

Features

- 600W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

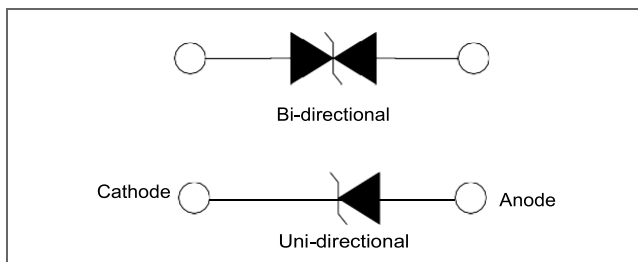
RoHS
Compliant



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Function Diagram



Maximum Ratings and Thermal Characteristics (T _A =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T _A =25°C by 10/1000 μ s Waveform (Fig.3)	P _{PPM}	600	W
Power Dissipation on Infinite Heat Sink at T _L =50°C	P _D	3.3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I _{FSM}	60	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V _F	3.5	V
Operating Temperature Range	T _J	-55 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
	Pending

Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

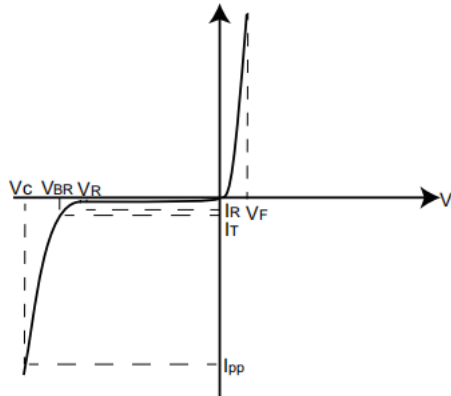
Characteristics (T = 25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI BI		Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{nn} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
					MIN	MAX					
SMA6J5.0A	SMA6J5.0CA	6A005	6A005	5	6.40	7.00	10	9.2	66.0	800	
SMA6J6.0A	SMA6J6.0CA	6A006	6A006	6	6.67	7.37	10	10.3	61.0	800	
SMA6J6.5A	SMA6J6.5CA	6A06F	6A06F	6.5	7.22	7.98	10	11.2	56.0	500	
SMA6J7.0A	SMA6J7.0CA	6A007	6A007	7	7.78	8.60	10	12.0	50.0	200	
SMA6J7.5A	SMA6J7.5CA	6A07F	6A07F	7.5	8.33	9.21	1	12.9	46.5	100	
SMA6J8.0A	SMA6J8.0CA	6A008	6A008	8	8.89	9.83	1	13.6	44.1	50	
SMA6J8.5A	SMA6J8.5CA	6A08F	6A08F	8.5	9.44	10.40	1	14.4	41.7	20	
SMA6J9.0A	SMA6J9.0CA	6A009	6A009	9	10.0	11.1	1	15.4	39.0	10	
SMA6J10A	SMA6J10CA	6A010	6A010	10	11.1	12.3	1	17.0	37.0	5	
SMA6J11A	SMA6J11CA	6A011	6A011	11	12.2	13.5	1	18.2	33.0	1	
SMA6J12A	SMA6J12CA	6A012	6A012	12	13.3	14.7	1	19.9	31.0	1	
SMA6J13A	SMA6J13CA	6A013	6A013	13	14.4	15.9	1	21.5	29.0	1	
SMA6J14A	SMA6J14CA	6A014	6A014	14	15.6	17.2	1	23.2	25.8	1	
SMA6J15A	SMA6J15CA	6A015	6A015	15	16.7	18.5	1	24.4	25.1	1	
SMA6J16A	SMA6J16CA	6A016	6A016	16	17.8	19.7	1	26.0	23.1	1	
SMA6J17A	SMA6J17CA	6A017	6A017	17	18.9	20.9	1	27.6	22.6	1	
SMA6J18A	SMA6J18CA	6A018	6A018	18	20.0	22.1	1	29.2	21.5	1	
SMA6J20A	SMA6J20CA	6A020	6A020	20	22.2	24.5	1	32.4	19.4	1	
SMA6J22A	SMA6J22CA	6A022	6A022	22	24.4	26.9	1	35.5	17.0	1	
SMA6J24A	SMA6J24CA	6A024	6A024	24	26.7	29.5	1	38.9	16.0	1	
SMA6J26A	SMA6J26CA	6A026	6A026	26	28.9	31.9	1	42.1	14.9	1	
SMA6J28A	SMA6J28CA	6A028	6A028	28	31.1	34.4	1	45.4	13.8	1	
SMA6J30A	SMA6J30CA	6A030	6A030	30	33.3	36.8	1	48.4	12.5	1	
SMA6J33A	SMA6J33CA	6A033	6A033	33	36.7	40.6	1	53.3	11.8	1	
SMA6J36A	SMA6J36CA	6A036	6A036	36	40.0	44.2	1	58.1	10.4	1	
SMA6J40A	SMA6J40CA	6A040	6A040	40	44.4	49.1	1	64.5	9.7	1	
SMA6J43A	SMA6J43CA	6A043	6A043	43	47.8	52.8	1	69.4	8.7	1	
SMA6J45A	SMA6J45CA	6A045	6A045	45	50.0	55.3	1	72.7	8.3	1	
SMA6J48A	SMA6J48CA	6A048	6A048	48	53.3	58.9	1	77.4	8.1	1	
SMA6J51A	SMA6J51CA	6A051	6A051	51	56.7	62.7	1	82.4	7.4	1	
SMA6J54A	SMA6J54CA	6A054	6A054	54	60.0	66.3	1	87.1	6.9	1	
SMA6J58A	SMA6J58CA	6A058	6A058	58	64.4	71.2	1	93.6	6.7	1	
SMA6J60A	SMA6J60CA	6A060	6A060	60	66.7	73.7	1	96.8	6.2	1	
SMA6J64A	SMA6J64CA	6A064	6A064	64	71.1	78.6	1	103	5.9	1	
SMA6J70A	SMA6J70CA	6A070	6A070	70	77.8	86.0	1	113	5.5	1	
SMA6J75A	SMA6J75CA	6A075	6A075	75	83.3	92.1	1	121	5.0	1	
SMA6J78A	SMA6J78CA	6A078	6A078	78	86.7	95.8	1	126	4.8	1	
SMA6J85A	SMA6J85CA	6A085	6A085	85	94.4	104	1	137	4.6	1	
SMA6J90A	SMA6J90CA	6A090	6A090	90	100	111	1	146	4.2	1	
SMA6J100A	-	6A100	-	100	111	123	1	162	3.8	1	

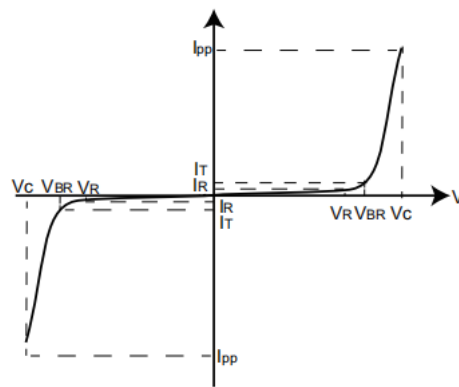
Part Number (Uni)	Part Number (Bi)	Key Marking		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{nn} (V)	Maximum Peak Pulse Current I_{pp} (A)	Maximum Reverse Leakage I_R @ V_R (μ A)	Agency Approval 
		UNI	BI		MIN	MAX					
SMA6J110A	-	6A110	-	110	122	135	1	177	3.5	1	
SMA6J120A	-	6A120	-	120	133	147	1	193	3.2	1	
SMA6J130A	-	6A130	-	130	144	159	1	209	2.9	1	

I-V Curve Characteristics

Uni-directional



Bi-directional



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional



Ratings and Characteristic Curves (T = 25°C unless otherwise noted)

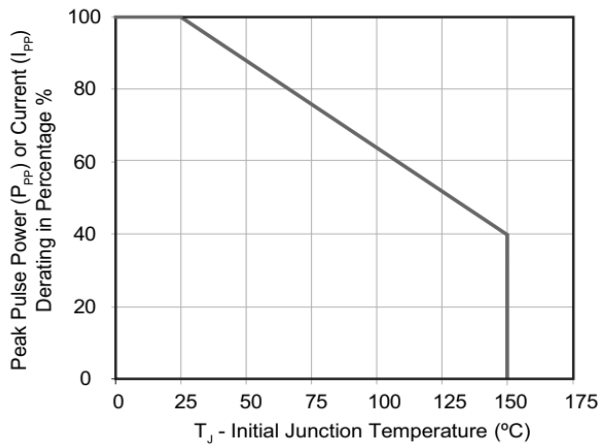


Figure 1. Peak pulse power derating curve

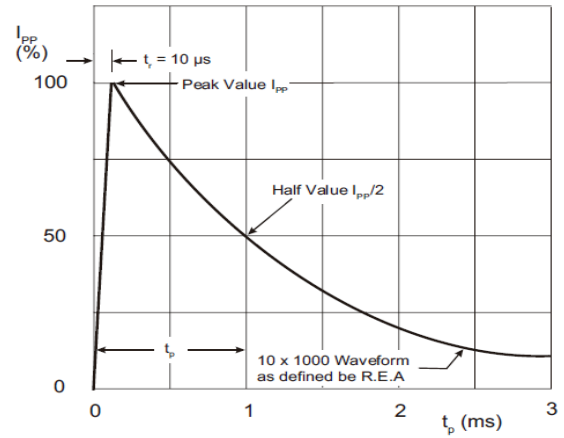


Figure2. Pulse waveform

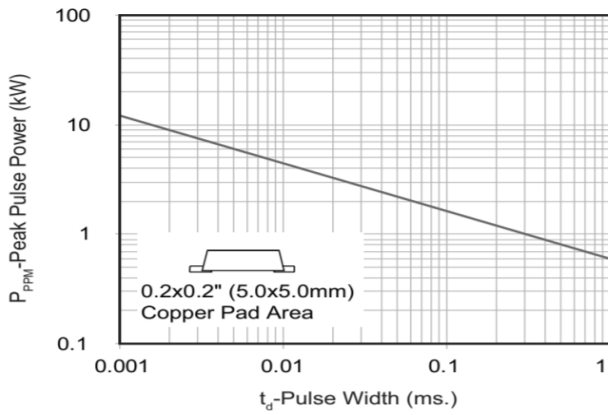


Figure3. Peak pulse power rating curve

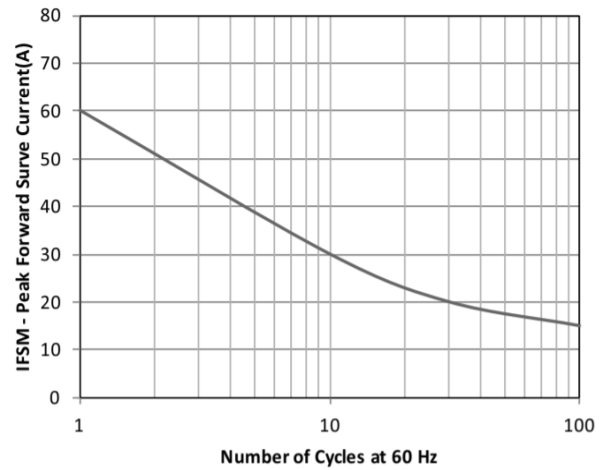
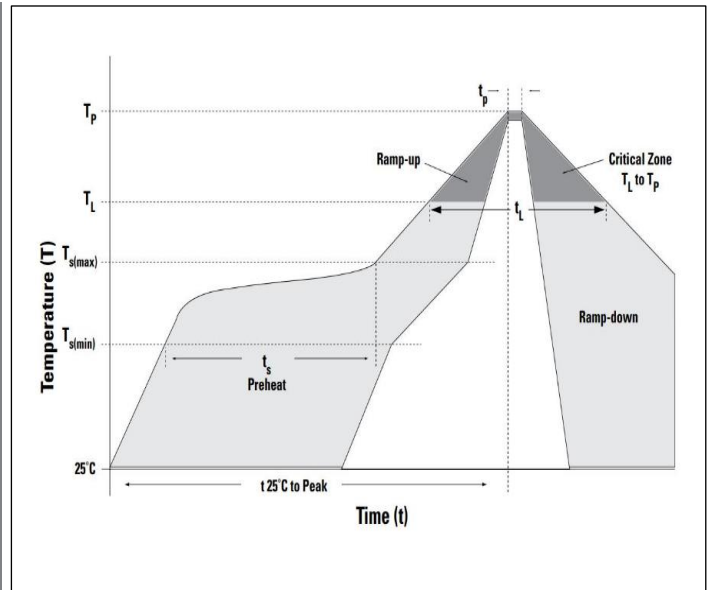


Figure4. Maximum non-repetitive surge current

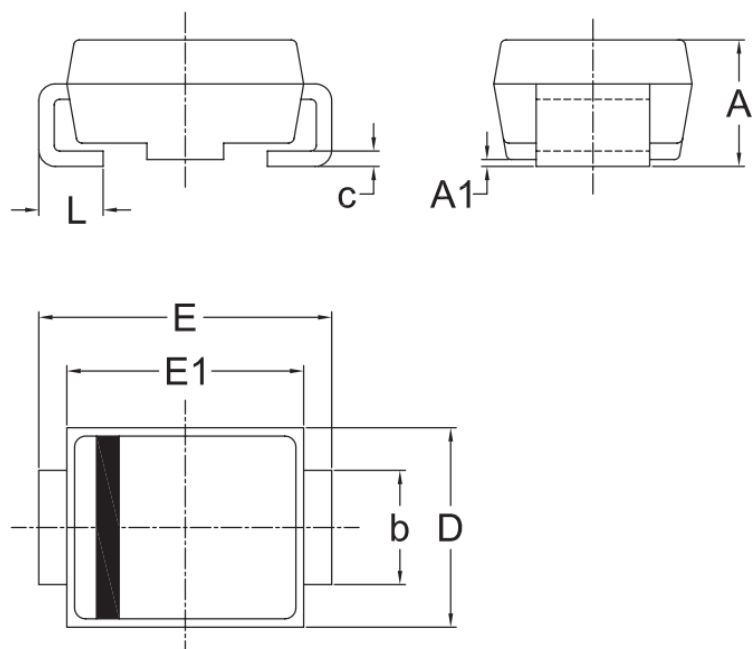
Soldering Parameters

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_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260 ^{+0/-5} °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

Soldering profile

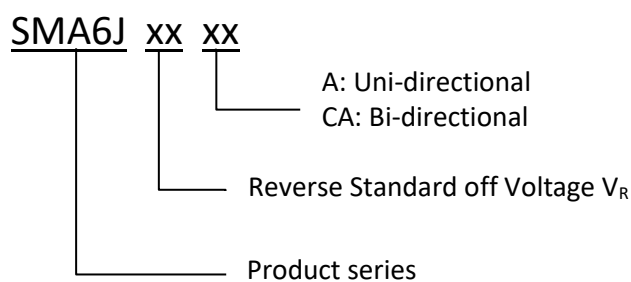


Dimensions

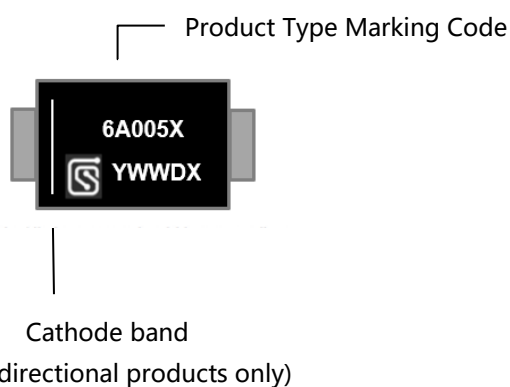


unit		A	A1	b	c	D	E	E1	L
max	mm	2.50	0.30	1.65	0.31	2.85	5.28	4.55	1.55
min		1.90	0	1.25	0.15	2.30	4.70	3.80	0.76

Part Numbering



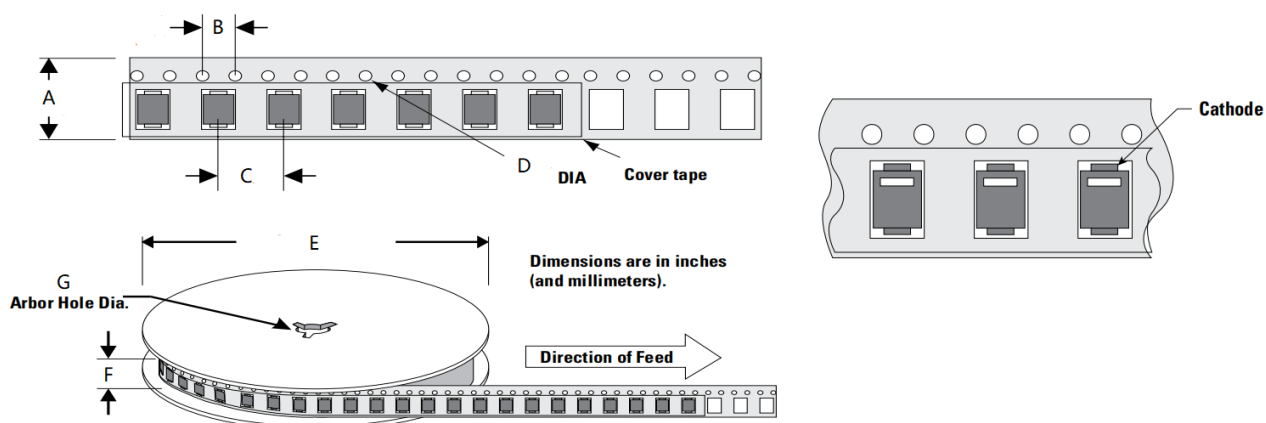
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
SMA6JXXXX	DO-214AC	5000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	12.00±0.10
B	4.00±0.10
C	4.00±0.10
D	1.55±0.05
E	330.20±2.00
F	15.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Aug-2021
1.1	Change marking & update dimension	22-Nov-2024