

SMA6J SERIES

SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR



Features

- Glass Passivated Die Construction
- 600W Peak Pulse Power Dissipation
- 10V- 70V Standoff Voltage
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Case Material has UL Flammability Classification Rating 94V-O
- This is a Pb - Free Device
- All SMC Parts are Traceable to the Wafer Lot
- Additional testing can be offered upon request
- "-A" suffix is for Automotive qualified

Circuit Diagram



Mechanical Data

- Case: SMA Low Profile Molded Plastic
- Terminals: Solder Plated , Solderable per MIL-STD 750, Method 2026
- Polarity: Color band denotes cathode except Bipolar
- Mounting Position: Any
- Weight:0.064 grams(approx.)

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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation (Note 1)	P _{PPM}	600	W
Non repetitive surge peak forward current for unidirectional types t _p = 10 ms, T _j initial = Tamb	I _{FSM}	60	A
Power dissipation on infinite heatsink	P	4.0	W
Operating junction temperature range	T _J	-55 to +175	°C
Storage temperature range	T _{STG}	-65 to +175	°C
Maximum lead temperature for soldering during 10 s	T _L	260	°C
Junction to leads	R _{th (j-l)}	30	°C/W
Junction to ambient on printed circuit on recommended pad layout	R _{th (j-a)}	120	°C/W

Notes: 1. For a surge greater than the maximum values, the diode will fail in short-circuit.

Electrical Characteristics @ $T_A=25^\circ\text{C}$ unless otherwise specified

Part Number	Marking Code		Stand-off Voltage V_{wm} (V)	Breakdown Voltage V_{BR} @ I_{BR} (mA) (V)			Clamping Voltage V_c ($10 \times 1000\mu\text{s}$) @ I_{PP} Max		Stand By Current I_R @ V_{wm} (uA) Max	Stand By Current I_R @ V_{wm} $T_J=85^\circ\text{C}$ (uA) Max
	Uni-Directional	Bi-Directional		Min.	Max.	mA	V	A		
SMA6J10A/CA	6UE	6BE	10	11.1	12.3	1	15.7	37	1	5
SMA6J12A/CA	6UF	6BF	12	13.3	14.7	1	18.8	31	1	5
SMA6J13A/CA	6UG	6BG	13	14.4	15.9	1	20.4	29	1	5
SMA6J15A/CA	6UH	6BH	15	16.7	18.5	1	23.6	25.1	1	5
SMA6J18A/CA	6UJ	6BJ	18	20.0	22.1	1	28.3	21.5	0.2	1
SMA6J20A/CA	6UK	6BK	20	22.2	24.5	1	31.4	19.4	0.2	1
SMA6J24A/CA	6UM	6BM	24	26.7	29.5	1	37.8	16	0.2	1
SMA6J26A/CA	6UN	6BN	26	28.9	31.9	1	40.9	14.9	0.2	1
SMA6J28A/CA	6UO	6BO	28	31.1	34.4	1	44.0	13.8	0.2	1
SMA6J33A/CA	6UQ	6BQ	33	36.7	40.6	1	51.9	11.8	0.2	1
SMA6J40A/CA	6UR	6BR	40	44.4	49.1	1	62.8	9.7	0.2	1
SMA6J48A/CA	6US	6BS	48	53.3	58.9	1	75.4	8.1	0.2	1
SMA6J58A/CA	6UT	6BT	58	64.4	71.2	1	91.1	6.7	0.2	1
SMA6J70A/CA	6UU	6BU	70	77.8	86.0	1	110	5.5	0.2	1
SMA6J75A/CA	6UV	6BV	75	83.3	92.1	1	121	5	0.2	1
SMA6J78A/CA	6UW	6BW	78	86.7	95.8	1	126	4.8	0.2	1
SMA6J85A/CA	6UX	6BX	85	94.4	104	1	137	4.6	0.2	1
SMA6J90A/CA	6UY	6BY	90	100	111	1	146	4.2	0.2	1

"C" Suffix Designates Bi-directional Devices
"A" Suffix Designates 5% Tolerance Devices
"-A" suffix is for Automotive qualified

Ratings and Characteristics Curves

Figure 1. Peak power dissipation versus initial junction temperature

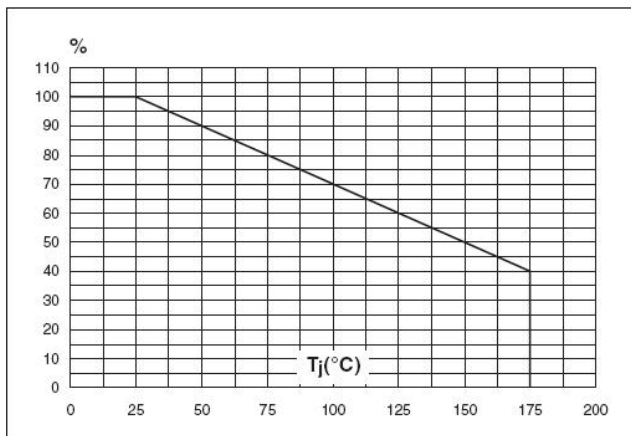


Figure 2. Peak pulse power versus exponential pulse duration (T_j initial = 25 °C)

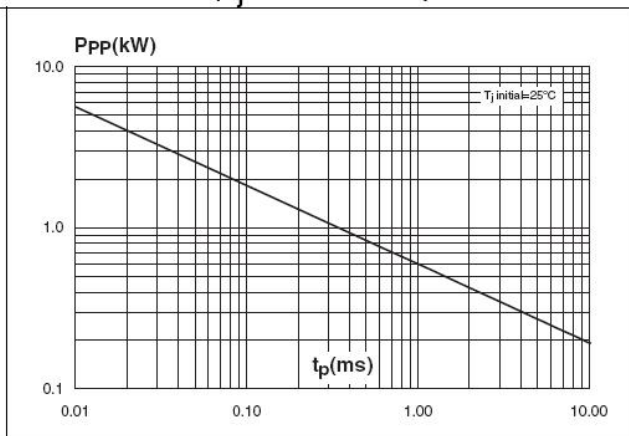


Figure 3. Clamping voltage versus peak pulse current (exponential waveform, maximum values)

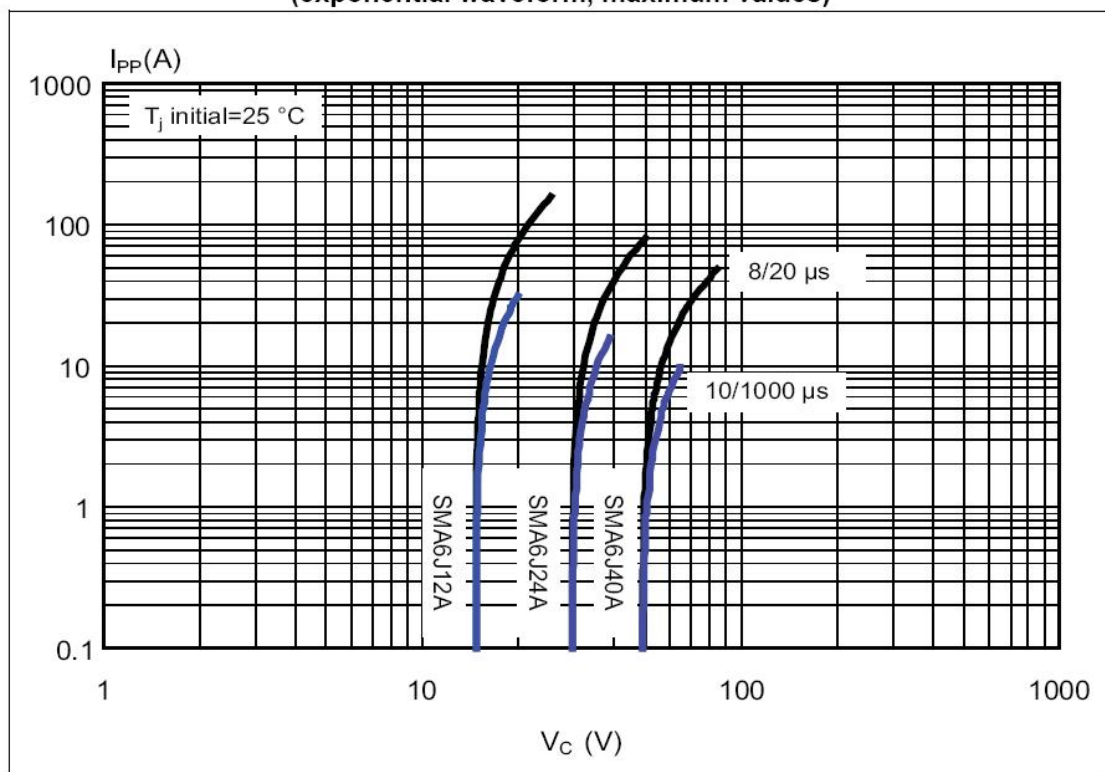


Figure 4. Junction capacitance versus reverse applied voltage (typical values) (SMA6JxxA)

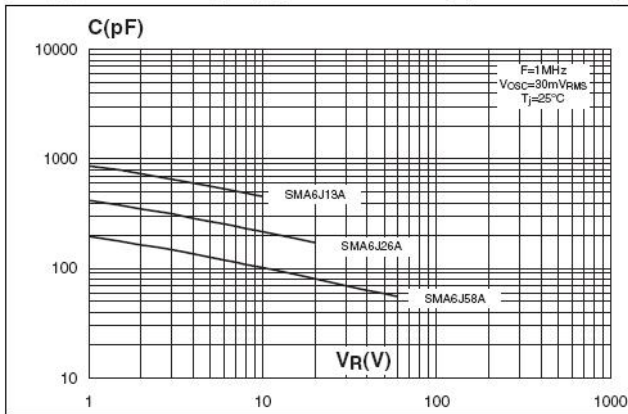


Figure 5. Junction capacitance versus reverse applied voltage (typical values) (SMA6JxxCA)

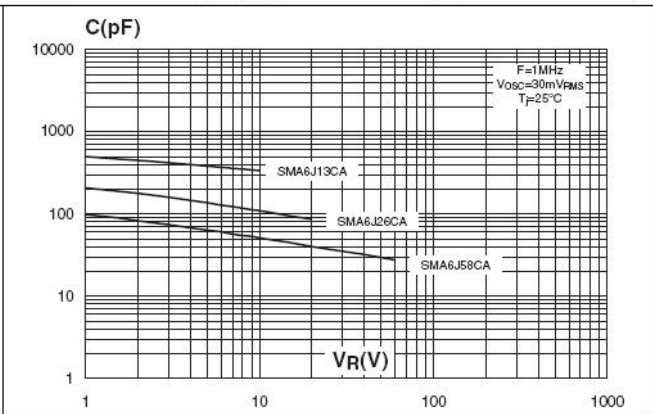


Figure 6. Peak forward voltage drop versus peak forward current (typical values)

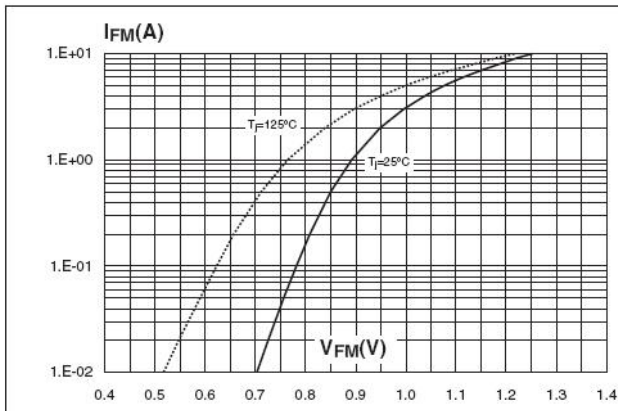


Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (printed circuit board FR4, $S_{Cu} = 1 \text{ cm}^2$)

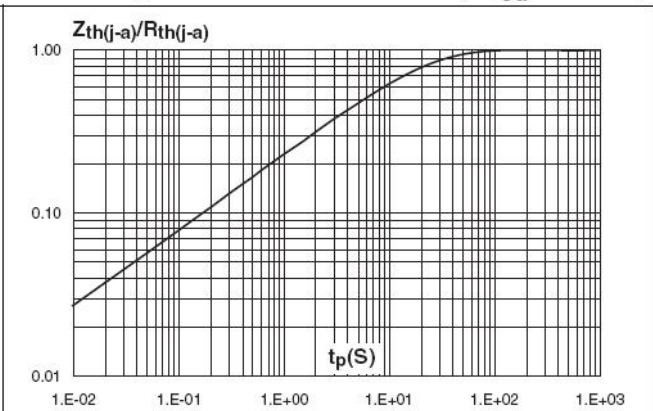


Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (printed circuit board FR4, $e_{Cu} = 35 \mu\text{m}$)

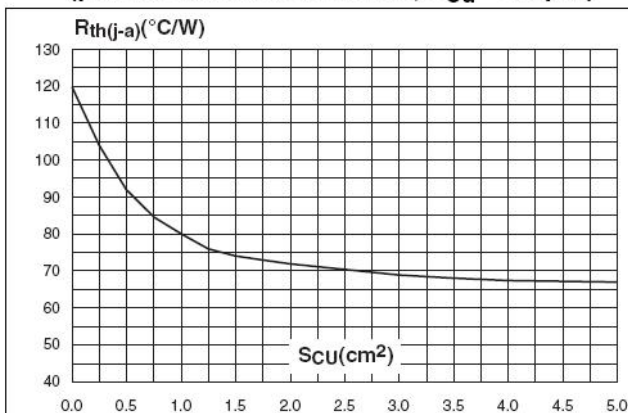
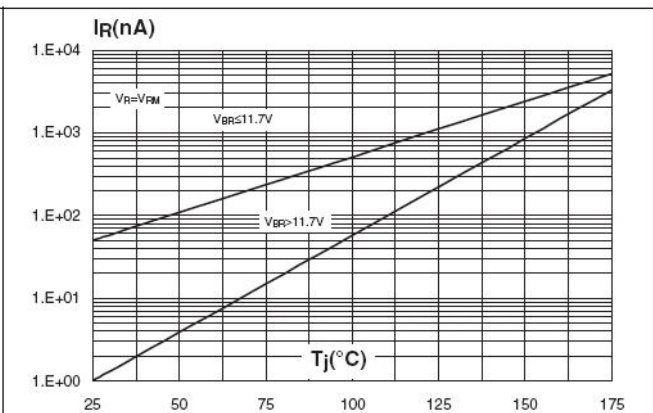
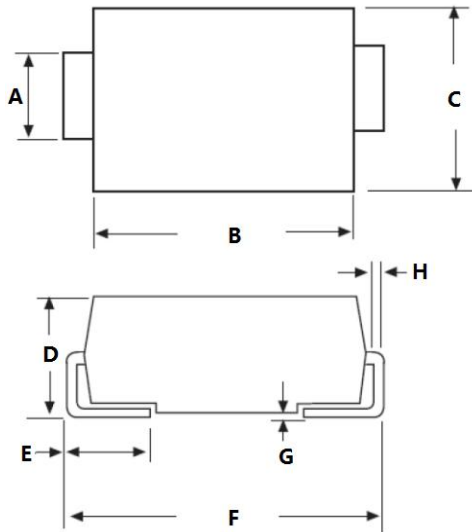


Figure 9. Leakage current versus junction temperature (typical values)



Mechanical Dimensions SMA



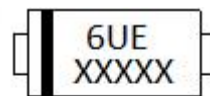
SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.25	1.65	0.049	0.065
B	3.95	4.60	0.156	0.181
C	2.25	2.90	0.089	0.114
D	1.95	2.65	0.077	0.104
E	0.75	1.50	0.030	0.059
F	4.80	5.35	0.189	0.211
G	0.05	0.20	0.002	0.008
H	0.15	0.40	0.006	0.016

Ordering Information

Device	Package	Shipping
SMA6J10A THRU SMA6J90CA	SMA (Pb-Free)	5000pcs / reel
SMA6J10ATR THRU SMA6J90CATR	SMA (Pb-Free)	5000pcs / reel

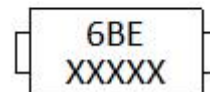
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

Marking Diagram



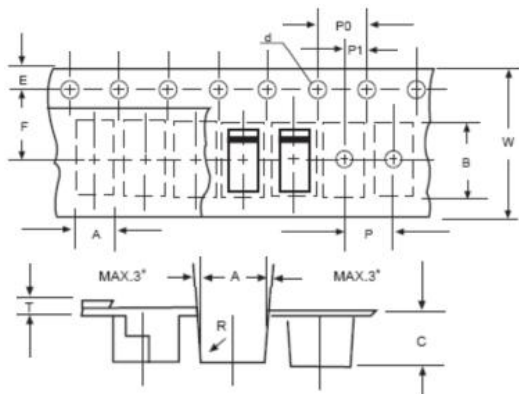
Where XXXXX is YYWWL

6UE/6BE = Marking code
YY = Year
WW = Week
L = Lot Number



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

Carrier Tape Specification SMA



SYMBOL	Millimeters	
	Min.	Max.
A	2.97	3.17
B	5.70	5.90
C	2.32	2.52
d	1.40	1.60
E	1.40	1.60
F	5.60	5.70
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
T	0.25	0.35
W	11.80	12.20

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..