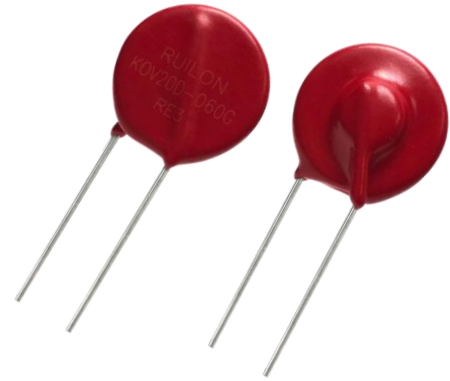


**Description**

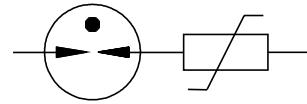
Ruilon combines its patented GDT and a Metal Oxide Varistor (MOV) to create a new and innovative KOV<sup>®</sup> Series Composite Surge Protective Unit. By combining the best features of both MOV and GDT technologies, the KOV<sup>®</sup> Series achieves high performance as a long life protector with low capacitance and, most importantly, very low leakage. The KOV<sup>®</sup> Series is ideally suited for any number of AC and DC power applications where a high level of performance is required over time.



**Features**

- Hybrid design
- Low leakage
- Bidirectional protection
- Low capacitance
- RoHS and REACH compliant

**Circuit Diagram**



**Applications**

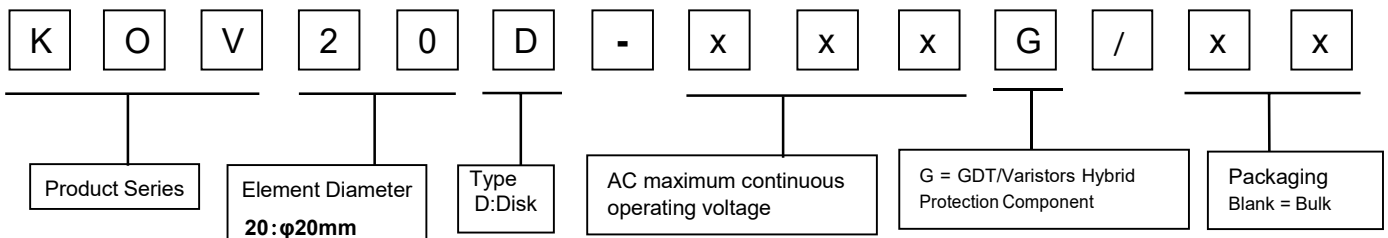
AC Line Protection

- White goods
- Power line communications
- Smoke alarm systems
- High value consumer goods
- UL 1449 SPD 5th edition

DC Line Protection

- Solar inverters
- Power supplies
- Distribution systems

**Part Number Code**



**Absolute Maximum Ratings (@T<sub>A</sub>=25°C unless otherwise noted)**

| Parameter             | Symbol           | Typ | Value    | Unit |
|-----------------------|------------------|-----|----------|------|
| Operating Temperature | T <sub>OPR</sub> | 25  | -40 -105 | °C   |
| Storage Temperature   | T <sub>STG</sub> | 25  | -40 -125 | °C   |





**Electrical Characteristics(@T<sub>A</sub>=25°C unless otherwise noted)**

| Part No.    | Operating                                |                 |                     |                 | Protection                |                                   |                            |  |                |                       |        |
|-------------|--|-----------------|---------------------|-----------------|---------------------------|-----------------------------------|----------------------------|--|----------------|-----------------------|--------|
|             | Max. Continuous Operating Voltage (MCOV) |                 | Max. Leakage @ MCOV | Max Capacitance | Surge Current IEC61643.11 | Open-circuit voltage IEC61000-4-5 | Ring Wave Surge IEEE 62.41 | Protection Level Current Class (1) IEC 61051-1 |                | Clamp Transition Time | Energy |
|             | V <sub>rms</sub>                         | V <sub>DC</sub> | Arms                | 1MHz            | 15 Ops.                   | 40 Ops.                           | 200 A                      | Max .  | Typ.           |                       | 8/20µs |
|             | V  | V               | µA                  | pF              | In(A)                     | Uoc(V)                            | Ops.                       | V <sub>fp</sub>                                | V <sub>c</sub> | µs                    | J      |
| KOV20D-050G | 50                                       | 65              | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 700  | 150            | 0.3                   | 56     |
| KOV20D-060G | 60                                       | 85              | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 700  | 185            | 0.3                   | 70     |
| KOV20D-130G | 130                                      | 170             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 700  | 360            | 0.3                   | 130    |
| KOV20D-175G | 175                                      | 225             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 475            | 0.3                   | 190    |
| KOV20D-210G | 210                                      | 275             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 535            | 0.3                   | 210    |
| KOV20D-250G | 250                                      | 320             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 630            | 0.3                   | 255    |
| KOV20D-275G | 275                                      | 350             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 680            | 0.3                   | 275    |
| KOV20D-300G | 300                                      | 385             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 740            | 0.3                   | 305    |
| KOV20D-320G | 320                                      | 415             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 810            | 0.3                   | 350    |
| KOV20D-350G | 350                                      | 460             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1200   | 870            | 0.3                   | 360    |
| KOV20D-385G | 385                                      | 505             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1400   | 950            | 0.3                   | 380    |
| KOV20D-420G | 420                                      | 560             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1400   | 1050           | 0.3                   | 390    |
| KOV20D-460G | 460                                      | 615             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1600   | 1150           | 0.3                   | 400    |
| KOV20D-510G | 510                                      | 670             | < 1                 | 4               | 5,000                     | 10,000                            | ± 250                      | 1600   | 1330           | 0.3                   | 420    |

**Notes:**

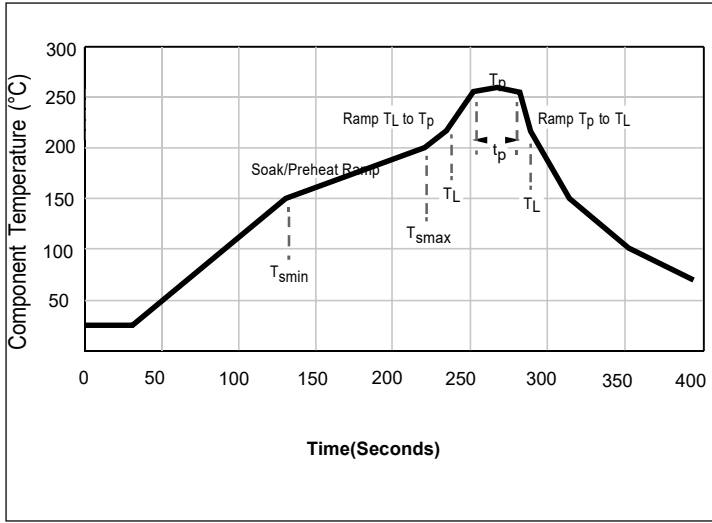
1) Front Level Protection (V<sub>fp</sub>) defined as measured with 10 % of peak current in accordance with IEC 61051-1.

**Agency Approvals**

| Icon  | Description                                  |
|---|--|
|  | Compliance with 2011/65/EU                   |
|  | Compliance with IEC61249-2-21:2003           |
|  | Mean lead free                               |
|  | Compliance with UL1449, Certificated E337906 |

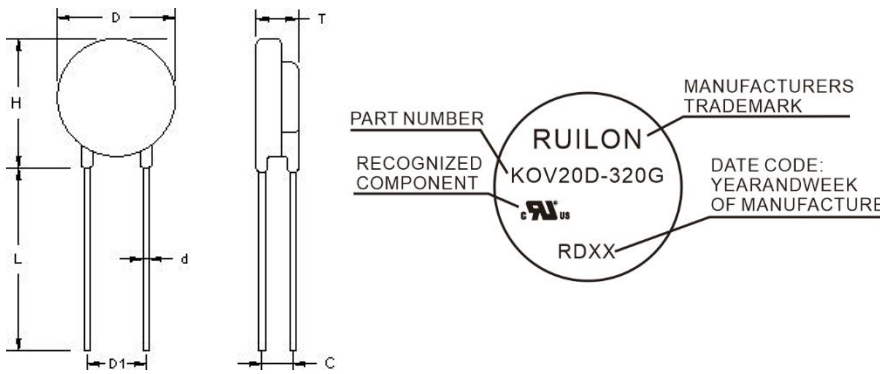
**Soldering Profile**

Users should ensure that they do not exceed the scope of IPC/JEDEC J-STD-020 (Pb-Free) during solder assembly.



| Profile Feature                                | Profile Limits     |
|--|--------------------|
| Preheat temperature min. ( $T_{smin}$ )        | 150°C              |
| Preheat temperature max. ( $T_{smax}$ )        | 200°C              |
| Ramp time ( $T_{smax} - T_{smin}$ )            | 60 – 120 seconds   |
| Ramp-up rate ( $T_L$ to $T_p$ )                | 3 °C / second max. |
| Liquidus temperature ( $T_L$ )                 | 217°C              |
| Time maintained above $T_L$                    | 60 – 150 seconds   |
| Peak package body temperature                  | 260°C              |
| Time within 5 °C of peak temperature ( $T_p$ ) | 30 seconds max.    |
| Ramp-down rate ( $T_p$ to $T_L$ )              | 6 °C / second max. |
| Time from 25 °C to peak temperature            | 8 minutes max.     |

**Dimensions**



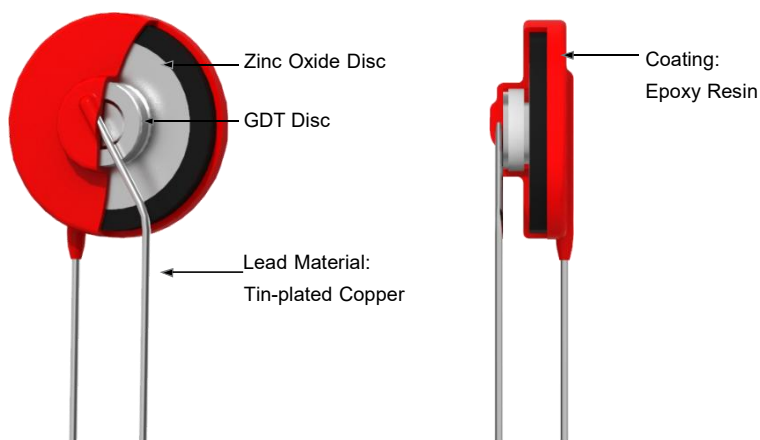
| Symbol   | Millimeters | Inches |
|----------|-------------|--------|
| H(max)   | 26.0        | 1.024  |
| L(min)   | 15.0        | 0.591  |
| D(max)   | 23.0        | 0.906  |
| D1(±1.0) | 10.0        | 0.394  |
| T(max)   | TABLE 2     |        |
| C(±1.0)  | TABLE 2     |        |
| d(±0.1)  | 1.0         | 0.039  |

Packaging Quantity: 200pcs/bag

TABLE 2

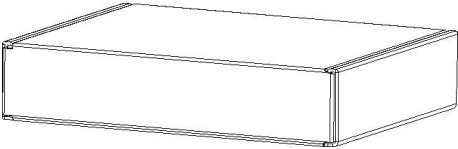
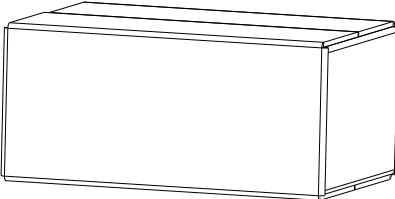
| Model       | T(max)      |        | C           |        | Model       | T(max)      |        | C           |        |
|-------------|-------------|--------|-------------|--------|-------------|-------------|--------|-------------|--------|
|             | Millimeters | Inches | Millimeters | Inches |             | Millimeters | Inches | Millimeters | Inches |
| KOV20D-050G | 6.9         | 0.272  | 4.2         | 0.165  | KOV20D-300G | 8.7         | 0.343  | 5.6         | 0.220  |
| KOV20D-060G | 7.0         | 0.276  | 4.2         | 0.165  | KOV20D-320G | 8.9         | 0.351  | 5.8         | 0.228  |
| KOV20D-130G | 7.5         | 0.296  | 4.2         | 0.165  | KOV20D-350G | 9.1         | 0.359  | 6.0         | 0.236  |
| KOV20D-175G | 7.9         | 0.311  | 4.6         | 0.181  | KOV20D-385G | 9.3         | 0.366  | 6.3         | 0.248  |
| KOV20D-210G | 8.0         | 0.315  | 4.9         | 0.193  | KOV20D-420G | 9.6         | 0.378  | 6.6         | 0.260  |
| KOV20D-250G | 8.3         | 0.327  | 5.2         | 0.205  | KOV20D-460G | 9.9         | 0.390  | 7.4         | 0.291  |
| KOV20D-275G | 8.5         | 0.335  | 5.4         | 0.213  | KOV20D-510G | 10.4        | 0.410  | 7.7         | 0.303  |

**Construction**



**Packaging Information - 20 mm Disc**

**BULK:**

| Inner box size  | Outer box size  | Quantity   |
|---|---|--|
| Size: 260*208*55(mm)<br> | Size: 435*275*200(mm)<br> | <ul style="list-style-type: none"> <li>• 1600 pcs. per carton</li> <li>• 200 pcs. per bag</li> <li>• 2 bags per inner box</li> <li>• 4 inner boxes per carton</li> </ul> |