

## Aluminum Electrolytic Capacitor

# M5 series

- Subminiature product, Low impedance, 105°C.
- Applicable to small electronic devices.
- Height: 5mm.
- RoHS Compliance
- 105°C低阻抗、超小型產品。
- 適用於小型電子設備。
- 高度：5mm系列。

### SPECIFICATIONS

| Items 項目                                                               | Characteristics 特性                                                                                                                                                                                                                                                                |                                         |      |      |      |      |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------|------|------|------|
| Capacitance Tolerance<br>靜電容量誤差                                        | ± 20%(120Hz,20℃)                                                                                                                                                                                                                                                                  |                                         |      |      |      |      |
| Operating Temperature Range<br>適用溫度範圍                                  | -40 ~ +105℃                                                                                                                                                                                                                                                                       |                                         |      |      |      |      |
| Rated Voltage Range<br>額定電壓範圍                                          | 6.3 ~ 35VDC                                                                                                                                                                                                                                                                       |                                         |      |      |      |      |
| Leakage Current<br>洩漏電流                                                | I ≤ 0.01CV or 3 (μA) which is greater.( After 2 minutes application of DC rated voltage, at 20 ℃)                                                                                                                                                                                 |                                         |      |      |      |      |
| Dissipation Factor<br>散逸因素(tan δ)                                      | Measurement Frequency: 120Hz. Temperature: 20℃                                                                                                                                                                                                                                    |                                         |      |      |      |      |
|                                                                        | Rated Voltage(V)                                                                                                                                                                                                                                                                  | 6.3                                     | 10   | 16   | 25   | 35   |
|                                                                        | tan δ(Max)                                                                                                                                                                                                                                                                        | 0.22                                    | 0.20 | 0.18 | 0.14 | 0.12 |
| Low Temperature Stability<br>低溫特性<br>Impedance Ratio(Max)<br>阻抗比率(最大值) | Measurement Frequency: 120Hz.                                                                                                                                                                                                                                                     |                                         |      |      |      |      |
|                                                                        | Rated Voltage(V)                                                                                                                                                                                                                                                                  | 6.3                                     | 10   | 16   | 25   | 35   |
|                                                                        | Z(-25℃)/Z(20℃)                                                                                                                                                                                                                                                                    | 2                                       | 2    | 2    | 2    | 2    |
|                                                                        | Z(-40℃)/Z(20℃)                                                                                                                                                                                                                                                                    | 4                                       | 4    | 3    | 3    | 3    |
| Load Life 負荷壽命                                                         | 1000hours,with application of rated voltage at 105℃                                                                                                                                                                                                                               |                                         |      |      |      |      |
|                                                                        | Capacitance Change                                                                                                                                                                                                                                                                | Within ± 20% of Initial Value           |      |      |      |      |
|                                                                        | tan δ                                                                                                                                                                                                                                                                             | 200% or less of Initial Specified Value |      |      |      |      |
|                                                                        | Leakage Current                                                                                                                                                                                                                                                                   | Initial Specified Value or less         |      |      |      |      |
| Shelf Life 放置壽命                                                        | The following specifications shall be satisfied when the capacitors are restored to 20℃ after exposing them for 1,000 hours 105℃ without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to them 4.1 of JIS C5101-4. |                                         |      |      |      |      |
|                                                                        | Capacitance Change                                                                                                                                                                                                                                                                | Within ± 20% of Initial Value           |      |      |      |      |
|                                                                        | tan δ                                                                                                                                                                                                                                                                             | 200% or less of Initial Specified Value |      |      |      |      |
|                                                                        | Leakage Current                                                                                                                                                                                                                                                                   | Initial Specified Value or less         |      |      |      |      |
| Standards 參照標準                                                         | JIS C 5101-4 (IEC 60384)                                                                                                                                                                                                                                                          |                                         |      |      |      |      |

### Frequency Coefficient of Permissible Ripple Current

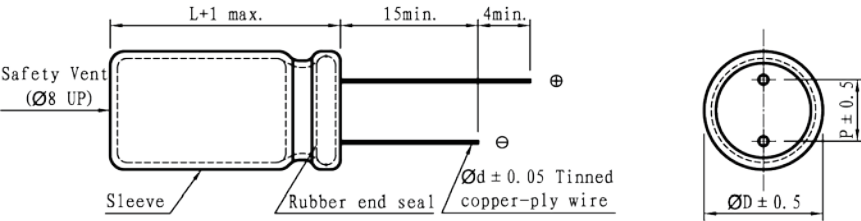
|                |      |      |      |      |            |
|----------------|------|------|------|------|------------|
| Frequency (Hz) | 50   | 120  | 300  | 1K   | 10K ~ 100K |
| Coefficien     | 0.50 | 0.65 | 0.70 | 0.90 | 1.00       |

The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime with every 5°C rise. When long life performance is required in actual use , the rms ripple current has to be reduced.

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DIMENSIONS(mm)



|          |      |      |      |
|----------|------|------|------|
| $\phi D$ | 4    | 5    | 6.3  |
| P        | 1.5  | 2.0  | 2.5  |
| $\phi d$ | 0.45 | 0.45 | 0.45 |

STANDARD RATINGS

D×L(mm) ; R.C.(mA rms) at 105°C 100KHz, IMP ( Ω max) at 20°C 100KHz.

| Cap<br>( $\mu F$ ) | V<br>(Code) | 6.3<br>(0J) |      |     | 10<br>(1A) |      |     | 16<br>(1C) |      |     |
|--------------------|-------------|-------------|------|-----|------------|------|-----|------------|------|-----|
|                    | Item        | D x L       | R.C. | IMP | D x L      | R.C. | IMP | D x L      | R.C. | IMP |
| 10                 |             |             |      |     |            |      |     | 4x5        | 55   | 5.0 |
| 15                 |             |             |      |     |            |      |     | 5x5        | 80   | 2.6 |
| 22                 |             | 4x5         | 52   | 5.0 | 5x5        | 80   | 2.6 | 5x5        | 82   | 2.5 |
| 33                 |             | 5x5         | 82   | 2.5 | 5x5        | 82   | 2.5 | 6.3x5      | 113  | 1.3 |
| 47                 |             | 5x5         | 85   | 2.5 | 6.3x5      | 115  | 1.2 | 6.3x5      | 115  | 1.2 |
| 68                 |             | 6.3x5       | 118  | 1.3 |            |      |     |            |      |     |
| 100                |             | 6.3x5       | 120  | 1.2 |            |      |     |            |      |     |

| Cap<br>( $\mu F$ ) | V<br>(Code) | 25<br>(1E) |      |     | 35<br>(1V) |      |     |
|--------------------|-------------|------------|------|-----|------------|------|-----|
|                    | Item        | D x L      | R.C. | IMP | D x L      | R.C. | IMP |
| 1                  |             |            |      |     | 4x5        | 48   | 5.0 |
| 1.5                |             |            |      |     | 4x5        | 49   | 4.9 |
| 2.2                |             |            |      |     | 4x5        | 50   | 4.9 |
| 3.3                |             |            |      |     | 4x5        | 52   | 4.8 |
| 4.7                |             | 4x5        | 49   | 5.0 | 4x5        | 55   | 4.8 |
| 6.8                |             | 4x5        | 52   | 4.8 | 5x5        | 80   | 2.6 |
| 10                 |             | 5x5        | 82   | 2.5 | 5x5        | 85   | 2.5 |
| 15                 |             | 6.3x5      | 116  | 1.3 | 6.3x5      | 116  | 1.3 |
| 22                 |             | 6.3x5      | 118  | 1.2 | 6.3x5      | 118  | 1.2 |
| 33                 |             | 6.3x5      | 120  | 1.1 |            |      |     |