

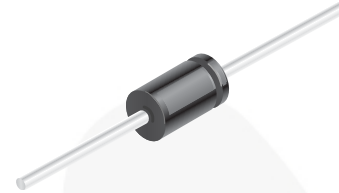
# P6KE6V8(C)A - P6KE440(C)A 600 W Transient Voltage Suppressors

## Features

- Glass-Passivated Junction
- 600 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 and 5.0 ns for Bi-directional
- Typical  $I_R < 1.0$  mA Above 10 V

## Applications

- Devices for Bipolar Applications
- Bi-directional Types Use CA Suffix
- Electrical Characteristics Apply in Both Directions



**DO-15**

COLOR BAND DENOTES CATHODE  
ON UNIDIRECTIONAL DEVICES ONLY. NO

## 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       | Units            |
|-----------|---|-------------|------------------|
| $P_{PPM}$ | Peak Pulse Power Dissipation at $t_P = 1$ ms  | 600         | W                |
| $I_{PPM}$ | Peak Pulse Current  | see table   | A                |
| $P_D$     | Power Dissipation<br>0.375-inch Lead Length at $T_A = 75^\circ\text{C}$                               | 5.0         | W                |
| $I_{FSM}$ | Non-Repetitive Peak Forward Surge Current<br>Superimposed on Rated Load (JEDEC Method) <sup>(1)</sup> | 100         | A                |
| $T_{stg}$ | Storage Temperature Range   | -65 to +175 | $^\circ\text{C}$ |
| $T_J$     | Operating Junction Temperature  | 175         | $^\circ\text{C}$ |

### Note:

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

## Electrical Characteristics

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Uni-directional<br>Bi-directional (C)<br>Device | Reverse<br>Stand-off Voltage<br>$V_{RWM}$ (V) | Breakdown<br>Voltage<br>$V_{BR}$ (V) |      | Test<br>Current<br>$I_T$ (mA) | Clamping<br>Voltage<br>@ $I_{PPM}$ $V_C$ (V) | Peak Pulse<br>Current<br>$I_{PPM}$ (A) | Reverse<br>Leakage<br>$V_{RWM}$<br>$I_R$ ( $\mu\text{A}$ ) <sup>(2)</sup> | Temperature<br>Coefficient<br>$V_{BR}$ (%/°C) |
|---|---|--------------------------------------|------|-------------------------------|--|--|---|---|
|   |   | Min.                                 | Max. |                               |  |  |   |   |
| P6KE6V8(C)A                                     | 5.80  | 6.45                                 | 7.14 | 10                            | 10.5   | 57.1                                   | 1000  | 0.057   |
| P6KE7V5(C)A                                     | 6.40  | 7.13                                 | 7.88 | 10                            | 11.3   | 53.1                                   | 500   | 0.061   |
| P6KE8V2(C)A                                     | 7.02  | 7.79                                 | 8.61 | 10                            | 12.1   | 50.0                                   | 200   | 0.065   |
| P6KE9V1(C)A                                     | 7.78  | 8.65                                 | 9.55 | 1                             | 13.4   | 45.0                                   | 50  | 0.068   |
| P6KE10(C)A                                      | 8.55  | 9.50                                 | 10.5 | 1                             | 14.5   | 41.0                                   | 10  | 0.073   |
| P6KE11(C)A                                      | 9.40  | 10.5                                 | 11.6 | 1                             | 15.6   | 38.0                                   | 5   | 0.075   |
| P6KE12(C)A                                      | 10.2  | 11.4                                 | 12.6 | 1                             | 16.7   | 36.0                                   | 5   | 0.078   |
| P6KE13(C)A                                      | 11.1  | 12.4                                 | 13.7 | 1                             | 18.2   | 33.0                                   | 5   | 0.081   |
| P6KE15(C)A                                      | 12.8  | 14.3                                 | 15.8 | 1                             | 21.2   | 28.0                                   | 5   | 0.084   |
| P6KE16(C)A                                      | 13.6  | 15.2                                 | 16.8 | 1                             | 22.5   | 27.0                                   | 5   | 0.086   |
| P6KE18(C)A                                      | 15.3  | 17.1                                 | 18.9 | 1                             | 25.2   | 24.0                                   | 5   | 0.088   |
| P6KE20(C)A                                      | 17.1  | 19.0                                 | 21.0 | 1                             | 27.7   | 22.0                                   | 5   | 0.090   |
| P6KE22(C)A                                      | 18.8  | 20.9                                 | 23.1 | 1                             | 30.6   | 20.0                                   | 5   | 0.092   |
| P6KE24(C)A                                      | 20.5  | 22.8                                 | 25.2 | 1                             | 33.2   | 18.1                                   | 5   | 0.094   |
| P6KE27(C)A                                      | 23.1  | 25.7                                 | 28.4 | 1                             | 37.5   | 16.0                                   | 5   | 0.096   |
| P6KE30(C)A                                      | 25.6  | 28.5                                 | 31.5 | 1                             | 41.4   | 14.5                                   | 5   | 0.097   |
| P6KE33(C)A                                      | 28.2  | 31.4                                 | 34.7 | 1                             | 45.7   | 13.2                                   | 5   | 0.098   |
| P6KE36(C)A                                      | 30.8  | 34.2                                 | 37.8 | 1                             | 49.9   | 12.0                                   | 5   | 0.099   |
| P6KE39(C)A                                      | 33.3  | 37.1                                 | 41.0 | 1                             | 53.9   | 11.2                                   | 5   | 0.100   |
| P6KE43(C)A                                      | 36.8  | 40.9                                 | 45.2 | 1                             | 59.3   | 10.1                                   | 5   | 0.101   |
| P6KE47(C)A                                      | 40.2  | 44.7                                 | 49.4 | 1                             | 64.8   | 9.3                                    | 5   | 0.101   |
| P6KE51(C)A                                      | 43.6  | 48.5                                 | 53.6 | 1                             | 70.1   | 8.6                                    | 5   | 0.102   |
| P6KE56(C)A                                      | 47.8  | 53.2                                 | 58.8 | 1                             | 77.0   | 7.8                                    | 5   | 0.103   |
| P6KE62(C)A                                      | 53.0  | 58.9                                 | 65.1 | 1                             | 85.0   | 7.1                                    | 5   | 0.104   |
| P6KE68(C)A                                      | 58.1  | 64.6                                 | 71.4 | 1                             | 92.0   | 6.5                                    | 5   | 0.104   |
| P6KE75(C)A                                      | 64.1  | 71.3                                 | 78.8 | 1                             | 103.0  | 5.8                                    | 5   | 0.105   |
| P6KE82(C)A                                      | 70.1  | 77.9                                 | 86.1 | 1                             | 113.0  | 5.3                                    | 5   | 0.105   |
| P6KE91(C)A                                      | 77.8  | 86.5                                 | 95.5 | 1                             | 125.0  | 4.8                                    | 5   | 0.106   |

**Electrical Characteristics** (continued)Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

| Uni-directional<br>Bi-directional (C)<br>Device | Reverse<br>Stand-off Voltage<br>$V_{RWM}$ (V) | Breakdown<br>Voltage<br>$V_{BR}$ (V) |       | Test<br>Current<br>$I_T$ (mA) | Clamping<br>Voltage<br>@ $I_{PPM}$ $V_C$ (V) | Peak Pulse<br>Current<br>$I_{PPM}$ (A) | Reverse<br>Leakage<br>$V_{RWM}$<br>$I_R$ ( $\mu\text{A}$ ) <sup>(2)</sup> | Temperature<br>Coefficient<br>$V_{BR}$ (%/ $^\circ\text{C}$ ) |
|---|---|--------------------------------------|-------|-------------------------------|--|--|---|---|
|   |   | Min.                                 | Max.  |                               |  |  |   |   |
| P6KE100(C)A                                     | 85.5  | 95.0                                 | 105.0 | 1                             | 137.0  | 4.4                                    | 5   | 0.106   |
| P6KE110(C)A                                     | 94.0  | 105.0                                | 116.0 | 1                             | 152.0  | 4.0                                    | 5   | 0.107   |
| P6KE120(C)A                                     | 102.0   | 114.0                                | 126.0 | 1                             | 165.0  | 3.6                                    | 5   | 0.107   |
| P6KE130(C)A                                     | 111.0   | 124.0                                | 137.0 | 1                             | 179.0  | 3.4                                    | 5   | 0.107   |
| P6KE150(C)A                                     | 128.0   | 143.0                                | 158.0 | 1                             | 207.0  | 2.9                                    | 5   | 0.108   |
| P6KE160(C)A                                     | 136.0   | 152.0                                | 168.0 | 1                             | 219.0  | 2.7                                    | 5   | 0.108   |
| P6KE170(C)A                                     | 145.0   | 162.0                                | 179.0 | 1                             | 234.0  | 2.6                                    | 5   | 0.108   |
| P6KE180(C)A                                     | 154.0   | 171.0                                | 189.0 | 1                             | 246.0  | 2.4                                    | 5   | 0.108   |
| P6KE200(C)A                                     | 171.0   | 190.0                                | 210.0 | 1                             | 274.0  | 2.2                                    | 5   | 0.108   |
| P6KE220(C)A                                     | 185.0   | 209.0                                | 231.0 | 1                             | 328.0  | 1.9                                    | 5   | 0.108   |
| P6KE250(C)A                                     | 214.0   | 237.0                                | 263.0 | 1                             | 344.0  | 1.8                                    | 5   | 0.110   |
| P6KE300(C)A                                     | 256.0   | 285.0                                | 315.0 | 1                             | 414.0  | 1.5                                    | 5   | 0.110   |
| P6KE350(C)A                                     | 300.0   | 332.0                                | 368.0 | 1                             | 482.0  | 1.3                                    | 5   | 0.110   |
| P6KE400(C)A                                     | 342.0   | 380.0                                | 420.0 | 1                             | 548.0  | 1.1                                    | 5   | 0.110   |
| P6KE440(C)A                                     | 376.0   | 418.0                                | 462.0 | 1                             | 602.0  | 1.0                                    | 5   | 0.110   |

**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

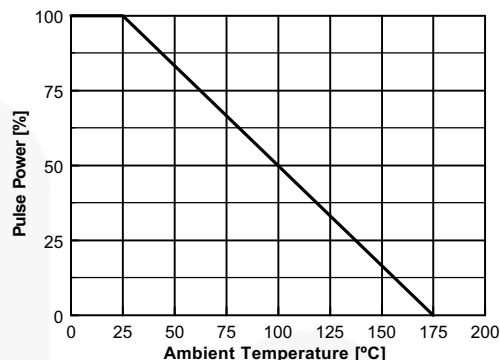


Figure 2. Pulse Derating Curve



Figure 3. Pulse Waveform

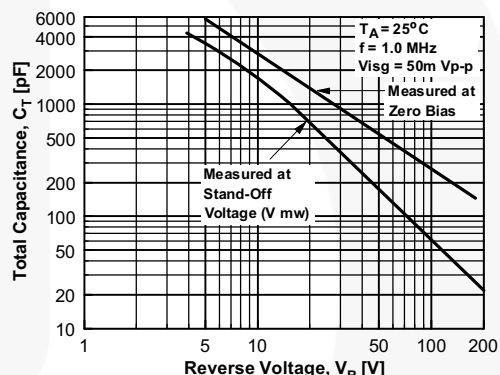


Figure 4. Total Capacitance - Uni-directional



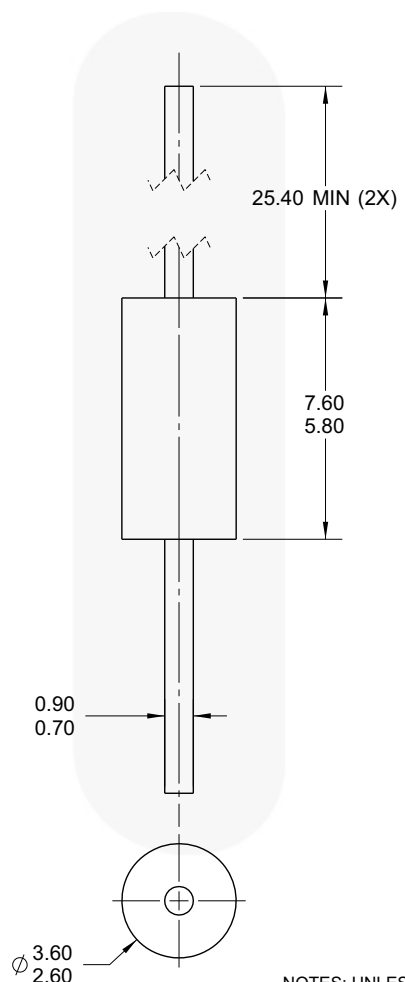
Figure 5. Steady-State Power Derating Curve



Figure 6. Non-Repetitive Surge Current

Physical Dimensions

DO-15



NOTES: UNLESS OTHERWISE SPECIFIED

- A) PACKAGE STANDARD REFERENCE: JEDEC DO-204 VARIATION AC.
- B) PLASTIC PACKAGE BODY.
- D) ALL DIMENSIONS ARE IN MILLIMETERS.
- E) DRAWING FILE NAME: DO15AREV1

Figure 7. AXIAL LEADED, JEDEC DO204, VARIATION AC (ACTIVE)

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