

CYD3144E Hall Effect Unipolar 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.



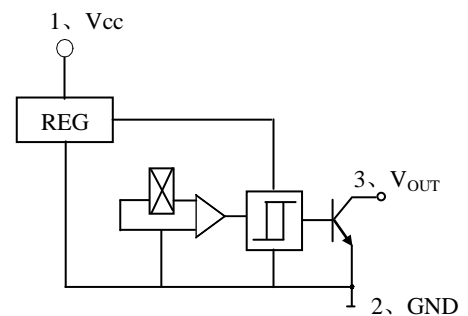
FEATURES

- 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

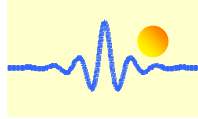


ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Supply Voltage	V _{CC}	28	V
Quiescent Output Voltage	V _O	28	V
Output Current	I _O	25	mA
Operating Temperature Range	T _A	-40 ~ +85	°C
Storage Temperature Range	T _S	-65 ~ +150	°C

ELECTRICAL CHARACTERISTICS

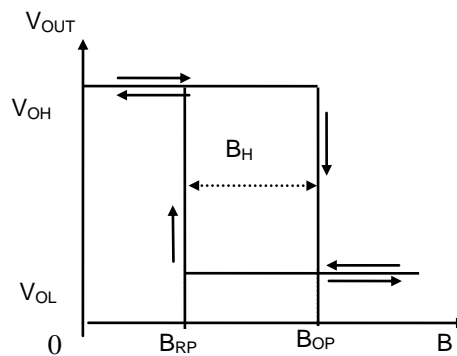
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V _{CC} =4.5V ~ 24V	V _{CC}	4.5	-	24	V
Output Low Voltage	V _{CC} =4.5V, V _O =24V I _O =20mA, B≥B _{OP}	V _{OL}	-	175	400	mV
Output Leakage Current	V _O =24V, B<B _{RP}	I _{OH}	-	<1.0	10	μA
Supply Current	V _{CC} =24V V _O open-collector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



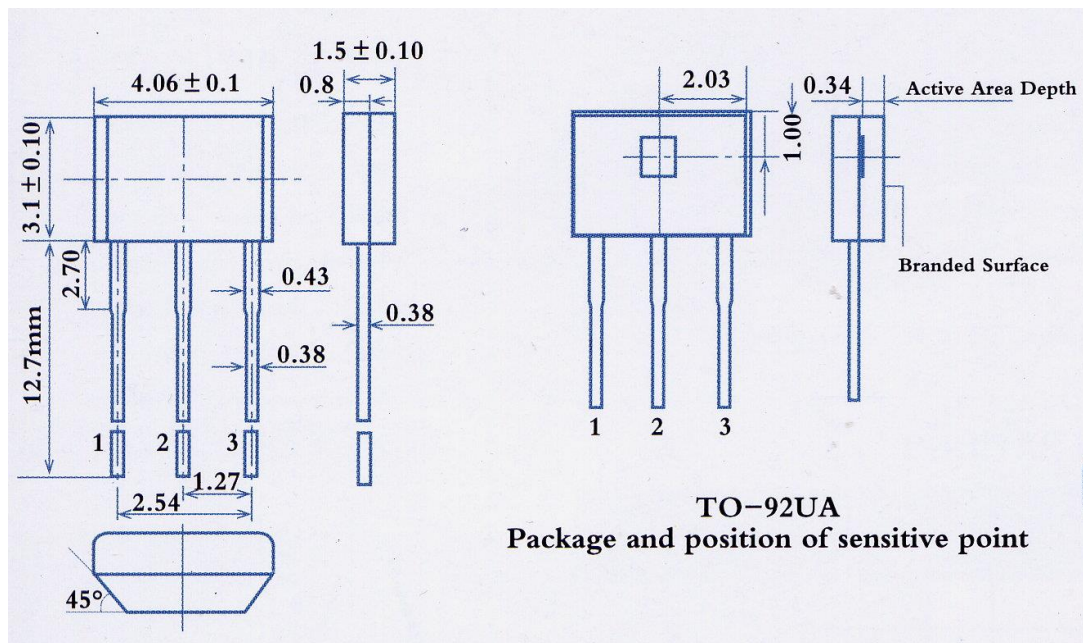
Magnetic Characteristics

Parameter	Symbol	CY3144E		
		Min (mT)	Typ (mT)	Max (mT)
Operate Point	B_{OP}	10.0	15	20.0
Release Point	B_{RP}	4.0	8.5	14.0
Hysteresis	B_H	-	6.5	-

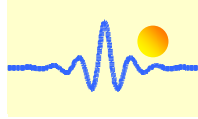
Magnetic-Electrical Transfer Characteristics



Package Outline Drawing (Unit: mm)

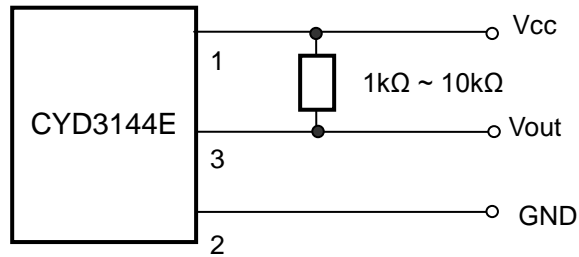


Pin Notes: 1. Power Supply 2. Ground 3. Output



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.