

Surface mount type

TPL·TPLF Series

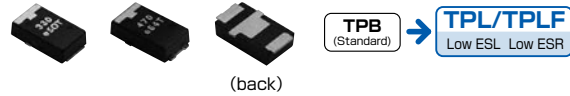
Up Grade

RoHS compliance

Low ESR · Low ESL

Face down terminal type

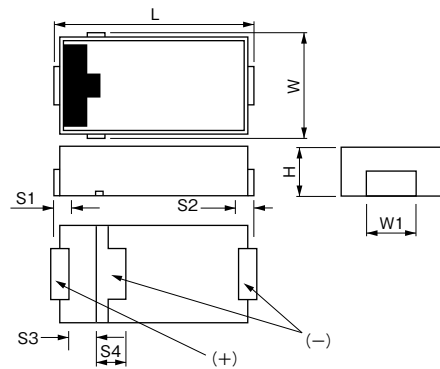
TPL series has a low ESL and low ESR advantage using an unique face down terminal structure.



Specifications

Items	Condition			Specifications			
Rated voltage (V)	—			2.0	2.5	4.0	6.3
Surge voltage (V)	—			2.3	2.9	4.6	7.2
Category temperature range (°C)	—			-55 to +105			
Capacitance tolerance (%)	120Hz/20°C			M : ±20			
Rated capacitance range (μF)	120Hz/20°C			100 to 560			
Dissipation Factor (DF)	120Hz/20°C			Please see the attached characteristics list			
Leakage current	Rated voltage applied, after 5 minutes			Please see the attached characteristics list			
Equivalent series resistance (ESR)	100kHz/20°C			Please see the attached characteristics list			
Characteristics of impedance ratio at high temp. and low temp.	100kHz/+20°C	-55°C	Z/Z _{20°C}	0.6 to 2.0			
		+105°C	Z/Z _{20°C}	0.6 to 2.0			
Endurance	105°C, 2,000h*, rated voltage applied (* 2R5TPL330M9U:1,000h)	ΔC/C		Within±20% of the initial value			
		DF		≤ 1.5 times of the initial limit			
		LC		Within the initial limit			
Damp heat (Steady State)	60°C, 90 to 95%RH, 500h, No-applied voltage	ΔC/C		Within+50%, -20% of the initial value			
		DF		≤ 1.5 times of the initial limit			
		LC		≤ 3 times of the initial limit			
Surge	105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied	ΔC/C		Within±5% of the initial value			
		DF		Within the initial limit			
		LC		≤ 3 times of the initial limit			

Dimensions



Size list

RV : Rated voltage

RV	2.0	2.5	4.0	6.3
μF				
100				D12T
150			D12T	D15T
220	D12T, D2T	D15T	D15T	D15T
330	D2T	D15T, D2T		
470	D2T	D2T		
560	D2T			

(unit: mm)

Size code	L ±0.3	W ±0.2	H ±0.1	S1/S2 ±0.2	S3 ±0.1	S4 ±0.2	W1 ±0.1
D12T	7.3	4.3	1.1	1.1	1.1	2.3	2.8
D15T	7.3	4.3	1.4	1.1	1.1	2.3	2.8
D2T	7.3	4.3	1.8	1.1	1.1	2.3	2.8

T P L · T P L F

POSCAP

POSCAP Line-up

Guidelines and precautions for use

Series system diagram

Image of case size

Products list

Explanation of part numbers

Packing specifications

Marking

Recommended land pattern dimension

Recommended soldering condition

Fundamental structure

Characteristics

Reliability

Selection guide

Technical data

TPSF

TPU

TPL·TPLF

TPF

TPG

TPE

TPB

TPC

TPD

TA

TH

TQC

Tantalum Solid Capacitors with Conductive Polymer

■ TPL series characteristics list

Size code	Part number	Rated voltage (V)	Rated temperature (°C)	Rated capacitance (μF)	Category voltage (V)	Category temperature (°C)	DF (% max)	LC (μA) max/5min.	ESR (mΩmax) 100kHz/20°C	ESL (nHmax) *Typical value	Maximum allowable ripple current (mA rms) 100kHz※1	MSL	
												Reflow temp. ≤ 260°C	Reflow temp. ≤ 250°C
D12T	6TPL100MD※2	6.3	105	100	6.3	105	10.0	126.0	25	1.0	2100	3	2a
	4TPL150MD	4.0	105	150	4.0	105	10.0	120.0	25	1.0	2100	3	2a
	2TPL220MD※2	2.0	105	220	2.0	105	10.0	88.0	25	1.0	2100	3	2a
D15T	6TPL220MAU	6.3	85	220	5.0	105	10.0	277.2	25	0.9	2100	3	2a
	6TPL150MU	6.3	105	150	6.3	105	10.0	189.0	25	0.9	2100	3	2a
	4TPL220MKU	4.0	105	220	4.0	105	10.0	176.0	20	0.9	2400	3	2a
	2R5TPL330MFU	2.5	105	330	2.5	105	10.0	165.0	15	0.9	2800	3	2a
	2R5TPL330M9U	2.5	105	330	2.5	105	10.0	165.0	9	0.9	3600	3	2a
	2R5TPL220MIU	2.5	105	220	2.5	105	10.0	110.0	18	0.9	2500	3	2a
D2T	2R5TPL470MC	2.5	105	470	2.5	105	10.0	117.5	12	0.8	3400	3	2a
	2R5TPL470M9	2.5	105	470	2.5	105	10.0	117.5	9	0.8	3900	3	2a
	2R5TPL470M8	2.5	105	470	2.5	105	10.0	235.0	8	0.8	4100	3	2a
	2R5TPL470M7※2	2.5	105	470	2.5	105	10.0	235.0	7	0.8	4400	3	2a
	2R5TPL330MC	2.5	105	330	2.5	105	10.0	82.5	12	0.8	3400	3	2a
	2R5TPL330M9	2.5	105	330	2.5	105	10.0	82.5	9	0.8	3900	3	2a
	2R5TPL330M8	2.5	105	330	2.5	105	10.0	165.0	8	0.8	4100	3	2a
	2R5TPL330M7※2	2.5	105	330	2.5	105	10.0	165.0	7	0.8	4400	3	2a

※1 100k to 500kHz, 45°C
 ※2 Under development

■ TPLF series characteristics list

Size code	Part number	Rated voltage (V)	Rated temperature (°C)	Rated capacitance (μF)	Category voltage (V)	Category temperature (°C)	DF (% max)	LC (μA) max/5min.	ESR (mΩmax) 100kHz/20°C	ESL (nHmax) *Typical value	Maximum allowable ripple current (mA rms) 100kHz※1	MSL	
												Reflow temp. ≤ 260°C	Reflow temp. ≤ 250°C
D2T	2TPLF560M6※2	2.0	105	560	2.0	105	10.0	224.0	6	0.5	4700	3	2a
	2TPLF560M5※2	2.0	105	560	2.0	105	10.0	224.0	5	0.5	5200	3	2a
	2TPLF470M6	2.0	105	470	2.0	105	10.0	188.0	6	0.5	4700	3	2a
	2TPLF470M5	2.0	105	470	2.0	105	10.0	188.0	5	0.5	5200	3	2a
	2TPLF470M4E	2.0	105	470	2.0	105	10.0	188.0	4/500kHz	0.5	5200	3	2a
	2TPLF330M7	2.0	105	330	2.0	105	10.0	132.0	7	0.5	4400	3	2a
	2TPLF330M6	2.0	105	330	2.0	105	10.0	132.0	6	0.5	4700	3	2a
	2TPLF330M5	2.0	105	330	2.0	105	10.0	132.0	5	0.5	5200	3	2a
	2TPLF220M7	2.0	105	220	2.0	105	10.0	88.0	7	0.5	4400	3	2a
	2TPLF220M6	2.0	105	220	2.0	105	10.0	88.0	6	0.5	4700	3	2a

Please refer to page 65 for the compensation coefficient of maximum allowable ripple current.

※1 100k to 500kHz, 45°C
 ※2 Under development