VISHAY

The DNA of tech.™

DID YOU KNOW?

INDUSTRY-FIRST SNAPBACK TYPE XClampR™ TVS

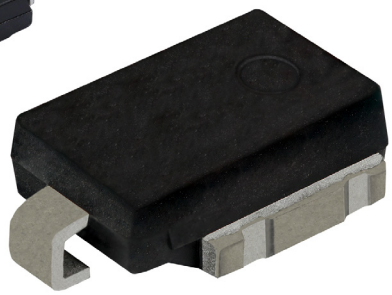
What Are the Key Features of XClampR™ TVS?

- Designed to protect sensitive electronic equipment against voltage transients induced by inductive load switching and lightning
- With their low maximum clamping voltages, the XClampR TVS offer low clamping ratios of 1 (XMC7K24CA) and 1.08 (XLD5A24CA and XLD8 A24CA) - compared to 1.4 for conventional TVS - enabling high peak pulse currents in the SMC (DO-214AB) and DO-218AB packages
- For applications with stand-off voltages greater than 24 V - such as 48 V belt starter (BSG) and integrated starter (ISG) generators in mild hybrid electric vehicles (HEV) - the devices can be paired with a standard TVS

What Are the Key Benefits of XClampR TVS?

- High peak pulse power dissipation
  - 7 kW at 10/1000 µs in the SMC (DO-214AB)
  - 7 kW at 10/10 000 µs in the DO-218AB
- Low maximum clamping voltage
  - Down to 24 V in the SMC (DO-214AB)
  - Down to 26 V in the DO-218AB
- Low clamping ratios (V_C/V_{WM})
  - Down to 1 in the SMC (DO-214AB)
  - Down to 1.08 in the DO-218AB
- Wide operating temperature range of -55 °C to +175 °C

SMC (DO-214AB)

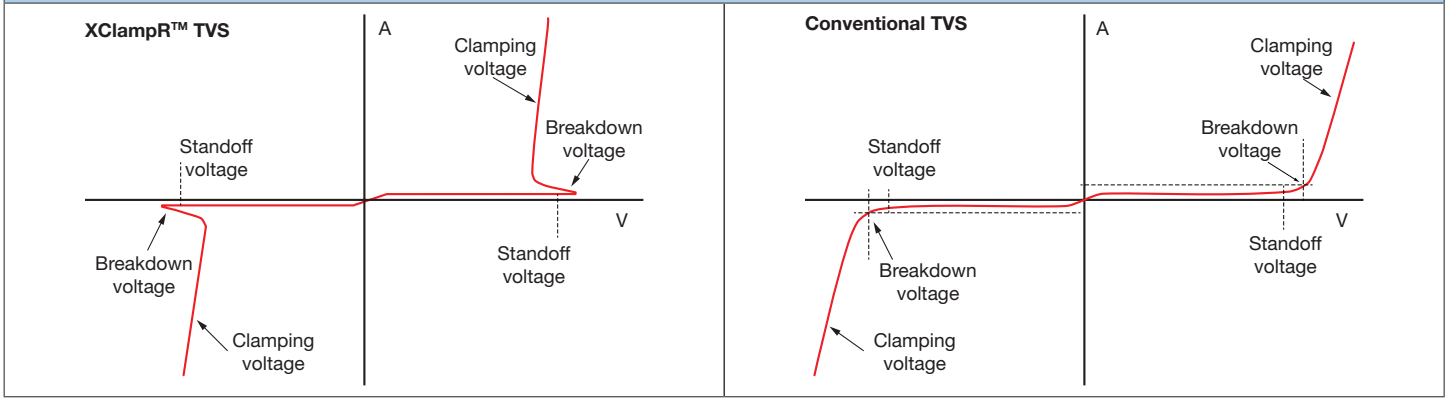


DO-218AB

- High peak pulse current
  - 180 A at 7 kW and 10/1000 µs power rating in the SMC (DO-214AB) package
  - 120 A and 180 A in the DO-218AB package at power ratings of 4.6 kW and 7 kW at 10/10 000 µs, respectively
- Suitable for high reliability applications
  - Available in AEC-Q101 qualified versions
  - Extremely stable breakdown voltage from 26.7 V to 29.5 V over their entire operating temperature range

Why Choose XClampR TVS?

TYPICAL OPERATION CURVE OF XClampR TVS AND CONVENTIONAL TVS



XClampR TVS is a snapback type TVS with an extremely low clamping voltage ratio for suppressing transient voltage to a lower clamping voltage, compared to conventional TVS.

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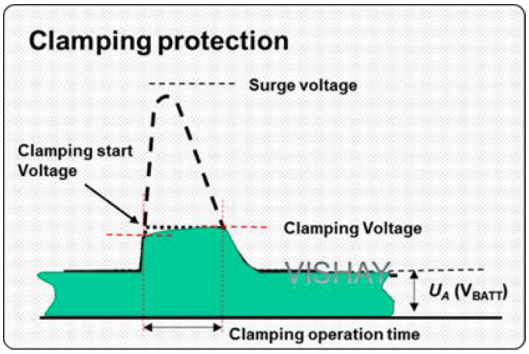
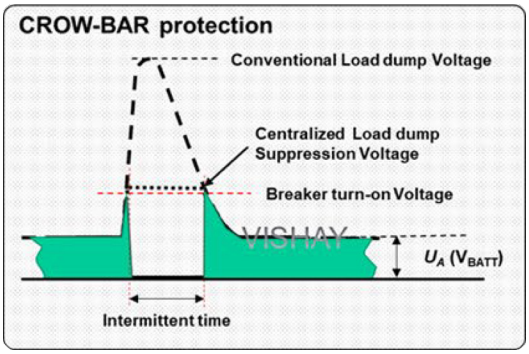
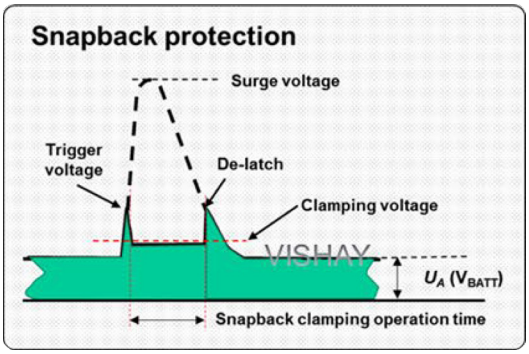
Overvoltage Protection Types



Circuit Type	ABD TVS, Zener, MOV
Advantage	• No electrical short • Accurate voltage protection control
Disadvantage	• High power derating device required



Circuit Type	Gas Discharge Tube Type Surge Arrestor, Thyristor, Load Switch
Advantage	• No electrical short (load switch type) • Simple and small device required (GDT, thyristor)
Disadvantage	• Intermittence time • Fuse blowout (thyristor type) • Circuit reset • Big capacitor and polarity protection diode required for power backup (load switch)



Circuit Type	ABD TVS, Zener, MOV
Advantage	• No electrical short • No intermittent time • Accurate voltage protection control
Disadvantage	• None

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The Key Specifications

XClampR™ TRANSIENT VOLTAGE SUPPRESSORS			
PART NUMBER	XLD5A24CA	XLD8A24CA	XMC7K24CA
Maximum working stand-off voltage	24 V	24 V	24 V
Breakdown voltage	26.7 V to 29.5 V	26.7 V to 29.5 V	26.7 V to 29.5 V
Maximum clamping voltage	26 V	26 V	24 V
Peak pulse power (10/1000 µs)	7700 W (1)	11 000 W (1)	7000 W (1)
Peak pulse current (10/1000 µs)	200 A	300 A	180 A
Peak pulse power (10/10 000 µs)	4600 W (1)	7000 W (1)	1100 W (1)
Peak pulse current (10/10 000 µs)	120 A	180 A	30 A
Maximum reverse leakage current	1.0 µA	1.0 µA	1.0 µA
Maximum operating junction temperature	175 °C	175 °C	175 °C
Polarity	Bidirectional	Bidirectional	Bidirectional
Package	DO-218AB	DO-218AB	SMC (DO-214AB)

Note

(1) Equivalent I_{PPM} with conventional TVS