

# 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

## 1.5KE SERIES

### GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

**VOLTAGE- 6.8 TO 550 Volts**

**1500 Watt Peak Power 5.0 Watt Steady State**

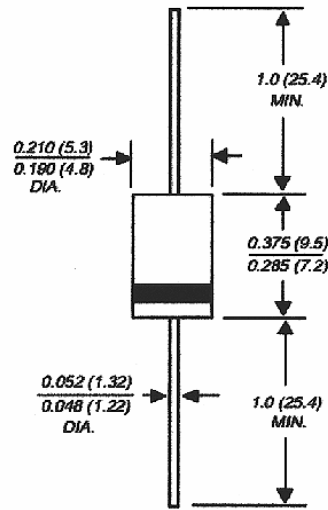
#### FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94 V-O
- Glass passivated chip junction in Molded Plastic package
- 1500W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Fast response time: typically less than 1.0 ps from 0 volts to BV min.
- Typical IR less than 1µA above 10V
- High temperature soldering guaranteed: 250°C/10 seconds/ .375", (9.5mm) lead length, 5lbs., (2.3kg) tension

#### MECHANICAL DATA

Case: JEDEC DO-201 Molded plastic  
 Terminals: Plated Axial leads, solderable per MIL-STD-750, Method 2026  
 Polarity: Color band denoted positive end (cathode) except Bipolar  
 Mounting Position: Any  
 Weight: 0.045 ounces, 1.2 grams

#### DO-201



*Dimensions in inches and (millimeters)*

#### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types 1.5KE6.80 thru types 1.5KE550 (e.g. 1.5KE6.8C, 1.5KE550CA)

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 at TA = 25 °C, TP = 1ms (NOTE 1)  | P <sub>PPM</sub>                  | Minimum 1500 | Watts |
| Peak Pulse Current of on 10/1000 µs waveform (Note 1)  | I <sub>PPM</sub>                  | SEE TABLE 1  | Amps  |
| Steady State Power Dissipation at TL = 75°C<br>Lead lengths .375", 9.5mm (Note 2)                          | P <sub>M(AV)</sub>                | 6.5          | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method)(Note 3) | I <sub>FSM</sub>                  | 200          | Amps  |
| Operating and Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub> | -55 +175     | °C    |

**NOTES:**

1. Non-repetitive current pulse, per Fig.3 and derated above Ta=25 °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.

Certified RoHS Compliant

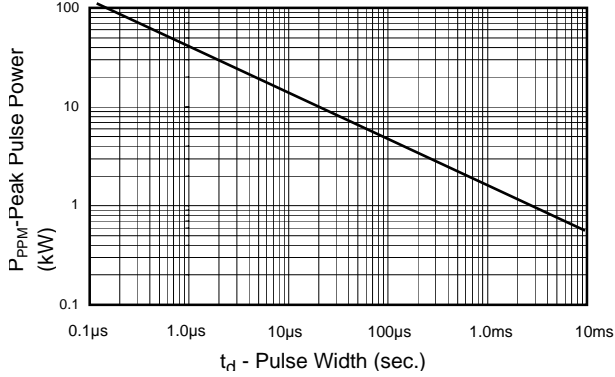
UL File # E223026

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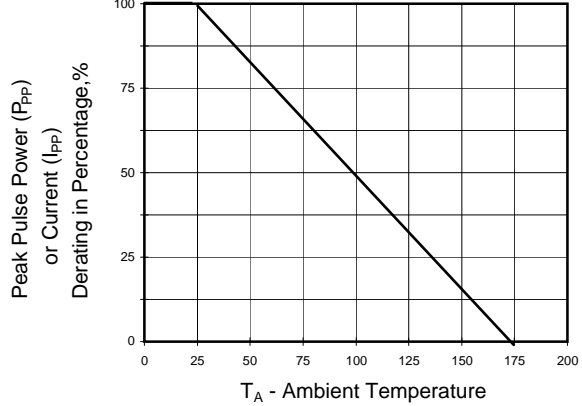
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## RATING AND CHARACTERISTIC CURVES 1.5KE SERIES

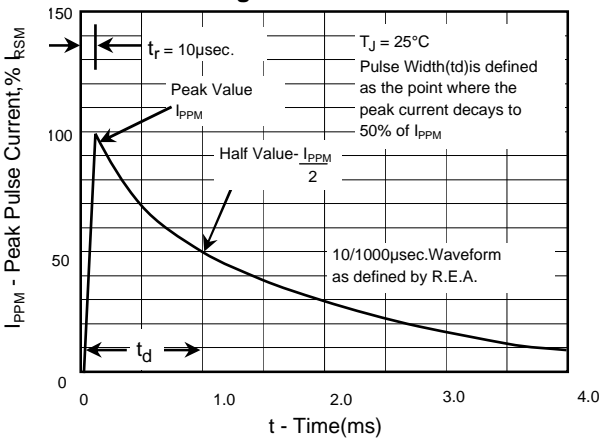
**Fig. 1 - Peak Pulse Power Rating Curve**



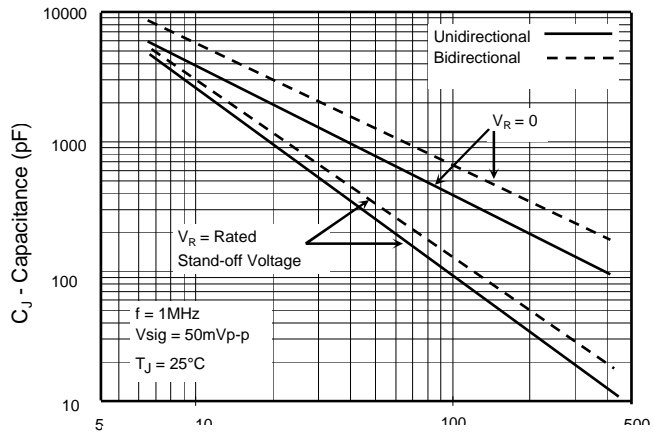
**Fig. 2 - Pulse Derating Curve**



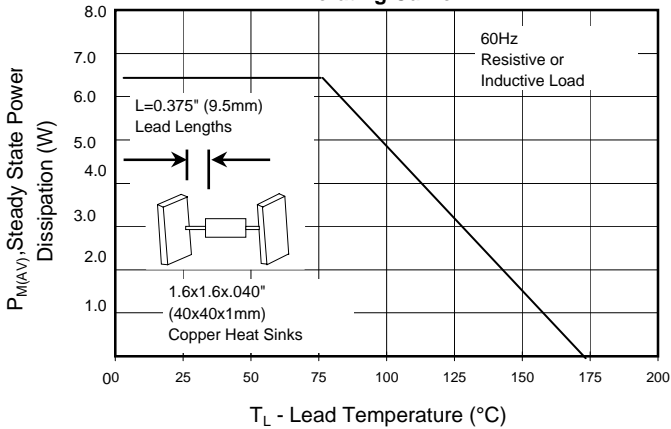
**Fig. 3 - Pulse Waveform**



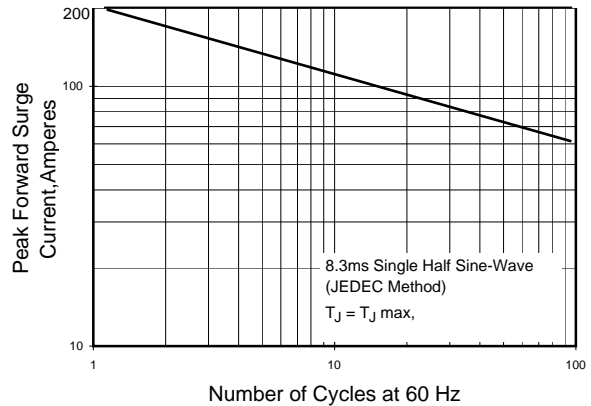
**Fig. 4 - Typical Junction Capacitance**



**Fig. 5 - Steady State Power Derating Curve**



**Fig. 6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Use Only**



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## 1500 Watt TVS

| UNI-POLAR | BI-POLAR   | REVERSE<br>STANDOFF<br>VOLTAGE<br>$V_{RWM}$ (V) | BREAKDOWN<br>VOLTAGE<br>$V_{BR}$ (V)<br>MIN. @ $I_T$ | BREAKDOWN<br>VOLTAGE<br>$V_{BR}$ (V)<br>MAX. @ $I_T$ | TEST<br>CURRENT<br>( $I_T$ )<br>mA | MAXIMUM<br>CLAMPING<br>VOLTAGE @ $I_{PP}$<br>$V_C$ (V) | PEAK<br>PULSE<br>CURRENT<br>$I_{PP}$ (A) | REVERSE<br>LEAKAGE<br>@ $V_{RWM}$<br>$I_R$ ( $\mu$ A) |
|-----------|------------|---|--|--|------------------------------------|--|--|---|
| 1.5KE6.8A | 1.5KE6.8CA | 5.80  | 6.45   | 7.14   | 10                                 | 10.5   | 144.8                                    | 1000  |
| 1.5KE7.5A | 1.5KE7.5CA | 6.40  | 7.13   | 7.88   | 10                                 | 11.3   | 134.5                                    | 500   |
| 1.5KE8.2A | 1.5KE8.2CA | 7.02  | 7.79   | 8.61   | 10                                 | 12.1   | 125.6                                    | 200   |
| 1.5KE9.1A | 1.5KE9.1CA | 7.78  | 8.65   | 9.50   | 10                                 | 13.4   | 113.4                                    | 50  |
| 1.5KE10A  | 1.5KE10CA  | 8.55  | 9.50   | 10.50  | 1                                  | 14.5   | 104.8                                    | 10  |
| 1.5KE11A  | 1.5KE11CA  | 9.40  | 10.50  | 11.60  | 1                                  | 15.6   | 97.4                                     | 5   |
| 1.5KE12A  | 1.5KE12CA  | 10.20   | 11.40  | 12.60  | 1                                  | 16.7   | 91.0                                     | 5   |
| 1.5KE13A  | 1.5KE13CA  | 11.10   | 12.40  | 13.70  | 1                                  | 18.2   | 83.5                                     | 5   |
| 1.5KE15A  | 1.5KE15CA  | 12.80   | 14.30  | 15.80  | 1                                  | 21.2   | 71.7                                     | 5   |
| 1.5KE16A  | 1.5KE16CA  | 13.60   | 15.20  | 16.80  | 1                                  | 22.5   | 67.6                                     | 5   |
| 1.5KE18A  | 1.5KE18CA  | 15.30   | 17.10  | 18.90  | 1                                  | 25.2   | 60.3                                     | 5   |
| 1.5KE20A  | 1.5KE20CA  | 17.10   | 19.00  | 21.00  | 1                                  | 27.7   | 54.9                                     | 5   |
| 1.5KE22A  | 1.5KE22CA  | 18.80   | 20.90  | 23.10  | 1                                  | 30.6   | 49.7                                     | 5   |
| 1.5KE24A  | 1.5KE24CA  | 20.50   | 22.80  | 25.20  | 1                                  | 33.2   | 45.8                                     | 5   |
| 1.5KE27A  | 1.5KE27CA  | 23.10   | 25.70  | 28.40  | 1                                  | 37.5   | 40.5                                     | 5   |
| 1.5KE30A  | 1.5KE30CA  | 25.60   | 28.50  | 31.50  | 1                                  | 41.4   | 36.7                                     | 5   |
| 1.5KE33A  | 1.5KE33CA  | 28.20   | 31.40  | 34.70  | 1                                  | 45.7   | 33.3                                     | 5   |
| 1.5KE36A  | 1.5KE36CA  | 30.80   | 34.20  | 37.80  | 1                                  | 49.9   | 30.5                                     | 5   |
| 1.5KE39A  | 1.5KE39CA  | 33.30   | 37.10  | 41.00  | 1                                  | 53.9   | 28.2                                     | 5   |
| 1.5KE43A  | 1.5KE43CA  | 36.80   | 40.90  | 45.20  | 1                                  | 59.3   | 25.6                                     | 5   |
| 1.5KE47A  | 1.5KE47CA  | 40.20   | 44.70  | 49.40  | 1                                  | 64.8   | 23.5                                     | 5   |
| 1.5KE51A  | 1.5KE51CA  | 43.60   | 48.50  | 53.60  | 1                                  | 70.1   | 21.7                                     | 5   |
| 1.5KE56A  | 1.5KE56CA  | 47.80   | 53.20  | 58.80  | 1                                  | 77.0   | 19.7                                     | 5   |
| 1.5KE62A  | 1.5KE62CA  | 53.00   | 58.90  | 65.10  | 1                                  | 85.0   | 17.9                                     | 5   |
| 1.5KE68A  | 1.5KE68CA  | 58.10   | 64.60  | 71.40  | 1                                  | 92.0   | 16.5                                     | 5   |
| 1.5KE75A  | 1.5KE75CA  | 64.10   | 71.30  | 78.80  | 1                                  | 103.0  | 14.8                                     | 5   |
| 1.5KE82A  | 1.5KE82CA  | 70.10   | 77.90  | 86.10  | 1                                  | 113.0  | 13.5                                     | 5   |
| 1.5KE91A  | 1.5KE91CA  | 77.80   | 86.50  | 95.50  | 1                                  | 125.0  | 12.2                                     | 5   |
| 1.5KE100A | 1.5KE100CA | 85.50   | 95.00  | 105.00   | 1                                  | 137.0  | 11.1                                     | 5   |
| 1.5KE110A | 1.5KE110CA | 94.00   | 105.00   | 116.00   | 1                                  | 152.0  | 10.0                                     | 5   |
| 1.5KE120A | 1.5KE120CA | 102.00  | 114.00   | 126.00   | 1                                  | 165.0  | 9.2                                      | 5   |
| 1.5KE130A | 1.5KE130CA | 111.00  | 124.00   | 137.00   | 1                                  | 179.0  | 8.5                                      | 5   |
| 1.5KE150A | 1.5KE150CA | 128.00  | 143.00   | 158.00   | 1                                  | 207.0  | 7.3                                      | 5   |
| 1.5KE160A | 1.5KE160CA | 136.00  | 152.00   | 168.00   | 1                                  | 219.0  | 6.9                                      | 5   |
| 1.5KE170A | 1.5KE170CA | 145.00  | 162.00   | 179.00   | 1                                  | 234.0  | 6.5                                      | 5   |
| 1.5KE180A | 1.5KE180CA | 154.00  | 171.00   | 189.00   | 1                                  | 246.0  | 6.2                                      | 5   |
| 1.5KE200A | 1.5KE200CA | 171.00  | 190.00   | 210.00   | 1                                  | 274.0  | 5.5                                      | 5   |
| 1.5KE220A | 1.5KE220CA | 185.00  | 209.00   | 231.00   | 1                                  | 328.0  | 4.6                                      | 5   |
| 1.5KE250A | 1.5KE250CA | 214.00  | 237.00   | 263.00   | 1                                  | 344.0  | 4.4                                      | 5   |
| 1.5KE300A | 1.5KE300CA | 256.00  | 285.00   | 315.00   | 1                                  | 414.0  | 3.7                                      | 5   |
| 1.5KE350A | 1.5KE350CA | 300.00  | 332.00   | 368.00   | 1                                  | 482.0  | 3.2                                      | 5   |
| 1.5KE400A | 1.5KE400CA | 342.00  | 380.00   | 420.00   | 1                                  | 548.0  | 2.8                                      | 5   |
| 1.5KE440A | 1.5KE440CA | 376.00  | 418.00   | 462.00   | 1                                  | 602.0  | 2.5                                      | 5   |
| 1.5KE480A | 1.5KE480CA | 408.00  | 456.00   | 504.00   | 1                                  | 658.0  | 2.3                                      | 5   |
| 1.5KE510A | 1.5KE510CA | 434.00  | 485.00   | 535.00   | 1                                  | 698.0  | 2.1                                      | 5   |
| 1.5KE530A | 1.5KE530CA | 450.00  | 503.50   | 556.50   | 1                                  | 725.0  | 2.1                                      | 5   |
| 1.5KE540A | 1.5KE540CA | 459.00  | 513.00   | 567.00   | 1                                  | 740.0  | 2.0                                      | 5   |
| 1.5KE550A | 1.5KE550CA | 467.00  | 522.50   | 577.50   | 1                                  | 760.0  | 2.0                                      | 5   |

For bidirectional type having  $V_{RWM}$  of 10 volts and less, the IR limit is double.  
For parts without A , the VBR is  $\pm 10\%$

Certified RoHS Compliant  
UL File # E223026