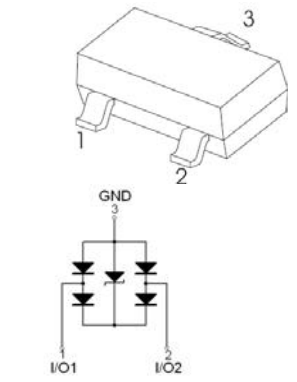
Uni-direction ESD Protection Diode

DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

SOT-23



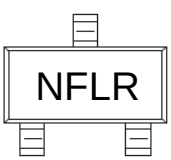
FEATURES

- Uni-directional ESD protection of two lines
- Low capacitance: 0.8pF(max.)
- Low reverse stand−off voltage: 5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package:2.9mm×1.3mm×1.0mm
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

APPLICATIONS

- Computers and peripherals
- High speed data lines
- Mobile phone
- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- PAD
- STB
- LCD TV
- Digital Camera
- Other electronics equipments Communi-cation systems

MARKING



MAXIMUM RATINGS (Ta=25℃ unless otherwise noted)

Parameter		Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage	Air Model	V_{ESD} (1)	±15	kV
	Contact Model		±15	
JESD22-A114-B ESD Voltage	Per Human Body Model		±16	
ESD Voltage	Machine Model		±0.4	
Peak Pulse Power		P_{PP} (2)	87.5	W
Peak Pulse Current		I_{PP} (2)	3.5	A
Lead Solder Temperature − Maximum (10 Second Duration)		T_L	260	℃
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55 ~ +150	℃

(1).Device stressed with ten non-repetitive ESD pulses, Per channel (I/O to GND).

(2).Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5.

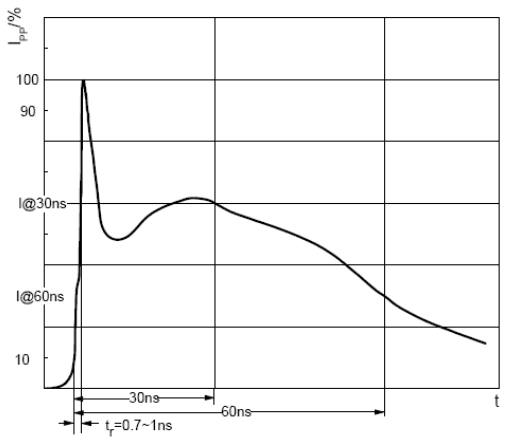
ESD standards compliance

IEC61000-4-2 Standard

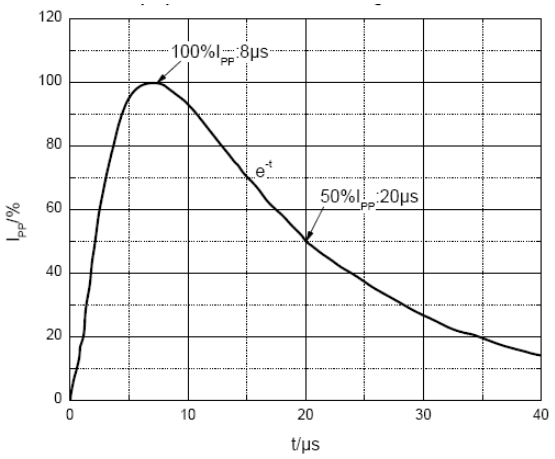
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

JESD22-A114-B Standard

ESD Class	Human Body Discharge V
0	0～249
1A 1B 1C	250～499 500～999 1000～1999
2	2000～3999
3A 3B	4000～7999 8000～15999



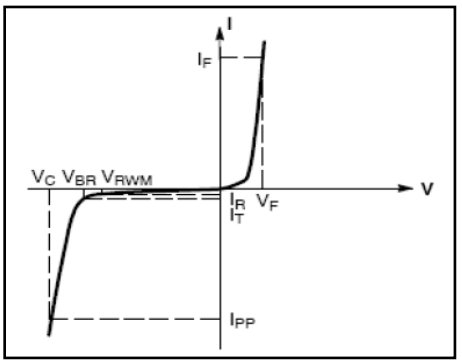
ESD pulse waveform according to IEC61000-4-2



8/20μs pulse waveform according to IEC 61000-4-5

ELECTRICAL PARAMETER

Symbol	Parameter
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Peak Pulse Current
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_R	Reverse Leakage Current @ V_{RWM}
V_{RWM}	Reverse Standoff Voltage
V_F	Forward Voltage@ I_F
I_F	Forward Current



V-I characteristics for a uni-directional TVS

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

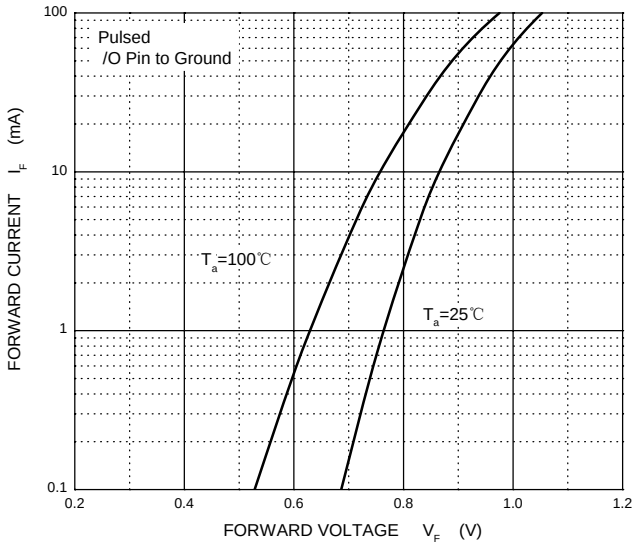
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Per channel(I/O to GND unless otherwise specified)						
Reverse stand off voltage	V_{RWM} (1)				5	V
Reverse leakage current	I_R	V_{RWM}=5V			1	μA
Breakdown voltage	$V_{(BR)}$	I_T=1mA	6			V
Clamping voltage	V_C (2)	I_{PP}=1A			15	V
		I_{PP}=3.5A			25	V
Forward voltage	V_F	I_F=10mA	0.4		1.4	V
Junction capacitance	C_J	V_R=0V,f=1MHz			0.8	pF
		V_R=0V,f=1MHz, I/O to I/O			0.4	pF

(1).Other voltages available upon request.

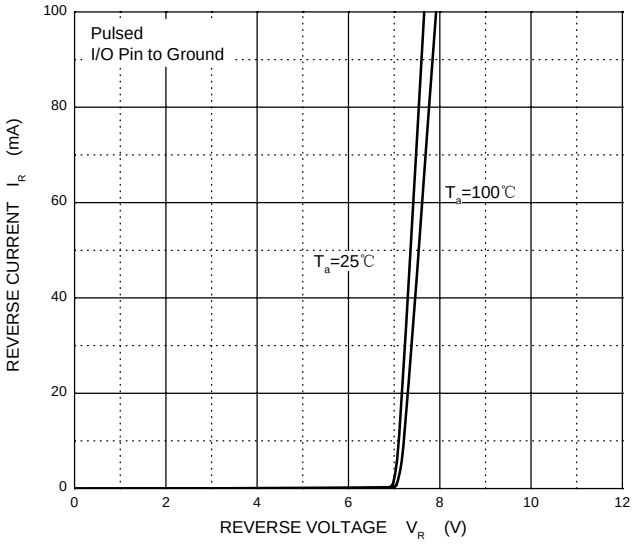
(2).Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

TYPICAL CHARACTERISTICS

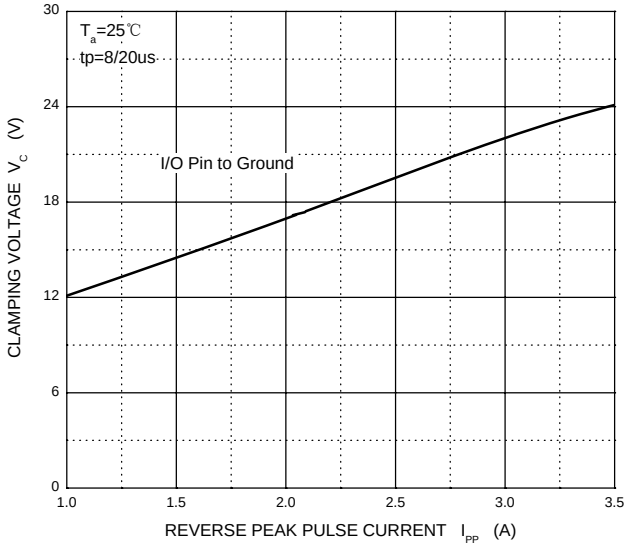
Forward Characteristics



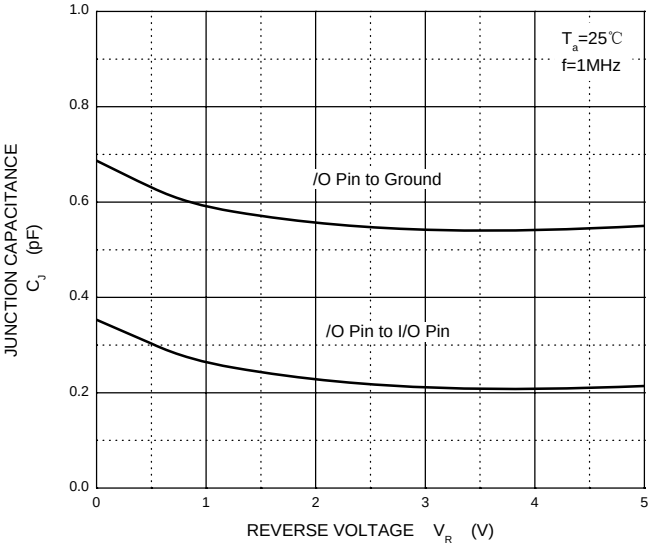
Reverse Characteristics



V_C —— I_{PP}

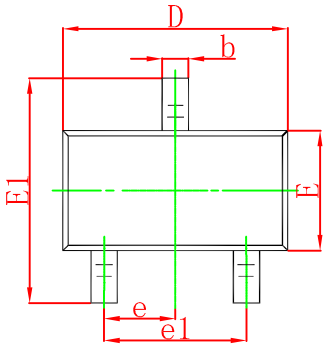


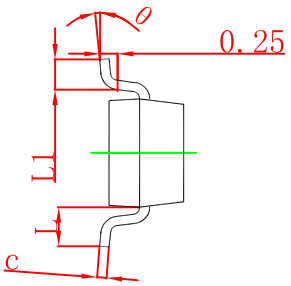
Capacitance Characteristics

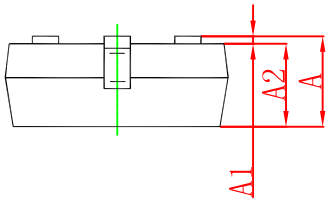


PACKAGE OUTLINE AND PAD LAYOUT INFORMATION

SOT-23 Package Outline Dimensions

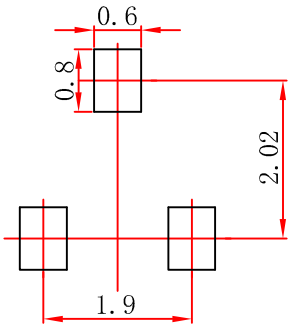






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	° 8

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.