

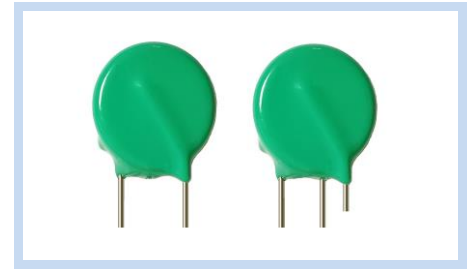
# Metal Oxide Varistor Thermally Protected Type

TPV-F Series

MERITEK

## FEATURE

- High peak surge current rating
- Two or Three terminal thermally protected Metal Oxide Varistor
- Fast responding to transient over-voltage and limited current
- Low clamping ratio and no follow-on current
- Failed Safe Fuse Protection Construction Design
- Operating Temperature: -40°C ~ +85°C
- UL/cUL safety approved: certification No: E326004



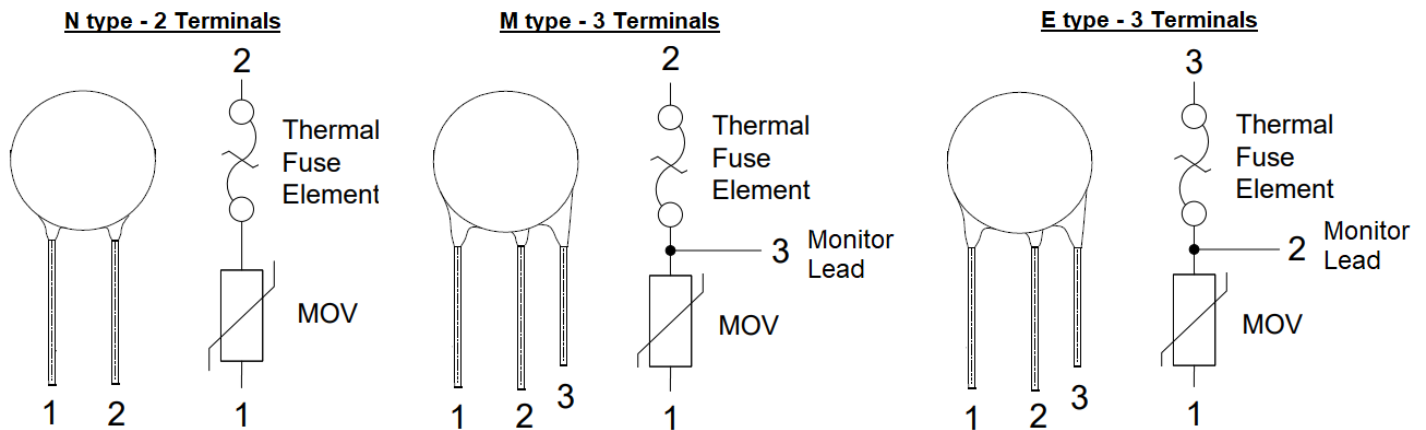
## PART NUMBERING SYSTEM

TPV-F   14   N   241   K   S  
(1)   (2)   (3)   (4)   (5)   (6)

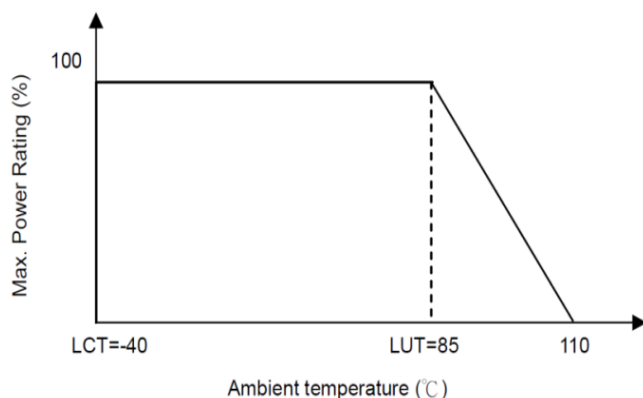


No	Item	Digit	Description	Series Reference
(1)	Meritek Series	TPV-F	Thermally protected Metal Oxide Varistor	Leaded Epoxy Failed Safe Fuse Type
(2)	Diameter	14	14: 14mm	20: 20mm
(3)	Lead/Package type	N	N: 2 Terminals (2T)	3 Terminals (3T): M and E type
(4)	Varistor Voltage	241	241: 240V	First two significant, Third: multiplier
(5)	Tolerance	K	K: ±10%	-10% ~ +10%
(6)	Internal Control	S	S: Straight	O: Outside Kink

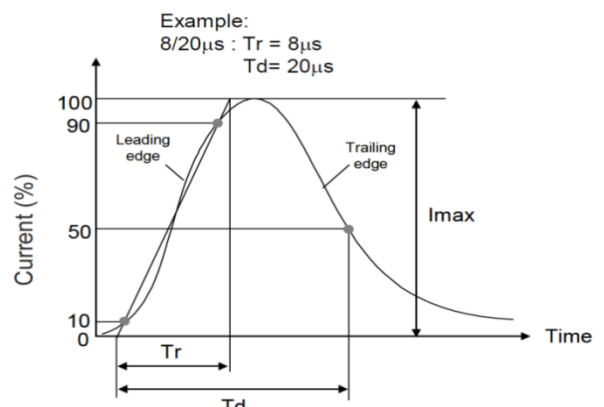
## LEAD CONFIGURATION



## POWER DERATING CURVE



## SURGE CURRENT STANDARD WAVEFORM

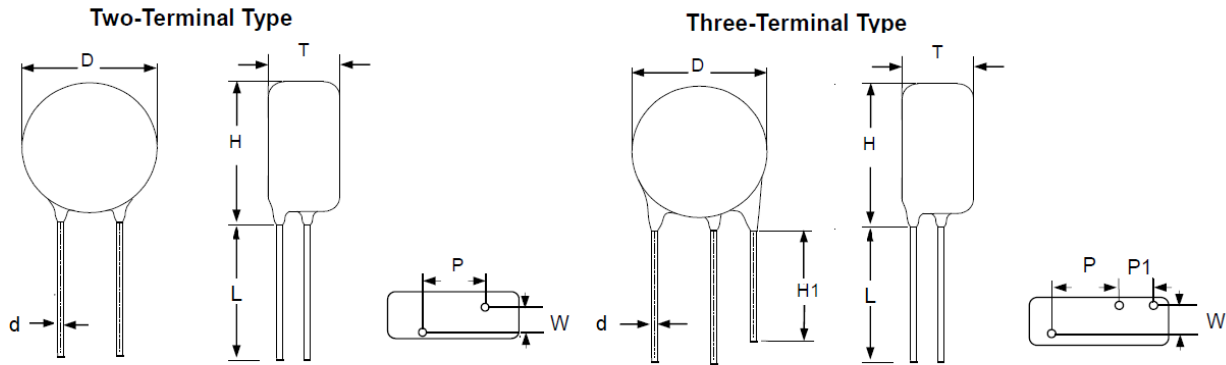


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## DIMENSION – TPV-F14N, TPV-F14M(E)



Unit: mm

Series	Lead Type	D Max	H	T	P	P1	L Min	H1 Min	d
TPV-F14N	Two-Terminal	19	21.0	See table below	7.5	-	25	-	0.8
TPV-F14M(E)	Three-Terminal	19	21.0		7.5	5.0	25	10	0.8

## ELECTRICAL CHARACTERISTICS

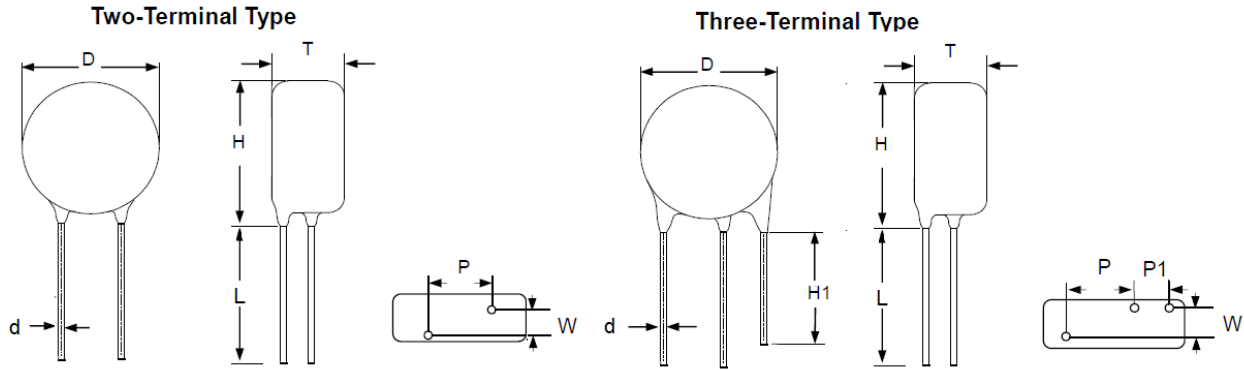
Codes 14mm	Varistor Voltage @1mA DC	Max. Continuous Voltage		Max. Clamping Voltage (8/20 $\mu$ s)		Max. Surge Current (8/20 $\mu$ s)	Rated Power	Maximum Energy W <sub>MAX</sub>		Refer. Cap. @1KHz	Dimension	
	V <sub>1mA</sub>	V <sub>AC(rms)</sub>	V <sub>DC</sub>	V <sub>P</sub>	I <sub>P</sub>	I <sub>MAX</sub>	P	10/1Kus	2ms	C <sub>P</sub>	T <sub>MAX</sub>	W $\pm$ 1
	(V)	(V)	(V)	(V)	(A)	(KA)	(W)	(J)	(J)	(pF)	(mm)	(mm)
820	82(74~90)	50	65	135	50	6	0.6	27	22	2400	8.8	2.8
101	100(90~110)	60	85	165	50	6	0.6	33	28	2000	8.8	2.8
121	120(108~132)	75	100	200	50	6	0.6	40	32	1700	8.8	2.8
151	150(135~165)	95	125	250	50	6	0.6	53	35	1300	9.8	3.8
181	180(162~198)	115	150	300	50	6	0.6	60	40	1100	9.8	3.8
201	200(185~225)	130	170	340	50	6	0.6	70	50	1000	9.8	3.8
221	220(198~242)	140	180	360	50	6	0.6	78	55	900	9.8	3.8
241	240(216~264)	150	200	395	50	6	0.6	84	60	830	9.8	3.8
271	270(243~297)	175	225	455	50	6	0.6	99	70	740	9.8	3.8
301	300(270~330)	190	250	500	50	6	0.6	108	75	670	9.8	3.8
331	330(297~363)	210	275	550	50	6	0.6	115	80	610	9.8	3.8
361	360(324~396)	230	300	595	50	6	0.6	130	90	560	9.8	3.8
391	390(351~429)	250	320	650	50	6	0.6	140	100	510	9.8	3.8
431	430(387~473)	275	350	710	50	6	0.6	155	110	460	11.5	5.5
471	470(423~517)	300	385	775	50	6	0.6	175	125	430	11.5	5.5
511	510(459~561)	320	415	845	50	6	0.6	180	136	390	11.5	5.5
561	560(504~616)	350	460	925	50	6	0.6	185	140	360	11.5	5.5
621	620(558~682)	385	505	1025	50	6	0.6	190	150	320	11.5	5.5
681	680(612~748)	420	560	1120	50	6	0.6	200	155	290	11.5	5.5

# Metal Oxide Varistor Thermally Protected Type

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## DIMENSION – TPV-F20N, TPV-F20M(E)



Unit: mm

Series	Lead Type	D Max	H Max	T	P	P1	L Min	H1 Min	d
TPV-F20N	Two-Terminal	24	26.0	See table below	7.5*	-	25	-	1.0
TPV-F20M(E)	Three-Terminal	24	26.0		7.5	5.0	25	10	1.0

Note: 12.5mm pitch option available upon request.

## ELECTRICAL CHARACTERISTICS

Codes 20mm	Varistor Voltage @1mA DC	Max. Continuous Voltage		Max. Clamping Voltage (8/20 $\mu$ s)		Max. Surge Current (8/20 $\mu$ s)	Rated Power	Maximum Energy W <sub>MAX</sub>		Refer. Cap. @1KHz	Dimension	
	V <sub>1mA</sub>	V <sub>AC(rms)</sub>	V <sub>DC</sub>	V <sub>P</sub>	I <sub>P</sub>	I <sub>MAX</sub>	P	10/1K $\mu$ s	2mS	C <sub>P</sub>	T <sub>MAX</sub>	W $\pm$ 1
	(V)	(V)	(V)	(V)	(A)	(KA)	(W)	(J)	(J)	(pF)	(mm)	
180	18(16~21)	11	14	36	20	3	0.2	13	10	28500	9.0	4.5
220	22(20~25)	14	18	43	20	3	0.2	16	12	18500	9.0	4.5
270	27(24~31)	17	22	53	20	3	0.2	19	14	13000	9.0	4.5
330	33(30~36)	20	26	65	20	3	0.2	24	18	11500	9.0	4.5
390	39(35~43)	25	31	77	20	3	0.2	28	21	8500	9.0	4.5
470	47(42~52)	30	38	93	20	5	0.2	34	25	7400	9.0	4.5
560	56(50~62)	35	45	110	20	5	0.2	41	30	6500	9.0	4.5
680	68(61~75)	40	56	135	20	5	0.2	49	37	5800	9.0	4.5
820	82(74~90)	50	65	135	100	10	1.0	56	42	4900	9.0	4.5
101	100(90~110)	60	85	165	100	10	1.0	70	52	4000	9.0	4.5
121	120(108~132)	75	100	200	100	10	1.0	85	63	3300	9.0	4.5
151	150(135-165)	95	125	250	100	10	1.0	106	70	2700	9.8	5.3
181	180(162-198)	115	150	300	100	10	1.0	130	80	2200	9.8	5.3
201	200(185-225)	130	170	340	100	10	1.0	140	100	2000	9.8	5.3
221	220(198-242)	140	180	360	100	10	1.0	155	110	1800	9.8	5.3
241	240(216-264)	150	200	395	100	10	1.0	168	120	1650	9.8	5.3
271	270(243-297)	175	225	455	100	10	1.0	190	135	1500	9.8	5.3
301	300(270-330)	190	250	500	100	10	1.0	210	145	1300	9.8	5.3
331	330(297-363)	210	275	550	100	10	1.0	228	150	1200	9.8	5.3
361	360(324-396)	230	300	595	100	10	1.0	255	160	1100	9.8	5.3
391	390(351-429)	250	320	650	100	10	1.0	275	170	1000	9.8	5.3
431	430(387-473)	275	350	710	100	10	1.0	305	190	930	11.5	7.0
471	470(423-517)	300	385	775	100	10	1.0	350	250	850	11.5	7.0
511	510(459-561)	320	415	845	100	10	1.0	360	270	780	11.5	7.0
561	560(504-616)	350	460	925	100	10	1.0	380	280	710	11.5	7.0
621	620(558-682)	385	505	1025	100	10	1.0	390	300	650	11.5	7.0
681	680(612-748)	420	560	1120	100	10	1.0	400	300	600	11.5	9.3

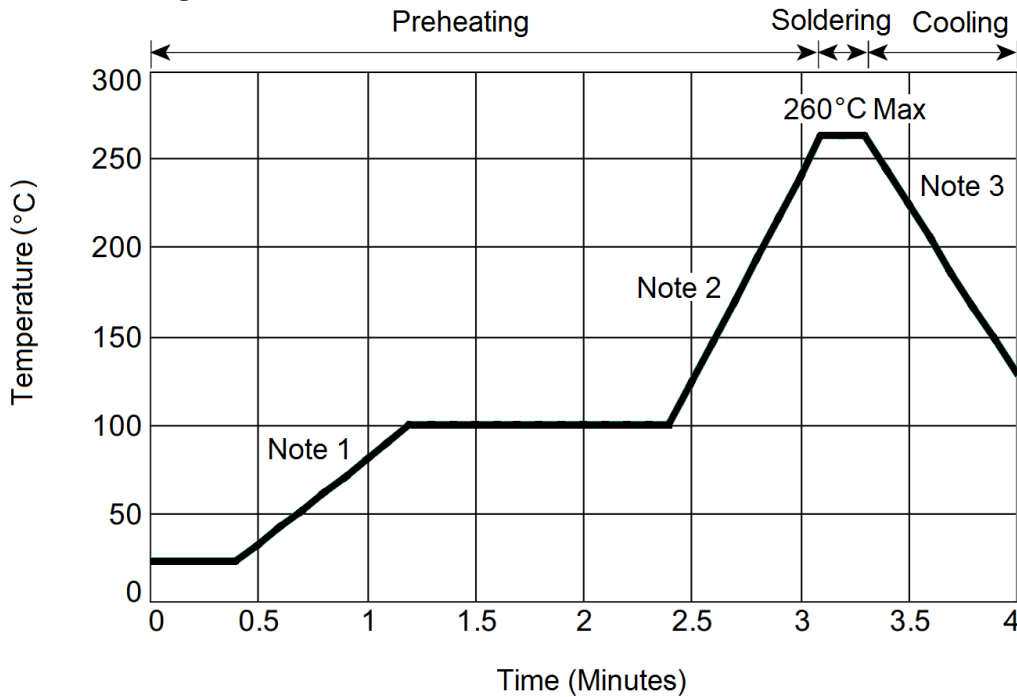
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## SOLDERING RECOMMENDATION

### Wave Soldering Profile



Note 1: 1~3°C/Sec  
Note 2: Approx. 200°C/Sec  
Note 3: 5°C/Sec Max

### Recommended Reworking Conditions with Soldering Iron

Item	Condition
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec. (max.)
Distance From Varistor	2 mm (min.)

## WAREHOUSE STORAGE CONDITION SPECIFICATION

### Storage Conditions:

1. Storage temperature: -10°C~+40°C
2. Relative humidity:  $\leq 75\%RH$
3. Keep away from corrosive atmosphere and sunlight.

Period of Storage: 1 year

\*Specifications subject to change without notice.