

MDE Semiconductor, Inc.

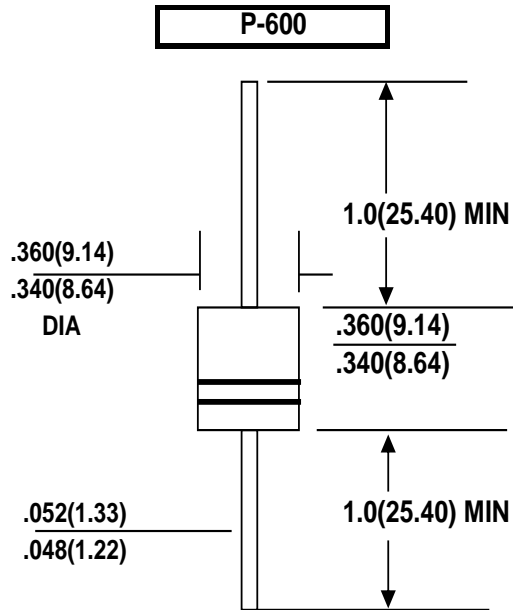
201 Shipyard Way, Unit C, Newport Beach, CA., USA 92663 Tel : 760-564-8656 • Fax : 760-564-2414
1-800-831-4881 Email: sales@mdesemiconductor.com Web: www.mdesemiconductor.com

MART100KP SERIES

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR VOLTAGE-28.0 TO 400 Volts 100000 Watt Peak Pulse Power

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Glass passivated junction
- 100000W Peak Pulse Power capability on 6.4/6.9µs 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
- 100KW Transient Voltage Suppressor (TVS) are designed for aircraft applications requiring high power transient protection. This includes various treats such as "Waveform 4" at 6.4/69 µs per RTCA/DO-160E Section 22



Dimensions in inches (millimeters)

MECHANICAL DATA

Case: Molded plastic over glass passivated junction
Terminals: Matte Tin Plated 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 MART100KP28 thru types MART1000KP400
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 6.4/6.9µs waveform	P _{PPM}	Minimum 100000	Watts
Peak Pulse Current of on 6.4/69µs waveform	I _{PPM}	SEE TABLE 1	Amps
Steady State Power Dissipation at Tl=75 °C Lead Lengths.375", (9.5mm)	P _{M(AV)}	8.0	Watts
Peak Forward Surge Current, 8.3ms Sine-Wave Superimposed on Rated Load, (JEDEC Method)	I _{FSM}	400.0	Amps
Operatings and Storage Temperature Range	T _J , T _{STG}	-55 to +175	°C

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100000 Watt TVS

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 (μ A)
MART100KP28A	MART100KP28CA	28.00	31.28	50	58.0	1715.0	5000
MART100KP30A	MART100KP30CA	30.00	33.51	50	64.0	1553.0	5000
MART100KP33A	MART100KP33CA	33.00	36.9	50	67.8	1463.0	5000
MART100KP36A	MART100KP36CA	36.00	40.2	50	71.7	1387.0	5000
MART100KP39A	MART100KP39CA	39.00	43.6	20	77.7	1275.0	2000
MART100KP42A	MART100KP42CA	42.00	46.9	10	83.5	1190.0	1000
MART100KP43A	MART100KP43CA	43.00	48.0	10	84.5	1184.0	1000
MART100KP45A	MART100KP45CA	45.00	50.3	5	88.5	1130.0	250
MART100KP48A	MART100KP48CA	48.00	53.6	5	94.3	1061.0	150
MART100KP51A	MART100KP51CA	51.00	57.0	5	101.0	990.0	50
MART100KP54A	MART100KP54CA	54.00	60.3	5	106.0	943.0	20
MART100KP58A	MART100KP58CA	58.00	64.8	5	114.0	878.0	20
MART100KP60A	MART100KP60CA	60.00	67.0	5	118.0	848.0	15
MART100KP64A	MART100KP64CA	64.00	71.5	5	126.0	795.0	10
MART100KP66A	MART100KP66CA	66.00	73.7	5	128.4	776.0	10
MART100KP70A	MART100KP70CA	70.00	78.2	5	138.0	725.0	10
MART100KP71A	MART100KP71CA	71.00	79.3	5	133.0	723.0	10
MART100KP72A	MART100KP72CA	72.00	80.4	5	136.8	708.0	10
MART100KP75A	MART100KP75CA	75.00	83.8	5	147.0	680.0	10
MART100KP78A	MART100KP78CA	78.00	87.1	5	153.0	655.0	10
MART100KP84A	MART100KP84CA	84.00	93.8	5	167.0	579.0	10
MART100KP90A	MART100KP90CA	90.00	100.5	5	178.0	563.0	10
MART100KP96A	MART100KP96CA	96.00	107.2	5	187.0	516.0	10
MART100KP102A	MART100KP102CA	102.00	113.9	5	198.0	487.0	10
MART100KP108A	MART100KP108CA	108.00	120.6	5	210.0	460.0	10
MART100KP120A	MART100KP120CA	120.00	134.0	5	235.0	426.0	10
MART100KP132A	MART100KP132CA	132.00	147.4	5	256.0	378.0	10
MART100KP144A	MART100KP144CA	144.00	160.8	5	267.0	361.0	10
MART100KP150A	MART100KP150CA	150.00	167.6	5	296.0	338.0	10
MART100KP156A	MART100KP156CA	156.00	174.3	5	306.0	328.0	10
MART100KP160A	MART100KP160CA	160.00	178.7	5	315.0	318.0	10
MART100KP168A	MART100KP168CA	168.00	187.7	5	326.0	314.0	10
MART100KP170A	MART100KP170CA	170.00	189.9	5	334.0	300.0	10
MART100KP180A	MART100KP180CA	180.00	201.1	5	354.0	283.0	10
MART100KP198A	MART100KP198CA	198.00	221.2	5	382.0	267.0	10
MART100KP216A	MART100KP216CA	216.00	241.3	5	417.0	245.0	10
MART100KP240A	MART100KP240CA	240.00	268.1	5	460.0	221.0	10
MART100KP258A	MART100KP258CA	258.00	288.2	5	510.0	198.0	10
MART100KP260A	MART100KP260CA	260.00	290.4	5	512.0	196.0	10
MART100KP270A	MART100KP270CA	270.00	301.6	5	523.0	184.0	10
MART100KP280A	MART100KP280CA	280.00	312.8	5	552.0	181.0	10
MART100KP288A	MART100KP288CA	288.00	321.7	5	563.0	177.0	10
MART100KP300A	MART100KP300CA	300.00	333.0	5	590.0	170.0	10
MART100KP350A	MART100KP350CA	350.00	389.0	5	690.0	145.0	10
MART100KP400A	MART100KP400CA	400.00	444.0	5	787.0	127.0	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

8/11/2020

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MRT100KP Series Rating and Characteristic Curves

Fig. 1 - Peak Pulse Power Rating Curve

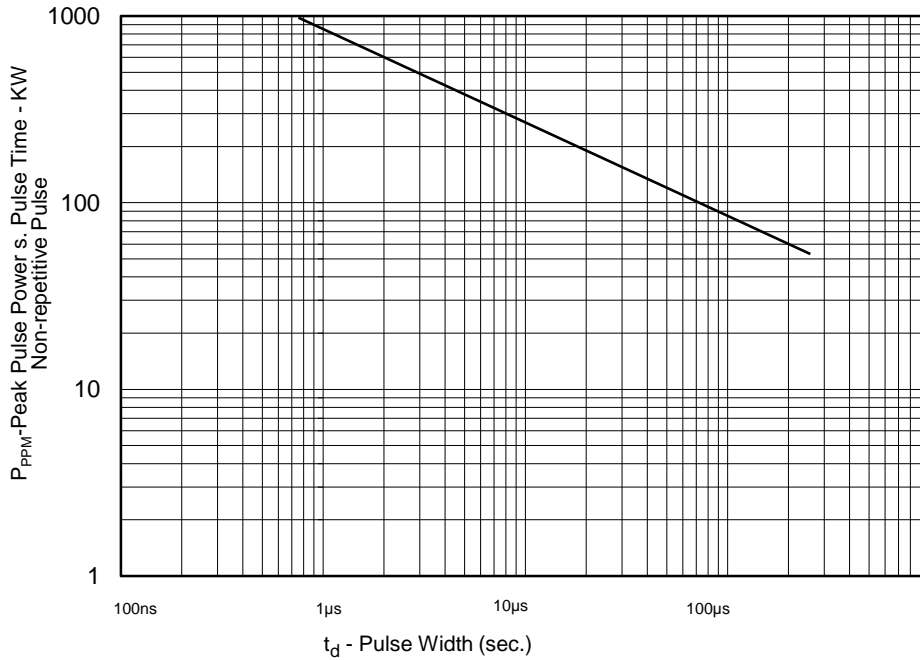
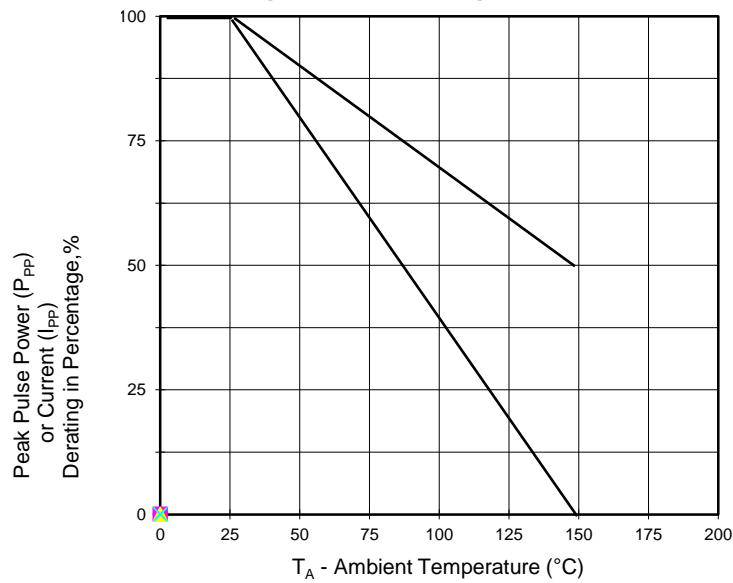


Fig.2 - Pulse Derating Curve



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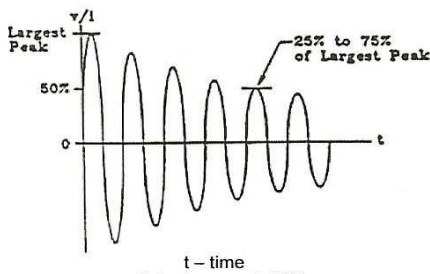


FIGURE 7 – Waveform 3

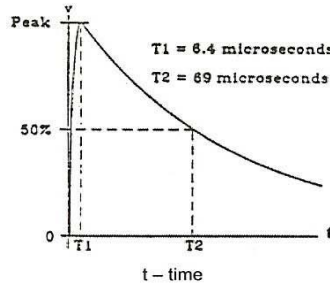


FIGURE 8 – Waveform 4

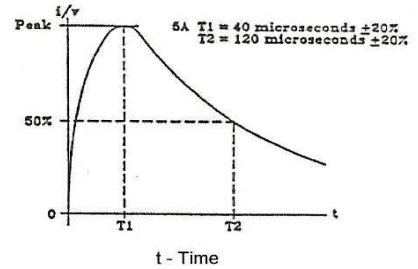


FIGURE 9 – Waveform 5A

Note: The 1 Mhz 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 the RTCA/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.

UPSCREENING

The specific screening flow for MART100KP upscreening includes the following process steps on the finished product.

- Temperature Cycling: 10 cycles, -55 to +150 deg C
- 100% surge testing: 3 times(each direction for bidirectional)
- High Temp Reverse Bias: 24 hours (each direction for bidirectional)