



## Leaded Varistors

### Standard series

**Series/Type:** SIOV-S20KV431  
**Ordering code:** B72120S0271K101  
Date: 2009-06-16  
Version: a

## Applications

Overvoltage protection

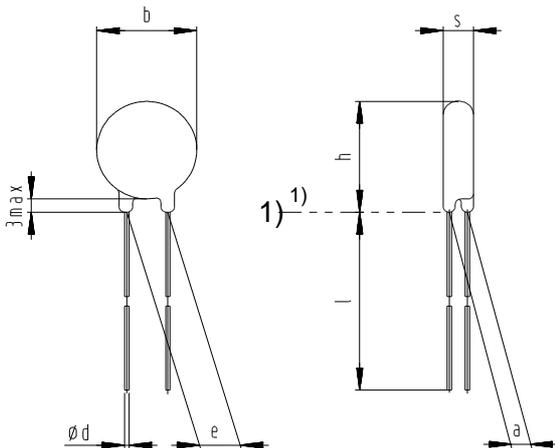
## Features

- UL approval to UL1449 (file number E321126)

## SIOV nomenclature

S = Disk type  
 20 = Rated disk diameter  
 KV = K: Tolerance of  $V_V$  at 1mA :  $\pm 10\%$  ; V: Following numbers refer to  $V_V$   
 431 = Nominal  $V_V$  (1mA) = 430V

## Dimensional drawings in mm



$b_{max}$	=	21.5
$h_{max}$	=	25.5
$s_{max}$	=	5.4
e	=	$10.0 \pm 1.0$
a	=	$2.3 \pm 1.0$
$l_{min}$	=	25.0
$\varnothing d$	=	$1.0 \pm 0.05$

<sup>1)</sup> seating plane in accordance with IEC 60717

## Electrical data

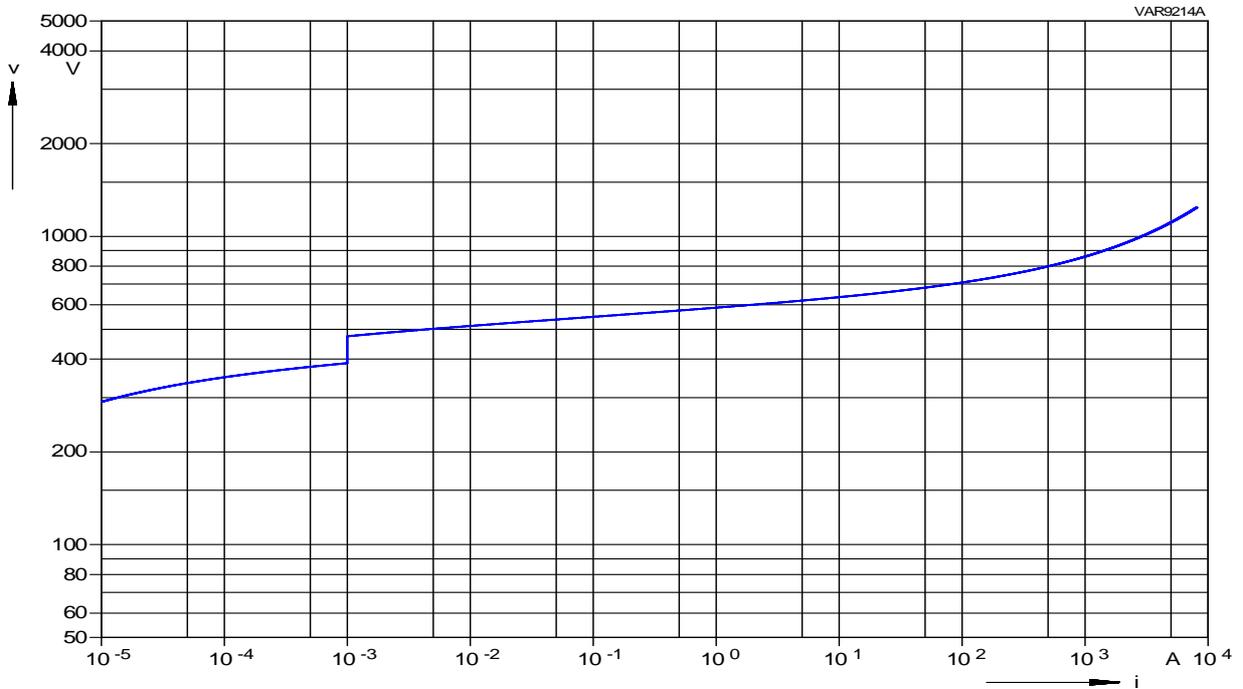
Maximum Ratings (85 °C):

Max. operating AC voltage		$V_{RMS}$	=	275 V
Max. operating DC voltage		$V_{DC}$	=	350 V
Surge current (8/20 $\mu$ s)	1 time	$I_{max}$	=	8000 A
Energy absorption (2 ms)	1 time	$W_{max}$	=	151.0 J
Average power dissipation		$P_{max}$	=	1.00 W

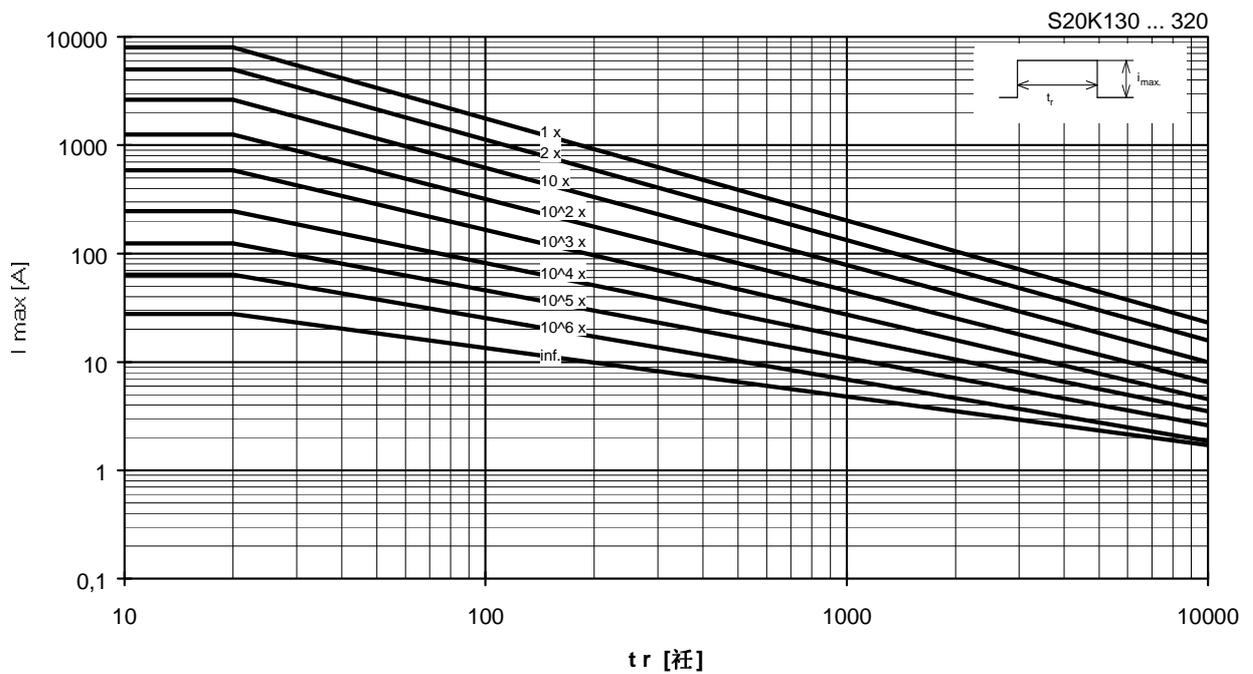
Characteristics (25 °C):

Varistor voltage at 1 mA		$V_V$	=	$430V \pm 10\%$
Clamping voltage at 100 A (8/20 $\mu$ s)		$V_{C,max}$	=	710 V
Typ. capacitance at 1 kHz		C	=	630 pF

v/i Characteristic



Derating



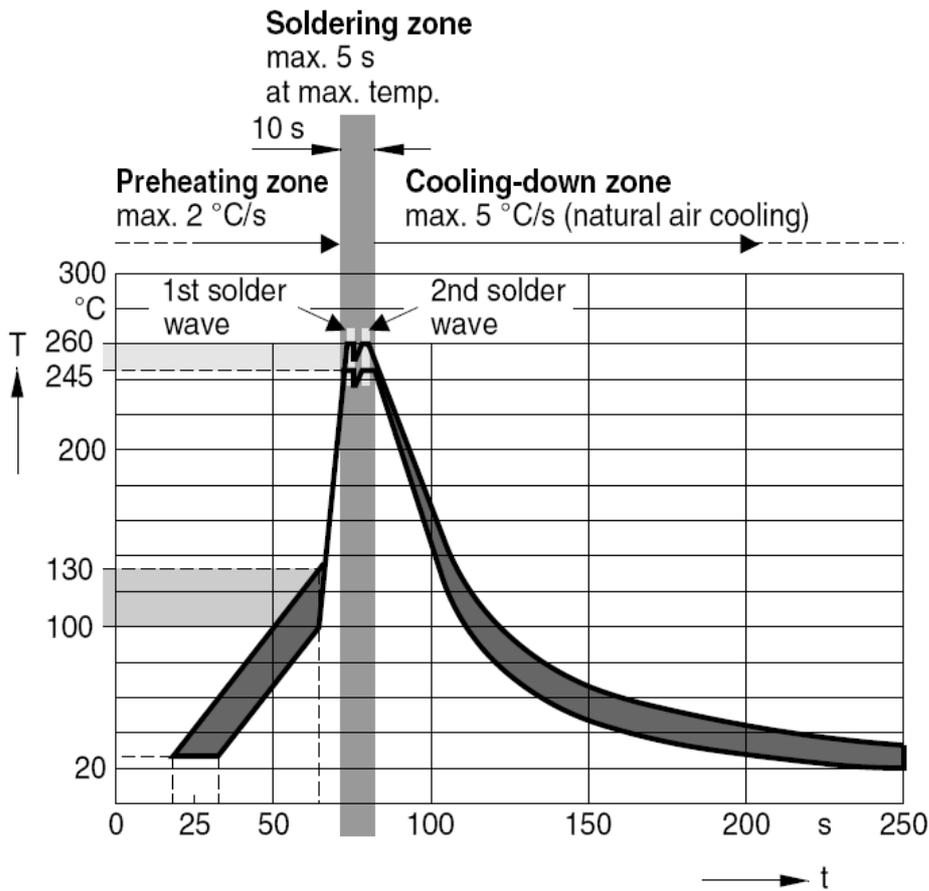
**General technical data**

Climatic category	40/85/56
Operating temperature	-40...+85 °C
Storage temperature	-40...+125 °C
Electric strength	≥2.5 kV <sub>RMS</sub>
Insulation resistance	≥10 MΩ
Response time	<25 ns

**Soldering**

Varistors with wire leads can be soldered using all conventional methods.

Recommended wave soldering temperature profile.



## Cautions and warnings

### General

1. EPCOS metal oxide varistors (SIOVs) 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 EPCOS during the design-in-phase.
2. Ensure suitability of SIOVs through reliability testing during the design-in phase. The 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

1. Store SIOVs only in original packaging. Do not open the package before storage.
2. Storage conditions in original packaging:  

Storage temperature:	-25 °C ... +45 °C
Relative humidity:	<75% annual average, <95% on maximum 30 days a year.
Dew precipitation:	Is to be avoided.
3. Avoid contamination of SIOVs surface during storage, handling and processing.
4. Avoid storage of SIOVs in harmful environments which can affect the function during long-term operation (examples given under operation precautions).
5. The SIOV type series should be soldered within the time specified.  

SIOV-S, -Q, -LS	24 month
ETFV and SFS types	12 month.

### 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.

### 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 the 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 the presence of deoxidizing gases (chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, etc), corrosive agents, humid or salty conditions, Avoid contact with any liquids and solvents.

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