

# P6KE6V8(C)A - P6KE440(C)A

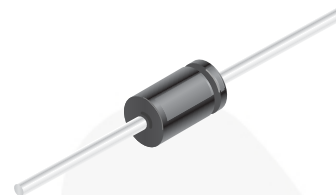
## 600 W Transient Voltage Suppressors

### 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>$V_{BR}$ (%/ $^\circ\text{C}$ ) |
|-------------------------------------------------|-----------------------------------------------|--------------------------------------|------|-------------------------------|----------------------------------------------|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------|
|                                                 |                                               | 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

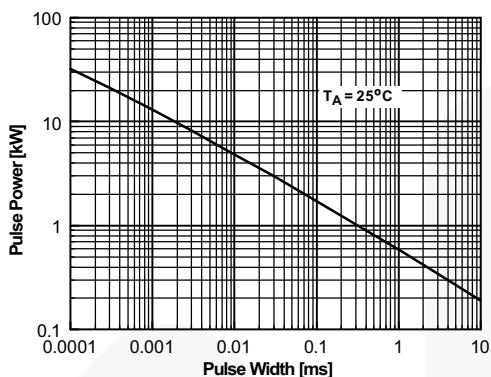


Figure 1. Peak Pulse Power Rating Curve

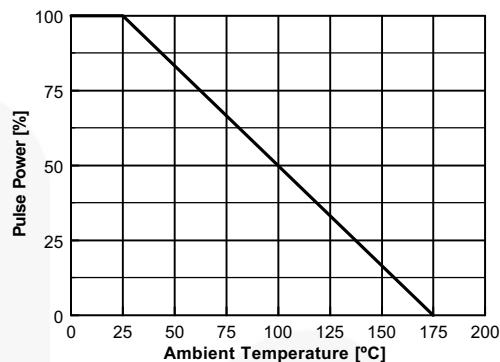


Figure 2. Pulse Derating Curve

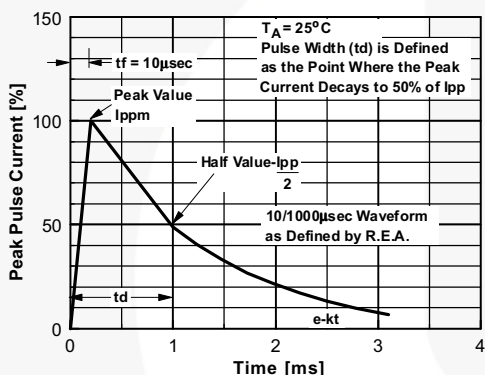


Figure 3. Pulse Waveform

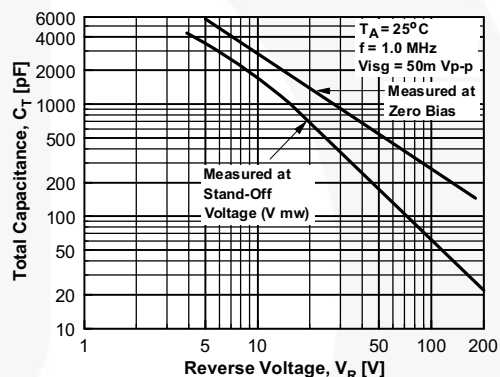


Figure 4. Total Capacitance - Uni-directional

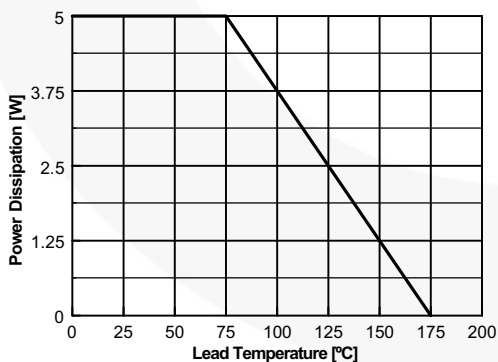


Figure 5. Steady-State Power Derating Curve

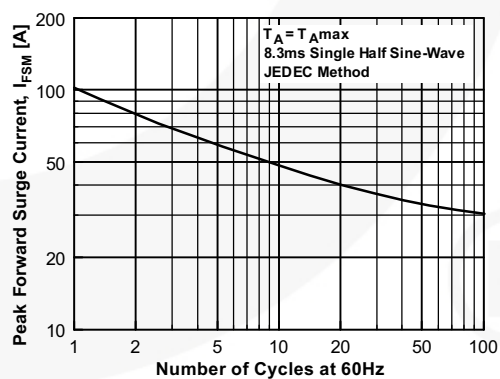
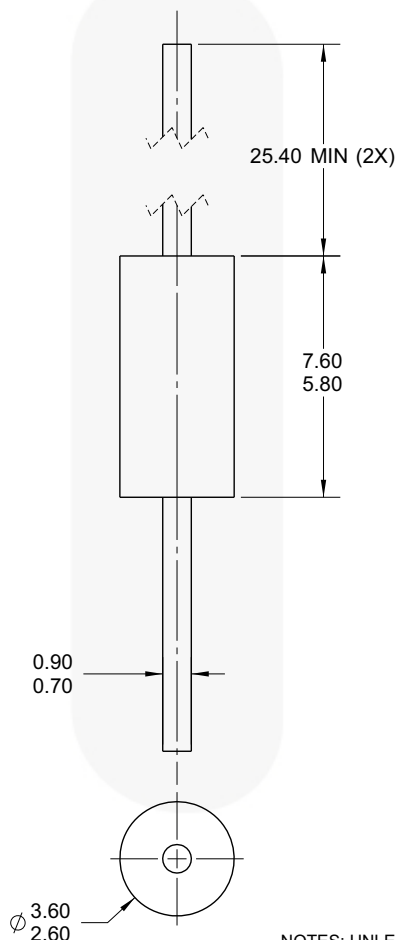


Figure 6. Non-Repetitive Surge Current

## 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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| BitSiC™                                                                           | Global Power Resource <sup>SM</sup>            | Programmable Active Droop™                                                        | TinyBuck™                                                                           |
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|  | MicroPak™                                      | STEALTH™                                                                          | UHC®                                                                                |
| Fairchild®                                                                        | MicroPak2™                                     | SuperFET®                                                                         | Ultra FRFET™                                                                        |
| Fairchild Semiconductor®                                                          | MillerDrive™                                   | SuperSOT™-3                                                                       | UniFET™                                                                             |
| FACT Quiet Series™                                                                | MotionMax™                                     | SuperSOT™-6                                                                       | VCX™                                                                                |
| FACT®                                                                             | mWSaver™                                       | SuperSOT™-8                                                                       | VisualMax™                                                                          |
| FAST®                                                                             | OptoHiT™                                       | SupreMOS®                                                                         | VoltagePlus™                                                                        |
| FastvCore™                                                                        | OPTOLOGIC®                                     | SyncFET™                                                                          | XS™                                                                                 |
| FETBench™                                                                         | OPTOPLANAR®                                    |                                                                                   |                                                                                     |

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