

# Koshin

## KLS Miniature Aluminium Electrolytic Capacitors

### 7mm L, 85°C Low Leakage Current Miniature Capacitors, Series KLS.

Diameter from  $\Phi 4$  to  $\Phi 8$  and height of 7mm

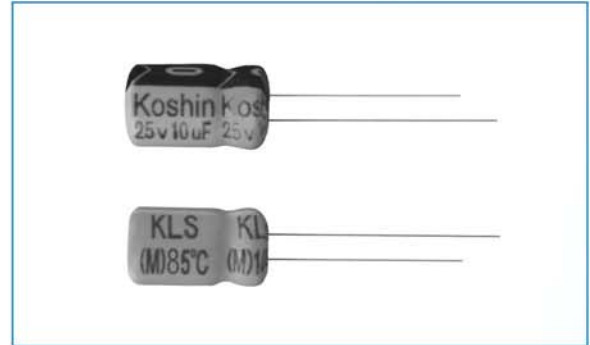
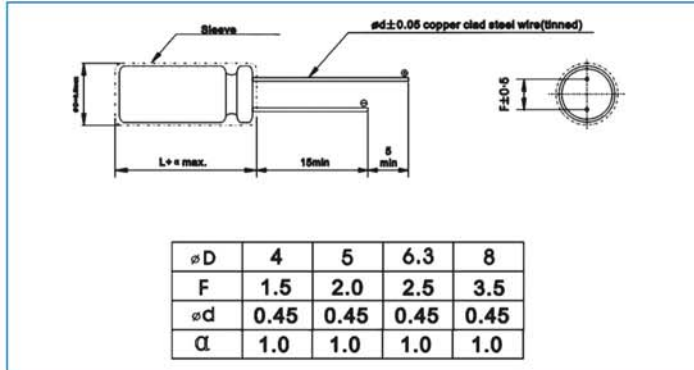
Guaranteed 1000 hours at 85°C

RoHS

Outline Drawing

Unit: mm

Photo



Marking color: black print on orange sleeve

### Specifications

| No. | Item                                      | Performance   |   |      |      |      |      |      |      |      |               |   |
|-----|---|---|---|------|------|------|------|------|------|------|---------------|---|
| 1   | Temperature range (°C)                    | -40 to +85  |   |      |      |      |      |      |      |      |               |   |
| 2   | Leakage current ( $\mu$ A)                | Less than 0.002CV or 0.3 whichever is larger (after two minutes) C: Capacitance( $\mu$ F); V: Rated voltage(V) 20°C |   |      |      |      |      |      |      |      |               |   |
| 3   | Capacitance tolerance (%)                 | $\pm 20$ (20°C, 120Hz)  |   |      |      |      |      |      |      |      |               |   |
| 4   | Tangent of the loss angle (Tan $\delta$ ) | Rated voltage (V)   | 4   | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | (20°C, 120Hz) |   |
|     |   | Tan $\delta$ (max)  | 0.35  | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 |               |   |
| 5   | Low temperature characteristics           | Rated voltage (V)   | 4   | 6.3  | 10   | 16   | 25   | 35   | 50   | 63   | (120Hz)       |   |
|     |   | Impedance ratio (max)   | $Z_{(-25^\circ\text{C})}/Z_{(+20^\circ\text{C})}$ | 6    | 4    | 3    | 3    | 2    | 2    | 2    |               | 2 |
|     |   |   | $Z_{(-40^\circ\text{C})}/Z_{(+20^\circ\text{C})}$ | 12   | 8    | 6    | 4    | 4    | 3    | 3    |               | 3 |
| 6   | Endurance (85°C) (Applied ripple current) | Test time   | 1000 hours  |      |      |      |      |      |      |      |               |   |
|     |   | Leakage current   | The initial specified value or less               |      |      |      |      |      |      |      |               |   |
|     |   | Percentage of capacitance change  | Within $\pm 20\%$ of initial value                |      |      |      |      |      |      |      |               |   |
|     |   | Tangent of the loss angle   | 200% or less of the initial specified value       |      |      |      |      |      |      |      |               |   |
| 7   | Shelf life (85°C)                         | Test time   | 500hours  |      |      |      |      |      |      |      |               |   |
|     |   | Leakage current   | The initial specified value or less               |      |      |      |      |      |      |      |               |   |
|     |   | Percentage of capacitance change  | Within $\pm 20\%$ of initial value                |      |      |      |      |      |      |      |               |   |
|     |   | Tangent of the loss angle   | 200% or less of the initial specified value       |      |      |      |      |      |      |      |               |   |
| 8   | Applicable standards                      | JIS-C-5102 and JIS-C-5141   |   |      |      |      |      |      |      |      |               |   |

### Coefficient of Frequency for Ripple Current

| Capacitance ( $\mu$ F) | Frequency (Hz) |      |      |      |      |
|------------------------|----------------|------|------|------|------|
|                        | 50 · 60        | 120  | 1K   | 10K  | 100K |
| CAP $\leq$ 47          | 0.70           | 1.00 | 1.20 | 1.30 | 1.45 |
| CAP > 47               | 0.80           | 1.00 | 1.10 | 1.15 | 1.20 |

### Coefficient of Temperature for Ripple Current

| Temperature(°C) | 45   | 60   | 70   | 85   |
|-----------------|------|------|------|------|
| Coefficient     | 1.80 | 1.50 | 1.30 | 1.00 |

## KLS Miniature Aluminium Electrolytic Capacitors

Dimension:  $\Phi$ DxL(mm)

Ripple Current: mA/rms at 120Hz, 85°C

### DIMENSION & PERMISSIBLE RIPPLE CURRENT

| V.DC<br>$\mu$ F Contents | 4V         |    | 6.3V       |    | 10V        |    | 16V        |     | 25V        |    | 35V        |     | 50V        |     | 63V        |       |    |
|--------------------------|------------|----|------------|----|------------|----|------------|-----|------------|----|------------|-----|------------|-----|------------|-------|----|
|                          | $\Phi$ DxL | mA | $\Phi$ DxL | mA | $\Phi$ DxL | mA | $\Phi$ DxL | mA  | $\Phi$ DxL | mA | $\Phi$ DxL | mA  | $\Phi$ DxL | mA  | $\Phi$ DxL | mA    |    |
| 0.1                      |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 3   | 4X7        | 3     |    |
| 0.22                     |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 5   | 4X7        | 5     |    |
| 0.33                     |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 6   | 4X7        | 6     |    |
| 0.47                     |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 7   | 4X7        | 7     |    |
| 1                        |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 10  | 4X7        | 10    |    |
| 2.2                      |            |    |            |    |            |    |            |     |            |    |            |     | 4X7        | 16  | 5X7        | 19    |    |
| 3.3                      |            |    |            |    |            |    |            |     |            |    |            | 4X7 | 18         | 4X7 | 20         | 6.3X7 | 29 |
| 4.7                      |            |    |            |    |            |    |            |     | 4X7        | 19 | 5X7        | 21  | 5X7        | 24  | 6.3X7      | 36    |    |
| 10                       |            |    |            |    |            |    | 4X7        | 27  | 5X7        | 29 | 6.3X7      | 36  | 6.3X7      | 40  |            |       |    |
| 22                       |            |    |            |    | 4X7        | 36 | 4X7        | 40  | 6.3X7      | 47 | 6.3X7      | 53  |            |     |            |       |    |
| 33                       | 4X7        | 33 | 4X7        | 41 | 5X7        | 44 | 5X7        | 55  | 6.3X7      | 63 | 8X7        | 71  |            |     |            |       |    |
| 47                       | 4X7        | 39 | 5X7        | 49 | 6.3X7      | 54 | 6.3X7      | 62  | 8X7        | 74 |            |     |            |     |            |       |    |
| 100                      | 6.3X7      | 59 | 6.3X7*     | 75 | 8X7        | 90 | 8X7        | 110 |            |    |            |     |            |     |            |       |    |

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