

# Surface Mount XClampR™ Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218AB



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## FEATURES

- XClampR™ extremely low clamping voltage
- $I_{PPM} = 120$  A with a 10/10 000  $\mu$ s waveform
- $T_J = 175$  °C capability suitable for high reliability and automotive requirement
- Bidirectional
- Low leakage current
- AEC-Q101 qualified
  - Automotive ordering code: base P/NHM3
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

## MECHANICAL DATA

**Case:** DO-218AB

Molding compound meets UL 94 V-0 flammability rating  
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

HM3 suffix meet JESD 201 class 2 whisker test

**Polarity:** no cathode marking on bidirectional types

## PRIMARY CHARACTERISTICS

$V_{WM}$	24 V
$V_{BR}$	26.7 ~ 29.5
$V_{CL}$ max.	26 V
$P_{PPM}$ (10/1000 $\mu$ s)	7700 W <sup>(1)</sup>
$P_{PPM}$ (10/10 000 $\mu$ s)	4600 W <sup>(2)</sup>
$T_J$ max.	175 °C
Polarity	Bidirectional
Package	DO-218AB

### Notes

<sup>(1)</sup> Equivalent  $I_{PPM}$  with conventional 7700 W TVS

<sup>(2)</sup> Equivalent  $I_{PPM}$  with conventional 4600 W TVS

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

## MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Device marking code		X5A24C	
Peak pulse power dissipation	with 10/1000 $\mu$ s waveform	7700 <sup>(1)</sup>	W
	with 10/10 000 $\mu$ s waveform	4600 <sup>(1)</sup>	W
Peak pulse current with a 10/10 000 $\mu$ s waveform, fig.4	$I_{PPM}$ <sup>(2)</sup>	120	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C

### Notes

<sup>(1)</sup> The peak pulse power at equivalent  $I_{PPM}$  with conventional TVS

<sup>(2)</sup> Non-repetitive current pulse and derated above  $T_A = 25$  °C

## ELECTRICAL CHARACTERISTICS ( $T_A = 25$ °C unless otherwise noted)

DEVICE TYPE	BREAKDOWN VOLTAGE $V_{BR}$ (V) AT $I_T$		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAX. REVERSE LEAKAGE AT $V_{WM}$ $I_D$ ( $\mu$ A)	MAX. PEAK PULSE CURRENT AT 10/10 000 $\mu$ s WAVEFORM (A)	CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	
	MIN.	MAX.					MIN.	MAX.
XLD5A24CA	26.7	29.5	5	24	1.0	120	18	26

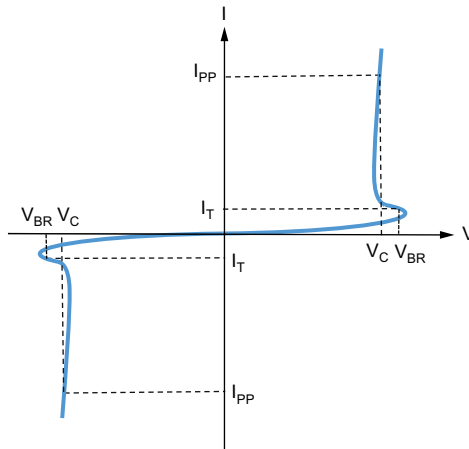


ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
XLD5A24CAHM3/I <sup>(1)</sup>	2.505	I	750	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

I - V CURVE CHARACTERISTICS



- V<sub>BR</sub>.....Breakdown voltage
- I<sub>T</sub>.....Reverse test current
- V<sub>C</sub>.....Clamping voltage
- I<sub>PP</sub>.....Peak pulse surge current

**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

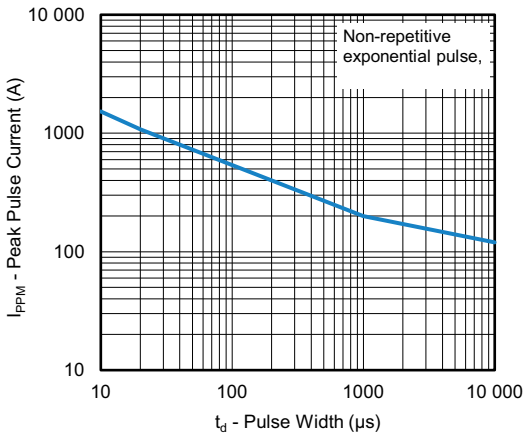


Fig. 1 - Peak Pulse Current Rating Curve

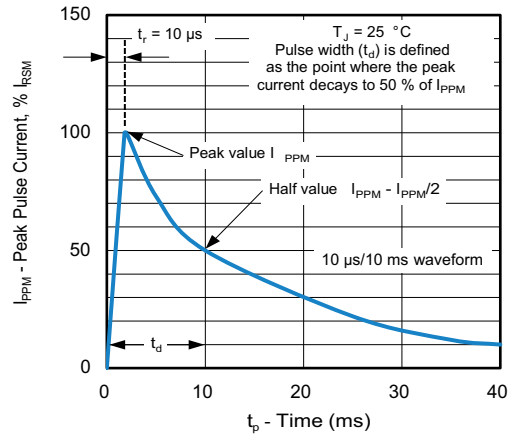


Fig. 4 - Pulse Waveform

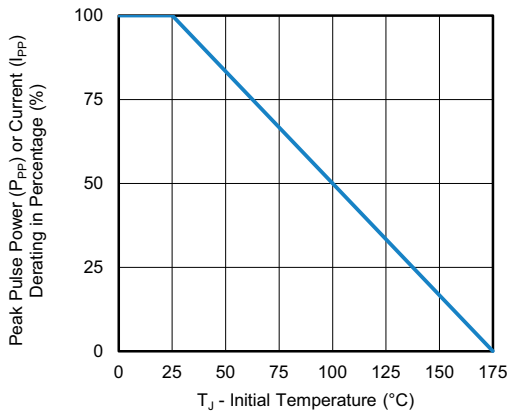


Fig. 2 - Peak Pulse Current vs. Initial Junction Temperature

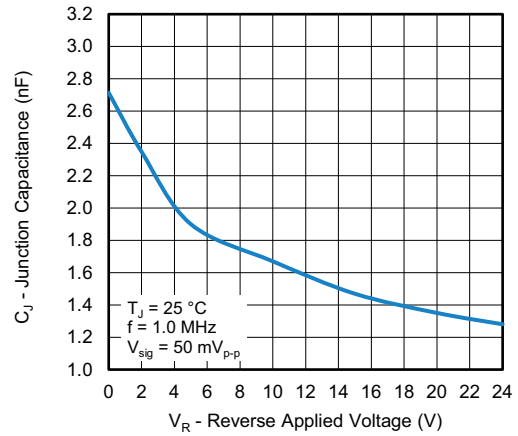


Fig. 5 - Typical Junction Capacitance

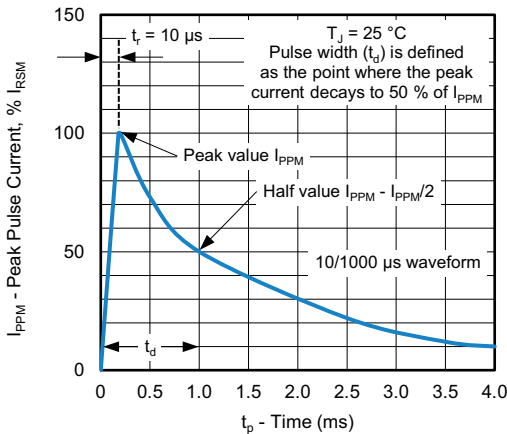


Fig. 3 - Pulse Waveform

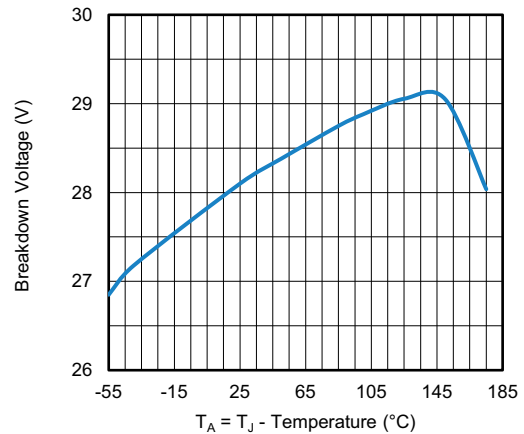
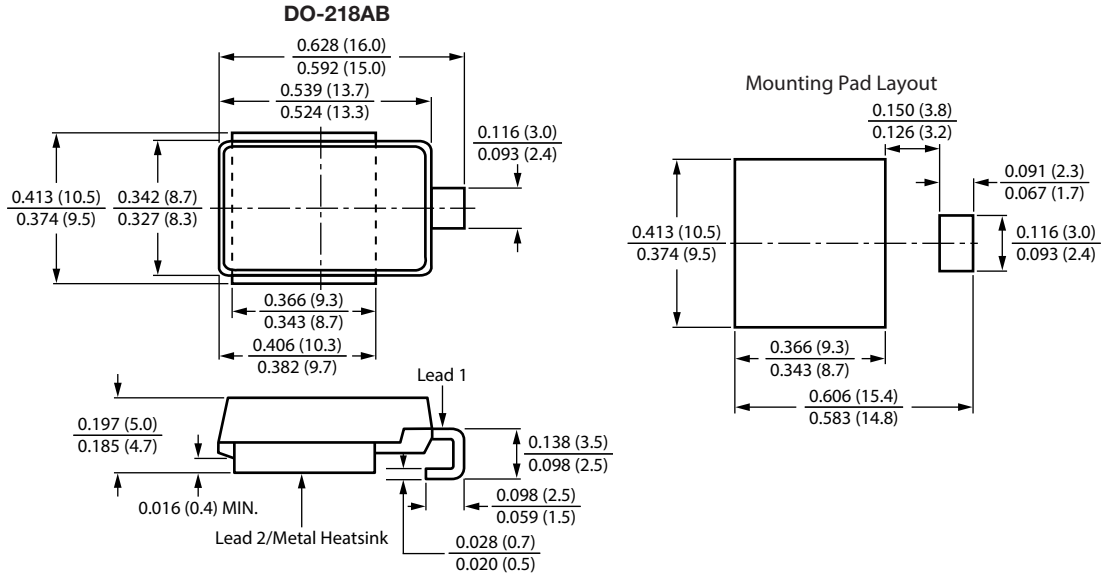


Fig. 6 - Typical Breakdown Voltage vs. Temperature Curve



**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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