

### Plastic seal Metal Oxide Varistors (MOV)

#### Features

- Wide operating voltage (V1mA) range from 560V to 680V
- Fast responding to transient over-voltage
- Large absorbing transient energy capability
- Low clamping ratio and no follow-on current
- Operating Temperature: -40°C ~ +125°C
- Safety certification:

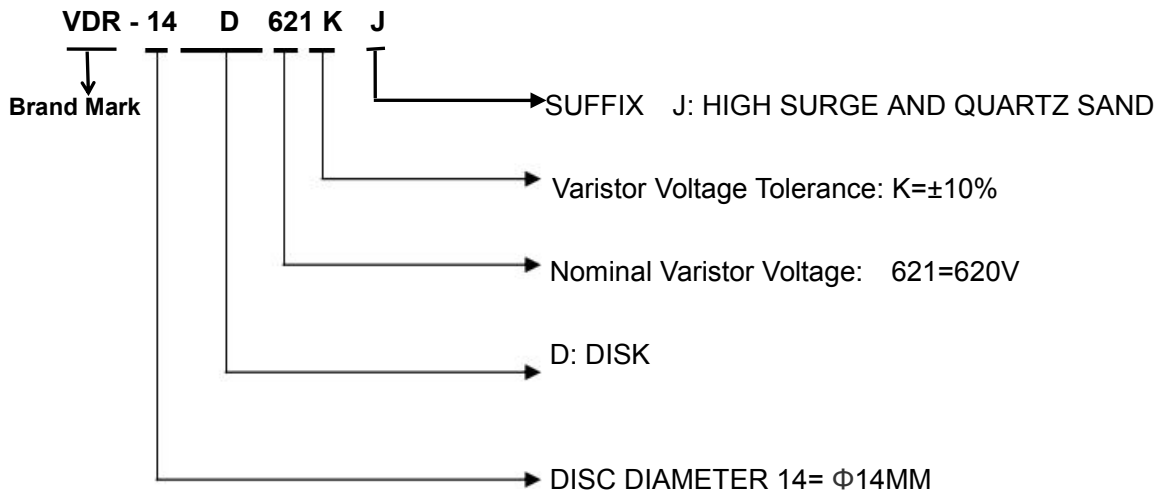


#### Applications

Air Conditioner



#### Description of Part Number



#### Delivery Time

Standard MOV	Delivery Time	High Surge MOV	Delivery Time	6KV/3KA MOV	Delivery Time
VDR-14D561KJ	15days	VDR-14D621KJ	15days	VDR-14D681KJ	15days

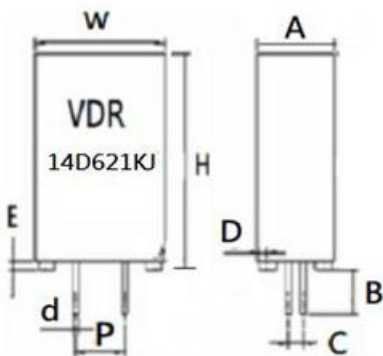
### Electrical Characteristics

Part Number	Maximum Allowable Voltage		Varistor Voltage $V_{1mA}(V)$	Maximum Clamping Voltage $V_c(V)$ AT 50A	Withstandin Surge Current 8/20uS		Maximum Energy (10/1000μs) (J) High Surge	Typical Capacitance (Reference) 1KHz(pf)	Safety Certification	
	$V_{AC}(V)$	$V_{DC}(V)$			I(A) 2 times	1 time			UL / CUL	VDE
<b>VDR-14D561KJ</b>	350	460	560(504~616)	925	4500A	6000A	185	360	√	√
<b>VDR-14D621KJ</b>	385	505	620(558~682)	1025	4500A	6000A	190	320	√	√
<b>VDR-14D681KJ</b>	420	560	680(612~748)	1120	4500A	6000A	200	290	√	√

### Electrical Parameter

Specification Item	Performance Requirements	Unit	Description and Test methods
2.1	Tempfrature Coefficient	0~0.05	$\frac{U_{1mA}(25^{\circ}C) - U_{1mA}(85^{\circ}C)}{U_{1mA}(25^{\circ}C)} \times \frac{1}{60} \times 100$ %
2.2	Leakage Current	≤20	μA The maximum continuous DC working Voltage is applied to both ends,the Current Through the Varistor
2.3	Impulse Response Time	<25	nSec
2.4	Encapsulating Material	Blue flame retardant epoxy resin +Quarta Sand,Encapsulating material has UL flammability classification 94V-O	
2.5	Main Material	Zinc Oxide	
2.6	Appearance	Without dirt & Crack,Marking should be clear	
2.7	Standard test environment conditions	All items shall be tested under the following environmental conditions. Temperature: 5 ~ 35°C,Relative humidity: 45 ~ 85%RH	

### Dimension(mm) and Marking



Symbol	Dimensions
W(±0.5)	20.0mm
H(±1.0)	24.8mm
d (±0.1)	0.8mm
P(±0.5)	8.0mm
A(±1.0)	11.5mm
B(±0.5)	4.0mm
C(±0.5)	2.5mm
D(±1.0)	2.5mm
E(±0.1)	1.0mm



## Environmental Requirements

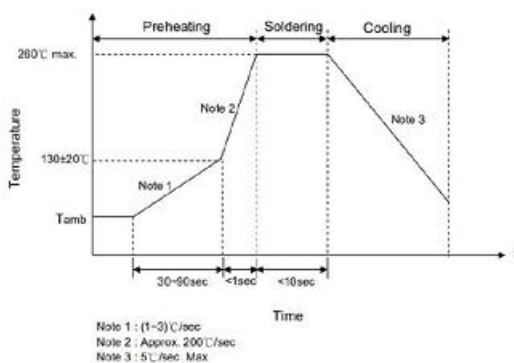
Item	Item Environmental Characteristics	Performance Requirements	Description and Test methods
3.1	Climatic Sequence	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ <p>No obvious mechanical damage</p>	IEC 68-2-4, Test Db dry heat: (125±2°C)×16hrs, Circulating hot and humid: A loop(55±2°C)×24hrs、 95~100%RH Chill: (-40±2°C)×2hrs, Circulating hot and humid: 1 time(55±2°C) ×24hrs、 95~100%RH、 The rest of the cycle 5 times, 24hrs/cycle.
3.2	steady state moist heat	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ <p>No obvious mechanical damage</p>	IEC68-2-3 Temperature/time: (40±2°C)/500hrs、 humidity: 90~95%RH.
3.3	Temperature changes rapidly	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ <p>No obvious mechanical damage</p>	IEC 68-2-14, Test Na TA=- 40°C, TB= +125°C ; five cycles, Let stand at each temperature for 30 minutes
3.4	upper category temperature durability	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 10\%$ <p>No obvious mechanical damage</p>	IEC 68-2-2 Temperature: 125°C±2°C、Time: 1000hrs。 Voltage: Maximum continuous working Voltage(AC)
3.5	hygrothermal environment durability	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 10\%$ <p>No obvious mechanical damage</p>	IEC68-2-3 Temperature: 125°C±2°C、Time: 500hrs、 humidity: 90~95%RH。 Voltage: Maximum continuous working Voltage(AC)
3.6	Operating Temperature	(-40°C ~ + 125°C)	Varistors do not need to derate use of the Temperature Range.
3.7	Storage Temperature	(-40°C ~ +150°C)	Varistors under no load
3.8	Insulation with stand voltage	≥2500VAC	The electrode leads of varistor,1 min.

### Mechanical Requirements

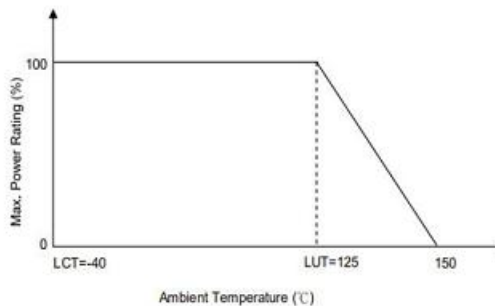
Item	Itemmechanical Characteristics	Performance Requirements	Description and Test methods
3.9	Quake	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ No obvious mechanical damage	IEC68-2-6, Test Fc Method B4 Total duration: 6hrs(Three directions, every direction 2hrs). Frequency range: 10 Hz~55 Hz、amplitude: 0.75mm or acceleration 98 m/s2
3.10	shock	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ No obvious mechanical damage	IEC 68-2-27, Test Ea impulse waveform : half-sine wave、 acceleration: 490m/s2 pulsewidth: 11ms. Three directions, every direction 6 times
3.11	Solderability	Dipping part 95% Covered with solder	IEC 68-2-20, Test Ta Method 1 Temperature: 235±5℃ Time: 2±0.5sec
3.12	Resistance to soldering Heat	No obvious mechanical damage	IEC 68-2-20, Test Tb Method 1A Tin temperature: 260℃、duration: 5sec
3.13	Terminals Strength	$\frac{\Delta U_{1mA}}{U_{1mA}} \leq \pm 5\%$ No obvious mechanical damage	IEC68-2-21, Test Ua stretch—strength: 10 N ( ø 0.6 and ø 0.8mm Lead wires) 20N( ø 1.0mm Lead wires)duration:10 sec. bend—strength: 5 N ( ø 0.6 and ø 0.8mm Lead wires)、 10N( ø 1.0mm Lead wires) Number of bending: 2 Times

### Soldering Recommendation and Power derating curve

■ Wave Soldering Profile



When operating temperature exceeds 125 , the power, the Max. continuous operation Voltage, the Max. Surge Current and the Max. Energy should be derated as below figure, the derated coefficient is -4%



## Notice for use

To avoid damage to other equipment due to fire or deterioration caused by varistor, please refer to and observe the following principles:

1) When a high current or high voltage flows into the varistor, the varistor itself may be damaged, heated, smoke, catch fire and burst.

To avoid this, fuses or circuit breakers can be installed at both ends of the varistor or power supply;

The fuses of the following specifications are for reference only:

	Diameter 05D	07D	10D	14D	20D
Rated current of fuse	1-2A	2-3A	3-5A	3-10A	5-15A

2) Do not allow the current and energy flowing into the varistor to exceed its rated value.

3) The marked VDR product brand names and marks are all patent applications of the company.

Customers who use or sell VDR products that are not specifically designated for such applications are at their own risk.

4) All VDR products, product specifications and data are subject to change without notice, please improve. For any data sheet Or any other data sheet. Any errors included. Inaccurate or incomplete shall not be liable.

5) Regarding the suitability of products for specific applications. It is the customer's responsibility to confirm that products with the characteristics described in the product specifications application. The data provided in the parameter data sheets and / or specifications may vary for different applications and performance may vary over time Variety. All operating parameters, including typical parameters, must be provided by the customer 's technical experts. Product specifications will not expand or Modify the VDR procurement terms and conditions in other ways, including but not limited to the guarantees described therein.

6) Do not place flammable substances near the varistor.

7) The varistor can only emit a small amount of heat energy, so it is not suitable for use in equipment that often generates sudden heat.

In addition, the higher the working environment of the varistor, the smaller the proportion of heat dissipated.

Varistors can only dissipate a small amount of heat energy, so they are not suitable for use in equipment that often generates sudden heat.

If a large amount of heat acts on the varistor in an instant, it is possible that the heat energy cannot be dissipated within the pulse time And the varistor is damaged.

8) When welding, please be careful not to melt the welding points of the varistor and the resin coating.

### Material category policy

All products of VDR hereby certify that RoHS-compliant products are in accordance with the definitions and Restrictions on June 8, 2011 regarding restrictions on the use of certain hazardous substances (Reach) in electrical and electronic equipment. We confirm All VDR products comply with the IEC 61249-2-21 JEDEC JS709A standard.