1,500W SURFACE MOUNT AUTOMOTIVE TRANSIENT VOLTAGE SUPPRESSOR

Product Summary (@T_A = +25°C)

P_{PK}	I_{FSM}	V_{RWM}	$PM_{(AV)}$
1500W	200A	5V to 110V	5W

Features and Benefits

- 1,500W Peak Pulse Power Dissipation
- 5V to 110V 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 DIODES™ SMCJ5.0(C)AQ – SMCJ110(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/

Description and Applications

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

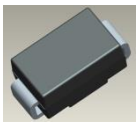
Compliance with following standards:

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

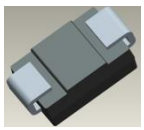
Mechanical Data

- Package: SMC
- Package 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 e3
- Polarity Indicator: Cathode Band (Note: Bidirectional devices have no polarity indicator.)
- Weight: 0.21 grams (Approximate)

SMC



Top View



Bottom View

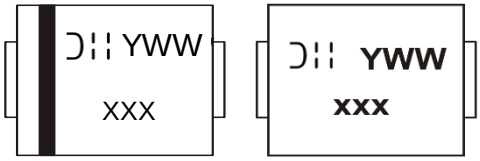
Ordering Information (Note 4)

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

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

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. 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.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. 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 Electrical Characteristics Table)
= Manufacturer's Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 2 for 2022)
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:
5. Valid provided that terminals are kept at ambient temperature.
6. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
7. 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 10)	Max. Clamping Voltage @ I_{PP} (Note 11)	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
SMCJ40(C)AQ	40.0	44.40	49.1	1.0	5.0	64.5	23.2	BFR	GFR
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
SMCJ58(C)AQ	58.0	64.40	71.2	1.0	5.0	93.6	16.0	BGG	GGG
SMCJ60(C)AQ	60.0	66.70	73.7	1.0	5.0	96.8	15.5	BGK	GGK
SMCJ64(C)AQ	64.0	71.10	78.6	1.0	5.0	103.0	14.6	BGM	GGM
SMCJ70(C)AQ	70.0	77.80	86.0	1.0	5.0	113.0	13.3	BGP	GGP
SMCJ75(C)AQ	75.0	83.30	92.1	1.0	5.0	121.0	12.4	BGR	GGR
SMCJ78(C)AQ	78.0	86.70	95.8	1.0	5.0	126.0	11.4	BGT	GGT
SMCJ85(C)AQ	85.0	94.40	104	1.0	5.0	137.0	10.4	BGV	GGV
SMCJ110(C)AQ	110.0	122.00	135	1.0	5.0	177.0	8.4	BHE	GHE

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

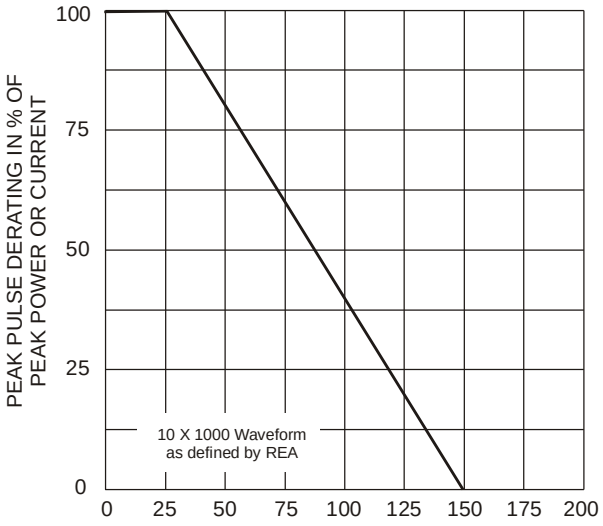


Fig. 1 Pulse Derating Curve

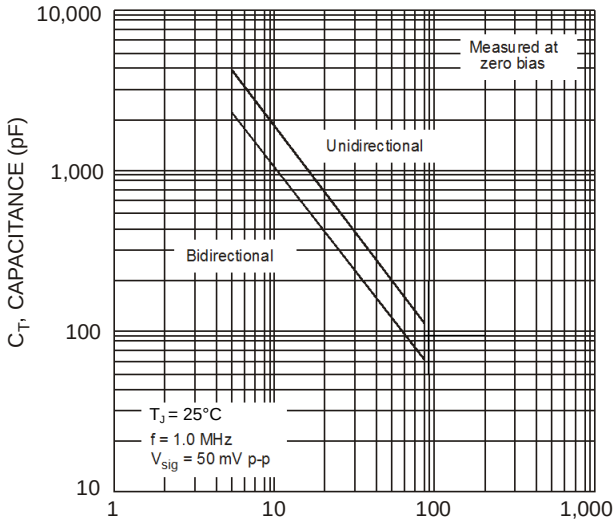


Fig. 2 Typical Total Capacitance

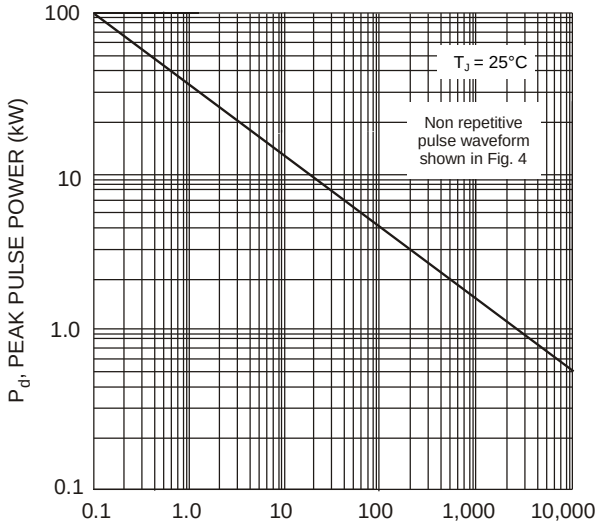


Fig. 3 Pulse Rating Curve

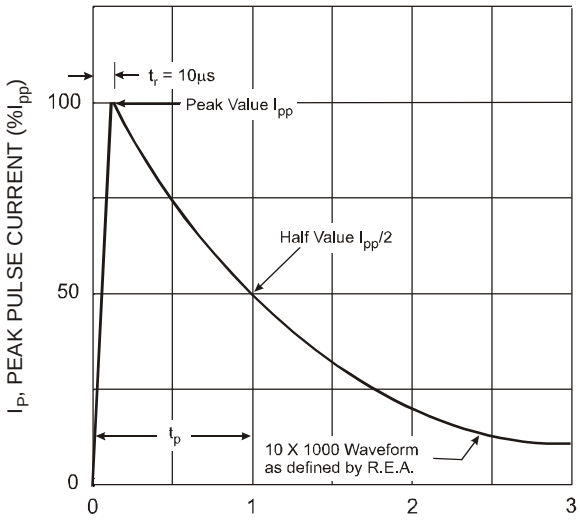


Fig. 4 Pulse Waveform

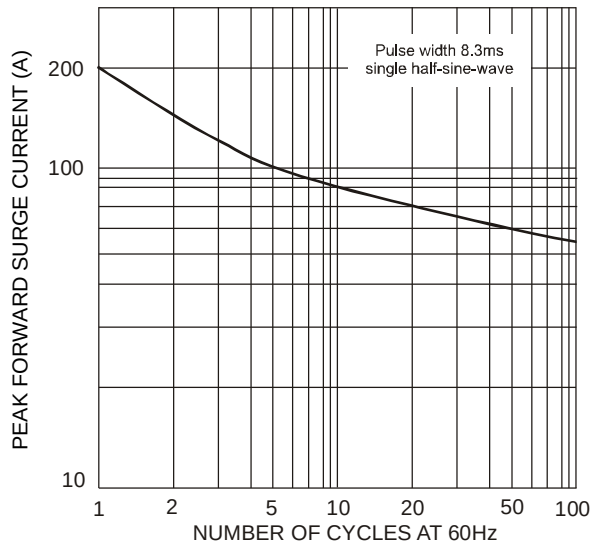


Fig. 5 Maximum Non-Repetitive Surge Current

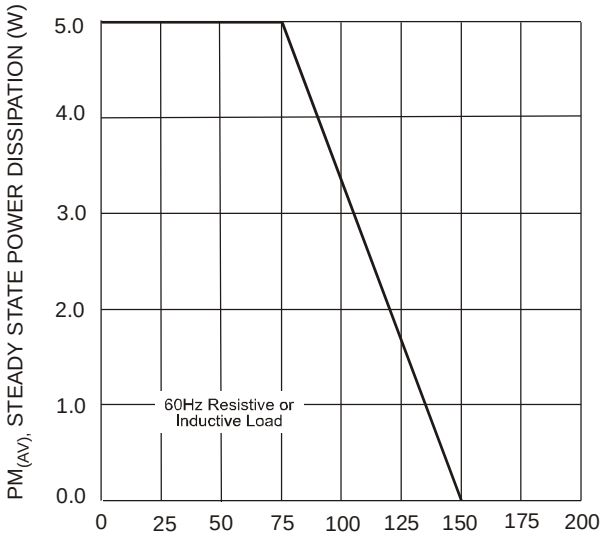


Fig. 6 Steady State Power Derating Curve

Package Outline Dimensions

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

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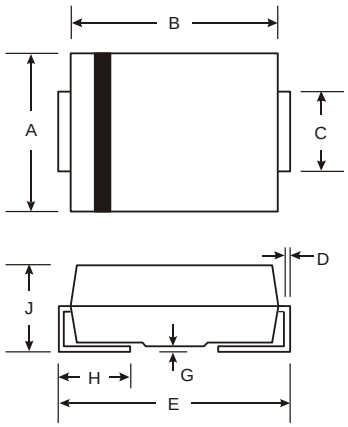
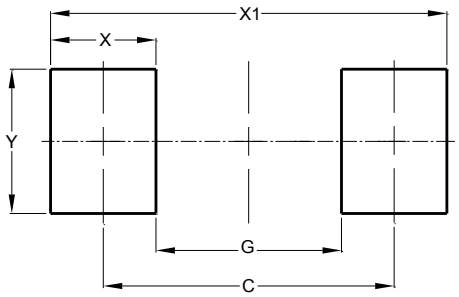


SMC		
Dim	**Min**	**Max**
A	5.59	6.22
B	6.60	7.11
C	2.75	3.18
D	0.15	0.31
E	7.75	8.13
G	0.10	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

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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