

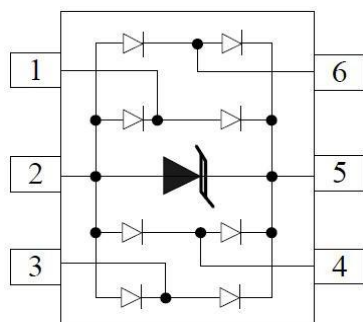
## Description

The SEH0504S2 is designed with Salltech Punch-Through process TVS technology to protect voltage sensitive components from ESD. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD. Because of its small size, it is suited for use in cellular phones, MP3 players, digital cameras, USB 2.0 high speed, VGA, DVI, HDMI, eSATA and other high speed line applications.

## Features

- Ultra low capacitance: 1.0pF typical (I/O to I/O)
- Ultra low leakage: nA level
- Working voltage: 5V
- Up to 4 data lines and one power line protects
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm 25\text{kV}$
    - Contact discharge:  $\pm 20\text{kV}$
- RoHS Compliant

## Symbol and Pin Configuration



SOT-23-6L (Top View)

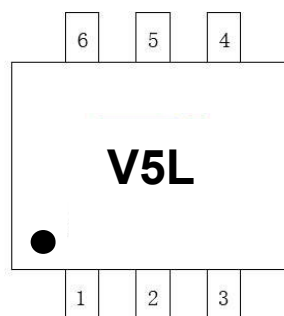
## Mechanical Characteristics

- Package: SOT-23-6L
- 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

- High Speed Line :USB1.0/2.0, VGA, DVI,SDI
- High Definition Multi-Media Interface(HDMI1.3/1.4/2.0)
- Serial and Parallel Ports
- Notebooks, Desktops, Servers
- Peripherals
- Cellular handsets and accessories
- Portable instrumentation

## Marking Information



Details marking code reference customer approval list

## Ordering information

Part Number	Packaging	Reel Size
SEH0504S2	3000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
Peak Pulse Power (tp=8/20 $\mu\text{s}$ waveform)	$P_{pp}$	70	W
Peak Pulse Current (8/20 $\mu\text{s}$ )	$I_{pp}$	3	A
ESD per IEC 61000-4-2 (Air)	VESD	$\pm 20$	kV
ESD per IEC 61000-4-2 (Contact)		$\pm 25$	
Operating Temperature Range	$T_J$	-55 to +125	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Working Voltage	$V_{RWM}$			5	V	
Breakdown Voltage	$V_{BR}$	6			V	$I_T = 1\text{mA}$
Reverse Leakage Current	$I_R$			5	$\mu\text{A}$	$V_{RWM} = 5.0\text{V}$
Forward Voltage	$V_F$		0.8	1.5	V	$I_T = 15\text{mA}$
Clamping Voltage	$V_C$			22	V	$I_{PP} = 3\text{A}$ (8 x 20 $\mu\text{s}$ pulse)
Junction Capacitance	$C_J$		0.4	0.6	pF	Between I/O pins $V_R=0\text{V}$ , $f=1\text{MHz}$
Junction Capacitance	$C_J$		0.5	0.8	pF	I/O pins and Ground $V_R=0\text{V}$ , $f=1\text{MHz}$

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

Figure 1: Peak Pulse Power vs. Pulse Time

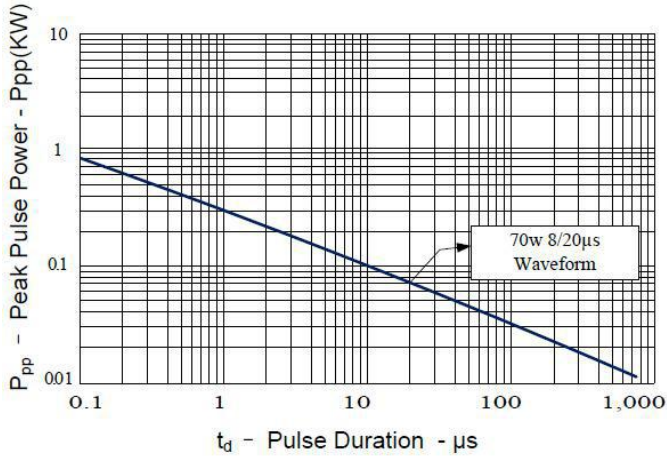


Figure 2: Power Derating Curve

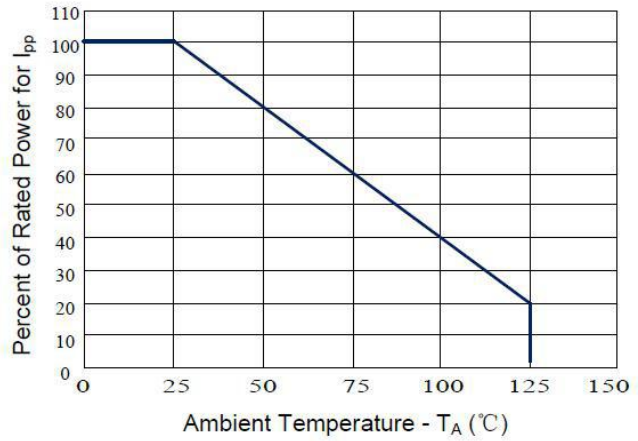


Figure 3: Pulse Waveform

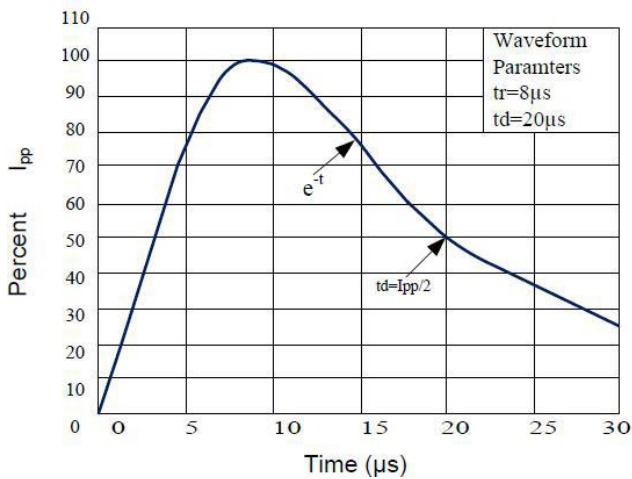


Figure 4: Clamping Voltage vs. Peak Pulse Current

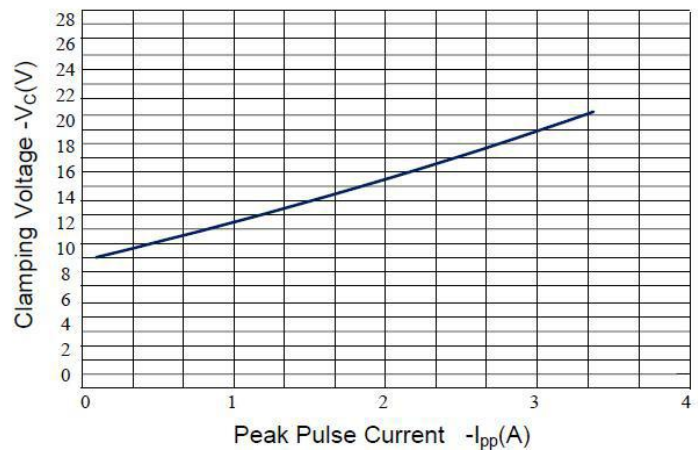
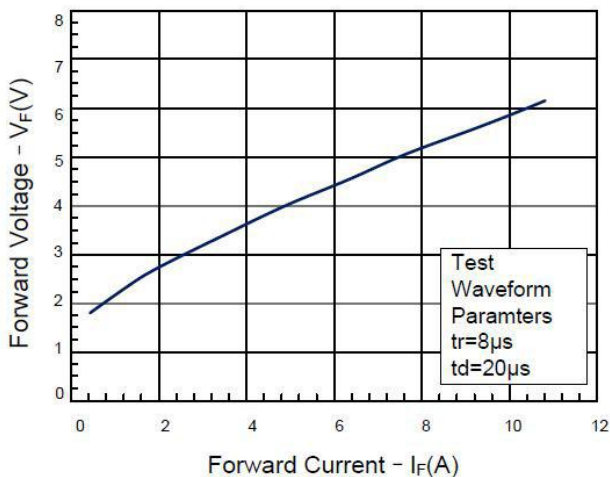
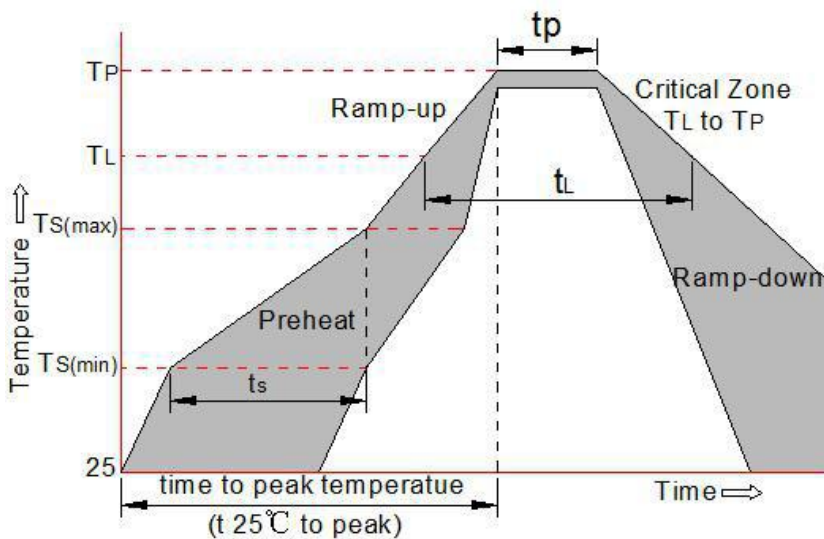


Figure 6: Forward Voltage vs. Forward Current

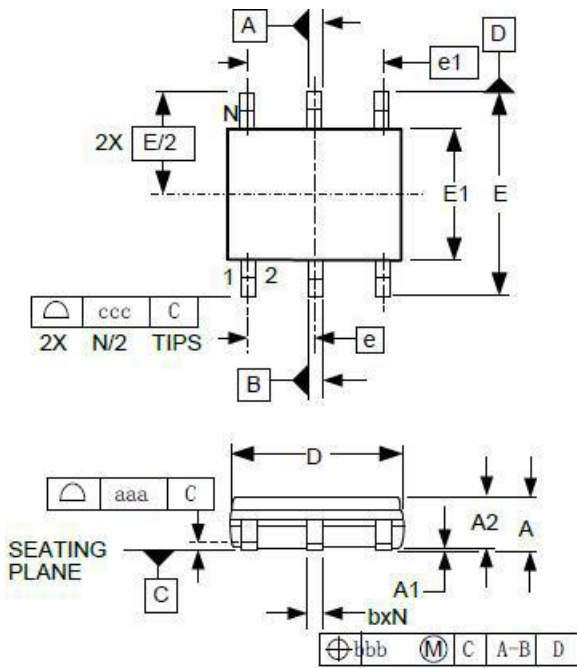


## Soldering parameters

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

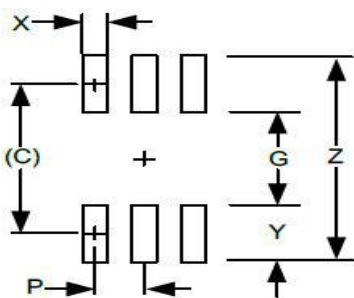


Package mechanical data



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	-	1.45	.035	-	.057
A1	0.00	-	0.15	.000	-	.006
A2	0.90	1.25	1.30	.035	.049	.051
b	0.35	-	0.50	.010	-	.020
c	0.08	-	0.20	.003	-	.007
D	2.80	2.90	3.00	.110	.114	.122
E1	1.50	1.625	1.75	.060	.063	.069
E	2.80 BSC			.110 BSC		
e	0.95 BSC			.037BSC		
e1	1.90BSC			.075BSC		
L	0.35	0.45	0.60	.013	.018	.024
L1	(0.60)			(.024)		
θ	0°	-	8°	0°	-	8°
N	6			6		
aaa	0.10			.004		
bbb	0.20			.008		
ccc	0.20			.008		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	(2.50)	(.098)
G	1.40	.055
P	0.95	.037
X	0.60	.024
Y	1.10	.043
Z	3.6	.141

Contact information

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