nichicon

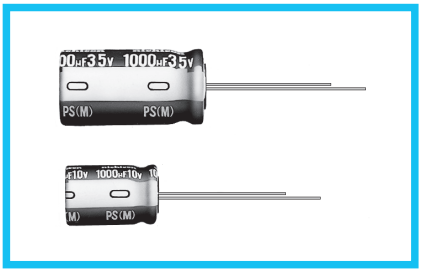
# UPS

Miniature Sized, Low Impedance, For Switching Power Supplies

Smaller | Low Impedance | Anti-Solvent Feature (Through 100V only)

- Wide temperature range type, miniature sized.
- Compliant to the RoHS directive (2011/65/EU,(EU)2015/863).

UPJ → Smaller → UPS



## ■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 | 160 to 450 |
|---|---|---|
| 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. | CV ≦ 1000 : I= 0.1CV+40 (μA) or less.<br>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 | 315 · 350 | 400 · 450 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| tan δ (MAX.) | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | 0.15 | 0.20 | 0.25 |

**Stability at Low Temperature**

Measurement frequency : 120Hz

| Rated voltage (V) | | 6.3 · 10 | 16 · 25 | 35 · 50 | 63 · 100 | 160 · 200 | 250 | 315 · 350 | 400 | 450 |
|---|---|---|---|---|---|---|---|---|---|---|
| Impedance ratio (MAX.) | Z−25˚C / Z+20˚C | — | — | — | 2 | 3 | 3 | 4 | 6 | 15 |
| | Z−40˚C / Z+20˚C | — | — | — | 3 | 4 | 6 | 8 | 10 | — |
| | Z−55˚C / Z+20˚C | 5 | 4 | 3 | — | — | — | — | — | — |

**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 |
| Leakage current | Less than or equal to the initial specified value |

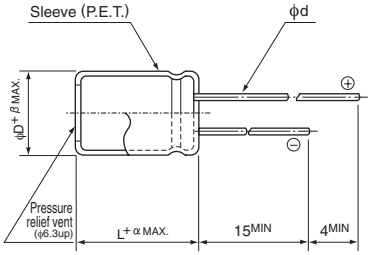
**Shelf Life**

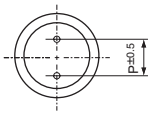
After storing the capacitors under no load at 105˚C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above.

**Marking**

Printed with white color letter on dark brown sleeve.

## ■Radial Lead Type




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

(mm)

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

• Please refer to page 20 about the end seal configuration.

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

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| U | P | S | 1 | E | 4 | 7 | 1 | M | P | D | |

- Size code
- Configuration ※
- Capacitance tolerance (±20%)
- Rated capacitance (470μF)
- Rated voltage (25V)
- Series name
- Type

※ 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 |

## ● Frequency coefficient of rated ripple current

| V | Cap.(μF) \ Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|---|---|---|---|---|---|---|
| 6.3 to 100 | 2.2 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.

# UPS

## ■Dimensions

| Cap. (μF) | Code | 6.3 (0J) Case size φD × L (mm) | 6.3 (0J) Impedance (Ω) MAX. 20˚C/100kHz | 6.3 (0J) Rated ripple (mArms) 105˚C/100kHz | 10 (1A) Case size φD × L (mm) | 10 (1A) Impedance (Ω) MAX. 20˚C/100kHz | 10 (1A) Rated ripple (mArms) 105˚C/100kHz | 16 (1C) Case size φD × L (mm) | 16 (1C) Impedance (Ω) MAX. 20˚C/100kHz | 16 (1C) Rated ripple (mArms) 105˚C/100kHz | 25 (1E) Case size φD × L (mm) | 25 (1E) Impedance (Ω) MAX. 20˚C/100kHz | 25 (1E) Rated ripple (mArms) 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) | Code | 35 (1V) Case size φD × L (mm) | 35 (1V) Impedance (Ω) MAX. 20˚C/100kHz | 35 (1V) Rated ripple (mArms) 105˚C/100kHz | 50 (1H) Case size φD × L (mm) | 50 (1H) Impedance (Ω) MAX. 20˚C/100kHz | 50 (1H) Rated ripple (mArms) 105˚C/100kHz | 63 (1J) Case size φD × L (mm) | 63 (1J) Impedance (Ω) MAX. 20˚C/100kHz | 63 (1J) Rated ripple (mArms) 105˚C/100kHz | 100 (2A) Case size φD × L (mm) | 100 (2A) Impedance (Ω) MAX. 20˚C/100kHz | 100 (2A) Rated ripple (mArms) 105˚C/100kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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) | 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 | | | | | | | Case size φD × L (mm) | Rated ripple |
| 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.