

Metal Oxide Varistors Data Sheet

Features

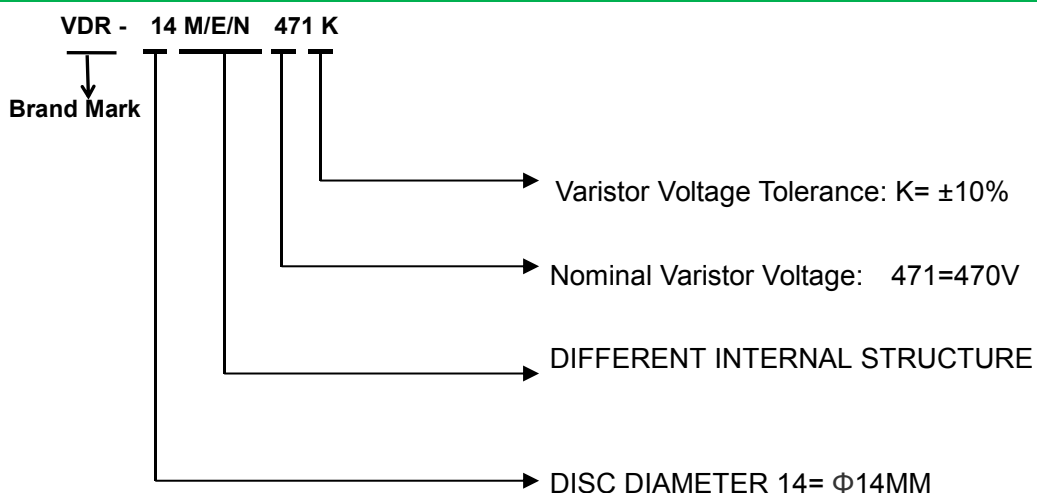
- TMOV integrated thermal protection device
- High peak surge current rating up to 6KA
- Designed to facilitate compliance to UL1449 for TVSS products
- Wide operating voltage (V1mA) range from 82V to 1200V
- Rated current: 5A
- Rated Functioning Temperature:136(°C)
- Fast responding to transient over-voltage 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



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

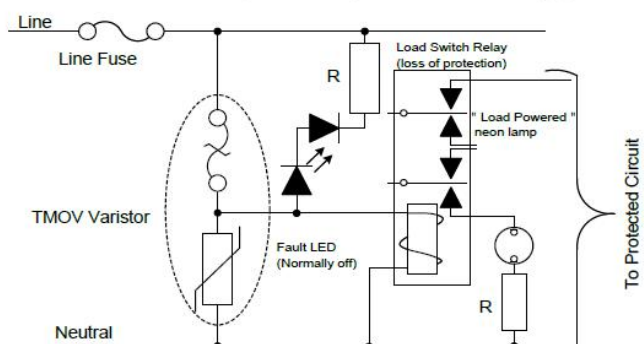
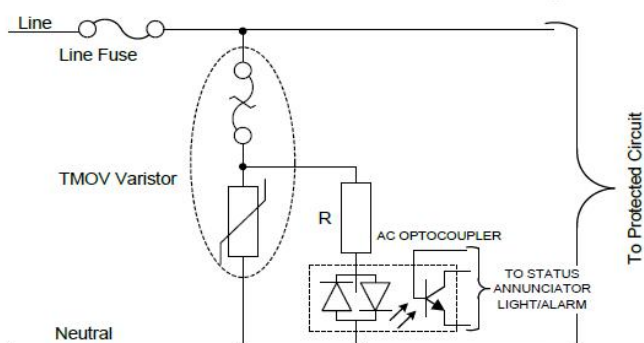
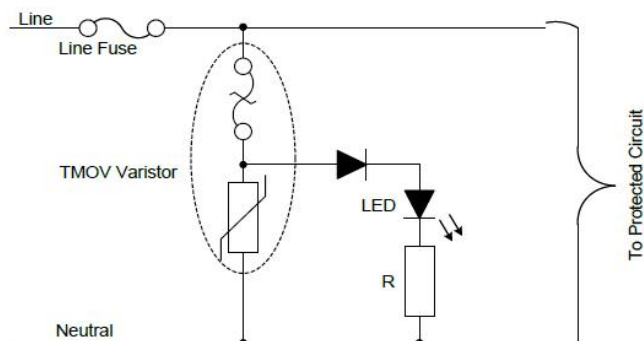
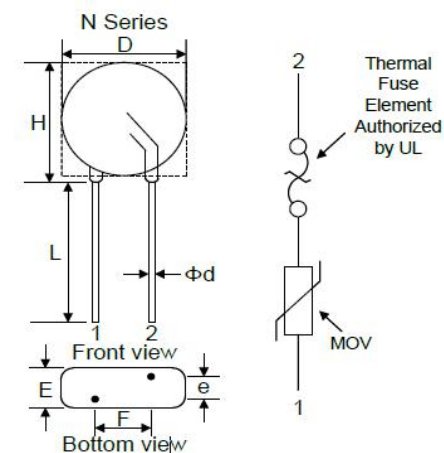
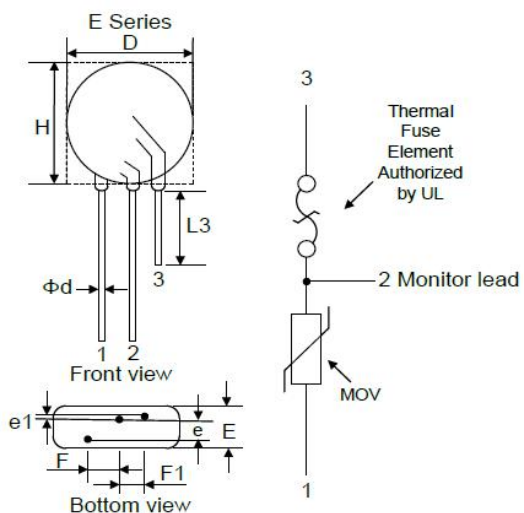
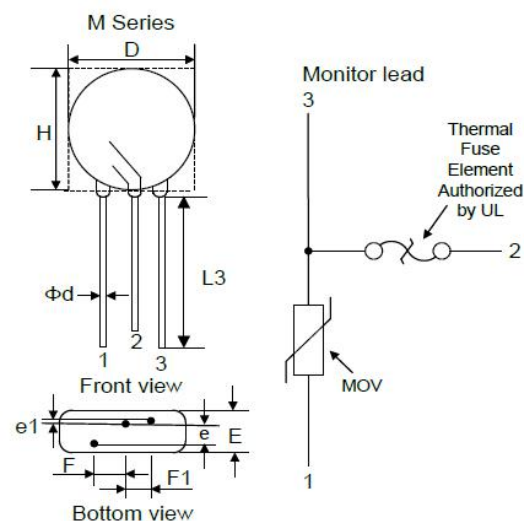
Description of Part Number



Delivery Time

Standard MOV	Delivery Time
VDR-14M/E/N820K ~ VDR-14M/E/N122K	24days

Lead configurations and application examples



Dimension

Symbol		HUAAN'S M / E/ N Varistor			Unit: mm
		14M	14E	14N	
D(Max)		19.0mm	19.0mm	19.0mm	
H(Max)		21.0mm	21.0mm	21.0mm	
F(±1.0)		7.5mm	7.5mm	7.5mm	
F1(±1.0)		5.0mm	5.0mm	--	
e(Max)	820K ~ 121K	2.8mm	2.8mm	2.8mm	
	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)	820K ~ 121K	1.3±0.8mm	1.3±0.8mm	--	
	151K ~ 391K				
	431K ~ 621K				
	681K ~ 911K				
	102K ~ 122K				
E(Max)	820K ~ 121K	8.8mm	8.8mm	8.8mm	
	151K ~ 391K	9.8mm	9.8mm	9.8mm	
	431K ~ 621K	11.5mm	11.5mm	11.5mm	
	681K ~ 911K	13.8mm	13.8mm	13.8mm	
	102K ~ 122K	16.0mm	16.0mm	16.0mm	
L(Min)		20.0mm	20.0mm	20.0mm	
L3(Min)		10.0mm	10.0mm	--	
Φd		0.8mm			

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) AT 50A	1time	2times	10/1000μs	2ms	W	@1KHz(pf)
14M/E/N820K	50	65	82(73.8~90.2)	135	4500A	2500A	27J	22J	0.6	2400
14M/E/N101K	60	85	100(90~110)	165	4500A	2500A	33J	28J	0.6	2000
14M/E/N121K	75	100	120(108~132)	200	4500A	2500A	40J	32J	0.6	1700
14M/E/N151K	95	125	150(135~165)	250	6000A	4500A	50J	40J	0.6	1300
14M/E/N181K	115	150	180(162~198)	300	6000A	4500A	58J	50J	0.6	1100
14M/E/N201K	130	170	200(180~220)	340	6000A	4500A	70J	57J	0.6	1000
14M/E/N221K	140	180	220(198~242)	360	6000A	4500A	78J	60J	0.6	900
14M/E/N241K	150	200	240(216~264)	395	6000A	4500A	85J	63J	0.6	830
14M/E/N271K	175	225	270(243~297)	455	6000A	4500A	100J	70J	0.6	740
14M/E/N301K	190	250	300(270~330)	500	6000A	4500A	107J	77J	0.6	670
14M/E/N331K	210	275	330(297~363)	550	6000A	4500A	115J	85J	0.6	610
14M/E/N361K	230	300	360(324~396)	595	6000A	4500A	125J	93J	0.6	560
14M/E/N391K	250	320	390(351~429)	650	6000A	4500A	140J	100J	0.6	510
14M/E/N431K	275	350	430(387~473)	710	6000A	4500A	155J	115J	0.6	460
14M/E/N471K	300	385	470(423~517)	775	6000A	4500A	175J	125J	0.6	430
14M/E/N511K	320	415	510(459~561)	845	6000A	4500A	190J	125J	0.6	390
14M/E/N561K	350	460	560(504~616)	925	6000A	4500A	200J	125J	0.6	360
14M/E/N621K	385	505	620(558~682)	1025	6000A	4500A	210J	125J	0.6	320
14M/E/N681K	420	560	680(612~748)	1120	6000A	4500A	220J	130J	0.6	290
14M/E/N751K	460	615	750(675~825)	1240	6000A	4500A	225J	143J	0.6	270
14M/E/N781K	485	640	780(702~858)	1290	6000A	4500A	240J	148J	0.6	260
14M/E/N821K	510	670	820(738~902)	1355	6000A	4500A	245J	157J	0.6	240
14M/E/N911K	550	745	910(819~1001)	1500	6000A	4500A	255J	175J	0.6	220
14M/E/N102K	625	825	1000(900~1100)	1650	6000A	4500A	280J	190J	0.6	200
14M/E/N112K	680	895	1100(990~1210)	1815	6000A	4500A	310J	205J	0.6	180
14M/E/N122K	750	990	1200(1080~1320)	1980	6000A	4500A	338J	215J	0.6	150

Packing Information

Part Number	Quantity	Packaging Option	Packaging Specification
14M/E/NxxxK	200PCS	Plastic bag	Bulk Pack

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															