



Features

- 4 ~ 18 ϕ , 105°C, 2,000 hours assured
- Designed for surface mounting on high density PC board
- RoHS Compliance



Marking color: Black

SPECIFICATIONS

| Items | Performance | | | | | | | | | | | | |
|--|--|--|---|--------------------------|------|--------|------|------|------|-----------|-----------|-----------|-----------|
| Category Temperature Range | 6.3 ~ 100V | 160 ~ 450V | | | | | | | | | | | |
| | -55°C ~ +105°C | -40°C ~ +105°C | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (at 120Hz, 20°C) | | | | | | | | | | | | |
| Leakage Current (at 20°C) | Rated voltage | 6.3 ~ 100V | 160 ~ 450V | | | | | | | | | | |
| | Time | after 2 minutes | | | | | | | | | | | |
| | Case size | 4 ~ 10 ϕ | 12.5 ~ 18 ϕ | 12.5 ~ 18 ϕ | | | | | | | | | |
| | Leakage Current | I = 0.01CV or 3 μ A, whichever is greater | I = 0.03CV or 4 μ A, whichever is greater | I = 0.04CV + 100 μ A | | | | | | | | | |
| Where, C = rated capacitance in μ F V = rated DC working voltage in V | | | | | | | | | | | | | |
| Dissipation Factor (Tan δ at 120Hz, 20°C) | Rated Voltage | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 400 ~ 450 | | |
| | 4 ~ 10 ϕ | 0.45 | 0.35 | 0.28 | 0.18 | 0.16 | 0.14 | 0.12 | 0.12 | - | - | | |
| | 12.5 ~ 18 ϕ | 0.40 | 0.38 | 0.34 | 0.26 | 0.22 | 0.18 | 0.14 | 0.10 | 0.20 | 0.25 | | |
| When the capacitance exceeds 1,000 μ F, 0.02 shall be added every 1,000 μ F increase. | | | | | | | | | | | | | |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio shall not exceed the values given in the table below. | | | | | | | | | | | | |
| | Impedance Ratio | Rated Voltage | | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 400 ~ 450 |
| | | Z(-25°C) | $\phi D < 12.5$ | 4 | 4 | 3 | 2 | 2 | 2 | 2 | 3 | - | - |
| | | /Z(+20°C) | $\phi D \geq 12.5$ | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 6 |
| Z(-55/-40°C) | | $\phi D < 12.5$ | 12 | 8 | 6 | 4 | 3 | 3 | 3 | 4 | - | - | |
| /Z(+20°C) | $\phi D \geq 12.5$ | 10 | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 6 | 10 | | |
| Endurance | Test Time | 2,000 Hrs | | | | | | | | | | | |
| | Capacitance Change | Within ±25% of initial value for $\phi D \leq 6.3\text{mm}$; Within ±20% of initial value for $\phi D \geq 8\text{mm}$ | | | | | | | | | | | |
| | Dissipation Factor | Less than 300% of specified value for $\phi D \leq 6.3\text{mm}$; Less than 200% of specified value for $\phi D \geq 8\text{mm}$ | | | | | | | | | | | |
| | Leakage Current | Within specified value | | | | | | | | | | | |
| * The above specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage applied for 2,000 hours at 105°C. | | | | | | | | | | | | | |
| Shelf Life Test | Test time: 1,000 hours; other items are the same as those for the Endurance. The rated voltage shall be applied to the capacitors before the measurements for 160 ~ 450V (Refer to JIS C 5101-4 4.1). | | | | | | | | | | | | |
| Ripple Current & Frequency Multipliers | Freq. (Hz) | | 50 | 120 | 1k | 10k up | | | | | | | |
| | Cap. (μ F) | | | | | | | | | | | | |
| | Under 1,000 | | 0.80 | 1.00 | 1.25 | 1.40 | | | | | | | |
| 1,000 < C \leq 4,700 | | 0.85 | 1.00 | 1.15 | 1.25 | | | | | | | | |

DIAGRAM OF DIMENSIONS

Fig. 1

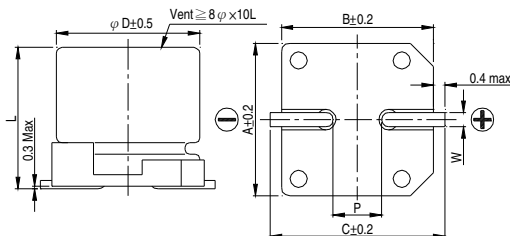
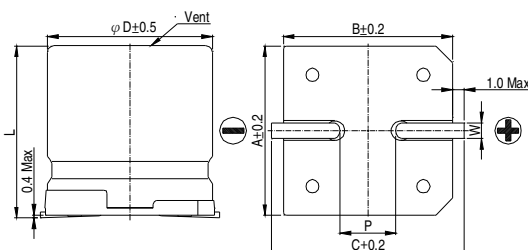


Fig. 2



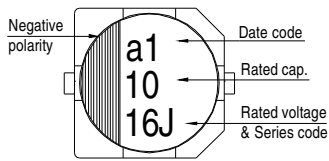
LEAD SPACING AND DIAMETER

Unit: mm

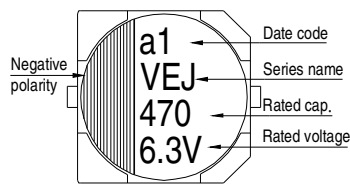
| ϕD | L | A | B | C | W | P ± 0.2 | Fig. No. |
|----------|------------|------|------|------|-----------|---------|----------|
| 4 | 5.7 ± 0.3 | 4.3 | 4.3 | 5.1 | 0.5 ~ 0.8 | 1.0 | 1 |
| 5 | 5.7 ± 0.3 | 5.3 | 5.3 | 6.1 | 0.5 ~ 0.8 | 1.5 | 1 |
| 6.3 | 5.7 ± 0.3 | 6.6 | 6.6 | 7.4 | 0.5 ~ 0.8 | 2.0 | 1 |
| 6.3 | 7.7 ± 0.3 | 6.6 | 6.6 | 7.4 | 0.5 ~ 0.8 | 2.0 | 1 |
| 8 | 10 ± 0.5 | 8.4 | 8.4 | 9.2 | 0.7 ~ 1.1 | 3.1 | 1 |
| 10 | 7.7 ± 0.3 | 10.4 | 10.4 | 11.2 | 0.7 ~ 1.1 | 4.7 | 1 |
| 10 | 10 ± 0.5 | 10.4 | 10.4 | 11.2 | 0.7 ~ 1.1 | 4.7 | 1 |
| 10 | 10.3 ± 0.5 | 10.4 | 10.4 | 11.2 | 0.7 ~ 1.1 | 4.7 | 1 |
| 12.5 | 13.5 ± 0.5 | 13.0 | 13.0 | 15.0 | 1.1 ~ 1.4 | 4.4 | 2 |
| 12.5 | 16 ± 0.5 | 13.0 | 13.0 | 15.0 | 1.1 ~ 1.4 | 4.4 | 2 |
| 16 | 16.5 ± 0.5 | 17.0 | 17.0 | 19.0 | 1.1 ~ 1.4 | 6.4 | 2 |
| 18 | 16.5 ± 0.5 | 19.0 | 19.0 | 21.0 | 1.1 ~ 1.4 | 6.4 | 2 |

MARKING

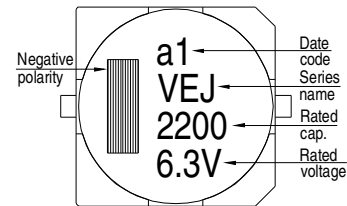
$\phi D \leq 6.3\text{mm}$



$\phi D = 8 \sim 10\text{mm}$



$\phi D \geq 12.5\text{mm}$



Dimension: $\phi D \times L(\text{mm})$

Ripple Current: mA/rms at 120 Hz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

| μF | V. DC Contents | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | |
|---------------|-------------------|-------------------|-------|-------------------|-------|-------------------|------------|-------------------|------------|-------------------|-------|-------------------|-----|-------------------|-----|-------------------|-----|
| | | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA |
| 0.22 | R22 | | | | | | | | | | | 4x5.7 | 3 | | | | |
| 0.33 | R33 | | | | | | | | | | | 4x5.7 | 4 | | | | |
| 0.47 | R47 | | | | | | | | | | | 4x5.7 | 5 | 4x5.7 | 5 | | |
| 1 | 010 | | | | | | | | | | | 4x5.7 | 8 | 4x5.7 | 8 | | |
| 2.2 | 2R2 | | | | | | | | | | | 4x5.7 | 12 | 4x5.7 | 12 | | |
| 3.3 | 3R3 | | | | | | | | | | | 4x5.7 | 14 | 5x5.7 | 17 | | |
| 4.7 | 4R7 | | | | | | | 4x5.7 | 17 | 4x5.7 | 17 | 5x5.7 | 20 | 6.3x5.7 | 22 | | |
| 10 | 100 | | | | | 4x5.7 | 20 | 4x5.7 | 20 | 5x5.7 | 27 | 6.3x5.7 | 32 | 6.3x5.7 | 32 | | |
| 22 | 220 | 4x5.7 | 22 | 4x5.7 | 22 | 5x5.7 | 30 | 5x5.7 | 30 | 6.3x5.7 | 44 | 6.3x5.7 | 38 | 6.3x7.7 | 58 | 8x10 | 100 |
| 33 | 330 | 5x5.7 | 34 | 5x5.7 | 34 | 5x5.7 | 34 | 6.3x5.7 | 46 | 6.3x5.7 | 46 | 6.3x7.7 | 65 | 8x10 | 140 | 10x10 | 150 |
| 47 | 470 | 5x5.7 | 38 | 5x5.7 | 38 | 6.3x5.7 | 48 | 6.3x5.7 | 48 | 6.3x7.7 | 80 | 6.3x7.7 | 70 | 8x10 | 170 | 12.5x13.5 | 250 |
| 100 | 101 | 6.3x5.7 | 69 | 6.3x5.7 | 69 | 6.3x5.7 | 69 | 6.3x7.7 | 100 | 8x10 | 240 | 8x10 | 210 | 10x10.3 | 310 | 12.5x13.5 | 380 |
| 220 | 221 | 6.3x7.7 | 120 | 6.3x7.7 | 120 | 6.3x7.7 | 120 | 8x10 10x7.7 | 270 270 | 8x10 | 270 | 10x10.3 | 330 | 12.5x13.5 | 470 | 16x16.5 | 450 |
| 330 | 331 | 8x10 | 290 | 8x10 | 290 | 8x10 10x7.7 | 290 290 | 8x10 | 290 | 10x10 | 370 | 12.5x13.5 | 490 | 16x16.5 | 650 | 18x16.5 | 590 |
| 470 | 471 | 8x10 | 320 | 8x10 | 320 | 10x10 | 380 | 10x10 | 380 | 12.5x13.5 | 520 | 12.5x16 | 550 | 16x16.5 | 700 | | |
| 1,000 | 102 | 10x10 | 410 | 10x10.3 | 410 | 12.5x13.5 | 550 | 12.5x16 | 550 | 16x16.5 | 800 | 18x16.5 | 990 | | | | |
| 2,200 | 222 | 12.5x13.5 | 680 | 12.5x13.5 | 680 | 16x16.5 | 900 | 16x16.5 | 900 | 18x16.5 | 1,050 | | | | | | |
| 3,300 | 332 | 12.5x16 | 850 | 16x16.5 | 950 | 16x16.5 | 950 | 18x16.5 | 1,150 | | | | | | | | |
| 4,700 | 472 | 16x16.5 | 1,000 | 16x16.5 | 1,000 | 18x16.5 | 1,225 | | | | | | | | | | |
| 6,800 | 682 | 18x16.5 | 1,290 | 18x16.5 | 1,290 | | | | | | | | | | | | |

| μF | V. DC Contents | 160V (2C) | | 200V (2D) | | 250V (2E) | | 400V (2G) | | 450V (2W) | |
|---------------|-------------------|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|-------------------|-----|
| | | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA | $\phi D \times L$ | mA |
| 3.3 | 3R3 | | | | | 12.5x13.5 | 60 | | | 12.5x13.5 | 40 |
| 4.7 | 4R7 | | | | | 12.5x13.5 | 65 | 12.5x13.5 | 45 | 12.5x13.5 | 45 |
| 10 | 100 | | | 12.5x13.5 | 80 | 12.5x13.5 | 70 | 12.5x13.5 | 50 | 12.5x16 | 75 |
| 22 | 220 | | | 12.5x16 | 110 | 12.5x13.5 | 105 | 16x16.5 | 85 | 16x16.5 | 85 |
| 33 | 330 | 12.5x13.5 | 95 | 12.5x16 | 120 | 16x16.5 | 180 | 18x16.5 | 100 | 18x16.5 | 100 |
| 47 | 470 | 16x16 | 240 | 16x16.5 | 220 | 16x16.5 | 220 | | | | |
| 100 | 101 | 16x16.5 | 250 | 18x16.5 | 280 | 18x16.5 | 260 | | | | |

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