



Metal oxide varistor

Disk Type

Series/Type:	L32K460PK21
Ordering code:	B72232M0461K121V58
Date:	2013-08-05
Version:	a

Applications

Overvoltage protection.
Suitable for use in industrial applications.

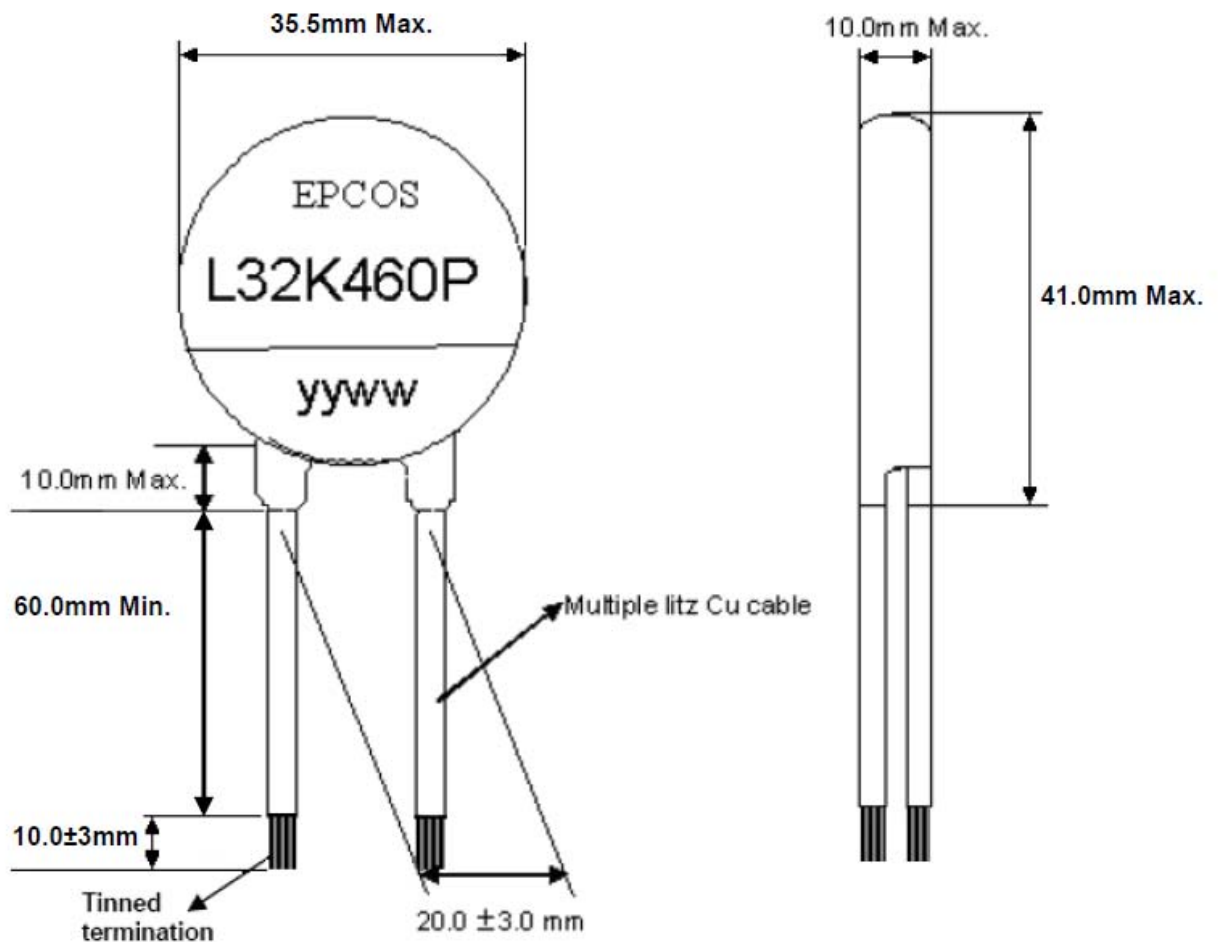
Features

- High peak surge current rating of 25kA

Nomenclature

L	=	Disc type, metallized
32	=	Rated disk diameter
K	=	Tolerance of varistor voltage at 1 mA: ±10%
460	=	Max. AC voltage
P	=	Epoxy resin coating
K21	=	Customized cable leads

Dimensional drawing in mm



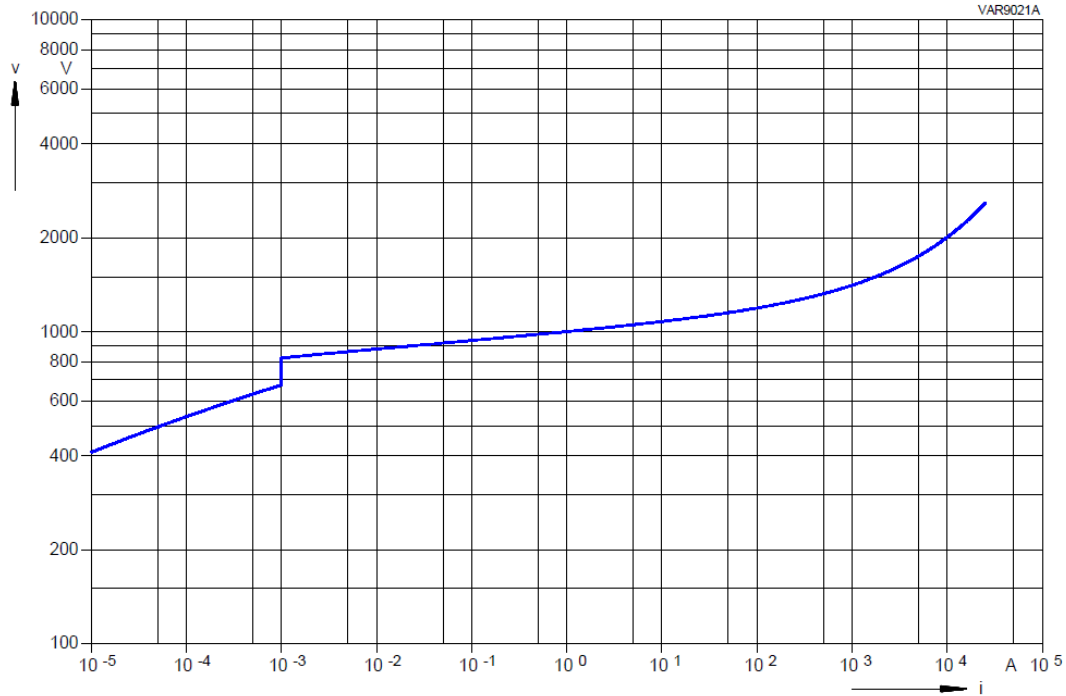
Electrical data
Maximum Ratings (85 °C)

Max. operating AC voltage		V_{RMS}	=	460 V
Max. operating DC voltage		V_{DC}	=	615 V
Surge current (8/20 μ s)	1 time	I_{max}	=	25000 A
Energy absorption (2 ms)		W_{max}	=	660 J
Average power dissipation		P_{max}	=	1.2 W

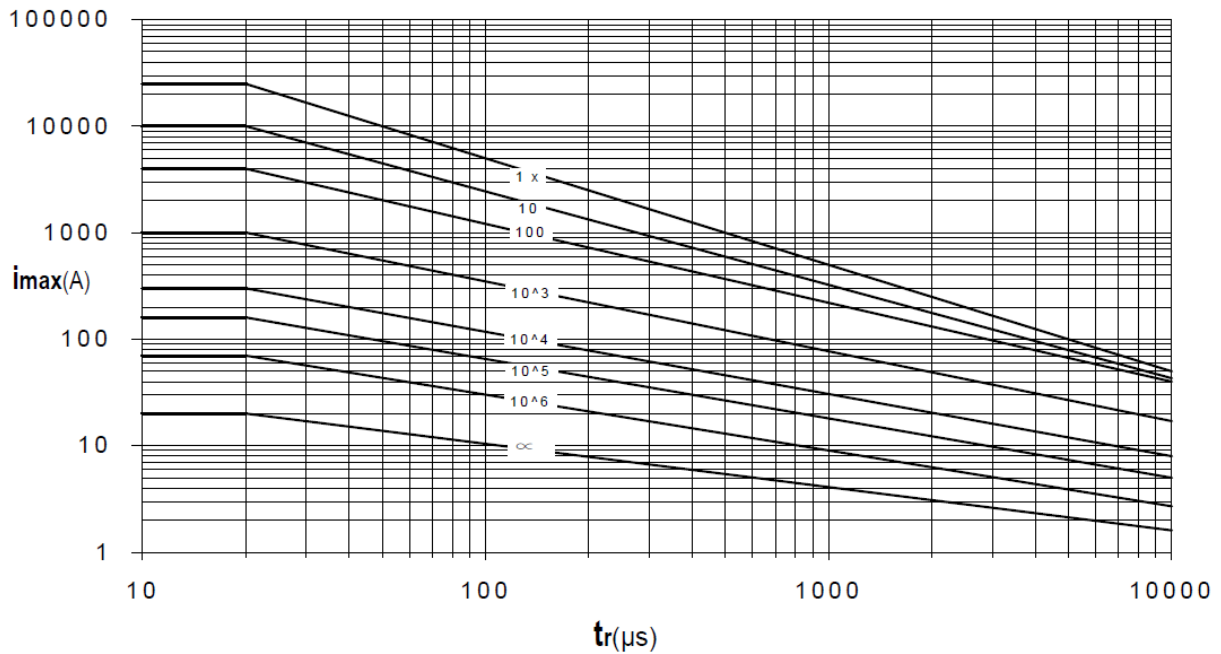
Characteristics (25 °C):

Varistor voltage at 1 mA		V_V	=	750 V \pm 10%
Clamping voltage at 200 A		$V_{C,max}$	=	1240 V
Typical capacitance at 1 kHz		C	=	1200 pF

v/I Characteristic



Derating curves



Special electrical data for use in accordance with TRMSCAAP2 REV 2

Maximum continuous operating voltage (U_c)	440 V_{RMS}
Rated voltage (U_r)	480 V_{RMS}
Nominal lightning discharge current I_n (8/20 μs)	5 kA
Peak residual voltage for 8/20 μs current impulse of the following impulse:	
1 kA	
5 kA	2500 V_{peak} max.
10 kA	
steep current impulse residual voltage	2500 V_{peak} max.
virtual front time T1: 2 μs $\pm 10\%$	
virtual time to half value of the tail:	<20 μs
peak value of current :	5 kA $\pm 5\%$
long duration current impulse withstand test	
peak current	75 A
virtual duration of peak	1000 μs
rectangular pulse shape in accordance with IEC 60-1	
number of groups of applications	4
number of impulses per group	5
interval between groups	25 - 30 minutes
interval between impulses	50 - 60 seconds
visual examination:	no visible damage
electrical measurement:	change of varistor voltage less than 10 %
operating duty test	
initial measurement:	residual voltage at $I_n = 5$ kA (8/20 μs)
conditioning:	20 impulses at $I_n = 5$ kA (8/20 μs) in 4 groups of 5 impulses;
interval between impulses:	50 - 60 seconds
interval between groups:	25 - 30 minutes
superimposed on continuous operating voltage +20%	
(1.2 * $U_c = 528$ V_{RMS})	

Special electrical data for use in accordance with TRMSCAAP2 REV 2 (cont'd)

high current impulse 4/10 us :

1 impulse at $I_{max} = 30 \text{ kA}$

preheat to $60 \text{ °C} \pm 3 \text{ °C}$

1 impulse at $I_{max} = 30 \text{ kA}$

rated voltage $U_r = 480 \text{ V}$ for 10 seconds

continuous operating voltage $U_c = 440 \text{ V}$ for 30 minutes

cool to ambient , $20 \text{ °C} \pm 15 \text{ °C}$

requirement: power dissipation decreases at least during
the last 15 minutes of U_c application

measurement: residual voltage at $I_n = 5 \text{ kA}$ (8/20 μs)

requirement: change of residual voltage less 10 %
no visible damage

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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