

RoHS Compliant Product

DESCRIPTION

SZMD0502 is an ultra-low capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.5pF (I/O to I/O) only, SZMD0502 is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

SZMD0502 uses small SOT-23 package. Each SZMD0502 device can protect two high-speed data lines.

The combined features of low capacitance, small size and high ESD robustness make SZMD0502 ideal for high-speed data port and high-frequency line (e.g., USB 2.0 & DVI) applications.

The low clamping voltage of the SZMD0502 guarantees a minimum stress on the protected IC.

FEATURES

- Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (Air)
 $\pm 8\text{kV}$ (Contact)
IEC 61000-4-4 (EFT) 40A (5/50 ns)
Cable Discharge Event (CDE)
- Low capacitance : 0.5pF Typical (I/O-I/O)
- Protects two data lines
- Low leakage current
- Low clamping voltage

APPLICATIONS

- Serial ATA
- Desktops, Servers and Notebooks
- PCI Express
- MDDI Ports
- USB2.0 Power and Data Line Protection
- Display Ports
- Digital Visual Interfaces (DVI)

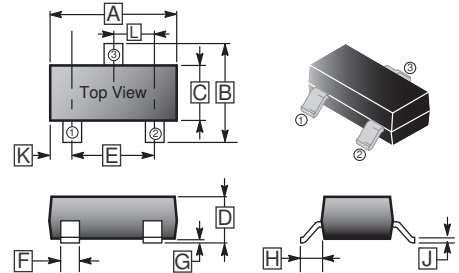
MARKING

0502

PACKAGE INFORMATION

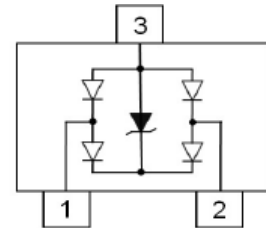
Package	MPQ	Leader Size
SOT-23	3K	7 inch

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.01	0.18
B	2.10	2.95	H	0.5 Typ.	
C	1.20	1.7	J	0.08	0.20
D	0.89	1.3	K	0.6 REF.	
E	1.70	2.3	L	0.95 BSC.	
F	0.30	0.50			

Top View



ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Pulse Power ¹	P _{PP}	45	W
Peak Pulse Current ¹	I _{PP}	3	A
IEC61000-4-2	Air model	±15	KV
	Contact model	±12	
Operating Temperature	T _{OPT}	-55~125	°C
Storage Temperature	T _{STG}	-55~150	°C

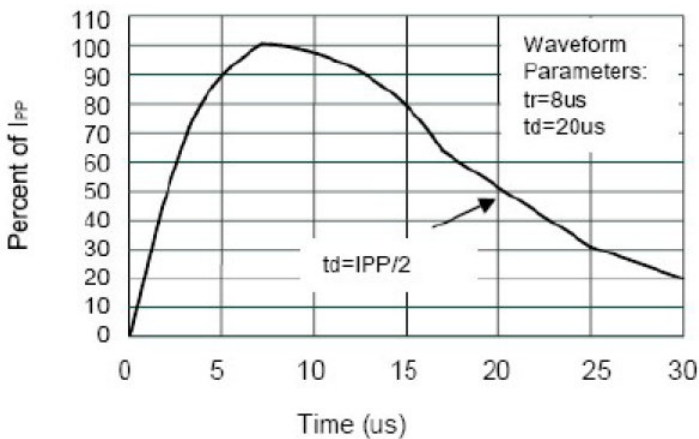
Notes:

1. According to IEC61000-4-5, the waveform of the non-repetitive 8/20μs pulsed current decays by exponents.

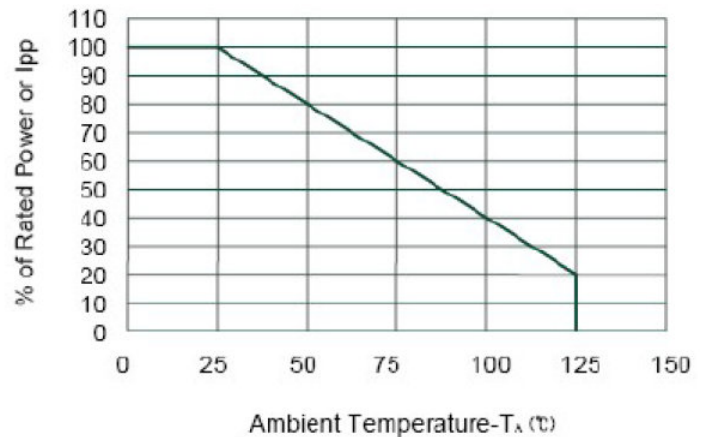
ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Reverse Working Voltage	I/O to GND	V _{RWM}	-	-	5	V
Reverse Breakdown Voltage	I _T =1mA Between I/O and GND	V _{BR}	6	-	-	V
Reverse Leakage Current	V _{RWM} =5V Between I/O and GND	I _R	-	-	1	μA
Clamping Voltage	I _{PP} =1A, t _p =8/20μs Between I/O and GND	V _C	-	8.5	12	V
Forward Voltage	I _T =10mA Between I/O and GND	V _F	-	-	1	V
Junction Capacitance 1	V _R =0V, f=1MHz Between I/O and GND	C _{J1}	-	1	1.4	pF
Junction Capacitance 2	V _R =0V, f=1MHz Between I/O and I/O	C _{J2}	-	0.5	0.7	pF

ELECTRICAL CHARACTERISTICS CURVES



Pulse Waveform



Power Derating Curve