

Product Summary (@T_A = +25°C)

| P _{PK} | I _{FSM} (A) | V _{RWM} (V) | PM _(AV) |
|-----------------|----------------------|----------------------|--------------------|
| 1500W | 200 | 14-36 | 5W |

Description and Applications

Suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against electrostatic discharges according to ISO10605.

Compliance with following standards:

- ISO10605, C = 150pF, R = 330Ω:
30kV (Air Discharge)
30kV (Contact Discharge)
- ISO7637-2
Pulse 1: V_s = -100 V
Pulse 2a: V_s = +50 V
Pulse 3a: V_S = -150 V
Pulse 3b: V_S = +100 V

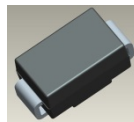
Features and Benefits

- 1500W Peak Pulse Power Dissipation
- 14V - 36V Standoff Voltages
- Glass Passivated Die Construction
- Unidirectional and Bidirectional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Notes 3)**
- Qualified to AEC-Q101 Standards for High Reliability**
- PPAP Capable (Note 4)**

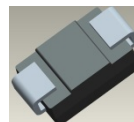
Mechanical Data

- Case: SMC
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Terminals: Lead-Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208③
- Polarity Indicator: Cathode Band (Note: Bidirectional devices have no polarity indicator.)
- Weight: 0.21 grams (Approximate)

SMC



Top View



Bottom View

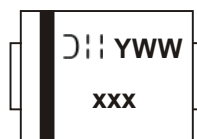
Ordering Information (Note 5)

| Part Number | Qualification | Case | Packaging |
|-------------------|---------------|------|------------------|
| SMCJXX(C)AQ-13-F* | Automotive | SMC | 3000/Tape & Reel |

*x = Device Voltage, e.g., SMCJ14A-13-F.

- Notes:
- EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 - See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 - Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 - Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 - For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



- xxx = Product Type Marking Code (See Page 3)
- 3||| = Manufacturers' Code Marking
- YWW = Date Code Marking
- Y = Last Digit of Year (ex: 9 for 2019)
- 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 6) | P_{PK} | 1500 | W |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Notes 6, 7, & 8) | I_{FSM} | 200 | A |
| Steady State Power Dissipation @ $T_L = +75^\circ\text{C}$ | $PM_{(AV)}$ | 5.0 | W |
| Instantaneous Forward Voltage @ $I_{FP} = 100\text{A}$ (Notes 6 & 8) | V_F | 3.5 | V |

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 | $^\circ\text{C}$ |

- 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.

Electrical Characteristics (@T_A = +25°C unless otherwise specified.)

| Part Number Add C For Bidirectional (Note 9) | Reverse Standoff Voltage V _{RWM} (V) | Breakdown Voltage V _{BR} @ I _T (Note 10) | | Test Current I _T (mA) | Max. Reverse Leakage @ V _{RWM} I _R (μA) | Max. Clamping Voltage @ I _{pp} (Note 11) V _C (V) | Max. Peak Pulse Current I _{pp} (A) | Marking Code | |
|---|--|--|---------|--|--|---|---|--------------|-----|
| | | Min (V) | Max (V) | | | | | BI | UNI |
| SMCJ14(C)AQ | 14.0 | 15.60 | 17.2 | 1.0 | 5.0 | 23.2 | 64.7 | BEK | GEK |
| SMCJ15(C)AQ | 15.0 | 16.70 | 18.5 | 1.0 | 5.0 | 24.4 | 61.5 | BEM | GEM |
| SMCJ16(C)AQ | 16.0 | 17.80 | 19.7 | 1.0 | 5.0 | 26.0 | 57.7 | BEP | GEP |
| SMCJ17(C)AQ | 17.0 | 18.90 | 20.9 | 1.0 | 5.0 | 27.6 | 53.3 | BER | GER |
| SMCJ18(C)AQ | 18.0 | 20.00 | 22.1 | 1.0 | 5.0 | 29.2 | 51.4 | BET | GET |
| SMCJ20(C)AQ | 20.0 | 22.20 | 24.5 | 1.0 | 5.0 | 32.4 | 46.3 | BEV | GEV |
| SMCJ22(C)AQ | 22.0 | 24.40 | 27.0 | 1.0 | 5.0 | 35.5 | 42.2 | BEX | GEX |
| SMCJ24(C)AQ | 24.0 | 26.70 | 29.5 | 1.0 | 5.0 | 38.9 | 38.6 | BEZ | GEZ |
| SMCJ26(C)AQ | 26.0 | 28.90 | 31.9 | 1.0 | 5.0 | 42.1 | 35.6 | BFE | GFE |
| SMCJ28(C)AQ | 28.0 | 31.10 | 34.4 | 1.0 | 5.0 | 45.4 | 33.0 | BFG | GFG |
| SMCJ30(C)AQ | 30.0 | 33.30 | 36.8 | 1.0 | 5.0 | 48.4 | 31.0 | BFK | GFK |
| SMCJ33(C)AQ | 33.0 | 36.70 | 40.6 | 1.0 | 5.0 | 53.3 | 28.1 | BFM | GFM |
| SMCJ36(C)AQ | 36.0 | 40.00 | 44.2 | 1.0 | 5.0 | 58.1 | 25.8 | BFP | GFP |

- Notes:
- 9. Suffix C denotes bidirectional device.
 - 10. V_{BR} measured with I_T current pulse = 10 ~ 15 ms.
 - 11. Per 10 x 1000μs waveform. See Figure 4.

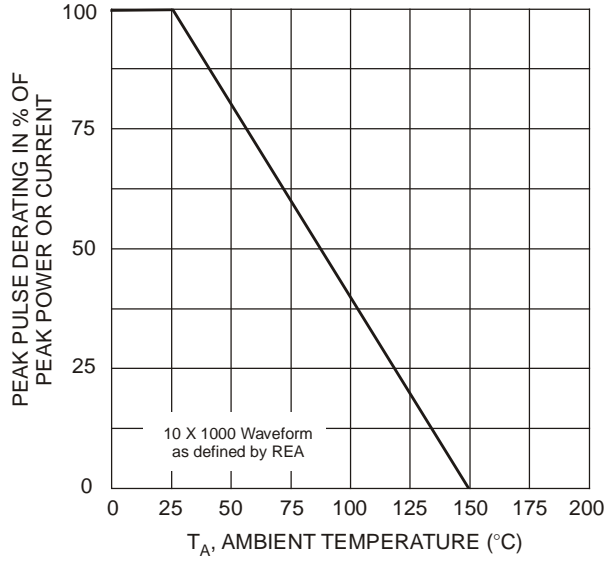


Fig. 1 Pulse Derating Curve

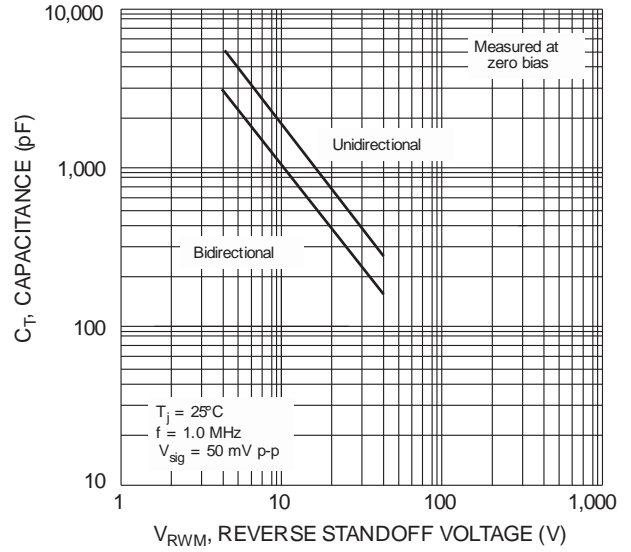


Fig. 2 Typical Total Capacitance

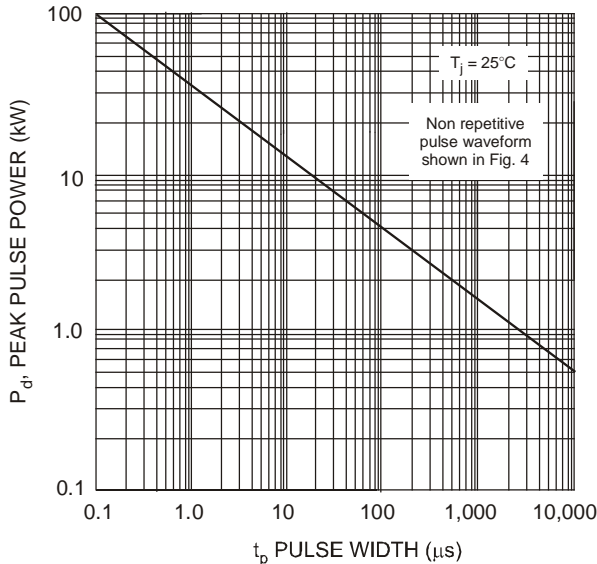


Fig. 3 Pulse Rating Curve

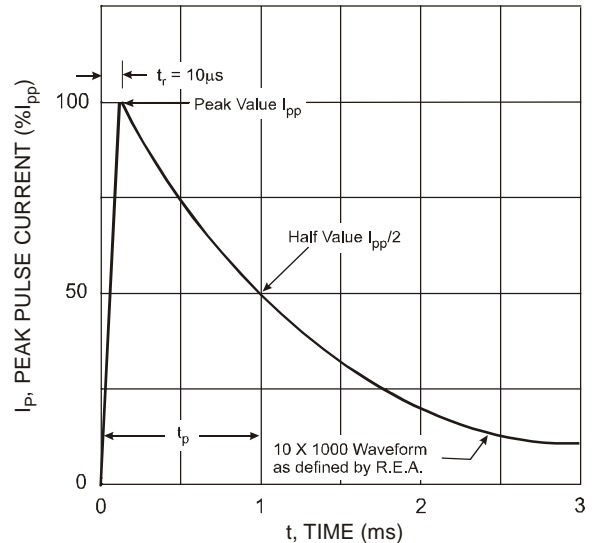


Fig. 4 Pulse Waveform

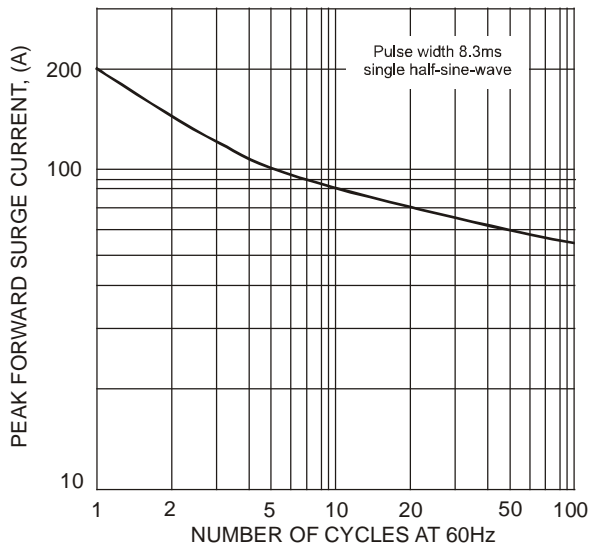


Fig. 5, Maximum Non-Repetitive Surge Current

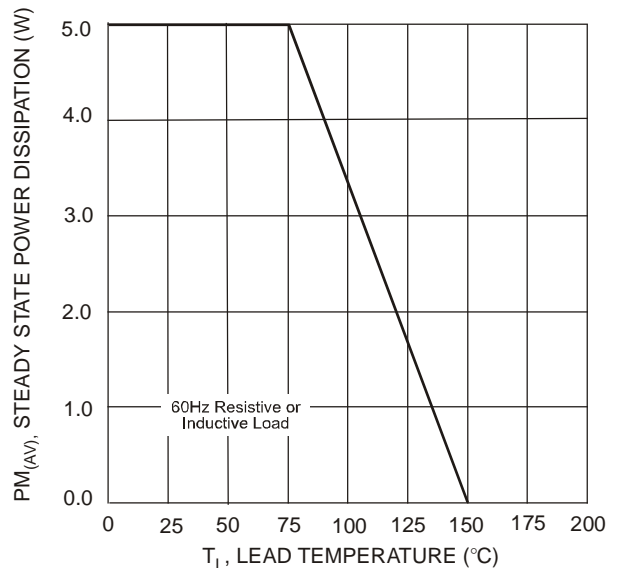
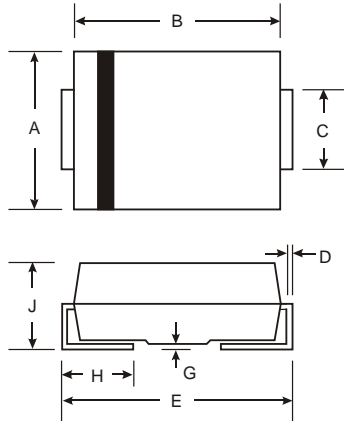


Fig. 6 Steady State Power Derating Curve

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

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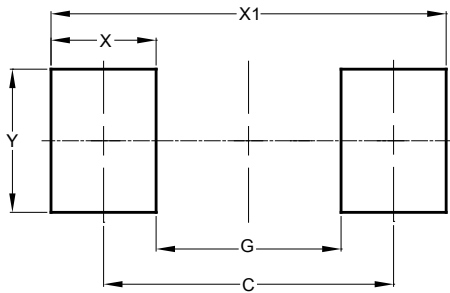


| SMC | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 5.59 | 6.22 |
| B | 6.60 | 7.11 |
| C | 2.75 | 3.18 |
| D | 0.15 | 0.31 |
| E | 7.75 | 8.13 |
| G | 0.10 | 0.20 |
| H | 0.76 | 1.52 |
| J | 2.00 | 2.50 |
| All Dimensions in mm | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMC



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

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