

### Surface Mount Type

TPE series B size



#### Features

- Small size (L 3.5 × W 2.8 × H 1.9 mm)
- Low ESR (15 mΩ max.)
- RoHS compliance, Halogen free

#### Specifications

Size code	B2	
Category temp. range	-55 °C to +105 °C	
Rated volt. range	2.0 V.DC to 10 V.DC	
Category volt. range	1.8 V.DC to 8 V.DC	
Rated cap. range	47 μF to 470 μF	
Capacitance tolerance	±20 % (120 Hz / +20 °C)	
Leakage current	Please see the attached characteristics list	
Dissipation factor(tan δ)	Please see the attached characteristics list	
Surge voltage (V.DC)	Rated voltage × 1.15	
Endurance	+105 °C 1000 h rated voltage applied	
	Rated temp, +85 °C Products : +85 °C 1000 h, rated voltage applied	
	Capacitance change	Within ±20 % of the initial value
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 500 h, No-applied voltage	
	Capacitance change	Within +50 %, -20 % of the initial value (2R5TPE220MAZB (MAPB, MAFB), 2R5TPE330MAZB, 2TPE330MAFB (MADGB), 2TPE470MAJGB (MAFB), 2TPE330MFB, ETPE330MAFB (MA9GB))
		Within +40 %, -20 % of the initial value (Except for above model)
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit
	Leakage current	≤ 3 times of the initial limit

#### Marking

Rated capacitance code

Polarity marking(+)

Rated voltage code

Lot No.

R. voltage code		Unit : V.DC	
d	2.0	g	4.0
e	2.5	j	6.3
		k	8.0
		A	10

R. capacitance code		Unit : μF	
S7	47	E8	150
A8	100	J8	220
C8	120	N8	330
		S8	470

#### Dimensions (not to scale)

Size code	L±0.2	W±0.2	H±0.1	S±0.2	W1±0.1
B2	3.5	2.8	1.9	0.8	2.2

Unit : mm

\* Externals of figure are the reference.

### Characteristics list

Rated volt. (V.DC)	Rated temp. (°C)	Category volt. (V.DC)	Category temp. (°C)	Rated cap. (μF)	Case size (mm)			Size code	Specifications				Standard		Floor life level	
					L	W	H		Ripple current* <sup>1</sup> (mA r.m.s.)	ESR* <sup>2</sup> (mΩ max.)	tan δ* <sup>3</sup>	LC* <sup>4</sup> (μA)	Part number	Min. packaging qty (pcs)	Reflow temp ≤260°C	Reflow temp ≤250°C
2.0	105	2.0	105	330	3.5	2.8	1.9	B2	2000	15	0.08	132.0	2TPE330MFB	2000	3	3
	85	1.8	105		3.5	2.8	1.9		2000	15	0.08	132.0	2TPE330MAFB	2000		
	85	1.8	105		3.5	2.8	1.9		2000	13/300kHz	0.10	132.0	2TPE330MADGB	2000		
	85	1.8	105	470	3.5	2.8	1.9		2300	15	0.10	188.0	2TPE470MAFB	2000		
	85	1.8	105		3.5	2.8	1.9		2300	11/300kHz	0.08	188.0	2TPE470MAJGB	2000		
2.5	85	2.0	105	220	3.5	2.8	1.9		2000	15	0.08	110.0	2R5TPE220MAFB	2000		
	105	2.5	105		3.5	2.8	1.9		1800	15/300kHz	0.08	110.0	2R5TPE220MFGB	2000		
	105	2.5	105		3.5	2.8	1.9		1700	21	0.08	55.0	2R5TPE220MLB	2000		
	85	2.0	105		3.5	2.8	1.9		1600	25	0.08	55.0	2R5TPE220MAPB	2000		
	105	2.5	105		3.5	2.8	1.9		1400	35	0.08	55.0	2R5TPE220MZB	2000		
	85	2.0	105		3.5	2.8	1.9		1400	35	0.08	55.0	2R5TPE220MAZB	2000		
	85	2.0	105	330	3.5	2.8	1.9		1400	35	0.08	82.5	2R5TPE330MAZB	2000		
	85	2.0	105		3.5	2.8	1.9		3200	9/300kHz	0.08	165.0	ETPE330MA9GB	2000		
	105	2.5	105		3.5	2.8	1.9		3200	9/300kHz	0.08	165.0	ETPE330M9GB	2000		
	85	2.0	105		3.5	2.8	1.9		2700	15	0.08	165.0	ETPE330MAFB	2000		
	105	2.5	105		3.5	2.8	1.9	2700	15	0.08	165.0	ETPE330MFB	2000			
4.0	105	4.0	105	100	3.5	2.8	1.9	1400	35	0.08	40.0	4TPE100MZB	2000			
	85	3.2	105	150	3.5	2.8	1.9	1400	35	0.08	60.0	4TPE150MAZB	2000			
	85	3.2	105	220	3.5	2.8	1.9	1400	35	0.08	88.0	4TPE220MAZB	2000			
6.3	105	6.3	105	100	3.5	2.8	1.9	1600	25	0.08	63.0	6TPE100MPB	2000			
	85	5.0	105		3.5	2.8	1.9	1400	35	0.08	63.0	6TPE100MAZB	2000			
	105	6.3	105		3.5	2.8	1.9	1400	35	0.08	63.0	6TPE100MZB	2000			
	85	5.0	105	120	3.5	2.8	1.9	1400	35	0.08	75.6	6TPE120MAZB	2000			
	85	5.0	105	150	3.5	2.8	1.9	1600	25	0.08	94.5	6TPE150MAPB	2000			
	85	5.0	105		3.5	2.8	1.9	1400	35	0.08	94.5	6TPE150MAZB	2000			
	85	5.0	105	220	3.5	2.8	1.9	1400	35	0.10	138.6	6TPE220MAZB	2000			
	85	5.0	105		3.5	2.8	1.9	1600	25	0.10	138.6	6TPE220MAPB	2000			
8.0	85	6.3	105	100	3.5	2.8	1.9	1400	35	0.08	80.0	8TPE100MAZB	2000			
10	85	8.0	105	47	3.5	2.8	1.9	1400	35	0.08	47.0	10TPE47MAZB	2000			

\*1: Ripple current (100 kHz / +45 °C)

\*2: ESR (100 kHz / +20 °C)

\*3: tan δ (120 Hz / +20 °C)

\*4: After 5 minutes

◆ Please refer to each page in this catalog for "Reflow conditions", "Taping specifications" and "Floor life level".

◆ Small order quantity (500 pcs/reel) is available with TPE series. Please contact our sales representative if you prefer it.

## Surface Mount Type

TPE series D size



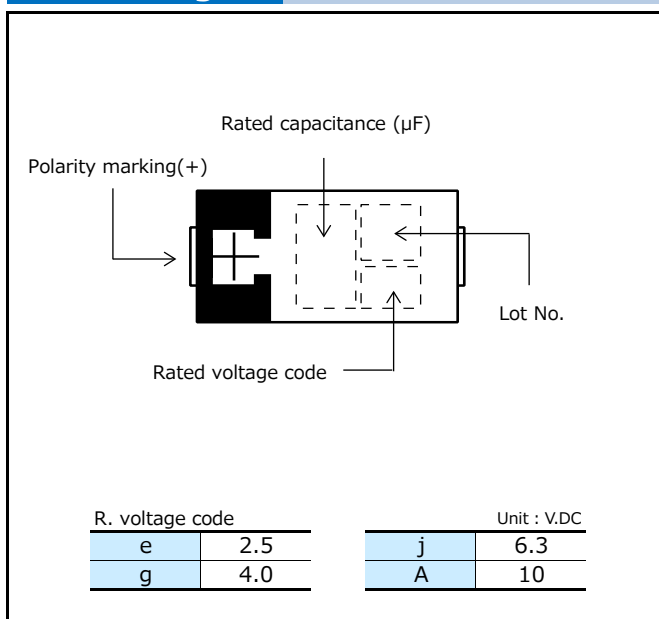
### Features

- Low profile (Height 1.5 mm max.)
- Low ESR (7 mΩ max.)
- Large capacitance (1500 μF max.)
- RoHS compliance, Halogen free

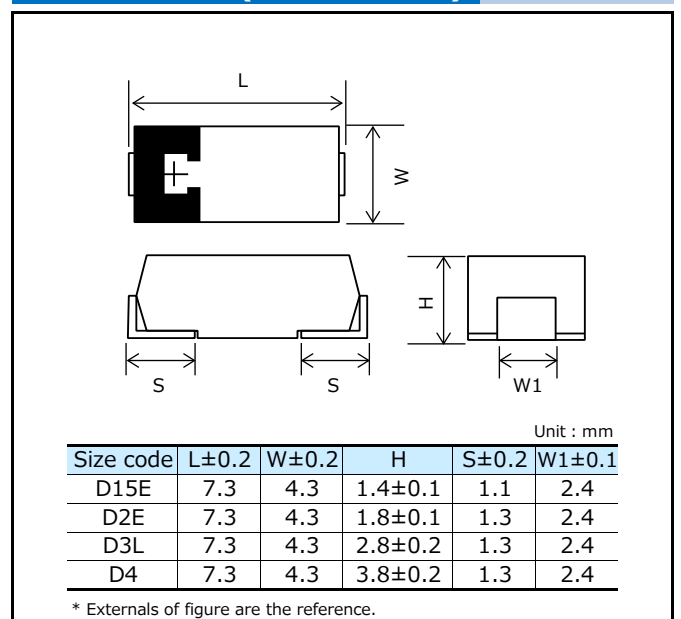
### Specifications

Size code	D15E	D2E	D3L	D4
Category temp. range	-55 °C to +105 °C			
Rated volt. range	6.3 V.DC	2.5 V.DC to 10 V.DC		
Category volt. range	5.0 V.DC	2.5 V.DC to 10 V.DC		
Rated cap. range	470 μF	68 μF to 470 μF	220 μF to 680 μF	330 μF to 1500 μF
Capacitance tolerance	±20 % (120 Hz / +20 °C)			
Leakage current	Please see the attached characteristics list			
Dissipation factor(tan δ)	Please see the attached characteristics list			
Surge voltage (V.DC)	Rated voltage × 1.15			
Endurance	+105 °C 2000 h rated voltage applied Rated temp, +85 °C Products : +85 °C 1000 h, rated voltage applied 6TPE330MAP, 6TPE470MAZU : +85 °C 2000 h, rated voltage applied			
	Capacitance change	Within ±20 % of the initial value		
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit		
	Leakage current	Within the initial limit		
Damp heat (Steady State)	+60 °C, 90 % to 95 %, 500 h, No-applied voltage			
	Capacitance change	Within +50 %, -20 % of the initial value (2R5TPE220M (I, F, 9), 2R5TPE330M (I, F, C, 9, 7), 2R5TPE470M (I, F, C, 9, 7), 2R5TPE1000MF, 2R5TPE1500M (F, C)) Within +40 %, -20 % of the initial value (Except for above model)		
	Dissipation factor(tan δ)	≤ 1.5 times of the initial limit		
	Leakage current	≤ 3 times of the initial limit		

### Marking



### Dimensions (not to scale)



## Characteristics list

Rated volt. (V.DC)	Rated temp. (°C)	Category volt. (V.DC)	Category temp. (°C)	Rated cap. (μF)	Case size (mm)			Size code	Specifications				Standard		Floor life level			
					L	W	H		Ripple current <sup>*1</sup> (mA r.m.s.)	ESR <sup>*2</sup> (mΩ max.)	tan δ <sup>*3</sup>	LC <sup>*4</sup> (μA)	Part number	Min. packaging qty (pcs)	Reflow temp ≤260°C	Reflow temp ≤250°C		
2.5	105	2.5	105	220	7.3	4.3	1.8	D2E	3900	9	0.10	55.0	2R5TPE220M9	3000	3			
	105	2.5	105		7.3	4.3	1.8		3100	15	0.10	55.0	2R5TPE220MF	3000				
	105	2.5	105		7.3	4.3	1.8		2800	18	0.10	55.0	2R5TPE220MI	3000				
	105	2.5	105		7.3	4.3	1.8		2400	25	0.10	55.0	2R5TPE220M	3000				
	105	2.5	105	330	7.3	4.3	1.8		4400	7	0.10	82.5	2R5TPE330M7	3000				
	105	2.5	105		7.3	4.3	1.8		3900	9	0.10	82.5	2R5TPE330M9	3000				
	105	2.5	105		7.3	4.3	1.8		3500	12	0.10	82.5	2R5TPE330MC	3000				
	105	2.5	105		7.3	4.3	1.8		3100	15	0.10	82.5	2R5TPE330MF	3000				
	105	2.5	105	470	7.3	4.3	1.8		2800	18	0.10	82.5	2R5TPE330MI	3000				
	105	2.5	105		7.3	4.3	1.8		2400	25	0.10	82.5	2R5TPE330M	3000				
	105	2.5	105		7.3	4.3	1.8		4400	7	0.10	117.5	2R5TPE470M7	3000				
	105	2.5	105		7.3	4.3	1.8		3900	9	0.10	117.5	2R5TPE470M9	3000				
	105	2.5	105	680	7.3	4.3	1.8		3500	12	0.10	117.5	2R5TPE470MC	3000				
	105	2.5	105		7.3	4.3	1.8		3100	15	0.10	117.5	2R5TPE470MF	3000				
	105	2.5	105		7.3	4.3	1.8		2800	18	0.10	117.5	2R5TPE470MI	3000				
	105	2.5	105		7.3	4.3	2.8		3500	12	0.10	170.0	2R5TPE680MCL	2500				
	105	2.5	105	1000	7.3	4.3	3.8		D3L	3100	15	0.10	170.0	2R5TPE680MFL			2500	
	105	2.5	105		7.3	4.3	3.8			3900	15	0.15	250.0	2R5TPE1000MF			2000	
4.0	105	4.0	105	1500	7.3	4.3	3.8	D4	4400	12	0.15	375.0	2R5TPE1500MC	2000	-			
	105	4.0	105		7.3	4.3	3.8		3900	15	0.15	375.0	2R5TPE1500MF	2000				
	105	4.0	105	220	7.3	4.3	1.8		D2E	2800	18	0.10	60.0	4TPE150MI			3000	
	105	4.0	105		7.3	4.3	1.8			3100	15	0.10	88.0	4TPE220MF			3000	
	105	4.0	105		7.3	4.3	1.8			2800	18	0.10	88.0	4TPE220MI			3000	
	105	4.0	105		7.3	4.3	1.8			2400	25	0.10	88.0	4TPE220M			3000	
105	4.0	105	330	7.3	4.3	1.8	2800	18		0.10	132.0	4TPE330MI	3000					
105	4.0	105		7.3	4.3	1.8	2400	25		0.10	132.0	4TPE330M	3000					
6.3	105	6.3	105	100	7.3	4.3	1.8	D3L	3500	12	0.10	188.0	4TPE470MCL	2500	2a			
	105	6.3	105		7.3	4.3	1.8		3100	15	0.10	188.0	4TPE470MFL	2500				
	105	6.3	105		7.3	4.3	2.8		2800	18	0.10	188.0	4TPE470MIL	2500				
	105	6.3	105		7.3	4.3	2.8		2400	25	0.10	188.0	4TPE470ML	2500				
	105	6.3	105	150	7.3	4.3	1.8		D2E	2800	18	0.10	63.0	6TPE100MI			3000	
	105	6.3	105		7.3	4.3	1.8			2400	25	0.10	63.0	6TPE100M			3000	
	105	6.3	105		7.3	4.3	1.8			3100	15	0.10	94.5	6TPE150MF			3000	
	105	6.3	105		7.3	4.3	1.8			2800	18	0.10	94.5	6TPE150MI			3000	
	105	6.3	105	220	7.3	4.3	1.8			2400	25	0.10	94.5	6TPE150M			3000	
	105	6.3	105		7.3	4.3	1.8			2800	18	0.10	138.6	6TPE220MI			3000	
	105	6.3	105		7.3	4.3	1.8			2400	25	0.10	138.6	6TPE220M			3000	
	85	5.0	105		7.3	4.3	1.8			2400	25	0.10	138.6	6TPE220MAP			3000	
85	5.0	105	330	7.3	4.3	1.8	D3L	2400		25	0.10	207.9	6TPE330MAP	3000				
85	5.0	105		7.3	4.3	2.8		2400		25	0.10	207.9	6TPE330MAL	2500				
85	5.0	105		7.3	4.3	2.8		3900		9/500kHz	0.10	207.9	6TPE330MA9EL	2500				
105	6.3	105		7.3	4.3	2.8		3100		15	0.10	207.9	6TPE330MFL	2500				
105	6.3	105	470	7.3	4.3	2.8		D4	2800	18	0.10	207.9	6TPE330MIL	2500				
105	6.3	105		7.3	4.3	2.8			2400	25	0.10	207.9	6TPE330ML	2500				
85	5.0	105		7.3	4.3	3.8			4400	10	0.10	207.9	6TPE330MAA	2000				
85	5.0	105		7.3	4.3	1.4			D15E	1700	35	0.10	296.1	6TPE470MAZU	4000			
105	6.3	105	680	7.3	4.3	3.8			D4	3500	18	0.15	296.1	6TPE470MI	2000			
105	6.3	105		7.3	4.3	3.8				3000	25	0.15	296.1	6TPE470M	2000			
105	6.3	105		7.3	4.3	3.8				3500	18	0.15	428.4	6TPE680MI	2000			
105	6.3	105		7.3	4.3	3.8				3000	25	0.15	428.4	6TPE680M	2000			
10	105	10	105	68	7.3	4.3	1.8			D2E	2400	25	0.10	68.0	10TPE68M	3000	-	
	105	10	105	220	7.3	4.3	2.8			D3L	2800	18	0.10	220.0	10TPE220MIL	2500		
	105	10	105		7.3	4.3	2.8				2400	25	0.10	220.0	10TPE220ML	2500		
	105	10	105	330	7.3	4.3	3.8			D4	3000	25	0.10	330.0	10TPE330M	2000		

\*1: Ripple current (100 kHz / +45 °C)

\*2: ESR (100 kHz / +20 °C)

\*3: tan δ (120 Hz / +20 °C)

\*4: After 5 minutes

◆ Please refer to each page in this catalog for "Reflow conditions", "Taping specifications" and "Floor life level".

◆ Small order quantity (500 pcs/reel) is available with TPE series. Please contact our sales representative if you prefer it.

## Guidelines and precautions regarding the technical information and use of our products described in this online catalog.

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