

Features

- 1500W 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

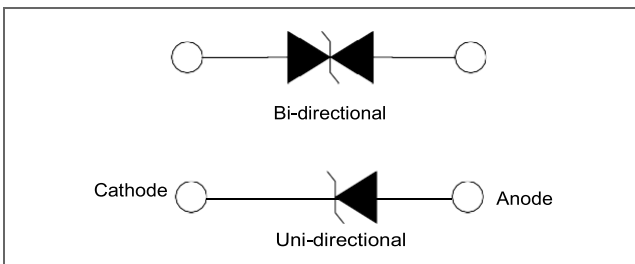
**RoHS**  
Compliant



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>	1500	W
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =50°C	P <sub>D</sub>	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I <sub>FSM</sub>	120	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	V <sub>F</sub>	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.

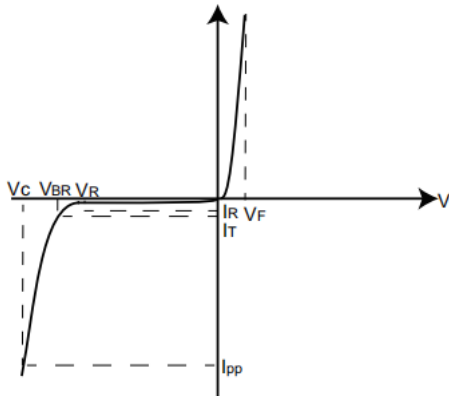
**Characteristics (T = 25°C unless otherwise noted)**

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>DN</sub> (V)	Maximum Peak Pulse Current I <sub>pp</sub> (A) 10/1000uS	Maximum Clamping Voltage V <sub>C</sub> @ I <sub>DN</sub> (V)	Maximum Peak Pulse Current I <sub>pp</sub> (A) 8/20uS	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)
		UNI	BI		MIN	MAX						
1.5SMB20A	1.5SMB20CA	020	020	17.1	19.0	21.0	1	27.7	54.9	34.8	302.0	20
1.5SMB22A	1.5SMB22CA	022	022	18.8	20.9	23.1	1	30.6	49.7	35.0	273.4	10
1.5SMB23A	1.5SMB23CA	023	023	20.0	22.0	24.2	1	33.2	45.0	35.0	250.0	1
1.5SMB24A	1.5SMB24CA	024	024	20.5	22.8	25.2	1	33.2	45.0	42.9	249.0	1
1.5SMB27A	1.5SMB27CA	027	027	23.1	25.7	28.4	1	37.5	40.5	48.4	222.8	1
1.5SMB30A	1.5SMB30CA	030	030	25.6	28.5	31.5	1	41.4	36.7	53.5	201.9	1
1.5SMB33A	1.5SMB33CA	033	033	28.2	31.4	34.7	1	45.7	33.3	59.0	183.2	1
1.5SMB36A	1.5SMB36CA	036	036	30.8	34.2	37.8	1	49.9	30.5	64.5	167.8	1
1.5SMB39A	1.5SMB39CA	039	039	33.3	37.1	41.0	1	53.9	28.2	69.6	155.1	1
1.5SMB43A	1.5SMB43CA	043	043	36.8	40.9	45.2	1	59.3	25.6	76.6	140.8	1
1.5SMB47A	1.5SMB47CA	047	047	40.2	44.7	49.4	1	64.8	23.5	83.7	129.3	1
1.5SMB51A	1.5SMB51CA	051	051	43.6	48.5	53.6	1	70.1	21.7	90.6	119.4	1
1.5SMB56A	1.5SMB56CA	056	056	47.8	53.2	58.8	1	77.0	19.7	99.5	108.4	1
1.5SMB62A	1.5SMB62CA	062	062	53.0	58.9	65.1	1	85.0	17.9	109.8	98.5	1
1.5SMB68A	1.5SMB68CA	068	068	58.1	64.6	71.4	1	92.0	16.5	118.9	90.8	1
1.5SMB75A	1.5SMB75CA	075	075	64.1	71.3	78.8	1	103.0	14.8	133.1	81.4	1
1.5SMB82A	1.5SMB82CA	082	082	70.1	77.9	86.1	1	113.0	13.5	146.0	74.3	1
1.5SMB91A	1.5SMB91CA	091	091	77.8	86.5	95.5	1	125.0	12.2	161.5	67.1	1
1.5SMB100A	1.5SMB100CA	100	100	85.5	95.0	105.0	1	137.0	11.1	177.0	61.1	1

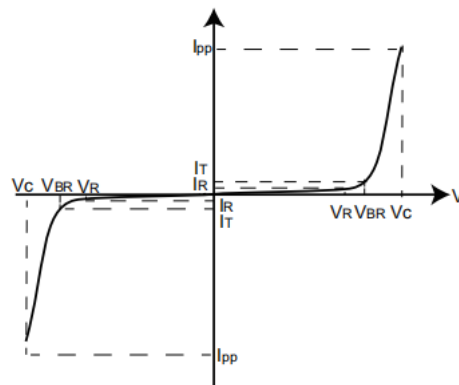


I-V Curve Characteristics

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

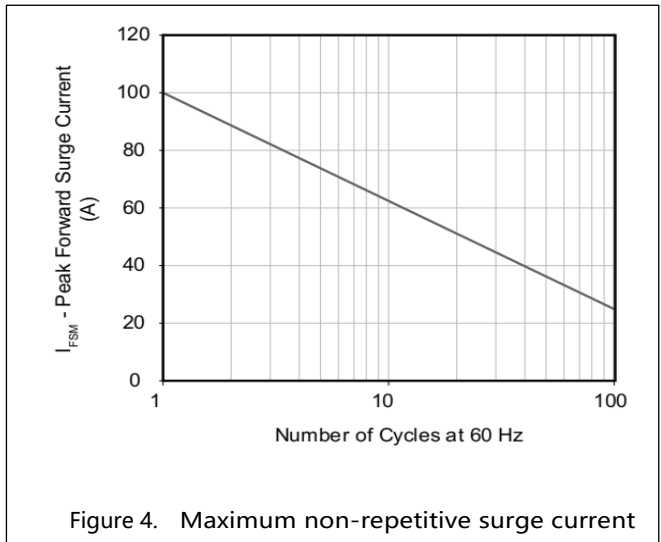
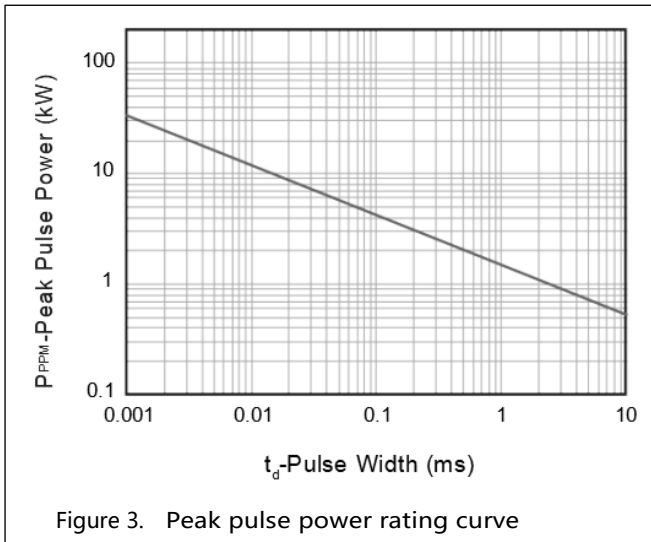
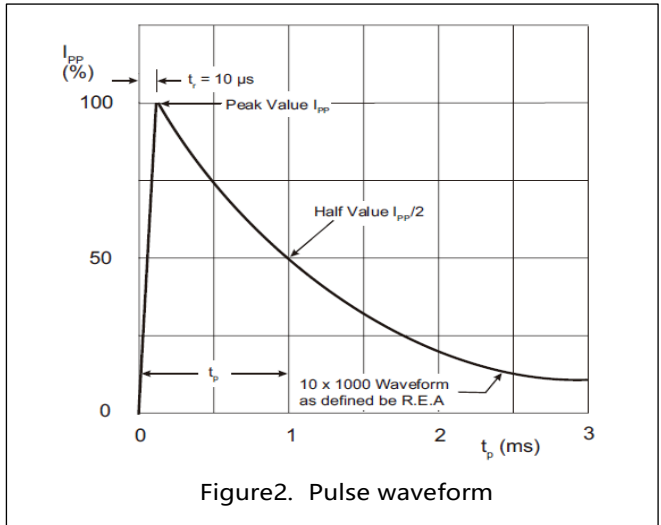
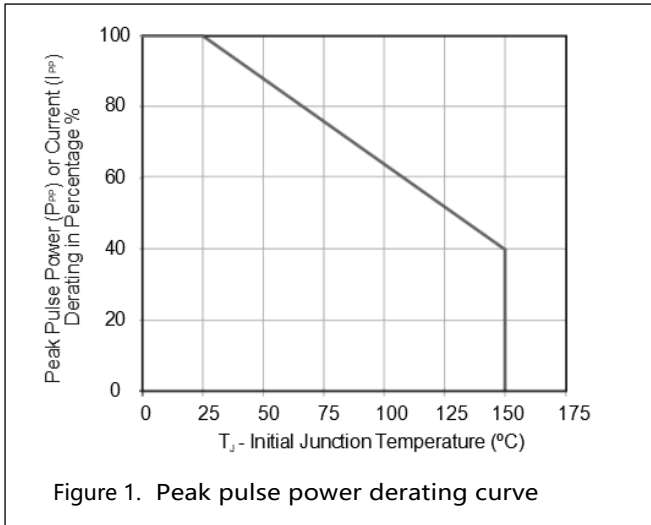
$V_{BR}$  Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current ( $I_T$ )

$V_C$  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

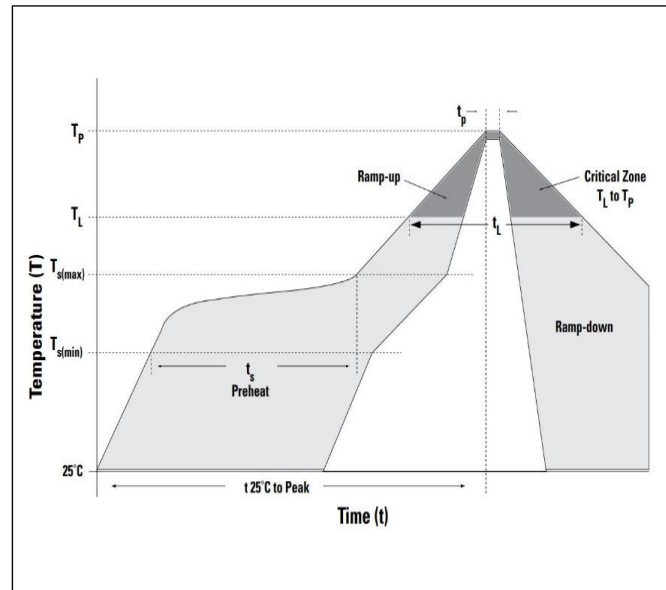
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



## Soldering Parameters

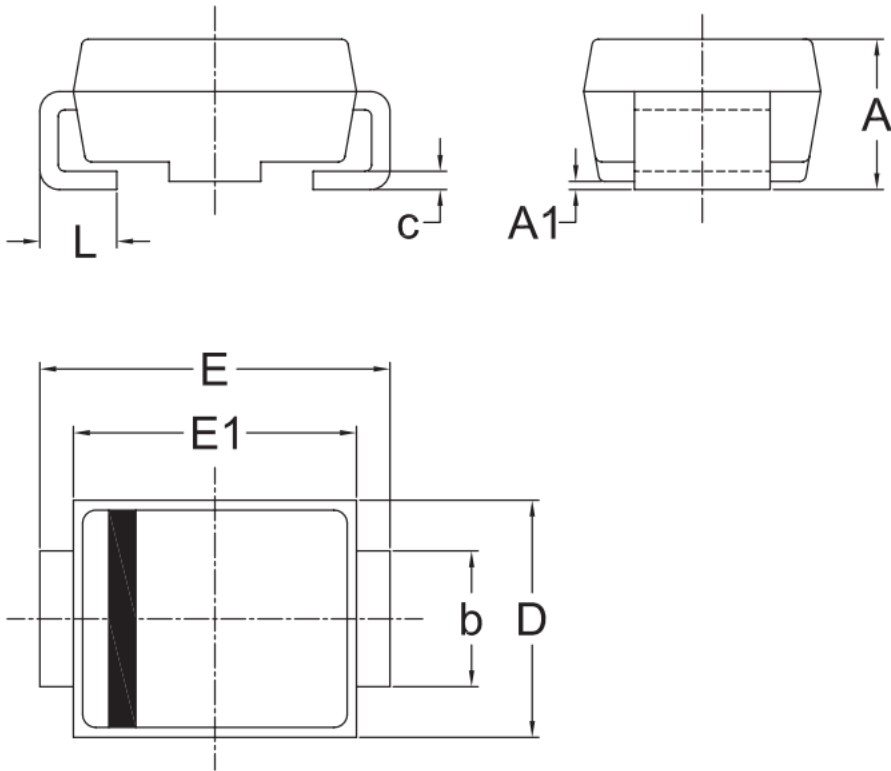
Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 – 180 secs
Average ramp up rate (Liquidus Temp ( $T_A$ ) to peak)		3°C/second max
$T_{s(max)}$ to $T_A$ - Ramp-up Rate		3°C/second max
Reflow	- 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





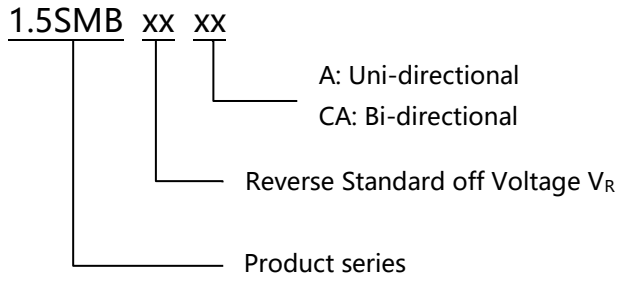
Dimensions



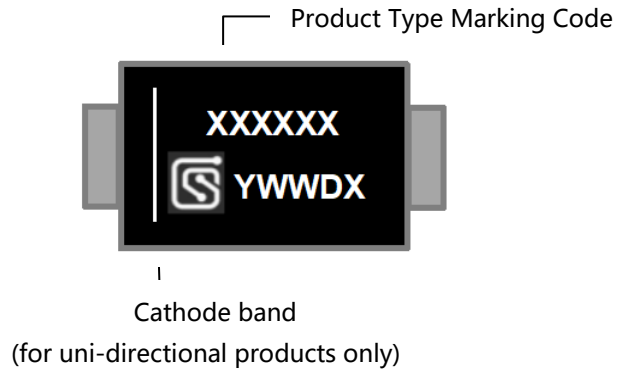
UNIT	A	A1	b	c	D	E	E1	L	
mm	Max	2.50	0.30	2.15	0.25	3.75	5.54	4.65	1.50
	Min	2.00	0.00	1.85	0.15	3.45	5.04	4.35	0.80

Remark: Dimensions D and E1 do not include mold flash & gate remain.

Part Numbering



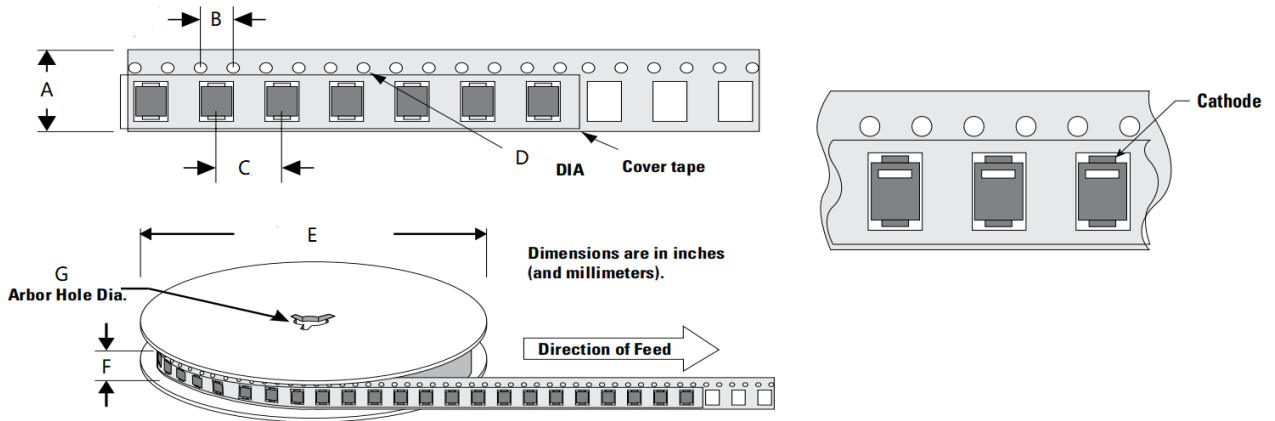
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
1.5SMBXXXX	DO-214AA	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	12.00±0.10
B	4.00±0.10
C	8.00±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