

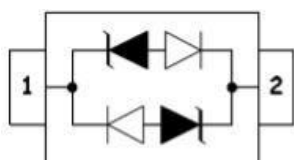
Description

The SEHXX01D3 is a bi-directional TVS diode, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive high-speed data lines. The SEHXX01D3 has a low capacitance with a typical value at 0.8pF, and complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into a lead free SOD-323 package. The small size, low capacitance and high ESD surge protection make SEHXX01D3 an ideal choice to protect cell phone, wireless systems, and communication equipment.

Features

- 350W peak pulse power (8/20us)
- Ultra low leakage: nA level
- Ultra low capacitance: 0.8pF typical
- Stand-off Voltage: 3.3 V ~ 24 V
- Ultra low clamping voltage
- Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-4 (EFT) 40A (5/50ns)
- RoHS Compliant

Dimensions & Symbol



Mechanical Characteristics

- Package: SOD-323
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- USB Ports
- Smart Phones
- Wireless Systems
- Ethernet 10/100/1000 Base-T

Marking Information



SEH3301D3	SEH0501D3	SEH0801D3	SEH1201D3	SEH1501D3	SEH2401D3
CC	AC	DC	ABLC	BBLC	CBLC

Details marking code reference customer approval list

Ordering Information

Part Number	Packaging	Reel Size
SEH3301D3	3000/Tape & Reel	7 inch
SEH0501D3	3000/Tape & Reel	7 inch
SEH0801D3	3000/Tape & Reel	7 inch
SEH1201D3	3000/Tape & Reel	7 inch
SEH1501D3	3000/Tape & Reel	7 inch
SEH2401D3	3000/Tape & Reel	7 inch

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

SEH3301D3			
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	350	W
Peak Pulse Current (8/20 μs)	Ipp	20	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$
SEH0501D3			
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	350	W
Peak Pulse Current (8/20 μs)	Ipp	17	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$
SEH0801D3			
Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μs)	Ppk	350	W
Peak Pulse Current (8/20 μs)	Ipp	15	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}\text{C}$

SEH1201D3

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μ s)	Ppk	350	W
Peak Pulse Current (8/20 μ s)	Ipp	11	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}$ C
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}$ C

SEH1501D3

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μ s)	Ppk	350	W
Peak Pulse Current (8/20 μ s)	Ipp	10	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}$ C
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}$ C

SEH2401D3

Parameter	Symbol	Value	Unit
Peak Pulse Power (8/20 μ s)	Ppk	350	W
Peak Pulse Current (8/20 μ s)	Ipp	6	A
ESD per IEC 61000-4-2 (Air)	VESD	± 30	kV
ESD per IEC 61000-4-2 (Contact)		± 30	
Operating Temperature Range	TJ	-55 to +125	$^{\circ}$ C
Storage Temperature Range	Tstg	-55 to +150	$^{\circ}$ C

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

SEH3301D3						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			3.3	V	
Breakdown Voltage	VBR	4.0			V	$I_T = 1\text{mA}$
Reverse Leakage Current	IR			20	μA	$VRWM = 3.3\text{V}$
Clamping Voltage	VC		7.0		V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			19	V	$I_{PP} = 20\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	CJ		0.8		pF	$VR = 0\text{V}$, $f = 1\text{MHz}$
SEH0501D3						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			5	V	
Breakdown Voltage	VBR	6.2			V	$I_T = 1\text{mA}$
Reverse Leakage Current	IR			5	μA	$VRWM = 5\text{V}$
Clamping Voltage	VC		9.8		V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			21	V	$I_{PP} = 17\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	CJ		0.8		pF	$VR = 0\text{V}$, $f = 1\text{MHz}$
SEH0801D3						
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			8	V	
Breakdown Voltage	VBR	8.5			V	$I_T = 1\text{mA}$
Reverse Leakage Current	IR			2	μA	$VRWM = 8\text{V}$
Clamping Voltage	VC		13.5		V	$I_{PP} = 1\text{A}$ (8 x 20 μs pulse)
Clamping Voltage	VC			25	V	$I_{PP} = 15\text{A}$ (8 x 20 μs pulse)
Junction Capacitance	CJ		0.8		pF	$VR = 0\text{V}$, $f = 1\text{MHz}$

SEH1201D3

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			12	V	
Breakdown Voltage	VBR	13.3			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 12V
Clamping Voltage	VC		19		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			30	V	IPP = 11A (8 x 20uS pulse)
Junction Capacitance	CJ		0.8		pF	VR = 0V, f = 1MHz

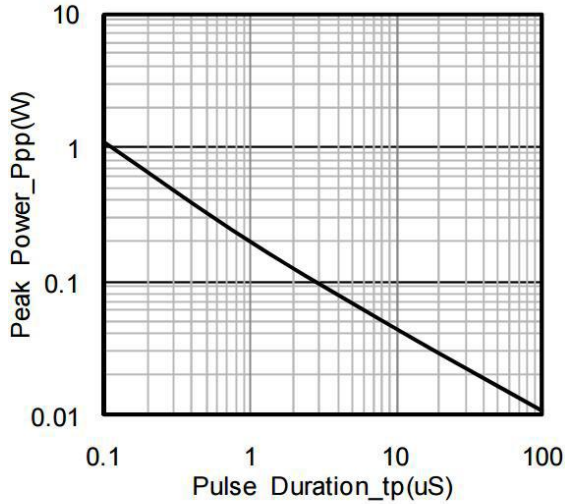
SEH1501D3

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			15	V	
Breakdown Voltage	VBR	16.7			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 15V
Clamping Voltage	VC		24		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			32	V	IPP = 10A (8 x 20uS pulse)
Junction Capacitance	CJ		0.8		pF	VR = 0V, f = 1MHz

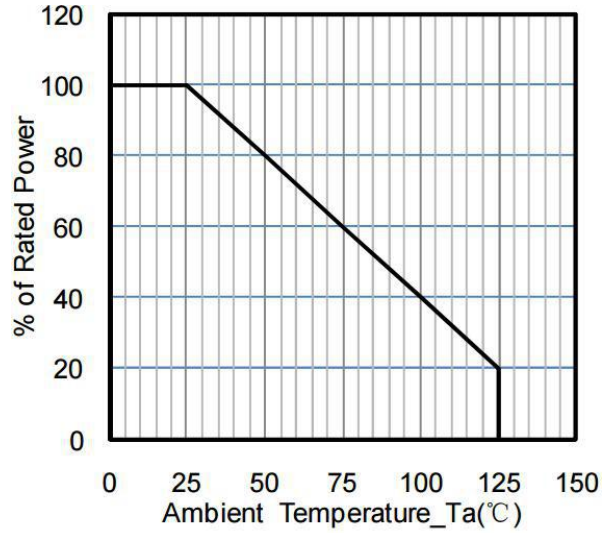
SEH2401D3

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	VRWM			24	V	
Breakdown Voltage	VBR	26.7			V	IT = 1mA
Reverse Leakage Current	IR			1	uA	VRWM = 24V
Clamping Voltage	VC		43		V	IPP = 1A (8 x 20uS pulse)
Clamping Voltage	VC			43	V	IPP = 6A (8 x 20uS pulse)
Junction Capacitance	CJ		0.8		pF	VR = 0V, f = 1MHz

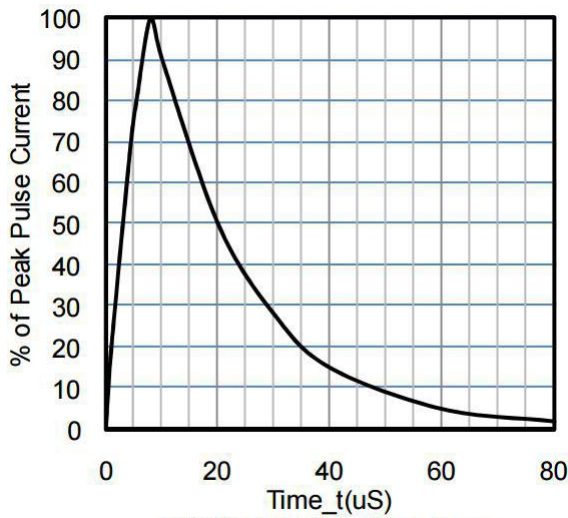
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



Peak Pulse Power vs. Pulse Time



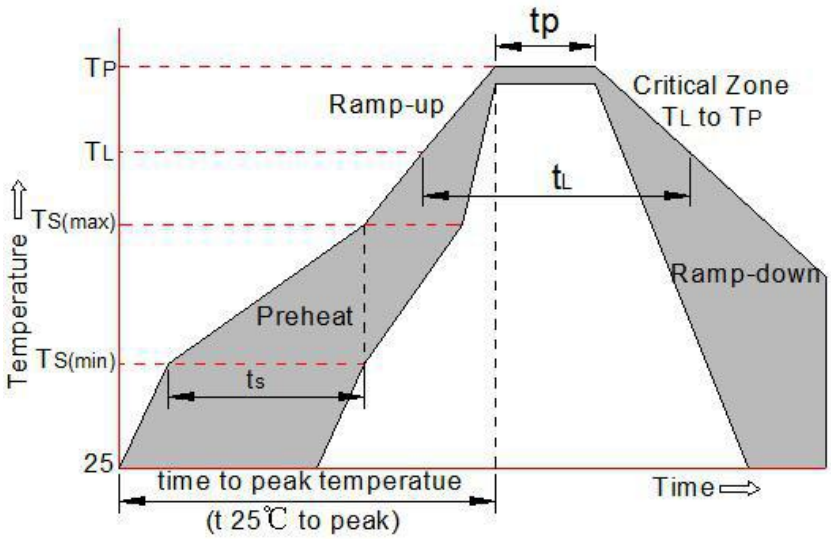
Power Derating Curve



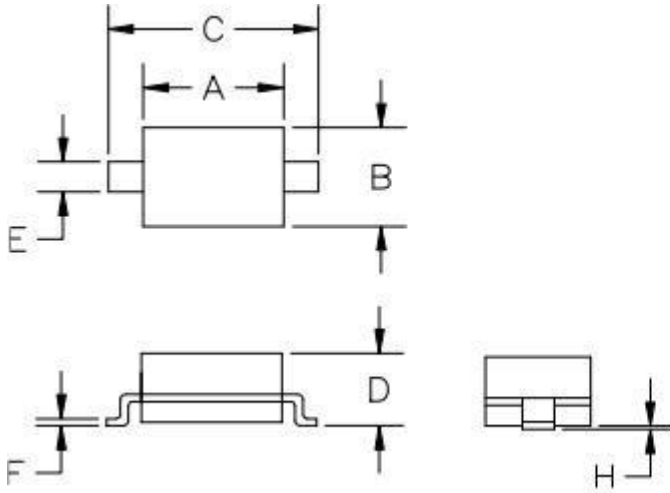
8 X 20uS Pulse Waveform

Soldering Parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L) (Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C

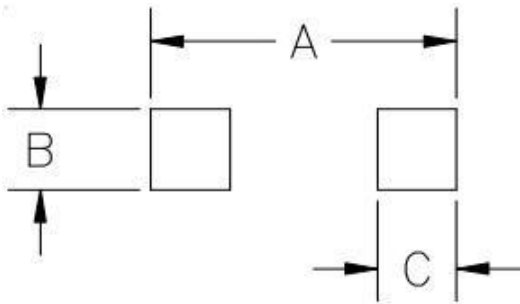


Package Mechanical Data



SYM	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.50	1.80	0.060	0.071
B	1.20	1.40	0.045	0.054
C	2.30	2.70	0.090	0.107
D	-	1.10	-	0.043
E	0.30	0.40	0.012	0.016
F	0.10	0.25	0.004	0.010
H	-	0.10	-	0.004

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
A	3.15	0.120
B	0.80	0.031
C	0.80	0.031

Contact Information

SALLTECH MICRO-ELECTRONICS (SHANGHAI)CO.,LTD.

Area 10.No.8.Hangdu Road.Pudong District.Shanghai.P.R.China.

TEL: +86-21-58131219

FAX: +86-21-58131183