

TVS Diode – AMPA Series

Features

- Working voltage: 10 to 43V
- Glass passivated chip
- Excellent voltage clamping capability
- Automotive grade AEC-Q101 qualified
- Meets ISO7637-2 5a surge specification
- 6600W peak pulse power capability on 10/1000 μ s waveform
- Meet AEC-Q101 requirement
- Low leakage current
- Very fast response time

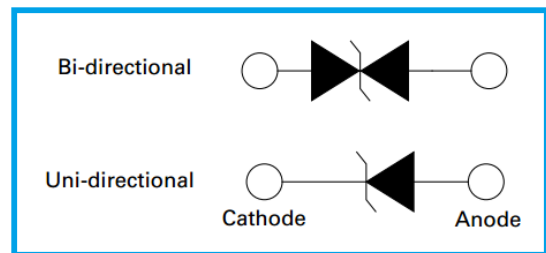


Applications

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

Agency Approval

- UL certification pending



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

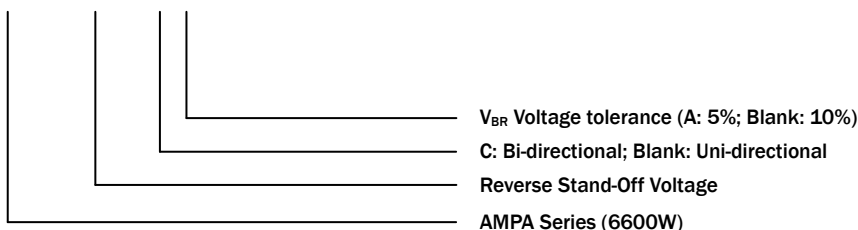
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note 1, Fig.1).	P _{PPM}	Min 6600	Watt
Peak Pulse Current of 10/1000 μ s waveform (Note 1, Fig.3).	I _{PPM}	See Table	Amp
Power Dissipation on Infinite Heatsink at T _L = 25°C	P _D	8.0	Watt
Peak Forward Surge Current, 8.3 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	°C

Note:

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

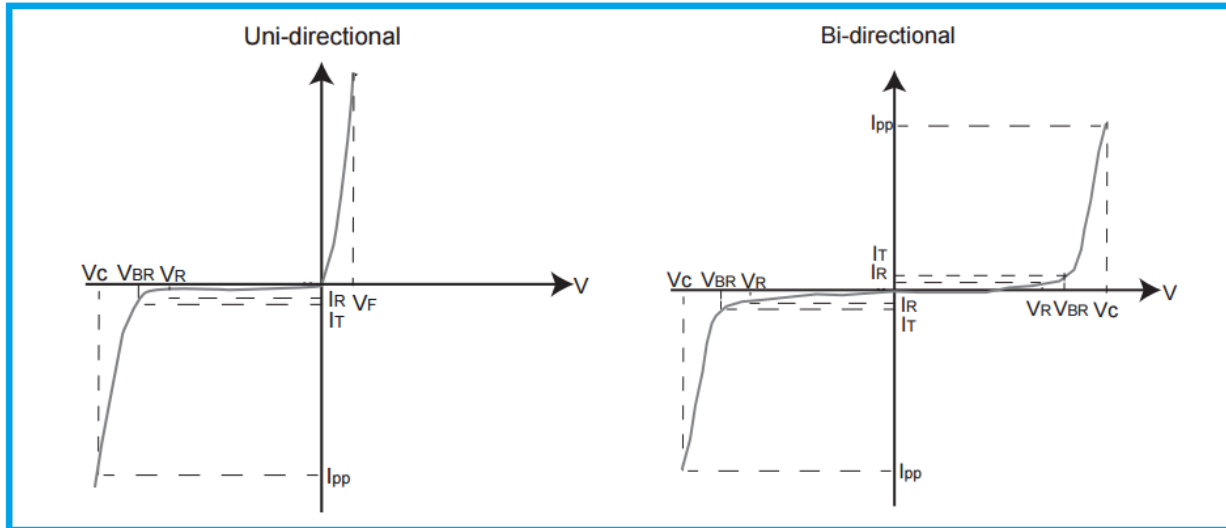
Part Number Code

AMPA □□□ C A



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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 _{PP}	Maximum Peak Pulse Current I _{PP} (A)	Maximum Reverse Leakage I _R (μA) @ V _R	Maximum I _R (μA) @ V _R T _J = 175°C
Uni	Bi		Min.	Max.					
AMPA10A	-	10.0	11.10	12.30	5	17.0	388.0	15	250
AMPA11A	-	11.0	12.20	13.50	5	18.2	363.0	10	150
AMPA12A	-	12.0	13.30	14.70	5	19.9	332.0	10	150
AMPA13A	-	13.0	14.40	15.90	5	21.5	307.0	10	150
AMPA14A	AMPA14CA	14.0	15.60	17.20	5	23.2	284.0	10	150
AMPA15A	AMPA15CA	15.0	16.70	18.50	5	24.4	270.0	10	150
AMPA16A	AMPA16CA	16.0	17.80	19.70	5	26.0	254.0	10	150
AMPA17A	AMPA17CA	17.0	18.90	20.90	5	27.6	239.0	10	150
AMPA18A	AMPA18CA	18.0	20.00	22.10	5	29.2	226.0	10	150
AMPA20A	AMPA20CA	20.0	22.20	24.50	5	32.4	204.0	10	150
AMPA22A	AMPA22CA	22.0	24.40	26.90	5	35.5	186.0	10	150
AMPA24A	AMPA24CA	24.0	26.70	29.50	5	38.9	170.0	10	150
AMPA26A	AMPA26CA	26.0	28.90	31.90	5	42.1	157.0	10	150
AMPA28A	AMPA28CA	28.0	31.10	34.40	5	45.4	145.0	10	150
AMPA30A	AMPA30CA	30.0	33.30	36.80	5	48.4	136.0	10	150
AMPA33A	AMPA33CA	33.0	36.70	40.60	5	53.3	124.0	10	150
AMPA36A	AMPA36CA	36.0	40.00	44.20	5	58.1	114.0	10	150
AMPA40A	AMPA40CA	40.0	44.40	49.10	5	64.5	102.0	10	150
AMPA43A	AMPA43CA	43.0	47.80	52.80	5	69.4	95.1	10	150

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Ratings and Characteristic Curves

Fig 1 – Steady State Power Derating Curve

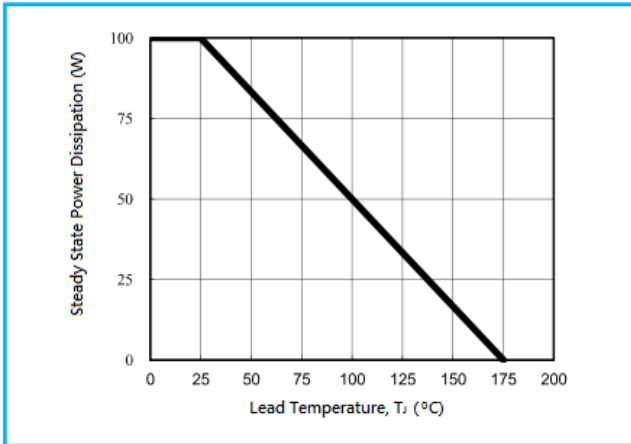


Fig 2 - Pulse Derating Curve

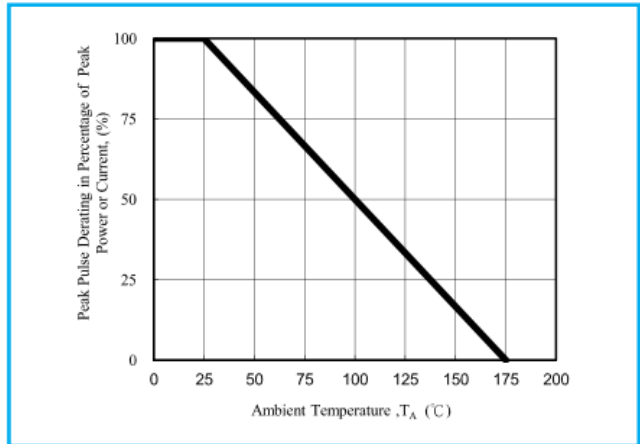


Fig 3 - Pulse Waveform

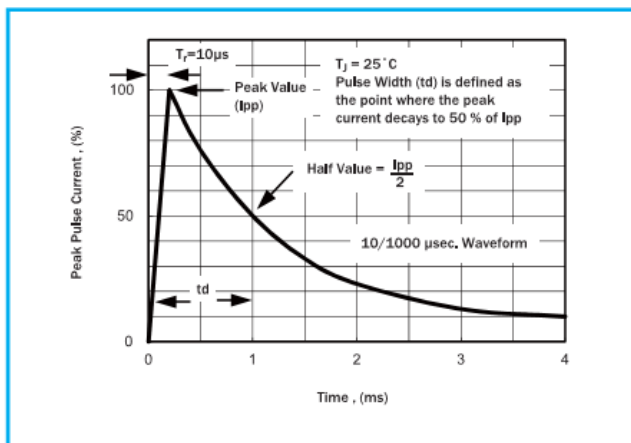
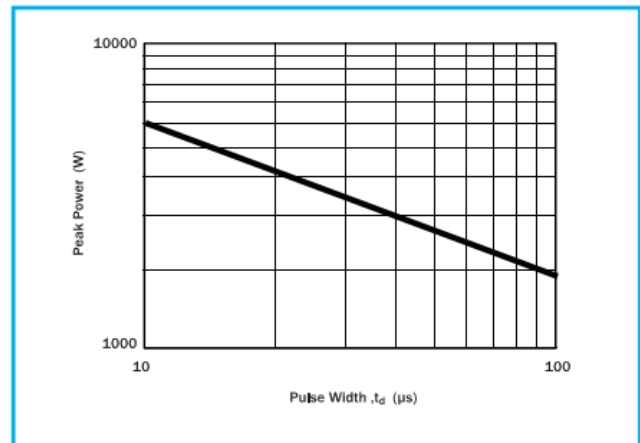
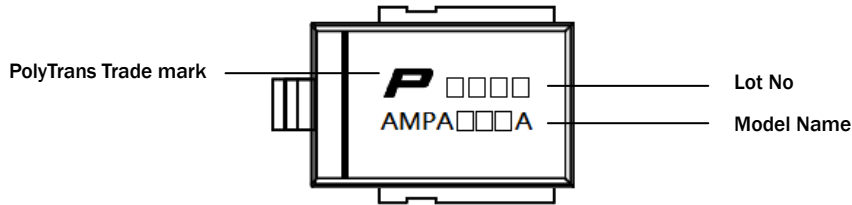


Fig 4 –Peak Pulse Power Rating Curve

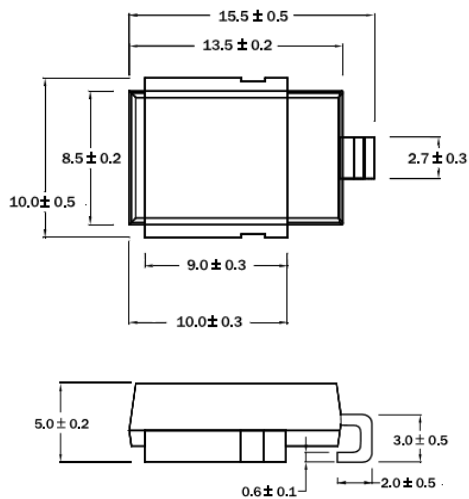


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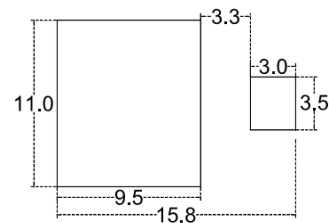
Marking Definitions



Physical Dimensions (Millimeters)

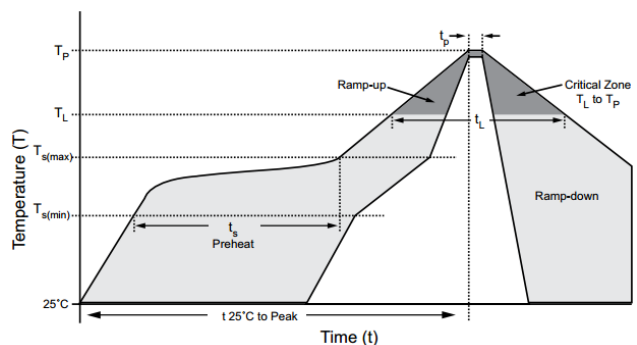


Recommended Mounting Pad Layout



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.



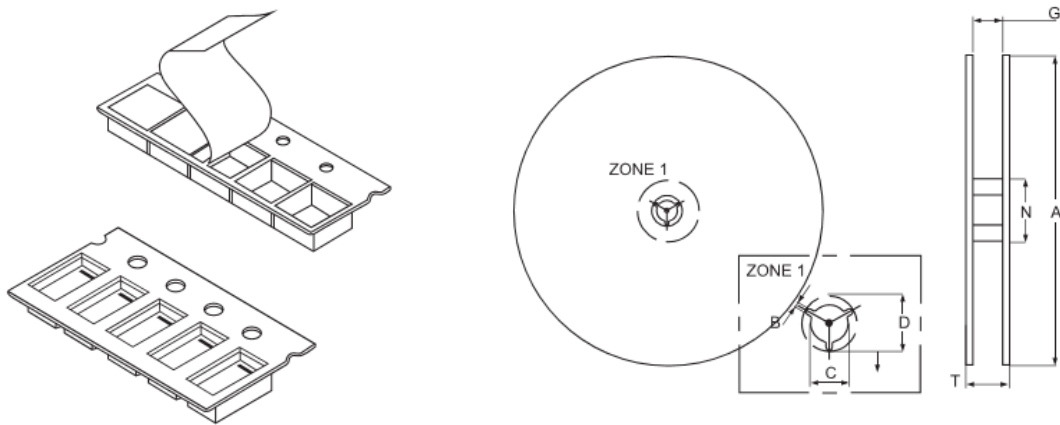
Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

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Packaging Information

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
AMPA Series	DO-218AB	750	Tape & Reel – 24mm 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