



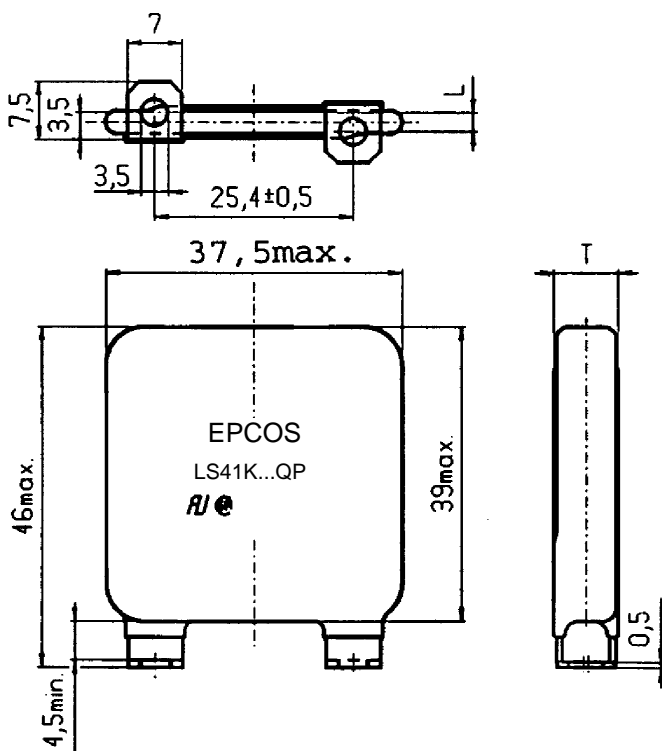
## Metal oxide varistors

Strap type

**Series/Type:** SIOV- LS41K130 ... 460QP  
**Ordering code:** B72241L0\*\*\*K100  
Date: 2007-04-13  
Version: f

**SIOV nomenclature**

- LS = Strap terminals for screw fixing or soldering  
 41 = Rated diameter 40 mm with improved electrical performance  
 K =  $\pm 10\%$  tolerance of varistor voltage at 1 mA  
 130 ... 460 = Max. AC voltage  
 Q = Square disk  
 P = Epoxy coating

**Dimensional drawing in mm**


| Type       | L $\pm 1.0$ | T <sub>max</sub> |
|------------|-------------|------------------|
| LS41K130QP | -3.5        | 8.1              |
| LS41K140QP | -3.3        | 8.2              |
| LS41K150QP | -3.2        | 8.3              |
| LS41K230QP | -2.0        | 9.0              |
| LS41K250QP | -1.8        | 9.2              |
| LS41K275QP | -1.6        | 9.4              |
| LS41K320QP | -1.1        | 9.9              |
| LS41K385QP | -0.4        | 10.6             |
| LS41K420QP | 0.0         | 10.9             |
| LS41K440QP | 0.2         | 11.1             |
| LS41K460QP | 0.4         | 11.4             |

**Electrical data**

Maximum ratings (85 °C)

| Type       | Max. operating voltage |          | Max. surge current<br>(8/20 $\mu$ s)<br>$i_{max}$ | Surge current to IEC 61643-1 |       | Max. energy absorption<br>(2 ms)<br>$W_{max}$ | Average power dissipation<br>$P_{max}$ |
|------------|------------------------|----------|---|------------------------------|-------|---|--|
|            | $V_{RMS}$              | $V_{DC}$ |   | $I_{max}$                    | $I_n$ |   |  |
| SIOV-      | [V]                    | [V]      | [kA]  | [kA]                         | [kA]  | [J]   | [W]                                    |
| LS41K130QP | 130                    | 170      | 50  | 45                           | 20    | 310   | 1.4                                    |
| LS41K140QP | 140                    | 180      | 50  | 45                           | 20    | 340   | 1.4                                    |
| LS41K150QP | 150                    | 200      | 50  | 45                           | 20    | 360   | 1.4                                    |
| LS41K230QP | 230                    | 300      | 50  | 45                           | 20    | 460   | 1.4                                    |
| LS41K250QP | 250                    | 320      | 50  | 45                           | 20    | 490   | 1.4                                    |
| LS41K275QP | 275                    | 350      | 50  | 45                           | 20    | 550   | 1.4                                    |
| LS41K320QP | 320                    | 420      | 50  | 45                           | 20    | 640   | 1.4                                    |
| LS41K385QP | 385                    | 505      | 50  | 45                           | 20    | 800   | 1.4                                    |
| LS41K420QP | 420                    | 560      | 50  | 45                           | 20    | 910   | 1.4                                    |
| LS41K440QP | 440                    | 585      | 50  | 45                           | 20    | 950   | 1.4                                    |
| LS41K460QP | 460                    | 615      | 50  | 45                           | 20    | 960   | 1.4                                    |

Characteristics (25 °C)

| Type       | Varistor-voltage<br>$V_V \pm 10\%$<br>(1 mA) | Max. clamping voltage<br>V<br>(300 A) | Typical capacitance<br>$C_{typ}$<br>(1 kHz) | Ordering code   |
|------------|--|---------------------------------------|---|-----------------|
| SIOV-      | [V]  | [V]                                   | [pF]  |                 |
| LS41K130QP | 205  | 340                                   | 6950  | B72241L0131K100 |
| LS41K140QP | 220  | 365                                   | 6350  | B72241L0141K100 |
| LS41K150QP | 240  | 395                                   | 5750  | B72241L0151K100 |
| LS41K230QP | 360  | 595                                   | 3750  | B72241L0231K100 |
| LS41K250QP | 390  | 650                                   | 3350  | B72241L0251K100 |
| LS41K275QP | 430  | 710                                   | 3100  | B72241L0271K100 |
| LS41K320QP | 510  | 840                                   | 2600  | B72241L0321K100 |
| LS41K385QP | 620  | 1025                                  | 2150  | B72241L0381K100 |
| LS41K420QP | 680  | 1120                                  | 2000  | B72241L0421K100 |
| LS41K440QP | 715  | 1180                                  | 1850  | B72241L0441K100 |
| LS41K460QP | 750  | 1240                                  | 1750  | B72241L0461K100 |

**Ratings to IEC 61643-331: 2003**

Components for low-voltage surge protective devices-part 331: Specification for metal oxide varistors.

Maximum ratings (85 °C)

| Type       | Max.<br>continuous a. c.<br>voltages<br>$V_{M(AC)}$<br>[V] | Max.<br>continuous d. c.<br>voltages<br>$V_{M(DC)}$<br>[V] | Single-pulse<br>max. energy<br>(2 ms)<br>$W_{TM}$<br>[J] | Single-pulse<br>peak<br>current(8/20 $\mu$ s)<br>$I_{TM}$<br>[A] |
|------------|--|--|--|--|
| SIOV-      |  |  |  |  |
| LS41K130QP | 118  | 154  | 310  | 50000  |
| LS41K140QP | 126  | 165  | 340  | 50000  |
| LS41K150QP | 136  | 181  | 360  | 50000  |
| LS41K230QP | 209  | 272  | 460  | 50000  |
| LS41K250QP | 225  | 290  | 490  | 50000  |
| LS41K275QP | 250  | 318  | 550  | 50000  |
| LS41K320QP | 290  | 381  | 640  | 50000  |
| LS41K385QP | 346  | 455  | 800  | 50000  |
| LS41K420QP | 380  | 505  | 910  | 50000  |
| LS41K440QP | 396  | 528  | 950  | 50000  |
| LS41K460QP | 415  | 555  | 960  | 50000  |

Characteristics (25 °C)

| Type       | Nominal varistor<br>voltage at $I_N = 1$ mA<br>duration of<br>$I_N = 0.2 \dots 2$ s<br>$V_N \pm 10\%$<br>[V] | Clamping<br>voltage at<br>$I_P = 300$ A<br>(8/20 $\mu$ s)<br>$V_C$<br>[V] | Standby<br>current at<br>$V_{M(DC)}$<br>$I_D$<br>[ $\mu$ A] | Typical<br>capacitance at<br>1 kHz, 1 $V_{RMS}$<br>$C_V$<br>[pF] |
|------------|--|---|---|--|
| SIOV-      |  |   |   |  |
| LS41K130QP | 205  | 340   | 600   | 6950   |
| LS41K140QP | 220  | 365   | 600   | 6350   |
| LS41K150QP | 240  | 395   | 600   | 5750   |
| LS41K230QP | 360  | 595   | 600   | 3750   |
| LS41K250QP | 390  | 650   | 600   | 3350   |
| LS41K275QP | 430  | 710   | 600   | 3100   |
| LS41K320QP | 510  | 840   | 600   | 2600   |
| LS41K385QP | 620  | 1025  | 600   | 2150   |
| LS41K420QP | 680  | 1120  | 600   | 2000   |
| LS41K440QP | 715  | 1180  | 600   | 1850   |
| LS41K460QP | 750  | 1240  | 600   | 1750   |

**Ratings to IEC 61643-331: 2003; Annex A**

| Type                | Surge current class II                                |  |
|---------------------|---|--|
|                     | Max. discharge current<br>(8/20 $\mu$ s)<br>$I_{max}$ | Nominal discharge current<br>(8/20 $\mu$ s)<br>$I_N$ |
|                     | [A]   | [A]  |
| SIOV-<br>LS41K130QP | 45000   | 20000  |
| LS41K140QP          | 45000   | 20000  |
| LS41K150QP          | 45000   | 20000  |
| LS41K230QP          | 45000   | 20000  |
| LS41K250QP          | 45000   | 20000  |
| LS41K275QP          | 45000   | 20000  |
| LS41K320QP          | 45000   | 20000  |
| LS41K385QP          | 45000   | 20000  |
| LS41K420QP          | 45000   | 20000  |
| LS41K440QP          | 45000   | 20000  |
| LS41K460QP          | 45000   | 20000  |

**Service conditions**

Operating and storage temperature range:

- extended range:

-40 °C to +85 °C

Altitude or atmospheric pressure range:

86 kPa to 106 kPa

Humidity:

<93% at 25 °C

Mechanical shock and vibration:

IEC 60068-2-6, test Fc

T = 3 · 2 h

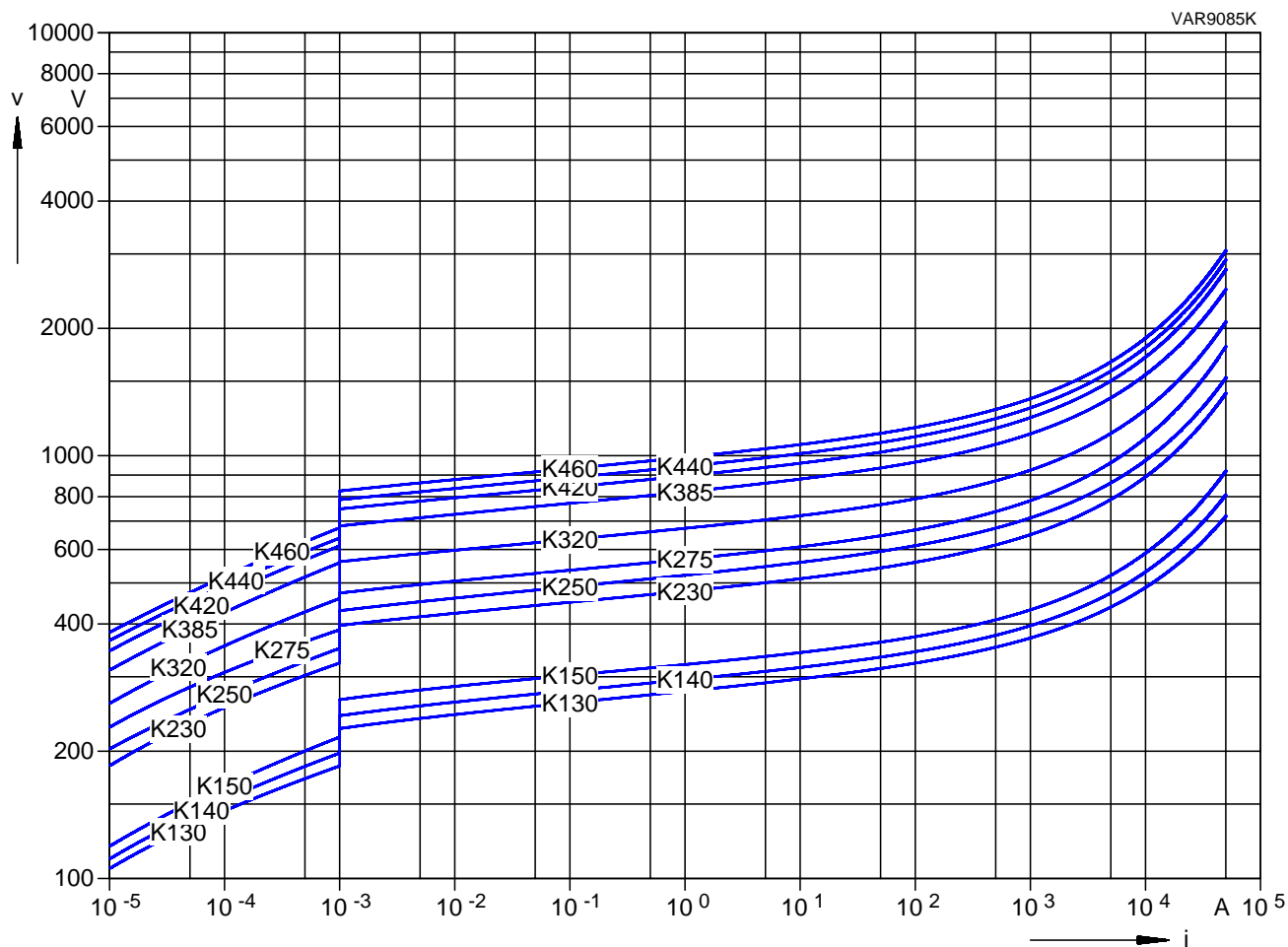
f = 10 ... 55 Hz

h = 0.75 mm or a = 98 m/s<sup>2</sup>

Solvent resistance:

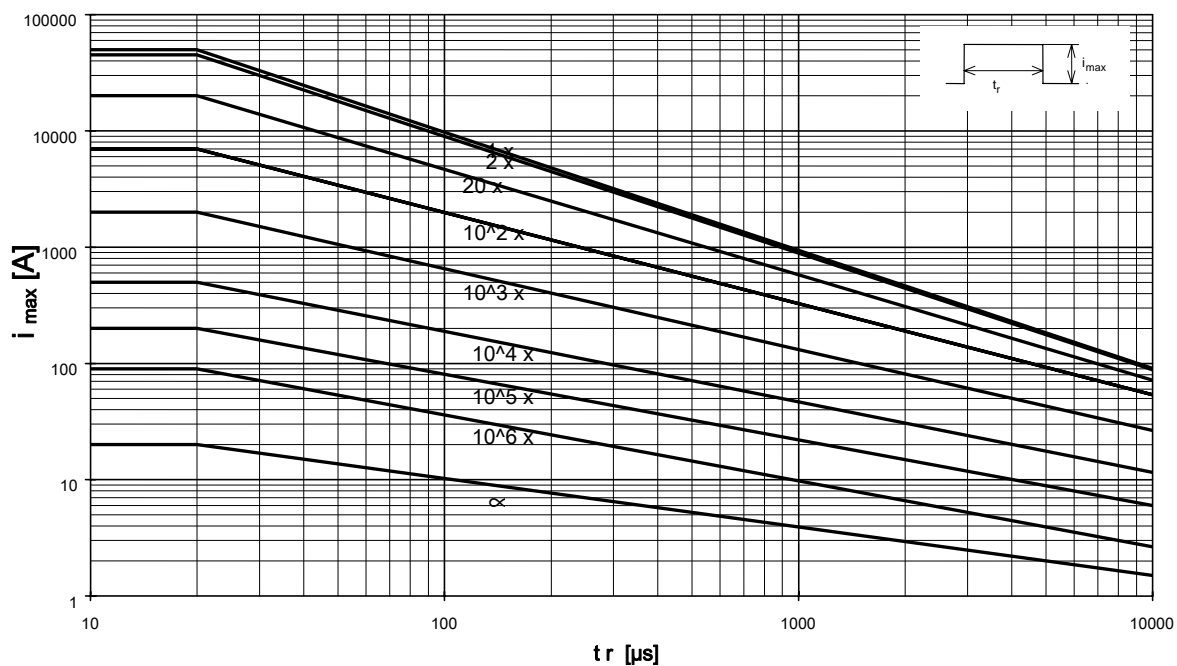
IEC 60068-2-45, Test X A (method 2)

v/i characteristic

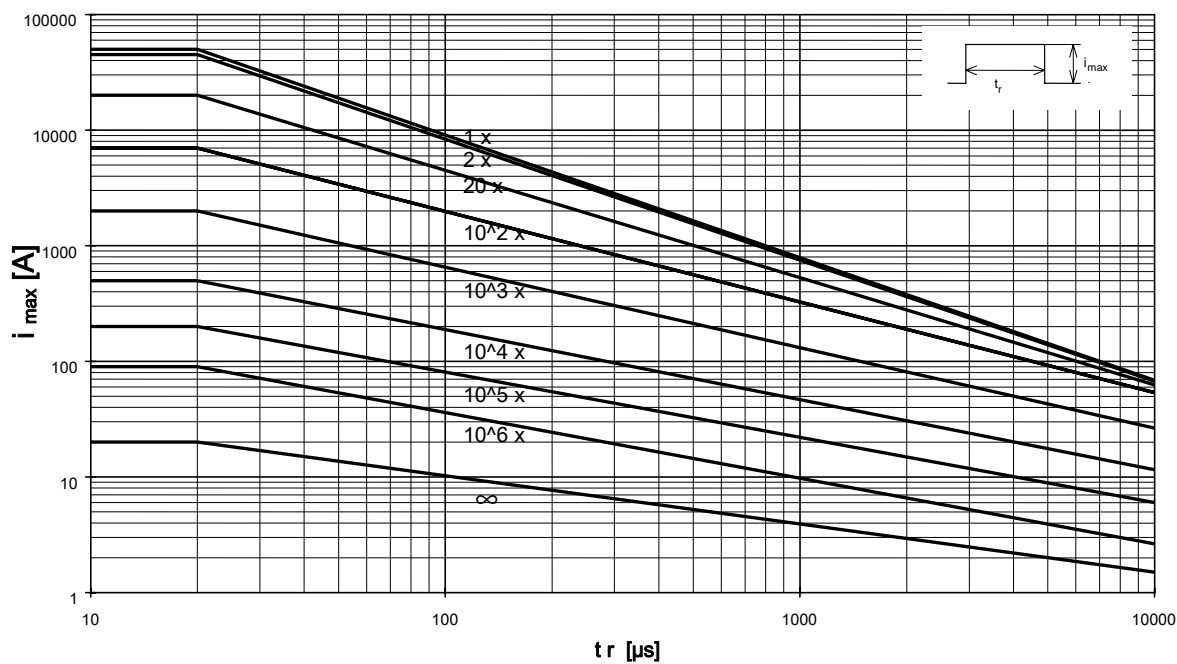


Derating curves

LS41K130 ... 150QP



LS41K230 ... 460QP



**Note:** For more details refer to the data book 'SIOV Metal Oxide Varistors'.

Ordering No. EPC: 62003-7600

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