

## 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-020
- Leads: Plated Leads, Solderable per MIL-STD-202, Method 208 
- Marking: Unidirectional - Type Number and Cathode Band
- Marking: Bidirectional - Type Number Only
- Ordering Information: See Page 4
- Weight: 0.4 grams (approximate)

## 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    |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave, Superimposed on Rated Load 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    |
|                                                                                                                              |                  | V <sub>BR</sub> ≤ 200V<br>V <sub>BR</sub> > 200V |      |

## Thermal Characteristics

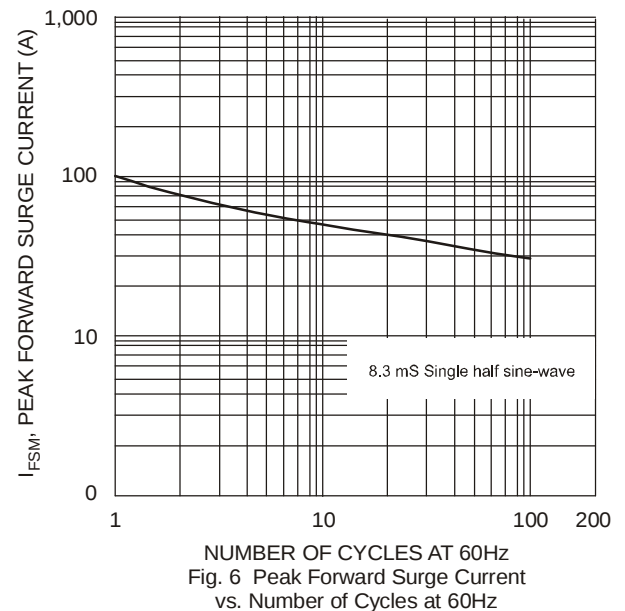
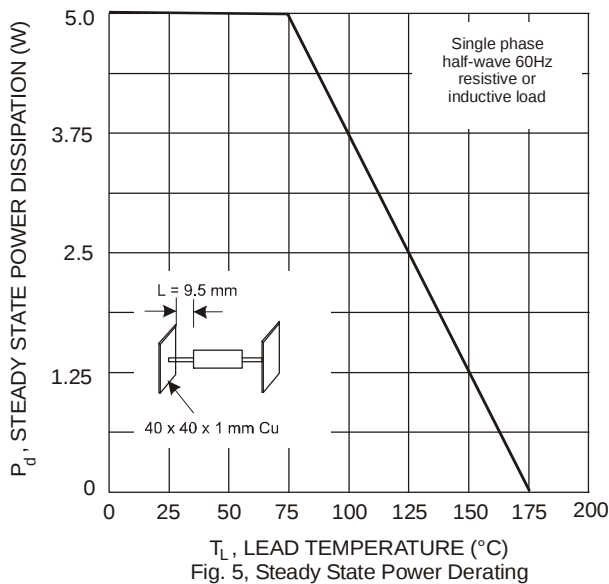
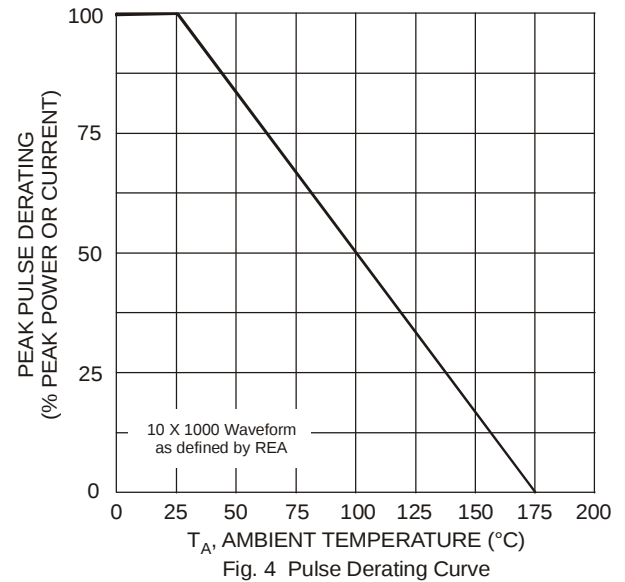
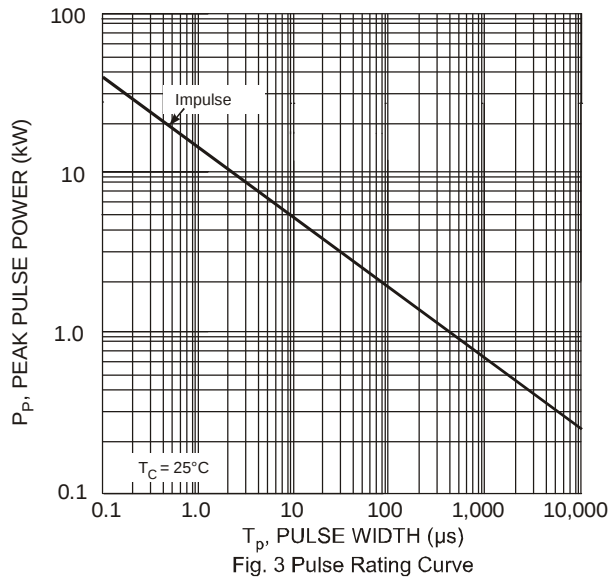
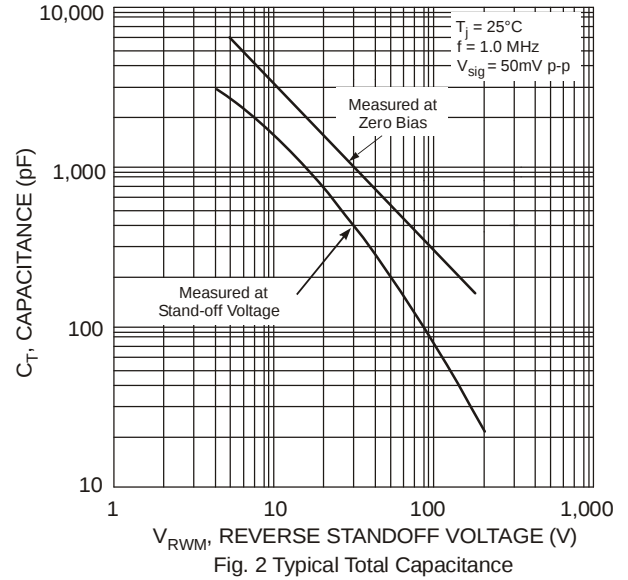
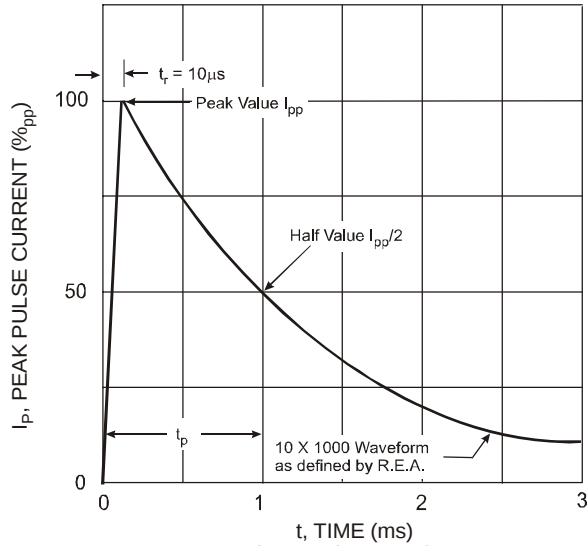
| Characteristic                                                                                                       | Symbol                            | Value       | Unit |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------|------|
| 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    |
| Typical Thermal Resistance, Junction to Case                                                                         | R <sub>θJC</sub>                  | 20          | °C/W |
| Typical Thermal Resistance, Junction to Lead                                                                         | R <sub>θJL</sub>                  | 15          | °C/W |
| Typical Thermal Resistance, Junction to Ambient                                                                      | R <sub>θJA</sub>                  | 75          | °C/W |
| Operating and Storage Temperature Range                                                                              | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

| Type Number<br>(Note 2) | Type Number<br>(Note 2) | Reverse Standoff Voltage | Breakdown Voltage<br>V <sub>BR</sub> @ I <sub>T</sub> |         | Test Current        | Max Reverse Leakage<br>(Note 3)<br>@ V <sub>R</sub> | Max Clamping Voltage<br>@ I <sub>pp</sub> | Max Peak Pulse Current |
|-------------------------|-------------------------|--------------------------|-------------------------------------------------------|---------|---------------------|-----------------------------------------------------|-------------------------------------------|------------------------|
| (UNI)                   | (BI)                    | V <sub>RWM</sub> (V)     | Min (V)                                               | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                                 | V <sub>C</sub> (V)                        | I <sub>PP</sub> (A)    |
| 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<sub>R</sub> of 10 volts and under, the I<sub>R</sub> limit is doubled.



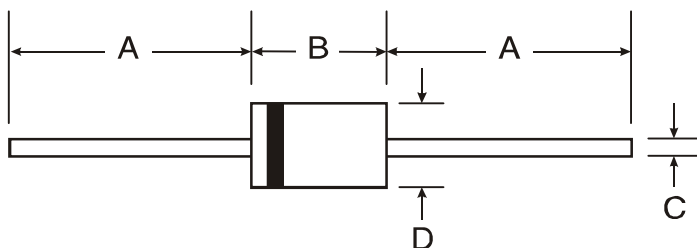
## Ordering Information (Note 4)

| Part Number      | Case  | Packaging               |
|------------------|-------|-------------------------|
| (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 VRWM = P6KE7V5A-B for Bulk, P6KE7V5A-T for Tape & Reel.

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

## Package Outline Dimensions



| DO-15                |       |       |
|----------------------|-------|-------|
| Dim                  | Min   | Max   |
| A                    | 25.40 | —     |
| B                    | 5.50  | 7.62  |
| C                    | 0.686 | 0.889 |
| D                    | 2.60  | 3.60  |
| All Dimensions in mm |       |       |

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