

Surface Mount Type

Series: FK Type : V

- Features
 - Endurance: 2000 to 5000h at 105°C
 - Low impedance (40 to 60% less than FC series)
 - Miniaturized (30 to 50% less than FC series)
 - Vibration-proof product is available upon request. ($\phi 8 \leq$)
 - RoHS directive compliant (Parts No: EEV* $\phi 12.5 \leq$, EEE*)



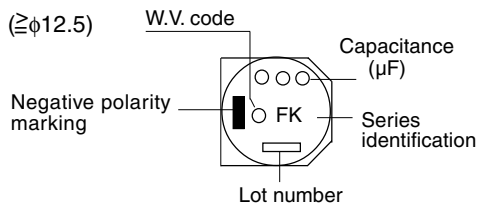
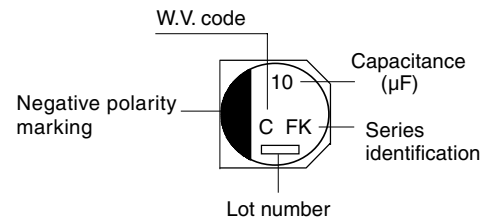
■ Specifications

| | | | | | | | | | | | |
|------------------------------------|---|--|----|----|----|----|----|----|----|-----|-----------------------------|
| Category temp. range | -55 to +105°C | | | | | | | | | | |
| Rated W.V. Range | 6.3 to 100V .DC | | | | | | | | | | |
| Nominal Cap. Range | 3.3 to 6800 μ F | | | | | | | | | | |
| Capacitance Tolerance | ± 20 % (120Hz/+20°C) | | | | | | | | | | |
| DC Leakage Current | $I \leq 0.01 CV$ or $3(\mu A)$ After 2 minutes application of rated working voltage at +20°C. (Whichever is greater) | | | | | | | | | | |
| tan δ | Please see the attached standard products list | | | | | | | | | | |
| Characteristics at Low Temperature | W.V. (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | (Impedance ratio at 120 Hz) |
| | Z(-25°C) / Z(+20°C) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | Z(-40°C) / Z(+20°C) | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | Z(-55°C) / Z(+20°C) | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | |
| Endurance | After applying rated working voltage at +105 \pm 2°C for 2000 hours (\geq dia.12.5 and suffix "G" in dia.8 to 10 are 5000 hours) the capacitors shall meet the limits specified below. Post-test requirement at +20°C. | | | | | | | | | | |
| | Capacitance change | ± 30 % of initial measured value (Suffix "G" is 35%) | | | | | | | | | |
| | tan δ | ≤ 200 % of initial specified value (Suffix "G" is 300%) | | | | | | | | | |
| | DC leakage current | \leq initial specified value | | | | | | | | | |
| Shelf Life | After storage for 1000 hours at +105 \pm 2°C with no voltage applied and then being stabilized at +20°C, capacitors shall meet the limits specified in Endurance (With voltage treatment) | | | | | | | | | | |
| | After reflow soldering (Refer to page 86 for recommended temperature profile) and then being stabilized at +20°C, capacitor shall meet the following limits. | | | | | | | | | | |
| Resistance to Soldering Heat | After reflow soldering (Refer to page 86 for recommended temperature profile) and then being stabilized at +20°C, capacitor shall meet the following limits. | | | | | | | | | | |
| | Capacitance change | ± 10 % of initial measured value | | | | | | | | | |
| | tan δ | \leq initial specified value | | | | | | | | | |
| | DC leakage current | \leq initial specified value | | | | | | | | | |

■ Marking

Example. 16V10 μ F

Marking color : BLACK

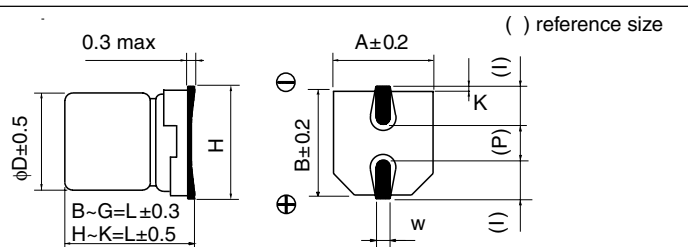


W.V. code

| | | | | | |
|------|-----|----|----|----|----|
| V | 6.3 | 10 | 16 | 25 | 35 |
| Code | j | A | C | E | V |

| | | | | |
|------|----|----|----|-----|
| V | 50 | 63 | 80 | 100 |
| Code | H | J | K | 2A |

■ Dimensions in mm (not to scale)



| Size code | D | L | A,B | H max. | I | W | P | K |
|-----------|------|------|------|--------|-----|----------------|-----|---------------------|
| B | 4.0 | 5.8 | 4.3 | 5.5 | 1.8 | 0.65 \pm 0.1 | 1.0 | 0.35 -0.20 to +0.15 |
| C | 5.0 | 5.8 | 5.3 | 6.5 | 2.2 | 0.65 \pm 0.1 | 1.5 | 0.35 -0.20 to +0.15 |
| D | 6.3 | 5.8 | 6.6 | 7.8 | 2.6 | 0.65 \pm 0.1 | 1.8 | 0.35 -0.20 to +0.15 |
| D8 | 6.3 | 7.7 | 6.6 | 7.8 | 2.6 | 0.65 \pm 0.1 | 1.8 | 0.35 -0.20 to +0.15 |
| E | 8.0 | 6.2 | 8.3 | 9.5 | 3.4 | 0.65 \pm 0.1 | 2.2 | 0.35 -0.20 to +0.15 |
| F | 8.0 | 10.2 | 8.3 | 10.0 | 3.4 | 0.90 \pm 0.2 | 3.1 | 0.70 \pm 0.20 |
| G | 10.0 | 10.2 | 10.3 | 12.0 | 3.5 | 0.90 \pm 0.2 | 4.6 | 0.70 \pm 0.20 |
| H13 | 12.5 | 13.5 | 13.5 | 15.0 | 4.7 | 0.90 \pm 0.3 | 4.4 | 0.70 \pm 0.30 |
| J16 | 16.0 | 16.5 | 17.0 | 19.0 | 5.5 | 1.20 \pm 0.3 | 6.7 | 0.70 \pm 0.30 |
| K16 | 18.0 | 16.5 | 19.0 | 21.0 | 6.7 | 1.20 \pm 0.3 | 6.7 | 0.70 \pm 0.30 |

■ Case size VS Capacitance, Impedance and Ripple current

Impedance;(Ω /100kHz,+20°C),
Ripple current;(mA r.m.s./100kHz+105°C)

| Capacitance (μ F) | W.V. | 6.3 | | | 10 | | | 16 | | |
|---------------------------|------|------|-----------|----------------|------|-----------|----------------|------|-----------|----------------|
| | | Size | Impedance | Ripple current | Size | Impedance | Ripple current | Size | Impedance | Ripple current |
| 10 | | | | | | | | B | 1.35 | 90 |
| 22 | | B | 1.35 | 90 | B | 1.35 | 90 | C(B) | 0.7(1.35) | 160(90) |
| 33 | | | | | C(B) | 0.7(1.35) | 160(90) | | | |
| 47 | | C(B) | 0.7(1.35) | 160(90) | | | | D(C) | 0.36(0.7) | 240(160) |
| 68 | | | | | | | | D | 0.36 | 240 |
| 100 | | D(C) | 0.36(0.7) | 240(160) | | | | D | 0.36 | 240 |
| 150 | | | | | D | 0.36 | 240 | D8 | 0.34 | 280 |
| 220 | | D | 0.36 | 240 | D8 | 0.34 | 280 | D8 | 0.34 | 280 |
| 330 | | D8 | 0.34 | 280 | E | 0.26 | 300 | E | 0.26 | 300 |
| | | E | 0.26 | 300 | ⊙F | 0.16 | 600 | ⊙F | 0.16 | 600 |
| 470 | | ⊙F | 0.16 | 600 | ⊙F | 0.16 | 600 | ⊙F | 0.16 | 600 |
| 680 | | | | | ⊙F | 0.16 | 600 | ⊙G | 0.08 | 850 |
| 1000 | | ⊙F | 0.16 | 600 | ⊙G | 0.08 | 850 | | | |
| 1500 | | ⊙G | 0.08 | 850 | | | | H13 | 0.06 | 1100 |
| 2200 | | | | | H13 | 0.06 | 1100 | | | |
| 3300 | | H13 | 0.06 | 1100 | | | | J16 | 0.035 | 1800 |
| 4700 | | | | | J16 | 0.035 | 1800 | K16 | 0.033 | 2060 |
| 6800 | | J16 | 0.035 | 1800 | K16 | 0.033 | 2060 | | | |

| Capacitance (μ F) | W.V. | 25 | | | 35 | | | 50 | | |
|---------------------------|------|------|-----------|----------------|------|-----------|----------------|-------|------------|----------------|
| | | Size | Impedance | Ripple current | Size | Impedance | Ripple current | Size | Impedance | Ripple current |
| 4.7 | | | | | B | 1.35 | 90 | B | 2.9 | 60 |
| 10 | | B | 1.35 | 90 | C(B) | 0.7(1.35) | 160(90) | D(C) | 0.88(1.52) | 165(85) |
| 22 | | C | 0.7 | 160 | C | 0.7 | 160 | D | 0.88 | 165 |
| 33 | | D(C) | 0.36(0.7) | 240(160) | D | 0.36 | 240 | D8 | 0.68 | 195 |
| | | | | | | | | E | 0.68 | 195 |
| 47 | | D | 0.36 | 240 | D | 0.36 | 240 | E(D8) | 0.68 | 195 |
| 68 | | D | 0.36 | 240 | D8 | 0.34 | 280 | | | |
| 100 | | D8 | 0.34 | 280 | D8 | 0.34 | 280 | ⊙F | 0.34 | 350 |
| | | E | 0.26 | 300 | ⊙F | 0.16 | 600 | | | |
| 150 | | ⊙F | 0.16 | 600 | ⊙F | 0.16 | 600 | ⊙G | 0.18 | 670 |
| 220 | | ⊙F | 0.16 | 600 | ⊙F | 0.16 | 600 | ⊙G | 0.18 | 670 |
| 330 | | ⊙F | 0.16 | 600 | ⊙G | 0.08 | 850 | H13 | 0.12 | 900 |
| 390 | | | | | | | | H13 | 0.12 | 900 |
| 470 | | ⊙G | 0.08 | 850 | H13 | 0.06 | 1100 | J16 | 0.073 | 1610 |
| 680 | | | | | H13 | 0.06 | 1100 | J16 | 0.073 | 1610 |
| 1000 | | H13 | 0.06 | 1100 | J16 | 0.035 | 1800 | J16 | 0.073 | 1610 |
| 1500 | | | | | J16 | 0.035 | 1800 | | | |
| 2200 | | J16 | 0.035 | 1800 | | | | | | |
| 3300 | | K16 | 0.033 | 2060 | | | | | | |

| Capacitance (μ F) | W.V. | 63 | | | 80 | | | 100 | | |
|---------------------------|------|------|-----------|----------------|------|-----------|----------------|------|-----------|----------------|
| | | Size | Impedance | Ripple current | Size | Impedance | Ripple current | Size | Impedance | Ripple current |
| 3.3 | | | | | C | 5 | 25 | | | |
| 4.7 | | C | 3 | 50 | D | 3 | 40 | | | |
| 10 | | D | 1.5 | 80 | D8 | 2.4 | 60 | | | |
| | | | | | E | 2.4 | 60 | | | |
| 22 | | D8 | 1.2 | 120 | F | 1.3 | 130 | F | 1.3 | 130 |
| | | E | 1.2 | 120 | F | 1.3 | 130 | | | |
| 33 | | F | 0.65 | 250 | F | 1.3 | 130 | G | 0.7 | 200 |
| 47 | | F | 0.65 | 250 | G | 0.7 | 200 | H13 | 0.32 | 500 |
| 68 | | F | 0.65 | 250 | H13 | 0.32 | 500 | H13 | 0.32 | 500 |
| 100 | | G | 0.35 | 400 | H13 | 0.32 | 500 | J16 | 0.17 | 793 |
| 150 | | H13 | 0.16 | 800 | H13 | 0.32 | 500 | J16 | 0.17 | 793 |
| 220 | | H13 | 0.16 | 800 | | | | K16 | 0.153 | 917 |
| 330 | | | | | J16 | 0.17 | 793 | K16 | 0.153 | 917 |
| 470 | | J16 | 0.082 | 1410 | K16 | 0.153 | 917 | | | |
| 680 | | K16 | 0.080 | 1690 | | | | | | |

(); Miniaturization type ⊙ Life time 5000h available upon request(suffix : G)

Standard Products

| W.V. (V) | Cap. (±20%) (μF) | Case size | | | Specification | | | Part No. (RoHS: not compliant) | | Part No. (RoHS: compliant) | | Min. Packaging Q'ty |
|-------------|------------------------|--------------|----------------|--------------|---|--|-----------------------------|--------------------------------------|-------------|----------------------------------|--------|---------------------------|
| | | Dia. (mm) | Length (mm) | Size Code | Ripple current (100kHz) (+105°C) (mA) | Impe- dance (100kHz) (+20°C) (Ω) | tan δ (120Hz) (+20°C) | | Reflow | | Reflow | Taping (pcs) |
| 6.3 | 22 | 4 | 5.8 | B | 90 | 1.35 | 0.26 | EEVFK0J220R | (1) | EEEFK0J220R | (4) | 2000 |
| | 47 | 4 | 5.8 | B | 90 | 1.35 | 0.26 | EEVFK0J470UR | (1) | EEEFK0J470UR | (4) | 2000 |
| | | 5 | 5.8 | C | 160 | 0.70 | 0.26 | EEVFK0J470R | (1) | EEEFK0J470R | (4) | 1000 |
| | 100 | 5 | 5.8 | C | 160 | 0.70 | 0.26 | EEVFK0J101UR | (1) | EEEFK0J101UR | (4) | 1000 |
| | | 6.3 | 5.8 | D | 240 | 0.36 | 0.26 | EEVFK0J101P | (1) | EEEFK0J101P | (4) | 1000 |
| | 220 | 6.3 | 5.8 | D | 240 | 0.36 | 0.26 | EEVFK0J221P | (1) | EEEFK0J221P | (4) | 1000 |
| | 330 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.26 | EEVFK0J331XP | (1) | EEEFK0J331XP | (4) | 900 |
| | | 8 | 6.2 | E | 300 | 0.26 | 0.26 | EEVFK0J331P | (2) | EEEFK0J331P | (5) | 1000 |
| | 470 | 8 | 10.2 | F | 600 | 0.16 | 0.26 | EEVFK0J471P | (2) | EEEFK0J471P | (5) | 500 |
| | 1000 | 8 | 10.2 | F | 600 | 0.16 | 0.26 | EEVFK0J102P | (2) | EEEFK0J102P | (5) | 500 |
| | 1500 | 10 | 10.2 | G | 850 | 0.08 | 0.26 | EEVFK0J152P | (2) | EEEFK0J152P | (5) | 500 |
| 3300 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.30 | | | EEVFK0J332Q | (2) | 200 | |
| 6800 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.36 | | | EEVFK0J682M | (2) | 125 | |
| 10 | 22 | 4 | 5.8 | B | 90 | 1.35 | 0.19 | EEVFK1A220R | (1) | EEEFK1A220R | (4) | 2000 |
| | 33 | 4 | 5.8 | B | 90 | 1.35 | 0.19 | EEVFK1A330UR | (1) | EEEFK1A330UR | (4) | 2000 |
| | | 5 | 5.8 | C | 160 | 0.70 | 0.19 | EEVFK1A330R | (1) | EEEFK1A330R | (4) | 1000 |
| | 150 | 6.3 | 5.8 | D | 240 | 0.36 | 0.19 | EEVFK1A151P | (1) | EEEFK1A151P | (4) | 1000 |
| | 220 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.19 | EEVFK1A221XP | (1) | EEEFK1A221XP | (4) | 900 |
| | | 8 | 6.2 | E | 300 | 0.26 | 0.19 | EEVFK1A221P | (2) | EEEFK1A221P | (5) | 1000 |
| | 330 | 8 | 10.2 | F | 600 | 0.16 | 0.19 | EEVFK1A331P | (2) | EEEFK1A331P | (5) | 500 |
| | 470 | 8 | 10.2 | F | 600 | 0.16 | 0.19 | EEVFK1A471P | (2) | EEEFK1A471P | (5) | 500 |
| | 680 | 8 | 10.2 | F | 600 | 0.16 | 0.19 | EEVFK1A681P | (2) | EEEFK1A681P | (5) | 500 |
| | 1000 | 10 | 10.2 | G | 850 | 0.08 | 0.19 | EEVFK1A102P | (2) | EEEFK1A102P | (5) | 500 |
| | 2200 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.21 | | | EEVFK1A222Q | (2) | 200 |
| 4700 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.25 | | | EEVFK1A472M | (2) | 125 | |
| 6800 | 18 | 16.5 | K16 | 2060 | 0.033 | 0.29 | | | EEVFK1A682M | (2) | 125 | |
| 16 | 10 | 4 | 5.8 | B | 90 | 1.35 | 0.16 | EEVFK1C100R | (1) | EEEFK1C100R | (4) | 2000 |
| | 22 | 4 | 5.8 | B | 90 | 1.35 | 0.16 | EEVFK1C220UR | (1) | EEEFK1C220UR | (4) | 2000 |
| | | 5 | 5.8 | C | 160 | 0.70 | 0.16 | EEVFK1C220R | (1) | EEEFK1C220R | (4) | 1000 |
| | 47 | 5 | 5.8 | C | 160 | 0.70 | 0.16 | EEVFK1C470UR | (1) | EEEFK1C470UR | (4) | 1000 |
| | | 6.3 | 5.8 | D | 240 | 0.36 | 0.16 | EEVFK1C470P | (1) | EEEFK1C470P | (4) | 1000 |
| | 68 | 6.3 | 5.8 | D | 240 | 0.36 | 0.16 | EEVFK1C680P | (1) | EEEFK1C680P | (4) | 1000 |
| | 100 | 6.3 | 5.8 | D | 240 | 0.36 | 0.16 | EEVFK1C101P | (1) | EEEFK1C101P | (4) | 1000 |
| | 150 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.16 | EEVFK1C151XP | (1) | EEEFK1C151XP | (4) | 900 |
| | 220 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.16 | EEVFK1C221XP | (1) | EEEFK1C221XP | (4) | 900 |
| | | 8 | 6.2 | E | 300 | 0.26 | 0.16 | EEVFK1C221P | (2) | EEEFK1C221P | (5) | 1000 |
| | 330 | 8 | 10.2 | F | 600 | 0.16 | 0.16 | EEVFK1C331P | (2) | EEEFK1C331P | (5) | 500 |
| | 470 | 8 | 10.2 | F | 600 | 0.16 | 0.16 | EEVFK1C471P | (2) | EEEFK1C471P | (5) | 500 |
| | 680 | 10 | 10.2 | G | 850 | 0.08 | 0.16 | EEVFK1C681P | (2) | EEEFK1C681P | (5) | 500 |
| | 1500 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.16 | | | EEVFK1C152Q | (2) | 200 |
| 3300 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.20 | | | EEVFK1C332M | (2) | 125 | |
| 4700 | 18 | 16.5 | K16 | 2060 | 0.033 | 0.22 | | | EEVFK1C472M | (2) | 125 | |
| 25 | 10 | 4 | 5.8 | B | 90 | 1.35 | 0.14 | EEVFK1E100R | (1) | EEEFK1E100R | (4) | 2000 |
| | 22 | 5 | 5.8 | C | 160 | 0.7 | 0.14 | EEVFK1E220R | (1) | EEEFK1E220R | (4) | 1000 |

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

Endurance: 105°C 2000h - 5000h

■ Standard Products

| W.V. | Cap. (±20%) (μF) | Case size | | | Specification | | | Part No. (RoHS: not compliant) | Reflow | Part No. (RoHS: compliant) | Reflow | Min. Packaging Qty | Taping (pcs) |
|------|----------------------------|--------------|----------------|--------------|---|--|-----------------------------|--------------------------------------|-------------|----------------------------------|--------|--------------------------|-----------------|
| | | Dia. (mm) | Length (mm) | Size Code | Ripple current (100kHz) (+105°C) (mA) | Impe- dance (100kHz) (+20°C) (Ω) | tan δ (120Hz) (+20°C) | | | | | | |
| 25 | 33 | 5 | 5.8 | C | 160 | 0.7 | 0.14 | EEVFK1E330UR | (1) | EEEFK1E330UR | (4) | 1000 | |
| | | 6.3 | 5.8 | D | 240 | 0.36 | 0.14 | EEVFK1E330P | (1) | EEEFK1E330P | (4) | 1000 | |
| | 47 | 6.3 | 5.8 | D | 240 | 0.36 | 0.14 | EEVFK1E470P | (1) | EEEFK1E470P | (4) | 1000 | |
| | 68 | 6.3 | 5.8 | D | 240 | 0.36 | 0.14 | EEVFK1E680P | (1) | EEEFK1E680P | (4) | 1000 | |
| | 100 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.14 | EEVFK1E101XP | (1) | EEEFK1E101XP | (4) | 900 | |
| | | 8 | 6.2 | E | 300 | 0.26 | 0.14 | EEVFK1E101P | (2) | EEEFK1E101P | (5) | 1000 | |
| | 150 | 8 | 10.2 | F | 600 | 0.16 | 0.14 | EEVFK1E151P | (2) | EEEFK1E151P | (5) | 500 | |
| | 220 | 8 | 10.2 | F | 600 | 0.16 | 0.14 | EEVFK1E221P | (2) | EEEFK1E221P | (5) | 500 | |
| | 330 | 8 | 10.2 | F | 600 | 0.16 | 0.14 | EEVFK1E331P | (2) | EEEFK1E331P | (5) | 500 | |
| | 470 | 10 | 10.2 | G | 850 | 0.08 | 0.14 | EEVFK1E471P | (2) | EEEFK1E471P | (5) | 500 | |
| | 1000 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.14 | | (2) | EEVFK1E102Q | (2) | 200 | |
| | 2200 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.16 | | (2) | EEVFK1E222M | (2) | 125 | |
| 3300 | 18 | 16.5 | K16 | 2060 | 0.033 | 0.18 | | (2) | EEVFK1E332M | (2) | 125 | | |
| 35 | 4.7 | 4 | 5.8 | B | 90 | 1.35 | 0.12 | EEVFK1V4R7R | (1) | EEEFK1V4R7R | (4) | 2000 | |
| | 10 | 4 | 5.8 | B | 90 | 1.35 | 0.12 | EEVFK1V100UR | (1) | EEEFK1V100UR | (4) | 2000 | |
| | | 5 | 5.8 | C | 160 | 0.70 | 0.12 | EEVFK1V100R | (1) | EEEFK1V100R | (4) | 1000 | |
| | 22 | 5 | 5.8 | C | 160 | 0.70 | 0.12 | EEVFK1V220R | (1) | EEEFK1V220R | (4) | 1000 | |
| | 33 | 6.3 | 5.8 | D | 240 | 0.36 | 0.12 | EEVFK1V330P | (1) | EEEFK1V330P | (4) | 1000 | |
| | 47 | 6.3 | 5.8 | D | 240 | 0.36 | 0.12 | EEVFK1V470P | (1) | EEEFK1V470P | (4) | 1000 | |
| | 68 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.12 | EEVFK1V680XP | (1) | EEEFK1V680XP | (4) | 900 | |
| | 100 | 6.3 | 7.7 | D8 | 280 | 0.34 | 0.12 | EEVFK1V101XP | (1) | EEEFK1V101XP | (4) | 900 | |
| | | 8 | 10.2 | F | 600 | 0.16 | 0.12 | EEVFK1V101P | (2) | EEEFK1V101P | (5) | 500 | |
| | 150 | 8 | 10.2 | F | 600 | 0.16 | 0.12 | EEVFK1V151P | (2) | EEEFK1V151P | (5) | 500 | |
| | 220 | 8 | 10.2 | F | 600 | 0.16 | 0.12 | EEVFK1V221P | (2) | EEEFK1V221P | (5) | 500 | |
| | 330 | 10 | 10.2 | G | 850 | 0.08 | 0.12 | EEVFK1V331P | (2) | EEEFK1V331P | (5) | 500 | |
| | 470 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.12 | | | EEVFK1V471Q | (2) | 200 | |
| | 680 | 12.5 | 13.5 | H13 | 1100 | 0.06 | 0.12 | | | EEVFK1V681Q | (2) | 200 | |
| | 1000 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.12 | | | EEVFK1V102M | (2) | 125 | |
| 1500 | 16 | 16.5 | J16 | 1800 | 0.035 | 0.12 | | | EEVFK1V152M | (2) | 125 | | |
| 50 | 4.7 | 4 | 5.8 | B | 60 | 2.9 | 0.10 | EEVFK1H4R7R | (1) | EEEFK1H4R7R | (4) | 2000 | |
| | 10 | 5 | 5.8 | C | 85 | 1.52 | 0.10 | EEVFK1H100UR | (1) | EEEFK1H100UR | (4) | 1000 | |
| | | 6.3 | 5.8 | D | 165 | 0.88 | 0.10 | EEVFK1H100P | (1) | EEEFK1H100P | (4) | 1000 | |
| | 22 | 6.3 | 5.8 | D | 165 | 0.88 | 0.10 | EEVFK1H220P | (1) | EEEFK1H220P | (4) | 1000 | |
| | 33 | 6.3 | 7.7 | D8 | 195 | 0.68 | 0.10 | EEVFK1H330XP | (1) | EEEFK1H330XP | (4) | 900 | |
| | | 8 | 6.2 | E | 195 | 0.68 | 0.10 | EEVFK1H330P | (2) | EEEFK1H330P | (5) | 1000 | |
| | 47 | 6.3 | 7.7 | D8 | 195 | 0.68 | 0.10 | EEVFK1H470XP | (1) | EEEFK1H470XP | (4) | 900 | |
| | | 8 | 6.2 | E | 195 | 0.68 | 0.10 | EEVFK1H470P | (2) | EEEFK1H470P | (5) | 1000 | |
| | 100 | 8 | 10.2 | F | 350 | 0.34 | 0.10 | EEVFK1H101P | (2) | EEEFK1H101P | (5) | 500 | |
| | 150 | 10 | 10.2 | G | 670 | 0.18 | 0.10 | EEVFK1H151P | (2) | EEEFK1H151P | (5) | 500 | |
| | 220 | 10 | 10.2 | G | 670 | 0.18 | 0.10 | EEVFK1H221P | (2) | EEEFK1H221P | (5) | 500 | |
| | 330 | 12.5 | 13.5 | H13 | 900 | 0.12 | 0.10 | | | EEVFK1H331Q | (2) | 200 | |
| | 390 | 12.5 | 13.5 | H13 | 900 | 0.12 | 0.10 | | | EEVFK1H391Q | (2) | 200 | |
| | 470 | 16 | 16.5 | J16 | 1610 | 0.073 | 0.10 | | | EEVFK1H471M | (2) | 125 | |
| 680 | 16 | 16.5 | J16 | 1610 | 0.073 | 0.10 | | | EEVFK1H681M | (2) | 125 | | |
| 1000 | 16 | 16.5 | J16 | 1610 | 0.073 | 0.10 | | | EEVFK1H102M | (2) | 125 | | |

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

Endurance: 105°C 2000h - 5000h

Standard Products

| W.V. (V) | Cap. (±20%) (μF) | Case size | | | Specification | | | Part No. (RoHS: not compliant) | | Part No. (RoHS: compliant) | | Min. Packaging Q'ty |
|-------------|------------------------|--------------|----------------|--------------|---|--|-----------------------------|--------------------------------------|-------------|----------------------------------|--------|---------------------------|
| | | Dia. (mm) | Length (mm) | Size Code | Ripple current (100kHz) (+105°C) (mA) | Impe- dance (100kHz) (+20°C) (Ω) | tan δ (120Hz) (+20°C) | | Reflow | | Reflow | Taping (pcs) |
| 63 | 4.7 | 5 | 5.8 | C | 50 | 3.0 | 0.08 | EEVFK1J4R7R | (1) | EEEFK1J4R7R | (4) | 1000 |
| | 10 | 6.3 | 5.8 | D | 80 | 1.5 | 0.08 | EEVFK1J100P | (1) | EEEFK1J100P | (4) | 1000 |
| | 22 | 6.3 | 7.7 | D8 | 120 | 1.2 | 0.08 | EEVFK1J220XP | (1) | EEEFK1J220XP | (4) | 900 |
| | | 8 | 6.2 | E | 120 | 1.2 | 0.08 | EEVFK1J220P | (2) | EEEFK1J220P | (5) | 1000 |
| | 33 | 8 | 10.2 | F | 250 | 0.65 | 0.08 | EEVFK1J330P | (2) | EEEFK1J330P | (5) | 500 |
| | 47 | 8 | 10.2 | F | 250 | 0.65 | 0.08 | EEVFK1J470P | (2) | EEEFK1J470P | (5) | 500 |
| | 68 | 8 | 10.2 | F | 250 | 0.65 | 0.08 | EEVFK1J680UP | (2) | EEEFK1J680UP | (5) | 500 |
| | 100 | 10 | 10.2 | G | 400 | 0.35 | 0.08 | EEVFK1J101P | (2) | EEEFK1J101P | (5) | 500 |
| | 150 | 12.5 | 13.5 | H13 | 800 | 0.16 | 0.08 | | | EEVFK1J151Q | (2) | 200 |
| | 220 | 12.5 | 13.5 | H13 | 800 | 0.16 | 0.08 | | | EEVFK1J221Q | (2) | 200 |
| | 470 | 16 | 16.5 | J16 | 1410 | 0.082 | 0.08 | | | EEVFK1J471M | (2) | 125 |
| 680 | 18 | 16.5 | K16 | 1690 | 0.08 | 0.08 | | | EEVFK1J681M | (2) | 125 | |
| 80 | 3.3 | 5 | 5.8 | C | 25 | 5.0 | 0.08 | EEVFK1K3R3R | (1) | EEEFK1K3R3R | (4) | 1000 |
| | 4.7 | 6.3 | 5.8 | D | 40 | 3.0 | 0.08 | EEVFK1K4R7P | (1) | EEEFK1K4R7P | (4) | 1000 |
| | 10 | 6.3 | 7.7 | D8 | 60 | 2.4 | 0.08 | EEVFK1K100XP | (1) | EEEFK1K100XP | (4) | 900 |
| | | 8 | 6.2 | E | 60 | 2.4 | 0.08 | EEVFK1K100P | (2) | EEEFK1K100P | (5) | 1000 |
| | 22 | 8 | 10.2 | F | 130 | 1.3 | 0.08 | EEVFK1K220P | (2) | EEEFK1K220P | (5) | 500 |
| | 33 | 8 | 10.2 | F | 130 | 1.3 | 0.08 | EEVFK1K330P | (2) | EEEFK1K330P | (5) | 500 |
| | 47 | 10 | 10.2 | G | 200 | 0.7 | 0.08 | EEVFK1K470P | (2) | EEEFK1K470P | (5) | 500 |
| | 68 | 12.5 | 13.5 | H13 | 500 | 0.32 | 0.08 | | | EEVFK1K680Q | (2) | 200 |
| | 100 | 12.5 | 13.5 | H13 | 500 | 0.32 | 0.08 | | | EEVFK1K101Q | (2) | 200 |
| | 150 | 12.5 | 13.5 | H13 | 500 | 0.32 | 0.08 | | | EEVFK1K151Q | (2) | 200 |
| | 330 | 16 | 16.5 | J16 | 793 | 0.17 | 0.08 | | | EEVFK1K331M | (2) | 125 |
| 470 | 18 | 16.5 | K16 | 917 | 0.153 | 0.08 | | | EEVFK1K471M | (2) | 125 | |
| 100 | 22 | 8.0 | 10.2 | F | 130 | 1.3 | 0.07 | EEVFK2A220P | (2) | EEEFK2A220P | (5) | 500 |
| | 33 | 10 | 10.2 | G | 200 | 0.7 | 0.07 | EEVFK2A330P | (2) | EEEFK2A330P | (5) | 500 |
| | 47 | 12.5 | 13.5 | H13 | 500 | 0.32 | 0.07 | | | EEVFK2A470Q | (2) | 200 |
| | 68 | 12.5 | 13.5 | H13 | 500 | 0.32 | 0.07 | | | EEVFK2A680Q | (2) | 200 |
| | 100 | 16 | 16.5 | J16 | 793 | 0.17 | 0.07 | | | EEVFK2A101M | (2) | 125 |
| | 150 | 16 | 16.5 | J16 | 793 | 0.17 | 0.07 | | | EEVFK2A151M | (2) | 125 |
| | 220 | 18 | 16.5 | K16 | 917 | 0.153 | 0.07 | | | EEVFK2A221M | (2) | 125 |
| | 330 | 18 | 16.5 | K16 | 917 | 0.153 | 0.07 | | | EEVFK2A331M | (2) | 125 |

An explanation of the taping dimensions can be found on page 84.

Reflow profiles can be found on page 86.

Endurance: 105°C 2000h - 5000h

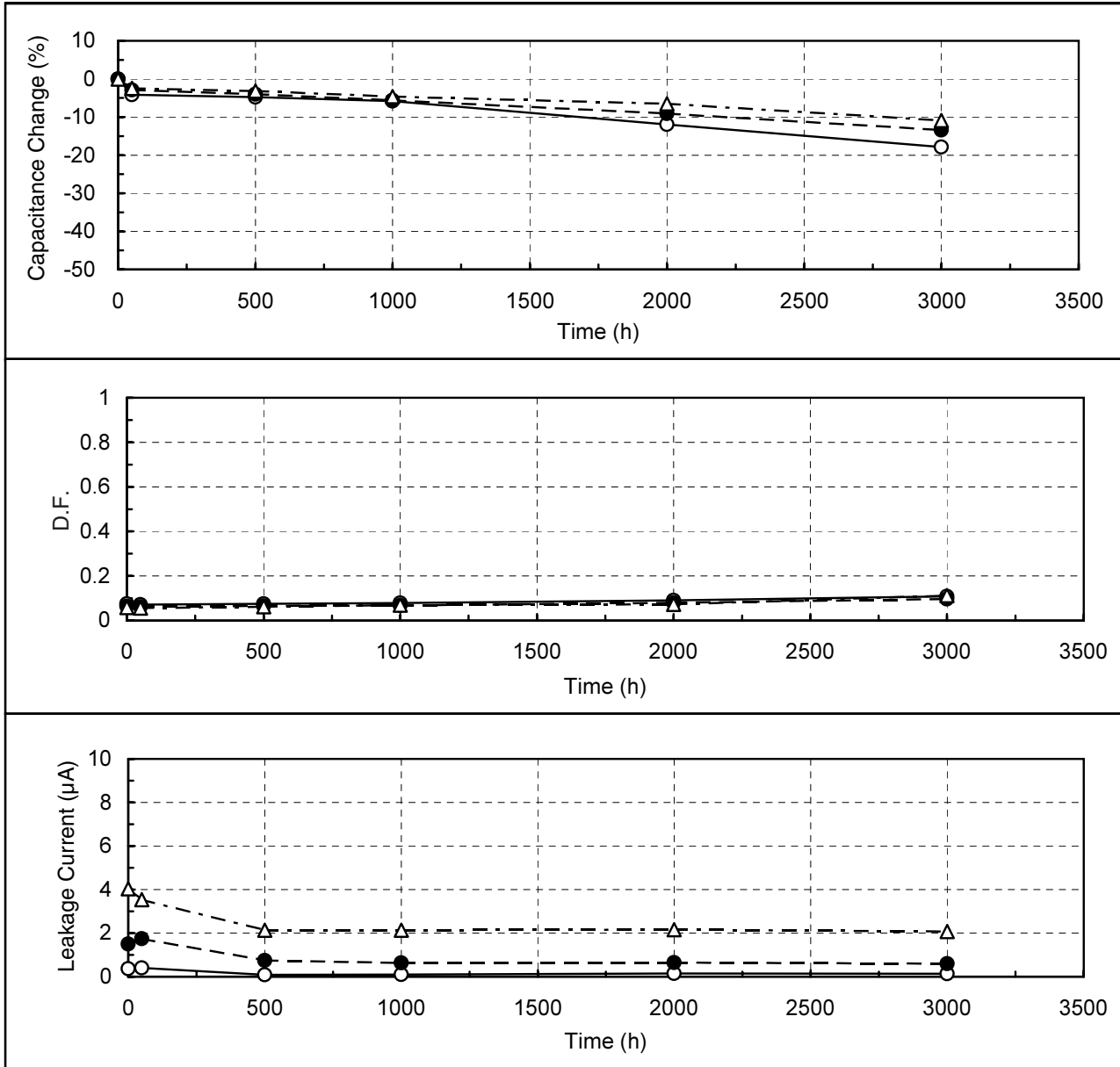
Frequency Correction Factor of Rated Ripple Current

| | Frequency (Hz) | | | | |
|-------------|----------------|------|------|------|-------|
| | 50,60 | 120 | 1k | 10k | 100k~ |
| coefficient | 0.70 | 0.75 | 0.90 | 0.95 | 1.00 |

■ Endurance

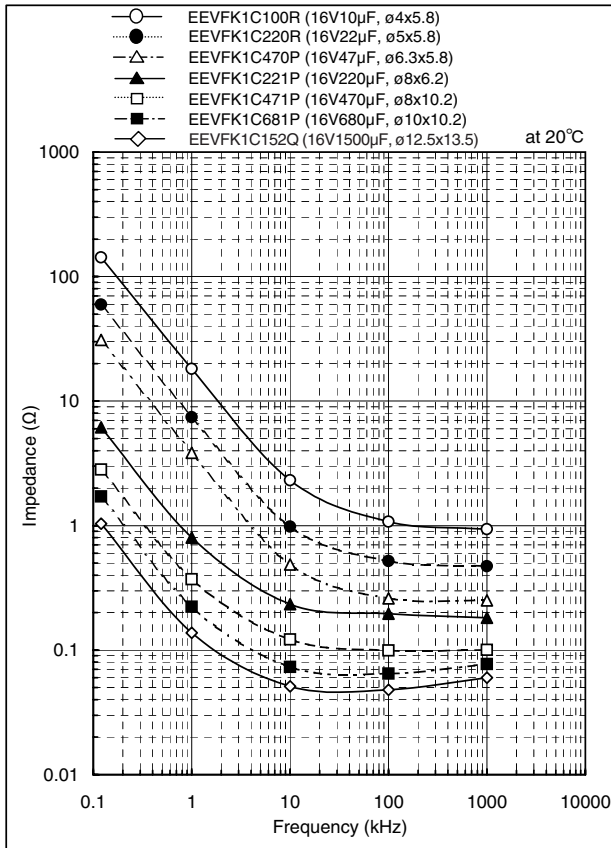
- EEVFK0J220R (6.3V22 μ F, ϕ 4x5.8)
- EEVFK0J101P (6.3V100 μ F, ϕ 6.3x5.8)
- △ EEVFK0J152P (6.3V1500 μ F, ϕ 10x10.2)

at 105°C

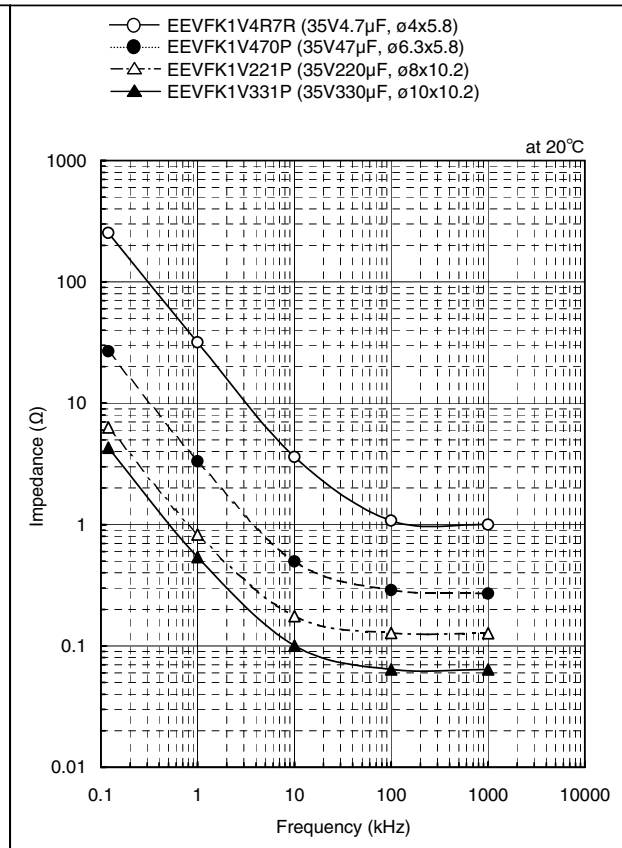


■ Frequency Characteristics (Impedance)

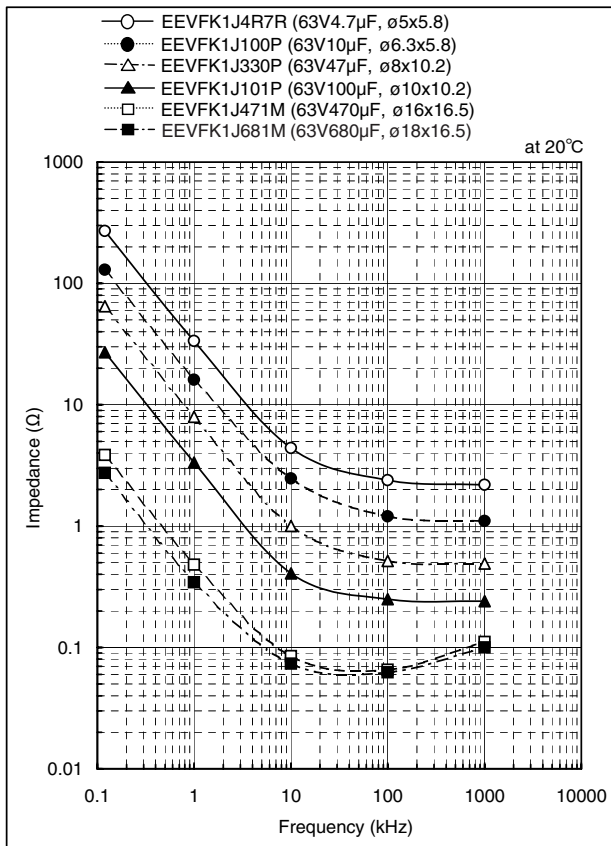
● 16VV



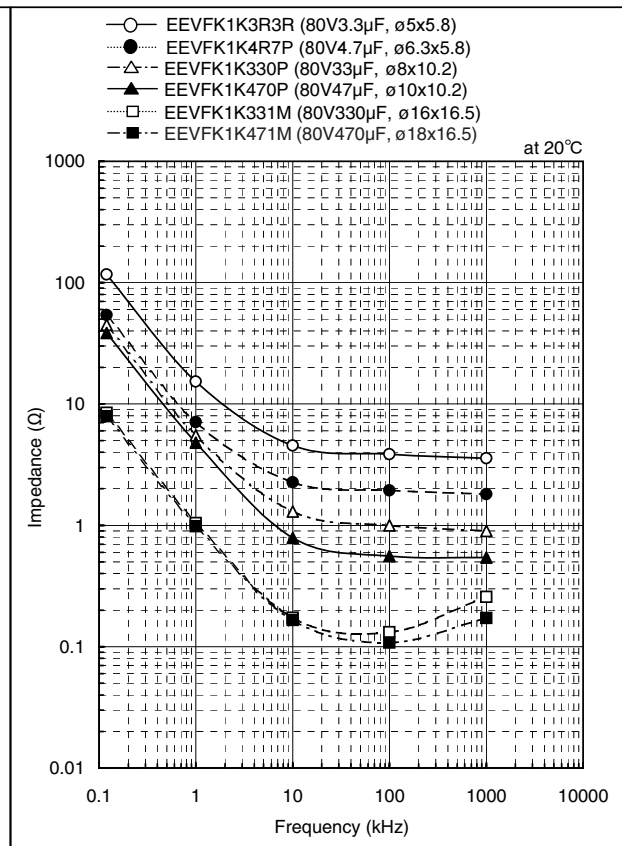
● 35VV



● 63VV

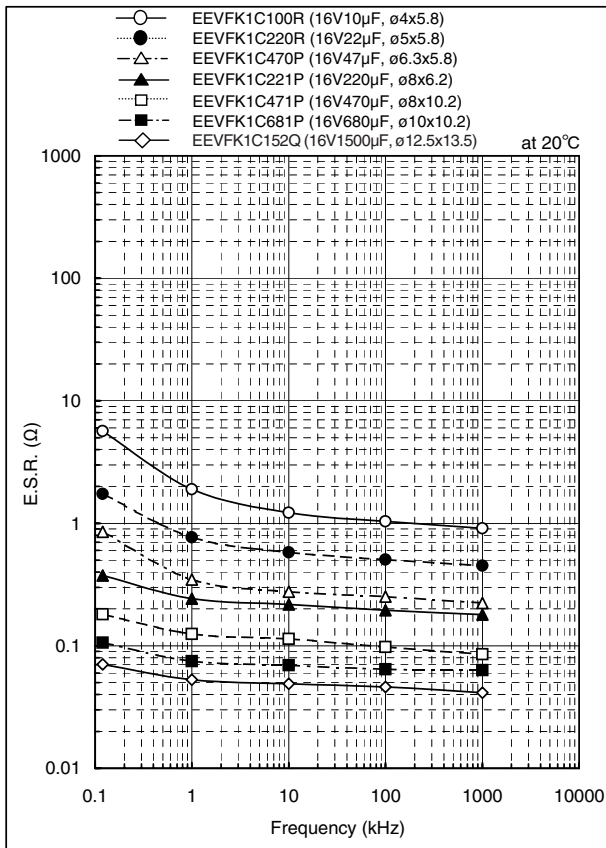


● 80VV

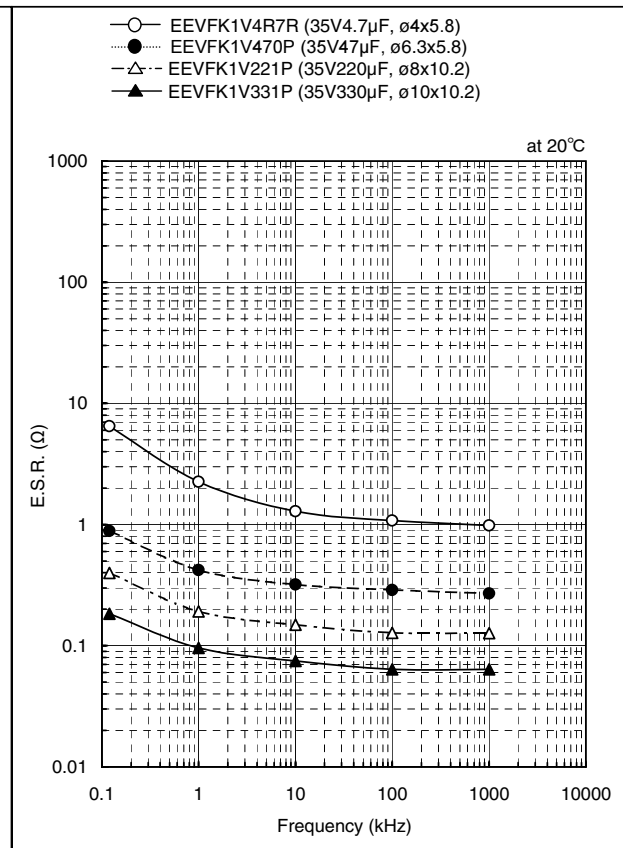


Frequency Characteristics (ESR)

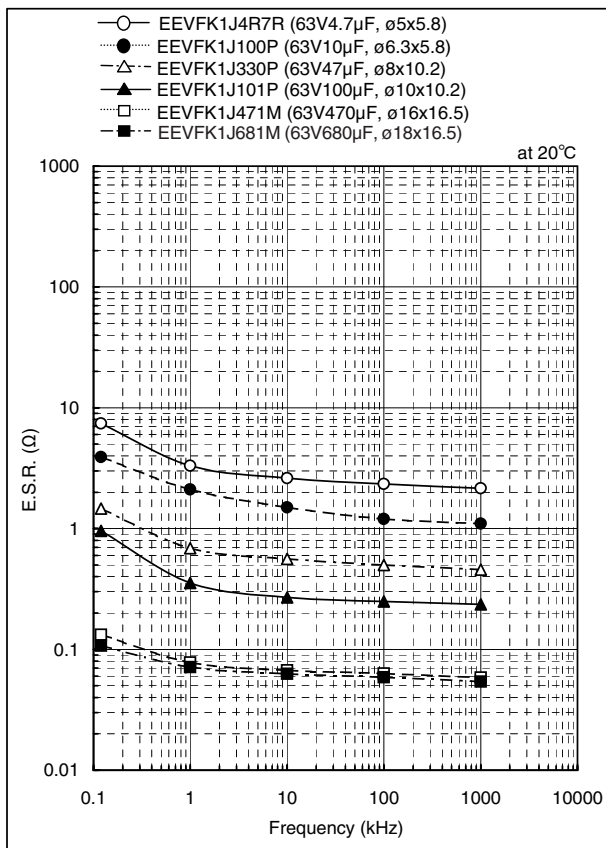
● 16WV



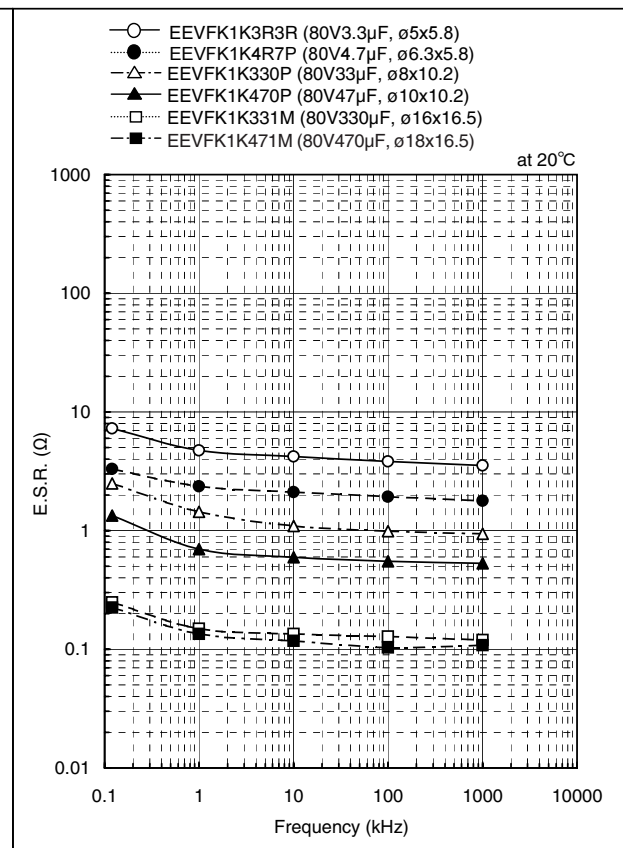
● 35WV



● 63WV

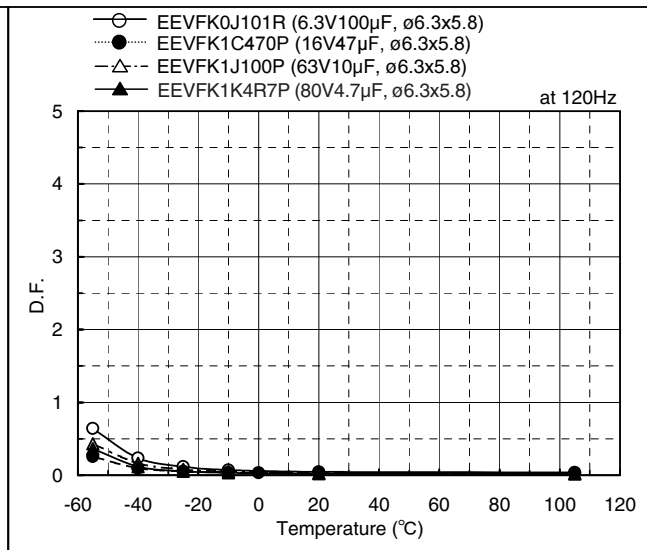
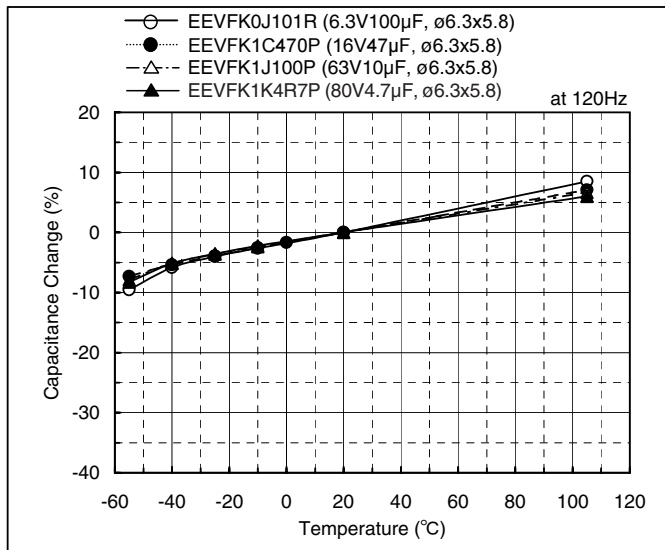


● 80WV

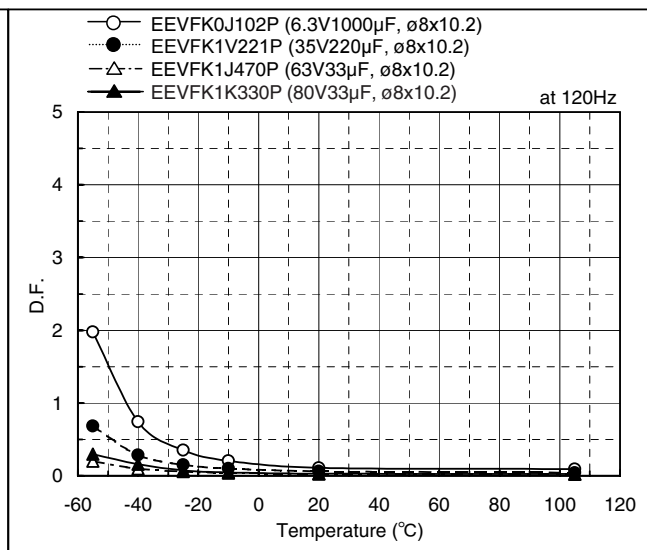
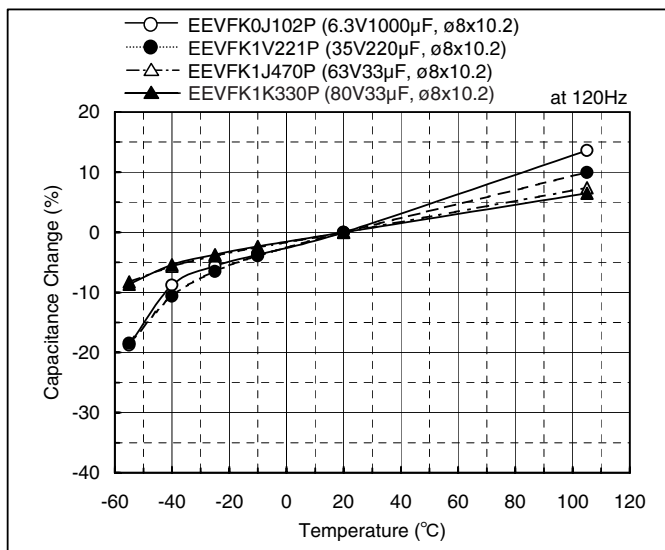


Temperature Characteristics

● $\phi 6.3 \times 5.8$



● $\phi 8 \times 10.2$



| Pre-fix | Suffix | Case Diameter | RoHS Compliant | Terminal Finish | Reflow Condition | | Reflow Chart |
|---------|--------|---------------|----------------|-----------------|-------------------|----------------|--|
| | | | | | Peak Temperature | Time above 200 | |
| ECE-V | R | 3mm to 5mm | No | Sn-Pb | 240 for 5 seconds | 20 seconds | (1) Fig.1 |
| | P | 6mm | No | Sn-Pb | 240 for 5 seconds | 20 seconds | (1) Fig.1 |
| | P | 8mm to 10mm | No | Sn-Pb | 230 for 5 seconds | 20 seconds | (2) Fig.2 |
| EEV- | R | 4mm to 5mm | No | Sn-Pb | 240 for 5 seconds | 20 seconds | (1) Fig.1 |
| | P | 6mm | No | Sn-Pb | 240 for 5 seconds | 20 seconds | (1) Fig.1 |
| | P | 8mm to 10mm | No | Sn-Pb | 230 for 5 seconds | 20 seconds | (2) Fig.2 |
| | Q | 12.5mm | Yes | Sn | 230 for 5 seconds | 20 seconds | (2) Fig.2 (Except for EB series) (3) Fig.3 (EB series only) |
| | M | 16mm to 18mm | Yes | Sn | 230 for 5 seconds | 20 seconds | (2) Fig.2 (Except for EB series) (3) Fig.3 (EB series only) |
| EEE- | R | 3mm to 5mm | Yes | Sn-Bi | 250 for 5 seconds | 60 seconds | (4) Fig.4 |
| | P | 6mm | Yes | Sn-Bi | 250 for 5 seconds | 60 seconds | (4) Fig.4 |
| | P | 8mm to 10mm | Yes | Sn-Bi | 235 for 5 seconds | 60 seconds | (5) Fig.5 |

