

Product Summary (@T_A = +25°C)

PPK	I _{FSM} (A)	V _{RWM} (V)	PM(AV)
3000W	300	5 to 170	5W

Description and Applications

This device is suitable to protect sensitive automotive circuits against surges defined in ISO7637-2 and against electrostatic discharges according to ISO10605.

Compliance with the following standards:

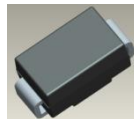
- ISO10605, C = 150pF, R = 330Ω:
30kV (Air Discharge)
30kV (Contact Discharge)
- ISO7637-2:
Pulse 1: V_s = -150V
Pulse 2a: V_s = +112V
Pulse 3a: V_s = -220V
Pulse 3b: V_s = +150V

Features and Benefits

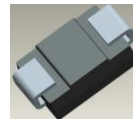
- 3000W Peak Pulse Power Dissipation
- 5V to 170V Standoff Voltages
- Glass Passivated Die Construction
- Excellent Clamping Capability
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Notes 3)**
- The 3.0SMCJ5.0(C)AQ - 3.0SMCJ170AQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Package: SMC
- Package Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 (3) Lead-Free Plating (Matte Tin Finish)
- Weight: 0.21 grams (Approximate)



Top View



Bottom View

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
3.0SMCJX.X(C)AQ-13	SMC	3000	Tape & Reel
3.0SMCJXX(C)AQ-13	SMC	3000	Tape & Reel
3.0SMCJXXXAQ-13	SMC	3000	Tape & Reel

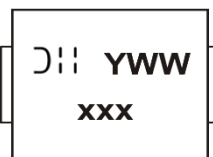
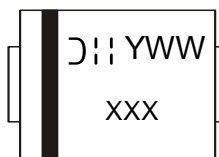
*X = Device Voltage, e.g., 3.0SMCJ14AQ-13.

- 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.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

Cathode Band for Uni-Directional Device

Bi-Directional Device



XXX = Product Type Marking Code
(See *Electrical Characteristics* Table)
D;; = Manufacturers' Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 3 for 2023)
WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Note 5)	PPK	3000	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (Notes 6 & 7)	IFSM	300	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Operating Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

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

Part Number (Note 8)	Reverse Standoff Voltage V _{RWM} (V)	Breakdown Voltage V _{BR} @ I _T (Note 9)		Test Current I _T (mA)	Max Reverse Leakage @ V _{RWM} (Note 10) 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)					Un-	Bi-
3.0SMCJ5.0(C)AQ	5.0	6.40	7.07	10	1000	9.2	326.1	HDE	DHS
3.0SMCJ10(C)AQ	10.0	11.10	12.27	1.0	5.0	17.0	176.5	HDX	DDX
3.0SMCJ11(C)AQ	11.0	12.20	13.5	1.0	5.0	18.2	164.8	HDZ	DDZ
3.0SMCJ12(C)AQ	12.0	13.30	14.7	1.0	5.0	19.9	150.8	HEE	DEE
3.0SMCJ13(C)AQ	13.0	14.40	15.9	1.0	5.0	21.5	139.5	HEG	DED
3.0SMCJ14(C)AQ	14.0	15.60	17.2	1.0	5.0	23.2	129.3	HEK	DEK
3.0SMCJ15(C)AQ	15.0	16.70	18.5	1.0	5.0	24.2	124.0	HEM	DEM
3.0SMCJ16(C)AQ	16.0	17.80	19.7	1.0	5.0	26.0	115.4	HEP	DEP
3.0SMCJ17(C)AQ	17.0	18.90	20.9	1.0	5.0	27.6	108.7	HER	DER
3.0SMCJ18(C)AQ	18.0	20.00	22.1	1.0	5.0	29.2	102.7	HET	DET
3.0SMCJ20(C)AQ	20.0	22.20	24.5	1.0	5.0	32.4	92.6	HEV	DEV
3.0SMCJ22(C)AQ	22.0	24.40	27.0	1.0	5.0	35.5	84.5	HEX	DEX
3.0SMCJ24(C)AQ	24.0	26.70	29.5	1.0	5.0	38.9	77.1	HEZ	DEZ
3.0SMCJ26(C)AQ	26.0	28.90	31.9	1.0	5.0	42.1	71.3	HFE	DFE
3.0SMCJ28(C)AQ	28.0	31.10	34.4	1.0	5.0	45.4	66.1	HFG	DFD
3.0SMCJ30(C)AQ	30.0	33.30	36.8	1.0	5.0	48.4	62.0	HFK	DFK
3.0SMCJ33(C)AQ	33.0	36.70	40.6	1.0	5.0	53.3	56.3	HFM	DFM
3.0SMCJ36(C)AQ	36.0	40.00	44.2	1.0	5.0	58.1	51.6	HFP	DFP
3.0SMCJ58(C)AQ	58.0	64.40	71.2	1.0	5.0	93.6	32.1	HGG	DDD
3.0SMCJ100AQ	100.0	111.00	122.7	1.0	5.0	162.0	18.5	HGZ	—
3.0SMCJ110AQ	110.0	122.00	134.8	1.0	5.0	177.0	16.9	HHE	—
3.0SMCJ120AQ	120.0	133.00	147.0	1.0	5.0	193.0	15.5	HHG	—
3.0SMCJ130AQ	130.0	144.00	159.2	1.0	5.0	209.0	14.4	HHK	—
3.0SMCJ150AQ	150.0	167.00	184.6	1.0	5.0	243.0	12.3	HHM	—
3.0SMCJ160AQ	160.0	178.00	196.7	1.0	5.0	259.0	11.6	HHP	—
3.0SMCJ170AQ	170.0	189.00	208.9	1.0	5.0	275.0	10.9	HHR	—

- Notes:
5. Non-repetitive current pulse per Figure 2 and derated above T_A = +25°C per Figure 1.
 6. Mounted on 8.00mm² (0.013mm thick) land areas.
 7. Measured with 8.3ms single half sine wave. Duty cycle = 4 pulses per minute maximum. For uni-directional devices only.
 8. Additional voltages may be available upon request. Please contact the Diodes Incorporated sales department for assistance.
 9. V_{BR} measured with I_T current pulse = 10ms to 15ms.
 10. The I_R limit is double for bi-directional device for V_{RWM} ≤ 10V.
 11. Per 10 × 1000µs waveform. See Figure 4.

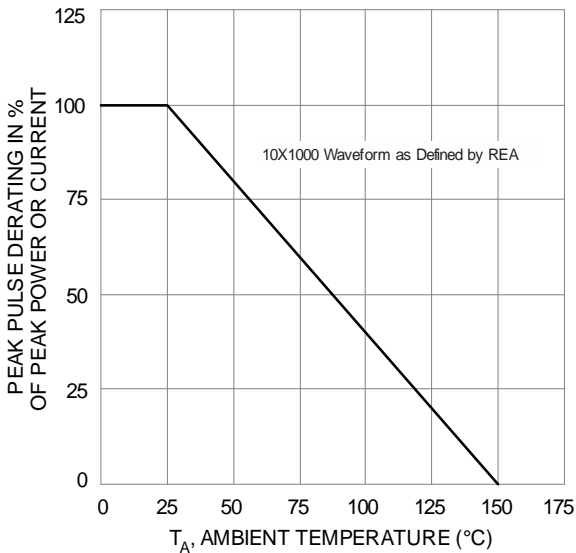


Figure 1. Pulse Derating Curve

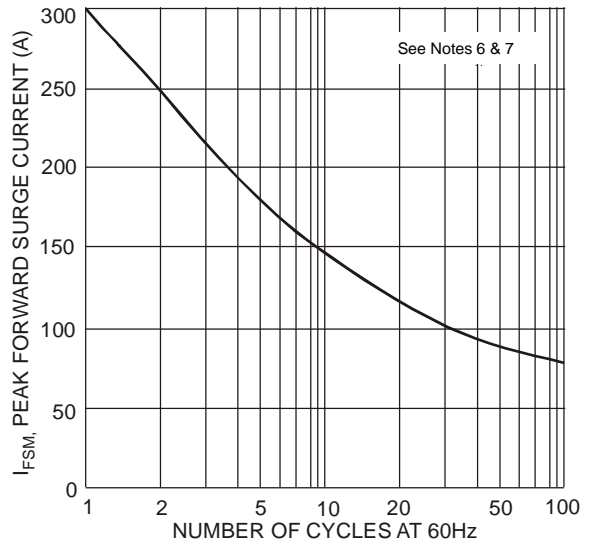


Figure 2. Maximum Non-Repetitive Surge Current

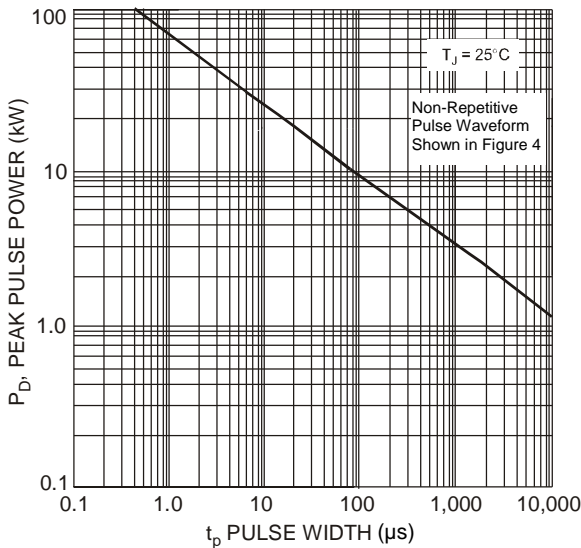


Figure 3. Pulse Rating Curve

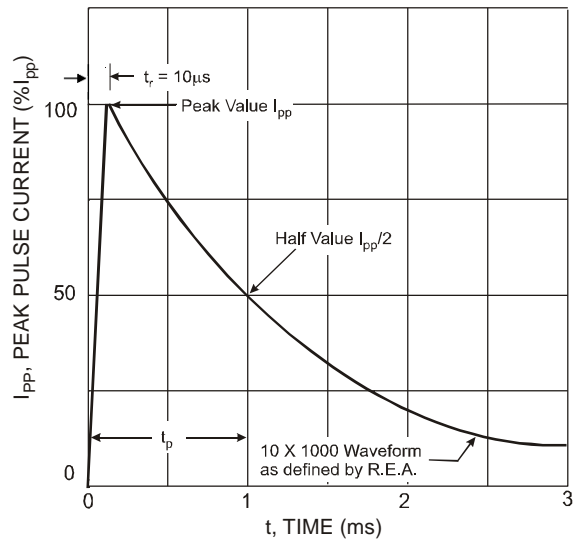


Figure 4. Pulse Waveform

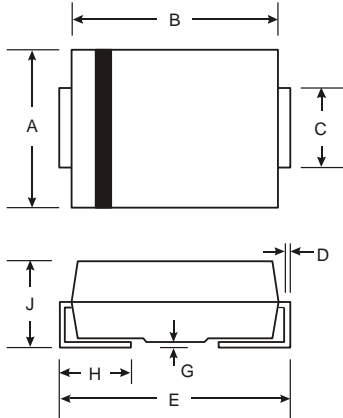
Notes:

- 6. Mounted on 8.00mm² (0.013mm thick) land areas.
- 7. Measured with 8.3ms single half sine wave. Duty cycle = 4 pulses per minute maximum. For uni-directional devices only.

Package Outline Dimensions

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

SMC

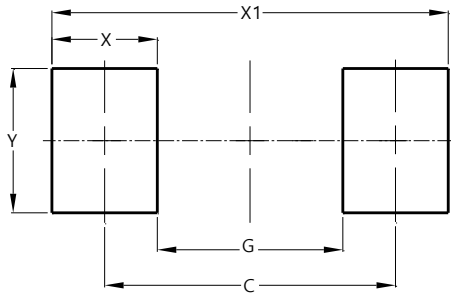


SMC		
Dim	Min	Max
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

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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