

MDE Semiconductor, Inc.

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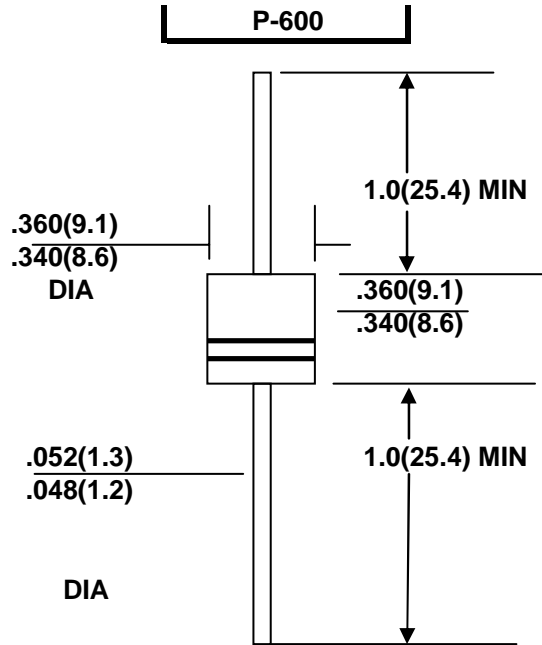
RT100KP SERIES

DRAFT

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-28.0 TO 400 Volts 100,000 Watt Peak Pulse Power

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
 - Glass passivated junction
 - 100,000W Peak Pulse Power capability on 6.4/69 μ s waveform
 - Excellent clamping capability
 - Repetition rate (duty cycle):0.05%
 - Low incremental surge resistance
 - Fast response time: typically less than 1.0 ps from 0 volts to BV
 - High temperature soldering guaranteed: 265°C/10 seconds/.375", (9.5mm) lead length, 5lbs., (2.3kg) tension
- 100 KW Transient Voltage Suppressor (TVS) are designed for aircraft applications requiring high power transient protection. This includes various threats such as "Waveform 4" at 6.4/69 μ s per RTCA/DO-160E Section22.



Dimensions in inches (millimeters)

MECHANICAL DATA

Case: Molded plastic over glass passivated junction
 Terminals: Plated Tin Axial leads, solderable per MIL-STD-750, Method 2026
 Polarity: Color band denoted positive end (cathode) except Bipolar
 Mounting Position: Any
 Weight: 0.07 ounce, 2.5 gram

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types RT100KP28 thru types RT100KP400
 Electrical characteristics apply in both directions.

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| RATING | SYMBOL | VALUE | UNITS |
|---|----------------|-----------------|-------|
| Peak Pulse Power Dissipation on 6.4/69 μ s waveform | P_{PPM} | Minimum 100,000 | Watts |
| Peak Pulse Current of on 6.4/69 μ s waveform | I_{PPM} | SEE TABLE 1 | Amps |
| Steady State Power Dissipation at $T_I=75^\circ\text{C}$ Lead Lengths .375", (9.5mm)(NOTE 2) | $P_M(AV)$ | 8.0 | Watts |
| Peak Forward Surge Current, 8.3ms Sine-Wave Superimposed on Rated Load, (JEDEC Method) (NOTE 3) | I_{FSM} | 400.0 | Amps |
| Operatings and Storage Temperature Range | T_J, T_{STG} | -55 to +175 | °C |

NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_a=25^\circ\text{C}$ per Fig.2.
2. Mounted on Copper Pad area of 0.8x0.8" (20x20mm) per Fig.5.
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle=4 pulses per minutes maximum

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RT100KP Series Rating and Characteristic Curves

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Fig. 1 - Peak Pulse Power Rating Curve

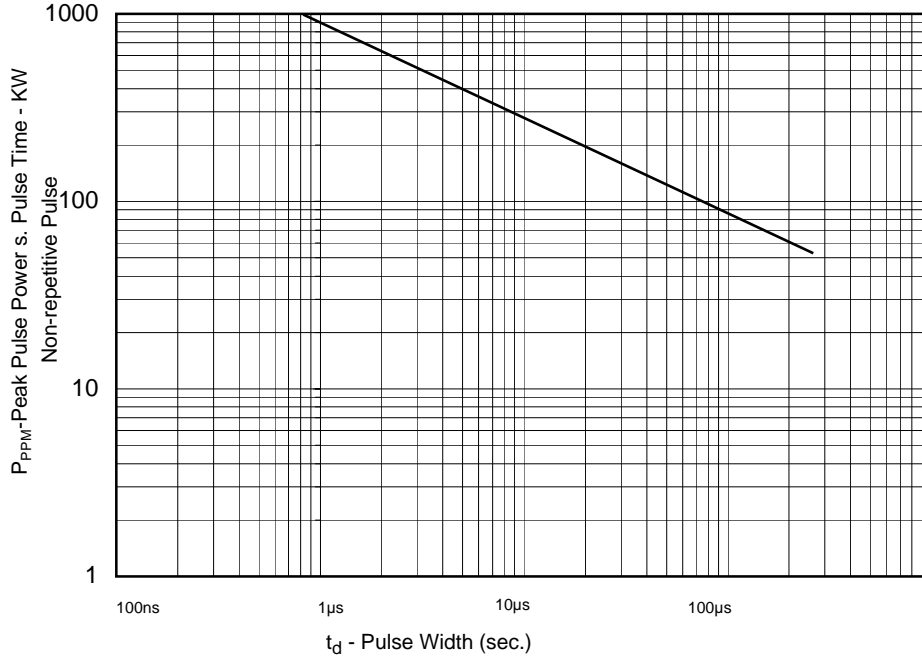
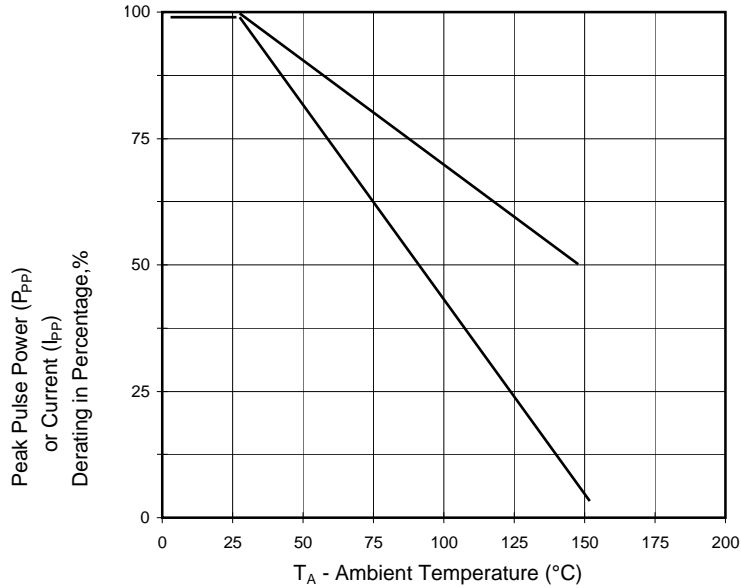


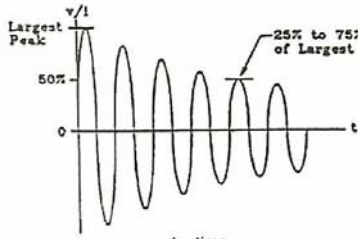
Fig.2 - Pulse Derating Curve



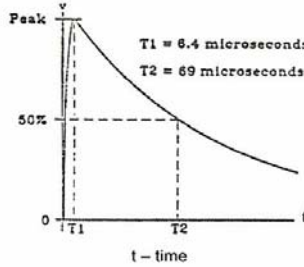
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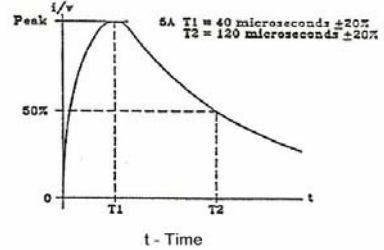
RT100KP Series Rating and Installation



t - time
 Note: frequency is 1MHz
FIGURE 7 - Waveform 3



t - time
FIGURE 8 - Waveform 4



t - Time
FIGURE 9 - Waveform 5A

Note: The 1MHz damped oscillatory waveform (3) has an effective pulse width of 4 μ s. Equivalent peak pulse power at each of the pulse widths represented in RRCA/DO-160E for waveforms 3, 4 and 5A (above) has been determined referencing Figure 1.

| WAVEFORM NUMBER | PULSE WIDTH μ S | PEAK PULSE POWER kW | Peak Pulse Current Conversion Factor * from Rated I_{PP} at 6.4/69 μ s |
|-----------------|------------------------|----------------------------|--|
| 3 | 4 | 340 | 3.40x |
| 4 | 6.4/69 | 100 | 1.00x |
| 5A | 40/120 | 70 | 0.70x |

* Multiply by the conversion factor shown with reference to the maximum rated I_{PP} in the Electrical Characteristics Table

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100000 Watt TVS

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| UNI-POLAR | BI-POLAR | REVERSE STANDOFF VOLTAGE V_{RWM} (V) | BREAKDOWN VOLTAGE V_{BR} (V) MIN. @ I_T | TEST CURRENT (I_T) mA | MAXIMUM CLAMPING VOLTAGE @ I_{PP} V_c (V) | PEAK PULSE CURRENT I_{PP} (A) | REVERSE LEAKAGE @ V_{RWM} I_R (μA) |
|-------------|--------------|---|--|------------------------------------|--|--|--|
| RT100KP28A | RT100KP28CA | 28.00 | 31.28 | 50 | 50.0 | 2018.0 | 5000 |
| RT100KP30A | RT100KP30CA | 30.00 | 33.51 | 50 | 55.2 | 1827.8 | 5000 |
| RT100KP33A | RT100KP33CA | 33.00 | 36.9 | 50 | 58.5 | 1722.3 | 5000 |
| RT100KP36A | RT100KP36CA | 36.00 | 40.2 | 50 | 61.8 | 1632.7 | 5000 |
| RT100KP39A | RT100KP39CA | 39.00 | 43.6 | 20 | 67.2 | 1501.5 | 2000 |
| RT100KP42A | RT100KP42CA | 42.00 | 46.9 | 10 | 72.0 | 1401.2 | 1000 |
| RT100KP43A | RT100KP43CA | 43.00 | 48.0 | 10 | 73.0 | 1382.3 | 1000 |
| RT100KP45A | RT100KP45CA | 45.00 | 50.3 | 5 | 77.4 | 1303.7 | 250 |
| RT100KP48A | RT100KP48CA | 48.00 | 53.6 | 5 | 81.6 | 1236.4 | 150 |
| RT100KP51A | RT100KP51CA | 51.00 | 57.0 | 5 | 86.4 | 1167.8 | 50 |
| RT100KP54A | RT100KP54CA | 54.00 | 60.3 | 5 | 91.4 | 1103.9 | 20 |
| RT100KP58A | RT100KP58CA | 58.00 | 64.8 | 5 | 92.4 | 1091.9 | 20 |
| RT100KP60A | RT100KP60CA | 60.00 | 67.0 | 5 | 102.0 | 989.3 | 15 |
| RT100KP64A | RT100KP64CA | 64.00 | 71.5 | 5 | 104.0 | 970.0 | 10 |
| RT100KP66A | RT100KP66CA | 66.00 | 73.7 | 5 | 107.0 | 943.0 | 10 |
| RT100KP70A | RT100KP70CA | 70.00 | 78.2 | 5 | 109.0 | 925.7 | 10 |
| RT100KP71A | RT100KP71CA | 71.00 | 79.3 | 5 | 111.5 | 904.8 | 10 |
| RT100KP72A | RT100KP72CA | 72.00 | 80.4 | 5 | 114.0 | 885.1 | 10 |
| RT100KP75A | RT100KP75CA | 75.00 | 83.8 | 5 | 119.4 | 845.1 | 10 |
| RT100KP78A | RT100KP78CA | 78.00 | 87.1 | 5 | 129.0 | 782.2 | 10 |
| RT100KP84A | RT100KP84CA | 84.00 | 93.8 | 5 | 139.2 | 724.9 | 10 |
| RT100KP90A | RT100KP90CA | 90.00 | 100.5 | 5 | 146.4 | 689.3 | 10 |
| RT100KP96A | RT100KP96CA | 96.00 | 107.2 | 5 | 156.0 | 646.7 | 10 |
| RT100KP102A | RT100KP102CA | 102.00 | 113.9 | 5 | 165.6 | 609.4 | 10 |
| RT100KP108A | RT100KP108CA | 108.00 | 120.6 | 5 | 175.2 | 575.8 | 10 |
| RT100KP120A | RT100KP120CA | 120.00 | 134.0 | 5 | 194.4 | 519.1 | 10 |
| RT100KP132A | RT100KP132CA | 132.00 | 147.4 | 5 | 213.0 | 473.9 | 10 |
| RT100KP144A | RT100KP144CA | 144.00 | 160.8 | 5 | 223.2 | 452.2 | 10 |
| RT100KP150A | RT100KP150CA | 150.00 | 167.6 | 5 | 233.4 | 432.2 | 10 |
| RT100KP156A | RT100KP156CA | 156.00 | 174.3 | 5 | 245.0 | 411.9 | 10 |
| RT100KP160A | RT100KP160CA | 160.00 | 178.7 | 5 | 252.6 | 399.6 | 10 |
| RT100KP168A | RT100KP168CA | 168.00 | 187.7 | 5 | 272.4 | 370.3 | 10 |
| RT100KP170A | RT100KP170CA | 170.00 | 189.9 | 5 | 275.0 | 367.0 | 10 |
| RT100KP180A | RT100KP180CA | 180.00 | 201.1 | 5 | 290.4 | 347.3 | 10 |
| RT100KP198A | RT100KP198CA | 198.00 | 221.2 | 5 | 319.8 | 315.3 | 10 |
| RT100KP216A | RT100KP216CA | 216.00 | 241.3 | 5 | 348.6 | 289.4 | 10 |
| RT100KP240A | RT100KP240CA | 240.00 | 268.1 | 5 | 387.0 | 260.7 | 10 |
| RT100KP258A | RT100KP258CA | 258.00 | 288.2 | 5 | 416.4 | 242.4 | 10 |
| RT100KP260A | RT100KP260CA | 260.00 | 290.4 | 5 | 416.0 | 242.4 | 10 |
| RT100KP270A | RT100KP270CA | 270.00 | 301.6 | 5 | 436.2 | 231.4 | 10 |
| RT100KP280A | RT100KP280CA | 280.00 | 312.8 | 5 | 464.0 | 217.4 | 10 |
| RT100KP288A | RT100KP288CA | 288.00 | 321.7 | 5 | 469.9 | 214.8 | 10 |
| RT100KP300A | RT100KP300CA | 300.00 | 333.0 | 5 | 483.0 | 206.5 | 10 |
| RT100KP350A | RT100KP350CA | 350.00 | 389.0 | 5 | 564.0 | 176.5 | 10 |
| RT100KP400A | RT100KP400CA | 400.00 | 444.0 | 5 | 644.0 | 153.1 | 10 |

For bidirectional type having V_{RWM} of 40 volts and less, the I_R limit is double

For parts without A , the V_{BR} is $\pm 10\%$

Certified RoHS Compliant