

**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

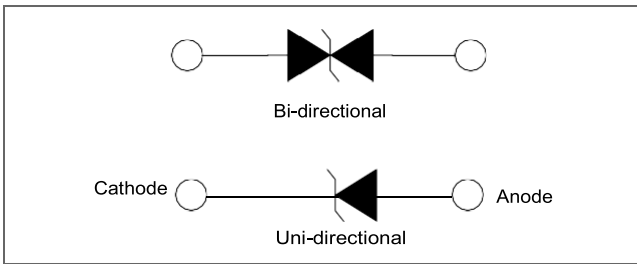
**RoHS**  
Compliant



**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 <sub>A</sub> =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T <sub>A</sub> =25°C by 10/1000µs Waveform (Fig.3)	P <sub>PPM</sub>	600	W
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =50°C	P <sub>D</sub>	3.3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I <sub>FSM</sub>	60	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V <sub>F</sub>	3.5	V
Operating Temperature Range	T <sub>J</sub>	-55 to 150	°C
Storage Temperature Range	T <sub>STG</sub>	-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.

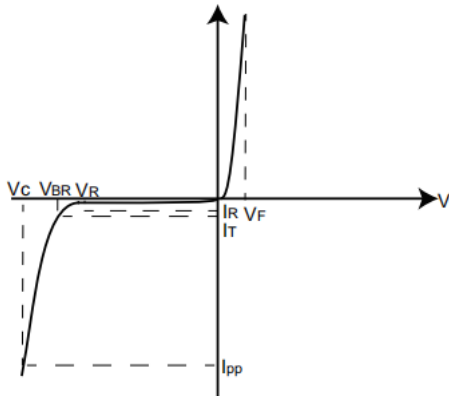
**Characteristics (T = 25°C unless otherwise noted)**

Part Number (Uni)	Part Number (Bi)	Key Marking		Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts) @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage V <sub>C</sub> @ I <sub>pp</sub> (V)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)	Agency Approval 
		UNI	BI		MIN	MAX					
SMA6L5.0A	\	6A005	\	5.0	6.40	7.00	10	9.2	65.3	800	
SMA6L6.0A	\	6A006	\	6.0	6.67	7.37	10	10.3	58.3	800	
SMA6L6.5A	\	6A06F	\	6.5	7.22	7.98	10	11.2	53.6	500	
SMA6L7.0A	\	6A007	\	7.0	7.78	8.60	10	12.0	50.0	200	
SMA6L7.5A	\	6A07F	\	7.5	8.33	9.21	1	12.9	46.6	100	
SMA6L8.0A	\	6A008	\	8.0	8.89	9.83	1	13.6	44.2	50	
SMA6L8.5A	\	6A08F	\	8.5	9.44	10.40	1	14.4	41.7	20	
SMA6L9.0A	\	6A009	\	9.0	10.00	11.10	1	15.4	39.0	10	
SMA6L10A	\	6A010	\	10.0	11.10	12.30	1	17.0	35.3	5	
SMA6L11A	\	6A011	\	11.0	12.20	13.50	1	18.2	33.0	1	
SMA6L12A	\	6A012	\	12.0	13.30	14.70	1	19.9	30.2	1	
SMA6L13A	\	6A013	\	13.0	14.40	15.90	1	21.5	28.0	1	
SMA6L14A	\	6A014	\	14.0	15.60	17.20	1	23.2	25.9	1	
SMA6L15A	\	6A015	\	15.0	16.70	18.50	1	24.4	24.6	1	
SMA6L16A	\	6A016	\	16.0	17.80	19.70	1	26.0	23.1	1	
SMA6L17A	\	6A017	\	17.0	18.90	20.90	1	27.6	21.8	1	
SMA6L18A	\	6A018	\	18.0	20.00	22.10	1	29.2	20.6	1	
SMA6L20A	\	6A020	\	20.0	22.20	24.50	1	32.4	18.6	1	
SMA6L22A	\	6A022	\	22.0	24.40	26.90	1	35.5	16.9	1	
SMA6L24A	\	6A024	\	24.0	26.70	29.50	1	38.9	15.5	1	
SMA6L26A	\	6A026	\	26.0	28.90	31.90	1	42.1	14.3	1	
SMA6L28A	\	6A028	\	28.0	31.10	34.40	1	45.4	13.3	1	
SMA6L30A	\	6A030	\	30.0	33.30	36.80	1	48.4	12.4	1	
SMA6L33A	\	6A033	\	33.0	36.70	40.60	1	53.3	11.3	1	
SMA6L36A	\	6A036	\	36.0	40.00	44.20	1	58.1	10.4	1	
SMA6L40A	\	6A040	\	40.0	44.40	49.10	1	64.5	9.3	1	
SMA6L43A	\	6A043	\	43.0	47.80	52.80	1	69.4	8.7	1	
SMA6L45A	\	6A045	\	45.0	50.00	55.30	1	72.7	8.3	1	
SMA6L48A	\	6A048	\	48.0	53.30	58.90	1	77.4	7.8	1	
SMA6L51A	\	6A051	\	51.0	56.70	62.70	1	82.4	7.3	1	
SMA6L54A	\	6A054	\	54.0	60.00	66.30	1	87.1	6.9	1	
SMA6L58A	\	6A058	\	58.0	64.40	71.20	1	93.6	6.5	1	
SMA6L60A	\	6A060	\	60.0	66.70	73.70	1	96.8	6.2	1	
SMA6L64A	\	6A064	\	64.0	71.10	78.60	1	103.0	5.9	1	
SMA6L70A	\	6A070	\	70.0	77.80	86.00	1	113.0	5.3	1	
SMA6L75A	\	6A075	\	75.0	83.30	92.10	1	121.0	5.0	1	
SMA6L78A	\	6A078	\	78.0	86.70	95.80	1	126.0	4.8	1	
SMA6L85A	\	6A085	\	85.0	94.40	104.0	1	137.0	4.4	1	

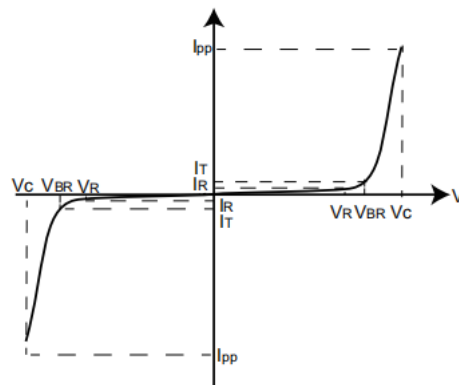


## I-V Curve Characteristics

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

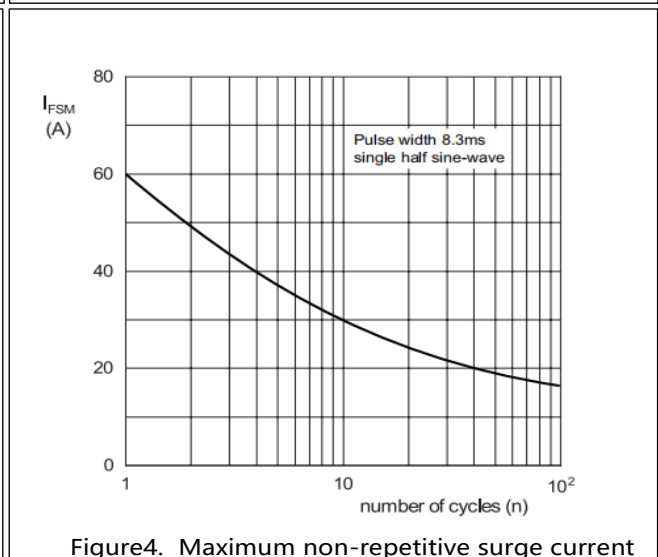
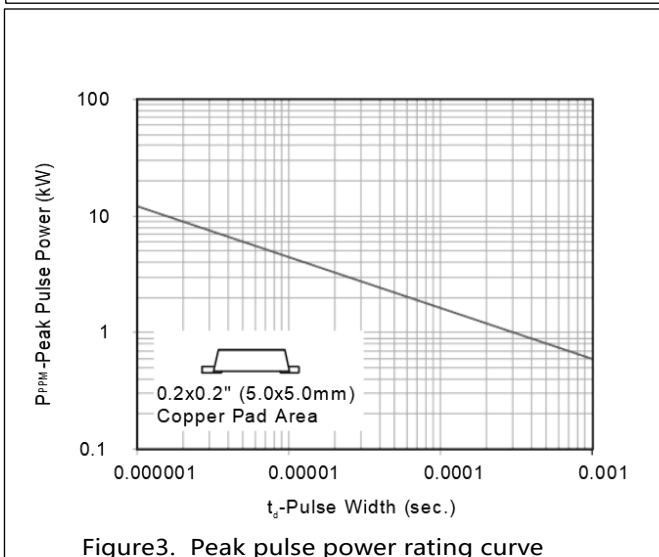
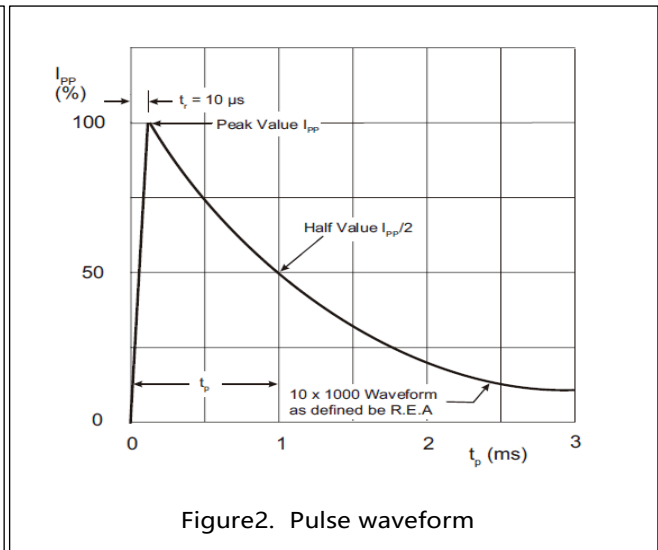
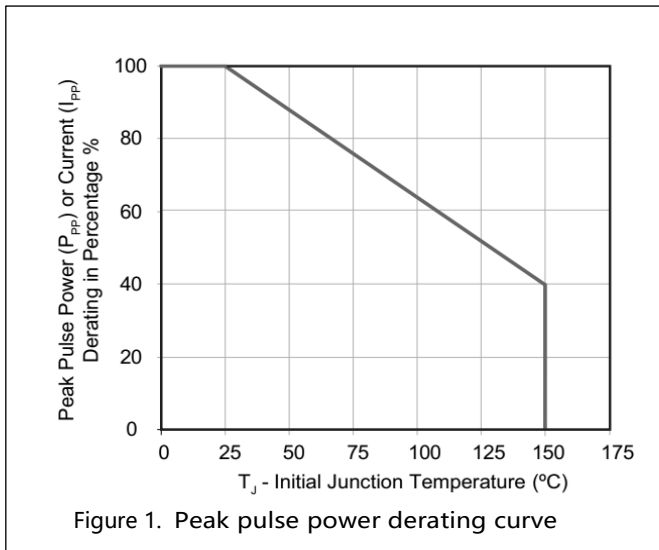
$V_{BR}$  Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current ( $I_T$ )

$V_C$  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

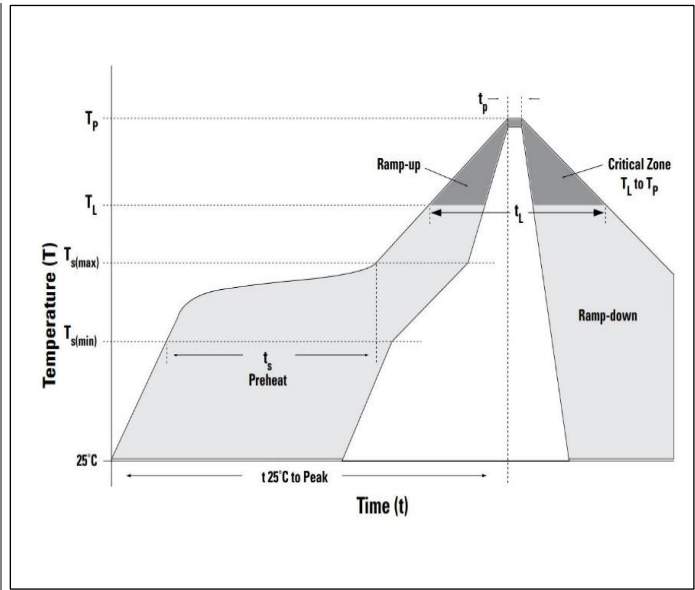
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



**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 <sup>+0/-5</sup> °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

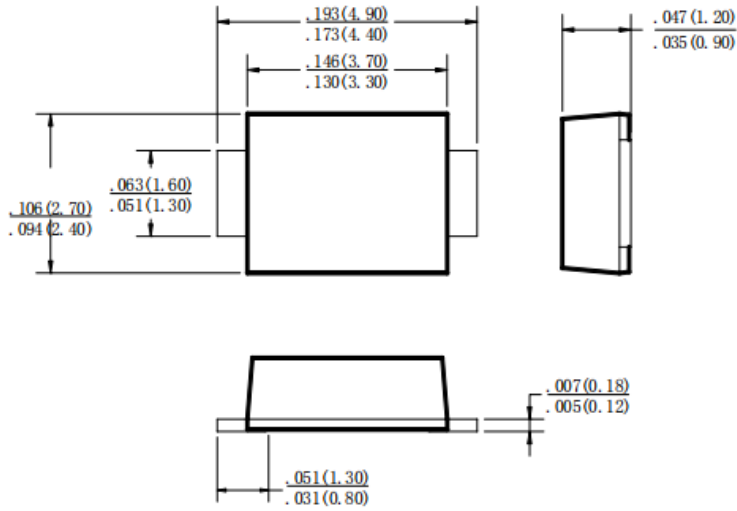
**Soldering profile**





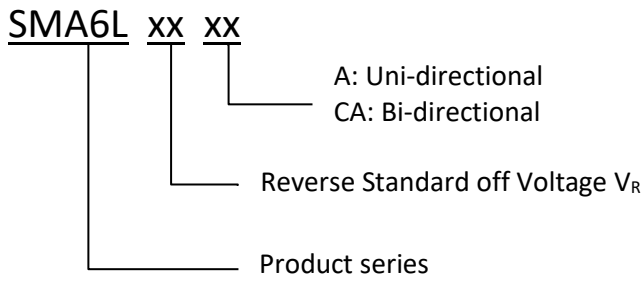
Dimensions

**SMAF Package Outline Dimensions**

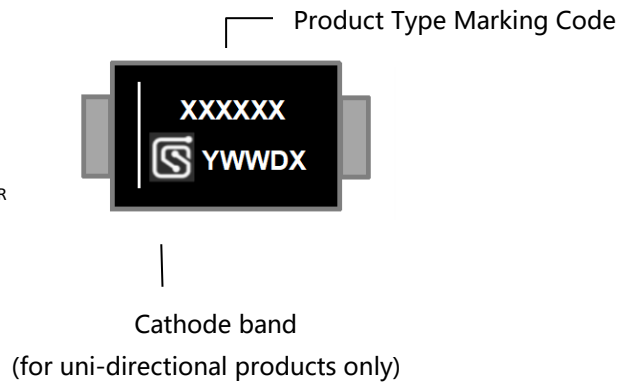


Dimensions in inches and (millimeters)

Part Numbering



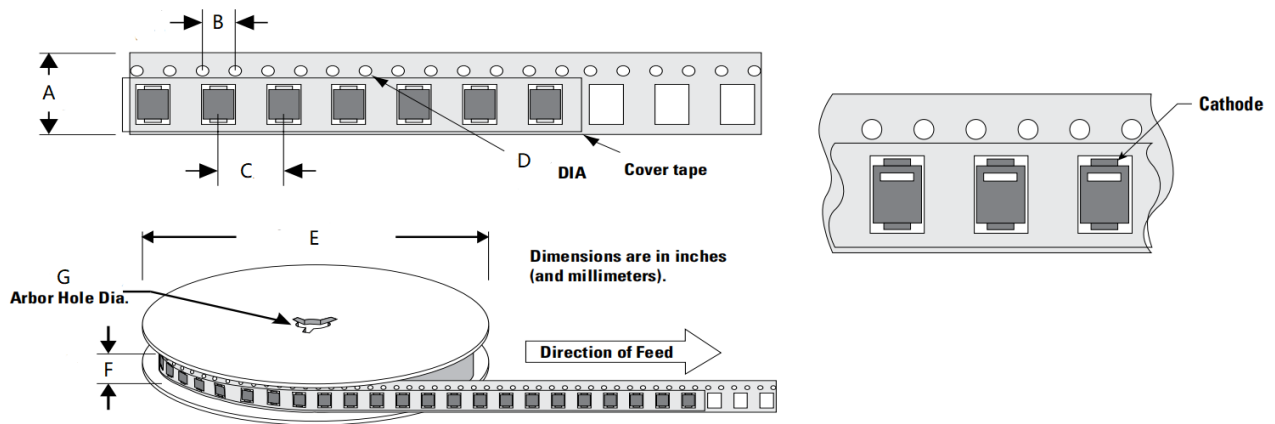
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
SMA6LXXXX	SMAF	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-July-2021
1.1	Modified Temperature Range & Details	16-August-2021