

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

## Features

- Glass passivated junction.
- 600W Peak Pulse Power capability at 1.0ms.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0ps from 0 volts to BV for unidirectional and 5.0ns for bidirectional.
- Typical  $I_R$  less than 1.0 $\mu$ A above 10V.



**DO-15**

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ON UNIDIRECTIONAL DEVICES ONLY. NO

## Applications

- Devices For Bipolar Applications.
- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

## Absolute Maximum Ratings\* $T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter                                                                                       | Value       | Units            |
|-----------|-------------------------------------------------------------------------------------------------|-------------|------------------|
| $P_{PPM}$ | Peak Pulse Power Dissipation at $T_P=1\text{ms}$                                                | 600         | 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) | 100         | A                |
| $T_{stg}$ | Storage Temperature Range                                                                       | -65 to +175 | $^\circ\text{C}$ |
| $T_J$     | Operating Junction Temperature                                                                  | 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.

# 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<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>$I_R$ ( $\mu\text{A}$ )* | 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                                                         |
| 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                                                         |

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

## Typical Performance Characteristics

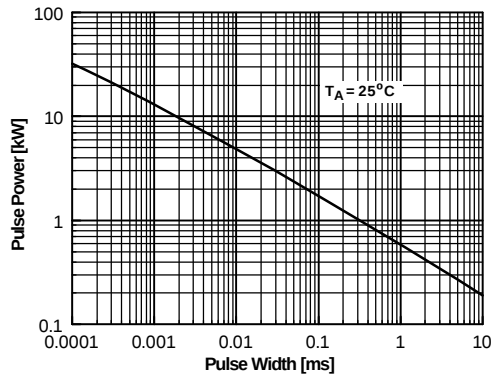


Figure 1. Peak Pulse Power Rating Curve

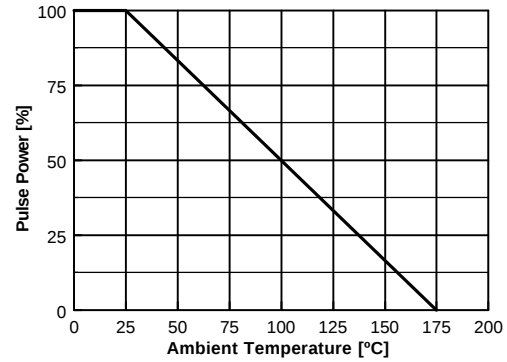


Figure 2. Pulse Derating Curve

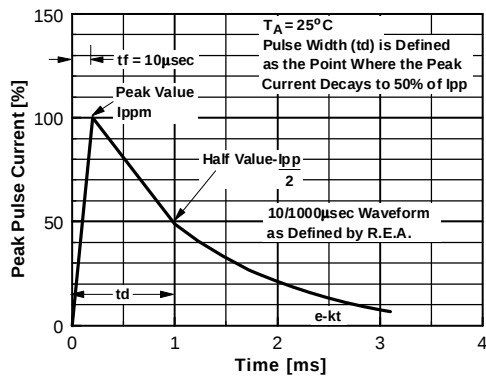


Figure 3. Pulse Waveform

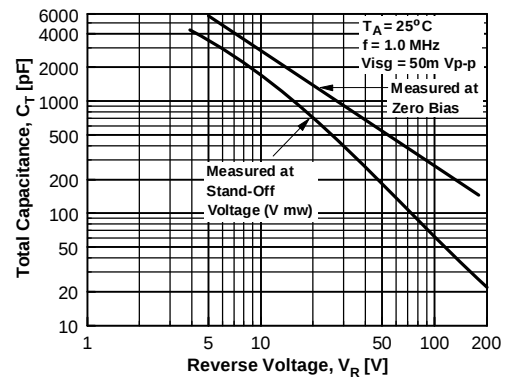


Figure 4. Total Capacitance - Unidirectional

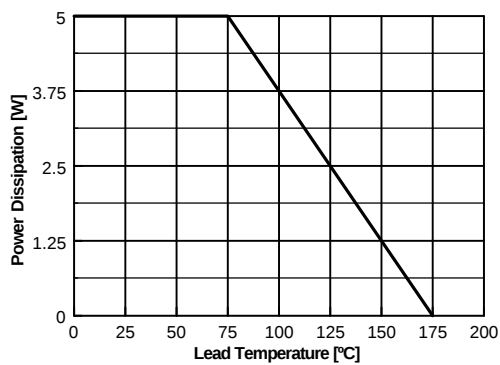


Figure 5. Steady State Power Derating Curve

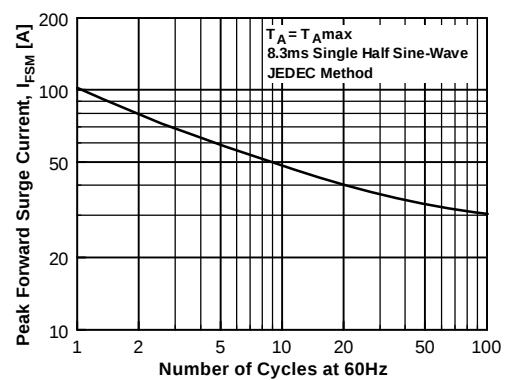


Figure 6. Non-Repetitive Surge Current



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| FlashWriter®*                                                                       | PDP SPM™                                                                            | Sync-Lock™                                                                          | VCX™                                                                                        |
| FPS™                                                                                |                                                                                     |                                                                                     | VisualMax™                                                                                  |
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|--------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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