

# P6KE6V8(C)A - P6KE400(C)A

600W TRANSIENT VOLTAGE SUPPRESSOR

## Features

- 600W Peak Pulse Power Dissipation
- Voltage Range 6.8V - 400V
- Constructed with Glass Passivated Die
- Uni- and Bidirectional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- **Lead Free Finish, RoHS Compliant (Note 1)**



## Mechanical Data

- Case: DO-15
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Leads: Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Marking: Unidirectional - Type Number and Cathode Band
- Marking: Bidirectional - Type Number Only
- Weight: 0.4 grams (approximate)

| DO-15                |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 25.40 | —     |
| B                    | 5.50  | 7.62  |
| C                    | 0.686 | 0.889 |
| D                    | 2.60  | 3.6   |
| All Dimensions in mm |       |       |

## Maximum Ratings @ T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Peak Power Dissipation, t <sub>p</sub> = 1.0 ms<br>(Non repetitive current pulse, derated above T <sub>A</sub> = 25°C)                       | P <sub>pk</sub>                   | 600         | W    |
| Steady State Power Dissipation at T <sub>L</sub> = 75°C<br>Lead Lengths 9.5 mm (Mounted on Copper Land Area of 40mm)                         | P <sub>d</sub>                    | 5.0         | W    |
| Peak Forward Surge Current, 8.3 ms Single Half Sine Wave, Superimposed on Rated Load (JEDEC Method) Duty Cycle = 4 pulses per minute maximum | I <sub>FSM</sub>                  | 100         | A    |
| Forward Voltage @ I <sub>F</sub> = 35A<br>300µs Square Wave Pulse, Unidirectional Only   | V <sub>F</sub>                    | 3.5<br>5.0  | V    |
| Operating and Storage Temperature Range  | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

Notes: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see EU Directive Annex Notes 5 and 7.

| Type Number<br>(Note 2) | Type Number<br>(Note 2) | Reverse Standoff Voltage | Breakdown Voltage<br>$V_{BR}$ @ $I_T$ |         | Test Current | Max Reverse Leakage<br>(Note 3)<br>@ $V_R$ | Max Clamping Voltage<br>@ $I_{PP}$ | Max Peak Pulse Current |
|-------------------------|-------------------------|--------------------------|---------------------------------------|---------|--------------|--|------------------------------------|------------------------|
|                         |                         |                          | $V_{RWM}$ (V)                         | Min (V) |              |  |                                    |                        |
| P6KE6V8A                | P6KE6V8CA               | 5.80                     | 6.45                                  | 7.14    | 10           | 1000                                       | 10.5                               | 57.0                   |
| P6KE7V5A                | P6KE7V5CA               | 6.40                     | 7.13                                  | 7.88    | 10           | 500  | 11.3                               | 53.0                   |
| P6KE8V2A                | P6KE8V2CA               | 7.02                     | 7.79                                  | 8.61    | 10           | 200  | 12.1                               | 50.0                   |
| P6KE9V1A                | P6KE9V1CA               | 7.78                     | 8.65                                  | 9.55    | 1.0          | 50   | 13.4                               | 45.0                   |
| P6KE10A                 | P6KE10CA                | 8.55                     | 9.50                                  | 10.50   | 1.0          | 10   | 14.5                               | 41.0                   |
| P6KE11A                 | P6KE11CA                | 9.40                     | 10.50                                 | 11.60   | 1.0          | 5.0  | 15.6                               | 38.0                   |
| P6KE12A                 | P6KE12CA                | 10.20                    | 11.40                                 | 12.60   | 1.0          | 5.0  | 16.7                               | 36.0                   |
| P6KE13A                 | P6KE13CA                | 11.10                    | 12.40                                 | 13.70   | 1.0          | 5.0  | 18.2                               | 33.0                   |
| P6KE15A                 | P6KE15CA                | 12.80                    | 14.30                                 | 15.80   | 1.0          | 5.0  | 21.2                               | 28.0                   |
| P6KE16A                 | P6KE16CA                | 13.60                    | 15.20                                 | 16.80   | 1.0          | 5.0  | 22.5                               | 27.0                   |
| P6KE18A                 | P6KE18CA                | 15.30                    | 17.10                                 | 18.90   | 1.0          | 5.0  | 25.2                               | 24.0                   |
| P6KE20A                 | P6KE20CA                | 17.10                    | 19.00                                 | 21.00   | 1.0          | 5.0  | 27.7                               | 22.0                   |
| P6KE22A                 | P6KE22CA                | 18.80                    | 20.90                                 | 23.10   | 1.0          | 5.0  | 30.6                               | 20.0                   |
| P6KE24A                 | P6KE24CA                | 20.50                    | 22.80                                 | 25.20   | 1.0          | 5.0  | 33.2                               | 18.0                   |
| P6KE27A                 | P6KE27CA                | 23.10                    | 25.70                                 | 28.40   | 1.0          | 5.0  | 37.5                               | 16.0                   |
| P6KE30A                 | P6KE30CA                | 25.60                    | 28.50                                 | 31.50   | 1.0          | 5.0  | 41.4                               | 14.40                  |
| P6KE33A                 | P6KE33CA                | 28.20                    | 31.40                                 | 34.70   | 1.0          | 5.0  | 45.7                               | 13.20                  |
| P6KE36A                 | P6KE36CA                | 30.80                    | 34.20                                 | 37.80   | 1.0          | 5.0  | 49.9                               | 12.00                  |
| P6KE39A                 | P6KE39CA                | 33.30                    | 37.10                                 | 41.00   | 1.0          | 5.0  | 53.9                               | 11.20                  |
| P6KE43A                 | P6KE43CA                | 36.80                    | 40.90                                 | 45.20   | 1.0          | 5.0  | 59.3                               | 10.10                  |
| P6KE47A                 | P6KE47CA                | 40.20                    | 44.70                                 | 49.40   | 1.0          | 5.0  | 64.8                               | 9.30                   |
| P6KE51A                 | P6KE51CA                | 43.60                    | 48.50                                 | 53.60   | 1.0          | 5.0  | 70.1                               | 8.60                   |
| P6KE56A                 | P6KE56CA                | 47.80                    | 53.20                                 | 58.80   | 1.0          | 5.0  | 77.0                               | 7.80                   |
| P6KE62A                 | P6KE62CA                | 53.00                    | 58.90                                 | 65.10   | 1.0          | 5.0  | 85.0                               | 7.10                   |
| P6KE68A                 | P6KE68CA                | 58.10                    | 64.60                                 | 71.40   | 1.0          | 5.0  | 92.0                               | 6.50                   |
| P6KE75A                 | P6KE75CA                | 64.10                    | 71.30                                 | 78.80   | 1.0          | 5.0  | 103.0                              | 5.80                   |
| P6KE82A                 | P6KE82CA                | 70.10                    | 77.90                                 | 86.10   | 1.0          | 5.0  | 113.0                              | 5.30                   |
| P6KE91A                 | P6KE91CA                | 77.80                    | 86.50                                 | 95.50   | 1.0          | 5.0  | 125.0                              | 4.80                   |
| P6KE100A                | P6KE100CA               | 85.50                    | 95.00                                 | 105.00  | 1.0          | 5.0  | 137.0                              | 4.40                   |
| P6KE110A                | P6KE110CA               | 94.00                    | 105.00                                | 116.00  | 1.0          | 5.0  | 152.0                              | 4.00                   |
| P6KE120A                | P6KE120CA               | 102.00                   | 114.00                                | 126.00  | 1.0          | 5.0  | 165.0                              | 3.60                   |
| P6KE130A                | P6KE130CA               | 111.00                   | 124.00                                | 137.00  | 1.0          | 5.0  | 179.0                              | 3.30                   |
| P6KE150A                | P6KE150CA               | 128.00                   | 143.00                                | 158.00  | 1.0          | 5.0  | 207.0                              | 2.90                   |
| P6KE160A                | P6KE160CA               | 136.00                   | 152.00                                | 168.00  | 1.0          | 5.0  | 219.0                              | 2.70                   |
| P6KE170A                | P6KE170CA               | 145.00                   | 162.00                                | 179.00  | 1.0          | 5.0  | 234.0                              | 2.60                   |
| P6KE180A                | P6KE180CA               | 154.00                   | 171.00                                | 189.00  | 1.0          | 5.0  | 246.0                              | 2.40                   |
| P6KE200A                | P6KE200CA               | 171.00                   | 190.00                                | 210.00  | 1.0          | 5.0  | 274.0                              | 2.20                   |
| P6KE220A                | P6KE220CA               | 185.00                   | 209.00                                | 231.00  | 1.0          | 5.0  | 328.0                              | 1.83                   |
| P6KE250A                | P6KE250CA               | 214.00                   | 237.00                                | 263.00  | 1.0          | 5.0  | 344.0                              | 1.75                   |
| P6KE300A                | P6KE300CA               | 256.00                   | 285.00                                | 315.00  | 1.0          | 5.0  | 414.0                              | 1.45                   |
| P6KE350A                | P6KE350CA               | 300.00                   | 332.00                                | 368.00  | 1.0          | 5.0  | 482.0                              | 1.25                   |
| P6KE400A                | P6KE400CA               | 342.00                   | 380.00                                | 420.00  | 1.0          | 5.0  | 548.0                              | 1.10                   |

Notes: 2. Suffix 'C' denotes bidirectional device.  
3. For bidirectional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is doubled.



Fig. 1 Pulse Waveform

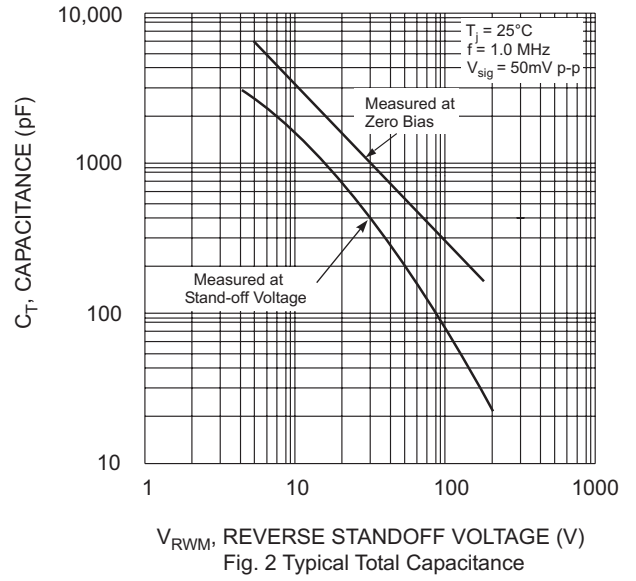


Fig. 2 Typical Total Capacitance



Fig. 3 Pulse Rating Curve



Fig. 4 Pulse Derating Curve



Fig. 5, Steady State Power Derating



Fig. 6 Peak Forward Surge Current vs. Number of Cycles at 60Hz

**Ordering Information** (Note 4)

| Device           | Packaging | Shipping                |
|------------------|-----------|-------------------------|
| (Type Number)-B* | DO-15     | 500/Bulk                |
| (Type Number)-T* | DO-15     | 4K/Tape & Reel, 13-inch |

\* Add "-B" or "-T" to the appropriate type number in Table 1 for Bulk or Tape & Reel, respectively. Example: 6.40V  $V_{RWM}$  = P6KE7V5A-B for Bulk, P6KE7V5A-T for Tape & Reel.

Notes: 4. For packaging details, visit our website at <http://www.diodes.com/datasheets/ap02008.pdf>.

**IMPORTANT NOTICE**

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

**LIFE SUPPORT**

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.