

Surface Mount Type

Series : **FT** Type : **V**

High temperature Lead-Free reflow



Features

- Endurance : 105 °C 2000 h to 5000 h
- Miniaturized, Low ESR (1 size smaller than series FK)
- Vibration-proof product is available upon request. ($\phi 8$ mm and larger)
- RoHS compliant

Specifications

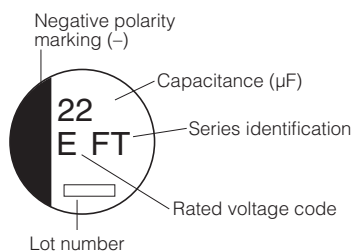
| | | |
|------------------------------------|---|---|
| Category temperature range | -55 °C to +105 °C | |
| Rated voltage range | 6.3 V.DC to 50 V.DC | |
| Capacitance range | 10 μ F to 2200 μ F | |
| Capacitance tolerance | ± 20 % (120 Hz/+20 °C) | |
| Leakage current | $I \leq 0.01$ CV (μ A) After 2 minutes | |
| Dissipation factor (tan δ) | Please see the attached characteristics list | |
| Endurance | After applying rated working voltage for 2000 hours at +105 °C ± 2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits. (Suffix "G" in 6.3 V.DC : 3000 hours, 10 V.DC to 50 V.DC : 5000 hours) | |
| | Capacitance change | Within ± 30 % of the initial value (Suffix "G" is ± 35 %) |
| | tan δ | ≤ 200 % of the initial limit (Suffix "G" is ≤ 300 %) |
| Shelf life | DC leakage current | Within the initial limit |
| | 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) | |
| Resistance to soldering heat | After reflow soldering and then being stabilized at +20 °C, capacitor shall meet the following limits. | |
| | Capacitance change | Within ± 10 % of the initial value |
| | tan δ | Within the initial limit |
| AEC-Q200 | DC leakage current | Within the initial limit |
| | AEC-Q200 compliant | |

Frequency correction factor for ripple current

| Capacitance (μ F) | Frequency (Hz) | | | |
|------------------------|----------------|------|------|----------|
| | 120 | 1 k | 10 k | 100 k to |
| 10 to 470 | 0.65 | 0.85 | 0.95 | 1.00 |
| 560 to 2200 | 0.70 | 0.90 | 0.95 | 1.00 |

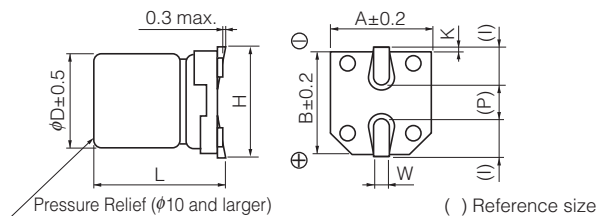
Marking

Example : 25 V.DC 22 μ F
Marking color : BLACK



| | | | | | | |
|-------------------|-----|----|----|----|----|----|
| R. Voltage (V.DC) | 6.3 | 10 | 16 | 25 | 35 | 50 |
| Code | j | A | C | E | V | H |

Dimensions



| Size code | ϕD | L | A, B | H | I | W | P | K |
|-----------|----------|----------------|------|-----------|-----|----------------|-----|-------------------------|
| B | 4.0 | 5.8 ± 0.3 | 4.3 | 5.5 max. | 1.8 | 0.65 ± 0.1 | 1.0 | 0.35 $^{+0.15}_{-0.20}$ |
| C | 5.0 | 5.8 ± 0.3 | 5.3 | 6.5 max. | 2.2 | 0.65 ± 0.1 | 1.5 | 0.35 $^{+0.15}_{-0.20}$ |
| D | 6.3 | 5.8 ± 0.3 | 6.6 | 7.8 max. | 2.6 | 0.65 ± 0.1 | 1.8 | 0.35 $^{+0.15}_{-0.20}$ |
| D8 | 6.3 | 7.7 ± 0.3 | 6.6 | 7.8 max. | 2.6 | 0.65 ± 0.1 | 1.8 | 0.35 $^{+0.15}_{-0.20}$ |
| F | 8.0 | 10.2 ± 0.3 | 8.3 | 10.0 max. | 3.4 | 0.90 ± 0.2 | 3.1 | 0.70 ± 0.20 |
| G | 10.0 | 10.2 ± 0.3 | 10.3 | 12.0 max. | 3.5 | 0.90 ± 0.2 | 4.6 | 0.70 ± 0.20 |

Characteristics list

Endurance : 105 °C 2000 h

| Rated voltage (V.DC) | Cap. (±20 %) (μF) | Case size (mm) | | Size* code | Specification | | | Part No. | Reflow | Min. Packaging Q'ty |
|----------------------|-------------------|----------------|------|------------|--|----------------------------|-------------------------|--------------|--------|---------------------|
| | | φD | L | | Ripple current (100 kHz) (+105 °C) (mA r.m.s.) | ESR (100 kHz) (+20 °C) (Ω) | tan δ (120 Hz) (+20 °C) | | | Taping (pcs) |
| 6.3 | 100 | 4 | 5.8 | B | 160 | 0.85 | 0.26 | EEEFT0J101AR | (5) | 2000 |
| | 220 | 5 | 5.8 | C | 240 | 0.36 | 0.26 | EEEFT0J221AR | (5) | 1000 |
| | 330 | 6.3 | 5.8 | D | 300 | 0.26 | 0.26 | EEEFT0J331AP | (5) | 1000 |
| | 470 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.26 | EEEFTJ471XAP | (5) | 900 |
| | 680 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.26 | EEEFTJ681XAP | (5) | 900 |
| | 1500 | 8 | 10.2 | F | 850 | 0.08 | 0.26 | EEEFT0J152AP | (6) | 500 |
| 2200 | 10 | 10.2 | G | 1190 | 0.06 | 0.28 | EEEFT0J222AP | (6) | 500 | |
| 10 | 68 | 4 | 5.8 | B | 160 | 0.85 | 0.19 | EEEFT1A680AR | (5) | 2000 |
| | 150 | 5 | 5.8 | C | 240 | 0.36 | 0.19 | EEEFT1A151AR | (5) | 1000 |
| | 220 | 6.3 | 5.8 | D | 300 | 0.26 | 0.19 | EEEFT1A221AP | (5) | 1000 |
| | 330 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.19 | EEEFTA331XAP | (5) | 900 |
| | 470 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.19 | EEEFTA471XAP | (5) | 900 |
| | 1000 | 8 | 10.2 | F | 850 | 0.08 | 0.19 | EEEFT1A102AP | (6) | 500 |
| 1500 | 10 | 10.2 | G | 1190 | 0.06 | 0.19 | EEEFT1A152AP | (6) | 500 | |
| 16 | 47 | 4 | 5.8 | B | 160 | 0.85 | 0.16 | EEEFT1C470AR | (5) | 2000 |
| | 68 | 5 | 5.8 | C | 240 | 0.36 | 0.16 | EEEFT1C680AR | (5) | 1000 |
| | 100 | 5 | 5.8 | C | 240 | 0.36 | 0.16 | EEEFT1C101AR | (5) | 1000 |
| | 150 | 6.3 | 5.8 | D | 300 | 0.26 | 0.16 | EEEFT1C151AP | (5) | 1000 |
| | 220 | 6.3 | 5.8 | D | 300 | 0.26 | 0.16 | EEEFT1C221AP | (5) | 1000 |
| | 330 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.16 | EEEFTC331XAP | (5) | 900 |
| | 680 | 8 | 10.2 | F | 850 | 0.08 | 0.16 | EEEFT1C681AP | (6) | 500 |
| | 820 | 8 | 10.2 | F | 850 | 0.08 | 0.16 | EEEFT1C821UP | (6) | 500 |
| | 1000 | 10 | 10.2 | G | 1190 | 0.06 | 0.16 | EEEFT1C102AP | (6) | 500 |
| | 1200 | 10 | 10.2 | G | 1190 | 0.06 | 0.16 | EEEFT1C122UP | (6) | 500 |
| 25 | 22 | 4 | 5.8 | B | 160 | 0.85 | 0.14 | EEEFT1E220AR | (5) | 2000 |
| | 33 | 4 | 5.8 | B | 160 | 0.85 | 0.14 | EEEFT1E330AR | (5) | 2000 |
| | 47 | 5 | 5.8 | C | 240 | 0.36 | 0.14 | EEEFT1E470AR | (5) | 1000 |
| | 68 | 5 | 5.8 | C | 240 | 0.36 | 0.14 | EEEFT1E680AR | (5) | 1000 |
| | 100 | 6.3 | 5.8 | D | 300 | 0.26 | 0.14 | EEEFT1E101AP | (5) | 1000 |
| | 150 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.14 | EEEFTE151XAP | (5) | 900 |
| | 220 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.14 | EEEFTE221XAP | (5) | 900 |
| | 470 | 8 | 10.2 | F | 850 | 0.08 | 0.14 | EEEFT1E471AP | (6) | 500 |
| | 560 | 8 | 10.2 | F | 850 | 0.08 | 0.14 | EEEFT1E561UP | (6) | 500 |
| 820 | 10 | 10.2 | G | 1190 | 0.06 | 0.14 | EEEFT1E821AP | (6) | 500 | |
| 1000 | 10 | 10.2 | G | 1190 | 0.06 | 0.14 | EEEFT1E102UP | (6) | 500 | |
| 35 | 22 | 4 | 5.8 | B | 160 | 0.85 | 0.12 | EEEFT1V220AR | (5) | 2000 |
| | 33 | 5 | 5.8 | C | 240 | 0.36 | 0.12 | EEEFT1V330AR | (5) | 1000 |
| | 47 | 5 | 5.8 | C | 240 | 0.36 | 0.12 | EEEFT1V470AR | (5) | 1000 |
| | 68 | 6.3 | 5.8 | D | 300 | 0.26 | 0.12 | EEEFT1V680AP | (5) | 1000 |
| | 100 | 6.3 | 5.8 | D | 300 | 0.26 | 0.12 | EEEFT1V101AP | (5) | 1000 |
| | 150 | 6.3 | 7.7 | D8 | 600 | 0.16 | 0.12 | EEEFTV151XAP | (5) | 900 |
| | 330 | 8 | 10.2 | F | 850 | 0.08 | 0.12 | EEEFT1V331AP | (6) | 500 |
| | 390 | 8 | 10.2 | F | 850 | 0.08 | 0.12 | EEEFT1V391UP | (6) | 500 |
| | 560 | 10 | 10.2 | G | 1190 | 0.06 | 0.12 | EEEFT1V561AP | (6) | 500 |
| 680 | 10 | 10.2 | G | 1190 | 0.06 | 0.12 | EEEFT1V681UP | (6) | 500 | |
| 50 | 10 | 4 | 5.8 | (B) | 85 | 2.30 | 0.10 | EEEFTH100UAR | (5) | 2000 |
| | | 5 | 5.8 | C | 165 | 0.88 | 0.10 | EEEFT1H100AR | (5) | 1000 |
| | 22 | 5 | 5.8 | C | 165 | 0.88 | 0.10 | EEEFT1H220AR | (5) | 1000 |
| | 47 | 6.3 | 5.8 | D | 195 | 0.68 | 0.10 | EEEFT1H470AP | (5) | 1000 |
| | 100 | 6.3 | 7.7 | D8 | 350 | 0.34 | 0.10 | EEEFTH101XAP | (5) | 900 |
| | 220 | 8 | 10.2 | F | 670 | 0.18 | 0.10 | EEEFT1H221AP | (6) | 500 |
| 330 | 10 | 10.2 | G | 900 | 0.12 | 0.10 | EEEFT1H331AP | (6) | 500 | |

* Size code() : Miniaturization product

If Part number exceeds 12 digits, voltage code is abbreviated as follows; 0J → J, 1A → A, 1C → C, 1E → E, 1V → V, 1H → H

· Please refer to the page of "Reflow Profile" and "The Taping Dimensions".

· When requesting vibration-proof product, please put the last "V" instead to "P"

Characteristics list (Endurance 5000 h)

Endurance : 105 °C 5000 h (6.3 V.DC : 105 °C 3000 h)

| Rated voltage (V.DC) | Cap. (±20 %) (μF) | Case size (mm) | | Size code | Specification | | | Part No. | Reflow | Min. Packaging Q'ty |
|----------------------|-------------------|----------------|------|-----------|--|----------------------------|-------------------------|--------------|--------|---------------------|
| | | φD | L | | Ripple current (100 kHz) (+105 °C) (mA r.m.s.) | ESR (100 kHz) (+20 °C) (Ω) | tan δ (120 Hz) (+20 °C) | | | Taping (pcs) |
| 6.3 | 1500 | 8 | 10.2 | F | 850 | 0.08 | 0.26 | EEEFT0J152GP | (6) | 500 |
| | 2200 | 10 | 10.2 | G | 1190 | 0.06 | 0.28 | EEEFT0J222GP | (6) | 500 |
| 10 | 1000 | 8 | 10.2 | F | 850 | 0.08 | 0.19 | EEEFT1A102GP | (6) | 500 |
| | 1500 | 10 | 10.2 | G | 1190 | 0.06 | 0.19 | EEEFT1A152GP | (6) | 500 |
| 16 | 680 | 8 | 10.2 | F | 850 | 0.08 | 0.16 | EEEFT1C681GP | (6) | 500 |
| | 1000 | 10 | 10.2 | G | 1190 | 0.06 | 0.16 | EEEFT1C102GP | (6) | 500 |
| 25 | 470 | 8 | 10.2 | F | 850 | 0.08 | 0.14 | EEEFT1E471GP | (6) | 500 |
| | 820 | 10 | 10.2 | G | 1190 | 0.06 | 0.14 | EEEFT1E821GP | (6) | 500 |
| 35 | 330 | 8 | 10.2 | F | 850 | 0.08 | 0.12 | EEEFT1V331GP | (6) | 500 |
| | 560 | 10 | 10.2 | G | 1190 | 0.06 | 0.12 | EEEFT1V561GP | (6) | 500 |
| 50 | 220 | 8 | 10.2 | F | 670 | 0.18 | 0.10 | EEEFT1H221GP | (6) | 500 |
| | 330 | 10 | 10.2 | G | 900 | 0.12 | 0.10 | EEEFT1H331GP | (6) | 500 |

- Please refer to the page of "Reflow Profile" and "The Taping Dimensions".
- When requesting vibration-proof product, please put the last "V" instead to "P"