SIOV Metal Oxide Varistors

ThermoFuse varistors

Series/Type:	**MT30 series**
Ordering code:	**B72230M***
Date:	2020-01-06
Version:	g

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Construction

- Square varistor element, leaded
- Coating: epoxy molding, flame-retardant to UL 94 V-0
- Terminals: tinned copper wire, metal compound wire

Applications

- Solar
- Inverters
- Street lighting
- Telecommunications
- Large power supplies

Features

- High peak surge current up to 25 kA
- UL1449 approved, type 1CA (file number E321126)
- Remote signal contact
- Compact size with patented overmolding design

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 circuite

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Electrical specifications

Maximum ratings (85 °C)

Ordering codes	Type SIOV	Max. operating voltage		I_n 8/20 µs[1]	I_{max} 8/20 µs[1]	W_{max} 2 ms	P_{max}
		V_{RMS} V	V_{DC} V	kA	kA	J	W
B72230M0151M401	MT30K150M4	150	200	15	25	215	1.2
B72230M0321M401	MT30K320M4	320	420	15	25	445	1.2
B72230M0381M401	MT30K385M4	385	505	15	25	600	1.2
B72230M0421M401	MT30K420M4	420	560	15	25	700	1.2
B72230M0511M401	MT30K510M4	499 [2]	670	15	25	750	1.2
B72230M0551M401	MT30K550M4	499 [3]	750	12.5	25	750	1.2
B72230M0681M401	MT30K680M4	680	895	12.5	25	940	1.2
B72230M0751M401	MT30K750M4	750	970	10	25	1025	1.2

[1] acc. to IEC61643-11

[2] acc. to UL1449 type 1CA. If no need of UL1449 certification, V_{RMS} specified for 510 V.

[3] acc. to UL1449 type 1CA. If no need of UL1449 certification, V_{RMS} specified for 550 V.

Characteristics (25 °C)

Ordering codes	Type SIOV	V_v 1 mA	$v_{c,max}$ 10 kA	C_{typ} 1 kHz
		V	V	pF
B72230M0151M401	MT30K150M4	240 (228 … 270)	900	3250
B72230M0321M401	MT30K320M4	510 (459 … 561)	1400	1600
B72230M0381M401	MT30K385M4	620 (558 … 682)	1500	1250
B72230M0421M401	MT30K420M4	680 (612 … 748)	1800	1150
B72230M0511M401	MT30K510M4	820 (738 … 902)	2050	950
B72230M0551M401	MT30K550M4	910 (819 … 1001)	2150	900
B72230M0681M401	MT30K680M4	1100 (990 … 1210)	2600	710
B72230M0751M401	MT30K750M4	1200 (1080 … 1320)	3500	500

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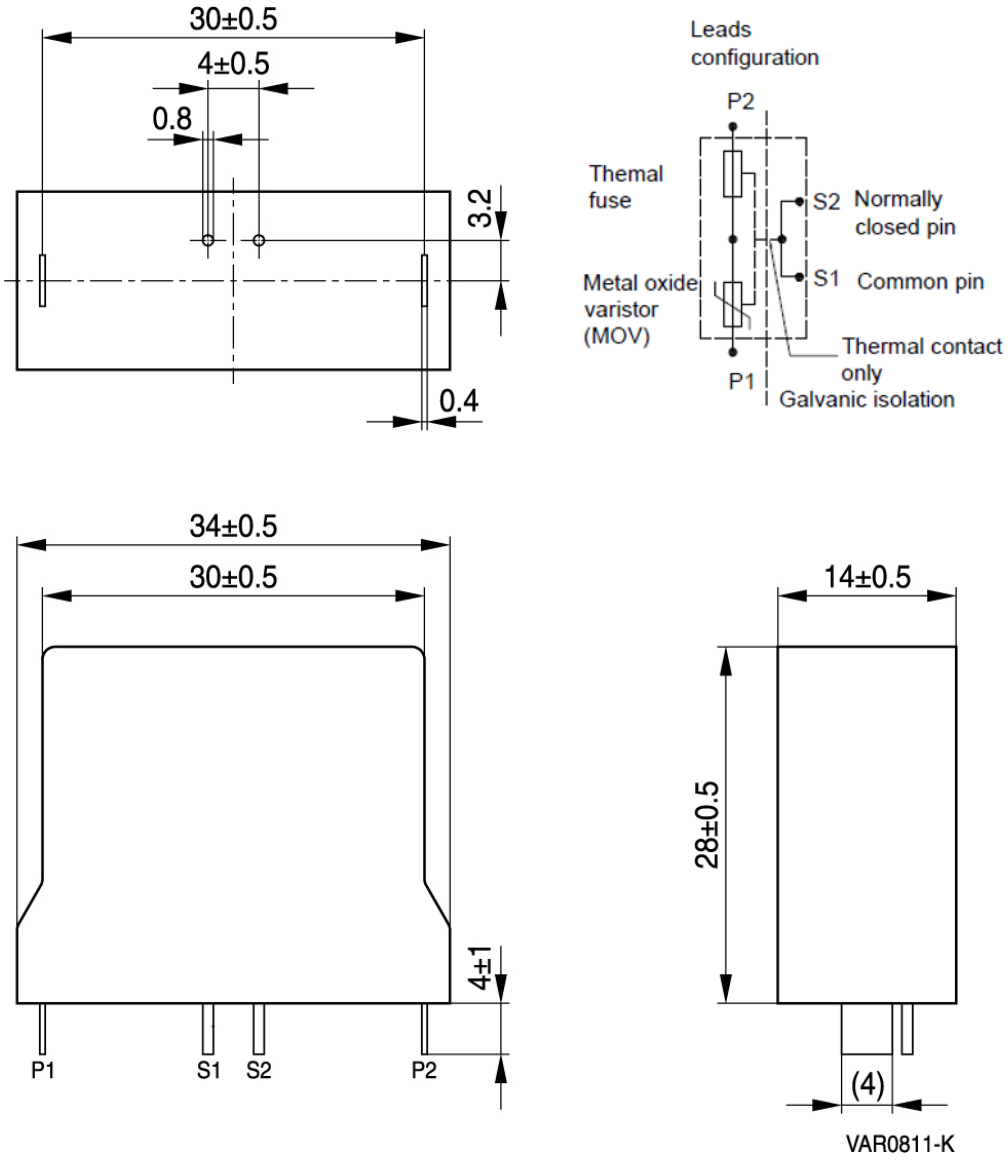
Dimensional drawings (in mm)



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

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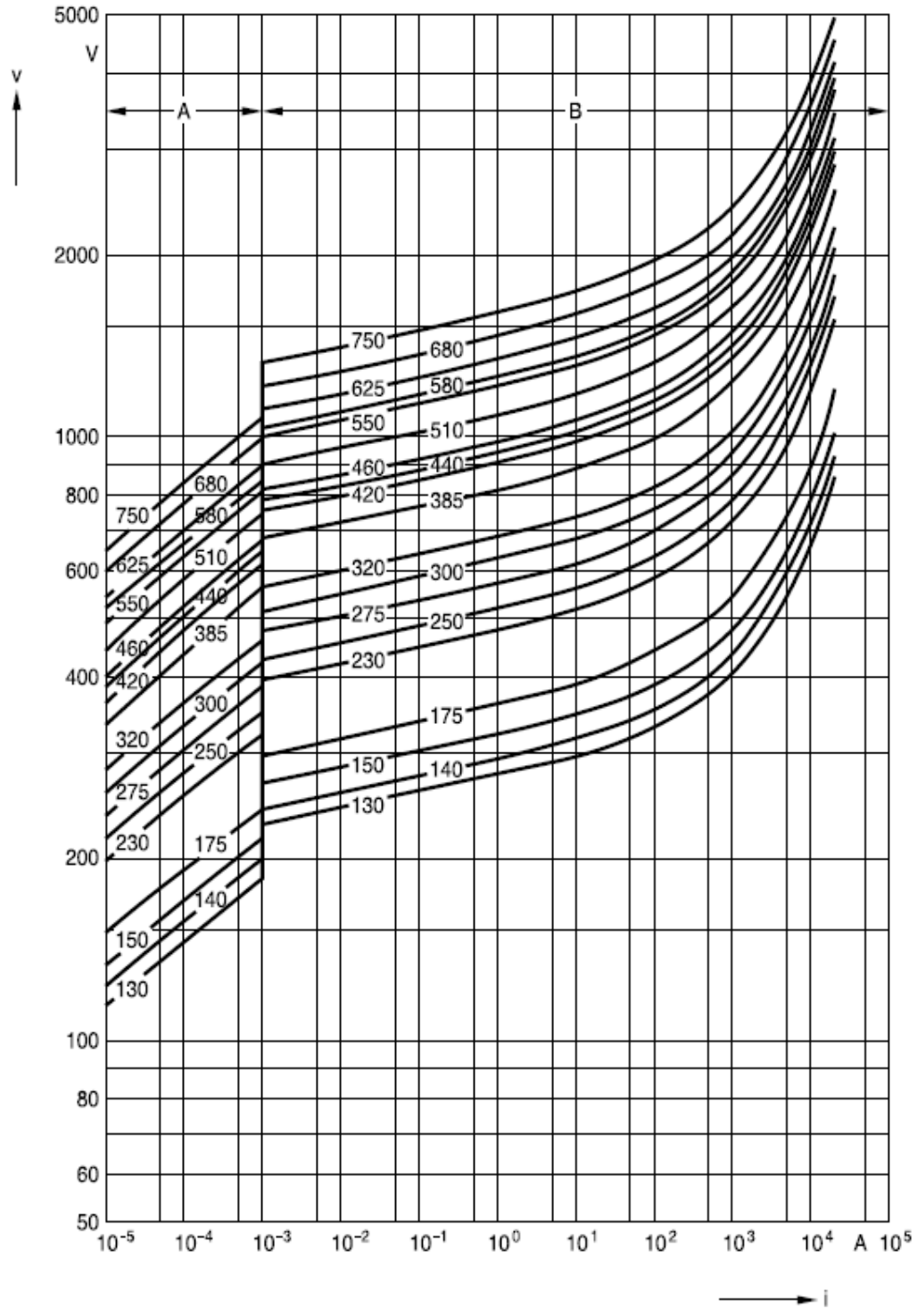
v/i characteristic



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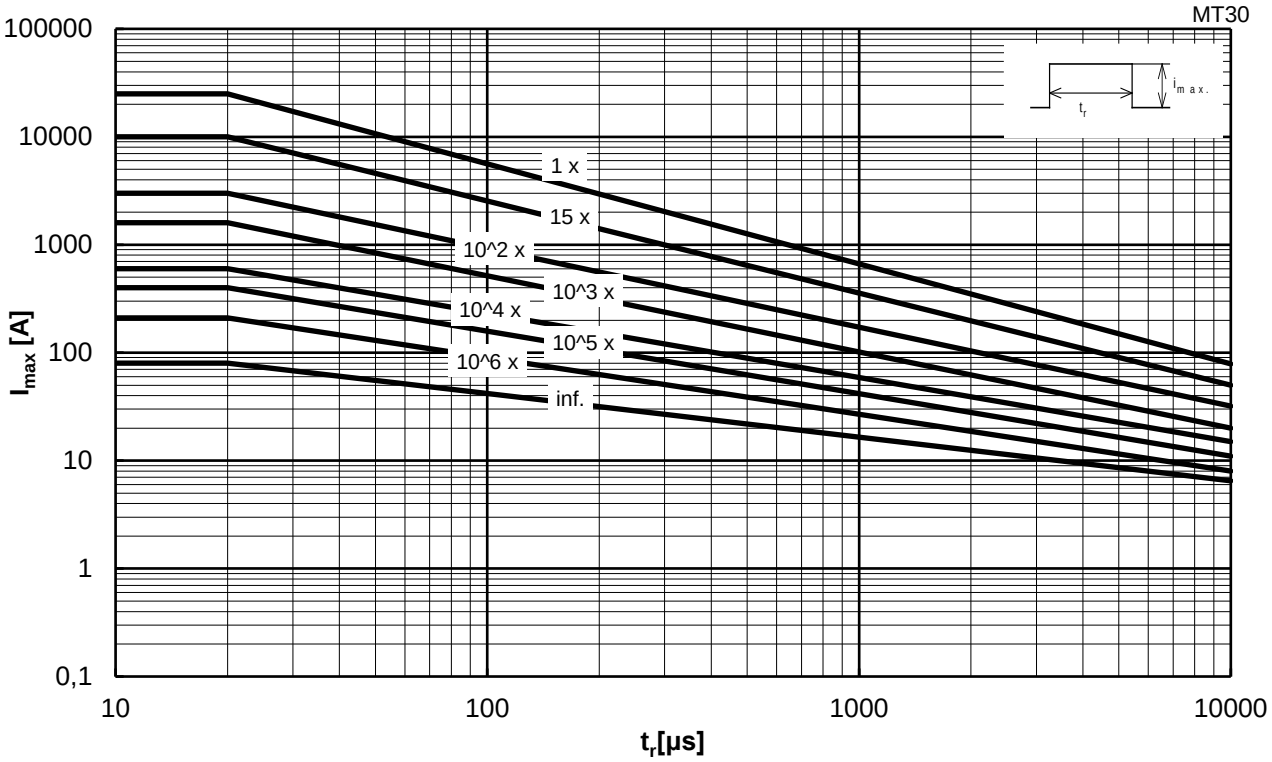
Derating curves



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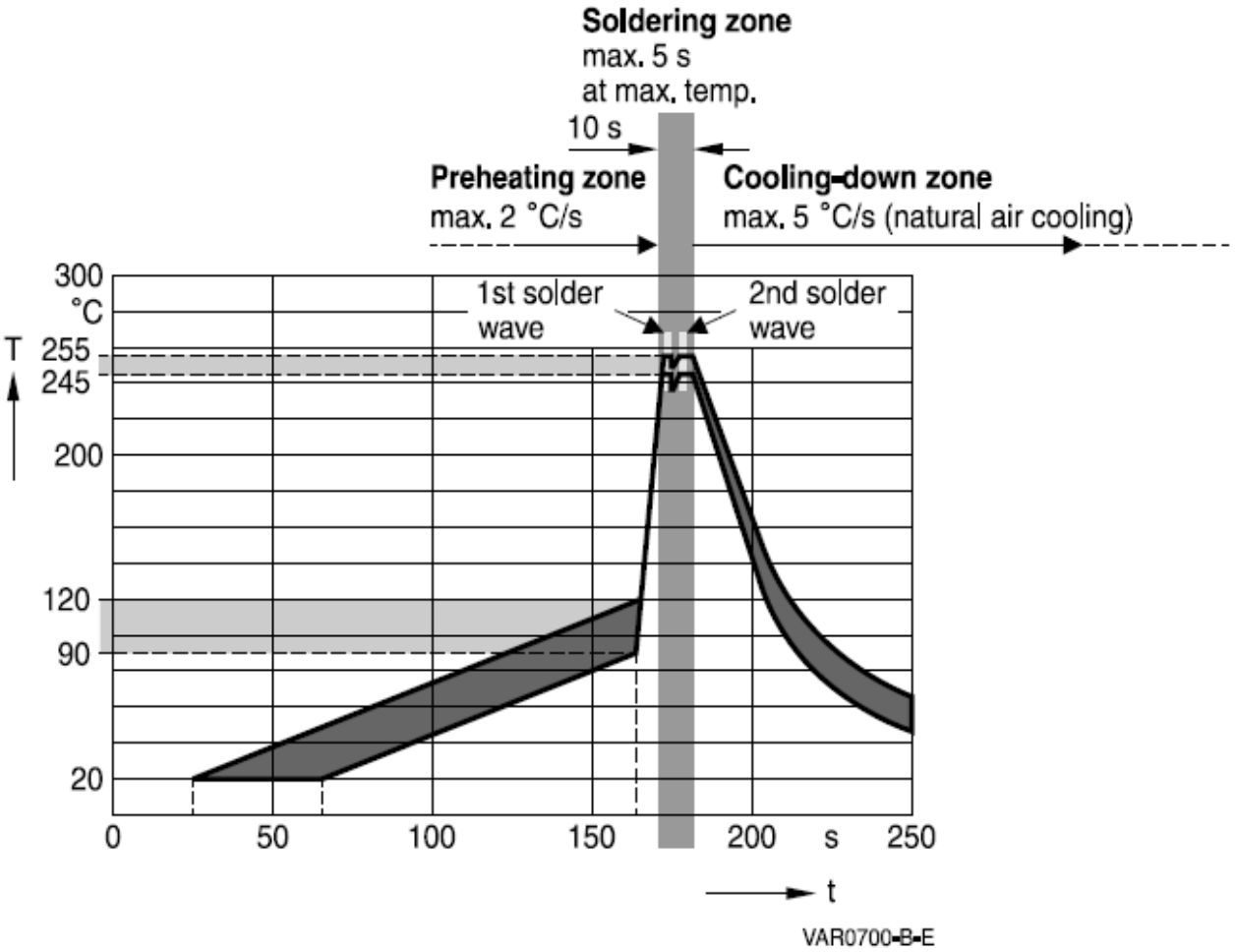
Typical wave soldering curve

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 / 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.



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Cautions and warnings

General

1. EPCOS 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, -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.

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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.

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Important notes

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