

# Transient Voltage Suppressors

## 1V5KE6V8(C)A - 1V5KE440(C)A

### Features

- Glass passivated junction.
- 1500W Peak Pulse Power capability at 1.0 ms.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0 ps from 0 volts to BV for unidirectional and 5.0 ns for bidirectional.
- Typical  $I_R$  less than 1.0  $\mu$ A above 10V.
- UL certified, UL #E210467.



**DO-201AE**

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

### DEVICES FOR BIPOLAR APPLICATIONS

- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

## 1500 Watt Transient Voltage Suppressors

### Absolute Maximum Ratings\*

$T_A = 25^\circ\text{C}$  unless otherwise noted

| Symbol    | Parameter                                                                                       | Value       | Units            |
|-----------|-------------------------------------------------------------------------------------------------|-------------|------------------|
| $P_{PPM}$ | Peak Pulse Power Dissipation at $T_P=1\text{ms}$                                                | 1500        | W                |
| $I_{PPM}$ | Peak Pulse Current                                                                              | see table   | A                |
| $P_D$     | Power Dissipation<br>.375 " lead length @ $T_A = 75^\circ\text{C}$                              | 5.0         | W                |
| $I_{FSM}$ | Non-repetitive Peak Forward Surge Current<br>superimposed on rated load (JEDEC method) (Note 1) | 200         | A                |
| $T_{stg}$ | Storage Temperature Range                                                                       | -55 to +175 | $^\circ\text{C}$ |
| $T_J$     | Operating Junction Temperature                                                                  | -55 to +175 | $^\circ\text{C}$ |

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**Note 1:** Measured on 8.3 ms single half-sine wave; Duty cycle = 4 pulses per minute maximum.

# Transient Voltage Suppressors

(continued)

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

| Uni-directional<br>Bi-directional (C)<br>Device | Reverse<br>Stand-off Voltage<br>$V_{RWM}$ (V) | Breakdown Voltage<br>$V_{BR}$ (V) |       | Test<br>Current<br>$I_T$ (mA) | Clamping<br>Voltage @ $I_{PPM}$<br>$V_C$ (V) | Peak Pulse Current<br>$I_{PPM}$ (A) | Reverse<br>Leakage $V_{RWM}$<br>$I_R$ (uA)* |
|-------------------------------------------------|-----------------------------------------------|-----------------------------------|-------|-------------------------------|----------------------------------------------|-------------------------------------|---------------------------------------------|
|                                                 |                                               | 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                                           |
| 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                                           |

\* For bidirectional parts with  $V_{RWM} < 10\text{V}$ , the  $I_R$  max limit is doubled.

1V5KE6V8(C)A - 1V5KE440(C)A

# Transient Voltage Suppressors (continued)

## Typical Characteristics

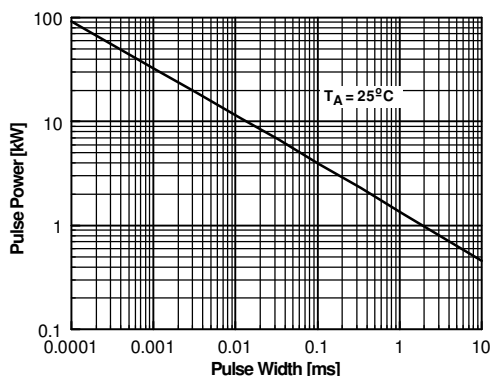


Figure 1. Peak Pulse Power Rating Curve

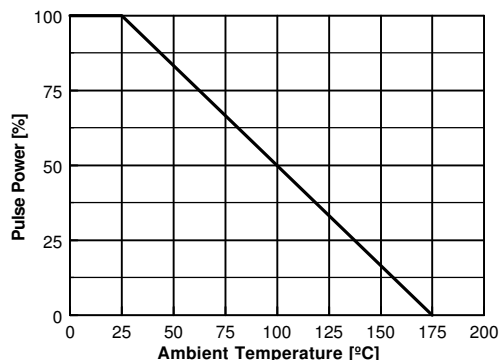


Figure 2. Pulse Derating Curve

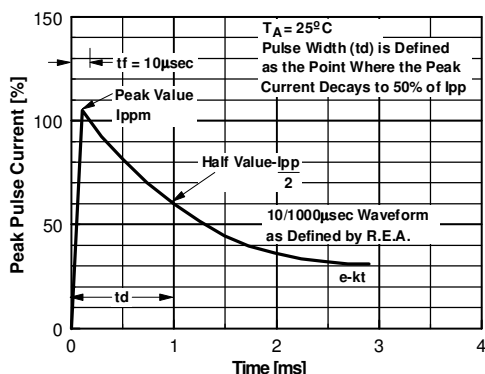


Figure 3. Pulse Waveform

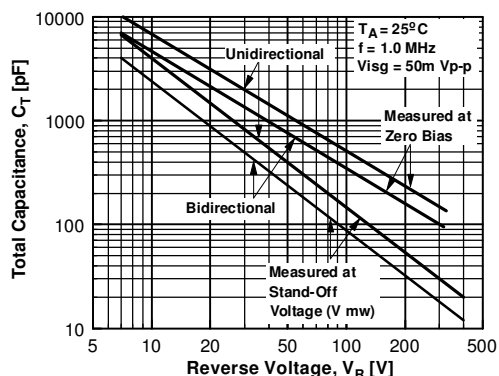


Figure 4. Total Capacitance

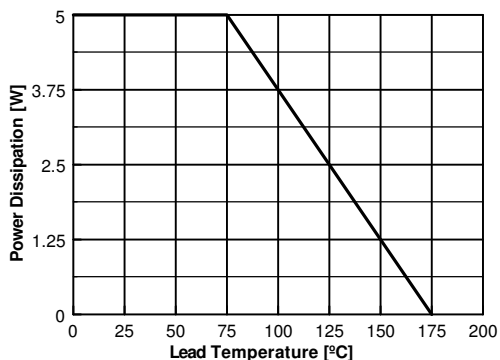


Figure 5. Steady State Power Derating Curve

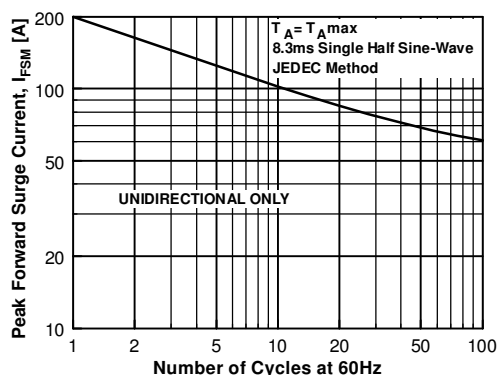


Figure 6. Non-Repetitive Surge Current

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