

Vertical Surface Mounting Capacitors



Fig.1 Component outline

FEATURES

- New Vishay OS-CON series as results of polymerized organic semiconductor as electrolyte
- Features superior heat-proof characteristics compared with previously developed Vishay OS-CON series
- Particularly effective when used as surface mounting devices of the switching power supply
- Rated ripple current values are guaranteed at 105 °C
- No need to consider derating on maximum allowable ripple current



RoHS
COMPLIANT

| QUICK REFERENCE DATA | | | |
|---|---|--|-------------|
| DESCRIPTION | VALUE | | |
| Operating Temperature Range | - 55 °C to + 105 °C | | |
| Capacitance Tolerance at 120 Hz | M: ± 20 % | | |
| Tangent of Loss Angle (tan δ) at 120 Hz | Values in Standard Ratings Table | | |
| Leakage Current (µA/2 minutes) (or less)* | Values in Standard Ratings Table | | |
| Equivalent Series Resistance (Ω), (100 k to 300 kHz) | Values in Standard Ratings Table | | |
| Characteristics at high temp. and low temp. Impedance Ratio at 100 kHz, + 20 °C | - 55 °C | Z/Z _{20 °C} | 1.0 to 1.25 |
| | + 105 °C | Z/Z _{20 °C} | 0.75 to 1.0 |
| Endurance + 105 °C, 2000 hours Rated Voltage Applied (25 WV to 20 V) (1000 hours for A5/B6 sizes) | ΔC/C | Within ± 20 % | |
| | tan δ | ≤ 1.5 x the value of Tangent of Loss Angle | |
| | ESR | ≤ 1.5 x the value of ESR | |
| | Leakage Current | ≤ The Value of Leakage Current | |
| Damp heat (Steady state) (+ 60 °C, 90 to 95 % RH, 1000 hours, no voltage) (500 hours for A5/B6 sizes) | ΔC/C | Within ± 20 % | |
| | tan δ | ≤ 1.5 x the value of Tangent of Loss Angle | |
| | ESR | ≤ 1.5 x the value of ESR | |
| | Leakage Current | ≤ The Value of Leakage Current after Voltage Treatment | |
| Reverse Voltage Guarantee | Temporary: < 20 % of the rated voltage Continuous: < 10 % of the rated voltage | | |
| Solder heat resistance (VPS)** (215 °C x 90 s) or (230 °C x 60 s) (Please consult us for A5/B6 sizes) | ΔC/C | Within ± 10 % | |
| | tan δ | ≤ 1.3 x the value of Tangent of Loss Angle | |
| | ESR | ≤ 1.3 x the value of ESR | |
| | Leakage Current | ≤ The Value of Leakage Current after Voltage Treatment | |

* If any doubt arises, measure the current after applying voltage (voltage treatment). Voltage Treatment: The rated voltage is applied to Vishay OS-CON (2.5 to 20 WV) for 120 minutes at 105 °C. (However, 20 V is applied to a 25 WV Vishay OS-CON).

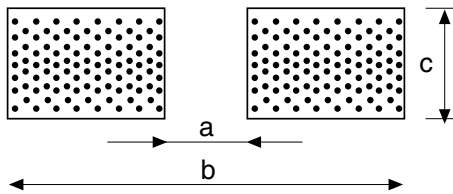
** Refer to Standard Ratings table for soldering recommendation.

DIMENSIONS in millimeters



| DIMENSIONS in millimeters | | | | | | | |
|---------------------------|-----------|--------|---------|---------|---------|------------|---------|
| SIZE CODE | Ø D ± 0.5 | L max. | W ± 0.2 | H ± 0.2 | C ± 0.2 | R | P ± 0.2 |
| A5 | 4.0 | 5.5 | 4.3 | 4.3 | 5.0 | 0.5 to 0.8 | 1.0 |
| B6 | 5.0 | 6.0 | 5.3 | 5.3 | 6.0 | 0.5 to 0.8 | 1.4 |
| C6 | 6.3 | 6.0 | 6.6 | 6.6 | 7.3 | 0.5 to 0.8 | 2.1 |
| E7 | 8.0 | 7.0 | 8.3 | 8.3 | 9.0 | 0.5 to 0.8 | 3.2 |
| F8 | 10.0 | 8.0 | 10.3 | 10.3 | 11.0 | 0.5 to 0.8 | 4.6 |
| E12 | 8.0 | 12.0 | 8.3 | 8.3 | 9.0 | 0.8 to 1.1 | 3.2 |
| F12 | 10.0 | 12.7 | 10.3 | 10.3 | 11.0 | 0.8 to 1.1 | 4.6 |

RECOMMENDED LAND PATTERN



| DIMENSIONS in millimeters | | | |
|----------------------------------|-----|------|-----|
| SIZE CODE | a | b | c |
| A5 | 1.0 | 6.2 | 1.6 |
| B6 | 1.4 | 7.4 | 1.6 |
| C6 | 2.1 | 9.1 | 1.6 |
| E7 | 2.8 | 11.1 | 1.9 |
| F8 | 4.3 | 13.1 | 1.9 |
| E12 | 2.8 | 11.1 | 1.9 |
| F12 | 4.3 | 13.1 | 1.9 |

| CASE CODE LIST | | | | | | | | |
|-----------------------|---------|-----------|---------|-----------|-----------|-----------|---------|---------|
| CAPACITANCE (μF) | WV (SV) | 2.5 (3.3) | 4 (5.2) | 6.3 (8.2) | 10 (11.5) | 16 (18.4) | 20 (23) | 25 (25) |
| 3.3 | | - | - | - | - | A5 | - | - |
| 4.7 | | - | - | - | A5 | - | - | - |
| 6.8 | | - | - | - | A5 | - | - | C6 |
| 10.0 | | - | - | - | A5 | - | B6 | E7 |
| 15.0 | | - | - | - | A5 | B6 | - | - |
| 27.0 | | - | - | - | - | - | C6 | - |
| 22.0 | | - | - | A5 | - | B6 | C6 | F8 |
| 33.0 | | - | A5 | - | B6 | - | E7 | E12 |
| 39.0 | | - | B6 | - | - | C6 | - | - |
| 47.0 | | - | - | B6 | C6 | - | E7 | - |
| 56.0 | | - | - | - | C6 | E7 | F8 | F12 |
| 68.0 | | - | B6 | - | - | - | F8 | - |
| 82.0 | | - | - | C6 | - | E7 | - | - |
| 100.0 | | - | - | C6 | - | F8 | E12 | - |
| 120.0 | | - | - | - | E7 | - | - | - |
| 150.0 | | - | C6, E7 | - | E7, F8 | F8 | F12 | - |
| 180.0 | | - | - | - | - | E12 | - | - |
| 220.0 | | - | - | E7, F8 | - | - | - | - |
| 270.0 | | - | - | - | E7, F8 | - | - | - |
| 330.0 | | - | E7 | F8 | E12 | F12 | - | - |
| 470.0 | | - | - | F8, E12 | - | - | - | - |
| 560.0 | | - | E12 | - | F12 | - | - | - |
| 680.0 | | E12 | F8 | - | - | - | - | - |
| 820.0 | | - | - | F12 | - | - | - | - |
| 1200.0 | | - | F12 | - | - | - | - | - |
| 1500.0 | | F12 | - | - | - | - | - | - |

*** WV = Rated Voltage. **** (SV) = Surge Voltage (at room temperature). The description contents are subject to change due to technical improvement without notice. Please ask for latest specifications for order and use.

| STANDARD RATINGS | | | | | | | |
|-------------------------|-----------------|-------------------|------------------------|----------------------------------|---|----------------------------|---|
| CASE CODE | PART NUMBER* | RATED VOLTAGE (V) | RATED CAPACITANCE (μF) | MAX. ESR (100 k to 300 kHz) (mΩ) | ALLOWABLE RIPPLE CURRENT (mAmps) at 100 kHz, + 105 °C | MAX. TANGENT OF LOSS ANGLE | MAX. LEAKAGE CURRENT (μA) (After 2 Minutes) |
| A5 | 94SVP335X0016A5 | 16 | 3.3 | 280 | 590 | 0.07 | 26.4 |
| | 94SVP475X0010A5 | 10 | 4.7 | 260 | 660 | 0.08 | 23.5 |
| | 94SVP685X0010A5 | 10 | 6.8 | 260 | 660 | 0.09 | 34.0 |
| | 94SVP106X0010A5 | 10 | 10 | 240 | 670 | 0.10 | 50.0 |
| | 94SVP156X0010A5 | 10 | 15 | 240 | 670 | 0.10 | 75.0 |
| | 94SVP226X06R3A5 | 6.3 | 22 | 220 | 700 | 0.12 | 69.3 |
| | 94SVP336X0004A5 | 4 | 33 | 200 | 740 | 0.15 | 66.0 |

* Part Numbers shown are for ± 20 % capacitance tolerance (X0).



| STANDARD RATINGS | | | | | | | |
|------------------|-------------------|-------------------|------------------------|----------------------------------|---|----------------------------|---|
| CASE CODE | PART NUMBER* | RATED VOLTAGE (V) | RATED CAPACITANCE (μF) | MAX. ESR (100 k to 300 kHz) (mΩ) | ALLOWABLE RIPPLE CURRENT (mAmps) at 100 kHz, + 105 °C | MAX. TANGENT OF LOSS ANGLE | MAX. LEAKAGE CURRENT (μA) (After 2 Minutes) |
| B6 | 94SVP106X0020B6 | 20 | 10 | 170 | 850 | 0.10 | 100 |
| | 94SVP156X0016B6 | 16 | 15 | 150 | 920 | 0.10 | 120 |
| | 94SVP226X0016B6 | 16 | 22 | 150 | 920 | 0.15 | 176 |
| | 94SVP336X0010B6 | 10 | 33 | 130 | 990 | 0.15 | 165 |
| | 94SVP476X006R3B6 | 6.3 | 47 | 90 | 1060 | 0.15 | 148 |
| | 94SVP396X0004B6 | 4 | 39 | 70 | 1100 | 0.15 | 78 |
| C6 | 94SVP686X0004B6 | 4 | 68 | 70 | 1100 | 0.15 | 136 |
| | 94SVP685X0025C6 | 25 | 6.8 | 80 | 1200 | 0.10 | 85 |
| | 94SVP226X0020C6 | 20 | 22 | 65 | 1390 | 0.10 | 88 |
| | 94SVP276X0020C6 | 20 | 27 | 60 | 1450 | 0.10 | 108 |
| | 94SVP396X0016C6 | 16 | 39 | 65 | 1390 | 0.10 | 125 |
| | 94SVP476X0010C6 | 10 | 47 | 60 | 1450 | 0.12 | 94 |
| | 94SVP566X0010C6 | 10 | 56 | 55 | 1510 | 0.12 | 112 |
| | 94SVP107X006R3C6 | 6.3 | 100 | 40 | 1810 | 0.12 | 126 |
| E7 | 94SVP826X006R3C6 | 6.3 | 82 | 50 | 1570 | 0.12 | 103 |
| | 94SVP157X0004C6 | 4 | 150 | 50 | 1620 | 0.12 | 120 |
| | 94SVP106X0025E7 | 25 | 10 | 60 | 1500 | 0.10 | 125 |
| | 94SVP336X0020E7 | 20 | 33 | 50 | 1700 | 0.12 | 132 |
| | 94SVP476X0020E7 | 20 | 47 | 50 | 1700 | 0.12 | 188 |
| | 94SVP566X0016E7 | 16 | 56 | 50 | 1800 | 0.12 | 179 |
| | 94SVP826X0016E7 | 16 | 82 | 45 | 1890 | 0.12 | 262 |
| | 94SVP127X0010E7 | 10 | 120 | 40 | 2120 | 0.12 | 240 |
| | 94SVP157X0010E7 | 10 | 150 | 35 | 2560 | 0.12 | 300 |
| F8 | 94SVP157X0004E7 | 4 | 150 | 35 | 2350 | 0.12 | 120 |
| | 94SVP337X0004E7 | 4 | 330 | 35 | 2560 | 0.12 | 264 |
| | 94SVP227X006R3E7 | 6.3 | 220 | 35 | 2560 | 0.12 | 277 |
| | 94SVP226X0025F8 | 25 | 22 | 50 | 2000 | 0.10 | 275 |
| | 94SVP566X0020F8 | 20 | 56 | 45 | 2200 | 0.12 | 224 |
| | 94SVP686X0020F8 | 20 | 68 | 45 | 2200 | 0.12 | 272 |
| | 94SVP107X0016F8 | 16 | 100 | 40 | 2400 | 0.12 | 320 |
| | 94SVP157X0016F8 | 16 | 150 | 35 | 2670 | 0.12 | 480 |
| | 94SVP157X0010F8 | 10 | 150 | 35 | 2670 | 0.12 | 300 |
| E12 | 94SVP277X0010F8 | 10 | 270 | 30 | 3020 | 0.12 | 540 |
| | 94SVP227X006R3F8 | 6.3 | 220 | 30 | 3020 | 0.12 | 277 |
| | 94SVP477X006R3F8 | 6.3 | 470 | 25 | 3700 | 0.12 | 592 |
| | 94SVP337X006R3F8 | 6.3 | 330 | 25 | 3300 | 0.12 | 416 |
| | 94SVP687X0004F8 | 4 | 680 | 25 | 3700 | 0.12 | 544 |
| | 94SVP336X0025E12 | 25 | 33 | 30 | 2980 | 0.12 | 413 |
| | 94SVP107X0020E12 | 20 | 100 | 25 | 3260 | 0.15 | 400 |
| | 94SVP187X0016E12 | 16 | 180 | 22 | 3480 | 0.15 | 576 |
| F12 | 94SVP337X0010E12 | 10 | 330 | 19 | 3740 | 0.15 | 660 |
| | 94SVP477X006R3E12 | 6.3 | 470 | 17 | 3960 | 0.15 | 592 |
| | 94SVP567X0004E12 | 4 | 560 | 16 | 4080 | 0.15 | 448 |
| | 94SVP687X002R5E12 | 2.5 | 680 | 16 | 4080 | 0.15 | 340 |
| | 94SVP566X0025F12 | 25 | 56 | 28 | 3800 | 0.12 | 700 |
| | 94SVP157X0020F12 | 20 | 150 | 21 | 4220 | 0.15 | 600 |
| F12 | 94SVP337X0016F12 | 16 | 330 | 17 | 4580 | 0.15 | 792 |
| | 94SVP567X0010F12 | 10 | 560 | 15 | 4870 | 0.15 | 840 |
| | 94SVP827X006R3F12 | 6.3 | 820 | 14 | 5040 | 0.15 | 775 |
| | 94SVP128X0004F12 | 4 | 1200 | 13 | 5230 | 0.18 | 960 |
| | 94SVP158X002R5F12 | 2.5 | 1500 | 13 | 5230 | 0.18 | 750 |

* Part Numbers shown are for ± 20 % capacitance tolerance (X0).



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