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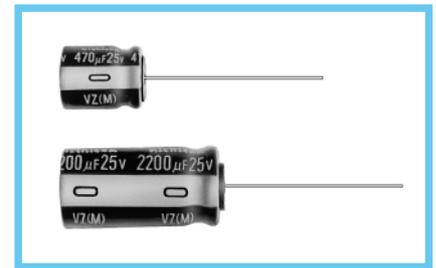
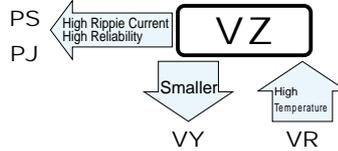
Jameco Part Number 609553

VZ series Wide Temperature Range



Anti-Solvent Feature
(Through 100V only)

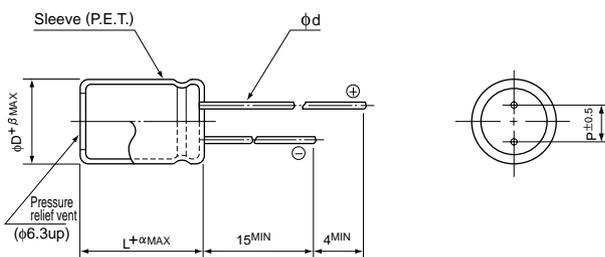
- Small case sizes as same as VR series, but operating over wide temperature range of $-55 \sim +105^{\circ}\text{C}$.
- Adapted to the RoHS directive (2002/95/EC).



Specifications

| Item | Performance Characteristics | | | | | | |
|------------------------------|---|---|--------------------|------------------------------------|-------|---|-----------------|
| Category Temperature Range | $-55 \sim +105^{\circ}\text{C}$ (6.3 ~ 100V), $-40 \sim +105^{\circ}\text{C}$ (160 ~ 400V), $-25 \sim +105^{\circ}\text{C}$ (450V) | | | | | | |
| Rated Voltage Range | 6.3 ~ 450V | | | | | | |
| Rated Capacitance Range | 0.1 ~ 33000µF | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ at 120Hz, 20°C | | | | | | |
| Leakage Current | Rated voltage (V) | 6.3 ~ 100 | | | | | |
| | | <p>After 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4 (µA), whichever is greater.</p> <p>After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (µA), whichever is greater.</p> | | | | | |
| tan δ | Rated voltage (V) | 160 ~ 450 | | | | | |
| | | <p>After 1 minute's application of rated voltage, $\text{CV} \leq 1000$: $I = 0.1\text{CV} + 40$ (µA) or less</p> <p>After 1 minute's application of rated voltage, $\text{CV} > 1000$: $I = 0.04\text{CV} + 100$ (µA) or less</p> | | | | | |
| Stability at Low Temperature | For capacitance of more than 1000µF, add 0.02 for every increase of 1000µF. Measurement frequency : 120Hz, Temperature : 20°C | | | | | | |
| | Rated voltage (V) | 6.3 10 16 25 35 50 63 100 160 ~ 200 250 ~ 350 400 450 | | | | | |
| Endurance | Impedance ratio | tan δ (MAX.) | | | | | |
| | ZT / Z20 (MAX.) | | | | | | |
| Shelf Life | After 1000 hours' application of rated voltage at 105°C, capacitors meet the characteristic requirements listed at right. | | | | | | |
| | <table border="1"> <tr> <td>Capacitance change</td> <td>Within $\pm 20\%$ of initial value</td> </tr> <tr> <td>tan δ</td> <td>200% or less of initial specified value</td> </tr> <tr> <td>Leakage current</td> <td>Initial specified value or less</td> </tr> </table> | | Capacitance change | Within $\pm 20\%$ of initial value | tan δ | 200% or less of initial specified value | Leakage current |
| Capacitance change | Within $\pm 20\%$ of initial value | | | | | | |
| tan δ | 200% or less of initial specified value | | | | | | |
| Leakage current | Initial specified value or less | | | | | | |
| Marking | After storing the capacitors under no load at 105°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above. | | | | | | |
| | Printed with white color letter on black sleeve. | | | | | | |

Radial Lead Type

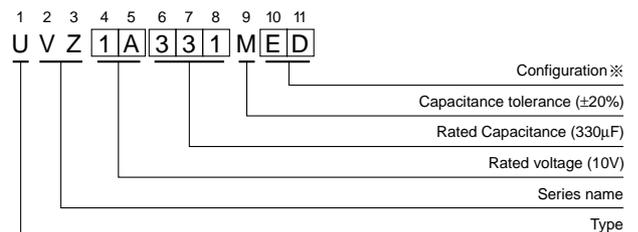


| | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25 |
|----|-----|-----|-----|-----|------|-----|-----|------|------|------|
| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25 |
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 10.0 | 12.5 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 | 1.0 | 1.0 |
| β | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 1.0 | 1.0 |

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

• Please refer to page 21 about the end seal configuration.

Type numbering system (Example : 10V 330µF)



| ※ Configuration | |
|-----------------|--|
| φ D | Pb-free leadwire Pb-free PET sleeve |
| 5 | DD |
| 6.3 | ED |
| 8 · 10 | PD |
| 12.5 ~ 18 | HD |
| 20 ~ 25 | RD |

Please refer to page 21, 22, 23 about the formed or taped product spec.
Please refer to page 3 for the minimum order quantity.

• Dimension table in next page.



■ Dimensions

| Cap.(μF) | V Code | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | |
|----------|-----------|---------|------|---------|------|---------|------|---------|------|---------|------|------------------------|-----------------|
| | | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | |
| 0.1 | 0R1 | | | | | | | | | | | 5×11 | 1.3 |
| 0.22 | R22 | | | | | | | | | | | 5×11 | 2.9 |
| 0.33 | R33 | | | | | | | | | | | 5×11 | 4.3 |
| 0.47 | R47 | | | | | | | | | | | 5×11 | 7 |
| 1 | 010 | | | | | | | | | | | 5×11 | 13 |
| 2.2 | 2R2 | | | | | | | | | | | 5×11 | 20 |
| 3.3 | 3R3 | | | | | | | | | | | 5×11 | 25 |
| 4.7 | 4R7 | | | | | | | 5×11 | 25 | 5×11 | 28 | 5×11 | 30 |
| 10 | 100 | | | | | 5×11 | 35 | 5×11 | 36 | 5×11 | 41 | 5×11 | 46 |
| 22 | 220 | 5×11 | 45 | 5×11 | 45 | 5×11 | 54 | 5×11 | 58 | 5×11 | 61 | 5×11 | 68 |
| 33 | 330 | 5×11 | 55 | 5×11 | 58 | 5×11 | 65 | 5×11 | 68 | 5×11 | 75 | 5×11 | 90 |
| 47 | 470 | 5×11 | 65 | 5×11 | 68 | 5×11 | 79 | 5×11 | 83 | 5×11 | 93 | 6.3×11 | 115 |
| 100 | 101 | 5×11 | 95 | 5×11 | 105 | 5×11 | 115 | 6.3×11 | 140 | 6.3×11 | 150 | 8×11.5 | 190 |
| 220 | 221 | 5×11 | 145 | 6.3×11 | 175 | 6.3×11 | 190 | 8×11.5 | 240 | 10×12.5 | 275 | 10×12.5 | 300 |
| 330 | 331 | 6.3×11 | 195 | 6.3×11 | 210 | 8×11.5 | 265 | 10×12.5 | 315 | 10×12.5 | 350 | 10×16 | 410 |
| 470 | 471 | 6.3×11 | 230 | 6.3×11 | 250 | 8×11.5 | 315 | 10×12.5 | 380 | 10×16 | 460 | 12.5×20 | 530 |
| 1000 | 102 | 8×11.5 | 390 | 10×12.5 | 460 | 10×16 | 560 | 10×20 | 680 | 12.5×20 | 810 | 12.5×25 | 950 |
| 2200 | 222 | 10×20 | 710 | 10×20 | 760 | 12.5×20 | 920 | 12.5×25 | 1090 | 16×25 | 1260 | 16×35.5 | 1470 |
| 3300 | 332 | 10×20 | 840 | 12.5×20 | 1000 | 12.5×25 | 1170 | 16×25 | 1400 | 16×35.5 | 1610 | 18×35.5 | 1770 |
| 4700 | 472 | 12.5×20 | 1090 | 12.5×25 | 1260 | 16×25 | 1480 | 16×31.5 | 1710 | 18×35.5 | 1910 | 20×40 | 2100 |
| 6800 | 682 | 12.5×25 | 1350 | 16×25 | 1570 | 16×35.5 | 1780 | 18×35.5 | 2040 | 20×40 | 2150 | 22×50 | 2500 |
| 10000 | 103 | 16×25 | 1650 | 16×35.5 | 1890 | 18×35.5 | 2060 | 20×40 | 2150 | 22×50 | 2650 | 25×50 | 2850 |
| 15000 | 153 | 16×35.5 | 2010 | 18×35.5 | 2180 | 20×40 | 2430 | 22×50 | 2750 | 25×50 | 3100 | | |
| 22000 | 223 | 18×40 | 2350 | 20×40 | 2650 | 22×50 | 3000 | 25×50 | 3250 | | | | |
| 33000 | 333 | 22×50 | 2800 | 22×50 | 3250 | 25×50 | 3450 | | | | | Case size φD×L (mm) | Rated ripple |

| Cap.(μF) | V Code | 63 | | 100 | | 160 | | 200 | | 250 | | 315 | | 350 | | 400 | | 450 | | |
|----------|-----------|---------|------|---------|------|---------|------|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|---------|------------------------|-----------------|
| | | 1J | | 2A | | 2C | | 2D | | 2E | | 2F | | 2V | | 2G | | 2W | | |
| 0.1 | 0R1 | | | 5×11 | 1.5 | | | | | | | | | | | | | | | |
| 0.22 | R22 | | | 5×11 | 3.4 | | | | | | | | | | | | | | | |
| 0.33 | R33 | | | 5×11 | 5.0 | | | | | | | | | | | | | | | |
| 0.47 | R47 | | | 5×11 | 7.1 | 6.3×11 | 11 | 6.3×11 | 11 | 6.3×11 | 10 | | | | | | | | | |
| 1 | 010 | | | 5×11 | 15 | 6.3×11 | 16 | 6.3×11 | 16 | 6.3×11 | 15 | 6.3×11 | 15 | 6.3×11 | 15 | 8×11.5 | 17 | 8×11.5 | 13 | |
| 2.2 | 2R2 | | | 5×11 | 21 | 6.3×11 | 25 | 6.3×11 | 25 | 6.3×11 | 23 | 8×11.5 | 26 | 8×11.5 | 26 | 10×12.5 | 30 | 10×12.5 | 23 | |
| 3.3 | 3R3 | | | 5×11 | 29 | 6.3×11 | 30 | 6.3×11 | 30 | 8×11.5 | 32 | 10×12.5 | 38 | 10×12.5 | 38 | 10×12.5 | 38 | 10×16 | 31 | |
| 4.7 | 4R7 | | | 5×11 | 32 | 6.3×11 | 34 | 8×11.5 | 39 | 8×11.5 | 39 | 10×12.5 | 45 | 10×12.5 | 45 | 10×16 | 50 | 10×20 | 40 | |
| 10 | 100 | 5×11 | 46 | 6.3×11 | 54 | 8×11.5 | 41 | 10×12.5 | 65 | 10×16 | 74 | 10×20 | 80 | 10×20 | 80 | 12.5×20 | 90 | 12.5×20 | 65 | |
| 22 | 220 | 5×11 | 71 | 6.3×11 | 93 | 10×16 | 100 | 10×20 | 120 | 12.5×20 | 130 | 12.5×20 | 115 | 12.5×25 | 115 | 16×25 | 165 | 16×25 | 115 | |
| 33 | 330 | 6.3×11 | 100 | 8×11.5 | 130 | 10×20 | 145 | 12.5×20 | 160 | 12.5×20 | 160 | 16×25 | 195 | 16×25 | 195 | 16×31.5 | 215 | 16×35.5 | 165 | |
| 47 | 470 | 6.3×11 | 120 | 10×12.5 | 165 | 12.5×20 | 195 | 12.5×20 | 195 | 12.5×25 | 210 | 16×25 | 230 | 16×35.5 | 270 | 16×35.5 | 270 | 18×40 | 185 | |
| 100 | 101 | 10×12.5 | 215 | 10×20 | 265 | 12.5×25 | 215 | 16×31.5 | 375 | 16×31.5 | 365 | 18×35.5 | 395 | 18×40 | 420 | 20×40 | 450 | 22×40 | 270 | |
| 220 | 221 | 10×16 | 335 | 12.5×25 | 440 | 16×35.5 | 570 | 18×35.5 | 575 | 20×40 | 600 | 22×50 | 620 | 22×50 | 620 | 25×50 | 660 | | | |
| 330 | 331 | 10×20 | 510 | 12.5×25 | 540 | 18×40 | 750 | 20×40 | 705 | 22×50 | 730 | 25×50 | 760 | | | | | | | |
| 470 | 471 | 12.5×20 | 640 | 16×25 | 715 | 22×40 | 900 | 22×50 | 840 | 25×50 | 870 | | | | | | | | | |
| 1000 | 102 | 16×25 | 930 | 18×40 | 985 | 25×50 | 1310 | | | | | | | | | | | | | |
| 2200 | 222 | 18×35.5 | 1650 | 22×50 | 1750 | | | | | | | | | | | | | | | |
| 3300 | 332 | 20×40 | 1950 | 25×50 | 2070 | | | | | | | | | | | | | | | |
| 4700 | 472 | 22×50 | 2450 | | | | | | | | | | | | | | | | | |
| 6800 | 682 | 25×50 | 2800 | | | | | | | | | | | | | | | | Case size φD×L (mm) | Rated ripple |

Rated Ripple (mA rms) at 105°C 120Hz

● Frequency coefficient of rated ripple current

| V | Cap.(μF) | Frequency | | | | | |
|-----------|--------------|-----------|------|-------|-------|-------|----------|
| | | ~ 47 | 50Hz | 120Hz | 300Hz | 1 kHz | 10 kHz ~ |
| 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 ~ 33000 | | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |
| 160 ~ 450 | 0.47 ~ 220 | | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |
| | 330 ~ 1000 | | 0.90 | 1.00 | 1.10 | 1.13 | 1.15 |