

# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

## UPM

Low Impedance, High Reliability



Low Impedance



Long Life



Anti-Solvent  
Feature  
(Through 100V only)

**UPM**



**UPW**

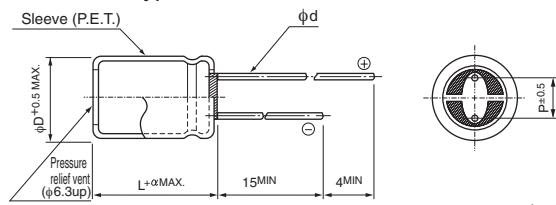
- High reliability withstanding 5000 hour load life at +105°C (3000/2000 hours for smaller case sizes as specified below).
- Capacitance ranges available based on the numerical values in E12 series under JIS.
- Compliant to the RoHS directive (2011/65/EU, (EU)2015/863).
- AEC-Q200 compliant. Please contact us for details.



### ■ 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       | 1 to 15000µF                                                                                                                                                                                                                                |                                                                                                                                 |       |         |           |           |      |           |            |                                                                                                                                                  |
| Capacitance Tolerance         | $\pm 20\%$ 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. |       |         |           |           |      |           |            | After 1 minute's application of rated voltage at 20°C, CV $\leq 1000 : I = 0.1CV+40$ (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.                                                                                                                                                                 |                                                                                                                                 |       |         |           |           |      |           |            |                                                                                                                                                  |
|                               | Rated Voltage (V)                                                                                                                                                                                                                           | 6.3                                                                                                                             | 10    | 16      | 25        | 35        | 50   | 63 to 100 | 160 to 350 | 400 · 450                                                                                                                                        |
|                               | tan δ (MAX.)                                                                                                                                                                                                                                | 0.22                                                                                                                            | 0.19  | 0.16    | 0.14      | 0.12      | 0.10 | 0.08      | 0.20       | 0.25                                                                                                                                             |
| Stability at Low Temperature  | Rated voltage (V)                                                                                                                                                                                                                           | 6.3 · 10                                                                                                                        | 16    | 25 · 35 | 50 to 100 | 160 · 200 | 250  | 315 · 350 | 400        | 450                                                                                                                                              |
|                               | Impedance ratio (MAX.)                                                                                                                                                                                                                      | Z-25°C / Z+20°C                                                                                                                 | —     | —       | —         | —         | —    | —         | —          | 15                                                                                                                                               |
|                               |                                                                                                                                                                                                                                             | Z-40°C / Z+20°C                                                                                                                 | —     | —       | —         | 4         | 6    | 8         | 10         | —                                                                                                                                                |
| Endurance                     | The specifications listed below shall be met when the capacitors are restored to 20°C after D.C. bias plus rated ripple current is applied at 105°C for the condition listed at right. The peak voltage shall not exceed the rated voltage. |                                                                                                                                 |       |         |           |           |      |           |            |                                                                                                                                                  |
|                               | Rated Voltage                                                                                                                                                                                                                               | $\phi D$ (mm)                                                                                                                   |       |         |           |           |      |           |            | $\phi 5, \phi 6.3$                                                                                                                               |
|                               | 6.3~450V                                                                                                                                                                                                                                    | 2000h                                                                                                                           | 3000h | 5000h   |           |           |      |           |            | h=hours                                                                                                                                          |
| Shelf Life                    | Capacitance change                                                                                                                                                                                                                          | Within $\pm 20\%$ 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                                                                               |       |         |           |           |      |           |            |                                                                                                                                                  |
| Marking                       | Printed with white color letter on dark brown sleeve.                                                                                                                                                                                       |                                                                                                                                 |       |         |           |           |      |           |            |                                                                                                                                                  |

### ■ Radial Lead Type



\*In case L > 25 for the φ12.5 dia. unit, lead dia.  $\phi d = 0.8$ mm.

• Please refer to page 18 about the end seal configuration.

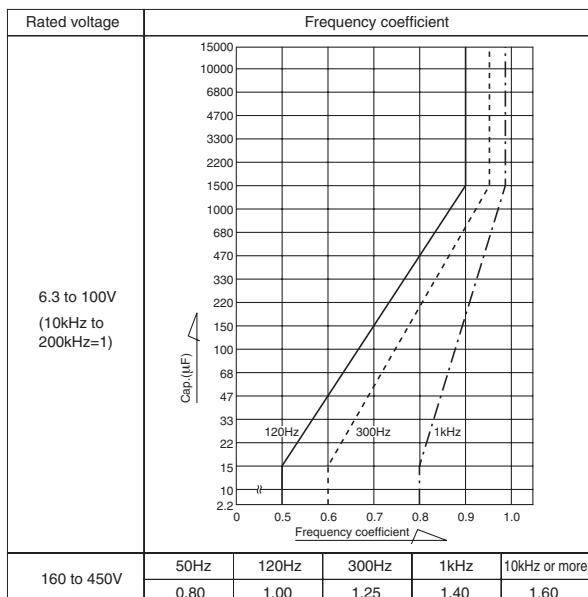
### Type numbering system (Example : 25V 470µF)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12                                   |
|---|---|---|---|---|---|---|---|---|----|----|--------------------------------------|
| U | P | M | 1 | E | 4 | 7 | 1 | M | P  | D  |                                      |
|   |   |   |   |   |   |   |   |   |    |    | Size code                            |
|   |   |   |   |   |   |   |   |   |    |    | Configuration                        |
|   |   |   |   |   |   |   |   |   |    |    | Capacitance tolerance ( $\pm 20\%$ ) |
|   |   |   |   |   |   |   |   |   |    |    | 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                                     |

### ● Frequency coefficient of rated ripple current





















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