ChenYang
Technologies GmbH & Co. KG

CYD543 HALL EFFECT UNIPOLAR IC SWITCHES

This Hall-effect switch is monolithic integrated circuit consisting of a voltage regulator, Hall-voltage generator, differential amplifier, Schmitt trigger, temperature compensation circuit and open-collector output stage. Its input is a magnetic flux density signal and output is a digital voltage signal.

FEATURES

- Wide supply voltage range
- Fast response time
- Wide frequency and temperature range
- Long operating life
- Small size, convenient installing
- Output compatible with all digital logic families
- Unipolar Sensor
- **ROHS Compliant**

TYPICAL APPLICATIONS

- Contact-less switch
- Position control
- Speed measurement
- Revolution detection
- Isolation measurement
- Brushless dc motor
- Automotive igniters

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Value	Unit
Supply voltage	V_{CC}	24	V
Magnetic flux density	B	Unlimited	mT
Output OFF voltage	V_{ce}	50	mV
Continuous output current	I_{OL}	50	mA
Operating temperature range	T_A	-50~150	°C
Storage temperature range	T_S	-55~150	°C

ELECTRICAL CHARACTERISTICS

T_A=25°C

Parameter	Symbol	Test conditions	Type and Value			Unit
			min	type	max	
Supply voltage	V_{CC}		4.5	-	24	V
Output saturation voltage	V_{OL}	Iout=20mA B>B_{OP}	-	200	400	mV
Output leakage current	I_{OH}	Vout=24V B<B_{RP}	-	0.1	10	μA
Supply current	I_{CC}	V_{CC}=Output open	-	-	10	mA
Output rise time	t_r	R_L=820Ω C_L=20PF	-	0.12	-	μS
Output fall time	t_f	R_L=820Ω C_L=20PF	-	0.18	-	μS

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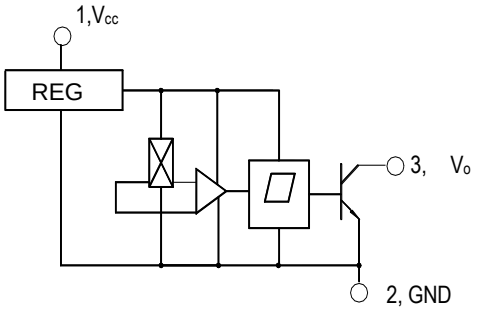
MAGNET CHARACTERISTICS

V_{CC}=4.5 ~ 24V

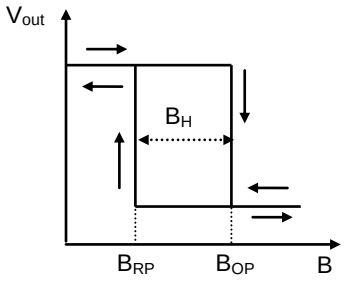
Paramenter	Symbol	Min.	Typical	Max.	Unit
Operate point	B_{OP}		15	20	mT
Release point	B_{RP}	3	10		mT
Hysteresis	B_H		5	-	mT

NOTE: 1mT=10GS

BLOCK DIAGRAM

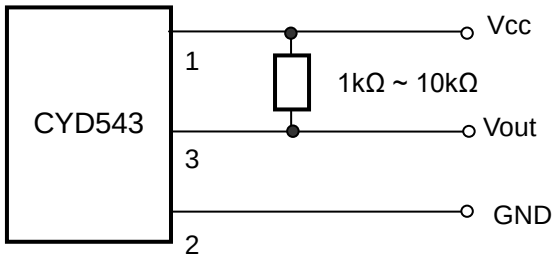


MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



Connection

This sensor has an OC (NPN) output voltage. Therefore it is necessary to connect a pull-up resistor in value from 1kΩ to 10kΩ between the power supply Vcc and output pins.



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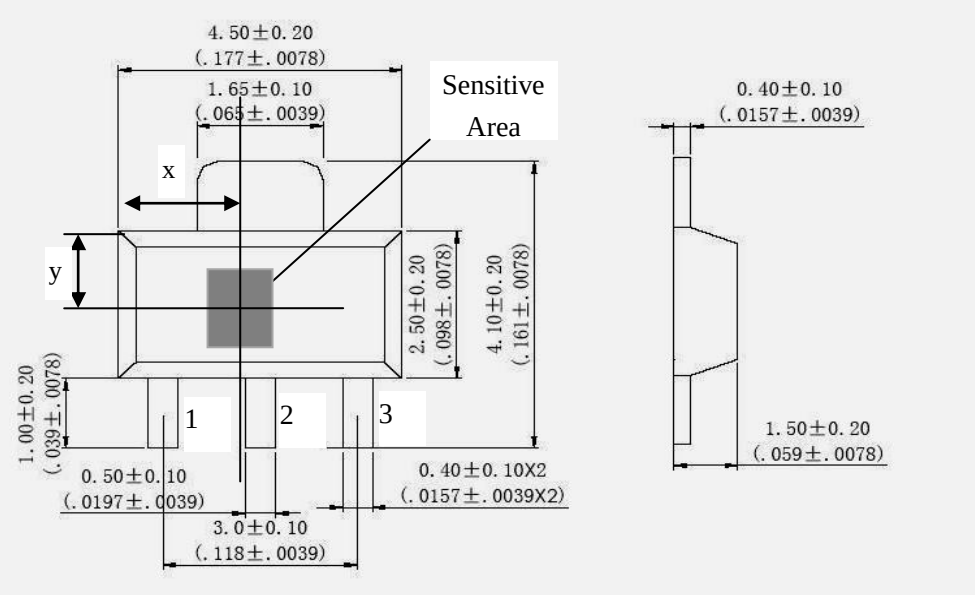
DIMENSIONS (in mm)



x= 2.25 ± 0.25 mm
y= 1.25 ± 0.25mm

Die Size
XW: 1.073mm
YH: 1.184mm

SOT-89 PACKAGE 1. Supply Voltage 2. GND 3. Output

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°C) at the leads; keep it lower in a short time (<3s) to guarantee good soldering quality.

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