Surface mount type

TPU Series

RoHS compliance

Small size・Low profile

Face down terminal type

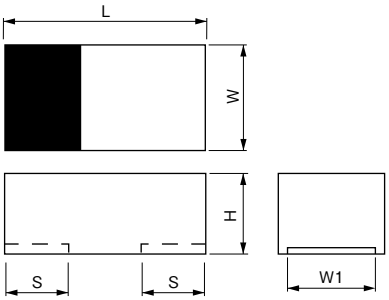
TPU series has a real advantage in size-sensitive applications using a face down terminal structure.

TPC → TPU (Small size, Low profile)

■ Specifications

Items	Condition		Specifications			
Rated voltage (V)	–		2.5	4.0	6.3	10
Surge voltage (V)	–		2.9	4.6	7.2	12
Category temperature range (℃)	–		−55 to +85			
Capacitance tolerance (%)	120Hz/20℃		M : ±20			
Rated capacitance range (μF)	120Hz/20℃		4.7 to 150			
Dissipation Factor (DF)	120Hz/20℃		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℃		Please see the attached characteristics list			
Characteristics of impedance ratio at high temp. and low temp.	100kHz/+20℃	−55℃ Z/Z20℃	0.6 to 2.0			
		+85℃ Z/Z20℃	0.6 to 2.0			
Endurance	85℃, 1,000h, rated voltage applied	△C/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℃, 90 to 95%RH, 500h, No-applied voltage	△C/C	Within+40%,−20% of the initial value			
		DF	≤ 1.5 times of the initial limit			
		LC	≤ 3 times of the initial limit			
Surge	85℃, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied	△C/C	Within±5% of the initial value			
		DF	Within the initial limit			
		LC	≤ 3 times of the initial limit			

■ Dimensions



(unit: mm)

Size code	L ±0.1※1	W ±0.1※1	H ±0.1	S ±0.1※1	W1 ±0.1
S09	2.0	1.25	0.9	0.5	0.9
S11	2.0	1.25	1.1	0.5	0.9
A09	3.2	1.6	0.9	0.8	1.2
B09	3.5	2.8	0.9	0.8	2.2

※1 ±0.2:A09,B09

■ Size list

RV : Rated voltage

μF \ RV	2.5	4.0	6.3	10
4.7				S09
10			S09	
15		S09		
22	S09		S09	
33		S09	S11	A09
47	S09	S11	A09	
68	S11	A09		
100	A09			
150			B09	

■ TPU series characteristics list

Size code	Part number	Rated voltage (V)	Rated temperature (℃)	Rated capacitance (μF)	Category voltage (V)	Category temperature (℃)	DF (% max)	LC (μA) max/5min.	ESR (mΩmax) 100kHz/20℃	Maximum allowable ripple current (mArms) 100kHz※1	MSL Reflow temp. ≤ 260℃	MSL Reflow temp. ≤ 250℃
S09	10TPU4R7MSI	10	85	4.7	10	85	10.0	4.7	300	360	—	3
	6TPU22MSI	6.3	85	22	6.3	85	10.0	27.7	150	510	—	3
	6TPU10MSI	6.3	85	10	6.3	85	10.0	6.3	250	400	—	3
	4TPU33MSI	4.0	85	33	4.0	85	10.0	26.4	150	510	—	3
	4TPU15MSI	4.0	85	15	4.0	85	10.0	6.0	250	400	—	3
	2R5TPU47MSI	2.5	85	47	2.5	85	10.0	23.5	150	510	—	3
	2R5TPU22MSI	2.5	85	22	2.5	85	10.0	5.5	250	400	—	3
S11	6TPU33MSK	6.3	85	33	6.3	85	10.0	41.6	150	510	—	3
	4TPU47MSK	4.0	85	47	4.0	85	10.0	37.6	150	510	—	3
	2R5TPU68MSK	2.5	85	68	2.5	85	10.0	34.0	150	510	—	3
A09	10TPU33MAI	10	85	33	10	85	10.0	33.0	150	510	3	3
	6TPU47MAI	6.3	85	47	6.3	85	10.0	29.6	150	510	3	3
	4TPU68MAI	4.0	85	68	4.0	85	10.0	27.2	150	510	3	3
	2R5TPU100MAI	2.5	85	100	2.5	85	10.0	25.0	150	510	3	3
B09	6TPU150MBI※2	6.3	85	150	6.3	85	10.0	94.5	100	670	3	3

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

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