Metal Oxide Varistors Data Sheet

Features

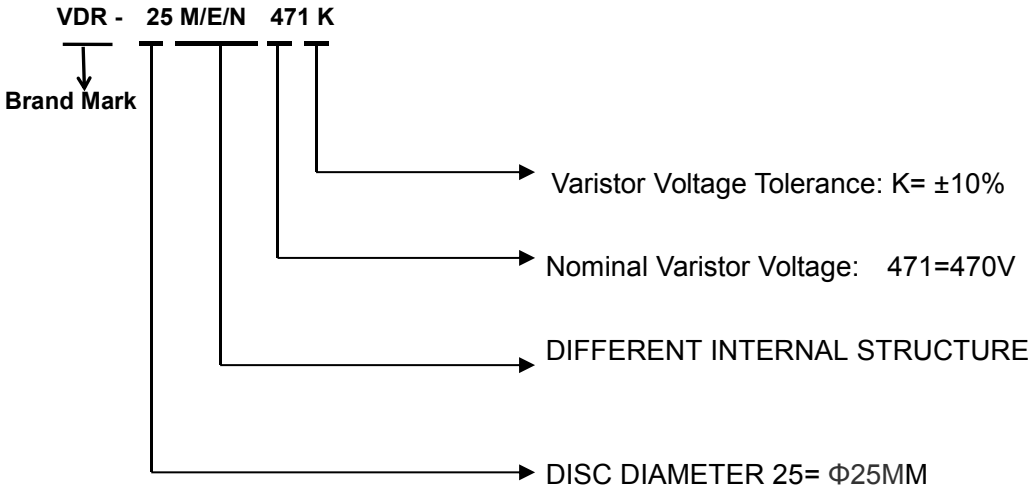
RoHS

·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(℃)
·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℃ ~ +85℃
·Storage Temperature：-40℃ ~ +85℃

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

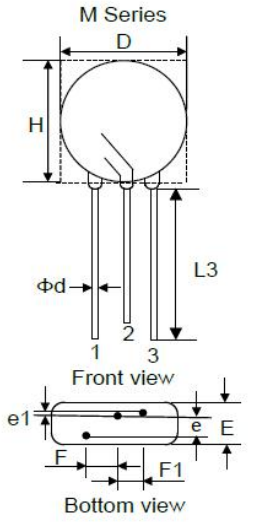
Description of Part Number

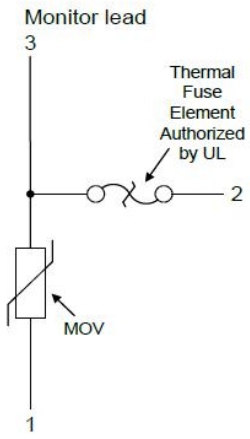


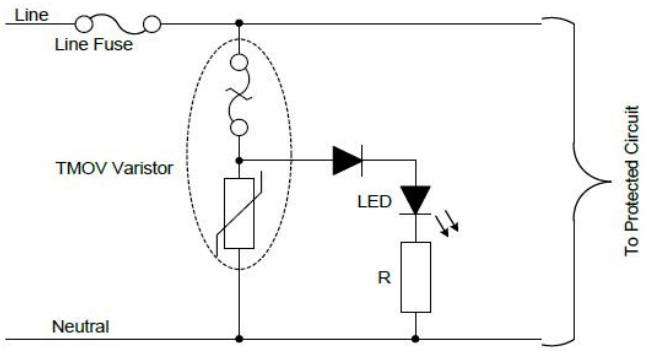
Delivery Time

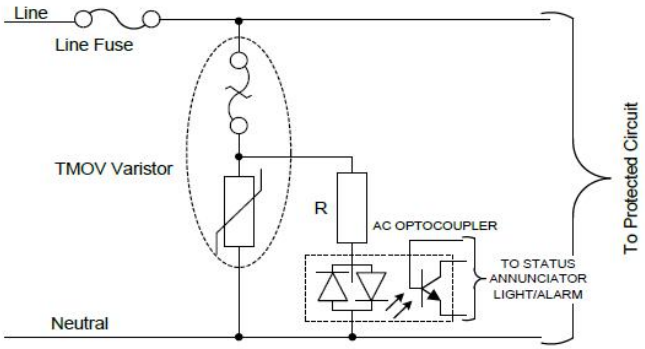
TMOV Part number	Delivery Time	Packing Quantity
VDR-25M/E/N151K ~ VDR-25M/E/N122K	24days	50PCS

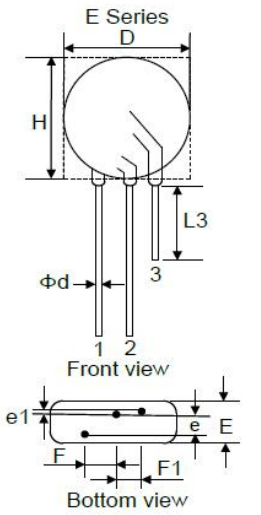
Lead configurations and application examples

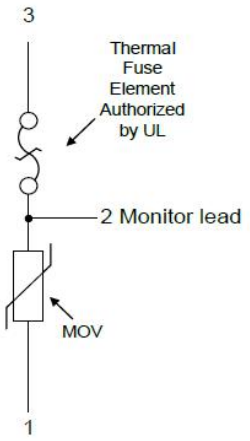


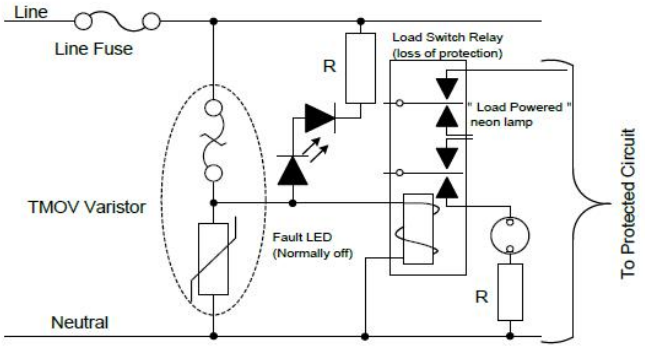


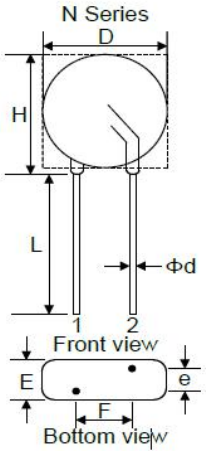


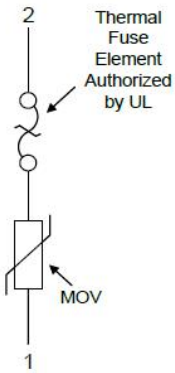


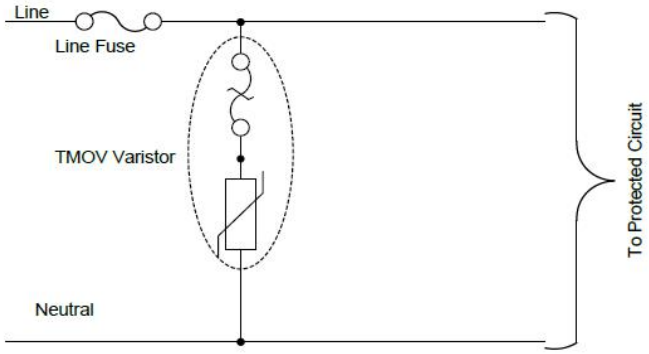












Dimension

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

RoHS

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)	Vc(V) AT 150A	1time	2times	10/1000μs	2ms	W	@1KHz(pf)
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/s2 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 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%
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