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May 2015

1V5KE6V8(C)A - 1V5KE440(C)A 1500 W Transient Voltage Suppressors

Features

- Glass-Passivated Junction
- 1500 W Peak Pulse Power Capability at 1.0 ms
- Excellent Clamping Capability
- Low Incremental Surge Resistance
- Fast Response Time; Typically
< 1.0 ps from 0 V to BV for Uni-directional,
5.0 ns for Bidirectional
- Typical I_R : 1.0 μ A Above 10 V
- UL Certified: UL #E258596
- Bi-directional Types Use CA Suffix
- Electrical Characteristics apply in both directions



DO-201AE

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ON UNIDIRECTIONAL DEVICES ONLY. NO
COLOR BAND ON BIDIRECTIONAL DEVICES.

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

| Symbol | Parameter | Value | Unit |
|-----------|--|-------------|------------------|
| P_{PPM} | Peak Pulse Power Dissipation $t_p = 1$ ms | 1500 | W |
| I_{PPM} | Peak Pulse Current | see table | A |
| I_{FSM} | Non-Repetitive Peak Forward Surge Current Superimposed on Rated Load (JEDEC Method) ⁽¹⁾ | 200 | A |
| T_{stg} | Storage Temperature Range | -55 to +175 | $^\circ\text{C}$ |
| T_J | Operating Junction Temperature | -55 to +175 | $^\circ\text{C}$ |

Note:

1. Measured on 8.3 ms single half-sine wave; duty cycle = 4 pulses per minute maximum.

Thermal Characteristics

| Symbol | Parameter | Value | Unit |
|--------|--|-------|------|
| P_D | Power Dissipation .375 inch lead length at $T_A = 75^\circ\text{C}$ | 5.0 | W |

1V5KE6V8(C)A - 1V5KE440(C)A — 1500 W Transient Voltage Suppressors

Electrical Characteristics

T_A = 25°C unless otherwise noted.

| Uni-directional Bi-directional (C) Device | Reverse Stand-Off Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} (V) | | Test Current I _T (mA) | Clamping Voltage at I _{PPM} V _C (V) | Peak Pulse Current I _{PPM} (A) | Reverse Leakage at V _{RWM} I _R (μA) ⁽²⁾ |
|---|---|---|-------|--|--|---|---|
| | | Min. | Max. | | | | |
| 1V5KE6V8(C)A | 5.80 | 6.45 | 7.14 | 10 | 10.5 | 143 | 1000 |
| 1V5KE7V5(C)A | 6.40 | 7.13 | 7.88 | 10 | 11.3 | 133 | 500 |
| 1V5KE8V2(C)A | 7.02 | 7.79 | 8.61 | 10 | 12.1 | 124 | 200 |
| 1V5KE9V1(C)A | 7.78 | 8.65 | 9.55 | 1 | 13.4 | 112 | 50 |
| 1V5KE10(C)A | 8.55 | 9.50 | 10.5 | 1 | 14.5 | 103 | 10 |
| 1V5KE11(C)A | 9.40 | 10.5 | 11.6 | 1 | 15.6 | 96.2 | 5 |
| 1V5KE12(C)A | 10.2 | 11.4 | 12.6 | 1 | 16.7 | 90.0 | 5 |
| 1V5KE13(C)A | 11.1 | 12.4 | 13.7 | 1 | 18.2 | 82.0 | 5 |
| 1V5KE15(C)A | 12.8 | 14.3 | 15.8 | 1 | 21.2 | 71.0 | 5 |
| 1V5KE16(C)A | 13.6 | 15.2 | 16.8 | 1 | 22.5 | 67.0 | 5 |
| 1V5KE18(C)A | 15.3 | 17.1 | 18.9 | 1 | 26.2 | 59.5 | 5 |
| 1V5KE20(C)A | 17.1 | 19.0 | 21.0 | 1 | 27.7 | 54.2 | 5 |
| 1V5KE22(C)A | 18.8 | 20.9 | 23.1 | 1 | 30.6 | 49.0 | 5 |
| 1V5KE24(C)A | 20.5 | 22.8 | 25.2 | 1 | 33.2 | 45.2 | 5 |
| 1V5KE27(C)A | 23.1 | 25.7 | 28.4 | 1 | 37.5 | 40.0 | 5 |
| 1V5KE30(C)A | 25.6 | 28.5 | 31.5 | 1 | 41.4 | 36.2 | 5 |
| 1V5KE33(C)A | 28.2 | 31.4 | 34.7 | 1 | 45.7 | 33.0 | 5 |
| 1V5KE36(C)A | 30.8 | 34.2 | 37.8 | 1 | 49.9 | 30.1 | 5 |
| 1V5KE39(C)A | 33.3 | 37.1 | 41.0 | 1 | 53.9 | 28.0 | 5 |
| 1V5KE43(C)A | 36.8 | 40.9 | 45.2 | 1 | 59.3 | 25.3 | 5 |
| 1V5KE47(C)A | 40.2 | 44.7 | 49.4 | 1 | 64.8 | 23.2 | 5 |
| 1V5KE51(C)A | 43.6 | 48.5 | 53.6 | 1 | 70.1 | 21.4 | 5 |
| 1V5KE56(C)A | 47.8 | 53.2 | 58.8 | 1 | 77.0 | 19.5 | 5 |
| 1V5KE62(C)A | 53.0 | 58.9 | 65.1 | 1 | 85.0 | 17.7 | 5 |
| 1V5KE68(C)A | 58.1 | 64.6 | 71.4 | 1 | 92.0 | 16.3 | 5 |
| 1V5KE75(C)A | 64.1 | 71.3 | 78.8 | 1 | 104.0 | 14.6 | 5 |
| 1V5KE82(C)A | 70.1 | 77.9 | 86.1 | 1 | 113.0 | 13.3 | 5 |
| 1V5KE91(C)A | 77.8 | 86.5 | 95.5 | 1 | 125.0 | 12.0 | 5 |
| 1V5KE100(C)A | 85.5 | 95.0 | 105.0 | 1 | 137.0 | 11.0 | 5 |
| 1V5KE110(C)A | 94.0 | 106.0 | 116.0 | 1 | 152.0 | 9.9 | 5 |
| 1V5KE120(C)A | 102.0 | 114.0 | 126.0 | 1 | 165.0 | 9.1 | 5 |
| 1V5KE130(C)A | 111.0 | 124.0 | 137.0 | 1 | 179.0 | 8.4 | 5 |
| 1V5KE150(C)A | 128.0 | 143.0 | 158.0 | 1 | 207.0 | 7.2 | 5 |
| 1V5KE160(C)A | 136.0 | 152.0 | 168.0 | 1 | 219.0 | 6.8 | 5 |

Electrical Characteristics (Continued)T_A = 25°C unless otherwise noted.

| Uni-directional Bi-directional (C) Device | Reverse Stand-Off Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} (V) | | Test Current I _T (mA) | Clamping Voltage at I _{PPM} V _C (V) | Peak Pulse Current I _{PPM} (A) | Reverse Leakage at V _{RWM} I _R (μA) ⁽²⁾ |
|---|---|---|-------|--|--|---|---|
| | | Min. | Max. | | | | |
| 1V5KE170(C)A | 145.0 | 162.0 | 179.0 | 1 | 234.0 | 6.4 | 5 |
| 1V5KE180(C)A | 154.0 | 171.0 | 189.0 | 1 | 246.0 | 6.1 | 5 |
| 1V5KE200(C)A | 171.0 | 190.0 | 210.0 | 1 | 274.0 | 5.5 | 5 |
| 1V5KE220(C)A | 185.0 | 209.0 | 231.0 | 1 | 328.0 | 4.6 | 5 |
| 1V5KE250(C)A | 214.0 | 237.0 | 263.0 | 1 | 344.0 | 4.5 | 5 |
| 1V5KE300(C)A | 256.0 | 285.0 | 315.0 | 1 | 414.0 | 3.8 | 5 |
| 1V5KE350(C)A | 300.0 | 333.0 | 368.0 | 1 | 482.0 | 3.2 | 5 |
| 1V5KE400(C)A | 342.0 | 380.0 | 420.0 | 1 | 548.0 | 2.8 | 5 |
| 1V5KE440(C)A | 376.0 | 418.0 | 462.0 | 1 | 602.0 | 2.6 | 5 |

Note:2. For bi-directional parts with V_{RWM} < 10 V, the I_R maximum limit is doubled.

Typical Performance Characteristics

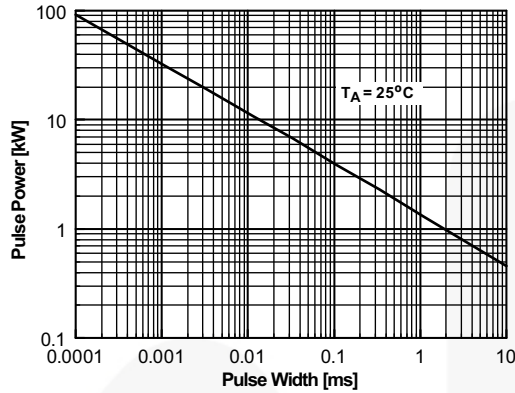


Figure 1. Peak Pulse Power Rating Curve

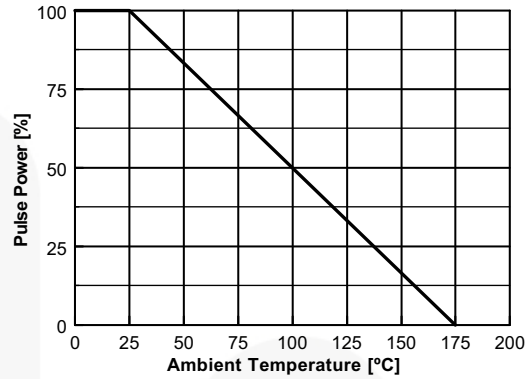


Figure 2. Pulse Derating Curve

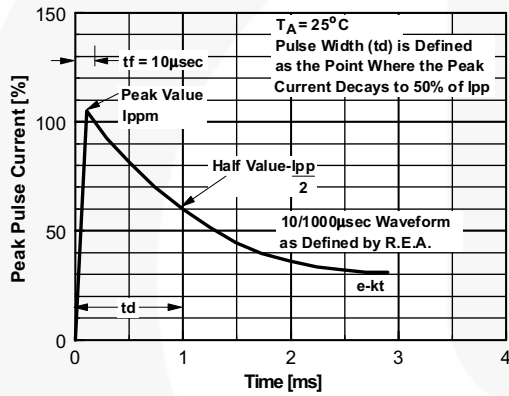


Figure 3. Pulse Waveform

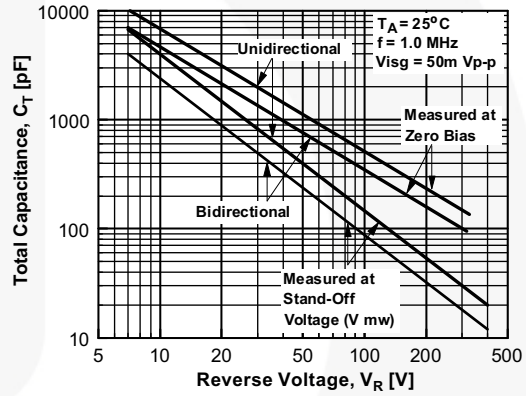


Figure 4. Total Capacitance

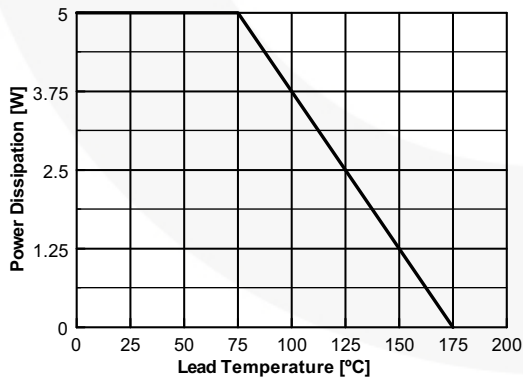


Figure 5. Steady State Power Derating Curve

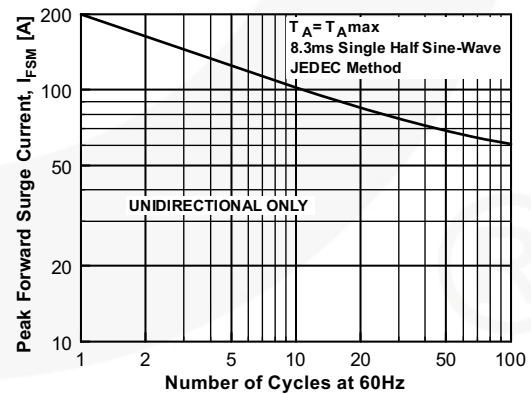
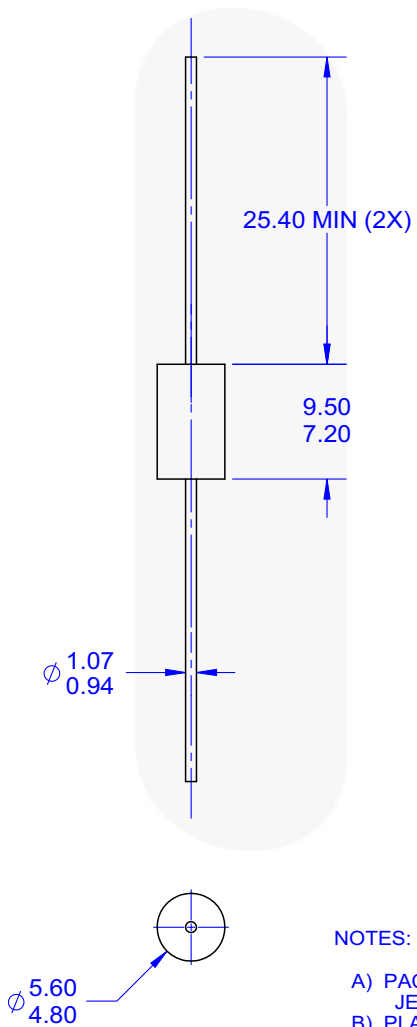


Figure 6. Non-Repetitive Surge Current

Physical Dimension



- NOTES: UNLESS OTHERWISE SPECIFIED
- A) PACKAGE STANDARD REFERENCE: JEDEC DO-201 VARIATION AE.
 - B) PLASTIC PACKAGE BODY.
 - C) ALL DIMENSIONS ARE IN MILLIMETERS.
 - D) DRAWING FILE NAME: DO201AREV1






Figure 7. AXIAL LEADED, JEDEC DO201AE





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