

# 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<br>V <sub>BR</sub> ≤ 200V<br>V <sub>BR</sub> > 200V   | 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>.

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