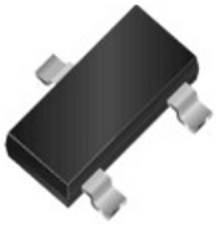
Description

The XE23T24VB is a bi-directional ESD protection diode designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

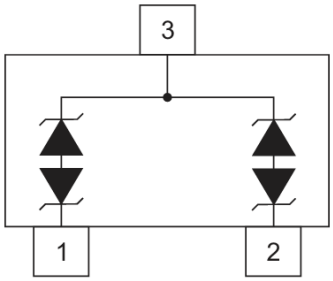
The XE23T24VB may be used to provide ESD protection up to ±30kV contact and ±30kV air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 6A (8/20μs) according to IEC61000-4-5.

The XE23T24VB is available in SOT-23 package. Standard products are Pb-free and Halogen-free.

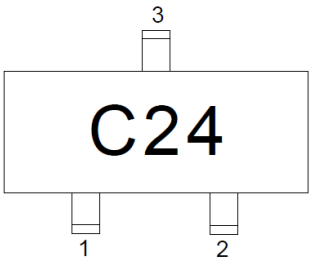
http//:www.xihangsemi.com



SOT-23



Circuit Diagram



Marking（Top View）

Features

- Working voltage: 24V
- SOT-23 Package
- Transient protection for data lines to
  IEC61000-4-2 (ESD) ±30kV (air),
  ±30kV (contact)
  IEC61000-4-5 (Surge)6A (8/20us)
  IEC61000-4-4(EFT)40A(5/50ns)
- Low leakage current
- Low clamping voltage
- Solid-state silicon-avalanche technology

Order Information

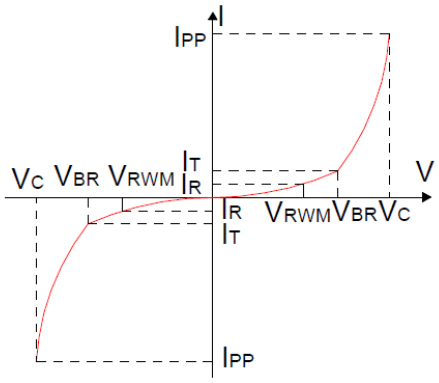
Device	Package	Shipping
XE23T24VB	SOT-23	3000/Tape&Reel

Applications

- Automotive Networks
- RS-232，RS-422&RS423 Data Lines
- CAN Bus Protection
- Wireless Network Systems
- Digital Video Interface （DVI）
- Medical Sensors

Definitions of electrical characteristics

Symbol	Parameter
V_{RWM}	Reverse Stand-off Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_R	Reverse Breakdown Current
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}



Absolute Maximum Rating

Rating	Symbol	Value	Units
Peak Pulse Power (t_P = 8/20μS)	P_{PK}	240	W
Peak Pulse Currentr (t_P = 8/20μS)	I_{pp}	6	A
ESD according to IEC61000-4-2 air discharge	V_{ESD}	±30	kV
ESD according to IEC61000-4-2 contact discharge		±30	kV
Lead Soldering Temperature	T_L	260 (10 sec)	℃
Operating Temperature	T_{OP}	-55 to +125	℃
Storage Temperature	T_{STG}	-55 to +150	℃

Electrical Characteristics (Ta=25℃, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V_{RWM}				24	V
Reverse Leakage Current	I_R	V_{RWM} =24V			1	uA
Reverse Breakdown Voltage	V_{BR}	I_T=1mA	26.7			V
Clamping Voltage[1)]	V_{CL}	I_{PP}=1A t_P = 8/20μs			33	V
		I_{PP}=6A t_P = 8/20μs			41	V
Junction Capacitance	C_j	V_R=0V f = 1MHz Pin1 to Pin3 or Pin2 to Pin3		25	30	pF

Notes:

1)Non-repetitive current pulse, according to IEC61000-4-5.

Typical Characteristics (Ta=25℃, unless otherwise noted)

Fig.1 Non-Repetitive Pulse Power vs.Pulse Time

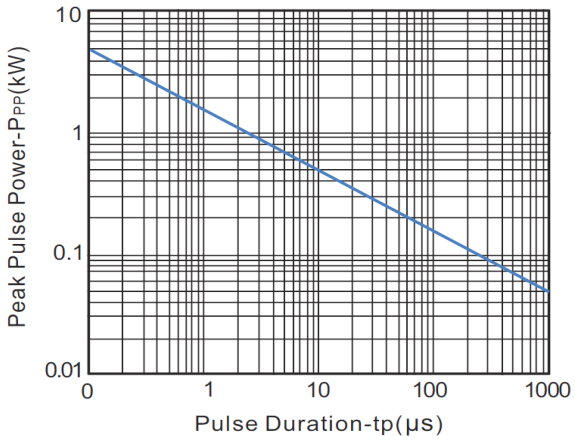
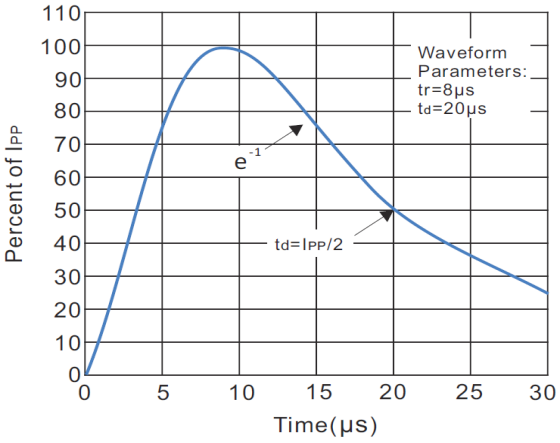
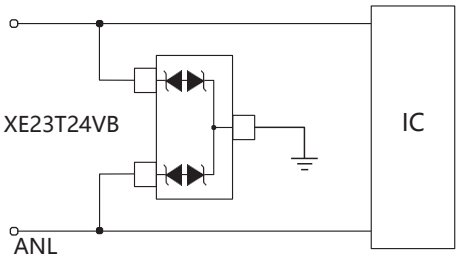


Fig.2 Pulse Waveform



Application Information

CAN Protection



PCB Layout Recommendations

The location and circuit board layout is critical to maximize the effectiveness of the CAN protection circuit. The following guidelines are recommended:

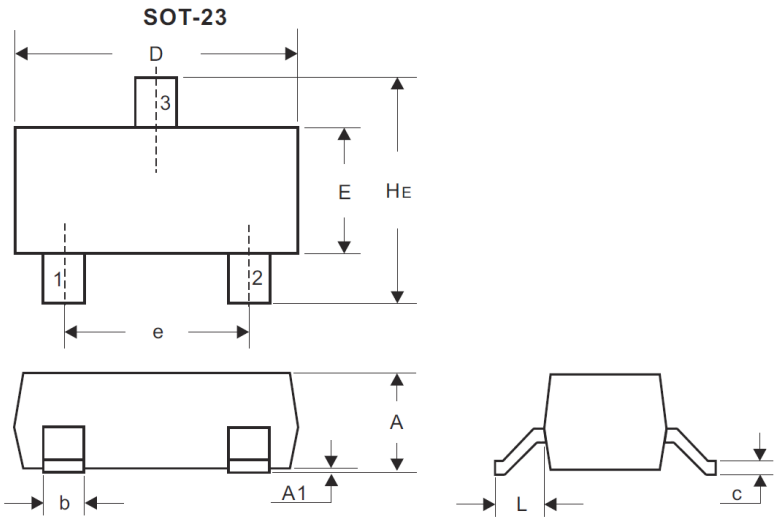
Locate the protection devices as close as possible to the CAN connector. This allows the protection devices to absorb the energy of the transient voltage before it can be coupled into the adjacent traces on the PCB.

Minimize the loop area for the high.speed data lines, power and ground lines to reduce the radiated emissions. Avoid running protection conductors in parallel with unprotected conductors

Use ground planes wherever possible to reduce the parasitic capacitance and inductance of the PCB that degrades the effectiveness of a filter device.

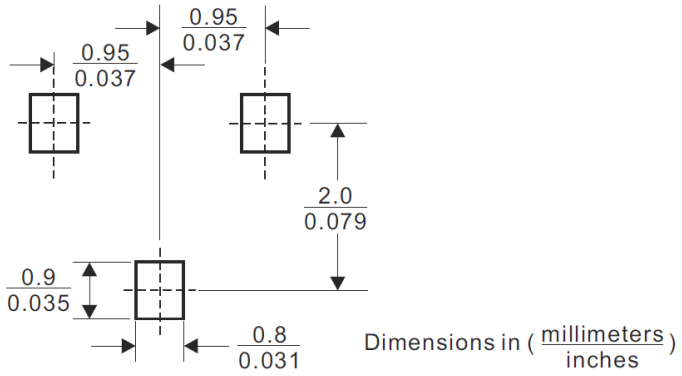
Using shared transient return paths to a common ground point.

Package Outline Dimensions (SOT-23）



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.89	1.11	0.035	0.044
A1	0.01	0.10	0.001	0.004
b	0.37	0.50	0.015	0.020
c	0.09	0.18	0.003	0.007
D	2.80	3.04	0.110	0.120
E	1.20	1.40	0.047	0.055
e	1.78	2.04	0.070	0.081
L	0.35	0.69	0.014	0.029
HE	2.10	2.64	0.083	0.104

Recommend Land Pattern (Unit: mm)



Note: This recommended land pattern is for reference purpose only.

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