

## Features

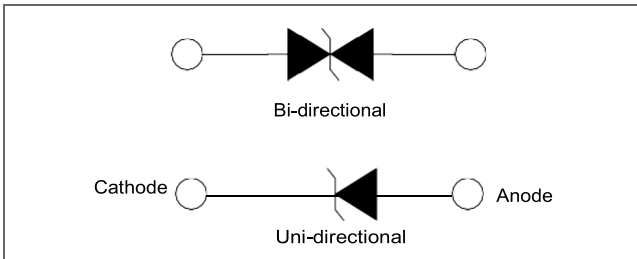
- 1500W peak pulse power capability at 10/1000 $\mu$ s waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260 $^{\circ}$ C
- High reliability application and automotive grade AEC-Q101 qualified




## 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 ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^{\circ}\text{C}$ by 10/1000 $\mu$ s Waveform (Fig.3)	$P_{PPM}$	1500	W
Power Dissipation on Infinite Heat Sink at $T_L=50^{\circ}\text{C}$	$P_D$	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	$I_{FSM}$	200	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	$V_F$	3.5/5	V
Operating Temperature Range	$T_J$	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to 150	$^{\circ}\text{C}$

AGENCY	AGENCY FILE NUMBER
	Pending

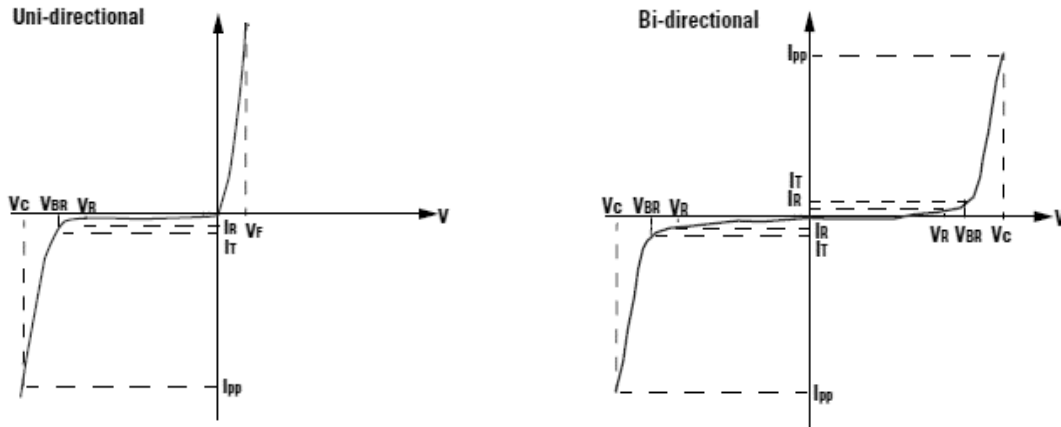
### Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
2.  $V_F < 3.5\text{V}$  for single die parts and  $V_F < 5\text{V}$  for stacked-die parts.

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

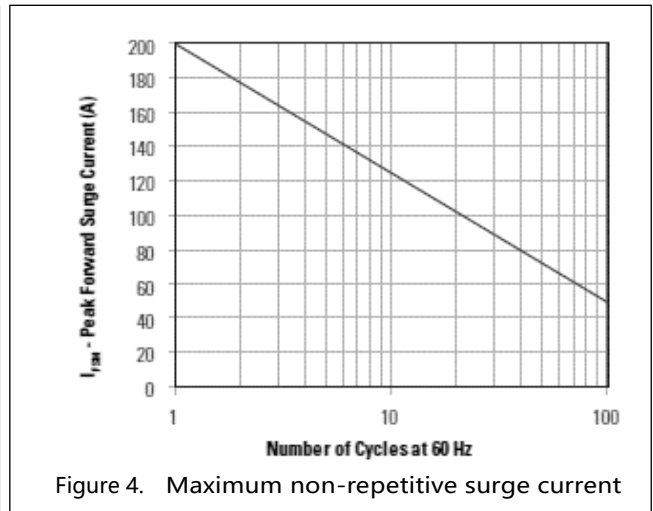
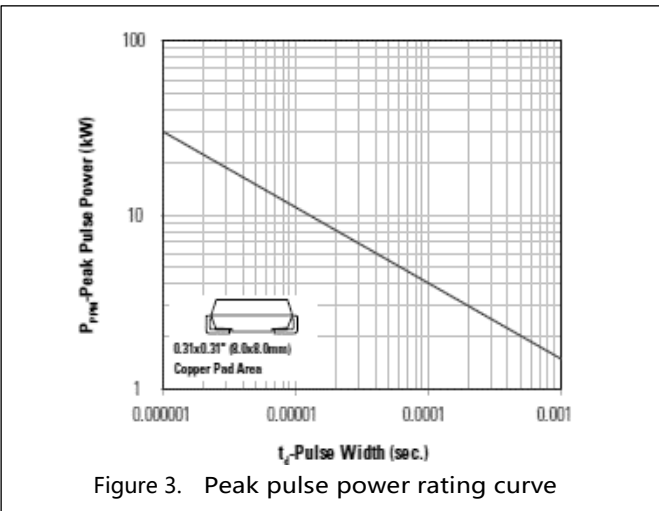
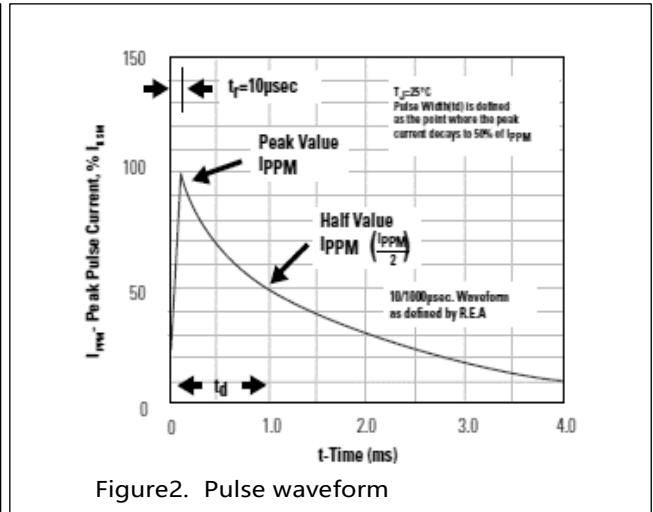
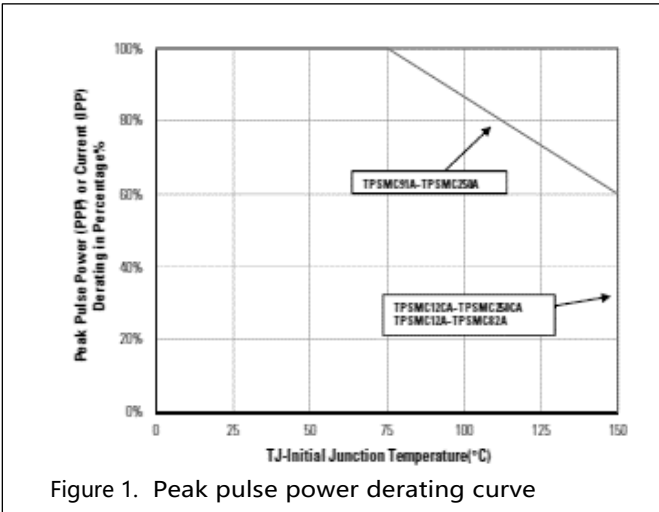
Part Number (Uni)	Part Number (Bi)	Key Marking		Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts) @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage V <sub>C</sub> @ I <sub>nn</sub> (V)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)	Agency Approval 
		UNI	BI		MIN	MAX					
TPSMC12A	TPSMC12CA	AC012	AC012	10.20	11.40	12.60	1	16.7	91.0	5	
TPSMC13A	TPSMC13CA	AC013	AC013	11.10	12.40	13.70	1	18.2	83.5	1	
TPSMC15A	TPSMC15CA	AC015	AC015	12.80	14.30	15.80	1	21.2	71.7	1	
TPSMC16A	TPSMC16CA	AC016	AC016	13.60	15.20	16.80	1	22.5	67.6	1	
TPSMC18A	TPSMC18CA	AC018	AC018	15.30	17.10	18.90	1	25.2	60.3	1	
TPSMC20A	TPSMC20CA	AC020	AC020	17.10	19.00	21.00	1	27.7	54.9	1	
TPSMC22A	TPSMC22CA	AC022	AC022	18.80	20.90	23.10	1	30.6	49.7	1	
TPSMC24A	TPSMC24CA	AC024	AC024	20.50	22.80	25.20	1	33.2	45.8	1	
TPSMC27A	TPSMC27CA	AC027	AC027	23.10	25.70	28.40	1	37.5	40.5	1	
TPSMC30A	TPSMC30CA	AC030	AC030	25.60	28.50	31.50	1	41.4	36.7	1	
TPSMC33A	TPSMC33CA	AC033	AC033	28.20	31.40	34.70	1	45.7	33.3	1	
TPSMC36A	TPSMC36CA	AC036	AC036	30.80	34.20	37.80	1	49.9	30.5	1	
TPSMC39A	TPSMC39CA	AC039	AC039	33.30	37.10	41.00	1	53.9	28.2	1	
TPSMC43A	TPSMC43CA	AC043	AC043	36.80	40.90	45.20	1	59.3	25.6	1	
TPSMC47A	TPSMC47CA	AC047	AC047	40.20	44.70	49.40	1	64.8	23.5	1	
TPSMC51A	TPSMC51CA	AC051	AC051	43.60	48.50	53.60	1	70.1	21.7	1	
TPSMC56A	TPSMC56CA	AC056	AC056	47.80	53.20	58.80	1	77.0	19.7	1	
TPSMC62A	TPSMC62CA	AC062	AC062	53.00	58.90	65.10	1	85.0	17.9	1	
TPSMC68A	TPSMC68CA	AC068	AC068	58.10	64.60	71.40	1	92.0	16.5	1	
TPSMC75A	TPSMC75CA	AC075	AC075	64.10	71.30	78.80	1	103.0	14.8	1	
TPSMC82A	TPSMC82CA	AC082	AC082	70.10	77.90	86.10	1	113.0	13.5	1	
TPSMC91A	TPSMC91CA	AC091	AC091	77.80	86.50	95.50	1	125.0	12.2	1	
TPSMC100A	TPSMC100CA	AC100	AC100	85.50	95.00	105.26	1	137.0	11.1	1	
TPSMC110A	TPSMC110CA	AC110	AC110	94.50	104.50	115.79	1	152.0	10	1	
TPSMC120A	TPSMC120CA	AC120	AC120	102.60	114.00	126.32	1	165.0	9.2	1	
TPSMC130A	TPSMC130CA	AC130	AC130	111.15	123.50	136.84	1	179.0	8.5	1	
TPSMC150A	TPSMC150CA	AC150	AC150	128.25	142.50	157.89	1	207.0	7.3	1	
TPSMC160A	TPSMC160CA	AC160	AC160	136.80	152.00	168.42	1	219.0	6.9	1	
TPSMC170A	TPSMC170CA	AC170	AC170	145.35	161.50	178.95	1	234.0	6.5	1	
TPSMC180A	TPSMC180CA	AC180	AC180	153.90	171.00	189.47	1	246.0	6.2	1	
TPSMC200A	TPSMC200CA	AC200	AC200	171.00	190.00	210.53	1	274.0	5.5	1	
TPSMC220A	TPSMC220CA	AC220	AC220	188.10	209.00	231.58	1	328.0	4.6	1	
TPSMC250A	TPSMC250CA	AC250	AC250	213.75	237.50	263.16	1	344.0	4.4	1	

I-V Curve Characteristics



- $P_{PPM}$  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

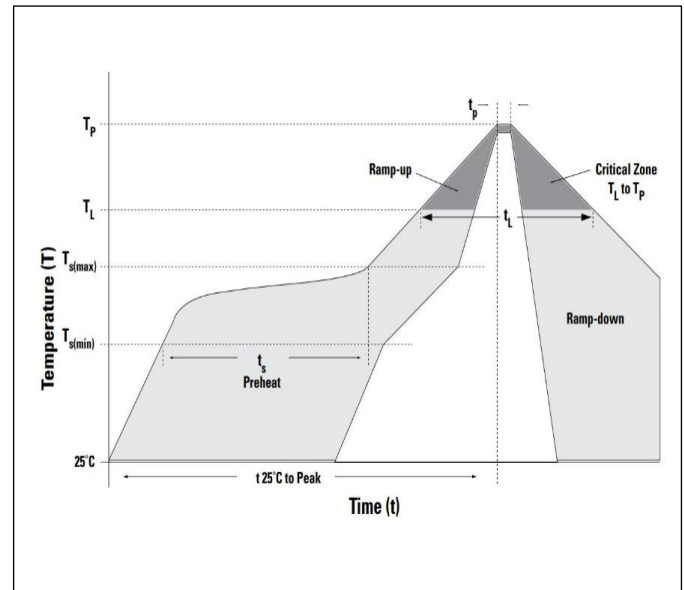
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



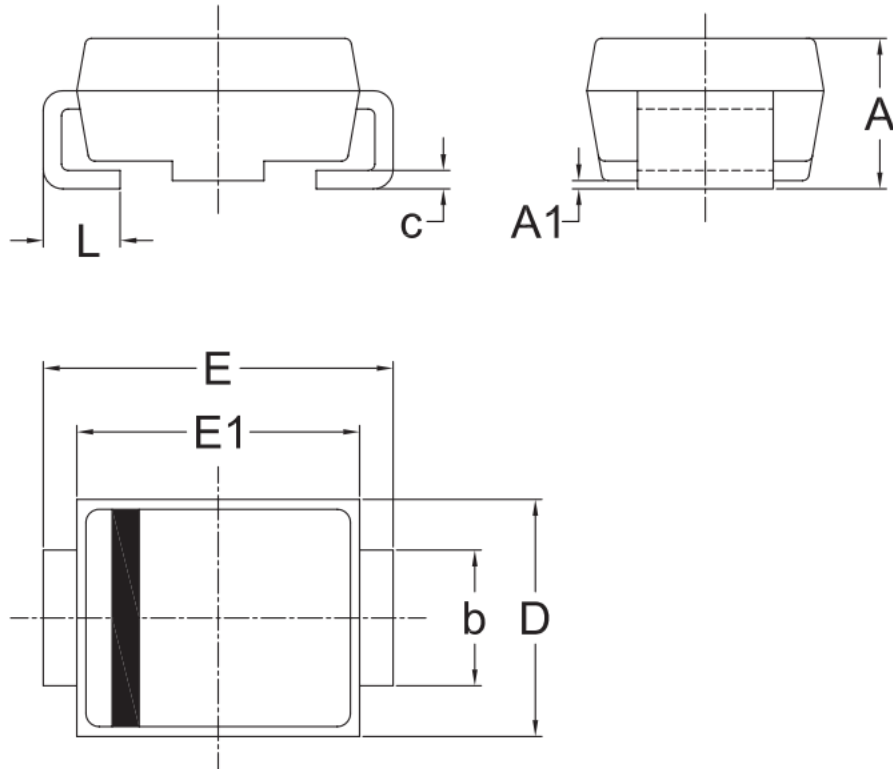
## Soldering Parameters

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



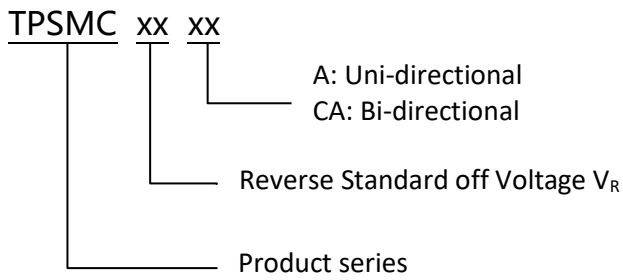
Dimensions



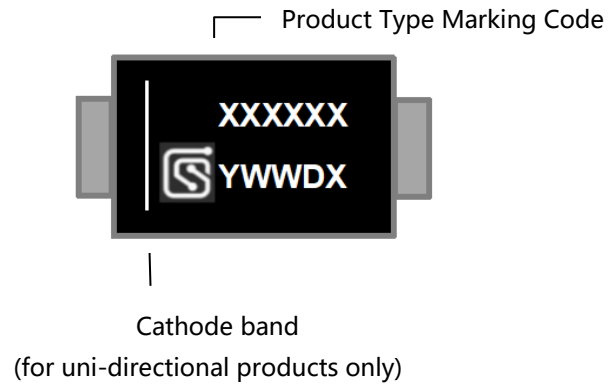
UNIT		A	A1	b	c	D	E	E1	L
mm	Max	2.83	0.30	3.10	0.25	6.15	8.15	7.05	1.60
	Min	2.33	0.00	2.80	0.15	5.85	7.65	6.75	0.90

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

Part Numbering



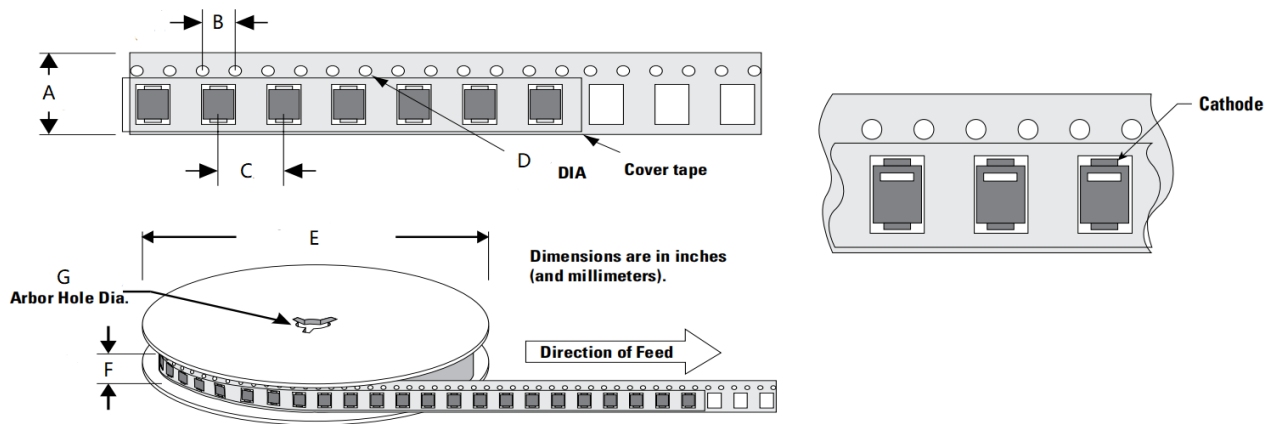
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
TPSMCXXXX	DO-214AB	3000	Tape & Reel

### Tape and Reel Specification



Symbol	Millimeter
A	16.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	19.70±2.00
G	13.30±0.30

### Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Aug-2021



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