# Surface Mount XClampR™ Transient Voltage Suppressors

## High Temperature Stability and High Reliability Conditions

**SMC (DO-214AB)**

| PRIMARY CHARACTERISTICS | |
|---|---|
| $V_{WM}$ | 24 V |
| $V_{BR}$ | 26.7 V to 29.5 V |
| $V_{CL}$ max. | 24 V |
| $P_{PPM}$ (10/1000 µs) | 7000 W (1) |
| $T_J$ max. | 175 °C |
| Polarity | Bidirectional |
| Package | SMC (DO-214AB) |

**Note**

(1) Equivalent $I_{PPM}$ with conventional 7 KW TVS

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switch and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive, and telecommunication

## FEATURES

- XClampR™ extremely low clamping voltage
- $I_{PPM}$ = 180 A with a 10/1000 µs 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 260 °C
- UL recognition for safety 497B with file number E136766
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

## MECHANICAL DATA

**Case:** SMC (DO-214AB)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS-compliant, and industrial grade
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
M3 and HM3 suffix meet JESD 201 class 2 whisker test

**Polarity:** no marking on bidirectional types

| MAXIMUM RATINGS ($T_A$ = 25 °C unless otherwise noted) | | | |
|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **VALUE** | **UNIT** |
| Peak pulse current with a 10/1000 µs waveform, fig.1 | $I_{PPM}$ (1) | 180 | A |
| Maximum working stand-off voltage | $V_{WM}$ | 24 | V |
| Operating junction and storage temperature range | $T_J$, $T_{STG}$ | -55 to +175 | °C |

**Note**

(1) Non-repetitive current pulse and derated above $T_A$ = 25 °C

| ELECTRICAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | |
|---|---|---|---|---|---|
| **DEVICE TYPE** | **DEVICE MARKING CODE** | **BREAKDOWN VOLTAGE $V_{BR}$ (V) AT $I_T$** | | **TEST CURRENT $I_T$ (mA)** | **STAND-OFF VOLTAGE $V_{WM}$ (V)** |
| | | **MIN.** | **MAX.** | | |
| XMC7K24CA | C7BZ | 26.7 | 29.5 | 1.0 | 24 |

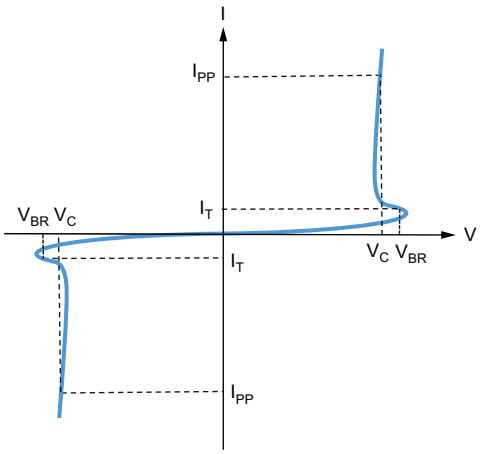
| ADDITIONAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITIONS** | | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Clamping voltage for 10/1000 µs exponentially decaying waveform | at $I_{PP}$ = 180 A | | $V_C$ | 18 | - | 24 | V |
| Reverse leakage current | Rated $V_{WM}$ | $T_J$ = 25 °C | $I_R$ | - | - | 1.0 | µA |

| ORDERING INFORMATION (Example) | | | | |
|---|---|---|---|---|
| **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PREFERRED PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| XMC7K24CA-M3/H | 0.261 | H | 850 | 7" diameter plastic tape and reel |
| XMC7K24CA-M3/I | 0.261 | I | 3500 | 13" diameter plastic tape and reel |
| XMC7K24CAHM3/H (1) | 0.261 | H | 850 | 7" diameter plastic tape and reel |
| XMC7K24CAHM3/I(1) | 0.261 | I | 3500 | 13" diameter plastic tape and reel |

**Note**

(1) AEC-Q101 qualified

## I - V CURVE CHARACTERISTICS




$V_{BR}$.....Breakdown voltage

$I_T$.....Reverse test current

$V_C$.....Clamping voltage

$I_{PP}$.....Peak pulse surge current

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

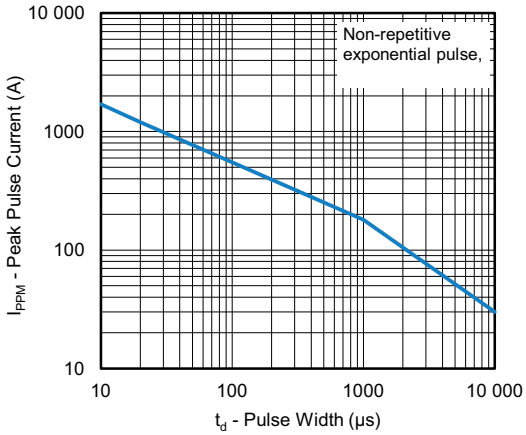



Fig. 1 - Peak Pulse Current Rating Curve

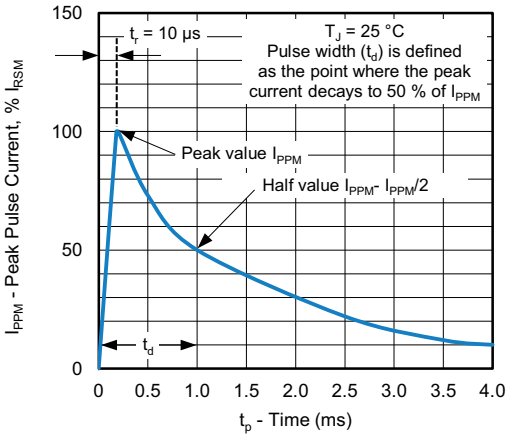



Fig. 3 - Pulse Waveform

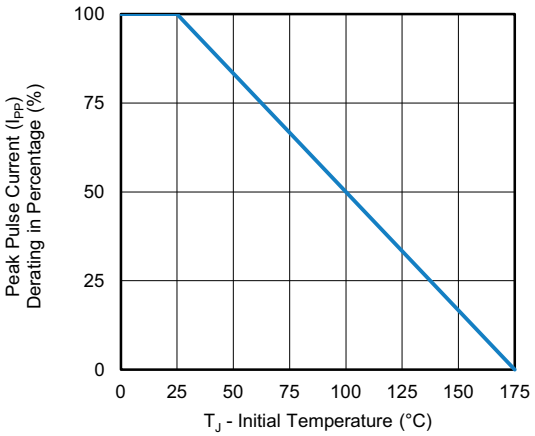



Fig. 2 - Peak Pulse Current vs. Initial Junction Temperature

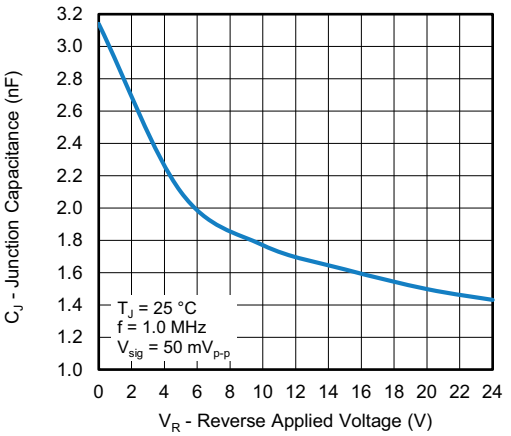



Fig. 4 - Typical Junction Capacitance

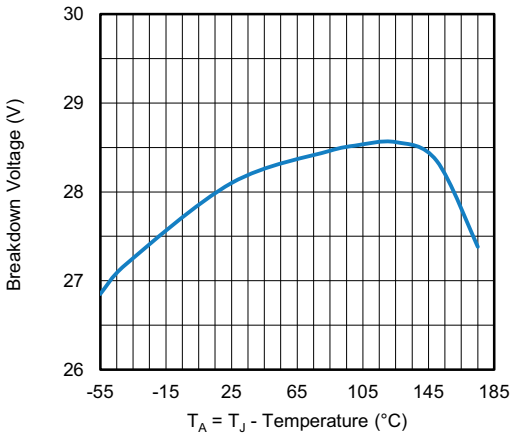
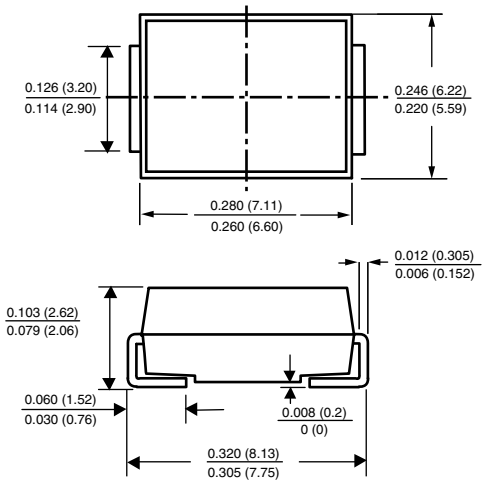


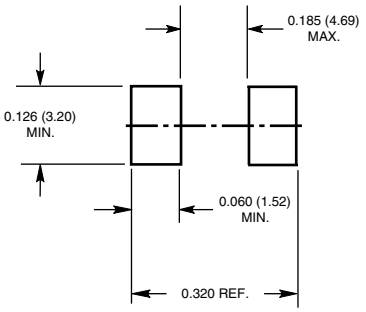

Fig. 5 - Typical Breakdown Voltage vs. Temperature Curve

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)




Mounting Pad Layout



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