

# Surface mount type

# TPB Series



RoHS compliance, Halogen free  
Standard products

## Specifications

Items	Condition	Specifications		
Rated voltage (V)	-	4.0	6.3	10
Surge voltage (V)	-	4.6	7.2	12
Category temperature range (°C)	-	-55 to +105		
Capacitance tolerance (%)	120Hz/20°C	M : ±20		
Rated capacitance range (μF)	120Hz/20°C	33 to 470		
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 <sub>20°C</sub>	0.6 to 2.0
		+105°C	Z/Z <sub>20°C</sub>	0.6 to 2.0
Endurance	105°C, 2,000h B2 size : 105°C, 1,000h, ※Rated temp. 85°C products: 85°C, 1,000h, rated voltage applied	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 +40%, -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 ※Rated temp. 85°C products: 85°C	ΔC/C	Within ±5% of the initial value	
		DF	Within the initial limit	
		LC	≤ 3 times of the initial limit	

## Marking and dimensions

**B2 size**

Rated capacitance: ※3

Rated voltage: ※1

Lot. No.: ※2

**D3L size**

Rated capacitance

Rated voltage: ※1

Lot. No.: ※2

**D4 size**

Rated capacitance

Rated voltage: ※1

Lot. No.: ※2

※1 The rated voltage is as follows.

R.V.	4.0	6.3	10
Mark	g	j	A

※2 Lot.No.shows roughly manufacturing date.

※3 The rated capacitance is as follows.

Capacitance(μF)	33	47	68
Mark	N7	S7	W7

Size code	L ±0.3※1	W ±0.2	H ±0.2※2	S ±0.2	W1 ±0.1
B2	3.5	2.8	1.9	0.8	2.2
D3L	7.3	4.3	2.8	1.3	2.4
D4	7.3	4.3	3.8	1.3	2.4

※1 ±0.2 : B2    ※2 ±0.1 : B2

## Recommended land pattern dimension of PWB

(unit : mm)

Size code	a	b	c
B2	1.6	2.7	1.4
D3L	2.4	2.9	3.7
D4	2.4	2.9	3.7

## Size list

RV: Rated voltage

μF \ RV	4.0	6.3	10.0
33			B2
47			B2
68	B2	B2	
150			D3L
220		D3L	D3L, D4
330	D3L	D3L, D4	D4
470		D4	

## TPB 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	Maximum allowable ripple current (mA rms) 100kHz※1	MSL	
											Reflow temp. ≤ 260°C	Reflow temp. ≤ 250°C
B2	10TPB47M	10	105	47	10	105	8.0	47.0	70	1100	3	3
	10TPB33M	10	105	33	10	105	8.0	33.0	70	1100	3	3
	6TPB68M	6.3	105	68	6.3	105	8.0	42.8	70	1100	3	3
	4TPB68M	4.0	105	68	4.0	105	8.0	27.2	70	1100	3	3
D3L	10TPB220ML	10	105	220	10	105	10	220.0	40	2000	—	2a
	10TPB150ML	10	105	150	10	105	10	150.0	40	2000	3	2a
	6TPB330ML	6.3	105	330	6.3	105	10	207.9	40	2000	3	2a
	6TPB330MAL	6.3	85	330	5.0	105	10	207.9	40	2000	3	2a
	6TPB220ML	6.3	105	220	6.3	105	10	138.6	40	2000	3	2a
	4TPB330ML	4.0	105	330	4.0	105	10	132.0	40	2000	3	2a
D4	10TPB330M	10	105	330	10	105	10	330.0	35	3000	—	2a
	10TPB220M	10	105	220	10	105	10	220.0	40	3000	3	2a
	6TPB470M	6.3	105	470	6.3	105	15	296.1	35	3000	3	2a
	6TPB330M	6.3	105	330	6.3	105	10	207.9	40	3000	3	2a

※1 100k to 500kHz,45°C

TPU

TPH

TPG

TPSF

TPE

TPB

TPC

TPF

TA

TV

TH

TQC