

Reverse Voltage: 5.0 to 440 V
Peak Pulse Power: 3000 W

Axial Lead Transient Voltage Suppressors

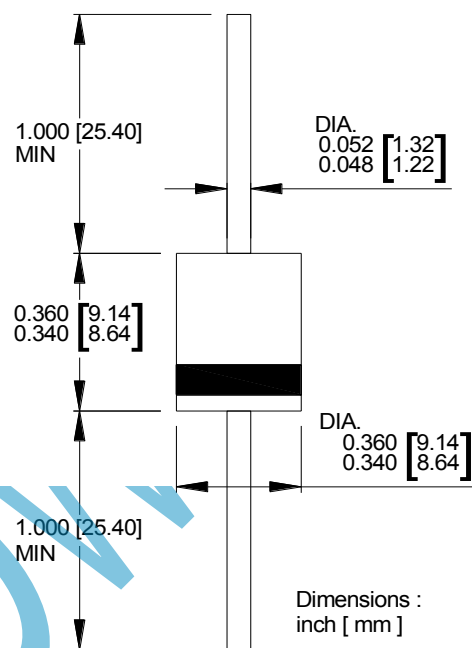
Features

- Glass passivated chip
- 3000 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} | 3000 | 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 | 6.5 | W |
| Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾ | I_{FSM} | 300 | 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} | \square 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)

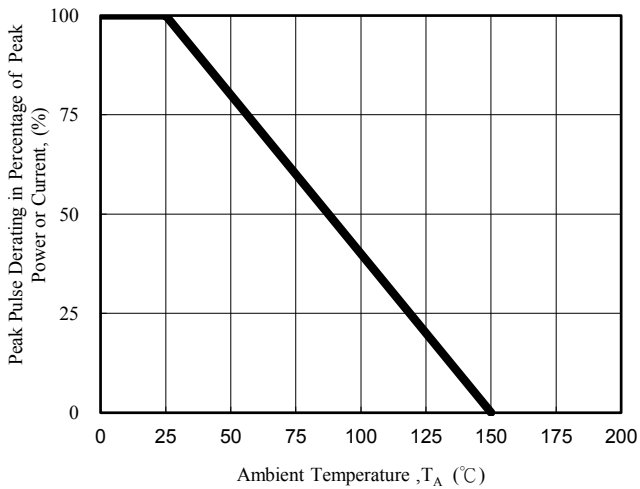


Fig. 1 - Pulse Derating Curve

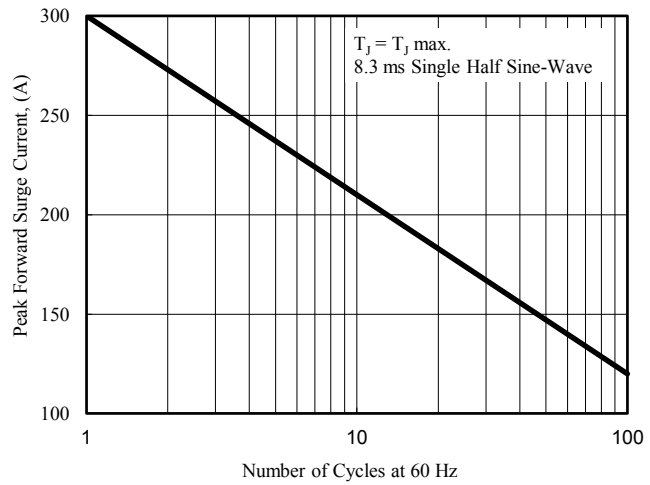


Fig. 2 - Maximum Non-Repetitive Surge Current

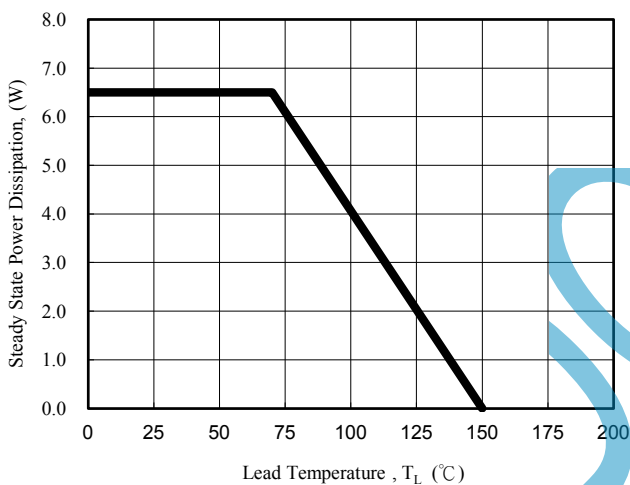


Fig. 3 - Steady State Power Derating Curve

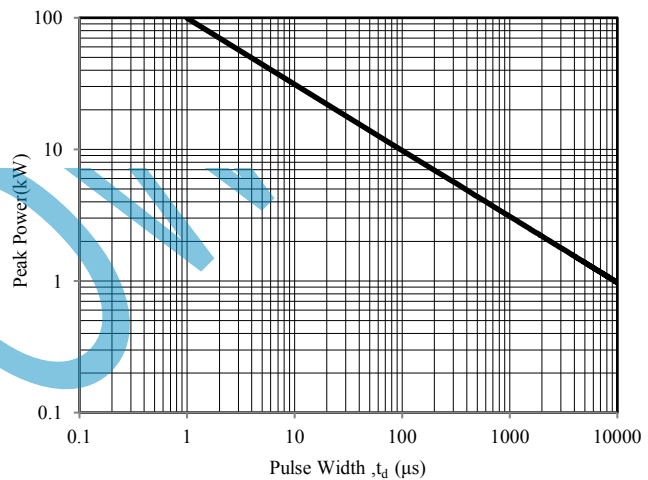


Fig. 4 - Peak Pulse Power Rating Curve

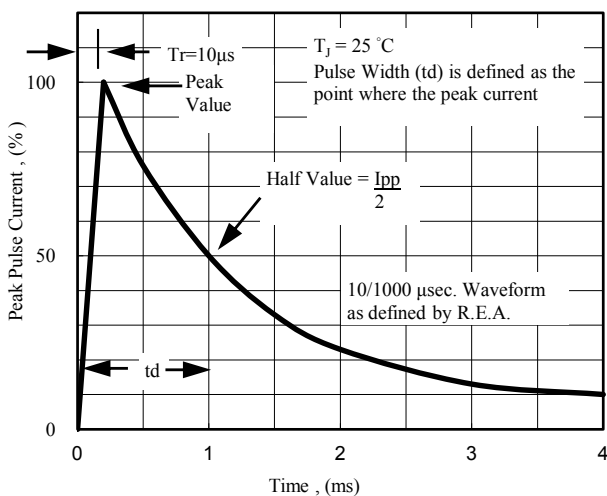


Fig. 5 - Pulse Waveform

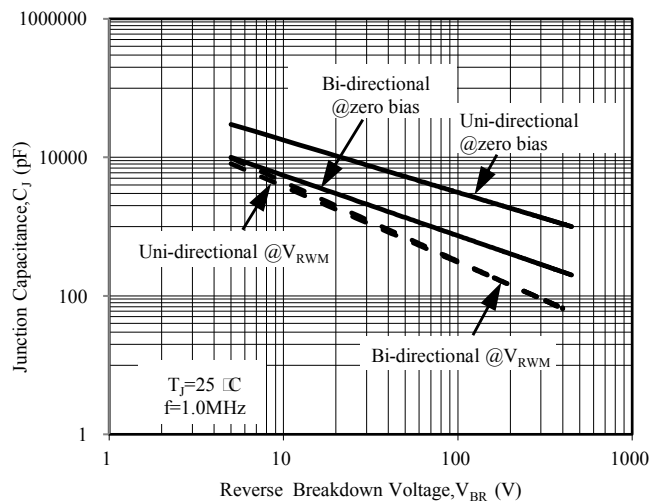


Fig. 6 - Typical Junction Capacitance

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) | | | | |
| 3KP5.0A | 3KP5.0CA | 6.40 | 7.00 | 50 | 5000 | 5 | 326.1 | 9.2 |
| 3KP6.0A | 3KP6.0CA | 6.67 | 7.37 | 50 | 5000 | 6 | 291.3 | 10.3 |
| 3KP6.5A | 3KP6.5CA | 7.22 | 7.98 | 50 | 2000 | 7 | 267.9 | 11.2 |
| 3KP7.0A | 3KP7.0CA | 7.78 | 8.60 | 50 | 1000 | 7 | 250.0 | 12.0 |
| 3KP7.5A | 3KP7.5CA | 8.33 | 9.21 | 5 | 250 | 8 | 232.6 | 12.9 |
| 3KP8.0A | 3KP8.0CA | 8.89 | 9.83 | 5 | 150 | 8 | 220.6 | 13.6 |
| 3KP8.5A | 3KP8.5CA | 9.44 | 10.40 | 5 | 50 | 9 | 208.3 | 14.4 |
| 3KP9.0A | 3KP9.0CA | 10.00 | 11.10 | 5 | 20 | 9 | 194.8 | 15.4 |
| 3KP10A | 3KP10CA | 11.10 | 12.30 | 5 | 15 | 10 | 176.5 | 17.0 |
| 3KP11A | 3KP11CA | 12.20 | 13.50 | 5 | 2 | 11 | 164.8 | 18.2 |
| 3KP12A | 3KP12CA | 13.30 | 14.70 | 5 | 2 | 12 | 150.8 | 19.9 |
| 3KP13A | 3KP13CA | 14.40 | 15.90 | 5 | 2 | 13 | 139.5 | 21.5 |
| 3KP14A | 3KP14CA | 15.60 | 17.20 | 5 | 2 | 14 | 129.3 | 23.2 |
| 3KP15A | 3KP15CA | 16.70 | 18.50 | 5 | 2 | 15 | 123.0 | 24.4 |
| 3KP16A | 3KP16CA | 17.80 | 19.70 | 5 | 2 | 16 | 115.4 | 26.0 |
| 3KP17A | 3KP17CA | 18.90 | 20.90 | 5 | 2 | 17 | 108.7 | 27.6 |
| 3KP18A | 3KP18CA | 20.00 | 22.10 | 5 | 2 | 18 | 102.7 | 29.2 |
| 3KP19A | 3KP19CA | 21.10 | 23.30 | 5 | 2 | 19 | 97.5 | 30.8 |
| 3KP20A | 3KP20CA | 22.20 | 24.50 | 5 | 2 | 20 | 92.6 | 32.4 |
| 3KP22A | 3KP22CA | 24.40 | 26.90 | 5 | 2 | 22 | 84.5 | 35.5 |
| 3KP24A | 3KP24CA | 26.70 | 29.50 | 5 | 2 | 24 | 77.1 | 38.9 |
| 3KP26A | 3KP26CA | 28.90 | 31.90 | 5 | 2 | 26 | 71.3 | 42.1 |
| 3KP28A | 3KP28CA | 31.10 | 34.40 | 5 | 2 | 28 | 66.1 | 45.4 |
| 3KP30A | 3KP30CA | 33.30 | 36.80 | 5 | 2 | 30 | 62.0 | 48.4 |
| 3KP33A | 3KP33CA | 36.70 | 40.60 | 5 | 2 | 33 | 56.3 | 53.3 |
| 3KP36A | 3KP36CA | 40.00 | 44.20 | 5 | 2 | 36 | 51.6 | 58.1 |
| 3KP40A | 3KP40CA | 44.40 | 49.10 | 5 | 2 | 40 | 46.5 | 64.5 |
| 3KP43A | 3KP43CA | 47.80 | 52.80 | 5 | 2 | 43 | 43.2 | 69.4 |
| 3KP45A | 3KP45CA | 50.00 | 55.30 | 5 | 2 | 45 | 41.3 | 72.7 |
| 3KP48A | 3KP48CA | 53.30 | 58.90 | 5 | 2 | 48 | 38.8 | 77.4 |
| 3KP51A | 3KP51CA | 56.70 | 62.70 | 5 | 2 | 51 | 36.4 | 82.4 |
| 3KP54A | 3KP54CA | 60.00 | 66.30 | 5 | 2 | 54 | 34.4 | 87.1 |
| 3KP58A | 3KP58CA | 64.40 | 71.20 | 5 | 2 | 58 | 32.1 | 93.6 |
| 3KP60A | 3KP60CA | 66.70 | 73.70 | 5 | 2 | 60 | 31.0 | 96.8 |
| 3KP64A | 3KP64CA | 71.10 | 78.60 | 5 | 2 | 64 | 29.1 | 103.0 |
| 3KP70A | 3KP70CA | 77.80 | 86.00 | 5 | 2 | 70 | 26.5 | 113.0 |
| 3KP75A | 3KP75CA | 83.30 | 92.10 | 5 | 2 | 75 | 24.8 | 121.0 |
| 3KP78A | 3KP78CA | 86.70 | 95.80 | 5 | 2 | 78 | 23.8 | 126.0 |
| 3KP80A | 3KP80CA | 88.80 | 97.60 | 5 | 2 | 80 | 23.1 | 129.6 |
| 3KP85A | 3KP85CA | 94.40 | 104.00 | 5 | 2 | 85 | 21.9 | 137.0 |
| 3KP90A | 3KP90CA | 100.00 | 111.00 | 5 | 2 | 90 | 20.5 | 146.0 |
| 3KP100A | 3KP100CA | 111.00 | 123.00 | 5 | 2 | 100 | 18.5 | 162.0 |
| 3KP110A | 3KP110CA | 122.00 | 135.00 | 5 | 2 | 110 | 16.9 | 177.0 |
| 3KP120A | 3KP120CA | 133.00 | 147.00 | 5 | 2 | 120 | 15.5 | 193.0 |
| 3KP130A | 3KP130CA | 144.00 | 159.00 | 5 | 2 | 130 | 14.4 | 209.0 |
| 3KP140A | 3KP140CA | 155.00 | 171.00 | 5 | 2 | 140 | 13.2 | 226.8 |
| 3KP150A | 3KP150CA | 167.00 | 185.00 | 5 | 2 | 150 | 12.3 | 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) | | | | |
| 3KP160A | 3KP160CA | 178.00 | 197.00 | 5 | 2 | 160 | 11.6 | 259.0 |
| 3KP170A | 3KP170CA | 189.00 | 209.00 | 5 | 2 | 170 | 10.9 | 275.0 |
| 3KP180A | 3KP180CA | 200.00 | 221.00 | 5 | 2 | 180 | 10.3 | 291.6 |
| 3KP190A | 3KP190CA | 211.00 | 233.00 | 5 | 2 | 190 | 9.7 | 307.8 |
| 3KP200A | 3KP191CA | 222.00 | 246.00 | 5 | 2 | 200 | 9.3 | 324.0 |
| 3KP210A | 3KP210CA | 233.00 | 258.00 | 5 | 2 | 210 | 8.6 | 349.5 |
| 3KP220A | 3KP220CA | 244.00 | 270.00 | 5 | 2 | 220 | 8.1 | 371.1 |
| 3KP250A | 3KP250CA | 279.00 | 309.00 | 5 | 2 | 250 | 7.4 | 405.0 |
| 3KP300A | 3KP300CA | 335.00 | 371.00 | 5 | 2 | 300 | 6.2 | 486.0 |
| 3KP350A | 3KP350CA | 391.00 | 432.00 | 5 | 2 | 350 | 5.3 | 567.0 |
| 3KP400A | 3KP400CA | 447.00 | 494.00 | 5 | 2 | 400 | 4.6 | 648.0 |
| 3KP440A | 3KP440CA | 492.00 | 543.00 | 5 | 2 | 440 | 4.2 | 713.0 |

Note:

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% 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

