

## SMD Varistors

### Monolithic; Standard Series



#### Construction

- Cylindrical varistor element, encapsulated
- Encapsulation: thermoplast, flame-retardant to UL 94 V-0
- Termination: tinned copper alloy

#### Features

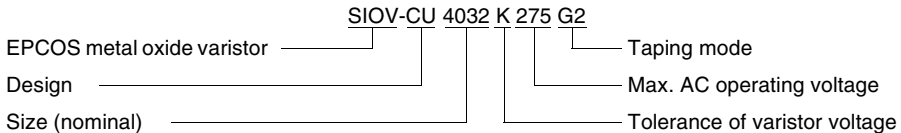
- Electrical equivalents to leaded types SIOV-S05/S07 up to 460 V<sub>RMS</sub>
- Good solderability
- PSpice models
- Approvals: UL (all types) and CSA (≥ K130)

#### Taping

- Supply on 8/12-mm tape, for tape dimensions see pages 154/155, for reel dimensions and packing units see page 157, chapter "SMD Varistors: Taping"

#### Type designation

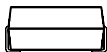
Detailed description of coding system on page 39, chapter "General Technical Information"



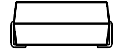
#### General technical data

|                                            |                         |                                   |
|--------------------------------------------|-------------------------|-----------------------------------|
| Climatic category                          | 40/85/56                | in accordance with IEC 60068-1    |
| LCT                                        | – 40 °C                 |                                   |
| UCT                                        | + 85 °C                 |                                   |
| Damp heat, steady state (93 % r.h., 40 °C) | 56 days                 | in accordance with IEC 60068-2-3  |
| Operating temperature                      | – 40 ... + 85 °C        | in accordance with CECC 42 000    |
| Storage temperature                        | – 40 ... + 125 °C       |                                   |
| Electric strength                          | ≥ 2,5 kV <sub>RMS</sub> | in accordance with CECC 42 000    |
| Insulation resistance                      | ≥ 1,0 GΩ                | in accordance with CECC 42 000    |
| Response time                              | < 10 ns                 |                                   |
| Solderability                              | 235 °C, 2 s             | in accordance with IEC 60068-2-58 |
| Resistance to soldering heat               | 260 °C, 10 s            | in accordance with IEC 60068-2-20 |

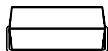
**Note:** Contact EPCOS for consultancy if solvents on water-base are used for cleaning.


**SMD Varistors**
**Monolithic; Standard Series**
**Maximum ratings** ( $T_A = 85\text{ }^{\circ}\text{C}$ )

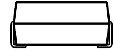
| Type         | Ordering code   | $V_{RMS}$ | $V_{DC}$ | $i_{max}$<br>8/20 $\mu\text{s}$ | $W_{max}$<br>(2 ms) | $P_{max}$ |
|--------------|-----------------|-----------|----------|---------------------------------|---------------------|-----------|
| SIOV-        |                 | V         | V        | A                               | J                   | W         |
| CU3225K11G2  | B72650M0110K072 | 11        | 14       | 100                             | 0,3                 | 0,01      |
| CU4032K11G2  | B72660M0110K072 | 11        | 14       | 250                             | 0,8                 | 0,02      |
| CU3225K14G2  | B72650M0140K072 | 14        | 18       | 100                             | 0,4                 | 0,01      |
| CU4032K14G2  | B72660M0140K072 | 14        | 18       | 250                             | 0,9                 | 0,02      |
| CU3225K17G2  | B72650M0170K072 | 17        | 22       | 100                             | 0,5                 | 0,01      |
| CU4032K17G2  | B72660M0170K072 | 17        | 22       | 250                             | 1,1                 | 0,02      |
| CU3225K20G2  | B72650M0200K072 | 20        | 26       | 100                             | 0,6                 | 0,01      |
| CU4032K20G2  | B72660M0200K072 | 20        | 26       | 250                             | 1,3                 | 0,02      |
| CU3225K25G2  | B72650M0250K072 | 25        | 31       | 100                             | 0,7                 | 0,01      |
| CU4032K25G2  | B72660M0250K072 | 25        | 31       | 250                             | 1,6                 | 0,02      |
| CU3225K30G2  | B72650M0300K072 | 30        | 38       | 100                             | 0,9                 | 0,01      |
| CU4032K30G2  | B72660M0300K072 | 30        | 38       | 250                             | 2,0                 | 0,02      |
| CU3225K35G2  | B72650M0350K072 | 35        | 45       | 100                             | 1,1                 | 0,01      |
| CU4032K35G2  | B72660M0350K072 | 35        | 45       | 250                             | 2,5                 | 0,02      |
| CU3225K40G2  | B72650M0400K072 | 40        | 56       | 100                             | 1,3                 | 0,01      |
| CU4032K40G2  | B72660M0400K072 | 40        | 56       | 250                             | 3,0                 | 0,02      |
| CU3225K50G2  | B72650M0500K072 | 50        | 65       | 400                             | 1,8                 | 0,10      |
| CU4032K50G2  | B72660M0500K072 | 50        | 65       | 1200                            | 4,2                 | 0,25      |
| CU3225K60G2  | B72650M0600K072 | 60        | 85       | 400                             | 2,2                 | 0,10      |
| CU4032K60G2  | B72660M0600K072 | 60        | 85       | 1200                            | 4,8                 | 0,25      |
| CU3225K75G2  | B72650M0750K072 | 75        | 100      | 400                             | 2,5                 | 0,10      |
| CU4032K75G2  | B72660M0750K072 | 75        | 100      | 1200                            | 5,9                 | 0,25      |
| CU3225K95G2  | B72650M0950K072 | 95        | 125      | 400                             | 3,4                 | 0,10      |
| CU4032K95G2  | B72660M0950K072 | 95        | 125      | 1200                            | 7,6                 | 0,25      |
| CU3225K115G2 | B72650M0111K072 | 115       | 150      | 400                             | 3,6                 | 0,10      |
| CU4032K115G2 | B72660M0111K072 | 115       | 150      | 1200                            | 8,4                 | 0,25      |
| CU3225K130G2 | B72650M0131K072 | 130       | 170      | 400                             | 4,2                 | 0,10      |
| CU4032K130G2 | B72660M0131K072 | 130       | 170      | 1200                            | 9,5                 | 0,25      |
| CU3225K140G2 | B72650M0141K072 | 140       | 180      | 400                             | 4,5                 | 0,10      |
| CU4032K140G2 | B72660M0141K072 | 140       | 180      | 1200                            | 10,0                | 0,25      |


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

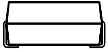
| Type         | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | Max. clamping voltage |          | $C_{typ}$<br>(1 kHz)<br>pF | Derating<br>curve<br>Page | V/I char-<br>acteristic<br>Page |
|--------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|---------------------------|---------------------------------|
|              |                      |                             | $v$<br>V              | $i$<br>A |                            |                           |                                 |
| SIOV-        |                      |                             |                       |          |                            |                           |                                 |
| CU3225K11G2  | 18                   | $\pm 10$                    | 36                    | 1,0      | 1750                       | 246                       | 274                             |
| CU4032K11G2  | 18                   | $\pm 10$                    | 36                    | 2,5      | 2750                       | 246                       | 275                             |
| CU3225K14G2  | 22                   | $\pm 10$                    | 43                    | 1,0      | 1450                       | 246                       | 274                             |
| CU4032K14G2  | 22                   | $\pm 10$                    | 43                    | 2,5      | 2300                       | 246                       | 275                             |
| CU3225K17G2  | 27                   | $\pm 10$                    | 53                    | 1,0      | 1200                       | 246                       | 274                             |
| CU4032K17G2  | 27                   | $\pm 10$                    | 53                    | 2,5      | 1900                       | 246                       | 275                             |
| CU3225K20G2  | 33                   | $\pm 10$                    | 65                    | 1,0      | 980                        | 246                       | 274                             |
| CU4032K20G2  | 33                   | $\pm 10$                    | 65                    | 2,5      | 1600                       | 246                       | 275                             |
| CU3225K25G2  | 39                   | $\pm 10$                    | 77                    | 1,0      | 850                        | 246                       | 274                             |
| CU4032K25G2  | 39                   | $\pm 10$                    | 77                    | 2,5      | 1400                       | 246                       | 275                             |
| CU3225K30G2  | 47                   | $\pm 10$                    | 93                    | 1,0      | 720                        | 246                       | 274                             |
| CU4032K30G2  | 47                   | $\pm 10$                    | 93                    | 2,5      | 1200                       | 246                       | 275                             |
| CU3225K35G2  | 56                   | $\pm 10$                    | 110                   | 1,0      | 620                        | 246                       | 274                             |
| CU4032K35G2  | 56                   | $\pm 10$                    | 110                   | 2,5      | 1050                       | 246                       | 275                             |
| CU3225K40G2  | 68                   | $\pm 10$                    | 135                   | 1,0      | 520                        | 246                       | 274                             |
| CU4032K40G2  | 68                   | $\pm 10$                    | 135                   | 2,5      | 900                        | 246                       | 275                             |
| CU3225K50G2  | 82                   | $\pm 10$                    | 135                   | 5,0      | 300                        | 247                       | 274                             |
| CU4032K50G2  | 82                   | $\pm 10$                    | 135                   | 10,0     | 530                        | 247                       | 275                             |
| CU3225K60G2  | 100                  | $\pm 10$                    | 165                   | 5,0      | 250                        | 247                       | 274                             |
| CU4032K60G2  | 100                  | $\pm 10$                    | 165                   | 10,0     | 480                        | 247                       | 275                             |
| CU3225K75G2  | 120                  | $\pm 10$                    | 200                   | 5,0      | 210                        | 247                       | 274                             |
| CU4032K75G2  | 120                  | $\pm 10$                    | 200                   | 10,0     | 430                        | 247                       | 275                             |
| CU3225K95G2  | 150                  | $\pm 10$                    | 250                   | 5,0      | 135                        | 247                       | 274                             |
| CU4032K95G2  | 150                  | $\pm 10$                    | 250                   | 10,0     | 260                        | 247                       | 275                             |
| CU3225K115G2 | 180                  | $\pm 10$                    | 300                   | 5,0      | 110                        | 247                       | 274                             |
| CU4032K115G2 | 180                  | $\pm 10$                    | 300                   | 10,0     | 220                        | 247                       | 275                             |
| CU3225K130G2 | 205                  | $\pm 10$                    | 340                   | 5,0      | 100                        | 247                       | 274                             |
| CU4032K130G2 | 205                  | $\pm 10$                    | 340                   | 10,0     | 200                        | 247                       | 275                             |
| CU3225K140G2 | 220                  | $\pm 10$                    | 360                   | 5,0      | 95                         | 247                       | 274                             |
| CU4032K140G2 | 220                  | $\pm 10$                    | 360                   | 10,0     | 180                        | 247                       | 275                             |


**SMD Varistors**
**Monolithic; Standard Series**
**Maximum ratings ( $T_A = 85\text{ °C}$ )**

| Type         | Ordering code   | $V_{RMS}$ | $V_{DC}$ | $i_{max}$<br>8/20 $\mu s$ | $W_{max}$<br>(2 ms) | $P_{max}$ |
|--------------|-----------------|-----------|----------|---------------------------|---------------------|-----------|
| SIOV-        |                 | V         | V        | A                         | J                   | W         |
| CU3225K150G2 | B72650M0151K072 | 150       | 200      | 400                       | 4,9                 | 0,10      |
| CU4032K150G2 | B72660M0151K072 | 150       | 200      | 1200                      | 11,0                | 0,25      |
| CU3225K175G2 | B72650M0171K072 | 175       | 225      | 400                       | 5,6                 | 0,10      |
| CU4032K175G2 | B72660M0171K072 | 175       | 225      | 1200                      | 13,0                | 0,25      |
| CU3225K230G2 | B72650M0231K072 | 230       | 300      | 400                       | 7,2                 | 0,10      |
| CU4032K230G2 | B72660M0231K072 | 230       | 300      | 1200                      | 17,0                | 0,25      |
| CU3225K250G2 | B72650M0251K072 | 250       | 320      | 400                       | 8,2                 | 0,10      |
| CU4032K250G2 | B72660M0251K072 | 250       | 320      | 1200                      | 19,0                | 0,25      |
| CU3225K275G2 | B72650M0271K072 | 275       | 350      | 400                       | 8,6                 | 0,10      |
| CU4032K275G2 | B72660M0271K072 | 275       | 350      | 1200                      | 21,0                | 0,25      |
| CU3225K300G2 | B72650M0301K072 | 300       | 385      | 400                       | 9,6                 | 0,10      |
| CU4032K300G2 | B72660M0301K072 | 300       | 385      | 1200                      | 23,0                | 0,25      |
| CU4032K460G2 | B72660M0461K072 | 460       | 615      | 1000                      | 36,0                | 0,25      |

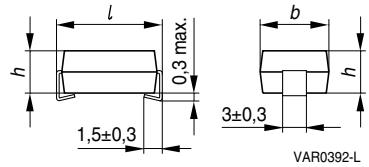

**Characteristics** ( $T_A = 25\text{ °C}$ )

| Type         | $V_V$<br>(1 mA)<br>V | $\Delta V_V$<br>(1 mA)<br>% | Max. clamping voltage |          | $C_{typ}$<br>(1 kHz)<br>pF | Derating<br>curve<br>Page | V/I char-<br>acteristic<br>Page |
|--------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|---------------------------|---------------------------------|
|              |                      |                             | $v$<br>V              | $i$<br>A |                            |                           |                                 |
| SIOV-        |                      |                             |                       |          |                            |                           |                                 |
| CU3225K150G2 | 240                  | $\pm 10$                    | 395                   | 5,0      | 90                         | 247                       | 274                             |
| CU4032K150G2 | 240                  | $\pm 10$                    | 395                   | 10,0     | 170                        | 247                       | 275                             |
| CU3225K175G2 | 270                  | $\pm 10$                    | 455                   | 5,0      | 75                         | 247                       | 274                             |
| CU4032K175G2 | 270                  | $\pm 10$                    | 455                   | 10,0     | 150                        | 247                       | 275                             |
| CU3225K230G2 | 360                  | $\pm 10$                    | 595                   | 5,0      | 60                         | 247                       | 274                             |
| CU4032K230G2 | 360                  | $\pm 10$                    | 595                   | 10,0     | 115                        | 247                       | 275                             |
| CU3225K250G2 | 390                  | $\pm 10$                    | 650                   | 5,0      | 55                         | 247                       | 274                             |
| CU4032K250G2 | 390                  | $\pm 10$                    | 650                   | 10,0     | 105                        | 247                       | 275                             |
| CU3225K275G2 | 430                  | $\pm 10$                    | 710                   | 5,0      | 50                         | 247                       | 274                             |
| CU4032K275G2 | 430                  | $\pm 10$                    | 710                   | 10,0     | 95                         | 247                       | 275                             |
| CU3225K300G2 | 470                  | $\pm 10$                    | 775                   | 5,0      | 45                         | 247                       | 274                             |
| CU4032K300G2 | 470                  | $\pm 10$                    | 775                   | 10,0     | 90                         | 247                       | 275                             |
| CU4032K460G2 | 750                  | $\pm 10$                    | 1240                  | 10,0     | 55                         | upon<br>request           | 275                             |



## SMD Varistors

### Monolithic; Standard Series



Weight:

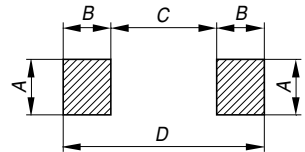
CU3225: approx. 0,5 g

CU4032: approx. 0,8 g

### Dimensions

| Type                  | <i>l</i><br>mm | <i>b</i><br>mm | <i>h</i><br>mm |
|-----------------------|----------------|----------------|----------------|
| SIOV-CU3225K11...175  | $8,0 \pm 0,3$  | $6,3 \pm 0,3$  | $3,2 \pm 0,3$  |
| SIOV-CU3225K230...300 | $8,0 \pm 0,3$  | $6,3 \pm 0,3$  | $4,5 \pm 0,3$  |
| SIOV-CU4032K11...175  | $10,2 \pm 0,3$ | $8,0 \pm 0,3$  | $3,2 \pm 0,3$  |
| SIOV-CU4032K230...460 | $10,2 \pm 0,3$ | $8,0 \pm 0,3$  | $4,5 \pm 0,3$  |

Termination: tinned copper alloy



VAR0391-D

### Recommended solder pad layout

| Type                  | <i>A</i><br>mm | <i>B</i><br>mm | <i>C</i><br>mm | <i>D</i><br>mm |
|-----------------------|----------------|----------------|----------------|----------------|
| SIOV-CU3225K11...175  | 3,5            | 2,8            | 4,5            | 10,1           |
| SIOV-CU3225K230...300 | 3,5            | 2,8            | 4,5            | 10,1           |
| SIOV-CU4032K11...175  | 3,5            | 2,8            | 6,5            | 12,1           |
| SIOV-CU4032K230...460 | 3,5            | 2,8            | 6,5            | 12,1           |

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