ChenYang
Technologies GmbH & Co. KG

CYD1024 HALL-EFFECT SWITCH ICs

CYD1024 Hall-effect switch is a monolithic integrated circuit, which 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. The switch IC can convert a changeable magnetic field signal into digital voltage output.

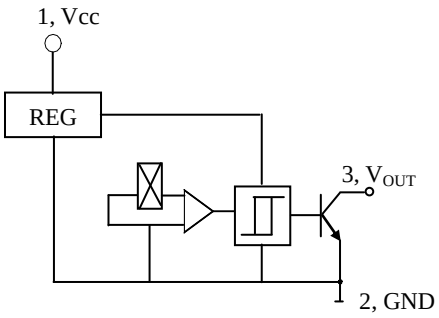
FEATURES

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

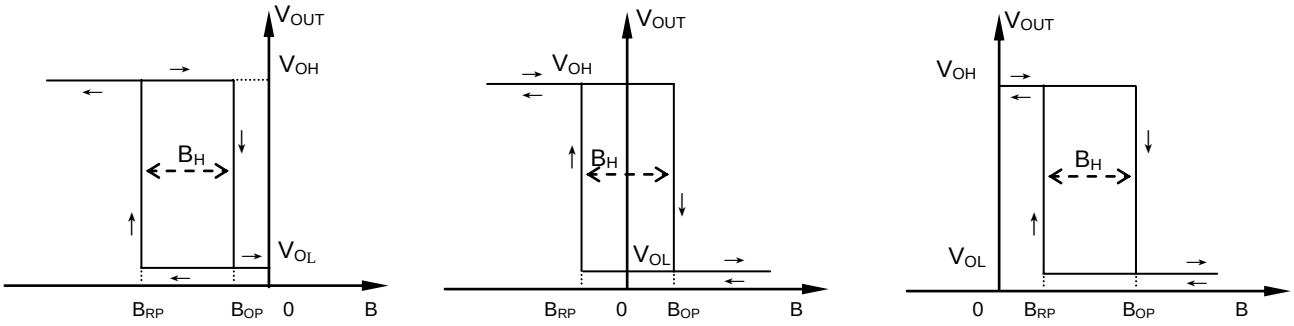
TYPICAL APPLICATION

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

FUNCTIONAL BLOCK DIAGRAM



Magnetic-Electrical Transfer Characteristics



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ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	Vcc	4.5	20	V
Magnetic Flux Density	B	unlimited		mT
Output Current	Io	-	25	mA
Operating Temperature Range	T_A	-20	+85	°C
Storage Temperature Range	Ts	-55	+150	°C

ELECTRICAL CHARACTERISTICS

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage		V_{CC}	4.5	-	20.0	V
Output Low Voltage	Vcc=4.5V Vo=Vccmax B=20mT Io=25mA	V_{OL}	-	0.2	0.4	V
Output Leakage Current	Vo=Vccmax, Vcc open-collector output	I_{OH}	-	1.0	10.0	μA
Supply Current	Vcc=Vccmax Vo open-collector output	Icc	-	3.0	5.0	mA
Output Rise time	Vcc=12V C_L=20pF	t_r	-	0.12	1.2	μS
Output Fall time	R_L=480KΩ	t_f	-	0.14	1.4	μS

Magnetic Characteristics (Unit: mT)

Parameter	Rank	Value			Unit
		Min	Typ	Max	
Operate Point	B_{OP}	5	-	10	mT
Release Point	B_{RP}	-1	-	4	
Hysteresis	B_H	6	-	8	

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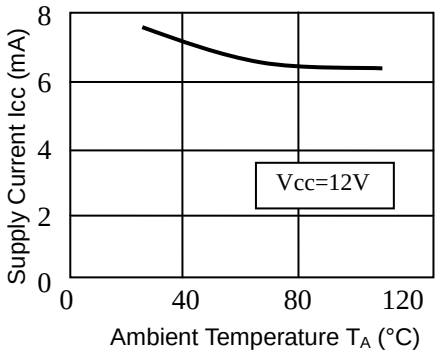
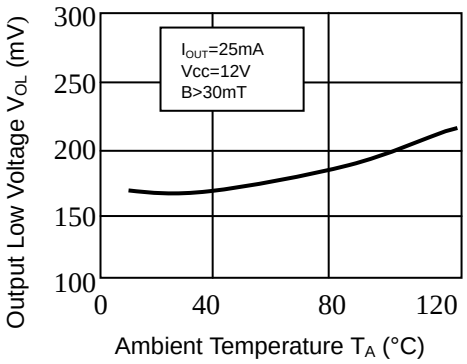
Characteristics Curves

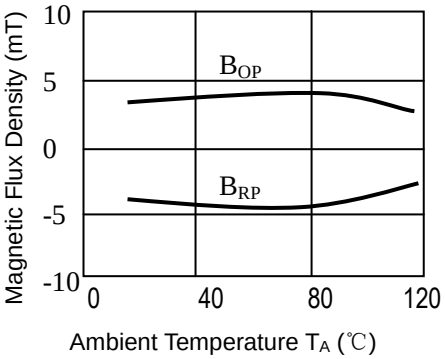
Supply Current VS Temperature



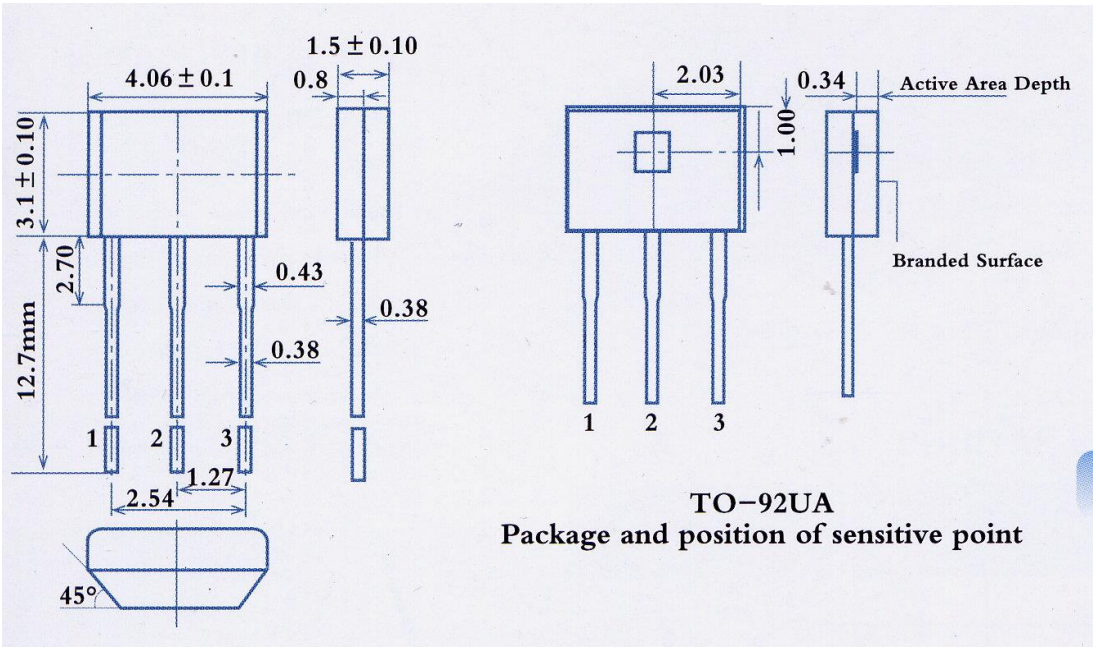
Output Low Voltage VS Temperature



B_{OP} and B_{RP} VS Temperature



Package Outline Drawing (Unit: mm)



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

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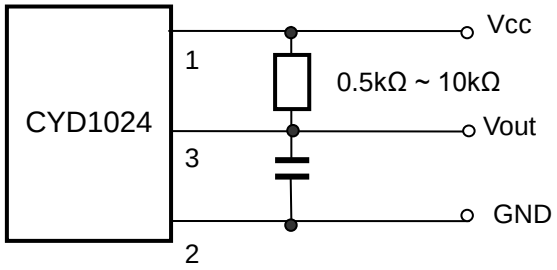
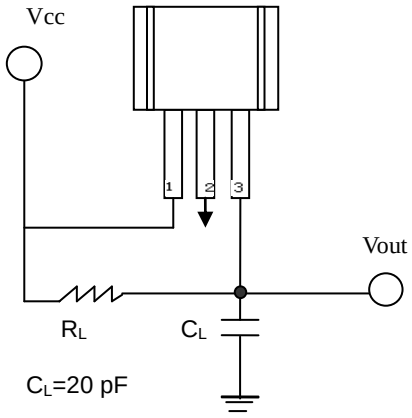
Connection

This sensor has an OC (NPN) output voltage. Therefore it is necessary to connect a pull-up resistor in value from 0.5kΩ to 10kΩ between the power supply Vcc and output pins.





Pin Arrangement:

1:	Power supply
2:	Ground
3:	Output

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 (<260°C) at the leads; keep it lower in a short time (<3s) to guarantee good soldering quality.

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