

Wide Temperature Range, Permissible Abnormal Voltage

- Improved safety feature for abnormally excessive voltage.
- High ripple current product.
- Compliant to the RoHS directive (2011/65/EU).

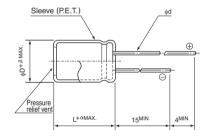




## ■ Specifications

| Item                          | Performance Characteristics   |                            |        |  |  |                               |  |  |  |
|-------------------------------|---|----------------------------|--------|--|--|-------------------------------|--|--|--|
| Category Temperature Range    | -40 to +105°C   |                            |        |  |  |                               |  |  |  |
| Rated Voltage Range           | 200 · 400V  |                            |        |  |  |                               |  |  |  |
| Rated Capacitance Range       | 10 to 220μF   |                            |        |  |  |                               |  |  |  |
| Capacitance Tolerance         | ±20% at 120Hz, 20°C   |                            |        |  |  |                               |  |  |  |
| Leakage Current               | After 1 minute's application of rated voltage at 20°C, leakage current is 0.04CV+100 (μA) or less.  |                            |        |  |  |                               |  |  |  |
| Tangent of loss angle (tan δ) | Rated voltage (V) 200 400 Measurement frequency:120Hz at 20°C tan δ (MAX.) 0.15 0.15  |                            |        |  |  |                               |  |  |  |
| Stability at Low Temperature  | Rated voltage (V)   |                            | 200    |  | 400  | Measurement frequency : 120Hz |  |  |  |
|                               | Impedance ratio ZT / Z20 (MAX.)   | °C / Z+20°C<br>°C / Z+20°C | 3<br>6 |  | 8<br>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 2000 hours at 105°C, the peak voltage shall not exceed the rated voltage.             |                            |        |  | Within ±20% of the initial capacitance value 200% or less than the initial specified value 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. |                            |        |  |  |                               |  |  |  |
|                               | The pressure relief vent will operate in normal conditions, with no dangerous conditions such as flames, ignitions or dispersion of pieces of the capacitor and / or case.  |                            |        |  |  |                               |  |  |  |
| Safety Performance            | voltage (V)   | Test conditions            |        |  |  |                               |  |  |  |
|                               | voltage (V)   | Limited DC current         |        |  |  | Test Voltage                  |  |  |  |
|                               | 200   | 4A                         |        |  |  | 300VDC and 375VDC             |  |  |  |
|                               | 400   | 2A                         |        |  |  | 500VDC and 600VDC             |  |  |  |
| Marking                       | Printed with white color letter on dark brown sleeve.   |                            |        |  |  |                               |  |  |  |

### ■Radial Lead Type



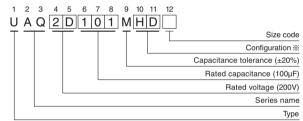
 Please refer to page 20 about the end seal configuration.



φD 10 12.5 16 18 22 β 0.5 0.5 0.5 0.5 1.0 P 5.0 5.0 7.5 7.5 10 φd 0.6 0.6 0.8 0.8 1.0

α (φD≤18) 2.0 (φD >18) 3.0

# Type numbering system (Example : $200V\ 100\mu F$ )



※ Configuration

| φD         | Pb-free leadwire<br>Pb-free PET sleeve |  |  |  |  |
|------------|--|--|--|--|--|
| 10         | PD                                     |  |  |  |  |
| 12.5 to 18 | HD                                     |  |  |  |  |
| 22         | RD                                     |  |  |  |  |

#### Dimensions

|          | V(Code)        |              |                   | 200 (2D)        | 400 (2G)          |             |             |                    |  |              |
|----------|----------------|--------------|-------------------|-----------------|-------------------|-------------|-------------|--------------------|--|--------------|
| Cap.(µF) | Code $\phi D$  | φ <b>1</b> 0 | φ12.5             | φ <b>16</b>     | φ <b>18</b>       | φ <b>22</b> | φ12.5       | φ <b>16</b>        | φ18  | ф <b>22</b>  |
| 40       |                |              |                   |                 |                   |             | 12.5 × 20   |                    |  |              |
| 10       | 100            |              |                   |                 |                   |             | 100         |                    |  |              |
| 22       | 220            | 10 × 20      | ļ                 |                 |                   | L<br>       | 12.5 × 31.5 | <u>016 × 20</u>    |  |              |
| 22       | 220            | 120          |                   |                 |                   |             | 145         | 145                |  |              |
| 33       | 330            | 10 × 25      | <u>012.5 × 20</u> |                 |                   |             | 12.5 × 40   | <u>016 × 25</u>    | <u> * 18 × 20                                   </u> |              |
| 33       | 330            | 160          | 160               |                 |                   |             | 195         | 195                | 195  |              |
| 47       | <b>47</b> 470  | 10 × 31.5    | <u>012.5 × 20</u> |                 |                   | L           |             | 16 × 35.5          | ○18 × 25   | *22 × 20     |
| 47       | 470            | 195          | 195               |                 |                   |             |             | 280                | 280  | 280          |
| 56       | 560            |              | 12.5 × 25         |                 |                   | L           |             | <u>16 × 35.5</u> _ | <u>018 × 31.5</u> _                                  | *22 × 25     |
| 50       | 300            |              | 210               |                 |                   |             |             | 320                | 320  | 320          |
| 68       | 680            |              | 12.5 × 25         |                 |                   | L           |             | 16 × 40            | <u>018 × 35.5</u>                                    |              |
| 00       | 000            |              | 250               |                 |                   |             |             | 350                | 350  |              |
| 82       | 820            |              | 12.5 × 31.5       | 016 × 20        |                   |             |             |                    | 18 × 40  |              |
| 02       | 020            |              | 285               | 285             |                   |             |             |                    | 420  |              |
| 100      | 101            | L            | 12.5 × 35.5       | <u>016 × 25</u> | * 18 × 20         |             |             |                    |  |              |
| 100      | 101            |              | 335               | 335             | 335               |             |             |                    |  |              |
| 150      | <b>150</b> 151 |              |                   | 16 × 31.5       | ○18 × 25          | * 22 × 20   |             |                    |  |              |
| 150      | 131            |              |                   | 435             | 435               | 435         |             |                    |  |              |
| 180      | 181            |              | l                 | 16 × 35.5       | <u>018 × 31.5</u> | * 22 × 25   | l           |                    |  | l            |
| 100      | 101            |              |                   | 495             | 495               | 495         |             |                    |  |              |
| 220      | 221            |              | l                 |                 | 18 × 35.5         | L           | l           |                    |  | Case size    |
| 220      | 441            |              |                   |                 | 575               |             |             |                    |  | Rated ripple |

# • Frequency coefficient of rated ripple current

| Frequency   | 50, 60Hz | 120Hz | 300Hz | 1kHz | 10kHz or more |
|-------------|----------|-------|-------|------|---------------|
| Coefficient | 0.80     | 1.00  | 1.25  | 1.40 | 1.60          |

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

- : In case of low profile type, 6 will be put at 12th digit of type numbering system.
- \* : For further low profile product, 3 will be put at 12th digit.