



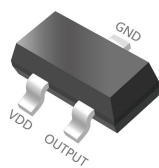
HX3144

High Sensitivity, Unipolar Hall Switch

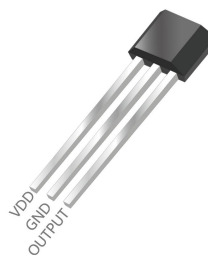
1 Overview

HX3144 The unipolar Hall effect integrated circuit is a magnetic sensor circuit composed of power supply reverse connection protection, internal voltage stabilizing unit, Hall voltage generator, differential amplifier, Schmitt trigger and open collector output stage. Its input is the magnetic induction intensity, and the output is a digital voltage signal. It is a magnetic sensitive circuit that works with a single magnetic pole and is suitable for working with rectangular or cylindrical magnets.

HX3144 allowable -40°C ~ 125°C temperature range operation, power supply voltage operating range from 2.5V arrive 24V , the load current capability can be up to 50mA . The packaging form is SOT-23 and TO-92S, all comply with halogen-free standards.



SOT-23 encapsulation



TO-92S encapsulation

2, features and advantages

Adopt advanced DMOS craftsmanship

Reverse bias protection on supply pins

Wide power supply voltage range and large output current

100% pass 125°C temperature detection

switch is fast and has no instantaneous jitter.

High bandwidth (0~100kHz) Good protection against high

transient voltages ESD Electrostatic properties $>4\text{kV}$ Long life,

small size, easy to install

3, typical application

Brushless DC motor

contactless switch

position control

current sensor

security alarm device

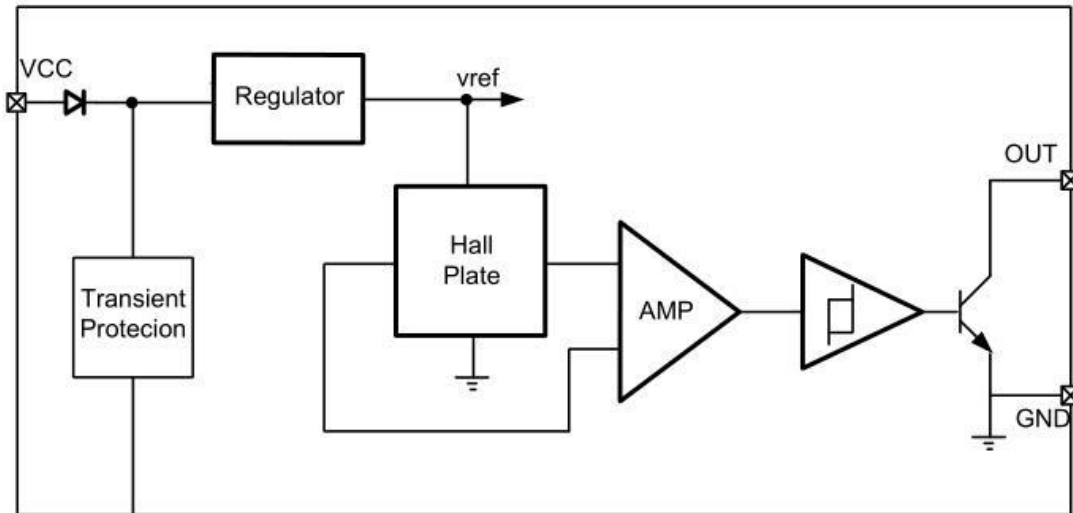
Isolation testing

Speed detection

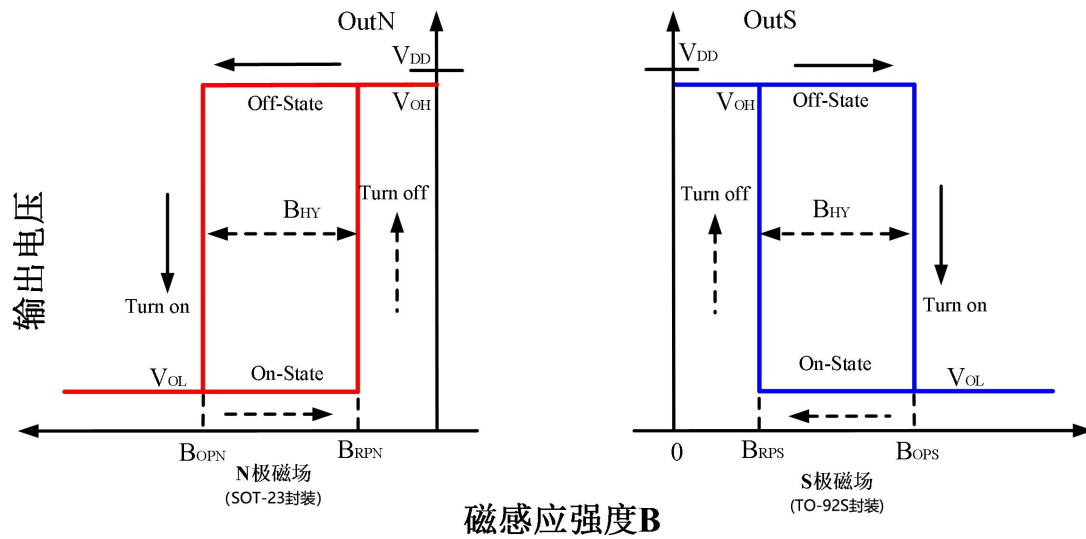
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4, functional block diagram



5, magnetolectric conversion diagram



6, Ordering Information

Product number	Package information	smallest packaging	Operating temperature	Product silk screen
HX3144KSO	SO(SOT-23)	3k	K(-40°C~125°C)	44xx
HX3144KUA	UA(TO-92S)	1k	K(-40°C~125°C)	3144xxx

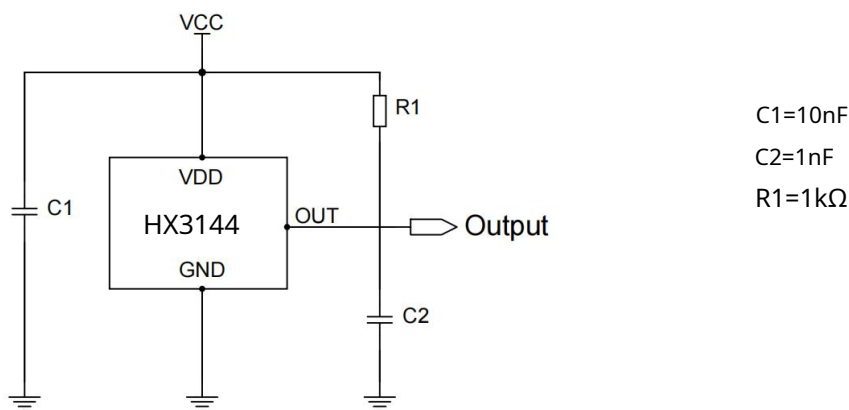
7, limit parameter(TA=25°C)

parameter	numerical value	unit
Supply voltage (VDD)	- 28~28	V
The output voltage(VOUT)	0.5~twenty four	V
Magnetic field threshold	Unlimited	Gauss
Output current(IOUT)	50	mA
Operating temperature(TA)	- 40~125	°C
Storage temperature(TS)	- 55~165	°C
Static electricity level (ESD)	4000	V

8, Magnetoelectric parameters(TA=25°C,VDD=12V)

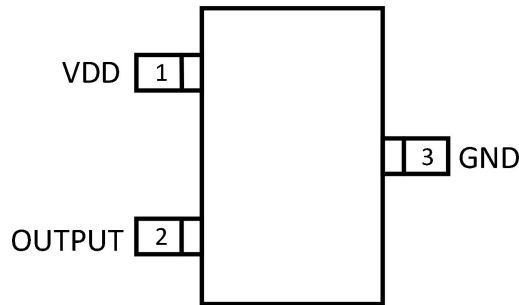
parameter	Test Conditions	minimum value	Typical value	maximum value	unit
Supply voltage (VDD)	--	2.5	--	24.0	V
Supply current (IDD)	VDD=5V,B<Bop	--	2.5	5.0	mA
Output saturation voltage (Vsat)	I _{OUT} = 20 mA,B>Bop	--	--	400.0	mV
Output leakage current (I _{off})	I _{OFF} ,B<Brp,V _{out} =20V	--	--	10.0	μA
Output rise time (TR)	R1=1kΩ,C2=20pF	--	0.04	0.45	μS
Output fall time (TF)	R1=1kΩ,C2=20pF	--	0.18	0.45	μS
Conversion frequency (w _{xya})	--	--	--	100	kHz
opening point (BOP)	--	60	--	100	Gauss
closing point (BRP)	--	40	--	80	Gauss
Hysteresis (BHYS)	--	--	20	--	Gauss
Static Protection(ESD)	HMB	4000	--	--	V

9,Recommended circuit



10. Pin definition

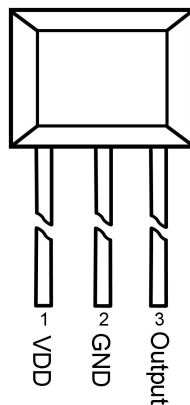
SOT-23



Pin structure (top view)

Pin name	serial number	Function description
VDD	1	Power input terminal
Output	2	Output
GND	3	Ground terminal

TO-92S

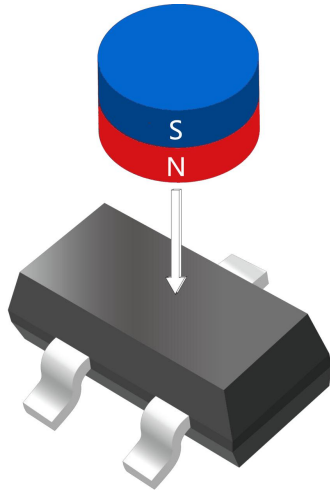


Pin structure (top view)

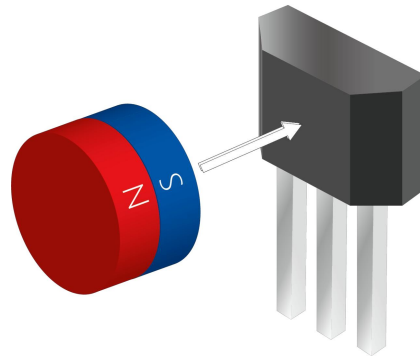
Pin name	serial number	Function description
VDD	1	Power input terminal
GND	2	Ground terminal
Output	3	Output

11. Sensing direction

SOT-23

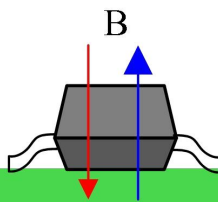


TO-92S

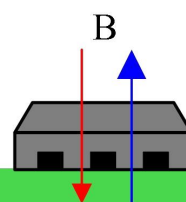


As shown above, HX3144 The product is sensitive to both the magnetic field where the magnetic field lines pass vertically from the bottom of the chip to the top of the chip and the magnetic field which passes vertically from the top of the chip to the bottom of the chip. Take the silk screen surface as the front, HX3144, SOT-23 package pair N sensitive to polar magnetic fields; TO-92S package pair S sensitive to polar magnetic fields.

SOT-23



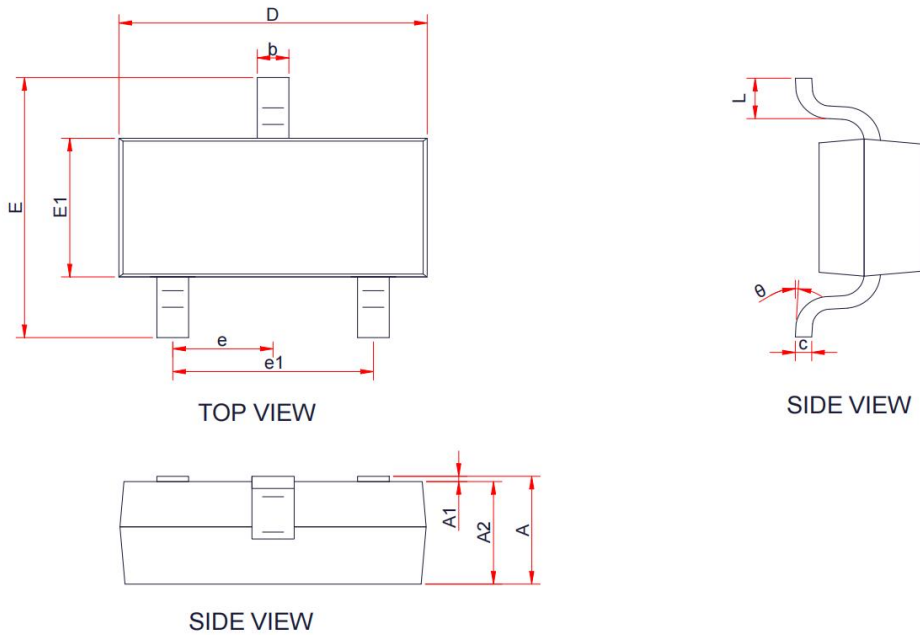
TO-92S



PCB

12.Package size_SOT-23(unit:mm)

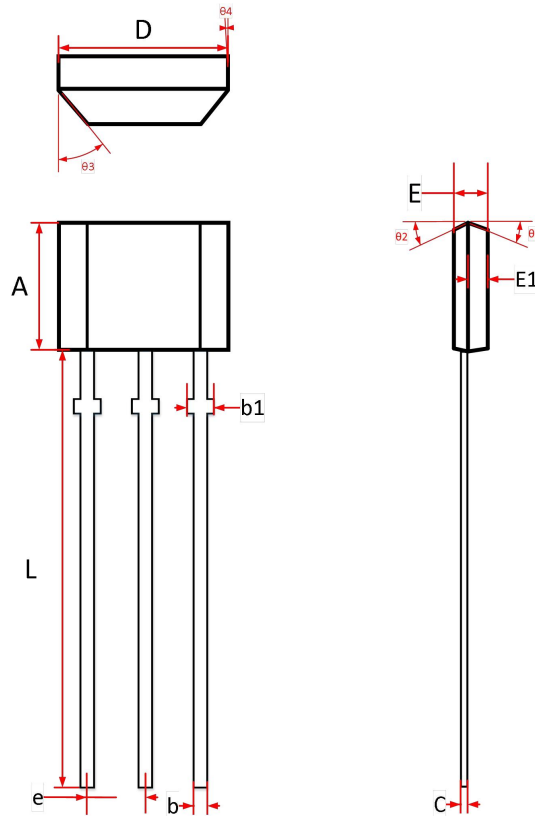
SOT-23



Symbol	Dimensions in Millimeters		
	Min	Typ	Max
A	--	--	1.22
A1	0.00	--	0.1
A2	1.00	1.10	1.15
b	0.30	--	0.50
c	0.10	--	0.20
D	2.82	2.95	3.02
E	2.65	2.80	2.95
E1	1.50	1.65	1.70
e	0.85	0.95	1.05
e1	1.80	1.90	2.00
L	0.30	0.45	0.60
θ	0°	--	8°

13.Package size_TO-92S(unit:mm)

TO-92S



Symbol	Dimensions in Millimeters		
	Min	Typ	Max
A	2.90	3.00	3.10
b	0.35	0.39	0.50
b1	0.40	0.44	0.55
C	0.36	0.38	0.45
D	3.90	4.00	4.10
E	1.42	1.52	1.62
E1	--	0.75	--
e	1.27TYP		
L	13.50	14.50	15.50
θ1	--	6°	--
θ2	--	3°	--
θ3	--	45°	--
θ4	--	3°	--

14,Reminder

Warm reminder from Huaxin

- 1.Hall is a sensitive device. Please pay attention to taking electrostatic protection measures during use and storage.
- 2.During the installation process of the Hall, try to avoid exerting mechanical stress on the Hall body. If the pins need to be bent, please 3mm operate outside the scope.
- 3.Recommended soldering temperature: soldering iron soldering, recommended temperature 350°C, longest 5 Second. Wave soldering: recommended maximum temperature 260°C, longest 3 Second. Infrared reflow soldering: highest recommended 245°C, longest 10 Second.
- 4.It is not recommended to exceed the parameters in the data sheet. Although the Hall will work normally under extreme parameters, being exposed to extreme conditions for a long time may cause damage to the Hall or the actual product. In order to ensure the normal operation of the Hall and the safety of the product Stability, please use within the permissions of the data sheet.