

Product Summary (@ $T_A = +25^\circ\text{C}$)

PPK	IFSM	VRWM	PM(AV)
1500W	200A	5V to 85V	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: $V_S = -100\text{V}$
Pulse 2a: $V_S = +50\text{V}$
Pulse 3a: $V_S = -150\text{V}$
Pulse 3b: $V_S = +100\text{V}$

Features and Benefits

- 1,500W Peak Pulse Power Dissipation
- 5V to 85V 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 (Note 3)**
- The SMCJ5.0(C)AQ – SMCJ85(C)AQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
<https://www.diodes.com/quality/product-definitions/>

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 208
- Polarity Indicator: Cathode Band (Note: Bidirectional devices have no polarity indicator.)
- Weight: 0.21 grams (Approximate)

SMC



Top View



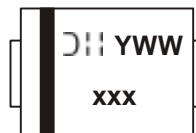
Bottom View

Ordering Information (Note 4)

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

*X = Device Voltage, e.g., SMCJ14AQ-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.
 - For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information


- xxx = Product Type Marking Code (See Page 2)
- DII = Manufacturers' 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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Non-Repetitive Current Pulse Derated Above T _A = +25°C) (Note 5)	P _{PK}	1500	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (Notes 5, 6, & 7)	I _{FSM}	200	A
Steady State Power Dissipation @ T _L = +75°C	PM(AV)	5.0	W
Instantaneous Forward Voltage @ I _{PP} = 100A (Notes 5 & 7)	V _F	3.5	V

Thermal Characteristics

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

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

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

Part Number Add C For Bidirectional (Note 8)	Reverse Standoff Voltage	Breakdown Voltage V _{BR} @ I _T (Note 9)		Test Current	Max. Reverse Leakage @ V _{RWM} (Note 11)	Max. Clamping Voltage @ I _{pp} (Note 10)	Max. Peak Pulse Current	Marking Code	
	V _{RWM} (V)	Min (V)	Max (V)	I _T (mA)	I _R (µA)	V _C (V)	I _{PP} (A)	BI	UNI
SMCJ5.0(C)AQ	5.0	6.40	7.07	10	1000	9.2	163.0	BDE	GDE
SMCJ6.0(C)AQ	6.0	6.67	7.37	10	1000	10.3	145.6	BDG	GDG
SMCJ6.5(C)AQ	6.5	7.22	7.98	10	500	11.2	133.9	BDK	GDK
SMCJ7.0(C)AQ	7.0	7.78	8.60	10	200	12.0	125.0	BDM	GDM
SMCJ7.5(C)AQ	7.5	8.33	9.21	1.0	100	12.9	116.3	BDP	GDP
SMCJ8.0(C)AQ	8.0	8.89	9.83	1.0	50	13.6	110.3	BDR	GDR
SMCJ8.5(C)AQ	8.5	9.44	10.4	1.0	20	14.4	104.2	BDT	GDT
SMCJ9.0(C)AQ	9.0	10.00	11.1	1.0	10	15.4	97.4	BDV	GDV
SMCJ10(C)AQ	10.0	11.10	12.3	1.0	5.0	17.0	88.2	BDX	GDX
SMCJ11(C)AQ	11.0	12.20	13.5	1.0	5.0	18.2	82.4	BDZ	GDZ
SMCJ12(C)AQ	12.0	13.30	14.7	1.0	5.0	19.9	75.3	BEE	GEE
SMCJ13(C)AQ	13.0	14.40	15.9	1.0	5.0	21.5	69.7	BEG	GEG
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
SMCJ48(C)AQ	48.0	53.30	58.9	1.0	5.0	77.4	19.4	BFX	GFX
SMCJ51(C)AQ	51.0	56.70	62.7	1.0	5.0	82.4	18.2	BFZ	GFZ
SMCJ85(C)AQ	85.0	94.40	104	1.0	5.0	137.0	10.4	BGV	GGV

- Notes:
- Suffix C denotes bidirectional device.
 - V_{BR} measured with I_T current pulse = 10ms to 15ms.
 - Per 10 × 1000µs waveform. See Figure 4.
 - For bidirectional devices having V_{RWM} of 10V and under, the I_R is doubled.

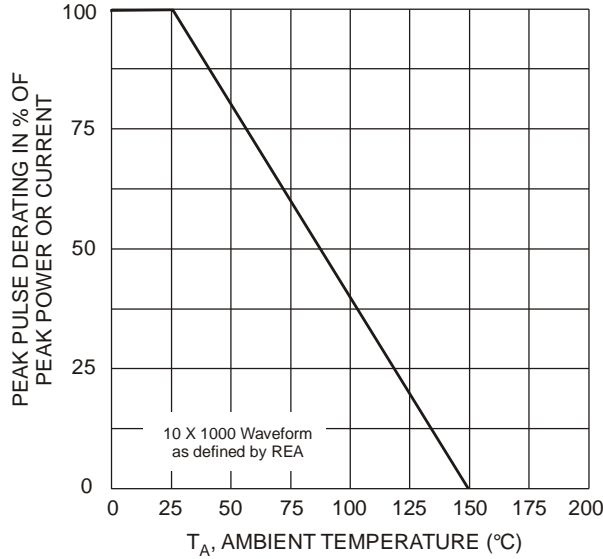


Fig. 1 Pulse Derating Curve

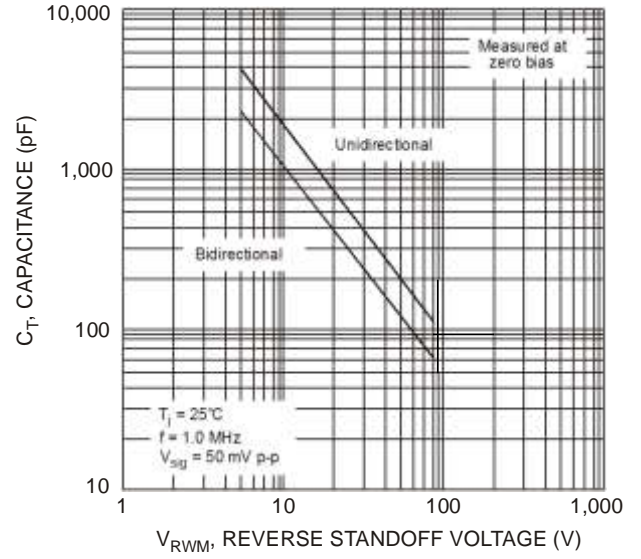


Fig. 2 Typical Total Capacitance

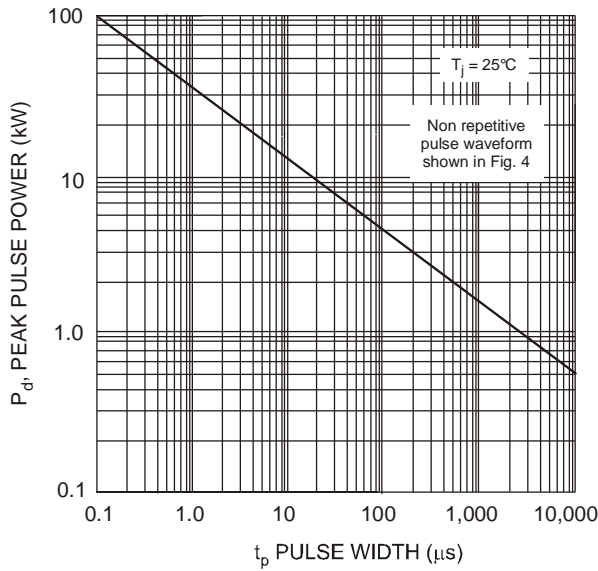


Fig. 3 Pulse Rating Curve

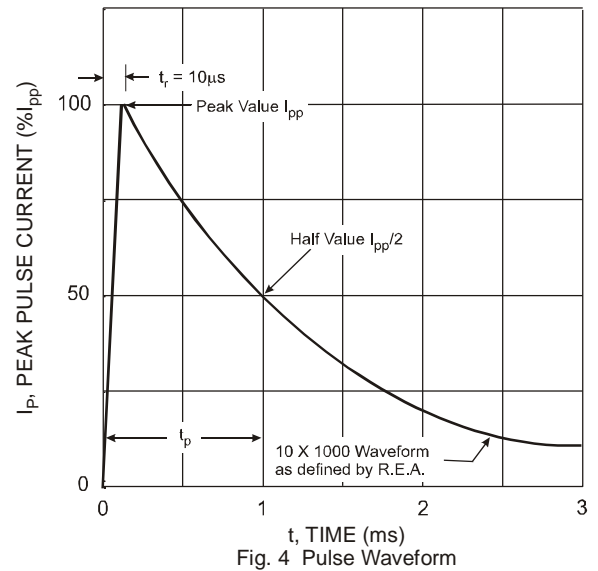


Fig. 4 Pulse Waveform

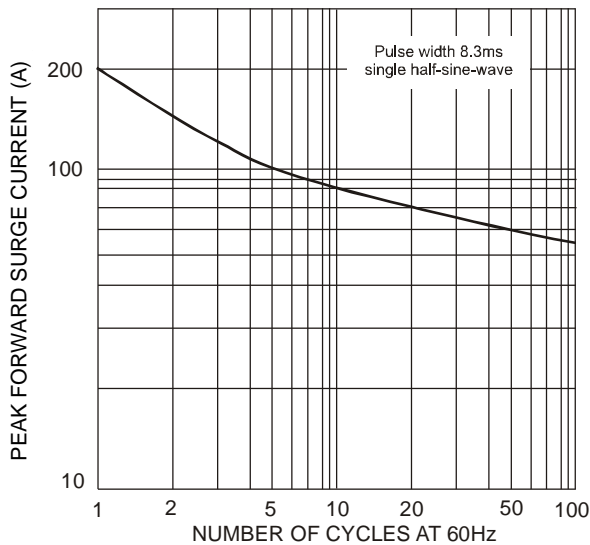


Fig. 5 Maximum Non-Repetitive Surge Current

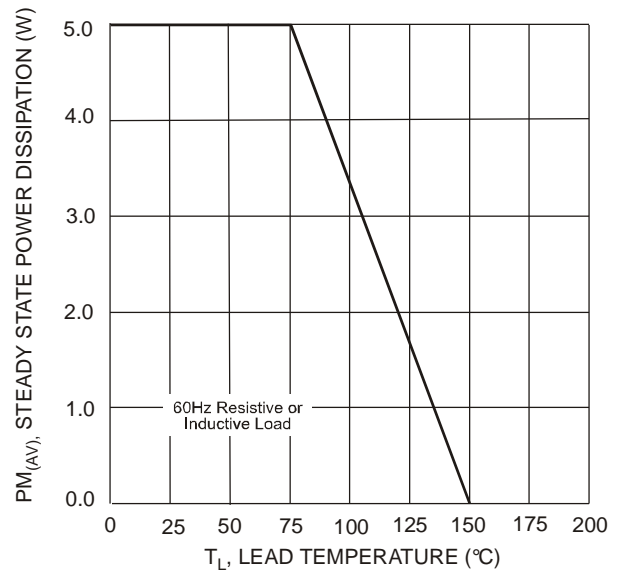
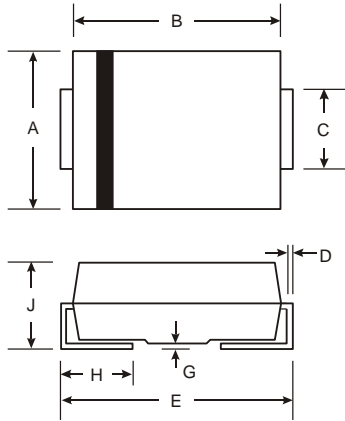


Fig. 6 Steady State Power Derating Curve

Package Outline Dimensions

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

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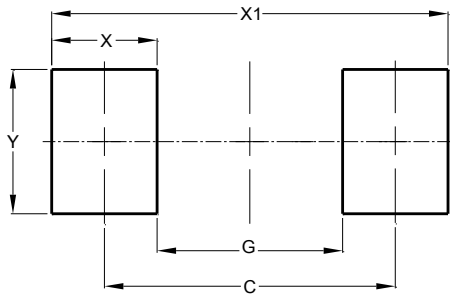


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Dim	Min	Max
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

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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