



Metal Oxide Varistor

Thermal Protective Varistor

Series/Type: MT30***
Ordering code: B72230M ***M401
Date: 2020-01-10
Version: b

Applications

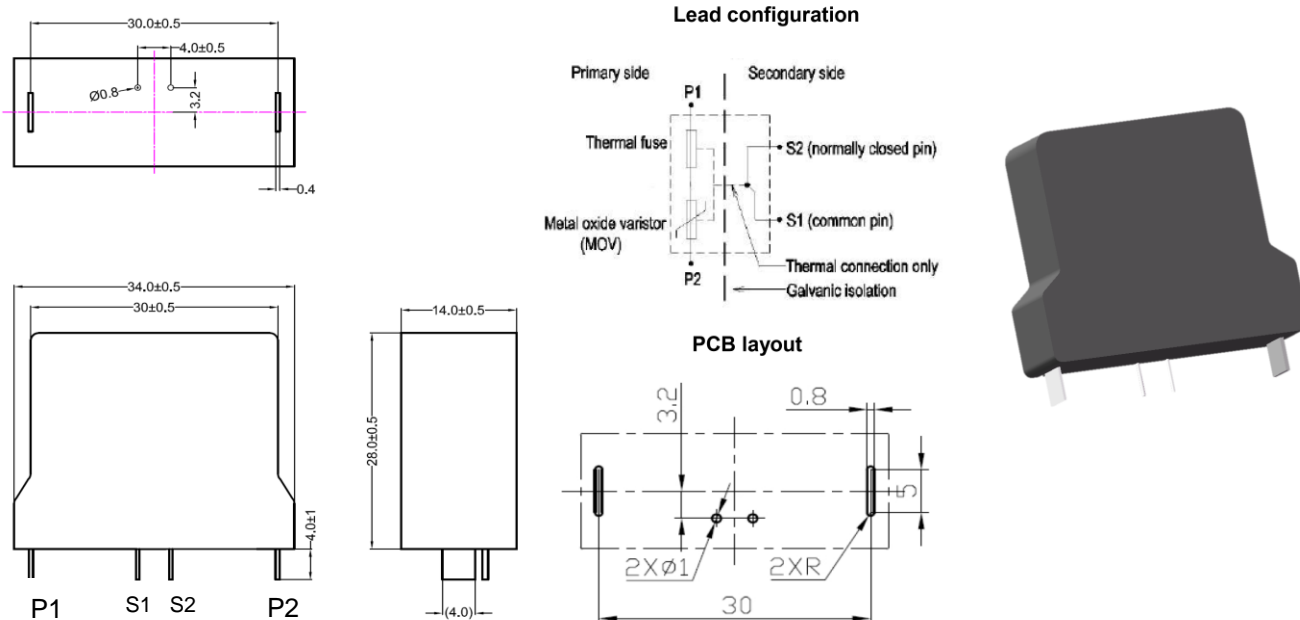
- Surge protection device
- AC/DC distribution
- Inverters
- UPS(Uninterruptable Power Supply)
- Telecommunication
- Household application

Feature

- High peak surge current up to 25 kA
- UL1449 recognized, Type 1CA (file number E321126)
- SCCR rating up to 200 kA
- Remote Signal Contact
- Compact size with patented over-molding design
- Compliance with UL1449-4 and IEC61643-11

SIOV Nomenclature

MT	=	TDK Electronics ThermoFuse varistor MT series
30	=	Rated disk diameter (mm)
K	=	Tolerance of Vv at 1 mA: $\pm 10\%$
150~750	=	Operating max. AC voltage
M4	=	Typical design

Dimensional drawing in mm


Type Name	Ordering Code
MT30K150M4	B72230M0151M401
MT30K320M4	B72230M0321M401
MT30K385M4	B72230M0381M401
MT30K420M4	B72230M0421M401
MT30K510M4	B72230M0511M401
MT30K550M4	B72230M0551M401
MT30K680M4	B72230M0681M401
MT30K750M4	B72230M0751M401

Electrical data

Note: the following technical specification is applicable for primary side

Maximum Ratings (85 °C)

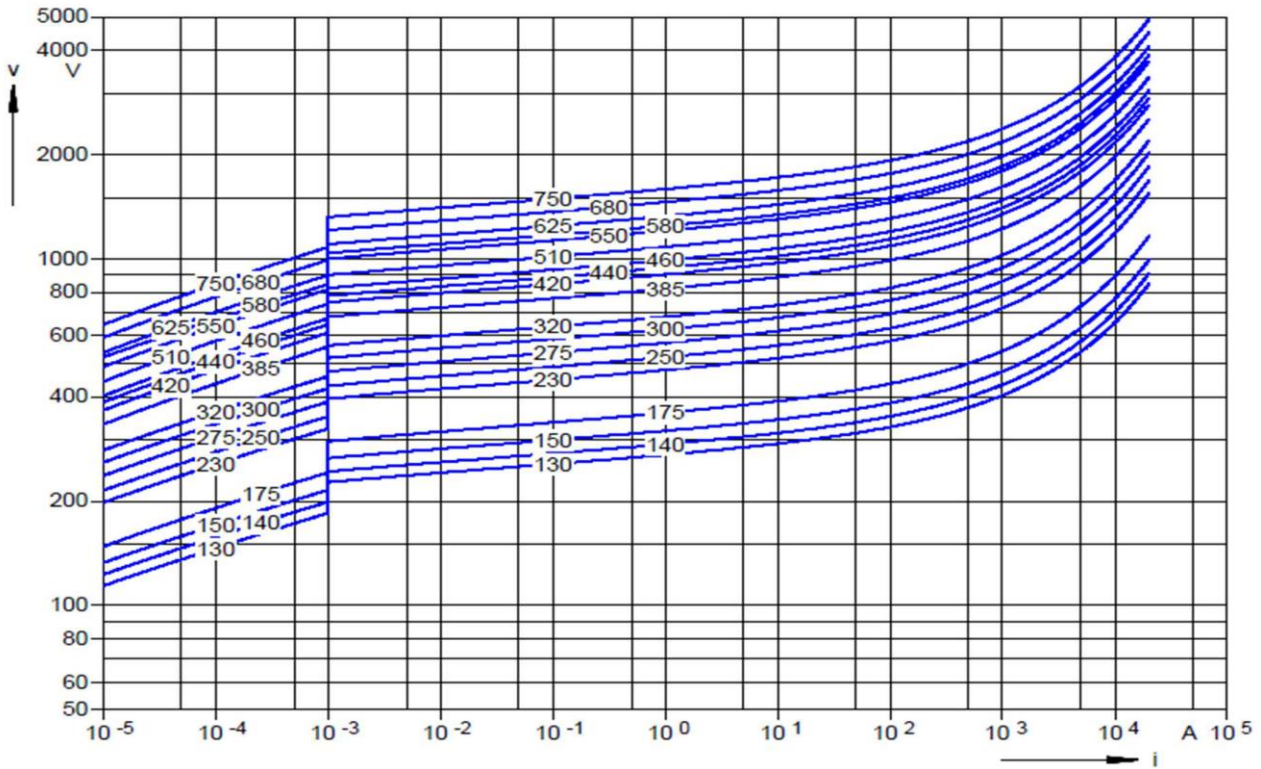
Type-SIOV	max. operating voltage		Norminal surge current	Max. surge current	max. energy absorption	average power dissipation
			(8/20 μ s) *)	(8/20 μ s) *)	(2 ms)	
	RMS Voltage [V]	DC Voltage [V]	[kA]	[kA]	[J]	[W]
MT30K150M4	150	200	15	25	215	1.2
MT30K320M4	320	420	15	25	445	1.2
MT30K385M4	385	505	15	25	600	1.2
MT30K420M4	420	560	15	25	700	1.2
MT30K510M4	499	670	15	25	750	1.2
MT30K550M4	499	750	12.5	25	750	1.2
MT30K680M4	680	895	12.5	25	940	1.2
MT30K750M4	750	970	10	25	1025	1.2

*) acc.IEC61643-11

Characteristics (25 °C):

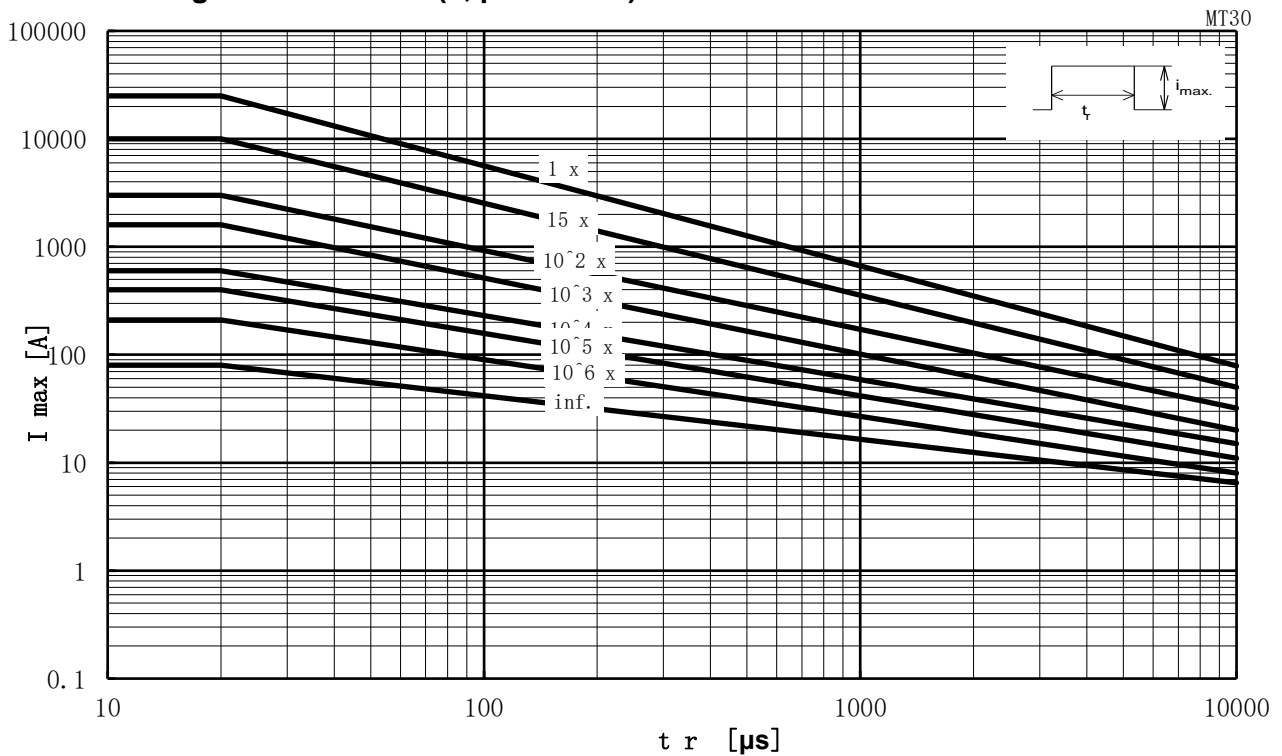
Type-SIOV	Varistor Voltage (Vv) at 1 mA	Voltage Protection Level	typical capacitance
			(1 kHz)
	[V]	[V]	[pF]
MT30K150M4	240 (228-270)	600	3250
MT30K320M4	510 \pm 10%	1000	1600
MT30K385M4	620 \pm 10%	1250	1250
MT30K420M4	680 \pm 10%	1350	1150
MT30K510M4	820 \pm 10%	1750	950
MT30K550M4	910 \pm 10%	1800	900
MT30K680M4	1100 \pm 10%	2100	710
MT30K750M4	1200 \pm 10%	2200	500

v/i characteristic



Derating curves

Maximum surge current $i_{max} = f(t_r, \text{pulse train})$



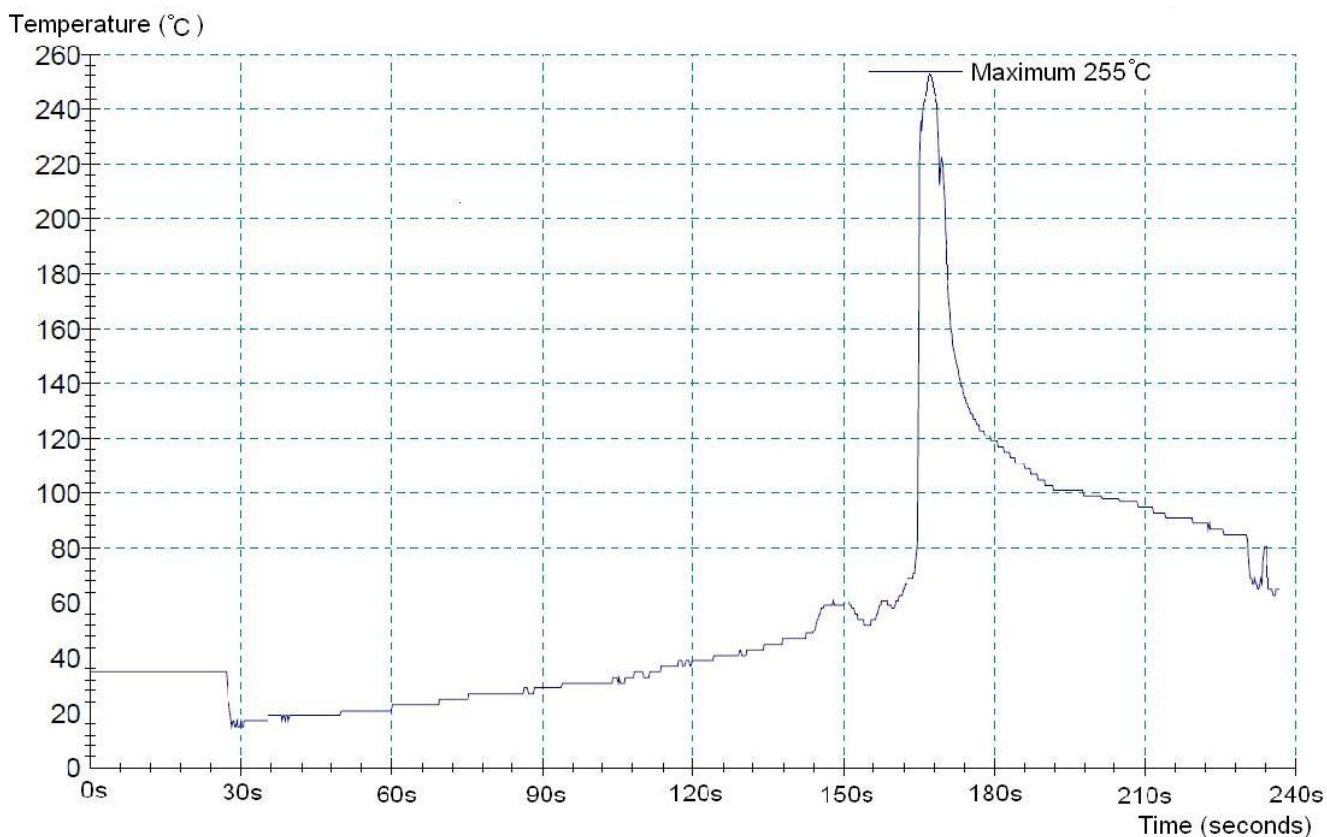
General technical data:

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	≥2500V(AC)
Application altitude	<5000m
Installation	On board

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 possible: (1) Manual soldering under max. 350 °C / 3s: 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 period:

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

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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, CeraCharge, CeraDiode, CeraLink, CeraPad, CeraPlas, CSMP, CTVS, DeltaCap, DigiSiMic, ExoCore, FilterCap, FormFit, LeaXield, MiniBlue, MiniCell, MKD, MKK, MotorCap, PCC, PhaseCap, PhaseCube, PhaseMod, PhiCap, PowerHap, PQSine, PQvar, SIFERRIT, SIFI, SIKOREL, SilverCap, SIMDAD, SiMic, SIMID, SineFormer, SIOV, ThermoFuse, WindCap 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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