

HX3144 is an unipolar Hall effect sensor IC. It incorporates advanced chopper stabilization technology to provide accurate and stable magnetic switch points. The design, specifications and performance have been optimized for applications of solid state switches.

The output transistor will be switched on (BOP) in the presence of a sufficiently strong South pole magnetic field facing the marked side of the package. Similarly, the output will be switched off (BRP) in the presence of a weaker South field and remain off with “0” field.

The package type in a Halogen Free version was verified by third party organization. Halogen Free package is available by customer’s option.

### ***Features and Benefits***

- DMOS Hall IC Technology.
- Reverse bias protection on power supply pin.
- Solid-State Reliability.
- Chopper stabilized amplifier stage.
- Unipolar, output switches with absolute value of South pole from magnet.
- Operation down to 3.0V.
- High Sensitivity for direct reed switch replacement applications.
- 100% tested at 125 for K Spec.
- Custom sensitivity / Temperature selection are available.
- Good ESD Protection.

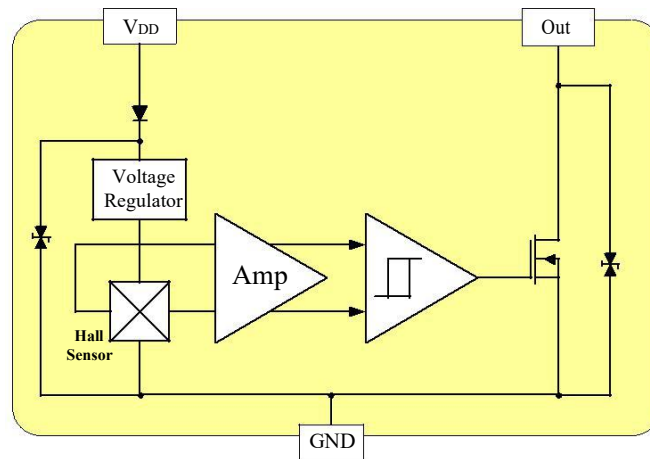
### ***Applications***

- Solid state switch
- Limit switch
- Current limit
- Interrupter
- Current sensing
- Magnet proximity sensor for reed switch replacement

### ***Ordering number***

Part No.	Temperature Suffix	Package Type
HX3144UA	(-40°C to + 125°C)	(TO-92S)
HX3144ESO	(-40°C to + 105°C)	(SOT-23)

### ***Functional Diagram***



**Absolute Maximum Ratings At ( $T_a=25^{\circ}\text{C}$ )**

Characteristics		Values	Unit
Supply voltage, ( $V_{DD}$ )		28	V
Output Voltage, ( $V_O$ )		28	V
Reverse Voltage, ( $V_{DD}$ )		-28	V
Magnetic flux density		Unlimited	Gauss
Output current, ( $I_{OUT}$ )		50	mA
Operating Temperature Range, ( $T_a$ )		-40 to +125	$^{\circ}\text{C}$
Storage temperature range, ( $T_s$ )		-55 to +150	$^{\circ}\text{C}$
Maximum Junction Temp, ( $T_j$ )		150	$^{\circ}\text{C}$
Thermal Resistance	( $\theta_{ja}$ )	206	$^{\circ}\text{C}/\text{W}$
	( $\theta_{jc}$ )	148	$^{\circ}\text{C}/\text{W}$
Package Power Dissipation, ( $P_D$ )		606	mW

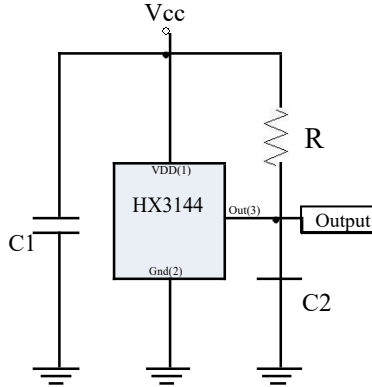
*Note: Do not apply reverse voltage to  $V_{DD}$  and  $V_{OUT}$  Pin, It may be caused for Miss function or damaged device.*

**Electrical Specifications**

*DC Operating Parameters  $T_A=+25^{\circ}\text{C}$ ,  $V_{DD}=12\text{V}$*

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, ( $V_{DD}$ )	Operating	3.0		24.0	V
Supply Current, ( $I_{DD}$ )	$B < B_{OP}$		2.5	5.0	mA
Output Saturation Voltage, ( $V_{Sat}$ )	$I_{OUT} = 20\text{ mA}$ , $B > B_{OP}$			400.0	mV
Output Leakage Current, ( $I_{off}$ )	$I_{OFF}$ $B < B_{RP}$ , $V_{OUT} = 20\text{V}$			10.0	$\mu\text{A}$
Output Rise Time, ( $T_R$ )	$R_L=1\text{k}\Omega$ , $C_L=20\text{pF}$		0.04	0.45	$\mu\text{S}$
Output Fall Time, ( $T_F$ )	$R_L=820\Omega$ ; $C_L=20\text{pF}$		0.18	0.45	$\mu\text{S}$
Electro-Static Discharge	HMB	4			KV
Operate Point, ( $B_{OP}$ )		60		100	Gauss
Release Point, ( $B_{RP}$ )		40		80	Gauss
Hysteresis, ( $B_{HYS}$ )			20		Gauss

**Typical application circuit**

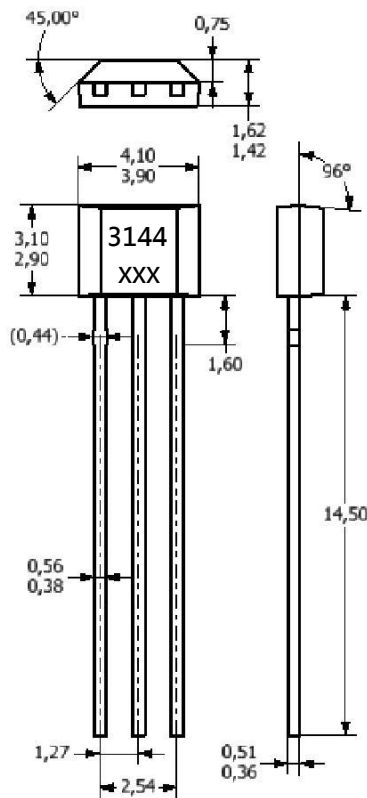


R 1KΩ  
C1 10nF  
C2 1nF

**Sensor Location, Package Dimension and Marking**

**HX3144 Package**

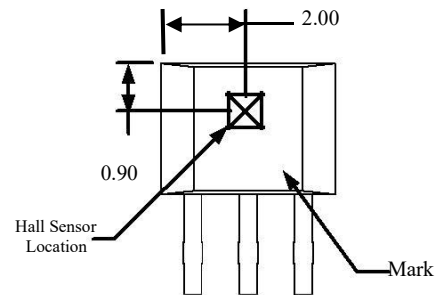
**UA Package**



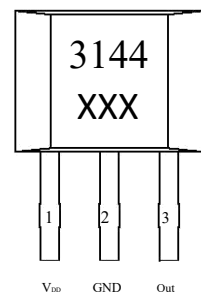
**NOTES:**

- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface.
- 4).PINOUT:  
Pin 1 VDD  
Pin 2 GND  
Pin 3 Output

**Hall Chip location**



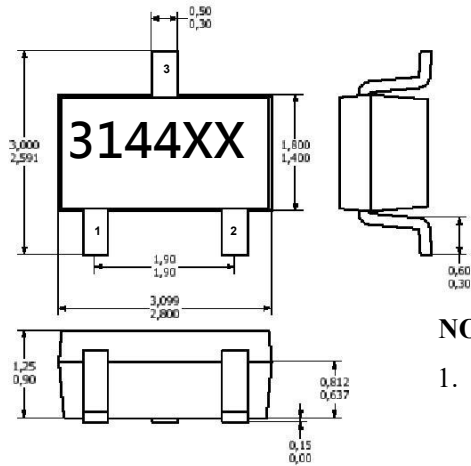
**Output Pin Assignment (Top view)**



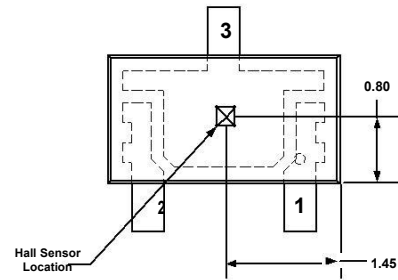
## HX3144 Specifications

### General Purpose Unipolar Hall Effect Switch

**Package (SOT-23)**  
**(Top View)**



**Hall Plate Chip Location**  
**(Bottom view)**



**NOTES:**

1. PINOUT (See Top View at left :)  
Pin 1 VCC  
Pin 2 Output  
Pin 3 GND
2. Controlling dimension: mm
3. Lead thickness after solder plating will be 0.254mm maximum