



## Description

The SE9205 is a four-channel Electro-Static Discharge (ESD) Protection device that is designed to protect sensitive IC's from damage or latch-up due to ESD stress. It is designed to replace multilayer varistors(MLVs) in portable applications such as cell phone, notebook computer, PDA's, digital still camera, and other similar electronic devices. It offers desirable characteristics for board level protection, including fast response time, low operating voltage, and low channel-to-channel capacitance.

The SE9205 is housed in a SOT-23-6L package that is ideal for use in portable electronics such as cell phone, PDA's, notebook computer, and digital still cameras.

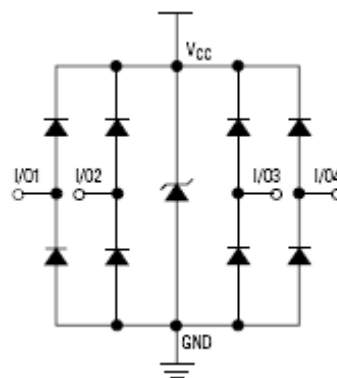
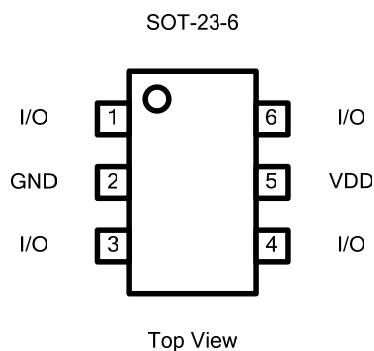
## Features

- Four-channel protection.
- Low channel-to-channel capacitance at 3pF typical.
- Working voltage: V<sub>dd</sub>=5V is optional.
- Low leakage current.
- Available in SOT-23-6L packages.

## Application

- USB removable devices
- PDAs/Cell Phones
- Notebooks & Handhelds
- Portable Instrumentation
- Digital camera
- Peripherals
- MP3 Players

## Pin Configuration





**Absolute Maximum Ratings<sup>(1)</sup>**

Supply Input Voltage (VDD) ..... +5V  
 Power Dissipation (PD) ..... Internally Limited <sup>(3)</sup>  
 Junction Temperature (TJ) ..... 150°C  
 Lead Temperature (soldering, 5 sec.) ..... 260°C  
 Storage Temperature (TS) ..... -40°C to +150°C

**Operating Ratings<sup>(2)</sup>**

Supply Input Voltage (VDD) ..... 5.0V  
 Junction Temperature (TJ) ..... 0°C to +125°C  
 Package Thermal Resistance  
 230°C/W (SOT-23-6L)

**Electrical Characteristics (T<sub>J</sub> = 25°C)**

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>DD</sub>	Reverse Standoff Voltage	I = 10μA	--	5	-	V
I <sub>LEAK</sub>	Reverse Standoff Leakage current	V = 5.0V		1	100	nA
V <sub>C</sub>	Signal Clamp Voltage					
	Positive	I = 10mA	5.6	6.8	8	V
	Negative	I = 10mA	-1.2	-0.8	-0.4	
	Clamp Voltage during ESD MIL-STD-883 Method 3015 ( HBM )					
	8kV		--	12	--	V
	8kV		--	-8	--	
	ESD Test Level <sup>(4)</sup>					
	IEC-61000-2, Contact Discharge		20	--	--	kV
	MIL-STD-883 Method 3015 ( HBM )		30	--	--	
	Channel-to-GND Capacitance	0V @ 1 MHz	--	4	--	pF
	Channel-to-Channel Capacitance	0V @ 1 MHz	--	3	--	pF
	Turn on / off time		--	1	--	ns
	Temperature Range					
	Operating		-40	--	85	°C
	Storage		-65	--	150	
	Diode Dynamic Resistance					
	Forward Conduction		--	1	--	V
	Reverse Conduction		--	1.4	--	

**Note 1:** Exceeding the absolute maximum rating may damage the device.

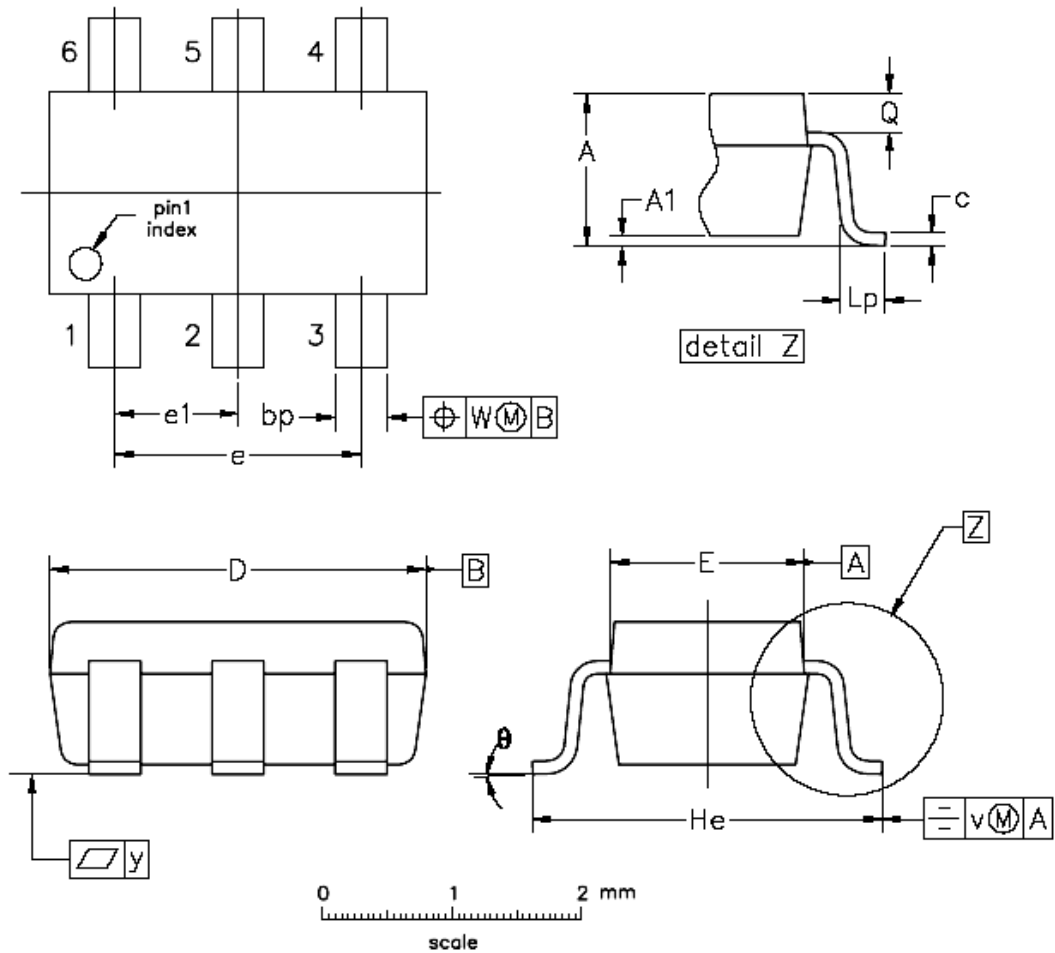
**Note 2:** The device is not guaranteed to function outside its operating rating.

**Note 3:** The maximum allowable power dissipation at any TA (ambient temperature) is calculated using: P<sub>D(MAX)</sub> = (T<sub>J(MAX)</sub> - T<sub>A</sub>)/θ<sub>JA</sub>. Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown.

**Note 4:** ESD Voltage applied between channel pins and ground, one pin at a time; all other channel pins are open; all ground pins are grounded.



OUTLINE DRAWING SOT-23-6L



UNIT	A	A1	bp	c	D	E	e	e1	He	Lp	Q	v	w	y	$\theta$
mm	1.3 1.0	0.15 0.03	0.50 0.35	0.20 0.10	3.1 2.7	1.7 1.3	1.9	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1	0° 10°



## Contact Information

### Seaward Electronics Incorporated – China

Room 1605, Building 1, International Pioneering Park, #1 Shangdi Xinxi Rd.

Haidian District, Beijing 100085, China

Tel: 86-10-8289-5700/01/05

Fax: 86-10-8289-5706

Email: [sales@seawardinc.com.cn](mailto:sales@seawardinc.com.cn)

### Seaward Electronics Corporation – Taiwan

2F, #181, Sec. 3, Min Quan East Rd.

Taipei, Taiwan R.O.C

Tel: 886-2-2712-0307

Fax: 886-2-2712-0191

Email: [sales@seawardinc.com.tw](mailto:sales@seawardinc.com.tw)

### Seaward Electronics Incorporated – North America

1512 Centre Pointe Dr.

Milpitas, CA95035, USA

Tel: 1-408-821-6600

Last Updated - 5/23/2007

---

Revision 5/23/2007

**Preliminary and all contents are subject to change without prior notice**

© Seaward Electronics Inc., 2006. • [www.seawardinc.com](http://www.seawardinc.com) • Page 4