

SOT-563 Plastic-Encapsulate Diodes

ESDU5V0N4 Uni-direction ESD Protection Array

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.

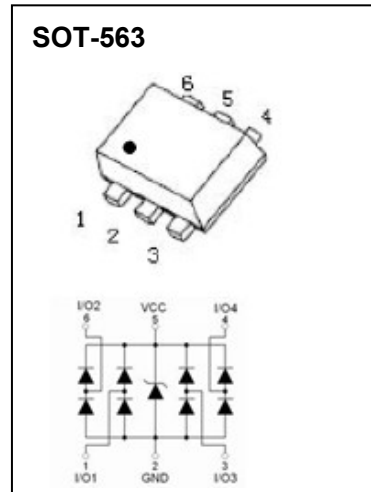
The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook,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

FEATURES

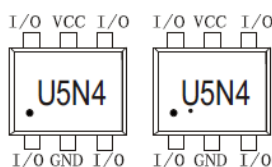
- Uni-directional ESD protection of four lines
- Low capacitance: 0.8pF(max)
- Low reverse stand-off voltage: 5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.6mm × 1.2mm × 0.6mm
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

APPLICATIONS

- Computers and peripherals
- Audio and video equipment
- High speed data lines
- Display port
- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- LVDS
- USB 2.0
- Other electronics equipments communication systems



MARKING



Front side

U5N4 = Device code

Solid dot=Pin1 indicator

Solid dot = Green molding compound device, if none,
the normal device

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
IEC 61000-4-2 ESD Voltage(I/O to GND & V_{CC} to GND)	Air Model	± 25	kV
	Contact Model	± 25	
JESD22-A114-B ESD Voltage(I/O to GND & V_{CC} to GND)	Per Human Body Model	± 16	
ESD Voltage(I/O to GND & V_{CC} to GND)	Machine Model	± 0.4	
Peak Pulse Power	$P_{PP}^{(2)}$	125	W
Peak Pulse Current	$I_{PP}^{(2)}$	5	A
Lead Solder Temperature – Maximum (10 Second Duration)	T_L	260	$^{\circ}\text{C}$
Junction Temperature	T_j	150	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 ~ +150	$^{\circ}\text{C}$

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

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

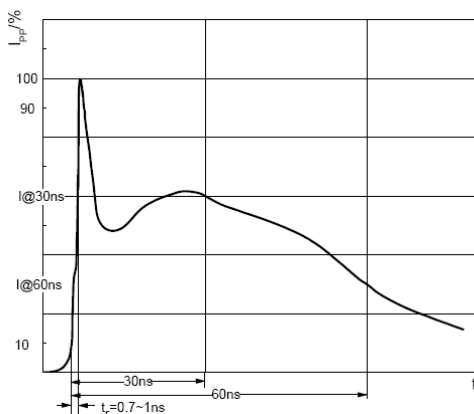
ESD standards compliance

IEC61000-4-2 Standard

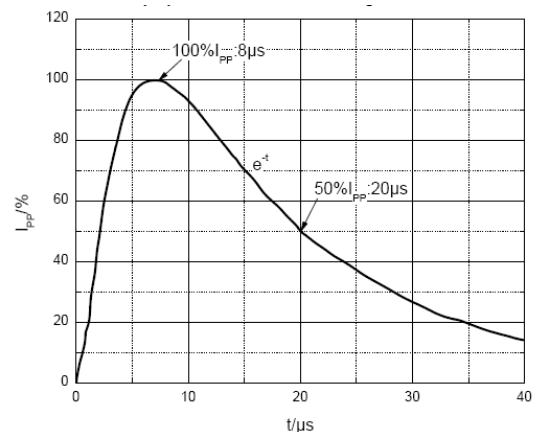
Contact Discharge		Air Discharge	
Level	Test Voltage kV	Level	Test Voltage kV
1	2	1	2
2	4	2	4
3	6	3	8
4	8	4	15

JESD22-A114-B Standard

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



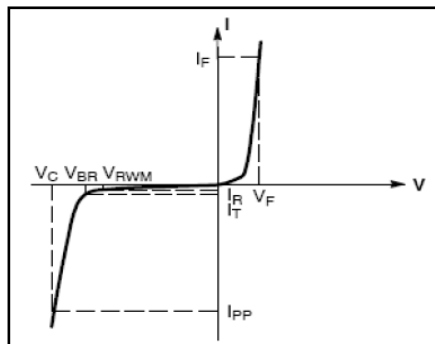
ESD pulse waveform according to IEC61000-4-2



8/20 μs 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 ($T_a=25^\circ\text{C}$ 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
Breakdown voltage	$V_{(BR)}$	$I_T=1\text{mA}$	6.5		8.8	V
		$I_T=1\text{mA}$ V_{CC} to GND	5.8		8.1	V
Reverse leakage current	I_R	$V_{RWM}=5\text{V}$ (I/O to GND & V_{CC} to GND)			1	μA
Forward voltage	V_F	$I_F=10\text{mA}$ (I/O to GND & V_{CC} to GND)	0.5		1.0	V
Clamping voltage	$V_C^{(2)}$	$I_{PP}=1\text{A}$ (I/O to GND & V_{CC} to GND)			15	V
		$I_{PP}=5\text{A}$ (I/O to GND & V_{CC} to GND)			25	V
Junction capacitance	C_J	$V_R=0\text{V}, f=1\text{MHz}$			0.8	pF
		$V_R=0\text{V}, f=1\text{MHz},$ I/O to I/O			0.4	pF

(1).Other voltages available upon request.

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