

## DATA SHEET

### METAL OXIDE VARISTOR – TMOV SERIES

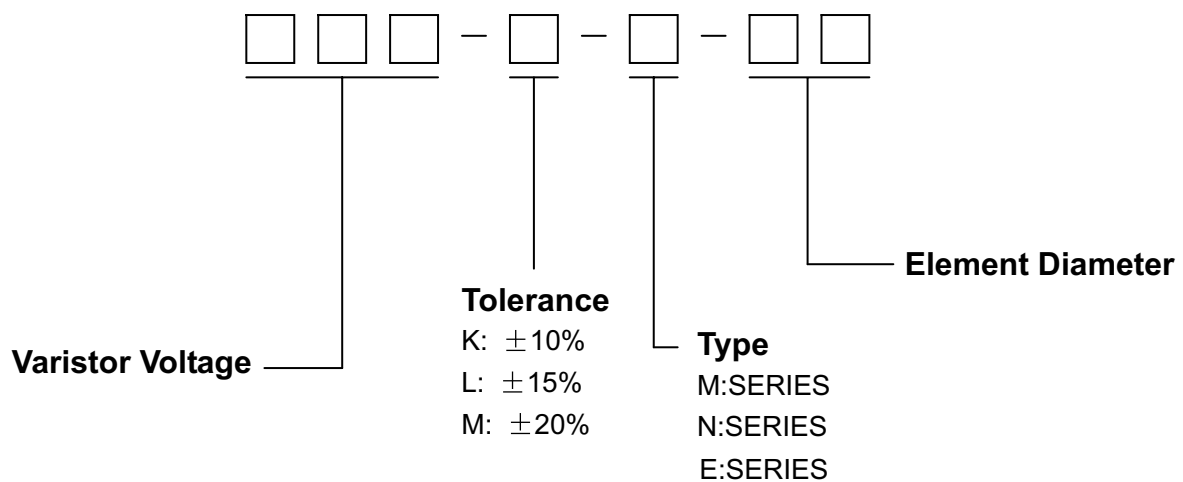
#### FEATURE

- ✧ TMOV integrated thermal protection device
- ✧ High peak surge current rating up to 15KA
- ✧ Designed to facilitate compliance to UL1449 for TVSS products
- ✧ Wide operating voltage ( $V_{1mA}$ ) range from 82V to 1200V.
- ✧ Rated current: 5A
- ✧ Fast responding to transient over-voltage and limited current
- ✧ Large absorbing transient energy capability.
- ✧ Low clamping ratio and no follow-on current.
- ✧ Three-lead version available for indication purposes
- ✧ Meets MSL level 1, per J-STD-020

#### APPLICATION

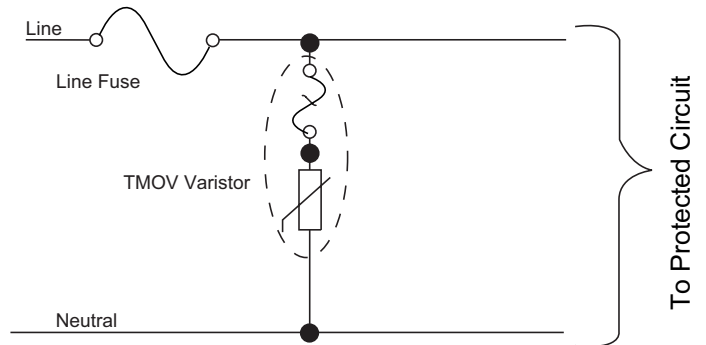
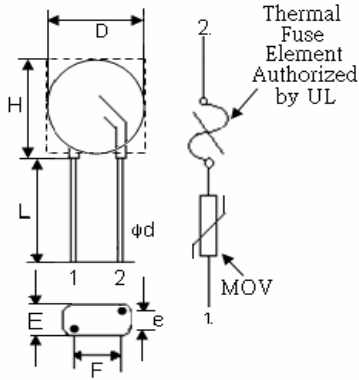
- ✧ AC power line or AC/DC supplies
- ✧ Transistor, diode, IC, thyristor or triac semiconductor protection.
- ✧ Surge protection in consumer electronics.
- ✧ Surge protection in industrial electronics.
- ✧ Surge protection in electronic home appliances, gas and petroleum appliances.
- ✧ Relay and electromagnetic valve surge absorption.
- ✧ AC panel protection Modules

#### PART NUMBER CODE

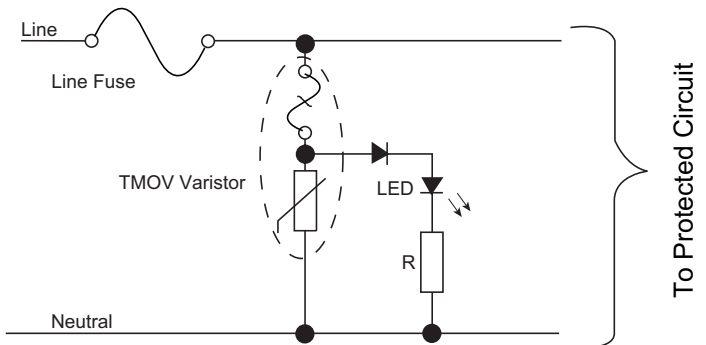
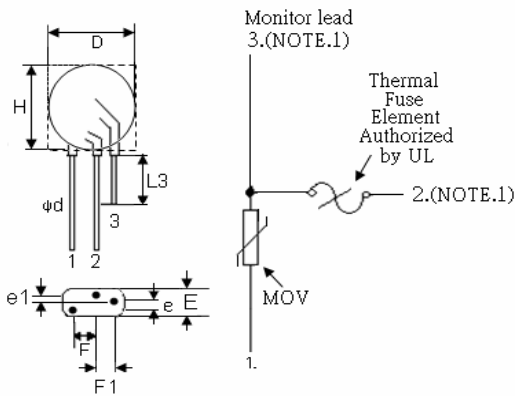


**LEAD CONFIGURATIONS AND APPLICATION EXAMPLES**

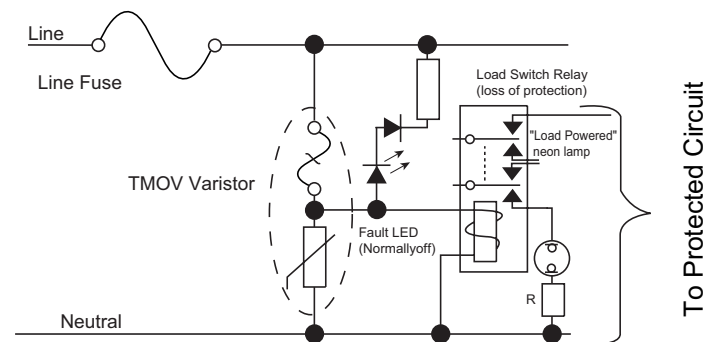
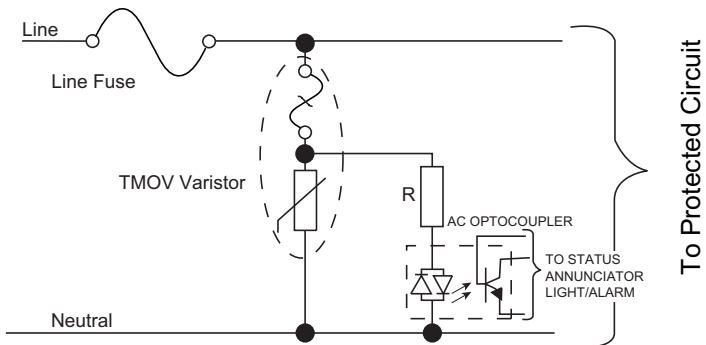
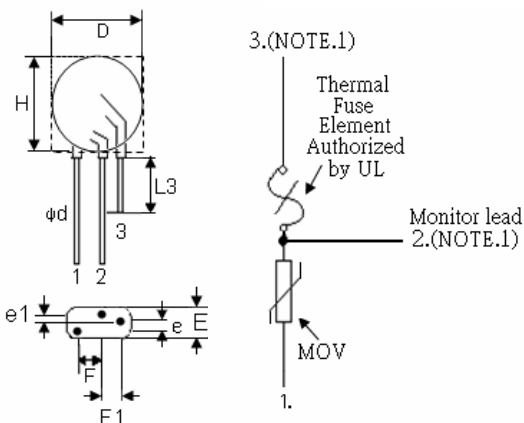
**N SERIES**



**M SERIES**



**E SERIES**



**DIMENSIONS**

Symbol		BK'S M / E / N Varistor								
		14M	14E	14N	20M	20E	20N	25M	25E	25N
D(MAX.)		19.0	19.0	19.0	24.0	24.0	24.0	29.0	29.0	29.0
H(MAX.)		21.0	21.0	21.0	26.0	26.0	26.0	32.0	32.0	32.0
F(±1.0)		7.5	7.5	7.5	7.5	7.5	$\frac{12.5}{7.5}$	$\frac{12.5}{7.5}$	$\frac{12.5}{7.5}$	$\frac{12.5}{7.5}$
F1(±1.0)		5	5	—	5	5	—	$\frac{6.5}{5}$	$\frac{6.5}{5}$	—
e MAX.	180K~680K	—	—	—	3.0	3.0	3.0	—	—	—
	820K~121K	2.8	2.8	2.8	3.0	3.0	3.0	—	—	—
	151K~391K	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
	431K~621K	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
	681K~911K	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
	102K~122K	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
e1	180K~680K	—	—	—	1.5±1	1.5±1	—	—	—	—
	820K~121K	1.3±0.8	1.3±0.8					—	—	
	151K~391K	1.3±0.8	1.3±0.8					2.3±1	2.3±1	
	431K~621K	1.3±0.8	1.3±0.8							
	681K~911K	1.3±0.8	1.3±0.8							
	102K~122K	1.3±0.8	1.3±0.8							
E MAX.	180K~680K	—	—	—	9.0	9.0	9.0	—	—	—
	820K~121K	8.8	8.8	8.8	9.0	9.0	9.0	—	—	—
	151K~391K	9.8	9.8	9.8	9.8	9.8	9.8	11.8	11.8	11.8
	431K~621K	11.5	11.5	11.5	11.5	11.5	11.5	13.5	13.5	13.5
	681K~911K	13.8	13.8	13.8	13.8	13.8	13.8	15.8	15.8	15.8
	102K~122K	16.0	16.0	16.0	16.0	16.0	16.0	18.0	18.0	18.0
L (MIN)		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
L3(MIN)		10	10	—	10	10	—	10	10	—
$\phi d$		0.8			1.0			1.0		
<b>UNIT:mm</b>										

**ELECTRICAL CHARACTERISTIC**

Part Number	Maximum Allowable Voltage		Varistor Voltage	Clamping Voltage (Max.)			Maximum Peak Current (8/20 $\mu$ s)		Maximum Energy (JOULE)		Rated Power (W)	Typical Capacitance (Reference) @1KHZ(pf)
	AC rms (V)	DC (V)		$V_{1mA}(V)$	$V_C(V)$	$I_P(A)$	1 time	2 time	10/1000 $\mu$ s	2ms		
			(A)									
820KM(E,N)14	50	65	82(74~90)	135	50	4500	2500	27	22	0.6	2400	
101KM(E,N)14	60	85	100(90~110)	165				33	28		2000	
121KM(E,N)14	75	100	120(108~132)	200				40	32		1700	
151KM(E,N)14	95	125	150(135~165)	250	50	6000	4500	50	35	1300		
181KM(E,N)14	115	150	180(162~198)	300				58	40	1100		
201KM(E,N)14	130	170	200(185~225)	340				70	50	1000		
221KM(E,N)14	140	180	220(198~242)	365				78	55	900		
241KM(E,N)14	150	200	240(216~264)	395				85	60	830		
271KM(E,N)14	175	225	270(243~297)	455				100	70	740		
301KM(E,N)14	190	250	300(270~330)	500				107	75	670		
331KM(E,N)14	210	275	330(297~363)	550				115	80	610		
361KM(E,N)14	230	300	360(324~396)	595				125	90	560		
391KM(E,N)14	250	320	390(351~429)	650				140	100	510		
431KM(E,N)14	275	350	430(387~473)	710				155	110	460		
471KM(E,N)14	300	385	470(423~517)	775				175	125	430		
511KM(E,N)14	320	415	510(459~561)	845				190	136	390		
561KM(E,N)14	350	460	560(504~616)	920				200	140	360		
621KM(E,N)14	385	505	620(558~682)	1025				210	150	320		
681KM(E,N)14	420	560	680(612~748)	1120				220	155	290		
751KM(E,N)14	460	615	750(675~825)	1240				225	160	270		
781KM(E,N)14	485	640	780(702~858)	1290				240	165	260		
821KM(E,N)14	510	670	820(738~902)	1355				245	170	240		
911KM(E,N)14	550	745	910(819~1001)	1500				255	180	220		
102KM(E,N)14	625	825	1000(900~1100)	1650	280	190	200					
112KM(E,N)14	680	895	1100(990~1210)	1815	310	205	180					
122KM(E,N)14	750	990	1200(1080~1320)	1880	338	215	150					