

Reverse Voltage: 5.0 to 440 V
Peak Pulse Power: 5000 W

Axial Lead Transient Voltage Suppressors

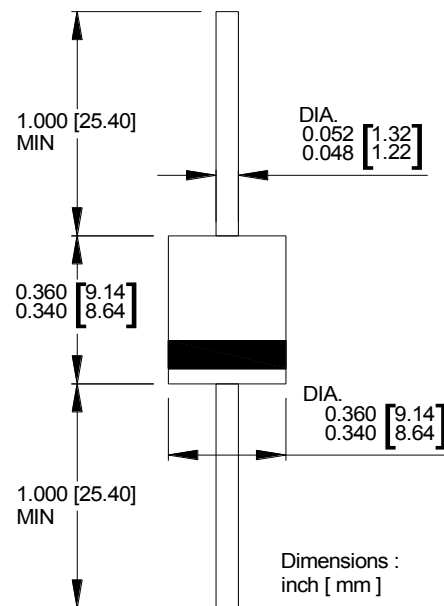
Features

- Glass passivated chip
- 5000 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Mechanical Data

- Case: Molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-202, method 208 guranteed
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

R-6/P600



Maximum Ratings($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|----------------|----------------|--------------------|
| Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾ | P_{PP} | 5000 | W |
| Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾ | I_{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at $T_L = 75^{\circ}\text{C}$ | P_D | 8.0 | W |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾ | I_{FSM} | 500 | A |
| Maximum instantaneous forward voltage at 100 A for unidirectional only ⁽³⁾ | V_F | 3.5/5.0 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | - 55 to +150 | $^{\circ}\text{C}$ |

Note:

(1) Non-repetitive current pulse per Fig.5 and derated above $T_A = 25^{\circ}\text{C}$ per Fig.1

(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} > 201\text{V}$

Ratings and Characteristics Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

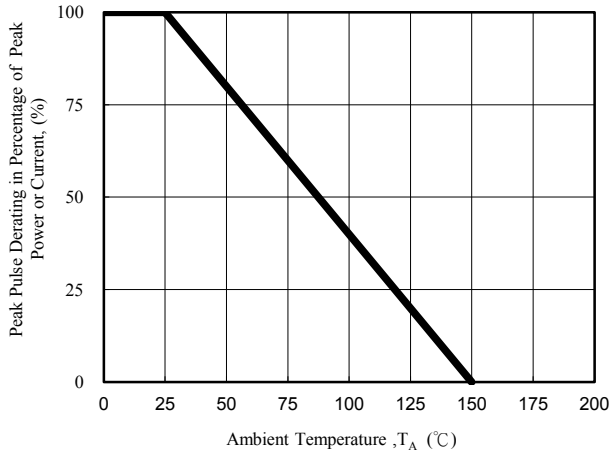


Fig. 1 - Pulse Derating Curve

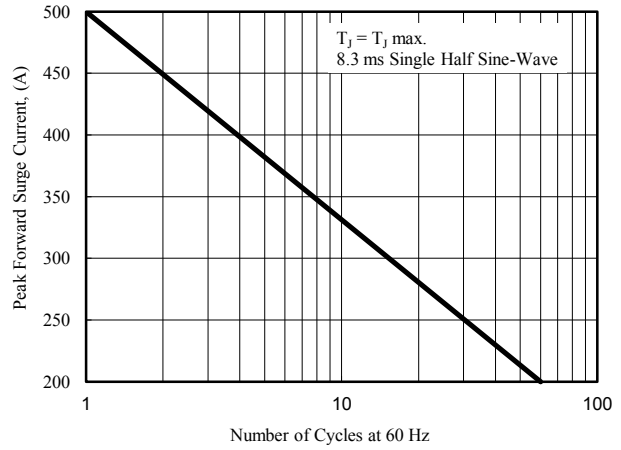


Fig. 2 - Maximum Non-Repetitive Surge Current

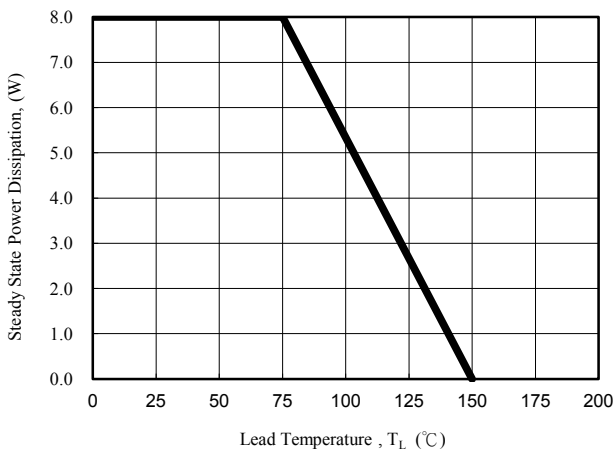


Fig. 3 - Steady State Power Derating Curve

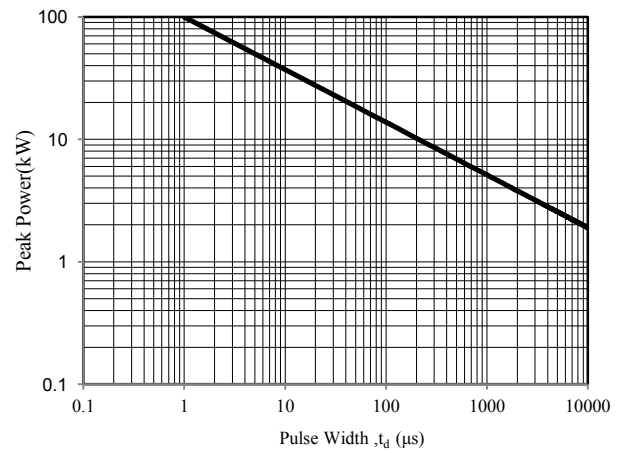


Fig. 4 - Peak Pulse Power Rating Curve

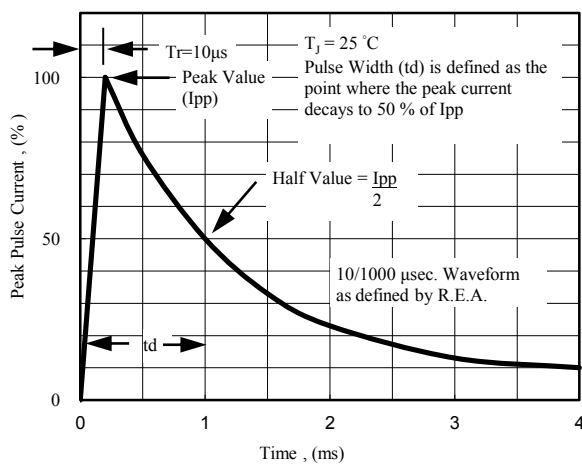


Fig. 5 - Pulse Waveform

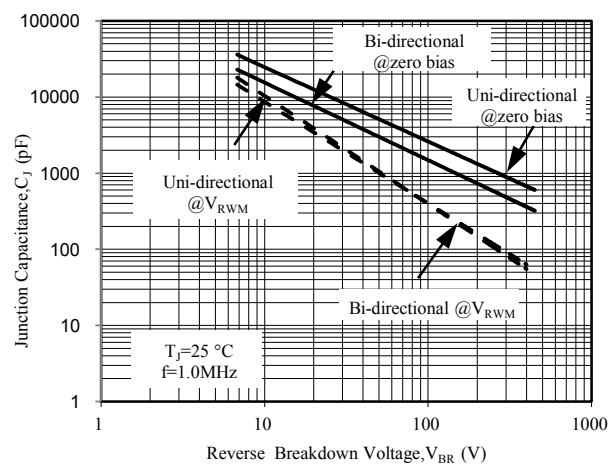


Fig. 6 - Typical Junction Capacitance

Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage V_{BR} @ I_T | | | Maximum Reverse Leakage I_R @ V_{RWM} (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current I_{PP} (A) | Maximum Clamping Voltage V_C @ I_{PP} (V) |
|----------------------|---------------------|------------------------------------|---------|------------|---|--|--|---|
| | | Min (V) | Max (V) | I_T (mA) | | | | |
| 5KP5.0A | 5KP5.0CA | 6.40 | 7.00 | 50 | 5000 | 5 | 543.48 | 9.2 |
| 5KP6.0A | 5KP6.0CA | 6.67 | 7.37 | 50 | 5000 | 6 | 485.44 | 10.3 |
| 5KP6.5A | 5KP6.5CA | 7.22 | 7.98 | 50 | 2000 | 7 | 446.43 | 11.2 |
| 5KP7.0A | 5KP7.0CA | 7.78 | 8.60 | 50 | 1000 | 7 | 416.67 | 12.0 |
| 5KP7.5A | 5KP7.5CA | 8.33 | 9.21 | 5 | 250 | 8 | 387.60 | 12.9 |
| 5KP8.0A | 5KP8.0CA | 8.89 | 9.83 | 5 | 150 | 8 | 367.65 | 13.6 |
| 5KP8.5A | 5KP8.5CA | 9.44 | 10.4 | 5 | 50 | 9 | 347.22 | 14.4 |
| 5KP9.0A | 5KP9.0CA | 10.00 | 11.1 | 5 | 20 | 9 | 324.68 | 15.4 |
| 5KP10A | 5KP10CA | 11.10 | 12.3 | 5 | 15 | 10 | 294.12 | 17.0 |
| 5KP11A | 5KP11CA | 12.20 | 13.5 | 5 | 2 | 11 | 274.73 | 18.2 |
| 5KP12A | 5KP12CA | 13.30 | 14.7 | 5 | 2 | 12 | 251.26 | 19.9 |
| 5KP13A | 5KP13CA | 14.40 | 15.9 | 5 | 2 | 13 | 232.56 | 21.5 |
| 5KP14A | 5KP14CA | 15.60 | 17.2 | 5 | 2 | 14 | 215.52 | 23.2 |
| 5KP15A | 5KP15CA | 16.70 | 18.5 | 5 | 2 | 15 | 204.92 | 24.4 |
| 5KP16A | 5KP16CA | 17.80 | 19.7 | 5 | 2 | 16 | 192.31 | 26.0 |
| 5KP17A | 5KP17CA | 18.90 | 20.9 | 5 | 2 | 17 | 181.16 | 27.6 |
| 5KP18A | 5KP18CA | 20.00 | 22.1 | 5 | 2 | 18 | 171.23 | 29.2 |
| 5KP19A | 5KP19CA | 21.10 | 23.3 | 5 | 2 | 19 | 162.44 | 30.8 |
| 5KP20A | 5KP20CA | 22.20 | 24.5 | 5 | 2 | 20 | 154.32 | 32.4 |
| 5KP22A | 5KP22CA | 24.40 | 26.9 | 5 | 2 | 22 | 140.85 | 35.5 |
| 5KP24A | 5KP24CA | 26.70 | 29.5 | 5 | 2 | 24 | 128.53 | 38.9 |
| 5KP26A | 5KP26CA | 28.90 | 31.9 | 5 | 2 | 26 | 118.76 | 42.1 |
| 5KP28A | 5KP28CA | 31.10 | 34.4 | 5 | 2 | 28 | 110.13 | 45.4 |
| 5KP30A | 5KP30CA | 33.30 | 36.8 | 5 | 2 | 30 | 103.31 | 48.4 |
| 5KP33A | 5KP33CA | 36.70 | 40.6 | 5 | 2 | 33 | 93.81 | 53.3 |
| 5KP36A | 5KP36CA | 40.00 | 44.2 | 5 | 2 | 36 | 86.06 | 58.1 |
| 5KP40A | 5KP40CA | 44.40 | 49.1 | 5 | 2 | 40 | 77.52 | 64.5 |
| 5KP43A | 5KP43CA | 47.80 | 52.8 | 5 | 2 | 43 | 72.05 | 69.4 |
| 5KP45A | 5KP45CA | 50.00 | 55.3 | 5 | 2 | 45 | 68.78 | 72.7 |
| 5KP48A | 5KP48CA | 53.30 | 58.9 | 5 | 2 | 48 | 64.60 | 77.4 |
| 5KP51A | 5KP51CA | 56.70 | 62.7 | 5 | 2 | 51 | 60.68 | 82.4 |
| 5KP54A | 5KP54CA | 60.00 | 66.3 | 5 | 2 | 54 | 57.41 | 87.1 |
| 5KP58A | 5KP58CA | 64.40 | 71.2 | 5 | 2 | 58 | 53.42 | 93.6 |
| 5KP60A | 5KP60CA | 66.70 | 73.7 | 5 | 2 | 60 | 51.65 | 96.8 |
| 5KP64A | 5KP64CA | 71.10 | 78.6 | 5 | 2 | 64 | 48.54 | 103.0 |
| 5KP70A | 5KP70CA | 77.80 | 86.0 | 5 | 2 | 70 | 44.25 | 113.0 |
| 5KP75A | 5KP75CA | 83.30 | 92.1 | 5 | 2 | 75 | 41.32 | 121.0 |
| 5KP78A | 5KP78CA | 86.70 | 95.8 | 5 | 2 | 78 | 39.68 | 126.0 |
| 5KP80A | 5KP80CA | 88.80 | 97.6 | 5 | 2 | 80 | 38.58 | 129.6 |
| 5KP85A | 5KP85CA | 94.40 | 104.0 | 5 | 2 | 85 | 36.50 | 137.0 |
| 5KP90A | 5KP90CA | 100.00 | 111.0 | 5 | 2 | 90 | 34.25 | 146.0 |
| 5KP100A | 5KP100CA | 111.00 | 123.0 | 5 | 2 | 100 | 30.86 | 162.0 |
| 5KP110A | 5KP110CA | 122.00 | 135.0 | 5 | 2 | 110 | 28.25 | 177.0 |
| 5KP120A | 5KP120CA | 133.00 | 147.0 | 5 | 2 | 120 | 25.91 | 193.0 |
| 5KP130A | 5KP130CA | 144.00 | 159.0 | 5 | 2 | 130 | 23.92 | 209.0 |
| 5KP140A | 5KP140CA | 155.00 | 171.0 | 5 | 2 | 140 | 22.05 | 226.8 |
| 5KP150A | 5KP150CA | 167.00 | 185.0 | 5 | 2 | 150 | 20.58 | 243.0 |



Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| Part Number (Uni) | Part Number (Bi) | Breakdown Voltage V_{BR} @ I_T | | | Maximum Reverse Leakage I_R @ V_{RWM} (μA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current I_{PP} (A) | Maximum Clamping Voltage V_C @ I_{PP} (V) |
|----------------------|---------------------|------------------------------------|---------|------------|---|--|--|---|
| | | Min (V) | Max (V) | I_T (mA) | | | | |
| 5KP160A | 5KP160CA | 178.00 | 197.0 | 5 | 2 | 160 | 19.31 | 259.0 |
| 5KP170A | 5KP170CA | 189.00 | 209.0 | 5 | 2 | 170 | 18.18 | 275.0 |
| 5KP180A | 5KP180CA | 200.00 | 220.0 | 5 | 2 | 180 | 17.15 | 291.6 |
| 5KP190A | 5KP190CA | 211.00 | 232.0 | 5 | 2 | 190 | 16.24 | 307.8 |
| 5KP200A | 5KP200CA | 224.00 | 247.0 | 5 | 2 | 200 | 15.43 | 324.0 |
| 5KP210A | 5KP210CA | 233.00 | 258.0 | 5 | 2 | 210 | 14.31 | 349.5 |
| 5KP220A | 5KP220CA | 246.00 | 272.0 | 5 | 2 | 220 | 14.04 | 356.0 |
| 5KP250A | 5KP250CA | 279.00 | 309.0 | 5 | 2 | 250 | 12.35 | 405.0 |
| 5KP300A | 5KP300CA | 335.00 | 371.0 | 5 | 2 | 300 | 10.29 | 486.0 |
| 5KP350A | 5KP350CA | 391.00 | 432.0 | 5 | 2 | 350 | 8.82 | 567.0 |
| 5KP400A | 5KP400CA | 447.00 | 494.0 | 5 | 2 | 400 | 7.72 | 648.0 |
| 5KP440A | 5KP440CA | 492.00 | 543.0 | 5 | 2 | 440 | 7.01 | 713.0 |

Note:

1. Suffix 'A ' denotes 5% tolerance device.
2. Add suffix 'C 'or ' CA ' after part number to specify Bi-directional devices
3. For Bi-Directional devices having V_R of 10 volts and under, the I_R limit is double