

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.

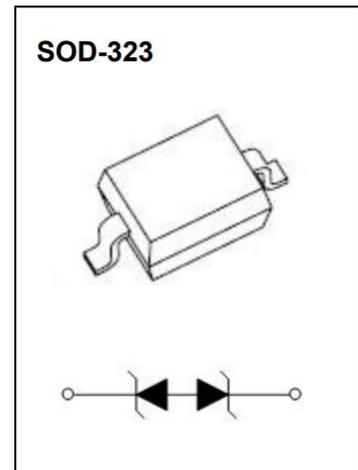
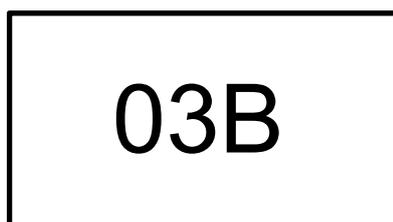
Features

- Bi-directional ESD protection of one line
- Reverse stand-off voltage: 3.3V
- Low reverse clamping voltage
- Low leakage current
- Fast response time
- IEC 61000-4-2 (ESD) immunity test :
- Air discharge: $\pm 30\text{kV}$
- Contact discharge: $\pm 30\text{kV}$

Applications

- Computers and peripherals
- High speed data lines
- Audio and video equipment
- Cellular handsets and accessories
- Subscriber identity module(SIM) card protection
- Portable electronics
- FireWire
- Other electronics equipments communi- cation systems

Marking Diagram



ES3.3D1HA03

Bi-direction ESD Protection Diode

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

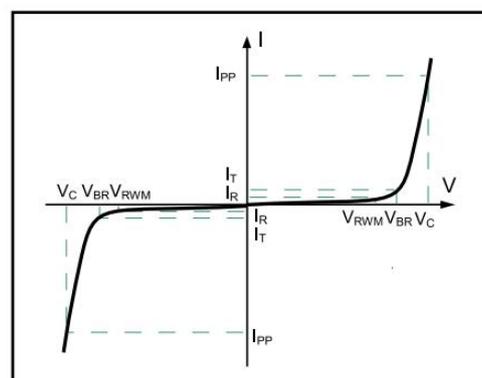
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	350	W
Peak Pulse Current (8/20 μs)	IPP	25	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}				3.3	V
Breakdown Voltage	V_{BR}	$I_T = 1\text{mA}$	3.4		5	V
Reverse Leakage Current	I_R	$V_{RWM} = \pm 3.3\text{V}$			0.5	μA
Clamping Voltage	V_C	$I_{PP} = 25\text{A}$ (8 x 20 μs pulse)			12	V
Junction Capacitance	C_j	$V_R = 0\text{V}$, $f = 1\text{MHz}$			50	pF

Electronics Parameter

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



ES3.3D1HA03
Bi-direction ESD Protection Diode

Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

Fig 1 Power Derating Curve

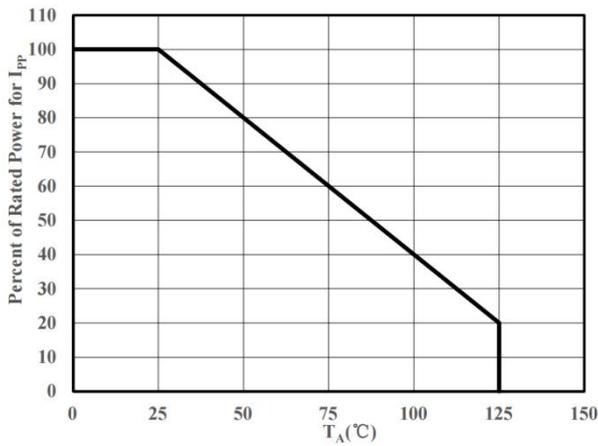


Fig 2 8/20 μs pulse waveform according to IEC 61000-4-5

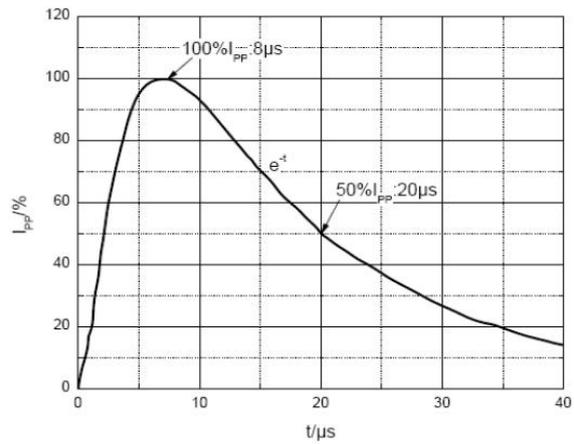
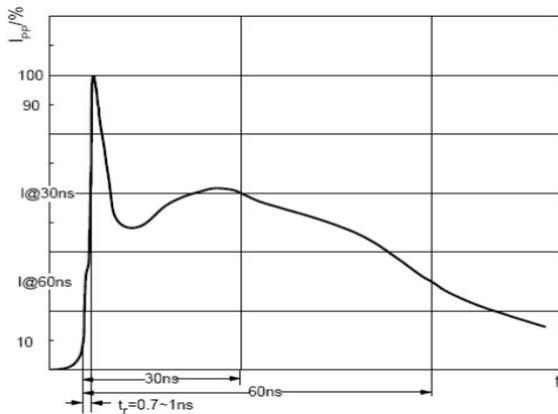


Fig 3 ESD pulse waveform according to IEC61000-4-2



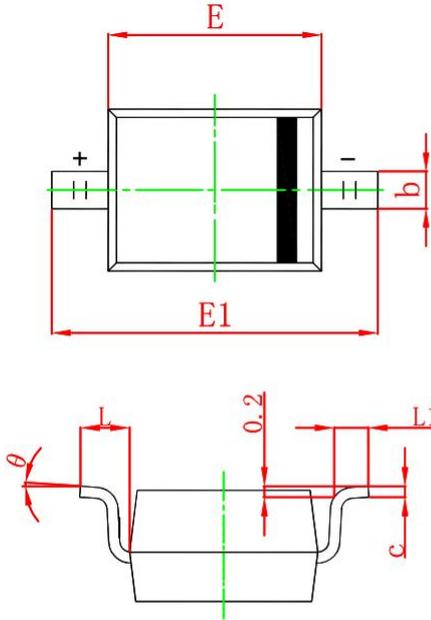
Ordering Information

Part Number	Package Type	Quantity(PCS) /Reel	Reel Size
ES3.3D1HA03	SOD-323	3000	7 inch

ES3.3D1HA03

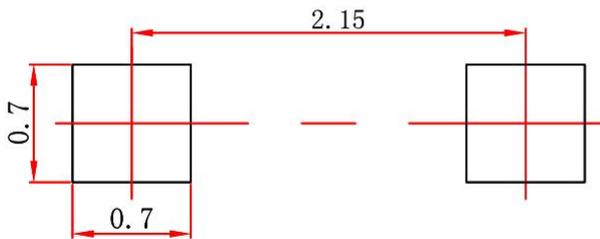
Bi-direction ESD Protection Diode

Package Outline Dimensions (Unit: mm)



Symbol	Dimensions in Millimeters		Min	Max
	Min	Max		
A		1.100		0.043
A1	0.000	0.100	0.000	0.004
A2	0.800	1.000	0.031	0.039
b	0.250	0.350	0.010	0.014
c	0.080	0.150	0.003	0.006
D	1.200	1.400	0.047	0.055
E	1.600	1.800	0.063	0.071
E1	2.500	2.750	0.098	0.108
L	0.475 REF		0.019 REF	
L1	0.250	0.400	0.010	0.016
θ	0°	8°	0°	8°

Suggested Land Pattern (Unit: mm)



Note:

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