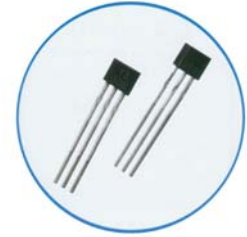


CYD3020 Hall Effect Switch ICs



CYD3020 Hall-effect switch integrated circuits are composed of a reverse voltage 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

- Wide supply voltage range
- Fast Response Time, No Instant Moving
- Wide Operating Frequency (DC~100KHz)
- Long Operating Life, Small Size, Convenient Installation
- Interfacing with Transistor, TTL, MOS Logic Circuits Directly

TYPICAL APPLICATION

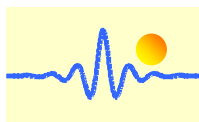
- Non-contact Switch
- Position Control
- Revolution Detection
- Isolation Measurement
- DC Brushless Motor
- Current Sensor
- Automotive Ignition
- Safe Alarm Device

ABSOLUTE MAXIMUM RATINGS

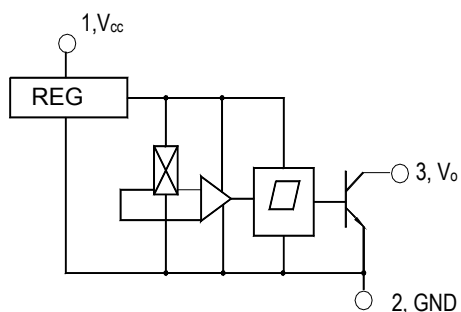
Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	V _{CC}	-	25	V
Magnetic Flux Density	B	unlimited	unlimited	mT
Output Current	I _O	-	25	mA
Operating Temperature Range	T _A	(I)	-40	°C
		(II)	-40	
Storage Temperature Range	T _S	-55	150	°C

ELECTRICAL CHARACTERISTICS

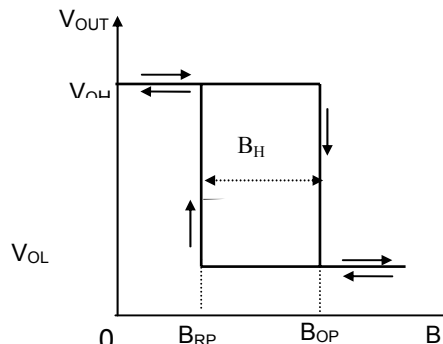
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V _{CC} =4.5V~24V	V _{CC}	4.5	-	24	V
Output Low Voltage	V _{CC} =4.5V V _O =V _{CC} max, I _O =25mA B=50mT	V _{OL}	-	0.2	0.4	V
Output Leakage Current	V _O =V _{CC} max, V _{CC} open-collector output	I _{OH}	-	0.05	10	μA
Supply Current	V _O =V _{CC} max, V _O open-collector output	I _{CC}	-	8	12	mA
Output Rise time	V _{CC} =12V R _L =480 Ω C _L =20pF	t _r	-	0.12	1.2	μS
Output Fall time		t _f	-	0.14	1.4	μS



FUNCTIONAL BLOCK DIAGRAM



Magnetic-Electrical Transfer Characteristics



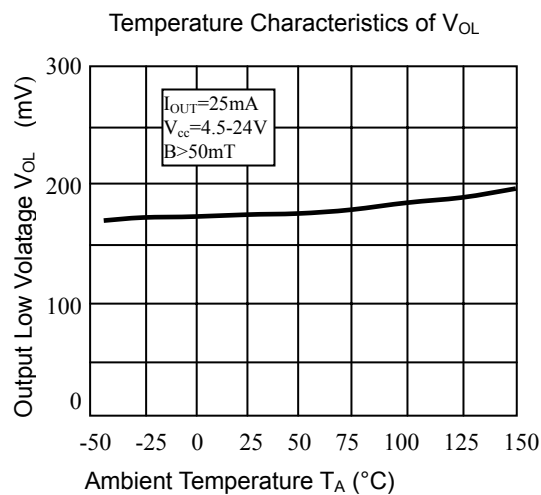
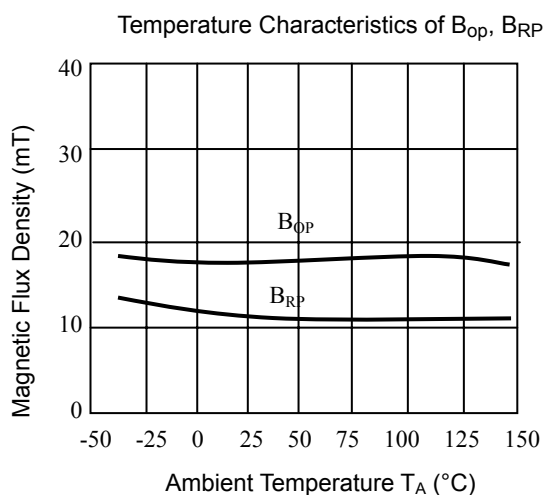
Magnetic Characteristics

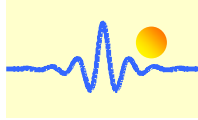
Parameter	Value			Unit
	Min	Typ	Max	
Operate Point (B_{OP})	7	-	35	mT
Release Point (B_{RP})	5	-	33	
Hysteresis (B_H)	2	-	-	

MATCHING MAGNETS

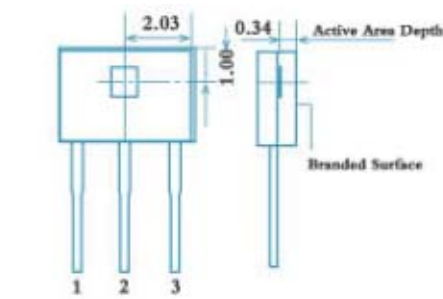
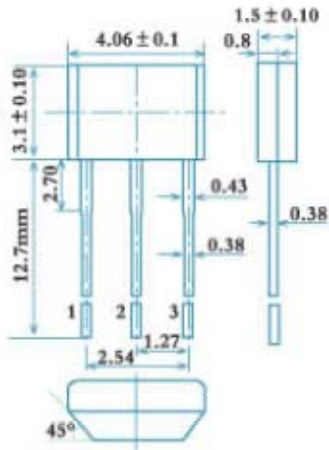
Type	SmCo1	SmCo2	SmCo3	NdFeB1	NdFeB2	NdFeB3	NdFeB4	NdFeB5	NdeFeB6I
Size (mm)	4.0x3.3x1.5	5.0x4.0x2.5	5.0x5.0x2.5	4.0x3.3x1.5	5.0x4.0x2.5	5.0x5.0x2.5	Φ8.x4	Φ9.5x6	Φ12x4
Surface magnetic flux density (mT)	160	220	220	170	230	230	280	320	300

Characteristics Curves





Package (Unit: mm)



TO-92UA
Package and position of sensitive point

PIN NOTES

1. Power Supply
2. Ground
3. Output

CAUTIONS

- ◆ It is possible that outside mechanical stress affects the operating point and the release point of Hall-effect circuits, therefore, mechanical stress should be lessened as far as possible in the process of assembly;
- ◆ Pay attention to the soldering temperature at the leads, keep it lower in a short time to guarantee good soldering quality.