

ESDSR05

Low Capacitance ESD Protection

Description

The ESDSR05 consists of four, low capacitance steering diodes and a low voltage TVS diode that provide protection against ESD and lightning surge events. Each channel or I/O pin can safely absorb up to 25A ($t_p=8/20\ \mu s$) and repetitive ESD strikes above the maximum level (Level 4) specified in the IEC 61000-4-2 international standard without performance degradation.

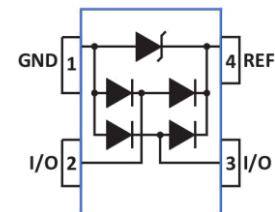
The low capacitance of the steering diode allows the designer to protect high speed data applications. The small SOT-143 package with four leads reduces the internal lead inductance for low overshoot voltage during fast front time transient events such as ESD and EFT.

Features

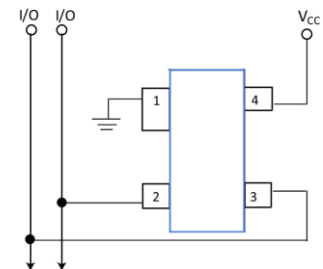
- ◆ Case :JEDEC SOT-143 package
- ◆ Low clamping voltage
- ◆ Small packaging options saves board space
- ◆ Low capacitance :4 pF typical
- ◆ Protection for 2 Lines
- ◆ Compatible with IEC 61000-4-2(ESD) :Air 15KV , Contact 8KV
- ◆ Compatible with IEC 61000-4-4(EFT) :40A ,5/50 nS
- ◆ Compatible with IEC 61000-4-5(Surge):24A ,8/20 uS - level 2 (line-GND)&Level 3 (Line-Line)

Applications

- ◆ USB Power and Data Line Protection
- ◆ 10/100/1000 Ethernet
- ◆ Video Graphics Cards
- ◆ SIM Ports
- ◆ ATM Interfaces



- ◆ Montors and Flat Panel Displays
- ◆ Digital Video Interface(DVI)

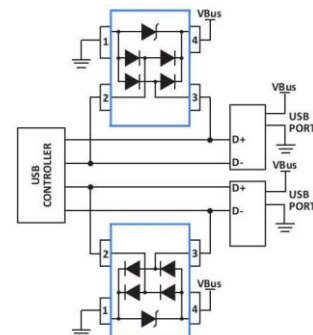


- ◆ IEEE 1394 Fire wire Ports

Schematic and PIN Configuration

Application Example Protection

USB Port Protection



ESDSR05

Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Peak Current (tp =8/20 μ s)	P _{PK}	500	W
Peak Current (tp =8/20 μ s)	I _{PP}	25	A
IEC61000-4-2 (Contact)	V _{ESD}	>8	kV
IEC61000-4-2 (Air)	V _{ESD}	>15	kV
Lead Soldering Temperature	T _L	260 (10 sec)	° C
Operating Temperature	T _J	-50 to 150	° C
Storage Temperature Range	T _{STG}	-50 to 150	° C

Electrical Characteristics (T =25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Stand-off Voltage	V _{RWM}				5	V
Reverse Breakdown Voltage	V _{BR}	I _t = 1mA	6			V
Reverse Leakage Current	I _R	V _{RWM} =5.0V, T=25°C			5	μ A
Clamping Voltage	V _C	I _{PP} = 1A, t _p = 8/20 μ s			9.8	V
Clamping Voltage	V _C	I _{PP} =10A, t _p = 8/20 μ s			12	V
Junction Capacitance	C _J	V _R =0V, f = 1MHz		0.7	2.5	pF

Rating & Characteristic Curves

Figure 1- Power Derating Curve

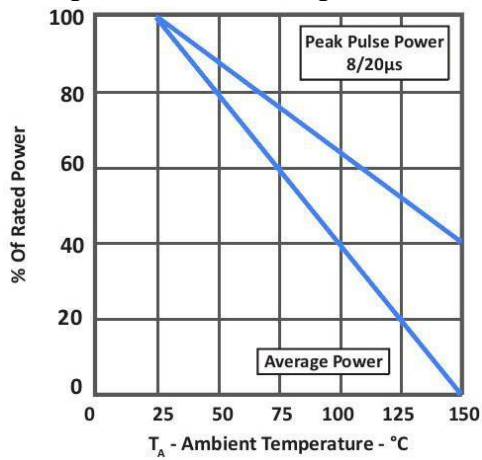


Figure 2- Clamping Voltage vs Current

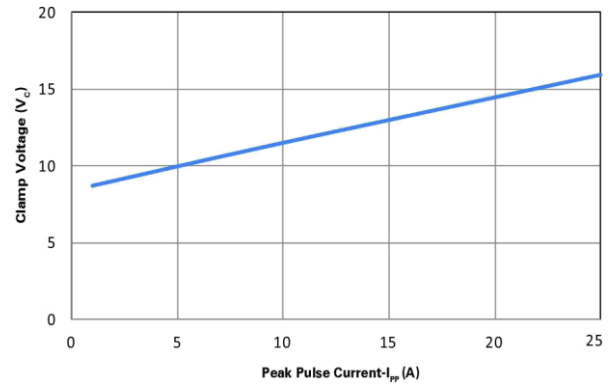


Figure 3- Typical Junction Capacitance

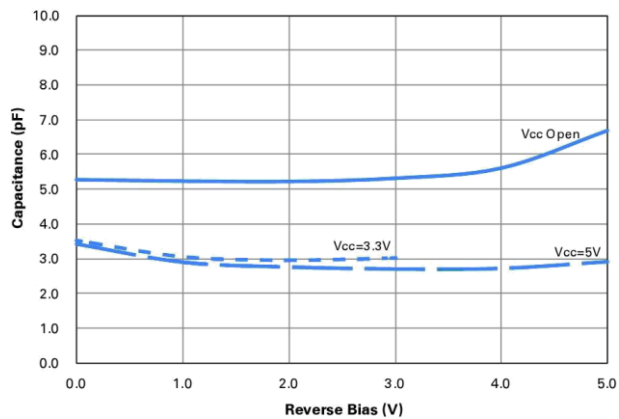
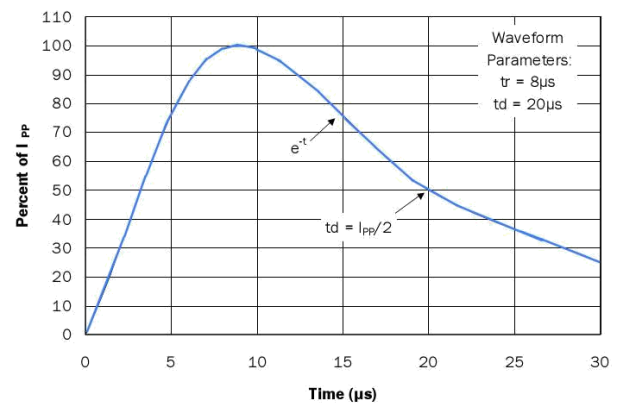
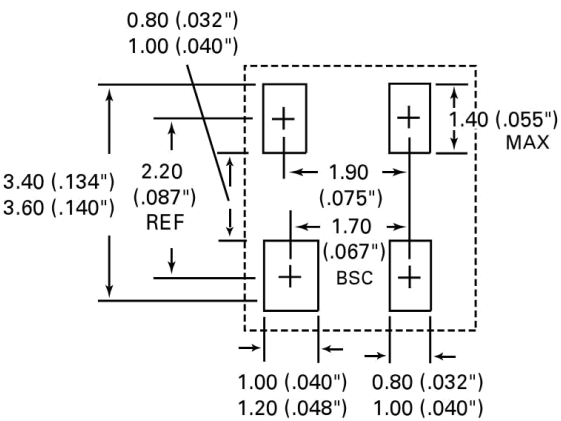
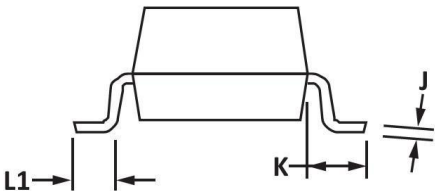
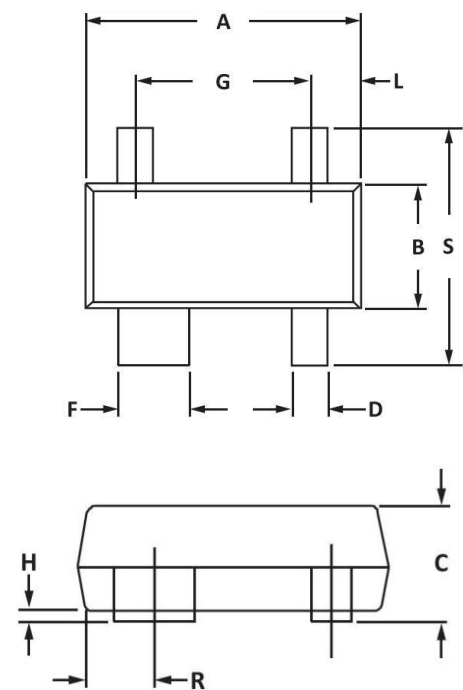


Figure 4- Pulse Waveform



Package Outline

SOT-143



Recommended Pad Layout

Dim	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.110	0.120
B	1.20	1.39	0.047	0.055
C	0.84	1.14	0.033	0.045
D	0.39	0.50	0.015	0.020
F	0.79	0.93	0.031	0.037
G	1.78	2.03	0.070	0.080
J	0.08	0.15	0.003	0.006
K	0.46	0.60	0.018	0.024
L	0.045	0.60	0.0175	0.024
L1	0.4	0.60	0.016	0.024
R	0.72	0.83	0.028	0.033
S	2.11	2.48	0.083	0.098