

### Surface Mount Type

Series: **FK** Type: **V**



#### ■ Features

- Endurance: 2000 h to 5000 h 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. (φ8 mm and larger)
- 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                  | 3.3 µF to 6800 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                                                                                                                                                                    |                                                          |    |    |    |    |    |    |    |     |                             |
| 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 for 2000 hours at +105 °C±2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits. (≥ ϕ12.5 and suffix "G" in ϕ8×10.2, ϕ10×10.2 are 5000 hours) |                                                          |    |    |    |    |    |    |    |     |                             |
|                                    | 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                                                                                                                                                                                                | ≤ 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)                        |                                                          |    |    |    |    |    |    |    |     |                             |
| Resistance to Soldering Heat       | After reflow soldering and then being stabilized at +20 °C, capacitors shall meet the following limits.                                                                                                           |                                                          |    |    |    |    |    |    |    |     |                             |
|                                    | Capacitance change                                                                                                                                                                                                | ±10 % of initial measured value                          |    |    |    |    |    |    |    |     |                             |
|                                    | tan δ                                                                                                                                                                                                             | ≤ initial specified value                                |    |    |    |    |    |    |    |     |                             |
|                                    | DC leakage current                                                                                                                                                                                                | ≤ initial specified value                                |    |    |    |    |    |    |    |     |                             |

#### ■ Frequency correction factor for ripple current

|                   | Frequency (Hz) |      |      |      |          |
|-------------------|----------------|------|------|------|----------|
|                   | 50, 60         | 120  | 1 k  | 10 k | 100 k to |
| Correction factor | 0.70           | 0.75 | 0.90 | 0.95 | 1.00     |

#### ■ Marking

Example: 6.3 V 22 μF, 6.3 V 3300 μF  
Marking color : BLACK

≤ φ10

Capacitance (μF)  
Series identification  
Mark for Lead-Free Products Black Dot (Square)  
Lot number  
Rated Voltage Mark

≥ φ12.5

Capacitance (μF)  
Series identification  
Lot number  
Rated Voltage Mark

**Rated Voltage Mark**

|   |       |    |       |
|---|-------|----|-------|
| j | 6.3 V | H  | 50 V  |
| A | 10 V  | J  | 63 V  |
| C | 16 V  | K  | 80 V  |
| E | 25 V  | 2A | 100 V |
| V | 35 V  |    |       |

#### ■ Dimensions in mm (not to scale)

(Unit : mm)

Pressure Relief (φ10 and larger)

( ) Reference size

| Size code | D    | 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 <sup>+1.5</sup> <sub>-0.2</sub> |
| C         | 5.0  | 5.8±0.3  | 5.3  | 6.5 max.  | 2.2 | 0.65±0.1 | 1.5 | 0.35 <sup>+1.5</sup> <sub>-0.2</sub> |
| D         | 6.3  | 5.8±0.3  | 6.6  | 7.8 max.  | 2.6 | 0.65±0.1 | 1.8 | 0.35 <sup>+1.5</sup> <sub>-0.2</sub> |
| D8        | 6.3  | 7.7±0.3  | 6.6  | 7.8 max.  | 2.6 | 0.65±0.1 | 1.8 | 0.35 <sup>+1.5</sup> <sub>-0.2</sub> |
| E         | 8.0  | 6.2±0.3  | 8.3  | 9.5 max.  | 3.4 | 0.65±0.1 | 2.2 | 0.35 <sup>+1.5</sup> <sub>-0.2</sub> |
| F         | 8.0  | 10.2±0.3 | 8.3  | 10.0 max. | 3.4 | 0.90±0.2 | 3.1 | 0.70±0.2                             |
| G         | 10.0 | 10.2±0.3 | 10.3 | 12.0 max. | 3.5 | 0.90±0.2 | 4.6 | 0.70±0.2                             |
| H13       | 12.5 | 13.5±0.5 | 13.5 | 15.0 max. | 4.7 | 0.90±0.3 | 4.4 | 0.70±0.3                             |
| J16       | 16.0 | 16.5±0.5 | 17.0 | 19.0 max. | 5.5 | 1.20±0.3 | 6.7 | 0.70±0.3                             |
| K16       | 18.0 | 16.5±0.5 | 19.0 | 21.0 max. | 6.7 | 1.20±0.3 | 6.7 | 0.70±0.3                             |

## ■ Standard Products

Endurance : 105 °C 2000 h ( ≥ ϕ12.5 : 5000 h)

| W.V. | Cap.<br>(±20 %) | Case size |        |               | Specification                                              |                                           |                               | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|------|-----------------|-----------|--------|---------------|------------------------------------------------------------|-------------------------------------------|-------------------------------|------------------------------|--------|------------------------|
|      |                 | Dia.      | Length | *Size<br>Code | Ripple<br>Current<br>(100 kHz)<br>(+105 °C)<br>(mA r.m.s.) | Impedance<br>(100 kHz)<br>(+20 °C)<br>(Ω) | tan δ<br>(120 Hz)<br>(+20 °C) |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |               |                                                            |                                           |                               |                              |        | (pcs)                  |
| 6.3  | 22              | 4         | 5.8    | B             | 90                                                         | 1.35                                      | 0.26                          | EEEFK0J220R                  | (1)    | 2000                   |
|      | 47              | 4         | 5.8    | (B)           | 90                                                         | 1.35                                      | 0.26                          | EEEFK0J470UR                 | (1)    | 2000                   |
|      |                 | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.26                          | EEEFK0J470R                  | (1)    | 1000                   |
|      | 100             | 5         | 5.8    | (C)           | 160                                                        | 0.70                                      | 0.26                          | EEEFK0J101UR                 | (1)    | 1000                   |
|      |                 | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.26                          | EEEFK0J101P                  | (1)    | 1000                   |
|      | 220             | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.26                          | EEEFK0J221P                  | (1)    | 1000                   |
|      | 330             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.26                          | EEEFK0J331XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 300                                                        | 0.26                                      | 0.26                          | EEEFK0J331P                  | (2)    | 1000                   |
|      | 470             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.26                          | EEEFK0J471P                  | (2)    | 500                    |
|      | 1000            | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.26                          | EEEFK0J102P                  | (2)    | 500                    |
|      | 1500            | 10        | 10.2   | G             | 850                                                        | 0.08                                      | 0.26                          | EEEFK0J152P                  | (2)    | 500                    |
| 10   | 3300            | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.30                          | EEVFK0J332Q                  | (3)    | 200                    |
|      | 6800            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.36                          | EEVFK0J682M                  | (3)    | 125                    |
|      | 22              | 4         | 5.8    | B             | 90                                                         | 1.35                                      | 0.19                          | EEEFK1A220R                  | (1)    | 2000                   |
|      | 33              | 4         | 5.8    | (B)           | 90                                                         | 1.35                                      | 0.19                          | EEEFK1A330UR                 | (1)    | 2000                   |
|      |                 | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.19                          | EEEFK1A330R                  | (1)    | 1000                   |
|      | 150             | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.19                          | EEEFK1A151P                  | (1)    | 1000                   |
|      | 220             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.19                          | EEEFK1A221XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 300                                                        | 0.26                                      | 0.19                          | EEEFK1A221P                  | (2)    | 1000                   |
|      | 330             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A331P                  | (2)    | 500                    |
|      | 470             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A471P                  | (2)    | 500                    |
|      | 680             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A681P                  | (2)    | 500                    |
| 16   | 1000            | 10        | 10.2   | G             | 850                                                        | 0.08                                      | 0.19                          | EEEFK1A102P                  | (2)    | 500                    |
|      | 2200            | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.21                          | EEVFK1A222Q                  | (3)    | 200                    |
|      | 4700            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.25                          | EEVFK1A472M                  | (3)    | 125                    |
|      | 6800            | 18        | 16.5   | K16           | 2060                                                       | 0.033                                     | 0.29                          | EEVFK1A682M                  | (3)    | 125                    |
|      | 10              | 4         | 5.8    | B             | 90                                                         | 1.35                                      | 0.16                          | EEEFK1C100R                  | (1)    | 2000                   |
|      | 22              | 4         | 5.8    | (B)           | 90                                                         | 1.35                                      | 0.16                          | EEEFK1C220UR                 | (1)    | 2000                   |
|      |                 | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.16                          | EEEFK1C220R                  | (1)    | 1000                   |
|      | 47              | 5         | 5.8    | (C)           | 160                                                        | 0.70                                      | 0.16                          | EEEFK1C470UR                 | (1)    | 1000                   |
|      |                 | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.16                          | EEEFK1C470P                  | (1)    | 1000                   |
|      | 68              | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.16                          | EEEFK1C680P                  | (1)    | 1000                   |
|      | 100             | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.16                          | EEEFK1C101P                  | (1)    | 1000                   |
| 25   | 150             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.16                          | EEEFK1C151XP                 | (1)    | 900                    |
|      | 220             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.16                          | EEEFK1C221XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 300                                                        | 0.26                                      | 0.16                          | EEEFK1C221P                  | (2)    | 1000                   |
|      | 330             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.16                          | EEEFK1C331P                  | (2)    | 500                    |
|      | 470             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.16                          | EEEFK1C471P                  | (2)    | 500                    |
|      | 680             | 10        | 10.2   | G             | 850                                                        | 0.08                                      | 0.16                          | EEEFK1C681P                  | (2)    | 500                    |
|      | 1500            | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.16                          | EEVFK1C152Q                  | (3)    | 200                    |
|      | 3300            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.20                          | EEVFK1C332M                  | (3)    | 125                    |
|      | 4700            | 18        | 16.5   | K16           | 2060                                                       | 0.033                                     | 0.22                          | EEVFK1C472M                  | (3)    | 125                    |
|      | 10              | 4         | 5.8    | B             | 90                                                         | 1.35                                      | 0.14                          | EEEFK1E100R                  | (1)    | 2000                   |
|      | 22              | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.14                          | EEEFK1E220R                  | (1)    | 1000                   |
| 25   | 33              | 5         | 5.8    | (C)           | 160                                                        | 0.70                                      | 0.14                          | EEEFK1E330UR                 | (1)    | 1000                   |
|      |                 | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.14                          | EEEFK1E330P                  | (1)    | 1000                   |
|      | 47              | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.14                          | EEEFK1E470P                  | (1)    | 1000                   |
|      | 68              | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.14                          | EEEFK1E680P                  | (1)    | 1000                   |
|      | 100             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.14                          | EEEFK1E101XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 300                                                        | 0.26                                      | 0.14                          | EEEFK1E101P                  | (2)    | 1000                   |
|      | 150             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E151P                  | (2)    | 500                    |
|      | 220             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E221P                  | (2)    | 500                    |
|      | 330             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E331P                  | (2)    | 500                    |
|      | 470             | 10        | 10.2   | G             | 850                                                        | 0.08                                      | 0.14                          | EEEFK1E471P                  | (2)    | 500                    |
|      | 1000            | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.14                          | EEVFK1E102Q                  | (3)    | 200                    |
| 25   | 1500            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.14                          | EEVFK1E152M                  | (3)    | 125                    |
|      | 2200            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.16                          | EEVFK1E222M                  | (3)    | 125                    |
|      | 3300            | 18        | 16.5   | K16           | 2060                                                       | 0.033                                     | 0.18                          | EEVFK1E332M                  | (3)    | 125                    |

\* Size code( ): Miniaturization product

· 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"

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.

00 Nov. 2012

## ■ Standard Products

Endurance : 105 °C 2000 h ( ≥ ϕ12.5 : 5000 h)

| W.V. | Cap.<br>(±20 %) | Case size |        |               | Specification                                              |                                           |                               | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|------|-----------------|-----------|--------|---------------|------------------------------------------------------------|-------------------------------------------|-------------------------------|------------------------------|--------|------------------------|
|      |                 | Dia.      | Length | *Size<br>Code | Ripple<br>Current<br>(100 kHz)<br>(+105 °C)<br>(mA r.m.s.) | Impedance<br>(100 kHz)<br>(+20 °C)<br>(Ω) | tan δ<br>(120 Hz)<br>(+20 °C) |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |               |                                                            |                                           |                               |                              |        | (pcs)                  |
| 35   | 4.7             | 4         | 5.8    | B             | 90                                                         | 1.35                                      | 0.12                          | EEEFK1V4R7R                  | (1)    | 2000                   |
|      | 10              | 4         | 5.8    | (B)           | 90                                                         | 1.35                                      | 0.12                          | EEEFK1V100UR                 | (1)    | 2000                   |
|      |                 | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.12                          | EEEFK1V100R                  | (1)    | 1000                   |
|      | 22              | 5         | 5.8    | C             | 160                                                        | 0.70                                      | 0.12                          | EEEFK1V220R                  | (1)    | 1000                   |
|      | 33              | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.12                          | EEEFK1V330P                  | (1)    | 1000                   |
|      | 47              | 6.3       | 5.8    | D             | 240                                                        | 0.36                                      | 0.12                          | EEEFK1V470P                  | (1)    | 1000                   |
|      | 68              | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.12                          | EEEFK1V680XP                 | (1)    | 900                    |
|      | 100             | 6.3       | 7.7    | D8            | 280                                                        | 0.34                                      | 0.12                          | EEEFK1V101XP                 | (1)    | 900                    |
|      |                 | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V101P                  | (2)    | 500                    |
|      | 150             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V151P                  | (2)    | 500                    |
|      | 220             | 8         | 10.2   | F             | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V221P                  | (2)    | 500                    |
|      | 330             | 10        | 10.2   | G             | 850                                                        | 0.08                                      | 0.12                          | EEEFK1V331P                  | (2)    | 500                    |
|      | 470             | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.12                          | EEVFK1V471Q                  | (3)    | 200                    |
|      | 680             | 12.5      | 13.5   | H13           | 1100                                                       | 0.06                                      | 0.12                          | EEVFK1V681Q                  | (3)    | 200                    |
|      | 1000            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.12                          | EEVFK1V102M                  | (3)    | 125                    |
|      | 1500            | 16        | 16.5   | J16           | 1800                                                       | 0.035                                     | 0.12                          | EEVFK1V152M                  | (3)    | 125                    |
| 50   | 4.7             | 4         | 5.8    | B             | 60                                                         | 2.90                                      | 0.10                          | EEEFK1H4R7R                  | (1)    | 2000                   |
|      | 10              | 5         | 5.8    | (C)           | 85                                                         | 1.52                                      | 0.10                          | EEEFK1H100UR                 | (1)    | 1000                   |
|      |                 | 6.3       | 5.8    | D             | 165                                                        | 0.88                                      | 0.10                          | EEEFK1H100P                  | (1)    | 1000                   |
|      | 22              | 6.3       | 5.8    | D             | 165                                                        | 0.88                                      | 0.10                          | EEEFK1H220P                  | (1)    | 1000                   |
|      | 33              | 6.3       | 7.7    | D8            | 195                                                        | 0.68                                      | 0.10                          | EEEFK1H330XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 195                                                        | 0.68                                      | 0.10                          | EEEFK1H330P                  | (2)    | 1000                   |
|      | 47              | 6.3       | 7.7    | D8            | 195                                                        | 0.68                                      | 0.10                          | EEEFK1H470XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 195                                                        | 0.68                                      | 0.10                          | EEEFK1H470P                  | (2)    | 1000                   |
|      | 100             | 8         | 10.2   | F             | 350                                                        | 0.34                                      | 0.10                          | EEEFK1H101P                  | (2)    | 500                    |
|      | 150             | 10        | 10.2   | G             | 670                                                        | 0.18                                      | 0.10                          | EEEFK1H151P                  | (2)    | 500                    |
|      | 220             | 10        | 10.2   | G             | 670                                                        | 0.18                                      | 0.10                          | EEEFK1H221P                  | (2)    | 500                    |
|      | 330             | 12.5      | 13.5   | H13           | 900                                                        | 0.12                                      | 0.10                          | EEVFK1H331Q                  | (3)    | 200                    |
|      | 390             | 12.5      | 13.5   | H13           | 900                                                        | 0.12                                      | 0.10                          | EEVFK1H391Q                  | (3)    | 200                    |
|      | 470             | 16        | 16.5   | J16           | 1610                                                       | 0.073                                     | 0.10                          | EEVFK1H471M                  | (3)    | 125                    |
|      | 560             | 16        | 16.5   | J16           | 1610                                                       | 0.073                                     | 0.10                          | EEVFK1H561M                  | (3)    | 125                    |
|      | 680             | 16        | 16.5   | J16           | 1610                                                       | 0.073                                     | 0.10                          | EEVFK1H681M                  | (3)    | 125                    |
|      | 1000            | 16        | 16.5   | J16           | 1610                                                       | 0.073                                     | 0.10                          | EEVFK1H102M                  | (3)    | 125                    |
| 63   | 4.7             | 5         | 5.8    | C             | 50                                                         | 3.00                                      | 0.08                          | EEEFK1J4R7R                  | (1)    | 1000                   |
|      | 10              | 6.3       | 5.8    | D             | 80                                                         | 1.50                                      | 0.08                          | EEEFK1J100P                  | (1)    | 1000                   |
|      | 22              | 6.3       | 7.7    | D8            | 120                                                        | 1.20                                      | 0.08                          | EEEFK1J220XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 120                                                        | 1.20                                      | 0.08                          | EEEFK1J220P                  | (2)    | 1000                   |
|      | 33              | 8         | 10.2   | F             | 250                                                        | 0.65                                      | 0.08                          | EEEFK1J330P                  | (2)    | 500                    |
|      | 47              | 8         | 10.2   | F             | 250                                                        | 0.65                                      | 0.08                          | EEEFK1J470P                  | (2)    | 500                    |
|      | 68              | 8         | 10.2   | (F)           | 250                                                        | 0.65                                      | 0.08                          | EEEFK1J680UP                 | (2)    | 500                    |
|      | 100             | 10        | 10.2   | G             | 400                                                        | 0.35                                      | 0.08                          | EEEFK1J101P                  | (2)    | 500                    |
|      | 150             | 12.5      | 13.5   | H13           | 800                                                        | 0.16                                      | 0.08                          | EEVFK1J151Q                  | (3)    | 200                    |
|      | 220             | 12.5      | 13.5   | H13           | 800                                                        | 0.16                                      | 0.08                          | EEVFK1J221Q                  | (3)    | 200                    |
|      | 470             | 16        | 16.5   | J16           | 1410                                                       | 0.082                                     | 0.08                          | EEVFK1J471M                  | (3)    | 125                    |
|      | 680             | 18        | 16.5   | K16           | 1690                                                       | 0.08                                      | 0.08                          | EEVFK1J681M                  | (3)    | 125                    |
| 80   | 3.3             | 5         | 5.8    | C             | 25                                                         | 5.00                                      | 0.08                          | EEEFK1K3R3R                  | (1)    | 1000                   |
|      | 4.7             | 6.3       | 5.8    | D             | 40                                                         | 3.00                                      | 0.08                          | EEEFK1K4R7P                  | (1)    | 1000                   |
|      | 10              | 6.3       | 7.7    | D8            | 60                                                         | 2.40                                      | 0.08                          | EEEFK1K100XP                 | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 60                                                         | 2.40                                      | 0.08                          | EEEFK1K100P                  | (2)    | 1000                   |
|      | 22              | 8         | 10.2   | F             | 130                                                        | 1.30                                      | 0.08                          | EEEFK1K220P                  | (2)    | 500                    |
|      | 33              | 8         | 10.2   | F             | 130                                                        | 1.30                                      | 0.08                          | EEEFK1K330P                  | (2)    | 500                    |
|      | 47              | 10        | 10.2   | G             | 200                                                        | 0.70                                      | 0.08                          | EEEFK1K470P                  | (2)    | 500                    |
|      | 68              | 12.5      | 13.5   | H13           | 500                                                        | 0.32                                      | 0.08                          | EEVFK1K680Q                  | (3)    | 200                    |
|      | 100             | 12.5      | 13.5   | H13           | 500                                                        | 0.32                                      | 0.08                          | EEVFK1K101Q                  | (3)    | 200                    |
|      | 150             | 12.5      | 13.5   | H13           | 500                                                        | 0.32                                      | 0.08                          | EEVFK1K151Q                  | (3)    | 200                    |
|      | 330             | 16        | 16.5   | J16           | 793                                                        | 0.17                                      | 0.08                          | EEVFK1K331M                  | (3)    | 125                    |
|      | 470             | 18        | 16.5   | K16           | 917                                                        | 0.153                                     | 0.08                          | EEVFK1K471M                  | (3)    | 125                    |

\* Size code( ):Miniaturization product

· 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"

■ Standard Products

Endurance : 105 °C 2000 h ( ≥ ϕ12.5 : 5000 h)

| W.V. | Cap.<br>(±20 %) | Case size |        |               | Specification                                              |                                           |                               | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|------|-----------------|-----------|--------|---------------|------------------------------------------------------------|-------------------------------------------|-------------------------------|------------------------------|--------|------------------------|
|      |                 | Dia.      | Length | *Size<br>Code | Ripple<br>Current<br>(100 kHz)<br>(+105 °C)<br>(mA r.m.s.) | Impedance<br>(100 kHz)<br>(+20 °C)<br>(Ω) | tan δ<br>(120 Hz)<br>(+20 °C) |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |               |                                                            |                                           |                               |                              |        | (pcs)                  |
| 100  | 22              | 8         | 10.2   | F             | 130                                                        | 1.30                                      | 0.07                          | EEEFK2A220P                  | (2)    | 500                    |
|      | 33              | 10        | 10.2   | G             | 200                                                        | 0.70                                      | 0.07                          | EEEFK2A330P                  | (2)    | 500                    |
|      | 47              | 12.5      | 13.5   | H13           | 500                                                        | 0.32                                      | 0.07                          | EEVFK2A470Q                  | (3)    | 200                    |
|      | 68              | 12.5      | 13.5   | H13           | 500                                                        | 0.32                                      | 0.07                          | EEVFK2A680Q                  | (3)    | 200                    |
|      | 100             | 16        | 16.5   | J16           | 793                                                        | 0.17                                      | 0.07                          | EEVFK2A101M                  | (3)    | 125                    |
|      | 150             | 16        | 16.5   | J16           | 793                                                        | 0.17                                      | 0.07                          | EEVFK2A151M                  | (3)    | 125                    |
|      | 220             | 18        | 16.5   | K16           | 917                                                        | 0.153                                     | 0.07                          | EEVFK2A221M                  | (3)    | 125                    |
|      | 330             | 18        | 16.5   | K16           | 917                                                        | 0.153                                     | 0.07                          | EEVFK2A331M                  | (3)    | 125                    |

\* Size code( ):Miniaturization product

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

■ Endurance 5000 h Products

Endurance : 105 °C 5000 h

| W.V. | Cap.<br>(±20 %) | Case size |        |              | Specification                                              |                                           |                               | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|------|-----------------|-----------|--------|--------------|------------------------------------------------------------|-------------------------------------------|-------------------------------|------------------------------|--------|------------------------|
|      |                 | Dia.      | Length | Size<br>Code | Ripple<br>Current<br>(100 kHz)<br>(+105 °C)<br>(mA r.m.s.) | Impedance<br>(100 kHz)<br>(+20 °C)<br>(Ω) | tan δ<br>(120 Hz)<br>(+20 °C) |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |              |                                                            |                                           |                               |                              |        | (pcs)                  |
| 6.3  | 470             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.26                          | EEEFK0J471GP                 | (2)    | 500                    |
|      | 1000            | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.26                          | EEEFK0J102GP                 | (2)    | 500                    |
|      | 1500            | 10        | 10.2   | G            | 850                                                        | 0.08                                      | 0.26                          | EEEFK0J152GP                 | (2)    | 500                    |
| 10   | 330             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A331GP                 | (2)    | 500                    |
|      | 470             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A471GP                 | (2)    | 500                    |
|      | 680             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.19                          | EEEFK1A681GP                 | (2)    | 500                    |
|      | 1000            | 10        | 10.2   | G            | 850                                                        | 0.08                                      | 0.19                          | EEEFK1A102GP                 | (2)    | 500                    |
| 16   | 330             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.16                          | EEEFK1C331GP                 | (2)    | 500                    |
|      | 470             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.16                          | EEEFK1C471GP                 | (2)    | 500                    |
|      | 680             | 10        | 10.2   | G            | 850                                                        | 0.08                                      | 0.16                          | EEEFK1C681GP                 | (2)    | 500                    |
| 25   | 150             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E151GP                 | (2)    | 500                    |
|      | 220             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E221GP                 | (2)    | 500                    |
|      | 330             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.14                          | EEEFK1E331GP                 | (2)    | 500                    |
|      | 470             | 10        | 10.2   | G            | 850                                                        | 0.08                                      | 0.14                          | EEEFK1E471GP                 | (2)    | 500                    |
| 35   | 100             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V101GP                 | (2)    | 500                    |
|      | 150             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V151GP                 | (2)    | 500                    |
|      | 220             | 8         | 10.2   | F            | 600                                                        | 0.16                                      | 0.12                          | EEEFK1V221GP                 | (2)    | 500                    |
|      | 330             | 10        | 10.2   | G            | 850                                                        | 0.08                                      | 0.12                          | EEEFK1V331GP                 | (2)    | 500                    |
| 50   | 100             | 8         | 10.2   | F            | 350                                                        | 0.34                                      | 0.10                          | EEEFK1H101GP                 | (2)    | 500                    |
|      | 150             | 10        | 10.2   | G            | 670                                                        | 0.18                                      | 0.10                          | EEEFK1H151GP                 | (2)    | 500                    |
|      | 220             | 10        | 10.2   | G            | 670                                                        | 0.18                                      | 0.10                          | EEEFK1H221GP                 | (2)    | 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"

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