SIOV Metal Oxide Varistors

ThermoFuse varistors

Series/Type:	**MT30 series**
Ordering code:	**B72230M***
Date:	2024-05-02
Version:	j

Construction

- Strap terminated varistor with a thermal disconnecting system
- Flame retardant epoxy encapsulation
- Patented over-molding design (CN107946011B and CN107946007B)

Applications

- Inverters
- Photovoltaic inverters
- Industrial power supplies
- Outdoor lighting systems and telecommunication systems
- Type 1 and Type 2 SPD application

Features

- Compact size
- Short circuit current rating (SCCR) up to 200 kA according to UL1449
- High peak surge current up to 25 kA
- UL1449 recognized as a type 1CA for both AC and DC applications (file number E321126)
- Isolated remote indication
- High reliability for PV application
- Same PCB footprint for all types
- RoHS compliant, lead-free

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

Nomenclature

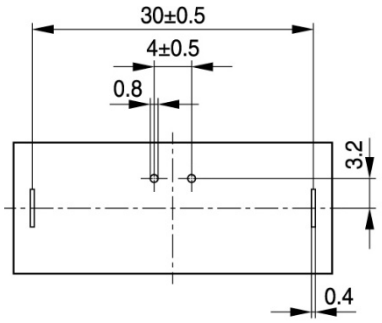
MT	=	Series designation
30	=	Rated disk diameter (mm)
K	=	Tolerance of V_v at 1 mA: ±10%
150 … 750	=	Max. operating AC voltage
M4	=	Separated monitor circuit

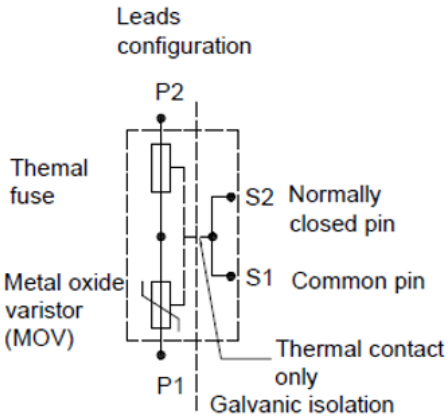
Electrical specifications

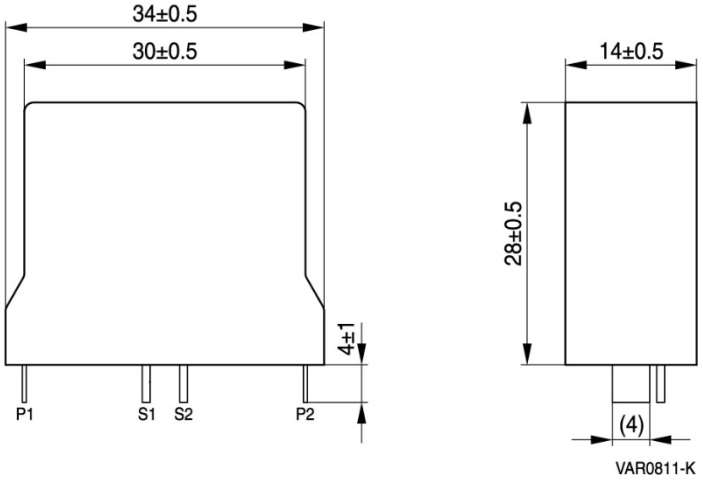
Ordering codes	Type SIOV	Maximum ratings 85 °C		Characteristics (25 °C)				
		Max. continuous operating voltage		I_n 8/20 µs[1)]	I_{max} 8/20 µs[1)]	W_{max} 2 ms	Voltage Protection Rating	P_{max}
		V_{AC}	V_{DC}				VPR	
		V	V	kA	kA	J	V	W
B72230M0151M401	MT30K150M4	150	200	20	25	215	600	1.2
B72230M0231M401	MT30K230M4	230	300	15	25	315	800	1.2
B72230M0271M401	MT30K275M4	275	350	15	25	375	900	1.2
B72230M0321M401	MT30K320M4	320	420	15	25	445	1200	1.2
B72230M0351M401	MT30K350M4	350	450	15	25	520	1200	1.2
B72230M0381M401	MT30K385M4	385	505	15	25	600	1500	1.2
B72230M0421M401	MT30K420M4	420	560	15	25	700	1500	1.2
B72230M0461M401	MT30K460M4	460	615	15	25	720	1800	1.2
B72230M0511M401	MT30K510M4	510	670	15	25	750	1800	1.2
B72230M0551M401	MT30K550M4	550	750	12.5	25	750	1800	1.2
B72230M0621M401	MT30K625M4	625	825	12.5	25	855	1800	1.2
B72230M0681M401	MT30K680M4	680	895	10	20	940	2000	1.2
B72230M0751M401	MT30K750M4	750	970	10	20	1025	2500	1.2

[1)] acc. to IEC61643-11

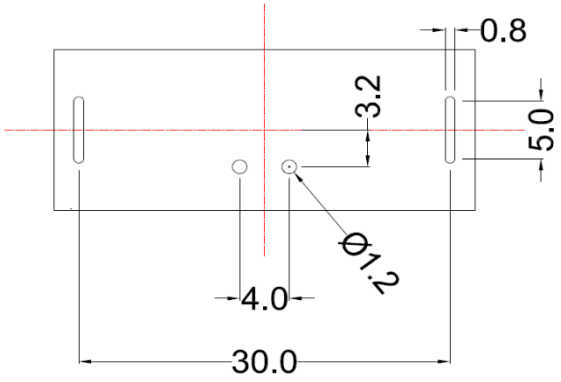
Dimensional drawings (in mm)



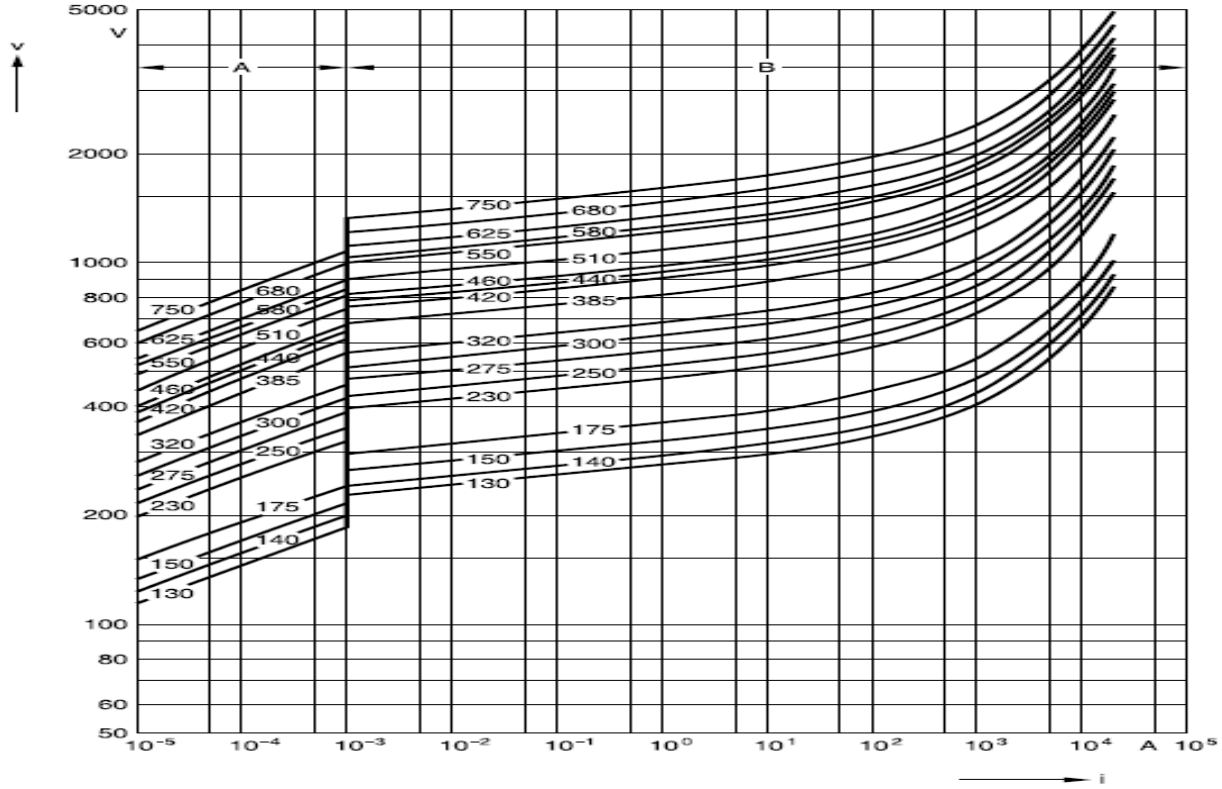




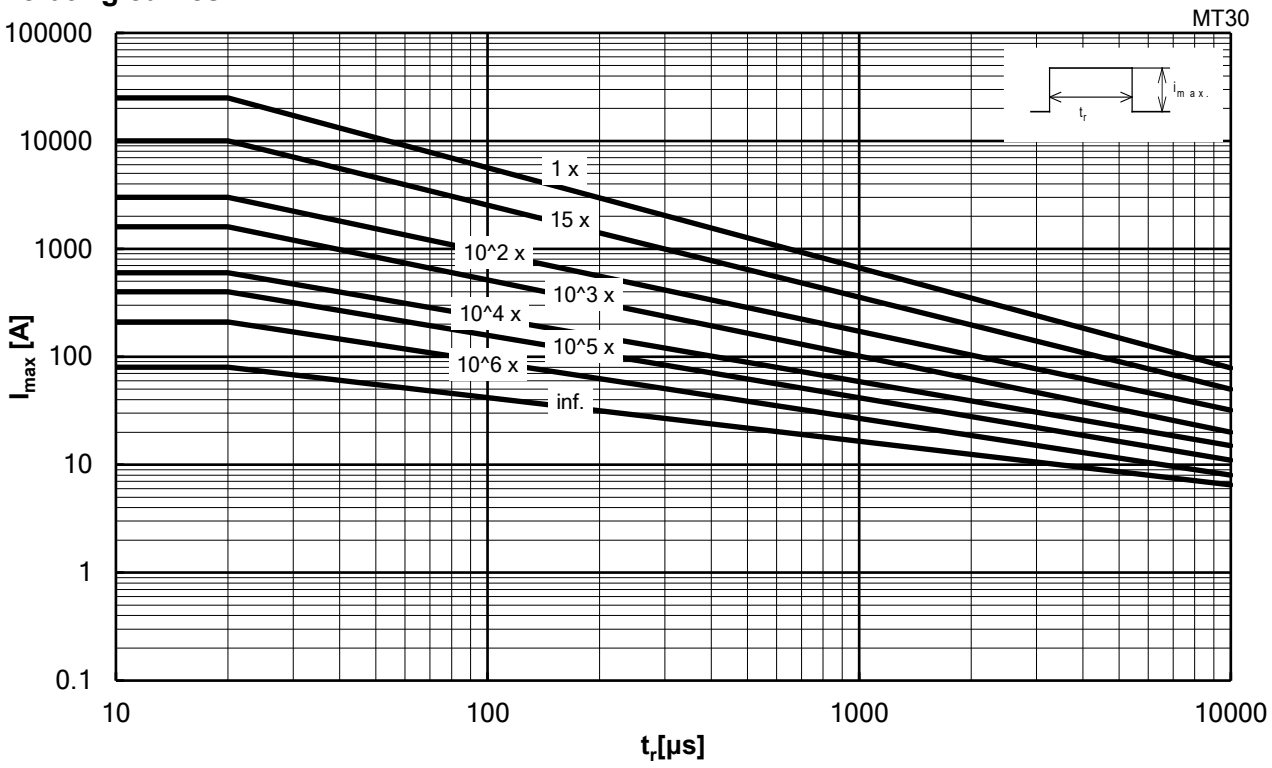
PCB layout



v/i characteristic



Derating curves

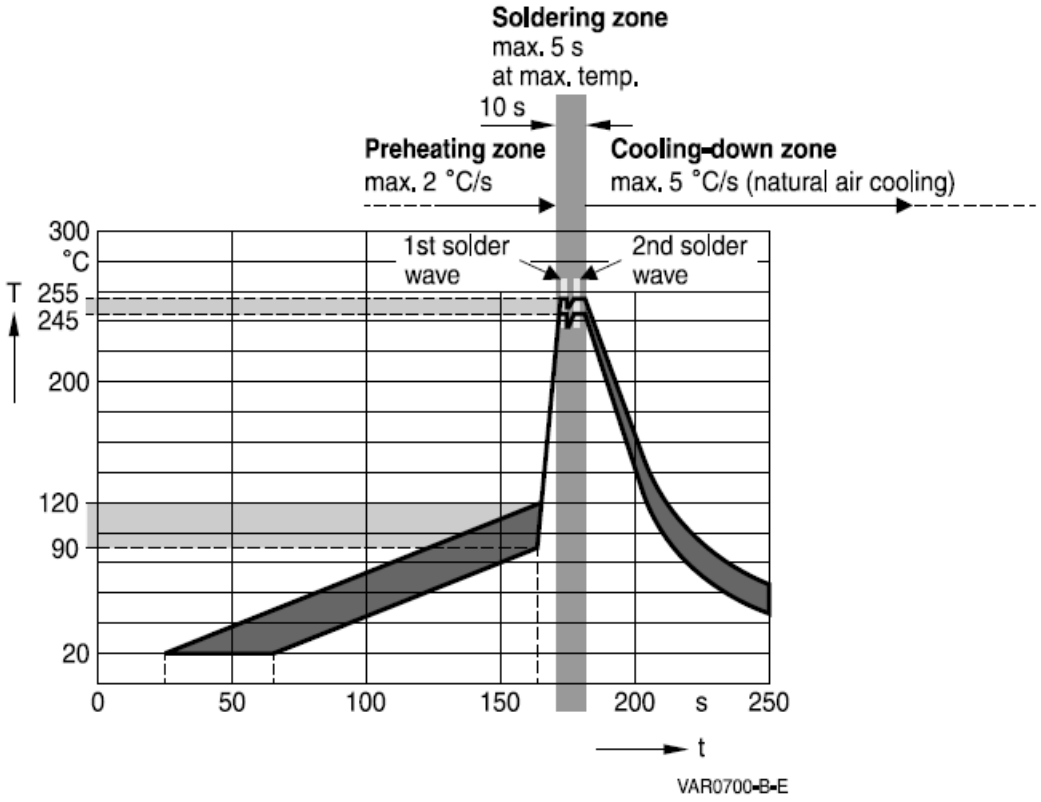


Typical wave soldering curve

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 are to 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 the T series (T14 and T20).

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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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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