SEMTECH

PROTECTION PRODUCTS - RailClamp®

Description

RailClamps are ultra low capacitance TVS arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from overvoltage caused by **ESD** (electrostatic discharge), **CDE** (Cable Discharge Events), and **EFT** (electrical fast transients).

The RClamp™0502B has a typical capacitance of only 0.50pF (pin 1 to 2). This means it can be used on circuits operating in excess of 3GHz without signal attenuation. They may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±8kV contact discharge). Each device can be configured to protect 1 bidirectional line or two unidirectional lines.

These devices are in a small SC-75 (SOT-523) package and feature a lead-free, matte tin finish. They are compatible with both lead free and SnPb assembly techniques. They are designed for use in applications where board space is at a premium. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, MDDI, antenna circuits, Automatic Test Equipment, USB 2.0, and Infiniband circuits.

Features

◆ Transient protection for high-speed data lines to
  IEC 61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
  IEC 61000-4-4 (EFT) 40A (5/50ns)
◆ Designed to replace polymer TVS
◆ Protects up to two I/O lines
◆ Ultra-Low capacitance **(<1pF)**
◆ No insertion loss to **>3.0GHz**
◆ Low profile (<1mm)
◆ Low leakage current and clamping voltage
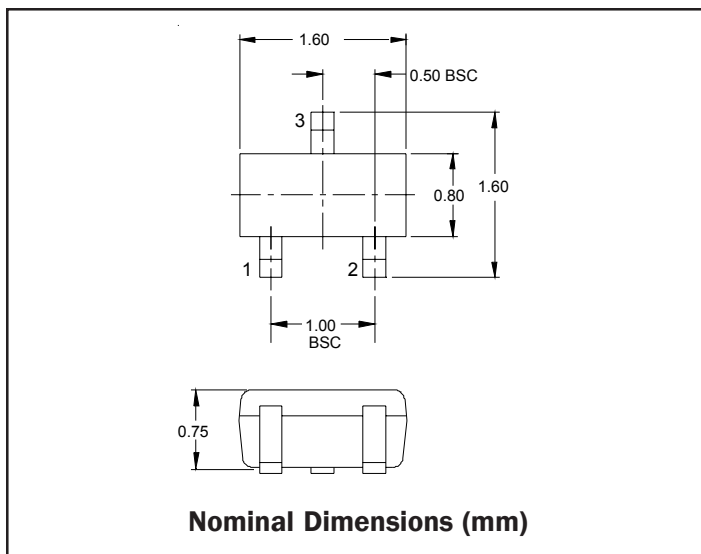◆ Low operating voltage: 5.0V
◆ Solid-state silicon-avalanche technology

Mechanical Characteristics

◆ SC-75 (SOT-523) package
◆ Lead Finish: Matte Tin
◆ RoHS/WEEE Compliant
◆ Molding compound flammability rating: UL 94V-0
◆ Marking: P5
◆ Packaging: Tape and Reel

Applications

◆ High-Definition Multimedia Interface (HDMI)
◆ Mobile Display Digital Interface (MDDI)
◆ USB 2.0 & Firewire Ports
◆ GaAs Photodetector Protection
◆ HBT Power Amp Protection
◆ Infiniband Transceiver Protection

Dimensions

Nominal Dimensions (mm)

Schematic & PIN Configuration

SC-75 3L (Top View)