SMA6J SERIES

Transient Voltage Suppressor

Description

SMA6J Series transient voltage suppressors are excellent overvoltage protective devices.
The Series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

SMA (DO-214AC)

Features

- Excellent clamping capability
- Low leakage current
- High surge capability
- Glass passivated chip
- Epoxy resin package
- Built-in strain relief
- Will not fatigue
- RoHS Compliant
- Fast response time:
- typically less than 1.0ps from 0 Volts to VBR min

Mechanical Characteristics

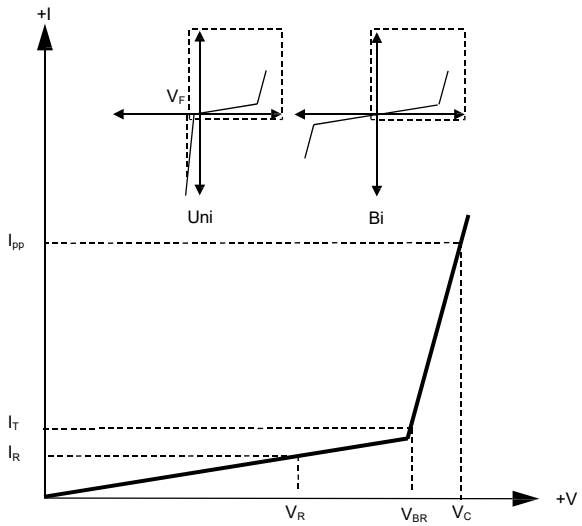
- Package: SMA plastic package.
- Lead Finish: Matte Tin
- Case Material: Epoxy Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020

Applications

- Telecom
- Computer
- Industrial electronic
- Consumer electronic

Electrical Parameters

Parameter	Definition
C_J	Junction Capacitance - typical capacitance measured with 0V or V_R bias
I_{PP}	Peak Pulse Current - maximum rated peak impulse current
V_C	Clamping Voltage - Peak voltage measured across the suppressor at a specified Ippm (peak impulse current)
V_{BR}	Breakdown Voltage - Maximum voltage that flows though the TVS at a specified test current (I_T)
I_R	Leakage Current - maximum peak off-state current measured at V_R
V_R	Peak Off-state Voltage - maximum voltage that can be applied while maintaining off state



Revised: 2022/04/08

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

Parameter	Symbol	Value	Units	Remarks
Peak Pulse Power Dissipation	P_{PPM}	600	W	(Note1)(Note2)
Steady State Power Dissipation	P_D	3.3	W	(Note3)
Peak Forward Surge Current	I_{FSM}	60	A	(Note4)
Maximum Instantaneous Forward Voltage at 25A	V_{FM}	3.5/6.5	V	(Note5)
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	30	℃/W	
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	120	℃/W	
Operating Temperature Range	T_J	-55 to 150	℃	
Storage Temperature Range	T_{STG}	-55 to 150	℃	

Notes1: Non-repetitive current pulse , 10/1000us Waveform.

Notes2: Mounted on copper pad area of 5×5mm to each terminal.

Notes3: Infinite HeatSink at T_L=50°C

Notes4: Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 perminute maximum.

Notes5: For UnidirectionalOnly, VFM<3.5V for VBR ≤200V and VFM<5.0V for VBR≥201V.

Electrical Characteristics (TA=25°C unless otherwise)

Part Number (Uni)	Part Number (Bi)	Marking Code		Reverse Stand off Voltage	Breakdown Voltage V_{BR}@I_T(V)		Test Current I_T(mA)	Maximum Clamping Voltage V_C@ I_{PP}(V)	Maximum Peak Pulse Current I_{PP} (A)	Maximun Reverse Leakage I_R@ V_R (μA)
		Uni	Bi	V_R (V)	Min	Max				
SMA6J5.0A	SMA6J5.0CA	6AE	6WE	5	6.4	7	10	9.2	65.3	800
SMA6J6.0A	SMA6J6.0CA	6AG	6WG	6	6.67	7.37	10	10.3	58.3	800
SMA6J6.5A	SMA6J6.5CA	6AK	6WK	6.5	7.22	7.98	10	11.2	53.6	500
SMA6J7.0A	SMA6J7.0CA	6AM	6WM	7	7.78	8.6	10	12	50	200
SMA6J7.5A	SMA6J7.5CA	6AP	6WP	7.5	8.33	9.21	1	12.9	46.6	100
SMA6J8.0A	SMA6J8.0CA	6AR	6WR	8	8.89	9.83	1	13.6	44.2	50
SMA6J8.5A	SMA6J8.5CA	6AT	6WT	8.5	9.44	10.4	1	14.4	41.7	20
SMA6J9.0A	SMA6J9.0CA	6AV	6WV	9	10	11.1	1	15.4	39	10
SMA6J10A	SMA6J10CA	6AX	6WX	10	11.1	12.3	1	17	35.3	5
SMA6J11A	SMA6J11CA	6AZ	6WZ	11	12.2	13.5	1	18.2	33	1
SMA6J12A	SMA6J12CA	6BE	6XE	12	13.3	14.7	1	19.9	30.2	1
SMA6J13A	SMA6J13CA	6BG	6XG	13	14.4	15.9	1	21.5	28	1
SMA6J14A	SMA6J14CA	6BK	6XK	14	15.6	17.2	1	23.2	25.9	1
SMA6J15A	SMA6J15CA	6BM	6XM	15	16.7	18.5	1	24.4	24.6	1
SMA6J16A	SMA6J16CA	6BP	6XP	16	17.8	19.7	1	26	23.1	1
SMA6J17A	SMA6J17CA	6BR	6XR	17	18.9	20.9	1	27.6	21.8	1
SMA6J18A	SMA6J18CA	6BT	6XT	18	20	22.1	1	29.2	20.6	1
SMA6J20A	SMA6J20CA	6BV	6XV	20	22.2	24.5	1	32.4	18.6	1

Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Marking Code		Reverse Stand off Voltage V_R (V)	Breakdown Voltage V_{BR} @ I_T(V)		Test Current I_T(mA)	Maximum Clamping Voltage V_C@ I_{PP}(V)	Maximum Peak Pulse Current I_{PP} (A)	Maximun Reverse Leakage I_R @ V_R (μA)
		Uni	Bi		Min	Max				
SMA6J22A	SMA6J22CA	6BX	6XX	22	24.4	26.9	1	35.5	16.9	1
SMA6J24A	SMA6J24CA	6BZ	6XZ	24	26.7	29.5	1	38.9	15.5	1
SMA6J26A	SMA6J26CA	6CE	6YE	26	28.9	31.9	1	42.1	14.3	1
SMA6J28A	SMA6J28CA	6CG	6YG	28	31.1	34.4	1	45.4	13.3	1
SMA6J30A	SMA6J30CA	6CK	6YK	30	33.3	36.8	1	48.4	12.4	1
SMA6J33A	SMA6J33CA	6CM	6YM	33	36.7	40.6	1	53.3	11.3	1
SMA6J36A	SMA6J36CA	6CP	6YP	36	40	44.2	1	58.1	10.4	1
SMA6J40A	SMA6J40CA	6CR	6YR	40	44.4	49.1	1	64.5	9.3	1
SMA6J43A	SMA6J43CA	6CT	6YT	43	47.8	52.8	1	69.4	8.7	1
SMA6J45A	SMA6J45CA	6CV	6YV	45	50	55.3	1	72.7	8.3	1
SMA6J48A	SMA6J48CA	6CX	6YX	48	53.3	58.9	1	77.4	7.8	1
SMA6J51A	SMA6J51CA	6CZ	6YZ	51	56.7	62.7	1	82.4	7.3	1
SMA6J54A	SMA6J54CA	6RE	6ZE	54	60	66.3	1	87.1	6.9	1
SMA6J58A	SMA6J58CA	6RG	6ZG	58	64.4	71.2	1	93.6	6.5	1
SMA6J60A	SMA6J60CA	6RK	6ZK	60	66.7	73.7	1	96.8	6.2	1
SMA6J64A	SMA6J64CA	6RM	6ZM	64	71.1	78.6	1	103	5.9	1
SMA6J70A	SMA6J70CA	6RP	6ZP	70	77.8	86	1	113	5.3	1
SMA6J75A	SMA6J75CA	6RR	6ZR	75	83.3	92.1	1	121	5	1
SMA6J78A	SMA6J78CA	6RT	6ZT	78	86.7	95.8	1	126	4.8	1
SMA6J85A	SMA6J85CA	6RV	6ZV	85	94.4	104	1	137	4.4	1
SMA6J90A	SMA6J90CA	6RX	6ZX	90	100	111	1	146	4.1	1
SMA6J100A	SMA6J100CA	6RZ	6ZZ	100	111	123	1	162	3.7	1
SMA6J110A	SMA6J110CA	6SE	6VE	110	122	135	1	177	3.4	1
SMA6J120A	SMA6J120CA	6SG	6VG	120	133	147	1	193	3.1	1
SMA6J130A	SMA6J130CA	6SK	6VK	130	144	159	1	209	2.9	1
SMA6J150A	SMA6J150CA	6SM	6VM	150	167	185	1	243	2.5	1
SMA6J160A	SMA6J160CA	6SP	6VP	160	178	197	1	259	2.3	1
SMA6J170A	SMA6J170CA	6SR	6VR	170	189	209	1	275	2.2	1
SMA6J180A	SMA6J180CA	6ST	6VT	180	201	222	1	292	2.1	1
SMA6J200A	SMA6J200CA	6SV	6VV	200	224	247	1	324	1.9	1
SMA6J220A	SMA6J220CA	6SX	6VX	220	246	272	1	356	1.7	1
SMA6J250A	SMA6J250CA	6SZ	6VZ	250	279	309	1	405	1.5	1
SMA6J300A	SMA6J300CA	6TE	6UE	300	335	371	1	486	1.3	1
SMA6J350A	SMA6J350CA	6TG	6UG	350	391	432	1	567	1.1	1
SMA6J400A	SMA6J400CA	6TK	6UK	400	447	494	1	648	0.9	1
SMA6J440A	SMA6J440CA	6TM	6UM	440	492	543	1	713	0.9	1

Rating And Characteristic Curves (TA=25°C unless otherwise noted)

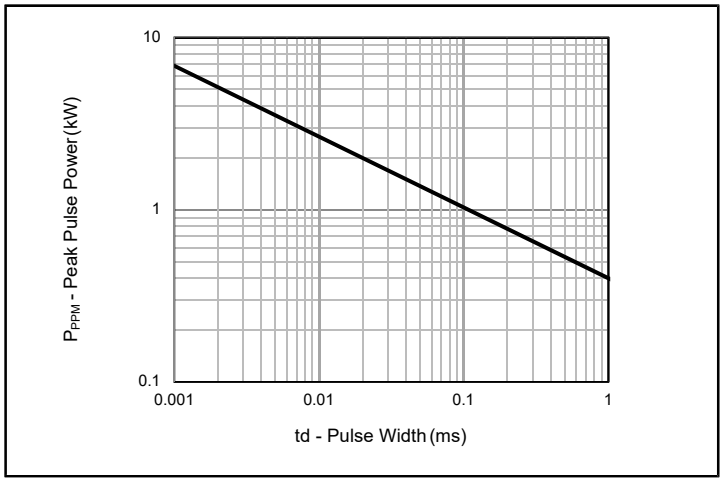


Fig.1 - Peak Pulse Power Rating

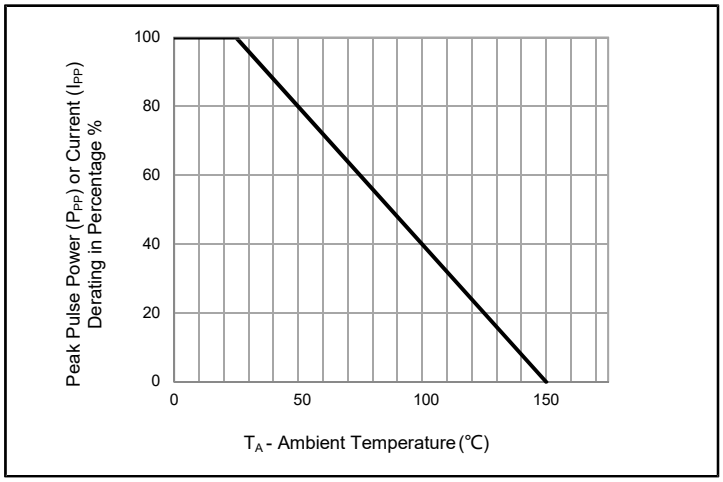


Fig.2 - Pulse Derating Curve

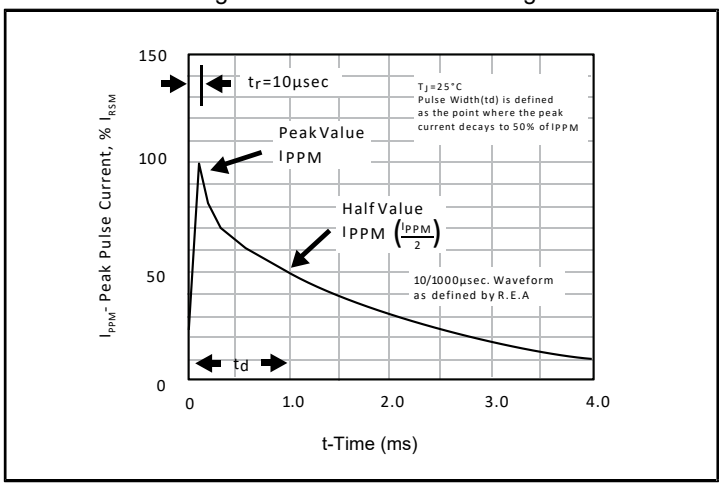


Fig.3 - Pulse Waveform

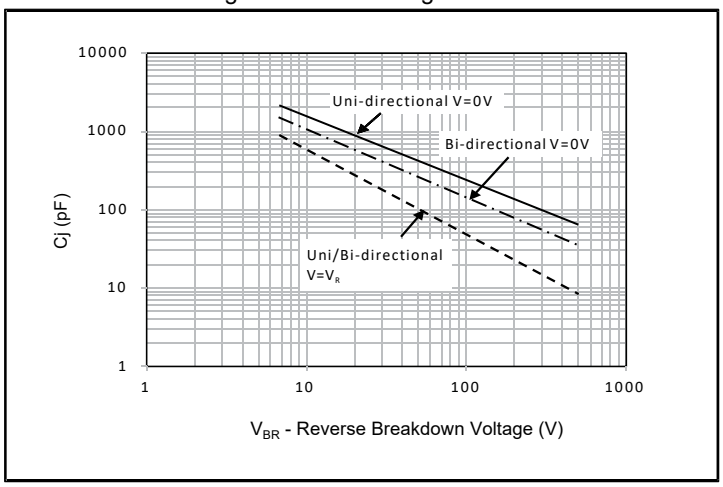


Fig.4 - Typical Junction Capacitance

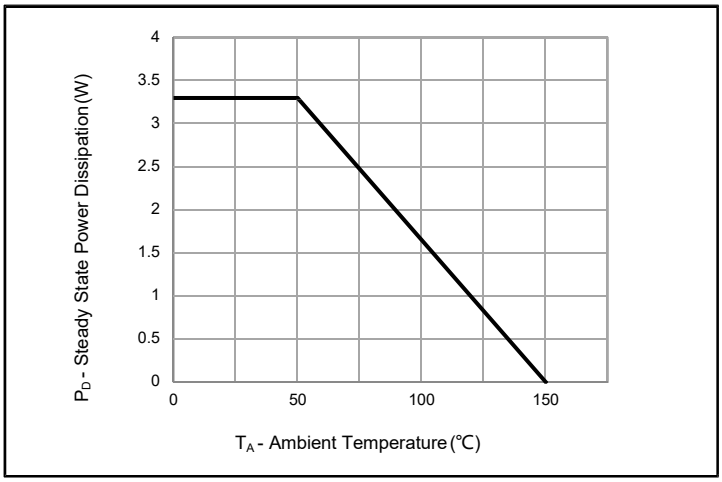


Fig.5 - Steady State Power Dissipation Derating Curve

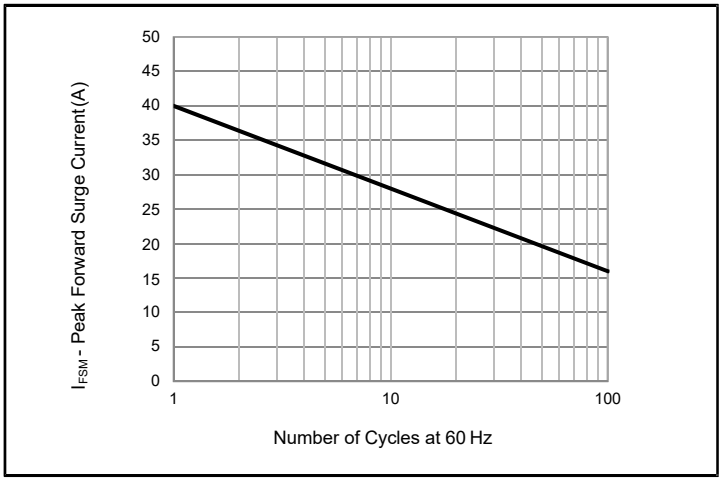
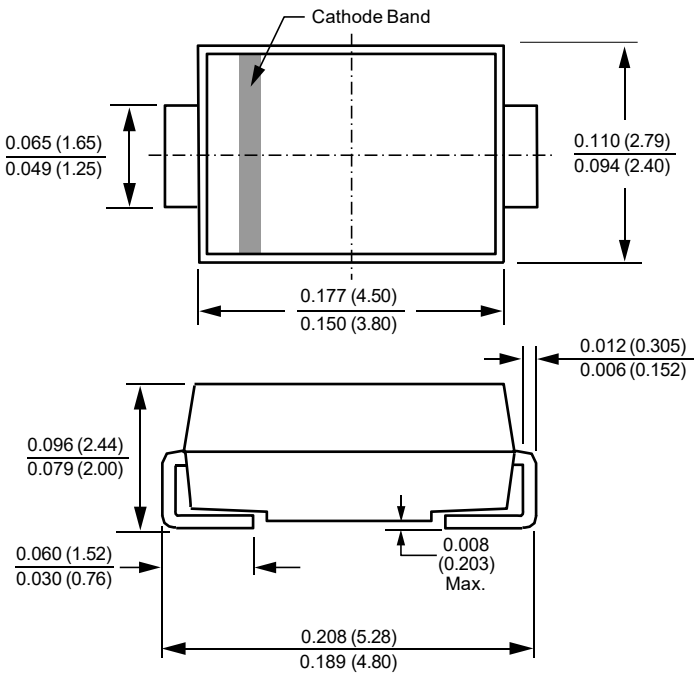


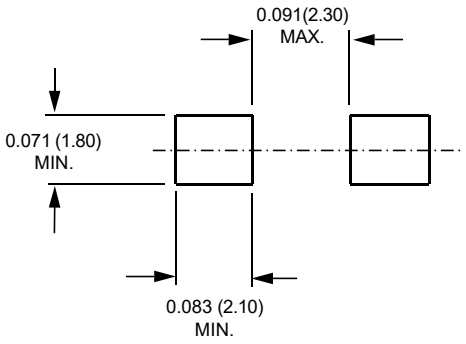
Fig.6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

Package Outline Dimensions in inches (millimeters)

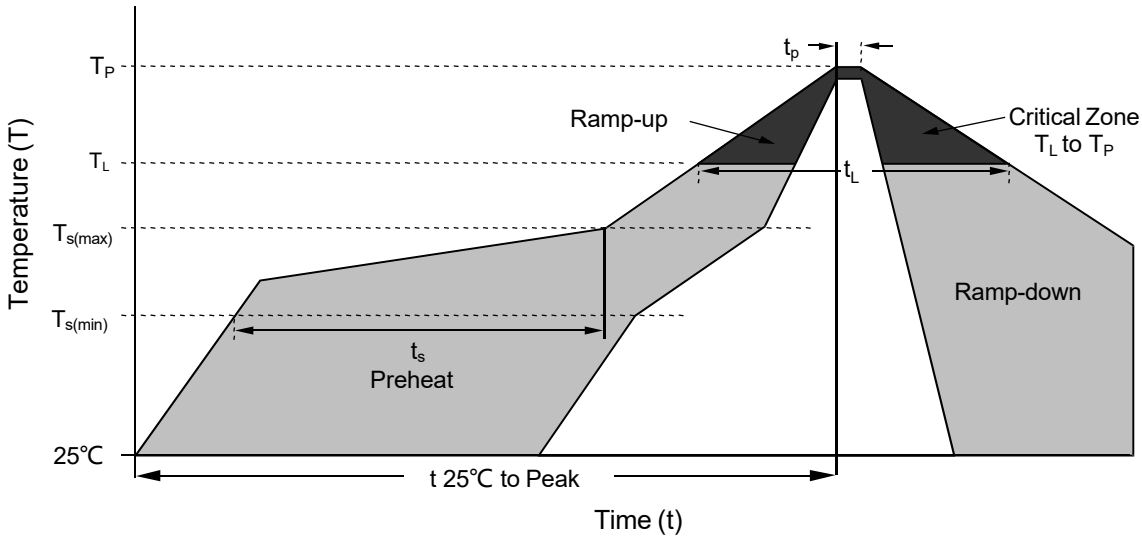
SMA (DO-214AC)



Mounting Pad Layout

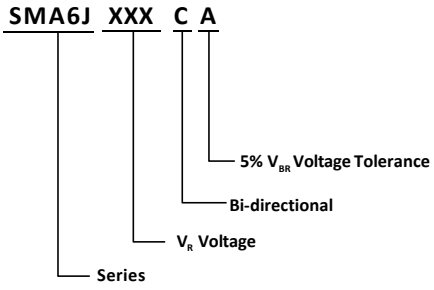


Soldering Parameters

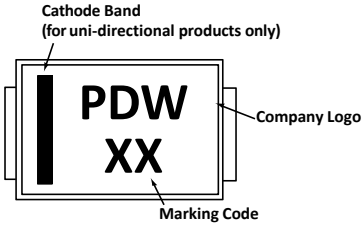


Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{S(max)}$ to TL - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 – 150 secs
Peak Temperature (T_P)		$260^{+0/-5\ °C}$
Time within 5°C of actual peak Temperature (t_p)		20 – 40 secs
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (t)		8 minutes Max.
Do not exceed		260°C

Part Numbering System



Part Marking System



Summary of Packing Options

Package	Packing Description	Packing Quantity
SMA	Tape/Reel,7" reel	1800
	Tape/Reel,13" reel	7500

Tape and Reel Specification