

**USA**

7mmL, For General Purposes

**USR**

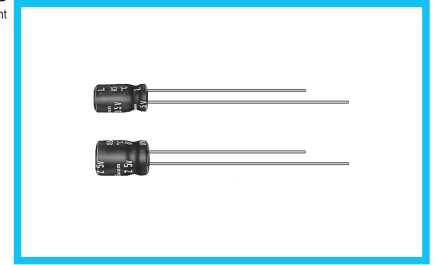
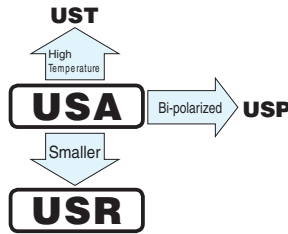
7mmL, High CV



- Standard miniature series with 7mm height.
- Compliant to the RoHS directive (2011/65/EU).

- Higher CV series with 7mm height.

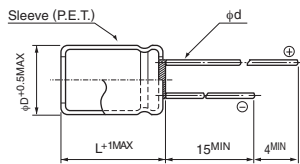
Values marked with an ※ in the dimension table are scheduled to be discontinued and are not recommended for new designs.



## Specifications

| Item                          | USA                                                                                                                                                                                                                                    |                 |      |      |                    | USR          |                                                   |      |    |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------|------|--------------------|--------------|---------------------------------------------------|------|----|
| Category Temperature Range    | - 40 to +85°C                                                                                                                                                                                                                          |                 |      |      |                    | -40 to +85°C |                                                   |      |    |
| Rated Voltage Range           | 6.3 to 50V                                                                                                                                                                                                                             |                 |      |      |                    | 4 to 50V     |                                                   |      |    |
| Rated Capacitance Range       | 0.1 to 220μF                                                                                                                                                                                                                           |                 |      |      |                    | 0.1 to 470μF |                                                   |      |    |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                    |                 |      |      |                    |              |                                                   |      |    |
| Leakage Current               | After 2 minutes' application of rated voltage at 20°C, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.                                                                                                        |                 |      |      |                    |              |                                                   |      |    |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C                                                                                                                                                                                                  |                 |      |      |                    |              |                                                   |      |    |
|                               | Rated voltage (V)                                                                                                                                                                                                                      | 4               | 6.3  | 10   | 16                 | 25           | 35                                                | 50   |    |
|                               | tan δ (MAX.)                                                                                                                                                                                                                           | 0.35            | 0.24 | 0.20 | 0.16               | 0.14         | 0.12                                              | 0.10 |    |
| Stability at Low Temperature  | Measurement frequency : 120Hz                                                                                                                                                                                                          |                 |      |      |                    |              |                                                   |      |    |
|                               | Rated voltage (V)                                                                                                                                                                                                                      |                 | 4    | 6.3  | 10                 | 16           | 25                                                | 35   | 50 |
|                               | Impedance ratio                                                                                                                                                                                                                        | Z-25°C / Z+20°C | 6    | 4    | 3                  | 2            | 2                                                 | 2    | 2  |
|                               | ZT / Z20 (MAX.)                                                                                                                                                                                                                        | Z-40°C / Z+20°C | 12   | 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.                                                                                    |                 |      |      | 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



|    | 4    | 5    | 6.3  | 8   |
|----|------|------|------|-----|
| φD | 1.5  | 2.0  | 2.5  | 3.5 |
| P  | 0.45 | 0.45 | 0.45 | 0.5 |
| φd | 0.45 | 0.45 | 0.45 | 0.5 |

## Type numbering system (Example : USA : 10V 33μF)

|                              |   |   |   |   |   |   |   |   |    |    |
|------------------------------|---|---|---|---|---|---|---|---|----|----|
| 1                            | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| U                            | S | A | 1 | A | 3 | 3 | 0 | M | D  | D  |
| Configuration※               |   |   |   |   |   |   |   |   |    |    |
| Capacitance tolerance (±20%) |   |   |   |   |   |   |   |   |    |    |
| Rated capacitance (33 μF)    |   |   |   |   |   |   |   |   |    |    |
| Rated voltage (10V)          |   |   |   |   |   |   |   |   |    |    |
| Series name                  |   |   |   |   |   |   |   |   |    |    |
| Type                         |   |   |   |   |   |   |   |   |    |    |
| ※ Configuration              |   |   |   |   |   |   |   |   |    |    |
| φ D                          |   |   |   |   |   |   |   |   |    |    |
| 4 to 8                       |   |   |   |   |   |   |   |   |    |    |
| Pb-free leadwire             |   |   |   |   |   |   |   |   |    |    |
| Pb-free PET sleeve           |   |   |   |   |   |   |   |   |    |    |
| DD                           |   |   |   |   |   |   |   |   |    |    |

## Dimensions

| V(Code)<br>Type-Series<br>Code<br>Cap.(μF) |     | 4 (0G)         |               | 6.3 (0J)       |               | 10 (1A)       |               | 16 (1C)       |               | 25 (1E)       |               | 35 (1V)       |             | 50 (1H)        |                |
|--------------------------------------------|-----|----------------|---------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|----------------|----------------|
|                                            |     | USR            | USA           | USR            | USA           | USR           | USA           | USR           | USA           | USR           | USA           | USR           | USA         | USR            |                |
| 0.1                                        | 0R1 |                |               |                |               |               |               |               |               |               |               |               |             | ※ 4 × 7<br>1.0 | ※ 4 × 7<br>1.0 |
| 0.22                                       | R22 |                |               |                |               |               |               |               |               |               |               |               |             | ※ 4 × 7<br>2.3 | ※ 4 × 7<br>2.3 |
| 0.33                                       | R33 |                |               |                |               |               |               |               |               |               |               |               |             | ※ 4 × 7<br>3.5 | ※ 4 × 7<br>3.5 |
| 0.47                                       | R47 |                |               |                |               |               |               |               |               |               |               |               |             | ※ 4 × 7<br>5.0 | ※ 4 × 7<br>5.0 |
| 1                                          | 010 |                |               |                |               |               |               |               |               |               |               |               |             | 4 × 7<br>10    | 4 × 7<br>10    |
| 2.2                                        | 2R2 |                |               |                |               |               |               |               |               |               |               |               |             | 4 × 7<br>19    | 4 × 7<br>19    |
| 3.3                                        | 3R3 |                |               |                |               |               |               |               |               |               |               |               |             | 4 × 7<br>24    | 4 × 7<br>24    |
| 4.7                                        | 4R7 |                |               |                |               |               |               |               |               |               |               | 4 × 7<br>24   | 4 × 7<br>24 | 5 × 7<br>29    | 4 × 7<br>28    |
| 10                                         | 100 |                |               |                |               |               |               | 4 × 7<br>28   | 4 × 7<br>28   | 5 × 7<br>33   | 4 × 7<br>28   | 5 × 7<br>36   | 4 × 7<br>31 | 6.3 × 7<br>44  | 5 × 7<br>38    |
| 22                                         | 220 |                | 4 × 7<br>34   | 4 × 7<br>34    | 5 × 7<br>38   | 4 × 7<br>35   | 5 × 7<br>44   | 4 × 7<br>39   | 6.3 × 7<br>51 | 5 × 7<br>48   | 6.3 × 7<br>57 | 5 × 7<br>52   | 8 × 7<br>65 | 6.3 × 7<br>58  | 6.3 × 7<br>58  |
| 33                                         | 330 | 4 × 7<br>33    | 5 × 7<br>42   | 4 × 7<br>40    | 5 × 7<br>47   | 4 × 7<br>43   | 6.3 × 7<br>57 | 5 × 7<br>55   | 6.3 × 7<br>63 | 5 × 7<br>58   | 8 × 7<br>72   | 6.3 × 7<br>65 | 8 × 7<br>75 | 8 × 7<br>75    | 8 × 7<br>75    |
| 47                                         | 470 | 4 × 7<br>39    | 5 × 7<br>50   | 4 × 7<br>48    | 6.3 × 7<br>59 | 5 × 7<br>59   | 6.3 × 7<br>68 | 5 × 7<br>65   | 8 × 7<br>78   | 6.3 × 7<br>71 | 8 × 7<br>85   | 8 × 7<br>85   |             |                |                |
| 100                                        | 101 | 5 × 7<br>65    | 6.3 × 7<br>77 | 5 × 7<br>78    | 8 × 7<br>96   | 6.3 × 7<br>87 | 8 × 7<br>107  | 6.3 × 7<br>98 | 8 × 7<br>115  | 8 × 7<br>115  |               |               |             |                |                |
| 220                                        | 221 | 6.3 × 7<br>110 | 8 × 7<br>130  | 6.3 × 7<br>120 |               | 8 × 7<br>145  |               | 8 × 7<br>150  |               |               |               |               |             |                |                |
| 330                                        | 331 | 8 × 7<br>165   |               | 8 × 7<br>180   |               |               |               |               |               |               |               |               |             |                |                |
| 470                                        | 471 | 8 × 7<br>240   |               |                |               |               |               |               |               |               |               |               |             |                |                |
| Case size φD × L (mm)                      |     |                |               |                |               |               |               |               |               |               |               |               |             |                |                |
| Rated 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 (mArms) 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.8100F

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