Multi-Function Varistor
With 2 or 3 Remote Signal leads

TPT Series

MERITEK

FEATURE

- **Operating Temperature: -40°C ~ +85°C**
- **Max Continuous Operating Voltage: 150V_{AC} ~ 680V_{AC}**
- **High Surge Current rating: 50KA**
- **2 or 3 leads on top for Remote Signaling**
- **UL/cUL safety approved: certification No: E326004**

PART NUMBERING SYSTEM

RoHS

c UL us

TPT	150	L	T	2
(1)	(2)	(3)	(4)	(5)

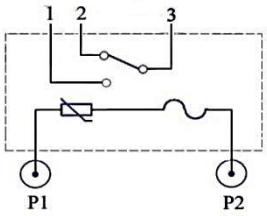
No	Item	Digit	Description	Series Reference
(1)	**Meritek Series**	TPT	Thermally Protected Varistor	With Remote Signal leads
(2)	**Max Operation AC Voltage**	150	150: 150VAC	Max Continuous Operation Voltage (MCOV)
(3)	**Terminal Type**	L	L: Long tab type	S: Short tab type
(4)	**Signal Lead Position**	T	T: Top side	B: Bottom Side
(5)	**No of Signal Lead**	2	2: 2pins signal lead	3: 3pins signal lead

ELECTRICAL CHARACTERISTICS

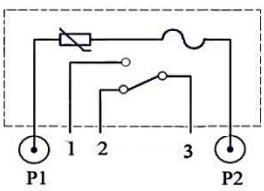
Part Number	SPD Voltage	Max Continuous Operating Voltage		Varistor Voltage	Voltage Protection Rating	Nominal Discharge Current	Maximum Discharge Current	Short Circuit Current	Tab Spacing
		MCOV		Vn	VPR	In 8/20us	Imax 8/20us	SCCR	T_{MAX}
	(V_{AC})	(V_{AC})	(V_{DC})	(V)	(V)	(KA)	(KA)	(KA)	(mm)
TPT150□	120	150	200	216~264	600	20	50	200	7.30
TPT180□	120	180	225	243~297	700				7.53
TPT250□	120	250	320	351~429	900				8.53
TPT275□	239	275	350	387~473	900				8.86
TPT300□	239	300	385	423~517	900				9.15
TPT320□	277	320	410	459~561	900				9.47
TPT385□	277	385	505	558~682	1500				10.35
TPT420□	347	420	560	612~748	1500				10.85
TPT510□	347	510	670	738~902	1500				11.07
TPT550□	480	550	745	819~1001	2000				11.69
TPT680□	600	680	895	990~1210	2000				13.00

Note: □: Tab size and lead configuration

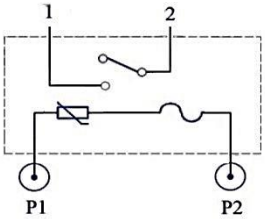
LEAD CONFIGURATION



3 leads, Top Side

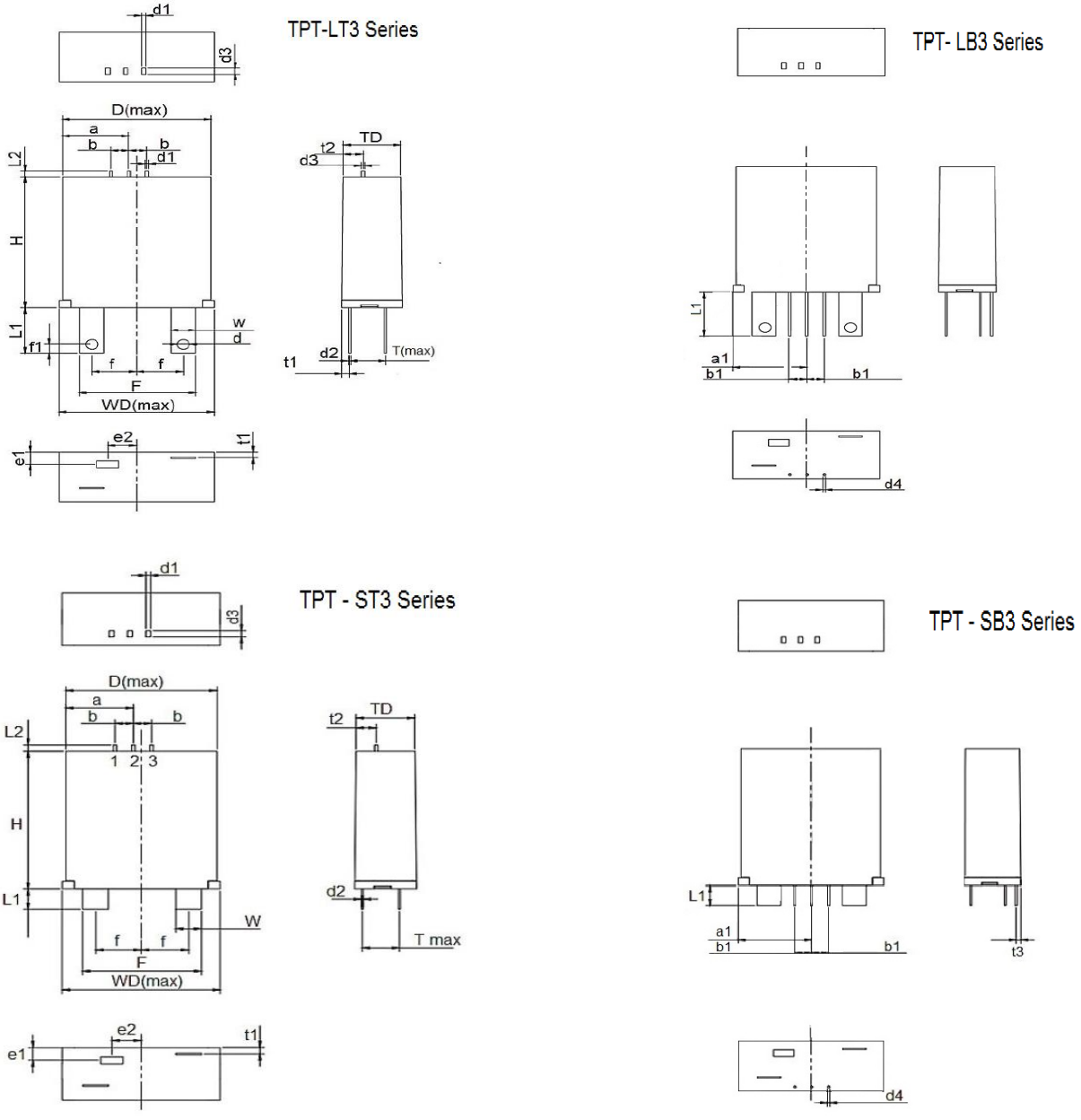


3 leads, Bottom Side



2 leads, Top side

DIMENSION – TPT-3 series



Unit: mm

Item	TPT-LT3, TPT-LB3	TPT-ST3, TPT-SB3	Item	TPT-LT3, TPT-LB3	TPT-ST3, TPT-SB3	Item	TPT-LT3, TPT-LB3	TPT-ST3, TPT-SB3
d3±0.2	0.5	0.5	**L1±1.0**	15.5	3.8	**D max**	40.9	40.9
d4±0.05	0.8	0.8	**L2±0.5**	1.2	1.2	**H±1.0**	44	44
e1±1.0	4.5	4.5	**a±0.5**	18.8	18.8	**W±0.5**	7	7
e2±0.5	8.0	8	**b±0.5**	5.0	5.0	**f±0.1**	12.5	12.5
t1±0.5	2.3	2.3	**a1±0.5**	21.83	21.83	**F±1**	32	32
t2±0.5	4	4.0	**b1±0.5**	5.0	5.0	**WD max**	43.2	43.2
t3±0.5	-	1.42	**d1±0.2**	0.9	0.9	**TD±1.0**	16	16
f1±0.2	3.5	-	**d2±0.05**	0.5	0.5	**d±0.1**	3.5	-

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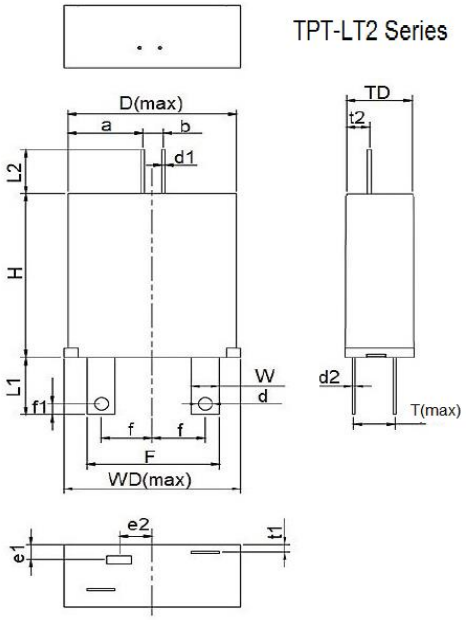
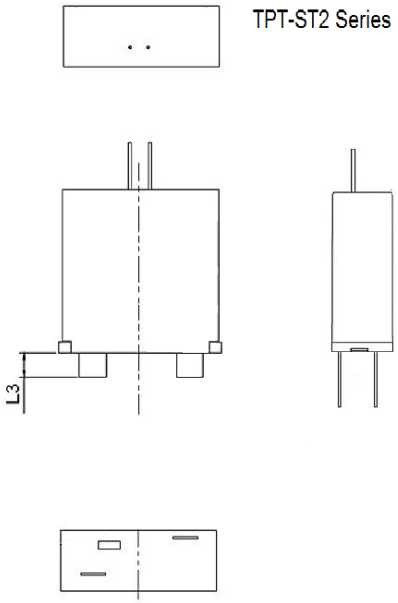
DIMENSION – TPT-2 series





Unit: mm

Item	TPT-LT2, TPT-ST2	Item	TPT-LT2, TPT-ST2	Item	TPT-LT2, TPT-ST2
d1±0.05	0.8	**e2±0.5**	8.0	**D max**	40.9
d2±0.05	0.5	**t1±0.5**	2.3	**H±1.0**	44
e1±1.0	4.5	**t2±0.5**	5.5	**W±0.5**	7.0
L1±1.0	15.5	**f1±0.2**	3.5	**f±0.1**	12.5
L2±0.3	11.9	**d±0.1**	3.5	**F±1.0**	32
L3±1.0	3.8	**b±0.5**	5.0	**WD Max**	43.2
a±0.5	17.8	-	-	**TD±1.0**	16

SOLDERING RECOMMENDATION

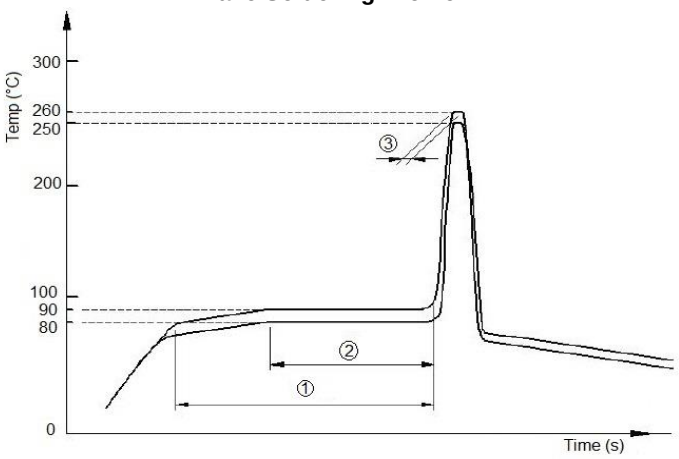
Wave Soldering

Stage		Condition
1	**Preheating**	<150sec
2	**Soaking**	<100sec
3	**Dwell Time**	Dip Time ≤4sec

Iron Soldering

Item	Condition
Iron Temperature	350°C (Max.)
Soldering Time	4sec (Max.)
Space between Soldering Point and the Bottom of Product	2mm (Min.)

Wave Soldering Profile



APPLICATION NOTES

Varistor Voltage – UL1449

Varistors can be connected to a variable voltage source adjusted to maintain a current of 1mA Dc applied between 10 ms and 500 ms and the voltage across the varistor measured.

Leakage Current – IEC 61051

Measure the current passing through the varistor at 0.75V, and at a temperature of 25 °C, the leakage current shall be no more than 20μA

Dielectric Voltage – UL1449

Subject the voltage no less than 2500V, last for 1 minute between leads and enclosure

Voltage Protection Rating Test – UL1449

Test Method: Terminal wires of the SPD shall be subjected to a 6 kV/3kA combination wave surge which has the inherent 1.2/50μs voltage wave across an open circuit and 8/20μs current wave into a short circuit to determine the "Voltage Protection Rating (VPR)" and to benchmark the sample prior to the "Nominal Discharge Current (In) Test". Three (3) x 6 kV/ 3 kA impulse surges shall be applied with the sample connected to the rated voltage. The surge shall be initiated at a phase angle of 90 ±10 degrees. Following the testing of In, the same sample shall be subjected to the repeated VPR test.

Pass Criteria: The average "Measured Limiting Voltage (MLV)" measured prior to the in test did not exceed the VPR, nor did any individual measurement exceed the VPR by 10%. And the average MLV per sample during the repeated VPR test after the In test did not deviate from the average MLV for the same sample during the initial VPR test by greater than 10%

Nominal Discharge Current Test – UL1449

Test Method: The same samples that were subjected to the initial 6 kV/3 kA combination wave in the "Voltage Protection Rating (VPR)" Test shall then be subjected to fifteen (15) x 8/20 short circuit current surges. During the application of these surges the samples are unenergized. Surges shall be applied in three groups of five surges. Within 1 second after the application of each surge, the specified MCOV shall be applied for 60 seconds ±5 seconds. After each group of 5 surges, the samples shall rest for 30 minutes±5 minutes. After the 15th surge, the MCOV shall be re-applied for at least 15 minutes.

Pass Criteria: During and following the surge test, there shall not have visible or smelt (or both) damage, and complied to Voltage Protection Rating (VPR) pass criteria.

Maximum Discharge Current Test – UL1449

Test Method: Previously untested sample shall be subject to one 8/20 short circuit current surges. During the application of these surges the samples are unenergized. Within 1 second after the application of each surge, the specified MCOV shall be applied at least 15 minutes.

Pass Criteria: During and following the surge test, there shall not have visible or smelt (or both) damage and the variation rate of the varistor voltage shall be less than 10%

PACKAGING SPECIFICATION

Item	Dimensions (mm)	Quantity
Plastic Tray	345x245x20	18 PCS / Plastic Tray
Outside Box	350x260x150	126 PCS / Carton

*Specifications subject to change without notice.