027 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J391() | 200 | 500 |
| | 470 | 12.5 | 25 | 1995 | 0.027 | 10000 | 0.6 | 5.0 | 5.0 | | EEUFR1J471() | 200 | 500 |
| 560 | 12.5 | 30 | 2528 | 0.024 | 10000 | 0.8 | 5.0 | | | EEUFR1J561L | 100 | | |
| | 16 | 20 | 2153 | 0.029 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1J561S() | 100 | 250 | |
| 680 | 12.5 | 35 | 2780 | 0.021 | 10000 | 0.8 | 5.0 | | | EEUFR1J681L | 100 | | |
| 820 | 16 | 25 | 2988 | 0.024 | 10000 | 0.8 | 7.5 | 7.5 | | EEUFR1J821() | 100 | 250 | |
| 100 | 100 | 10 | 20 | 1500 | 0.084 | 10000 | 0.6 | 5.0 | 5.0 | EEUFR2A101() | 200 | 500 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
 Should a safety concern arise regarding this product, please be sure to contact us immediately.

Radial Lead Type

Series: **EB** Type: **A**



■ Features

- Endurance : +105 °C 5000 h to 10000 h
- High ripple high frequency (High Voltage)
- RoHS directive compliant

■ Specifications

| | | |
|-----------------------|--|------------------------------------|
| Category Temp. Range | -40 °C to +105 °C | -25 °C to +105 °C |
| Rated W.V. Range | 10 V.DC to 63 V.DC | 160 V.DC to 450 V.DC |
| Nominal Cap. Range | 2.2 μF to 3300 μF | 10 μF to 330 μF |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | I ≤ 0.01 CV or 3 (μA) After 2 minutes application of rated working voltage at +20 °C (Whichever is greater) | |
| tan δ | Please see the attached standard products list | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. | |
| | (10 to 63 V.DC) Duration : φ5×11 to φ8×11.5 : 5000 hours φ8×15 to φ12.5×25 : 10000 hours | |
| | Capacitance change | ±30 % of initial measured value |
| | tan δ | ≤ 300 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| | (160 to 450 V.DC) Duration : 5000 hours | |
| | Capacitance change | ±20 % of initial measured value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |

■ Frequency correction factor for ripple current (10 ~ 63 V.DC)

| Capacitance (μF) | Frequency (Hz) | | | | |
|---------------------|----------------|------|------|------|-------|
| | 60 | 120 | 1 k | 10 k | 100 k |
| 2.2 to 10 | 0.75 | 1.00 | 1.40 | 1.55 | 1.65 |
| 22 to 470 | 0.85 | 1.00 | 1.20 | 1.25 | 1.30 |
| 1000 to 3300 | 0.95 | 1.00 | 1.05 | 1.10 | 1.15 |

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

■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

03 Jun. 2014

Standard Products

Endurance : 105 °C $\phi 5 \times 11$ to $\phi 8 \times 11.5 = 5000$ h, $\phi 5 \times 15$ to $\phi 6.3 \times 15 = 7000$ h, $\phi 8 \times 15$ to $\phi 12.5 \times 25 = 10000$ h

| W.V. (V) | Cap. ($\pm 20\%$) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | | |
|-------------|---|--------------|----------------|--|---------------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | $\tan \delta$ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | | |
| 10 | 100 | 5 | 15 | 105 | 0.30 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1A101()*** | 200 | 2000 | |
| | | 5 | 11 | 66 | 0.30 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1A101S() | 200 | 2000 | |
| | 220 | 6.3 | 15 | 152 | 0.30 | 7000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1A221()*** | 200 | 2000 | |
| | | 6.3 | 11.2 | 100 | 0.30 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1A221S() | 200 | 2000 | |
| | 470 | 8 | 15 | 278 | 0.30 | 10000 | 0.6 | 3.5 | 5.0 | | EEUEB1A471() | 200 | 1000 | |
| | | 8 | 11.5 | 180 | 0.30 | 5000 | 0.6 | 3.5 | 5.0 | | EEUEB1A471S() | 200 | 1000 | |
| 16 | 2200 | 12.5 | 20 | 540 | 0.32 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1A222() | 200 | 500 | |
| | | 12.5 | 25 | 802 | 0.34 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1A332() | 200 | 500 | |
| | 1000 | 10 | 20 | 430 | 0.25 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1C102() | 200 | 500 | |
| | | 12.5 | 25 | 706 | 0.27 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1C222() | 200 | 500 | |
| | 25 | 47 | 5 | 15 | 78 | 0.22 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1E470()*** | 200 | 2000 |
| | | | 5 | 11 | 55 | 0.22 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1E470S() | 200 | 2000 |
| 100 | | 6.3 | 15 | 135 | 0.22 | 7000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1E101()*** | 200 | 2000 | |
| | | 6.3 | 11.2 | 95 | 0.22 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1E101S() | 200 | 2000 | |
| 220 | | 8 | 11.5 | 125 | 0.22 | 5000 | 0.6 | 3.5 | 5.0 | | EEUEB1E221S() | 200 | 1000 | |
| 330 | | 8 | 15 | 255 | 0.22 | 10000 | 0.6 | 3.5 | 5.0 | | EEUEB1E331() | 200 | 1000 | |
| 35 | 470 | 10 | 16 | 321 | 0.22 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1E471() | 200 | 500 | |
| | | 12.5 | 20 | 498 | 0.22 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1E102() | 200 | 500 | |
| | 1000 | 5 | 15 | 66 | 0.18 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1V330()*** | 200 | 2000 | |
| | | 5 | 11 | 46 | 0.18 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1V330S() | 200 | 2000 | |
| | 220 | 8 | 15 | 197 | 0.18 | 10000 | 0.6 | 3.5 | 5.0 | | EEUEB1V221() | 200 | 1000 | |
| | 330 | 10 | 16 | 278 | 0.18 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1V331() | 200 | 500 | |
| 50 | 470 | 10 | 20 | 349 | 0.18 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1V471() | 200 | 500 | |
| | | 12.5 | 25 | 586 | 0.18 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1V102() | 200 | 500 | |
| | 0.47 | 5 | 11 | 4 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1HR47S()** | 200 | 2000 | |
| | | 1 | 5 | 11 | 8 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H1R0S()** | 200 | 2000 |
| | 2.2 | 5 | 11 | 15 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H2R2S() | 200 | 2000 | |
| | 3.3 | 5 | 11 | 18 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H3R3S() | 200 | 2000 | |
| | 4.7 | 5 | 11 | 18 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H4R7S() | 200 | 2000 | |
| | 10 | 5 | 11 | 27 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H100S() | 200 | 2000 | |
| | | 5 | 15 | 55 | 0.15 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H220()*** | 200 | 2000 | |
| | 22 | 5 | 11 | 39 | 0.15 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1H220S() | 200 | 2000 | |
| | | 6.3 | 15 | 87 | 0.15 | 7000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1H470()*** | 200 | 2000 | |
| | 47 | 6.3 | 11.2 | 61 | 0.15 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1H470S() | 200 | 2000 | |
| | | 8 | 11.5 | 99 | 0.15 | 5000 | 0.6 | 3.5 | 5.0 | | EEUEB1H101S() | 200 | 1000 | |
| | 220 | 10 | 16 | 234 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1H221() | 200 | 500 | |
| 330 | 10 | 20 | 293 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1H331() | 200 | 500 | | |
| 470 | 12.5 | 20 | 370 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1H471() | 200 | 500 | | |
| 63 | 0.47 | 5 | 15 | 6 | 0.12 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1JR47()** | 200 | 2000 | |
| | | 5 | 11 | 4.5 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1JR47S()** | 200 | 2000 | |
| | 1 | 5 | 15 | 12 | 0.12 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J1R0()** | 200 | 2000 | |
| | | 5 | 11 | 9 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J1R0S()** | 200 | 2000 | |
| | 2.2 | 5 | 11 | 16.5 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J2R2S() | 200 | 2000 | |
| | 3.3 | 5 | 15 | 30 | 0.12 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J3R3()*** | 200 | 2000 | |
| | | 5 | 11 | 20 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J3R3S() | 200 | 2000 | |
| | 4.7 | 5 | 15 | 30 | 0.12 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J4R7()*** | 200 | 2000 | |
| | | 5 | 11 | 23 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J4R7S() | 200 | 2000 | |
| | 10 | 5 | 15 | 46 | 0.12 | 7000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J100()*** | 200 | 2000 | |
| | | 5 | 11 | 30 | 0.12 | 5000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUEB1J100S() | 200 | 2000 | |
| | 22 | 6.3 | 15 | 55 | 0.12 | 7000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1J220()*** | 200 | 2000 | |
| | | 6.3 | 11.2 | 40 | 0.12 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1J220S() | 200 | 2000 | |
| | 33 | 6.3 | 15 | 71 | 0.12 | 7000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1J330()*** | 200 | 2000 | |
| 6.3 | | 11.2 | 50 | 0.12 | 5000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUEB1J330S() | 200 | 2000 | | |
| 47 | 8 | 15 | 94 | 0.12 | 10000 | 0.6 | 3.5 | 5.0 | | EEUEB1J470() | 200 | 1000 | | |
| | 8 | 11.5 | 80 | 0.12 | 5000 | 0.6 | 3.5 | 5.0 | | EEUEB1J470S() | 200 | 1000 | | |
| 100 | 8 | 15 | 180 | 0.12 | 10000 | 0.6 | 3.5 | 5.0 | | EEUEB1J101() | 200 | 1000 | | |
| 220 | 10 | 20 | 292 | 0.12 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1J221() | 200 | 500 | | |
| 330 | 12.5 | 20 | 381 | 0.12 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1J331() | 200 | 500 | | |
| 470 | 12.5 | 25 | 454 | 0.12 | 10000 | 0.6 | 5.0 | 5.0 | | EEUEB1J471() | 200 | 500 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

** Please kindly accept last shipment : 31/Mar/2015

*** Please kindly accept last shipment : 30/Jun/2015

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

Standard Products

Endurance : 105 °C 5000 h

| W.V. | Cap. (±20 %) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|------|-----------------|-----------|--------|---|-------------------------------|----------------------|-------------|------------|----------------|----------------|---------------------|--------|-----|
| | | Dia. | Length | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. | Lead Space | | | Straight Leads | Taping | |
| | | | | | | | | Straight | Taping *B | | | | |
| (V) | (μF) | (mm) | (mm) | (mA r.m.s.) | (+20 °C) | (hours) | (mm) | (mm) | (mm) | (pcs) | (pcs) | | |
| 160 | 22 | 10 | 20 | 470 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2C220() | 200 | 500 | |
| | 33 | 10 | 20 | 470 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2C330() | 200 | 500 | |
| | 47 | 12.5 | 20 | 600 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2C470() | 200 | 500 | |
| | 68 | 12.5 | 25 | 750 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2C680() | 200 | 500 | |
| | | 16 | 20 | 750 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2C680S() | 100 | 250 | |
| | 100 | 16 | 25 | 1060 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2C101() | 100 | 250 | |
| | | 18 | 20 | 1060 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2C101S() | 100 | 250 | |
| | 150 | 16 | 31.5 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2C151 | 100 | – | |
| | | 18 | 25 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2C151S() | 100 | 250 | |
| | 220 | 16 | 31.5 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2C221 | 100 | – | |
| 18 | | 25 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2C221S() | 100 | 250 | | |
| 330 | 18 | 31.5 | 1690 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2C331 | 50 | – | | |
| 200 | 22 | 10 | 20 | 470 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2D220() | 200 | 500 | |
| | 33 | 12.5 | 20 | 600 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2D330() | 200 | 500 | |
| | 47 | 12.5 | 20 | 600 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2D470() | 200 | 500 | |
| | 68 | 12.5 | 25 | 750 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2D680() | 200 | 500 | |
| | | 16 | 20 | 750 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2D680S() | 100 | 250 | |
| | 100 | 16 | 25 | 1060 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2D101() | 100 | 250 | |
| | | 18 | 20 | 1060 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2D101S() | 100 | 250 | |
| | 150 | 16 | 31.5 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2D151 | 100 | – | |
| | | 18 | 25 | 1280 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2D151S() | 100 | 250 | |
| | 220 | 18 | 31.5 | 1690 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2D221 | 50 | – | |
| 250 | 22 | 12.5 | 20 | 560 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2E220() | 200 | 500 | |
| | 33 | 12.5 | 20 | 560 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2E330() | 200 | 500 | |
| | 47 | 12.5 | 25 | 710 | 0.15 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2E470() | 200 | 500 | |
| | | 16 | 20 | 710 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2E470S() | 100 | 250 | |
| | 68 | 16 | 25 | 990 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2E680() | 100 | 250 | |
| | | 18 | 20 | 990 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2E680S() | 100 | 250 | |
| | 100 | 16 | 31.5 | 1200 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2E101 | 100 | – | |
| | | 18 | 25 | 1200 | 0.15 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2E101S() | 100 | 250 | |
| | 150 | 18 | 31.5 | 1470 | 0.15 | 5000 | 0.8 | 7.5 | – | EEUEB2E151 | 50 | – | |
| | 350 | 10 | 10 | 20 | 270 | 0.20 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2V100() | 200 | 500 |
| 22 | | 12.5 | 20 | 350 | 0.20 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2V220() | 200 | 500 | |
| 33 | | 16 | 20 | 480 | 0.20 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2V330S() | 100 | 250 | |
| | | 16 | 25 | 640 | 0.20 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2V470() | 100 | 250 | |
| 47 | | 18 | 20 | 640 | 0.20 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2V470S() | 100 | 250 | |
| | | 16 | 31.5 | 780 | 0.20 | 5000 | 0.8 | 7.5 | – | EEUEB2V680 | 100 | – | |
| 68 | | 18 | 25 | 780 | 0.20 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2V680S() | 100 | 250 | |
| | | 100 | 18 | 31.5 | 970 | 0.20 | 5000 | 0.8 | 7.5 | – | EEUEB2V101 | 50 | – |
| 400 | | 10 | 10 | 20 | 250 | 0.24 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2G100() | 200 | 500 |
| | | 22 | 12.5 | 25 | 410 | 0.24 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2G220() | 200 | 500 |
| | 16 | | 20 | 410 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2G220S() | 100 | 250 | |
| | 33 | 16 | 25 | 600 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2G330() | 100 | 250 | |
| | | 18 | 20 | 600 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2G330S() | 100 | 250 | |
| | 47 | 16 | 31.5 | 730 | 0.24 | 5000 | 0.8 | 7.5 | – | EEUEB2G470 | 100 | – | |
| | | 18 | 25 | 730 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2G470S() | 100 | 250 | |
| | 450 | 10 | 12.5 | 20 | 310 | 0.24 | 5000 | 0.6 | 5.0 | 5.0 | EEUEB2W100() | 200 | 500 |
| | | 22 | 16 | 25 | 560 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2W220() | 100 | 250 |
| | | | 18 | 20 | 560 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2W220S() | 100 | 250 |
| 33 | | 16 | 31.5 | 680 | 0.24 | 5000 | 0.8 | 7.5 | – | EEUEB2W330() | 100 | – | |
| | | 18 | 25 | 680 | 0.24 | 5000 | 0.8 | 7.5 | 7.5 | EEUEB2W330S() | 100 | 250 | |
| 47 | | 18 | 31.5 | 850 | 0.24 | 5000 | 0.8 | 7.5 | – | EEUEB2W470 | 50 | – | |

· When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
 · Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **EE** Type: **A**

■ Features

- High ripple current (at high frequency):
40 % higher than ED Series
- Endurance: 105 °C 8000 h to 10000 h
- RoHS directive compliant



■ Specifications

| | | | | | | | | |
|-----------------------|--|------------------------------------|------|------|------|------|------|-----------------|
| Category Temp. Range | -25 °C to + 105 °C | | | | | | | |
| Rated W.V. Range | 160 V .DC to 450 V .DC | | | | | | | |
| Nominal Cap. Range | 10 μF to 330 μF | | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | |
| DC Leakage Current | $I \leq 0.06 CV + 10 (\mu A)$ After 2 minutes | | | | | | | |
| tan δ | W.V. | 160 | 200 | 250 | 350 | 400 | 450 | (120 Hz/+20 °C) |
| | tan δ | 0.15 | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. Duration φ10 : 8000 hours φ12.5 to φ18 : 10000 hours | | | | | | | |
| | Capacitance change | ±20 % of initial measured value | | | | | | |
| | tan δ | ≤ 200 % of initial specified value | | | | | | |
| | DC leakage current | ≤ initial specified value | | | | | | |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | | |

■ Frequency correction factor for ripple current

| W. V. (V. DC) | Cap. (μF) | Frequency (Hz) | | | | | |
|------------------|--------------|----------------|-------|-------|-------|--------|---------|
| | | 60 ≤ | 120 ≤ | 300 ≤ | 1 k ≤ | 10 k ≤ | 100 k ≤ |
| 160 to 450 | 10 to 82 | 0.25 | 0.35 | 0.50 | 0.65 | 0.90 | 1.00 |
| | 100 to 330 | 0.30 | 0.40 | 0.55 | 0.70 | 0.90 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

| | | | | |
|--------------|-----|------|-----|-----|
| Body Dia. φD | 10 | 12.5 | 16 | 18 |
| Lead Dia. φd | 0.6 | 0.6 | 0.8 | 0.8 |
| Lead space F | 5.0 | 5.0 | 7.5 | 7.5 |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

■ Case size/Ripple current

| Cap. (μ F) | 160 V | | | 200 V | | |
|--------------------|-------------------------------------|--------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------|
| | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | |
| | | 120 Hz | 100 kHz | | 120 Hz | 100 kHz |
| 22 | 10 \times 20 | 245 | 700 | 10 \times 20 | 300 | 850 |
| 33 | 10 \times 20 | 280 | 810 | 10 \times 20 | 320 | 920 |
| 47 | 10 \times 20 | 370 | 1065 | 12.5 \times 20 | 385 | 1100 |
| 68 | 12.5 \times 20 | 470 | 1350 | 12.5 \times 25 16 \times 20S | 465 465 | 1330 1330 |
| 82 | 12.5 \times 25 | 520 | 1480 | 16 \times 20S | 510 | 1460 |
| 100 | 12.5 \times 25 16 \times 20S | 660 680 | 1660 1700 | 16 \times 25 18 \times 20S | 690 670 | 1730 1665 |
| 150 | 16 \times 25 18 \times 20S | 755 730 | 1890 1820 | 16 \times 25 | 740 | 1860 |
| 220 | 16 \times 31.5 18 \times 25S | 910 780 | 2280 1950 | 18 \times 31.5 | 1175 | 2600 |
| 330 | 18 \times 31.5 | 1040 | 2600 | 18 \times 40 | 1250 | 3120 |

| Cap. (μ F) | 250 V | | | 350 V | | |
|--------------------|-------------------------------------|--------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------|
| | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | |
| | | 120 Hz | 100 kHz | | 120 Hz | 100 kHz |
| 15 | | | | 10 \times 20 | 170 | 480 |
| 22 | 10 \times 20 | 275 | 785 | 12.5 \times 20 | 230 | 660 |
| 33 | 12.5 \times 20 | 350 | 995 | 12.5 \times 25 16 \times 20S | 275 315 | 790 900 |
| 47 | 12.5 \times 25 16 \times 20S | 450 490 | 1290 1400 | 16 \times 25 18 \times 20S | 375 375 | 1070 1070 |
| 68 | 16 \times 20S | 490 | 1400 | 16 \times 31.5 18 \times 25S | 535 465 | 1530 1330 |
| 82 | 16 \times 25 18 \times 20S | 590 590 | 1680 1680 | 18 \times 25S | 535 | 1530 |
| 100 | 16 \times 31.5 18 \times 25S | 840 840 | 2100 2100 | 18 \times 31.5 | 640 | 1600 |
| 150 | 18 \times 31.5 | 1010 | 2520 | | | |
| 220 | 18 \times 40 | 1175 | 2940 | | | |

| Cap. (μ F) | 400 V | | | 450 V | | |
|--------------------|-------------------------------------|--------------------------------------|--------------|-------------------------------------|--------------------------------------|--------------|
| | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | | Case size (ϕ D \times L) | Ripple current (mA r.m.s.) 105 °C | |
| | | 120 Hz | 100 kHz | | 120 Hz | 100 kHz |
| 10 | 10 \times 20 | 150 | 430 | 10 \times 20U 12.5 \times 20 | 115 170 | 330 490 |
| 15 | 12.5 \times 20 | 205 | 590 | 12.5 \times 25 | 270 | 780 |
| 22 | 12.5 \times 25 16 \times 20S | 265 300 | 760 860 | 16 \times 20S | 330 | 945 |
| 33 | 16 \times 20S | 355 | 1020 | 16 \times 25 18 \times 20S | 350 350 | 1000 1000 |
| 47 | 16 \times 25 18 \times 20S | 410 410 | 1180 1180 | 16 \times 31.5 18 \times 25S | 420 420 | 1200 1200 |
| 56 | | | | 18 \times 31.5 | 480 | 1380 |
| 68 | 18 \times 25 | 515 | 1470 | 18 \times 40 | 630 | 1800 |
| 82 | 18 \times 31.5 | 575 | 1645 | | | |
| 100 | 18 \times 40 | 825 | 2060 | | | |

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

Standard Products

Endurance : 105 °C ϕ 10=8000 h, ϕ 12.5 to ϕ 18=10000 h

| W.V. | Cap. ($\pm 20\%$) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|------|------------------------|-----------|--------|---|---------------------------------------|----------------------|-------------|------------|--------------|----------------|-------------------------|-----------------|-----|
| | | Dia. | Length | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | $\tan \delta$ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | | Straight | Taping *B | | | | |
| (V) | (μ F) | (mm) | (mm) | (mA r.m.s.) | (120 Hz) (+20 °C) | (hours) | (mm) | (mm) | (mm) | | (pcs) | (pcs) | |
| 160 | 22 | 10 | 20 | 700 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2C220() | 200 | 500 | |
| | 33 | 10 | 20 | 810 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2C330() | 200 | 500 | |
| | 47 | 10 | 20 | 1065 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2C470() | 200 | 500 | |
| | 68 | 12.5 | 20 | 1350 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2C680() | 200 | 500 | |
| | 82 | 12.5 | 25 | 1480 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2C820() | 200 | 500 | |
| | 100 | 100 | 12.5 | 25 | 1660 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2C101() | 200 | 500 |
| | | | 16 | 20 | 1700 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2C101S() | 100 | 250 |
| | 150 | 150 | 16 | 25 | 1890 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2C151() | 100 | 250 |
| | | | 18 | 20 | 1820 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2C151S() | 100 | 250 |
| | 220 | 220 | 16 | 31.5 | 2280 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2C221 | 100 | |
| 18 | | | 25 | 1950 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2C221S() | 100 | 250 | |
| 330 | 330 | 18 | 31.5 | 2600 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2C331 | 50 | | |
| 200 | 22 | 10 | 20 | 850 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2D220() | 200 | 500 | |
| | 33 | 10 | 20 | 920 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2D330() | 200 | 500 | |
| | 47 | 12.5 | 20 | 1100 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2D470() | 200 | 500 | |
| | 68 | 68 | 12.5 | 25 | 1330 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2D680() | 200 | 500 |
| | | | 16 | 20 | 1330 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2D680S() | 100 | 250 |
| | 82 | 16 | 20 | 1460 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2D820S() | 100 | 250 | |
| | 100 | 100 | 16 | 25 | 1730 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2D101() | 100 | 250 |
| | | | 18 | 20 | 1665 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2D101S() | 100 | 250 |
| | 150 | 150 | 16 | 25 | 1860 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2D151() | 100 | 250 |
| | 220 | 220 | 18 | 31.5 | 2600 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2D221 | 50 | |
| 330 | 330 | 18 | 40 | 3120 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2D331 | 50 | | |
| 250 | 22 | 10 | 20 | 785 | 0.15 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2E220() | 200 | 500 | |
| | 33 | 12.5 | 20 | 995 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2E330() | 200 | 500 | |
| | 47 | 47 | 12.5 | 25 | 1290 | 0.15 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2E470() | 200 | 500 |
| | | | 16 | 20 | 1400 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2E470S() | 100 | 250 |
| | 68 | 16 | 20 | 1400 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2E680S() | 100 | 250 | |
| | 82 | 82 | 16 | 25 | 1680 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2E820() | 100 | 250 |
| | | | 18 | 20 | 1680 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2E820S() | 100 | 250 |
| | 100 | 100 | 16 | 31.5 | 2100 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2E101 | 100 | |
| | | | 18 | 25 | 2100 | 0.15 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2E101S() | 100 | 250 |
| | 150 | 150 | 18 | 31.5 | 2520 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2E151 | 50 | |
| 220 | 220 | 18 | 40 | 2940 | 0.15 | 10000 | 0.8 | 7.5 | | EEUEE2E221 | 50 | | |
| 350 | 15 | 10 | 20 | 480 | 0.20 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2V150() | 200 | 500 | |
| | 22 | 12.5 | 20 | 660 | 0.20 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2V220() | 200 | 500 | |
| | 33 | 33 | 12.5 | 25 | 790 | 0.20 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2V330() | 200 | 500 |
| | | | 16 | 20 | 900 | 0.20 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2V330S() | 100 | 250 |
| | 47 | 47 | 16 | 25 | 1070 | 0.20 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2V470() | 100 | 250 |
| | | | 18 | 20 | 1070 | 0.20 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2V470S() | 100 | 250 |
| | 68 | 68 | 16 | 31.5 | 1530 | 0.20 | 10000 | 0.8 | 7.5 | | EEUEE2V680 | 100 | |
| | | | 18 | 25 | 1330 | 0.20 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2V680S() | 100 | 250 |
| | 82 | 82 | 18 | 25 | 1530 | 0.20 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2V820S() | 100 | 250 |
| | 100 | 100 | 18 | 31.5 | 1600 | 0.20 | 10000 | 0.8 | 7.5 | | EEUEE2V101 | 50 | |

· When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
 · Please refer to the page of "Taping Dimensions".

■ Standard Products

Endurance : 105 °C ϕ 10=8000 h, ϕ 12.5 to ϕ 18=10000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------------------|--------------|----------------|---|--------------------------------------|----------------------|-------------------|------------------|----------------------|----------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | |
| 400 | 10 | 10 | 20 | 430 | 0.24 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2G100() | 200 | 500 |
| | 15 | 12.5 | 20 | 590 | 0.24 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2G150() | 200 | 500 |
| | 22 | 12.5 | 25 | 760 | 0.24 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2G220() | 200 | 500 |
| | | 16 | 20 | 860 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2G220S() | 100 | 250 |
| | 33 | 16 | 20 | 1020 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2G330S() | 100 | 250 |
| | 47 | 16 | 25 | 1180 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2G470() | 100 | 250 |
| | | 18 | 20 | 1180 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2G470S() | 100 | 250 |
| | 68 | 18 | 25 | 1470 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2G680() | 100 | 250 |
| | 82 | 18 | 31.5 | 1645 | 0.24 | 10000 | 0.8 | 7.5 | | EEUEE2G820 | 50 | |
| 100 | 18 | 40 | 2060 | 0.24 | 10000 | 0.8 | 7.5 | | EEUEE2G101 | 50 | | |
| 450 | 10 | 10 | 20 | 330 | 0.24 | 8000 | 0.6 | 5.0 | 5.0 | EEUEE2W100U() | 200 | 500 |
| | | 12.5 | 20 | 490 | 0.24 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2W100() | 200 | 500 |
| | 15 | 12.5 | 25 | 780 | 0.24 | 10000 | 0.6 | 5.0 | 5.0 | EEUEE2W150() | 200 | 500 |
| | 22 | 16 | 20 | 945 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2W220S() | 100 | 250 |
| | 33 | 16 | 25 | 1000 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2W330() | 100 | 250 |
| | | 18 | 20 | 1000 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2W330S() | 100 | 250 |
| | 47 | 16 | 31.5 | 1200 | 0.24 | 10000 | 0.8 | 7.5 | | EEUEE2W470 | 100 | |
| | | 18 | 25 | 1200 | 0.24 | 10000 | 0.8 | 7.5 | 7.5 | EEUEE2W470S() | 100 | 250 |
| | 56 | 18 | 31.5 | 1380 | 0.24 | 10000 | 0.8 | 7.5 | | EEUEE2W560 | 50 | |
| 68 | 18 | 40 | 1800 | 0.24 | 10000 | 0.8 | 7.5 | | EEUEE2W680 | 50 | | |

- When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
- Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **TA** Type: **A**



■ Features

- Endurance: 125 °C 2000 h
- Heat cycle: 1000 cycle -40 °C to +125 °C
- AEC-Q200 qualified*
- RoHS directive compliant

■ Specifications

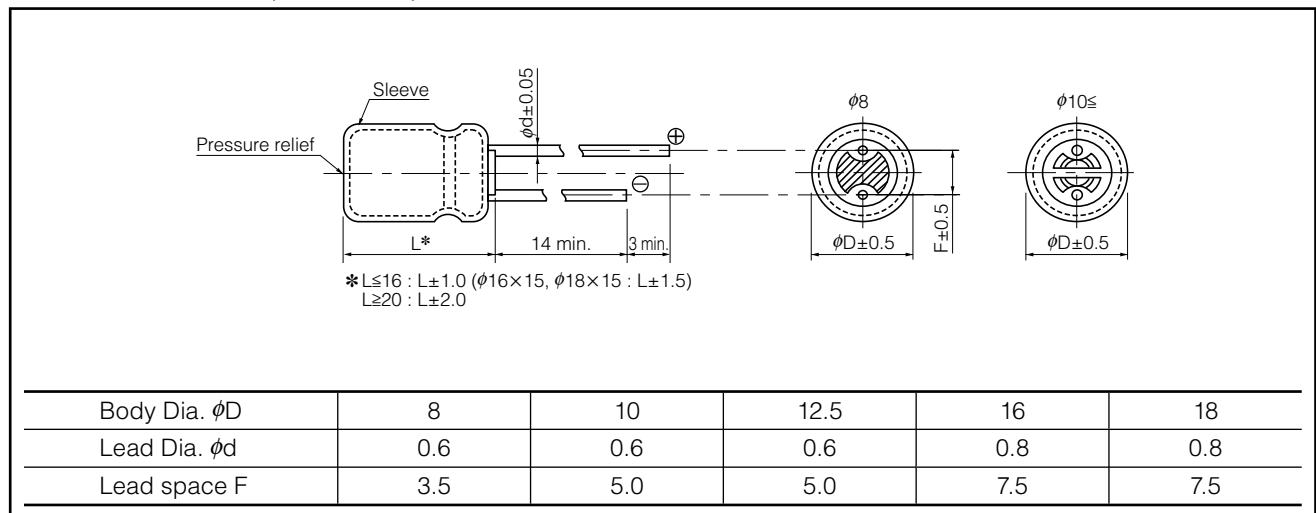
| | | | | | | | | |
|---|---|------------------------------------|------|------|------|------|------|------------------|
| Category Temp. Range | -40 °C to + 125 °C | | | | | | | |
| Rated W.V. Range | 10 V .DC to 63 V .DC | | | | | | | |
| Nominal Cap. Range | 2.2 μF to 4700 μF | | | | | | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | | | | | | |
| DC Leakage Current | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Whichever is greater) | | | | | | | |
| tan δ | W.V.(V) | 10 | 16 | 25 | 35 | 50 | 63 | (120Hz / +20 °C) |
| | tan δ | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | |
| For capacitance value ≥ 1000 μF , add 0.02 per every 1000 μF. | | | | | | | | |
| Endurance | After following life test with DC voltage and +125 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), for 2000 hours, when the capacitors are restored to 20 °C, the capacitors, shall meet the limits specified below. | | | | | | | |
| | Capacitance change | ±30% of initial measured value | | | | | | |
| | tan δ | ≤ 300 % of initial specified value | | | | | | |
| | DC leakage current | ≤ initial specified value | | | | | | |
| Shelf Life | After storage for 1000 hours at +125 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | | | | | | |

■ Frequency correction factor for ripple current

| W.V. (V.DC) | Cap. (μF) | Frequency (Hz) | | | | |
|----------------|--------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 10 to 63 | 1 to 330 | 0.55 | 0.65 | 0.85 | 0.90 | 1.00 |
| | 470 to 1000 | 0.70 | 0.75 | 0.90 | 0.95 | 1.00 |
| | 2200 to 4700 | 0.75 | 0.80 | 0.90 | 0.95 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)



* This product qualify for AEC-Q200, but it has some deviations.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May. 2014

Standard Products

Endurance : 125 °C 2000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|---|---|-------------------|------------------|----------------------|----------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+125 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | |
| 10 | 330 | 8 | 11.5 | 500 | 0.130 | 0.6 | 3.5 | 5.0 | EEUTA1A331() | 200 | 1000 |
| | 470 | 10 | 12.5 | 680 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1A471() | 200 | 500 |
| | 1000 | 10 | 20 | 1100 | 0.057 | 0.6 | 5.0 | 5.0 | EEUTA1A102() | 200 | 500 |
| | | 12.5 | 15 | 1085 | 0.070 | 0.6 | 5.0 | 5.0 | EEUTA1A102S() | 200 | 500 |
| | 2200 | 12.5 | 25 | 1750 | 0.033 | 0.6 | 5.0 | 5.0 | EEUTA1A222L() | 200 | 500 |
| | | 16 | 20 | 1985 | 0.032 | 0.8 | 7.5 | 7.5 | EEUTA1A222() | 100 | 250 |
| | | 18 | 15 | 1800 | 0.042 | 0.8 | 7.5 | 7.5 | EEUTA1A222S() | 100 | 250 |
| | 3300 | 16 | 25 | 2300 | 0.024 | 0.8 | 7.5 | 7.5 | EEUTA1A332() | 100 | 250 |
| | | 18 | 20 | 2250 | 0.031 | 0.8 | 7.5 | 7.5 | EEUTA1A332S() | 100 | 250 |
| | 4700 | 16 | 31.5 | 2710 | 0.020 | 0.8 | 7.5 | | EEUTA1A472 | 100 | |
| 18 | | 25 | 2470 | 0.022 | 0.8 | 7.5 | 7.5 | EEUTA1A472S() | 100 | 250 | |
| 16 | 220 | 8 | 11.5 | 500 | 0.130 | 0.6 | 3.5 | 5.0 | EEUTA1C221() | 200 | 1000 |
| | 330 | 10 | 12.5 | 680 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1C331() | 200 | 500 |
| | 470 | 10 | 16 | 945 | 0.075 | 0.6 | 5.0 | 5.0 | EEUTA1C471() | 200 | 500 |
| | 1000 | 12.5 | 20 | 1490 | 0.042 | 0.6 | 5.0 | 5.0 | EEUTA1C102() | 200 | 500 |
| | | 16 | 15 | 1520 | 0.047 | 0.8 | 7.5 | 7.5 | EEUTA1C102S() | 100 | 250 |
| | 2200 | 16 | 25 | 2300 | 0.024 | 0.8 | 7.5 | 7.5 | EEUTA1C222() | 100 | 250 |
| | | 18 | 20 | 2250 | 0.031 | 0.8 | 7.5 | 7.5 | EEUTA1C222S() | 100 | 250 |
| | 3300 | 16 | 31.5 | 2710 | 0.020 | 0.8 | 7.5 | | EEUTA1C332 | 100 | |
| | | 18 | 25 | 2470 | 0.022 | 0.8 | 7.5 | 7.5 | EEUTA1C332S() | 100 | 250 |
| | 4700 | 18 | 31.5 | 3270 | 0.018 | 0.8 | 7.5 | | EEUTA1C472 | 50 | |
| 25 | 100 | 8 | 11.5 | 500 | 0.130 | 0.6 | 3.5 | 5.0 | EEUTA1E101() | 200 | 1000 |
| | 220 | 10 | 12.5 | 680 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1E221() | 200 | 500 |
| | 330 | 10 | 16 | 945 | 0.075 | 0.6 | 5.0 | 5.0 | EEUTA1E331() | 200 | 500 |
| | 470 | 10 | 20 | 1100 | 0.057 | 0.6 | 5.0 | 5.0 | EEUTA1E471() | 200 | 500 |
| | | 12.5 | 15 | 1085 | 0.070 | 0.6 | 5.0 | 5.0 | EEUTA1E471S() | 200 | 500 |
| | 1000 | 12.5 | 25 | 1750 | 0.033 | 0.6 | 5.0 | 5.0 | EEUTA1E102L() | 200 | 500 |
| | | 16 | 20 | 1985 | 0.032 | 0.8 | 7.5 | 7.5 | EEUTA1E102() | 100 | 250 |
| | | 18 | 15 | 1800 | 0.042 | 0.8 | 7.5 | 7.5 | EEUTA1E102S() | 100 | 250 |
| | 2200 | 16 | 31.5 | 2710 | 0.020 | 0.8 | 7.5 | | EEUTA1E222 | 100 | |
| | | 18 | 25 | 2470 | 0.022 | 0.8 | 7.5 | 7.5 | EEUTA1E222S() | 100 | 250 |
| 3300 | 18 | 35.5 | 3310 | 0.017 | 0.8 | 7.5 | | EEUTA1E332 | 50 | | |
| 35 | 100 | 10 | 12.5 | 555 | 0.180 | 0.6 | 5.0 | 5.0 | EEUTA1V101() | 200 | 500 |
| | 220 | 10 | 16 | 765 | 0.130 | 0.6 | 5.0 | 5.0 | EEUTA1V221() | 200 | 500 |
| | 330 | 10 | 20 | 930 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1V331() | 200 | 500 |
| | 470 | 12.5 | 20 | 1330 | 0.070 | 0.6 | 5.0 | 5.0 | EEUTA1V471() | 200 | 500 |
| | | 16 | 15 | 1450 | 0.088 | 0.8 | 7.5 | 7.5 | EEUTA1V471S() | 100 | 250 |
| | 1000 | 16 | 25 | 2010 | 0.037 | 0.8 | 7.5 | 7.5 | EEUTA1V102() | 100 | 250 |
| | | 18 | 20 | 2180 | 0.046 | 0.8 | 7.5 | 7.5 | EEUTA1V102S() | 100 | 250 |
| | 2200 | 18 | 35.5 | 2790 | 0.025 | 0.8 | 7.5 | | EEUTA1V222 | 50 | |

- When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
- Please refer to the page of "Taping Dimensions".

Standard Products

Endurance : 125 °C 2000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|---|---|-------------------|------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (100 kHz) (+125 °C) (mA r.m.s.) | Impedance (100 kHz) (+20 °C) (Ω) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | |
| 50 | 1 | 8 | 11.5 | 35 | 2.00 | 0.6 | 3.5 | 5.0 | EEUTA1H1R0()*** | 200 | 1000 |
| | 10 | 8 | 11.5 | 180 | 0.950 | 0.6 | 3.5 | 5.0 | EEUTA1H100() | 200 | 1000 |
| | 22 | 8 | 11.5 | 250 | 0.650 | 0.6 | 3.5 | 5.0 | EEUTA1H220() | 200 | 1000 |
| | 33 | 8 | 11.5 | 300 | 0.450 | 0.6 | 3.5 | 5.0 | EEUTA1H330() | 200 | 1000 |
| | 47 | 8 | 11.5 | 440 | 0.350 | 0.6 | 3.5 | 5.0 | EEUTA1H470S() | 200 | 1000 |
| | 100 | 10 | 12.5 | 555 | 0.180 | 0.6 | 5.0 | 5.0 | EEUTA1H101() | 200 | 500 |
| | 220 | 10 | 20 | 930 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1H221() | 200 | 500 |
| | 330 | 12.5 | 20 | 1330 | 0.070 | 0.6 | 5.0 | 5.0 | EEUTA1H331() | 200 | 500 |
| | | 16 | 15 | 1450 | 0.088 | 0.8 | 7.5 | 7.5 | EEUTA1H331S() | 100 | 250 |
| | 470 | 12.5 | 25 | 1650 | 0.055 | 0.6 | 5.0 | 5.0 | EEUTA1H471L() | 200 | 500 |
| | | 16 | 20 | 1650 | 0.053 | 0.8 | 7.5 | 7.5 | EEUTA1H471() | 100 | 250 |
| | | 18 | 15 | 1710 | 0.075 | 0.8 | 7.5 | 7.5 | EEUTA1H471S() | 100 | 250 |
| | 1000 | 16 | 31.5 | 2430 | 0.031 | 0.8 | 7.5 | | EEUTA1H102 | 100 | |
| | | 18 | 25 | 2350 | 0.032 | 0.8 | 7.5 | 7.5 | EEUTA1H102S() | 100 | 250 |
| | 63 | 22 | 8 | 11.5 | 310 | 0.470 | 0.6 | 3.5 | 5.0 | EEUTA1J220() | 200 |
| 33 | | 10 | 12.5 | 410 | 0.360 | 0.6 | 5.0 | 5.0 | EEUTA1J330() | 200 | 500 |
| 47 | | 10 | 16 | 460 | 0.270 | 0.6 | 5.0 | 5.0 | EEUTA1J470() | 200 | 500 |
| 100 | | 10 | 20 | 680 | 0.205 | 0.6 | 5.0 | 5.0 | EEUTA1J101() | 200 | 500 |
| 220 | | 12.5 | 25 | 1325 | 0.100 | 0.6 | 5.0 | 5.0 | EEUTA1J221L() | 200 | 500 |
| | | 16 | 20 | 1360 | 0.085 | 0.8 | 7.5 | 7.5 | EEUTA1J221() | 100 | 250 |
| | | 18 | 15 | 1300 | 0.120 | 0.8 | 7.5 | 7.5 | EEUTA1J221S() | 100 | 250 |
| 330 | | 16 | 25 | 1660 | 0.070 | 0.8 | 7.5 | 7.5 | EEUTA1J331() | 100 | 250 |
| | | 18 | 20 | 1760 | 0.077 | 0.8 | 7.5 | 7.5 | EEUTA1J331S() | 100 | 250 |
| 470 | | 16 | 31.5 | 2055 | 0.060 | 0.8 | 7.5 | | EEUTA1J471 | 100 | |
| | | 18 | 25 | 1990 | 0.060 | 0.8 | 7.5 | 7.5 | EEUTA1J471S() | 100 | 250 |

· When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **TP** Type: **A**



■ Features

- Endurance: 125 °C 2000 h to 5000 h or 135 °C 1000 h to 2000 h
- Smaller than series TA
- High ripple current (at high frequency) : 20 to 40% higher than TA series
- AEC-Q200 qualified*
- RoHS directive compliant

■ Specifications

| | | | |
|---|--|------------------------------------|------|
| Category Temp. Range | -40 °C to + 135 °C | | |
| Rated W.V. Range | 25 V .DC to 35 V .DC | | |
| Nominal Cap. Range | 100 μF to 5100 μF | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | |
| DC Leakage Current | I ≤ 0.01 CV After 2 minutes | | |
| tan δ | W.V.(V) | 25 | 35 |
| | tan δ | 0.14 | 0.12 |
| (120Hz / +20 °C) For capacitance value ≥ 1000 μF , add 0.02 per every 1000 μF. | | | |
| Endurance 1 | After following life test with DC voltage and +125 °C±2 °C ripple current value applied. (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. Duration φ8 : 2000 hours, φ10 : 3000 hours, φ12.5 : 4000 hours, φ16 to φ18 : 5000 hours | | |
| | Capacitance change | ±30% of initial measured value | |
| | tan δ | ≤ 300 % of initial specified value | |
| | DC leakage current | ≤ initial specified value | |
| Endurance 2 | After following life test with DC voltage and +135 °C±2 °C ripple current value applied. (The sum of DC and ripple peak voltage shall not exceed the rated working voltage) when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. Duration φ8 : 1000 hours, φ10 to φ18 : 2000 hours | | |
| | Capacitance change | ±30% of initial measured value | |
| | tan δ | ≤ 300 % of initial specified value | |
| | DC leakage current | ≤ initial specified value | |
| Shelf Life 1 | After storage for 1000 hours at +125 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | |
| Shelf Life 2 | After storage for 1000 hours at +135 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | |

■ Frequency correction factor for ripple current

| W.V. (V.DC) | Cap. (μF) | Frequency (Hz) | | | | |
|----------------|-------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 25 to 35 | to 330 | 0.55 | 0.65 | 0.85 | 0.90 | 1.00 |
| | 390 to 1000 | 0.70 | 0.75 | 0.90 | 0.95 | 1.00 |
| | 1200 to | 0.75 | 0.80 | 0.90 | 0.95 | 1.00 |

■ Dimensions in mm (not to scale)

(Unit : mm)

| | | | | | |
|--------------|-----|-----|------|-----|-----|
| Body Dia. φD | 8 | 10 | 12.5 | 16 | 18 |
| Lead Dia. φd | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| Lead space F | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |

* This product qualify for AEC-Q200, but it has some deviations.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

■ Standard Products

| W.V. | Cap. (±20 %) | Case size | | Specification | | | | | | Lead Length | | | Part No. * : Substandard (E24series numbers) | Min. Packaging Q'ty | |
|------|-----------------|-----------|--------|---|---|---------------------------------------|--------------------------------|--------------------------------|--------------------------------|-------------|------------|-----------------|--|---------------------|--------|
| | | Dia. | Length | Ripple Current (100 kHz) (+125 °C) (mA r.m.s.) | Ripple Current (100 kHz) (+135 °C) (mA r.m.s.) | E.S.R (100 kHz) (+20 °C) (Ω) | tan δ (120 kHz) (+20 °C) | 125 °C Endurance (hours) | 135 °C Endurance (hours) | Lead Dia. | Lead Space | | | Straight Leads | Taping |
| | | | | | | | | | | | Straight | Taping *B | | | |
| (V) | (μF) | (mm) | (mm) | (mA r.m.s.) | (mA r.m.s.) | (Ω) | | | | (mm) | (mm) | (mm) | | | |
| 25 | 220 | 10 | 12.5 | 580 | 500 | 0.190 | 0.14 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E221() | 200 | 500 |
| | 330 | 10 | 16 | 1100 | 945 | 0.130 | 0.14 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E331() | 200 | 500 |
| | 470 | 8 | 20 | 1060 | 760 | 0.067 | 0.14 | 2000 | 1000 | 0.6 | 3.5 | 5.0 | EEUTP1E471L() | 200 | 1000 |
| | | 10 | 16 | 1100 | 945 | 0.130 | 0.14 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E471() | 200 | 500 |
| | 510 | 10 | 16 | 1100 | 945 | 0.130 | 0.14 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E511()* | 200 | 500 |
| | 820 | 10 | 20 | 1540 | 1100 | 0.052 | 0.14 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E821() | 200 | 500 |
| | 1000 | 12.5 | 20 | 1860 | 1490 | 0.038 | 0.14 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E102() | 200 | 500 |
| | 1200 | 12.5 | 20 | 1860 | 1490 | 0.038 | 0.14 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E122() | 200 | 500 |
| | 1800 | 12.5 | 25 | 2180 | 1750 | 0.030 | 0.14 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1E182() | 200 | 500 |
| | | 16 | 20 | 2380 | 1985 | 0.029 | 0.14 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E182S() | 100 | 250 |
| | 2000 | 16 | 20 | 2380 | 1985 | 0.029 | 0.16 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E202S()* | 100 | 250 |
| | 2200 | 16 | 25 | 2760 | 2300 | 0.022 | 0.16 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E222() | 100 | 250 |
| | | 18 | 20 | 2700 | 2250 | 0.028 | 0.16 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E222S() | 100 | 250 |
| | 2700 | 16 | 25 | 2760 | 2300 | 0.022 | 0.16 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E272() | 100 | 250 |
| | | 18 | 20 | 2700 | 2250 | 0.028 | 0.16 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E272S() | 100 | 250 |
| | 3300 | 16 | 31.5 | 3250 | 2710 | 0.018 | 0.18 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1E332 | 100 | |
| | | 18 | 25 | 2960 | 2470 | 0.020 | 0.18 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E332S() | 100 | 250 |
| | 3900 | 16 | 31.5 | 3250 | 2710 | 0.018 | 0.18 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1E392 | 100 | |
| | | 18 | 25 | 2960 | 2470 | 0.020 | 0.18 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1E392S() | 100 | 250 |
| | 4700 | 18 | 31.5 | 3480 | 2900 | 0.016 | 0.20 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1E472 | 50 | |
| 5100 | 18 | 31.5 | 3480 | 2900 | 0.016 | 0.22 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1E512* | 50 | | |
| 35 | 100 | 10 | 12.5 | 580 | 500 | 0.190 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V101() | 200 | 500 |
| | 120 | 10 | 12.5 | 580 | 500 | 0.190 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V121() | 200 | 500 |
| | 220 | 8 | 20 | 1060 | 760 | 0.067 | 0.12 | 2000 | 1000 | 0.6 | 3.5 | 5.0 | EEUTP1V221L() | 200 | 1000 |
| | | 10 | 16 | 1100 | 945 | 0.130 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V221() | 200 | 500 |
| | 270 | 8 | 20 | 1060 | 760 | 0.067 | 0.12 | 2000 | 1000 | 0.6 | 3.5 | 5.0 | EEUTP1V271L() | 200 | 1000 |
| | | 10 | 16 | 1100 | 945 | 0.130 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V271() | 200 | 500 |
| | 330 | 10 | 20 | 1540 | 1100 | 0.052 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V331() | 200 | 500 |
| | 390 | 10 | 20 | 1540 | 1100 | 0.052 | 0.12 | 3000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V391() | 200 | 500 |
| | 470 | 12.5 | 20 | 1860 | 1490 | 0.038 | 0.12 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V471() | 200 | 500 |
| | 560 | 12.5 | 20 | 1860 | 1490 | 0.038 | 0.12 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V561() | 200 | 500 |
| | 620 | 12.5 | 20 | 1860 | 1490 | 0.038 | 0.12 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V621()* | 200 | 500 |
| | 820 | 12.5 | 25 | 2180 | 1750 | 0.030 | 0.12 | 4000 | 2000 | 0.6 | 5.0 | 5.0 | EEUTP1V821() | 200 | 500 |
| | 1000 | 16 | 20 | 2380 | 1985 | 0.029 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V102() | 100 | 250 |
| | 1200 | 16 | 20 | 2380 | 1985 | 0.029 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V122() | 100 | 250 |
| | 1500 | 16 | 25 | 2760 | 2300 | 0.022 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V152() | 100 | 250 |
| | | 18 | 20 | 2700 | 2250 | 0.028 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V152S() | 100 | 250 |
| | 1600 | 16 | 25 | 2760 | 2300 | 0.022 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V162()* | 100 | 250 |
| | 1800 | 16 | 31.5 | 3250 | 2710 | 0.018 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1V182 | 100 | |
| | | 18 | 25 | 2960 | 2470 | 0.020 | 0.12 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V182S() | 100 | 250 |
| | 2000 | 16 | 31.5 | 3250 | 2710 | 0.018 | 0.14 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1V202* | 100 | |
| 18 | | 25 | 2960 | 2470 | 0.020 | 0.14 | 5000 | 2000 | 0.8 | 7.5 | 7.5 | EEUTP1V202S()* | 100 | 250 | |
| 2200 | 18 | 31.5 | 3480 | 2900 | 0.016 | 0.14 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1V222 | 50 | | |
| 2700 | 18 | 31.5 | 3480 | 2900 | 0.016 | 0.14 | 5000 | 2000 | 0.8 | 7.5 | | EEUTP1V272 | 50 | | |

· When requesting taped product, please put the letter "B" between the "()". Lead wire pitch *B=5 mm, 7.5 mm.
 · Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **NHG** Type: **A**



■ Features

- Endurance : 105 °C 1000 h to 2000 h
- RoHS directive compliant

■ Specifications

| | | |
|-----------------------|---|---|
| Category Temp. Range | -55 °C to +105 °C | -25 °C to +105 °C |
| Rated W.V. Range | 6.3 V.DC to 100 V.DC | 160 V.DC to 450 V.DC |
| Nominal Cap. Range | 2.2 μF to 22000 μF | 1 μF to 330 μF |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | $I \leq 0.01 CV$ or $3 (\mu A)$ After 2 minutes (Which is greater) | $I \leq 0.06 CV + 10 (\mu A)$ After 2 minutes |
| tan δ | Please see the attached standard products list | |
| Endurance | <p>After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), When the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below.</p> <p>Duration : 6.3 V.DC to 100 V.DC : (φ5 to φ8)=1000 hours, (φ10 to φ18)=2000 hours 160 V.DC to 450 V.DC : 2000 hours</p> | |
| | Capacitance change | ±20 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap. (μF) | Frequency (Hz) | | | | |
|------------|---------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 6.3 to 100 | 2.2 to 33 | 0.75 | 1.00 | 1.55 | 1.80 | 2.00 |
| | 47 to 470 | 0.80 | 1.00 | 1.35 | 1.50 | 1.50 |
| | 1000 to 22000 | 0.85 | 1.00 | 1.10 | 1.15 | 1.15 |
| 160 to 450 | 1 to 330 | 0.80 | 1.00 | 1.35 | 1.50 | 1.50 |

■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May. 2014

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|--|-------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 6.3 | 220 | 5 | 11 | 140 | 0.28 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA0JHG221() | 200 | 2000 |
| | 470 | 6.3 | 11.2 | 230 | 0.28 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA0JHG471() | 200 | 2000 |
| | 1000 | 8 | 11.5 | 380 | 0.28 | 1000 | 0.6 | 3.5 | 5.0 | | ECA0JHG102() | 200 | 1000 |
| | 2200 | 10 | 16 | 710 | 0.30 | 2000 | 0.6 | 5.0 | 5.0 | | ECA0JHG222() | 200 | 500 |
| | 3300 | 10 | 20 | 840 | 0.32 | 2000 | 0.6 | 5.0 | 5.0 | | ECA0JHG332() | 200 | 500 |
| | 4700 | 12.5 | 20 | 1090 | 0.34 | 2000 | 0.6 | 5.0 | 5.0 | | ECA0JHG472() | 200 | 500 |
| | 6800 | 12.5 | 25 | 1350 | 0.38 | 2000 | 0.6 | 5.0 | 5.0 | | ECA0JHG682() | 200 | 500 |
| | 10000 | 16 | 25 | 1650 | 0.46 | 2000 | 0.8 | 7.5 | 7.5 | | ECA0JHG103() | 100 | 250 |
| | 15000 | 16 | 31.5 | 2010 | 0.56 | 2000 | 0.8 | 7.5 | | | ECA0JHG153 | 100 | |
| 22000 | 18 | 35.5 | 2350 | 0.70 | 2000 | 0.8 | 7.5 | | | ECA0JHG223 | 50 | | |
| 10 | 330 | 6.3 | 11.2 | 200 | 0.24 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1AHG331() | 200 | 2000 |
| | 470 | 8 | 11.5 | 250 | 0.24 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1AHG471() | 200 | 1000 |
| | 1000 | 10 | 12.5 | 460 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1AHG102() | 200 | 500 |
| | 2200 | 10 | 20 | 760 | 0.26 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1AHG222() | 200 | 500 |
| | 3300 | 12.5 | 20 | 1000 | 0.28 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1AHG332() | 200 | 500 |
| | 4700 | 12.5 | 25 | 1260 | 0.30 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1AHG472() | 200 | 500 |
| | 6800 | 16 | 25 | 1570 | 0.34 | 2000 | 0.8 | 7.5 | 7.5 | | ECA1AHG682() | 100 | 250 |
| | 10000 | 16 | 31.5 | 1890 | 0.42 | 2000 | 0.8 | 7.5 | | | ECA1AHG103 | 100 | |
| 15000 | 18 | 35.5 | 2180 | 0.52 | 2000 | 0.8 | 7.5 | | | ECA1AHG153 | 50 | | |
| 16 | 100 | 5 | 11 | 110 | 0.20 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CHG101() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 180 | 0.20 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1CHG221() | 200 | 2000 |
| | 330 | 8 | 11.5 | 260 | 0.20 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1CHG331() | 200 | 1000 |
| | 470 | 8 | 11.5 | 310 | 0.20 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1CHG471() | 200 | 1000 |
| | 1000 | 10 | 16 | 560 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1CHG102() | 200 | 500 |
| | 2200 | 12.5 | 20 | 920 | 0.22 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1CHG222() | 200 | 500 |
| | 3300 | 12.5 | 25 | 1170 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1CHG332() | 200 | 500 |
| | 4700 | 16 | 25 | 1480 | 0.26 | 2000 | 0.8 | 7.5 | 7.5 | | ECA1CHG472() | 100 | 250 |
| | 6800 | 16 | 31.5 | 1780 | 0.30 | 2000 | 0.8 | 7.5 | | | ECA1CHG682 | 100 | |
| | 10000 | 18 | 35.5 | 2060 | 0.38 | 2000 | 0.8 | 7.5 | | | ECA1CHG103 | 50 | |
| 25 | 47 | 5 | 11 | 91 | 0.16 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1EHG470() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 130 | 0.16 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1EHG101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 230 | 0.16 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1EHG221() | 200 | 1000 |
| | 330 | 8 | 11.5 | 310 | 0.16 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1EHG331() | 200 | 1000 |
| | 470 | 10 | 12.5 | 380 | 0.16 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1EHG471() | 200 | 500 |
| | 1000 | 10 | 20 | 680 | 0.16 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1EHG102() | 200 | 500 |
| | 2200 | 12.5 | 25 | 1090 | 0.18 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1EHG222() | 200 | 500 |
| | 3300 | 16 | 25 | 1400 | 0.20 | 2000 | 0.8 | 7.5 | 7.5 | | ECA1EHG332() | 100 | 250 |
| | 4700 | 16 | 31.5 | 1750 | 0.22 | 2000 | 0.8 | 7.5 | | | ECA1EHG472 | 100 | |
| 6800 | 18 | 35.5 | 2040 | 0.26 | 2000 | 0.8 | 7.5 | | | ECA1EHG682 | 50 | | |
| 35 | 47 | 5 | 11 | 90 | 0.14 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1VHG470() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 150 | 0.14 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1VHG101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 270 | 0.14 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1VHG221() | 200 | 1000 |
| | 330 | 10 | 12.5 | 350 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1VHG331() | 200 | 500 |
| | 470 | 10 | 16 | 460 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1VHG471() | 200 | 500 |
| | 1000 | 12.5 | 20 | 810 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1VHG102() | 200 | 500 |
| | 2200 | 16 | 25 | 1260 | 0.16 | 2000 | 0.8 | 7.5 | 7.5 | | ECA1VHG222() | 100 | 250 |
| | 3300 | 16 | 31.5 | 1610 | 0.18 | 2000 | 0.8 | 7.5 | | | ECA1VHG332 | 100 | |
| | 4700 | 18 | 35.5 | 1910 | 0.20 | 2000 | 0.8 | 7.5 | | | ECA1VHG472 | 50 | |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|--|-------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 50 | 0.1 | 5 | 11 | 1.1 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG0R1()*** | 200 | 2000 |
| | 0.22 | 5 | 11 | 2.3 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHGR22()*** | 200 | 2000 |
| | 0.33 | 5 | 11 | 3.5 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHGR33()*** | 200 | 2000 |
| | 0.47 | 5 | 11 | 5 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHGR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 10 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG010()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 18 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 22 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 26 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG4R7() | 200 | 2000 |
| | 10 | 5 | 11 | 39 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG100() | 200 | 2000 |
| | 22 | 5 | 11 | 65 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG220() | 200 | 2000 |
| | 33 | 5 | 11 | 90 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HHG330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 110 | 0.12 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1HHG470() | 200 | 2000 |
| | 100 | 8 | 11.5 | 180 | 0.12 | 1000 | 0.6 | 3.5 | 5.0 | | ECA1HHG101() | 200 | 1000 |
| | 220 | 10 | 12.5 | 300 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1HHG221() | 200 | 500 |
| | 330 | 10 | 16 | 410 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1HHG331() | 200 | 500 |
| | 470 | 10 | 20 | 530 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1HHG471() | 200 | 500 |
| | 1000 | 12.5 | 25 | 950 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1HHG102() | 200 | 500 |
| 2200 | 16 | 31.5 | 1470 | 0.14 | 2000 | 0.8 | 7.5 | | | ECA1HHG222 | 100 | | |
| 3300 | 18 | 35.5 | 1770 | 0.16 | 2000 | 0.8 | 7.5 | | | ECA1HHG332 | 50 | | |
| 63 | 10 | 5 | 11 | 46 | 0.10 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1JHG100() | 200 | 2000 |
| | 22 | 5 | 11 | 71 | 0.10 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1JHG220() | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 100 | 0.10 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1JHG330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 120 | 0.10 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1JHG470() | 200 | 2000 |
| | 100 | 10 | 12.5 | 215 | 0.10 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1JHG101() | 200 | 500 |
| | 220 | 10 | 16 | 335 | 0.10 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1JHG221() | 200 | 500 |
| | 330 | 10 | 20 | 510 | 0.10 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1JHG331() | 200 | 500 |
| | 470 | 12.5 | 20 | 640 | 0.10 | 2000 | 0.6 | 5.0 | 5.0 | | ECA1JHG471() | 200 | 500 |
| | 1000 | 16 | 25 | 930 | 0.10 | 2000 | 0.8 | 7.5 | 7.5 | | ECA1JHG102() | 100 | 250 |
| | 2200 | 18 | 35.5 | 1610 | 0.12 | 2000 | 0.8 | 7.5 | | | ECA1JHG222 | 50 | |
| 100 | 0.47 | 5 | 11 | 9 | 0.08 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AHGR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 14 | 0.08 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AHG010()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 21 | 0.08 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AHG2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 31 | 0.08 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AHG3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 38 | 0.08 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AHG4R7() | 200 | 2000 |
| | 10 | 6.3 | 11.2 | 54 | 0.08 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2AHG100() | 200 | 2000 |
| | 22 | 6.3 | 11.2 | 93 | 0.08 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2AHG220() | 200 | 2000 |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------|--------------|----------------|--|-------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 100 | 33 | 8 | 11.5 | 130 | 0.08 | 1000 | 0.6 | 3.5 | 5.0 | | ECA2AHG330() | 200 | 1000 |
| | 47 | 10 | 12.5 | 165 | 0.08 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2AHG470() | 200 | 500 |
| | 100 | 10 | 20 | 265 | 0.08 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2AHG101() | 200 | 500 |
| | 220 | 12.5 | 25 | 440 | 0.08 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2AHG221() | 200 | 500 |
| | 330 | 16 | 25 | 540 | 0.08 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2AHG331() | 100 | 250 |
| | 470 | 16 | 25 | 715 | 0.08 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2AHG471() | 100 | 250 |
| | 1000 | 18 | 35.5 | 985 | 0.08 | 2000 | 0.8 | 7.5 | | | ECA2AHG102 | 50 | |
| 160 | 1 | 6.3 | 11.2 | 17 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CHG010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 25 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CHG2R2() | 200 | 2000 |
| | 3.3 | 6.3 | 11.2 | 36 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CHG3R3() | 200 | 2000 |
| | 4.7 | 6.3 | 11.2 | 43 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CHG4R7() | 200 | 2000 |
| | 10 | 10 | 12.5 | 70 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2CHG100() | 200 | 500 |
| | 22 | 10 | 20 | 130 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2CHG220() | 200 | 500 |
| | 33 | 10 | 20 | 180 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2CHG330() | 200 | 500 |
| | 47 | 12.5 | 20 | 220 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2CHG470() | 200 | 500 |
| | 100 | 16 | 25 | 335 | 0.15 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2CHG101() | 100 | 250 |
| | 220 | 16 | 31.5 | 540 | 0.15 | 2000 | 0.8 | 7.5 | | | ECA2CHG221 | 100 | |
| 330 | 18 | 31.5 | 705 | 0.15 | 2000 | 0.8 | 7.5 | | | ECA2CHG331 | 50 | | |
| 200 | 1 | 6.3 | 11.2 | 17 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DHG010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 25 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DHG2R2() | 200 | 2000 |
| | 3.3 | 6.3 | 11.2 | 36 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DHG3R3() | 200 | 2000 |
| | 4.7 | 8 | 11.5 | 50 | 0.15 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2DHG4R7() | 200 | 1000 |
| | 10 | 10 | 16 | 80 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2DHG100() | 200 | 500 |
| | 22 | 10 | 20 | 140 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2DHG220() | 200 | 500 |
| | 33 | 12.5 | 20 | 190 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2DHG330() | 200 | 500 |
| | 47 | 12.5 | 20 | 220 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2DHG470() | 200 | 500 |
| | 100 | 16 | 25 | 335 | 0.15 | 2000 | 0.8 | 7.5 | 7.5 | 2.5 | ECA2DHG101() | 100 | 250 |
| | 220 | 18 | 31.5 | 575 | 0.15 | 2000 | 0.8 | 7.5 | | | ECA2DHG221 | 50 | |
| 250 | 1 | 6.3 | 11.2 | 17 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2EHG010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 29 | 0.15 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2EHG2R2() | 200 | 2000 |
| | 3.3 | 8 | 11.5 | 42 | 0.15 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2EHG3R3 | 200 | 1000 |
| | 4.7 | 8 | 11.5 | 50 | 0.15 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2EHG4R7() | 200 | 1000 |
| | 10 | 10 | 16 | 88 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2EHG100() | 200 | 500 |
| | 22 | 12.5 | 20 | 155 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2EHG220() | 200 | 500 |
| | 33 | 12.5 | 20 | 190 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2EHG330() | 200 | 500 |
| | 47 | 12.5 | 25 | 230 | 0.15 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2EHG470() | 200 | 500 |
| | 100 | 16 | 31.5 | 365 | 0.15 | 2000 | 0.8 | 7.5 | | | ECA2EHG101 | 100 | |
| 350 | 1 | 6.3 | 11.2 | 18 | 0.20 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2VHG010() | 200 | 2000 |
| | 2.2 | 8 | 11.5 | 31 | 0.20 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2VHG2R2() | 200 | 1000 |
| | 3.3 | 10 | 12.5 | 38 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2VHG3R3() | 200 | 500 |
| | 4.7 | 10 | 16 | 50 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2VHG4R7() | 200 | 500 |
| | 10 | 10 | 20 | 82 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2VHG100() | 200 | 500 |
| | 22 | 12.5 | 20 | 130 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2VHG220() | 200 | 500 |
| | 33 | 16 | 25 | 195 | 0.20 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2VHG330() | 100 | 250 |
| | 47 | 16 | 25 | 230 | 0.20 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2VHG470() | 100 | 250 |
| | 100 | 18 | 31.5 | 375 | 0.20 | 2000 | 0.8 | 7.5 | | | ECA2VHG101 | 50 | |

· When requesting taped product, please put the letter "B" or "I" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

■ Standard Products

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|--|-------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 400 | 1 | 6.3 | 11.2 | 18 | 0.24 | 2000 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2GHG010() | 200 | 2000 |
| | 2.2 | 8 | 11.5 | 30 | 0.24 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2GHG2R2() | 200 | 1000 |
| | 3.3 | 10 | 12.5 | 40 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2GHG3R3() | 200 | 500 |
| | 4.7 | 10 | 16 | 50 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2GHG4R7() | 200 | 500 |
| | 10 | 10 | 20 | 80 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2GHG100() | 200 | 500 |
| | 22 | 12.5 | 25 | 145 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2GHG220() | 200 | 500 |
| | 33 | 16 | 25 | 195 | 0.24 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2GHG330() | 100 | 250 |
| | 47 | 16 | 31.5 | 250 | 0.24 | 2000 | 0.8 | 7.5 | | | ECA2GHG470 | 100 | |
| 450 | 1 | 8 | 11.5 | 18 | 0.24 | 2000 | 0.6 | 3.5 | 5.0 | | ECA2WHG010() | 200 | 1000 |
| | 2.2 | 10 | 12.5 | 29 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2WHG2R2() | 200 | 500 |
| | 3.3 | 10 | 16 | 41 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2WHG3R3() | 200 | 500 |
| | 4.7 | 10 | 20 | 49 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2WHG4R7() | 200 | 500 |
| | 10 | 12.5 | 20 | 75 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | ECA2WHG100() | 200 | 500 |
| | 22 | 16 | 25 | 115 | 0.24 | 2000 | 0.8 | 7.5 | 7.5 | | ECA2WHG220() | 100 | 250 |
| | 33 | 16 | 31.5 | 155 | 0.24 | 2000 | 0.8 | 7.5 | | | ECA2WHG330 | 100 | |

- When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
- Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **HD** Type: **A**



■ Features

- Endurance : 105 °C 1000 h to 2000 h
- Minaturize, Higher Capacitance :
1 Size Minaturized Product of Current A-NHG
- RoHS directive compliant

■ Specifications

| | | |
|-----------------------|---|------------------------------------|
| Category Temp. Range | -55 °C to +105 °C | |
| Rated W.V. Range | 10 V.DC to 50 V.DC | |
| Nominal Cap. Range | 2.2 μF to 22000 μF | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Which is greater) | |
| tan δ | Please see the attached standard products list | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), When the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. Duration : φ5 to φ8=1000 hours, φ10 to φ18=2000 hours | |
| | Capacitance change | ±20 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap. (μF) | Frequency (Hz) | | | | |
|------------|---------------|----------------|------|------|------|-------|
| | | 60 | 120 | 1 k | 10 k | 100 k |
| 10 to 50 | 2.2 to 33 | 0.75 | 1.00 | 1.55 | 1.80 | 2.00 |
| | 47 to 470 | 0.80 | 1.00 | 1.35 | 1.50 | 1.50 |
| | 1000 to 22000 | 0.85 | 1.00 | 1.10 | 1.15 | 1.15 |

■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May. 2014

Standard Products

Endurance : 105 °C ϕ 5 to ϕ 8=1000 h, ϕ 10 to ϕ 18=2000 h

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------------|--------------|----------------|--|---------------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|---------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | $\tan \delta$ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 10 | 330 | 6.3 | 11.2 | 200 | 0.24 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1A331() | 200 | 2000 |
| | 470 | 8 | 11.5 | 250 | 0.24 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1A471() | 200 | 1000 |
| | 1000 | 10 | 12.5 | 460 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1A102() | 200 | 500 |
| | 2200 | 10 | 16 | 760 | 0.26 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1A222() | 200 | 500 |
| | 4700 | 12.5 | 20 | 1260 | 0.30 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1A472() | 200 | 500 |
| | 6800 | 12.5 | 25 | 1570 | 0.34 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1A682() | 200 | 500 |
| | 10000 | 16 | 25 | 1890 | 0.42 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1A103() | 100 | 250 |
| | 15000 | 16 | 31.5 | 2180 | 0.52 | 2000 | 0.8 | 7.5 | | | EEUHD1A153 | 100 | |
| 16 | 22000 | 18 | 35.5 | 2400 | 0.66 | 2000 | 0.8 | 7.5 | | | EEUHD1A223 | 50 | |
| | 100 | 5 | 11 | 110 | 0.20 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1C101() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 180 | 0.20 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1C221() | 200 | 2000 |
| | 330 | 8 | 11.5 | 260 | 0.20 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1C331() | 200 | 1000 |
| | 470 | 8 | 11.5 | 310 | 0.20 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1C471() | 200 | 1000 |
| | 3300 | 12.5 | 20 | 1170 | 0.24 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1C332() | 200 | 500 |
| | 4700 | 12.5 | 25 | 1480 | 0.26 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1C472() | 200 | 500 |
| | 6800 | 16 | 25 | 1780 | 0.30 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1C682() | 100 | 250 |
| | 8200 | 16 | 25 | 1780 | 0.34 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1C822() | 100 | 250 |
| | 10000 | 16 | 31.5 | 2060 | 0.38 | 2000 | 0.8 | 7.5 | | | EEUHD1C103 | 100 | |
| 25 | 15000 | 18 | 35.5 | 2210 | 0.48 | 2000 | 0.8 | 7.5 | | | EEUHD1C153 | 50 | |
| | 47 | 5 | 11 | 91 | 0.16 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1E470() | 200 | 2000 |
| | 68 | 5 | 11 | 91 | 0.16 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1E680() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 130 | 0.16 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1E101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 230 | 0.16 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1E221() | 200 | 1000 |
| | 330 | 8 | 11.5 | 310 | 0.16 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1E331() | 200 | 1000 |
| | 470 | 10 | 12.5 | 380 | 0.16 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1E471() | 200 | 500 |
| | 1000 | 10 | 16 | 680 | 0.16 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1E102() | 200 | 500 |
| | 2200 | 12.5 | 20 | 1090 | 0.18 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1E222() | 200 | 500 |
| | 3300 | 12.5 | 25 | 1400 | 0.20 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1E332() | 200 | 500 |
| | 4700 | 16 | 25 | 1750 | 0.22 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1E472() | 100 | 250 |
| | 5600 | 16 | 25 | 1750 | 0.24 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1E562() | 100 | 250 |
| 35 | 6800 | 16 | 31.5 | 2040 | 0.26 | 2000 | 0.8 | 7.5 | | | EEUHD1E682 | 100 | |
| | 10000 | 18 | 35.5 | 2200 | 0.34 | 2000 | 0.8 | 7.5 | | | EEUHD1E103 | 50 | |
| | 47 | 5 | 11 | 90 | 0.14 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1V470() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 150 | 0.14 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1V101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 270 | 0.14 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1V221() | 200 | 1000 |
| | 330 | 10 | 12.5 | 350 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1V331() | 200 | 500 |
| | 470 | 10 | 16 | 460 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1V471() | 200 | 500 |
| | 680 | 10 | 16 | 460 | 0.14 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1V681() | 200 | 500 |
| | 2200 | 12.5 | 25 | 1260 | 0.16 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1V222() | 200 | 500 |
| | 3300 | 16 | 25 | 1610 | 0.18 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1V332() | 100 | 250 |
| 35 | 4700 | 16 | 31.5 | 1910 | 0.20 | 2000 | 0.8 | 7.5 | | | EEUHD1V472 | 100 | |
| | 6800 | 18 | 35.5 | 2050 | 0.24 | 2000 | 0.8 | 7.5 | | | EEUHD1V682 | 50 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.
 · Please refer to the page of "Taping Dimensions".

■ Standard Products

Endurance : 105 °C ϕ 5 to ϕ 8=1000 h, ϕ 10 to ϕ 18=2000 h

| W.V. (V) | Cap. (±20 %) (μ F) | Case size | | Specification | | | Lead Length | | | | Part No. | Min. Packaging Qty | |
|-------------|-------------------------------|--------------|----------------|--|---------------------------------------|----------------------|-------------------|------------------|----------------------|----------------------|------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | $\tan \delta$ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | | Straight (mm) | Taping *B (mm) | Taping *H (mm) | | | |
| 50 | 0.1 | 5 | 11 | 1.1 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1HR10()*** | 200 | 2000 |
| | 0.22 | 5 | 11 | 2.3 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1HR22()*** | 200 | 2000 |
| | 0.33 | 5 | 11 | 3.5 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1HR33()*** | 200 | 2000 |
| | 0.47 | 5 | 11 | 5 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1HR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 10 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H1R0()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 18 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 22 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 26 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H4R7() | 200 | 2000 |
| | 10 | 5 | 11 | 39 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H100() | 200 | 2000 |
| | 22 | 5 | 11 | 65 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H220() | 200 | 2000 |
| | 33 | 5 | 11 | 90 | 0.12 | 1000 | 0.5 | 2.0 | 5.0 | 2.5 | EEUHD1H330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 110 | 0.12 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1H470() | 200 | 2000 |
| | 68 | 6.3 | 11.2 | 110 | 0.12 | 1000 | 0.5 | 2.5 | 5.0 | 2.5 | EEUHD1H680() | 200 | 2000 |
| | 100 | 8 | 11.5 | 180 | 0.12 | 1000 | 0.6 | 3.5 | 5.0 | | EEUHD1H101() | 200 | 1000 |
| | 220 | 10 | 12.5 | 300 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1H221() | 200 | 500 |
| | 330 | 10 | 16 | 410 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1H331() | 200 | 500 |
| | 470 | 10 | 20 | 530 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1H471() | 200 | 500 |
| | 560 | 16 | 15 | 650 | 0.12 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1H561S() | 100 | 250 |
| | 680 | 16 | 15 | 650 | 0.12 | 2000 | 0.8 | 7.5 | 7.5 | | EEUHD1H681S() | 100 | 250 |
| | 1000 | 12.5 | 25 | 950 | 0.12 | 2000 | 0.6 | 5.0 | 5.0 | | EEUHD1H102() | 200 | 500 |
| 2200 | 16 | 31.5 | 1470 | 0.14 | 2000 | 0.8 | 7.5 | | | EEUHD1H222 | 100 | | |
| 3300 | 18 | 35.5 | 1770 | 0.16 | 2000 | 0.8 | 7.5 | | | EEUHD1H332 | 50 | | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **GA** Type: **A**

■ Features

- Endurance : 105 °C 1000 h
- RoHS directive compliant



■ Specifications

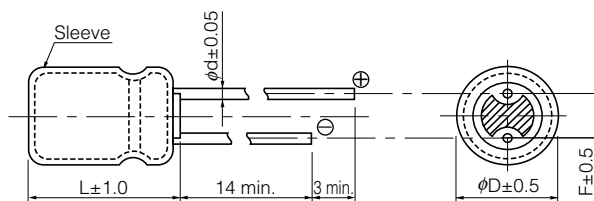
| | | |
|-----------------------|--|------------------------------------|
| Category Temp. Range | -55 °C to +105 °C | |
| Rated W.V. Range | 10 V.DC to 50 V.DC | |
| Nominal Cap. Range | 1.5 μF to 220 μF | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | I ≤ 0.01 CV or 3 (μA) After 2 minutes (Whichever is greater) | |
| tan δ | Please see the attached standard products list | |
| Endurance | After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), for 1000 hours, when the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below. | |
| | Capacitance change | ±20 % of initial measured value |
| | tan δ | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |

■ Frequency correction factor for ripple current

| W.V.(V.DC) | Cap (μF) | Frequency (Hz) | | | | |
|------------|------------|----------------|------|------|------|----------|
| | | 60 | 120 | 1 k | 10 k | 100 k to |
| 10 to 50 | 1.5 to 220 | 0.85 | 1.00 | 1.30 | 1.40 | 1.55 |

■ Dimensions in mm(not to scale)

(Unit : mm)



| | 4 | 5 | 6.3 | 8 |
|--------------|------|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 | 8 |
| Lead Dia. φd | 0.45 | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 | 2.5 |

Standard Products

Endurance : 105 °C 1000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | | Lead Length | | | Part No. | Min. Packaging Qty | | |
|-------------|-------------------------|--------------|----------------|--|-------------------------------|----------------------|-------------------|------------------|----------------------|---------------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Endurance (hours) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *H (mm) |
| 10 | 22 | 4 | 7 | 30 | 0.22 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1A220() | 200 | 2000 |
| | 33 | 5 | 7 | 50 | 0.22 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1A330() | 200 | 2000 |
| | 47 | 6.3 | 7 | 65 | 0.22 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1A470() | 200 | 2000 |
| | 68 | 6.3 | 7 | 75 | 0.22 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1A680() | 200 | 2000 |
| | 100 | 6.3 | 7 | 110 | 0.22 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1A101() | 200 | 2000 |
| | 220 | 8 | 7 | 160 | 0.22 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1A221() | 200 | 1000 |
| 16 | 10 | 4 | 7 | 30 | 0.18 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1C100() | 200 | 2000 |
| | 15 | 4 | 7 | 33 | 0.18 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1C150() | 200 | 2000 |
| | 22 | 5 | 7 | 50 | 0.18 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1C220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 65 | 0.18 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1C330() | 200 | 2000 |
| | 47 | 6.3 | 7 | 77 | 0.18 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1C470() | 200 | 2000 |
| | 100 | 8 | 7 | 120 | 0.18 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1C101() | 200 | 1000 |
| 25 | 10 | 4 | 7 | 33 | 0.16 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1E100() | 200 | 2000 |
| | 15 | 5 | 7 | 45 | 0.16 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1E150() | 200 | 2000 |
| | 22 | 5 | 7 | 50 | 0.16 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1E220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 75 | 0.16 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1E330() | 200 | 2000 |
| | 68 | 8 | 7 | 100 | 0.16 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1E680() | 200 | 1000 |
| 35 | 6.8 | 4 | 7 | 33 | 0.13 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1V6R8() | 200 | 2000 |
| | 10 | 5 | 7 | 35 | 0.13 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1V100() | 200 | 2000 |
| | 15 | 6.3 | 7 | 50 | 0.13 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1V150() | 200 | 2000 |
| | 22 | 6.3 | 7 | 70 | 0.13 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1V220() | 200 | 2000 |
| | 47 | 8 | 7 | 96 | 0.13 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1V470() | 200 | 1000 |
| 50 | 0.1 | 4 | 7 | 1.1 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR10()*** | 200 | 2000 |
| | 0.15 | 4 | 7 | 1.7 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR15()*** | 200 | 2000 |
| | 0.22 | 4 | 7 | 2.3 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR22()*** | 200 | 2000 |
| | 0.33 | 4 | 7 | 3.5 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR33()*** | 200 | 2000 |
| | 0.47 | 4 | 7 | 5 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR47()*** | 200 | 2000 |
| | 0.68 | 4 | 7 | 7 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1HR68()*** | 200 | 2000 |
| | 1 | 4 | 7 | 10 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1H1R0()*** | 200 | 2000 |
| | 1.5 | 4 | 7 | 16 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1H1R5() | 200 | 2000 |
| | 2.2 | 4 | 7 | 18 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1H2R2() | 200 | 2000 |
| | 3.3 | 4 | 7 | 22 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1H3R3() | 200 | 2000 |
| | 4.7 | 4 | 7 | 26 | 0.10 | 1000 | 0.45 | 1.5 | 5.0 | 2.5 | EEAGA1H4R7() | 200 | 2000 |
| | 6.8 | 5 | 7 | 35 | 0.10 | 1000 | 0.45 | 2.0 | 5.0 | 2.5 | EEAGA1H6R8() | 200 | 2000 |
| | 10 | 6.3 | 7 | 39 | 0.10 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1H100() | 200 | 2000 |
| | 15 | 6.3 | 7 | 55 | 0.10 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1H150() | 200 | 2000 |
| 22 | 8 | 7 | 70 | 0.10 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1H220() | 200 | 1000 | |
| 33 | 8 | 7 | 91 | 0.10 | 1000 | 0.45 | 2.5 | 5.0 | 2.5 | EEAGA1H330() | 200 | 1000 | |

· When requesting taped product, please put the letter "B" or "H" between the "()". Lead wire pitch *B=5 mm, H=2.5 mm.

Suffix "BQ" for ø8×7, 5mm pitch products

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **GA(Bi-polar)** Type: **A**

■ Features

- Endurance : 105 °C 1000 h to 2000 h
- RoHS directive compliant



■ Specifications

| | |
|-----------------------|--|
| Category Temp. Range | -40 °C to +105 °C |
| Rated W.V. Range | 6.3 V.DC to 50 V.DC |
| Nominal Cap. Range | 2.2 μF to 330 μF |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) |
| DC Leakage Current | $I \leq 0.03 CV + 3 (\mu A)$ After 2 minutes or $I \leq 0.03 CV$ or 3 (μA) After 5 minutes (Whichever is greater) |
| tan δ | Please see the attached standard products list |
| Endurance | After following life test of DC working voltage at +105 °C±2 °C when the capacitors are restored to 20 °C, the capacitors shall meet the following limits. Duration φ5 to φ8 : 1000 hours (500 hours for each polarity) φ10 : 2000 hours (1000 hours for each polarity) |
| | Capacitance change ± 20% of initial measured value |
| | tan δ ≤ 200 % of initial specified value |
| | DC leakage current ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) |

■ Frequency correction factor for ripple current

| Correction factor | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



■ Standard Products (Bi-polar)

Endurance : 105 °C ϕ 5 to ϕ 8=1000 h (500 h for each polarity), ϕ 10=2000 h (1000 h for each polarity)

| W.V. (V) | Cap. (\pm 20 %) (μ F) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------------------|--------------|----------------|--|---------------------------------------|-------------------|------------------|----------------------|----------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+105 °C) (mA r.m.s.) | $\tan \delta$ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 6.3 | 100 | 6.3 | 11.2 | 130 | 0.30 | 0.5 | 2.5 | 5.0 | 2.5 | ECA0JEN101() | 200 | 2000 |
| | 330 | 8 | 11.5 | 250 | 0.30 | 0.6 | 3.5 | 5.0 | | ECA0JEN331() | 200 | 1000 |
| 10 | 47 | 5 | 11 | 90 | 0.24 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1AEN470() | 200 | 2000 |
| 16 | 10 | 5 | 11 | 40 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CEN100() | 200 | 2000 |
| | 22 | 5 | 11 | 60 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CEN220() | 200 | 2000 |
| | 33 | 5 | 11 | 80 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CEN330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 100 | 0.20 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1CEN470() | 200 | 2000 |
| 25 | 10 | 5 | 11 | 45 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1EEN100() | 200 | 2000 |
| | 22 | 6.3 | 11.2 | 60 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1EEN220() | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 90 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1EEN330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 110 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1EEN470() | 200 | 2000 |
| | 100 | 8 | 11.5 | 180 | 0.15 | 0.6 | 3.5 | 5.0 | | ECA1EEN101() | 200 | 1000 |
| 35 | 33 | 8 | 11.5 | 100 | 0.15 | 0.6 | 3.5 | 5.0 | | ECA1VEN330() | 200 | 1000 |
| | 100 | 10 | 16 | 230 | 0.15 | 0.6 | 5.0 | 5.0 | | ECA1VEN101() | 200 | 500 |
| 50 | 0.47 | 5 | 11 | 10 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HENR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 10 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HEN010()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 18 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HEN2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 25 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HEN3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 30 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HEN4R7() | 200 | 2000 |
| | 10 | 6.3 | 11.2 | 50 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1HEN100() | 200 | 2000 |
| | 22 | 8 | 11.5 | 90 | 0.15 | 0.6 | 3.5 | 5.0 | | ECA1HEN220() | 200 | 1000 |
| | 33 | 8 | 11.5 | 110 | 0.15 | 0.6 | 3.5 | 5.0 | | ECA1HEN330() | 200 | 1000 |
| | 47 | 10 | 12.5 | 140 | 0.15 | 0.6 | 5.0 | 5.0 | | ECA1HEN470() | 200 | 500 |
| | 100 | 10 | 20 | 250 | 0.15 | 0.6 | 5.0 | 5.0 | | ECA1HEN101() | 200 | 500 |

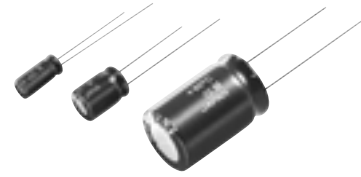
· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **M** Type: **A**



■ Features

- Endurance : 85 °C 2000 h
- Smaller than series SU
- RoHS directive compliant

■ Specifications

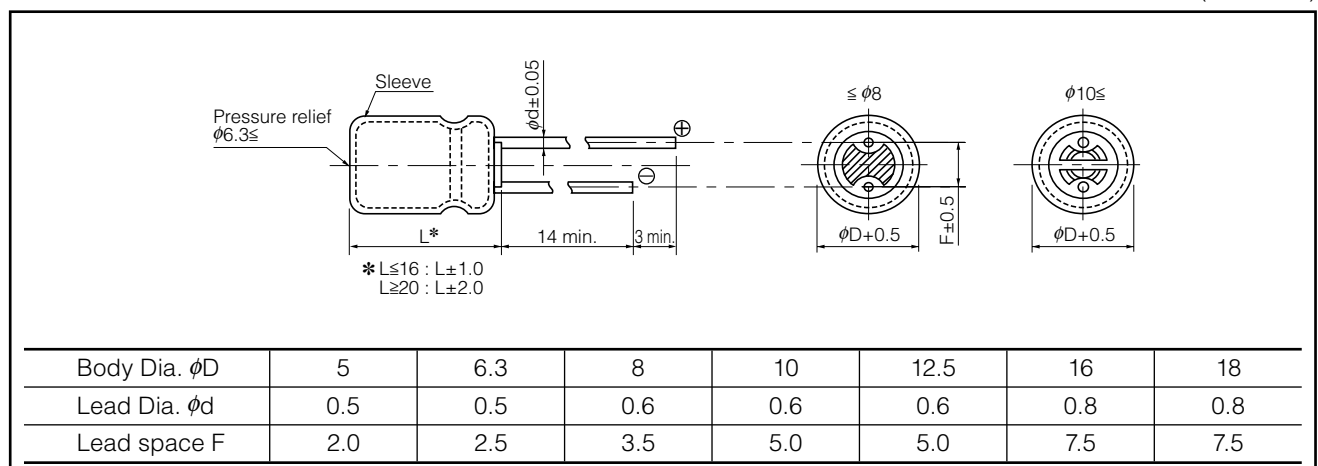
| | | |
|-----------------------|--|---|
| Category Temp. Range | -40 °C to + 85 °C | -25 °C to +85 °C |
| Rated W.V. Range | 6.3 V.DC to 100 V.DC | 160 V.DC to 450 V.DC |
| Nominal Cap. Range | 2.2 μF to 22000 μF | 1 μF to 470 μF |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | $I \leq 0.01 CV$ or $3 (\mu A)$ After 2 minutes (Whichever is greater) | $I \leq 0.06 CV + 10 (\mu A)$ After 2 minutes |
| tan δ | Please see the attached standard products list | |
| Endurance | After applying rated working voltage for 2000 hours at +85°C±2 °C, when the capacitors are restored to 20 °C, capacitors shall meet the following limits. | |
| | Capacitance change | ±20 % of initial measured value |
| | tan δ | ≤150 % of initial specified value |
| | DC leakage current | ≤initial specified value |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment) | |

■ Frequency correction factor for ripple current

| Correction factor | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



Standard Products

Endurance : 85 °C 2000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------------------|--------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 6.3 | 220 | 5 | 11 | 240 | 0.28 | 0.5 | 2.0 | 5.0 | 2.5 | ECA0JM221() | 200 | 2000 |
| | 470 | 6.3 | 11.2 | 380 | 0.28 | 0.5 | 2.5 | 5.0 | 2.5 | ECA0JM471() | 200 | 2000 |
| | 1000 | 8 | 11.5 | 580 | 0.28 | 0.6 | 3.5 | 5.0 | | ECA0JM102() | 200 | 1000 |
| | 2200 | 10 | 16 | 890 | 0.30 | 0.6 | 5.0 | 5.0 | | ECA0JM222() | 200 | 500 |
| | 3300 | 10 | 20 | 1020 | 0.32 | 0.6 | 5.0 | 5.0 | | ECA0JM332() | 200 | 500 |
| | 4700 | 12.5 | 20 | 1170 | 0.34 | 0.6 | 5.0 | 5.0 | | ECA0JM472() | 200 | 500 |
| | 6800 | 12.5 | 25 | 1270 | 0.38 | 0.6 | 5.0 | 5.0 | | ECA0JM682() | 200 | 500 |
| | 10000 | 16 | 25 | 1450 | 0.46 | 0.8 | 7.5 | 7.5 | | ECA0JM103() | 100 | 250 |
| | 15000 | 16 | 31.5 | 1700 | 0.56 | 0.8 | 7.5 | | | ECA0JM153 | 100 | |
| 22000 | 18 | 35.5 | 1900 | 0.70 | 0.8 | 7.5 | | | ECA0JM223 | 50 | | |
| 10 | 330 | 6.3 | 11.2 | 330 | 0.24 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1AM331() | 200 | 2000 |
| | 1000 | 10 | 12.5 | 630 | 0.24 | 0.6 | 5.0 | 5.0 | | ECA1AM102() | 200 | 500 |
| | 2200 | 10 | 20 | 920 | 0.26 | 0.6 | 5.0 | 5.0 | | ECA1AM222() | 200 | 500 |
| | 3300 | 12.5 | 20 | 1090 | 0.28 | 0.6 | 5.0 | 5.0 | | ECA1AM332() | 200 | 500 |
| | 4700 | 12.5 | 25 | 1200 | 0.30 | 0.6 | 5.0 | 5.0 | | ECA1AM472() | 200 | 500 |
| | 6800 | 16 | 25 | 1400 | 0.34 | 0.8 | 7.5 | 7.5 | | ECA1AM682() | 100 | 250 |
| | 10000 | 16 | 31.5 | 1600 | 0.42 | 0.8 | 7.5 | | | ECA1AM103 | 100 | |
| | 15000 | 18 | 35.5 | 1850 | 0.52 | 0.8 | 7.5 | | | ECA1AM153 | 50 | |
| 16 | 10 | 5 | 11 | 30 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CM100() | 200 | 2000 |
| | 22 | 5 | 11 | 75 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CM220() | 200 | 2000 |
| | 33 | 5 | 11 | 110 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CM330() | 200 | 2000 |
| | 47 | 5 | 11 | 130 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CM470() | 200 | 2000 |
| | 100 | 5 | 11 | 180 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1CM101() | 200 | 2000 |
| | 220 | 6.3 | 11.2 | 280 | 0.20 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1CM221() | 200 | 2000 |
| | 470 | 8 | 11.5 | 440 | 0.20 | 0.6 | 3.5 | 5.0 | | ECA1CM471() | 200 | 1000 |
| | 1000 | 10 | 16 | 680 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA1CM102() | 200 | 500 |
| | 2200 | 12.5 | 20 | 1000 | 0.22 | 0.6 | 5.0 | 5.0 | | ECA1CM222() | 200 | 500 |
| | 3300 | 12.5 | 25 | 1200 | 0.24 | 0.6 | 5.0 | 5.0 | | ECA1CM332() | 200 | 500 |
| | 4700 | 16 | 25 | 1360 | 0.26 | 0.8 | 7.5 | 7.5 | | ECA1CM472() | 100 | 250 |
| | 6800 | 16 | 31.5 | 1600 | 0.30 | 0.8 | 7.5 | | | ECA1CM682 | 100 | |
| 10000 | 18 | 35.5 | 1800 | 0.38 | 0.8 | 7.5 | | | ECA1CM103 | 50 | | |
| 25 | 100 | 6.3 | 11.2 | 180 | 0.16 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1EM101() | 200 | 2000 |
| | 330 | 8 | 11.5 | 390 | 0.16 | 0.6 | 3.5 | 5.0 | | ECA1EM331() | 200 | 1000 |
| | 470 | 10 | 12.5 | 480 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA1EM471() | 200 | 500 |
| | 1000 | 10 | 20 | 850 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA1EM102() | 200 | 500 |
| | 2200 | 12.5 | 25 | 1200 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA1EM222() | 200 | 500 |
| | 3300 | 16 | 25 | 1300 | 0.20 | 0.8 | 7.5 | 7.5 | | ECA1EM332() | 100 | 250 |
| | 4700 | 16 | 31.5 | 1500 | 0.22 | 0.8 | 7.5 | | | ECA1EM472 | 100 | |
| 6800 | 18 | 35.5 | 1750 | 0.26 | 0.8 | 7.5 | | | ECA1EM682 | 50 | | |
| 35 | 47 | 5 | 11 | 130 | 0.14 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1VM470() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 210 | 0.14 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1VM101() | 200 | 2000 |
| | 220 | 8 | 11.5 | 350 | 0.14 | 0.6 | 3.5 | 5.0 | | ECA1VM221() | 200 | 1000 |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
· Please refer to the page of "Taping Dimensions".

Standard Products

Endurance : 85 °C 2000 h

| W.V. | Cap. (±20 %) | Case size | | Specification | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|------|-----------------|-----------|--------|---|-------------------------------|-------------|------------|--------------|--------------|-----------------|---------------------|--------|
| | | Dia. | Length | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. | Lead Space | | | | Straight Leads | Taping |
| | | | | | | | Straight | Taping *B | Taping *i | | | |
| (V) | (μF) | (mm) | (mm) | (mA r.m.s.) | | (mm) | (mm) | (mm) | | | (pcs) | (pcs) |
| 35 | 330 | 10 | 12.5 | 440 | 0.14 | 0.6 | 5.0 | 5.0 | | ECA1VM331() | 200 | 500 |
| | 470 | 10 | 16 | 550 | 0.14 | 0.6 | 5.0 | 5.0 | | ECA1VM471() | 200 | 500 |
| | 1000 | 12.5 | 20 | 900 | 0.14 | 0.6 | 5.0 | 5.0 | | ECA1VM102() | 200 | 500 |
| | 2200 | 16 | 25 | 1250 | 0.16 | 0.8 | 7.5 | 7.5 | | ECA1VM222() | 100 | 250 |
| | 3300 | 16 | 31.5 | 1400 | 0.18 | 0.8 | 7.5 | | | ECA1VM332 | 100 | |
| | 4700 | 18 | 35.5 | 1600 | 0.20 | 0.8 | 7.5 | | | ECA1VM472 | 50 | |
| 50 | 0.1 | 5 | 11 | 1.3 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM0R1()*** | 200 | 2000 |
| | 0.22 | 5 | 11 | 2.9 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HMR22()*** | 200 | 2000 |
| | 0.33 | 5 | 11 | 4.4 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HMR33()*** | 200 | 2000 |
| | 0.47 | 5 | 11 | 5 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HMR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 10 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM010()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 20 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 35 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 45 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM4R7() | 200 | 2000 |
| | 10 | 5 | 11 | 65 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM100() | 200 | 2000 |
| | 22 | 5 | 11 | 100 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM220() | 200 | 2000 |
| | 33 | 5 | 11 | 110 | 0.12 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1HM330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 130 | 0.12 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1HM470() | 200 | 2000 |
| | 100 | 8 | 11.5 | 250 | 0.12 | 0.6 | 3.5 | 5.0 | | ECA1HM101() | 200 | 1000 |
| | 220 | 10 | 12.5 | 400 | 0.12 | 0.6 | 5.0 | 5.0 | | ECA1HM221() | 200 | 500 |
| | 330 | 10 | 16 | 500 | 0.12 | 0.6 | 5.0 | 5.0 | | ECA1HM331() | 200 | 500 |
| | 470 | 10 | 20 | 650 | 0.12 | 0.6 | 5.0 | 5.0 | | ECA1HM471() | 200 | 500 |
| 1000 | 12.5 | 25 | 1050 | 0.12 | 0.6 | 5.0 | 5.0 | | ECA1HM102() | 200 | 500 | |
| 2200 | 16 | 31.5 | 1300 | 0.14 | 0.8 | 7.5 | | | ECA1HM222 | 100 | | |
| 3300 | 18 | 35.5 | 1500 | 0.16 | 0.8 | 7.5 | | | ECA1HM332 | 50 | | |
| 63 | 10 | 5 | 11 | 70 | 0.11 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1JM100() | 200 | 2000 |
| | 22 | 5 | 11 | 105 | 0.11 | 0.5 | 2.0 | 5.0 | 2.5 | ECA1JM220() | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 130 | 0.11 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1JM330() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 160 | 0.11 | 0.5 | 2.5 | 5.0 | 2.5 | ECA1JM470() | 200 | 2000 |
| | 100 | 8 | 11.5 | 270 | 0.11 | 0.6 | 3.5 | 5.0 | | ECA1JM101() | 200 | 1000 |
| | 220 | 10 | 16 | 450 | 0.11 | 0.6 | 5.0 | 5.0 | | ECA1JM221() | 200 | 500 |
| | 330 | 10 | 20 | 550 | 0.11 | 0.6 | 5.0 | 5.0 | | ECA1JM331() | 200 | 500 |
| | 470 | 12.5 | 20 | 750 | 0.11 | 0.6 | 5.0 | 5.0 | | ECA1JM471() | 200 | 500 |
| | 1000 | 16 | 25 | 1100 | 0.11 | 0.8 | 7.5 | 7.5 | | ECA1JM102() | 100 | 250 |
| | 2200 | 18 | 35.5 | 1400 | 0.13 | 0.8 | 7.5 | | | ECA1JM222 | 50 | |
| 100 | 0.47 | 5 | 11 | 10 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AMR47()*** | 200 | 2000 |
| | 1 | 5 | 11 | 20 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AM010()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 30 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AM2R2() | 200 | 2000 |
| | 3.3 | 5 | 11 | 40 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AM3R3() | 200 | 2000 |
| | 4.7 | 5 | 11 | 50 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AM4R7() | 200 | 2000 |
| | 10 | 5 | 11 | 70 | 0.10 | 0.5 | 2.0 | 5.0 | 2.5 | ECA2AM100() | 200 | 2000 |
| | 22 | 6.3 | 11.2 | 115 | 0.10 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2AM220() | 200 | 2000 |

· When requesting taped product, please put the letter "B" or "I" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

Standard Products

Endurance : 85 °C 2000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------------------|--------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 100 | 33 | 8 | 11.5 | 145 | 0.10 | 0.6 | 3.5 | 5.0 | | ECA2AM330() | 200 | 1000 |
| | 47 | 8 | 11.5 | 180 | 0.10 | 0.6 | 3.5 | 5.0 | | ECA2AM470() | 200 | 1000 |
| | 100 | 10 | 16 | 350 | 0.10 | 0.6 | 5.0 | 5.0 | | ECA2AM101() | 200 | 500 |
| | 220 | 12.5 | 20 | 550 | 0.10 | 0.6 | 5.0 | 5.0 | | ECA2AM221() | 200 | 500 |
| | 330 | 12.5 | 25 | 700 | 0.10 | 0.6 | 5.0 | 5.0 | | ECA2AM331() | 200 | 500 |
| | 470 | 16 | 25 | 900 | 0.10 | 0.8 | 7.5 | 7.5 | | ECA2AM471() | 100 | 250 |
| | 1000 | 18 | 35.5 | 1300 | 0.10 | 0.8 | 7.5 | | | ECA2AM102 | 50 | |
| 160 | 1 | 6.3 | 11.2 | 36 | 0.16 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CM010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 53 | 0.16 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CM2R2() | 200 | 2000 |
| | 3.3 | 6.3 | 11.2 | 66 | 0.16 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CM3R3() | 200 | 2000 |
| | 4.7 | 6.3 | 11.2 | 78 | 0.16 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2CM4R7() | 200 | 2000 |
| | 10 | 10 | 12.5 | 105 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA2CM100() | 200 | 500 |
| | 22 | 10 | 16 | 175 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA2CM220() | 200 | 500 |
| | 33 | 10 | 20 | 235 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA2CM330() | 200 | 500 |
| | 47 | 12.5 | 20 | 320 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA2CM470() | 200 | 500 |
| | 100 | 12.5 | 25 | 515 | 0.16 | 0.6 | 5.0 | 5.0 | | ECA2CM101() | 200 | 500 |
| | 220 | 16 | 31.5 | 830 | 0.16 | 0.8 | 7.5 | | | ECA2CM221 | 100 | |
| | 330 | 18 | 31.5 | 1090 | 0.16 | 0.8 | 7.5 | | | ECA2CM331 | 50 | |
| 470 | 18 | 40 | 1440 | 0.16 | 0.8 | 7.5 | | | ECA2CM471 | 50 | | |
| 200 | 1 | 6.3 | 11.2 | 34 | 0.18 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DM010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 50 | 0.18 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DM2R2() | 200 | 2000 |
| | 3.3 | 6.3 | 11.2 | 62 | 0.18 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2DM3R3() | 200 | 2000 |
| | 4.7 | 8 | 11.5 | 86 | 0.18 | 0.6 | 3.5 | 5.0 | | ECA2DM4R7() | 200 | 1000 |
| | 10 | 10 | 12.5 | 100 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2DM100() | 200 | 500 |
| | 22 | 10 | 20 | 180 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2DM220() | 200 | 500 |
| | 33 | 10 | 20 | 220 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2DM330() | 200 | 500 |
| | 47 | 12.5 | 20 | 300 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2DM470() | 200 | 500 |
| | 100 | 16 | 25 | 475 | 0.18 | 0.8 | 7.5 | 7.5 | | ECA2DM101() | 100 | 250 |
| | 220 | 18 | 31.5 | 835 | 0.18 | 0.8 | 7.5 | | | ECA2DM221 | 50 | |
| 330 | 18 | 40 | 1140 | 0.18 | 0.8 | 7.5 | | | ECA2DM331 | 50 | | |
| 250 | 1 | 6.3 | 11.2 | 34 | 0.18 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2EM010() | 200 | 2000 |
| | 2.2 | 6.3 | 11.2 | 50 | 0.18 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2EM2R2() | 200 | 2000 |
| | 3.3 | 8 | 11.5 | 72 | 0.18 | 0.6 | 3.5 | 5.0 | | ECA2EM3R3() | 200 | 1000 |
| | 4.7 | 8 | 11.5 | 86 | 0.18 | 0.6 | 3.5 | 5.0 | | ECA2EM4R7() | 200 | 1000 |
| | 10 | 10 | 16 | 110 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2EM100() | 200 | 500 |
| | 22 | 10 | 20 | 180 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2EM220() | 200 | 500 |
| | 33 | 12.5 | 20 | 250 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2EM330() | 200 | 500 |
| | 47 | 12.5 | 25 | 330 | 0.18 | 0.6 | 5.0 | 5.0 | | ECA2EM470() | 200 | 500 |
| | 100 | 16 | 31.5 | 530 | 0.18 | 0.8 | 7.5 | | | ECA2EM101 | 100 | |
| 220 | 18 | 40 | 930 | 0.18 | 0.8 | 7.5 | | | ECA2EM221 | 50 | | |
| 350 | 1 | 6.3 | 11.2 | 32 | 0.20 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2VM010() | 200 | 2000 |
| | 2.2 | 8 | 11.5 | 55 | 0.20 | 0.6 | 3.5 | 5.0 | | ECA2VM2R2() | 200 | 1000 |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
· Please refer to the page of "Taping Dimensions".

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

■ Standard Products

Endurance : 85 °C 2000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 350 | 3.3 | 8 | 11.5 | 60 | 0.20 | 0.6 | 3.5 | 5.0 | | ECA2VM3R3() | 200 | 1000 |
| | 4.7 | 10 | 12.5 | 65 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2VM4R7() | 200 | 500 |
| | 10 | 10 | 20 | 115 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2VM100() | 200 | 500 |
| | 22 | 12.5 | 20 | 195 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2VM220() | 200 | 500 |
| | 33 | 16 | 25 | 300 | 0.20 | 0.8 | 7.5 | 7.5 | | ECA2VM330() | 100 | 250 |
| | 47 | 16 | 25 | 325 | 0.20 | 0.8 | 7.5 | 7.5 | | ECA2VM470() | 100 | 250 |
| | 100 | 18 | 31.5 | 535 | 0.20 | 0.8 | 7.5 | | | ECA2VM101 | 50 | |
| 400 | 1 | 6.3 | 11.2 | 32 | 0.20 | 0.5 | 2.5 | 5.0 | 2.5 | ECA2GM010() | 200 | 2000 |
| | 2.2 | 8 | 11.5 | 50 | 0.20 | 0.6 | 3.5 | 5.0 | | ECA2GM2R2() | 200 | 1000 |
| | 3.3 | 10 | 12.5 | 54 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2GM3R3() | 200 | 500 |
| | 4.7 | 10 | 16 | 72 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2GM4R7() | 200 | 500 |
| | 10 | 10 | 20 | 115 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2GM100() | 200 | 500 |
| | 22 | 12.5 | 25 | 215 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2GM220() | 200 | 500 |
| | 33 | 16 | 25 | 275 | 0.20 | 0.8 | 7.5 | 7.5 | | ECA2GM330() | 100 | 250 |
| | 47 | 16 | 31.5 | 350 | 0.20 | 0.8 | 7.5 | | | ECA2GM470 | 100 | |
| 450 | 1 | 8 | 11.5 | 37 | 0.20 | 0.6 | 3.5 | 5.0 | | ECA2WM010() | 200 | 1000 |
| | 2.2 | 10 | 12.5 | 44 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2WM2R2() | 200 | 500 |
| | 3.3 | 10 | 16 | 60 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2WM3R3() | 200 | 500 |
| | 4.7 | 10 | 20 | 79 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2WM4R7() | 200 | 500 |
| | 10 | 12.5 | 20 | 130 | 0.20 | 0.6 | 5.0 | 5.0 | | ECA2WM100() | 200 | 500 |
| | 22 | 16 | 25 | 210 | 0.20 | 0.8 | 7.5 | 7.5 | | ECA2WM220() | 100 | 250 |
| | 33 | 16 | 31.5 | 285 | 0.20 | 0.8 | 7.5 | | | ECA2WM330 | 100 | |

- When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
- Please refer to the page of "Taping Dimensions".

Radial Lead Type

Series: **SU(Bi-polar)** Type: **A**



■ Features

- Endurance : 85 °C 2000 h
- RoHS directive compliant

■ Specifications

| | | | |
|-----------------------|--|------------------------------------|--|
| Category Temp. Range | -40 °C to +85 °C | | |
| Rated W.V. Range | 6.3 V.DC to 50 V.DC | | |
| Nominal Cap. Range | 2.2 μF to 6800 μF | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | |
| DC Leakage Current | $I \leq 0.03 CV + 3$ (μA) After 5 minutes | | |
| tan δ | Please see the attached standard products list. | | |
| Endurance | After 2000 hours application of DC working voltage (1000 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits. | | |
| | Capacitance change | ± 20 % of initial measured value | |
| | tan δ | ≤ 150 % of initial specified value | |
| | DC leakage current | ≤ initial specified value | |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C capacitors shall meet the limits specified in Endurance. (With voltage treatment) | | |

■ Frequency correction factor for ripple current

| | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| Correction factor | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May. 2014

■ Standard Products (Bi-polar)

Endurance: 85 °C 2000 h (1000 hours for each polarity)

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Qty | | |
|-------------|-------------------------|--------------|----------------|---|--------------------------------------|-------------------|------------------|----------------------|----------------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) (Ω) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 6.3 | 330 | 8 | 11.5 | 250 | 0.30 | 0.6 | 3.5 | 5.0 | | ECEA0JN331U() | 200 | 1000 |
| | 470 | 10 | 12.5 | 310 | 0.30 | 0.6 | 5.0 | 5.0 | | ECEA0JN471X() | 200 | 500 |
| | 1000 | 10 | 20 | 430 | 0.30 | 0.6 | 5.0 | 5.0 | | ECEA0JN102U() | 200 | 500 |
| | 2200 | 12.5 | 25 | 660 | 0.32 | 0.6 | 5.0 | 5.0 | | ECEA0JN222U() | 200 | 500 |
| | 3300 | 16 | 25 | 760 | 0.34 | 0.8 | 7.5 | 7.5 | | ECEA0JN332U() | 100 | 250 |
| | 4700 | 16 | 31.5 | 1170 | 0.36 | 0.8 | 7.5 | | | ECEA0JN472U | 100 | |
| | 6800 | 18 | 35.5 | 1450 | 0.40 | 0.8 | 7.5 | | | ECEA0JN682U | 50 | |
| 10 | 47 | 5 | 11 | 90 | 0.25 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1AN470U() | 200 | 2000 |
| | 100 | 6.3 | 11.2 | 130 | 0.25 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1AN101X() | 200 | 2000 |
| | 220 | 8 | 11.5 | 200 | 0.25 | 0.6 | 3.5 | 5.0 | | ECEA1AN221U() | 200 | 1000 |
| | 330 | 10 | 16 | 280 | 0.25 | 0.6 | 5.0 | 5.0 | | ECEA1AN331U() | 200 | 500 |
| | 470 | 10 | 16 | 340 | 0.25 | 0.6 | 5.0 | 5.0 | | ECEA1AN471U() | 200 | 500 |
| | 1000 | 12.5 | 20 | 470 | 0.25 | 0.6 | 5.0 | 5.0 | | ECEA1AN102X() | 200 | 500 |
| | 2200 | 16 | 25 | 690 | 0.27 | 0.8 | 7.5 | 7.5 | | ECEA1AN222U() | 100 | 250 |
| | 3300 | 16 | 31.5 | 1090 | 0.29 | 0.8 | 7.5 | | | ECEA1AN332U | 100 | |
| 16 | 4700 | 18 | 35.5 | 1200 | 0.31 | 0.8 | 7.5 | | | ECEA1AN472U | 50 | |
| | 10 | 5 | 11 | 40 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1CN100U() | 200 | 2000 |
| | 22 | 5 | 11 | 60 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1CN220U() | 200 | 2000 |
| | 33 | 5 | 11 | 80 | 0.20 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1CN330U() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 100 | 0.20 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1CN470U() | 200 | 2000 |
| | 220 | 10 | 12.5 | 260 | 0.20 | 0.6 | 5.0 | 5.0 | | ECEA1CN221X() | 200 | 500 |
| | 330 | 10 | 16 | 330 | 0.20 | 0.6 | 5.0 | 5.0 | | ECEA1CN331U() | 200 | 500 |
| | 470 | 10 | 20 | 380 | 0.20 | 0.6 | 5.0 | 5.0 | | ECEA1CN471U() | 200 | 500 |
| | 1000 | 12.5 | 25 | 560 | 0.20 | 0.6 | 5.0 | 5.0 | | ECEA1CN102U() | 200 | 500 |
| 25 | 2200 | 16 | 31.5 | 750 | 0.22 | 0.8 | 7.5 | | | ECEA1CN222U | 100 | |
| | 3300 | 18 | 35.5 | 900 | 0.24 | 0.8 | 7.5 | | | ECEA1CN332U | 50 | |
| | 10 | 5 | 11 | 45 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1EN100U() | 200 | 2000 |
| | 22 | 5 | 11 | 60 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1EN220X() | 200 | 2000 |
| | 33 | 6.3 | 11.2 | 90 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1EN330U() | 200 | 2000 |
| | 47 | 6.3 | 11.2 | 110 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1EN470U() | 200 | 2000 |
| | 100 | 8 | 11.5 | 180 | 0.15 | 0.6 | 3.5 | 5.0 | | ECEA1EN101U() | 200 | 1000 |
| | 220 | 10 | 16 | 320 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1EN221U() | 200 | 500 |
| | 330 | 12.5 | 20 | 350 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1EN331U() | 200 | 500 |
| 35 | 470 | 12.5 | 20 | 430 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1EN471U() | 200 | 500 |
| | 1000 | 16 | 25 | 680 | 0.15 | 0.8 | 7.5 | 7.5 | | ECEA1EN102U() | 100 | 250 |
| | 2200 | 18 | 35.5 | 900 | 0.17 | 0.8 | 7.5 | | | ECEA1EN222U | 50 | |
| | 10 | 5 | 11 | 43 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1VN100U() | 200 | 2000 |
| | 22 | 6.3 | 11.2 | 80 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1VN220U() | 200 | 2000 |
| 35 | 33 | 8 | 11.5 | 100 | 0.15 | 0.6 | 3.5 | 5.0 | | ECEA1VN330U() | 200 | 1000 |
| | 47 | 8 | 11.5 | 120 | 0.15 | 0.6 | 3.5 | 5.0 | | ECEA1VN470U() | 200 | 1000 |
| | 100 | 10 | 16 | 230 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1VN101U() | 200 | 500 |
| | 220 | 12.5 | 20 | 360 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1VN221U() | 200 | 500 |
| | 330 | 12.5 | 20 | 450 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1VN331U() | 200 | 500 |
| 470 | 12.5 | 25 | 590 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1VN471U() | 200 | 500 | |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.
· Please refer to the page of "Taping Dimensions".

■ Standard Products (Bi-polar)

Endurance: 85 °C 2000 h (1000 hours for each polarity)

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|--------------------------------------|-------------------|------------------|----------------------|----------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) (Ω) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 50 | 0.47 | 5 | 11 | 10 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1HNR47U()*** | 200 | 2000 |
| | 1 | 5 | 11 | 10 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1HN010U()*** | 200 | 2000 |
| | 2.2 | 5 | 11 | 18 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1HN2R2U() | 200 | 2000 |
| | 3.3 | 5 | 11 | 25 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1HN3R3U() | 200 | 2000 |
| | 4.7 | 5 | 11 | 30 | 0.15 | 0.5 | 2.0 | 5.0 | 2.5 | ECEA1HN4R7U() | 200 | 2000 |
| | 10 | 6.3 | 11.2 | 50 | 0.15 | 0.5 | 2.5 | 5.0 | 2.5 | ECEA1HN100U() | 200 | 2000 |
| | 22 | 8 | 11.5 | 90 | 0.15 | 0.6 | 3.5 | 5.0 | | ECEA1HN220U() | 200 | 1000 |
| | 33 | 8 | 11.5 | 110 | 0.15 | 0.6 | 3.5 | 5.0 | | ECEA1HN330U() | 200 | 1000 |
| | 47 | 10 | 12.5 | 140 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1HN470U() | 200 | 500 |
| | 100 | 10 | 20 | 250 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1HN101U() | 200 | 500 |
| | 220 | 12.5 | 25 | 360 | 0.15 | 0.6 | 5.0 | 5.0 | | ECEA1HN221U() | 200 | 500 |
| | 330 | 16 | 25 | 450 | 0.15 | 0.8 | 7.5 | 7.5 | | ECEA1HN331U() | 100 | 250 |
| | 470 | 16 | 31.5 | 590 | 0.15 | 0.8 | 7.5 | | | ECEA1HN471U | 100 | |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **KA** Type: **A**

Low Profile



■ Features

- Endurance : 85° C 1000 h
- 7 mm height
- RoHS directive compliant

■ Specifications

| | | | |
|-----------------------|---|------------------------------------|--|
| Category Temp. Range | -40 °C to +85 °C | | |
| Rated W.V. Range | 4 V.DC to 50 V.DC | | |
| Nominal Cap. Range | 2.2 μF to 470 μF | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | |
| DC Leakage Current | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Whichever is greater) | | |
| tan δ | Please see the attached standard products list | | |
| Endurance | After applying rated working voltage for 1000 hours at +85 °C±2 °C when the capacitors are restored to 20 °C, capacitors shall meet the following limits. | | |
| | Capacitance change | ± 20% of initial measured value | |
| | tan δ | ≤ 200 % of initial specified value | |
| | DC leakage current | ≤ initial specified value | |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment) | | |

■ Frequency correction factor for ripple current

| | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| Correction factor | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



| | 4 | 5 | 6.3 | 8 |
|--------------|------|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 | 8 |
| Lead Dia. φd | 0.45 | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 | 2.5 |

Standard Products

Endurance : 85 °C 1000 h

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | | Part No. | Min. Packaging Q'ty | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------------------|-------------------|-------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | | Straight Leads (pcs) | Taping (pcs) |
| | | | | | | | Straight (mm) | Taping *B (mm) | Taping *i (mm) | | | |
| 4 | 47 | 4 | 7 | 34 | 0.35 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA0GKA470() | 200 | 2000 |
| | 100 | 5 | 7 | 61 | 0.35 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0GKA101() | 200 | 2000 |
| | 220 | 6.3 | 7 | 82 | 0.35 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0GKA221() | 200 | 2000 |
| | 330 | 8 | 7 | 110 | 0.35 | 0.45 | 2.5 | | 2.5 | ECEA0GKA331() | 200 | 1000 |
| | | 8 | 7 | 110 | 0.35 | 0.45 | | 5.0 | | ECEA0GKA331Q | | 1000 |
| | 470 | 8 | 7 | 140 | 0.35 | 0.45 | 2.5 | | 2.5 | ECEA0GKA471() | 200 | 1000 |
| 8 | | 7 | 140 | 0.35 | 0.45 | | 5.0 | | ECEA0GKA471Q | | 1000 | |
| 6.3 | 47 | 4 | 7 | 46 | 0.24 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA0JKA470() | 200 | 2000 |
| | 100 | 5 | 7 | 71 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JKA101() | 200 | 2000 |
| | 220 | 6.3 | 7 | 103 | 0.24 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0JKA221() | 200 | 2000 |
| | 330 | 8 | 7 | 130 | 0.24 | 0.45 | 2.5 | | 2.5 | ECEA0JKA331() | 200 | 1000 |
| | | 8 | 7 | 130 | 0.24 | 0.45 | | 5.0 | | ECEA0JKA331Q | | 1000 |
| 10 | 33 | 4 | 7 | 43 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1AKA330() | 200 | 2000 |
| | 100 | 6.3 | 7 | 80 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1AKA101() | 200 | 2000 |
| | 220 | 8 | 7 | 120 | 0.20 | 0.45 | 2.5 | | 2.5 | ECEA1AKA221() | 200 | 1000 |
| | | 8 | 7 | 120 | 0.20 | 0.45 | | 5.0 | | ECEA1AKA221Q | | 1000 |
| 16 | 10 | 4 | 7 | 28 | 0.16 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1CKA100() | 200 | 2000 |
| | 22 | 4 | 7 | 39 | 0.16 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1CKA220() | 200 | 2000 |
| | 33 | 5 | 7 | 60 | 0.16 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1CKA330() | 200 | 2000 |
| | 47 | 5 | 7 | 70 | 0.16 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1CKA470() | 200 | 2000 |
| | 100 | 6.3 | 7 | 91 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CKA101() | 200 | 2000 |
| 25 | 10 | 4 | 7 | 28 | 0.14 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1EKA100() | 200 | 2000 |
| | 22 | 5 | 7 | 55 | 0.14 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1EKA220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 65 | 0.14 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKA330() | 200 | 2000 |
| | 47 | 6.3 | 7 | 70 | 0.14 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKA470() | 200 | 2000 |
| 35 | 10 | 5 | 7 | 30 | 0.12 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1VKA100() | 200 | 2000 |
| | 22 | 6.3 | 7 | 60 | 0.12 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1VKA220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 65 | 0.12 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1VKA330() | 200 | 2000 |
| | 47 | 8 | 7 | 85 | 0.12 | 0.45 | 2.5 | | 2.5 | ECEA1VKA470() | 200 | 1000 |
| | | 8 | 7 | 85 | 0.12 | 0.45 | | 5.0 | | ECEA1VKA470Q | | 1000 |
| 50 | 0.1 | 4 | 7 | 1 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKA0R1()*** | 200 | 2000 |
| | 0.22 | 4 | 7 | 2 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKAR22()*** | 200 | 2000 |
| | 0.33 | 4 | 7 | 3 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKAR33()*** | 200 | 2000 |
| | 0.47 | 4 | 7 | 5 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKAR47()*** | 200 | 2000 |
| | 1 | 4 | 7 | 10 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKA010()*** | 200 | 2000 |
| | 2.2 | 4 | 7 | 16 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKA2R2() | 200 | 2000 |
| | 3.3 | 4 | 7 | 18 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKA3R3() | 200 | 2000 |
| | 4.7 | 4 | 7 | 23 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKA4R7() | 200 | 2000 |
| | 10 | 5 | 7 | 35 | 0.10 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1HKA100() | 200 | 2000 |
| | 22 | 6.3 | 7 | 60 | 0.10 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1HKA220() | 200 | 2000 |
| | 33 | 8 | 7 | 75 | 0.10 | 0.45 | 2.5 | | 2.5 | ECEA1HKA330() | 200 | 1000 |
| 8 | | 7 | 75 | 0.10 | 0.45 | | 5.0 | | ECEA1HKA330Q | | 1000 | |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

Radial Lead Type

Series: **KA(Bi-polar)** Type: **A**



■ Features

- Endurance : 85° C 1000 h
- 7 mm height
- RoHS directive compliant

■ Specifications

| | | | |
|-----------------------|---|-----------------------------------|--|
| Category Temp. Range | -40 °C to +85 °C | | |
| Rated W.V. Range | 4 V.DC to 50 V.DC | | |
| Nominal Cap. Range | 2.2 μF to 100 μF | | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | | |
| DC Leakage Current | I ≤ 0.05 CV or 10 (μA) After 2 minutes (Whichever is greater) | | |
| tan δ | Please see the attached standard products list | | |
| Endurance | After 1000 hours application of DC working voltage (500 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits. | | |
| | Capacitance change | ± 20% of initial measured value | |
| | tan δ | ≤200 % of initial specified value | |
| | DC leakage current | ≤initial specified value | |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment) | | |

■ Frequency correction factor for ripple current

| | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| Correction factor | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



| | | | |
|--------------|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 |
| Lead Dia. φd | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 |

■ Standard Products (Bi-polar)

Endurance : 85 °C 1000 h (500hours for each polarity)

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 4 | 100 | 6.3 | 7 | 61 | 0.35 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0GKN101() | 200 | 2000 |
| | 22 | 5 | 7 | 29 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JKN220() | 200 | 2000 |
| 6.3 | 33 | 5 | 7 | 38 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JKN330() | 200 | 2000 |
| | 47 | 6.3 | 7 | 46 | 0.24 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0JKN470() | 200 | 2000 |
| 10 | 10 | 4 | 7 | 25 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1AKN100() | 200 | 2000 |
| | 22 | 5 | 7 | 35 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1AKN220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 43 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1AKN330() | 200 | 2000 |
| | 47 | 6.3 | 7 | 65 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1AKN470() | 200 | 2000 |
| 16 | 4.7 | 4 | 7 | 20 | 0.16 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1CKN4R7() | 200 | 2000 |
| | 10 | 5 | 7 | 25 | 0.16 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1CKN100() | 200 | 2000 |
| | 22 | 6.3 | 7 | 39 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CKN220() | 200 | 2000 |
| | 33 | 6.3 | 7 | 60 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CKN330() | 200 | 2000 |
| 25 | 3.3 | 4 | 7 | 16 | 0.16 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1EKN3R3() | 200 | 2000 |
| | 4.7 | 5 | 7 | 21 | 0.16 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1EKN4R7() | 200 | 2000 |
| | 10 | 6.3 | 7 | 28 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKN100() | 200 | 2000 |
| | 22 | 6.3 | 7 | 55 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKN220() | 200 | 2000 |
| 35 | 2.2 | 4 | 7 | 12 | 0.14 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1VKN2R2() | 200 | 2000 |
| | 3.3 | 5 | 7 | 16 | 0.14 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1VKN3R3() | 200 | 2000 |
| | 4.7 | 5 | 7 | 22 | 0.14 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1VKN4R7() | 200 | 2000 |
| | 10 | 6.3 | 7 | 30 | 0.14 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1VKN100() | 200 | 2000 |
| 50 | 0.1 | 4 | 7 | 1 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKN0R1()*** | 200 | 2000 |
| | 0.22 | 4 | 7 | 2 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKNR22()*** | 200 | 2000 |
| | 0.33 | 4 | 7 | 3 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKNR33()*** | 200 | 2000 |
| | 0.47 | 4 | 7 | 5 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKNR47()*** | 200 | 2000 |
| | 1 | 4 | 7 | 10 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKN010()*** | 200 | 2000 |
| | 2.2 | 5 | 7 | 16 | 0.12 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1HKN2R2() | 200 | 2000 |
| | 3.3 | 5 | 7 | 16 | 0.12 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1HKN3R3() | 200 | 2000 |
| | 4.7 | 6.3 | 7 | 23 | 0.12 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1HKN4R7() | 200 | 2000 |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, 7.5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Radial Lead Type

Series: **KS** Type: **A**

■ Features

- Endurance : 85° C 1000 h
- 5 mm height
- RoHS directive compliant

Low Profile



■ Specifications

| | | |
|-----------------------|---|---|
| Category Temp. Range | -40 °C to +85 °C | |
| Rated W.V. Range | 4 V.DC to 50 V.DC | |
| Nominal Cap. Range | 2.2 μF to 330 μF | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | $I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Whichever is greater) | |
| tan δ | Please see the attached standard products list | |
| Endurance | After applying rated working voltage for 1000 hours at +85 °C±2 °C, when the capacitors are restored to 20°C capacitors, shall meet the following limits. | |
| | Capacitance change | ± 20% of initial measured value (4 V : ±30 %) |
| | tan δ | ≤ 200 % of initial specified value |
| | DC leakage current | ≤ initial specified value |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment) | |

■ Frequency correction factor for ripple current

| Correction factor | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



| | | | | |
|--------------|------|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 | 8 |
| Lead Dia. φd | 0.45 | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 | 2.5 |

Standard Products

Endurance : 85 °C 1000 h

| W.V. | Cap. (±20 %) | Case size | | Specification | | Lead Length | | | | Part No. | Min. Packaging Q'ty | | |
|------|-----------------|-----------|--------|---|-------------------------------|-------------|------------|--------------|--------------|-------------------|---------------------|--------|-------|
| | | Dia. | Length | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. | Lead Space | | | | Straight Leads | Taping | |
| | | | | | | | Straight | Taping *B | Taping *i | | | | (pcs) |
| (V) | (μF) | (mm) | (mm) | (mA r.m.s.) | | (mm) | (mm) | (mm) | | | (pcs) | (pcs) | |
| 4 | 33 | 4 | 5 | 26 | 0.35 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA0GKS330() | 200 | 2000 | |
| | 47 | 4 | 5 | 34 | 0.35 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA0GKS470() | 200 | 2000 | |
| | 100 | 5 | 5 | 61 | 0.35 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0GKS101() | 200 | 2000 | |
| | 220 | 6.3 | 5 | 82 | 0.35 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0GKS221() | 200 | 2000 | |
| 6.3 | 22 | 4 | 5 | 29 | 0.24 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA0JKS220() | 200 | 2000 | |
| | 33 | 5 | 5 | 38 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JKS330() | 200 | 2000 | |
| | 47 | 5 | 5 | 46 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JKS470() | 200 | 2000 | |
| | 100 | 6.3 | 5 | 71 | 0.24 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0JKS101() | 200 | 2000 | |
| | 330 | 8 | 5 | 130 | 0.24 | 0.45 | 2.5 | | 2.5 | ECEA0JKS331() | 200 | 1000 | |
| | | 8 | 5 | 130 | 0.24 | 0.45 | | 5.0 | | ECEA0JKS331Q | | 1000 | |
| 10 | 22 | 5 | 5 | 35 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1AKS220() | 200 | 2000 | |
| | 33 | 5 | 5 | 43 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1AKS330() | 200 | 2000 | |
| | 47 | 6.3 | 5 | 65 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1AKS470() | 200 | 2000 | |
| | 100 | 6.3 | 5 | 80 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1AKS101() | 200 | 2000 | |
| | 220 | 8 | 5 | 120 | 0.20 | 0.45 | 2.5 | | 2.5 | ECEA1AKS221() | 200 | 1000 | |
| | | 8 | 5 | 120 | 0.20 | 0.45 | | 5.0 | | ECEA1AKS221Q | | 1000 | |
| 16 | 10 | 4 | 5 | 28 | 0.16 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1CKS100() | 200 | 2000 | |
| | 22 | 5 | 5 | 39 | 0.16 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1CKS220() | 200 | 2000 | |
| | 33 | 6.3 | 5 | 60 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CKS330() | 200 | 2000 | |
| | 47 | 6.3 | 5 | 70 | 0.16 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CKS470() | 200 | 2000 | |
| | 100 | 8 | 5 | 91 | 0.16 | 0.45 | 2.5 | | 2.5 | ECEA1CKS101() | 200 | 1000 | |
| | | 8 | 5 | 91 | 0.16 | 0.45 | | 5.0 | | ECEA1CKS101Q | | 1000 | |
| 25 | 4.7 | 4 | 5 | 22 | 0.14 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1EKS4R7() | 200 | 2000 | |
| | 10 | 5 | 5 | 28 | 0.14 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1EKS100() | 200 | 2000 | |
| | 22 | 6.3 | 5 | 55 | 0.14 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKS220() | 200 | 2000 | |
| | 33 | 6.3 | 5 | 65 | 0.14 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1EKS330() | 200 | 2000 | |
| | 100 | 8 | 5 | 85 | 0.14 | 0.45 | 2.5 | | 2.5 | ECEA1EKS101() | 200 | 1000 | |
| | | 8 | 5 | 85 | 0.14 | 0.45 | | 5.0 | | ECEA1EKS101Q | | 1000 | |
| 35 | 3.3 | 4 | 5 | 16 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1VKS3R3() | 200 | 2000 | |
| | 4.7 | 4 | 5 | 22 | 0.12 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1VKS4R7() | 200 | 2000 | |
| | 10 | 5 | 5 | 30 | 0.12 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1VKS100() | 200 | 2000 | |
| | 22 | 6.3 | 5 | 60 | 0.12 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1VKS220() | 200 | 2000 | |
| | 33 | 8 | 5 | 65 | 0.12 | 0.45 | 2.5 | | 2.5 | ECEA1VKS330() | 200 | 1000 | |
| | | | 8 | 5 | 65 | 0.12 | 0.45 | | 5.0 | | ECEA1VKS330Q | | 1000 |
| | 47 | 8 | 5 | 85 | 0.12 | 0.45 | 2.5 | | 2.5 | ECEA1VKS470() | 200 | 1000 | |
| | | 8 | 5 | 85 | 0.12 | 0.45 | | 5.0 | | ECEA1VKS470Q | | 1000 | |
| 50 | 0.1 | 4 | 5 | 1 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS0R1()*** | 200 | 2000 | |
| | 0.22 | 4 | 5 | 2 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS0R2()*** | 200 | 2000 | |
| | 0.33 | 4 | 5 | 3 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS0R3()*** | 200 | 2000 | |
| | 0.47 | 4 | 5 | 5 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS0R4()*** | 200 | 2000 | |
| | 1 | 4 | 5 | 10 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS010()*** | 200 | 2000 | |
| | 2.2 | 4 | 5 | 16 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS2R2() | 200 | 2000 | |
| | 3.3 | 4 | 5 | 16 | 0.10 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HKS3R3() | 200 | 2000 | |
| | 4.7 | 5 | 5 | 23 | 0.10 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1HKS4R7() | 200 | 2000 | |
| | 10 | 6.3 | 5 | 35 | 0.10 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1HKS100() | 200 | 2000 | |
| | 22 | 8 | 5 | 60 | 0.10 | 0.45 | 2.5 | | 2.5 | ECEA1HKS220() | 200 | 1000 | |
| | | 8 | 5 | 60 | 0.10 | 0.45 | | 5.0 | | ECEA1HKS220Q | | 1000 | |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

Radial Lead Type

Series: **KS(Bi-polar)** Type: **A**



■ Features

- Endurance : 85° C 1000 h
- 5 mm height
- RoHS directive compliant

■ Specifications

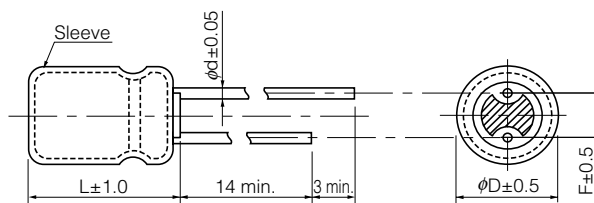
| | | |
|-----------------------|---|-----------------------------------|
| Category Temp. Range | -40 °C to +85 °C | |
| Rated W.V. Range | 63 V.DC to 50 V.DC | |
| Nominal Cap. Range | 2.2 μF to 47 μF | |
| Capacitance Tolerance | ±20 % (120 Hz/+20 °C) | |
| DC Leakage Current | I ≤ 0.05 CV or 10 (μA) After 2 minutes (Whichever is greater) | |
| tan δ | Please see the attached standard products list | |
| Endurance | After 1000 hours application of DC working voltage (500 hours for each polarity) at +85 °C±2 °C, when the capacitors are restored to 20 °C, the capacitors shall meet the following limits. | |
| | Capacitance change | ± 20% of initial measured value |
| | tan δ | ≤200 % of initial specified value |
| | DC leakage current | ≤initial specified value |
| Shelf Life | After storage for 1000 hours at +85 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance (With voltage treatment) | |

■ Frequency correction factor for ripple current

| | Frequency (Hz) | | | |
|-------------------|----------------|------|------|---------|
| | 50, 60 | 120 | 1 k | 10 k to |
| Correction factor | 0.70 | 1.00 | 1.30 | 1.70 |

■ Dimensions in mm (not to scale)

(Unit : mm)



| | | | |
|--------------|------|------|------|
| Body Dia. φD | 4 | 5 | 6.3 |
| Lead Dia. φd | 0.45 | 0.45 | 0.45 |
| Lead space F | 1.5 | 2.0 | 2.5 |

■ Standard Products (Bi-polar)

Endurance : 85 °C 1000 h (500hours for each polarity)

| W.V. (V) | Cap. (±20 %) (μF) | Case size | | Specification | | Lead Length | | | Part No. | Min. Packaging Q'ty | | |
|-------------|-------------------------|--------------|----------------|---|-------------------------------|-------------------|------------------|----------------------|----------|-------------------------|-----------------|----------------------|
| | | Dia. (mm) | Length (mm) | Ripple Current (120 Hz) (+85 °C) (mA r.m.s.) | tan δ (120 Hz) (+20 °C) | Lead Dia. (mm) | Lead Space | | | Straight Leads (pcs) | Taping (pcs) | |
| | | | | | | | Straight (mm) | Taping *B (mm) | | | | Taping *i (mm) |
| 6.3 | 22 | 5 | 5 | 29 | 0.24 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA0JSN220() | 200 | 2000 |
| | 33 | 6.3 | 5 | 38 | 0.24 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0JSN330() | 200 | 2000 |
| | 47 | 6.3 | 5 | 46 | 0.24 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA0JSN470() | 200 | 2000 |
| 10 | 10 | 4 | 5 | 25 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1ASN100() | 200 | 2000 |
| | 22 | 6.3 | 5 | 35 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1ASN220() | 200 | 2000 |
| | 33 | 6.3 | 5 | 43 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1ASN330() | 200 | 2000 |
| 16 | 4.7 | 4 | 5 | 20 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1CSN4R7() | 200 | 2000 |
| | 10 | 5 | 5 | 25 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1CSN100() | 200 | 2000 |
| | 22 | 6.3 | 5 | 39 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1CSN220() | 200 | 2000 |
| 25 | 3.3 | 5 | 5 | 18 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1ESN3R3() | 200 | 2000 |
| | 4.7 | 5 | 5 | 21 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1ESN4R7() | 200 | 2000 |
| | 10 | 6.3 | 5 | 28 | 0.20 | 0.45 | 2.5 | 5.0 | 2.5 | ECEA1ESN100() | 200 | 2000 |
| 35 | 2.2 | 4 | 5 | 12 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1VSN2R2() | 200 | 2000 |
| 50 | 0.1 | 4 | 5 | 1 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HSN0R1()*** | 200 | 2000 |
| | 0.22 | 4 | 5 | 2 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HSNR22()*** | 200 | 2000 |
| | 0.33 | 4 | 5 | 3 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HSNR33()*** | 200 | 2000 |
| | 0.47 | 4 | 5 | 5 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HSNR47()*** | 200 | 2000 |
| | 1 | 4 | 5 | 10 | 0.20 | 0.45 | 1.5 | 5.0 | 2.5 | ECEA1HSN010()*** | 200 | 2000 |
| | 2.2 | 5 | 5 | 16 | 0.20 | 0.45 | 2.0 | 5.0 | 2.5 | ECEA1HSN2R2() | 200 | 2000 |

· When requesting taped product, please put the letter "B" or "i" between the "()". Lead wire pitch *B=5 mm, i=2.5 mm.

· Please refer to the page of "Taping Dimensions".

*** Please kindly accept last shipment : 31/Mar/2015

Notices

■ Applicable laws and regulations

- This product satisfies the requirements of the RoHS Directive (2011/65/EU) (related to the specified hazardous substances contained in electrical and electronic equipment).
- The ozone-depleting chemicals regulated by the Montreal Protocol are not intentionally used in the materials used in our manufacturing processes.
- PBBs(Poly-Brominated Biphenyls)/PBDEs (Poly-Brominated Diphenyl ethers)
The above specified brominated flame retardants are not intentionally used.
- When exporting this product, observe the export procedures specified in export control laws such as the Foreign Exchange and Foreign Trade Control Law.

■ Limited applications

- This product is intended to be used for general-purpose standard applications for general electronic equipment (such as AV equipment, household appliances, business or office equipment, information or communications equipment, etc.)
- If this product is being examined for possible use in applications where higher reliability or safety is required, in cases where a malfunction of this product may endanger life or property, then the delivery specifications meeting the application requirements must be agreed to and exchanged.

Items to be observed

- (1) The purpose of these specifications is to ensure the quality of components as individual components.
Before use, check and evaluate their operation when mounted on your products.
- (2) Do not use our components outside of the corresponding specifications.

■ When using this capacitor in a product where safety is critical

We take great care in the quality of this product. However, performance may deteriorate and short-circuiting or open-circuiting may occur if it will be used in transportation equipment (e.g. trains, cars, traffic lights), medical equipment, airborne equipment, aerospace equipment, electric heating appliances, combustion/gas equipment, rotating equipment, disaster/crime prevention equipment, or other equipment where a defect in this component may cause the loss of human life or other significant damage. Ensure that the target equipment has a failsafe design and is provided with the following systems to guarantee adequate safety.

- (1) * Ensure the safety of the whole system by installing a protection circuit and a protection device.
- (2) Redundant circuits, etc. to maintain the safety of the entire system so that a single independent failure will not lead to unsafe conditions.

■ Conditions of use

This product is intended to be used in electronic equipment for general-purpose standard applications and is not designed for use in any special environments.
When this capacitor is used in a special environment or under special conditions, its performance may be affected. Before use, verify the performance and reliability of the capacitor.

⚠ Application Guidelines

1. Circuit design

Verify the usage and fitting environments and make sure to observe the rated performance specified in the corresponding catalog or specifications.

1.1 Operating temperature and frequency

Variations in temperature and frequency can affect the electrical characteristics of capacitors. Design circuits allowing for these variations.

- (1) At high temperatures leakage current increases.
- (2) At low temperatures the capacitance decreases and an increase in the tangent of the loss angle and impedance.
- (3) As frequency increases, capacitance decreases and the tangent of the loss angle increases, while the capacitive portion of impedance decreases till the resonant frequency is reached.
- (4) At low frequency there is temperature rise caused by ripple currents accompanying the increase in equivalent series resistance.

1.2 Operating temperature and life expectancy

- (1) The capacitor life is affected by usage temperature.
In general, the capacitor life is approximately doubled when the temperature decreases by 10 °C.
Reduce the usage temperature as much as possible.
- (2) The use of capacitors beyond the upper category temperatures may cause rapid deterioration in the characteristics and break down may occur.
The temperature referred to here includes the ambient temperature(within equipment), including heat produced by heat generating devices (power transistors, resistors, etc.), self-heating due to ripple currents, etc. Take these factors into consideration when checking the temperature of capacitors.
Do not place any heat generating devices, etc. on the back of capacitors.
- (3) The life acceleration can be calculated with the following equation:

$$L_2 = L_1 \times 2^{\frac{T_1 - T_2}{10}}$$

L₁: Life at a temperature T₁ °C (h)

L₂: Life at a temperature T₂ °C (h)

T₁: Category upper limit temperature + heat generation due to ripple currents (°C)

T₂: Ambient temperature to calculate the life + heat generation due to ripple currents (°C)

1.3 Common application conditions to avoid

If the loads shown below are applied to a capacitor, then its characteristics may degrade rapidly or it may short-circuit. Rapid heat or gas generation may occur, which leads to the activation of the pressure valve. Electrolytes will then leak from the sealing section. In the worst case, an explosion or ignition may occur.

When the capacitor breaks down, combustible materials (electrolytes, element fixing materials, etc.) may flow externally in all directions.

(1) Polarity

Aluminum electrolytic capacitors have polarities.

Do not apply a reversed or alternating-current voltage.

If the polarity is reversed, then short-circuiting may occur in the initial state or the pressure valve may be activated, leading to capacitor breakdown.

Check the polarity when using a polar capacitor.

If the polarity is unstable or unclear in a circuit, then use bipolar capacitors. However, bipolar capacitors cannot be used in alternating current circuits.

(2) Applied voltage

Do not apply an excessive voltage (voltage exceeding the rating).

The peak direct current voltage superposed with a ripple voltage (alternating current component) must be equal to or less than the rated voltage. A surge voltage exceeding the rated voltage is allowed and specified. However, the allowable conditions are limited and the specifications do not guarantee the application of such a surge voltage for a long time.

(3) Ripple current

Do not allow an excessive current (current exceeding the rated ripple current) to pass.

If an excessive ripple current passes through, then the amount of internally generated heat will grow, the capacitor life will be reduced, or the pressure valve will be activated, leading to breakdown.

Even if the current is equivalent to or less than the allowable level, a reversed voltage may be applied when a direct current bias voltage is low.

Use capacitors so that a reversed voltage is not applied.

- (4) Charging/discharging applications
Standard capacitors are not suitable for use in repeating charge/discharge applications. For charge/discharge applications, consult us with your actual application condition.
For rush current, please do not exceed 100 A.
- (5) ON-OFF circuit
Do not use capacitors in circuit where ON-OFF switching is repeated more than 10000 times/per day.
In case of applying to the these ON-OFF circuit, consult with us about circuit condition and so on.
- (6) Series/parallel connection
[Parallel connection]
If capacitors are connected in parallel, then the balance of currents between these capacitors may be disrupted and an excessive ripple current may pass through only part of these capacitors.
Wire your circuits such that excessive ripple current does not pass through the capacitors.
[Series connection]
If capacitors are connected in series, then the balance of voltages between these capacitors may be disrupted and excessive voltage may be applied. Add a bleeder resistor in parallel with each capacitor. By taking leak currents into consideration the balance of voltages will not be disrupted.
- (7) Electrical isolation of the capacitors
Isolate capacitors completely in a circuit in the following cases.
Between the housing and cathode and anode terminals and between circuit traces.
- (8) Capacitor sleeve
Exterior sleeves or lamination covering capacitors are for indication purposes only and do not guarantee electrical insulation.

1.4 Capacitor mounting considerations

For aluminum electrolytic capacitors, conductive electrolysis whose main solvent is combustible organic solvent and combustible electrolytic paper is used.
If the electrolysis leaks onto a printed circuit board, then it may corrode or short-circuit the traces, leading to smoke or fire. Check the following points when designing products.

- (1) Double-sided circuit board
If capacitors are used in double-sided boards, then do not lay wiring traces immediately below the capacitors.
If the sealed part of a capacitor adheres to the surface of a through-hole printed circuit board, then the solder may be absorbed into the gap during dip soldering and the anode and cathode terminals may be short-circuited.
- (2) Circuit board hole positioning
Solder may protrude from the through-holes or holes for post-mounted component leads and damage the capacitor exterior sleeves. Be mindful of the hole positions.
- (3) Circuit board hole spacing
Make holes for capacitors with a gap equivalent to that of capacitor leads (terminals) during design. Otherwise, there will be stress on the capacitor leads when they are inserted into these holes, leading to current leaks, short-circuiting, or electrolysis leakage.
- (4) Surface-mount types
For surface-mount type capacitors, design land traces with reference to the recommended board land sizes described in the delivery specifications, etc.
- (5) Capacitors equipped with pressure valves
Provide a space above the pressure valve so that it can operate properly.
For capacitors equipped with a pressure valve (as per the shape and dimensional descriptions of each series), provide a space as follows. If the space is smaller than the requirements, then the pressure valve may not operate properly, leading to an explosion.

| Product diameter | Space |
|------------------|--------------|
| φ6.3 to φ16 mm | 2 mm or more |
| φ18 to φ35 mm | 3 mm or more |
| φ40 mm or more | 5 mm or more |

- (6) Clearance for seal mounted pressure relief vents
When the pressure valve section of a capacitor faces the printed wiring, provide a degassing hole aligned with the pressure valve position for proper operation of the valve.
- (7) Wiring near the pressure relief vent.
Considerations must be taken in designing circuits so that there are no traces, particularly for high-voltage or large-current wiring, above the pressure valve sections.
When a pressure valve is activated, combustible high-temperature gas exceeding 100°C will be released. Gas may condense or the wiring covers may melt and secondary accidents may occur.
- (8) Circuit board patterns under the capacitor.
If electrolysis leaks, then the circuit traces may short-circuit and tracking or migration may occur.

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use.
Should a safety concern arise regarding this product, please be sure to contact us immediately.

2. Mounting

2.1 Considerations before using

- (1) Do not reuse capacitors that have been installed and energized.
- (2) Capacitors may generate transient recovery voltages. In this case, discharge them using a resistor of approx. 1 k Ω .
- (3) Capacitors stored for a long time may have a larger current leak.
In this case, dispose the voltage using a resistor of approx. 1 k Ω .
- (4) Do not drop capacitors onto a floor, etc.
Do not use dropped capacitors because they may be damaged mechanically or electrically.
- (5) Do not use corrupted capacitors.
If a capacitor's seal is deteriorated, then its performance will be degraded, life reduced, and/or the electrolyte will leak.

2.2 Capacitor insertion

- (1) Check the capacitor ratings (capacitance and voltage) before mounting.
- (2) Check the capacitor polarity before mounting.
- (3) Check the capacitor lead and hole intervals and land size before mounting.
If these intervals are different, then stress will be applied to the inside of the capacitor through its leads when they are inserted into the board holes, leading to short-circuiting or other failures.
- (4) When an automatic mounter is used, the force to clinch and fix capacitor leads must not be excessive.
When capacitor leads are clinched and fixed onto a circuit board, the leads may be pulled and a large force applied to the capacitor if there are missing cogs or the gap between the clinching section and the circuit board is too small. If this is the case, then the capacitor may break down.
For surface-mount type capacitors, if the mounting pressure is excessive, then current leaks may increase, short-circuiting may occur, or the capacitor may break down and come off.

2.3 Manual soldering

- (1) Solder capacitors under the soldering conditions (temperature and time) as described in the specifications or at 350 °C for three seconds or less.
- (2) If the capacitor lead terminals must be pre-processed in order to align the gaps between the terminals and holes, place them before soldering to prevent stress from being applied to the capacitor body.
- (3) If it is necessary to manually remove soldered capacitors, repair them after the solder has sufficiently melted to prevent stress from being applied to the capacitor terminals.
- (4) Do not touch the capacitor body with the soldering iron tip. Otherwise, a hole may occur on the capacitor exterior sleeve. The sleeve may break or become damaged.

2.4 Flow soldering

- (1) Do not immerse the capacitor body in a solder bath. The capacitor's inner pressure could increase and the capacitor will break down.
- (2) Solder capacitors under the soldering conditions (temperature and time) described in the specifications.
- (3) When soldering, do not allow other components to fall or touch the capacitors.
When soldering, if resistors, ceramic capacitors, or other components (with a high heat conductance) fall and their lead terminals or metallic sections touch the capacitor, then local thermal stress can occur causing the capacitor's exterior sleeve to break down. This phenomenon is identical to short-circuiting.
- (4) Prevent flux from adhering to anything other than the terminals.

2.5 Reflow soldering for chip capacitors

- (1) Surface-mount type capacitor are exclusively for reflow soldering. When reflow solder is used an ambient heat condition system such as the simultaneous use of infrared and hot-air is recommended.
* This system cannot be used for flow or dip soldering.
- (2) Soldering capacitors under the soldering conditions (pre-heating, soldering temperature and time) described in the specifications.
- (3) Reflow-solder only once.
If you need to apply reflow soldering twice, then make sure to contact us.
- (4) Do not reuse the installed surface-mount type capacitors.
- (5) The crack on top marking might be occurred by reflow heat stress.
But please acknowledge that it does not influence the reliability of the product.
- (6) VPS (Vapor Phase Soldering) reflow can cause significant characteristics change and/ or mounting failure due to deformation by acute temperature rise. VPS is acceptable provided that the process does not exceed recommended reflow profile and temperature rise is less than 3degC/sec. Please contact Panasonic for detailed conditions.

2.6 Other soldering considerations

If the chip capacitor temperature becomes very high due to pre-heating or hardening of the fixing resin, then the capacitor exterior sleeve may shrink or crack. If capacitors are passed through a heat-curing furnace, then the ambient temperature must be 150°C or less and the duration must be two minutes or less.

2.7 Capacitor handling after soldering

- (1) Do not tilt, bring down, or twist the capacitors soldered to the printed circuit board; otherwise a torque will be generated with the capacitor circumference as the fulcrum. As a result, a large force will be applied to the inside of the element through the terminals and the capacitor may break down.
- (2) Do not hold the capacitors soldered to the printed circuit board to carry the board; otherwise the board's entire weight will be applied to the inside of the element through the terminals and the capacitor may break down.
- (3) Do not hit the capacitors soldered to the printed circuit board with foreign objects. When stacking printed circuit boards, do not hit the capacitors with circuit boards or other components (terminals, etc.)

2.8 Circuit board cleaning

- (1) Apply the following conditions to flux cleaning after soldering

Temperature: 60°C or less, duration: Five minutes or less (Ultrasonic waves may be used.)
However, rinse sufficiently and dry the boards (at 100°C for 20 minutes or less).

[Applicable solvents]

Pine Alpha ST-100S
Clean-thru 750H, 750L, or 710M
Aqua Cleaner 210SEP
Sunelec B-12
DK Beclear CW-5790
Techno Cleaner 219
Cold Cleaner P3-375
Telpen Cleaner EC-7R
Techno Care FRW-17, FRW-1, or FRV-1
Isopropyl alcohol (IPA)

Remarks

- 1 : If you wish to use solvents other than the above or Deionized water, please contact us.
- 2 : Please do not use ozone-depleting chemicals in order to protect the environment.
- 3 : Depending on the cleaning method, the marking on a capacitor may be erased or blurred.

- (2) Avoid using the following solvent groups unless specifically allowed for in the specification

(a) Halogen solvents: Corrode the inside capacitors.

The solvent may enter (diffuse) inside the capacitor, decompose and cause a reaction. Then, the released chlorine ions may react with the aluminum and corrode it.

For capacitors for which we guarantee cleaning, use solvents under the cleaning conditions (temperature, time, etc.) described in the specifications.

(b) Alkaline solvents: Corrode (melt) aluminum housings.

(c) Petroleum solvents: Deteriorate sealing rubber.

(d) Xylene solvents: Deteriorate sealing rubber.

(e) Acetone: Erases indications.

- (3) Be sure to dry the printed circuit boards immediately after cleaning so that the solvent does not remain between the capacitor's sealed section and the circuit board.

- (4) Manage the contamination of solvents (conductance, PH, specific gravity, amount of water, etc.)

If the solvent is contaminated, then the chlorine concentration will become high and the inside capacitor may be corroded. Control the flux concentration against the solvent to 2 %wt or less.

2.9 Mounting adhesives and coating agents

- (1) If bond or coating agents are used to fix capacitors or prevent moisture, then solvents contained in these materials may corrode the capacitors. Select solvents other than halogen compounds. Do not use chloroprene-derived polymers.

Also, if the bond and coating material containing organic solvents, such as xylene and toluene, are used, resin of the top plate of a snap-in terminal type capacitor will be dissolved.

In this case please select part number without the top plate.

- (2) If fixing or coating agents are used for capacitors, then check the following points.

(a) Do not allow flux residue or contaminants to remain between the capacitor's sealed section and the circuit board.

(b) Harden and dry bond or coating agents so that the solvents do not remain. Do not completely block the sealed section of a capacitor. (At least 1/3 of the sealed section must be exposed.)

2.10 Fumigation process

When electronic equipment incorporating aluminum electrolytic capacitors is exported, wooden packing materials may be fumigated using halogen compounds such as bromomethane. If drying after the fumigation process is insufficient, halogen remaining in the packing materials may be released, enter and corrode the capacitors.

If the fumigation process is carried out, then check carefully for remaining halogen after processing and drying.

Make sure not to apply the fumigation process to completely packed electronic equipment.

3. Precautions for using capacitors

3.1 Environmental Conditions

Capacitors should not be stored or used in the following environments.

- (1) Exposure to temperatures above the upper category or below the lower category temperature of the capacitor.
- (2) Direct contact with water, salt water, or oil.
- (3) High humidity conditions where water could condense on the capacitor.
- (4) Exposure to toxic gases such as hydrogen sulfide, sulfuric acid, nitric acid, chlorine, Chlorine compound, Bromine, Bromine compound or ammonia.
- (5) Exposure to ozone, radiation, or ultraviolet rays.
- (6) Vibration and shock conditions exceeding specified requirements.

3.2 Electrical Precautions

- (1) Do not touch the capacitor terminals directly.
If you touch the capacitor terminals, you will receive an electric shock. Do not touch the exposed aluminum sections of a capacitor, such as the pressure valve sections because they are not insulated.
- (2) Do not short-circuit the capacitor terminals.
Do not spill conductive solutions such as acidic or alkaline solutions on the capacitors. Otherwise, short-circuiting will occur. The circuit will malfunction and the capacitors break down.
- (3) A low-molecular-weight-siloxane which is included in a silicon material shall causes abnormal electrical characteristics.

4. Precautions for checks and maintenance

- (1) Periodically check the capacitors used in industrial equipment. When checking and maintaining capacitors, turn off the equipment and discharge the capacitors beforehand. In this case, do not apply stress to the capacitor lead terminals, etc.
- (2) Periodically check the following items.
 - (a) Significant appearance abnormalities (deformation, electrolysis leakage, etc.)
 - (b) Electrical characteristics (described in the corresponding catalog or delivery specifications)If any abnormalities are found, then replace the capacitors or take appropriate actions.

5. Emergency procedures

- (1) Capacitors of a certain size or larger are equipped with a pressure valve to release excessive pressure.
If the capacitor pressure valve is activated and gas becomes visible when using equipment, then turn off the equipment or unplug it. If the power is not turned off, then the short-circuited capacitors may damage the circuit or the gas may become liquefied and cause a short-circuit. In the worst case, secondary disasters such as equipment damage may occur.
Gases released from the capacitor's pressure valve is not fume but liquefied electrolysis.
- (2) When a pressure valve is activated, a high-temperature gas exceeding 100 °C will be released. Do not place your face close to the capacitor.
If the gas gets into your eyes or you inhale it, then immediately wash your eyes with water or gargle. If the gas comes in contact with your skin, then wash it with soap.

6. Long Term Storage

- (1) Leakage current of a capacitor increases with long storage times. The aluminum oxide film deteriorates as a function of temperature and time.
If used without reconditioning, an abnormally high current will be required to restore the oxide film.
This surge current could cause the circuit or the capacitor to fail.
Storage period is one year. When storage period is over 12 months, a capacitor should be reconditioned by applying the rated voltage in series with a 1000 Ω current limiting resistor for a time period of 30 minutes.
For storage condition, keep room temperature (5 °C to 35 °C) and humidity (45% to 85%) where direct sunshine doesn't reach.
- (2) Environmental Conditions
 - (a) Exposure to temperatures above the upper category or below the lower category temperature of the capacitor.
 - (b) Direct contact with water, salt water, or oil
 - (c) High humidity conditions where water could condense on the capacitor.
 - (d) Exposure to toxic gases such as hydrogen sulfide, sulfuric acid, nitric acid, chlorine, Chlorine compound, Bromine, Bromine compound or ammonia.
 - (e) Exposure to ozone, radiation, or ultraviolet rays.
 - (f) Vibration and shock conditions exceeding specified requirements.

7. Discarding

When discarding capacitors, use either of the following procedures.

- (1) Make holes on the capacitor or break it up completely.
Then burn it at a temperature of 800°C or higher.
If capacitors are burnt as is, then they may explode.
- (2) If you do not burn them, then ask professional waste disposer.

The precautions in using aluminum electrolytic capacitors follow the Precautionary Guidelines for the Use of Fixed Aluminum Electrolytic Capacitors for Electronic equipment, RCR-2367B issued by EIAJ in March 2002.
Please refer to the above guidelines for details.

* Intellectual property right

We, Panasonic Group are providing the product and service that customers can use without anxiety, and are working positively on the protection of our products under intellectual property rights.

Representative patents relating to Conductive Polymer Hybrid Aluminum Electrolytic Capacitors are as follows :
US Patent Nos. 7497879 and 7621970 JP Patent No. 5360250

Lead Taping Radial Lead Type

● Dimensions in mm (not to scale)

| Case size | Lead space (F) | | |
|----------------------------|----------------|--------|--------|
| | 2.5 mm | 5.0 mm | 7.5 mm |
| φ4 × 5L | B | A | |
| φ5 × 5L | B | A | |
| φ6.3 × 5L | C | A | |
| φ8 × 5L | C | E | |
| φ4 × 7L | B | A | |
| φ5 × 7L | B | A | |
| φ6.3 × 7L | C | A | |
| φ8 × 7L | C | E | |
| φ5 × 11L | C | D | |
| φ6.3 × 11.2L, 15L | C | D | |
| φ8 × 11.5L, 15L, 20L | | E | |
| φ10 × 12.5L, 16L, 20L, 25L | | F | |
| φ12.5 × 15L, 20L, 25L | | G | |
| φ16 × 15L, 20L, 25L | | | H |
| φ18 × 15L, 20L, 25L | | | H |

Figure A (Lead space: 5.0 mm / φD×L : φ4×5, 7, φ5×5, 7, φ6.3×5, 7)



Figure B (Lead space: 2.5 mm / φD×L : φ4×5, 7, φ5×5, 7)

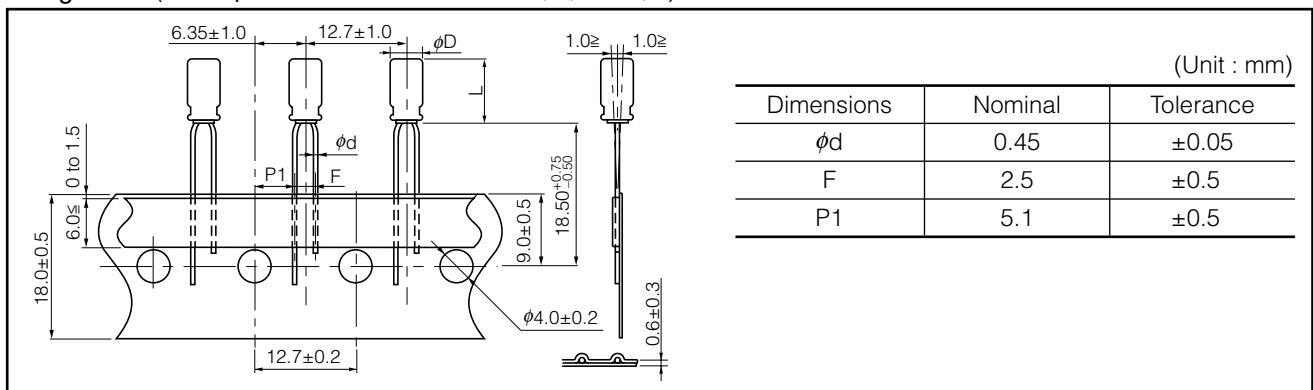


Figure C (Lead space: 2.5 mm / φD×L : φ5×11, φ6.3×5, 7, 11.2, 15, φ8×5, 7)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Figure D (Lead space: 5 mm / $\phi D \times L$: $\phi 5 \times 11$, $\phi 6.3 \times 11.2$, 15)



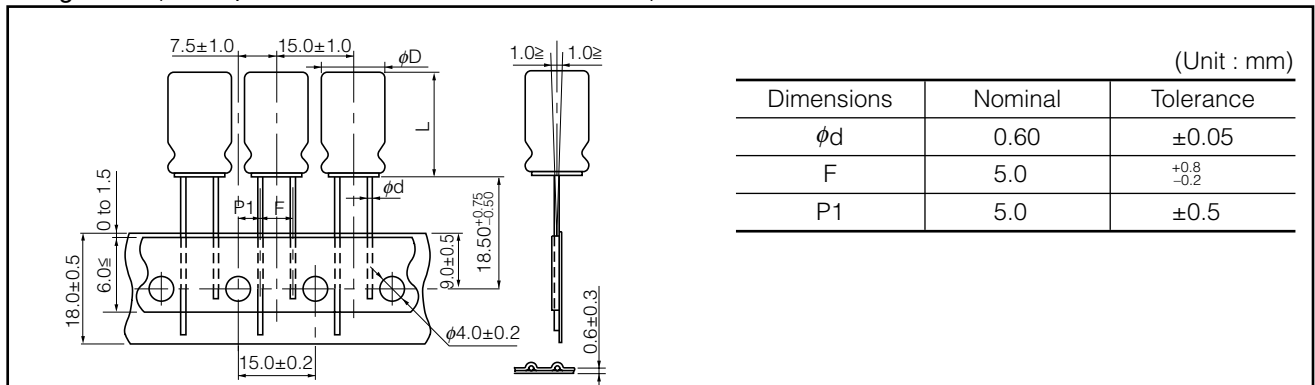
■ Figure E (Lead space: 5 mm / $\phi D \times L$: $\phi 8 \times 5$, 7, 11.5, 15, 20)



■ Figure F (Lead space: 5 mm / $\phi D \times L$: $\phi 10 \times 12.5$, 16, 20, 25)



■ Figure G (Lead space: 5 mm / $\phi D \times L$: $\phi 12.5 \times 15$, 20, 25)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

■ Figure H (Lead space: 7.5 mm / $\phi D \times L$: $\phi 16 \times 15, 20, 25, \phi 18 \times 15, 20, 25$)



■ Packaging Specifications

| Dimensions (mm) | Dimensions of Outer Carton Box | | | | |
|--------------------|--------------------------------|------------|------------|----------------------|--------------------|
| | $\phi 4$ to $\phi 5$ | $\phi 6.3$ | $\phi 8$ | $\phi 10, \phi 12.5$ | $\phi 16, \phi 18$ |
| a | 340 max. | 340 max. | 340 max. | 340 max. | 340 max. |
| b | to 55 max. | to 55 max. | to 55 max. | 55 to 66 max. | 62 to 75 max. |
| c | 170 to 210 max. | 270 max. | 230 max. | 170 to 270 max. | 225 to 310 max. |
| Packaging Quantity | 2000 pcs. | 2000 pcs. | 1000 pcs. | 500 pcs. | 250 pcs. |

Lead Forming Type (Snap-in)

Lead formed Aluminium Electrolytic Capacitor for self mounting, for rationalization and upgrade of soldering process.



* Direction of bending shape is not specified

■ Dimensions in mm (not to scale)

(Unit : mm)

| Dia ϕD | H1 ± 0.5 | H2 | H3 | F ± 0.5 | P | E max. | ϕd | for PWB | |
|--------------|--------------|-----|-----|-------------|---------|--------|----------|------------------|-----------|
| | | | | | | | | hole dia. ϕ | thickness |
| 5 | 4.5 | 2.7 | 2.5 | 5.0 | 1.0 | 1.0 | 0.5 | 0.9 | 1.6 |
| 6.3 | 4.5 | 2.7 | 2.5 | 5.0 | 1.0 | 1.0 | 0.5 | 1.0 | 1.6 |
| 8 | 4.5 | 2.7 | 2.5 | 5.0 | 1.0 | 1.0 | 0.6 | 1.0 | 1.6 |
| 10 | 4.5 | 2.7 | | 5.0 | 1.0 | 1.0 | 0.6 | 1.0 | 1.6 |
| 12.5 | 4.5 | 2.7 | | 5.0 | 1.0/0.9 | 1.0 | 0.6/0.8 | 1.0 / 1.1 | 1.6 |
| 16 | 4.5 | 2.7 | | 7.5 | 0.9 | 1.0 | 0.8 | 1.1 | 1.6 |
| 18 | 4.5 | 2.7 | | 7.5 | 0.9 | 1.0 | 0.8 | 1.1 | 1.6 |

■ Series KA/KS Dimensions in mm (not to scale)

(Unit : mm)

| Dia ϕD | H1 ± 0.5 | H2 | H3 ± 0.3 | F ± 0.5 | P | E max. | ϕd | for PWB | |
|--------------|--------------|-----|--------------|-------------|------|--------|----------|------------------|-----------|
| | | | | | | | | hole dia. ϕ | thickness |
| 4 | 4.5 | 2.7 | 1.5 | 5.0 | 0.95 | 1.0 | 0.45 | 0.9 | 1.6 |
| 5 | 4.5 | 2.7 | 1.5 | 5.0 | 0.95 | 1.0 | 0.45 | 0.9 | 1.6 |
| 6.3 | 4.5 | 2.7 | 1.5 | 5.0 | 0.95 | 1.0 | 0.45 | 0.9 | 1.6 |
| 8 | 4.5 | 2.7 | 1.5 | 5.0 | 0.95 | 1.0 | 0.45 | 0.9 | 1.6 |

Discontinued Series (not recommended for new design)

Aluminum Electrolytic Capacitors (Radial Lead Type)

| Discontinued Product | | | | | | Replacement | | | |
|--|---------------|------------------------|--|-------------------|---------------------------|------------------------|----------------------------|-----|---------------------------|
| Series | Part No. | Endurance | Features | Rated.W.V. (V) | Capacitance (μ F) | Series | Endurance | | |
| S SW S(High voltage) | ECEA--S----- | + 85 °C 1000 h | Standard | 10 to 50 | 1 to 100 | M | + 85 °C 2000 h | | |
| S Bi-polar | ECEA--N----S | + 85 °C 2000 h | Bi-polar Standard | 4 to 100 | 0.1 to 1000 | SU-BP | + 85 °C 2000 h | | |
| SU | ECEA--U----- | + 85 °C 2000 h | Standard | 6.3 to 450 | 0.1 to 15000 | M | + 85 °C 2000 h | | |
| K | ECEA--K----- | + 85 °C 1000 h | Height 7 mm | 6.3 to 50 | 0.1 to 100 | KA | + 85 °C 1000 h | | |
| KS(ϕ 3) | ECEA--KK---- | + 85 °C 1000 h | Height 5 mm ϕ 3x5 | 4 to 50 | 0.1 to 22 | Available upon request | | | |
| KG | ECEA--KG----- | +105 °C 1000 h | Height 7 mm | 6.3 to 50 | 0.1 to 220 | GA | +105 °C 1000 h | | |
| SS | ECEA--SS--- | + 85 °C 2000 h | Low profile | 6.3 to 50 | 3.3 to 4700 | Available upon request | | | |
| Z | ECEA--Z---- | + 85 °C 2000 h | Low impedance | 6.3 to 50 | 0.1 to 2200 | FC | +105 °C 1000 to 5000 h | | |
| HF | ECEA--F---- | +105 °C 2000 h | Low impedance | 10 to 63 | 22 to 2200 | | | | |
| HFS | ECEA--FS--- | +105 °C 1000 to 2000 h | Low impedance | 6.3 to 63 | 0.47 to 4700 | | | | |
| HFE | ECEA--FE--- | +105 °C 2000 h | Low impedance | 6.3 to 100 | 3.3 to 15000 | | | | |
| HFG | ECA--FG---- | +105 °C 2000 to 5000 h | Low impedance | 6.3 to 63 | 0.1 to 15000 | | | | |
| HFQ | ECA--FQ---- | +105 °C 1000 to 2000 h | Low impedance | 6.3 to 63 | 6.8 to 15000 | | | | |
| HFZ | ECA--FZ---- | +105 °C 5000 h | Low impedance | 6.3 to 35 | 56 to 5600 | | | | |
| KF | ECA--KF---- | +105 °C 1000 h | Height 7 mm, Low impedance | 6.3 to 35 | 1 to 120 | | | | |
| ESM | ECEA--E---M | + 85 °C 2000 h | Low impedance | 10 to 50 | 0.1 to 220 | | | | |
| FA | EEUFA----- | +105 °C 2000 to 5000 h | Low impedance | 6.3 to 63 | 68 to 15000 | | | | |
| FB | EEUFB----- | +105 °C 1000 to 2000 h | Low impedance | 10 to 50 | 0.47 to 10000 | | | | |
| NHE | ECEA--GE--- | +105 °C 2000 h | Longlife | 6.3 to 450 | 0.1 to 15000 | | | NHG | +105 °C 1000 to 2000 h |
| MH | ECA--MH--- | +105 °C 1000 h | Longlife | 6.3 to 100 | 0.1 to 22000 | | | | |
| NH | ECEA--G---S | +105 °C 2000 h | Longlife | 6.3 to 100 | 0.47 to 4700 | | | | |
| NE | ECA--TE--- | +105 °C 5000 to 7000 h | Longlife | 10 to 63 | 0.47 to 3300 | EB | +105 °C 5000 to 10000 h | | |
| NX | ECEA--NX--- | +105 °C 5000 h | Longlife | 6.3 to 50 | 0.047 to 2200 | TA | +125 °C 2000 h | | |
| 3H | ECEA--T---- | +125 °C 1000 h | High reliability | 10 to 63 | 1 to 1000 | Available upon request | | | |
| MG | EEUMG---- | + 85 °C 2000 h | High ripple | 160 to 450 | 2.2 to 470 | NHG | +105 °C 1000 to 2000 h | | |
| TH | ECEA--V---T | +105 °C 1000 h | Fixed time-interval circuit | 10, 16, 25, 50 | 1 to 2200 | M | +85 °C 2000 h | | |
| MT | ECEA--M---T | + 85 °C 1000 h | Time constant circuit | 6.3 to 50 | 47 to 2200 | | | | |
| MS | ECEA--M--- | + 85 °C 2000 h | Low LC | 10 to 50 | 0.1 to 100 | | | | |
| GA | EEUGA----- | +105 °C 2000 h | +105°C Standard | 6.3 to 50 | 0.1 to 15000 | NHG | +105 °C 1000 to 2000 h | | |
| EA | EEUEA----- | +105 °C 5000 h | Longlife | 160 to 450 | 10 to 150 | EE | +105 °C 8000 to 10000 h | | |
| Horizontal defection current correction | ECEA--W---- | + 85 °C 2000 h | Horizontal defection current correction for TV | 25 | 3.5 to 10 | Not available | | | |

Check Panasonic website for discontinued / revised product series specification.

<http://panasonic.net/id/>

Panasonic

MEMO

For more Information please contact the respective sales office of factory

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CAUTION AND WARNING

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