

### Features and Benefits

- 4.5V to 24V Operation
- -40°C to 150°C Superior temperature operation
- Bipolar technology
- Open-collector 25 mA output
- Reverse battery protection
- Small Size-SOT23 3L
- Solid-state reliability
- Resistant to physical stress
- Activate with small, commercially available Permanent magnets

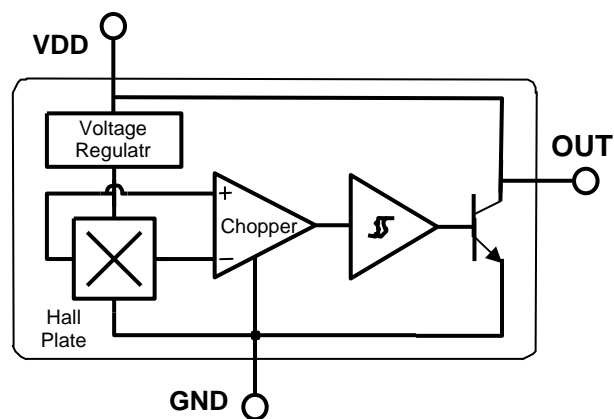
### Application Examples

- Automotive, Consumer and Industrial
- Solid-state switch
- Brushless DC motor commutation
- Speed detection
- Linear position detection
- Angular position detection
- Proximity detection



3 pin SOT23 (suffix SO)

### Functional Block Diagram



SOT Package  
 Pin 1 – V<sub>DD</sub>  
 Pin 2 – OUT  
 Pin 3 – GND

### General Description

The S1103 is a unipolar Hall-effect sensor IC fabricated from bipolar technology. The device integrates a voltage regulator, reverse battery protection diode, Hall sensor with dynamic offset cancellation system, temperature compensation circuitry, small signal amplifier, Schmitt trigger and an open-collector output to sink up to 25 mA. With suitable output pull up, they can be used with bipolar or CMOS logic circuits.

These Hall-effect switches are monolithic integrated circuits

with tighter magnetic specifications, designed to operate continuously over extended temperatures to +150°C, and are more stable with both temperature and supply voltage changes. The unipolar switching characteristic makes these devices ideal for use with a simple bar or rod magnet.

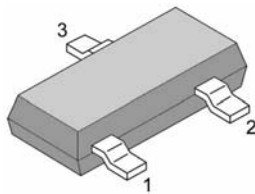
Thanks to its wide operating voltage range and extended choice of temperature range, it is quite suitable for use in automotive, industrial and consumer applications.

### Glossary of Terms

MilliTesla (mT),	Gauss	Units of magnetic flux density: 1mT = 10 Gauss
RoHS		Restriction of Hazardous Substances
Operating Point ( $B_{OP}$ )		Magnetic flux density applied on the branded side of the package which turns the output driver ON ( $V_{OUT} = V_{DSon}$ )
Release Point ( $B_{RP}$ )		Magnetic flux density applied on the branded side of the package which turns the output driver OFF ( $V_{OUT} = \text{high}$ )

### Pin Definitions and Descriptions

SOT Pin №	Name	Type	Function
1	VDD	Supply	Supply Voltage pin
2	OUT	Output	Open Drain Output pin
3	GND	Ground	Ground pin



### Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Supply Voltage	VDD	28	V
Supply Current	IDD	50	mA
Output Voltage	VOUT	28	V
Output Current	IOUT	50	mA
Storage Temperature Range	TS	-65 to 170	°C

Absolute maximum ratings

Operating Temperature Range	Symbol	Value	Units
Temperature Suffix "E"	TA	-40 to 85	°C
Temperature Suffix "K"	TA	-40 to 125	°C
Temperature Suffix "L"	TA	-40 to 150	°C

Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute-maximum- rated conditions for extended periods may affect device reliability

### General Electrical Specifications

DC Operating Parameters  $T_A = 25^\circ\text{C}$ ,  $V_{DD} = 4.5\text{V to } 24\text{V}$  (unless otherwise specified)

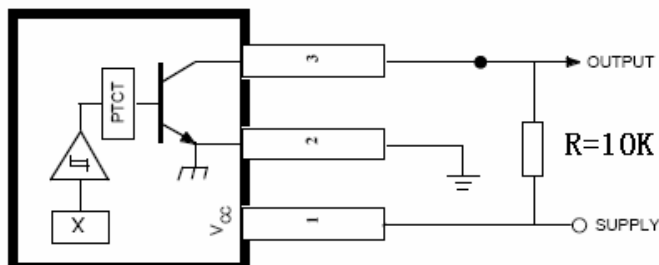
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	VDD	Operating	4.5		24	V
Supply Current	I <sub>DD</sub>	$B < B_{RP}$	4	5	7	mA
Output Saturation Voltage	V <sub>DSon</sub>	$I_{OUT} = 20\text{mA}$ , $B > B_{OP}$		0.3	0.5	V
Output Leakage Current	I <sub>OFF</sub>	$B < B_{RP}$ $V_{OUT} = 24\text{V}$		0.1	10	$\mu\text{A}$
Output Rise Time	t <sub>r</sub>	$R_L = 820\Omega$ , $C_L = 20\text{pF}$		0.04	2.0	$\mu\text{s}$
Output Fall Time	t <sub>f</sub>	$R_L = 820\Omega$ , $C_L = 20\text{pF}$		0.18	2.0	$\mu\text{s}$

### Magnetic Specifications

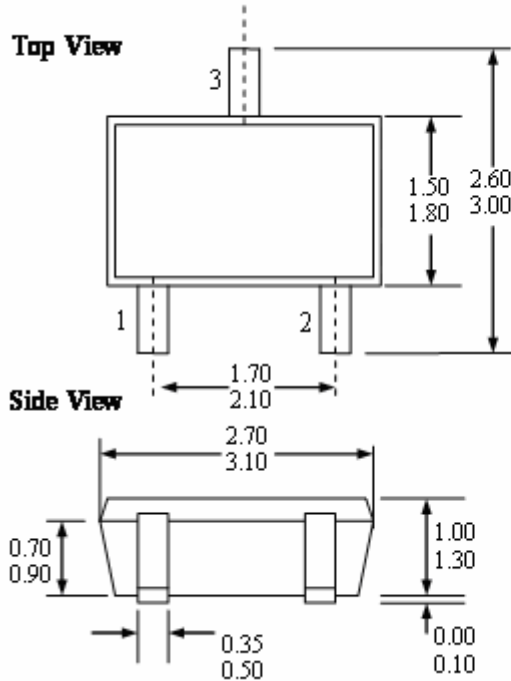
DC Operating Parameters  $V_{DD} = 4.5\text{V to } 24\text{V}$  (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operating Point	$B_{OP}$	$T_a = 25^\circ\text{C}$ , $V_{dd} = 12\text{V DC}$	150	170	190	G
Release Point	$B_{RP}$		100	125	160	G
Hysteresis	$B_{HYS}$			45		G

### Application Information



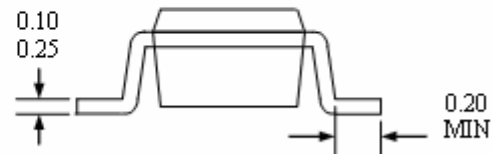
**Package LH, 3-Pin SOT-23:**



**Notes:**

- 1). PINOUT: Pin 1 VDD  
Pin 2 Output  
Pin 3 GND
- 2). All dimensions are in millimeters ;

**End View**



**Ordering Information**

Part No.	Pb-free	Temperature Code	Package Code	Packing
SS1103ESOT	YES	-40°C to 85°C	SOT-23	7-in. reel, 3000 pieces/reel
SS1103KSOT	YES	-40°C to 125°C	SOT-23	7-in. reel, 3000 pieces/reel
SS1103LSOT	YES	-40°C to 150°C	SOT-23	7-in. reel, 3000 pieces/reel