

DESCRIPTION

The ESD5302F 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 0.2pF (I/O to I/O) only, is designed ESD5302F 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.

The ESD5302F uses small SOT-23 package. Each

The ESD5302F device can protect two high-speed data lines. The combined features of low capacitance, small size and high ESD robustness make ideal for high-speed data port ESD5302F is a and high-frequency line applications. The low clamping voltage of the guarantees a ESD5302F is 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)
- ✧ Small package (2.9mm \times 2.4mm \times 1.0mm)
- ✧ Protects two data lines
- ✧ Low capacitance: 0.2pF Typical (I/O-I/O)
- ✧ Low leakage current
- ✧ Low clamping voltage

MACHANICAL DATA

- ✧ SOT-23 package
- ✧ Flammability Rating: UL 94V-0
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:260/10s
- ✧ Reel size: 7 inch

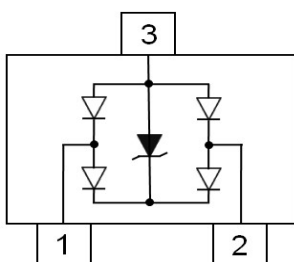
ORDERING INFORMATION

- ✧ Package: SOT-23
- ✧ Marking: 52L
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 3,000pcs

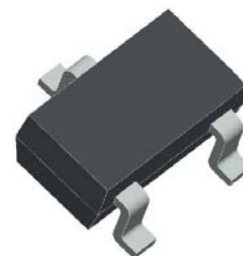
APPLICATIONS

- ✧ Serial ATA
- ✧ Desktops, Servers and Notebooks
- ✧ PCI Express
- ✧ MDDI Ports
- ✧ USB Data Line Protection
- ✧ Display Ports
- ✧ Digital Visual Interfaces (DVI)

PIN CONFIGURATION



PACKAGE OUTLINE



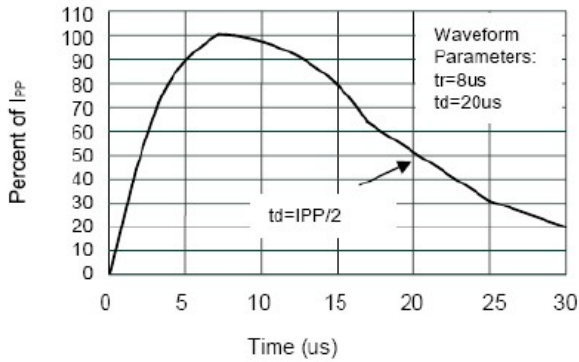
ABSOLUTE MAXIMUM RATING

Symbol	Parameter	Value	Units
P_{PP}	Peak Pulse Power (8/20 μ s)	60	W
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	± 20 ± 20	kV
T_{OPT}	Operating Temperature	-55/+125	$^{\circ}$ C
T_{STG}	Storage Temperature	-55/+150	$^{\circ}$ C

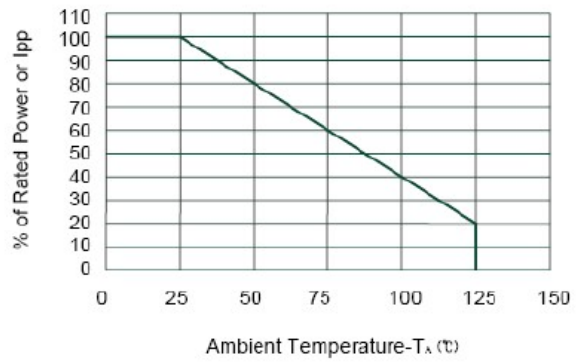
ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}$ C)

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	I/O to GND			5.0	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$ Between I/O and GND	6.0			V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{V}$ Between I/O and GND			100	nA
V_C	Clamping Voltage	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$ Between I/O and GND			10	V
		$I_{PP} = 4\text{A}$, $t_p = 8/20\mu\text{s}$ Between I/O and GND			15	V
V_F	Forward Voltage	$I_T = 10\text{mA}$ Between I/O and GND			1.2	V
C_T	Total Capacitance	$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and GND		0.4		pF
		$V_R = 0\text{V}$, $f = 1\text{MHz}$ Between I/O and I/O		0.2		pF

ELECTRICAL CHARACTERISTICS CURVE

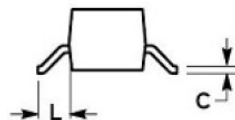
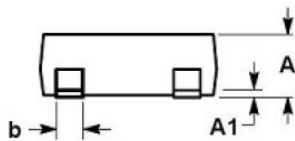
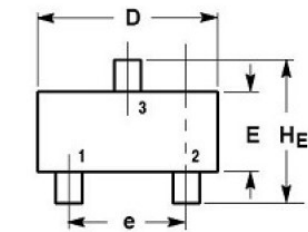


Pulse Waveform



Power Derating Curve

SOT-23 PACKAGE OUTLINE DIMENSIONS



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

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