# VT series

• **Wide Temperature Range Type for General Purpose**

## ■ SPECIFICATIONS

| Item | Performance Characteristics |
|---|---|
| Operating Temperature Range | −40~+105℃ |
| Voltage Range | 6.3V~400V |
| Capacitance Range | 0.47~15000 μF |
| Capacitance Tolerance | ±20% at 120Hz, 20℃ |
| Tan δ | For capacitance of more than 1000 μF, add 0.02 for every increase of 1000 μF, Measurement frequency: 120Hz, Temperature: 20℃ |

| Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160~250 | 350 | 400 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Tan δ (MAX.) | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.15 | 0.20 | 0.25 |

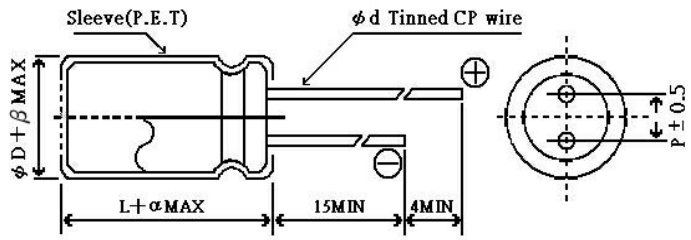
| Leakage Current | Rated voltage (V) | 6.3~100 | 160~400 |
|---|---|---|---|
| | Leakage Current | After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 μA, whichever is greater, After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 μA, whichever is greater, | CV≤1000; I=0.1CV+40(μA) MAX. (1 minute's) CV>1000; I=0.04CV+100(μA) MAX. (1 minute's) |

| Stability at Low Temperature | Rated Voltage(V) | 6.3 | 10 | 16 | 25~100 | 160~250 | 350 | 400 |
|---|---|---|---|---|---|---|---|---|
| | Impedance Ratio Z-25℃/Z+20℃ | 4 | 3 | 2 | 2 | 4 | 4 | 6 |
| | ZT/z20 (MAX.) Z-40℃/Z+20℃ | 8 | 6 | 6 | 3 | 6 | 8 | 10 |

| Load Life | After 2000 hours' application of rated voltage at 105℃ Capacitors meet the characteristics requirements listed at right. | Capacitance Change | Within ±20% of initial value |
|---|---|---|---|
| | | Tan δ | Not exceeding 200% of initial specified value |
| | | Leakage Current | Not exceeding Initial specified value |

| Shelf Life | After storing the capacitors under no load at 105℃ for 1000 hours, they will meet the specified value for endurance characteristics listed above. |
|---|---|

## ■ RADIAL LEAD TYPE




| α | (L<20) 1.5 |
|---|---|
| | (L≥20) 2.0 |

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 |
|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| β | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |

### ■ Allowable Ripple Current VS. Ambient Temperature

| Ambient temp. (℃) | ~+70 | +85 | +105 |
|---|---|---|---|
| Coefficient | 1.78 | 1.4 | 1.0 |

## ■ DIMENSIONS

D×L (mm)

| W.V. / Cap(μF) / S.V. | | 160(2C) | | 200(2D) | | 250(2E) | | 350(2V) | | 400(2G) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 200 | | 250 | | 300 | | 400 | | 450 | |
| 0.47 | R47 | 6.3×11 | 12 | 6.3×11 | 12 | 6.3×11 | 12 | 8×11.5 | 11 | | |
| 1 | 1R0 | 6.3×11 | 17 | 6.3×11 | 17 | 6.3×11 | 17 | 10×12.5 | 17 | 10×12.5 | 16 |
| 2.2 | 2R2 | 6.3×11 | 25 | 6.3×11 | 25 | 8×11.5 | 29 | 10×16 | 31 | 10×16 | 27 |
| 3.3 | 3R3 | 8×11.5 | 36 | 8×11.5 | 36 | 10×12.5 | 42 | 10×16 | 38 | 10×20 | 36 |
| 4.7 | 4R7 | 8×11.5 | 43 | 10×12.5 | 50 | 10×12.5 | 50 | 10×20 | 49 | 10×20 | 43 |
| 10 | 100 | 10×12.5 | 70 | 10×16 | 80 | 10×20 | 88 | 12.5×20 | 82 | 12.5×25 | 72 |
| 22 | 220 | 10×20 | 130 | 10×20 | 140 | 12.5×25 | 155 | 16×25 | 130 | 16×25 | 110 |
| 33 | 330 | 12.5×20 | 180 | 12.5×25 | 190 | 12.5×25 | 190 | 16×31.5 | 160 | 16×31.5 | 140 |
| 47 | 470 | 12.5×25 | 220 | 12.5×25 | 220 | 16×25 | 230 | 18×35.5 | 200 | 18×35.5 | 170 |
| 100 | 101 | 16×25 | 330 | 16×31.5 | 335 | 18×35.5 | 340 | | | | Allowable Ripple |
| 220 | 221 | 18×35.5 | 500 | 18×40 | 515 | | | | | Case size | |

Allowable Ripple ( mA rms ) at 105℃ 120Hz

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## ■ DIMENSIONS

D×L (mm)

| W.V. / Cap(μF) / S.V | 6.3(0J) | | 10(1A) | | 16(1C) | | 25(1E) | | 35(1V) | | 50(1H) | | 63(1J) | | 100(2A) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | | 13 | | 20 | | 32 | | 44 | | 63 | | 79 | | 125 | |
| 0.47 | R47 | | | | | | | | | | | 5×11 | 7 | | | 5×11 | 10 |
| 1 | 1R0 | | | | | | | | | | | 5×11 | 12 | | | 5×11 | 15 |
| 2.2 | 2R2 | | | | | | | | | | | 5×11 | 18 | | | 5×11 | 22 |
| 3.3 | 3R3 | | | | | | | | | | | 5×11 | 25 | | | 5×11 | 29 |
| 4.7 | 4R7 | | | | | | | 5×11 | 24 | 5×11 | 27 | 5×11 | 30 | 5×11 | 34 | 5×11 | 37 |
| 10 | 100 | | | | | 5×11 | 35 | 5×11 | 39 | 5×11 | 44 | 5×11 | 50 | 5×11 | 55 | 6.3×11 | 65 |
| 22 | 220 | 5×11 | 34 | 5×11 | 45 | 5×11 | 55 | 5×11 | 60 | 5×11 | 65 | 5×11 | 75 | 6.3×11 | 90 | 8×11.5 | 115 |
| 33 | 330 | 5×11 | 50 | 5×11 | 60 | 5×11 | 70 | 5×11 | 75 | 5×11 | 85 | 6.3×11 | 105 | 6.3×11 | 110 | 10×12.5 | 160 |
| 47 | 470 | 5×11 | 65 | 5×11 | 75 | 5×11 | 85 | 5×11 | 90 | 6.3×11 | 115 | 6.3×11 | 125 | 8×11.5 | 155 | 10×16 | 210 |
| 100 | 101 | 5×11 | 100 | 5×11 | 110 | 6.3×11 | 135 | 6.3×11 | 145 | 8×11.5 | 190 | 8×11.5 | 210 | 10×12.5 | 260 | 12.5×20 | 385 |
| 220 | 221 | 6.3×11 | 165 | 6.3×11 | 180 | 8×11.5 | 235 | 8×11.5 | 250 | 10×12.5 | 325 | 10×16 | 400 | 10×20 | 465 | 16×25 | 590 |
| 330 | 331 | 6.3×11 | 200 | 8×11.5 | 225 | 8×11.5 | 285 | 10×12.5 | 355 | 10×16 | 440 | 10×20 | 535 | 12.5×20 | 650 | 16×25 | 720 |
| 470 | 471 | 8×11.5 | 280 | 8×11.5 | 305 | 10×12.5 | 395 | 10×16 | 470 | 10×20 | 580 | 12.5×20 | 730 | 12.5×25 | 800 | 16×31.5 | 875 |
| 1000 | 102 | 10×12.5 | 470 | 10×16 | 570 | 10×20 | 700 | 12.5×20 | 855 | 12.5×25 | 995 | 16×25 | 1110 | 16×31.5 | 1200 | 18×40 | 1320 |
| 2200 | 222 | 12.5×20 | 930 | 12.5×20 | 1010 | 12.5×25 | 1150 | 16×25 | 1230 | 16×31.5 | 1450 | 18×35.5 | 1530 | 18×40 | 1840 | | |
| 3300 | 332 | 12.5×20 | 1100 | 12.5×25 | 1220 | 16×25 | 1350 | 16×31.5 | 1450 | 18×35.5 | 1660 | | | | | | |
| 4700 | 472 | 16×25 | 1320 | 16×25 | 1410 | 16×31.5 | 1560 | 18×35.5 | 1660 | 18×40 | 2030 | | | | | | |
| 6800 | 682 | 16×25 | 1470 | 16×31.5 | 1610 | 18×35.5 | 1750 | | | | | | | | | | Allowable Ripple |
| 10000 | 103 | 16×31.5 | 1830 | 18×35.5 | 1980 | 18×40 | 2170 | | | | | | | | | | |
| 15000 | 153 | 18×35.5 | 2280 | 18×40 | 2470 | | | | | | | | | | | Case size | |

Allowable Ripple ( mA rms ) at 105℃ 120Hz

## ■ Frequency Coefficient of Allowable Ripple Current

| V. | Frequency (Hz) / Cap. (μF) | 50 | 120 | 300 | 1K | 10K~ |
|---|---|---|---|---|---|---|
| 6.3~100 | ~47 | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100~470 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 1000~15000 | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |
| 160~400 | 0.47~220 | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |