

TVS Diode – AMPA-H Series

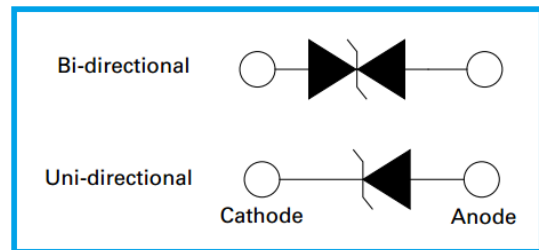
Features

- Working voltage: 16 to 48 V
- Glass passivated chip
- Excellent voltage clamping capability
- Automotive grade AEC-Q101 qualified
- Meets ISO7637-2 5a surge specification
- 8000 W peak pulse power capability on 10/1000 μ s waveform
- Low leakage current
- Very fast response time



Applications

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



Mechanical and Physical Data

- Case: DO-218AB molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Heat-sink is anode

Maximum Ratings and Thermal Characteristics

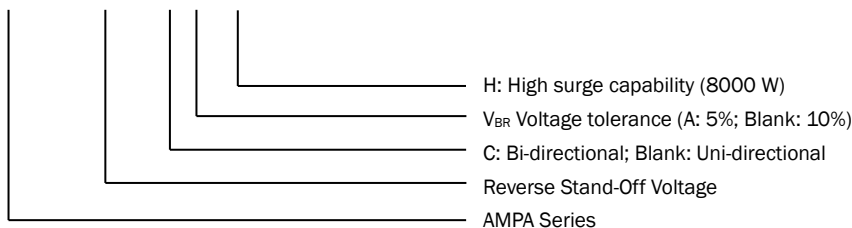
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note 1, Fig.1).	P_{PPM}	Min 8000	Watt
Peak Pulse Current of 10/1000 μ s waveform (Note 1, Fig.3).	I_{PPM}	See Table	Amp
Power Dissipation on Infinite Heatsink at $T_L = 25^\circ\text{C}$	P_D	8.0	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	I_{FSM}	700	Amp
Operating Junction and Storage Temperature Range.	T_J, T_{STG}	-55~175	$^\circ\text{C}$

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above $T_A = 25^\circ\text{C}$ per Fig.2.
2. 8.3ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

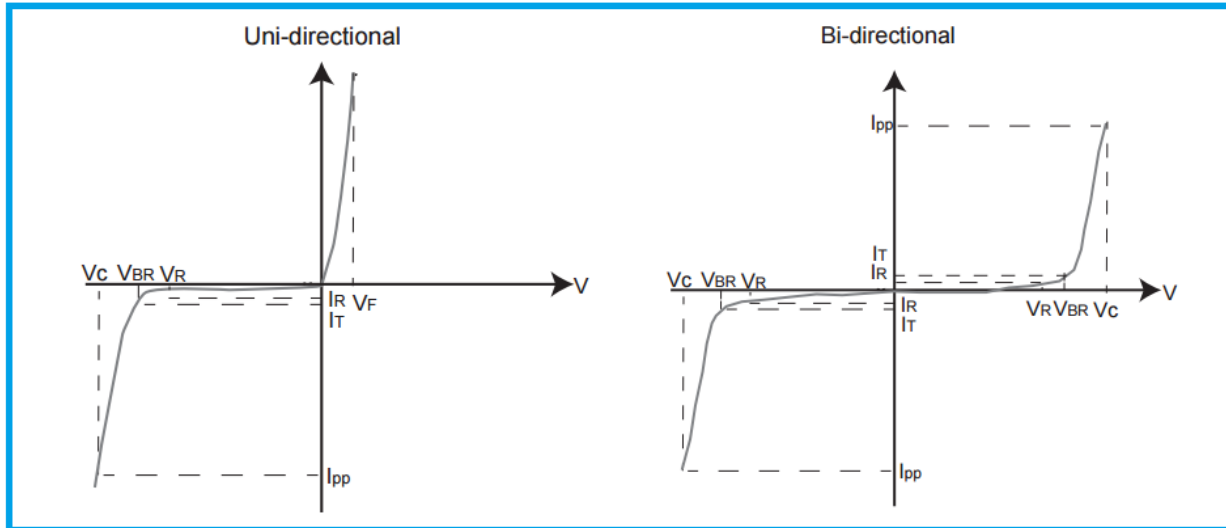
Part Number Code

AMPA C A - H



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I-V Curve Characteristics



- P_{PPM} Peak Pulse Power Dissipation – Maximum 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

Electrical Characteristics

Part Number		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 _{PPM}	Maximum Peak Pulse Current I _{PPM} (A)	Maximum Reverse Leakage I _R (μA) @ V _R	Maximum I _R (μA) @ V _R T _J = 175°C
Uni	Bi		Min.	Max.					
AMPA16A-H	AMPA16CA-H	16.0	17.8	19.7	5	26.0	307	10	150
AMPA17A-H	AMPA17CA-H	17.0	18.9	20.9	5	27.6	289	10	150
AMPA18A-H	AMPA18CA-H	18.0	20.0	22.1	5	29.2	273	10	150
AMPA20A-H	AMPA20CA-H	20.0	22.2	24.5	5	32.4	246	10	150
AMPA22A-H	AMPA22CA-H	22.0	24.4	26.9	5	35.5	225	10	150
AMPA24A-H	AMPA24CA-H	24.0	26.7	29.5	5	38.9	205	10	150
AMPA26A-H	AMPA26CA-H	26.0	28.9	31.9	5	42.1	190	10	150
AMPA28A-H	AMPA28CA-H	28.0	31.1	34.4	5	45.4	176	10	150
AMPA30A-H	AMPA30CA-H	30.0	33.3	36.8	5	48.4	165	10	150
AMPA33A-H	AMPA33CA-H	33.0	36.7	40.6	5	53.3	150	10	150
AMPA36A-H	AMPA36CA-H	36.0	40.0	44.2	5	58.1	137	10	150
AMPA40A-H	AMPA40CA-H	40.0	44.4	49.1	5	64.5	124	10	150
AMPA43A-H	AMPA43CA-H	43.0	47.8	52.8	5	69.4	115	10	150
AMPA45A-H	AMPA45CA-H	45.0	50.0	55.3	5	72.7	110	10	150
AMPA48A-H	AMPA48CA-H	48.0	53.3	58.9	5	77.4	103	10	150

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Ratings and Characteristic Curves

Fig 1 - Pulse Derating Curve

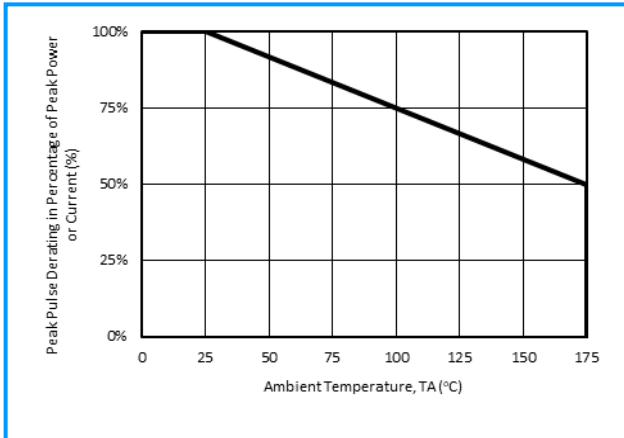


Fig 2 - Pulse Waveform

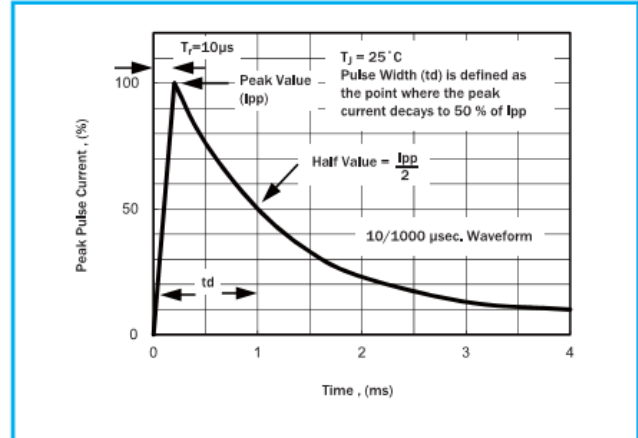
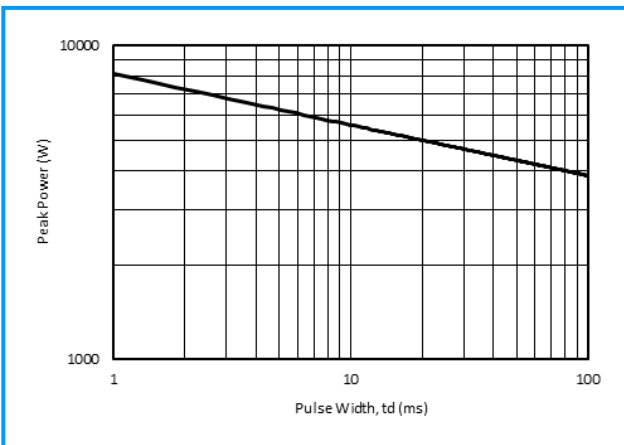
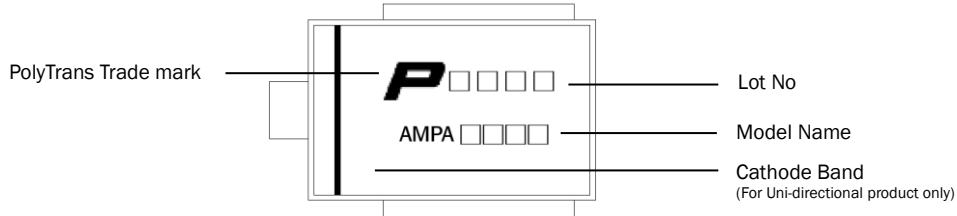


Fig 3 - Peak Pulse Power Rating Curve

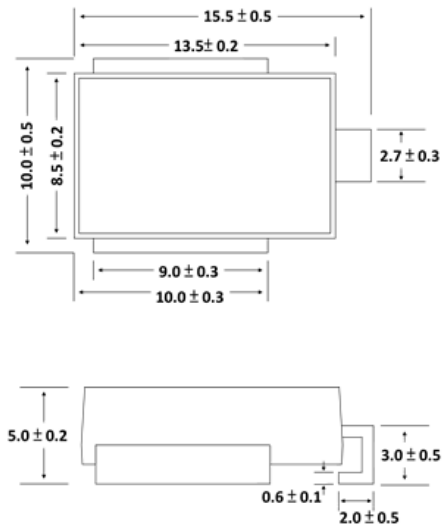


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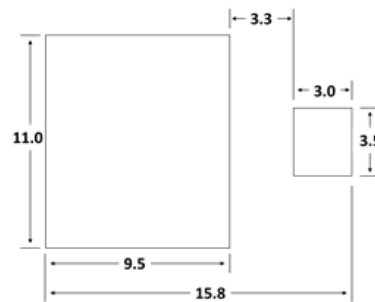
Marking Definitions



Physical Dimensions (Millimeters)

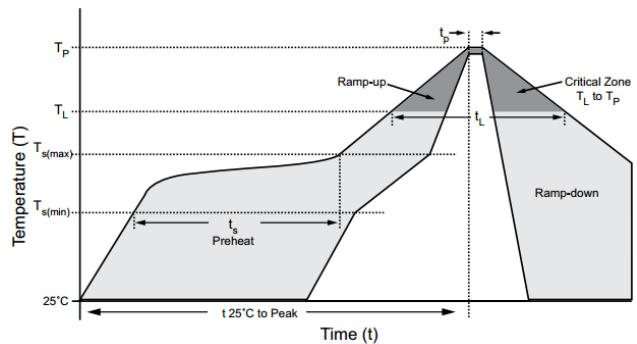


Recommended Mounting Pad Layout



Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min (T _{smin})	150°C
- Temperature Max (T _{smax})	200°C
- Time (T _{smin} to T _{smax})	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)	30 seconds max.
Ramp-Down Rate	6 °C /second max.



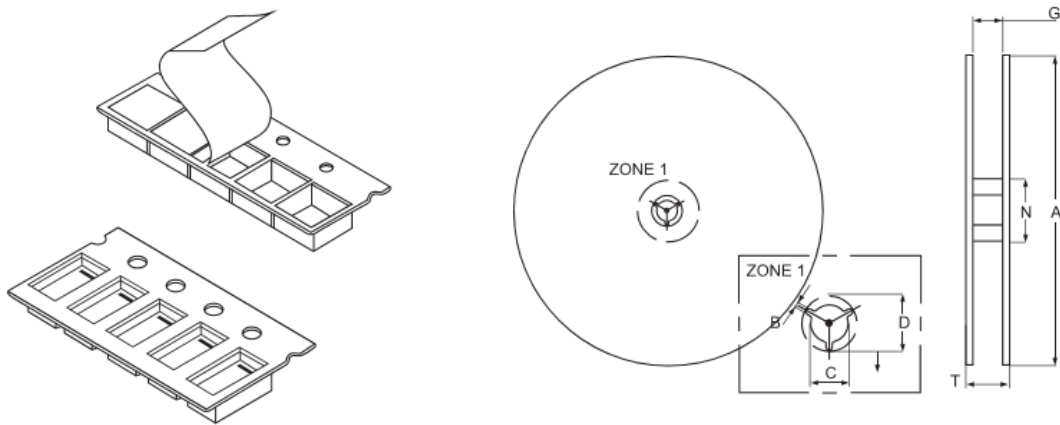
Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

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Packaging Information

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
AMPA-H Series	DO-218AB	750	Tape & Reel - 24 mm tape/13" reel	EIA STD RS-481

Tape and Reel Specifications



Symbol	A	B (Min.)	C	D (Min.)	N (Min.)	G (Max.)	T (Max.)
Spec	330±2.0	1.5	13.0±0.2	20.2	50.0	26.4	30.4

*Dimension in mm