

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 ^{Ⓔ3}
- Marking: Unidirectional - Type Number and Cathode Band
- Marking: Bidirectional - Type Number Only
- Ordering Information: See Page 4
- Weight: 0.4 grams (approximate)

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|-----------|--|------|
| Peak Power Dissipation, $t_p = 1.0$ ms (Non repetitive current pulse, derated above $T_A = 25^\circ\text{C}$) | P_{pk} | 600 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave, Superimposed on Rated Load Duty Cycle = 4 pulses per minute maximum | I_{FSM} | 100 | A |
| Forward Voltage @ $I_F = 35\text{A}$ 300 μs Square Wave Pulse, Unidirectional Only | V_F | $V_{BR} \leq 200\text{V}$ 5.0 $V_{BR} > 200\text{V}$ | V |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ Lead Lengths 9.5 mm (Mounted on Copper Land Area of 40mm) | P_D | 5.0 | W |
| Typical Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 20 | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Lead | $R_{\theta JL}$ | 15 | $^\circ\text{C/W}$ |
| Typical Thermal Resistance, Junction to Ambient | $R_{\theta JA}$ | 75 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |

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

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Type Number (Note 2) | Type Number (Note 2) | Reverse Standoff Voltage | Breakdown Voltage V _{BR} @ I _T | | Test Current | Max Reverse Leakage (Note 3) @ V _R | Max Clamping Voltage @ 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.

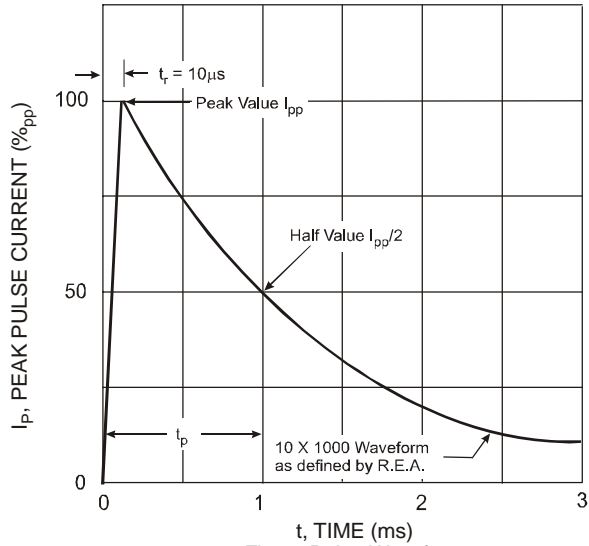


Fig. 1 Pulse Waveform

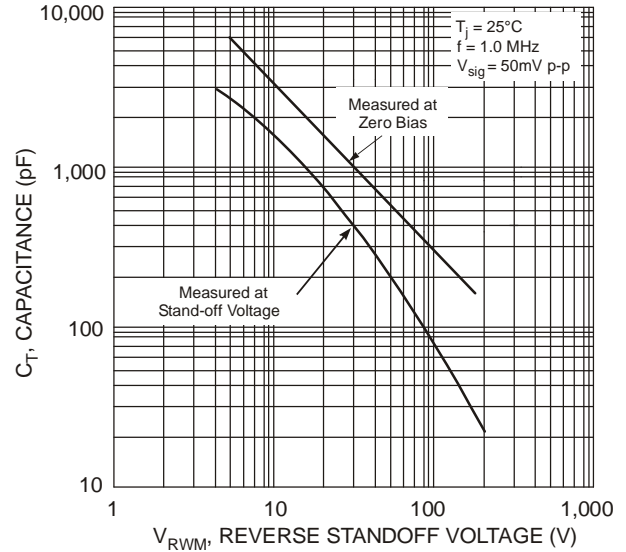


Fig. 2 Typical Total Capacitance

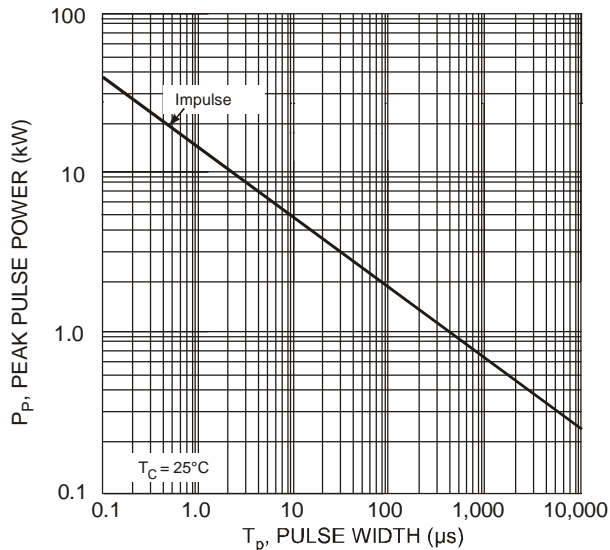


Fig. 3 Pulse Rating Curve

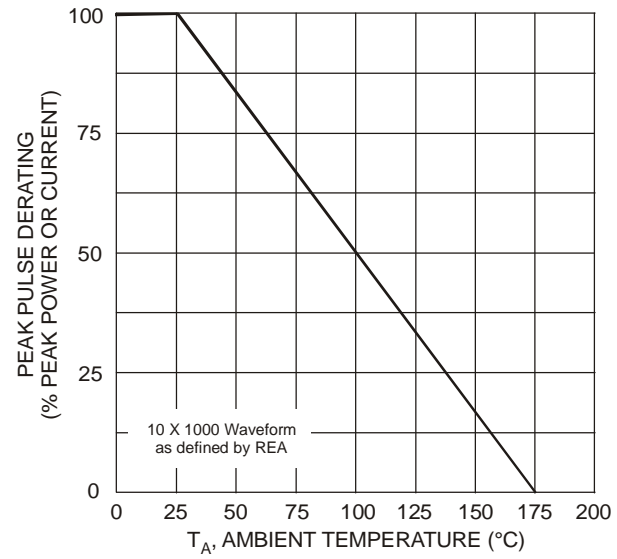


Fig. 4 Pulse Derating Curve

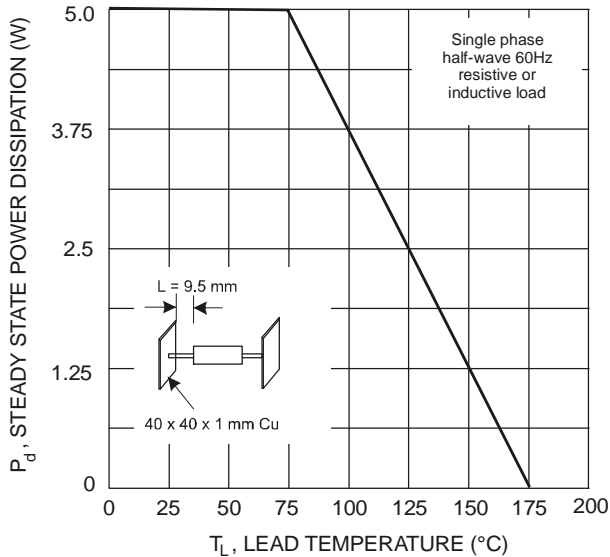


Fig. 5, Steady State Power Derating

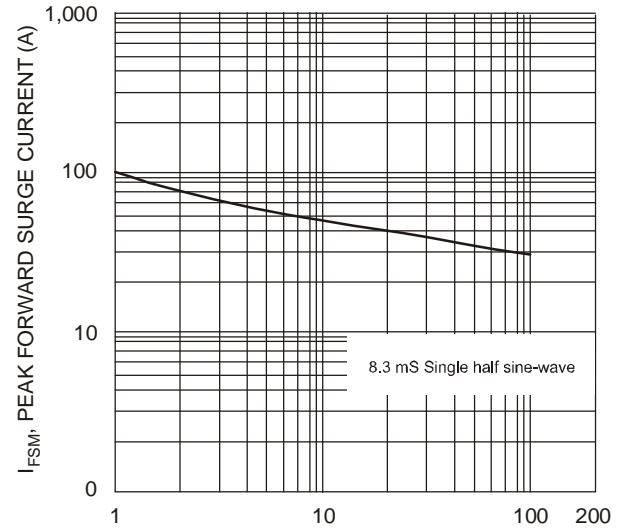


Fig. 6 Peak Forward Surge Current vs. Number of Cycles at 60Hz

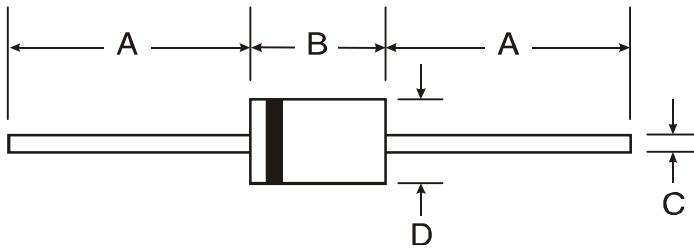
Ordering Information (Note 4)

| Part Number (Type Number)-B* | Case DO-15 | Packaging 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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