

CYD3172X HALL-EFFECT SWITCH IC

CYD3172X Hall effect latch IC is composed of a reverse protector, voltage regulator, Hall voltage generator, differential amplifier, Schmitt trigger and an open-collector output on a single silicon chip. ICs can convert the changeable magnetic field signal into digital voltage output.

FEATURES

- High Sensitivity
- Resistant to Physical Stress
- Wide Supply Voltage Range
- Interfacing with All Kinds of Logic Circuits Directly

TYPICAL APPLICATION

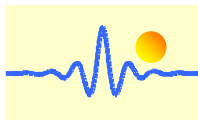
- High Sensitive Non-contact Switch
- DC Brushless Motor
- DC Brushless Fan

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	V _{CC}	4.5V ~ 24V		V
Magnetic Flux Density	B	unlimited	unlimited	mT
Output Current	I _O	-	25	mA
Operating Temperature Range	T _A	-40	85	°C
Storage Temperature Range	T _S	-65	170	°C

ELECTRICAL CHARACTERISTICS

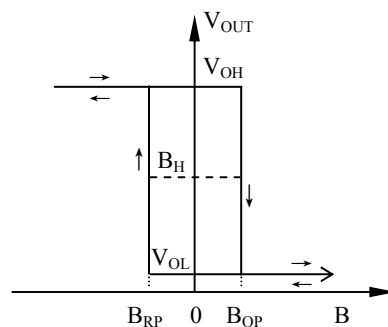
Parameter	Test Conditions	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V _{CC} =4.5V~24V	V _{CC}	4.5	-	24.0	V
Output Low Voltage	V _{CC} =4.5V R _L =960Ω	V _{OL}	-	0.2	0.4	V
Output Leakage Current	V _O =V _{CC} max B≤B _{RP}	I _{OH}	-	1.0	10.0	μA
Supply Current	V _{CC} =V _{CC} max open-collector output	I _{CC}	-	-	12.0	mA
Output Rise time	V _{CC} =12V R _L =820Ω	t _r	-	1.0	2.0	μS
Output Fall time	C _L =20pF	t _f	-	1.0	2.0	μS



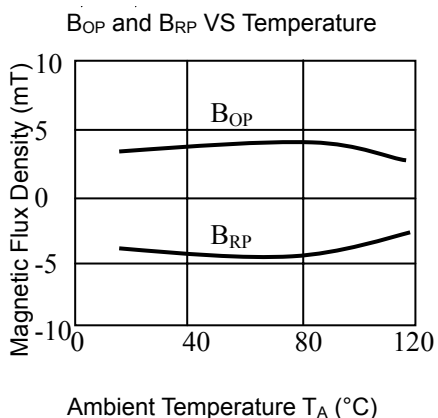
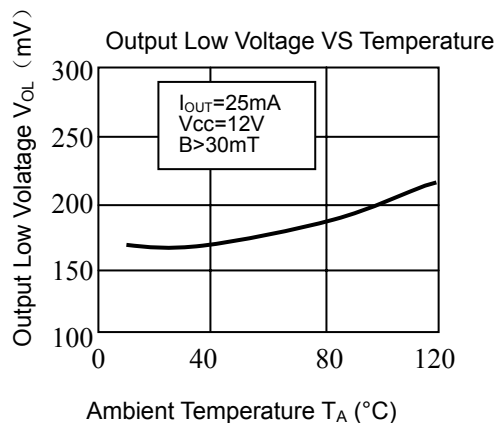
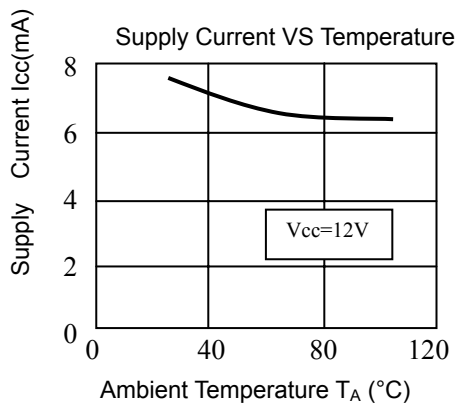
Magnetic Characteristics (Unit: mT)

Parameter	Value			Unit
	Min	Typ	Max	
Operate Point (B_{OP})	1	-	7	mT
Release Point (B_{RP})	-7	-	-1	
Hysteresis (B_H)	4	-	-	

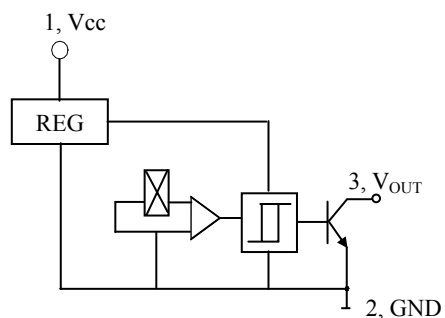
Magnetic-Electrical Transfer Characteristics

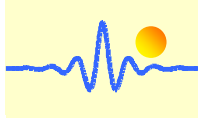


Characteristics Curves

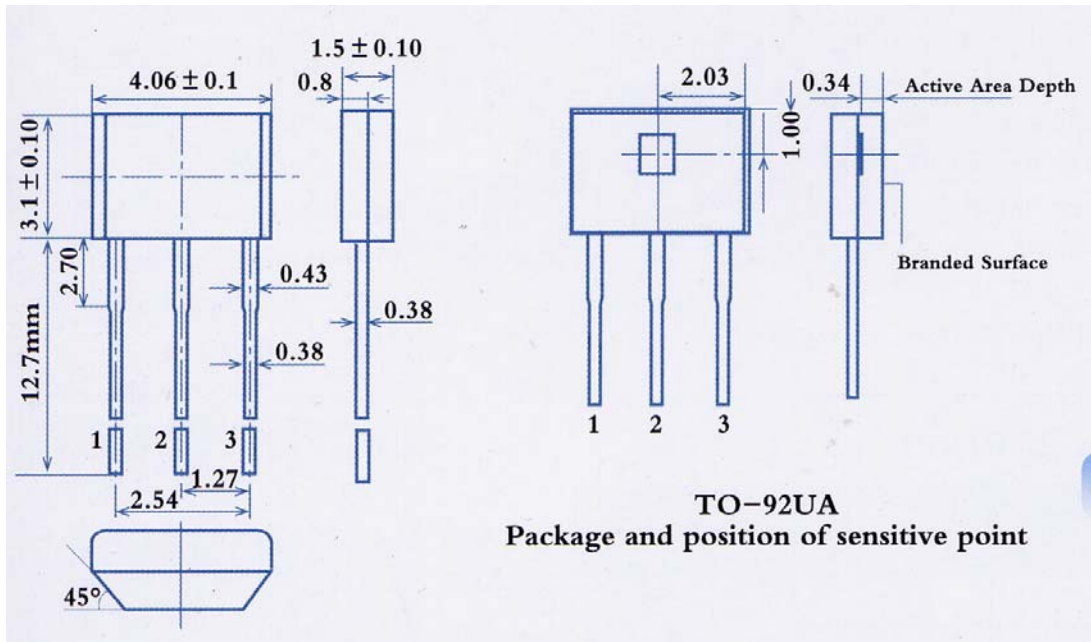


FUNCTIONAL BLOCK DIAGRAM





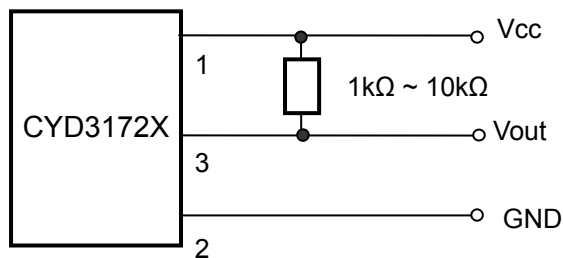
Package Outline Drawing (Unit: mm)



Pin Notes: 1. Power Supply 2. Ground 3. Output

Connection

This sensor has an OC (NPN) output voltage. Therefore it is necessary to connect a pull-up resistor in value from 1kΩ to 10kΩ between the power supply Vcc and output pins.



Cautions:

- 1) It is possible that outside mechanical stress affects the operating point and the release point of Hall-effect circuit, therefore, mechanical stress should be lessened as far as possible in the process of assembly;
- 2) Pay attention to the soldering temperature at the leads; keep it lower in a short time to guarantee good soldering quality.