SIOV Metal Oxide Varistors

ThermoFuse varistors

Series/Type:	**MT40 series**
Ordering code:	**B72240M***
Date:	2025-03-12
Version:	i

Construction

- Strap terminated varistor with a thermal disconnecting system
- Flame retardant epoxy encapsulation
- Patented over-molding design

Applications

- Inverters
- Industrial power supplies
- Outdoor lighting systems and telecommunication systems
- SPD application

Features

- Compact size
- Short circuit current rating (SCCR) up to 200 kA according to UL1449
- High peak surge current up to 50 kA
- UL1449 recognized as a type 1CA for both AC and DC applications (file number E321126)
- Micro-switch normally open for remote indication/monitoring circuit
- Same electrode footprint of PCB for all types
- RoHS compliant

General technical data

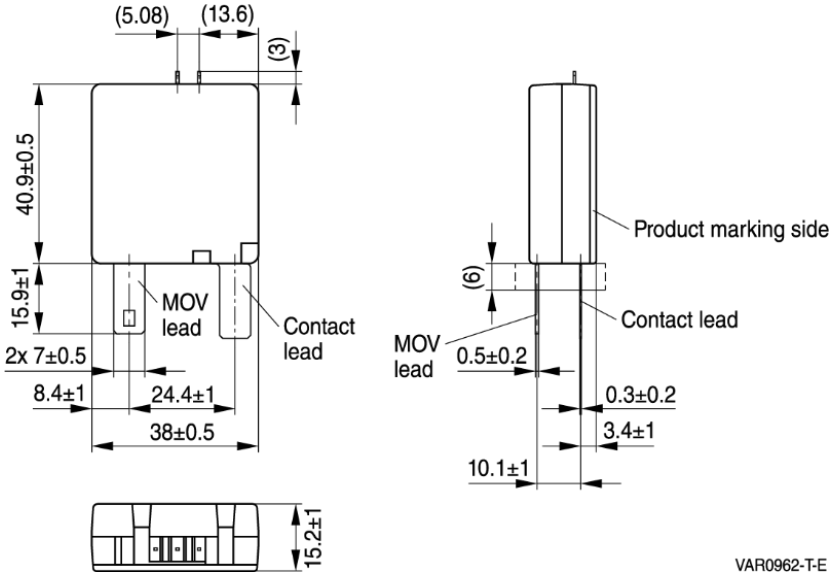
Climatic category to IEC 60068-1	40 / 85 / 56
Operating temperature	-40 …+85 °C
Storage temperature	-40 …+85 °C
Response time	< 25 ns
Coating material	UL94-V0 (black color)
Ingress protection	IP20
Electric strength	≥ 2500 V AC
Application altitude	< 5000 m
Installation	On board

Electrical specifications

Ordering codes	Type SIOV	Max. continuous operating voltage		Characteristics (25 °C)				
		V_{AC}	V_{DC}	V_V 1 mA	VPR	Ures. at 20 kA	Nominal discharge current (8/20 µs, 15 pulses)	Peak surge current (8/20 µs, 1 pulse)
		V	V	V	V	V	kA	kA
B72240M0151M501	MT40K150M5	150	200	240 (228 …270)	500	670	20	50
B72240M0271M501	MT40K275M5	275	350	430 (387 … 473)	1000	1200	20	50
B72240M0321M501	MT40K320M5	320	420	510 (459 … 561)	1000	1450	20	50
B72240M0381M501	MT40K385M5	385	505	620 (558 … 682)	1200	1700	20	50
B72240M0421M501	MT40K420M5	420	560	680 (612 … 748)	1500	1900	20	50
B72240M0551M501	MT40K550M5	550	750	910 (819 … 1001)	1800	2500	20	50

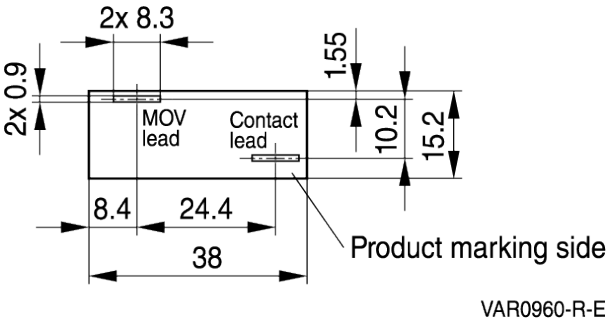
Note: Thermal disconnector may safely open without any damage to the device after peak surge current test.

Dimensional drawings (in mm)



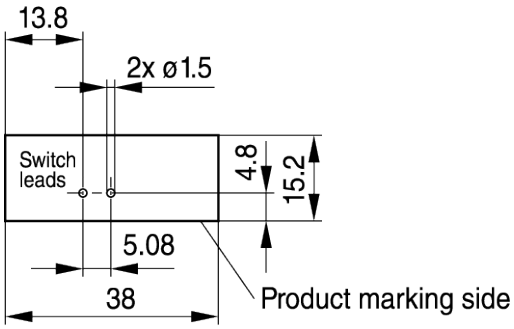
Remark: Dimension 10.1±1 and Dimension 3.4±1 tested in dashed box area

PCB layout for terminations (in mm)



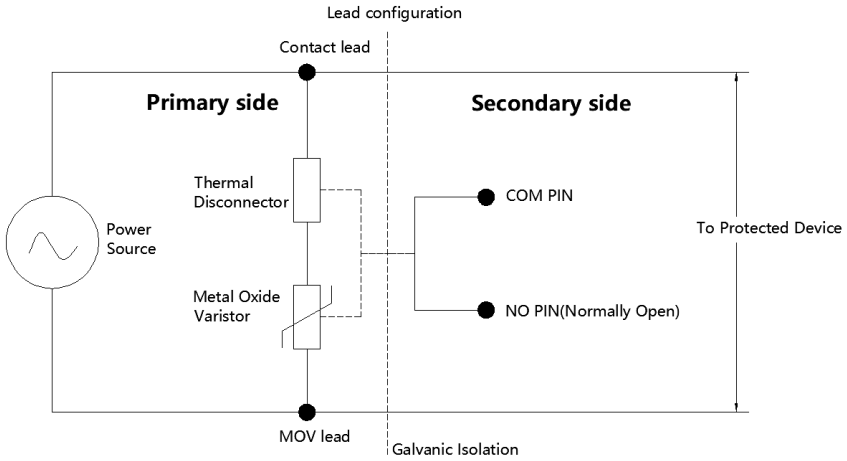
VAR0960-R-E

PCB layout for switch pins (in mm)



VAR0961-S-E

Typical circuit diagram with normally close switch

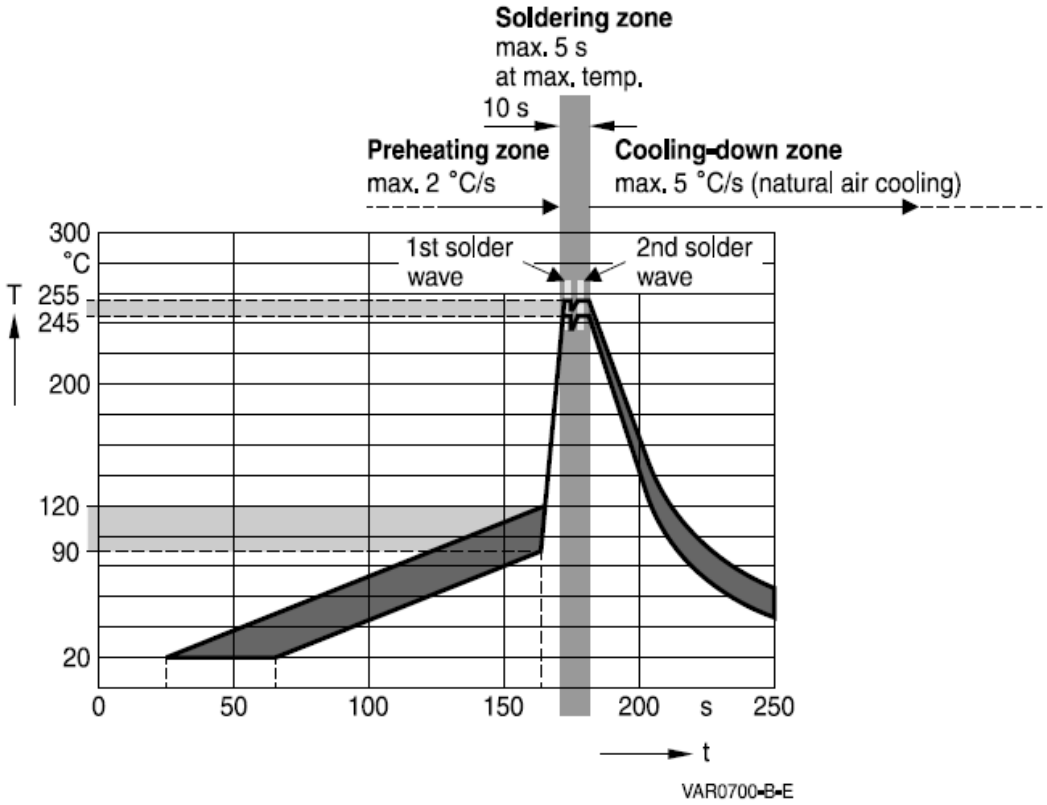


Typical wave soldering curve

Care must be taken when soldering the device into place because it contains a thermal fuse element. Reflow soldering is not recommended.

Two soldering methods are recommended:

(1) Manual soldering under max. 350 °C / 3 s: It is recommended to heat-sink the leads of the device.
(2) Wave soldering: It is very important that the temperatures of all preheat stages and the solder bath should be strictly controlled.



Cautions and warnings

General

1. TDK Electronics' metal oxide varistors are designed for specific applications and should not be used for purposes not identified in our specifications, application notes and data books unless otherwise agreed with TDK Electronics during the design-in-phase.
2. Ensure suitability of SIOVs through reliability testing during the design-in phase. SIOVs should be evaluated taking into consideration worst-case conditions.
3. For applications of SIOVs in line-to-ground circuits based on various international and local standards there are restrictions existing or additional safety measures required.

Storage

After shipment from TDK Electronics the SIOV type series should be soldered within the following time periods:

SIOV-S, -Q, L(S), -SNF, -ICL, -B, -E	24 months
SIOV-ETFV, -T, -SMD, -MT, -EM, -TM, -NT	12 months

The parts are to be left in the original packing to prevent oxidized terminals which can cause soldering problems.

Storage temperature:	-25 to 45 °C
Max. relative humidity (without condensation):	< 75% annual average,
	< 95% on max. 30 days per annum.

Handling

1. SIOVs must not be dropped.
2. Components must not be touched with bare hands. Gloves are recommended.
3. Avoid contamination of the surface of SIOV electrodes during handling, be careful of the sharp edge of SIOV electrodes.

Soldering (where applicable)

1. Use rosin-type flux or non-activated flux.
2. Insufficient preheating may cause ceramic cracks.
3. Rapid cooling by dipping in solvent is not recommended.
4. Complete removal of flux is recommended.
5. Temperature of all preheat stages and the solder bath must be strictly controlled especially for T series.

Mounting

1. Potting, sealing or adhesive compounds can produce chemical reactions in the SIOV ceramic that will degrade the component's electrical characteristics.
2. Overloading SIOVs may result in ruptured packages and expulsion of hot materials. For this reason, SIOVs should be physically shielded from adjacent components.

Operation

1. Use SIOVs only within the specified temperature operating range.
2. Use SIOVs only within the specified voltage and current ranges.
3. Environmental conditions must not harm the SIOVs. Use SIOVs only in normal atmospheric conditions. Avoid use in deoxidizing gases (chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, etc.), corrosive agents, humid or salty conditions. Contact with any liquids and solvents should be prevented.

This listing does not claim to be complete but merely reflects the experience of TDK Electronics.

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3. **The warnings, cautions and product-specific notes must be observed.**
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Important notes

8. The trade names EPCOS, CarXield, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, FilterCap, FormFit, InsuGate, LeaXield, MediPlas, MiniBlue, MiniCell, MKD, MKK, ModCap, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PiezoBrush, PlasmaBrush, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, SurfIND, ThermoFuse, WindCap, XieldCap are **trademarks registered or pending** in Europe and in other countries. Further information will be found on the Internet at www.tdk-electronics.tdk.com/trademarks.

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