SS118

Unipolar Hall-Effect Digital Switch

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

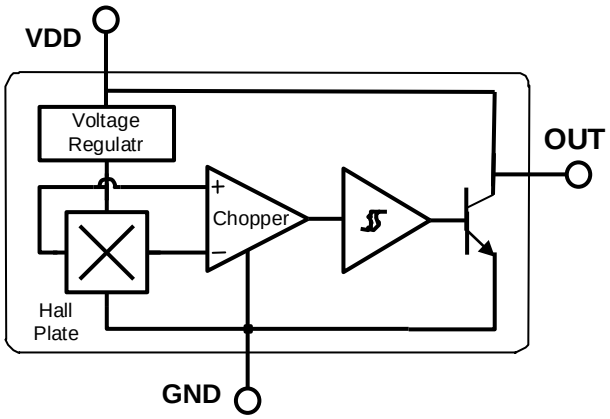
Application Examples

- 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_{DD}
Pin 2 – OUT
Pin 3 – GND

General Description

The SS118 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.

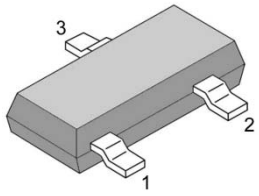
Thanks to its wide operating voltage range and extended choice of temperature range, it is quite suitable for use in automotive, industrial and consumer applications.

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} = 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

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General Electrical Specifications

DC Operating Parameters T_A = 25° C, V_{DD}= 4.5V to 24V (unless otherwise specified)

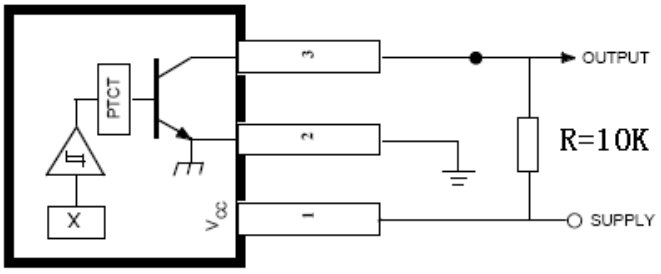
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Supply Voltage	VDD	Operating	4.5		24	V
Supply Current	IDD	B < B_{RP}	4	5	7	mA
Output Saturation Voltage	VDSon	IOUT = 20mA, B > B_{OP}		0.3	0.5	V
Output Leakage Current	IOFF	B < B_{RP} VOUT = 24V		0.1	10	μA
Output Rise Time	tr	RL = 820Ω, CL = 20pF		0.04	2.0	μs
Output Fall Time	tf	RL =820Ω, CL = 20pF		0.18	2.0	μs

Magnetic Specifications

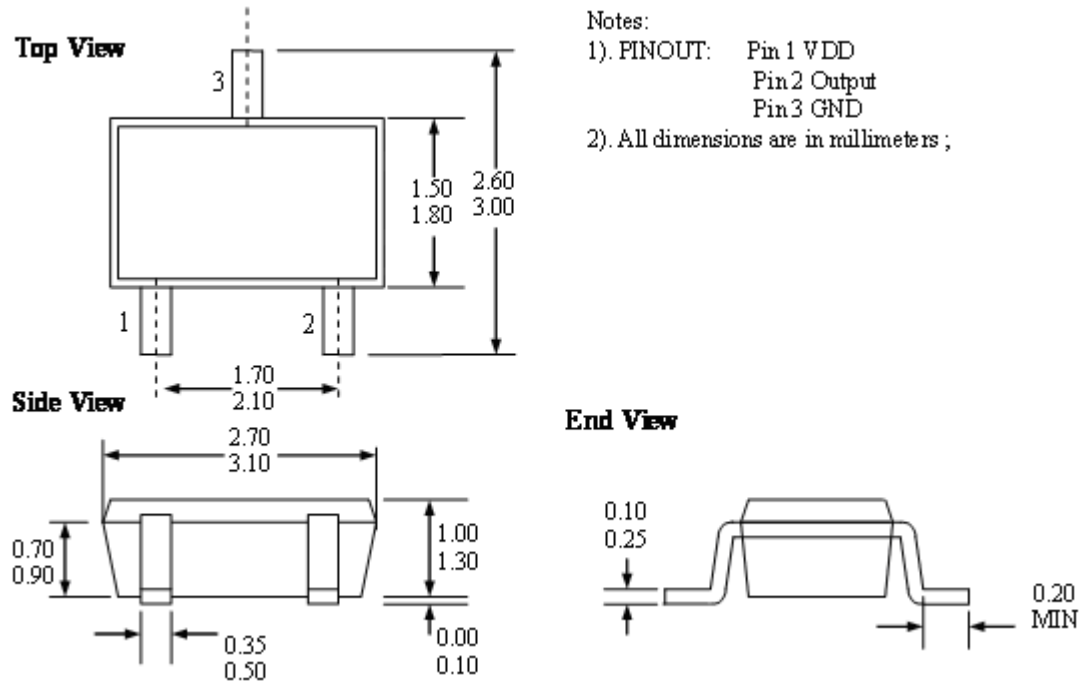
DC Operating Parameters V_{DD} = 4.5V to 24V (unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Operating Point	B_{OP}	Ta=25° C,Vdd=12V 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 ;

Ordering Information

Part No.	Pb-free	Temperature Code	Package Code	Packing
SS118ESOT	YES	-40°C to 85°C	SOT-23	7-in. reel, 3000 pieces/reel
SS118KSOT	YES	-40°C to 125°C	SOT-23	7-in. reel, 3000 pieces/reel
SS118LSOT	YES	-40°C to 150°C	SOT-23	7-in. reel, 3000 pieces/reel