

## 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 $\mu$ s waveform
- Meet AEC-Q101 requirement
- Low leakage current
- Very fast response time

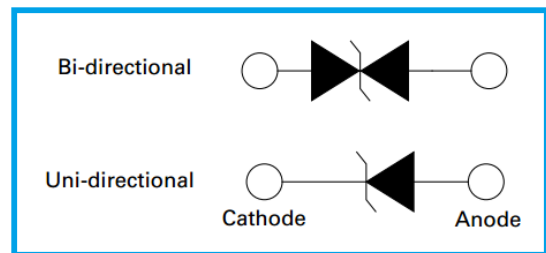


### Applications

- I/O interface, V<sub>CC</sub> bus
- Automotive
- Industrial and consumer electronic applications
- Relay and electromagnetic valve surge absorption

### Agency Approval

- UL certification pending



### Mechanical and Physical Data

- Case: D0-218AB molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Heat-sink is anode

### Maximum Ratings and Thermal Characteristics

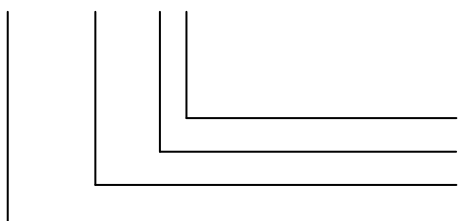
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note 1, Fig.1).	P <sub>PPM</sub>	Min 6600	Watt
Peak Pulse Current of 10/1000 $\mu$ s waveform (Note 1, Fig.3).	I <sub>PPM</sub>	See Table	Amp
Power Dissipation on Infinite Heatsink at T <sub>L</sub> = 25°C	P <sub>D</sub>	8.0	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	I <sub>FSM</sub>	700	Amp
Operating Junction and Storage Temperature Range.	T <sub>J</sub> , T <sub>STG</sub>	-55~175	°C

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub> = 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



V<sub>BR</sub> Voltage tolerance (A: 5%; Blank: 10%)

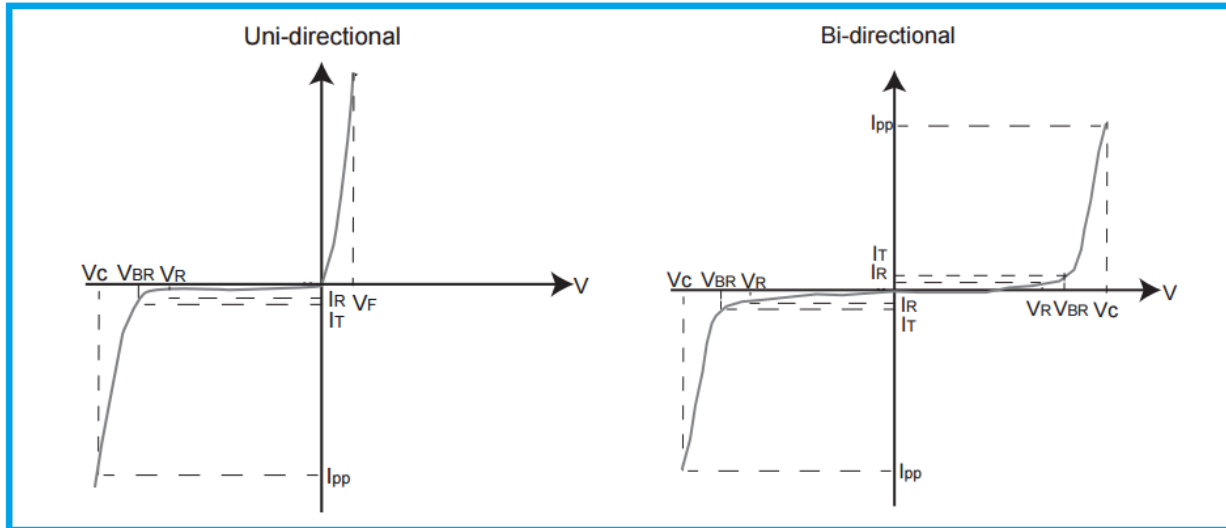
C: Bi-directional; Blank: Uni-directional

Reverse Stand-Off Voltage

AMPA Series (6600W)

## TVS Diode – AMPA Series

### 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

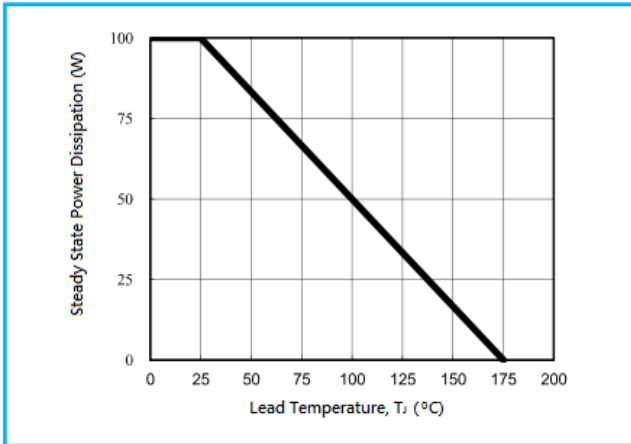
### Electrical Characteristics

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 $I_R$ ( $\mu$ A) @ $V_R$	Maximum $I_R$ ( $\mu$ A) @ $V_R$ $T_J = 175^\circ\text{C}$
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

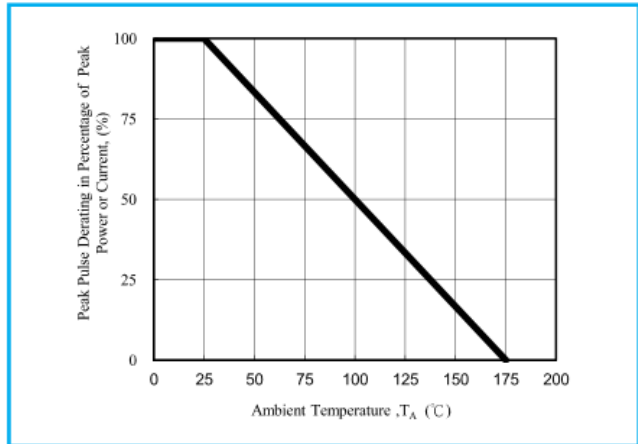
## TVS Diode – AMPA Series

### Ratings and Characteristic Curves

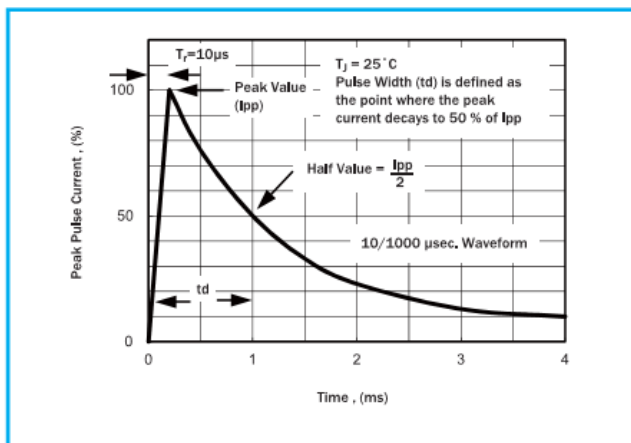
**Fig 1 – Steady State Power Derating Curve**



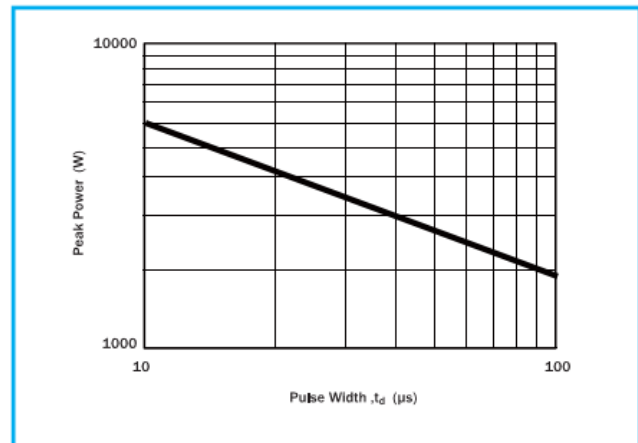
**Fig 2 - Pulse Derating Curve**



**Fig 3 - Pulse Waveform**

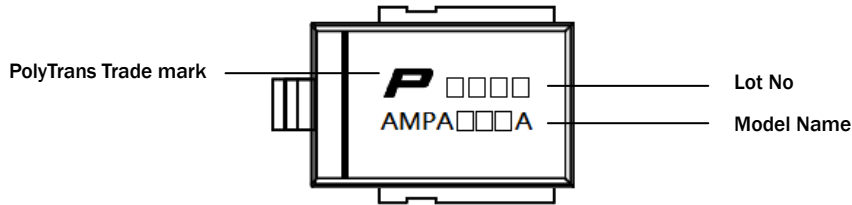


**Fig 4 –Peak Pulse Power Rating Curve**

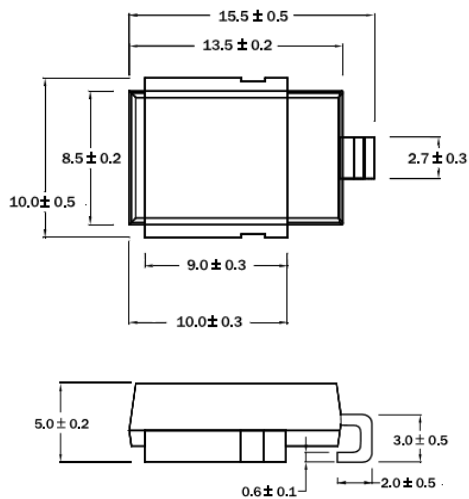


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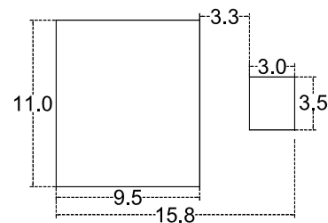
### Marking Definitions



### Physical Dimensions (Millimeters)

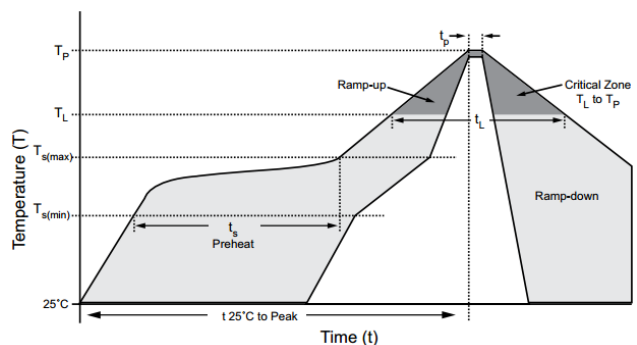


Recommended Mounting Pad Layout



### Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min (T <sub>smin</sub> )	150°C
- Temperature Max (T <sub>smax</sub> )	200°C
- Time (T <sub>smin</sub> to T <sub>smax</sub> )	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 <sub>p</sub> )	30 seconds max.
Ramp-Down Rate	6 °C /second max.



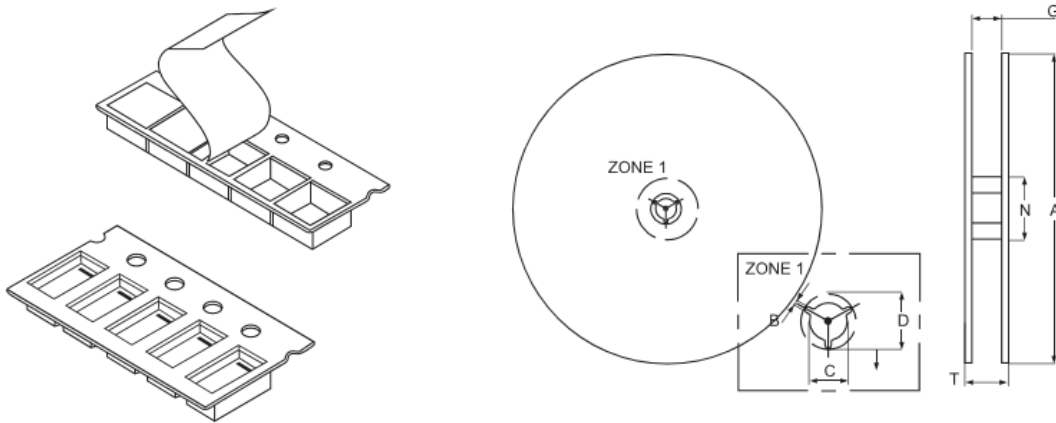
Note: If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

## TVS Diode – AMPA Series

### 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

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