

## Surface Mount Type

Series: **S** Type: **V**



### ■ Features

- Endurance: 85 °C 2000 h
- Vibration-proof product is available upon request. (ø8 mm and larger)
- RoHS directive compliant

### ■ Specifications

|                                    |                                                                                                                                                                                              |                                 |                                 |                 |    |                  |    |    |    |     |                             |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------------------------------|-----------------|----|------------------|----|----|----|-----|-----------------------------|
| Category Temp. Range               | -40 °C to +85 °C                                                                                                                                                                             |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| Rated W.V. Range                   | 4 V.DC to 100 V.DC                                                                                                                                                                           |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| Nominal Cap. Range                 | 0.1 µF to 1500 µF                                                                                                                                                                            |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| Capacitance Tolerance              | ±20 % (120 Hz/+20 °C)                                                                                                                                                                        |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| DC Leakage Current                 | I ≤ 0.01 CV or 3 (µA) (Bi-Polar I ≤ 0.02 CV or 6 (µA) After 2 minutes (Whichever is greater)                                                                                                 |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| tan δ                              | Please see the attached standard products list                                                                                                                                               |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| Characteristics at Low Temperature | W.V. (V)                                                                                                                                                                                     | 4                               | 6.3                             | 10              | 16 | 25               | 35 | 50 | 63 | 100 | (Impedance ratio at 120 Hz) |
|                                    | Z(-25 °C)/Z(+20 °C)                                                                                                                                                                          | 7                               | 4                               | 3               | 2  | 2                | 2  | 2  | 3  | 3   |                             |
|                                    | Z(-40 °C)/Z(+20 °C)                                                                                                                                                                          | 15                              | 8                               | 6               | 4  | 4                | 3  | 3  | 4  | 4   |                             |
| Endurance                          | After applying rated working voltage for 2000 hours (Bi-polar:1000 hours for each polarity) at +85 °C ±2 °C and then being stabilized at +20 °C, Capacitors shall meet the following limits. |                                 |                                 |                 |    |                  |    |    |    |     |                             |
|                                    | Capacitance change                                                                                                                                                                           | ±20 % of inisial measured value |                                 |                 |    |                  |    |    |    |     |                             |
|                                    |                                                                                                                                                                                              | Size code                       |                                 | Rated W.V.      |    | Cap. change      |    |    |    |     |                             |
|                                    |                                                                                                                                                                                              | A(φ3)                           |                                 | 4 W.V to 50 W.V |    | 1000 hours ±30 % |    |    |    |     |                             |
|                                    |                                                                                                                                                                                              | B(φ4) to D, D8(φ6.3)            |                                 | 4 W.V           |    |                  |    |    |    |     |                             |
|                                    |                                                                                                                                                                                              | ≤ D(φ6.3) Miniature             |                                 | 6.3 W.V         |    | 1000 hours ±20 % |    |    |    |     |                             |
|                                    | ≥ 10 W.V                                                                                                                                                                                     |                                 |                                 |                 |    |                  |    |    |    |     |                             |
|                                    | tan δ                                                                                                                                                                                        |                                 | ≤ 200 % 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)   |                                 |                                 |                 |    |                  |    |    |    |     |                             |
| 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 to |
| Correction factor | 0.70           | 1.00 | 1.30 | 1.70    |

### ■ Marking

Example:4V 33 µF (Polarized)  
Marking color: BLACK

Negative polarity marking (-)  
(No marking for the bi-polar)

Capacitance (µF)  
33

Series identification (S) or (A)  
(A size=Lot number)  
4S

Mark for Lead-Free Products  
Black Dot (Square)

Rated voltage Mark (V.DC)  
(6=6.3 V.DC)

Lot number  
(No marking=A size)

### ■ Dimensions in mm (not to scale)

(Unit : mm)

0.3 max.

A±0.2

B±0.2

W

P

K

( ) Reference size

Pressure Relief (ø10 and larger)

| Size code | D    | L                                   | A, B | H         | I   | W        | P   | K                                      |
|-----------|------|-------------------------------------|------|-----------|-----|----------|-----|----------------------------------------|
| A         | 3.0  | 5.4 <sup>+0.1</sup> <sub>-0.2</sub> | 3.3  | 4.5 max.  | 1.5 | 0.55±0.1 | 0.6 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| B         | 4.0  | 5.4 <sup>+0.1</sup> <sub>-0.2</sub> | 4.3  | 5.5 max.  | 1.8 | 0.65±0.1 | 1.0 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| C         | 5.0  | 5.4 <sup>+0.1</sup> <sub>-0.2</sub> | 5.3  | 6.5 max.  | 2.2 | 0.65±0.1 | 1.5 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| D         | 6.3  | 5.4 <sup>+0.1</sup> <sub>-0.2</sub> | 6.6  | 7.8 max.  | 2.6 | 0.65±0.1 | 1.8 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| D8        | 6.3  | 7.7±0.3                             | 6.6  | 7.8 max.  | 2.6 | 0.65±0.1 | 1.8 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| E         | 8.0  | 6.2±0.3                             | 8.3  | 9.5 max.  | 3.4 | 0.65±0.1 | 2.2 | 0.35 <sup>+0.15</sup> <sub>-0.25</sub> |
| 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                              |

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00 Nov. 2012

## ■ Standard Products

Endurance : 85 °C 2000 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>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | tan δ<br>(120 Hz)<br>(+20 °C) | Endurance  |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |               |                                                          |                               | (hours)    |                              |        | (pcs)                  |
| 4    | 22              | 3         | 5.4    | A             | 19                                                       | 0.37                          | 1000       | EEE0GS220SR **               | (1)    | 2000                   |
|      | 33              | 4         | 5.4    | B             | 26                                                       | 0.35                          | 1000       | EEE0GA330SR                  | (1)    | 2000                   |
|      | 47              | 4         | 5.4    | B             | 34                                                       | 0.35                          | 1000       | EEE0GA470SR                  | (1)    | 2000                   |
|      | 100             | 5         | 5.4    | C             | 61                                                       | 0.35                          | 1000       | EEE0GA101SR                  | (1)    | 1000                   |
|      | 220             | 6.3       | 5.4    | D             | 82                                                       | 0.35                          | 1000       | EEE0GA221SP                  | (1)    | 1000                   |
|      | 330             | 6.3       | 5.4    | (D)           | 80                                                       | 0.50                          | 1000       | EEE0GA331WP                  | (1)    | 1000                   |
|      | 470             | 6.3       | 7.7    | D8            | 200                                                      | 0.35                          | 1000       | EEE0GA471XP                  | (1)    | 900                    |
| 6.3  | 22              | 3         | 5.4    | (A)           | 20                                                       | 0.35                          | 1000       | EEE0JS220WR **               | (1)    | 2000                   |
|      |                 | 4         | 5.4    | B             | 29                                                       | 0.26                          | 2000       | EEE0JA220SR                  | (1)    | 2000                   |
|      | 33              | 4         | 5.4    | (B)           | 22                                                       | 0.35                          | 1000       | EEE0JA330WR                  | (1)    | 2000                   |
|      | 47              | 4         | 5.4    | (B)           | 36                                                       | 0.35                          | 1000       | EEE0JA470WR                  | (1)    | 2000                   |
|      |                 | 5         | 5.4    | C             | 46                                                       | 0.26                          | 2000       | EEE0JA470SR                  | (1)    | 1000                   |
|      | 100             | 5         | 5.4    | (C)           | 47                                                       | 0.35                          | 1000       | EEE0JA101WR                  | (1)    | 1000                   |
|      |                 | 6.3       | 5.4    | D             | 71                                                       | 0.26                          | 2000       | EEE0JA101SP                  | (1)    | 1000                   |
|      | 220             | 6.3       | 5.4    | (D)           | 74                                                       | 0.35                          | 1000       | EEE0JA221WP                  | (1)    | 1000                   |
|      | 330             | 6.3       | 7.7    | D8            | 188                                                      | 0.26                          | 2000       | EEE0JA331XP                  | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 300                                                      | 0.35                          | 2000       | EEE0JA331P                   | (2)    | 1000                   |
|      | 470             | 8         | 10.2   | F             | 380                                                      | 0.35                          | 2000       | EEE0JA471P                   | (2)    | 500                    |
|      | 1000            | 8         | 10.2   | (F)           | 500                                                      | 0.35                          | 2000       | EEE0JA102UP                  | (2)    | 500                    |
|      |                 | 10        | 10.2   | G             | 700                                                      | 0.35                          | 2000       | EEE0JA102P                   | (2)    | 500                    |
| 1500 | 10              | 10.2      | G      | 750           | 0.35                                                     | 2000                          | EEE0JA152P | (2)                          | 500    |                        |
| 10   | 22              | 4         | 5.4    | (B)           | 28                                                       | 0.30                          | 1000       | EEE1AA220WR                  | (1)    | 2000                   |
|      | 33              | 4         | 5.4    | (B)           | 29                                                       | 0.30                          | 1000       | EEE1AA330WR                  | (1)    | 2000                   |
|      |                 | 5         | 5.4    | C             | 43                                                       | 0.20                          | 2000       | EEE1AA330SR                  | (1)    | 1000                   |
|      | 47              | 5         | 5.4    | (C)           | 43                                                       | 0.30                          | 1000       | EEE1AA470WR                  | (1)    | 1000                   |
|      | 100             | 5         | 5.4    | (C)           | 50                                                       | 0.30                          | 1000       | EEE1AA101WR                  | (1)    | 1000                   |
|      |                 | 6.3       | 5.4    | D             | 70                                                       | 0.26                          | 2000       | EEE1AA101SP                  | (1)    | 1000                   |
|      | 220             | 6.3       | 7.7    | D8            | 173                                                      | 0.20                          | 2000       | EEE1AA221XP                  | (1)    | 900                    |
|      |                 | 8         | 6.2    | E             | 250                                                      | 0.26                          | 2000       | EEE1AA221P                   | (2)    | 1000                   |
|      | 330             | 8         | 10.2   | F             | 390                                                      | 0.26                          | 2000       | EEE1AA331P                   | (2)    | 500                    |
|      | 470             | 8         | 10.2   | (F)           | 390                                                      | 0.26                          | 2000       | EEE1AA471UP                  | (2)    | 500                    |
|      |                 | 10        | 10.2   | G             | 400                                                      | 0.26                          | 2000       | EEE1AA471P                   | (2)    | 500                    |
|      | 1000            | 10        | 10.2   | G             | 580                                                      | 0.26                          | 2000       | EEE1AA102P                   | (2)    | 500                    |
| 16   | 10              | 3         | 5.4    | A             | 20                                                       | 0.18                          | 1000       | EEE1CS100SR **               | (1)    | 2000                   |
|      |                 | 4         | 5.4    | B             | 28                                                       | 0.16                          | 2000       | EEE1CA100SR                  | (1)    | 2000                   |
|      | 22              | 4         | 5.4    | (B)           | 28                                                       | 0.26                          | 1000       | EEE1CA220WR                  | (1)    | 2000                   |
|      |                 | 5         | 5.4    | C             | 39                                                       | 0.16                          | 2000       | EEE1CA220SR                  | (1)    | 1000                   |
|      | 33              | 5         | 5.4    | (C)           | 35                                                       | 0.26                          | 1000       | EEE1CA330WR                  | (1)    | 1000                   |
|      | 47              | 5         | 5.4    | (C)           | 39                                                       | 0.26                          | 1000       | EEE1CA470WR                  | (1)    | 1000                   |
|      |                 | 6.3       | 5.4    | D             | 70                                                       | 0.16                          | 2000       | EEE1CA470SP                  | (1)    | 1000                   |
|      | 100             | 6.3       | 5.4    | (D)           | 70                                                       | 0.26                          | 1000       | EEE1CA101WP                  | (1)    | 1000                   |
|      |                 | 8         | 6.2    | E             | 200                                                      | 0.20                          | 2000       | EEE1CA101P                   | (2)    | 1000                   |
|      | 220             | 6.3       | 7.7    | D8            | 162                                                      | 0.16                          | 2000       | EEE1CA221XP                  | (1)    | 900                    |
|      |                 | 8         | 10.2   | F             | 280                                                      | 0.20                          | 2000       | EEE1CA221P                   | (2)    | 500                    |
|      | 330             | 8         | 10.2   | (F)           | 320                                                      | 0.20                          | 2000       | EEE1CA331UP                  | (2)    | 500                    |
|      |                 | 10        | 10.2   | G             | 380                                                      | 0.20                          | 2000       | EEE1CA331P                   | (2)    | 500                    |
|      | 470             | 8         | 10.2   | (F)           | 350                                                      | 0.20                          | 2000       | EEE1CA471UP                  | (2)    | 500                    |
|      |                 | 10        | 10.2   | G             | 420                                                      | 0.20                          | 2000       | EEE1CA471P                   | (2)    | 500                    |

\* Size code( ):Miniaturization product

\*\* Dia.3mm is not recommended for new design. Please consider Dia.4mm.(Available upon request)

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

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Endurance : 85 °C 2000 h

| W.V.<br>(V) | Cap.<br>(±20 %)<br>(μF) | Case size    |                |               | Specification                                            |                                       |                      | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|-------------|-------------------------|--------------|----------------|---------------|----------------------------------------------------------|---------------------------------------|----------------------|------------------------------|--------|------------------------|
|             |                         | Dia.<br>(mm) | Length<br>(mm) | *Size<br>Code | Ripple<br>Current<br>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | $\tan \delta$<br>(120 Hz)<br>(+20 °C) | Endurance<br>(hours) |                              |        | Taping<br>(pcs)        |
| 25          | 4.7                     | 3            | 5.4            | A             | 12                                                       | 0.16                                  | 1000                 | EEE1ES4R7SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 22                                                       | 0.14                                  | 2000                 | EEE1EA4R7SR                  | (1)    | 2000                   |
|             | 10                      | 4            | 5.4            | (B)           | 22                                                       | 0.20                                  | 1000                 | EEE1EA100WR                  | (1)    | 2000                   |
|             |                         | 5            | 5.4            | C             | 28                                                       | 0.14                                  | 2000                 | EEE1EA100SR                  | (1)    | 1000                   |
|             | 22                      | 5            | 5.4            | (C)           | 35                                                       | 0.20                                  | 1000                 | EEE1EA220WR                  | (1)    | 1000                   |
|             |                         | 6.3          | 5.4            | D             | 55                                                       | 0.14                                  | 2000                 | EEE1EA220SP                  | (1)    | 1000                   |
|             | 33                      | 5            | 5.4            | (C)           | 42                                                       | 0.20                                  | 1000                 | EEE1EA330WR                  | (1)    | 1000                   |
|             |                         | 6.3          | 5.4            | D             | 65                                                       | 0.14                                  | 2000                 | EEE1EA330SP                  | (1)    | 1000                   |
|             | 47                      | 6.3          | 5.4            | (D)           | 70                                                       | 0.20                                  | 1000                 | EEE1EA470WP                  | (1)    | 1000                   |
|             | 100                     | 6.3          | 7.7            | D8            | 143                                                      | 0.14                                  | 2000                 | EEE1EA101XP                  | (1)    | 900                    |
|             |                         | 8            | 6.2            | (E)           | 91                                                       | 0.16                                  | 2000                 | EEE1EA101UP                  | (2)    | 1000                   |
|             |                         | 8            | 10.2           | F             | 180                                                      | 0.16                                  | 2000                 | EEE1EA101P                   | (2)    | 500                    |
|             | 220                     | 8            | 10.2           | (F)           | 230                                                      | 0.16                                  | 2000                 | EEE1EA221UP                  | (2)    | 500                    |
|             |                         | 10.0         | 10.2           | G             | 310                                                      | 0.16                                  | 2000                 | EEE1EA221P                   | (2)    | 500                    |
|             | 330                     | 8            | 10.2           | (F)           | 270                                                      | 0.16                                  | 2000                 | EEE1EA331UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 340                                                      | 0.16                                  | 2000                 | EEE1EA331P                   | (2)    | 500                    |
|             | 470                     | 10           | 10.2           | G             | 380                                                      | 0.16                                  | 2000                 | EEE1EA471P                   | (2)    | 500                    |
| 35          | 2.2                     | 3            | 5.4            | A             | 8                                                        | 0.14                                  | 1000                 | EEE1VS2R2SR **               | (1)    | 2000                   |
|             | 3.3                     | 3            | 5.4            | A             | 10                                                       | 0.14                                  | 1000                 | EEE1VS3R3SR **               | (1)    | 2000                   |
|             | 4.7                     | 4            | 5.4            | B             | 22                                                       | 0.12                                  | 2000                 | EEE1VA4R7SR                  | (1)    | 2000                   |
|             | 10                      | 4            | 5.4            | (B)           | 22                                                       | 0.16                                  | 1000                 | EEE1VA100WR                  | (1)    | 2000                   |
|             |                         | 5            | 5.4            | C             | 30                                                       | 0.12                                  | 2000                 | EEE1VA100SR                  | (1)    | 1000                   |
|             | 22                      | 5            | 5.4            | (C)           | 36                                                       | 0.16                                  | 1000                 | EEE1VA220WR                  | (1)    | 1000                   |
|             |                         | 6.3          | 5.4            | D             | 60                                                       | 0.12                                  | 2000                 | EEE1VA220SP                  | (1)    | 1000                   |
|             | 33                      | 6.3          | 5.4            | (D)           | 60                                                       | 0.16                                  | 1000                 | EEE1VA330WP                  | (1)    | 1000                   |
|             |                         | 8            | 6.2            | E             | 130                                                      | 0.14                                  | 2000                 | EEE1VA330P                   | (2)    | 1000                   |
|             | 47                      | 6.3          | 5.4            | (D)           | 70                                                       | 0.16                                  | 1000                 | EEE1VA470WP                  | (1)    | 1000                   |
|             |                         | 8            | 6.2            | E             | 165                                                      | 0.14                                  | 2000                 | EEE1VA470P                   | (2)    | 1000                   |
|             | 100                     | 6.3          | 7.7            | D8            | 132                                                      | 0.12                                  | 2000                 | EEE1VA101XP                  | (1)    | 900                    |
|             |                         | 8            | 10.2           | (F)           | 140                                                      | 0.14                                  | 2000                 | EEE1VA101UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 210                                                      | 0.14                                  | 2000                 | EEE1VA101P                   | (2)    | 500                    |
|             | 220                     | 8            | 10.2           | (F)           | 200                                                      | 0.14                                  | 2000                 | EEE1VA221UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 310                                                      | 0.14                                  | 2000                 | EEE1VA221P                   | (2)    | 500                    |
|             | 330                     | 10           | 10.2           | G             | 350                                                      | 0.14                                  | 2000                 | EEE1VA331P                   | (2)    | 500                    |

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Endurance : 85 °C 2000 h

| W.V.<br>(V) | Cap.<br>(±20 %)<br>(μF) | Case size    |                |               | Specification                                            |                                       |                      | Part No.<br>(RoHS:compliant) | Reflow | Min.<br>Packaging Q'ty |
|-------------|-------------------------|--------------|----------------|---------------|----------------------------------------------------------|---------------------------------------|----------------------|------------------------------|--------|------------------------|
|             |                         | Dia.<br>(mm) | Length<br>(mm) | *Size<br>Code | Ripple<br>Current<br>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | $\tan \delta$<br>(120 Hz)<br>(+20 °C) | Endurance<br>(hours) |                              |        | Taping<br>(pcs)        |
| 50          | 0.1                     | 3            | 5.4            | A             | 1                                                        | 0.14                                  | 1000                 | EEE1HS0R1SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 1                                                        | 0.12                                  | 2000                 | EEE1HA0R1SR                  | (1)    | 2000                   |
|             | 0.22                    | 3            | 5.4            | A             | 2                                                        | 0.14                                  | 1000                 | EEE1HSR22SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 2                                                        | 0.12                                  | 2000                 | EEE1HAR22SR                  | (1)    | 2000                   |
|             | 0.33                    | 3            | 5.4            | A             | 3                                                        | 0.14                                  | 1000                 | EEE1HSR33SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 3                                                        | 0.12                                  | 2000                 | EEE1HAR33SR                  | (1)    | 2000                   |
|             | 0.47                    | 3            | 5.4            | A             | 5                                                        | 0.14                                  | 1000                 | EEE1HSR47SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 5                                                        | 0.12                                  | 2000                 | EEE1HAR47SR                  | (1)    | 2000                   |
|             | 1                       | 3            | 5.4            | A             | 8                                                        | 0.14                                  | 1000                 | EEE1HS010SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 10                                                       | 0.12                                  | 2000                 | EEE1HA010SR                  | (1)    | 2000                   |
|             | 2.2                     | 3            | 5.4            | A             | 8                                                        | 0.14                                  | 1000                 | EEE1HS2R2SR **               | (1)    | 2000                   |
|             |                         | 4            | 5.4            | B             | 16                                                       | 0.12                                  | 2000                 | EEE1HA2R2SR                  | (1)    | 2000                   |
|             | 3.3                     | 4            | 5.4            | B             | 16                                                       | 0.12                                  | 2000                 | EEE1HA3R3SR                  | (1)    | 2000                   |
|             | 4.7                     | 4            | 5.4            | (B)           | 18                                                       | 0.14                                  | 1000                 | EEE1HA4R7WR                  | (1)    | 2000                   |
|             |                         | 5            | 5.4            | C             | 23                                                       | 0.12                                  | 2000                 | EEE1HA4R7SR                  | (1)    | 1000                   |
|             | 10                      | 5            | 5.4            | (C)           | 27                                                       | 0.14                                  | 1000                 | EEE1HA100WR                  | (1)    | 1000                   |
|             |                         | 6.3          | 5.4            | D             | 35                                                       | 0.12                                  | 2000                 | EEE1HA100SP                  | (1)    | 1000                   |
|             | 22                      | 6.3          | 5.4            | (D)           | 40                                                       | 0.14                                  | 1000                 | EEE1HA220WP                  | (1)    | 1000                   |
|             |                         | 8            | 6.2            | E             | 120                                                      | 0.12                                  | 2000                 | EEE1HA220P                   | (2)    | 1000                   |
|             | 33                      | 6.3          | 7.7            | D8            | 85                                                       | 0.12                                  | 2000                 | EEE1HA330XP                  | (1)    | 900                    |
|             |                         | 8            | 6.2            | (E)           | 65                                                       | 0.12                                  | 2000                 | EEE1HA330UP                  | (2)    | 1000                   |
|             |                         | 8            | 10.2           | F             | 110                                                      | 0.12                                  | 2000                 | EEE1HA330P                   | (2)    | 500                    |
|             | 47                      | 6.3          | 7.7            | D8            | 105                                                      | 0.12                                  | 2000                 | EEE1HA470XP                  | (1)    | 900                    |
|             |                         | 8            | 10.2           | (F)           | 110                                                      | 0.12                                  | 2000                 | EEE1HA470UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 130                                                      | 0.12                                  | 2000                 | EEE1HA470P                   | (2)    | 500                    |
|             | 100                     | 8            | 10.2           | (F)           | 200                                                      | 0.12                                  | 2000                 | EEE1HA101UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 250                                                      | 0.12                                  | 2000                 | EEE1HA101P                   | (2)    | 500                    |
|             | 220                     | 10           | 10.2           | G             | 300                                                      | 0.12                                  | 2000                 | EEE1HA221P                   | (2)    | 500                    |
| 63          | 22                      | 8            | 6.2            | (E)           | 40                                                       | 0.18                                  | 2000                 | EEE1JA220UP                  | (2)    | 1000                   |
|             |                         | 8            | 10.2           | F             | 40                                                       | 0.18                                  | 2000                 | EEE1JA220P                   | (2)    | 500                    |
|             | 33                      | 8            | 10.2           | F             | 45                                                       | 0.18                                  | 2000                 | EEE1JA330P                   | (2)    | 500                    |
|             |                         | 8            | 10.2           | (F)           | 45                                                       | 0.18                                  | 2000                 | EEE1JA470UP                  | (2)    | 500                    |
|             | 47                      | 10           | 10.2           | G             | 45                                                       | 0.18                                  | 2000                 | EEE1JA470P                   | (2)    | 500                    |
|             | 100                     | 10           | 10.2           | G             | 60                                                       | 0.18                                  | 2000                 | EEE1JA101P                   | (2)    | 500                    |
| 100         | 3.3                     | 8            | 6.2            | E             | 50                                                       | 0.18                                  | 2000                 | EEE2AA3R3P                   | (2)    | 1000                   |
|             | 4.7                     | 8            | 6.2            | (E)           | 50                                                       | 0.18                                  | 2000                 | EEE2AA4R7UP                  | (2)    | 1000                   |
|             |                         | 8            | 10.2           | F             | 80                                                       | 0.18                                  | 2000                 | EEE2AA4R7P                   | (2)    | 500                    |
|             | 10                      | 8            | 6.2            | (E)           | 50                                                       | 0.18                                  | 2000                 | EEE2AA100UP                  | (2)    | 1000                   |
|             |                         | 8            | 10.2           | F             | 85                                                       | 0.18                                  | 2000                 | EEE2AA100P                   | (2)    | 500                    |
|             | 22                      | 8            | 10.2           | (F)           | 55                                                       | 0.18                                  | 2000                 | EEE2AA220UP                  | (2)    | 500                    |
|             |                         | 10           | 10.2           | G             | 85                                                       | 0.18                                  | 2000                 | EEE2AA220P                   | (2)    | 500                    |
|             | 33                      | 10           | 10.2           | G             | 90                                                       | 0.18                                  | 2000                 | EEE2AA330P                   | (2)    | 500                    |

\* Size code( ):Miniaturization product

\*\* Dia.3mm is not recommended for new design. Please consider Dia.4mm.(Available upon request)

· 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 (Bi-polar)

Endurance : 85 °C 2000 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>(120 Hz)<br>(+85 °C)<br>(mA r.m.s.) | $\tan \delta$<br>(120 Hz)<br>(+20 °C) | Endurance |                              |        | Taping                 |
| (V)  | (μF)            | (mm)      | (mm)   |              |                                                          |                                       | (hours)   |                              |        | (pcs)                  |
| 6.3  | 22              | 5         | 5.4    | C            | 29                                                       | 0.52                                  | 2000      | EEE0JA220NR                  | (1)    | 1000                   |
|      | 47              | 6.3       | 5.4    | D            | 46                                                       | 0.52                                  | 2000      | EEE0JA470NP                  | (1)    | 1000                   |
| 10   | 10              | 4         | 5.4    | B            | 25                                                       | 0.40                                  | 2000      | EEE1AA100NR                  | (1)    | 2000                   |
|      | 33              | 6.3       | 5.4    | D            | 43                                                       | 0.40                                  | 2000      | EEE1AA330NP                  | (1)    | 1000                   |
| 16   | 4.7             | 4         | 5.4    | B            | 20                                                       | 0.32                                  | 2000      | EEE1CA4R7NR                  | (1)    | 2000                   |
|      | 10              | 5         | 5.4    | C            | 25                                                       | 0.32                                  | 2000      | EEE1CA100NR                  | (1)    | 1000                   |
|      | 22              | 6.3       | 5.4    | D            | 39                                                       | 0.32                                  | 2000      | EEE1CA220NP                  | (1)    | 1000                   |
| 25   | 3.3             | 4         | 5.4    | B            | 12                                                       | 0.28                                  | 2000      | EEE1EA3R3NR                  | (1)    | 2000                   |
|      | 4.7             | 5         | 5.4    | C            | 21                                                       | 0.28                                  | 2000      | EEE1EA4R7NR                  | (1)    | 1000                   |
|      | 10              | 6.3       | 5.4    | D            | 28                                                       | 0.28                                  | 2000      | EEE1EA100NP                  | (1)    | 1000                   |
| 35   | 2.2             | 4         | 5.4    | B            | 12                                                       | 0.24                                  | 2000      | EEE1VA2R2NR                  | (1)    | 2000                   |
|      | 4.7             | 5         | 5.4    | C            | 22                                                       | 0.24                                  | 2000      | EEE1VA4R7NR                  | (1)    | 1000                   |
|      | 10              | 6.3       | 5.4    | D            | 30                                                       | 0.24                                  | 2000      | EEE1VA100NP                  | (1)    | 1000                   |
| 50   | 0.22            | 4         | 5.4    | B            | 2                                                        | 0.24                                  | 2000      | EEE1HAR22NR                  | (1)    | 2000                   |
|      | 0.33            | 4         | 5.4    | B            | 3                                                        | 0.24                                  | 2000      | EEE1HAR33NR                  | (1)    | 2000                   |
|      | 0.47            | 4         | 5.4    | B            | 5                                                        | 0.24                                  | 2000      | EEE1HAR47NR                  | (1)    | 2000                   |
|      | 1               | 4         | 5.4    | B            | 10                                                       | 0.24                                  | 2000      | EEE1HA010NR                  | (1)    | 2000                   |
|      | 2.2             | 5         | 5.4    | C            | 16                                                       | 0.24                                  | 2000      | EEE1HA2R2NR                  | (1)    | 1000                   |
|      | 3.3             | 5         | 5.4    | C            | 21                                                       | 0.24                                  | 2000      | EEENZ1H3R3R                  | (1)    | 1000                   |
|      | 4.7             | 6.3       | 5.4    | D            | 31                                                       | 0.24                                  | 2000      | EEE1HA4R7NP                  | (1)    | 1000                   |

- 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"



**Стандарт  
Электрон  
Связь**

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