
Low Cost Linear Hall Effect Sensor IC

FEATURES

- 4.5 to 5.5V wide supply voltage range
- Single current sourcing output
- Low noise output eliminates the need for filtering
- -40°C to 125°C wide ambient temperature range
- Responds to either positive or negative gauss
- Resistant to mechanical stress
- 3-pin SIP and SOT23 package is available

APPLICATIONS

- Motor control
- Position sensing
- Current sensing
- Magnetic code reading
- Ferrous metal detector
- Weigh and liquid level sensing

DESCRIPTION

SC4001 is a small, economical, linear Hall sensor chip whose output voltage varies proportionally to the supply voltage and to the intensity of the magnetic field it induces.

The SC4001's zero output voltage (without magnetic field) defaults to half of the supply voltage, with a typical sensitivity of 1.4 mV/Gs.

The typical working voltage of the chip is 5.0V, the limit voltage can be up to 30V, the working temperature range supports -40--125 °C , suitable for commercial, consumer and industrial fields.

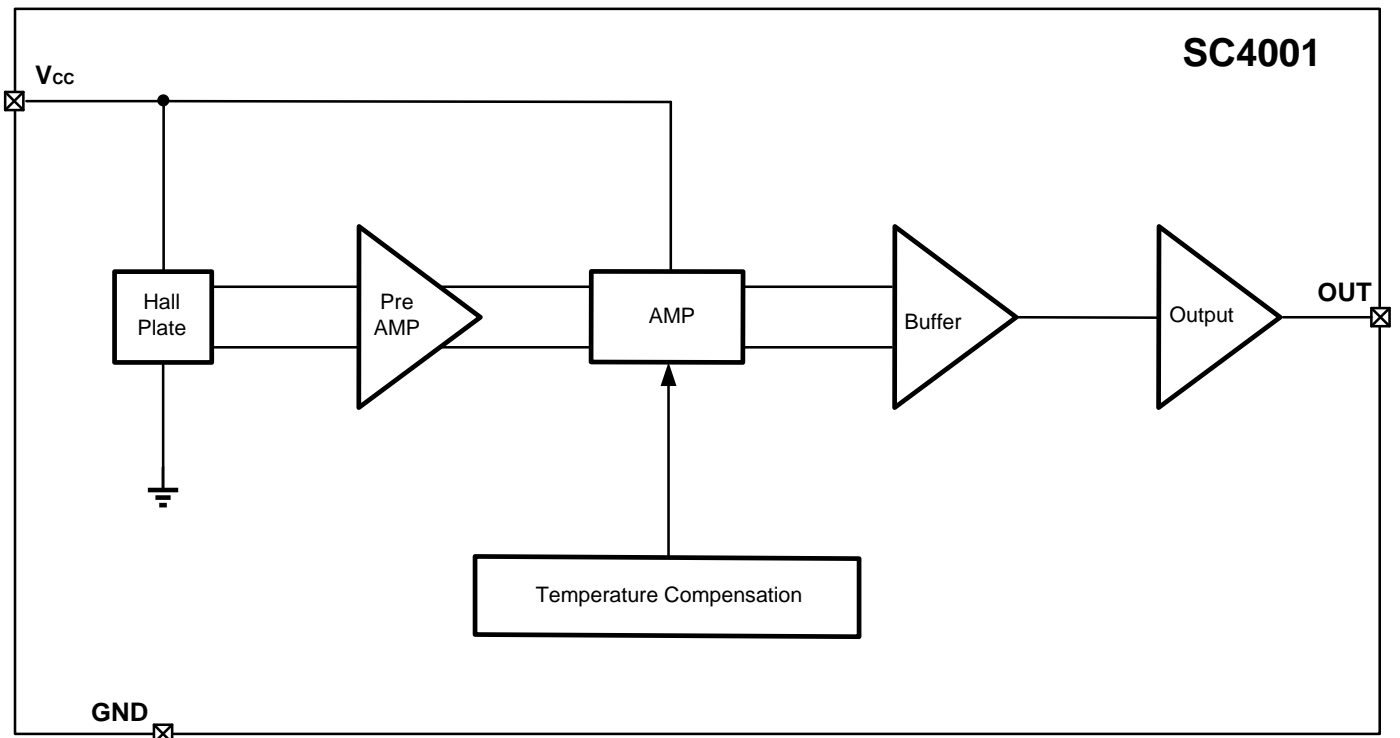
These devices are available in a 3-pin SIP package (UA) and a 3-pinSOT-23 style package (SE). Both packages are lead (Pb) free, with 100% matte tin lead frame plating.



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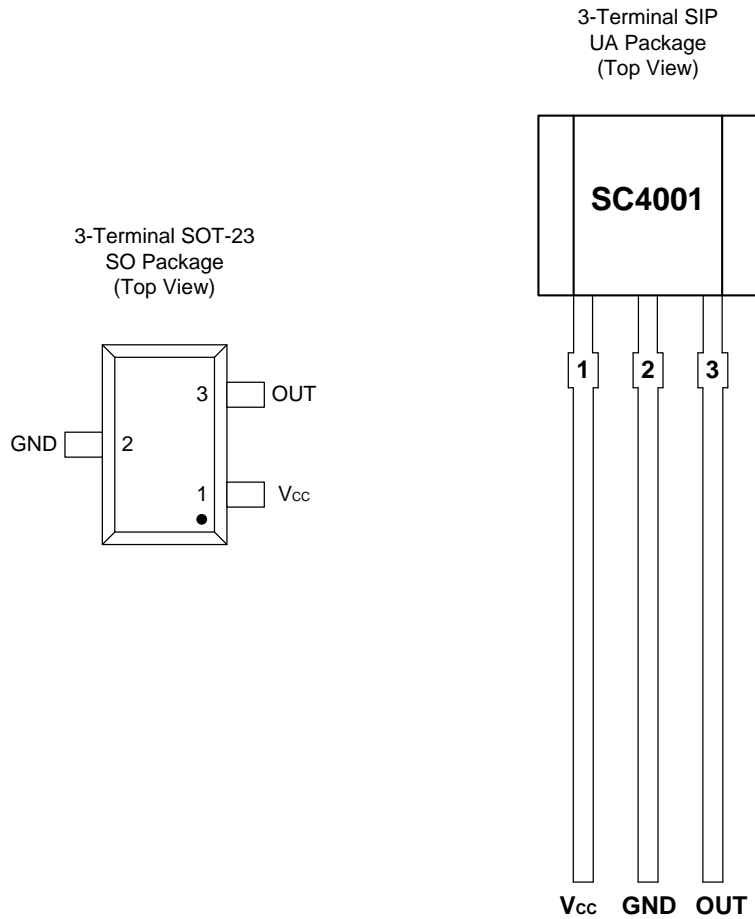
BLOCK DIAGRAM



ORDERING INFORMATION

Part Number	Packing	Mounting	Ambient, TA	Marking
SC4001UA	1000 pcs/Bag	SIP3	-40°C to 125°C	4001
SC4001SE	3000 pcs/Reel	SOT23	-40°C to 125°C	4001

TERMINAL CONFIGURATION



Terminal		Type	Description
Name	Number		
V _{cc}	1	PWR	4.5V ~ 5.5 V power supply
GND	2	Ground	Ground terminal
OUT	3	Output	Output terminal

ABSOLUTE MAXIMUM RATINGS

over operating free-air temperature range

Parameter	Symbol	Min.	Max.	Units
Power supply voltage	V_{CC}	-0.5	10.0	V
Output terminal voltage	V_{OUT}	-0.3	10.0	V
Supply current	I_{CC}	--	15	mA
Output current	I_{OUT}	--	2	mA
Operating ambient temperature	T_A	-40	125	°C
Operating junction temperature	T_J	-50	165	°C
Storage temperature	T_{STG}	-65	175	°C

Note: Stresses above those listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ESD PROTECTION

Human Body Model (HBM) tests according to: standard JEDEC JS-001-2017

Parameter	Symbol	Min.	Max.	Units
HBM ESD stress voltage	V_{ESD}	-4000	4000	V

THERMAL CHARACTERISTICS

Parameter	Symbol	Test Conditions	Rating	Units
Package thermal resistance	$R_{\theta JA}$	Single-layer PCB, with copper limited to solder pads	166	°C/W

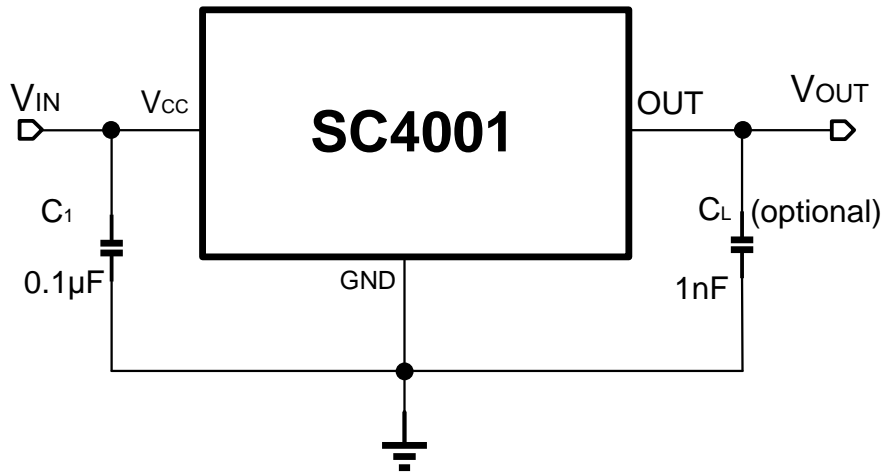
OPERATING CHARACTERISTICS

over operating free-air temperature range ($V_{CC}=5V$, unless otherwise noted)

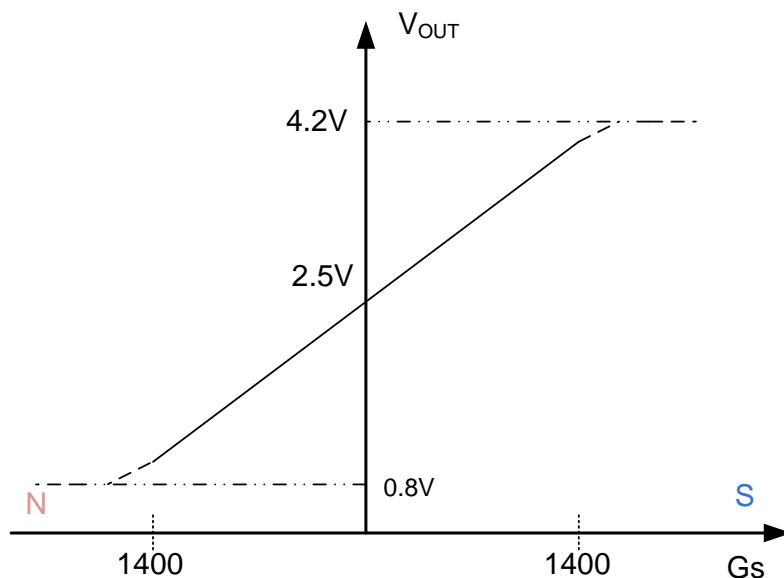
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Supply voltage	V_{CC}	$T_J < T_{J(Max)}$	4.5	5.0	5.5	V
Supply current	I_{CC}	$V_{CC}=5.0V, T_A=25^\circ C$	--	6.5	10.0	mA
Output load resistance	R_L	OUT to GND	4	--	--	k Ω
Output voltage range	$V_{OUT(H)}$	$T_A=25^\circ C, B=1000Gs$	4.0	4.2	--	V
	$V_{OUT(L)}$	$T_A=25^\circ C, B=-1000Gs$	0	0.8	1.0	
Quiescent voltage output	$V_{OUT(Q)}$	$B=0 Gs, T_A=25^\circ C$	2.375	2.5	2.625	V
Sensitivity	Sens	$T_A=25^\circ C$	1.0	1.4	1.9	mV/Gs
Linearity	Lin		-5	--	+5	%
Delta sensitivity vs. temp.	Sens	$T_A = -40^\circ C$ to $105^\circ C$	-20	--	+20	%
Step response time	t_{resp}	Delay the output signal reaching 90%	--	1	--	μS

1Gs = 0.1mT

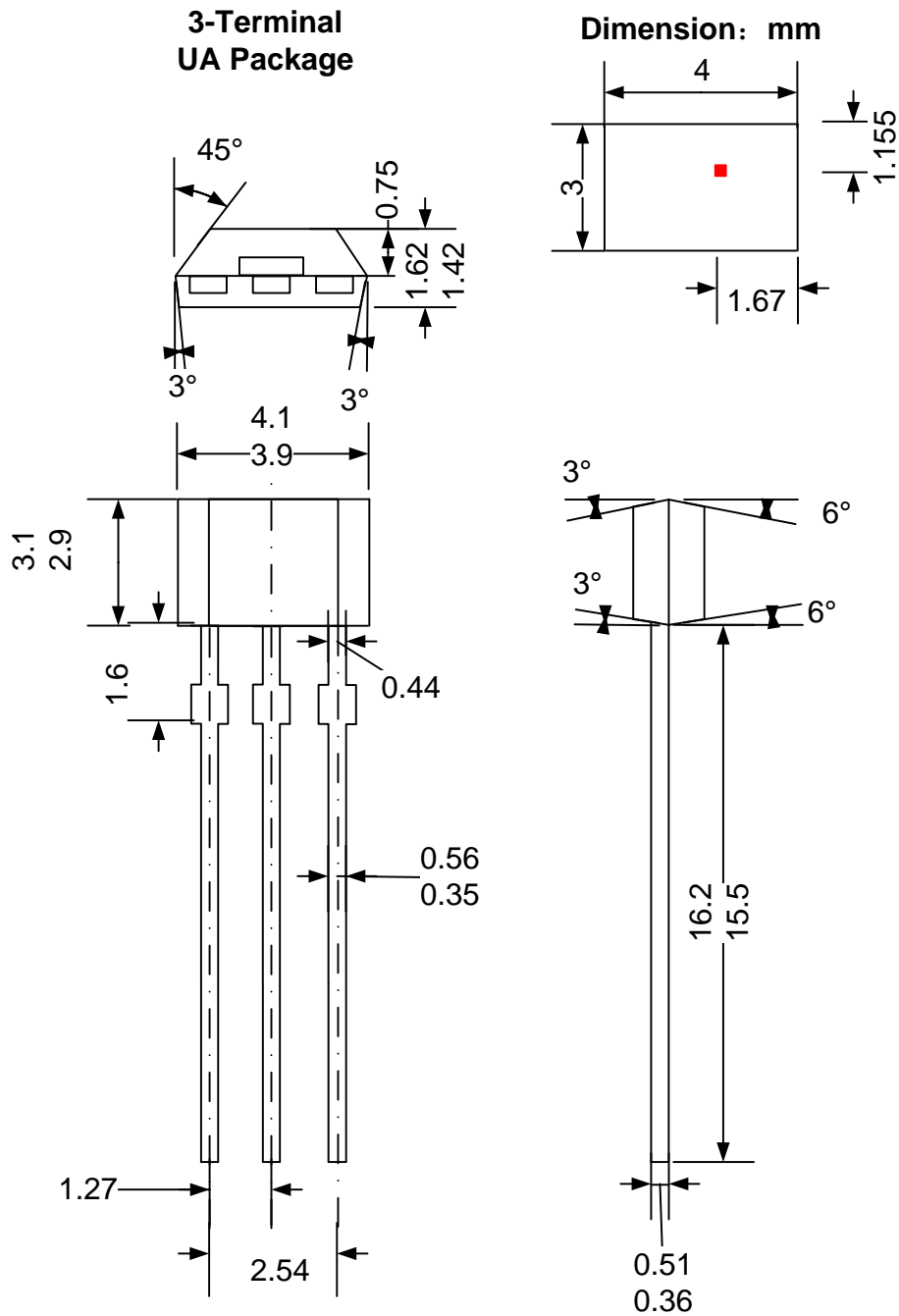
TYPICAL APPLICATION



In the quiescent state (that is, with no significant magnetic field: $B=0$), the output, $V_{OUT(Q)}$, equals to half of the supply voltage, V_{CC} , throughout the entire operating range of V_{CC} . The presence of a South-polarity magnetic field perpendicular to the branded surface of the package increases the output voltage from its quiescent value toward the supply voltage rail. The amount of the output voltage increase is proportional to the magnitude of the magnetic field applied. Conversely, the application of a North polarity field will decrease the output voltage from its quiescent value. This proportionality is specified as the magnetic sensitivity, $Sens$ (mV/Gs), of the device.



PACKAGE INFORMATION



Notes:

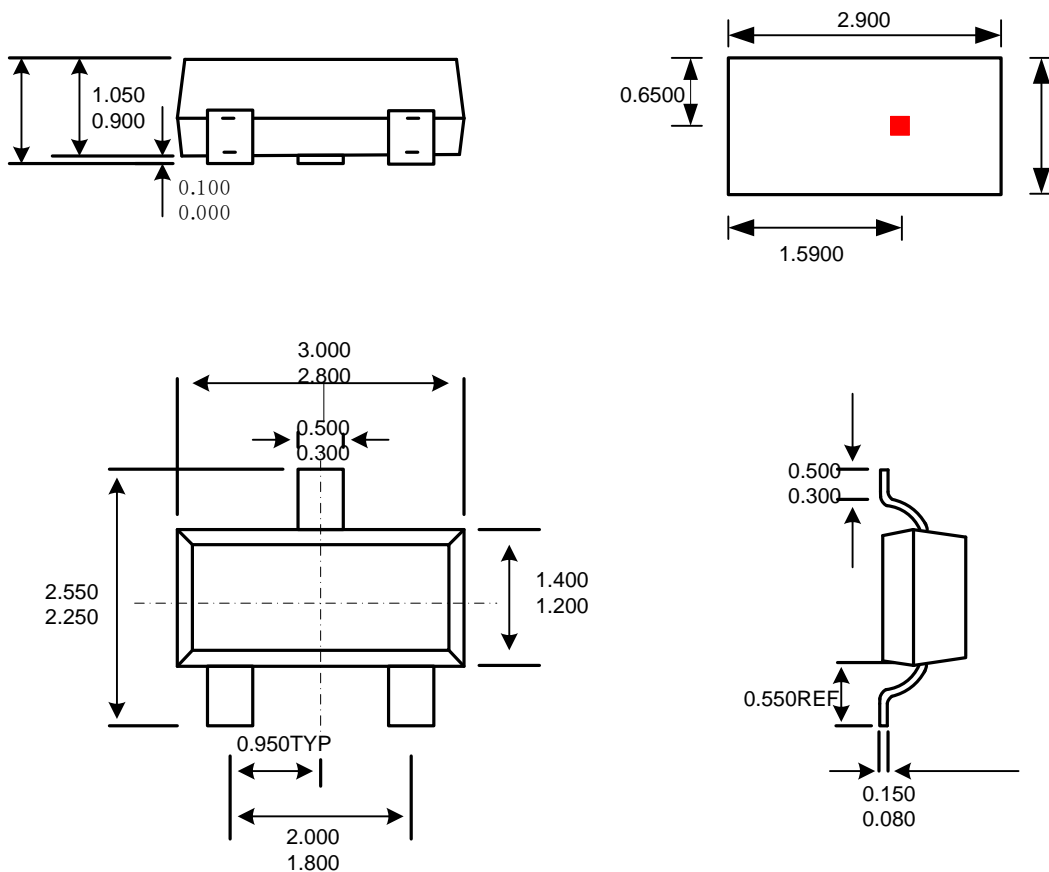
1. Exact body and lead configuration at vendor's option within limits shown.
2. Height does not include mold gate flash.

Where no tolerance is specified, dimension is nominal.

PACKAGE INFORMATION

**3-Terminal
SE Package**

Dimension:mm



Notes:

1. Exact body and lead configuration at vendor's option within limits shown.
2. Height does not include mold gate flash.

Where no tolerance is specified, dimension is nominal.

REVISION HISTORY

Revision	Date	Description
Rev1.0	2017-11-14	Preliminary Datasheet
Rev2.0	2018-09-11	Perfect TYPICAL INFORMATION
Rev2.3	2019-05-04	The final revision of old datasheet
RevA/1.0	2020-11-19	Unified datasheet format

单击下面可查看定价，库存，交付和生命周期等信息

[>>Semiment \(赛卓电子\)](#)