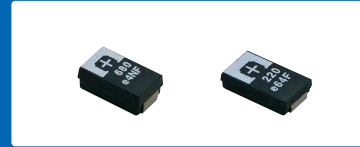


# TPF Series Low ESR · High Capacitance Products

## Feature

TPF series has low ESR and high capacitance at standard form.

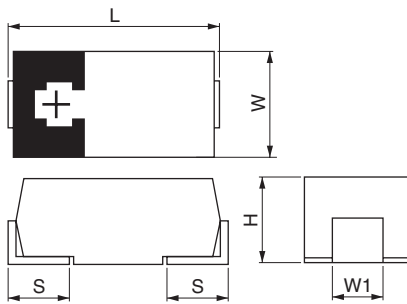


## Specifications

Items	Condition	Characteristics		
Operating Temperature range	—	-55 to +105 (°C)		
Rated capacitance range	120Hz/20°C	150 to 680 (μF)		
Capacitance tolerance	120Hz/20°C	M:±20%		
Rated voltage	—	2.0 to 10.0 (V.DC)		
Dissipation Factor (D.F.)	120Hz/20°C	10.0 (%)		
Leakage current	Rated voltage applied, after 5 minutes	Please see the attached characteristics list		
Equivalent series resistance (E.S.R. mΩmax.)	100kHz/20°C	Please see the attached characteristics list		
Temperature characteristics of Impedance ratio	100kHz/+20°C	-55°C	Z/Z <sub>20°C</sub>	1.0 to 2.0
		+105°C	Z/Z <sub>20°C</sub>	0.6 to 1.0
Endurance	105°C, 2000h, rated voltage applied	ΔC/C	Within±20% of the initial value	
		D.F.	≤ 1.5 times the initial limit	
		L.C.	≤ The initial limit	
Damp heat (Steady state)	60°C, 90 to 95%RH, 500h, No voltage applied	ΔC/C	Within+50%, -20% of the initial value (D2E size) Within+40%, -20% of the initial value (Except for the above model)	
		D.F.	≤ 1.5 times the initial limit	
		L.C.	≤ 3 times the initial limit	
Surge	105°C, 1000 cycles, 1kΩ discharge resistance, surge voltage applied	ΔC/C	Within±5% of the initial value	
		D.F.	≤ The initial limit	
		L.C.	≤ 3 times the initial limit	

## Dimensions

(unit: mm)



Size code	L (±0.3)	W (±0.2)	H*1 (±0.1)	S (±0.1)	W1 (±0.1)
D3L	7.3	4.3	2.8	1.3	2.4
D2E	7.3	4.3	1.8	1.3	2.4

\*1 ±0.1: D2E

## Size List

μF	RV (SV)	2.0	2.5	4.0	6.3	10.0
		(2.6)	(3.2)	(5.0)	(8.0)	(13.0)
150						D3L
220		D2E			D3L	
330		D2E	D3L	D3L	D3L	
470		D2E	D3L	D3L		
680			D3L			

## Characteristics List

Size code	SANYO Part number	Rated Voltage (V)	Rated Temperature (°C)	Rated Capacitance (μF)	Category Voltage (V)	Category Temperature (°C)	D.F. (%max.)	L.C. (μA) max./5min.	E.S.R. (mΩmax.) 100kHz/20°C	Maximum allowable ripple current (mA <sub>rms</sub> ) 100kHz <sup>*1</sup>	MSL	
											Reflow Temp. ≤ 260°C	Reflow Temp. ≤ 250°C
D3L	10TPF150ML	10.0	105	150	10.0	105	10.0	150.0	15	3600	3	2a
	6TPF330M9L	6.3	105	330	6.3	105	10.0	207.9	9	3900		
	6TPF220ML	6.3	105	220	6.3	105	10.0	138.6	12	4000		
	4TPF470ML	4.0	105	470	4.0	105	10.0	188.0	10	4400		
	4TPF330ML	4.0	105	330	4.0	105	10.0	132.0	12	4000		
	2R5TPF680ML	2.5	105	680	2.5	105	10.0	170.0	10	4400		
	2R5TPF680M7L	2.5	105	680	2.5	105	10.0	170.0	7	4400		
	2R5TPF680M6L	2.5	105	680	2.5	105	10.0	170.0	6	4400		
	2R5TPF470ML	2.5	105	470	2.5	105	10.0	117.5	10	4400		
	2R5TPF470M7L	2.5	105	470	2.5	105	10.0	117.5	7	4400		
D2E	2TPF470M6	2.0	105	470	2.0	105	10.0	188.0	6	4400	(*2)	
	2TPF330M6	2.0	105	330	2.0	105	10.0	132.0	6	4400		
	2TPF220M6	2.0	105	220	2.0	105	10.0	188.0	6	4400		

\*1 100k to 500kHz, 45°C \*2 Under evaluation