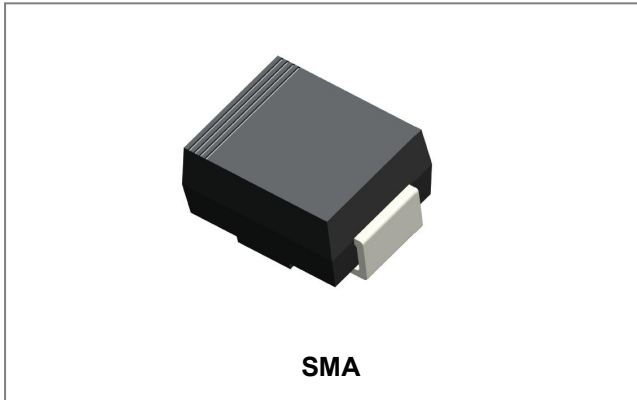


## SMA6J10A THRU SMA6J70CA SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR



### 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<sub>A</sub>=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Peak pulse power dissipation (Note 1)	P <sub>PPM</sub>	600	W
Non repetitive surge peak forward current for unidirectional types t <sub>p</sub> = 10 ms, T <sub>j</sub> initial = Tamb	I <sub>FSM</sub>	60	A
Power dissipation on infinite heatsink	P	4.0	W
Operating junction temperature range	T <sub>J</sub>	-55 to +175	°C
Storage temperature range	T <sub>STG</sub>	-65 to +175	°C
Maximum lead temperature for soldering during 10 s	T <sub>L</sub>	260	°C
Junction to leads	R <sub>th (j-l)</sub>	30	°C/W
Junction to ambient on printed circuit on recommended pad layout	R <sub>th (j-a)</sub>	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		Clamping Voltage $V_c$ ( $8 \times 20\mu\text{s}$ ) @ $I_{PP}$ 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.	Typ	Max.	mA	V	A	V	A		
SMA6J10A/CA	6UE	6BE	10	11.1	11.7	12.3	1	15.7	37	21.7	184	1	5
SMA6J12A/CA	6UF	6BF	12	13.3	14.0	14.7	1	18.8	31	25.3	157	1	5
SMA6J13A/CA	6UG	6BG	13	14.4	15.2	15.9	1	20.4	29	27.2	147	1	5
SMA6J15A/CA	6UH	6BH	15	16.7	17.6	18.5	1	23.6	25.1	32.5	123	1	5
SMA6J18A/CA	6UJ	6BJ	18	20.0	21.1	22.1	1	28.3	21.5	39.3	102	0.2	1
SMA6J20A/CA	6UK	6BK	20	22.2	23.4	24.5	1	31.4	19.4	42.8	93	0.2	1
SMA6J24A/CA	6UM	6BM	24	26.7	28.1	29.5	1	37.8	16	50	80	0.2	1
SMA6J26A/CA	6UN	6BN	26	28.9	30.4	31.9	1	40.9	14.9	53.5	75	0.2	1
SMA6J28A/CA	6UO	6BO	28	31.1	32.7	34.4	1	44.0	13.8	59	68	0.2	1
SMA6J33A/CA	6UQ	6BQ	33	36.7	38.6	40.6	1	51.9	11.8	69	57	0.2	1
SMA6J40A/CA	6UR	6BR	40	44.4	46.7	49.1	1	62.8	9.7	84	48	0.2	1
SMA6J48A/CA	6US	6BS	48	53.3	56.1	58.9	1	75.4	8.1	100	40	0.2	1
SMA6J58A/CA	6UT	6BT	58	64.4	67.8	71.2	1	91.1	6.7	121	33	0.2	1
SMA6J70A/CA	6UU	6BU	70	77.8	81.9	86.0	1	110	5.5	146	27	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

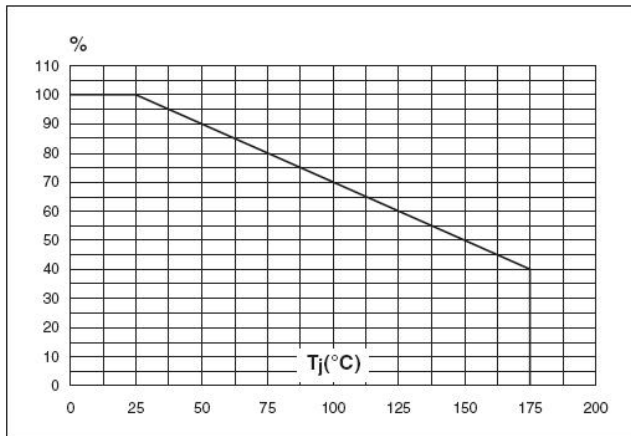


Figure 2. Peak pulse power versus exponential pulse duration ( $T_j$  initial = 25 °C)

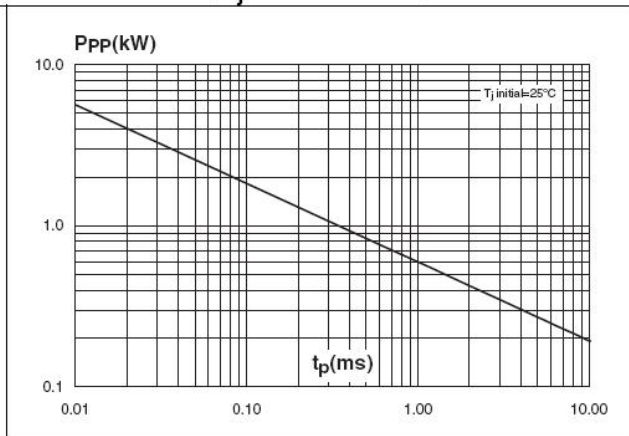
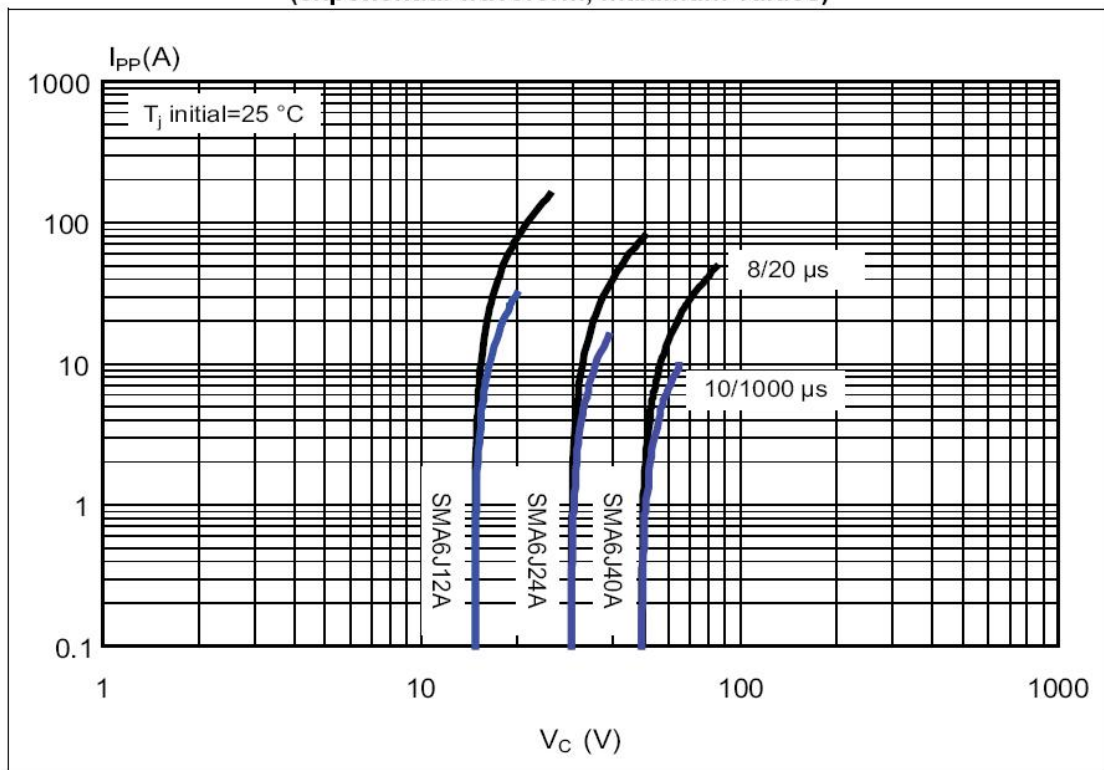
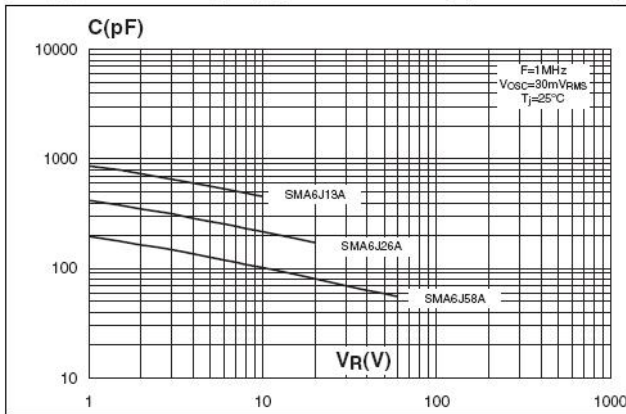


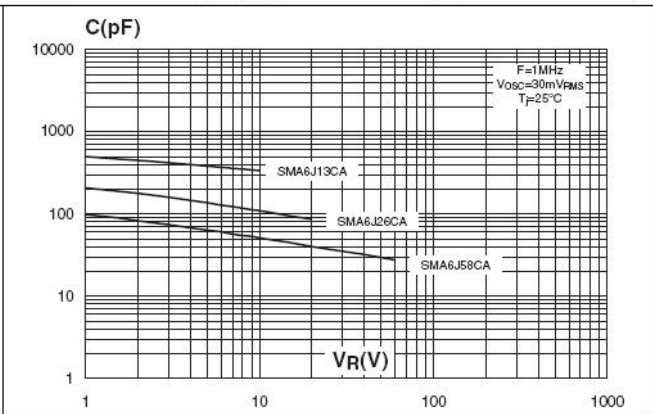
Figure 3. Clamping voltage versus peak pulse current (exponential waveform, maximum values)



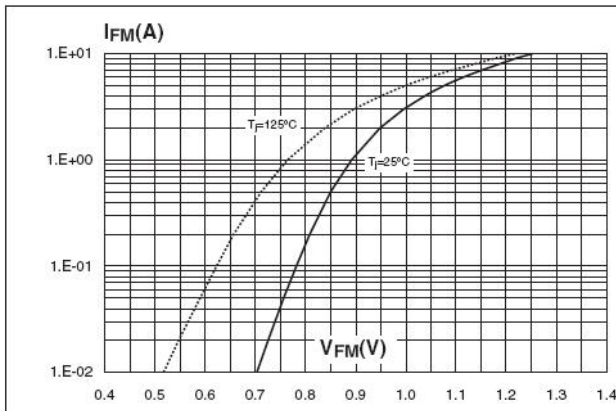
**Figure 4. Junction capacitance versus reverse applied voltage (typical values) (SMA6JxxA)**



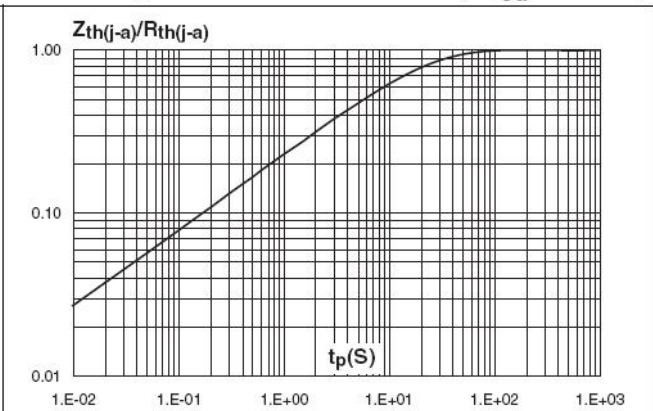
**Figure 5. Junction capacitance versus reverse applied voltage (typical values) (SMA6JxxCA)**



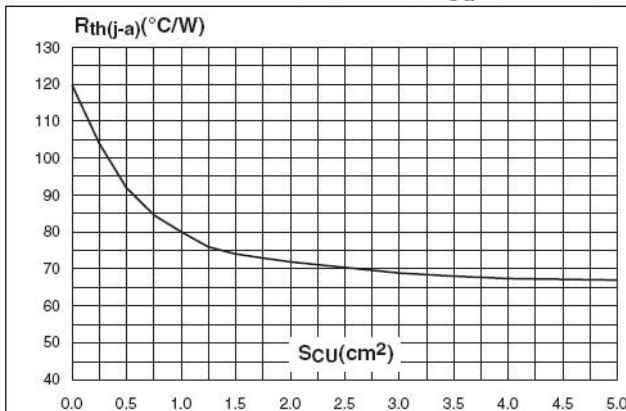
**Figure 6. Peak forward voltage drop versus peak forward current (typical values)**



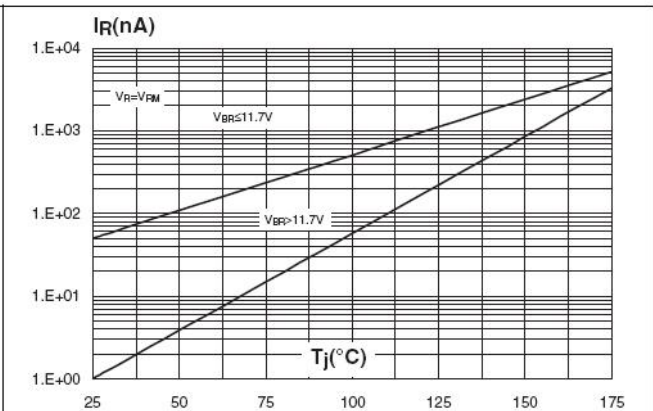
**Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (printed circuit board FR4,  $S_{Cu} = 1 \text{ cm}^2$ )**



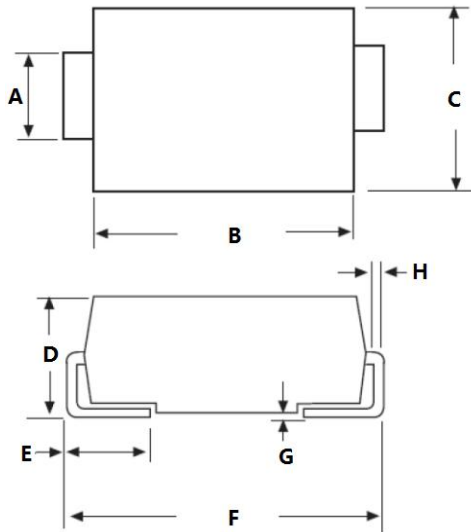
**Figure 8. Thermal resistance junction to ambient versus copper surface under each lead (printed circuit board FR4,  $e_{Cu} = 35 \mu\text{m}$ )**



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



**Mechanical Dimensions SMA**



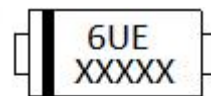
SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.25	1.65	0.049	0.065
B	3.95	4.60	0.156	0.181
C	2.25	2.90	0.089	0.114
D	1.95	2.65	0.077	0.104
E	0.75	1.50	0.030	0.059
F	4.80	5.35	0.189	0.211
G	0.05	0.20	0.002	0.008
H	0.15	0.40	0.006	0.016

**Ordering Information**

Device	Package	Shipping
SMA6J10A THRU SMA6J70CA	SMA (Pb-Free)	5000pcs / reel
SMA6J10ATR THRU SMA6J70CATR	SMA (Pb-Free)	5000pcs / reel

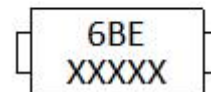
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification.

**Marking Diagram**



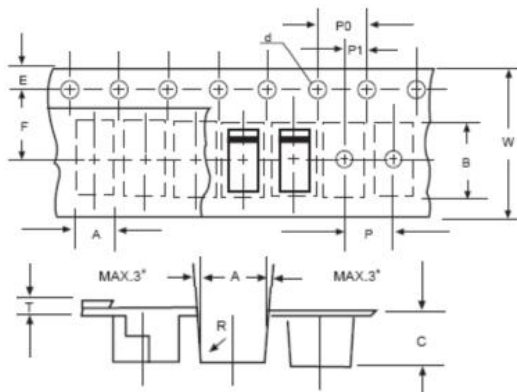
Where XXXXX is YYWWL

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



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