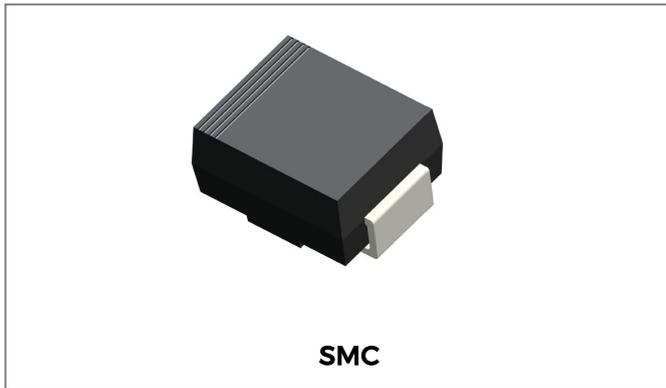


5.0 SMCJ SERIES SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR



Features

- Glass Passivated Die Construction
- 5000W Peak Pulse Power Dissipation
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-0
- “-A” suffix is for Automotive qualified
- This is a Pb - Free Device
- All SMC Parts are Traceable to the Wafer Lot
- Additional testing can be offered upon request

Circuit Diagram



Unipolar



Bipolar

Mechanical Data

- Case: SMC Low Profile Molded Plastic
- Terminals: Solder Plated , Solderable per MIL-STD 750, Method 2026
- Polarity: Color band denoted positive end (cathode) except Bidirectional

Maximum Ratings and Thermal Characteristics@T_A=25°C unless otherwise specified

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us waveform (NOTE 1, 2, 4, Fig.1)	P _{PPM}	5000	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 2),(Note 3)	I _{FSM}	300	A
Typical Thermal Resistance Junction to Lead	R _{θJL}	15	°C/W
Typical Thermal Resistance Junction to Ambient	R _{θJA}	75	°C/W
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55 to 150	°C

- Notes:**
1. Non-repetitive current pulse, per Fig 3 and derated above T_A = 25°C per Fig 2.
 2. Mounted on 8.0x8.0mm Copper Pads to each terminal.
 3. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4pulses per minute maximum.
 4. For a surge greater than the maximum values but energy level < 500 A²s, the diode will fail in short circuit.

Technical Data
Data Sheet N0240 Rev. F



Electrical Characteristics@T_A=25°C unless otherwise specified

UNI-POLAR	BI-POLAR	DEVICE MARKING CODE		REVERSE STAND-OFF VOLTAGE V _{RWM} (V)	BREAKDOWN VOLTAGE V _{BR} (V) MIN. @I _T	BREAKDOWN VOLTAGE V _{BR} (V) MAX. @I _T	TEST CURRENT IT(MA)	MAXIMUM CLAMPING VOLTAGE @I _{PP} V _c (V)	PEAK PULSE CURRENT I _{PP} (A)	REVERSE LEAKAGE @V _{RWM} I _r (uA)
		UNI	BI							
5.0SMCJ12A	5.0SMCJ12CA	5PEP	5BEP	12	13.3	14.7	10	19.9	252	800
5.0SMCJ13A	5.0SMCJ13CA	5PEQ	5BEQ	13	14.4	15.9	10	21.5	233	500
5.0SMCJ14A	5.0SMCJ14CA	5PER	5BER	14	15.6	17.2	10	23.2	216	200
5.0SMCJ15A	5.0SMCJ15CA	5PES	5BES	15	16.7	18.5	1	24.4	205	100
5.0SMCJ16A	5.0SMCJ16CA	5PET	5BET	16	17.8	19.7	1	26	193	50
5.0SMCJ17A	5.0SMCJ17CA	5PEU	5BEU	17	18.9	20.9	1	27.6	181	20
5.0SMCJ18A	5.0SMCJ18CA	5PEV	5BEV	18	20	22.1	1	29.2	172	10
5.0SMCJ20A	5.0SMCJ20CA	5PEW	5BEW	20	22.2	24.5	1	32.4	155	5
5.0SMCJ22A	5.0SMCJ22CA	5PEX	5BEX	22	24.4	26.9	1	35.5	141	5
5.0SMCJ24A	5.0SMCJ24CA	5PEZ	5BEZ	24	26.7	29.5	1	38.9	129	5
5.0SMCJ26A	5.0SMCJ26CA	5PFE	5BFE	26	28.9	31.9	1	42.1	119	5
5.0SMCJ28A	5.0SMCJ28CA	5PFG	5BFG	28	31.1	34.4	1	45.4	110	5
5.0SMCJ30A	5.0SMCJ30CA	5PFK	5BFK	30	33.3	36.8	1	48.4	103	5
5.0SMCJ33A	5.0SMCJ33CA	5PFM	5BFM	33	36.7	40.6	1	53.3	93.9	5
5.0SMCJ36A	5.0SMCJ36CA	5PFP	5BFP	36	40	44.2	1	58.1	86.1	5
5.0SMCJ40A	5.0SMCJ40CA	5PFR	5BFR	40	44.4	49.1	1	64.5	77.6	5
5.0SMCJ43A	5.0SMCJ43CA	5PFT	5BFT	43	47.8	52.8	1	69.4	72.1	5
5.0SMCJ45A	5.0SMCJ45CA	5PFV	5BFV	45	50	55.3	1	72.7	68.8	5
5.0SMCJ48A	5.0SMCJ48CA	5PFX	5BFX	48	53.3	58.9	1	77.4	64.7	5
5.0SMCJ51A	5.0SMCJ51CA	5PFZ	5BFZ	51	56.7	62.7	1	82.4	60.7	5
5.0SMCJ54A	5.0SMCJ54CA	5PGE	5BGE	54	60	66.3	1	87.1	57.5	5
5.0SMCJ58A	5.0SMCJ58CA	5PGG	5BGG	58	64.4	71.2	1	93.6	53.5	5
5.0SMCJ60A	5.0SMCJ60CA	5PGK	5BGK	60	66.7	73.7	1	96.8	51.7	5
5.0SMCJ64A	5.0SMCJ64CA	5PGM	5BGM	64	71.1	78.6	1	103	48.6	5
5.0SMCJ70A	5.0SMCJ70CA	5PGP	5BGP	70	77.8	86	1	113	44.3	5
5.0SMCJ75A	5.0SMCJ75CA	5PGR	5BGR	75	83.3	92.1	1	121	41.4	5
5.0SMCJ78A	5.0SMCJ78CA	5PGT	5BGT	78	86.7	95.8	1	126	39.7	5
5.0SMCJ85A	5.0SMCJ85CA	5PGV	5BGV	85	94.4	104	1	137	36.5	5
5.0SMCJ90A	5.0SMCJ90CA	5PGX	5BGX	90	100	111	1	146	34.3	5
5.0SMCJ100A	5.0SMCJ100CA	5PGZ	5BGZ	100	111	123	1	162	30.9	5
5.0SMCJ110A	5.0SMCJ110CA	5PHE	5BHE	110	122	135	1	177	28.3	5
5.0SMCJ120A	5.0SMCJ120CA	5PHG	5BHG	120	133	147	1	193	26	5
5.0SMCJ130A	5.0SMCJ130CA	5PHK	5BHK	130	144	159	1	209	24	5
5.0SMCJ150A	5.0SMCJ150CA	5PHM	5BHM	150	167	185	1	243	20.6	5
5.0SMCJ160A	5.0SMCJ160CA	5PHP	5BHP	160	178	197	1	259	19.3	5
5.0SMCJ170A	5.0SMCJ170CA	5PHR	5BHR	170	189	209	1	275	18.2	5

Notes: 1. "C" Suffix Designates Bi-directional Devices; 2. "A" Suffix Designates 5% Tolerance Devices
3. No Suffix Designates 10% Tolerance Devices; 4. For bidirectional type having V_{rwm} of 20 volts and less, the I_r limit is double.

Technical Data

D: **5.0 SMCJ -A SERIES Marking Code**



UNI-POLAR	BI-POLAR	DEVICE MARKING CODE		UNI-POLAR	BI-POLAR	DEVICE MARKING CODE	
		UNI	BI			UNI	BI
5.0SMCJ12A-A	5.0SMCJ12CA-A	5PEP-A	5BEP-A	5.0SMCJ48A-A	5.0SMCJ48CA-A	5PFX-A	5BFX-A
5.0SMCJ13A-A	5.0SMCJ13CA-A	5PEQ-A	5BEQ-A	5.0SMCJ51A-A	5.0SMCJ51CA-A	5PFZ-A	5BFZ-A
5.0SMCJ14A-A	5.0SMCJ14CA-A	5PER-A	5BER-A	5.0SMCJ54A-A	5.0SMCJ54CA-A	5PGE-A	5BGE-A
5.0SMCJ15A-A	5.0SMCJ15CA-A	5PES-A	5BES-A	5.0SMCJ58A-A	5.0SMCJ58CA-A	5PGG-A	5BGG-A
5.0SMCJ16A-A	5.0SMCJ16CA-A	5PET-A	5BET-A	5.0SMCJ60A-A	5.0SMCJ60CA-A	5PGK-A	5BGK-A
5.0SMCJ17A-A	5.0SMCJ17CA-A	5PEU-A	5BEU-A	5.0SMCJ64A-A	5.0SMCJ64CA-A	5PGM-A	5BGM-A
5.0SMCJ18A-A	5.0SMCJ18CA-A	5PEV-A	5BEV-A	5.0SMCJ70A-A	5.0SMCJ70CA-A	5PGP-A	5BGP-A
5.0SMCJ20A-A	5.0SMCJ20CA-A	5PEW-A	5BEW-A	5.0SMCJ75A-A	5.0SMCJ75CA-A	5PGR-A	5BGR-A
5.0SMCJ22A-A	5.0SMCJ22CA-A	5PEX-A	5BEX-A	5.0SMCJ78A-A	5.0SMCJ78CA-A	5PGT-A	5BGT-A
5.0SMCJ24A-A	5.0SMCJ24CA-A	5PEZ-A	5BEZ-A	5.0SMCJ85A-A	5.0SMCJ85CA-A	5PGV-A	5BGV-A
5.0SMCJ26A-A	5.0SMCJ26CA-A	5PFE-A	5BFE-A	5.0SMCJ90A-A			
5.0SMCJ28A-A	5.0SMCJ28CA-A	5PFG-A	5BFG-A	5.0SMCJ100A-A			
5.0SMCJ30A-A	5.0SMCJ30CA-A	5PFK-A	5BFK-A	5.0SMCJ110A-A			
5.0SMCJ33A-A	5.0SMCJ33CA-A	5PFM-A	5BFM-A	5.0SMCJ120A-A			
5.0SMCJ36A-A	5.0SMCJ36CA-A	5PFP-A	5BFP-A	5.0SMCJ130A-A			
5.0SMCJ40A-A	5.0SMCJ40CA-A	5PFR-A	5BFR-A	5.0SMCJ150A-A			
5.0SMCJ43A-A	5.0SMCJ43CA-A	5PFT-A	5BFT-A	5.0SMCJ160A-A			
5.0SMCJ45A-A	5.0SMCJ45CA-A	5PFV-A	5BFV-A	5.0SMCJ170A-A			

Ratings and Characteristics Curves

Fig.1- Peak Pulse Power Rating

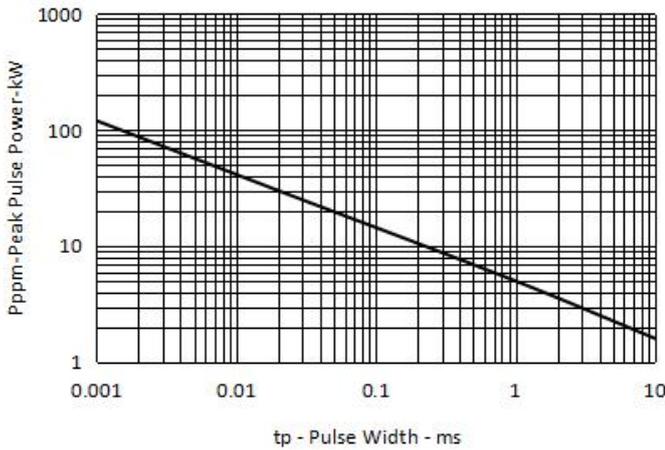


Fig.2- Pulse Derating Curve

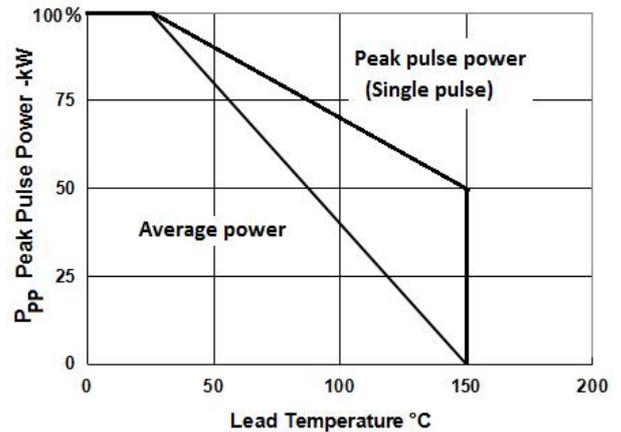


Fig.3 - Pulse Waveform

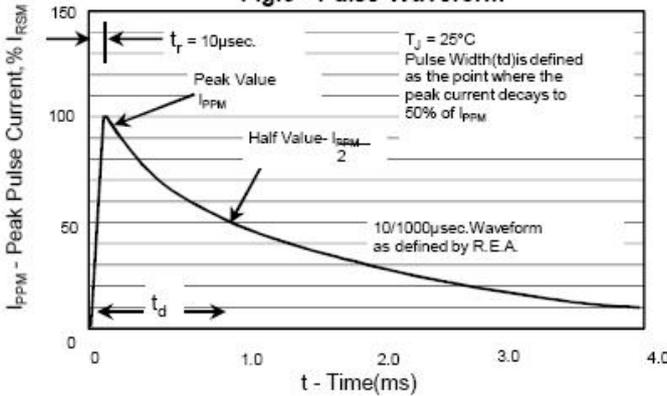


Fig.4 - Typical Junction Capacitance

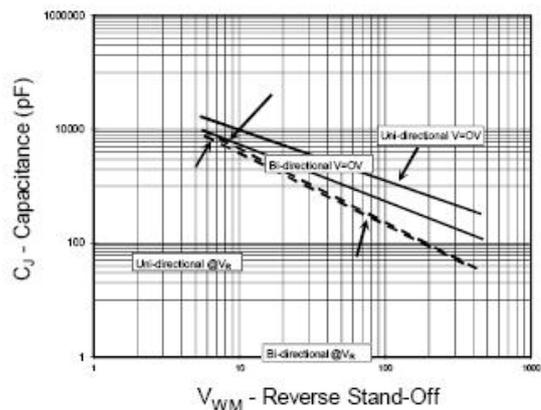


Fig.5 - Steady State Power Derating Curve

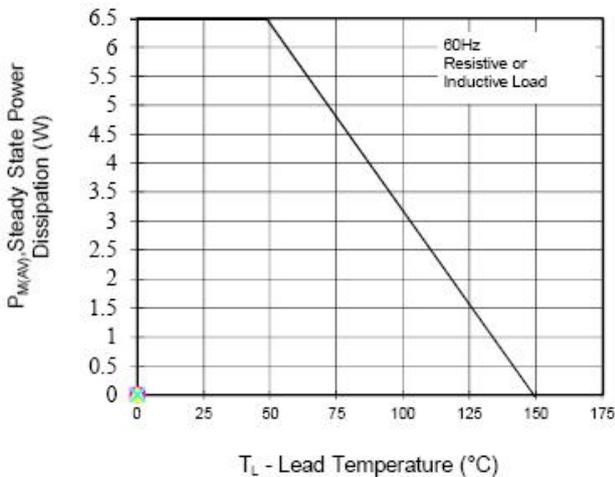
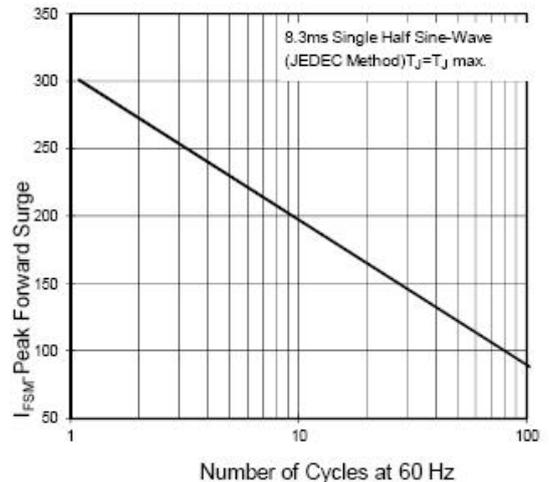


Fig.6 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



Ordering Information

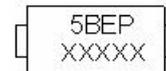
Device	Package	Shipping
5.0SMCJ SERIES	SMC (Pb-Free)	3000pcs / reel
5.0SMCJ SERIES TR	SMC (Pb-Free)	3000pcs / reel
5.0SMCJ58CA-T7	SMC (Pb-Free)	16mm/7" tape, 500pcs/reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Marking Diagram



5.0SMCJ12A



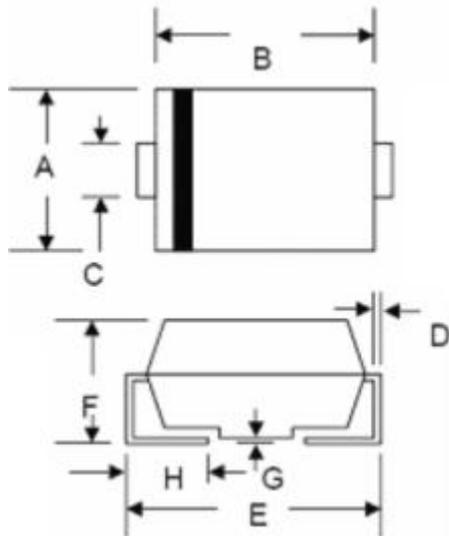
5.0SMCJ12CA

Where XXXXX is YYWWL

5PEP/5BEP = Marking code
YY = Year
WW = Week
L = Lot Number

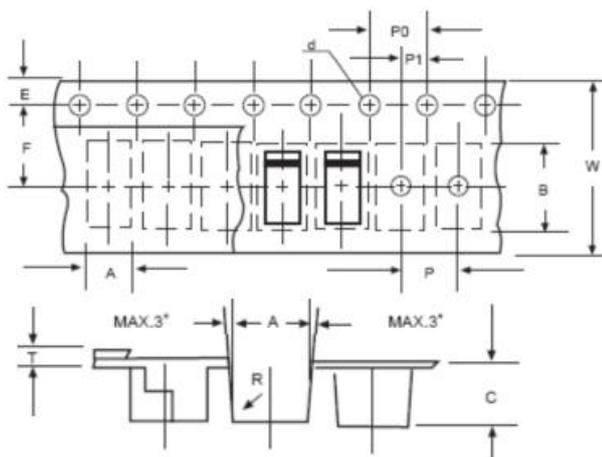
Cautions: Molding resin
Epoxy resin UL:94V-0

Mechanical Dimensions SMC



Dim.	SMC/DO-214AB			
	Min.	Max.	Min.	Max.
A	5.59	6.22	0.220	0.245
B	6.60	7.11	0.260	0.280
C	2.90	3.20	0.114	0.126
D	0.152	0.305	0.006	0.012
E	7.75	8.13	0.305	0.320
F	2.00	2.95	0.079	0.116
G	-	0.203	-	0.008
H	0.76	1.52	0.030	0.060
	In Millimeters		In inches	

Carrier Tape Specification SMC



SYMBOL	Millimeters	
	Min.	Max.
A	5.90	6.10
B	8.20	8.40
C	2.40	2.60
d	1.40	1.60
E	1.40	1.60
F	7.60	7.70
P	7.90	8.10
P0	3.90	4.10
P1	3.90	4.10
T	-	0.600
W	15.80	16.20



DISCLAIMER:

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC Diode Solutions sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC Diode Solutions be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC Diode Solution assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC Diode Solutions be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC Diode Solutions.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC Diode Solutions.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..