

TPE Series

Low ESR Products (C3,C2,B2 Size)

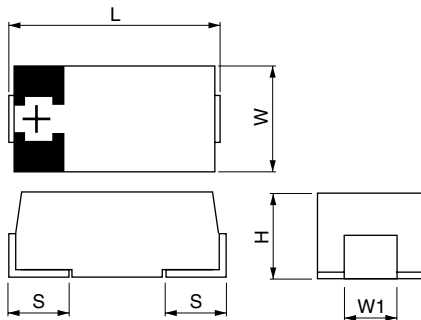


This products is the miniaturized version of TPE series.

Specifications

Items	Condition	Specifications					
Rated voltage (V)	—	2.0	2.5	4.0	6.3	8.0	10
Surge voltage (V)	—	2.6	3.2	5.0	8.0	10	13
Category temperature range (°C)	—	-55 to +105					
Capacitance tolerance (%)	120Hz/20°C	M : ±20					
Rated capacitance range (μF)	120Hz/20°C	47 to 330					
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, (B2size:1,000h) rated voltage applied *Rated temp. 85°C products: 85°C, 1,000h, rated voltage applied	ΔC/C		Within±20% of the initial value			
		DF		≤ 1.5 times the initial limit			
		LC		≤ The initial limit			
Damp heat (Steady State)	60°C, 90 to 95%RH, 500h, No-applied voltage	ΔC/C		Within+50%, -20% (2R5TPE220MDGB (MAZB, MAPB), 2R5TPE330MAZB, 2TPE330MIB (MFB, MAFB, MAFGB, MADGB), 2R5TPE330MFC2 (CC2, 9C2)) Within+40%, -20% of the initial value (Except for the above model)			
		DF		≤ 1.5 times the initial limit			
		LC		≤ 3 times the initial limit			
Surge	105°C, 1,000 times, 1kΩ discharge resistance, surge voltage applied *Rated temp 85°C products: 85°C, 1,000 times	ΔC/C		Within±5% of the initial value			
		DF		≤ The initial limit			
		LC		≤ 3 times the initial limit			

Dimensions



(unit: mm)

Size code	L ±0.2	W ±0.2	H ±0.1※1	S ±0.2	W1 ±0.1
B2	3.5	2.8	1.9	0.8	2.2
C2	6.0	3.2	1.8	1.3	1.8
C3	6.0	3.2	2.5	1.3	1.8

※1 ±0.2:C3

Size List

RV : Rated voltage

RV μF	2.0	2.5	4.0	6.3	8.0	10
47						B2
100			B2	B2	C2	
120				B2		
150		B2	B2	B2,C2		C3
180						C3
220		B2	B2,C2	C3		
330	B2	B2,C2				

TPE Series Characteristics List

Size code	SANYO Part number	Rated Voltage (V)	Rated Temperature (°C)	Rated Capacitance (μF)	Category Voltage (V)	Category Temperature (°C)	DF (%max)	LC (μA) max/5min.	ESR (mΩ max) 100kHz/20°C	Maximum allowable ripple current (mA rms) 100kHz※1	MSL	
											Reflow Temp. ≤ 260°C	Reflow Temp. ≤ 250°C
B2	10TPE47MAZB	10	85	47	8.0	105	8.0	47.0	35	1400	3	3
	6TPE150MAZB	6.3	85	150	5.0	105	8.0	94.5	35	1400		
	6TPE120MAZB	6.3	85	120	5.0	105	8.0	75.6	35	1400		
	6TPE100MZB	6.3	105	100	6.3	105	8.0	63.0	35	1400		
	6TPE100MPB								25	1600		
	6TPE100MAZB	6.3	85	100	5.0	105	8.0	63.0	35	1400		
	4TPE220MAZB	4.0	85	220	3.2	105	8.0	88.0	35	1400		
	4TPE150MAZB	4.0	85	150	3.2	105	8.0	60.0	35	1400		
	4TPE150MAUB								30	1500		
	4TPE100MZB	4.0	105	100	4.0	105	8.0	40.0	35	1400		
	2R5TPE330MAZB	2.5	85	330	2.0	105	8.0	82.5	35	1400		
	2R5TPE220MZB	2.5	105	220	2.5	105	8.0	55.0	35	1400		
	2R5TPE220MPB								25	1600		
	2R5TPE220MLB								21	1700		
	2R5TPE220MIB	2.5	105	220	2.5	105	8.0	110.0	18	1800		
	2R5TPE220MFB								15/300k	1800		
	2R5TPE220MDGB	2.5	105	220	2.5	105	8.0	110.0	13/300k	2000		
	2R5TPE220MAZB	2.5	85	220	2.0	105	8.0	55.0	35	1400		
	2R5TPE220MAPB								25	1600		
	2R5TPE220MAFB	2.5	85	220	2.0	105	8.0	110.0	15	2000		
	2R5TPE150MZB	2.5	105	150	2.5	105	8.0	37.5	35	1400		
	2TPE330MIB	2.0	105	330	2.0	105	8.0	132.0	18	1800		
	2TPE330MFB								15	2000		
	2TPE330MAFGB	2.0	85	330	1.8	105	8.0	132.0	15/300k	1800		
	2TPE330MAFB								15	2000		
	2TPE330MADGB								13/300k	2000		
C2	8TPE100MPC2	8.0	105	100	8.0	105	8.0	80.0	25	2200	3	3
	6TPE150MPC2	6.3	105	150	6.3	105	8.0	94.5	25	2200		
	6TPE150MIC2								18	2600		
	4TPE220MPC2	4.0	105	220	4.0	105	8.0	88.0	25	2200		
	4TPE220MIC2								18	2600		
	4TPE220MFC2								15	2900		
	2R5TPE330MIC2	2.5	105	330	2.5	105	8.0	82.5	18	2600		
	2R5TPE330MFC2								15	2900		
	2R5TPE330MCC2								12	3300		
	2R5TPE330M9C2								9	3700		
C3	10TPE180MGC	10	105	180	10	105	10.0	180	55	1500	—	3
	10TPE150MGC	10	105	150	10	105	10.0	150.0	55	1500	—	
	6TPE220MPC	6.3	105	220	6.3	105	8.0	138.6	25	2400		
	6TPE220MIC	6.3	105	220	6.3	105	8.0	138.6	18	2800		

Please refer to page 141 for the compensation coefficient of maximum allowable ripple current.

※1 100k to 500kHz, 45°C

TPE Series

Low ESR Products (D2E, D3L, D4 Size)

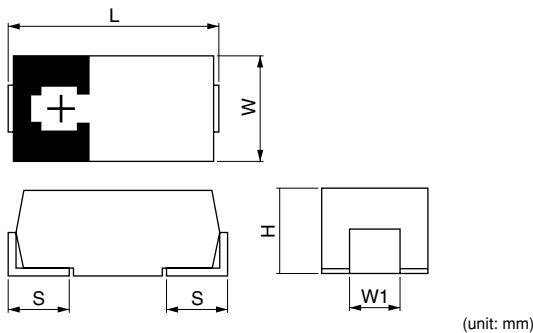


TPE series has low ESR and can aid in the miniaturization of many products.

Specifications

Items	Condition	Specifications			
Rated voltage (V)	—	2.5	4.0	6.3	10
Surge voltage (V)	—	3.2	5.0	8.0	13
Category temperature range (°C)	—	-55 to +105			
Capacitance tolerance (%)	120Hz/20°C	M : ±20			
Rated capacitance range (μF)	120Hz/20°C	68 to 1,500			
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 ※ Rated temp. 85°C products: 85°C, 1,000h, rated voltage applied	ΔC/C		Within±20% of the initial value	
		DF		≤ 1.5 times the initial limit	
		LC		≤ 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 (2R5TPE470M (I,F,C,9,7), 2R5TPE330M (I,F,C,9,7), 2R5TPE220M (I,F,C,9,7), 2R5TPE1000M (I,F), 2R5TPE1500M (F,C)) Within+40%, -20% of the initial value (Except for the above model)	
		DF		≤ 1.5 times the initial limit	
		LC		≤ 3 times the initial limit	
Surge	105°C, 1,000 cycles, 1kΩ discharge resistance, surge voltage applied ※ 6TPE330MAP, 16TPE220MAP: 85°C	ΔC/C		Within±5% of the initial value	
		DF		≤ The initial limit	
		LC		≤ 3 times the initial limit	

Dimensions



Size code	L ±0.3	W ±0.2	H ±0.2※1	S ±0.2	W1 ±0.1
D2E	7.3	4.3	1.8	1.3	2.4
D3L	7.3	4.3	2.8	1.3	2.4
D4	7.3	4.3	3.8	1.3	2.4

※1 ±0.1:D2E

Size List

RV : Rated voltage

RV μF	2.5	4.0	6.3	10
68				D2E
100			D2E	
150		D2E	D2E	
220	D2E	D2E	D2E	D3L
330	D2E	D2E	D2E, D3L	D4
470	D2E	D3L	D4	
680	D3L	D4	D4	
1000	D4			
1500	D4			

TPE Series Characteristics List

Size code	SANYO 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	Maximum allowable ripple current (mA _{rms}) 100kHz※1	MSL	
											Reflow Temp. ≤ 260°C	Reflow Temp. ≤ 250°C
D2E	10TPE68M	10	105	68	10	105	10.0	68.0	25	2400	3	2a
	6TPE330MAP	6.3	85	330	5.0	105	10.0	207.9	25	2400		
	6TPE220MAP	6.3	85	220	5.0	105	10.0	138.6	25	2400		
	6TPE220M	6.3	105	220	6.3	105	10.0	138.6	25	2400		
	6TPE220MI								18	2800		
	6TPE150M	6.3	105	150	6.3	105	10.0	94.5	25	2400		
	6TPE150MI								18	2800		
	6TPE100M	6.3	105	100	6.3	105	10.0	63.0	25	2400		
	6TPE100MI								18	2800		
	4TPE330M	4.0	105	330	4.0	105	10.0	132.0	25	2400		
	4TPE330MI								18	2800		
	4TPE220M	4.0	105	220	4.0	105	10.0	88.0	25	2400		
	4TPE220MI								18	2800		
	4TPE220MF	4.0	105	150	4.0	105	10.0	60.0	15	3100		
	4TPE150M								25	2400		
	4TPE150MI	18	2800									
	2R5TPE470M	2.5	105	470	2.5	105	10.0	117.5	25	2400		
	2R5TPE470MI								18	2800		
	2R5TPE470MF	2.5	105	470	2.5	105	10.0	117.5	15	3100		
	2R5TPE470MC								12	3500		
	2R5TPE470M9	2.5	105	470	2.5	105	10.0	235.0	9	3900		
	2R5TPE470M7								7	4400		
	2R5TPE330M	2.5	105	330	2.5	105	10.0	82.5	25	2400		
	2R5TPE330MI								18	2800		
	2R5TPE330MF	2.5	105	330	2.5	105	10.0	82.5	15	3100		
	2R5TPE330MC								12	3500		
	2R5TPE330M9	2.5	105	330	2.5	105	10.0	165.0	9	3900		
	2R5TPE330M7								7	4400		
	2R5TPE220M	2.5	105	220	2.5	105	10.0	55.0	25	2400		
	2R5TPE220MI								18	2800		
2R5TPE220MF	2.5	105	220	2.5	105	10.0	55.0	15	3100			
2R5TPE220MC								12	3500			
2R5TPE220M9	2.5	105	220	2.5	105	10.0	110.0	9	3900			
2R5TPE220M7								7	4400			
D3L	10TPE220ML	10	105	220	10	105	10.0	220.0	25	2400	※2	3
	6TPE330ML	6.3	105	330	6.3	105	10.0	207.9	25	2400		
	6TPE330MIL								18	2800		
	6TPE330MFL	6.3	105	330	6.3	105	10.0	207.9	15	3100		
	4TPE470ML								25	2400		
	4TPE470MIL	4.0	105	470	4.0	105	10.0	188.0	18	2800		
	4TPE470MFL								15	3100		
	4TPE470MCL	4.0	105	470	4.0	105	10.0	188.0	12	3500		
	2R5TPE680ML								25	2400		
	2R5TPE680MIL	2.5	105	680	2.5	105	10.0	170.0	18	2800		
2R5TPE680MFL	15								3100			
2R5TPE680MCL	2.5	105	680	2.5	105	10.0	170.0	12	3500			
10TPE330M								25	2400			
D4	6TPE680M	6.3	105	680	6.3	105	15.0	428.4	25	3000	※2	3
	6TPE680MI	6.3	105	680	6.3	105	15.0	296.1	18	3500		
	6TPE470M								25	3000		
	6TPE470MI	6.3	105	470	6.3	105	15.0	296.1	18	3500		
	4TPE680M								25	3000		
	4TPE680MI	4.0	105	680	4.0	105	15.0	272.0	18	3500		
	4TPE680MF								15	3900		
	2R5TPE1000M	2.5	105	1000	2.5	105	15.0	250.0	25	3000		
	2R5TPE1000MI								18	3500		
	2R5TPE1000MF	2.5	105	1000	2.5	105	15.0	250.0	15	3900		
	2R5TPE1500M								15	3900		
	2R5TPE1500MI	2.5	105	1500	2.5	105	15.0	375.0	15	3900		
2R5TPE1500MC	12								4400			

Please refer to page 141 for the compensation coefficient of maximum allowable ripple current.

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