

# TR Series

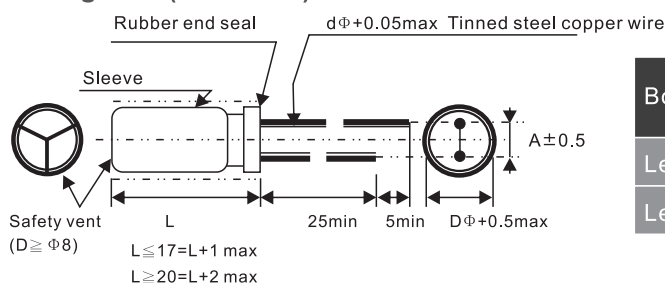


- 105°C, 2000 hours standard series (紋波疊加)
- 採用了新型高穩定、高導電率電解液、高信賴技術

• SPECIFICATIONS

| Items   | Characteristics   |                                       |      |      |      |      |      |      |      |  |
|---|---|---------------------------------------|------|------|------|------|------|------|------|--|
| Category<br>Temperature Range                                     | - 40 to +105°C  |                                       |      |      |      |      |      |      |      |  |
| Rated Voltage Range   | 6.3vto 100Vdc   |                                       |      |      |      |      |      |      |      |  |
| Capacitance Tolerance   | ± 20% (M) (at 20°C ,120Hz)  |                                       |      |      |      |      |      |      |      |  |
| Leakage Current   | I=0.01CV or 3 μA , whichever is greater.<br>Where, I :Max. Leakage current (μA).<br>C : Nominal capacitance (μF) .V :Rated voltage(V) (at 20°C , after 2 minutes) |                                       |      |      |      |      |      |      |      |  |
| Dissipation Factor (tan δ)  | Rated voltage (Vdc)   | 6.3V                                  | 10V  | 16V  | 25V  | 35V  | 50V  | 63V  | 100V |  |
|   | tan δ (Max.)  | 0.22                                  | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.08 |  |
| For capacitance>1000uF.and 2% per another 1000uF (at 20°C ,120Hz) |   |                                       |      |      |      |      |      |      |      |  |
| Low Temperature Characteristics                                   | Impedance ration max at 120Hz   |                                       |      |      |      |      |      |      |      |  |
|   | Working voltage   | 6.3v                                  | 10v  | 16v  | 25v  | 35v  | 50v  | 63v  | 100v |  |
|   | Z-25°C/ Z+20°C  | 5                                     | 4    | 3    | 2    | 2    | 2    | 2    | 2    |  |
| Z-40°C/ Z+20°C  | 10  | 8                                     | 6    | 4    | 3    | 3    | 3    | 3    |      |  |
| Load. Life  | The following specifications shall be satisfied when the capacitors are restored to 20°C after the voltage is applied for 2000 hours at 105°C                     |                                       |      |      |      |      |      |      |      |  |
|   | Capacitance change  | ≤ ±20% of the initial value           |      |      |      |      |      |      |      |  |
|   | DF (tan δ)  | ≤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 exposing them for 1000 hours at 105°C without voltage applied.     |                                       |      |      |      |      |      |      |      |  |
|   | Capacitance change  | ≤ ±20% of the initial value           |      |      |      |      |      |      |      |  |
|   | DF (tan δ)  | ≤200 % of the initial specified value |      |      |      |      |      |      |      |  |
|   | Leakage current   | ≤ The initial specified value         |      |      |      |      |      |      |      |  |
| Ripple Current Multiplier   | Temperature coefficient   |                                       |      |      |      |      |      |      |      |  |
|   | Temperature(°C)   | ~55                                   | 60   | 70   | 85   | 105  |      |      |      |  |
|   | Factor  | 2.20                                  | 2.10 | 2.00 | 1.75 | 1.00 |      |      |      |  |
|   | Frequency coefficient   |                                       |      |      |      |      |      |      |      |  |
|   | cap   | freq                                  | 60   | 120  | 1k   | 10k  | 100k |      |      |  |
|   | ~100  |                                       | 0.70 | 1.00 | 1.40 | 1.50 | 1.50 |      |      |  |
| 100~1000  |   | 0.75                                  | 1.00 | 1.30 | 1.35 | 1.35 |      |      |      |  |
| 1000up  |   | 0.80                                  | 1.00 | 1.12 | 1.15 | 1.15 |      |      |      |  |

• Diagram: (Unit: mm)

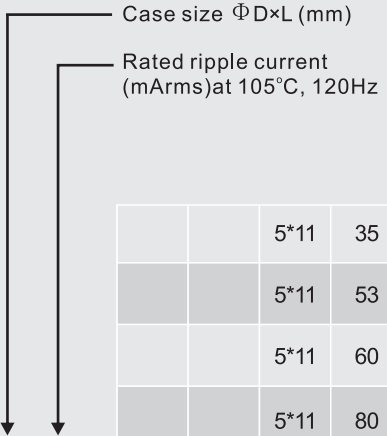


| Body Dia ΦD  | 5   | 6   | 8   | 10     | 13     |     | 16  | 18     |
|--------------|-----|-----|-----|--------|--------|-----|-----|--------|
|              |     |     |     | L ≤ 21 | L ≥ 25 |     |     |        |
| Lead Dia Φd  | 0.5 |     |     | 0.6    | 0.6    | 0.8 | 0.8 | 0.8    |
| Lead Space A | 2   | 2.5 | 3.5 | 5      |        | 7.5 |     | 7.5/10 |



● STANDARD RATING

| Vdc<br>μF | 6.3v   |       | 10v            |            | 16v                    |                   | 25v            |                | 35v            |            | 50v            |            | 63v             |            | 100v   |       |
|-----------|--------|-------|----------------|------------|------------------------|-------------------|----------------|----------------|----------------|------------|----------------|------------|-----------------|------------|--------|-------|
|           | 0.1    |       |                |            |                        |                   |                |                |                |            |                | 5*11       | 2.1             |            |        |       |
| 0.22      |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 3.5        |                 |            |        |       |
| 0.33      |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 5.0        |                 |            |        |       |
| 0.47      |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 7.0        |                 |            | 5*11   | 12    |
| 1.0       |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 15         | 5*11            | 15         | 5*11   | 22    |
| 2.2       |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 29         | 5*11            | 31         | 5*11   | 33    |
| 3.3       |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 35         | 5*11            | 37         | 5*11   | 40    |
| 4.7       |        |       |                |            |                        |                   |                |                |                |            | 5*11           | 42         | 5*11            | 45         | 5*11   | 48    |
| 10        |        |       |                |            | 5*11                   | 35                | 5*11           | 35             | 5*11           | 40         | 5*11           | 65         | 5*11            | 60         | 6.3*11 | 65    |
| 22        |        |       |                |            | 5*11                   | 53                | 5*11           | 58             | 5*11           | 65         | 5*11           | 80         | 6.3*11          | 95         | 8*12   | 110   |
| 33        |        |       |                |            | 5*11                   | 60                | 5*11           | 75             | 5*11           | 85         | 6.3*11         | 115        | 6.3*11          | 130        | 10*13  | 155   |
| 47        |        |       |                |            | 5*11                   | 80                | 5*11           | 85             | 5*11<br>6.3*11 | 105        | 6.3*11         | 140        | 6.3*12<br>8*12  | 150        | 10*17  | 210   |
| 100       | 5*11   | 95    | 5*11           | 105        | 5*11<br>6.3*11         | 130               | 5*11<br>6.3*11 | 160            | 6.3*11<br>8*12 | 170        | 8*12           | 235        | 8*14<br>10*12.5 | 280        | 10*20  | 350   |
| 220       | 6.3*11 | 153   | 6.3*11         | 195        | 6.3*11<br>8*12         | 200<br>210        | 8*12           | 290            | 8*12<br>8*16   | 290        | 10*17          | 510        | 10*20<br>13*21  | 490<br>530 | 13*25  | 710   |
| 330       | 6.3*11 | 220   | 6.3*11         | 250        | 6.3*15<br>8*12         | 320               | 8*12<br>8*14   | 340            | 10*17          | 420        | 10*20          | 680        | 13*20           | 680        | 16*25  | 860   |
| 470       | 6.3*11 | 240   | 6.3*11<br>8*12 | 260<br>285 | 8*12<br>8*14           | 370               | 8*14<br>8*16   | 470            | 10*17<br>10*20 | 510<br>540 | 10*20<br>13*20 | 720<br>810 | 13*25           | 880        | 16*32  | 1,100 |
| 1,000     | 8*12   | 450   | 8*16<br>10*17  | 560        | 8*16<br>10*17<br>10*20 | 620<br>690<br>720 | 10*20          | 830            | 13*21          | 1,400      | 13*25          | 1,250      | 16*32           | 1,500      |        |       |
| 2,200     | 10*20  | 820   | 10*20          | 895        | 10*30<br>13*21         | 1,150             | 13*25          | 1,250          | 13*30<br>16*25 | 1,800      | 16*36<br>18*25 | 1,960      |                 |            |        |       |
| 3,300     | 10*25  | 1,030 | 10*25<br>13*20 | 1,200      | 13*25                  | 1,400             | 16*32          | 1,750          | 18*32          | 2,200      | 18*36          | 2,500      |                 |            |        |       |
| 4,700     | 13*25  | 1,250 | 13*25          | 1,580      | 16*32                  | 1,800             | 16*25<br>16*36 | 1,960<br>2,130 | 18*40          | 2,400      | 22*35          | 2,800      |                 |            |        |       |
| 6,800     | 16*25  | 1,750 | 16*32          | 1,950      | 18*36                  | 2,100             | 18*36          | 2,500          |                |            |                |            |                 |            |        |       |
| 10,000    | 16*32  | 1,980 | 18*36          | 2,050      | 18*36                  | 2,500             |                |                |                |            |                |            |                 |            |        |       |
| 15,000    | 18*36  | 2,530 |                |            |                        |                   |                |                |                |            |                |            |                 |            |        |       |



Ripple Current : mA/rms at 120Hz 105°C

Chip Type SMD  
Miniature Type  
General Purpose  
High Frequency Low Impedance  
High Voltage High Reliability  
Non-polar Type  
Large Size Snap-in  
Large Size Screw  
X Metallized Polypropylene Film Capacitors