

Features

- 400W Peak Pulse Power Dissipation
- Glass Passivated Die Construction
- Unidirectional and Bidirectional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

Mechanical Data

- Case: SMA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208
- Polarity Indicator: Cathode Band (Note: Bi-directional devices have no polarity indicator.)
- Weight: 0.064 grams (approximate)



Top View



Bottom View

Ordering Information (Note 3)

| Part Number | Case | Packaging |
|------------------|------|------------------|
| SMAJXXX(C)A-13-F | SMA | 5000/Tape & Reel |

*x = Device Voltage, e.g., SMCJ170A-13-F. Example: SMAJ170A-13-F.

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes
 2. Product manufactured with Date Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



xx = Product type marking code
(See Electrical Characteristics Table)
 DII = Manufacturers' code marking
 YWW = Date code marking
 Y = Last digit of year (ex: 2 for 2002)
 WW = Week code (01 to 53)

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

| Characteristic | Symbol | Value | Unit |
|---|-------------|-------|------|
| Peak Pulse Power Dissipation (Non repetitive current pulse derated above $T_A = 25^\circ\text{C}$) (Note 4) | P_{PK} | 400 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 4, 5 & 6) | I_{FSM} | 40 | A |
| Steady State Power Dissipation @ $T_L = 75^\circ\text{C}$ | $PM_{(AV)}$ | 1.0 | W |
| Instantaneous Forward Voltage @ $I_{PP} = 35\text{A}$ (Notes 4, 5, & 6) | V_F | 3.5 | V |

- Notes:
4. Valid provided that terminals are kept at ambient temperature.
 5. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
 6. Unidirectional units only.

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|-----------------------------|-----------|-------------|------------------|
| Operating Temperature Range | T_J | -55 to +150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to +175 | $^\circ\text{C}$ |

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Part Number Add C For Bidirectional (Note 7) | Reverse Standoff Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} @ I _T (Note 8) | | Test Current I _T (mA) | Max. Reverse Leakage @ V _{RWM} (Note 9) I _R (μA) | Max. Clamping Voltage @ I _{pp} V _C (V) | Max. Peak Pulse Current I _{pp} (A) | Marking Code | |
|---|--|---|---------|--|---|--|--|--------------|------|
| | | Min (V) | Max (V) | | | | | BI- | UNI- |
| SMAJ5.0(C)A | 5.0 | 6.40 | 7.25 | 10 | 800 | 9.2 | 43.5 | TE | HE |
| SMAJ6.0(C)A | 6.0 | 6.67 | 7.37 | 10 | 800 | 10.3 | 38.8 | TG | HG |
| SMAJ6.5(C)A | 6.5 | 7.22 | 7.98 | 10 | 500 | 11.2 | 35.7 | TK | HK |
| SMAJ7.0(C)A | 7.0 | 7.78 | 8.60 | 10 | 200 | 12.0 | 33.3 | TM | HM |
| SMAJ7.5(C)A | 7.5 | 8.33 | 9.21 | 1.0 | 100 | 12.9 | 31.0 | TP | HP |
| SMAJ8.0(C)A | 8.0 | 8.89 | 9.83 | 1.0 | 50 | 13.6 | 29.4 | TR | HR |
| SMAJ8.5(C)A | 8.5 | 9.44 | 10.4 | 1.0 | 10 | 14.4 | 27.7 | TT | HT |
| SMAJ9.0(C)A | 9.0 | 10.0 | 11.1 | 1.0 | 5.0 | 15.4 | 26.0 | TV | HV |
| SMAJ10(C)A | 10 | 11.1 | 12.3 | 1.0 | 5.0 | 17.0 | 23.5 | TX | HX |
| SMAJ11(C)A | 11 | 12.2 | 13.5 | 1.0 | 5.0 | 18.2 | 22.0 | TZ | HZ |
| SMAJ12(C)A | 12 | 13.3 | 14.7 | 1.0 | 5.0 | 19.9 | 20.1 | UE | IE |
| SMAJ13(C)A | 13 | 14.4 | 15.9 | 1.0 | 5.0 | 21.5 | 18.6 | UG | IG |
| SMAJ14(C)A | 14 | 15.6 | 17.2 | 1.0 | 5.0 | 23.2 | 17.2 | UK | IK |
| SMAJ15(C)A | 15 | 16.7 | 18.5 | 1.0 | 5.0 | 24.4 | 16.4 | UM | IM |
| SMAJ16(C)A | 16 | 17.8 | 19.7 | 1.0 | 5.0 | 26.0 | 15.3 | UP | IP |
| SMAJ17(C)A | 17 | 18.9 | 20.9 | 1.0 | 5.0 | 27.6 | 14.5 | UR | IR |
| SMAJ18(C)A | 18 | 20.0 | 22.1 | 1.0 | 5.0 | 29.2 | 13.7 | UT | IT |
| SMAJ20(C)A | 20 | 22.2 | 24.5 | 1.0 | 5.0 | 32.4 | 12.3 | UV | IV |
| SMAJ22(C)A | 22 | 24.4 | 26.9 | 1.0 | 5.0 | 35.5 | 11.2 | UX | IX |
| SMAJ24(C)A | 24 | 26.7 | 29.5 | 1.0 | 5.0 | 38.9 | 10.3 | UZ | IZ |
| SMAJ26(C)A | 26 | 28.9 | 31.9 | 1.0 | 5.0 | 42.1 | 9.5 | VE | JE |
| SMAJ28(C)A | 28 | 31.1 | 34.4 | 1.0 | 5.0 | 45.4 | 8.8 | VG | JG |
| SMAJ30(C)A | 30 | 33.3 | 36.8 | 1.0 | 5.0 | 48.4 | 8.3 | VK | JK |
| SMAJ33(C)A | 33 | 36.7 | 40.6 | 1.0 | 5.0 | 53.3 | 7.5 | VM | JM |
| SMAJ36(C)A | 36 | 40.0 | 44.2 | 1.0 | 5.0 | 58.1 | 6.9 | VP | JP |
| SMAJ40(C)A | 40 | 44.4 | 49.1 | 1.0 | 5.0 | 64.5 | 6.2 | VR | JR |
| SMAJ43(C)A | 43 | 47.8 | 52.8 | 1.0 | 5.0 | 69.4 | 5.7 | VT | JT |
| SMAJ45(C)A | 45 | 50.0 | 55.3 | 1.0 | 5.0 | 72.7 | 5.5 | VV | JV |
| SMAJ48(C)A | 48 | 53.3 | 58.9 | 1.0 | 5.0 | 77.4 | 5.2 | VX | JX |
| SMAJ51(C)A | 51 | 56.7 | 62.7 | 1.0 | 5.0 | 82.4 | 4.9 | VZ | JZ |
| SMAJ54(C)A | 54 | 60.0 | 66.3 | 1.0 | 5.0 | 87.1 | 4.6 | WE | RE |
| SMAJ58(C)A | 58 | 64.4 | 71.2 | 1.0 | 5.0 | 93.6 | 4.3 | WG | RG |
| SMAJ60(C)A | 60 | 66.7 | 73.7 | 1.0 | 5.0 | 96.8 | 4.1 | WK | RK |
| SMAJ64(C)A | 64 | 71.1 | 78.6 | 1.0 | 5.0 | 103 | 3.9 | WM | RM |
| SMAJ70(C)A | 70 | 77.8 | 86.0 | 1.0 | 5.0 | 113 | 3.5 | WP | RP |
| SMAJ75(C)A | 75 | 83.3 | 92.1 | 1.0 | 5.0 | 121 | 3.3 | WR | RR |
| SMAJ78(C)A | 78 | 86.7 | 95.8 | 1.0 | 5.0 | 126 | 2.2 | WT | RT |
| SMAJ85(C)A | 85 | 94.4 | 104 | 1.0 | 5.0 | 137 | 2.9 | WV | RV |
| SMAJ90(C)A | 90 | 100 | 111 | 1.0 | 5.0 | 146 | 2.7 | WX | RX |
| SMAJ100(C)A | 100 | 111 | 123 | 1.0 | 5.0 | 162 | 2.5 | WZ | RZ |
| SMAJ110(C)A | 110 | 122 | 135 | 1.0 | 5.0 | 177 | 2.3 | XE | SE |
| SMAJ120(C)A | 120 | 133 | 147 | 1.0 | 5.0 | 193 | 2.0 | XG | SG |
| SMAJ130(C)A | 130 | 144 | 159 | 1.0 | 5.0 | 209 | 1.9 | XK | SK |
| SMAJ150(C)A | 150 | 167 | 185 | 1.0 | 5.0 | 243 | 1.6 | XM | SM |
| SMAJ160(C)A | 160 | 178 | 197 | 1.0 | 5.0 | 259 | 1.5 | XP | SP |
| SMAJ170(C)A | 170 | 189 | 209 | 1.0 | 5.0 | 275 | 1.4 | XR | SR |
| SMAJ200(C)A | 200 | 224 | 248 | 1.0 | 1.0 | 324 | 1.2 | YT | ST |

- Notes:
- Suffix C denotes Bi-directional device.
 - V_{BR} measured with I_T current pulse = 300μs
 - For Bidirectional devices having V_{RWM} of 10V and under, the I_R is doubled.



Fig. 1 Pulse Derating Curve

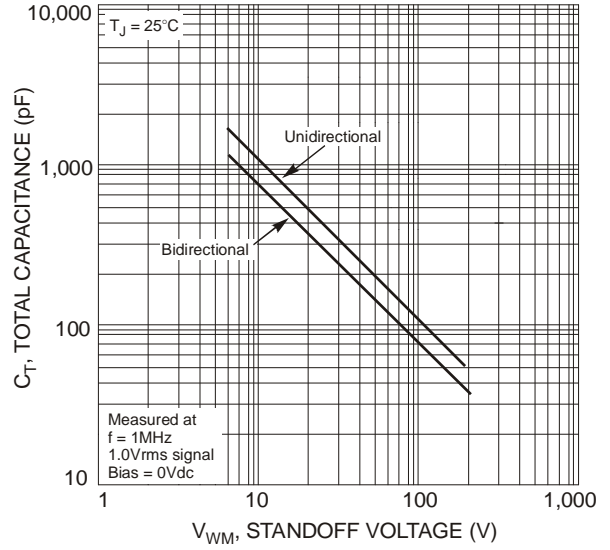


Fig. 2 Typical Total Capacitance

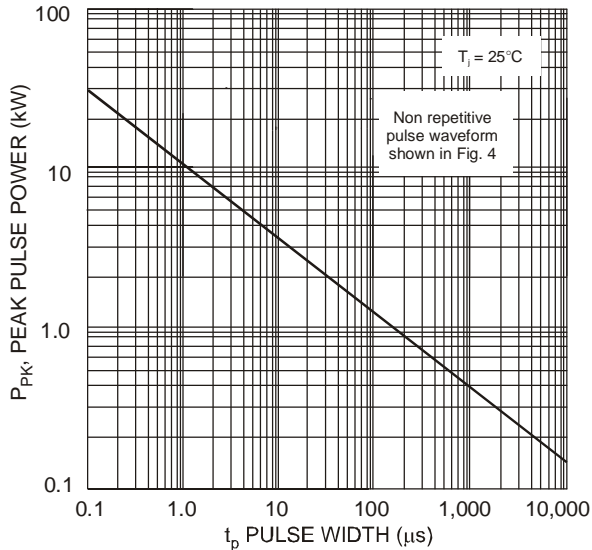


Fig. 3 Pulse Rating Curve



Fig. 4 Pulse Waveform

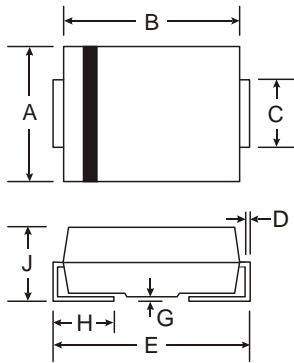


Fig. 5 Maximum Non-Repetitive Surge Current



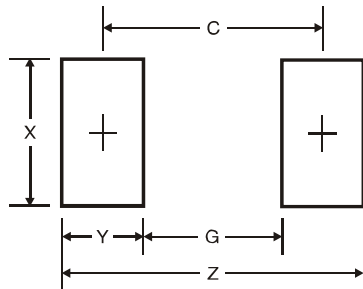
Fig. 6 Steady State Power Derating Curve

Package Outline Dimensions



| SMA | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.29 | 2.92 |
| B | 4.00 | 4.60 |
| C | 1.27 | 1.63 |
| D | 0.15 | 0.31 |
| E | 4.80 | 5.59 |
| G | 0.05 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.01 | 2.30 |
| All Dimensions in mm | | |

Suggested Pad Layout



| SMA Dimensions | Value (in mm) |
|----------------|---------------|
| Z | 6.5 |
| G | 1.5 |
| X | 1.7 |
| Y | 2.5 |
| C | 4.0 |

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