

TLS Series

• 105°C 3,000Hrs assured.

- Non-solvent proof.
- Downsized.
- High Ripple Capability.
- For SMPS, Inverter.
- RoHS compliant.
- Halogen-free capacitors are also available.



SPECIFICATIONS

| Item | Characteristics | | | | | | |
|--|--|---------------------------------|---------|---------|------------------|------|------|
| Rated Voltage Range | 160 ~ 550 V _{DC} | | | | | | |
| Operating Temperature Range | -25 ~ +105°C | | | | | | |
| Capacitance Tolerance | ±20%(M) (at 20°C, 120Hz) | | | | | | |
| Leakage Current | I = 0.02CV or 3mA, whichever is smaller. Where, I: Leakage Current(µA), C: Nominal capacitance(µF), V: Rated voltage(V _{DC}) (at 20°C, 5minutes) | | | | | | |
| ※ Dissipation Factor(Tanδ) | <table border="1"> <tr> <td>Rated voltage(V_{DC})</td> <td>160~400</td> <td>450~550</td> </tr> <tr> <td>Tanδ(Max.)</td> <td>0.15</td> <td>0.20</td> </tr> </table> (at 20°C, 120Hz) | Rated voltage(V _{DC}) | 160~400 | 450~550 | Tanδ(Max.) | 0.15 | 0.20 |
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| Tanδ(Max.) | 0.15 | 0.20 | | | | | |
| Temperature Characteristics (Max. Impedance ratio) | <table border="1"> <tr> <td>Rated voltage(V_{DC})</td> <td>160~400</td> <td>450~550</td> </tr> <tr> <td>Z(-25°C)/Z(20°C)</td> <td>4</td> <td>8</td> </tr> </table> (at 120Hz) | Rated voltage(V _{DC}) | 160~400 | 450~550 | Z(-25°C)/Z(20°C) | 4 | 8 |
| Rated voltage(V _{DC}) | 160~400 | 450~550 | | | | | |
| Z(-25°C)/Z(20°C) | 4 | 8 | | | | | |
| Load Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 3,000 hours at 105°C. Capacitance change ≤ ±20% of the initial value Tanδ ≤ 200% of the initial specified value Leakage current ≤ The initial specified value | | | | | | |
| Shelf Life | The following specifications shall be satisfied when the capacitors are restored to 20°C after the exposing them at 105°C for 1,000 hours without voltage applied. The rated voltage shall be applied to the capacitors for a minimum of 30 minutes, at least 24 hours and not more than 48 hours before the measurements. Capacitance change ≤ ±20% of the initial value Tanδ ≤ 200% of the initial specified value Leakage current ≤ The initial specified value | | | | | | |
| Others | Satisfied characteristics KS C IEC 60384-4 | | | | | | |

*For capacitors with CV products >100,000 higher Tanδ value may apply.
 When the capacitance exceeds 1,000µF, 0.01 shall be added every 1,000µF increase.

RATED RIPPLE CURRENT

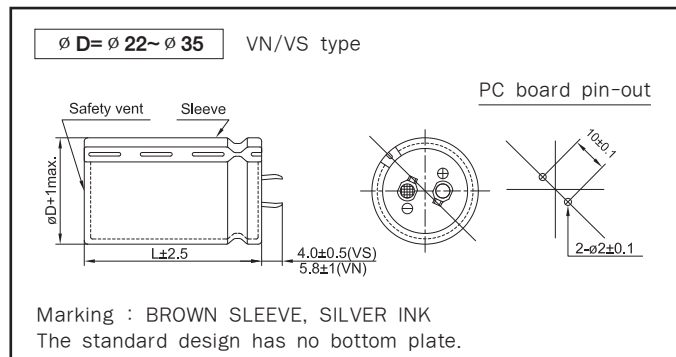
When capacitor are operated in any other condition at 120Hz, the maximum ripple current must be multiplied by the figure shown in the table.

Frequency multiplying factor

| V _{DC} | Freq.(Hz) | 60 | 120 | 300 | 1k | 10k~ |
|------------------------|-----------|------|------|------|------|------|
| 160~250V _{DC} | | 0.81 | 1.00 | 1.17 | 1.32 | 1.45 |
| 315~550V _{DC} | | 0.77 | 1.00 | 1.16 | 1.30 | 1.41 |

DIMENSIONS OF TLS Series

Unit(mm)



RATINGS OF TLS Series

| μF \ Vdc / ØD | 160 | | | | 200 | | | | 250 | | | |
|---------------|-----------------|-------------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|
| | 22 | 25.4 | 30 | 35 | 22 | 25.4 | 30 | 35 | 22 | 25.4 | 30 | 35 |
| 270 | | | | | | | | | 22 × 25 1.11 | | | |
| 330 | | | | | 22 × 25 1.23 | | | | 22 × 30 1.29 | | | |
| 390 | | | | | 22 × 30 1.40 | | | | 22 × 35 1.44 | 25.4 × 25 1.40 | | |
| 470 | 22 × 25 1.47 | | | | 22 × 30 1.54 | | | | 22 × 40 1.61 | 25.4 × 30 1.57 | | |
| 560 | 22 × 30 1.68 | | | | 22 × 35 1.72 | 25.4 × 25 1.67 | | | 22 × 45 1.79 | 25.4 × 35 1.79 | 30 × 25 1.87 | |
| 680 | 22 × 35 1.86 | 25.4 × 25 1.84 | | | 22 × 40 1.94 | 25.4 × 30 1.89 | 30 × 25 2.05 | | 22 × 50 2.02 | 25.4 × 40 2.02 | 30 × 30 2.08 | 35 × 25 2.19 |
| 820 | 22 × 40 2.12 | 25.4 × 30 2.08 | | | 22 × 45 2.17 | 25.4 × 35 2.17 | 30 × 30 2.28 | | | 25.4 × 45 2.26 | 30 × 35 2.34 | 35 × 30 2.44 |
| 1,000 | 22 × 45 2.40 | 25.4 × 35 2.40 | 30 × 25 2.50 | | | 25.4 × 40 2.45 | 30 × 30 2.52 | 35 × 25 2.66 | | 25.4 × 50 2.53 | 30 × 40 2.66 | 35 × 30 2.70 |
| 1,200 | 22 × 50 2.69 | 25.4 × 40 2.68 | 30 × 30 2.77 | 35 × 25 2.91 | | 25.4 × 45 2.78 | 30 × 35 2.83 | 35 × 30 2.96 | | | 30 × 45 2.99 | 35 × 35 3.00 |
| 1,500 | | 25.4 × 45 3.05 | 30 × 35 3.17 | 35 × 30 3.30 | | | 30 × 40 3.26 | 35 × 35 3.36 | | | | 35 × 40 3.48 |
| 1,800 | | 25.4 × 50 3.40 | 30 × 40 3.57 | 35 × 30 3.62 | | | 30 × 50 3.72 | 35 × 40 3.81 | | | | 35 × 50 3.98 |
| 2,200 | | | 30 × 45 4.05 | 35 × 35 4.07 | | | | 35 × 45 4.32 | | | | |
| 2,700 | | | 30 × 50 4.56 | 35 × 40 4.67 | | | | 35 × 50 4.88 | | | | |
| 3,300 | | | | 35 × 50 5.40 | | | | | | | | |

| μF \ Vdc / ØD | 315 | | | | 400 | | | | 450 | | | |
|---------------|-----------------|-------------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|-----------------|-------------------|-----------------|-----------------|
| | 22 | 25.4 | 30 | 35 | 22 | 25.4 | 30 | 35 | 22 | 25.4 | 30 | 35 |
| 100 | | | | | | | | | 22 × 25 0.70 | | | |
| 120 | | | | | 22 × 25 0.77 | | | | 22 × 30 0.81 | | | |
| 150 | | | | | 22 × 30 0.90 | | | | 22 × 35 0.92 | 25.4 × 25 0.90 | | |
| 180 | 22 × 25 0.95 | | | | 22 × 35 1.02 | 25.4 × 25 0.99 | | | 22 × 40 1.02 | 25.4 × 35 1.05 | 30 × 25 1.06 | |
| 220 | 22 × 30 1.10 | | | | 22 × 40 1.15 | 25.4 × 30 1.13 | | | 22 × 45 1.17 | 25.4 × 35 1.16 | 30 × 30 1.18 | |
| 270 | 22 × 35 1.24 | 25.4 × 25 1.21 | | | 22 × 45 1.29 | 25.4 × 35 1.30 | 30 × 25 1.29 | | | 25.4 × 40 1.32 | 30 × 30 1.30 | 35 × 25 1.37 |
| 330 | 22 × 40 1.40 | 25.4 × 30 1.38 | 30 × 25 1.43 | | 22 × 50 1.47 | 25.4 × 40 1.47 | 30 × 30 1.45 | | | 25.4 × 45 1.48 | 30 × 35 1.51 | 35 × 30 1.54 |
| 390 | 22 × 45 1.56 | 25.4 × 35 1.57 | 30 × 30 1.57 | | | 25.4 × 45 1.63 | 30 × 35 1.61 | 35 × 25 1.65 | | 25.4 × 50 1.65 | 30 × 40 1.65 | 35 × 30 1.67 |
| 470 | 22 × 50 1.70 | 25.4 × 40 1.76 | 30 × 30 1.73 | 35 × 25 1.82 | | 25.4 × 50 1.82 | 30 × 40 1.82 | 35 × 30 1.85 | | | 30 × 45 1.86 | 35 × 35 1.87 |
| 560 | | 25.4 × 45 1.96 | 30 × 35 1.93 | 35 × 30 2.02 | | | 30 × 45 2.04 | 35 × 35 2.05 | | | | 35 × 40 2.05 |
| 680 | | | 30 × 40 2.19 | 35 × 30 2.20 | | | 30 × 50 2.30 | 35 × 40 2.34 | | | | 35 × 50 2.44 |
| 820 | | | 30 × 45 2.47 | 35 × 35 2.48 | | | | 35 × 45 2.63 | | | | |
| 1,000 | | | | 35 × 40 2.83 | | | | 35 × 50 2.96 | | | | |
| 1,200 | | | | 35 × 45 3.18 | | | | | | | | |

← Case Size ØD×L(mm)
 ← Rated Ripple Current(Arms/105°C, 120Hz)

RATINGS OF TLS Series

| μF | V _{DC} ∅ D | 500 | | | | 550 | | |
|---------|------------------------|--|-----------------|-----------------|-------------------|-----------------|-----------------|----|
| | | 22 | 25.4 | 30 | 35 | 25.4 | 30 | 35 |
| 56 | 22 × 35 0.41 | | | | | | | |
| 68 | 22 × 40 0.48 | 25.4 × 30 0.46 | | | | | | |
| 82 | 22 × 45 0.56 | 25.4 × 35 0.54 | | | 25.4 × 40 0.52 | | | |
| 100 | 22 × 50 0.64 | 25.4 × 40 0.63 | 30 × 30 0.61 | | 25.4 × 50 0.60 | 30 × 35 0.55 | | |
| 120 | | 25.4 × 45 0.73 | 30 × 35 0.72 | | 25.4 × 50 0.72 | 30 × 40 0.70 | | |
| 150 | | 25.4 × 50 0.78 | 30 × 40 0.85 | 35 × 30 0.83 | | 30 × 45 0.80 | 35 × 35 0.75 | |
| 180 | | | 30 × 45 0.98 | 35 × 35 0.96 | | 30 × 50 0.95 | 35 × 40 0.93 | |
| 220 | | | 30 × 50 1.03 | 35 × 40 1.13 | | 30 × 60 0.90 | 35 × 50 0.95 | |
| 270 | | | 30 × 60 1.24 | 35 × 45 1.31 | | 30 × 70 1.00 | 35 × 55 1.05 | |
| 330 | | | | 35 × 50 1.38 | | | 35 × 60 1.15 | |
| 390 | | Case Size ∅ D × L (mm) → | | 35 × 60 | | | 35 × 70 | |
| | | Rated Ripple Current (Arms/105°C, 120Hz) → | | 1.63 | | | 1.50 | |