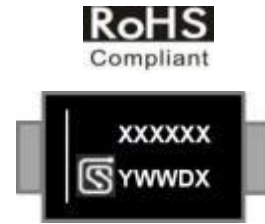




Features

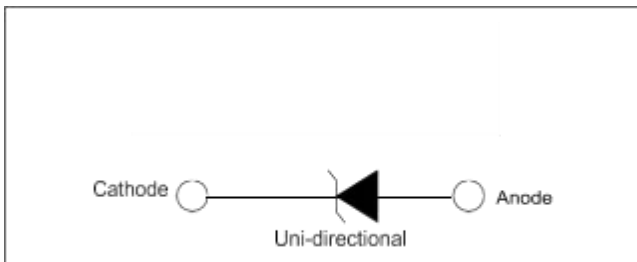
- 3000W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- Low clamping capability U- nCLAMP™
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C
- High reliability application and automotive grade AEC- Q101 qualified



Applications

This low clamp TVS series are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Automotive B M S 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/ 1000µs Waveform (Fig.2)	P_{PPM}	3000	W
Power Dissipation on Infinite Heat Sink at $T_L = 50^\circ\text{C}$	P_D	6.5	W
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave (Note 1)	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 10 A for Unidirectional Only(Note 2)	V_F	8	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 8.3 ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle= 4 per minute maximum.
2. $V_F < 8\text{V}$ for stacked-die parts.

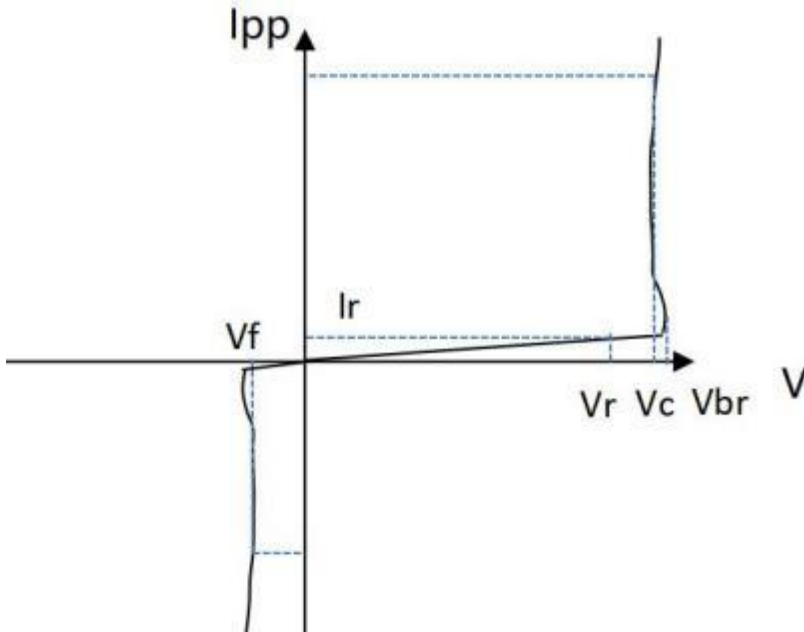


Characteristics (T = 25 °C unless otherwise noted)

Part Number (Uni)	Key Mar king UNI	Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Curren t I _T (mA)	Maximum Clamping Voltage V _C @ 10/100 0 uS I _{pp} (V)	Maximum Clamping Voltage V _C @ 8/20 uS I _{pp} (V)	Maximu m Reverse Leakage IR @ V _R (μA)	Agency Approval 
			MIN	MAX					
TPSMD75A-VBR-Un	AD075n	64.1	71.3	78.8	1	85V/35.3A	90V/350A	1	
TPSMD82A-VBR-Un	AD082n	70.1	77.9	86.1	1	95V/31.6A	100V/314A	1	
TPSMD91A-VBR-Un	AD091n	77.8	86.5	95.5	1	105V/28.6A	110V/286A	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 through the TVS at a specified test current (I_r)

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)

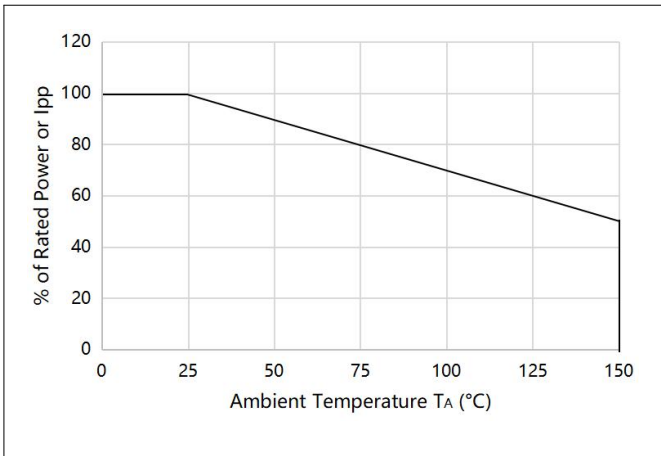


Figure 1. Peak pulse power derating curve

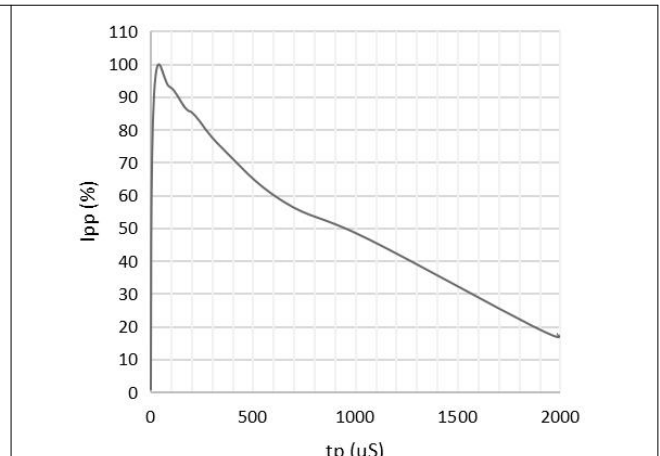


Figure 2. Pulse waveform

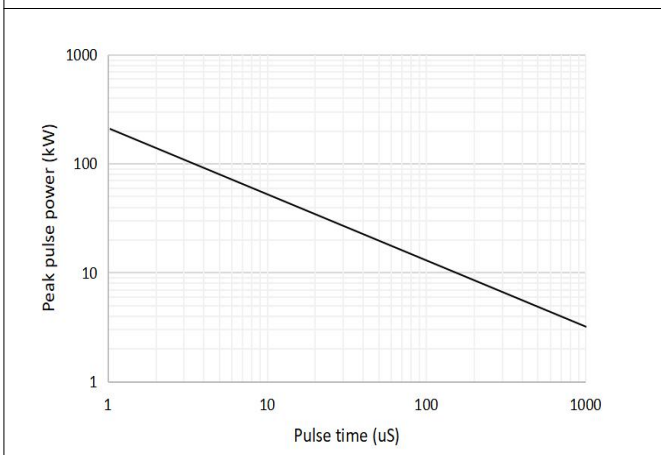


Figure 3. Peak pulse power rating curve

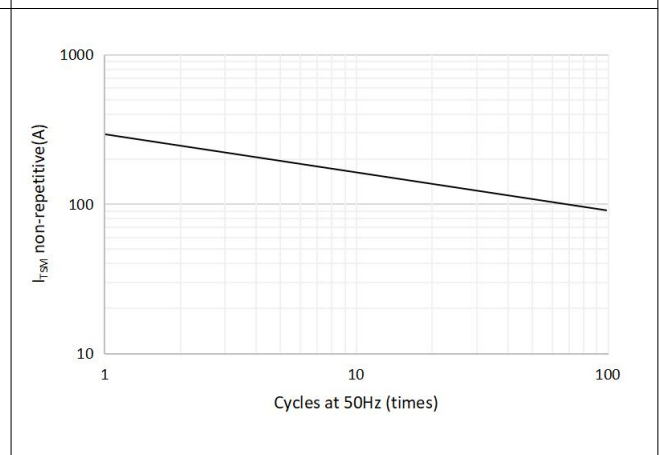


Figure 4. Maximum non-repetitive surge current

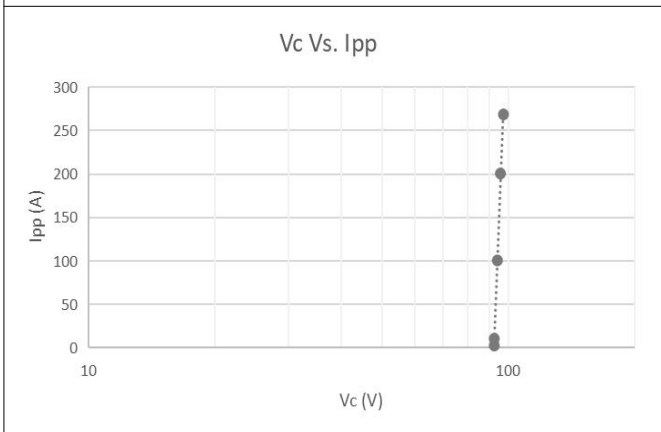


Figure 5. TPSMD91A-VBR-Un Typical V_c Vs. I_{pp} (8/20uS)

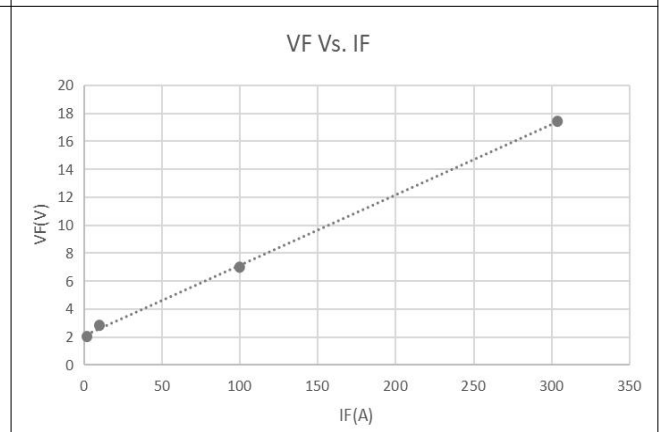


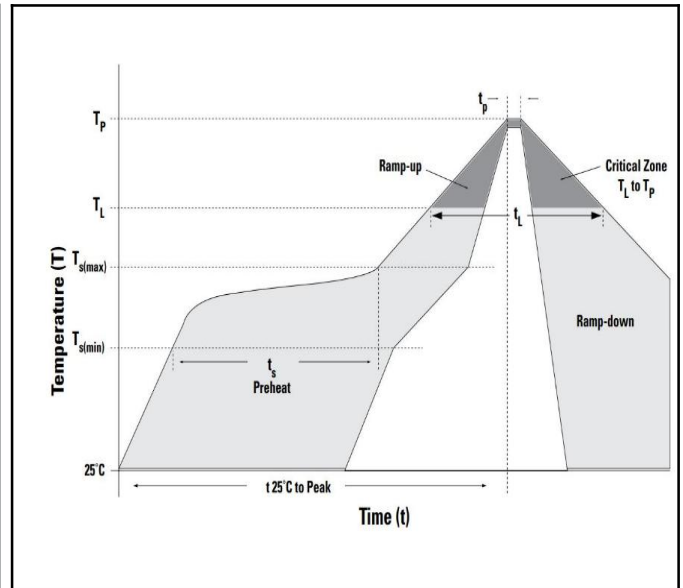
Figure 6. Typical V_F Vs. I_F (8/20uS)



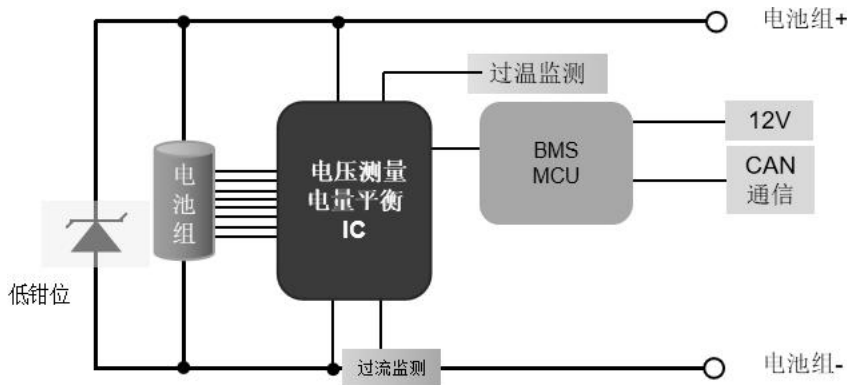
Soldering Parameters

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 – 120 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_r)	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



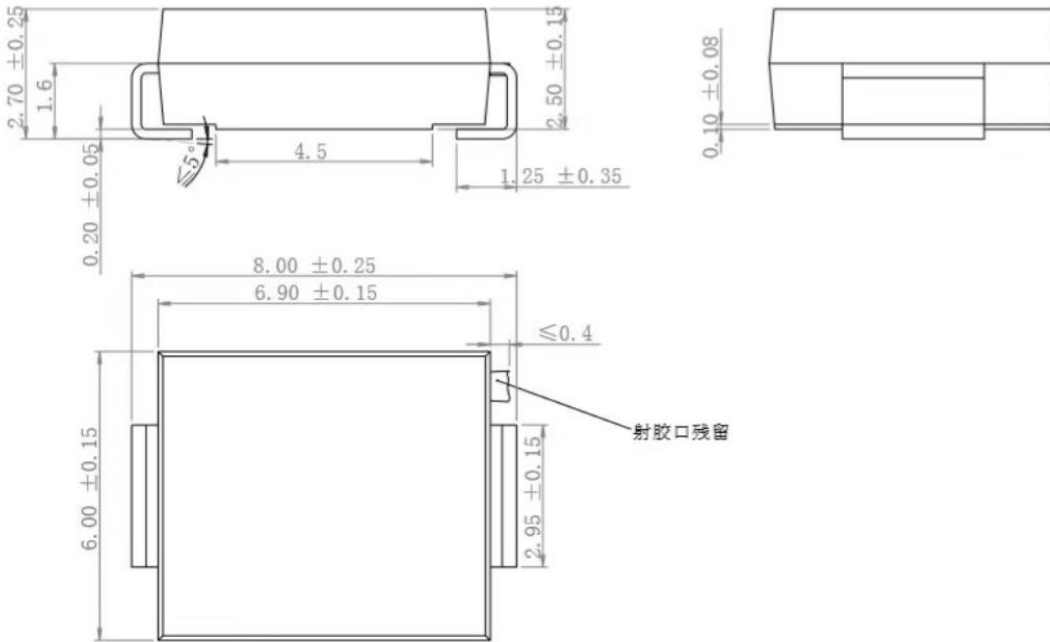
Typical Application





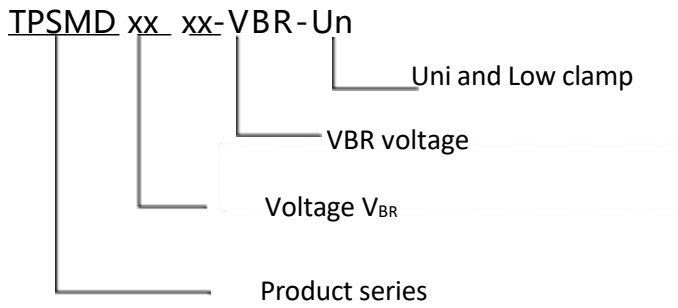
Dimensions

unit: mm

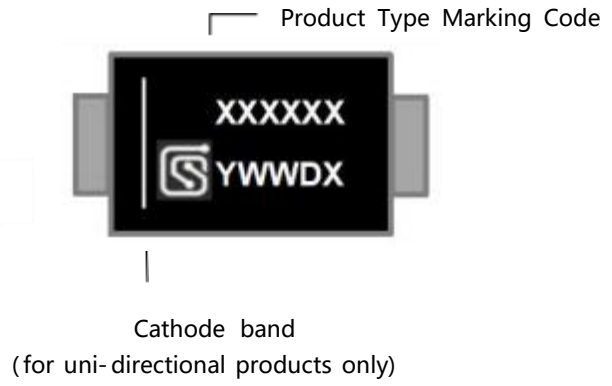




Part Numbering



Part Marking

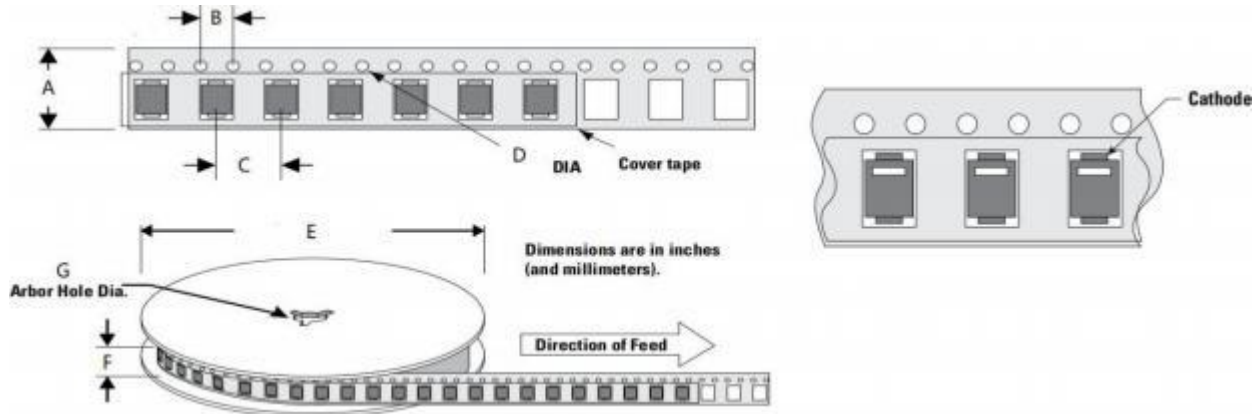


Packing

Part number	Package name	Small packing quantity	Packing method
TPSMDXXXX -VBR-Un	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	3-23-2023