

Metal Oxide Varistors Data Sheet

Features

- 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 (V1mA) range from 150V to 1200V
- Rated current: 20A
- Rated Functioning Temperature:136(°C)
- Fast responding to transient over-voltage and limited current
- Large absorbing transient energy capability
- Low clamping ratio and no follow-on current
- Meets MSL level 1, per J-STD-020
- Operating Temperature : -40°C ~ +85°C
- Storage Temperature : -40°C ~ +85°C

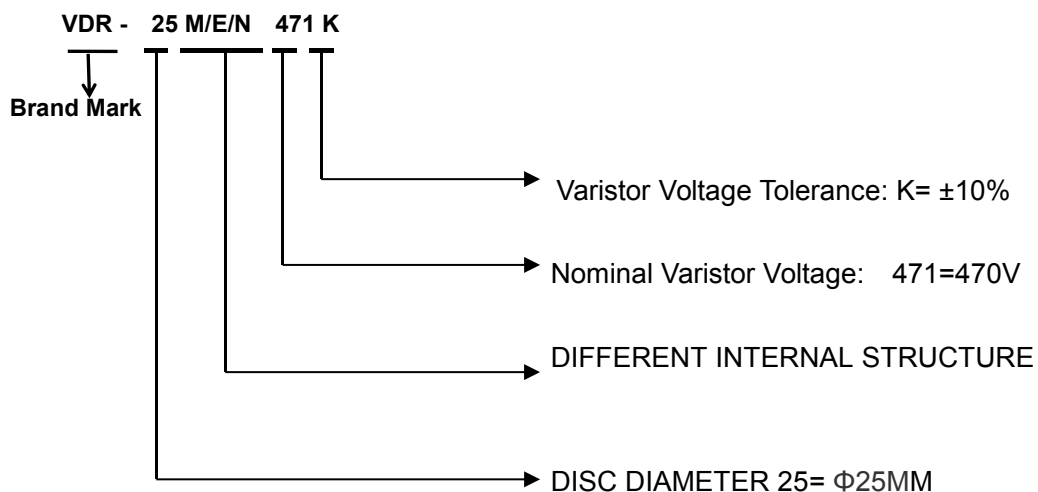
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RoHS



Applications

- 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
- AC panel protection Modules

Description of Part Number



Delivery Time

TMOV Part number	Delivery Time	Packing Quantity
VDR-25M/E/N151K ~ VDR-25M/E/N122K	24days	50PCS

Specifications are subject to change without notice

1

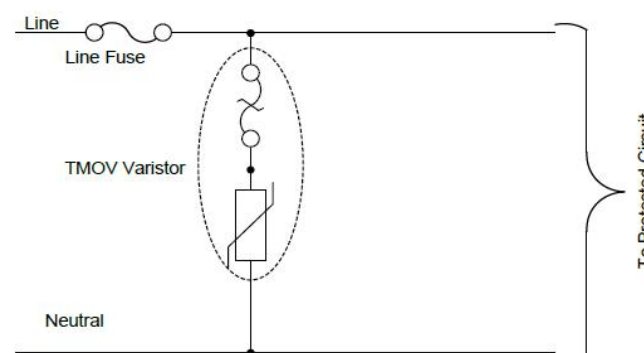
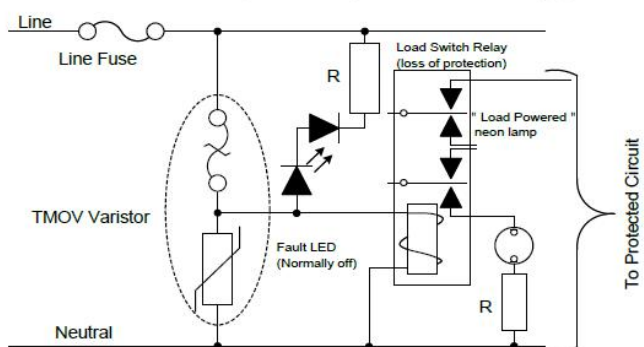
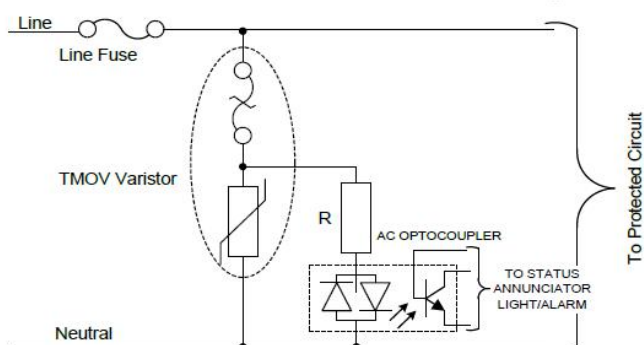
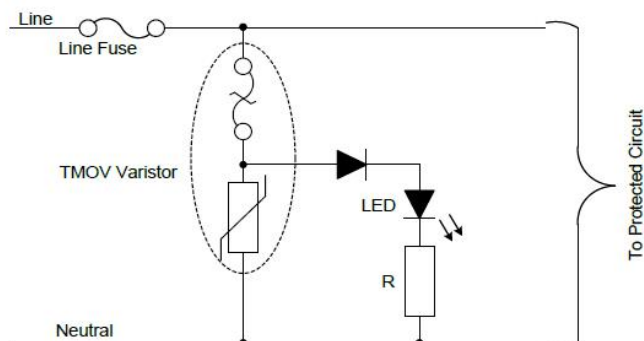
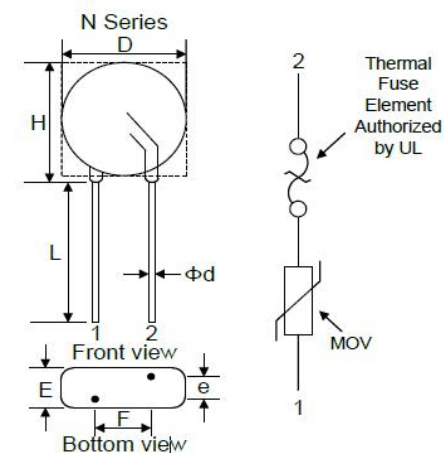
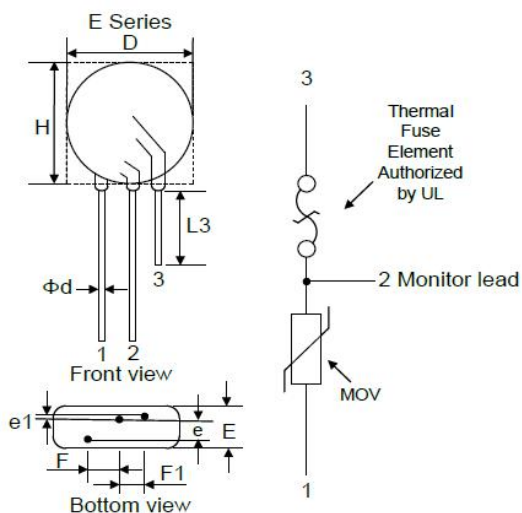
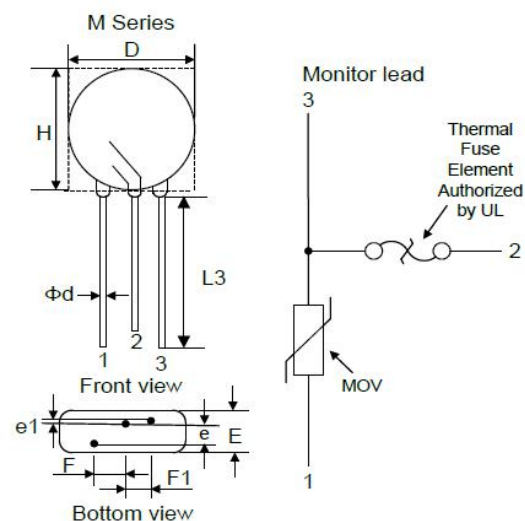
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Lead configurations and application examples



Dimension

Symbol		HUAAN'S M / E/ N Varistor			Unit: mm
		25M	25E	25N	
D(Max)		29.0mm	29.0mm	29.0mm	
H(Max)		32.0mm	32.0mm	32.0mm	
F(±1.0)		7.5mm	12.5mm / 7.5mm	12.5mm / 7.5mm	
F1(±1.0)		5.0mm	6.5mm / 5.0mm	--	
e(Max)	151K ~ 391K	3.8mm	3.8mm	3.8mm	
	431K ~ 621K	5.5mm	5.5mm	5.5mm	
	681K ~ 911K	7.8mm	7.8mm	7.8mm	
	102K ~ 122K	10.0mm	10.0mm	10.0mm	
e1(Max)	151K ~ 391K	2.3±1.0mm	2.3±1.0mm	--	
	431K ~ 621K				
	681K ~ 911K				
	102K ~ 122K				
E(Max)	151K ~ 391K	11.8mm	11.8mm	11.8mm	
	431K ~ 621K	13.5mm	13.5mm	13.5mm	
	681K ~ 911K	15.8mm	15.8mm	15.8mm	
	102K ~ 122K	18.0mm	18.0mm	18.0mm	
L(Min)		20.0mm	20.0mm	20.0mm	
L3(Min)		10.0mm	10.0mm	--	
Φd		1.0mm			

Electrical Characteristics



Part Number	Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage	Max Surge Current 8/20μs		Maximum Energy 10/1000μs		Rated Power	Typical Capacitance (Reference)
	V _{Ac} (V)	V _{Dc} (V)	V _{1mA} (V)	V _c (V)	1time	2times	10/1000μs	2ms	W	@1KHz(pf)
				AT 150A						
25M/E/N151K	95	125	150(135~165)	250	15000A	12000A	160J	105J	1.2	4300
25M/E/N181K	115	150	180(162~198)	300	15000A	12000A	175J	120J	1.2	3500
25M/E/N201K	130	170	200(180~220)	340	15000A	12000A	210J	150J	1.2	3200
25M/E/N221K	140	180	220(198~242)	360	15000A	12000A	230J	165J	1.2	2900
25M/E/N241K	150	200	240(216~264)	395	15000A	12000A	255J	180J	1.2	2650
25M/E/N271K	175	225	270(243~297)	455	15000A	12000A	285J	205J	1.2	2400
25M/E/N301K	190	250	300(270~330)	500	15000A	12000A	310J	220J	1.2	2100
25M/E/N331K	210	275	330(297~363)	550	15000A	12000A	325J	231J	1.2	1900
25M/E/N361K	230	300	360(324~396)	595	15000A	12000A	340J	240J	1.2	1750
25M/E/N391K	250	320	390(351~429)	650	15000A	12000A	360J	250J	1.2	1600
25M/E/N431K	275	350	430(387~473)	710	15000A	12000A	440J	310J	1.2	1500
25M/E/N471K	300	385	470(423~517)	775	15000A	12000A	490J	345J	1.2	1400
25M/E/N511K	320	415	510(459~561)	845	15000A	12000A	530J	370J	1.2	1250
25M/E/N561K	350	460	560(504~616)	925	15000A	12000A	560J	390J	1.2	1150
25M/E/N621K	385	505	620(558~682)	1025	15000A	12000A	590J	410J	1.2	1050
25M/E/N681K	420	560	680(612~748)	1120	15000A	12000A	620J	430J	1.2	950
25M/E/N751K	460	615	750(675~825)	1240	15000A	12000A	630J	440J	1.2	850
25M/E/N781K	485	640	780(702~858)	1290	15000A	12000A	675J	470J	1.2	850
25M/E/N821K	510	670	820(738~902)	1355	15000A	12000A	690J	480J	1.2	500
25M/E/N911K	550	745	910(819~1001)	1500	15000A	12000A	715J	500J	1.2	700
25M/E/N102K	625	825	1000(900~1100)	1650	15000A	12000A	750J	505J	1.2	650
25M/E/N112K	680	895	1100(990~1210)	1815	15000A	12000A	780J	550J	1.2	600
25M/E/N122K	750	990	1200(1080~1320)	1980	15000A	12000A	840J	590J	1.2	550

Mechanical Characteristics

Items	Test conditions / Methods	Specifications
Tensile Strength of Terminals	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. Terminal diameter (mm) Force(kg) 0.5< d≤0.8 1.0 0.8< d≤1.25 2.0 1.25< d 4.0	No visible damage ΔV1mA/V1mA ≤5%
Bending Strength of Terminals	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. Terminal diameter (mm) Force(kg) 0.5< d≤0.8 1.0 0.8< d≤1.25 2.0 1.25< d 4.0	No visible damage ΔV1mA/V1mA ≤5%
Vibration	Frequency range: 10~55 Hz Amplitude: 0.75mm or 98m/s ² Direction: 3 mutually perpendicular directions, 2hrs each.	No visible damage ΔV1mA/V1mA ≤5%
Solder ability	Solder Temp: 245±5℃ Dipping Time: 2±0.5 sec	At least 95% of terminal electrode is covered by new solder
Resistance to Soldering Heat	Solder Temp: 260±5℃ Dipping Time: ≤5 sec	No visible damage ΔV1mA/V1mA ≤10%

Reliability

Items	Test conditions / Methods	Specifications															
High Temperature Storage	Ambient Temp: 85±2℃ Duration: 1000hrs	ΔV1mA/V1mA ≤5%															
Low Temperature Storage	Ambient Temp: -40±2℃ Duration: 1000hrs	ΔV1mA/V1mA ≤5%															
Humidity	Ambient Temp: 40±2℃, 90~95% R.H. Duration: 1000hrs	ΔV1mA/V1mA ≤5%															
Temperature Cycle	The conditions shown below shall be repeated 5 cycles <table> <tr> <th>Step</th><th>Temperature (℃)</th><th>Period (minutes)</th></tr> <tr> <td>1</td><td>-40±3</td><td>30±3</td></tr> <tr> <td>2</td><td>Room temperature</td><td>15±3</td></tr> <tr> <td>3</td><td>85±3</td><td>30±3</td></tr> <tr> <td>4</td><td>Room temperature</td><td>15±3</td></tr> </table>	Step	Temperature (℃)	Period (minutes)	1	-40±3	30±3	2	Room temperature	15±3	3	85±3	30±3	4	Room temperature	15±3	No visible damage ΔV1mA/V1mA ≤5%
Step	Temperature (℃)	Period (minutes)															
1	-40±3	30±3															
2	Room temperature	15±3															
3	85±3	30±3															
4	Room temperature	15±3															
High Temperature Load	Ambient Temp: 85±2℃ Duration: 1000hrs Load: Max. Allowable Voltage In AC eara.	ΔV1mA/V1mA ≤10%															
Damp Heat Load	Ambient Temp: 40±2℃, 90~95% R.H. Duration: 1000hrs Load: Max. Allowable Voltage	No visible damage ΔV1mA/V1mA ≤10%															
Voltage Proof	Metal balls method, 2500Vac 1 min.	No visible damage															

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