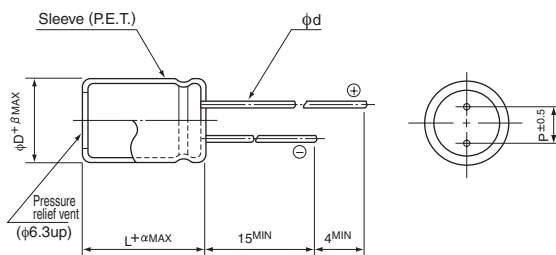


- One rank smaller case sizes than VZ series.
- Compliant to the RoHS directive (2011/65/EU).

## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------|------------|------------|----|
| Category Temperature Range    | -55 to +105°C (6.3 to 100V), -40 to +105°C (160 to 400V), -25 to +105°C (450V)                                                                                                                                                          |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
| Rated Voltage Range           | 6.3 to 450V                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
| Rated Capacitance Range       | 0.1 to 68000μF                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
| Leakage Current               | Rated voltage (V)                                                                                                                                                                                                                       | 6.3 to 100                                                                                                                                                                                                                                                             |      |      |      |                    | 160 to 450                                                                                                                                                                                       |                                                   |            |            |            |    |
|                               | _____                                                                                                                                                                                                                                   | After 1 minute's application of rated voltage at 20°C, leakage current is not more than 0.03CV or 4 (μA), whichever is greater.<br><br>After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (μA), whichever is greater. |      |      |      |                    | After 1 minute's application of rated voltage at 20°C, CV ≤ 1000: I = 0.1CV+40 (μA) or less<br><br>After 1 minute's application of rated voltage at 20°C, CV > 1000: I = 0.04CV+100 (μA) or less |                                                   |            |            |            |    |
| Tangent of loss angle (tan δ) | For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF. Measurement frequency : 120Hz at 20°C                                                                                                                       |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 6.3                                                                                                                                                                                                                                                                    | 10   | 16   | 25   | 35                 | 50                                                                                                                                                                                               | 63                                                | 100        | 160 to 250 | 350 to 450 |    |
|                               | tan δ (MAX.)                                                                                                                                                                                                                            | 0.28                                                                                                                                                                                                                                                                   | 0.24 | 0.20 | 0.16 | 0.14               | 0.12                                                                                                                                                                                             | 0.10                                              | 0.08       | 0.20       | 0.25       |    |
| Stability at Low Temperature  | Measurement frequency : 120Hz                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
|                               | Rated voltage (V)                                                                                                                                                                                                                       | 6.3                                                                                                                                                                                                                                                                    | 10   | 16   | 25   | 35 to 50           | 63 to 100                                                                                                                                                                                        | 160 to 200                                        | 250 to 350 | 400        | 450        |    |
|                               | Impedance ratio ZT / Z20 (MAX.)                                                                                                                                                                                                         | Z-25°C / Z+20°C                                                                                                                                                                                                                                                        | 5    | 4    | 3    | 2                  | 2                                                                                                                                                                                                | 2                                                 | 3          | 4          | 6          | 15 |
|                               |                                                                                                                                                                                                                                         | Z-40°C / Z+20°C                                                                                                                                                                                                                                                        | 10   | 8    | 6    | 4                  | 3                                                                                                                                                                                                | 3                                                 | 4          | 8          | 10         | —  |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 1000 hours at 105°C.                                                                                    |                                                                                                                                                                                                                                                                        |      |      |      | Capacitance change |                                                                                                                                                                                                  | Within ±20% of the initial capacitance value      |            |            |            |    |
|                               |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                        |      |      |      | tan δ              |                                                                                                                                                                                                  | 200% or less than the initial specified value     |            |            |            |    |
|                               |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                        |      |      |      | Leakage current    |                                                                                                                                                                                                  | Less than or equal to the initial specified value |            |            |            |    |
| Shelf Life                    | After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above. |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |
| Marking                       | Printed with white color letter on black sleeve.                                                                                                                                                                                        |                                                                                                                                                                                                                                                                        |      |      |      |                    |                                                                                                                                                                                                  |                                                   |            |            |            |    |

## Radial Lead Type

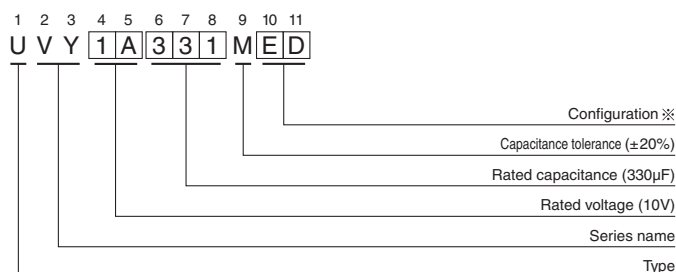


|    | φD  | 5   | 6.3 | 8   | 10  | 12.5 | 16  | 18   | 20   | 22   | 25   |
|----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|
| P  | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5  | 7.5 | 10.0 | 10.0 | 10.0 | 12.5 |
| φd | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8  | 0.8 | 1.0  | 1.0  | 1.0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

## Type numbering system (Example : 10V 330µF)



### ※ Configuration

| φ D        | Pb-free leadwire<br>Pb-free PET sleeve |
|------------|----------------------------------------|
| 5          | DD                                     |
| 6.3        | ED                                     |
| 8 · 10     | PD                                     |
| 12.5 to 18 | HD                                     |
| 20 to 25   | RD                                     |

Please refer to page 20, 21, 22 about the formed or taped product spec.  
Please refer to page 4 for the minimum order quantity.

- Dimension table in next page.



## ■ Dimensions

| V        |      | 6.3       |      | 10        |      | 16        |      | 25        |      | 35        |      | 50        |      | 63                        |                 |
|----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|-----------|------|---------------------------|-----------------|
| Cap.(μF) | Code | 0J        |      | 1A        |      | 1C        |      | 1E        |      | 1V        |      | 1H        |      | 1J                        |                 |
| 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    | 30   |                           |                 |
| 10       | 100  |           |      |           |      |           |      |           |      |           |      | 5 × 11    | 46   |                           |                 |
| 22       | 220  |           |      |           |      |           |      |           |      |           |      | 5 × 11    | 68   | 5 × 11                    | 71              |
| 33       | 330  |           |      |           |      |           |      |           |      |           |      | 5 × 11    | 90   | 6.3 × 11                  | 100             |
| 47       | 470  |           |      |           |      |           |      |           |      | 5 × 11    | 93   | 6.3 × 11  | 115  | 6.3 × 11                  | 120             |
| 68       | 680  |           |      |           |      |           |      |           |      | 6.3 × 11  | 110  | 6.3 × 11  | 150  | 8 × 11.5                  | 155             |
| 100      | 101  |           |      |           |      |           |      | 5 × 11    | 125  | 6.3 × 11  | 150  | 8 × 11.5  | 190  | 8 × 11.5                  | 200             |
| 220      | 221  |           |      | 5 × 11    | 155  | 6.3 × 11  | 190  | 6.3 × 11  | 200  | 8 × 11.5  | 250  | 10 × 12.5 | 300  | 10 × 16                   | 335             |
| 330      | 331  |           |      | 6.3 × 11  | 210  | 6.3 × 11  | 225  | 8 × 11.5  | 275  | 10 × 12.5 | 350  | 10 × 16   | 410  | 10 × 20                   | 510             |
| 470      | 471  |           |      | 6.3 × 11  | 250  | 8 × 11.5  | 315  | 10 × 12.5 | 380  | 10 × 16   | 460  | 10 × 20   | 540  | 12.5 × 20                 | 640             |
| 1000     | 102  | 8 × 11.5  | 390  | 10 × 12.5 | 460  | 10 × 12.5 | 500  | 10 × 16   | 610  | 12.5 × 20 | 810  | 12.5 × 25 | 950  | 16 × 25                   | 930             |
| 2200     | 222  | 10 × 16   | 635  | 10 × 16   | 705  | 10 × 20   | 710  | 12.5 × 25 | 1090 | 16 × 25   | 1260 | 16 × 31.5 | 1410 | 18 × 35.5                 | 1650            |
| 3300     | 332  | 10 × 20   | 840  | 12.5 × 20 | 1000 | 12.5 × 25 | 1170 | 16 × 25   | 1400 | 16 × 31.5 | 1500 | 18 × 35.5 | 1770 | 20 × 40                   | 1950            |
| 4700     | 472  | 12.5 × 20 | 1090 | 12.5 × 25 | 1260 | 16 × 25   | 1500 | 16 × 25   | 1570 | 16 × 35.5 | 1780 | 20 × 40   | 2100 | 22 × 50                   | 2450            |
| 6800     | 682  | 12.5 × 25 | 1350 | 16 × 25   | 1570 | 16 × 25   | 1600 | 16 × 35.5 | 1850 | 18 × 40   | 2000 | 22 × 50   | 2500 | 25 × 50                   | 2800            |
| 10000    | 103  | 16 × 25   | 1650 | 16 × 31.5 | 1820 | 16 × 35.5 | 1930 | 18 × 40   | 2000 | 22 × 50   | 2650 | 25 × 50   | 2850 |                           |                 |
| 15000    | 153  | 16 × 31.5 | 1820 | 16 × 35.5 | 2050 | 18 × 40   | 2210 | 22 × 50   | 2750 | 25 × 50   | 3100 |           |      |                           |                 |
| 22000    | 223  | 18 × 35.5 | 2280 | 18 × 40   | 2420 | 22 × 40   | 2710 | 25 × 50   | 3250 |           |      |           |      |                           |                 |
| 33000    | 333  | 20 × 40   | 2500 | 22 × 50   | 3210 | 25 × 50   | 3450 |           |      |           |      |           |      |                           |                 |
| 47000    | 473  | 22 × 50   | 2780 | 25 × 50   | 3570 |           |      |           |      |           |      |           |      |                           |                 |
| 68000    | 683  | 25 × 50   | 3070 |           |      |           |      |           |      |           |      |           |      | Case size<br>φ D × L (mm) | Rated<br>ripple |

| V        |      | 100       |      | 160       |      | 200       |     | 250       |      | 350       |     | 400       |     | 450                       |                 |
|----------|------|-----------|------|-----------|------|-----------|-----|-----------|------|-----------|-----|-----------|-----|---------------------------|-----------------|
| Cap.(μF) | Code | 2A        |      | 2C        |      | 2D        |     | 2E        |      | 2V        |     | 2G        |     | 2W                        |                 |
| 0.1      | 0R1  | 5 × 11    | 1.5  |           |      | 6.3 × 11  | 1.5 |           |      |           |     |           |     |                           |                 |
| 0.22     | R22  | 5 × 11    | 3.4  |           |      | 6.3 × 11  | 3.3 |           |      |           |     |           |     |                           |                 |
| 0.33     | R33  | 5 × 11    | 5.0  |           |      | 6.3 × 11  | 5   |           |      |           |     |           |     |                           |                 |
| 0.47     | R47  | 5 × 11    | 7.1  |           |      | 6.3 × 11  | 11  |           |      |           |     | 6.3 × 11  | 8.5 |                           |                 |
| 1        | 010  | 5 × 11    | 15   |           |      | 6.3 × 11  | 16  |           |      |           |     | 6.3 × 11  | 14  |                           |                 |
| 2.2      | 2R2  | 5 × 11    | 21   |           |      | 6.3 × 11  | 25  |           |      | 6.3 × 11  | 21  | 8 × 11.5  | 27  | 8 × 11.5                  | 20              |
| 3.3      | 3R3  | 5 × 11    | 29   |           |      | 6.3 × 11  | 30  | 6.3 × 11  | 28   | 8 × 11.5  | 30  | 8 × 11.5  | 34  | 10 × 12.5                 | 28              |
| 4.7      | 4R7  | 5 × 11    | 32   |           |      | 6.3 × 11  | 35  | 6.3 × 11  | 35   | 8 × 11.5  | 39  | 10 × 12.5 | 42  | 10 × 12.5                 | 32              |
| 10       | 100  | 5 × 11    | 50   | 8 × 11.5  | 41   | 8 × 11.5  | 57  | 10 × 12.5 | 71   | 10 × 12.5 | 64  | 10 × 16   | 64  | 10 × 20                   | 56              |
| 22       | 220  | 6.3 × 11  | 93   | 10 × 12.5 | 92   | 10 × 16   | 105 | 10 × 20   | 105  | 12.5 × 20 | 105 | 12.5 × 25 | 140 | 12.5 × 25                 | 100             |
| 33       | 330  | 8 × 11.5  | 130  | 10 × 16   | 125  | 10 × 20   | 140 | 10 × 20   | 140  | 12.5 × 25 | 170 | 16 × 25   | 170 | 16 × 25                   | 125             |
| 47       | 470  | 8 × 11.5  | 140  | 10 × 20   | 150  | 12.5 × 20 | 195 | 12.5 × 20 | 190  | 16 × 25   | 210 | 16 × 25   | 200 | 16 × 31.5                 | 155             |
| 68       | 680  | 10 × 12.5 | 190  | 12.5 × 20 | 250  | 12.5 × 25 | 250 | 16 × 25   | 270  | 16 × 25   | 285 | 16 × 31.5 | 240 | 18 × 35.5                 | 185             |
| 100      | 101  | 10 × 16   | 240  | 12.5 × 25 | 310  | 16 × 25   | 320 | 16 × 25   | 310  | 18 × 35.5 | 370 | 18 × 35.5 | 310 | 18 × 40                   | 200             |
| 220      | 221  | 12.5 × 20 | 390  | 16 × 31.5 | 410  | 16 × 35.5 | 500 | 18 × 35.5 | 485  | 22 × 50   | 540 | 22 × 50   | 460 | 25 × 50                   | 250             |
| 330      | 331  | 12.5 × 25 | 540  | 18 × 35.5 | 570  | 18 × 40   | 675 | 20 × 40   | 710  | 25 × 50   | 710 |           |     |                           |                 |
| 470      | 471  | 16 × 25   | 715  | 18 × 40   | 855  | 22 × 40   | 925 | 22 × 50   | 1000 |           |     |           |     |                           |                 |
| 1000     | 102  | 18 × 35.5 | 960  | 25 × 50   | 1350 |           |     |           |      |           |     |           |     |                           |                 |
| 2200     | 222  | 22 × 50   | 1750 |           |      |           |     |           |      |           |     |           |     |                           |                 |
| 3300     | 332  | 25 × 50   | 2070 |           |      |           |     |           |      |           |     |           |     | Case size<br>φ D × L (mm) | Rated<br>ripple |

Rated ripple current (mA rms) at 105°C 120Hz

## ● Frequency coefficient of rated ripple current

| V          | Cap.(μF) \ Frequency | 50Hz | 120Hz | 300Hz | 1 kHz | 10 kHz or more |
|------------|----------------------|------|-------|-------|-------|----------------|
| 6.3 to 100 | 0.1 to 68            | 0.75 | 1.00  | 1.35  | 1.57  | 2.00           |
|            | 100 to 470           | 0.80 | 1.00  | 1.23  | 1.34  | 1.50           |
|            | 1000 to 68000        | 0.85 | 1.00  | 1.10  | 1.13  | 1.15           |
| 160 to 450 | 0.1 to 220           | 0.80 | 1.00  | 1.25  | 1.40  | 1.60           |
|            | 330 to 1000          | 0.90 | 1.00  | 1.10  | 1.13  | 1.15           |

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| <a href="#"><u>UVY2E3R3MED1TD</u></a> | <a href="#"><u>UVY2V680MHD1TN</u></a> | <a href="#"><u>UVY2C330MPD1TD</u></a> | <a href="#"><u>UVY2C470MPD1TD</u></a> | <a href="#"><u>UVY2V220MHD1TO</u></a> |
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