

**Maximum Ratings** (@T<sub>A</sub> = +25°C unless otherwise specified.)

| Characteristic                                                                                               | Symbol             | Value      | Unit |
|--------------------------------------------------------------------------------------------------------------|--------------------|------------|------|
| Peak Pulse Power Dissipation<br>(Non repetitive current pulse derated above T <sub>A</sub> = +25°C) (Note 6) | P <sub>PK</sub>    | 1500       | W    |
| Peak Forward Surge Current,<br>8.3ms Single Half Sine-Wave Superimposed on Rated Load (Notes 6, 7, & 8)      | I <sub>FSM</sub>   | 200        | A    |
| Steady State Power Dissipation @ T <sub>L</sub> = +75°C                                                      | PM <sub>(AV)</sub> | 5.0        | W    |
| Instantaneous Forward Voltage @ I <sub>FP</sub> = 100A (Notes 6 & 8)                                         | V <sub>F</sub>     | See Note 9 | V    |

**Thermal Characteristics**

| Characteristic              | Symbol           | Value       | Unit |
|-----------------------------|------------------|-------------|------|
| Operating Temperature Range | T <sub>J</sub>   | -55 to +150 | °C   |
| Storage Temperature Range   | T <sub>STG</sub> | -55 to +175 | °C   |

- Notes:
- 6. Valid provided that terminals are kept at ambient temperature.
  - 7. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
  - 8. Unidirectional units only.
  - 9. V<sub>F</sub> = 3.5V for SMCJ5.0A through SMCJ90A, and V<sub>F</sub> = 5.0V for SMCJ100A through SMCJ170A.

**Electrical Characteristics** (@T<sub>A</sub> = +25°C unless otherwise specified.)

| Part Number<br>Add C For<br>Bidirectional<br>(Note 10) | Reverse<br>Standoff<br>Voltage | Breakdown<br>Voltage<br>V <sub>BR</sub> @ I <sub>T</sub> (Note 11) |         | Test<br>Current     | Max. Reverse<br>Leakage @<br>V <sub>RWM</sub> (Note 12) | Max. Clamping<br>Voltage @ I <sub>pp</sub> | Max. Peak Pulse<br>Current I <sub>pp</sub> | Marking Code |     |
|--------------------------------------------------------|--------------------------------|--------------------------------------------------------------------|---------|---------------------|---------------------------------------------------------|--------------------------------------------|--------------------------------------------|--------------|-----|
|                                                        | V <sub>RWM</sub> (V)           | Min (V)                                                            | Max (V) | I <sub>T</sub> (mA) | I <sub>R</sub> (μA)                                     | V <sub>C</sub> (V)                         | (A)                                        | BI           | UNI |
| SMCJ5.0(C)A                                            | 5.0                            | 6.40                                                               | 7.07    | 10                  | 1000                                                    | 9.2                                        | 163.0                                      | BDE          | GDE |
| SMCJ6.0(C)A                                            | 6.0                            | 6.67                                                               | 7.37    | 10                  | 1000                                                    | 10.3                                       | 145.6                                      | BDG          | GDG |
| SMCJ6.5(C)A                                            | 6.5                            | 7.22                                                               | 7.98    | 10                  | 500                                                     | 11.2                                       | 133.9                                      | BDK          | GDK |
| SMCJ7.0(C)A                                            | 7.0                            | 7.78                                                               | 8.60    | 10                  | 200                                                     | 12.0                                       | 125.0                                      | BDM          | GDM |
| SMCJ7.5(C)A                                            | 7.5                            | 8.33                                                               | 9.21    | 1.0                 | 100                                                     | 12.9                                       | 116.3                                      | BDP          | GDP |
| SMCJ8.0(C)A                                            | 8.0                            | 8.89                                                               | 9.83    | 1.0                 | 50                                                      | 13.6                                       | 110.3                                      | BDR          | GDR |
| SMCJ8.5(C)A                                            | 8.5                            | 9.44                                                               | 10.4    | 1.0                 | 20                                                      | 14.4                                       | 104.2                                      | BDT          | GDT |
| SMCJ9.0(C)A                                            | 9.0                            | 10.00                                                              | 11.1    | 1.0                 | 10                                                      | 15.4                                       | 97.4                                       | BDV          | GDV |
| SMCJ10(C)A                                             | 10.0                           | 11.10                                                              | 12.3    | 1.0                 | 5.0                                                     | 17.0                                       | 88.2                                       | BDX          | GDY |
| SMCJ11(C)A                                             | 11.0                           | 12.20                                                              | 13.5    | 1.0                 | 5.0                                                     | 18.2                                       | 82.4                                       | BDZ          | GDZ |
| SMCJ12(C)A                                             | 12.0                           | 13.30                                                              | 14.7    | 1.0                 | 5.0                                                     | 19.9                                       | 75.3                                       | BEE          | GEE |
| SMCJ13(C)A                                             | 13.0                           | 14.40                                                              | 15.9    | 1.0                 | 5.0                                                     | 21.5                                       | 69.7                                       | BEG          | GEG |
| SMCJ14(C)A                                             | 14.0                           | 15.60                                                              | 17.2    | 1.0                 | 5.0                                                     | 23.2                                       | 64.7                                       | BEK          | GEK |
| SMCJ15(C)A                                             | 15.0                           | 16.70                                                              | 18.5    | 1.0                 | 5.0                                                     | 24.4                                       | 61.5                                       | BEM          | GEM |
| SMCJ16(C)A                                             | 16.0                           | 17.80                                                              | 19.7    | 1.0                 | 5.0                                                     | 26.0                                       | 57.7                                       | BEP          | GEP |
| SMCJ17(C)A                                             | 17.0                           | 18.90                                                              | 20.9    | 1.0                 | 5.0                                                     | 27.6                                       | 53.3                                       | BER          | GER |
| SMCJ18(C)A                                             | 18.0                           | 20.00                                                              | 22.1    | 1.0                 | 5.0                                                     | 29.2                                       | 51.4                                       | BET          | GET |
| SMCJ20(C)A                                             | 20.0                           | 22.20                                                              | 24.5    | 1.0                 | 5.0                                                     | 32.4                                       | 46.3                                       | BEV          | GEV |
| SMCJ22(C)A                                             | 22.0                           | 24.40                                                              | 27.0    | 1.0                 | 5.0                                                     | 35.5                                       | 42.2                                       | BEX          | GEX |
| SMCJ24(C)A                                             | 24.0                           | 26.70                                                              | 29.5    | 1.0                 | 5.0                                                     | 38.9                                       | 38.6                                       | BEZ          | GEZ |
| SMCJ26(C)A                                             | 26.0                           | 28.90                                                              | 31.9    | 1.0                 | 5.0                                                     | 42.1                                       | 35.6                                       | BFE          | GFE |
| SMCJ28(C)A                                             | 28.0                           | 31.10                                                              | 34.4    | 1.0                 | 5.0                                                     | 45.4                                       | 33.0                                       | BFG          | GFG |
| SMCJ30(C)A                                             | 30.0                           | 33.30                                                              | 36.8    | 1.0                 | 5.0                                                     | 48.4                                       | 31.0                                       | BFK          | GFK |
| SMCJ33(C)A                                             | 33.0                           | 36.70                                                              | 40.6    | 1.0                 | 5.0                                                     | 53.3                                       | 28.1                                       | BFM          | GFM |
| SMCJ36(C)A                                             | 36.0                           | 40.00                                                              | 44.2    | 1.0                 | 5.0                                                     | 58.1                                       | 25.8                                       | BFP          | GFP |
| SMCJ40(C)A                                             | 40.0                           | 44.40                                                              | 49.1    | 1.0                 | 5.0                                                     | 64.5                                       | 23.2                                       | BFR          | GFR |
| SMCJ43(C)A                                             | 43.0                           | 47.80                                                              | 52.8    | 1.0                 | 5.0                                                     | 69.4                                       | 21.6                                       | BFT          | GFT |
| SMCJ45(C)A                                             | 45.0                           | 50.00                                                              | 55.3    | 1.0                 | 5.0                                                     | 72.7                                       | 20.6                                       | BFV          | GFV |
| SMCJ48(C)A                                             | 48.0                           | 53.30                                                              | 58.9    | 1.0                 | 5.0                                                     | 77.4                                       | 19.4                                       | BFX          | GFY |
| SMCJ51(C)A                                             | 51.0                           | 56.70                                                              | 62.7    | 1.0                 | 5.0                                                     | 82.4                                       | 18.2                                       | BFZ          | GFZ |
| SMCJ54(C)A                                             | 54.0                           | 60.00                                                              | 66.3    | 1.0                 | 5.0                                                     | 87.1                                       | 17.2                                       | BGE          | GGE |
| SMCJ58(C)A                                             | 58.0                           | 64.40                                                              | 71.2    | 1.0                 | 5.0                                                     | 93.6                                       | 16.0                                       | BGG          | GGG |
| SMCJ60(C)A                                             | 60.0                           | 66.70                                                              | 73.7    | 1.0                 | 5.0                                                     | 96.8                                       | 15.5                                       | BGK          | GGK |
| SMCJ64(C)A                                             | 64.0                           | 71.10                                                              | 78.6    | 1.0                 | 5.0                                                     | 103.0                                      | 14.6                                       | BGM          | GGM |
| SMCJ70(C)A                                             | 70.0                           | 77.80                                                              | 86.0    | 1.0                 | 5.0                                                     | 113.0                                      | 13.3                                       | BGP          | GGP |
| SMCJ75(C)A                                             | 75.0                           | 83.30                                                              | 92.1    | 1.0                 | 5.0                                                     | 121.0                                      | 12.4                                       | BGR          | GGR |
| SMCJ78(C)A                                             | 78.0                           | 86.70                                                              | 95.8    | 1.0                 | 5.0                                                     | 126.0                                      | 11.4                                       | BGT          | GGT |
| SMCJ85(C)A                                             | 85.0                           | 94.40                                                              | 104     | 1.0                 | 5.0                                                     | 137.0                                      | 10.4                                       | BGV          | GGV |
| SMCJ90(C)A                                             | 90.0                           | 100.00                                                             | 111     | 1.0                 | 5.0                                                     | 146.0                                      | 10.3                                       | BGX          | GGX |
| SMCJ100(C)A                                            | 100.0                          | 111.00                                                             | 123     | 1.0                 | 5.0                                                     | 162.0                                      | 9.3                                        | BGZ          | GGZ |
| SMCJ110(C)A                                            | 110.0                          | 122.00                                                             | 135     | 1.0                 | 5.0                                                     | 177.0                                      | 8.4                                        | BHE          | GHE |
| SMCJ120(C)A                                            | 120.0                          | 133.00                                                             | 147     | 1.0                 | 5.0                                                     | 193.0                                      | 7.9                                        | BHG          | GHG |
| SMCJ130(C)A                                            | 130.0                          | 144.00                                                             | 159     | 1.0                 | 5.0                                                     | 209.0                                      | 7.2                                        | BHK          | GHK |
| SMCJ150(C)A                                            | 150.0                          | 167.00                                                             | 185     | 1.0                 | 5.0                                                     | 243.0                                      | 6.2                                        | BHM          | GHM |
| SMCJ160(C)A                                            | 160.0                          | 178.00                                                             | 197     | 1.0                 | 5.0                                                     | 259.0                                      | 5.8                                        | BHP          | GHP |
| SMCJ170(C)A                                            | 170.0                          | 189.00                                                             | 209     | 1.0                 | 5.0                                                     | 275.0                                      | 5.5                                        | BHR          | GHR |

Notes: 10. Suffix C denotes bidirectional device.  
11. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10 ~ 15 ms.  
12. For bidirectional devices having V<sub>RWM</sub> of 10V and under, the I<sub>R</sub> is doubled.

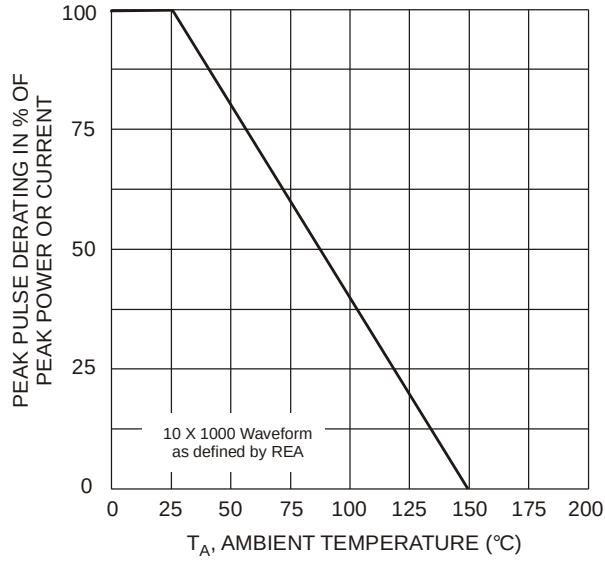


Fig. 1 Pulse Derating Curve

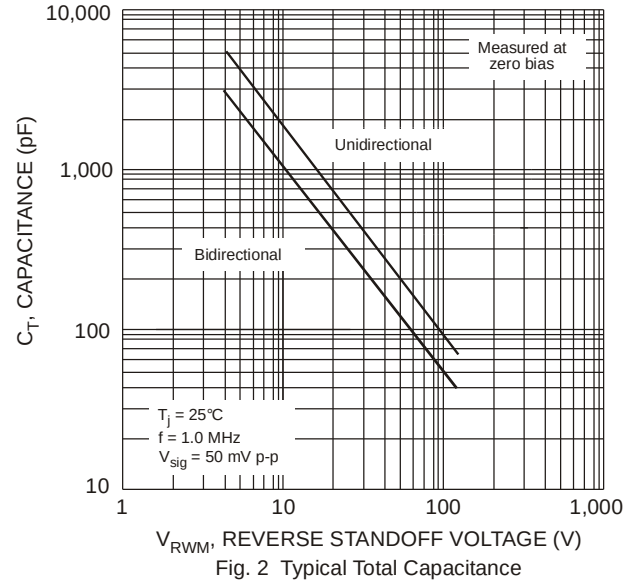


Fig. 2 Typical Total Capacitance

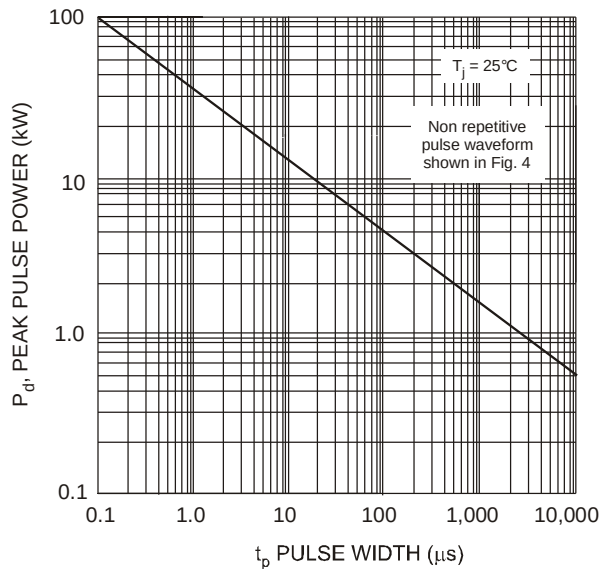


Fig. 3 Pulse Rating Curve

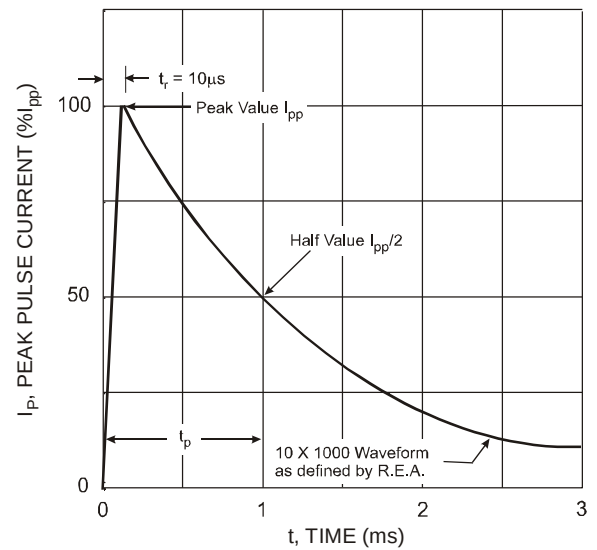


Fig. 4 Pulse Waveform

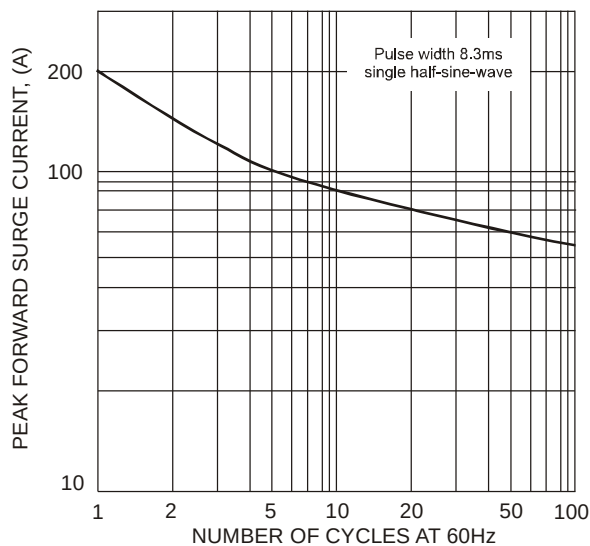


Fig. 5, Maximum Non-Repetitive Surge Current

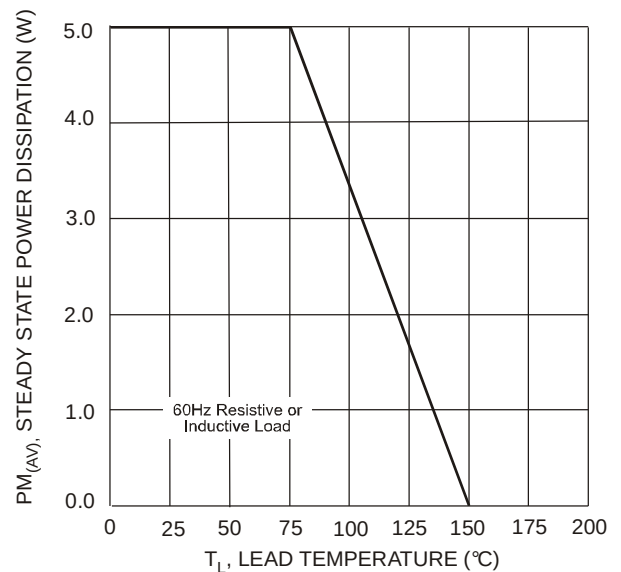
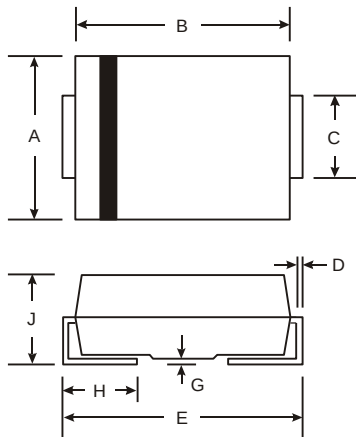


Fig. 6 Steady State Power Derating Curve

## Package Outline Dimensions

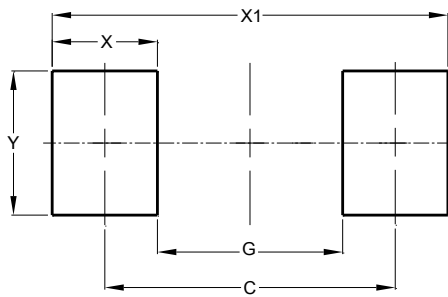
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



| SMC                  |      |      |
|----------------------|------|------|
| Dim                  | Min  | Max  |
| A                    | 5.59 | 6.22 |
| B                    | 6.60 | 7.11 |
| C                    | 2.75 | 3.18 |
| D                    | 0.15 | 0.31 |
| E                    | 7.75 | 8.13 |
| G                    | 0.10 | 0.20 |
| H                    | 0.76 | 1.52 |
| J                    | 2.00 | 2.50 |
| All Dimensions in mm |      |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 6.90          |
| G          | 4.40          |
| X          | 2.50          |
| X1         | 9.40          |
| Y          | 3.30          |

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