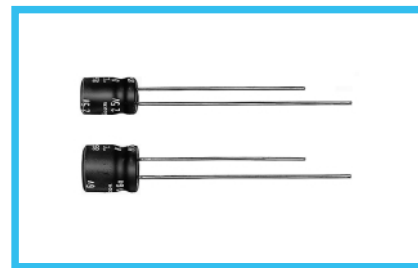


**SP** 7mmL, Bi-Polarized  
series



- Bi-polarized series with 7mm height.
- Extended capacitance range by an addition of  $\phi 8$  product.
- Compliant to the RoHS directive (2011/65/EU).

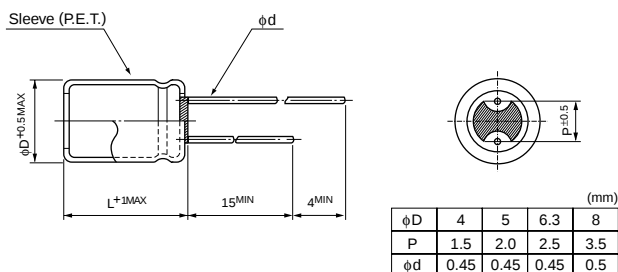
SP ← Bi-polarized SA



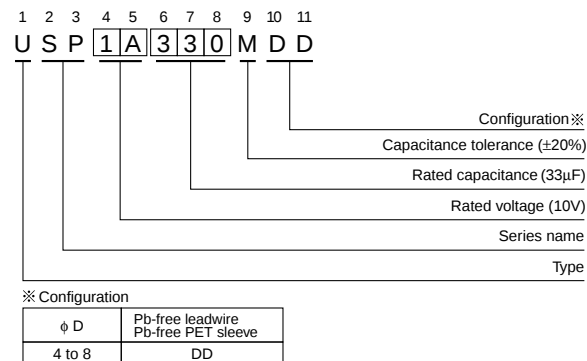
## Specifications

| Item                          | Performance Characteristics                                                                                                                                                                                                            |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------|------|------|------|------|--------------------|--|-----------------------------------------------|--|--|--|--|
| Category Temperature Range    | −40 to +85°C                                                                                                                                                                                                                           |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
| Rated Voltage Range           | 6.3 to 50V                                                                                                                                                                                                                             |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
| Rated Capacitance Range       | 0.1 to 220μF                                                                                                                                                                                                                           |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                    |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
| Leakage Current               | After 2 minutes' application of rated voltage, leakage current is not more than 0.05CV or 10 (μA), whichever is greater.                                                                                                               |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                  |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
|                               | Rated voltage (V)                                                                                                                                                                                                                      | 6.3             | 10                                                | 16   | 25   | 35   | 50   |                    |  |                                               |  |  |  |  |
|                               | tan δ (MAX.)                                                                                                                                                                                                                           | 0.24            | 0.20                                              | 0.16 | 0.16 | 0.14 | 0.12 |                    |  |                                               |  |  |  |  |
| Stability at Low Temperature  | Measurement frequency : 120 Hz                                                                                                                                                                                                         |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
|                               | Rated voltage (V)                                                                                                                                                                                                                      |                 | 6.3                                               | 10   | 16   | 25   | 35   | 50                 |  |                                               |  |  |  |  |
|                               | Impedance ratio                                                                                                                                                                                                                        | Z−25°C / Z+20°C | 4                                                 | 3    | 2    | 2    | 2    | 2                  |  |                                               |  |  |  |  |
|                               | ZT / Z20 (MAX.)                                                                                                                                                                                                                        | Z−40°C / Z+20°C | 8                                                 | 6    | 4    | 4    | 3    | 3                  |  |                                               |  |  |  |  |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 2000 hours at 85°C with the polarity inverted every 250 hours.                                         |                 |                                                   |      |      |      |      |                    |  |                                               |  |  |  |  |
|                               |                                                                                                                                                                                                                                        |                 |                                                   |      |      |      |      | 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 85°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



## Type numbering system (Example : 10V 33 $\mu$ F)



## Dimensions

| V        |      | 6.3     |     | 10      |     | 16      |     | 25      |    | 35      |    | 50                        |                 |
|----------|------|---------|-----|---------|-----|---------|-----|---------|----|---------|----|---------------------------|-----------------|
| Cap.(μF) | Code | 0J      |     | 1A      |     | 1C      |     | 1E      |    | 1V      |    | 1H                        |                 |
| 0.1      | 0R1  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 10              |
| 0.22     | R22  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 23              |
| 0.33     | R33  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 35              |
| 0.47     | R47  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 50              |
| 1        | 010  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 10              |
| 2.2      | 2R2  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 14              |
| 3.3      | 3R3  |         |     |         |     |         |     |         |    |         |    | 4 × 7                     | 20              |
| 4.7      | 4R7  |         |     |         |     | 4 × 7   | 18  | 5 × 7   | 21 | 5 × 7   | 16 | 5 × 7                     | 27              |
| 10       | 100  |         |     | 4 × 7   | 24  | 5 × 7   | 30  | 6.3 × 7 | 35 | 6.3 × 7 | 37 | 8 × 7                     | 44              |
| 22       | 220  |         |     | 5 × 7   | 40  | 6.3 × 7 | 51  | 6.3 × 7 | 53 | 8 × 7   | 62 | 8 × 7                     | 65              |
| 33       | 330  | 5 × 7   | 42  | 6.3 × 7 | 56  | 6.3 × 7 | 63  | 8 × 7   | 73 | 8 × 7   | 76 |                           |                 |
| 47       | 470  | 6.3 × 7 | 58  | 6.3 × 7 | 67  | 6.3 × 7 | 75  | 8 × 7   | 87 |         |    |                           |                 |
| 100      | 101  | 8 × 7   | 95  | 8 × 7   | 110 | 8 × 7   | 125 |         |    |         |    |                           |                 |
| 220      | 221  | 8 × 7   | 140 |         |     |         |     |         |    |         |    |                           |                 |
|          |      |         |     |         |     |         |     |         |    |         |    | Case size<br>φ D × L (mm) | Rated<br>ripple |

## Frequency coefficient of rated ripple current

| Frequency   | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-------|--------|--------|-------|----------------|
| Coefficient | 0.70  | 1.00   | 1.17   | 1.36  | 1.50           |

Rated ripple current (mA rms) at 85°C 120Hz

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

CAT.8100C