

## Leaded varistors

B722\*

### Standard series

#### Construction

- Round varistor element, leaded
- Coating: epoxy resin, flame-retardant to UL 94 V-0
- Terminals: tinned wire

#### Features

- Wide operating voltage range 11 ... 1100 V<sub>RMS</sub>
- High surge current ratings up to 8 kA
- No derating up to 105 °C ambient temperature
- PSpice models

#### Approvals

- UL
- CSA (all types ≥ K115)
- VDE
- CQC S05/07 (K11 ... K460), S10/S14 (K11 ... K680), S20 (K11 ... K1000)
- IEC

#### Delivery mode

- Bulk (standard), taped versions on reel or in Ammo pack upon request.
- For further details refer to chapter "Taping, packaging and lead configuration" for leaded varistors.

#### Options

S10\* types with lead spacing 5.0 mm and S20\* types with lead spacing 7.5 mm are also available on request.

#### General technical data

|                       |                |              |                   |
|-----------------------|----------------|--------------|-------------------|
| Climatic category     | to IEC 60068-1 | 40/105/56    |                   |
| Operating temperature | to IEC 61051   | −40 ... +105 | °C                |
| Storage temperature   |                | −40 ... +125 | °C                |
| Electric strength     | to IEC 61051   | ≥ 2.5        | kV <sub>RMS</sub> |
| Insulation resistance | to IEC 61051   | ≥ 100        | MΩ                |


**Leaded varistors**
**B722\***
**Standard series**
**Electrical specifications and ordering codes**
**Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )**

| Ordering code                                    | Type<br>(untaped)<br>SIOV- | $V_{\text{RMS}}$<br><br>V | $V_{\text{DC}}$<br><br>V | $i_{\text{max}}$<br>(8/20 $\mu\text{s}$ )<br>1 time<br>A | $I_{\text{n}}^{1)}$<br>(8/20 $\mu\text{s}$ )<br>15 times<br>A | $W_{\text{max}}$<br>(2 ms)<br><br>J | $P_{\text{max}}$<br><br>W |
|--------------------------------------------------|----------------------------|---------------------------|--------------------------|----------------------------------------------------------|---------------------------------------------------------------|-------------------------------------|---------------------------|
| <b><math>V_{\text{RMS}} = 11\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0110K101                                  | S05K11                     | 11                        | 14                       | 100                                                      | 50                                                            | 0.3                                 | 0.01                      |
| B72207S0110K101                                  | S07K11                     | 11                        | 14                       | 250                                                      | 100                                                           | 0.8                                 | 0.02                      |
| B72210S0110K101                                  | S10K11                     | 11                        | 14                       | 500                                                      | 250                                                           | 1.7                                 | 0.05                      |
| B72214S0110K101                                  | S14K11                     | 11                        | 14                       | 1000                                                     | 500                                                           | 3.2                                 | 0.10                      |
| B72220S0110K101                                  | S20K11                     | 11                        | 14                       | 2000                                                     | 1000                                                          | 10.0                                | 0.20                      |
| <b><math>V_{\text{RMS}} = 14\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0140K101                                  | S05K14                     | 14                        | 18                       | 100                                                      | 50                                                            | 0.4                                 | 0.01                      |
| B72207S0140K101                                  | S07K14                     | 14                        | 18 <sup>2)</sup>         | 250                                                      | 100                                                           | 0.9                                 | 0.02                      |
| B72210S0140K101                                  | S10K14                     | 14                        | 18 <sup>2)</sup>         | 500                                                      | 250                                                           | 2.0                                 | 0.05                      |
| B72214S0140K101                                  | S14K14                     | 14                        | 18 <sup>2)</sup>         | 1000                                                     | 500                                                           | 4.0                                 | 0.10                      |
| B72220S0140K101                                  | S20K14                     | 14                        | 18 <sup>2)</sup>         | 2000                                                     | 1000                                                          | 12.0                                | 0.20                      |
| <b><math>V_{\text{RMS}} = 17\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0170K101                                  | S05K17                     | 17                        | 22                       | 100                                                      | 50                                                            | 0.5                                 | 0.01                      |
| B72207S0170K101                                  | S07K17                     | 17                        | 22                       | 250                                                      | 100                                                           | 1.1                                 | 0.02                      |
| B72210S0170K101                                  | S10K17                     | 17                        | 22                       | 500                                                      | 250                                                           | 2.5                                 | 0.05                      |
| B72214S0170K101                                  | S14K17                     | 17                        | 22                       | 1000                                                     | 500                                                           | 5.0                                 | 0.10                      |
| B72220S0170K101                                  | S20K17                     | 17                        | 22                       | 2000                                                     | 1000                                                          | 14.0                                | 0.20                      |
| <b><math>V_{\text{RMS}} = 20\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0200K101                                  | S05K20                     | 20                        | 26                       | 100                                                      | 50                                                            | 0.6                                 | 0.01                      |
| B72207S0200K101                                  | S07K20                     | 20                        | 26                       | 250                                                      | 100                                                           | 1.3                                 | 0.02                      |
| B72210S0200K101                                  | S10K20                     | 20                        | 26                       | 500                                                      | 250                                                           | 3.1                                 | 0.05                      |
| B72214S0200K101                                  | S14K20                     | 20                        | 26                       | 1000                                                     | 500                                                           | 6.0                                 | 0.10                      |
| B72220S0200K101                                  | S20K20                     | 20                        | 26                       | 2000                                                     | 1000                                                          | 18.0                                | 0.20                      |
| <b><math>V_{\text{RMS}} = 25\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0250K101                                  | S05K25                     | 25                        | 31                       | 100                                                      | 50                                                            | 0.7                                 | 0.01                      |
| B72207S0250K101                                  | S07K25                     | 25                        | 31                       | 250                                                      | 100                                                           | 1.6                                 | 0.02                      |
| B72210S0250K101                                  | S10K25                     | 25                        | 31                       | 500                                                      | 250                                                           | 3.7                                 | 0.05                      |
| B72214S0250K101                                  | S14K25                     | 25                        | 31                       | 1000                                                     | 500                                                           | 7.0                                 | 0.10                      |
| B72220S0250K101                                  | S20K25                     | 25                        | 31                       | 2000                                                     | 1000                                                          | 22.0                                | 0.20                      |
| <b><math>V_{\text{RMS}} = 30\text{ V}</math></b> |                            |                           |                          |                                                          |                                                               |                                     |                           |
| B72205S0300K101                                  | S05K30                     | 30                        | 38                       | 100                                                      | 50                                                            | 0.9                                 | 0.01                      |
| B72207S0300K101                                  | S07K30                     | 30                        | 38                       | 250                                                      | 100                                                           | 2.0                                 | 0.02                      |
| B72210S0300K101                                  | S10K30                     | 30                        | 38                       | 500                                                      | 250                                                           | 4.4                                 | 0.05                      |
| B72214S0300K101                                  | S14K30                     | 30                        | 38                       | 1000                                                     | 500                                                           | 9.0                                 | 0.10                      |
| B72220S0300K101                                  | S20K30                     | 30                        | 38                       | 2000                                                     | 1000                                                          | 26.0                                | 0.20                      |

1) **Note:** Nominal discharge current  $I_n$ , according to UL 1449, 4<sup>th</sup> edition.

2) Jump-start strength (max. 24 V, 5 minutes)


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**B722\***
**StandardD series**
**Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )**

| Ordering code                             | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | $V_{C,max}$<br>( $i_C$ )<br>V | $i_C$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|-------------------------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| <b><math>V_{RMS} = 11\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0110K101                           | 18                   | $\pm 10$                    | 36                            | 1.0        | 1750                       |
| B72207S0110K101                           | 18                   | $\pm 10$                    | 36                            | 2.5        | 2750                       |
| B72210S0110K101                           | 18                   | $\pm 10$                    | 36                            | 5.0        | 6250                       |
| B72214S0110K101                           | 18                   | $\pm 10$                    | 36                            | 10.0       | 12100                      |
| B72220S0110K101                           | 18                   | $\pm 10$                    | 36                            | 20.0       | 23000                      |
| <b><math>V_{RMS} = 14\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0140K101                           | 22                   | $\pm 10$                    | 43                            | 1.0        | 1450                       |
| B72207S0140K101                           | 22                   | $\pm 10$                    | 43                            | 2.5        | 2300                       |
| B72210S0140K101                           | 22                   | $\pm 10$                    | 43                            | 5.0        | 5200                       |
| B72214S0140K101                           | 22                   | $\pm 10$                    | 43                            | 10.0       | 9950                       |
| B72220S0140K101                           | 22                   | $\pm 10$                    | 43                            | 20.0       | 19000                      |
| <b><math>V_{RMS} = 17\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0170K101                           | 27                   | $\pm 10$                    | 53                            | 1.0        | 1200                       |
| B72207S0170K101                           | 27                   | $\pm 10$                    | 53                            | 2.5        | 1900                       |
| B72210S0170K101                           | 27                   | $\pm 10$                    | 53                            | 5.0        | 4350                       |
| B72214S0170K101                           | 27                   | $\pm 10$                    | 53                            | 10.0       | 8200                       |
| B72220S0170K101                           | 27                   | $\pm 10$                    | 53                            | 20.0       | 15600                      |
| <b><math>V_{RMS} = 20\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0200K101                           | 33                   | $\pm 10$                    | 65                            | 1.0        | 980                        |
| B72207S0200K101                           | 33                   | $\pm 10$                    | 65                            | 2.5        | 1600                       |
| B72210S0200K101                           | 33                   | $\pm 10$                    | 65                            | 5.0        | 3650                       |
| B72214S0200K101                           | 33                   | $\pm 10$                    | 65                            | 10.0       | 6800                       |
| B72220S0200K101                           | 33                   | $\pm 10$                    | 65                            | 20.0       | 13000                      |
| <b><math>V_{RMS} = 25\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0250K101                           | 39                   | $\pm 10$                    | 77                            | 1.0        | 850                        |
| B72207S0250K101                           | 39                   | $\pm 10$                    | 77                            | 2.5        | 1400                       |
| B72210S0250K101                           | 39                   | $\pm 10$                    | 77                            | 5.0        | 3200                       |
| B72214S0250K101                           | 39                   | $\pm 10$                    | 77                            | 10.0       | 5850                       |
| B72220S0250K101                           | 39                   | $\pm 10$                    | 77                            | 20.0       | 11100                      |
| <b><math>V_{RMS} = 30\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0300K101                           | 47                   | $\pm 10$                    | 93                            | 1.0        | 720                        |
| B72207S0300K101                           | 47                   | $\pm 10$                    | 93                            | 2.5        | 1200                       |
| B72210S0300K101                           | 47                   | $\pm 10$                    | 93                            | 5.0        | 2750                       |
| B72214S0300K101                           | 47                   | $\pm 10$                    | 93                            | 10.0       | 4950                       |
| B72220S0300K101                           | 47                   | $\pm 10$                    | 93                            | 20.0       | 9350                       |


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**Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )**

| Ordering code                  | Type<br>(untaped)<br>SIOV- | $V_{\text{RMS}}$<br>V | $V_{\text{DC}}$<br>V | $i_{\text{max}}$<br>(8/20 $\mu\text{s}$ )<br>1 time<br>A | $I_n^{1)}$<br>(8/20 $\mu\text{s}$ )<br>15 times<br>A | $W_{\text{max}}$<br>(2 ms)<br>J | $P_{\text{max}}$<br>W |
|--------------------------------|----------------------------|-----------------------|----------------------|----------------------------------------------------------|------------------------------------------------------|---------------------------------|-----------------------|
| $V_{\text{RMS}} = 35\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0350K101                | S05K35                     | 35                    | 45                   | 100                                                      | 50                                                   | 1.1                             | 0.01                  |
| B72207S0350K101                | S07K35                     | 35                    | 45                   | 250                                                      | 100                                                  | 2.5                             | 0.02                  |
| B72210S0350K101                | S10K35                     | 35                    | 45                   | 500                                                      | 250                                                  | 5.4                             | 0.05                  |
| B72214S0350K101                | S14K35                     | 35                    | 45                   | 1000                                                     | 500                                                  | 10.0                            | 0.10                  |
| B72220S0350K101                | S20K35                     | 35                    | 45                   | 2000                                                     | 1000                                                 | 33.0                            | 0.20                  |
| $V_{\text{RMS}} = 40\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0400K101                | S05K40                     | 40                    | 56                   | 100                                                      | 50                                                   | 1.3                             | 0.01                  |
| B72207S0400K101                | S07K40                     | 40                    | 56                   | 250                                                      | 100                                                  | 3.0                             | 0.02                  |
| B72210S0400K101                | S10K40                     | 40                    | 56                   | 500                                                      | 250                                                  | 6.4                             | 0.05                  |
| B72214S0400K101                | S14K40                     | 40                    | 56                   | 1000                                                     | 500                                                  | 13.0                            | 0.10                  |
| B72220S0400K101                | S20K40                     | 40                    | 56                   | 2000                                                     | 1000                                                 | 37.0                            | 0.20                  |
| $V_{\text{RMS}} = 50\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0500K101                | S05K50                     | 50                    | 65                   | 400                                                      | 150                                                  | 1.8                             | 0.10                  |
| B72207S0500K101                | S07K50                     | 50                    | 65                   | 1200                                                     | 500                                                  | 4.2                             | 0.25                  |
| B72210S0500K101                | S10K50                     | 50                    | 65                   | 2500                                                     | 1500                                                 | 8.4                             | 0.40                  |
| B72214S0500K101                | S14K50                     | 50                    | 65                   | 4500                                                     | 3000                                                 | 15.0                            | 0.60                  |
| B72220S0500K101                | S20K50                     | 50                    | 65                   | 6500                                                     | 3000                                                 | 27.0                            | 1.00                  |
| $V_{\text{RMS}} = 60\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0600K101                | S05K60                     | 60                    | 85                   | 400                                                      | 150                                                  | 2.2                             | 0.10                  |
| B72207S0600K101                | S07K60                     | 60                    | 85                   | 1200                                                     | 500                                                  | 4.8                             | 0.25                  |
| B72210S0600K101                | S10K60                     | 60                    | 85                   | 2500                                                     | 1500                                                 | 10.0                            | 0.40                  |
| B72214S0600K101                | S14K60                     | 60                    | 85                   | 4500                                                     | 3000                                                 | 17.0                            | 0.60                  |
| B72220S0600K101                | S20K60                     | 60                    | 85                   | 6500                                                     | 3000                                                 | 33.0                            | 1.00                  |
| $V_{\text{RMS}} = 75\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0750K101                | S05K75                     | 75                    | 100                  | 400                                                      | 150                                                  | 2.5                             | 0.10                  |
| B72207S0750K101                | S07K75                     | 75                    | 100                  | 1200                                                     | 500                                                  | 5.9                             | 0.25                  |
| B72210S0750K101                | S10K75                     | 75                    | 100                  | 2500                                                     | 1500                                                 | 12.0                            | 0.40                  |
| B72214S0750K101                | S14K75                     | 75                    | 100                  | 4500                                                     | 3000                                                 | 20.0                            | 0.60                  |
| B72220S0750K101                | S20K75                     | 75                    | 100                  | 6500                                                     | 3000                                                 | 40.0                            | 1.00                  |
| $V_{\text{RMS}} = 95\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0950K101                | S05K95                     | 95                    | 125                  | 400                                                      | 150                                                  | 3.4                             | 0.10                  |
| B72207S0950K101                | S07K95                     | 95                    | 125                  | 1200                                                     | 500                                                  | 7.6                             | 0.25                  |
| B72210S0950K101                | S10K95                     | 95                    | 125                  | 2500                                                     | 1500                                                 | 15.0                            | 0.40                  |
| B72214S0950K101                | S14K95                     | 95                    | 125                  | 4500                                                     | 3000                                                 | 25.0                            | 0.60                  |
| B72220S0950K101                | S20K95                     | 95                    | 125                  | 6500                                                     | 3000                                                 | 50.0                            | 1.00                  |

<sup>1)</sup> **Note:** Nominal discharge current  $I_n$  according to UL 1449, 4<sup>th</sup> edition.


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**Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )**

| Ordering code                             | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | $V_{C,max}$<br>( $i_C$ )<br>V | $i_C$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|-------------------------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| <b><math>V_{RMS} = 35\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0350K101                           | 56                   | $\pm 10$                    | 110                           | 1.0        | 620                        |
| B72207S0350K101                           | 56                   | $\pm 10$                    | 110                           | 2.5        | 1050                       |
| B72210S0350K101                           | 56                   | $\pm 10$                    | 110                           | 5.0        | 2400                       |
| B72214S0350K101                           | 56                   | $\pm 10$                    | 110                           | 10.0       | 4200                       |
| B72220S0350K101                           | 56                   | $\pm 10$                    | 110                           | 20.0       | 8000                       |
| <b><math>V_{RMS} = 40\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0400K101                           | 68                   | $\pm 10$                    | 135                           | 1.0        | 520                        |
| B72207S0400K101                           | 68                   | $\pm 10$                    | 135                           | 2.5        | 900                        |
| B72210S0400K101                           | 68                   | $\pm 10$                    | 135                           | 5.0        | 2100                       |
| B72214S0400K101                           | 68                   | $\pm 10$                    | 135                           | 10.0       | 3550                       |
| B72220S0400K101                           | 68                   | $\pm 10$                    | 135                           | 20.0       | 6750                       |
| <b><math>V_{RMS} = 50\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0500K101                           | 82                   | $\pm 10$                    | 135                           | 5.0        | 300                        |
| B72207S0500K101                           | 82                   | $\pm 10$                    | 135                           | 10.0       | 530                        |
| B72210S0500K101                           | 82                   | $\pm 10$                    | 135                           | 25.0       | 950                        |
| B72214S0500K101                           | 82                   | $\pm 10$                    | 135                           | 50.0       | 1800                       |
| B72220S0500K101                           | 82                   | $\pm 10$                    | 135                           | 100.0      | 3800                       |
| <b><math>V_{RMS} = 60\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0600K101                           | 100                  | $\pm 10$                    | 165                           | 5.0        | 250                        |
| B72207S0600K101                           | 100                  | $\pm 10$                    | 165                           | 10.0       | 480                        |
| B72210S0600K101                           | 100                  | $\pm 10$                    | 165                           | 25.0       | 870                        |
| B72214S0600K101                           | 100                  | $\pm 10$                    | 165                           | 50.0       | 1650                       |
| B72220S0600K101                           | 100                  | $\pm 10$                    | 165                           | 100.0      | 3600                       |
| <b><math>V_{RMS} = 75\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0750K101                           | 120                  | $\pm 10$                    | 200                           | 5.0        | 210                        |
| B72207S0750K101                           | 120                  | $\pm 10$                    | 200                           | 10.0       | 430                        |
| B72210S0750K101                           | 120                  | $\pm 10$                    | 200                           | 25.0       | 720                        |
| B72214S0750K101                           | 120                  | $\pm 10$                    | 200                           | 50.0       | 1370                       |
| B72220S0750K101                           | 120                  | $\pm 10$                    | 200                           | 100.0      | 2900                       |
| <b><math>V_{RMS} = 95\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0950K101                           | 150                  | $\pm 10$                    | 250                           | 5.0        | 185                        |
| B72207S0950K101                           | 150                  | $\pm 10$                    | 250                           | 10.0       | 335                        |
| B72210S0950K101                           | 150                  | $\pm 10$                    | 250                           | 25.0       | 690                        |
| B72214S0950K101                           | 150                  | $\pm 10$                    | 250                           | 50.0       | 1200                       |
| B72220S0950K101                           | 150                  | $\pm 10$                    | 250                           | 100.0      | 2500                       |


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**Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )**

| Ordering code                                     | Type<br>(untaped)<br>SIOV- | $V_{\text{RMS}}$<br>V | $V_{\text{DC}}$<br>V | $i_{\text{max}}$<br>(8/20 $\mu\text{s}$ )<br>1 time<br>A | $I_n^{1)}$<br>(8/20 $\mu\text{s}$ )<br>15 times<br>A | $W_{\text{max}}$<br>(2 ms)<br>J | $P_{\text{max}}$<br>W |
|---------------------------------------------------|----------------------------|-----------------------|----------------------|----------------------------------------------------------|------------------------------------------------------|---------------------------------|-----------------------|
| <b><math>V_{\text{RMS}} = 115\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0111K101                                   | S05K115                    | 115                   | 150                  | 400                                                      | 150                                                  | 3.6                             | 0.10                  |
| B72207S0111K101                                   | S07K115                    | 115                   | 150                  | 1200                                                     | 500                                                  | 8.4                             | 0.25                  |
| B72210S0111K101                                   | S10K115                    | 115                   | 150                  | 2500                                                     | 1500                                                 | 18.0                            | 0.40                  |
| B72214S0111K101                                   | S14K115                    | 115                   | 150                  | 4500                                                     | 3000                                                 | 30.0                            | 0.60                  |
| B72220S0111K101                                   | S20K115                    | 115                   | 150                  | 6500                                                     | 3000                                                 | 60.0                            | 1.00                  |
| <b><math>V_{\text{RMS}} = 130\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0131K101                                   | S05K130                    | 130                   | 170                  | 400                                                      | 150                                                  | 4.2                             | 0.10                  |
| B72207S0131K101                                   | S07K130                    | 130                   | 170                  | 1200                                                     | 500                                                  | 9.5                             | 0.25                  |
| B72210S0131K101                                   | S10K130                    | 130                   | 170                  | 2500                                                     | 1500                                                 | 19.0                            | 0.40                  |
| B72214S0131K101                                   | S14K130                    | 130                   | 170                  | 4500                                                     | 3000                                                 | 34.0                            | 0.60                  |
| B72220S0131K101                                   | S20K130                    | 130                   | 170                  | 8000                                                     | 3000                                                 | 74.0                            | 1.00                  |
| <b><math>V_{\text{RMS}} = 140\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0141K101                                   | S05K140                    | 140                   | 180                  | 400                                                      | 150                                                  | 4.5                             | 0.10                  |
| B72207S0141K101                                   | S07K140                    | 140                   | 180                  | 1200                                                     | 500                                                  | 10.0                            | 0.25                  |
| B72210S0141K101                                   | S10K140                    | 140                   | 180                  | 2500                                                     | 1500                                                 | 22.0                            | 0.40                  |
| B72214S0141K101                                   | S14K140                    | 140                   | 180                  | 4500                                                     | 3000                                                 | 36.0                            | 0.60                  |
| B72220S0141K101                                   | S20K140                    | 140                   | 180                  | 8000                                                     | 3000                                                 | 78.0                            | 1.00                  |
| <b><math>V_{\text{RMS}} = 150\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0151K101                                   | S05K150                    | 150                   | 200                  | 400                                                      | 150                                                  | 4.9                             | 0.10                  |
| B72207S0151K101                                   | S07K150                    | 150                   | 200                  | 1200                                                     | 500                                                  | 11.0                            | 0.25                  |
| B72210S0151K101                                   | S10K150                    | 150                   | 200                  | 2500                                                     | 1500                                                 | 24.0                            | 0.40                  |
| B72214S0151K101                                   | S14K150                    | 150                   | 200                  | 4500                                                     | 3000                                                 | 40.0                            | 0.60                  |
| B72220S0151K101                                   | S20K150                    | 150                   | 200                  | 8000                                                     | 3000                                                 | 85.0                            | 1.00                  |
| <b><math>V_{\text{RMS}} = 175\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0171K101                                   | S05K175                    | 175                   | 225                  | 400                                                      | 150                                                  | 5.6                             | 0.10                  |
| B72207S0171K101                                   | S07K175                    | 175                   | 225                  | 1200                                                     | 500                                                  | 13.0                            | 0.25                  |
| B72210S0171K101                                   | S10K175                    | 175                   | 225                  | 2500                                                     | 1500                                                 | 28.0                            | 0.40                  |
| B72214S0171K101                                   | S14K175                    | 175                   | 225                  | 4500                                                     | 3000                                                 | 46.0                            | 0.60                  |
| B72220S0171K101                                   | S20K175                    | 175                   | 225                  | 8000                                                     | 3000                                                 | 98.0                            | 1.00                  |
| <b><math>V_{\text{RMS}} = 230\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0231K101                                   | S05K230                    | 230                   | 300                  | 400                                                      | 150                                                  | 7.2                             | 0.10                  |
| B72207S0231K101                                   | S07K230                    | 230                   | 300                  | 1200                                                     | 500                                                  | 17.0                            | 0.25                  |
| B72210S0231K101                                   | S10K230                    | 230                   | 300                  | 2500                                                     | 1500                                                 | 36.0                            | 0.40                  |
| B72214S0231K101                                   | S14K230                    | 230                   | 300                  | 4500                                                     | 3000                                                 | 60.0                            | 0.60                  |
| B72220S0231K101                                   | S20K230                    | 230                   | 300                  | 8000                                                     | 3000                                                 | 130.0                           | 1.00                  |

<sup>1)</sup> **Note:** Nominal discharge current  $I_n$  according to UL 1449, 4<sup>th</sup> edition.


**Leaded varistors**
**B722\***
**Standard series**
**Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )**

| Ordering code                              | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | $V_{C,max}$<br>( $i_C$ )<br>V | $i_C$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|--------------------------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| <b><math>V_{RMS} = 115\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0111K101                            | 180                  | $\pm 10$                    | 300                           | 5.0        | 155                        |
| B72207S0111K101                            | 180                  | $\pm 10$                    | 300                           | 10.0       | 280                        |
| B72210S0111K101                            | 180                  | $\pm 10$                    | 300                           | 25.0       | 580                        |
| B72214S0111K101                            | 180                  | $\pm 10$                    | 300                           | 50.0       | 1000                       |
| B72220S0111K101                            | 180                  | $\pm 10$                    | 300                           | 100.0      | 2100                       |
| <b><math>V_{RMS} = 130\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0131K101                            | 205                  | $\pm 10$                    | 340                           | 5.0        | 135                        |
| B72207S0131K101                            | 205                  | $\pm 10$                    | 340                           | 10.0       | 245                        |
| B72210S0131K101                            | 205                  | $\pm 10$                    | 340                           | 25.0       | 500                        |
| B72214S0131K101                            | 205                  | $\pm 10$                    | 340                           | 50.0       | 880                        |
| B72220S0131K101                            | 205                  | $\pm 10$                    | 340                           | 100.0      | 1850                       |
| <b><math>V_{RMS} = 140\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0141K101                            | 220                  | $\pm 10$                    | 360                           | 5.0        | 125                        |
| B72207S0141K101                            | 220                  | $\pm 10$                    | 360                           | 10.0       | 230                        |
| B72210S0141K101                            | 220                  | $\pm 10$                    | 360                           | 25.0       | 470                        |
| B72214S0141K101                            | 220                  | $\pm 10$                    | 360                           | 50.0       | 820                        |
| B72220S0141K101                            | 220                  | $\pm 10$                    | 360                           | 100.0      | 1700                       |
| <b><math>V_{RMS} = 150\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0151K101                            | 240                  | $\pm 10$                    | 395                           | 5.0        | 115                        |
| B72207S0151K101                            | 240                  | $\pm 10$                    | 395                           | 10.0       | 210                        |
| B72210S0151K101                            | 240                  | $\pm 10$                    | 395                           | 25.0       | 430                        |
| B72214S0151K101                            | 240                  | $\pm 10$                    | 395                           | 50.0       | 750                        |
| B72220S0151K101                            | 240                  | $\pm 10$                    | 395                           | 100.0      | 1550                       |
| <b><math>V_{RMS} = 175\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0171K101                            | 270                  | $\pm 10$                    | 455                           | 5.0        | 100                        |
| B72207S0171K101                            | 270                  | $\pm 10$                    | 455                           | 10.0       | 190                        |
| B72210S0171K101                            | 270                  | $\pm 10$                    | 455                           | 25.0       | 380                        |
| B72214S0171K101                            | 270                  | $\pm 10$                    | 455                           | 50.0       | 670                        |
| B72220S0171K101                            | 270                  | $\pm 10$                    | 455                           | 100.0      | 1350                       |
| <b><math>V_{RMS} = 230\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0231K101                            | 360                  | $\pm 10$                    | 595                           | 5.0        | 70                         |
| B72207S0231K101                            | 360                  | $\pm 10$                    | 595                           | 10.0       | 130                        |
| B72210S0231K101                            | 360                  | $\pm 10$                    | 595                           | 25.0       | 265                        |
| B72214S0231K101                            | 360                  | $\pm 10$                    | 595                           | 50.0       | 530                        |
| B72220S0231K101                            | 360                  | $\pm 10$                    | 595                           | 100.0      | 1000                       |


**Leaded varistors**
**B722\***
**Standard series**
**Electrical specifications and ordering codes**
**Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )**

| Ordering code                                     | Type<br>(untaped)<br>SIOV- | $V_{\text{RMS}}$<br>V | $V_{\text{DC}}$<br>V | $i_{\text{max}}$<br>(8/20 $\mu\text{s}$ )<br>1 time<br>A | $I_n^{1)}$<br>(8/20 $\mu\text{s}$ )<br>15 times<br>A | $W_{\text{max}}$<br>(2 ms)<br>J | $P_{\text{max}}$<br>W |
|---------------------------------------------------|----------------------------|-----------------------|----------------------|----------------------------------------------------------|------------------------------------------------------|---------------------------------|-----------------------|
| <b><math>V_{\text{RMS}} = 250\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0251K101                                   | S05K250                    | 250                   | 320                  | 400                                                      | 150                                                  | 8.2                             | 0.10                  |
| B72207S0251K101                                   | S07K250                    | 250                   | 320                  | 1200                                                     | 500                                                  | 19.0                            | 0.25                  |
| B72210S0251K101                                   | S10K250                    | 250                   | 320                  | 2500                                                     | 1500                                                 | 38.0                            | 0.40                  |
| B72214S0251K101                                   | S14K250                    | 250                   | 320                  | 4500                                                     | 3000                                                 | 65.0                            | 0.60                  |
| B72220S0251K101                                   | S20K250                    | 250                   | 320                  | 8000                                                     | 3000                                                 | 140.0                           | 1.00                  |
| <b><math>V_{\text{RMS}} = 275\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0271K101                                   | S05K275                    | 275                   | 350                  | 400                                                      | 150                                                  | 8.6                             | 0.10                  |
| B72207S0271K101                                   | S07K275                    | 275                   | 350                  | 1200                                                     | 500                                                  | 21.0                            | 0.25                  |
| B72210S0271K101                                   | S10K275                    | 275                   | 350                  | 2500                                                     | 1500                                                 | 43.0                            | 0.40                  |
| B72214S0271K101                                   | S14K275                    | 275                   | 350                  | 4500                                                     | 3000                                                 | 71.0                            | 0.60                  |
| B72220S0271K101                                   | S20K275                    | 275                   | 350                  | 8000                                                     | 3000                                                 | 151.0                           | 1.00                  |
| <b><math>V_{\text{RMS}} = 300\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0301K101                                   | S05K300                    | 300                   | 385                  | 400                                                      | 150                                                  | 9.6                             | 0.10                  |
| B72207S0301K101                                   | S07K300                    | 300                   | 385                  | 1200                                                     | 500                                                  | 23.0                            | 0.25                  |
| B72210S0301K101                                   | S10K300                    | 300                   | 385                  | 2500                                                     | 1500                                                 | 47.0                            | 0.40                  |
| B72214S0301K101                                   | S14K300                    | 300                   | 385                  | 4500                                                     | 3000                                                 | 76.0                            | 0.60                  |
| B72220S0301K101                                   | S20K300                    | 300                   | 385                  | 8000                                                     | 3000                                                 | 173.0                           | 1.00                  |
| <b><math>V_{\text{RMS}} = 320\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0321K101                                   | S05K320                    | 320                   | 420                  | 400                                                      | 150                                                  | 11.0                            | 0.10                  |
| B72207S0321K101                                   | S07K320                    | 320                   | 420                  | 1200                                                     | 500                                                  | 25.0                            | 0.25                  |
| B72210S0321K101                                   | S10K320                    | 320                   | 420                  | 2500                                                     | 1500                                                 | 50.0                            | 0.40                  |
| B72214S0321K101                                   | S14K320                    | 320                   | 420                  | 4500                                                     | 3000                                                 | 84.0                            | 0.60                  |
| B72220S0321K101                                   | S20K320                    | 320                   | 420                  | 8000                                                     | 3000                                                 | 184.0                           | 1.00                  |
| <b><math>V_{\text{RMS}} = 350\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0351K101                                   | S05K350                    | 350                   | 460                  | 400                                                      | 150                                                  | 12.0                            | 0.10                  |
| B72207S0351K101                                   | S07K350                    | 350                   | 460                  | 1200                                                     | 500                                                  | 27.0                            | 0.25                  |
| B72210S0351K101                                   | S10K350                    | 350                   | 460                  | 2500                                                     | 1500                                                 | 45.0                            | 0.40                  |
| B72214S0351K101                                   | S14K350                    | 350                   | 460                  | 4500                                                     | 3000                                                 | 80.0                            | 0.60                  |
| B72220S0351K101                                   | S20K350                    | 350                   | 460                  | 8000                                                     | 3000                                                 | 150.0                           | 1.00                  |
| <b><math>V_{\text{RMS}} = 385\text{ V}</math></b> |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0381K101                                   | S05K385                    | 385                   | 505                  | 400                                                      | 150                                                  | 13.0                            | 0.10                  |
| B72207S0381K101                                   | S07K385                    | 385                   | 505                  | 1200                                                     | 500                                                  | 28.0                            | 0.25                  |
| B72210S0381K101                                   | S10K385                    | 385                   | 505                  | 2500                                                     | 1500                                                 | 40.0                            | 0.40                  |
| B72214S0381K101                                   | S14K385                    | 385                   | 505                  | 4500                                                     | 3000                                                 | 80.0                            | 0.60                  |
| B72220S0381K101                                   | S20K385                    | 385                   | 505                  | 8000                                                     | 3000                                                 | 150.0                           | 1.00                  |

<sup>1)</sup> **Note:** Nominal discharge current  $I_n$  according to UL 1449, 4<sup>th</sup> edition.


**Leaded varistors**
**B722\***
**Standard series**
**Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )**

| Ordering code                              | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | $V_{C,max}$<br>( $i_C$ )<br>V | $i_C$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|--------------------------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| <b><math>V_{RMS} = 250\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0251K101                            | 390                  | $\pm 10$                    | 650                           | 5.0        | 65                         |
| B72207S0251K101                            | 390                  | $\pm 10$                    | 650                           | 10.0       | 120                        |
| B72210S0251K101                            | 390                  | $\pm 10$                    | 650                           | 25.0       | 245                        |
| B72214S0251K101                            | 390                  | $\pm 10$                    | 650                           | 50.0       | 490                        |
| B72220S0251K101                            | 390                  | $\pm 10$                    | 650                           | 100.0      | 940                        |
| <b><math>V_{RMS} = 275\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0271K101                            | 430                  | $\pm 10$                    | 710                           | 5.0        | 60                         |
| B72207S0271K101                            | 430                  | $\pm 10$                    | 710                           | 10.0       | 110                        |
| B72210S0271K101                            | 430                  | $\pm 10$                    | 710                           | 25.0       | 220                        |
| B72214S0271K101                            | 430                  | $\pm 10$                    | 710                           | 50.0       | 440                        |
| B72220S0271K101                            | 430                  | $\pm 10$                    | 710                           | 100.0      | 850                        |
| <b><math>V_{RMS} = 300\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0301K101                            | 470                  | $\pm 10$                    | 775                           | 5.0        | 55                         |
| B72207S0301K101                            | 470                  | $\pm 10$                    | 775                           | 10.0       | 100                        |
| B72210S0301K101                            | 470                  | $\pm 10$                    | 775                           | 25.0       | 200                        |
| B72214S0301K101                            | 470                  | $\pm 10$                    | 775                           | 50.0       | 400                        |
| B72220S0301K101                            | 470                  | $\pm 10$                    | 775                           | 100.0      | 780                        |
| <b><math>V_{RMS} = 320\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0321K101                            | 510                  | $\pm 10$                    | 840                           | 5.0        | 50                         |
| B72207S0321K101                            | 510                  | $\pm 10$                    | 840                           | 10.0       | 90                         |
| B72210S0321K101                            | 510                  | $\pm 10$                    | 840                           | 25.0       | 185                        |
| B72214S0321K101                            | 510                  | $\pm 10$                    | 840                           | 50.0       | 370                        |
| B72220S0321K101                            | 510                  | $\pm 10$                    | 840                           | 100.0      | 720                        |
| <b><math>V_{RMS} = 350\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0351K101                            | 560                  | $\pm 10$                    | 910                           | 5.0        | 48                         |
| B72207S0351K101                            | 560                  | $\pm 10$                    | 910                           | 10.0       | 80                         |
| B72210S0351K101                            | 560                  | $\pm 10$                    | 910                           | 25.0       | 160                        |
| B72214S0351K101                            | 560                  | $\pm 10$                    | 910                           | 50.0       | 350                        |
| B72220S0351K101                            | 560                  | $\pm 10$                    | 910                           | 100.0      | 660                        |
| <b><math>V_{RMS} = 385\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0381K101                            | 620                  | $\pm 10$                    | 1025                          | 5.0        | 45                         |
| B72207S0381K101                            | 620                  | $\pm 10$                    | 1025                          | 10.0       | 85                         |
| B72210S0381K101                            | 620                  | $\pm 10$                    | 1025                          | 25.0       | 175                        |
| B72214S0381K101                            | 620                  | $\pm 10$                    | 1025                          | 50.0       | 315                        |
| B72220S0381K101                            | 620                  | $\pm 10$                    | 1025                          | 100.0      | 600                        |


**Leaded varistors**
**B722\***
**Standard series**
**Electrical specifications and ordering codes**
**Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )**

| Ordering code                   | Type<br>(untaped)<br>SIOV- | $V_{\text{RMS}}$<br>V | $V_{\text{DC}}$<br>V | $i_{\text{max}}$<br>(8/20 $\mu\text{s}$ )<br>1 time<br>A | $I_n^{1)}$<br>(8/20 $\mu\text{s}$ )<br>15 times<br>A | $W_{\text{max}}$<br>(2 ms)<br>J | $P_{\text{max}}$<br>W |
|---------------------------------|----------------------------|-----------------------|----------------------|----------------------------------------------------------|------------------------------------------------------|---------------------------------|-----------------------|
| $V_{\text{RMS}} = 420\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0421K101                 | S05K420                    | 420                   | 560                  | 400                                                      | 150                                                  | 14.0                            | 0.10                  |
| B72207S0421K101                 | S07K420                    | 420                   | 560                  | 1200                                                     | 500                                                  | 32.0                            | 0.25                  |
| B72210S0421K101                 | S10K420                    | 420                   | 560                  | 2500                                                     | 1500                                                 | 45.0                            | 0.40                  |
| B72214S0421K101                 | S14K420                    | 420                   | 560                  | 4500                                                     | 3000                                                 | 90.0                            | 0.60                  |
| B72220S0421K101                 | S20K420                    | 420                   | 560                  | 8000                                                     | 3000                                                 | 175.0                           | 1.00                  |
| $V_{\text{RMS}} = 440\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0441K101                 | S05K440                    | 440                   | 585                  | 400                                                      | 150                                                  | 16.0                            | 0.10                  |
| B72207S0441K101                 | S07K440                    | 440                   | 585                  | 1200                                                     | 500                                                  | 34.0                            | 0.25                  |
| B72210S0441K101                 | S10K440                    | 440                   | 585                  | 2500                                                     | 1500                                                 | 47.0                            | 0.40                  |
| B72214S0441K101                 | S14K440                    | 440                   | 585                  | 4500                                                     | 3000                                                 | 95.0                            | 0.60                  |
| B72220S0441K101                 | S20K440                    | 440                   | 585                  | 8000                                                     | 3000                                                 | 185.0                           | 1.00                  |
| $V_{\text{RMS}} = 460\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72205S0461K101                 | S05K460                    | 460                   | 615                  | 400                                                      | 150                                                  | 18.0                            | 0.10                  |
| B72207S0461K101                 | S07K460                    | 460                   | 615                  | 1200                                                     | 500                                                  | 36.0                            | 0.25                  |
| B72210S0461K101                 | S10K460                    | 460                   | 615                  | 2500                                                     | 1500                                                 | 50.0                            | 0.40                  |
| B72214S0461K101                 | S14K460                    | 460                   | 615                  | 4500                                                     | 3000                                                 | 100.0                           | 0.60                  |
| B72220S0461K101                 | S20K460                    | 460                   | 615                  | 8000                                                     | 3000                                                 | 195.0                           | 1.00                  |
| $V_{\text{RMS}} = 510\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72210S0511K101                 | S10K510                    | 510                   | 670                  | 2500                                                     | 1500                                                 | 55.0                            | 0.40                  |
| B72214S0511K101                 | S14K510                    | 510                   | 670                  | 4500                                                     | 3000                                                 | 110.0                           | 0.60                  |
| B72220S0511K101                 | S20K510                    | 510                   | 670                  | 6500                                                     | 3000                                                 | 190.0                           | 1.00                  |
| $V_{\text{RMS}} = 550\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72210S0551K101                 | S10K550                    | 550                   | 745                  | 2500                                                     | 1500                                                 | 60.0                            | 0.40                  |
| B72214S0551K101                 | S14K550                    | 550                   | 745                  | 4500                                                     | 3000                                                 | 120.0                           | 0.60                  |
| B72220S0551K101                 | S20K550                    | 550                   | 745                  | 6500                                                     | 3000                                                 | 210.0                           | 1.00                  |
| $V_{\text{RMS}} = 625\text{ V}$ |                            |                       |                      |                                                          |                                                      |                                 |                       |
| B72210S0621K101                 | S10K625                    | 625                   | 825                  | 2500                                                     | 1500                                                 | 68.0                            | 0.40                  |
| B72214S0621K101                 | S14K625                    | 625                   | 825                  | 4500                                                     | 3000                                                 | 130.0                           | 0.60                  |
| B72220S0621K101                 | S20K625                    | 625                   | 825                  | 6500                                                     | 3000                                                 | 230.0                           | 1.00                  |

<sup>1)</sup> **Note:** Nominal discharge current  $I_n$  according to UL 1449, 4<sup>th</sup> edition.


**Leaded varistors**
**B722\***
**Standard series**
**Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )**

| Ordering code                              | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | $V_{c,max}$<br>( $i_c$ )<br>V | $i_c$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|--------------------------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| <b><math>V_{RMS} = 420\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0421K101                            | 680                  | $\pm 10$                    | 1120                          | 5.0        | 40                         |
| B72207S0421K101                            | 680                  | $\pm 10$                    | 1120                          | 10.0       | 75                         |
| B72210S0421K101                            | 680                  | $\pm 10$                    | 1120                          | 25.0       | 165                        |
| B72214S0421K101                            | 680                  | $\pm 10$                    | 1120                          | 50.0       | 290                        |
| B72220S0421K101                            | 680                  | $\pm 10$                    | 1120                          | 100.0      | 550                        |
| <b><math>V_{RMS} = 440\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0441K101                            | 715                  | $\pm 10$                    | 1180                          | 5.0        | 37                         |
| B72207S0441K101                            | 715                  | $\pm 10$                    | 1180                          | 10.0       | 72                         |
| B72210S0441K101                            | 715                  | $\pm 10$                    | 1180                          | 25.0       | 158                        |
| B72214S0441K101                            | 715                  | $\pm 10$                    | 1180                          | 50.0       | 275                        |
| B72220S0441K101                            | 715                  | $\pm 10$                    | 1180                          | 100.0      | 530                        |
| <b><math>V_{RMS} = 460\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72205S0461K101                            | 750                  | $\pm 10$                    | 1240                          | 5.0        | 35                         |
| B72207S0461K101                            | 750                  | $\pm 10$                    | 1240                          | 10.0       | 70                         |
| B72210S0461K101                            | 750                  | $\pm 10$                    | 1240                          | 25.0       | 150                        |
| B72214S0461K101                            | 750                  | $\pm 10$                    | 1240                          | 50.0       | 260                        |
| B72220S0461K101                            | 750                  | $\pm 10$                    | 1240                          | 100.0      | 500                        |
| <b><math>V_{RMS} = 510\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72210S0511K101                            | 820                  | $\pm 10$                    | 1355                          | 25.0       | 140                        |
| B72214S0511K101                            | 820                  | $\pm 10$                    | 1355                          | 50.0       | 240                        |
| B72220S0511K101                            | 820                  | $\pm 10$                    | 1355                          | 100.0      | 460                        |
| <b><math>V_{RMS} = 550\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72210S0551K101                            | 910                  | $\pm 10$                    | 1500                          | 25.0       | 120                        |
| B72214S0551K101                            | 910                  | $\pm 10$                    | 1500                          | 50.0       | 215                        |
| B72220S0551K101                            | 910                  | $\pm 10$                    | 1500                          | 100.0      | 410                        |
| <b><math>V_{RMS} = 625\text{ V}</math></b> |                      |                             |                               |            |                            |
| B72210S0621K101                            | 1000                 | $\pm 10$                    | 1650                          | 25.0       | 110                        |
| B72214S0621K101                            | 1000                 | $\pm 10$                    | 1650                          | 50.0       | 200                        |
| B72220S0621K101                            | 1000                 | $\pm 10$                    | 1650                          | 100.0      | 380                        |



# Leaded varistors

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## Standard series

### Electrical specifications and ordering codes

Maximum ratings ( $T_A = 105\text{ }^{\circ}\text{C}$ )

| Ordering code             | Type<br>(untaped)<br>SIOV- | $V_{RMS}$<br>V | $V_{DC}$<br>V | $i_{max}$<br>(8/20 $\mu$ s)<br>1 time<br>A | $I_n^{1)}$<br>(8/20 $\mu$ s)<br>15 times<br>A | $W_{max}$<br>(2 ms)<br>J | $P_{max}$<br>W |
|---------------------------|----------------------------|----------------|---------------|--------------------------------------------|-----------------------------------------------|--------------------------|----------------|
| $V_{RMS} = 680\text{ V}$  |                            |                |               |                                            |                                               |                          |                |
| B72210S0681K101           | S10K680                    | 680            | 895           | 2500                                       | 1500                                          | 72.0                     | 0.40           |
| B72214S0681K101           | S14K680                    | 680            | 895           | 4500                                       | 3000                                          | 140.0                    | 0.60           |
| B72220S0681K101           | S20K680                    | 680            | 895           | 6500                                       | 3000                                          | 250.0                    | 1.00           |
| $V_{RMS} = 1100\text{ V}$ |                            |                |               |                                            |                                               |                          |                |
| B72214S0102K101           | S14K1000 <sup>2)</sup>     | 1100           | 1465          | 4500                                       | 3000                                          | 230.0                    | 0.60           |
| B72220S0102K101           | S20K1000 <sup>2)</sup>     | 1100           | 1465          | 6500                                       | 3000                                          | 410.0                    | 1.00           |

### Characteristics ( $T_A = 25\text{ }^{\circ}\text{C}$ )

| Ordering code             | $V_v$<br>(1 mA)<br>V | $\Delta V_v$<br>(1 mA)<br>% | $V_{c,max}$<br>( $i_c$ )<br>V | $i_c$<br>A | $C_{typ}$<br>(1 kHz)<br>pF |
|---------------------------|----------------------|-----------------------------|-------------------------------|------------|----------------------------|
| $V_{RMS} = 680\text{ V}$  |                      |                             |                               |            |                            |
| B72210S0681K101           | 1100                 | $\pm 10$                    | 1815                          | 25.0       | 100                        |
| B72214S0681K101           | 1100                 | $\pm 10$                    | 1815                          | 50.0       | 180                        |
| B72220S0681K101           | 1100                 | $\pm 10$                    | 1815                          | 100.0      | 340                        |
| $V_{RMS} = 1100\text{ V}$ |                      |                             |                               |            |                            |
| B72214S0102K101           | 1800                 | $\pm 10$                    | 2970                          | 50.0       | 110                        |
| B72220S0102K101           | 1800                 | $\pm 10$                    | 2970                          | 100.0      | 210                        |

1) Note: Nominal discharge current  $I_n$ , according to UL 1449, 4<sup>th</sup> edition.

2) Operating voltage differs from type designation.

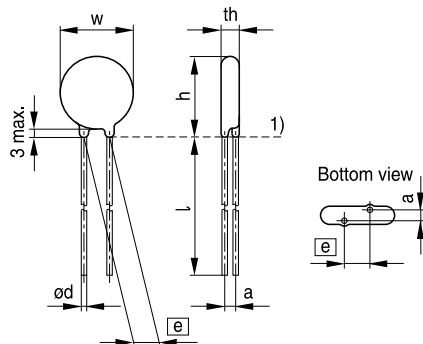


## Leaded varistors

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### Standard series

## Dimensional drawings



1) Seating plane to IEC 60717

VAR0408-C-E

## Weight

| Nominal diameter<br>mm | $V_{RMS}$<br>V | Weight<br>g  |
|------------------------|----------------|--------------|
| 5                      | 11 ... 460     | 0.3 ... 0.7  |
| 7                      | 11 ... 460     | 0.4 ... 1.1  |
| 10                     | 11 ... 680     | 1.0 ... 3.0  |
| 14                     | 11 ... 1000    | 1.4 ... 7.6  |
| 20                     | 11 ... 1000    | 2.7 ... 15.7 |

The weight of varistors in between these voltage classes can be interpolated.

## Dimensions

| Ordering code                 | [e] ±1<br>mm | a (typical)<br>mm | w <sub>max</sub><br>mm | th <sub>max</sub><br>mm | h <sub>max</sub><br>mm | l <sub>min</sub><br>mm | d ±0.05<br>mm |
|-------------------------------|--------------|-------------------|------------------------|-------------------------|------------------------|------------------------|---------------|
| <b>V<sub>RMS</sub> = 11 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0110K101               | 5.0          | 1.2               | 7.0                    | 3.3                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0110K101               | 5.0          | 1.2               | 9.0                    | 3.4                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0110K101               | 7.5          | 1.4               | 12.0                   | 4.0                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0110K101               | 7.5          | 1.4               | 15.5                   | 4.0                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0110K101               | 10.0         | 1.5               | 21.5                   | 4.5                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 14 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0140K101               | 5.0          | 1.3               | 7.0                    | 3.4                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0140K101               | 5.0          | 1.3               | 9.0                    | 3.5                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0140K101               | 7.5          | 1.5               | 12.0                   | 4.2                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0140K101               | 7.5          | 1.5               | 15.5                   | 4.2                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0140K101               | 10.0         | 1.6               | 21.5                   | 4.6                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 17 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0170K101               | 5.0          | 1.4               | 7.0                    | 3.5                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0170K101               | 5.0          | 1.4               | 9.0                    | 3.6                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0170K101               | 7.5          | 1.6               | 12.0                   | 4.4                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0170K101               | 7.5          | 1.7               | 15.5                   | 4.4                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0170K101               | 10.0         | 1.8               | 21.5                   | 4.8                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 20 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0200K101               | 5.0          | 1.2               | 7.0                    | 3.5                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0200K101               | 5.0          | 1.2               | 9.0                    | 3.6                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0200K101               | 7.5          | 1.6               | 12.0                   | 4.5                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0200K101               | 7.5          | 1.6               | 15.5                   | 4.6                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0200K101               | 10.0         | 2.1               | 21.5                   | 5.1                     | 25.5                   | 25.0                   | 1.0           |


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| Ordering code                 | [e] ±1<br>mm | a (typical)<br>mm | w <sub>max</sub><br>mm | th <sub>max</sub><br>mm | h <sub>max</sub><br>mm | l <sub>min</sub><br>mm | d ±0.05<br>mm |
|-------------------------------|--------------|-------------------|------------------------|-------------------------|------------------------|------------------------|---------------|
| <b>V<sub>RMS</sub> = 25 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0250K101               | 5.0          | 1.3               | 7.0                    | 3.6                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0250K101               | 5.0          | 1.3               | 9.0                    | 3.7                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0250K101               | 7.5          | 1.4               | 12.0                   | 4.2                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0250K101               | 7.5          | 1.4               | 15.5                   | 4.2                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0250K101               | 10.0         | 1.8               | 21.5                   | 4.7                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 30 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0300K101               | 5.0          | 1.5               | 7.0                    | 3.6                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0300K101               | 5.0          | 1.5               | 9.0                    | 3.7                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0300K101               | 7.5          | 1.5               | 12.0                   | 4.4                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0300K101               | 7.5          | 1.5               | 15.5                   | 4.4                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0300K101               | 10.0         | 2.0               | 21.5                   | 4.9                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 35 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0350K101               | 5.0          | 1.6               | 7.0                    | 3.7                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0350K101               | 5.0          | 1.6               | 9.0                    | 3.9                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0350K101               | 7.5          | 1.6               | 12.0                   | 4.4                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0350K101               | 7.5          | 1.6               | 15.5                   | 4.5                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0350K101               | 10.0         | 2.2               | 21.5                   | 5.1                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 40 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0400K101               | 5.0          | 1.8               | 7.0                    | 3.9                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0400K101               | 5.0          | 1.8               | 9.0                    | 4.1                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0400K101               | 7.5          | 1.7               | 12.0                   | 4.8                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0400K101               | 7.5          | 1.7               | 15.5                   | 4.9                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0400K101               | 10.0         | 2.4               | 21.5                   | 5.4                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 50 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0500K101               | 5.0          | 1.3               | 7.0                    | 3.3                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0500K101               | 5.0          | 1.3               | 9.0                    | 3.3                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0500K101               | 7.5          | 1.4               | 12.0                   | 3.9                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0500K101               | 7.5          | 1.4               | 15.5                   | 3.9                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0500K101               | 10.0         | 1.6               | 21.5                   | 4.3                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 60 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0600K101               | 5.0          | 1.4               | 7.0                    | 3.3                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0600K101               | 5.0          | 1.4               | 9.0                    | 3.3                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0600K101               | 7.5          | 1.4               | 12.0                   | 4.0                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0600K101               | 7.5          | 1.5               | 15.5                   | 4.0                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0600K101               | 10.0         | 1.7               | 21.5                   | 4.4                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 75 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0750K101               | 5.0          | 1.5               | 7.0                    | 3.4                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0750K101               | 5.0          | 1.5               | 9.0                    | 3.6                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0750K101               | 7.5          | 1.5               | 12.0                   | 4.2                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0750K101               | 7.5          | 1.5               | 15.5                   | 4.2                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0750K101               | 10.0         | 1.8               | 21.5                   | 4.6                     | 25.5                   | 25.0                   | 1.0           |



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## Standard series

| Ordering code                  | [e] ±1<br>mm | a (typical)<br>mm | w <sub>max</sub><br>mm | th <sub>max</sub><br>mm | h <sub>max</sub><br>mm | l <sub>min</sub><br>mm | d ±0.05<br>mm |
|--------------------------------|--------------|-------------------|------------------------|-------------------------|------------------------|------------------------|---------------|
| <b>V<sub>RMS</sub> = 95 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72205S0950K101                | 5.0          | 1.5               | 7.0                    | 3.4                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0950K101                | 5.0          | 1.5               | 9.0                    | 3.4                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0950K101                | 7.5          | 1.5               | 12.0                   | 4.0                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0950K101                | 7.5          | 1.5               | 15.5                   | 4.0                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0950K101                | 10.0         | 1.8               | 21.5                   | 4.5                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 115 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0111K101                | 5.0          | 1.5               | 7.0                    | 3.6                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0111K101                | 5.0          | 1.5               | 9.0                    | 3.6                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0111K101                | 7.5          | 1.6               | 12.0                   | 4.2                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0111K101                | 7.5          | 1.7               | 15.5                   | 4.2                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0111K101                | 10.0         | 1.9               | 21.5                   | 4.6                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 130 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0131K101                | 5.0          | 1.6               | 7.0                    | 3.6                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0131K101                | 5.0          | 1.6               | 9.0                    | 3.6                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0131K101                | 7.5          | 1.8               | 12.0                   | 4.2                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0131K101                | 7.5          | 1.9               | 15.5                   | 4.2                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0131K101                | 10.0         | 2.0               | 21.5                   | 4.7                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 140 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0141K101                | 5.0          | 1.7               | 7.0                    | 3.7                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0141K101                | 5.0          | 1.7               | 9.0                    | 3.7                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0141K101                | 7.5          | 1.9               | 12.0                   | 4.3                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0141K101                | 7.5          | 2.0               | 15.5                   | 4.3                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0141K101                | 10.0         | 2.1               | 21.5                   | 4.8                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 150 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0151K101                | 5.0          | 1.8               | 7.0                    | 3.8                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0151K101                | 5.0          | 1.8               | 9.0                    | 3.8                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0151K101                | 7.5          | 2.0               | 12.0                   | 4.4                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0151K101                | 7.5          | 2.1               | 15.5                   | 4.4                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0151K101                | 10.0         | 2.2               | 21.5                   | 4.9                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 175 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0171K101                | 5.0          | 2.0               | 7.0                    | 3.9                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0171K101                | 5.0          | 2.0               | 9.0                    | 4.0                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0171K101                | 7.5          | 2.2               | 12.0                   | 4.6                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0171K101                | 7.5          | 2.2               | 15.5                   | 4.6                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0171K101                | 10.0         | 2.3               | 21.5                   | 5.0                     | 25.5                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 230 V</b> |              |                   |                        |                         |                        |                        |               |
| B72205S0231K101                | 5.0          | 1.5               | 7.0                    | 4.0                     | 8.5                    | 25.0                   | 0.6           |
| B72207S0231K101                | 5.0          | 1.5               | 9.0                    | 4.0                     | 11.0                   | 25.0                   | 0.6           |
| B72210S0231K101                | 7.5          | 1.7               | 12.0                   | 4.7                     | 14.5                   | 25.0                   | 0.8           |
| B72214S0231K101                | 7.5          | 1.7               | 15.5                   | 4.7                     | 18.5                   | 25.0                   | 0.8           |
| B72220S0231K101                | 10.0         | 1.8               | 21.5                   | 5.1                     | 25.5                   | 25.0                   | 1.0           |


**Leaded varistors**
**B722\***
**Standard series**

| Ordering code                  | [e] $\pm 1$<br>mm | a (typical)<br>mm | w <sub>max</sub><br>mm | th <sub>max</sub><br>mm | h <sub>max</sub><br>mm | l <sub>min</sub><br>mm | d $\pm 0.05$<br>mm |
|--------------------------------|-------------------|-------------------|------------------------|-------------------------|------------------------|------------------------|--------------------|
| <b>V<sub>RMS</sub> = 250 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0251K101                | 5.0               | 1.5               | 7.0                    | 4.2                     | 8.5                    | 25.0                   | 0.6                |
| B72207S0251K101                | 5.0               | 1.5               | 9.0                    | 4.2                     | 11.0                   | 25.0                   | 0.6                |
| B72210S0251K101                | 7.5               | 1.7               | 12.0                   | 4.8                     | 14.5                   | 25.0                   | 0.8                |
| B72214S0251K101                | 7.5               | 1.7               | 15.5                   | 4.8                     | 18.5                   | 25.0                   | 0.8                |
| B72220S0251K101                | 10.0              | 1.9               | 21.5                   | 5.3                     | 25.5                   | 25.0                   | 1.0                |
| <b>V<sub>RMS</sub> = 275 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0271K101                | 5.0               | 1.6               | 7.0                    | 4.3                     | 8.5                    | 25.0                   | 0.6                |
| B72207S0271K101                | 5.0               | 1.6               | 9.0                    | 4.4                     | 11.0                   | 25.0                   | 0.6                |
| B72210S0271K101                | 7.5               | 1.8               | 12.0                   | 5.0                     | 14.5                   | 25.0                   | 0.8                |
| B72214S0271K101                | 7.5               | 1.8               | 15.5                   | 5.0                     | 18.5                   | 25.0                   | 0.8                |
| B72220S0271K101                | 10.0              | 2.0               | 21.5                   | 5.4                     | 25.5                   | 25.0                   | 1.0                |
| <b>V<sub>RMS</sub> = 300 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0301K101                | 5.0               | 1.7               | 7.0                    | 4.5                     | 8.5                    | 25.0                   | 0.6                |
| B72207S0301K101                | 5.0               | 1.7               | 9.0                    | 4.5                     | 11.0                   | 25.0                   | 0.6                |
| B72210S0301K101                | 7.5               | 1.9               | 12.0                   | 5.1                     | 14.5                   | 25.0                   | 0.8                |
| B72214S0301K101                | 7.5               | 1.9               | 15.5                   | 5.2                     | 18.5                   | 25.0                   | 0.8                |
| B72220S0301K101                | 10.0              | 2.1               | 21.5                   | 5.6                     | 25.5                   | 25.0                   | 1.0                |
| <b>V<sub>RMS</sub> = 320 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0321K101                | 5.0               | 1.9               | 7.0                    | 4.8                     | 9.0                    | 25.0                   | 0.6                |
| B72207S0321K101                | 5.0               | 1.9               | 9.0                    | 4.8                     | 11.5                   | 25.0                   | 0.6                |
| B72210S0321K101                | 7.5               | 2.1               | 12.0                   | 5.4                     | 15.0                   | 25.0                   | 0.8                |
| B72214S0321K101                | 7.5               | 2.1               | 15.5                   | 5.4                     | 19.0                   | 25.0                   | 0.8                |
| B72220S0321K101                | 10.0              | 2.3               | 21.5                   | 5.8                     | 25.5                   | 25.0                   | 1.0                |
| <b>V<sub>RMS</sub> = 350 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0351K101                | 5.0               | 2.0               | 7.0                    | 4.9                     | 9.0                    | 25.0                   | 0.6                |
| B72207S0351K101                | 5.0               | 2.0               | 9.0                    | 4.9                     | 11.5                   | 25.0                   | 0.6                |
| B72210S0351K101                | 7.5               | 2.2               | 12.0                   | 5.6                     | 15.0                   | 25.0                   | 0.8                |
| B72214S0351K101                | 7.5               | 2.2               | 15.5                   | 5.6                     | 19.0                   | 25.0                   | 0.8                |
| B72220S0351K101                | 10.0              | 2.4               | 21.5                   | 6.0                     | 25.5                   | 25.0                   | 1.0                |
| <b>V<sub>RMS</sub> = 385 V</b> |                   |                   |                        |                         |                        |                        |                    |
| B72205S0381K101                | 5.0               | 2.1               | 7.0                    | 5.1                     | 9.0                    | 25.0                   | 0.6                |
| B72207S0381K101                | 5.0               | 2.1               | 9.0                    | 5.2                     | 11.5                   | 25.0                   | 0.6                |
| B72210S0381K101                | 7.5               | 2.4               | 12.0                   | 5.8                     | 15.0                   | 25.0                   | 0.8                |
| B72214S0381K101                | 7.5               | 2.4               | 15.5                   | 5.9                     | 19.0                   | 25.0                   | 0.8                |
| B72220S0381K101                | 10.0              | 2.5               | 21.5                   | 6.3                     | 26.0                   | 25.0                   | 1.0                |


**Leaded varistors**
**B722\***
**Standard series**

| Ordering code                   | [e] ±1<br>mm | a (typical)<br>mm | w <sub>max</sub><br>mm | th <sub>max</sub><br>mm | h <sub>max</sub><br>mm | l <sub>min</sub><br>mm | d ±0.05<br>mm |
|---------------------------------|--------------|-------------------|------------------------|-------------------------|------------------------|------------------------|---------------|
| <b>V<sub>RMS</sub> = 420 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72205S0421K101                 | 5.0          | 2.4               | 7.0                    | 5.4                     | 9.0                    | 25.0                   | 0.6           |
| B72207S0421K101                 | 5.0          | 2.4               | 9.0                    | 5.4                     | 11.5                   | 25.0                   | 0.6           |
| B72210S0421K101                 | 7.5          | 2.6               | 12.0                   | 6.1                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0421K101                 | 7.5          | 2.6               | 15.5                   | 6.1                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0421K101                 | 10.0         | 2.7               | 21.5                   | 6.5                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 440 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72205S0441K101                 | 5.0          | 2.4               | 7.0                    | 5.5                     | 9.0                    | 25.0                   | 0.6           |
| B72207S0441K101                 | 5.0          | 2.4               | 9.0                    | 5.5                     | 11.5                   | 25.0                   | 0.6           |
| B72210S0441K101                 | 7.5          | 2.7               | 12.0                   | 6.2                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0441K101                 | 7.5          | 2.7               | 15.5                   | 6.3                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0441K101                 | 10.0         | 2.8               | 21.5                   | 6.7                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 460 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72205S0461K101                 | 5.0          | 2.6               | 7.0                    | 5.7                     | 9.0                    | 25.0                   | 0.6           |
| B72207S0461K101                 | 5.0          | 2.6               | 9.0                    | 5.7                     | 11.5                   | 25.0                   | 0.6           |
| B72210S0461K101                 | 7.5          | 2.8               | 12.0                   | 6.3                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0461K101                 | 7.5          | 2.8               | 15.5                   | 6.4                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0461K101                 | 10.0         | 3.0               | 21.5                   | 6.8                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 510 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72210S0511K101                 | 7.5          | 3.1               | 12.0                   | 6.7                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0511K101                 | 7.5          | 3.1               | 15.5                   | 6.8                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0511K101                 | 10.0         | 3.2               | 21.5                   | 7.1                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 550 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72210S0551K101                 | 7.5          | 3.4               | 12.0                   | 7.1                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0551K101                 | 7.5          | 3.4               | 15.5                   | 7.2                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0551K101                 | 10.0         | 3.6               | 21.5                   | 7.5                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 625 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72210S0621K101                 | 7.5          | 3.7               | 12.0                   | 7.5                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0621K101                 | 7.5          | 3.7               | 15.5                   | 7.5                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0621K101                 | 10.0         | 3.9               | 21.5                   | 7.9                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 680 V</b>  |              |                   |                        |                         |                        |                        |               |
| B72210S0681K101                 | 7.5          | 4.1               | 12.0                   | 7.9                     | 15.0                   | 25.0                   | 0.8           |
| B72214S0681K101                 | 7.5          | 4.1               | 15.5                   | 8.0                     | 19.0                   | 25.0                   | 0.8           |
| B72220S0681K101                 | 10.0         | 4.2               | 21.5                   | 8.4                     | 26.0                   | 25.0                   | 1.0           |
| <b>V<sub>RMS</sub> = 1100 V</b> |              |                   |                        |                         |                        |                        |               |
| B72214S0102K101                 | 7.5          | 6.3               | 15.5                   | 11.0                    | 20.5                   | 25.0                   | 0.8           |
| B72220S0102K101                 | 10.0         | 6.4               | 21.5                   | 11.4                    | 28.5                   | 25.0                   | 1.0           |


**Leaded varistors**
**B722\***
**Standard series**
**Reliability data**

| Test                                    | Test methods/conditions                                                                                                                                                                                                                                                                                                                                                               | Requirement                                                                                              |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Varistor voltage                        | The voltage between two terminals with the specified measuring current applied is called $V_V$ (1 mA <sub>DC</sub> @ 0.2 ... 2 s).                                                                                                                                                                                                                                                    | To meet the specified value                                                                              |
| Clamping voltage                        | The maximum voltage between two terminals with the specified standard impulse current (8/20 µs) applied.                                                                                                                                                                                                                                                                              | To meet the specified value                                                                              |
| Endurance at upper category temperature | 1000 h at UCT<br>After having continuously applied the maximum allowable AC voltage at UCT ±2 °C for 1000 h, the specimen shall be stored at room temperature and normal humidity for 1 to 2 h.<br>Thereafter, the change of $V_V$ shall be measured.                                                                                                                                 | $ \Delta V/V  (1 \text{ mA}) \leq 10\%$                                                                  |
| Surge current derating, 8/20 µs         | 10 surge currents (8/20 µs), unipolar, interval 30 s, amplitude corresponding to derating curve for 10 impulses at 20 µs                                                                                                                                                                                                                                                              | $ \Delta V/V  (1 \text{ mA}) \leq 10\%$<br>(measured in direction of surge current)<br>No visible damage |
| Surge current derating, 2 ms            | 10 surge currents (2 ms), unipolar, interval 120 s, amplitude corresponding to derating curve for 10 impulses at 2 ms                                                                                                                                                                                                                                                                 | $ \Delta V/V  (1 \text{ mA}) \leq 10\%$<br>(measured in direction of surge current)<br>No visible damage |
| Electric strength                       | IEC 61051-1, test 4.9.2<br>Metal balls method, 2500 V <sub>RMS</sub> , 60 s<br>The varistor is placed in a container holding 1.6 ±0.2 mm diameter metal balls such that only the terminations of the varistor are protruding.<br>The specified voltage shall be applied between both terminals of the specimen connected together and the electrode inserted between the metal balls. | No breakdown                                                                                             |


**Leaded varistors**
**B722\***
**StandardD series**

| Test                        | Test methods/conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Requirement                                                                 |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Climatic sequence           | <p>The specimen shall be subjected to:</p> <p>a) dry heat at UCT, 16 h, IEC 60068-2-2, test Ba</p> <p>b) damp heat, 1st cycle:<br/>55 °C, 93% r. H., 24 h, IEC 60068-2-30, test Db</p> <p>c) cold, LCT, 2 h, IEC 60068-2-1, test Aa</p> <p>d) damp heat, additional 5 cycles:<br/>55 °C/25 °C, 93% r. H., 24 h/cycle, IEC 60068-2-30, test Db.</p> <p>Then the specimen shall be stored at room temperature and normal humidity for 1 to 2 h.</p> <p>Thereafter, the change of <math>V_V</math> shall be measured. Thereafter, insulation resistance <math>R_{ins}</math> shall be measured at <math>V = 500\text{ V}</math>.</p> | $ \Delta V/V (1\text{ mA})  \leq 10\%$<br>$R_{ins} \geq 100\text{ M}\Omega$ |
| Rapid change of temperature | IEC 60068-2-14, test Na, LCT/UCT, dwell time 30 min, 5 cycles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | $ \Delta V/V (1\text{ mA})  \leq 5\%$<br>No visible damage                  |
| Damp heat, steady state     | IEC 60068-2-78, test Ca<br><br>The specimen shall be subjected to $40 \pm 2\text{ °C}$ , 90 to 95% r. H. for 56 days without load / with 10% of the maximum continuous DC operating voltage $V_{DC}$ . Then stored at room temperature and normal humidity for 1 to 2 h.<br>Thereafter, the change of $V_V$ shall be measured. Thereafter, insulation resistance $R_{ins}$ shall be measured at $V = 500\text{ V}$ (insulated varistors only).                                                                                                                                                                                    | $ \Delta V/V (1\text{ mA})  \leq 10\%$<br>$R_{ins} \geq 100\text{ M}\Omega$ |


**Leaded varistors**
**B722\***
**Standard series**

| Test                         | Test methods/conditions                                                                                                                                                                                                                                                                                                                                                                                                                        | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solderability                | <p>IEC 60068-2-20, test Ta, method 1 with modified conditions for lead-free solder alloys: 245 °C, 3 s:</p> <p>After dipping the terminals to a depth of approximately 3 mm from the body in a soldering bath of 245 °C for 3 s, the terminals shall be visually examined.</p>                                                                                                                                                                 | <p>The inspection shall be carried out under adequate light with normal eyesight or with the assistance of a magnifier capable of giving a magnification of 4 to 10 times. The dipped surface shall be covered with a smooth and bright solder coating with no more than small amounts of scattered imperfections such as pinholes or un-wetted or de-wetted areas. These imperfections shall not be concentrated in one area.</p> |
| Resistance to soldering heat | <p>IEC 60068-2-20, test Tb, method 1A, 260 °C, 10 s:</p> <p>Each lead shall be dipped into a solder bath having a temperature of <math>260 \pm 5</math> °C to a point 2.0 to 2.5 mm from the body of the specimen, be held there for <math>10 \pm 1</math> s and then be stored at room temperature and normal humidity for 1 to 2 h.</p> <p>The change of <math>V_V</math> shall be measured and the specimen shall be visually examined.</p> | <p><math> \Delta V/V (1 \text{ mA})  \leq 5\%</math></p> <p>No visible damage</p>                                                                                                                                                                                                                                                                                                                                                  |
| Tensile strength             | <p>IEC 60068-2-21, test Ua1</p> <p>After gradually applying the force specified below and keeping the unit fixed for 10 s, the terminal shall be visually examined for any damage.</p> <p>Force for wire diameter:</p> <p>0.6 mm = 10 N<br/>0.8 mm = 10 N<br/>1.0 mm = 20 N</p>                                                                                                                                                                | <p><math> \Delta V/V (1 \text{ mA})  \leq 5\%</math></p> <p>No break of solder joint, no wire break</p>                                                                                                                                                                                                                                                                                                                            |



# Leaded varistors

B722\*

## StandardD series

| Test        | Test methods/conditions                                                                                                                                                                                                                                                                                                                              | Requirement                                                 |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Vibration   | IEC 60068-2-6, test Fc, method B4<br>Frequency range: 10 ... 55 Hz<br>Amplitude: 0.75 mm or 98 m/s <sup>2</sup><br>Duration: 6 h (3 · 2 h)<br>Pulse: sine wave<br>After repeatedly applying a single harmonic vibration according to the table above.<br>The change of V <sub>V</sub> shall be measured and the specimen shall be visually examined. | $ \Delta V/V (1 \text{ mA})  \leq 5\%$<br>No visible damage |
| Bump        | IEC 60068-2-29, test Eb<br>Pulse duration: 6 ms<br>Max. acceleration: 400 m/s <sup>2</sup><br>Number of bumps: 4000<br>Pulse: half sine                                                                                                                                                                                                              | $ \Delta V/V (1 \text{ mA})  \leq 5\%$<br>No visible damage |
| Fire hazard | IEC 60695-11-5 (needle flame test)<br>Severity: vertical 10 s                                                                                                                                                                                                                                                                                        | 5 s max.                                                    |

### Note:

UCT = Upper category temperature

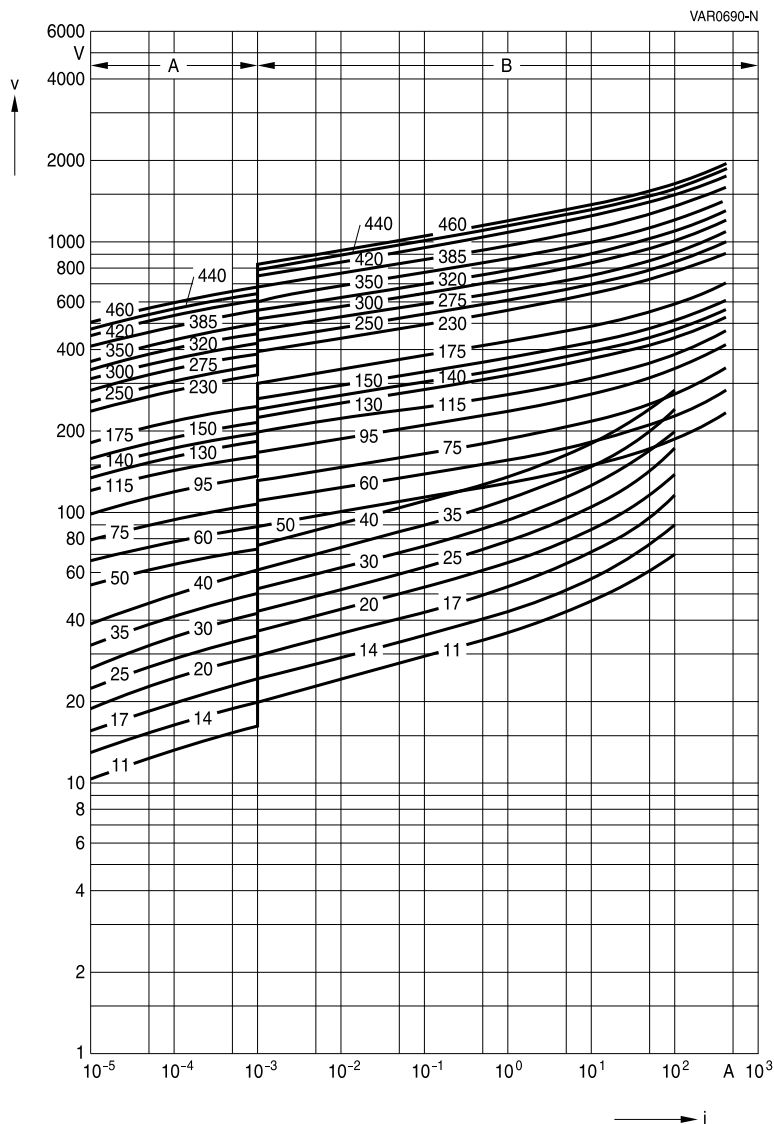
LCT = Lower category temperature

R<sub>ins</sub> = Insulation resistance



# v/i characteristics

$v = f(i)$  - for explanation of the characteristics refer to "General technical information", 1.6.3  
A = Leakage current, B = Protection level } for worst-case varistor tolerances

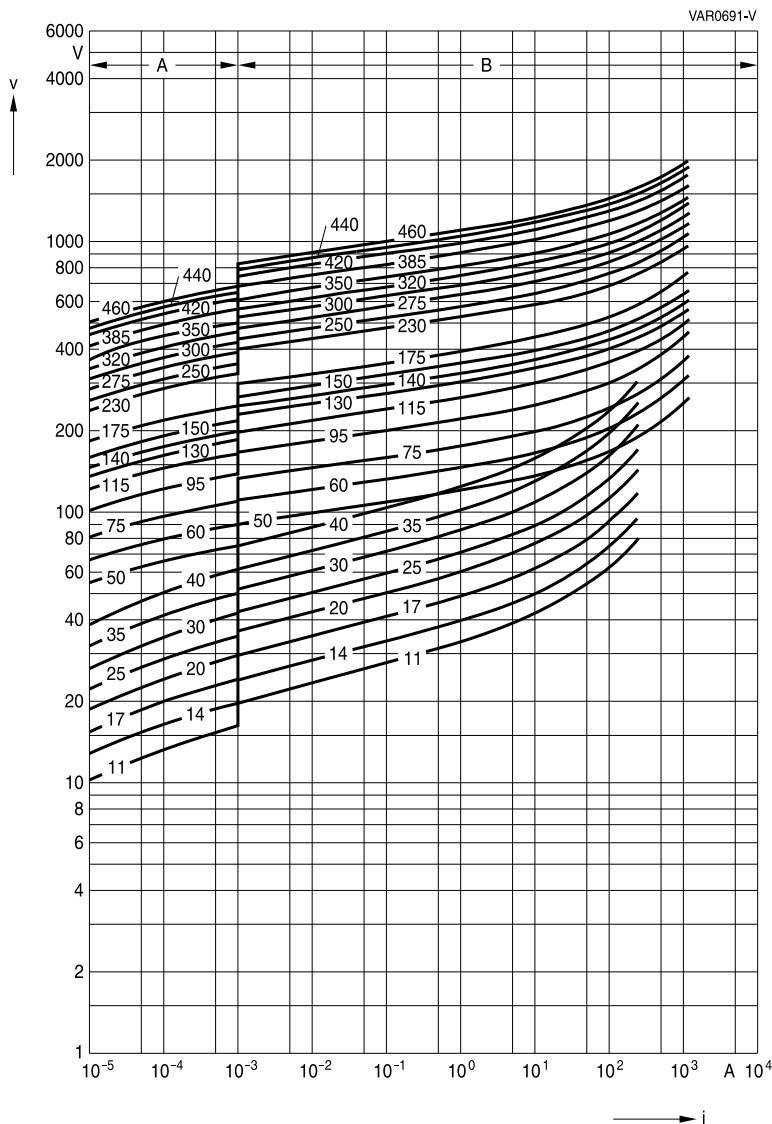


SIOV-S05 ...



## v/i characteristics

$v = f(i)$  - for explanation of the characteristics refer to "General technical information", 1.6.3  
 A = Leakage current, B = Protection level } for worst-case varistor tolerances

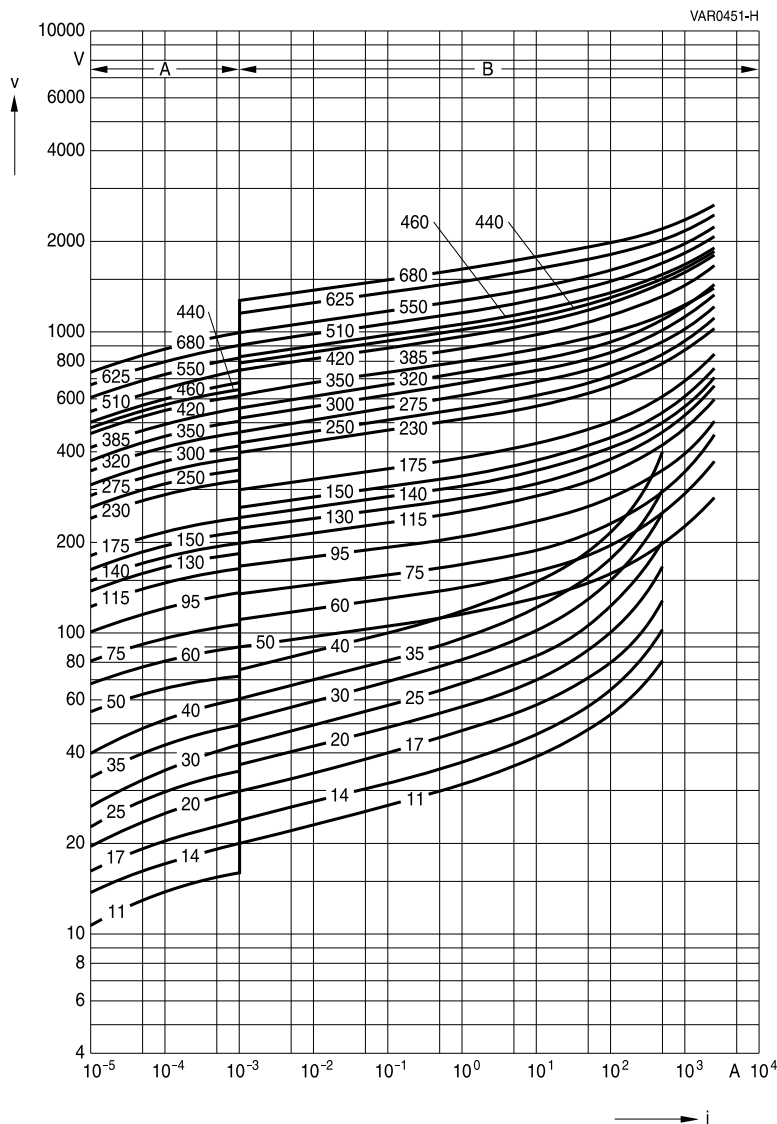


SIOV-S07 ...



# v/i characteristics

$v = f(i)$  - for explanation of the characteristics refer to "General technical information", 1.6.3  
A = Leakage current, B = Protection level } for worst-case varistor tolerances

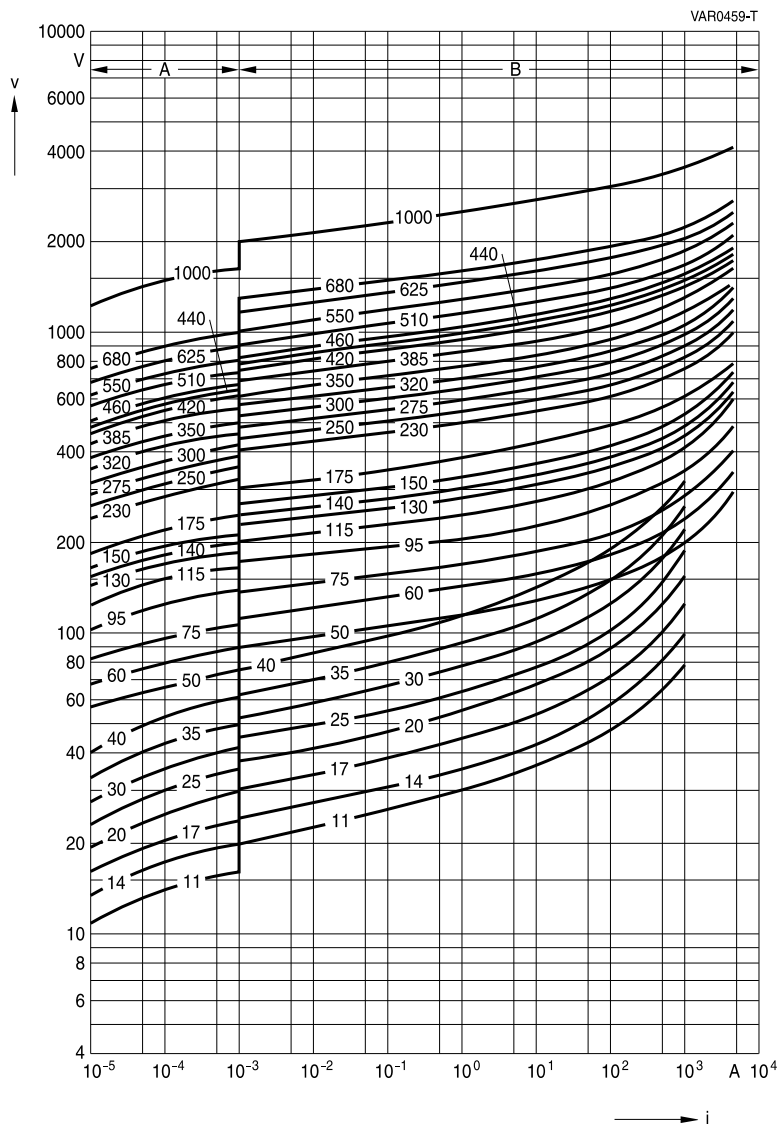


SIOV-S10 ...



## v/i characteristics

$v = f(i)$  - for explanation of the characteristics refer to "General technical information", 1.6.3  
A = Leakage current, B = Protection level } for worst-case varistor tolerances

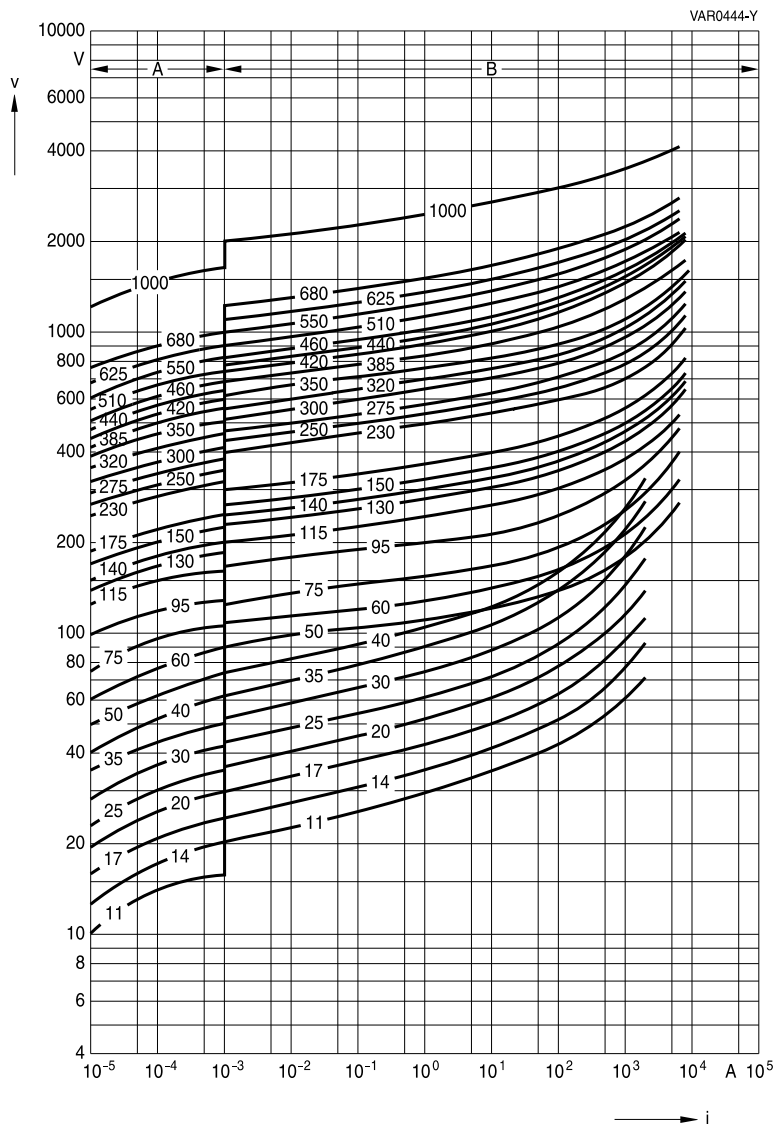


SIOV-S14 ...



# v/i characteristics

$v = f(i)$  - for explanation of the characteristics refer to "General technical information", 1.6.3  
A = Leakage current, B = Protection level } for worst-case varistor tolerances



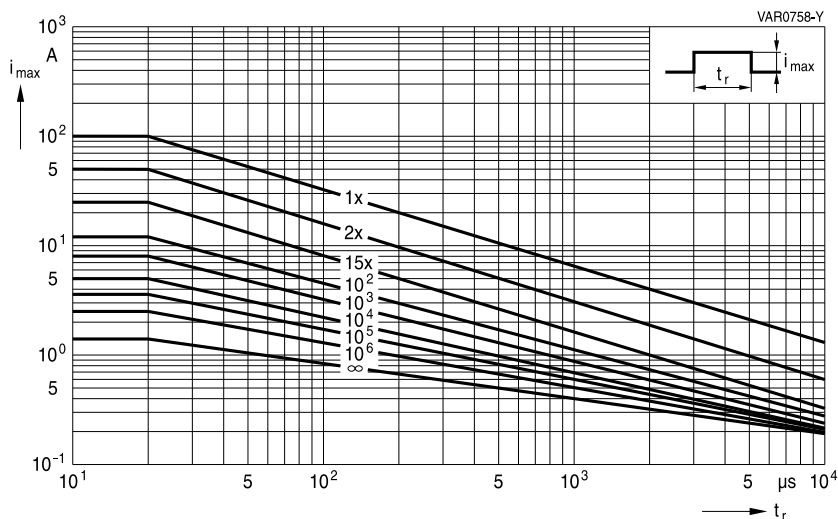
SIOV-S20 ...



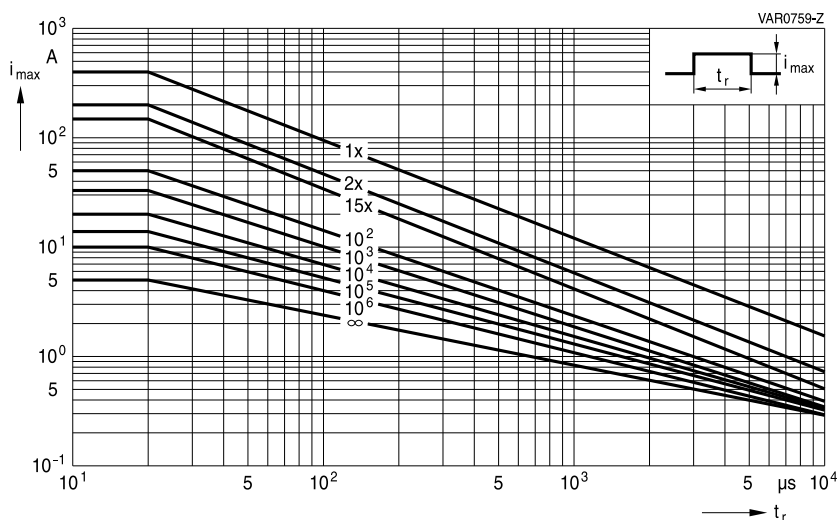
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S05K11 ... K40



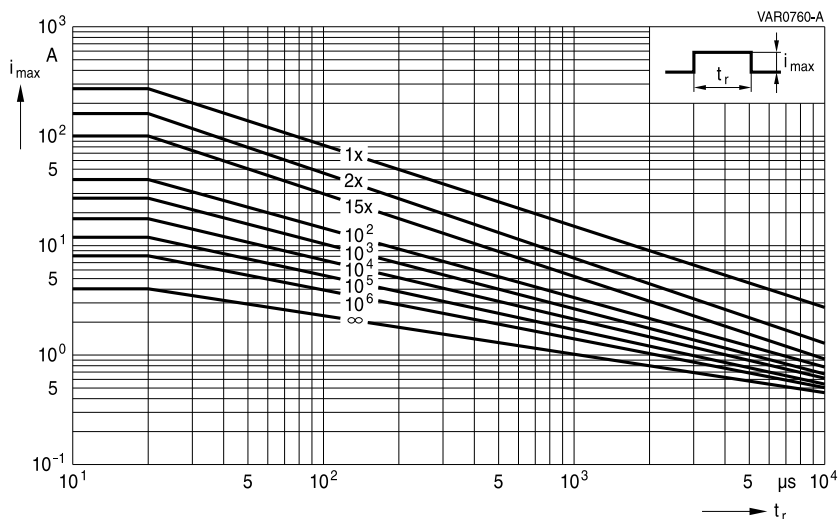
## SIOV-S05K50 ... K460



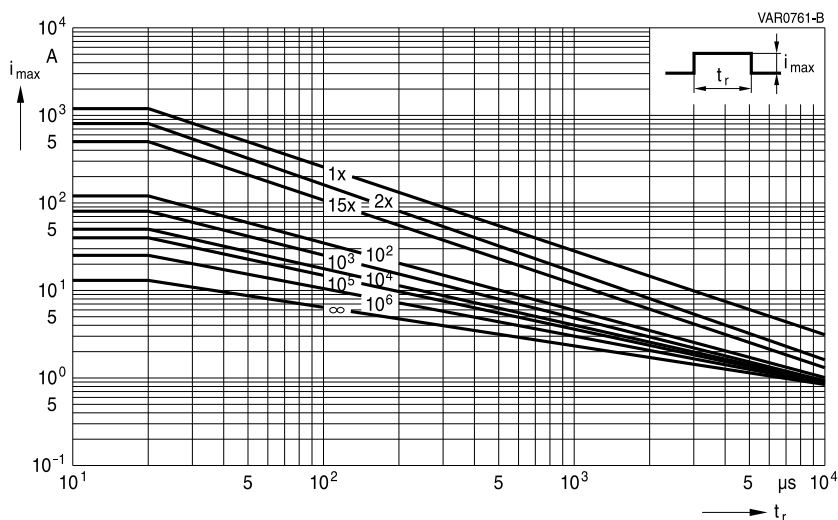
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S07K11 ... K40



## SIOV-S07K50 ... K460



## Leaded varistors

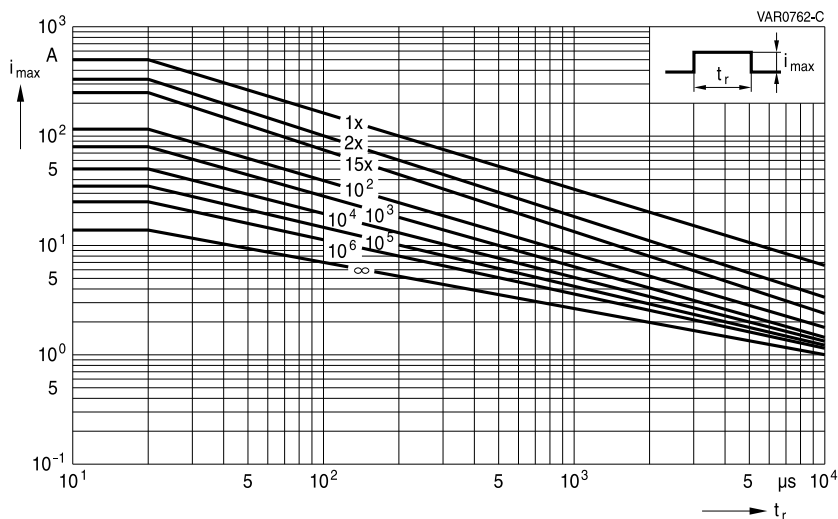
B722\*

### Standard series

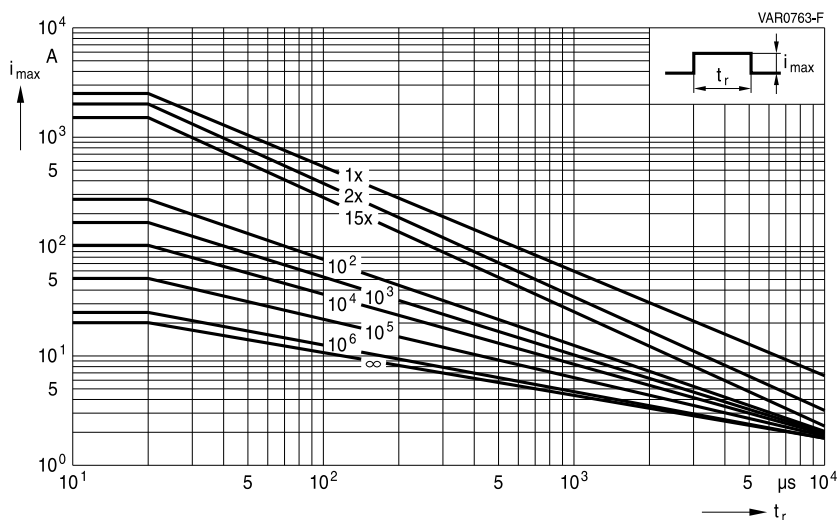
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S10K11 ... K40



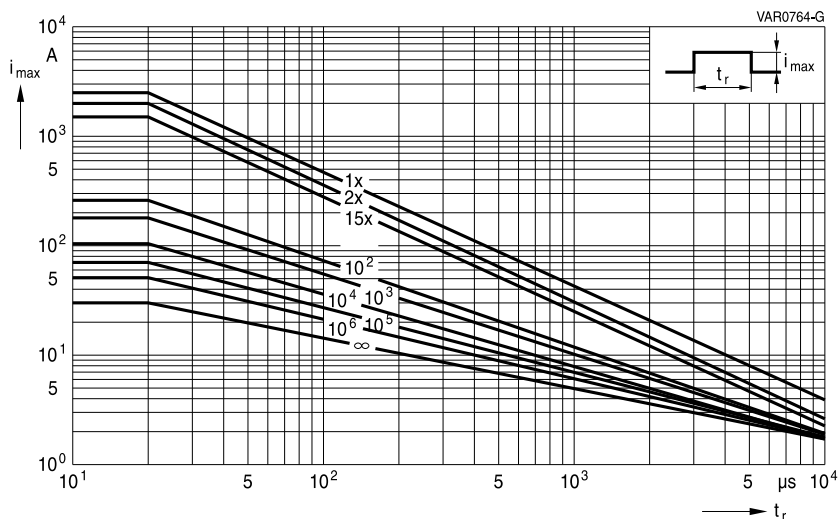
## SIOV-S10K50 ... K320



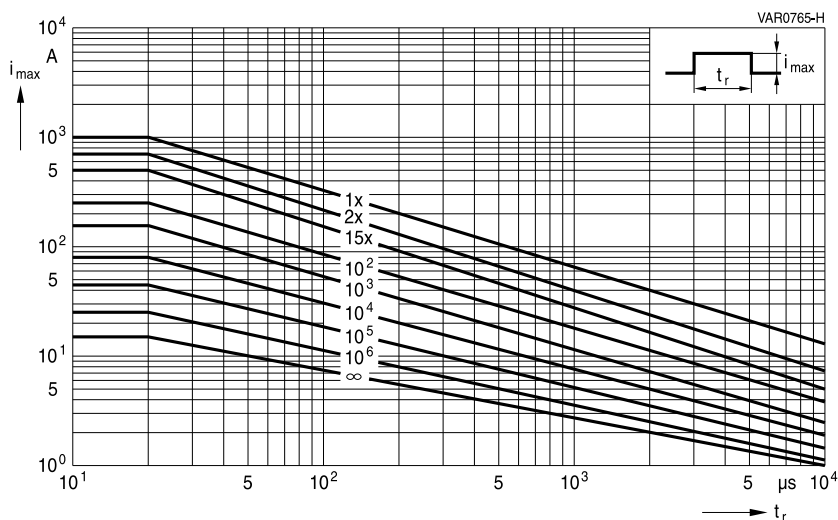
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S10K350 ... K680



## SIOV-S14K11 ... K40



# Leaded varistors

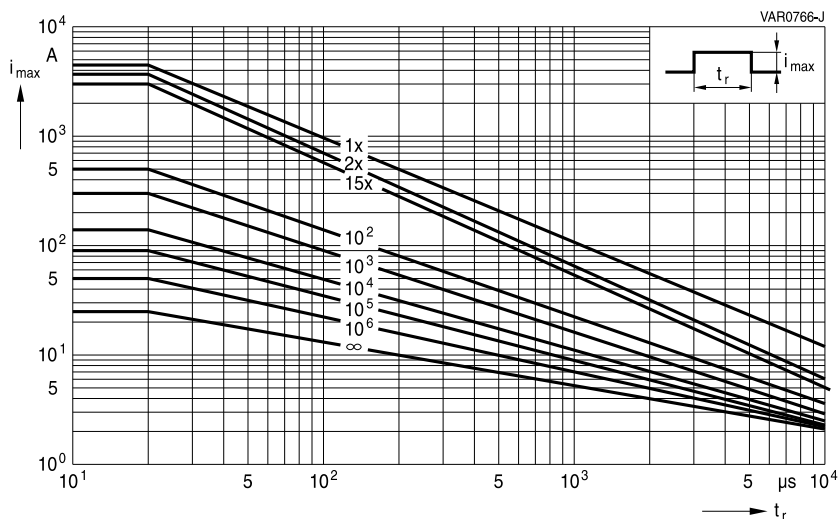
B722\*

## StandardD series

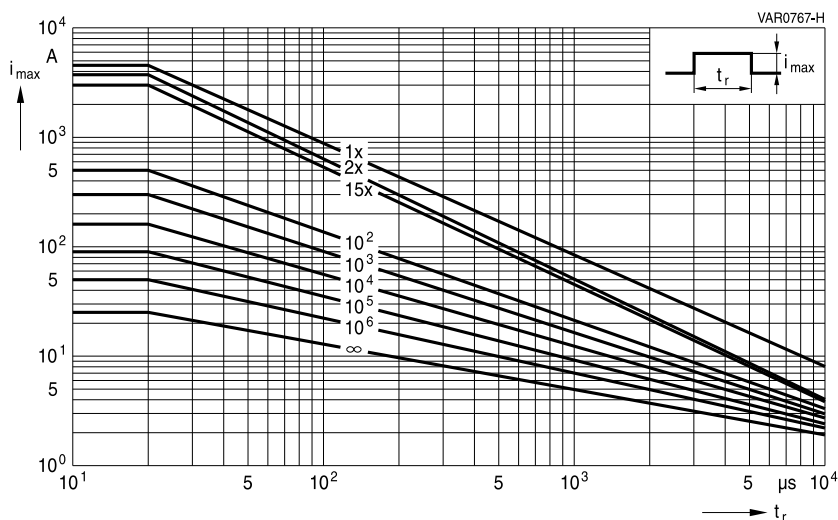
### Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



### SIOV-S14K50 ... K320



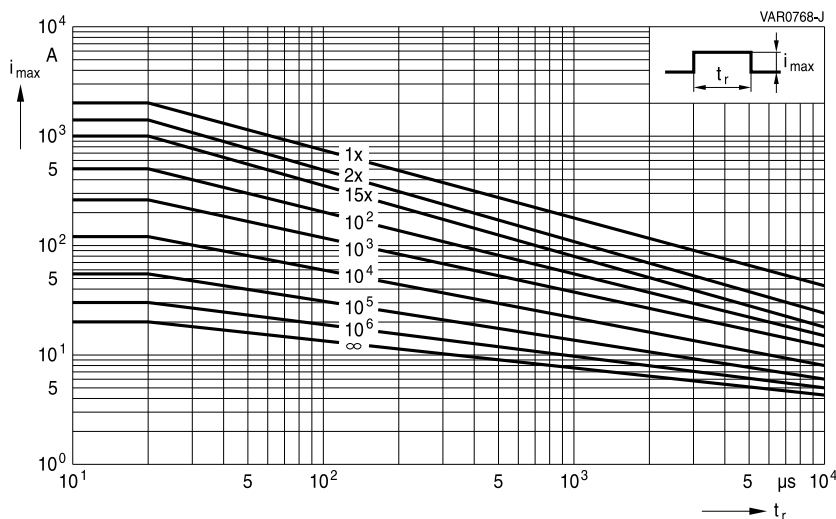
### SIOV-S14K350 ... K1000



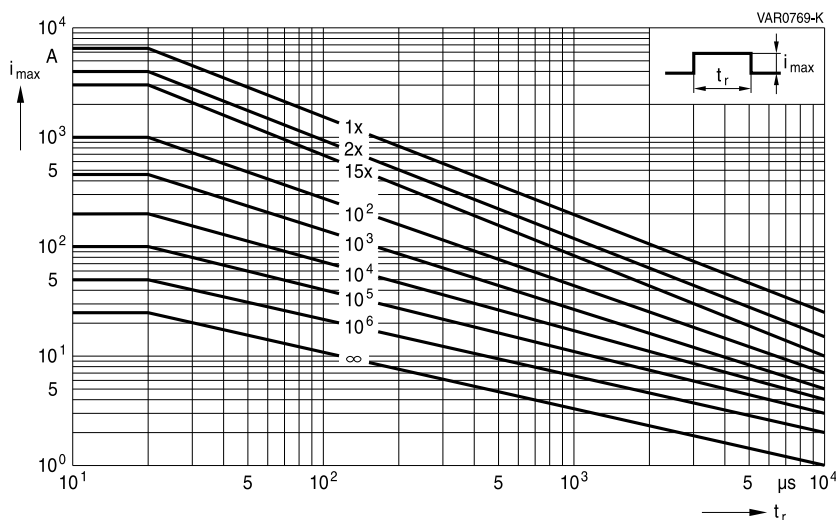
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S20K11 ... K40



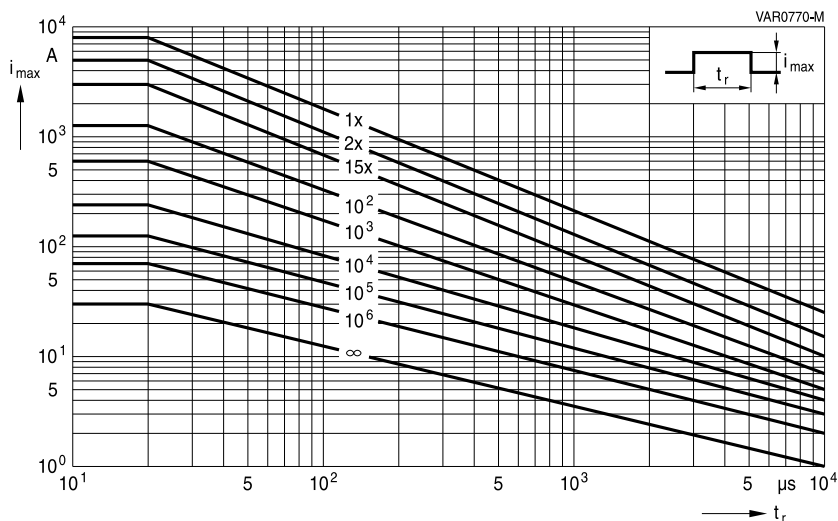
## SIOV-S20K50 ... K115



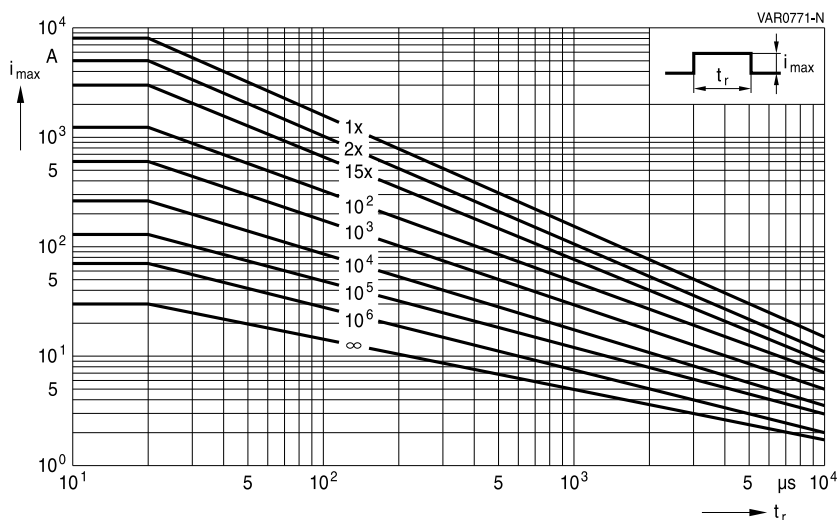
## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



## SIOV-S20K130 ... K320



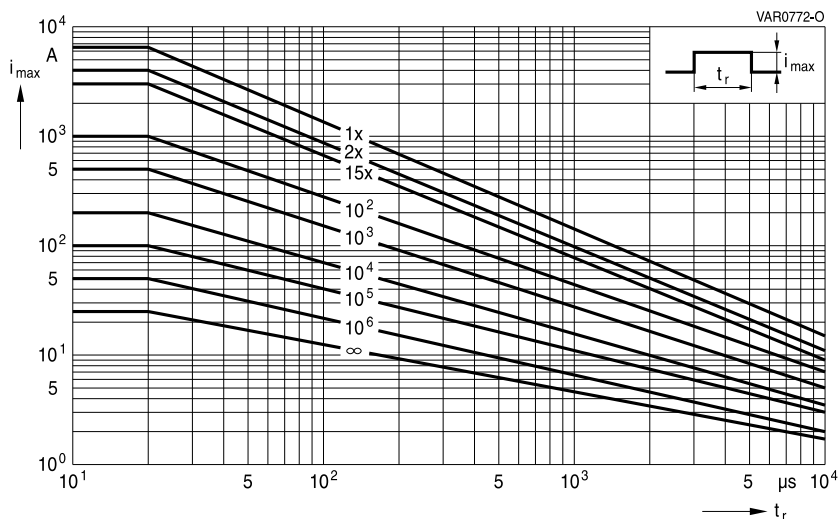
## SIOV-S20K350 ... K460



## Derating curves

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

For explanation of the derating curves refer to "General technical information", section 1.8.1



**SIOV-S20K510 ... K1000**



# Leaded varistors

B722\*

## Standard series

### Taping, packaging and lead configuration

#### 1 EPCOS ordering code system

##### For leaded varistors

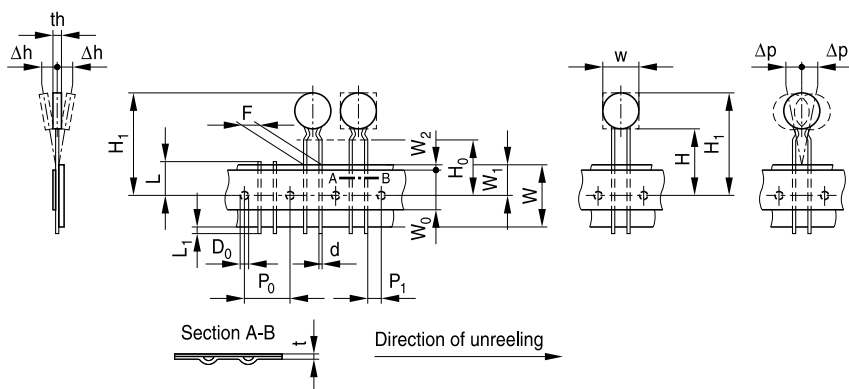
|                                                                                                                                                                   |    |   |   |     |   |   |   |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|---|-----|---|---|---|---|
| B722 or B723                                                                                                                                                      | 10 | S | 2 | 271 | K | 1 | 0 | 1 |
| Monolithic varistor                                                                                                                                               |    |   |   |     |   |   |   |   |
| Nominal disc diameter                                                                                                                                             |    |   |   |     |   |   |   |   |
| <b>Design:</b><br>F = Fail-safe varistor<br>Q = EnergetiQ<br>S = Leaded varistor<br>T = ThermoFuse<br>U = Disk type, SNF<br>X = Disk type, SNF (AEC-Q200)         |    |   |   |     |   |   |   |   |
| <b>Series:</b><br>0 = Standard<br>1 = Automotive<br>2 = AdvanceD<br>3 = SuperioR<br>4 = SuperioR                                                                  |    |   |   |     |   |   |   |   |
| <b>Max. AC operating voltage:</b><br>$271 = 27 \cdot 10^1 = 275 \text{ VAC}$<br>$140 = 14 \cdot 10^0 = 14 \text{ VAC}$<br>$141 = 14 \cdot 10^1 = 140 \text{ VAC}$ |    |   |   |     |   |   |   |   |
| <b>Tolerance of varistor voltage:</b><br>K = $\pm 10\%$<br>J = $\pm 5\%$<br>S = Special tolerance                                                                 |    |   |   |     |   |   |   |   |
| <b>Lead configuration:</b><br>1 = Straight leads<br>2 thru 9 = Kinked form                                                                                        |    |   |   |     |   |   |   |   |
| <b>Packaging:</b><br>0 = Bulk,<br>1 thru 7 = Taping style                                                                                                         |    |   |   |     |   |   |   |   |
| <b>Internal coding:</b><br>1 = Standard                                                                                                                           |    |   |   |     |   |   |   |   |



## 2 Taping and packaging of leaded varistors

Tape packaging for lead spacing  $\boxed{e} = 5$  fully conforms to IEC 60286-2, while for lead spacings  $\boxed{e} = 7.5$  and 10 the taping mode is based on this standard.

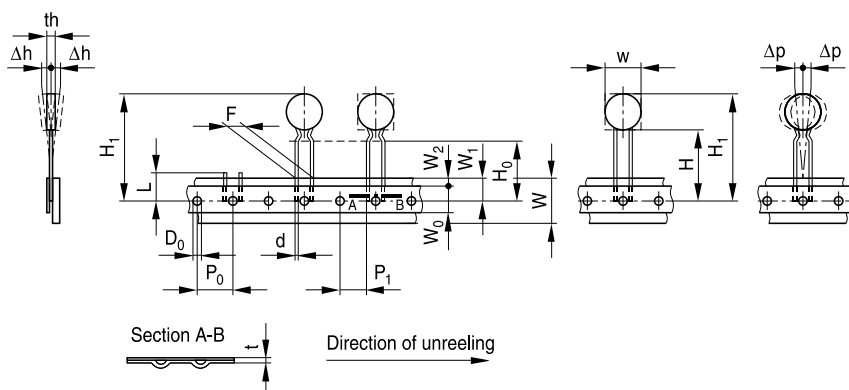
### 2.1 Taping in accordance with IEC 60286-2 for lead spacing 5.0 mm



$F \triangleq \boxed{e} = 5.0 \text{ mm}$

VAR0410-X-E

### 2.2 Taping based on IEC 60286-2 for lead spacing 7.5 and 10 mm



$F \triangleq \boxed{e} = 7.5 \text{ mm}$

$F \triangleq \boxed{e} = 10 \text{ mm}$

VAR0395-J-E



# Leaded varistors

B722\*

## StandardD series

### 2.3 Tape dimensions (in mm)

| Sym-<br>bol    | $\boxed{e} = 5.0$ | Tolerance | $\boxed{e} = 7.5$  | Tolerance  | $\boxed{e} = 10.0$ | Tolerance  | Remarks                                               |
|----------------|-------------------|-----------|--------------------|------------|--------------------|------------|-------------------------------------------------------|
| w              |                   | max.      |                    | max.       |                    | max.       | see tables in<br>each series<br>under<br>"Dimensions" |
| th             |                   | max.      |                    | max.       |                    | max.       |                                                       |
| d              | 0.6               | ±0.05     | 0.8                | ±0.05      | 1.0                | ±0.05      |                                                       |
| P <sub>0</sub> | 12.7              | ±0.3      | 12.7 <sup>1)</sup> | ±0.3       | 12.7               | ±0.3       | ±1 mm/20<br>sprocket holes                            |
| P <sub>1</sub> | 3.85              | ±0.7      | 8.95               | ±0.8       | 7.7                | ±0.8       |                                                       |
| F              | 5.0               | +0.6/−0.1 | 7.5                | ±0.8       | 10.0               | ±0.8       | measured at<br>top of compo-<br>nent body             |
| Δh             | 0                 | ±2.0      | depends on s       |            | depends on s       |            |                                                       |
| Δp             | 0                 | ±1.3      | 0                  | ±2.0       | 0                  | ±2.0       |                                                       |
| W              | 18.0              | ±0.5      | 18.0               | ±0.5       | 18.0               | ±0.5       | Peel-off<br>force ≥ 5 N                               |
| W <sub>0</sub> | 5.5               | min.      | 11.0               | min.       | 11.0               | min.       |                                                       |
| W <sub>1</sub> | 9.0               | ±0.5      | 9.0                | +0.75/−0.5 | 9.0                | +0.75/−0.5 |                                                       |
| W <sub>2</sub> | 3.0               | max.      | 3.0                | max.       | 3.0                | max.       |                                                       |
| H              | 18.0              | +2.0/−0   | 18.0               | +2.0/−0    | 18.0               | +2.0/−0    | <sup>2)</sup><br><sup>3)</sup>                        |
| H <sub>0</sub> | 16.0<br>(18.0)    | ±0.5      | 16.0<br>(18.0)     | ±0.5       | 16.0               | ±0.5       |                                                       |
| H <sub>1</sub> | 32.2              | max.      | 45.0               | max.       | 45.0               | max.       |                                                       |
| D <sub>0</sub> | 4.0               | ±0.2      | 4.0                | ±0.2       | 4.0                | ±0.2       | without lead                                          |
| t              | 0.9               | max.      | 0.9                | max.       | 0.9                | max.       |                                                       |
| L              | 11.0              | max.      | 11.0               | max.       | 11.0               | max.       |                                                       |
| L <sub>1</sub> | 0.5               | max.      |                    |            |                    |            |                                                       |

1) Taping with P<sub>0</sub> = 15.0 mm upon request

2) Applies only to uncrimped types

3) Applies only to crimped types (H<sub>0</sub> = 18 upon request)



## 2.4 Taping mode

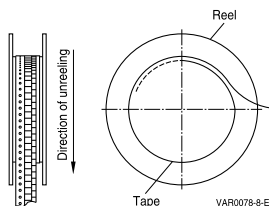
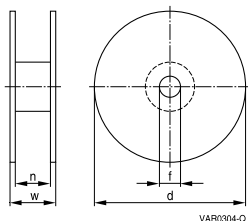
Example: B72210S0271K1 **5** 1  
 Digit 14

| Digit 14 | Taping mode | Reel type | Seating plane height $H_0$<br>for crimped types<br>mm | Seating plane height $H$<br>for uncrimped types<br>mm | Pitch distance<br>$P_0$<br>mm |
|----------|-------------|-----------|-------------------------------------------------------|-------------------------------------------------------|-------------------------------|
| 0        | —           | Bulk      | —                                                     | —                                                     | —                             |
| 1        | G           | I         | 16                                                    | 18                                                    | 12.7                          |
| 2        | G2          | I         | 18                                                    | —                                                     | 12.7                          |
| 3        | G3          | II        | 16                                                    | 18                                                    | 12.7                          |
| 4        | G4          | II        | 18                                                    | —                                                     | 12.7                          |
| 5        | G5          | III       | 16                                                    | 18                                                    | 12.7                          |
| 6        | GA          | Ammo pack | 16                                                    | 18                                                    | 12.7                          |
| 7        | G2A         | Ammo pack | 18                                                    | —                                                     | 12.7                          |

### Internal coding for special taping

|      |           |    |    |      |
|------|-----------|----|----|------|
| G6   | III       | 18 | —  | 12.7 |
| G10  | II        | 16 | 18 | 15.0 |
| G11  | II        | 18 | —  | 15.0 |
| G10A | Ammo pack | 16 | 18 | 15.0 |
| G11A | Ammo pack | 18 | —  | 15.0 |

## 2.5 Reel dimension



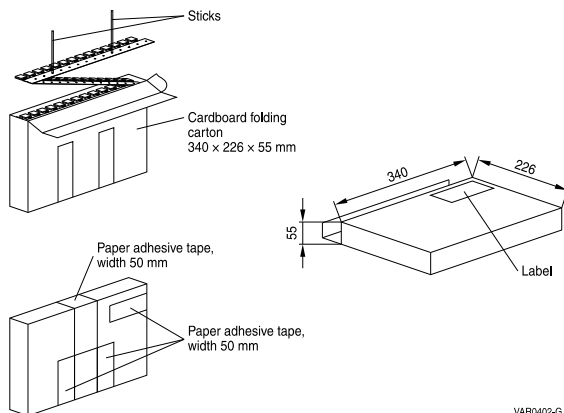
### Dimensions (in mm)

| Reel type | d        | f     | n          | w       |
|-----------|----------|-------|------------|---------|
| I         | 360 max. | 31 ±1 | approx. 45 | 54 max. |
| II        | 360 max. | 31 ±1 | approx. 55 | 64 max. |
| III       | 500 max. | 23 ±1 | approx. 59 | 72 max. |

If reel type III is not compatible with insertion equipment because of its large diameter, nominal disk diameter 10 mm and 14 mm can be supplied on reel II upon request (taping mode G3).



## 2.6 Ammo pack dimensions



VAR0402-G

## 3 Lead configuration

Straight leads are standard for disk varistors. Other lead configurations as crimp style or customer-specific lead wire length according to 3.1, 3.2, 3.3 and 3.4 are optional. Crimped leads (non-standard) are differently crimped for technical reasons; the individual crimp styles are denoted by consecutive numbers (S, S2 through S5) as shown in the dimensional drawings below.

The crimp styles of the individual types can be seen from the type designation in the ordering tables.

### 3.1 Crimp style mode

Example: B72210S0271K

**5** 01  
Digit 13

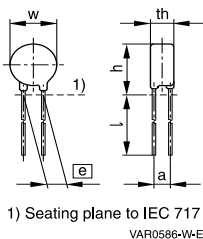
| Digit 13 of ordering code | Crimp style              | Figure |
|---------------------------|--------------------------|--------|
| 1                         | Standard, straight leads | 1      |
| 2                         | S2                       | 2      |
| 3                         | S3                       | 3      |
| 5                         | S5                       | 4      |
| Available upon request    |                          |        |
| Internal coding           | —                        | 5      |



### 3.2 Standard leads and non-standard crimp styles

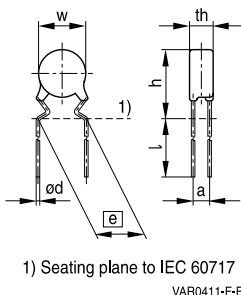
The basic dimensions in figure 1 to 5 are valid for types with either round or square (EnergetiQ series) component head.

#### Standard, straight leads



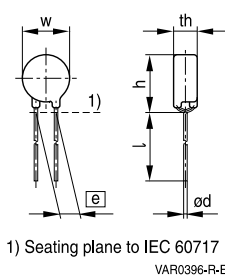
**Figure 1**

#### Non-standard, crimp style S2



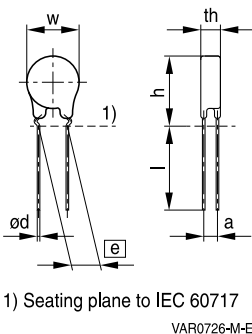
**Figure 2**

#### Non-standard, crimp style S3



**Figure 3**

#### Non-standard, crimp style S5



**Figure 4**



### 3.3 Trimmed leads (non-standard)

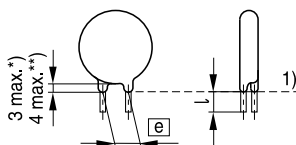
Varistors with cut leads available upon request.

Lead length tolerances:

Straight leads  $\pm 0.8$  mm

Crimped leads  $\pm 0.5$  mm

Minimum lead length 3.0 mm



1) Seating plane to IEC 60717

\*) For round component head

\*\*) For EnergetiQ series, square component head

VAR0642-U-E

**Figure 5**

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 EPCOS 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.

1. Store SIOVs only in original packaging. Do not open the package prior to processing.
2. Recommended 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 an SIOV's during storage, handling and processing.
4. Avoid storage of SIOVs in harmful environments that can affect the function during long-term operation (examples given under operation precautions).
5. The SIOV type series should be soldered after shipment from EPCOS within the time specified:  
SIOV-S, -Q, -LS, -B, -SNF 24 months  
ETFV/ T series, -CU 12 months.

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.

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. Temperatures of all preheat stages and the solder bath must be strictly controlled especially for T series (T14 and T20).



Leaded varistors

B722\*

StandardD 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 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.

## Display of ordering codes for EPCOS products

The ordering code for one and the same EPCOS product can be represented differently in data sheets, data books, other publications, on the EPCOS website, or in order-related documents such as shipping notes, order confirmations and product labels. **The varying representations of the ordering codes are due to different processes employed and do not affect the specifications of the respective products.** Detailed information can be found on the Internet under [www.epcos.com/orderingcodes](http://www.epcos.com/orderingcodes)



## Leaded varistors

B722\*

### Standard series

## Symbols and terms

| Symbol             | Term                                                                     |
|--------------------|--------------------------------------------------------------------------|
| $C$                | Capacitance                                                              |
| $C_{typ}$          | Typical capacitance                                                      |
| $i$                | Current                                                                  |
| $i_c$              | Current at which $V_{c, max}$ is measured                                |
| $I_{leak}$         | Leakage current                                                          |
| $i_{max}$          | Maximum surge current (also termed peak current)                         |
| $I_{max}$          | Maximum discharge current                                                |
| $I_n$              | Nominal discharge current to UL 1449                                     |
| LCT                | Lower category temperature                                               |
| $L_{typ}$          | Typical inductance                                                       |
| $P_{max}$          | Maximum average power dissipation                                        |
| $R_{ins}$          | Insulation resistance                                                    |
| $R_{min}$          | Minimum resistance                                                       |
| $T_A$              | Ambient temperature                                                      |
| $t_r$              | Duration of equivalent rectangular wave                                  |
| UCT                | Upper category temperature                                               |
| $v$                | Voltage                                                                  |
| $V_{clamp}$        | Clamping voltage                                                         |
| $V_{c, max}$       | Maximum clamping voltage at specified current $i_c$                      |
| $V_{DC}$           | DC operating voltage                                                     |
| $V_{jump}$         | Maximum jump start voltage                                               |
| $V_{max}$          | Maximum voltage                                                          |
| $V_{op}$           | Operating voltage                                                        |
| $V_{RMS}$          | AC operating voltage, root-mean-square value                             |
| $V_{RMS, op, max}$ | Root-mean-square value of max. DC operating voltage incl. ripple current |
| $V_{surge}$        | Super imposed surge voltage                                              |
| $V_V$              | Varistor voltage                                                         |
| $\Delta V_V$       | Tolerance of varistor voltage                                            |
| $W_{LD}$           | Maximum load dump                                                        |
| $W_{max}$          | Maximum energy absorption                                                |
| $e$                | Lead spacing                                                             |

All dimensions are given in mm.

The commas used in numerical values denote decimal points.

## Important notes

The following applies to all products named in this publication:

1. Some parts of this publication contain **statements about the suitability of our products for certain areas of application**. These statements are based on our knowledge of typical requirements that are often placed on our products in the areas of application concerned. We nevertheless expressly point out **that such statements cannot be regarded as binding statements about the suitability of our products for a particular customer application**. As a rule we are either unfamiliar with individual customer applications or less familiar with them than the customers themselves. For these reasons, it is always ultimately incumbent on the customer to check and decide whether a product with the properties described in the product specification is suitable for use in a particular customer application.
2. We also point out that **in individual cases, a malfunction of electronic components or failure before the end of their usual service life cannot be completely ruled out in the current state of the art, even if they are operated as specified**. In customer applications requiring a very high level of operational safety and especially in customer applications in which the malfunction or failure of an electronic component could endanger human life or health (e.g. in accident prevention or life-saving systems), it must therefore be ensured by means of suitable design of the customer application or other action taken by the customer (e.g. installation of protective circuitry or redundancy) that no injury or damage is sustained by third parties in the event of malfunction or failure of an electronic component.
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## Important notes

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