

## CYD1024 HALL-EFFECT SWITCH ICs

CYD1024 Hall-effect switches are monolithic integrated circuits, which are 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.



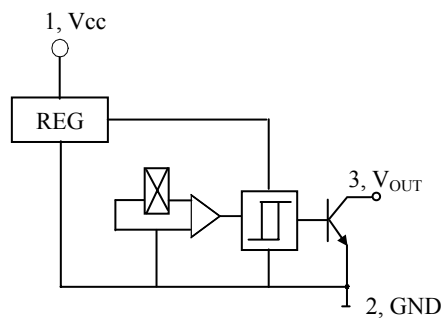
### FEATURES

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

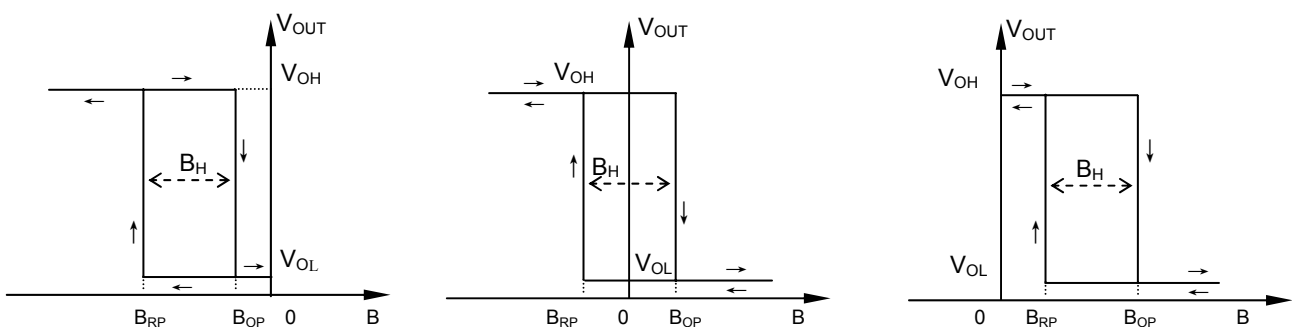
### TYPICAL APPLICATION

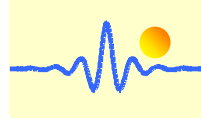
- High Sensitive Non-contact Switch
- DC Brushless Motor
- DC Brushless Fan

### FUNCTIONAL BLOCK DIAGRAM



### Magnetic-Electrical Transfer Characteristics





### ABSOLUTE MAXIMUM RATINGS

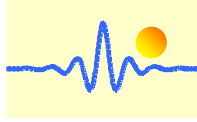
Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	V <sub>CC</sub>	4.5	20	V
Magnetic Flux Density	B	unlimited		mT
Output Current	I <sub>O</sub>	-	25	mA
Operating Temperature Range	T <sub>A</sub>	-20	+100	°C
Storage Temperature Range	T <sub>S</sub>	-55	+150	°C

### ELECTRICAL CHARACTERISTICS

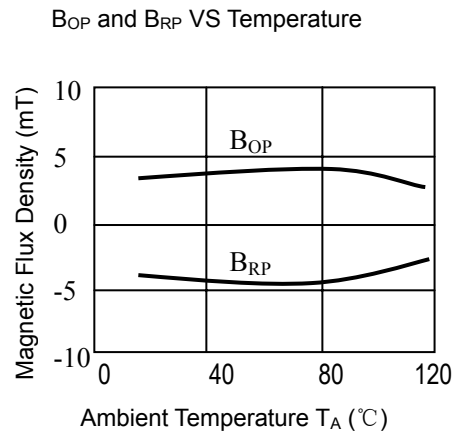
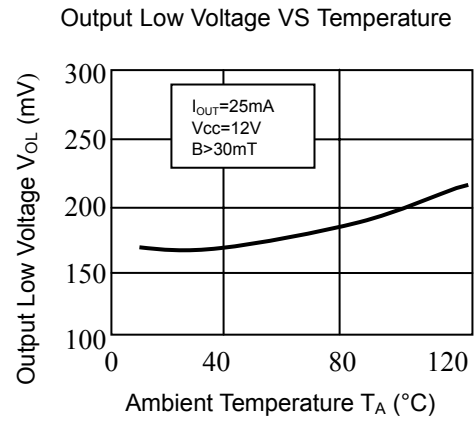
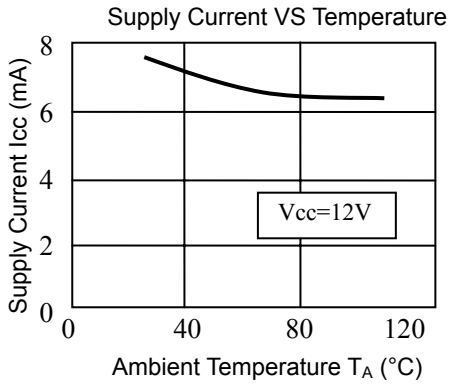
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage		V <sub>CC</sub>	4.5	-	20.0	V
Output Low Voltage	V <sub>CC</sub> =4.5V V <sub>O</sub> =V <sub>CC</sub> max B=20mT I <sub>O</sub> =25mA	V <sub>OL</sub>	-	0.2	0.4	V
Output Leakage Current	V <sub>O</sub> =V <sub>CC</sub> max, V <sub>CC</sub> open-collector output	I <sub>OH</sub>	-	0.1	10.0	μA
Supply Current	V <sub>CC</sub> =V <sub>CC</sub> max V <sub>O</sub> open-collector output	I <sub>CC</sub>	-	8.0	12.0	mA
Output Rise time	V <sub>CC</sub> =12V C <sub>L</sub> =20pF	t <sub>r</sub>	-	0.3	1.5	μS
Output Fall time	R <sub>L</sub> =480KΩ	t <sub>f</sub>	-	0.3	1.5	μS

### Magnetic Characteristics (Unit: mT)

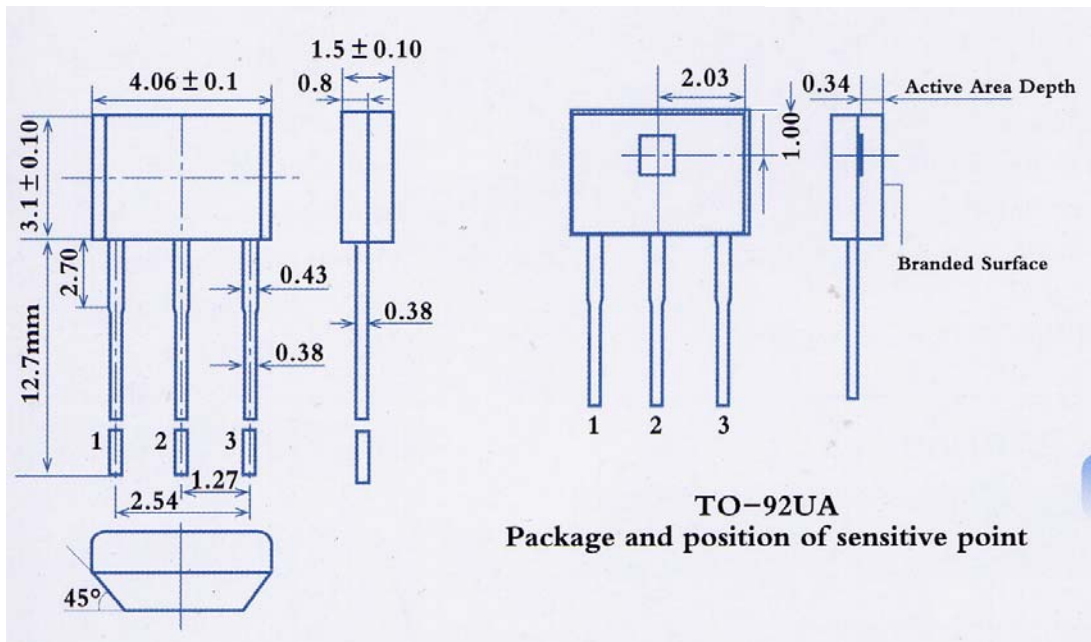
Parameter	Rank	Value			Unit
		Min	Typ	Max	
Operate Point (B <sub>OP</sub> )	A <sub>11</sub>	-	-	8	mT
	A <sub>12</sub>	-	-	10	
	A <sub>2</sub>	-	-	15	
	B	-	-	20	
Release Point (B <sub>RP</sub> )	A <sub>11</sub>	-8	-	-	mT
	A <sub>12</sub>	-10	-	-	
	A <sub>2</sub>	-15	-	-	
	B	-20	-	-	
Hysteresis (B <sub>H</sub> )		2	6	-	



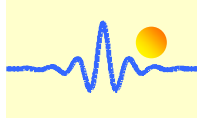
### Characteristics Curves



### Package Outline Drawing (Unit: mm)

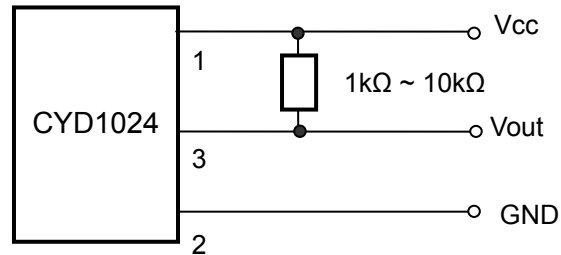


**Pin Notes:** 1. Power Supply 2. Ground, 3. Output



## Connection

This sensor has an OC (NPN) output voltage. Therefore it is necessary to connect a pull-up resistor in value from  $1\text{k}\Omega$  to  $10\text{k}\Omega$  between the power supply  $V_{cc}$  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.