

DATA SHEET

METAL OXIDE VARISTORS POWER SUPPLY

25D series

RoHS compliant & Halogen free



Product specification— January 09, 2019 V.0



Metal Oxide Varistor (MOV) Data Sheet

Features

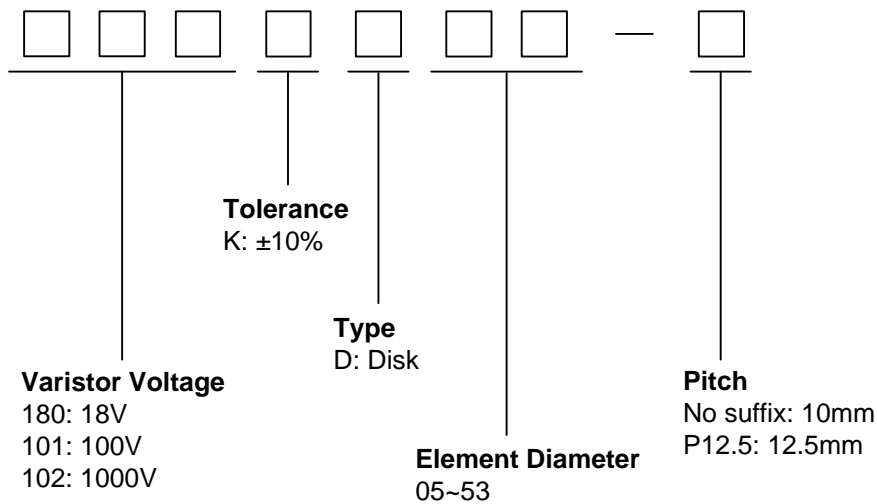
- Wide operating voltage (V_{1mA}) range from 18V to 1800V
- Fast responding to transient over-voltage
- Large absorbing transient energy capability
- Low clamping ratio and no follow-on current
- Meets MSL level 1, per J-STD-020
- Operating Temperature: $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- Storage Temperature: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- Safety certification: UL: E327997
 CSA: 246579
 VDE: 40027827



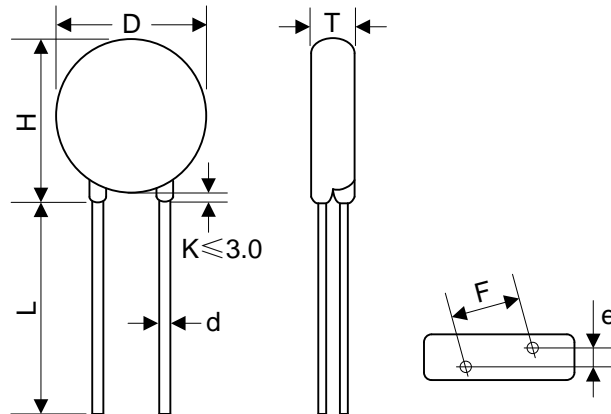
Applications

- Transistor, diode, IC, thyristor or triac semiconductor protection
- Surge protection in consumer electronics
- Surge protection in industrial electronics
- Surge protection in electronic home appliances, gas and petroleum appliances
- Relay and electromagnetic valve surge absorption

Part number code



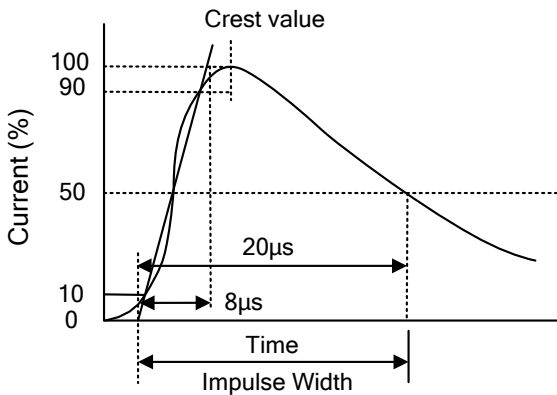
Dimensions



| Table 1 | |
|----------|-----------|
| Unit: mm | |
| Symbol | Dimension |
| H | 27.0~31.5 |
| L(min.) | 20.0 |
| D | 25.0~28.0 |
| F(±1.0) | 10.0/12.5 |
| T | Table 2 |
| e(±0.8) | Table 2 |
| d(±0.1) | 1.0 |

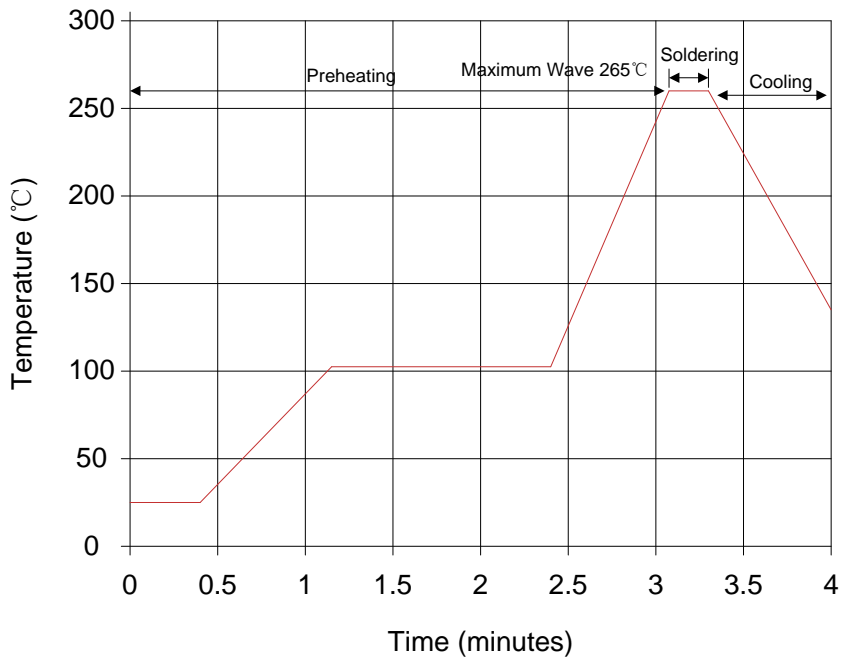
| Table 2 | | | | | |
|----------|---------|-----|-------|----------|-----|
| Unit: mm | | | | | |
| Model | T | e | Model | T | e |
| 180K | 2.5~4.8 | 1.7 | 361K | 3.4~5.9 | 2.9 |
| 220K | 2.6~4.9 | 1.8 | 391K | 3.5~6.1 | 3.0 |
| 270K | 2.6~5.0 | 2.0 | 431K | 3.7~6.4 | 3.2 |
| 330K | 2.7~5.2 | 1.9 | 471K | 3.8~6.7 | 3.4 |
| 390K | 2.6~5.5 | 2.0 | 511K | 3.9~7.0 | 3.6 |
| 470K | 2.7~5.1 | 2.1 | 561K | 4.1~7.3 | 3.8 |
| 560K | 2.8~5.4 | 2.3 | 621K | 4.3~7.6 | 4.1 |
| 680K | 2.9~5.7 | 2.6 | 681K | 4.5~7.8 | 4.4 |
| 820K | 2.6~4.5 | 2.0 | 751K | 4.8~8.0 | 4.5 |
| 101K | 2.9~4.6 | 2.2 | 781K | 4.9~8.1 | 4.6 |
| 121K | 2.9~4.8 | 2.4 | 821K | 5.1~8.4 | 4.8 |
| 151K | 2.7~4.9 | 2.0 | 911K | 5.3~8.9 | 5.2 |
| 181K | 2.8~5.2 | 2.1 | 102K | 5.9~9.5 | 5.2 |
| 201K | 2.9~5.2 | 2.2 | 112K | 6.3~10.1 | 5.6 |
| 221K | 3.0~5.3 | 2.3 | 122K | 6.4~10.7 | 6.0 |
| 241K | 3.1~5.8 | 2.4 | 142K | 7.4~12.6 | 6.8 |
| 271K | 3.1~5.3 | 2.6 | 162K | 7.9~13.2 | 7.6 |
| 301K | 3.2~5.5 | 2.7 | 182K | 8.1~14.5 | 8.4 |
| 331K | 3.2~5.7 | 2.7 | | | |

Electrical Ratings

| Items | Test Condition/Description | Requirement | | | | | |
|------------------------------------|--|-----------------------------|---------------|---------------|--------------|---------------|--|
| Varistor Voltage | The voltage between two terminals with the specified measuring current 1mA.DC applied is called Vb. | | | | | | |
| Maximum Allowable Voltage | The recommended maximum sine wave voltage (RMS) or the Maximum DC voltage can be applied continuously. | | | | | | |
| Maximum Clamping Voltage | <p>The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20µs</p>  | To meet the Specified value | | | | | |
| Rated Wattage | The maximum average power that can be applied within the specified ambient temperature. | | | | | | |
| Energy | The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000µs or 2ms is applied. | | | | | | |
| Withstanding Surge Current | The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20µs) applied one time. | | | | | | |
| Varistor Voltage Temp. Coefficient | $\left \frac{V_{1mA@85^{\circ}C} - V_{1mA@25^{\circ}C}}{V_{1mA@25^{\circ}C}} \times \frac{1}{60} \times 100\% (\%/^{\circ}C) \right $ | ≤0.05%/°C | | | | | |
| | $\left \frac{V_{1mA@-40^{\circ}C} - V_{1mA@25^{\circ}C}}{V_{1mA@25^{\circ}C}} \times \frac{1}{65} \times 100\% (\%/^{\circ}C) \right $ | | | | | | |
| Surge Life | <p>The change of Vb shall be measured after the impulse listed below which is applied 10,000 times continuously with the interval of ten seconds at room temperature.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td rowspan="2" style="text-align: center;">25Φ series</td> <td style="text-align: center;">180K to 680K</td> <td style="text-align: center;">250A (8/20µs)</td> </tr> <tr> <td style="text-align: center;">820K to 182K</td> <td style="text-align: center;">450A (8/20µs)</td> </tr> </table> | 25Φ series | 180K to 680K | 250A (8/20µs) | 820K to 182K | 450A (8/20µs) | $\frac{\Delta V_b}{V_b} \leq \pm 10\%$ |
| 25Φ series | 180K to 680K | | 250A (8/20µs) | | | | |
| | 820K to 182K | 450A (8/20µs) | | | | | |

Soldering Recommendation

Wave Lead Free Soldering Recommendation



| Item | Conditions |
|------------------|-------------------|
| Peak Temperature | 265°C |
| Dipping Time | 10 seconds (max.) |
| Soldering | 1 time |

Recommendation Reworking Conditions with Soldering Iron

| Item | Conditions |
|-----------------------------------|------------------|
| Temperature of Soldering Iron-tip | 360°C (max.) |
| Soldering Time | 3 seconds (max.) |
| Distance from Varistor | 2mm (min.) |

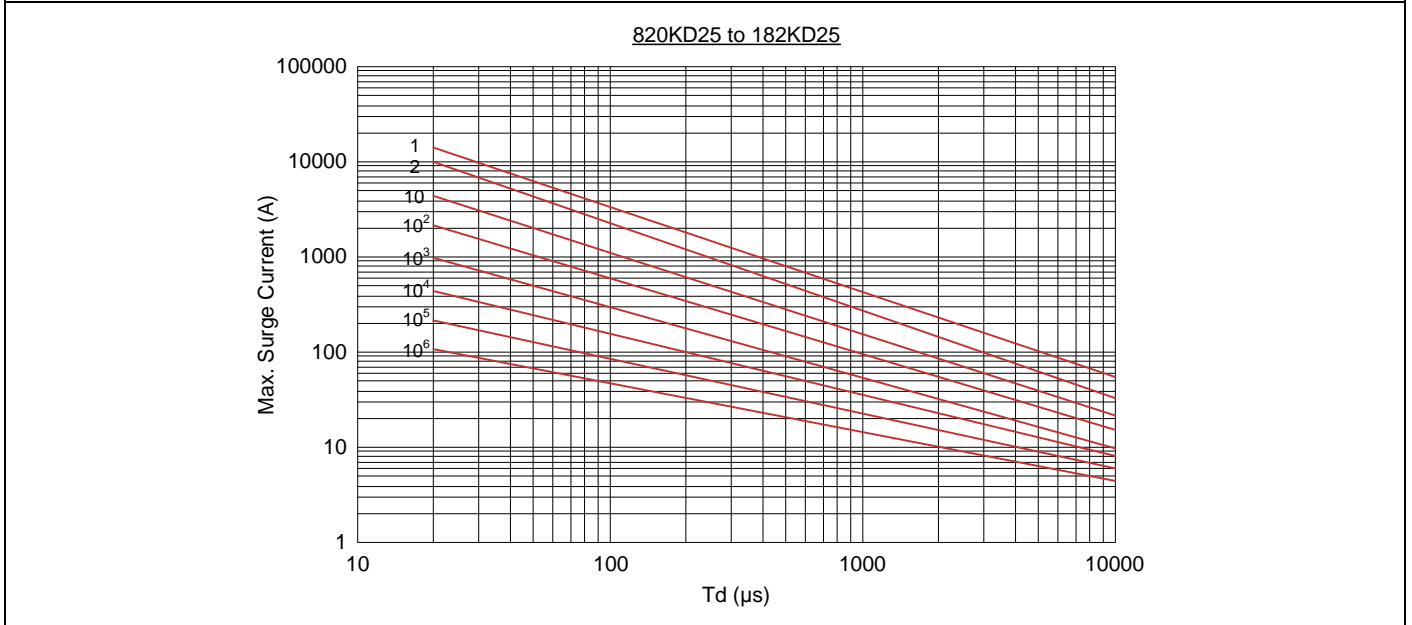
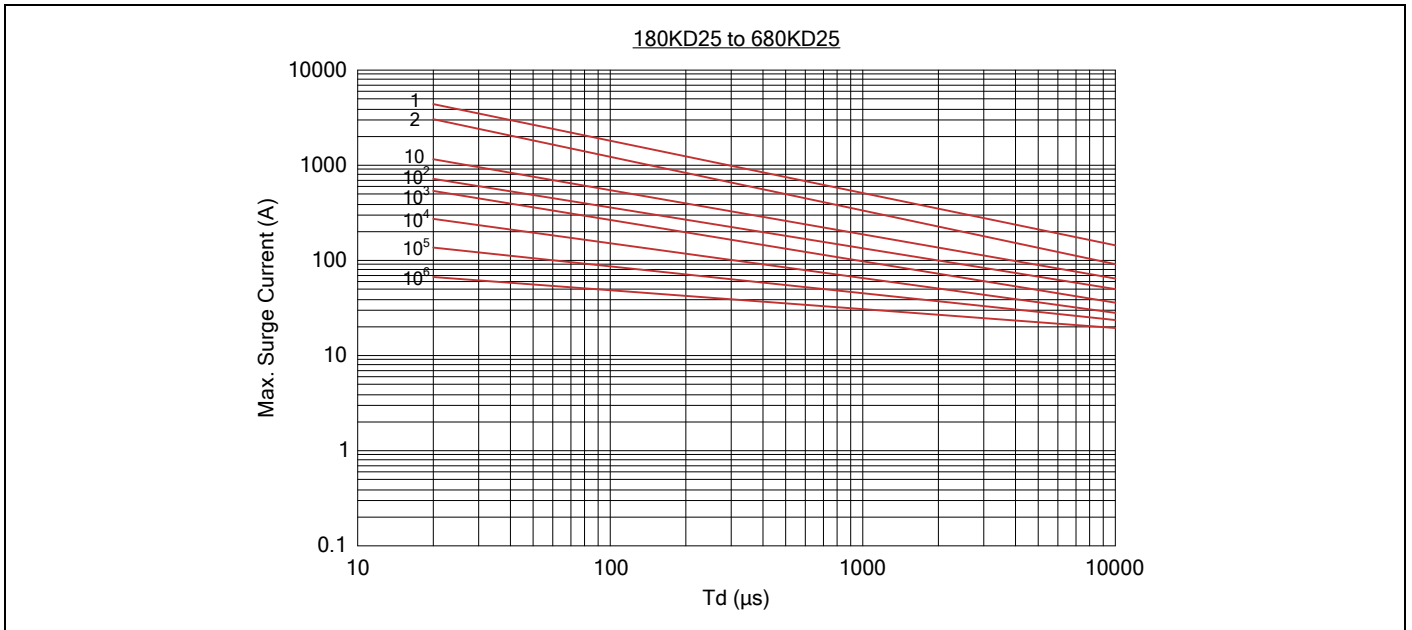
Mechanical Characteristics

| Items | Test conditions / Methods | Specifications | | | | | | | | |
|-------------------------------|---|--|------------|-----------|-----|------------|-----|--------|-----|---|
| Tensile Strength of Terminals | Gradually applying the force specified and keeping the unit fixed for 10±1 sec. <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (kg)</th> </tr> </thead> <tbody> <tr> <td>0.5<d≤0.8</td> <td>1.0</td> </tr> <tr> <td>0.8<d≤1.25</td> <td>2.0</td> </tr> <tr> <td>1.25<d</td> <td>4.0</td> </tr> </tbody> </table> | Terminal diameter (mm) | Force (kg) | 0.5<d≤0.8 | 1.0 | 0.8<d≤1.25 | 2.0 | 1.25<d | 4.0 | No visible damage ΔV _{1mA} /V _{1mA} ≤5% |
| Terminal diameter (mm) | Force (kg) | | | | | | | | | |
| 0.5<d≤0.8 | 1.0 | | | | | | | | | |
| 0.8<d≤1.25 | 2.0 | | | | | | | | | |
| 1.25<d | 4.0 | | | | | | | | | |
| Bending Strength of Terminals | Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (kg)</th> </tr> </thead> <tbody> <tr> <td>0.5<d≤0.8</td> <td>0.5</td> </tr> <tr> <td>0.8<d≤1.25</td> <td>1.0</td> </tr> <tr> <td>1.25<d</td> <td>2.0</td> </tr> </tbody> </table> | Terminal diameter (mm) | Force (kg) | 0.5<d≤0.8 | 0.5 | 0.8<d≤1.25 | 1.0 | 1.25<d | 2.0 | No visible damage ΔV _{1mA} /V _{1mA} ≤5% |
| Terminal diameter (mm) | Force (kg) | | | | | | | | | |
| 0.5<d≤0.8 | 0.5 | | | | | | | | | |
| 0.8<d≤1.25 | 1.0 | | | | | | | | | |
| 1.25<d | 2.0 | | | | | | | | | |
| Vibration | Frequency range: 10~55 Hz Amplitude: 0.75mm or 98m/s ² Direction: 3 mutually perpendicular directions, 2hrs each. | No visible damage ΔV _{1mA} /V _{1mA} ≤5% | | | | | | | | |
| Solder ability | Solder Temp: 245±5°C Dipping Time: 2±0.5 sec | At least 95% of terminal electrode is covered by new solder | | | | | | | | |
| Resistance to Soldering Heat | Solder Temp: 260±5°C Dipping Time: 10±1 sec | No visible damage ΔV _{1mA} /V _{1mA} ≤10% | | | | | | | | |

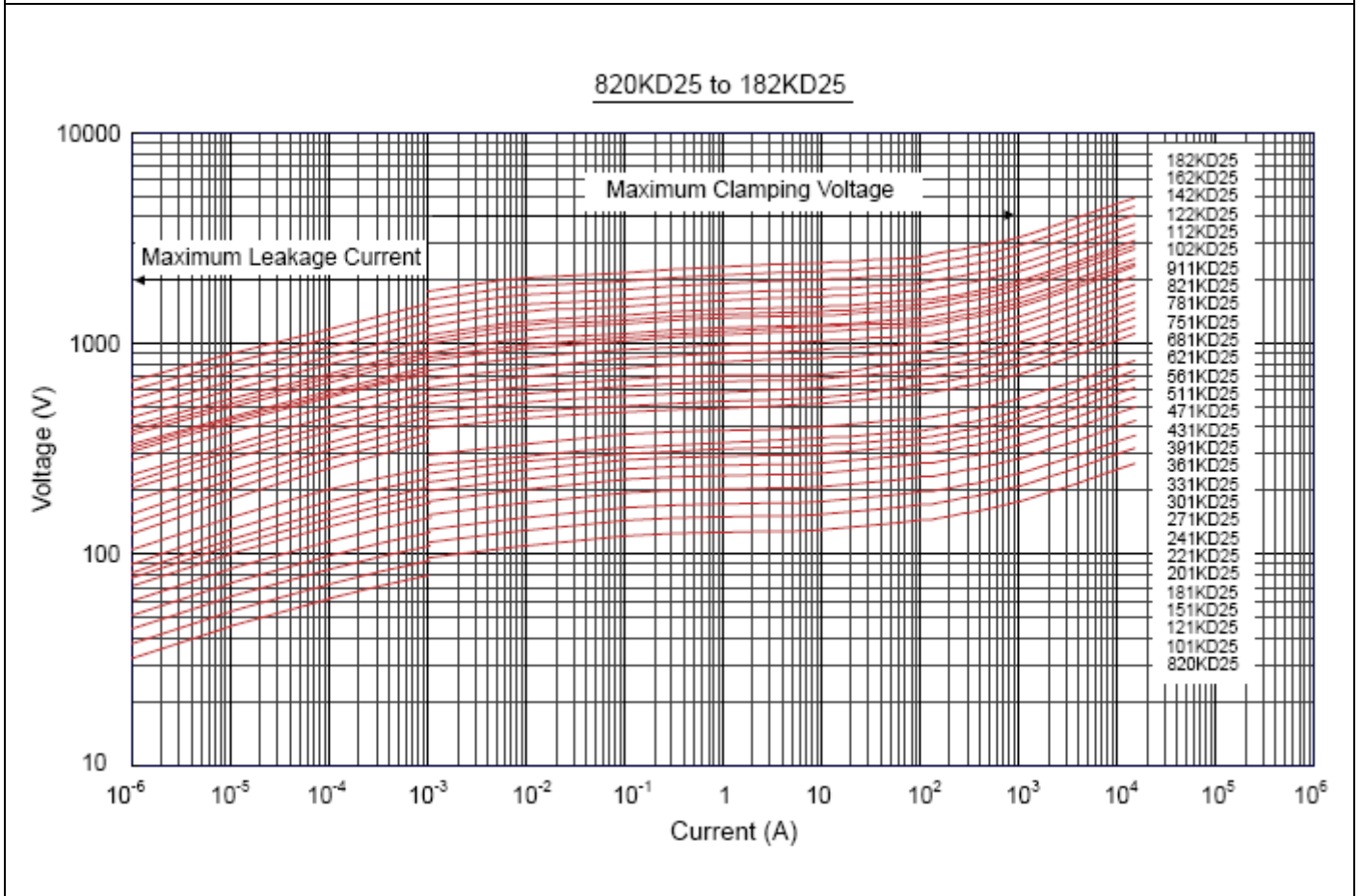
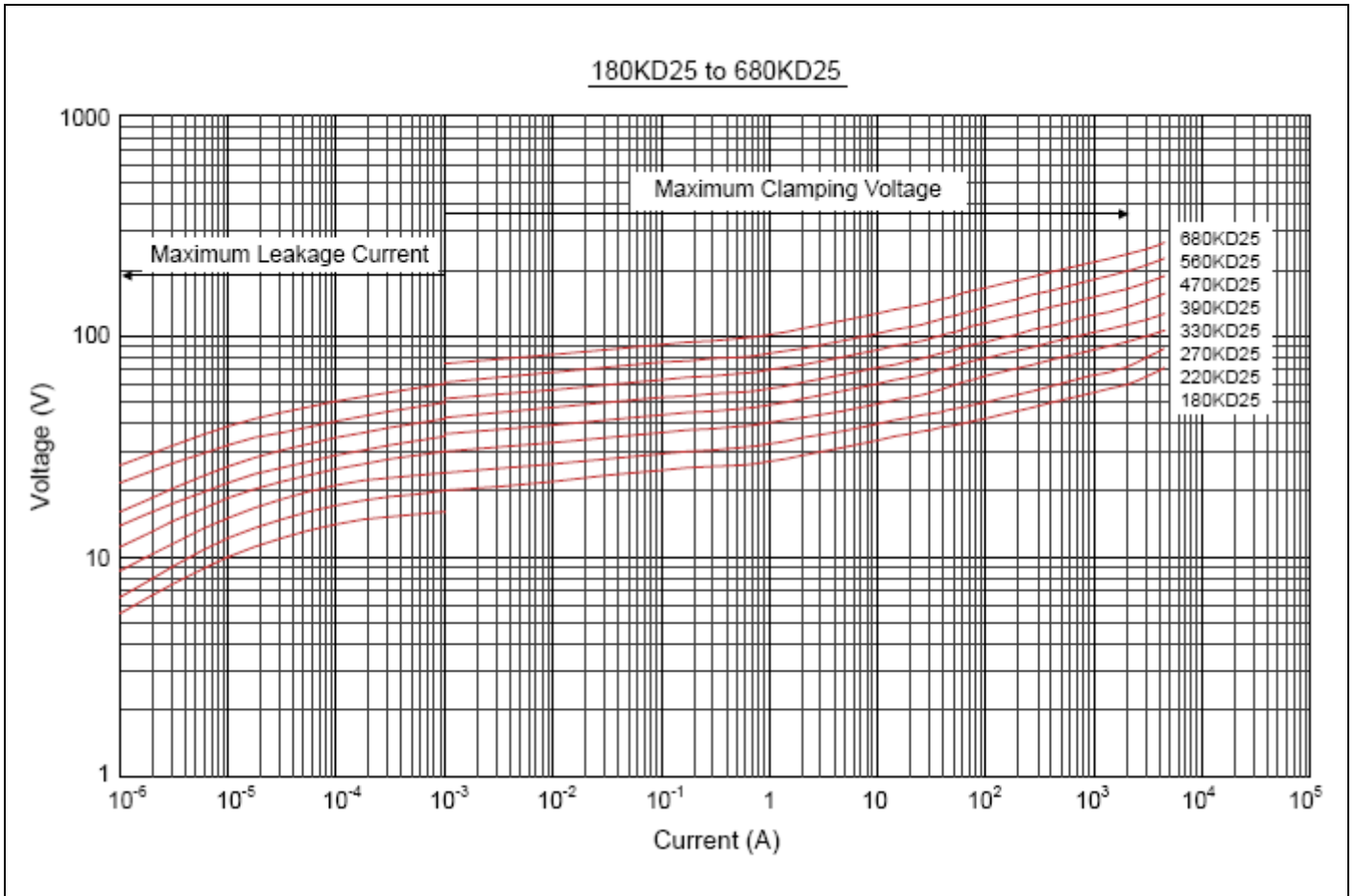
Reliability

| Items | Test conditions / Methods | Specifications | | | | | | | | | | | | | | | |
|--------------------------|---|--|------------------|------------------|---|-------|------|---|------------------|------|---|-------|------|---|------------------|------|---|
| High Temperature Storage | Ambient Temp: 125±2°C Duration: 1000hrs | ΔV _{1mA} /V _{1mA} ≤5% | | | | | | | | | | | | | | | |
| Low Temperature Storage | Ambient Temp: -40±2°C Duration: 1000hrs | ΔV _{1mA} /V _{1mA} ≤5% | | | | | | | | | | | | | | | |
| Humidity | Ambient Temp: 40±2°C, 90~95% R.H. Duration: 1000hrs | ΔV _{1mA} /V _{1mA} ≤5% | | | | | | | | | | | | | | | |
| Temperature Cycle | The conditions shown below shall be repeated 5 cycles <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>15±3</td> </tr> <tr> <td>3</td> <td>125±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>15±3</td> </tr> </tbody> </table> | Step | Temperature (°C) | Period (minutes) | 1 | -40±3 | 30±3 | 2 | Room temperature | 15±3 | 3 | 125±3 | 30±3 | 4 | Room temperature | 15±3 | No visible damage ΔV _{1mA} /V _{1mA} ≤5% |
| Step | Temperature (°C) | Period (minutes) | | | | | | | | | | | | | | | |
| 1 | -40±3 | 30±3 | | | | | | | | | | | | | | | |
| 2 | Room temperature | 15±3 | | | | | | | | | | | | | | | |
| 3 | 125±3 | 30±3 | | | | | | | | | | | | | | | |
| 4 | Room temperature | 15±3 | | | | | | | | | | | | | | | |
| High Temperature Load | Ambient Temp: 105±2°C Duration: 1000hrs Load: Max. Allowable Voltage In AC eara. | ΔV _{1mA} /V _{1mA} ≤10% | | | | | | | | | | | | | | | |
| Damp Heat Load | Ambient Temp: 40±2°C, 90~95% R.H. Duration: 1000hrs Load: Max. Allowable Voltage | No visible damage ΔV _{1mA} /V _{1mA} ≤10% | | | | | | | | | | | | | | | |
| Voltage Proof | Metal balls method, 2500Vac 1 min. | No visible damage | | | | | | | | | | | | | | | |

Maximum Surge Current Derating Curve



Maximum Leakage Current and Maximum Clamping Voltage Curve



Marking code

| | |
|--|---|
| | <ul style="list-style-type: none"> ① Brightking Logo ② Varistor Voltage ③ UL Accreditation Logo ④ CSA Accreditation Logo ⑤ VDE Accreditation Logo ⑥ “J” is High Surge Code, no “J” is Standard Surge ⑦ Disk Size ⑧ Product Line Code (“Y” may be A(a) thru Z(z)) ⑨ Date Code |
|--|---|

Quantity

| Packaging Dimensions (Unit: mm) | Quantity |
|---------------------------------|--|
| Exposure in bulk | 100pcs/bag 4bags/box (180K~621K) |
| | 50pcs/bag 4bags/box (681K~182K) |
| Cut the feet in bulk | 100pcs/bag 4bags/box (180K~621K) |
| | 50pcs/bag 4bags/box (681K~182K) |

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9