

Surface Mount XClampR™ Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218AB

| PRIMARY CHARACTERISTICS | |
|-------------------------------|-----------------------|
| V_{WM} | 24 V |
| V_{BR} | 26.7 ~ 29.5 |
| V_{CL} max. | 26 V |
| P_{PPM} (10/1000 μ s) | 7700 W ⁽¹⁾ |
| P_{PPM} (10/10 000 μ s) | 4600 W ⁽²⁾ |
| T_J max. | 175 °C |
| Polarity | Bidirectional |
| Package | DO-218AB |

Notes

- ⁽¹⁾ Equivalent I_{PPM} with conventional 7700 W TVS
- ⁽²⁾ Equivalent I_{PPM} with conventional 4600 W TVS

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning, especially for automotive load dump protection application withstanding 24 V jumper-start voltage test for 12 V powertrain. May need to connect in series with one conventional TVS to address in applications for various stand-off voltages and clamping voltages.

FEATURES

- XClampR™ extremely low clamping voltage
- $I_{PPM} = 120$ A with a 10/10 000 μ 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



RoHS
COMPLIANT
HALOGEN
FREE

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

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | |
|---|---------------------------------|---------------------|------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Device marking code | | X5A24C | |
| Peak pulse power dissipation | with 10/1000 μ s waveform | 7700 ⁽¹⁾ | W |
| | with 10/10 000 μ s waveform | 4600 ⁽¹⁾ | W |
| Peak pulse current with a 10/10 000 μ s waveform, fig.4 | I_{PPM} ⁽²⁾ | 120 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | °C |

Notes

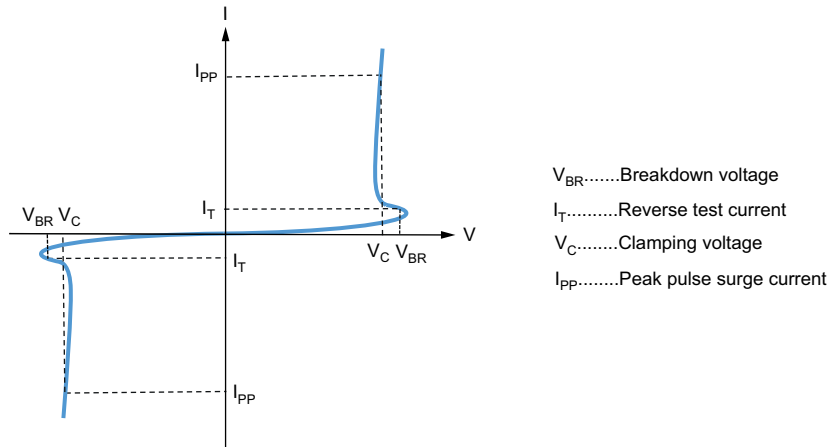
- ⁽¹⁾ The peak pulse power at equivalent I_{PPM} with conventional TVS
- ⁽²⁾ Non-repetitive current pulse and derated above $T_A = 25$ °C

| 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 (μ A) | MAX. PEAK PULSE CURRENT AT 10/10 000 μ 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 ⁽¹⁾ | 2.505 | I | 750 | 13" diameter plastic tape and reel |

Note

(1) AEC-Q101 qualified

I - V CURVE CHARACTERISTICS


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

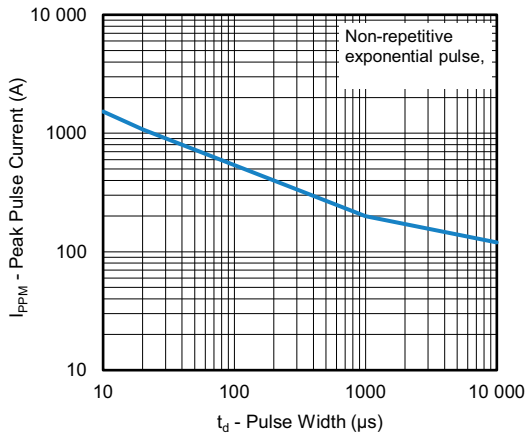


Fig. 1 - Peak Pulse Current Rating Curve

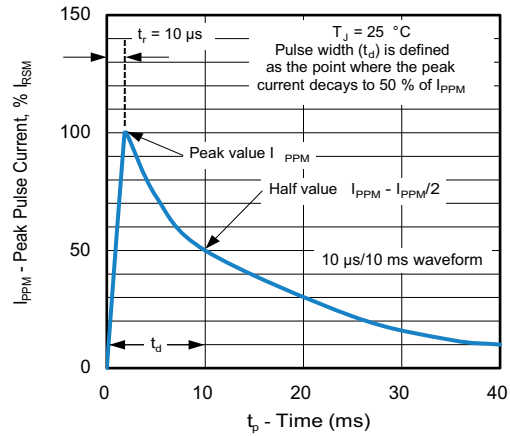


Fig. 4 - Pulse Waveform

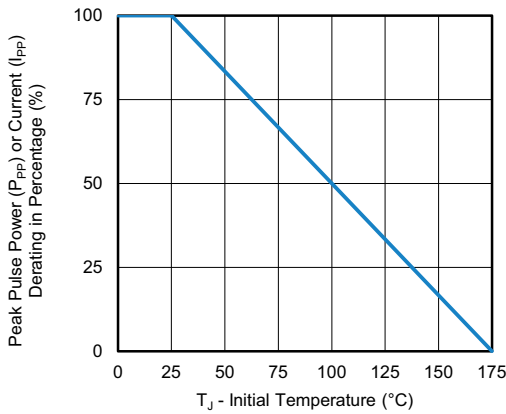


Fig. 2 - Peak Pulse Current vs. Initial Junction Temperature

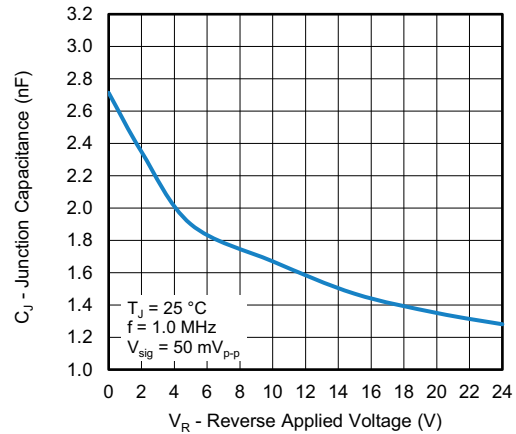


Fig. 5 - Typical Junction Capacitance

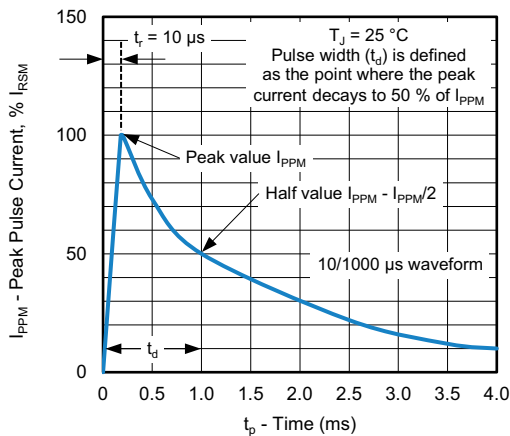


Fig. 3 - Pulse Waveform

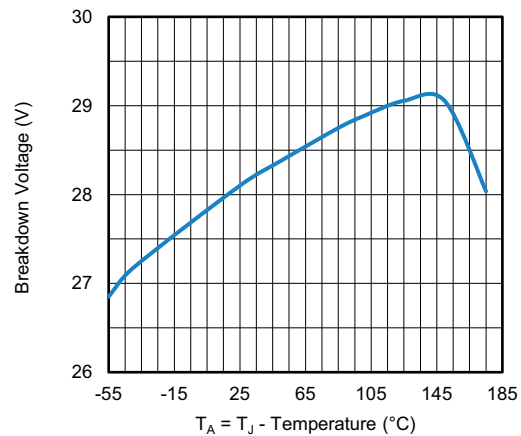
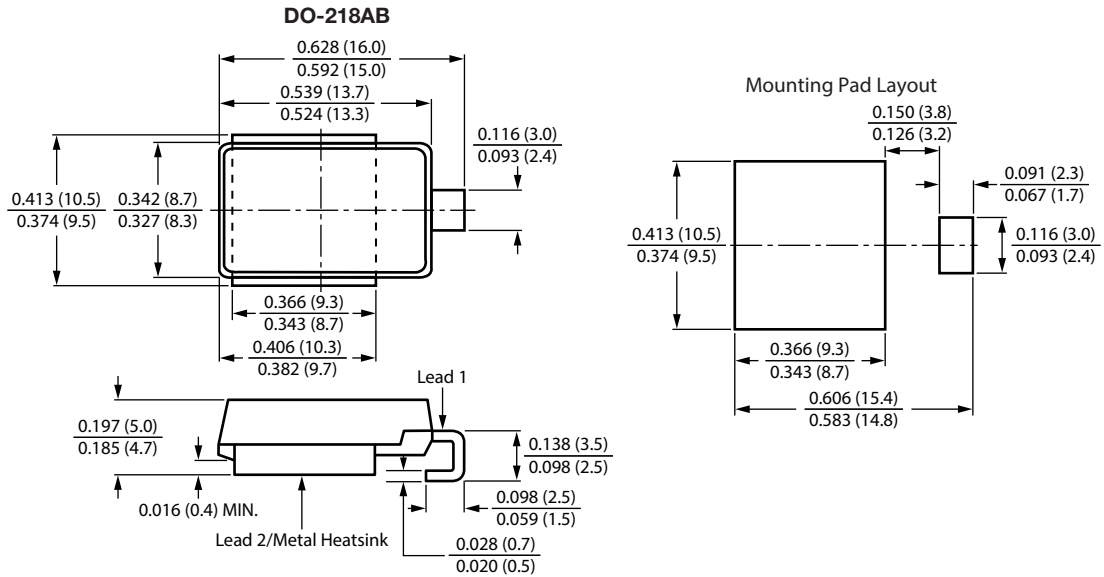


Fig. 6 - Typical Breakdown Voltage vs. Temperature Curve



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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