

## Product Summary (@T<sub>A</sub> = +25°C)

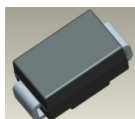
P <sub>PK</sub>	I <sub>FSM</sub> (A)	V <sub>RWM</sub> (V)	PM <sub>(AV)</sub>
600W	100	12-100	5W

## Description and Applications

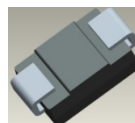
Suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against electrostatic discharges according to ISO10605.

Compliance with the following standards:

- ISO10605, C = 150pF, R = 330Ω:  
30kV (Air Discharge)  
30kV (Contact Discharge)
- ISO7637-2 (Note 6)  
Pulse 1: V<sub>s</sub> = -150V  
Pulse 2a: V<sub>s</sub> = +112V  
Pulse 3a: V<sub>s</sub> = -220V  
Pulse 3b: V<sub>s</sub> = +150V



Top View



Bottom View

## Features and Benefits

- 600W Peak Pulse Power Dissipation
- 12V - 100V Standoff Voltages
- Glass Passivated Die Construction
- Unidirectional and Bidirectional Versions Available
- Excellent Clamping Capability
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability**
- PPAP Capable (Note 4)**

## Mechanical Data

- Case: SMB
- 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 Ⓔ3
- Weight: 0.1 grams (Approximate)

## Ordering Information (Note 5)

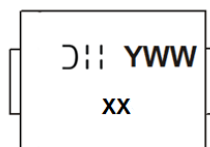
Part Number	Qualification	Case	Packaging
SMBJXXX(C)AQ-13-F	Automotive	SMB	3000/Tape & Reel

\*x = Device Voltage, e.g., SMBJ14A-13-F.

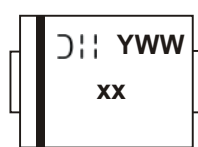
- Notes:
- EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  - See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  - 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
  - Not applicable to parts with stand-off voltage lower than the average battery voltage (13.5V).

## Marking Information

Bidirectional Device



Cathode Band for Unidirectional Device



xx = Product Type Marking Code (See Page 3)  
311 = Manufacturers' Code Marking  
YWW = Date Code Marking  
Y = Last Digit of Year (ex: 8 for 2018)  
WW = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Non Repetitive Current Pulse Derated above T <sub>A</sub> = +25°C) (Note 7)	P <sub>PK</sub>	600	W
Peak Power Derating Above +25°C	P <sub>DER</sub>	4.8	W/°C
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 7, 8, & 9)	I <sub>FSM</sub>	100	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> = 35A (Notes 7, 8, & 9)	V <sub>F</sub>	3.5	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:

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

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

Part Number Add C for Bi- Directional (Note 10)	Reverse Standoff Voltage	Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> (Note 11)		Test Current	Max Reverse Leakage @ V <sub>RWM</sub>	Max Clamping Voltage @ I <sub>pp</sub> (Note 12)	Max. Peak Pulse Current I <sub>pp</sub>	Marking Code	
		Min (V)	Max (V)					BI-	UNI-
See Note 7	V <sub>RWM</sub> (V)			I <sub>T</sub> (mA)	I <sub>R</sub> (μA)	V <sub>C</sub> (V)	(A)		
SMBJ12(C)AQ	12.0	13.30	15.30	1.0	5.0	19.9	30.2	BE	LE
SMBJ14(C)AQ	14.0	15.60	17.90	1.0	5.0	23.2	25.8	BK	LK
SMBJ15(C)AQ	15.0	16.70	19.20	1.0	5.0	24.4	24.0	BM	LM
SMBJ16(C)AQ	16.0	17.80	20.50	1.0	5.0	26.0	23.1	BP	LP
SMBJ17(C)AQ	17.0	18.90	21.70	1.0	5.0	27.6	21.7	BR	LR
SMBJ18(C)AQ	18.0	20.00	23.30	1.0	5.0	29.2	20.5	BT	LT
SMBJ20(C)AQ	20.0	22.20	25.50	1.0	5.0	32.4	18.5	BV	LV
SMBJ22(C)AQ	22.0	24.40	28.00	1.0	5.0	35.5	16.9	BX	LX
SMBJ24(C)AQ	24.0	26.70	30.70	1.0	5.0	38.9	15.4	BZ	LZ
SMBJ26(C)AQ	26.0	28.90	33.20	1.0	5.0	42.1	14.2	CE	ME
SMBJ28(C)AQ	28.0	31.10	35.80	1.0	5.0	45.4	13.2	CG	MG
SMBJ30(C)AQ	30.0	33.30	38.30	1.0	5.0	48.4	12.4	CK	MK
SMBJ33(C)AQ	33.0	36.70	42.20	1.0	5.0	53.3	11.3	CM	MM
SMBJ36(C)AQ	36.0	40.00	46.00	1.0	5.0	58.1	10.3	CP	MP
SMBJ51(C)AQ	51.0	56.70	65.20	1.0	5.0	82.4	7.3	CZ	MZ
SMBJ58(C)AQ	58.0	64.40	74.60	1.0	5.0	93.6	6.4	DG	NG
SMBJ100(C)AQ	100.0	111.0	128.00	1.0	5.0	162.0	3.7	DZ	NZ

Notes: 10. Suffix C denotes bidirectional device.  
11. V<sub>BR</sub> measured with I<sub>T</sub> current pulse = 10ms to 15ms.  
12. Per 10 × 1000μs waveform. See Figure 4.

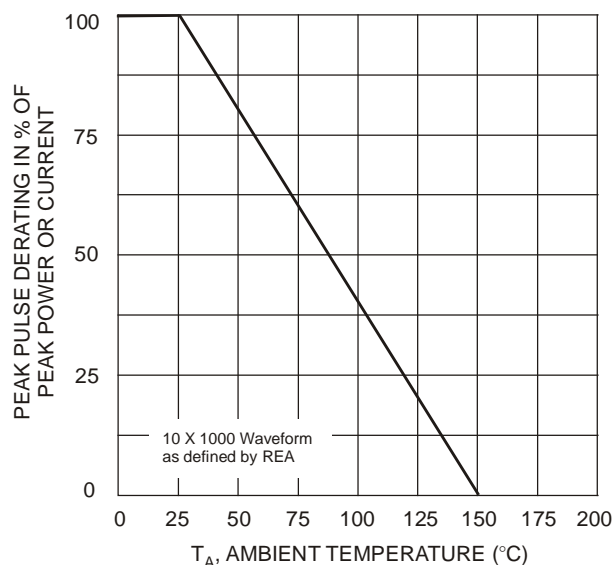


Fig. 1 Pulse Derating Curve

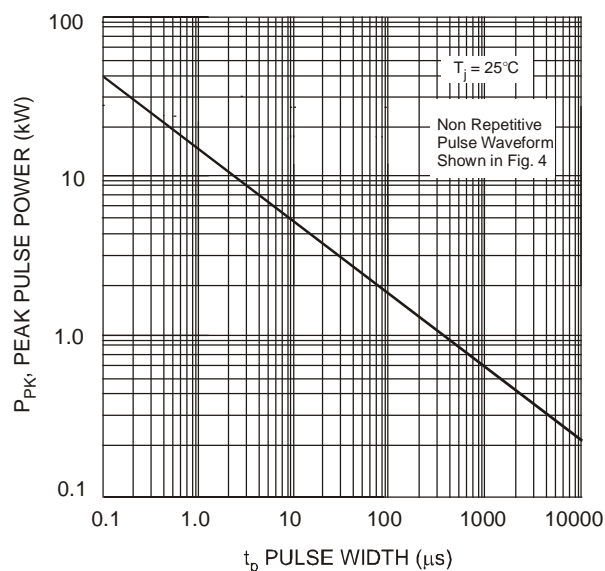


Fig. 3 Pulse Rating Curve

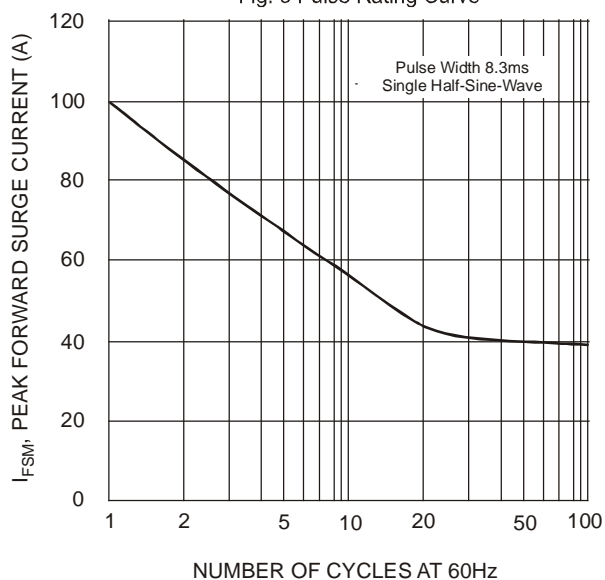


Fig. 5 Maximum Non-Repetitive Surge Current

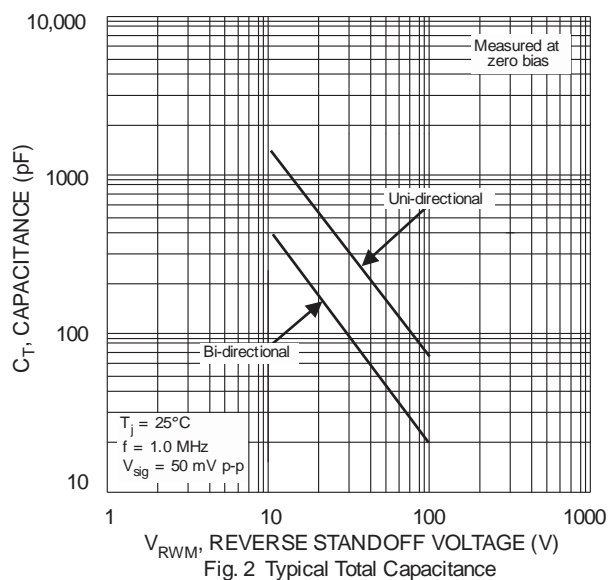
**SMBJ12(C)AQ – SMBJ100(C)AQ**


Fig. 2 Typical Total Capacitance

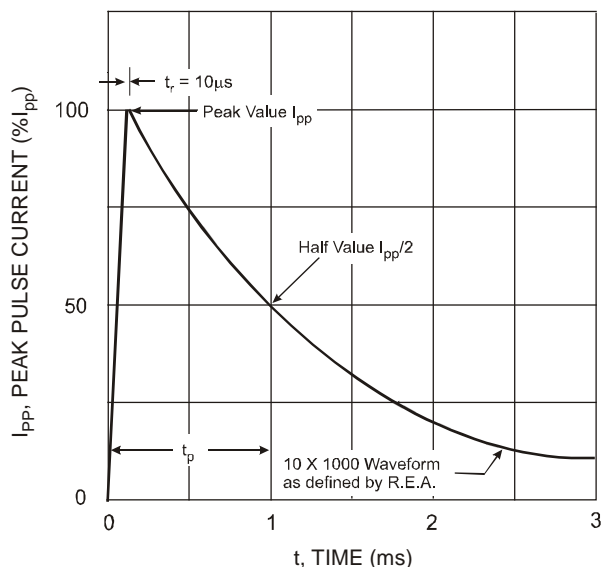


Fig. 4 Pulse Waveform

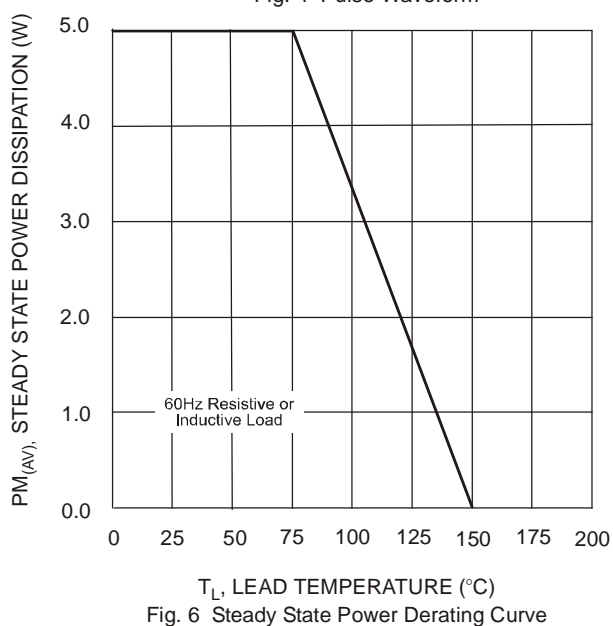
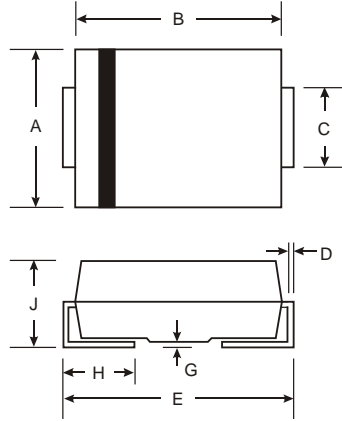


Fig. 6 Steady State Power Derating Curve

## Package Outline Dimensions

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

### SMB



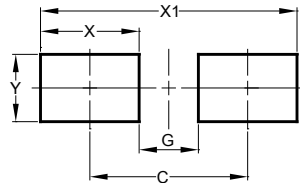
SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

Note: 12. The bar in the upper drawing is polarity indicator for Cathode Band. It is for unidirectional devices only. Bidirectional devices have no polarity Indicator.

## Suggested Pad Layout

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

### SMB



Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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