

AR3144 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 UA package 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. Furthermore, SO package output behavior is reversed with UA.

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

- Reverse bias protection on power supply pin.
- Solid-State Reliability.
- Operation down to 3.0V.
- 85°C for E Spec.
- Good ESD Protection.

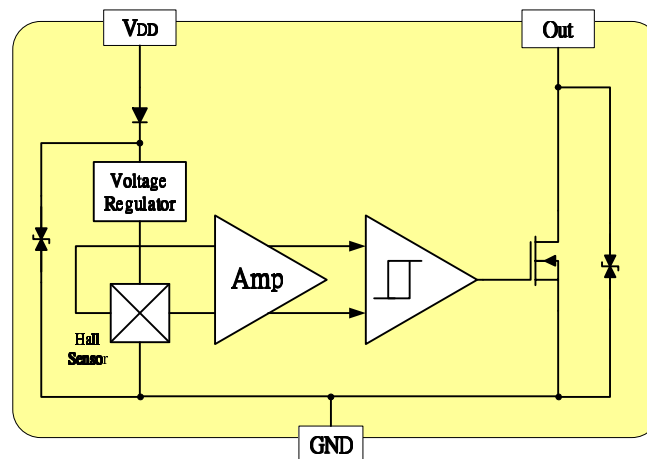
Applications

- 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
AR3144 EUA	E (-40°C to +85°C)	UA(TO-92S)
AR3144 ESO	E (-40°C to +85°C)	SO(SOT-23)

Functional Diagram



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

Characteristics	Values	Unit	
Supply voltage, (V_{DD})	26	V	
Output Voltage, (V_O)	26	V	
Reverse Voltage, (V_{DD})	-26	V	
Magnetic flux density	Unlimited	Gauss	
Output current, (I_{out})	50	mA	
Operating Temperature Range, (T_a)	-40 to +85	$^\circ\text{C}$	
Storage temperature range, (T_s)	-55 to +150	$^\circ\text{C}$	
Maximum Junction Temp, (T_j)	150	$^\circ\text{C}$	
Thermal Resistance	(θ_{ja}) UA / SO	206 / 543	$^\circ\text{C}/\text{W}$
	(θ_{jc}) UA / SO	148 / 410	$^\circ\text{C}/\text{W}$
Package Power Dissipation, (P_D) UA / SO	606 / 230	mW	

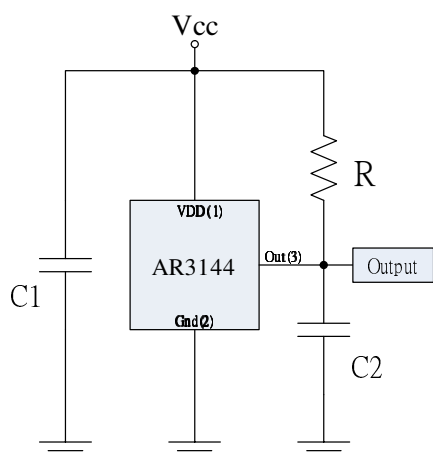
Note: Do not apply reverse voltage to V_{DD} and V_{out} Pin, It may be caused for Miss function or damaged device.

Electrical Specifications

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

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	μA
Output Rise Time, (T_R)	$R_L=1\text{k}\Omega$, $C_L=20\text{pF}$		0.04	0.45	μS
Output Fall Time, (T_F)	$R_L=820\Omega$; $C_L=20\text{pF}$		0.18	0.45	μS
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

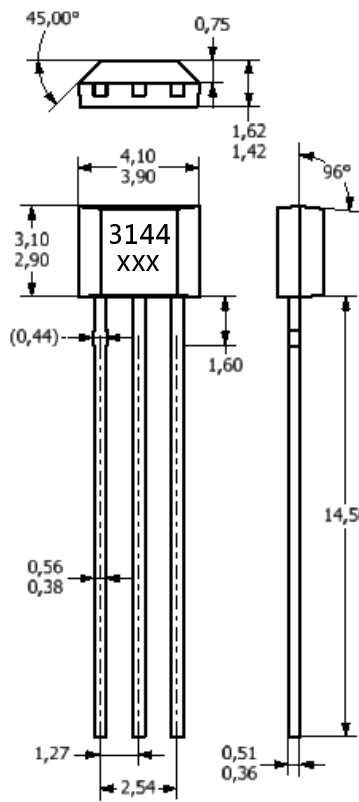
Typical application circuit



R : 1K Ω
C1 : 10nF
C2 : 1nF

Sensor Location, Package Dimension and Marking

UA Package

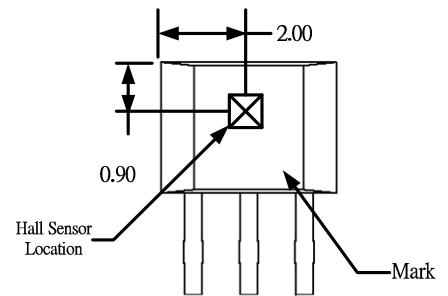


NOTES:

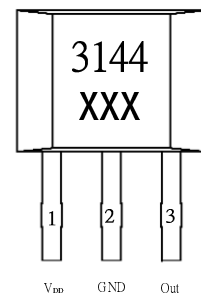
- Controlling dimension: mm
- Leads must be free of flash and plating voids
- Do not bend leads within 1 mm of lead to package interface.
- PINOUT:

Pin 1	V _{DD}
Pin 2	GND
Pin 3	Output

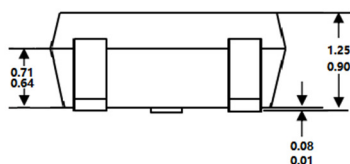
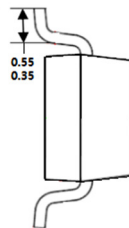
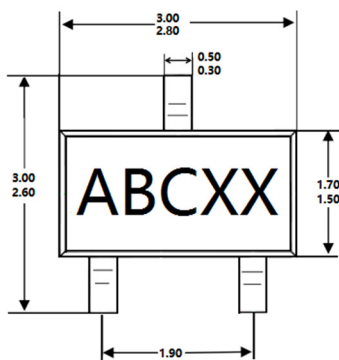
Hall Chip location



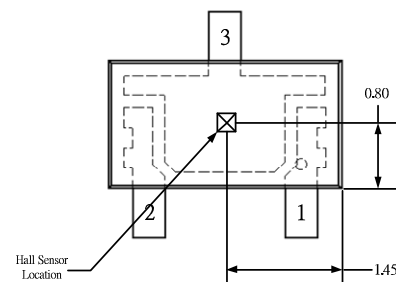
Output Pin Assignment (Top view)



Package (SOT-23) (Top View)



Hall Plate Chip Location (Bottom view)



NOTES:

- PINOUT (See Top View at left :)

Pin 1	V _{DD}
Pin 2	Output
Pin 3	GND
- Controlling dimension: mm
- Lead thickness after solder plating will be 0.254mm maximum
- marking: ABC is Lot number last three digits, XX is DC.