

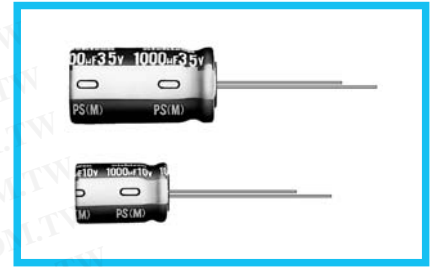
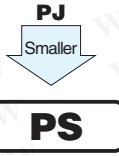
# ALUMINUM ELECTROLYTIC CAPACITORS

**PS** Miniature Sized, Low Impedance,  
For Switching Power Supplies  
series



- Wide temperature range type, miniature sized.
- Compliant to the RoHS directive (2011/65/EU).

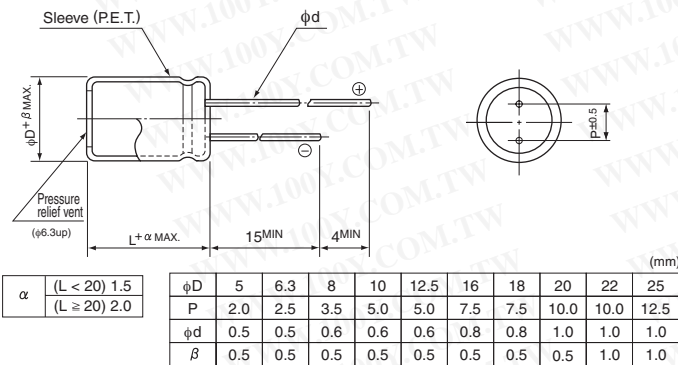
勝特力材料 886-3-5753170  
 勝特力电子(上海) 86-21-34970699  
 勝特力电子(深圳) 86-755-83298787  
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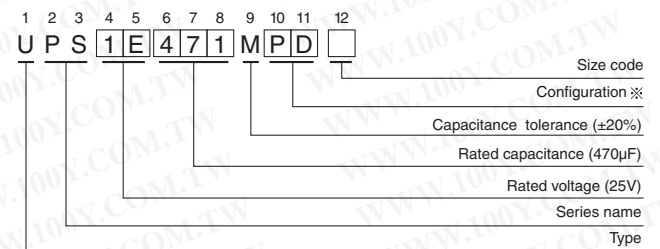
## Specifications

| 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       | 0.47 to 15000μF                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                               |  |          |         |         |          |           |     |           |     |     |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                               |  |          |         |         |          |           |     |           |     |     |
| Leakage Current               | Rated voltage (V)                                                                                                                                                                                                                                        | 6.3 to 100 <span style="float: right;">160 to 450</span>                                                                                                                                                                                      |  |          |         |         |          |           |     |           |     |     |
|                               | Leakage current                                                                                                                                                                                                                                          | 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. <span style="float: right;">CV ≤ 1000: I = 0.1CV+40 (μA)max.<br/>CV &gt; 1000: I = 0.04CV+100 (μA)max.</span> |  |          |         |         |          |           |     |           |     |     |
| Tangent of loss angle (tan δ) | For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF <span style="float: right;">Measurement frequency : 120Hz at 20°C</span>                                                                                                      |                                                                                                                                                                                                                                               |  |          |         |         |          |           |     |           |     |     |
|                               | Rated voltage (V)                                                                                                                                                                                                                                        | 6.3 10 16 25 35 50 63 100 160 to 250 315 - 350 400 - 450                                                                                                                                                                                      |  |          |         |         |          |           |     |           |     |     |
| Stability at Low Temperature  | Impedance ratio (MAX.)                                                                                                                                                                                                                                   | Measurement frequency : 120Hz                                                                                                                                                                                                                 |  |          |         |         |          |           |     |           |     |     |
|                               |                                                                                                                                                                                                                                                          | Rated voltage (V)                                                                                                                                                                                                                             |  | 6.3 · 10 | 16 · 25 | 35 · 50 | 63 · 100 | 160 · 200 | 250 | 315 · 350 | 400 | 450 |
|                               |                                                                                                                                                                                                                                                          | Z-25°C / Z+20°C                                                                                                                                                                                                                               |  | —        | —       | —       | 2        | 3         | 3   | 4         | 6   | 15  |
|                               |                                                                                                                                                                                                                                                          | Z-40°C / Z+20°C                                                                                                                                                                                                                               |  | —        | —       | —       | 3        | 4         | 6   | 8         | 10  | —   |
| Endurance                     | The specifications listed at right shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied for 3000 hours (2000 hours for φD= 5 to 10) at 105°C, the peak voltage shall not exceed the rated voltage. |                                                                                                                                                                                                                                               |  |          |         |         |          |           |     |           |     |     |
|                               | Capacitance change                                                                                                                                                                                                                                       | Within ±20% of the initial capacitance value                                                                                                                                                                                                  |  |          |         |         |          |           |     |           |     |     |
|                               | tan δ                                                                                                                                                                                                                                                    | 200% or less than 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 dark brown sleeve.                                                                                                                                                                                                    |                                                                                                                                                                                                                                               |  |          |         |         |          |           |     |           |     |     |

## Radial Lead Type



## Type numbering system (Example : 25V 470μF)



※ 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 about the end seal configuration.

## Frequency coefficient of rated ripple current

| V          | Cap.(μF)      | Frequency |       |       |      |               |
|------------|---------------|-----------|-------|-------|------|---------------|
|            |               | 50Hz      | 120Hz | 300Hz | 1kHz | 10kHz or more |
| 6.3 to 100 | 0.47 to 47    | —         | 0.17  | 0.40  | 0.65 | 1.00          |
|            | 100 to 220    | 0.30      | 0.50  | 0.65  | 0.80 | 1.00          |
|            | 330 to 680    | 0.57      | 0.71  | 0.82  | 0.90 | 1.00          |
|            | 1000 to 15000 | 0.75      | 0.87  | 0.96  | 0.98 | 1.00          |
| 160 to 450 | 0.47 to 220   | 0.80      | 1.00  | 1.25  | 1.40 | 1.60          |
|            | 330 to 470    | 0.90      | 1.00  | 1.10  | 1.13 | 1.15          |

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 pages.

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## Standard Ratings

| Cap. (μF) | V (Code) | Item Code | 6.3 (0J)                    |                                      |                                         | 10 (1A)                     |                                      |                                         | 16 (1C)                     |                                      |                                         | 25 (1E)                     |                                      |                                         |
|-----------|----------|-----------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|
|           |          |           | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz |
| 4.7       | 4R7      |           |                             |                                      |                                         |                             |                                      |                                         |                             |                                      | 5 × 11                                  | 1.50                        | 160                                  |                                         |
| 10        | 100      |           |                             |                                      |                                         |                             |                                      | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  |                                         |
| 22        | 220      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  |                                         |
| 33        | 330      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  |                                         |
| 47        | 470      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  |                                         |
| 100       | 101      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 1.50                        | 160                                  | 6.3 × 11                                | 0.50                        | 250                                  | 6.3 × 11                                | 0.50                        | 250                                  |                                         |
| 150       | 151      | 6.3 × 11  | 0.50                        | 250                                  | 6.3 × 11                                | 0.50                        | 250                                  | 6.3 × 11                                | 0.50                        | 250                                  | 8 × 11.5                                | 0.28                        | 410                                  |                                         |
| 220       | 221      | 6.3 × 11  | 0.50                        | 250                                  | 6.3 × 11                                | 0.50                        | 250                                  | 8 × 11.5                                | 0.28                        | 410                                  | 8 × 11.5                                | 0.28                        | 410                                  |                                         |
| 330       | 331      | 6.3 × 11  | 0.50                        | 250                                  | 8 × 11.5                                | 0.28                        | 410                                  | 8 × 11.5                                | 0.28                        | 410                                  | 10 × 12.5                               | 0.19                        | 600                                  |                                         |
| 470       | 471      | 8 × 11.5  | 0.28                        | 410                                  | 8 × 11.5                                | 0.28                        | 410                                  | 10 × 12.5                               | 0.19                        | 600                                  | 10 × 16                                 | 0.14                        | 800                                  |                                         |
| 680       | 681      | 10 × 12.5 | 0.19                        | 600                                  | 10 × 12.5                               | 0.19                        | 600                                  | 10 × 16                                 | 0.14                        | 800                                  | 10 × 20                                 | 0.11                        | 1000                                 |                                         |
| 1000      | 102      | 10 × 12.5 | 0.19                        | 600                                  | 10 × 16                                 | 0.14                        | 800                                  | 10 × 20                                 | 0.11                        | 1000                                 | 12.5 × 20                               | 0.075                       | 1250                                 |                                         |
| 1500      | 152      | 10 × 20   | 0.11                        | 1000                                 | 10 × 20                                 | 0.11                        | 1000                                 | 12.5 × 20                               | 0.075                       | 1250                                 | 16 × 25                                 | 0.038                       | 1900                                 |                                         |
| 2200      | 222      | 12.5 × 20 | 0.075                       | 1250                                 | 12.5 × 20                               | 0.075                       | 1250                                 | 12.5 × 25                               | 0.057                       | 1550                                 | 16 × 25                                 | 0.038                       | 1900                                 |                                         |
| 3300      | 332      | 12.5 × 20 | 0.075                       | 1250                                 | 12.5 × 25                               | 0.057                       | 1550                                 | 16 × 25                                 | 0.038                       | 1900                                 | 16 × 31.5                               | 0.033                       | 2350                                 |                                         |
| 4700      | 472      | 16 × 25   | 0.038                       | 1900                                 | 16 × 25                                 | 0.038                       | 1900                                 | 16 × 31.5                               | 0.033                       | 2350                                 | 18 × 35.5                               | 0.030                       | 2700                                 |                                         |
| 6800      | 682      | 16 × 25   | 0.038                       | 1900                                 | 16 × 31.5                               | 0.033                       | 2350                                 | 18 × 35.5                               | 0.030                       | 2700                                 | 18 × 40                                 | 0.027                       | 3300                                 |                                         |
| 10000     | 103      | 16 × 31.5 | 0.033                       | 2350                                 | 18 × 35.5                               | 0.030                       | 2700                                 | 18 × 40                                 | 0.027                       | 3300                                 |                                         |                             |                                      |                                         |
| 15000     | 153      | 18 × 35.5 | 0.030                       | 2700                                 | 18 × 40                                 | 0.027                       | 3300                                 |                                         |                             |                                      |                                         |                             |                                      |                                         |

| Cap. (μF) | V (Code) | Item Code | 35 (1V)                     |                                      |                                         | 50 (1H)                     |                                      |                                         | 63 (1J)                     |                                      |                                         | 100 (2A)                    |                                      |                                         |
|-----------|----------|-----------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|-----------------------------|--------------------------------------|-----------------------------------------|
|           |          |           | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz | Case size<br>φD × L<br>(mm) | Impedance<br>(Ω) MAX.<br>20°C/100kHz | Rated ripple<br>(mArms)<br>105°C/100kHz |
| 0.47      | R47      |           |                             |                                      |                                         | 5 × 11                      | 7.50                                 | 25                                      |                             |                                      |                                         | 5 × 11                      | 43.0                                 | 20                                      |
| 1         | 010      |           |                             |                                      |                                         | 5 × 11                      | 5.30                                 | 40                                      |                             |                                      |                                         | 5 × 11                      | 20.0                                 | 30                                      |
| 2.2       | 2R2      |           |                             |                                      |                                         | 5 × 11                      | 4.50                                 | 55                                      |                             |                                      |                                         | 5 × 11                      | 9.80                                 | 44                                      |
| 3.3       | 3R3      |           |                             |                                      |                                         | 5 × 11                      | 3.90                                 | 65                                      |                             |                                      |                                         | 5 × 11                      | 6.60                                 | 58                                      |
| 4.7       | 4R7      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 3.50                        | 90                                   | 5 × 11                                  | 4.70                        | 68                                   | 5 × 11                                  | 4.60                        | 74                                   |                                         |
| 10        | 100      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 2.10                        | 120                                  | 5 × 11                                  | 2.10                        | 110                                  | 6.3 × 11                                | 1.80                        | 130                                  |                                         |
| 22        | 220      | 5 × 11    | 1.50                        | 160                                  | 5 × 11                                  | 1.80                        | 150                                  | 6.3 × 11                                | 0.98                        | 180                                  | 8 × 11.5                                | 0.68                        | 230                                  |                                         |
| 33        | 330      | 5 × 11    | 1.50                        | 160                                  | 6.3 × 11                                | 0.65                        | 250                                  | 6.3 × 11                                | 0.71                        | 220                                  | 10 × 12.5                               | 0.46                        | 320                                  |                                         |
| 47        | 470      | 6.3 × 11  | 0.50                        | 250                                  | 6.3 × 11                                | 0.65                        | 250                                  | 8 × 11.5                                | 0.65                        | 310                                  | 10 × 16                                 | 0.37                        | 420                                  |                                         |
| 100       | 101      | 8 × 11.5  | 0.28                        | 410                                  | 8 × 11.5                                | 0.36                        | 340                                  | 10 × 12.5                               | 0.31                        | 390                                  | 12.5 × 20                               | 0.18                        | 580                                  |                                         |
| 150       | 151      | 8 × 11.5  | 0.28                        | 410                                  | 10 × 12.5                               | 0.26                        | 490                                  | 10 × 16                                 | 0.25                        | 440                                  | 12.5 × 25                               | 0.13                        | 710                                  |                                         |
| 220       | 221      | 10 × 12.5 | 0.19                        | 600                                  | 10 × 16                                 | 0.18                        | 650                                  | 10 × 20                                 | 0.20                        | 700                                  | 16 × 25                                 | 0.10                        | 890                                  |                                         |
| 330       | 331      | 10 × 16   | 0.14                        | 800                                  | 10 × 20                                 | 0.15                        | 810                                  | 12.5 × 20                               | 0.12                        | 980                                  | 16 × 25                                 | 0.090                       | 1080                                 |                                         |
| 470       | 471      | 10 × 20   | 0.11                        | 1000                                 | 12.5 × 20                               | 0.13                        | 1100                                 | 12.5 × 25                               | 0.081                       | 1200                                 | 16 × 31.5                               | 0.076                       | 1310                                 |                                         |
| 680       | 681      | 12.5 × 20 | 0.075                       | 1250                                 | 12.5 × 25                               | 0.10                        | 1200                                 | 16 × 25                                 | 0.058                       | 1300                                 | 16 × 35.5                               | 0.064                       | 1410                                 |                                         |
| 1000      | 102      | 12.5 × 25 | 0.057                       | 1550                                 | 16 × 25                                 | 0.058                       | 1600                                 | 16 × 31.5                               | 0.049                       | 1380                                 | 18 × 40                                 | 0.047                       | 1520                                 |                                         |
| 1500      | 152      | 16 × 25   | 0.038                       | 1900                                 | 16 × 31.5                               | 0.040                       | 2000                                 | 18 × 35.5                               | 0.038                       | 1750                                 |                                         |                             |                                      |                                         |
| 2200      | 222      | 16 × 31.5 | 0.033                       | 2350                                 | 18 × 35.5                               | 0.035                       | 2300                                 | 18 × 40                                 | 0.032                       | 2120                                 |                                         |                             |                                      |                                         |
| 3300      | 332      | 18 × 35.5 | 0.030                       | 2700                                 |                                         |                             |                                      |                                         |                             |                                      |                                         |                             |                                      |                                         |
| 4700      | 472      | 18 × 40   | 0.027                       | 3300                                 |                                         |                             |                                      |                                         |                             |                                      |                                         |                             |                                      |                                         |

| Cap. (μF) | V   | Code | 160        |      | 200       |      | 250        |      | 315       |     | 350        |     | 400        |     | 450        |     |
|-----------|-----|------|------------|------|-----------|------|------------|------|-----------|-----|------------|-----|------------|-----|------------|-----|
|           |     |      | 2C         | 2D   | 2E        | 2F   | 2V         | 2G   | 2W        |     |            |     |            |     |            |     |
| 0.47      | R47 |      | 6.3 × 11   | 12   | 6.3 × 11  | 12   | 6.3 × 11   | 12   | 8 × 11.5  | 11  | 8 × 11.5   | 11  |            |     |            |     |
| 1         | 010 |      | 6.3 × 11   | 17   | 6.3 × 11  | 17   | 6.3 × 11   | 17   | 8 × 11.5  | 16  | 10 × 12.5  | 17  | 10 × 12.5  | 16  | 10 × 12.5  | 18  |
| 2.2       | 2R2 |      | 6.3 × 11   | 25   | 6.3 × 11  | 25   | 8 × 11.5   | 29   | 10 × 12.5 | 28  | 10 × 16    | 31  | 10 × 16    | 27  | 10 × 20    | 29  |
| 3.3       | 3R3 |      | 8 × 11.5   | 36   | 8 × 11.5  | 36   | 10 × 12.5  | 42   | 10 × 12.5 | 34  | 10 × 16    | 38  | 10 × 20    | 36  | 12.5 × 20  | 41  |
| 4.7       | 4R7 |      | 8 × 11.5   | 43   | 10 × 12.5 | 50   | 10 × 12.5  | 50   | 10 × 16   | 45  | 10 × 20    | 49  | 10 × 20    | 43  | 12.5 × 20  | 49  |
| 10        | 100 |      | 10 × 12.5  | 70   | 10 × 16   | 80   | 10 × 20    | 88   | 10 × 20   | 72  | 12.5 × 20  | 82  | 12.5 × 25  | 72  | 16 × 25    | 75  |
| 22        | 220 |      | 10 × 20    | 130  | 10 × 20   | 140  | 12.5 × 25  | 155  | 12.5 × 25 | 120 | 16 × 25    | 130 | 16 × 25    | 110 | 16 × 31.5  | 115 |
| 33        | 330 |      | 12.5 × 20  | 180  | 12.5 × 25 | 190  | 12.5 × 25  | 190  | 16 × 25   | 155 | 16 × 31.5  | 160 | 16 × 31.5  | 140 | •18 × 35.5 | 145 |
| 47        | 470 |      | 12.5 × 25  | 220  | 12.5 × 25 | 220  | 16 × 25    | 230  | 16 × 35.5 | 190 | •18 × 35.5 | 200 | •18 × 35.5 | 170 | 20 × 40    | 175 |
| 100       | 101 |      | 16 × 25    | 330  | 16 × 31.5 | 335  | •18 × 35.5 | 340  | Δ18 × 40  | 285 | 20 × 40    | 290 | 22 × 50    | 350 | 25 × 50    | 350 |
| 220       | 221 |      | •18 × 35.5 | 500  | Δ18 × 40  | 515  | 20 × 40    | 525  | 22 × 50   | 540 | 25 × 50    | 550 |            |     |            |     |
| 330       | 331 |      | 20 × 40    | 900  | 22 × 40   | 1100 | 22 × 50    | 1150 |           |     |            |     |            |     |            |     |
| 470       | 471 |      | 22 × 50    | 1200 | 22 × 50   | 1310 | 25 × 50    | 1350 |           |     |            |     |            |     |            |     |

Rated ripple current (mArms) at 105°C 120Hz

Size φ20×31 is available for capacitors marked "•"  
 Size φ20×35 is available for capacitors marked "Δ"  
 In this case, "6" will be put at 12th digit of type numbering system.

CAT.8100D