

## CYD41 High Sensitive Hall effect Switch IC for high temperature

**CYD41 Series** high sensitive Hall Effect switch 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.



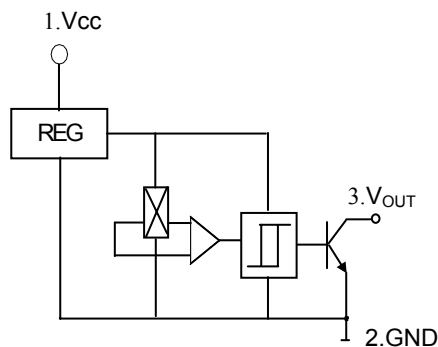
### FEATURES

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

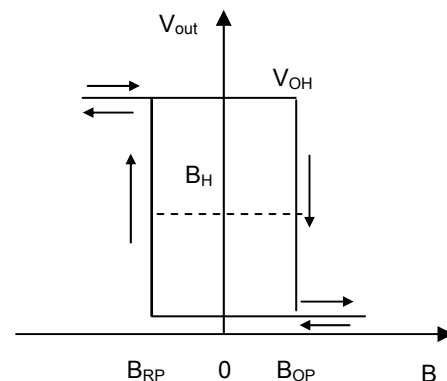
### TYPICAL APPLICATION

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

### FUNCTIONAL BLOCK DIAGRAM

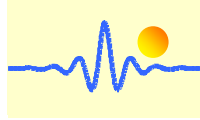


### MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	Vcc	4.5V~24V		V
Magnetic Flux Density	B	unlimited	unlimited	mT
Output Current	Io	-	25	MA
Operating Temperature Range	T <sub>A</sub>	-55	150	°C
Storage Temperature Range	T <sub>S</sub>	-55	150	°C



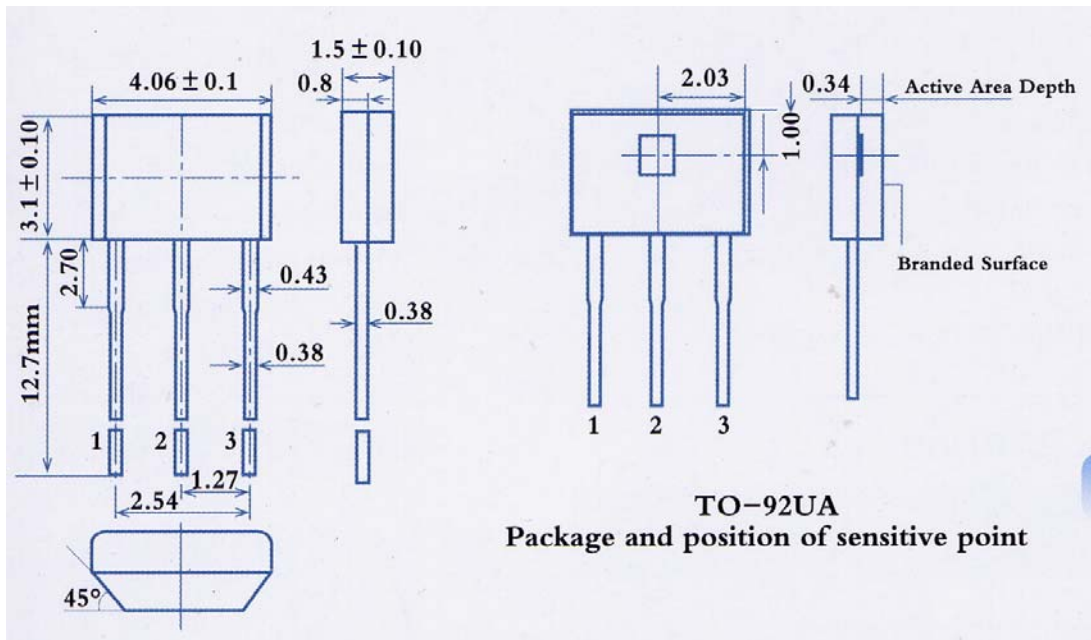
## ELECTRICAL CHARACTERISTICS

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V <sub>CC</sub> =4.5V~24V	V <sub>CC</sub>	4.5	-	24.0	V
Output Low Voltage	V <sub>CC</sub> =4.5V, R <sub>L</sub> =960Ω B≥B <sub>OP</sub>	V <sub>OL</sub>	-	0.2	0.4	V
Output Leakage Current	V <sub>O</sub> =V <sub>CCmax</sub> , B≤B <sub>RP</sub>	I <sub>OH</sub>	-	1.0	10.0	μA
Supply Current	V <sub>CC</sub> =V <sub>CCmax</sub> open-collector output	I <sub>CC</sub>	-	4.0	8.0	mA
Output Rise time	V <sub>CC</sub> =12V, R <sub>L</sub> =820Ω C <sub>L</sub> =20pF	t <sub>r</sub>	-	1.5	-	μS
Output Fall time		t <sub>f</sub>	-	1.0	-	μS

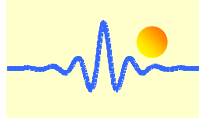
## Magnetic Characteristics (Unit: mT)

Parameter	Test condition	Value			Unit
		Min	Typ	Max	
Operate Point (B <sub>OP</sub> )	-20°C < TA < +90°C	1	4	7	mT
Release Point (B <sub>RP</sub> )	-20°C < TA < +90°C	-7	-4	-1	
Hysteresis (B <sub>H</sub> )	-20°C < TA < +90°C	4	8		

## Package Outline Drawing (Unit: mm)

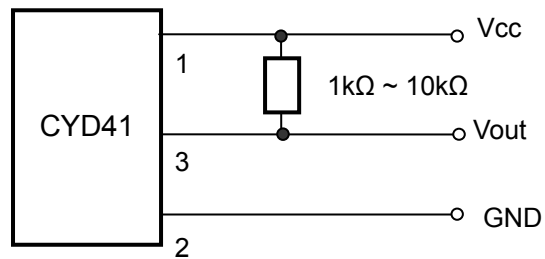


**Pin Notes:** 1. Power Supply 2. Ground 3. Output



## 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.