Single Digital Output Hall Effect Latch

Features

- Maximum output sink current 50mA
- Open-drain pre-driver
- Power reverse polarity protection
- Available in SIP-3L, SOT23(AR72X) package

Pb Free

General Description

AR72X is a Hall sensor with latched digital output. It's suitable for electronic commutation of brushless DC motor applications. The AR72X uses a chopper amplifier for magnetic signal amplification, which can achieve a low offset and thus precise magnetic switching thresholds.

If a magnetic flux density larger than threshold Bop,NO is turned on(low). The output state is held until a magnetic flux density reversal falls below Brp causing NO to be turned off (high)

Block Diagram

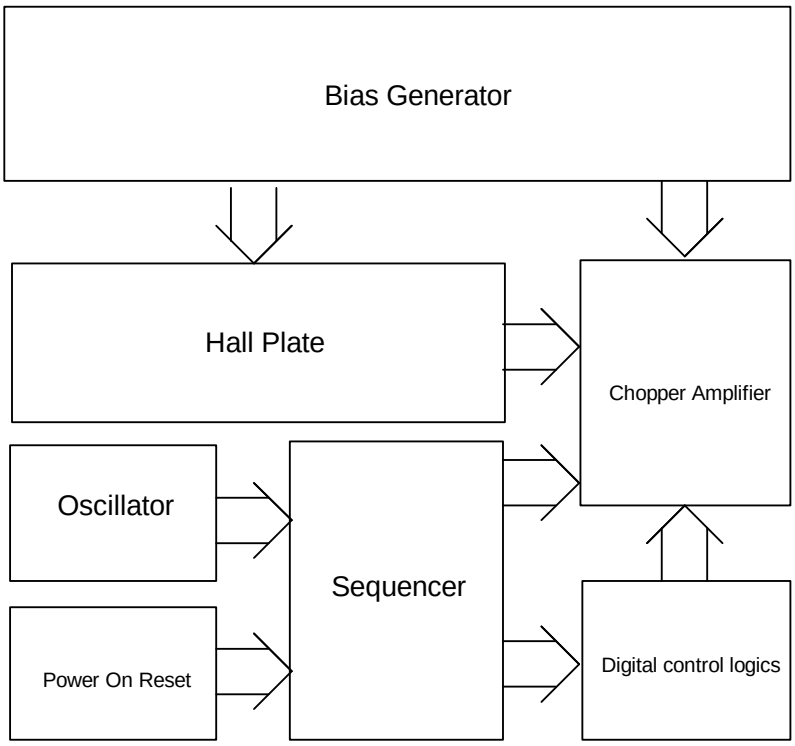


Figure.1

Pin Connection.

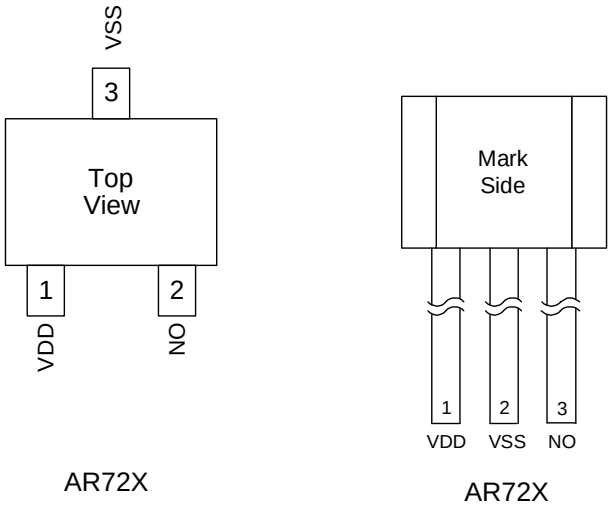


Figure 2

Pin Descriptions

Name	I/O	AR72X	AR72X	Description
VDD	P	1	1	Positive power supply
VSS	G	2	3	Ground
NO	O	3	2	Driver output

Legend: I=input, O=output, I/O=input/output, P=power supply, G=ground

Functional Descriptions

Refer to the block diagram (Figure.1), AR72X is composed of the following building blocks:

- Bias generator

The bias generator provides precise, temperature- and process-insensitive bias references for the analog blocks. These references guarantee proper operation of the chip under all conditions specified in this specification.

- Oscillator + Sequencer

The built-in oscillator provides the clock signal, which is taken by the sequencer to generate the sequential signals necessary for both the Hall sensor and the digital control logics

- Power on Reset

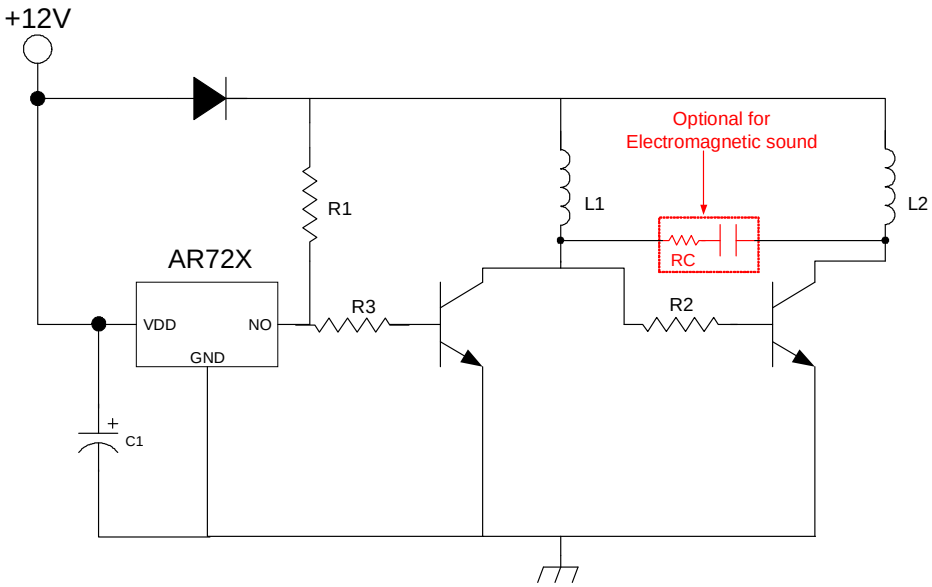
Used to detect the power-up ramp and reset the digital circuits to attain correct operation as soon as the power is ready.

- Chopper Amplifier

To achieve a higher magnetic sensitivity the chopper amplifier structure is adopted in this design. Use of this structure dynamically removes both the offset and flicker noise at the same time.

- Digital control logics

Generates controlling signals for the Hall sensor.



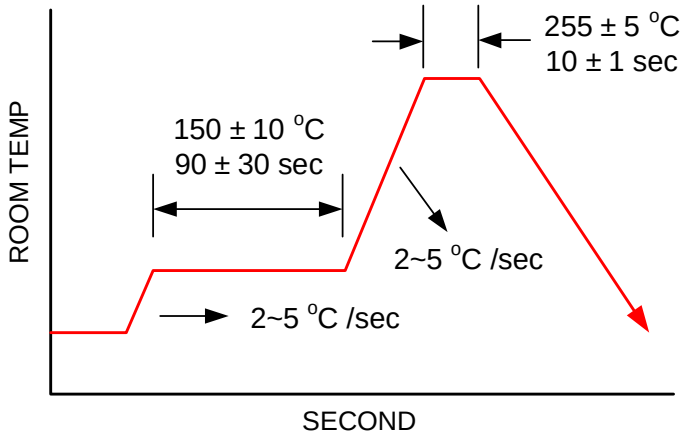
Brushless DC Fan

Figure.3

Note. Detail information please check application note.
Suggestion value :R1=1K ohm,R3=330 ohm, R=30 ohm ,C=2.2uF, C1>0.1uF

Absolute Maximum Ratings

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Operating Temperature	T_{OP}	-	-20		105	℃
Storage Temperature	T_{ST}	-	-40		150	℃
DC Supply Voltage	V_{DD}	-	2.4		16	V
Supply Current	I_{DD}	-			10	mA
Continuous Current	$I_{O(CONT)}$				50	mA
Junction temperature	T_J				150	℃
Lead Temperature		10sec			260	℃



Soldering Condition

Figure.4

Recommended Operating Conditions

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Supply Voltage	V_{DD}	-	2.4		16	V
Operating Temperature Range	T_A	-	-20		105	℃

Electrical Characteristics V_{DD}=12.0V, T_A=25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Average Supply Current(no load)	I_{DD}	-		3.0	10	mA
Output Saturation Voltage	V_{SAT}	Iout= 50mA		0.5	0.8	V
Output leakage current	I_{LEAK}	V_{OUT}=12V			20	μA
On resistance	R_{ON}			10		Ω

Magnetic Characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Operate Points	B_{OP}			+25		G
Release Points	B_{RP}			-25		G
Hysteresis	B_{HYST}			50		G

Hysteresis Characteristics

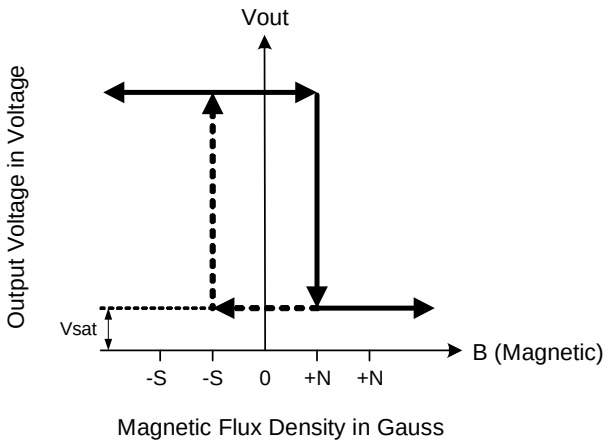
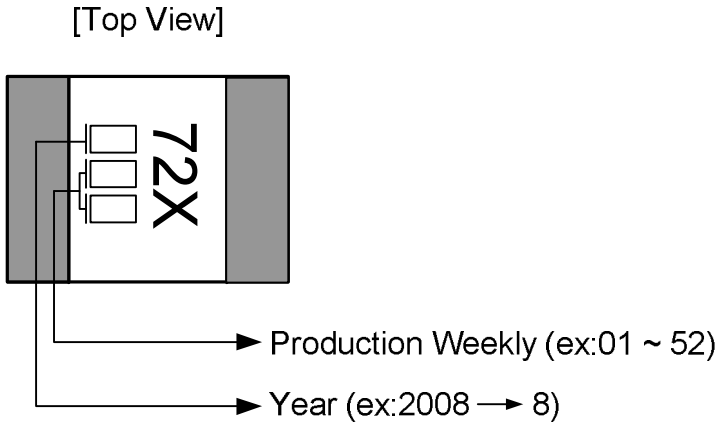


Figure.5

Marking Information

SIP-3L:



SOT23:

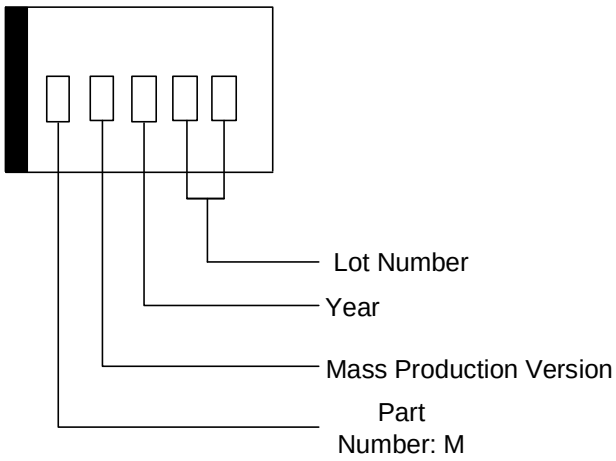
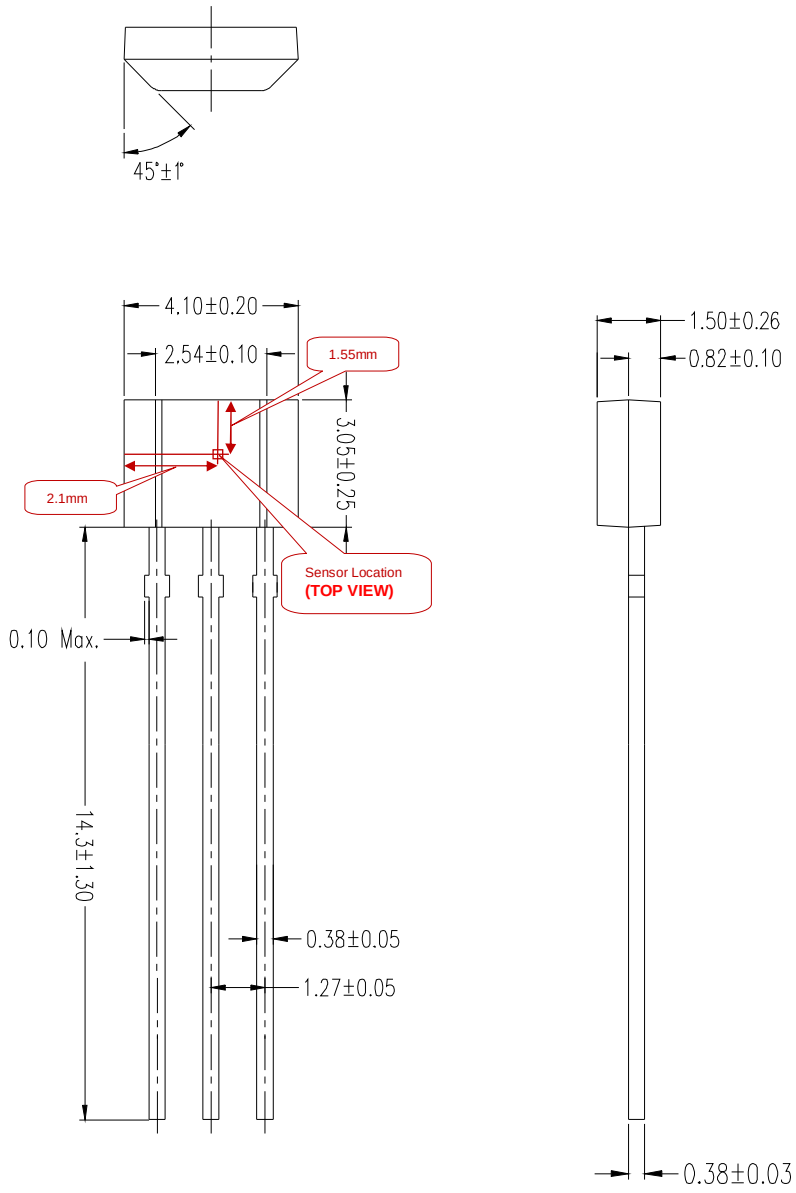


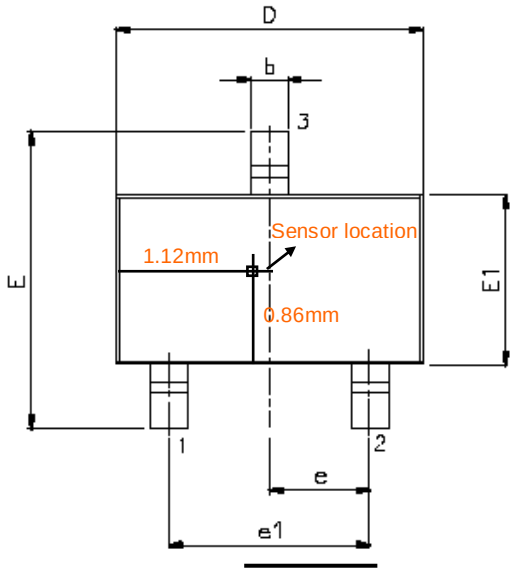
Figure.6

Package Dimension (Unit: mm)

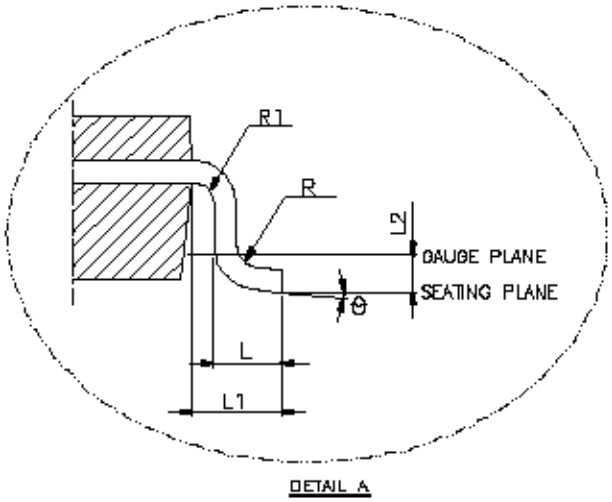
SIP-3L(Pb Free)

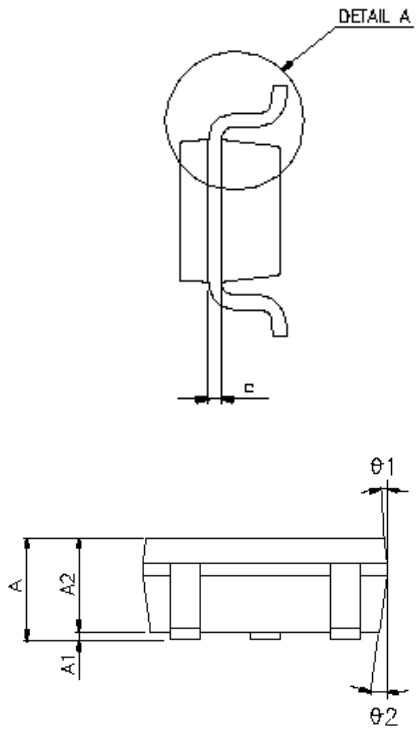


SOT23



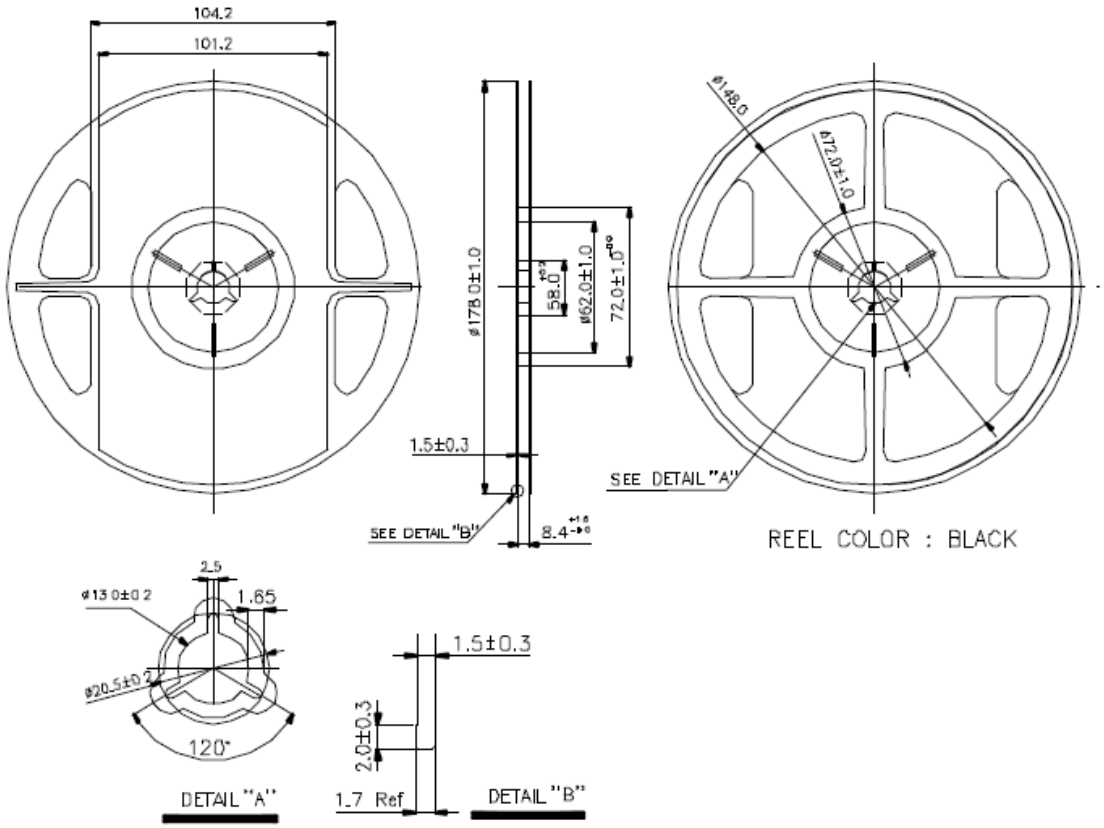
Symbols	Dimension In Millimeters		
	Min	Nom	Max
A	-	-	1.45
A1	-	-	0.15
A2	0.90	1.15	1.30
b	0.30	-	0.50
c	0.08	-	0.22
D	2.90BSC		
E	2.80BSC		
E1	1.60BSC		
e	0.95BSC		
e1	1.90BSC		
L	0.30	0.45	0.60
L1	0.60REF		
L2	0.25BSC		
R	0.10	-	-
R1	0.10	-	0.25
Θ	0°	4°	8°
Θ1	5°	10°	15°

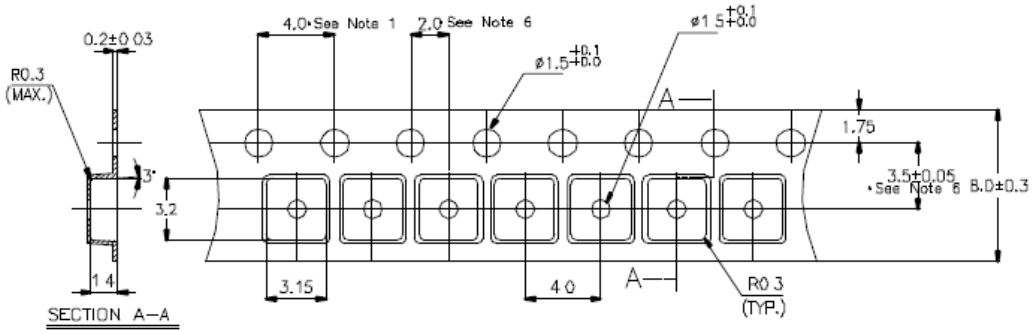


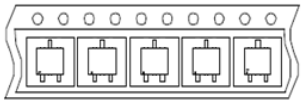


PACKING SPECIFICATION (Tapping Reel)

SOT23







PACKING QUANTITY SPECIFICATION

2500ea / 1 Reel

4 Reels / 1 INSIDE BOX

2 INSIDE BOXes / 1 OUTSIDE BOX

Order Information

Part Number	Operating Temperature	Package	MOQ	Marking
AR72X-LF	-20 ℃ to +105 ℃	SIP-3L	1000ea	-
AR72XY-LF	-20 ℃ to +105 ℃	SOT23	2500ea/Reel	Mxxxx