

# TL Series

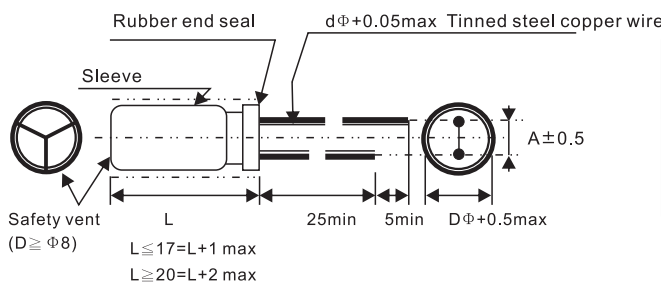
• 105°C, 2000~5000 hours LOW ESR series (紋波疊加)



• SPECIFICATIONS

Items	Characteristics									
Category Temperature Range	- 40 to +105°C									
Rated Voltage Range	6.3V to 63Vdc									
Capacitance Tolerance	± 20% (M) (at 20°C , 120Hz)									
Leakage Current	I=0.01CV or 3 μA , whichever is greater. Where, I :Max. Leakage current (μA). 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	(at 20°C , 120Hz)	
	tan δ (Max.)	0.19	0.16	0.14	0.12	0.10	0.08	0.08		
For capacitance>1000uF.and 2% per another 1000uF										
Low Temperature Characteristics	Impedance ration max at 120Hz									
	Working voltage	6.3v	10v	16v	25v	35v	50v	63v		
	Z-25°C/ Z+20°C	4	3	2	2	2	2	2		
Z-40°C/ Z+20°C	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 the specified at 105°C									
	Capacitance change	≤ ±20% of the initial value						φ D	load life	
	DF (tan δ)	≤ 200 % of the initial specified value						φ 5~6	2000h	
	Leakage current	≤ The initial specified value						φ 8	3000h	
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						φ 10~	5000h	
	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		0.30	0.40	0.75	0.90	1.00			
100~1000		0.40	0.50	0.85	0.94	1.00				
1000up		0.50	0.75	0.90	0.95	1.00				

• 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

Cap(μF)	Vdc	6.3v			10v		
		Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)	Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)
100					5*11	210	0.55
220		6.3*11	320	0.58	6.3*11	340	0.22
330		8*12	320	0.28	8*12	380	0.13
470		8*12	640	0.20	8*12	640	0.09
680		8*12	720	0.12	8*16	840	0.092
820		8*16	850	0.095	8*20	920	0.085
1000		8*16	1110	0.089	10*20	1060	0.070
1200		10*17	1400	0.068	10*20	1290	0.039
1500		10*20	1720	0.055	10*20	1450	0.040
2200		10*25	1950	0.045	10*25/13*21	1580/1690	0.045/0.040
3300		10*30	2250	0.045	10*30	1800	0.038
4700		13*25	2450	0.038	13*30	2200	0.035
6800		16*25	2750	0.035	16*32	2550	0.030

Maximum Ripple Current:(105°C 100KHz)

Maximum Impedance:( 20°C 100KHz )

● STANDARD RATING

Cap(μF)	Vdc	16v			25v		
		Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)	Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)
47					5*11	210	0.22
68		6.3*11	210	0.59	6.3*11	340	0.22
100		6.3*11	340	0.42	6.3*11	340	0.22
220		8*12	640	0.20	8*12	640	0.13
330		8*12	640	0.13	8*16	840	0.087
470		8*16	800	0.078	10*17	1050	0.066
680		8*20	1050	0.070	10*20	1080	0.049
820		10*17	1220	0.055	13*20	1450	0.045
1000		10*25	1180	0.049	13*21	1450	0.039
1200		10*25/13*21	1450/1550	0.043/0.040	13*25	1700	0.040
1500		13*25	1650	0.040	13*25	1950	0.038
2200		10*30	1920	0.030	13*30	2360	0.035
3300		13*25	2450	0.035	16*32	2700	0.030
4700		16*32	2550	0.030	18*32	2800	0.028
6800		18*32	2800	0.028			

Maximum Ripple Current:(105°C 100KHz)

Maximum Impedance:( 20°C 100KHz )

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



◆ TL series 105°C 長壽命,高紋波,低阻抗

● STANDARD RATING

Cap(μF) Item	35v			50v			
	Vdc	Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)	Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)
22		5*11	210	0.58	6.3*11	180	0.70
33		5*11	210	0.58	6.3*11	290	0.30
47		6.3*11	340	0.22	8*12	550	0.25
68		6.3*11	340	0.22	8*12	550	0.17
100		8*12	640	0.13	8*12	550	0.12
220		10*17	800	0.089	10*20	880	0.090
330		10*17	1060	0.065	13*20	1200	0.086
470		10*20	1300	0.049	13*20	1400	0.068
680		13*20	1400	0.040	13*21	1550	0.058
820		13*21	1550	0.038	13*25	1700	0.048
1000		13*25	1700	0.031	16*25	1900	0.042
1200		13*25	1900	0.038	16*32	2100	0.035
1500		13*30	2100	0.035	16*36	2420	0.030
2200		16*25	2700	0.030			
3300		18*36	2800	0.028			

Maximum Ripple Current:(105°C 100KHz)

Maximum Impedance:( 20°C 100KHz)

● STANDARD RATING

Cap(μF) Item	63v			
	Vdc	Case size D*L(mm)	Ripple Current (mA/ms)	Impedance (Ω)
22		6.3*11	115	1.2
33		6.3*11	115	1.2
47		8*12	230	0.63
68		8*12	230	0.63
100		10*15	280	0.35
220		10*25	650	0.160
330		13*21	710	0.130
470		13*25	820	0.075
680		16*25	1200	0.065
820		16*32	1350	0.056
1000		16*32	1450	0.049
1200		18*32	1680	0.045

Maximum Ripple Current:(105°C 100 KHz)

Maximum Impedance:( 20°C 100KHz)