

# MDE Semiconductor, Inc.

78-150 Calle Tampico, Unit 210, La Quinta, CA., USA 92253 Tel: 760-564-8656 • Fax: 760-564-2414  
1-800-831-4881 Email: sales@mdesemiconductor.com Web: www.mdesemiconductor.com

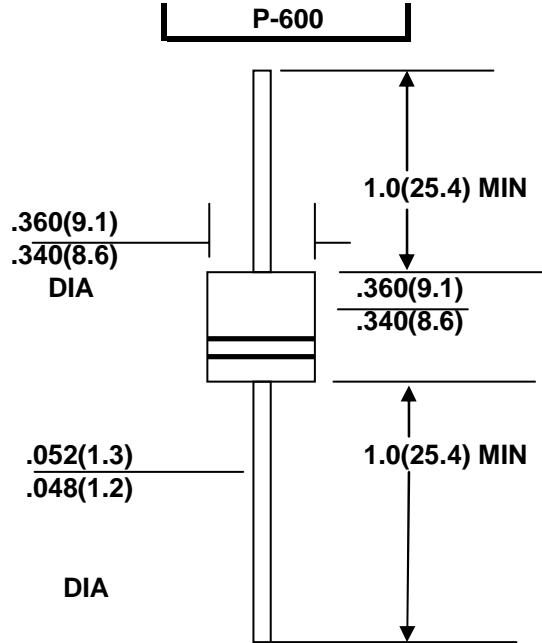
## RT100KP SERIES

**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  $\mu$ 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  $\mu$ 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 $\mu$ s waveform	$P_{PPM}$	Minimum 100,000	Watts
Peak Pulse Current of on 6.4/69 $\mu$ 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

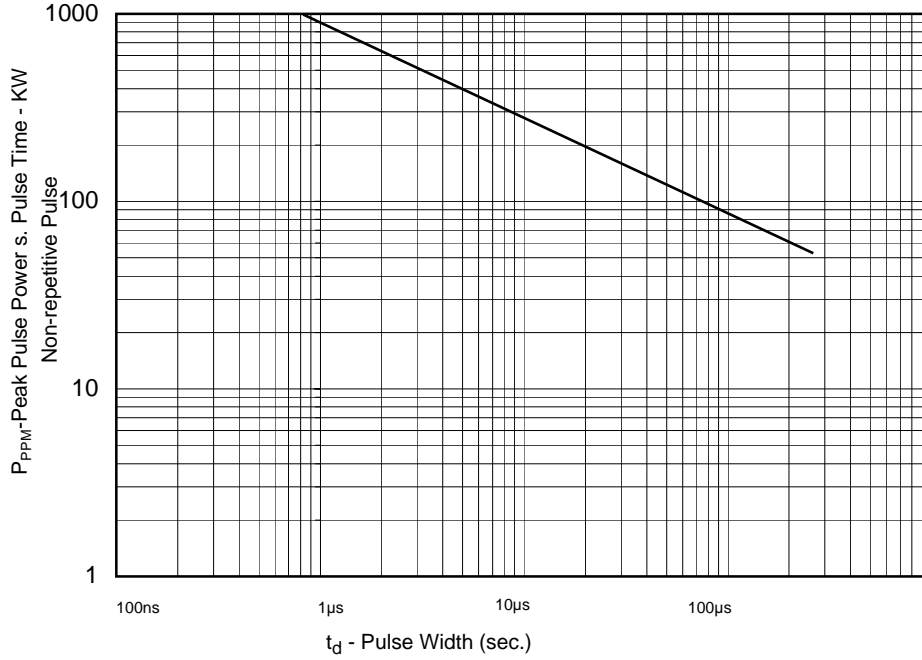
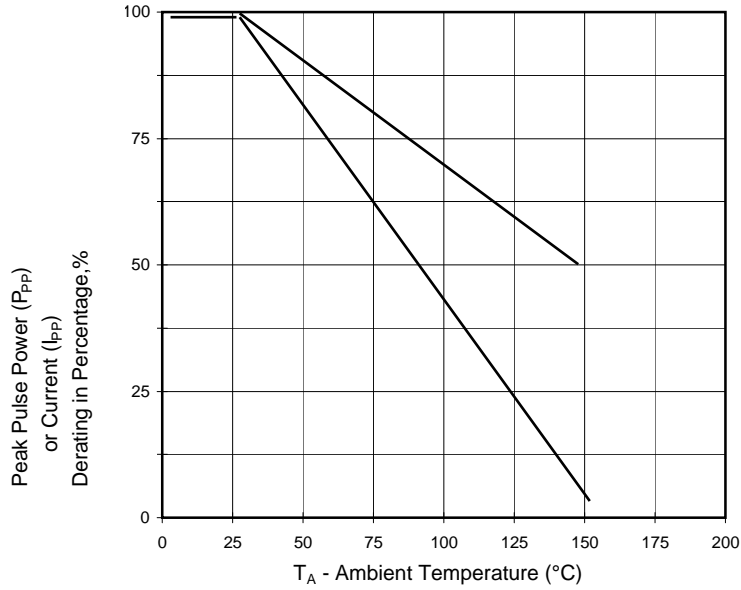


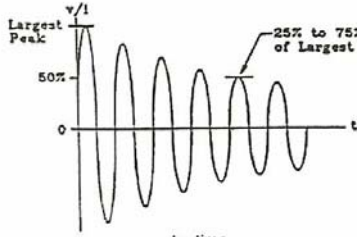
Fig.2 - Pulse Derating Curve



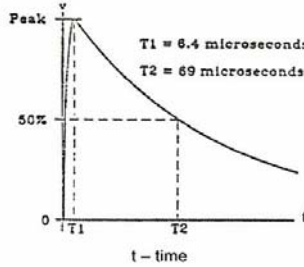
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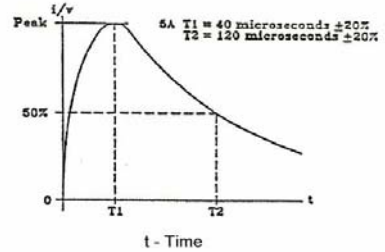
## RT100KP Series Rating and Installation



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  $\mu$ 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 $\mu$ S	PEAK PULSE POWER kW	Peak Pulse Current Conversion Factor * from Rated $I_{PP}$ at 6.4/69 $\mu$ 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 @ $V_{RWM}$ $I_R$ ( $\mu A$ )
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