

MDE Semiconductor, Inc.

78-150 Calle Tampico, Unit 210, La Quinta, CA. U.S.A. 92253 Tel: 760-564-8656 • Fax: 760-564-2414

1-800-831-4881 Email: sales@mdesemiconductor.com Web: www.mdesemiconductor.com

MAX™ 20 Series

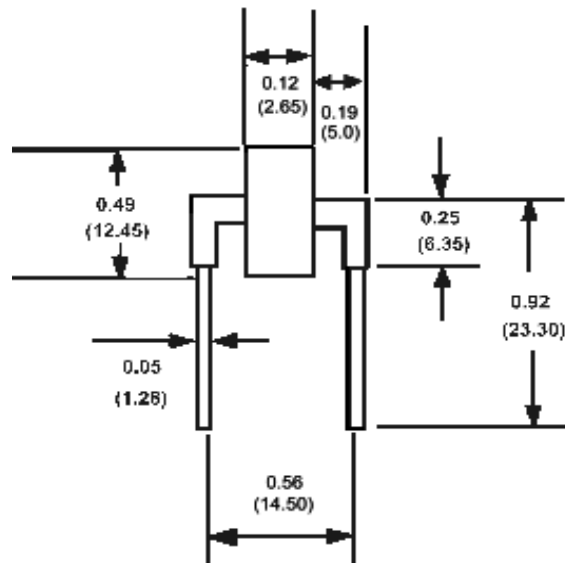
HIGH CURRENT TRANSIENT VOLTAGE SUPPRESSOR (TVS) DIODE

VOLTAGE - 5.0 to 150.0 Volts

20000 Watt Peak Pulse Power

FEATURES

- Glass passivated junction
- Bidirectional
- 20000W Peak Pulse Power capability on 10/1000 μ sec waveform
- Excellent clamping capability
- Repetition rate (duty cycle):0.05%
- Sharp breakdown voltage
- Low incremental surge resistance
- Fast response time: typically less than 1.0 ps from 0 volts to BV
- Typical IR less than 20 μ A above 10V
- High temperature soldering performance.



**Dimensions in inches
and
(Millimeters)**

MECHANICAL DATA

Terminals: Ag Plated Axial leads, solderable per MIL-STD-750, Method 2026

Mounting Position: Any

Weight: 1.49 \pm 0.149g (0.053 \pm 0.005 ounces)

DEVICES FOR BIPOLAR APPLICATIONS

Bidirectional use C or CA Suffix. 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 10x1000 μ sec waveform | Pppm | Minimum 20000 | Watts |
| Peak Pulse Current of on 10-1000 μ sec waveform | Ippm | SEE CURVE | Amps |

8/6/2002

MAXPak™ Series Curves

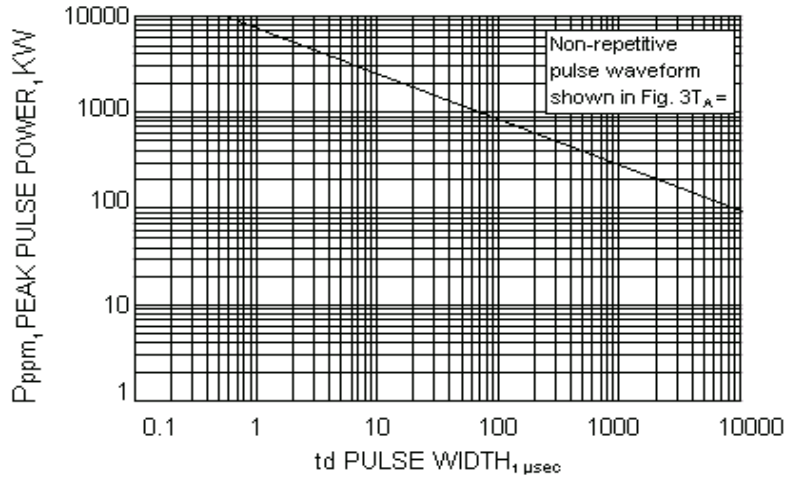


FIG. 1 PEAK PULSE POWER RATING

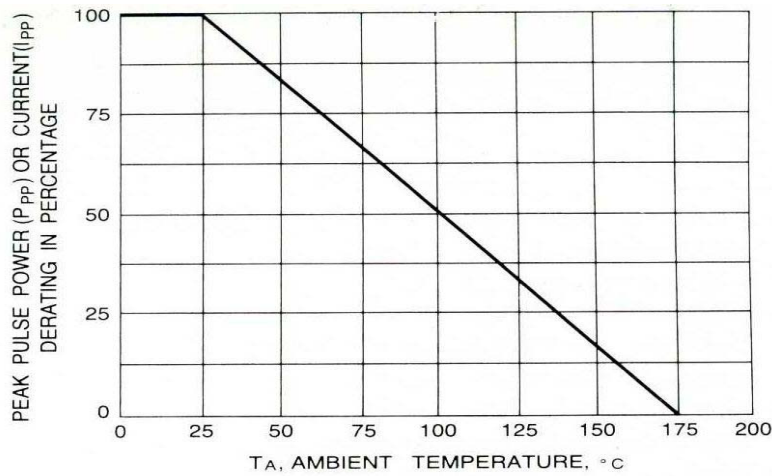


FIGURE 2-PULSE DERATING CURVE

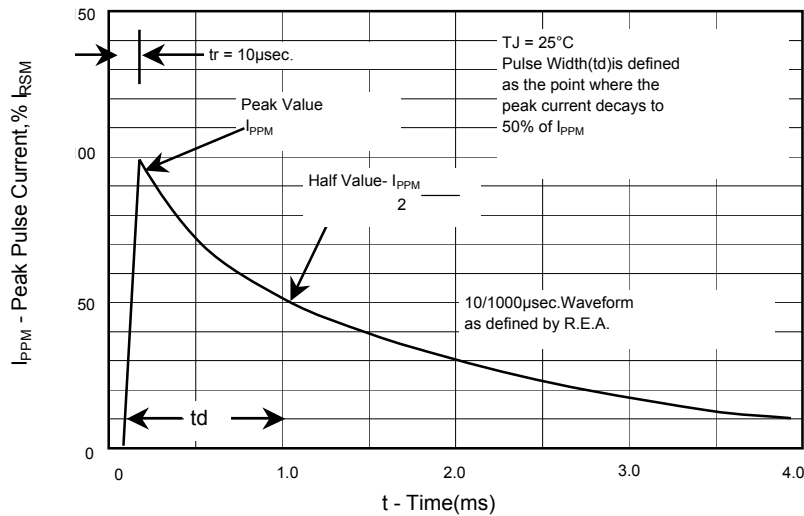


Fig.3 - Pulse Waveform

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MAX-20™ Series

| BI-DIRECTIONAL PART NUMBER | REVERSE STAND-OFF VOLTAGE VRWM(V) | BREAKDOWN VOLTAGE VBR(V) MIN@IT | BREAKDOWN VOLTAGE VBR(V) MAX@IT | TEST CURRENT IT (mA) | MAXIMUM CLAMPING VOLTAGE @Ipp Vc (V) | PEAK PULSE CURRENT IPP(A) | REVERSE LEAKAGE @VRWM IR(µA) |
|-------------------------------|--|--|--|-------------------------------|---|------------------------------------|---------------------------------------|
| MAX 20-5.0C | 5.00 | 6.40 | 7.30 | 50 | 9.6 | 2083.30 | 5000 |
| MAX 20-5.0CA | 5.00 | 6.40 | 7.00 | 50 | 9.2 | 2173.90 | 5000 |
| MAX 20-6.0C | 6.00 | 6.67 | 8.15 | 50 | 11.4 | 1754.40 | 5000 |
| MAX 20-6.0CA | 6.00 | 6.67 | 7.37 | 50 | 10.3 | 1941.70 | 5000 |
| MAX 20-6.5C | 6.50 | 7.22 | 8.82 | 50 | 12.3 | 1626.00 | 5000 |
| MAX 20-6.5CA | 6.50 | 7.22 | 7.98 | 50 | 11.2 | 1785.70 | 5000 |
| MAX 20-7.0C | 7.00 | 7.78 | 9.51 | 50 | 13.3 | 1503.80 | 2000 |
| MAX 20-7.0CA | 7.00 | 7.78 | 8.60 | 50 | 12.0 | 1666.70 | 2000 |
| MAX 20-7.5C | 7.50 | 8.33 | 10.20 | 5.0 | 14.3 | 1398.60 | 500 |
| MAX 20-7.5CA | 7.50 | 8.33 | 9.21 | 5.0 | 12.9 | 1550.40 | 500 |
| MAX 20-8.0C | 8.00 | 8.89 | 10.90 | 5.0 | 15.0 | 1333.30 | 200 |
| MAX 20-8.0CA | 8.00 | 8.89 | 9.83 | 5.0 | 13.6 | 1470.60 | 200 |
| MAX 20-8.5C | 8.50 | 9.44 | 11.50 | 5.0 | 15.9 | 1257.90 | 50 |
| MAX 20-8.5CA | 8.50 | 9.44 | 10.40 | 5.0 | 14.4 | 1388.90 | 50 |
| MAX 20-9.0C | 9.00 | 10.00 | 12.20 | 5.0 | 16.9 | 1183.40 | 20 |
| MAX 20-9.0CA | 9.00 | 10.00 | 11.10 | 5.0 | 15.4 | 1298.70 | 20 |
| MAX 20-10.0C | 10.00 | 11.10 | 13.60 | 5.0 | 18.8 | 1063.80 | 20 |
| MAX 20-10.0CA | 10.00 | 11.10 | 12.30 | 5.0 | 17.0 | 1176.50 | 20 |
| MAX 20-11.0C | 11.00 | 12.20 | 14.90 | 5.0 | 20.1 | 995.02 | 20 |
| MAX 20-11.0CA | 11.00 | 12.20 | 13.50 | 5.0 | 18.2 | 1098.90 | 20 |
| MAX 20-12.0C | 12.00 | 13.30 | 16.30 | 5.0 | 22.0 | 909.09 | 20 |
| MAX 20-12.0CA | 12.00 | 13.30 | 14.70 | 5.0 | 19.9 | 1005.00 | 20 |
| MAX 20-13.0C | 13.00 | 14.40 | 17.60 | 5.0 | 23.8 | 840.34 | 20 |
| MAX 20-13.0CA | 13.00 | 14.40 | 15.90 | 5.0 | 21.5 | 930.23 | 20 |
| MAX 20-14.0C | 14.00 | 15.60 | 19.10 | 5.0 | 25.8 | 775.19 | 20 |
| MAX 20-14.0CA | 14.00 | 15.60 | 17.20 | 5.0 | 23.2 | 862.07 | 20 |
| MAX 20-15.0C | 15.00 | 16.70 | 20.40 | 5.0 | 26.9 | 743.49 | 20 |
| MAX 20-15.0CA | 15.00 | 16.70 | 18.50 | 5.0 | 24.4 | 819.67 | 20 |
| MAX 20-16.0C | 16.00 | 17.80 | 21.80 | 5.0 | 28.8 | 694.44 | 20 |
| MAX 20-16.0CA | 16.00 | 17.80 | 19.70 | 5.0 | 26.0 | 769.23 | 20 |
| MAX 20-17.0C | 17.00 | 18.90 | 23.10 | 5.0 | 30.5 | 655.74 | 20 |
| MAX 20-17.0CA | 17.00 | 18.90 | 20.90 | 5.0 | 27.6 | 724.64 | 20 |
| MAX 20-18.0C | 18.00 | 20.00 | 24.40 | 5.0 | 32.2 | 621.12 | 20 |
| MAX 20-18.0CA | 18.00 | 20.00 | 22.10 | 5.0 | 29.2 | 684.93 | 20 |
| MAX 20-20.0C | 20.00 | 22.20 | 27.10 | 5.0 | 35.8 | 558.66 | 20 |
| MAX 20-20.0CA | 20.00 | 22.20 | 24.50 | 5.0 | 32.4 | 617.28 | 20 |
| MAX 20-22.0C | 22.00 | 24.40 | 29.80 | 5.0 | 39.4 | 507.51 | 20 |
| MAX 20-22.0CA | 22.00 | 24.40 | 26.90 | 5.0 | 35.5 | 563.38 | 20 |
| MAX 20-24.0C | 24.00 | 26.70 | 32.60 | 5.0 | 43.0 | 465.12 | 20 |
| MAX 20-24.0CA | 24.00 | 26.70 | 29.50 | 5.0 | 38.9 | 514.14 | 20 |
| MAX 20-26.0C | 26.00 | 28.90 | 35.30 | 5.0 | 46.6 | 429.18 | 20 |
| MAX 20-26.0CA | 26.00 | 28.90 | 31.90 | 5.0 | 42.1 | 475.06 | 20 |
| MAX 20-28.0C | 28.00 | 31.10 | 38.00 | 5.0 | 50.1 | 399.20 | 20 |
| MAX 20-28.0CA | 28.00 | 31.10 | 34.40 | 5.0 | 45.4 | 440.53 | 20 |

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|-------------------------------|--|--|--|-------------------------------|---|------------------------------------|---------------------------------------|
| MAX 20-30.0C | 30.00 | 33.30 | 40.70 | 5.0 | 53.5 | 373.83 | 20 |
| MAX 20-30.0CA | 30.00 | 33.30 | 36.80 | 5.0 | 48.4 | 413.22 | 20 |
| MAX 20-33.0C | 33.00 | 36.70 | 44.90 | 5.0 | 59.0 | 338.98 | 20 |
| MAX 20-33.0CA | 33.00 | 36.70 | 40.60 | 5.0 | 53.3 | 375.23 | 20 |
| MAX 20-36.0C | 36.00 | 40.00 | 48.90 | 5.0 | 64.3 | 311.04 | 20 |
| MAX 20-36.0CA | 36.00 | 40.00 | 44.20 | 5.0 | 58.1 | 344.23 | 20 |
| MAX 20-40.0C | 40.00 | 44.40 | 54.30 | 5.0 | 71.4 | 280.11 | 20 |
| MAX 20-40.0CA | 40.00 | 44.40 | 49.10 | 5.0 | 64.5 | 310.08 | 20 |
| MAX 20-43.0C | 43.0 | 47.80 | 58.40 | 5.0 | 76.7 | 260.76 | 20 |
| MAX 20-43.0CA | 43.0 | 47.80 | 52.80 | 5.0 | 69.4 | 288.18 | 20 |
| MAX 20-45.0C | 45.0 | 50.00 | 61.10 | 5.0 | 80.3 | 249.07 | 20 |
| MAX 20-45.0CA | 45.0 | 50.00 | 55.30 | 5.0 | 72.7 | 275.10 | 20 |
| MAX 20-48.0C | 48.0 | 53.30 | 65.20 | 5.0 | 85.5 | 233.92 | 20 |
| MAX 20-48.0CA | 48.0 | 53.30 | 58.90 | 5.0 | 77.4 | 258.40 | 20 |
| MAX 20-51.0C | 51.0 | 56.70 | 69.30 | 5.0 | 91.1 | 219.54 | 20 |
| MAX 20-51.0CA | 51.0 | 56.70 | 62.70 | 5.0 | 82.4 | 242.72 | 20 |
| MAX 20-54.0C | 54.0 | 60.00 | 73.30 | 5.0 | 96.3 | 207.68 | 20 |
| MAX 20-54.0CA | 54.0 | 60.00 | 66.30 | 5.0 | 87.1 | 229.62 | 20 |
| MAX 20-58.0C | 58.0 | 64.40 | 78.70 | 5.0 | 103.0 | 194.17 | 20 |
| MAX 20-58.0CA | 58.0 | 64.40 | 71.20 | 5.0 | 93.6 | 213.68 | 20 |
| MAX 20-60.0C | 60.0 | 66.70 | 81.50 | 5.0 | 107.0 | 186.92 | 20 |
| MAX 20-60.0CA | 60.0 | 66.70 | 73.70 | 5.0 | 96.8 | 206.61 | 20 |
| MAX 20-64.0C | 64.0 | 71.10 | 86.90 | 5.0 | 114.0 | 175.44 | 20 |
| MAX 20-64.0CA | 64.0 | 71.10 | 78.60 | 5.0 | 103.0 | 194.17 | 20 |
| MAX 20-70.0C | 70.0 | 77.80 | 95.10 | 5.0 | 125.0 | 160.00 | 20 |
| MAX 20-70.0CA | 70.0 | 77.80 | 86.00 | 5.0 | 113.0 | 176.99 | 20 |
| MAX 20-75.0C | 75.0 | 83.30 | 102.00 | 5.0 | 134.0 | 149.25 | 20 |
| MAX 20-75.0CA | 75.0 | 83.30 | 92.10 | 5.0 | 121.0 | 165.29 | 20 |
| MAX 20-78.0C | 78.0 | 86.70 | 106.00 | 5.0 | 139.0 | 143.88 | 20 |
| MAX 20-78.0CA | 78.0 | 86.70 | 95.80 | 5.0 | 126.0 | 158.73 | 20 |
| MAX 20-85.0C | 85.0 | 94.40 | 115.00 | 5.0 | 151.0 | 132.45 | 20 |
| MAX 20-85.0CA | 85.0 | 94.40 | 104.00 | 5.0 | 137.0 | 145.99 | 20 |
| MAX 20-90.0C | 90.0 | 100.00 | 122.00 | 5.0 | 160.0 | 125.00 | 20 |
| MAX 20-90.0CA | 90.0 | 100.00 | 111.00 | 5.0 | 146.0 | 136.99 | 20 |
| MAX 20-100.0C | 100.0 | 111.00 | 136.00 | 5.0 | 179.0 | 111.73 | 20 |
| MAX 20-100.0CA | 100.0 | 111.00 | 123.00 | 5.0 | 162.0 | 123.46 | 20 |
| MAX 20-110.0C | 110.0 | 122.00 | 149.00 | 5.0 | 196.0 | 102.04 | 20 |
| MAX 20-110.0CA | 110.0 | 122.00 | 135.00 | 5.0 | 177.0 | 112.99 | 20 |
| MAX 20-120.0C | 120.0 | 133.00 | 163.00 | 5.0 | 214.0 | 93.458 | 20 |
| MAX 20-120.0CA | 120.0 | 133.00 | 147.00 | 5.0 | 193.0 | 103.63 | 20 |
| MAX 20-130.0C | 130.0 | 144.00 | 176.00 | 5.0 | 230.0 | 86.957 | 20 |
| MAX 20-130.0CA | 130.0 | 144.00 | 159.00 | 5.0 | 209.0 | 95.694 | 20 |
| MAX 20-150.0C | 150.0 | 167.00 | 204.00 | 5.0 | 268.0 | 74.627 | 20 |
| MAX 20-150.0CA | 150.0 | 167.00 | 185.00 | 5.0 | 243.0 | 82.305 | 20 |

For Bidirectional type having Vrwm of 10 volts and less, the ID limit is double.

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