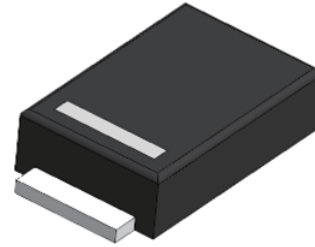


TVS Diode – SMP Series

Features

- Glass passivated chip.
- 200 W peak pulse power capability on 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- Low leakage
- Uni-directional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant
- Halogen Free
- Pb Free

SOD-323HE



Applications

- I/O interface, V_{CC} bus
- Telecom
- Industrial and consumer electronic applications.
- Relay and electromagnetic valve surge absorption.

Agency Approval

- Pending

Mechanical and Physical Data

- Case: JEDEC SMAF molded plastic.
- Surface mount device, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except bidirectional.

Maximum Ratings and Thermal Characteristics

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾	P_{PP}	200	W
Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾	I_{PP}	See Next Table	A
Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$	P_D	1.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I_{FSM}	15	A
Typical Thermal Resistance, Junction to Ambient ⁽³⁾	$R_{\theta JA}$	110	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance, Junction to Case ⁽³⁾	$R_{\theta JC}$	40	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance, Junction to Lead ⁽³⁾	$R_{\theta JL}$	70	$^\circ\text{C}/\text{W}$
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Note:

(1) Non-repetitive current pulse per Fig.5 and derated above $T_A = 25^\circ\text{C}$ per Fig.1

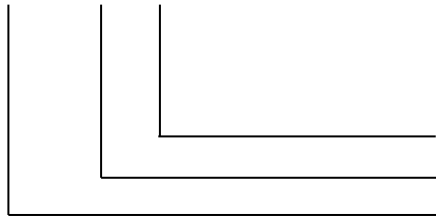
(2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3) The thermal resistance from junction to ambient, case or lead, mounted on P.C.B with 5x5 mm copper pads

TVS Diode – SMP Series

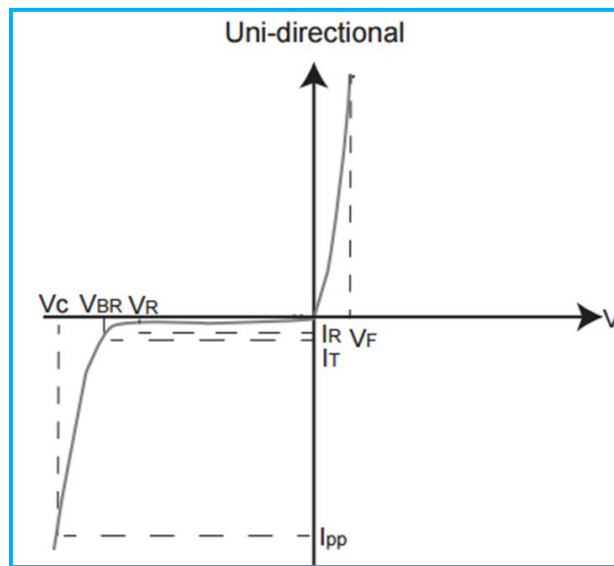
Part Number Code

SMP □□□ A



A: Uni-directional
Reverse Stand-Off Voltage or Typical Breakdown Voltage
SMP Series (200W)

I-V Curve Characteristics



- 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
- I_{PP} Peak Pulse Waveform
- I_T Test Current for breakdown voltage setting
- V_F Forward Voltage Drop for Uni-directional

Electrical Characteristics

Part Number	Marking	Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
			Min.	Max.				
SMP10A	2FX	10	11.1	12.3	1	17.0	11.76	1
SMP11A	2FZ	11	12.2	13.5	1	18.2	10.99	1
SMP12A	2HE	12	13.3	14.7	1	19.9	10.05	1
SMP13A	2HG	13	14.4	15.9	1	21.5	9.30	1
SMP14A	2HK	14	15.6	17.2	1	23.2	8.62	1
SMP15A	2HM	15	16.7	18.5	1	24.4	8.20	1
SMP16A	2HP	16	17.8	19.7	1	26.0	7.69	1

TVS Diode – SMP Series

Part Number	Marking	Reverse Stand Off Voltage V_R (V)	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R (μ A) @ V_R
			Min.	Max.				
SMP17A	2HR	17	17.8	19.7	1	26.0	7.69	1
SMP18A	2HT	18	18.9	20.9	1	27.6	7.25	1
SMP20A	2HV	20	20.0	22.1	1	29.2	6.85	1
SMP22A	2HX	22	22.2	24.5	1	32.4	6.17	1
SMP24A	2HZ	24	24.4	26.9	1	35.5	5.63	1
SMP26A	2JE	26	26.7	29.5	1	38.9	5.14	1
SMP28A	2JG	28	28.9	31.9	1	42.1	4.75	1
SMP30A	2JK	30	31.1	34.4	1	45.4	4.45	1
SMP33A	2JM	33	33.3	36.8	1	48.4	4.13	1
SMP36A	2JP	36	36.7	40.6	1	53.3	3.75	1
SMP40A	2JR	40	40.0	44.2	1	58.1	3.44	1
SMP43A	2JT	43	44.4	49.1	1	64.5	3.10	1

TVS Diode – SMP Series

Ratings and Characteristic Curves

Fig 1 - Pulse Derating Curve

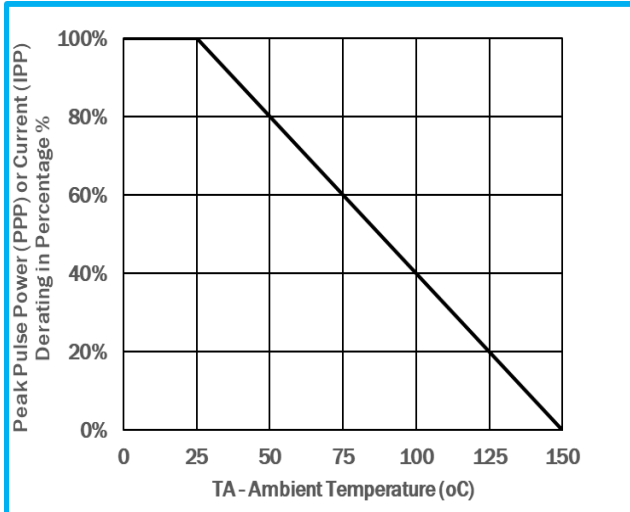


Fig 2 - Maximum Non-Repetitive Surge Current

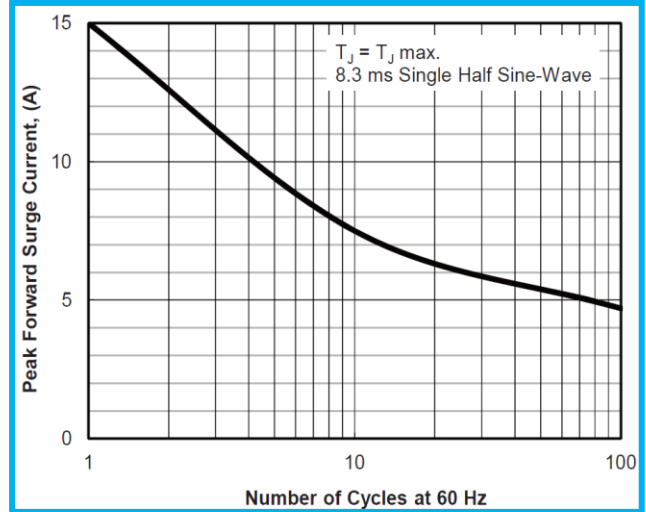


Fig 3 - Pulse Waveform

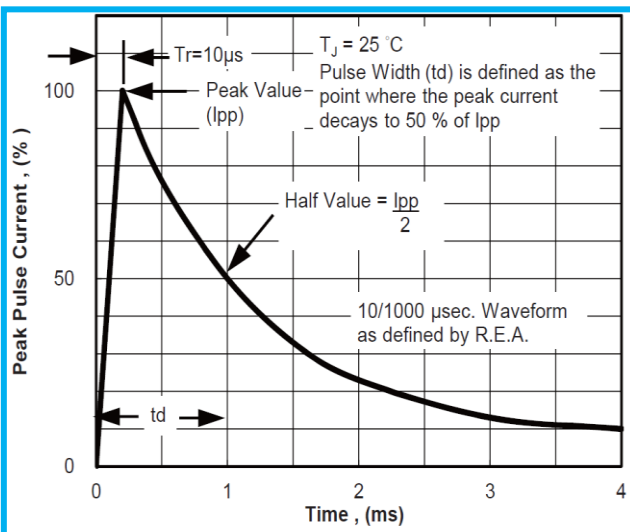
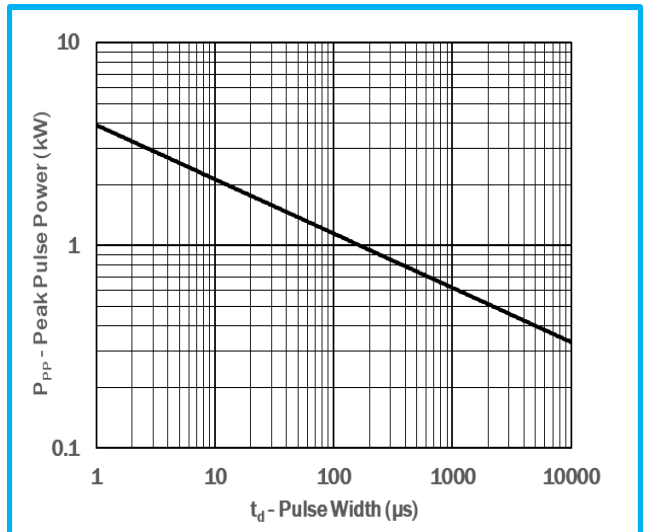
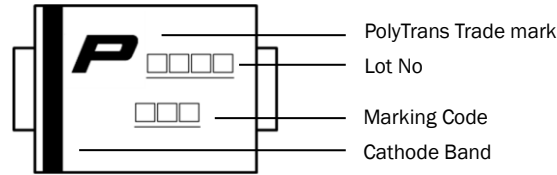


Fig 4 - Peak Pulse Power Rating Curve

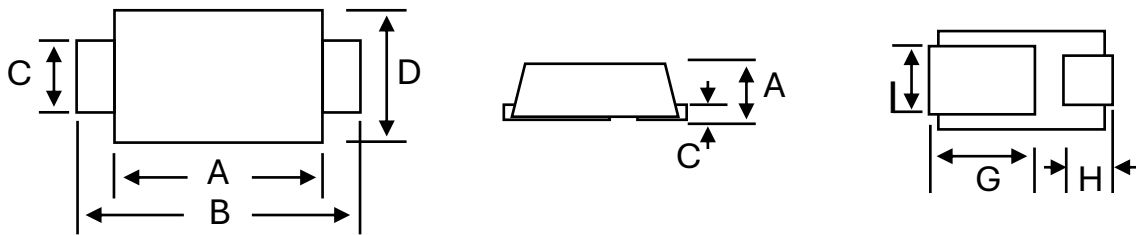


TVS Diode – SMP Series

Marking Definitions



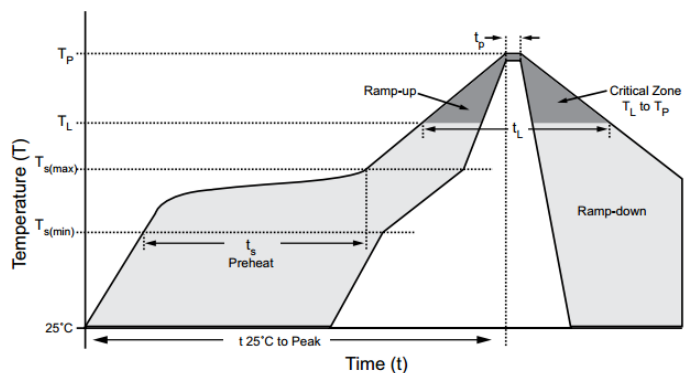
Physical Dimensions



Dimension	Millimeters	
	Min	Max
A	0.60	0.75
B	0.55	0.75
C	0.10	0.27
D	1.20	1.40
E	2.05	2.30
F	2.30	2.75
G	1.10	1.50
H	0.40	0.75
I	0.75	1.00

Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min (T_{s_min})	150°C
- Temperature Max (T_{s_max})	200°C
- Time (T_{s_min} to T_{s_max})	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
Peak Temperature	260°C max.
Time within 5°C of actual Peak Temperature (t_p)	40 seconds max.
Ramp-Down Rate	6 °C /second max.



Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

TVS Diode – SMP Series

Packaging Information

Part Number	Packaging Code	Component Package	Quantity	Packaging Option	Packaging Specification
SMP Series	T7	SOD-323HF	3000	Tape & Reel – 8mm tape/7" reel	EIA STD RS-481

Tape and Reel Specifications

