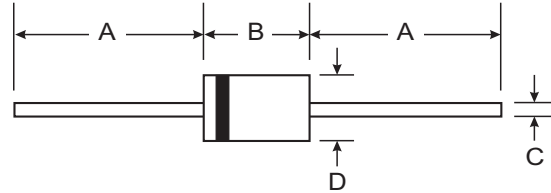


### Features

- Constructed with Glass Passivated Die
- Excellent Clamping Capability
- 500W Peak Pulse Power Dissipation
- Fast Response Time
- 100% Tested at Rated Peak Pulse Power
- Voltage Range 5.0 - 170 Volts
- Unidirectional and Bi-directional Versions Available (Note 1)
- **Available in Lead Free Finish/RoHS Compliant Version (Note 3)**

NOT RECOMMENDED FOR NEW DESIGN  
SUGGESTED REPLACEMENT P6KE6V8A - P6KE200A



### 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
- Also Available in Lead Free Plating (Matte Tin Finish).
- Marking: Unidirectional: Type Number and Cathode Band
- Marking Bi-directional: 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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic  | Symbol         | Value       | Unit             |
|---|----------------|-------------|------------------|
| Peak Power Dissipation, $T_p = 1.0\text{ms}$<br>(Non repetitive current pulse, derated above $T_A = 25^\circ\text{C}$ )         | $P_{pk}$       | 500         | W                |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$<br>Lead Lengths 9.5 mm (Board mounted)                               | $P_d$          | 1.0         | W                |
| Peak Forward Surge Current, 8.3 Single Half Sine Wave<br>Superimposed on Rated Load<br>Duty Cycle = 4 pulses per minute maximum | $I_{FSM}$      | 70          | A                |
| Forward Voltage @ $I_F = 35\text{A}$ 300 $\mu\text{s}$ Square Wave Pulse,<br>Unidirectional Only                                | $V_F$          | 3.5         | V                |
| Operating and Storage Temperature Range   | $T_J, T_{STG}$ | -65 to +175 | $^\circ\text{C}$ |

- Notes:
1. Suffix "A" denotes unidirectional, suffix "CA" denotes bi-directional device.
  2. For bi-directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is doubled.
  3. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

| Type Number<br>(Suffix C =<br>Bidirectional)<br>(Note 1) | Reverse<br>Standoff<br>Voltage | Breakdown Voltage<br>$V_{BR}$ @ $I_t$ |         | Test<br>Current | Max.<br>Clamping<br>Voltage<br>@ $I_{PP}$ | Max.<br>Peak<br>Pulse Current | Max.<br>Reverse<br>Leakage<br>@ $V_R$<br>(Note 2) | Max. Voltage<br>Temp.<br>Variation<br>of $V_{BR}$ |
|--|--------------------------------|---------------------------------------|---------|-----------------|---|-------------------------------|---|---|
|  | $V_R$ (V)                      | Min (V)                               | Max (V) | $I_t$ (mA)      | $V_C$ (V)                                 | $I_{PP}$ (A)                  | $I_R$ (A)   | mV/°C   |
| SA5V0(C)A  | 5.0                            | 6.40                                  | 7.00    | 10              | 9.2                                       | 54.3                          | 600   | 5.0   |
| SA6V0(C)A  | 6.0                            | 6.67                                  | 7.37    | 10              | 10.3                                      | 48.5                          | 600   | 5.0   |
| SA6V5(C)A  | 6.5                            | 7.22                                  | 7.98    | 10              | 11.2                                      | 44.7                          | 400   | 5.0   |
| SA7V0(C)A  | 7.0                            | 7.78                                  | 8.60    | 10              | 12.0                                      | 41.7                          | 150   | 6.0   |
| SA7V5(C)A  | 7.5                            | 8.33                                  | 9.21    | 1.0             | 12.9                                      | 38.8                          | 50  | 7.0   |
| SA8V0(C)A  | 8.0                            | 8.89                                  | 9.83    | 1.0             | 13.6                                      | 36.7                          | 25  | 7.0   |
| SA8V5(C)A  | 8.5                            | 9.44                                  | 10.4    | 1.0             | 14.4                                      | 34.7                          | 10  | 8.0   |
| SA9V0(C)A  | 9.0                            | 10.0                                  | 11.1    | 1.0             | 15.4                                      | 32.5                          | 5.0   | 9.0   |
| SA10(C)A   | 10                             | 11.1                                  | 12.3    | 1.0             | 17.0                                      | 29.4                          | 3.0   | 10  |
| SA11(C)A   | 11                             | 12.2                                  | 13.5    | 1.0             | 18.2                                      | 27.4                          | 3.0   | 11  |
| SA12(C)A   | 12                             | 13.3                                  | 14.7    | 1.0             | 19.9                                      | 25.1                          | 3.0   | 12  |
| SA13(C)A   | 13                             | 14.4                                  | 15.9    | 1.0             | 21.5                                      | 23.2                          | 3.0   | 13  |
| SA14(C)A   | 14                             | 15.6                                  | 17.2    | 1.0             | 23.2                                      | 21.5                          | 3.0   | 14  |
| SA15(C)A   | 15                             | 16.7                                  | 18.5    | 1.0             | 24.4                                      | 20.6                          | 3.0   | 16  |
| SA16(C)A   | 16                             | 17.8                                  | 19.7    | 1.0             | 26.0                                      | 19.2                          | 3.0   | 17  |
| SA17(C)A   | 17                             | 18.9                                  | 20.9    | 1.0             | 27.6                                      | 18.1                          | 3.0   | 19  |
| SA18(C)A   | 18                             | 20.0                                  | 22.1    | 1.0             | 29.2                                      | 17.2                          | 3.0   | 20  |
| SA20(C)A   | 20                             | 22.2                                  | 24.5    | 1.0             | 32.4                                      | 15.4                          | 3.0   | 23  |
| SA22(C)A   | 22                             | 24.4                                  | 26.9    | 1.0             | 35.5                                      | 14.1                          | 3.0   | 25  |
| SA24(C)A   | 24                             | 26.7                                  | 29.5    | 1.0             | 38.9                                      | 12.8                          | 3.0   | 28  |
| SA26(C)A   | 26                             | 28.9                                  | 31.9    | 1.0             | 42.1                                      | 11.9                          | 3.0   | 30  |
| SA28(C)A   | 28                             | 31.1                                  | 34.4    | 1.0             | 45.4                                      | 11.0                          | 3.0   | 31  |
| SA30(C)A   | 30                             | 33.3                                  | 36.8    | 1.0             | 48.4                                      | 10.3                          | 3.0   | 36  |
| SA33(C)A   | 33                             | 36.7                                  | 40.6    | 1.0             | 53.3                                      | 9.4                           | 3.0   | 39  |
| SA36(C)A   | 36                             | 40.0                                  | 44.2    | 1.0             | 58.1                                      | 8.6                           | 3.0   | 41  |
| SA40(C)A   | 40                             | 44.4                                  | 49.1    | 1.0             | 64.5                                      | 7.8                           | 3.0   | 46  |
| SA43(C)A   | 43                             | 47.8                                  | 52.8    | 1.0             | 69.4                                      | 7.2                           | 3.0   | 50  |
| SA45(C)A   | 45                             | 50.0                                  | 55.3    | 1.0             | 72.7                                      | 6.9                           | 3.0   | 52  |
| SA48(C)A   | 48                             | 53.3                                  | 58.9    | 1.0             | 77.4                                      | 6.5                           | 3.0   | 56  |
| SA51(C)A   | 51                             | 56.7                                  | 62.7    | 1.0             | 82.4                                      | 6.1                           | 3.0   | 61  |
| SA54(C)A   | 54                             | 60.0                                  | 66.3    | 1.0             | 87.1                                      | 5.7                           | 3.0   | 65  |
| SA58(C)A   | 58                             | 64.4                                  | 71.2    | 1.0             | 93.6                                      | 5.3                           | 3.0   | 70  |
| SA60(C)A   | 60                             | 66.7                                  | 73.7    | 1.0             | 96.8                                      | 5.2                           | 3.0   | 71  |
| SA64(C)A   | 64                             | 71.1                                  | 78.6    | 1.0             | 103.0                                     | 4.9                           | 3.0   | 76  |
| SA70(C)A   | 70                             | 77.8                                  | 86.0    | 1.0             | 113.0                                     | 4.4                           | 3.0   | 85  |
| SA75(C)A   | 75                             | 83.3                                  | 92.1    | 1.0             | 121.0                                     | 4.1                           | 3.0   | 91  |
| SA78(C)A   | 78                             | 86.7                                  | 95.8    | 1.0             | 126.0                                     | 4.0                           | 3.0   | 95  |
| SA85(C)A   | 85                             | 94.4                                  | 104.0   | 1.0             | 137.0                                     | 3.6                           | 3.0   | 103   |
| SA90(C)A   | 90                             | 100                                   | 111.0   | 1.0             | 146.0                                     | 3.4                           | 3.0   | 110   |
| SA100(C)A  | 100                            | 111                                   | 123.0   | 1.0             | 162.0                                     | 3.1                           | 3.0   | 123   |
| SA110(C)A  | 110                            | 122                                   | 135.0   | 1.0             | 177.0                                     | 2.8                           | 3.0   | 133   |
| SA120(C)A  | 120                            | 133                                   | 147.0   | 1.0             | 193.0                                     | 2.6                           | 3.0   | 146   |
| SA130(C)A  | 130                            | 144                                   | 159.0   | 1.0             | 209.0                                     | 2.4                           | 3.0   | 158   |
| SA150(C)A  | 150                            | 167                                   | 185.0   | 1.0             | 243.0                                     | 2.1                           | 3.0   | 184   |
| SA160(C)A  | 160                            | 178                                   | 197.0   | 1.0             | 259.0                                     | 1.9                           | 3.0   | 196   |
| SA170(C)A  | 170                            | 189                                   | 209.0   | 1.0             | 275.0                                     | 1.8                           | 3.0   | 208   |

Notes: 1. Suffix "A" denotes unidirectional, suffix "CA" denotes bi-directional device.  
2. For bi-directional devices having  $V_R$  of 10 volts and under, the  $I_R$  limit is doubled.

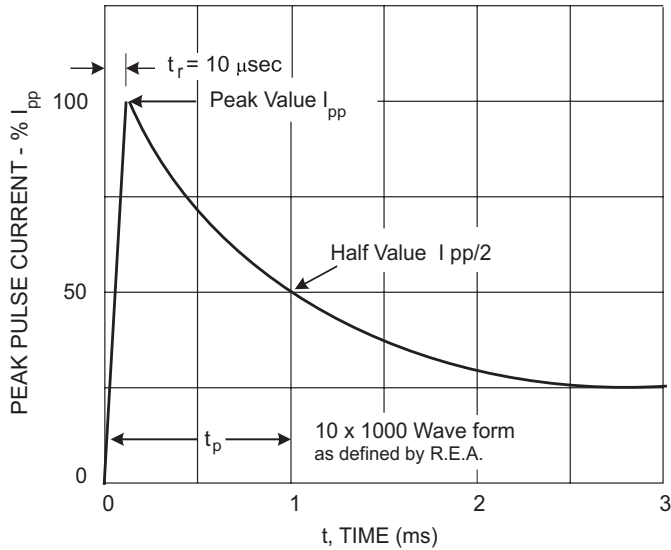


Fig. 1, Pulse Waveform

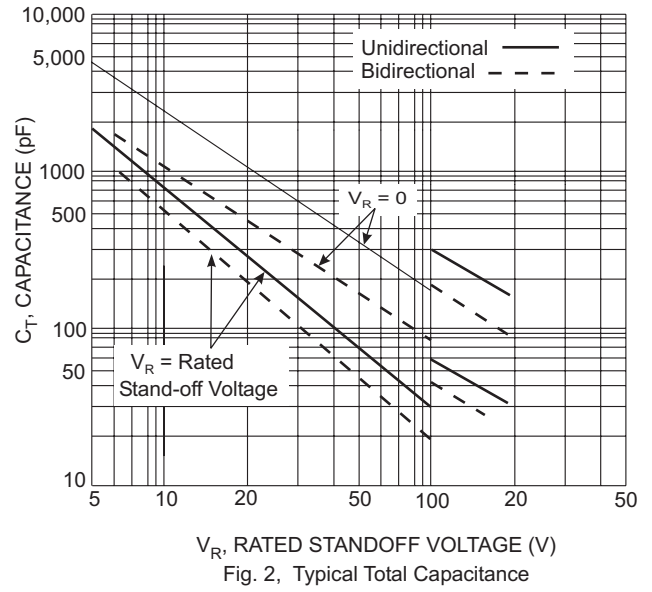


Fig. 2, Typical Total Capacitance

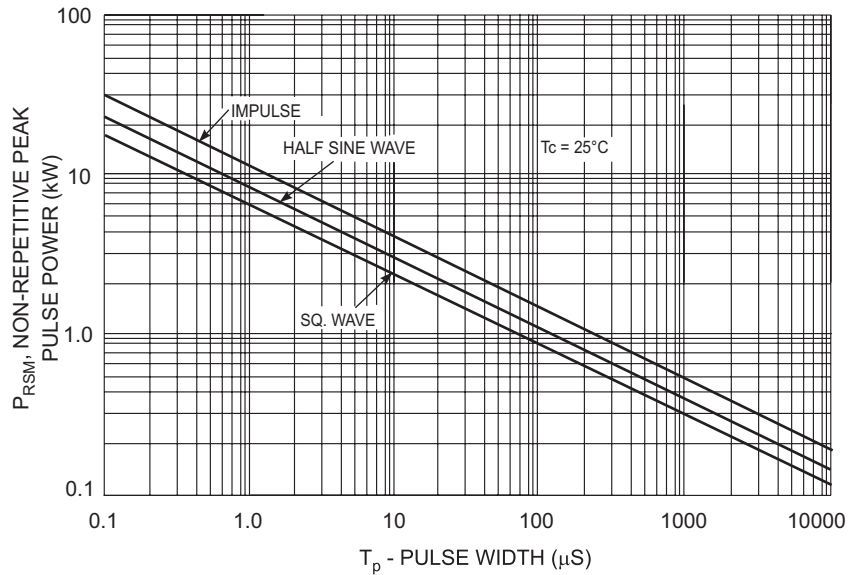


Fig. 3, Peak Pulse Power Derating

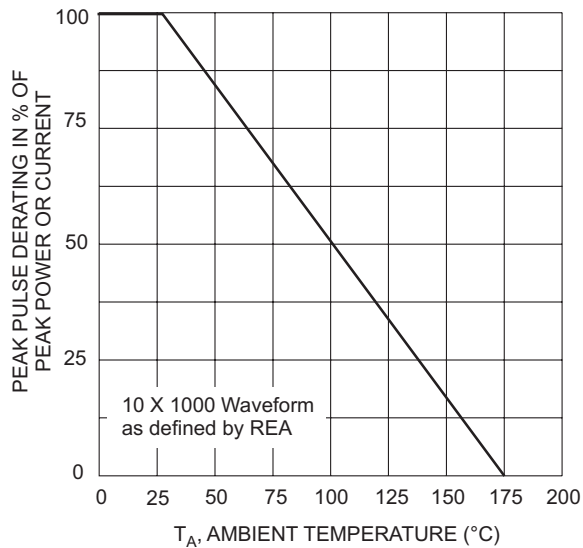


Fig. 4, Derating Curve

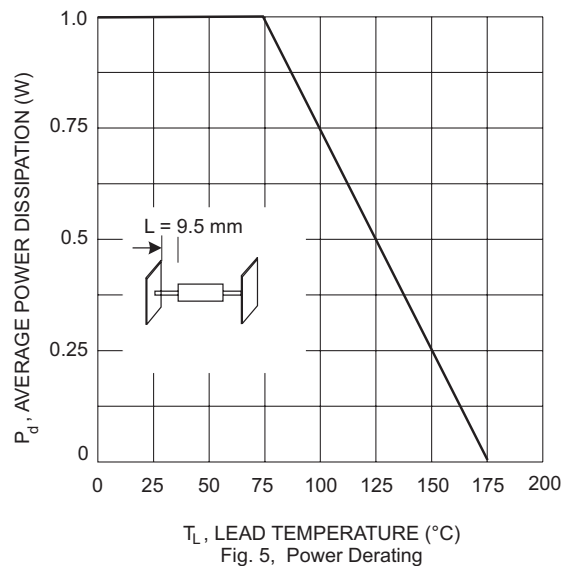


Fig. 5, Power Derating

**Ordering Information** (Note 5)

| Device           | Packaging | Shipping                |
|------------------|-----------|-------------------------|
| (Type Number)-B* | DO-15     | 1K/Bulk                 |
| (Type Number)-T* | DO-15     | 4K/Tape & Reel, 13-inch |

- Notes:
- \*Add "-B" or "-T" to the appropriate type number in Table 1 on Page 2. Example: 6.5V TVS = SA6V5(C)A-B.
  - For packaging details, visit our website at <http://www.diodes.com/datasheets/ap02008.pdf>.