

## CYD3144E Hall Effect Switch IC

CYD3144E Hall-effect switch integrated circuit is based on the semiconductor monolithic technology, which includes a voltage regulator, Hall voltage generator, differential amplifier, Schmitt trigger and an open-collector output on a single silicon chip. ICs can convert the input magnetic field signal into digital voltage output.



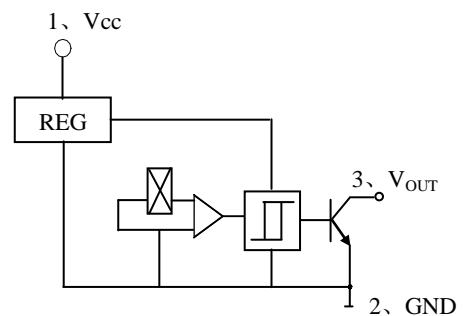
### FEATURES

- Small size
- High Sensitivity
- Quick Response
- Good Temperature Performance
- High Accuracy
- Excellent Reliability

### TYPICAL APPLICATION

- Non-contact Switch
- Automotive Ignition
- Brake ICs
- Position control
- Revolution detection
- Safe alarm device
- Textile control system

### FUNCTIONAL BLOCK DIAGRAM

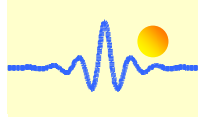


### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	28	V
Quiescent Output Voltage	V <sub>O</sub>	28	V
Output Current	I <sub>O</sub>	25	mA
Operating Temperature Range	T <sub>A</sub>	-40 ~ +85	°C
Storage Temperature Range	T <sub>S</sub>	-65 ~ +150	°C

### ELECTRICAL CHARACTERISTICS

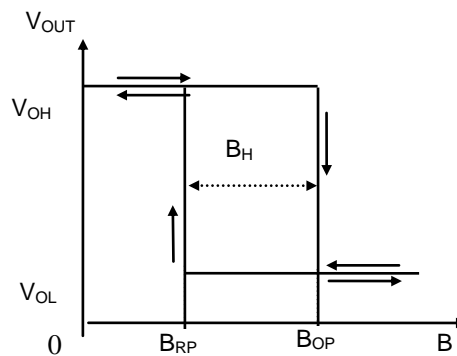
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V <sub>CC</sub> =4.5V ~ 24V	V <sub>CC</sub>	4.5	-	24	V
Output Low Voltage	V <sub>CC</sub> =4.5V, V <sub>O</sub> =24V I <sub>O</sub> =20mA, B≥B <sub>OP</sub>	V <sub>OL</sub>	-	175	400	mV
Output Leakage Current	V <sub>O</sub> =24V, B<B <sub>RP</sub>	I <sub>OH</sub>	-	<1.0	10	μA
Supply Current	V <sub>CC</sub> =24V V <sub>O</sub> open-collector output	I <sub>CC</sub>	-	3.0	9.0	mA
Output Rise time	V <sub>CC</sub> =12V R <sub>L</sub> =820Ω C <sub>L</sub> =20pF	t <sub>r</sub>	-	0.2	2.0	μS
Output Fall time		t <sub>f</sub>	-	0.18	2.0	μS



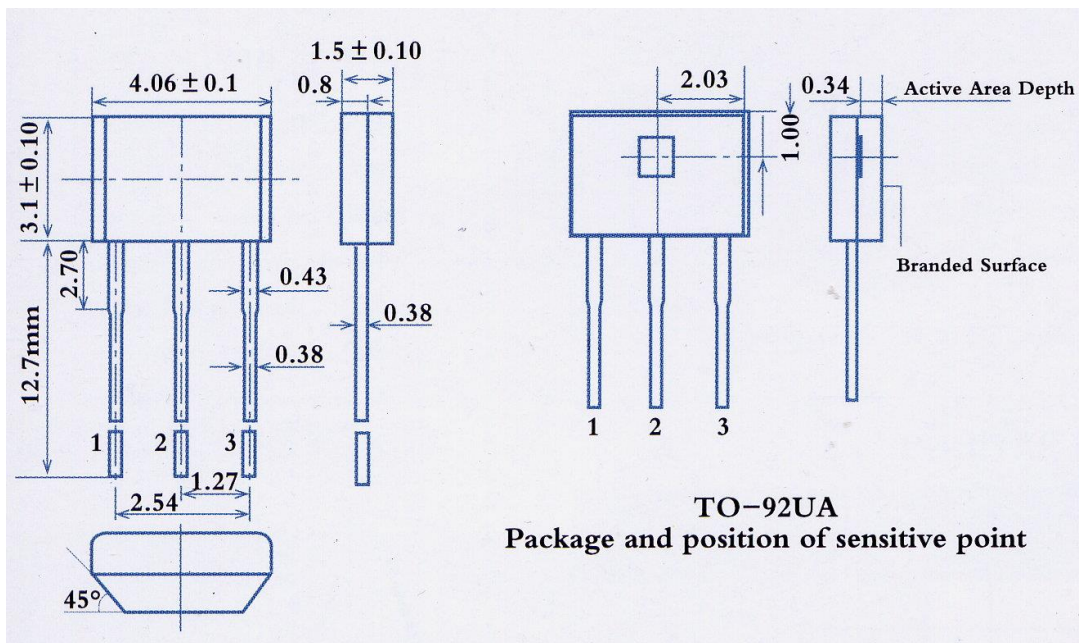
## Magnetic Characteristics

Parameter	Symbol	CY3144E		
		Min (mT)	Typ (mT)	Max (mT)
Operate Point	B <sub>OP</sub>	10.0	15	20.0
Release Point	B <sub>RP</sub>	4.0	8.5	14.0
Hysteresis	B <sub>H</sub>	-	6.5	-

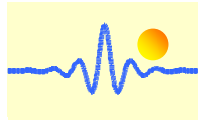
## Magnetic-Electrical Transfer Characteristics



## Package Outline Drawing (Unit: mm)

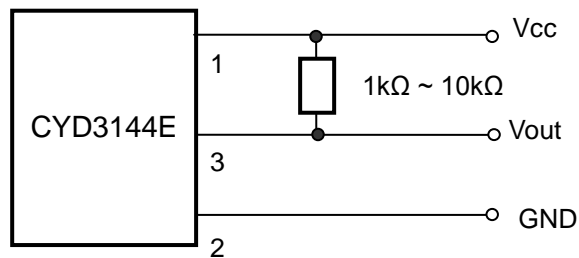


**Pin Notes:** 1. Power Supply 2. Ground 3. Output



## 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 ( $<260^{\circ}\text{C}$ ) at the leads; keep it lower in a short time ( $<3\text{s}$ ) to guarantee good soldering quality.