

Features

- 600W peak pulse power capability at 10/1000μs 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

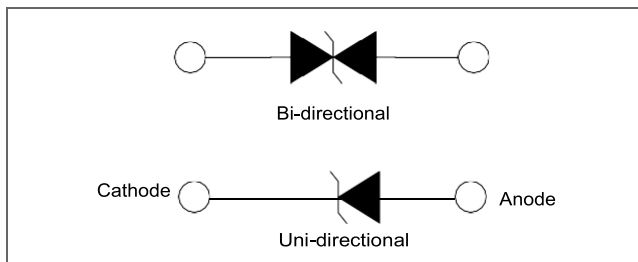
RoHS
Compliant



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 10/1000μs 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:

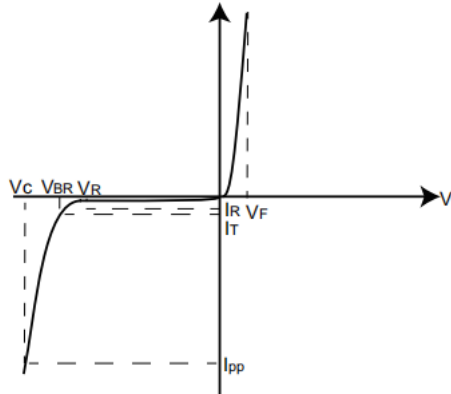
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T = 25°C unless otherwise noted)

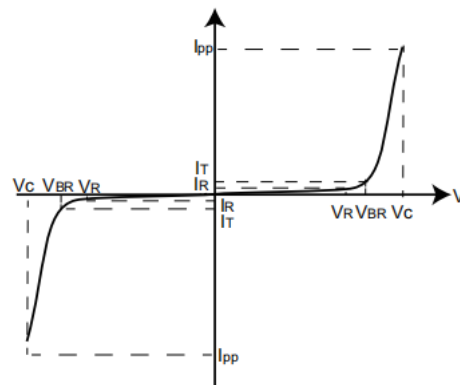
Part Number (Uni)	Part Number (Bi)	Key Marking UNI BI		Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
					MIN	MAX					
SMA6L3.3A	SMA6L3.3CA	6A03T	6A03T	3.3	5.2	6.0	10	7.3	82.2	200	
SMA6L5.0A	SMA6L5.0CA	6A005	6C005	5.0	6.40	7.00	10	9.2	65.3	800	
SMA6L6.0A	SMA6L6.0CA	6A006	6C006	6.0	6.67	7.37	10	10.3	58.3	800	
SMA6L6.5A	SMA6L6.5CA	6A06F	6C06F	6.5	7.22	7.98	10	11.2	53.6	500	
SMA6L7.0A	SMA6L7.0CA	6A007	6C007	7.0	7.78	8.60	10	12.0	50.0	200	
SMA6L7.5A	SMA6L7.5CA	6A07F	6C07F	7.5	8.33	9.21	1	12.9	46.6	100	
SMA6L8.0A	SMA6L8.0CA	6A008	6C008	8.0	8.89	9.83	1	13.6	44.2	50	
SMA6L8.5A	SMA6L8.5CA	6A08F	6C08F	8.5	9.44	10.40	1	14.4	41.7	20	
SMA6L9.0A	SMA6L9.0CA	6A009	6C009	9.0	10.00	11.10	1	15.4	39.0	10	
SMA6L10A	SMA6L10CA	6A010	6C010	10.0	11.10	12.30	1	17.0	35.3	5	
SMA6L11A	SMA6L11CA	6A011	6C011	11.0	12.20	13.50	1	18.2	33.0	1	
SMA6L12A	SMA6L12CA	6A012	6C012	12.0	13.30	14.70	1	19.9	30.2	1	
SMA6L13A	SMA6L13CA	6A013	6C013	13.0	14.40	15.90	1	21.5	28.0	1	
SMA6L14A	SMA6L14CA	6A014	6C014	14.0	15.60	17.20	1	23.2	25.9	1	
SMA6L15A	SMA6L15CA	6A015	6C015	15.0	16.70	18.50	1	24.4	24.6	1	
SMA6L16A	SMA6L16CA	6A016	6C016	16.0	17.80	19.70	1	26.0	23.1	1	
SMA6L17A	SMA6L17CA	6A017	6C017	17.0	18.90	20.90	1	27.6	21.8	1	
SMA6L18A	SMA6L18CA	6A018	6C018	18.0	20.00	22.10	1	29.2	20.6	1	
SMA6L20A	SMA6L20CA	6A020	6C020	20.0	22.20	24.50	1	32.4	18.6	1	
SMA6L22A	SMA6L22CA	6A022	6C022	22.0	24.40	26.90	1	35.5	16.9	1	
SMA6L24A	SMA6L24CA	6A024	6C024	24.0	26.70	29.50	1	38.9	15.5	1	
SMA6L26A	SMA6L26CA	6A026	6C026	26.0	28.90	31.90	1	42.1	14.3	1	
SMA6L28A	SMA6L28CA	6A028	6C028	28.0	31.10	34.40	1	45.4	13.3	1	
SMA6L30A	SMA6L30CA	6A030	6C030	30.0	33.30	36.80	1	48.4	12.4	1	
SMA6L33A	SMA6L33CA	6A033	6C033	33.0	36.70	40.60	1	53.3	11.3	1	
SMA6L36A	SMA6L36CA	6A036	6C036	36.0	40.00	44.20	1	58.1	10.4	1	
SMA6L40A	SMA6L40CA	6A040	6C040	40.0	44.40	49.10	1	64.5	9.3	1	
SMA6L43A	SMA6L43CA	6A043	6C043	43.0	47.80	52.80	1	69.4	8.7	1	
SMA6L45A	SMA6L45CA	6A045	6C045	45.0	50.00	55.30	1	72.7	8.3	1	
SMA6L48A	SMA6L48CA	6A048	6C048	48.0	53.30	58.90	1	77.4	7.8	1	
SMA6L51A	SMA6L51CA	6A051	6C051	51.0	56.70	62.70	1	82.4	7.3	1	
SMA6L54A	SMA6L54CA	6A054	6C054	54.0	60.00	66.30	1	87.1	6.9	1	
SMA6L58A	SMA6L58CA	6A058	6C058	58.0	64.40	71.20	1	93.6	6.5	1	
SMA6L60A	SMA6L60CA	6A060	6C060	60.0	66.70	73.70	1	96.8	6.2	1	
SMA6L64A	SMA6L64CA	6A064	6C064	64.0	71.10	78.60	1	103.0	5.9	1	
SMA6L70A	SMA6L70CA	6A070	6C070	70.0	77.80	86.00	1	113.0	5.3	1	
SMA6L75A	SMA6L75CA	6A075	6C075	75.0	83.30	92.10	1	121.0	5.0	1	
SMA6L78A	SMA6L78CA	6A078	6C078	78.0	86.70	95.80	1	126.0	4.8	1	
SMA6L85A	SMA6L85CA	6A085	6C085	85.0	94.40	104.0	1	137.0	4.4	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 though 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 ($T = 25^{\circ}\text{C}$ unless otherwise noted)

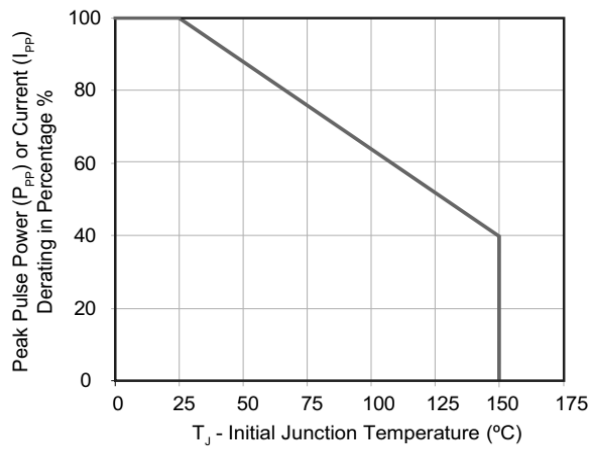


Figure 1. Peak pulse power derating curve

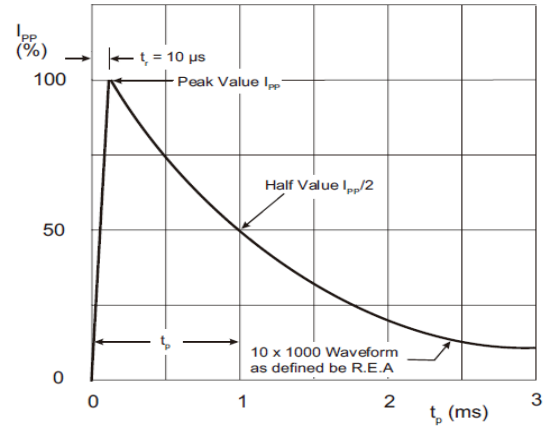


Figure2. Pulse waveform

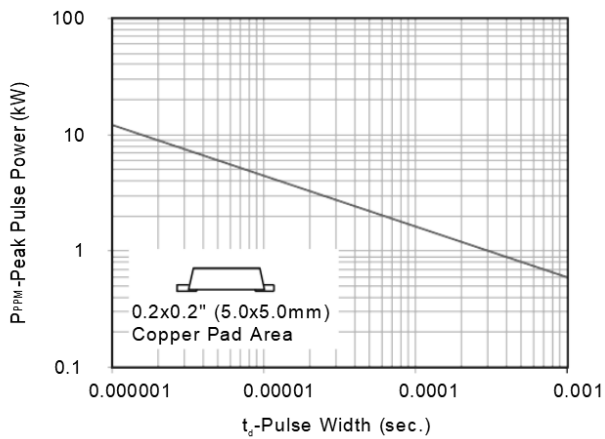


Figure3. Peak pulse power rating curve

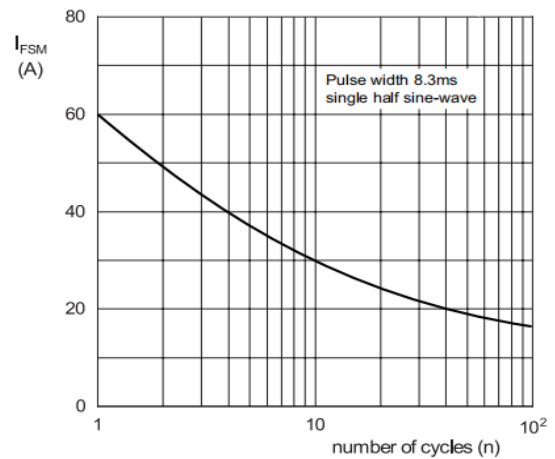
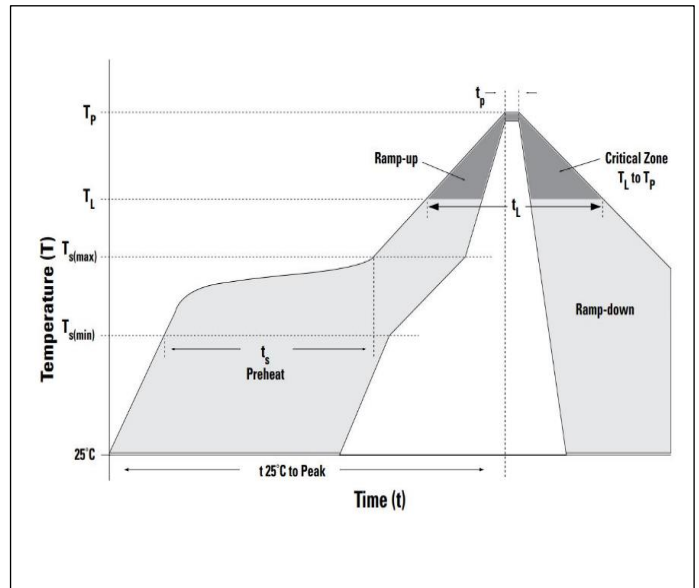


Figure4. Maximum non-repetitive surge current

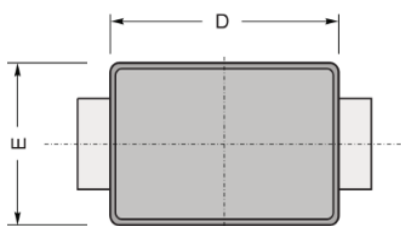
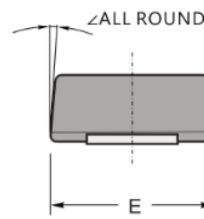
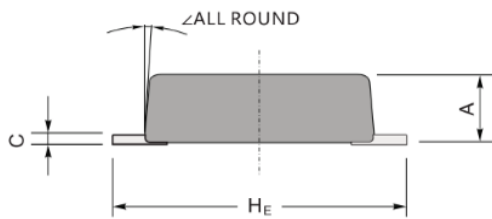
Soldering Parameters

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

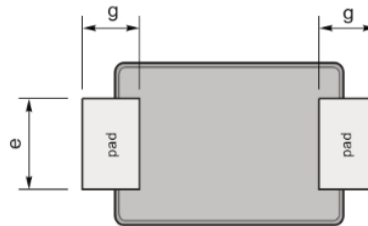
Soldering profile



Dimensions



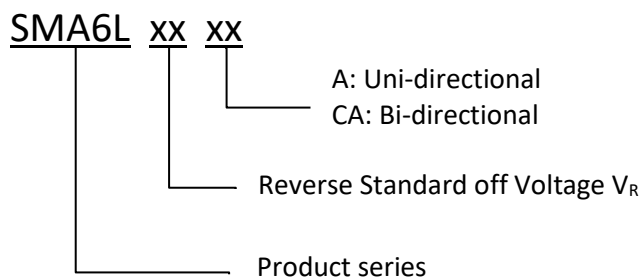
Top View



Bottom View

Ref.	Dimensions	
	Millimeters	
	Min.	Max.
A	1.03	1.33
C	0.10	0.20
D	3.35	3.65
E	2.45	2.75
e	1.30	1.60
g	0.60	1.20
H _E	4.55	4.95

Part Numbering



Part Marking

Product Type Marking Code
& Last Digit "X" is Traceability

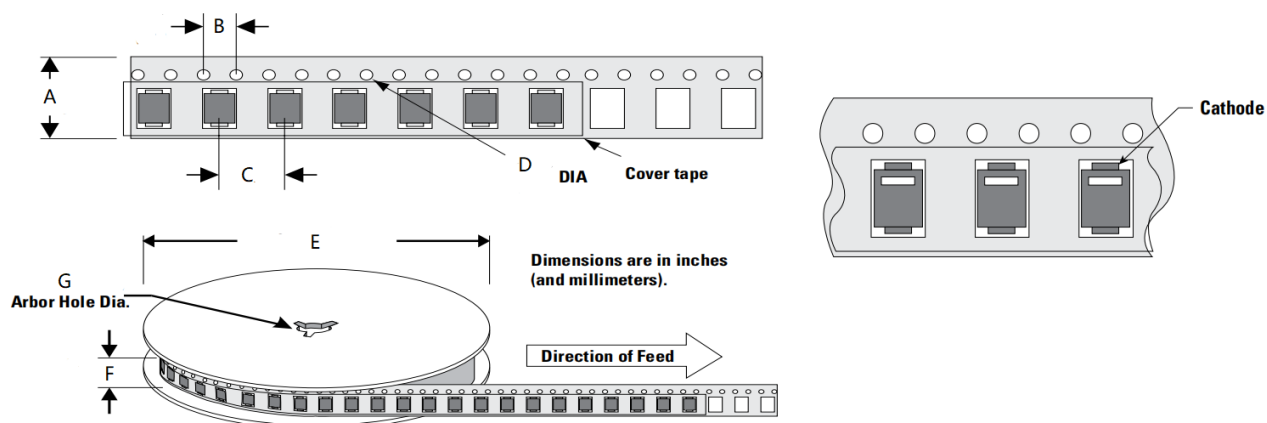


Cathode band
(for uni-directional products only)

Packing

Part number	Package name	Small packing quantity	Packing method
SMA6LXXXX	SMAF	3000	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-Jul-2021
1.1	Modified Temperature Range & Details	16-Aug-2021
1.2	Add Bi-directional Series	26-Apr-2023
1.3	Add Part Number	21-Jan-2025
1.4	Update Small Packing Quantity	21-Mar-2025