SEH0514S3

4-Line Ultra Low Capacitance TVS Diode

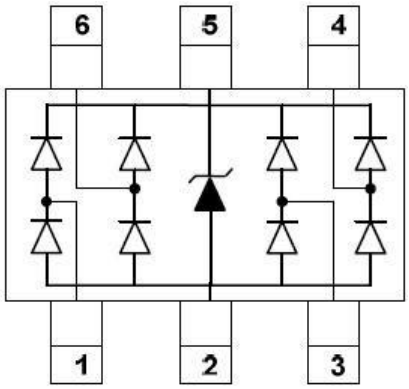
Description

The SEH0514S3 is an ultra low capacitance TVS array, 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 SEH0514S3 has an ultra-low capacitance with a typical value at 0.3pF, and complies with the IEC 61000-4-2 (ESD) standard with ±25kV air and ±20kV contact discharge. It is assembled into a 6-pin lead-free SC-70 package. The combination of small size, ultra low capacitance, and high ESD surge capability make it ideal for use in applications such as USB 3.0, multimedia, and other high speed ports.

Features

- Low leakage current
- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
  - – IEC 61000-4-2 (ESD) immunity test
    - Air discharge: ±25kV
    - Contact discharge: ±20kV
  - – IEC61000-4-5 (Lightning)5A (8/20μs)
- RoHS Compliant

Dimensions & Symbol（Unit: mm Max）



Circuit and Pin Schematic

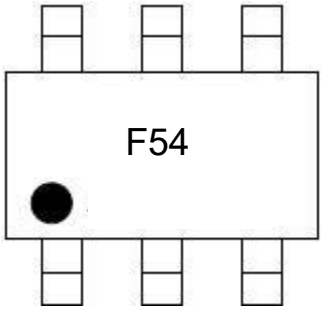
Mechanical Characteristics

- Package: SOT-363
- Lead Finish: Matte Tin
- Case Material: “Green” Molding Compound.
- Moisture Sensitivity: Level 3 per J-STD-020
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- USB 2.0 and USB 3.0 Ports
- USB OTG
- Digital Visual Interface (DVI)
- Monitor and Flat Panel Displays
- PCI Express and Serial SATA Ports
- Gigabit Ethernet
- IEEE 1394 Firewire Ports
- Consumer products (STB, DVD, DSC, DVC...)

Marking Information



Details marking code reference specification of approval list

Ordering information

Part Number	Packaging	Reel Size
SEH0514S3	3000/Tape & Reel	7 inch

Absolute Maximum Ratings (T_A=25ºC, RH=45%-75%, unless otherwise noted)

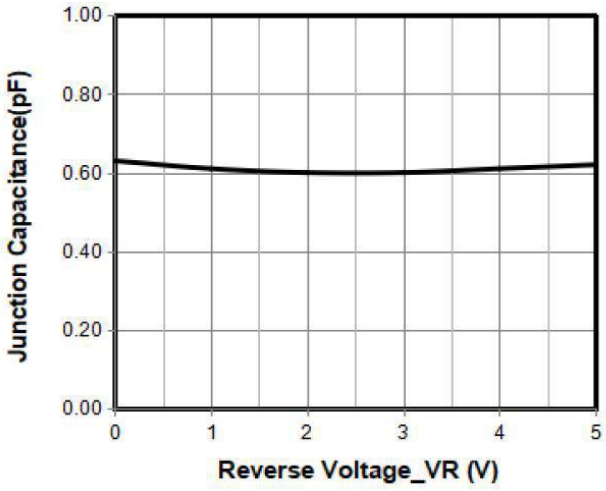
Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20μs waveform)	P_{pp}	75	W
Peak Pulse Current (8/20μs)	I_{pp}	5	A
ESD per IEC 61000−4−2 (Air) ESD per IEC 61000−4−2 (Contact)	V_{ESD}	±25 ±20	kV
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	Tstg	−55 to +150	°C

Electrical Characteristics (T_A=25℃)

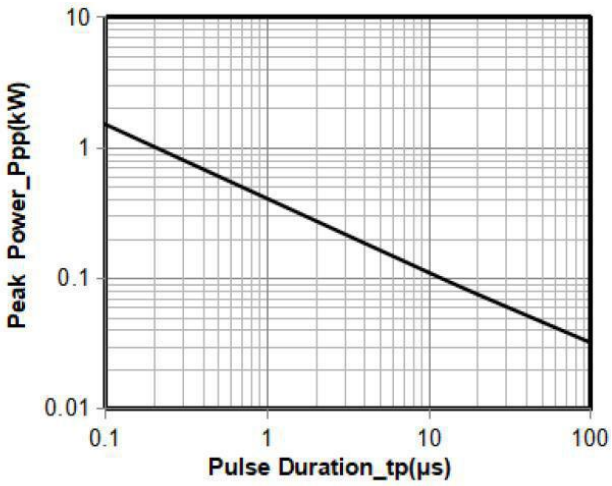
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	V_{RWM}			5	V	Pin 5 to Pin2
Breakdown Voltage	V_{BR}	6			V	I_T = 1mA,Pin 5 to Pin2
Reverse Leakage Current	I_R			0.5	μA	V_{RWM} = 5.0 V,Pin 5 to Pin2
Clamping Voltage	V_C			10	V	I_{PP} = 1A (8 x 20μs pulse),any I/O to ground
Clamping Voltage	V_C			15	V	I_{PP} = 5A (8 x 20μs pulse),any I/O to ground
Junction Capacitance	C_J		0.3	0.4	pF	VR = 0V, f = 1MHz，between I/O pins
Junction Capacitance	C_J			0.8	pF	VR = 0V, f = 1MHz，any I/O to ground

Note 1: I/O pins are Pin 1, 3, 4, and 6

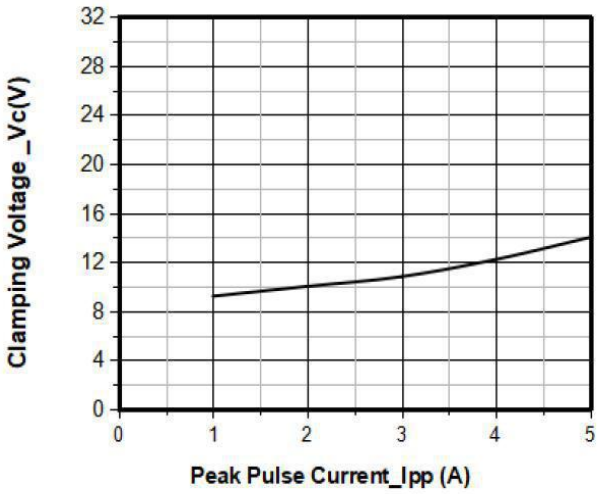
Typical Performance Characteristics (T_A=25°C unless otherwise Specified)



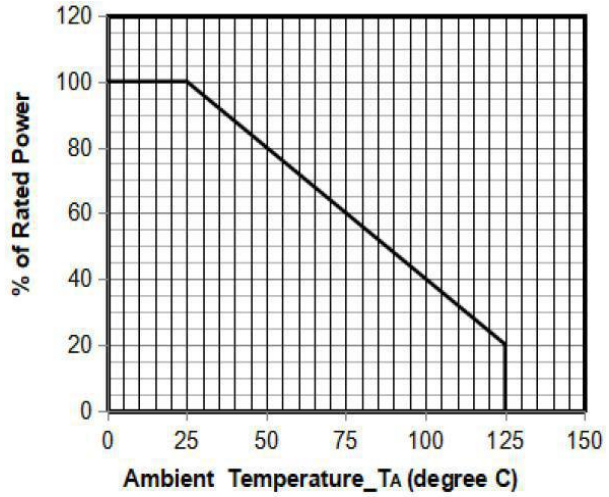
Junction Capacitance vs. Reverse Voltage



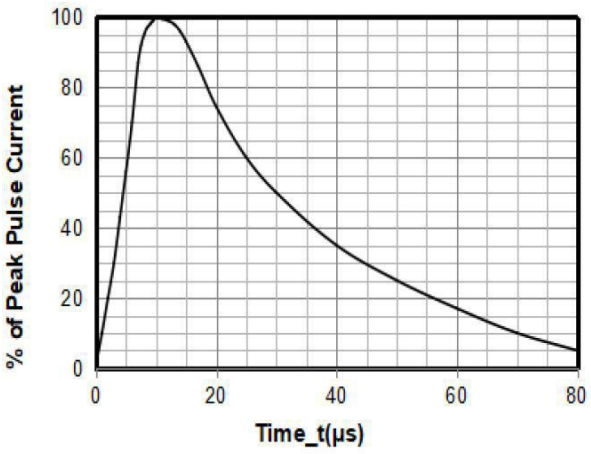
Peak Pulse Power vs. Pulse Time



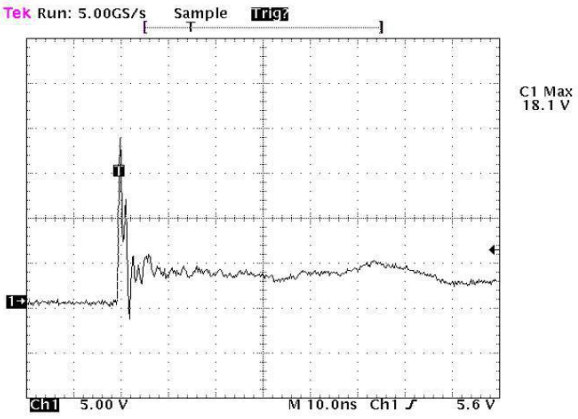
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20μs Pulse Waveform



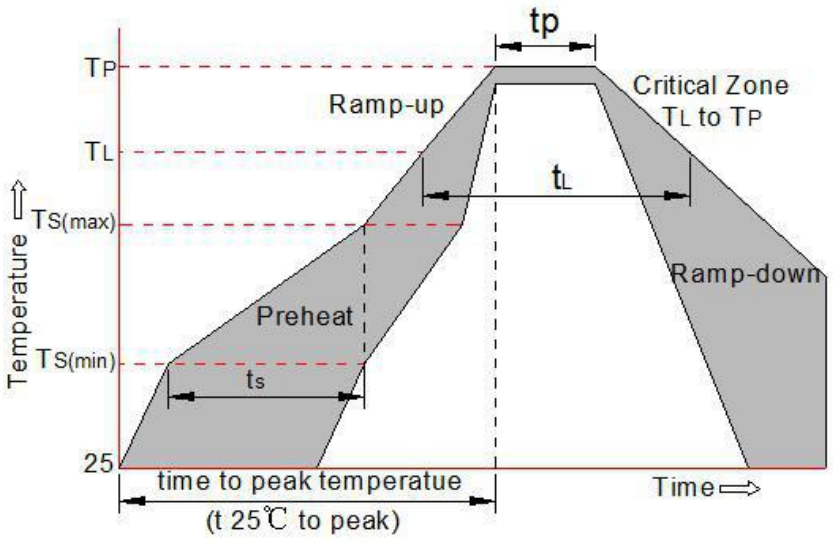
Note: Data is taken with a 10x attenuator

ESD Clamping Voltage

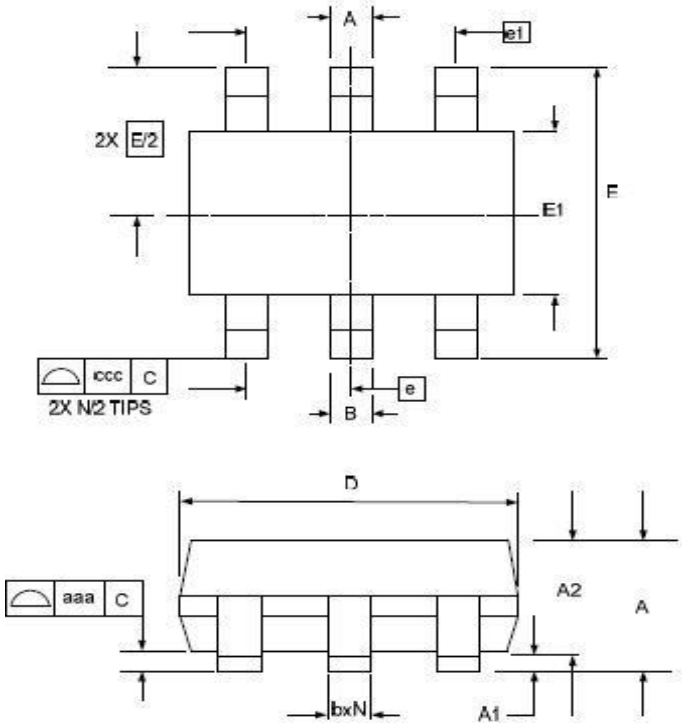
8 kV Contact per IEC61000−4−2

Soldering Parameters

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

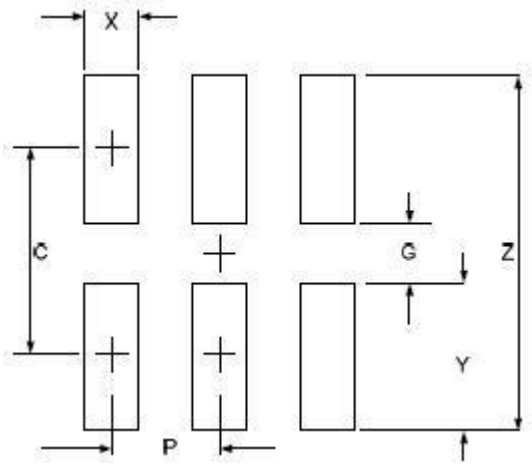


Package Mechanical Data



SYM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	-	-	.043	-	-	1.10
A1	.000	-	.004	0.00	-	0.10
A2	.028	.035	.039	0.70	0.79	1.00
b	.006	-	.012	0.15	-	0.30
c	0.03	-	.009	0.08	-	0.22
D	.075	.079	.087	1.90	2.00	2.20
E1	.045	.049	.053	1.15	1.25	1.35
E	.083BSC			2.10BSC		
e	.026BSC			0.65BSC		
e1	.051BSC			1.30BSC		
L	.010	.014	.018	0.26	0.36	0.46
L1	(.017)			(0.42)		
N	6			6		
θ	0°	-	8°	0°	-	8°

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	1.85	0.073
G	1.00	0.039
P	0.65	0.026
X	0.40	0.016
Y	0.85	0.033
Z	2.70	0.106

Contact Information

SalltechMicroelectronics(shanghai)Co.,Ltd.

Area10.No.8.HuangduRoad.PudongDistrict.Shanghai.P.R.China.

TEL：+86-021-58131219
FAX：+86-021-58131183