CYD175 Hall Effect Latch IC Switch for High Temperature

CYD175 is a single-digital-output Hall-effect sensor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, and an open-collector output pre-driver. An internal band gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.
While the magnetic flux density (B) is larger than threshold Bop, the OUT pin turns on (low). If B removed toward Brp, the OUT pin is latched “on” state prior to B < Brp. When B < Brp, the OUT pin go into “off ” state.

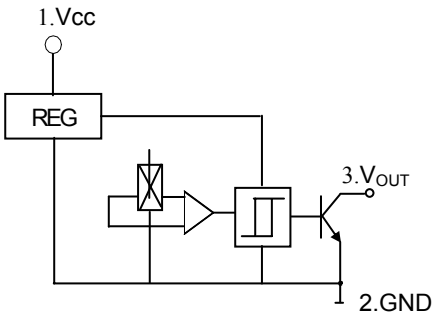
FEATURES

- Bipolar Hall effect latch sensor
- 3.5V to 20V DC operation voltage
- Open collector pre-driver
- 25mA output sink current
- Chip power reverse-connection protection
- Operating temperature: -40°C~150°C

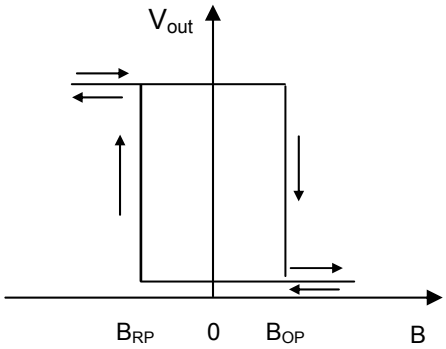
TYPICAL APPLICATION

- Rotor position sensing
- Current switch
- Encoder
- RPM detection

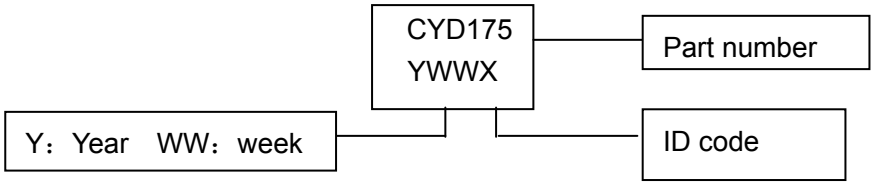
Block Diagram



Magnetic-electrical Transfer Characteristics



Marking Information



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Absolute Maximum Ratings (At Ta= 25°C)

Parameter	Symbol	Value		Unit
		Min	Max	
Supply Voltage	V_{CC}	3.5	20	V
Output “OFF ” Voltage	Vout (off)	20		V
Output “ON” Current	Io (sink)		25	mA
Operating Temperature Range	Top	-40	150	℃
Storage Temperature Range	Tstg	-65	150	℃
Maximum Junction Temperature	Tj		150	°C

Electrical Characteristics (Ta= 25°C)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Supply Voltage	V_{CC}		3.5	-	20	V
Output Saturation Voltage	Vout(sat)	CC=12V, OUT ”ON”, Io =10mA		300	400	mV
Supply Current	I_{CC}	VCC=12V, OUT ”OFF”		3.5	6.0	mA

Magnetic Characteristics (Ta= 25°C) (1mT = 10 Gauss)

Parameter	Symbol	grade	Value			Unit
			Min	Typ	Max	
Operate Point	B_{OP}	A	1.5	4	6	mT
		B	0.5	4	8	
Release Point	B_{RP}	A	-6	-4	-1.5	mT
		B	-8	-4	-0.5	
Hysteresis	B_H	A	3	8	12	mT
		B	10	8	16	

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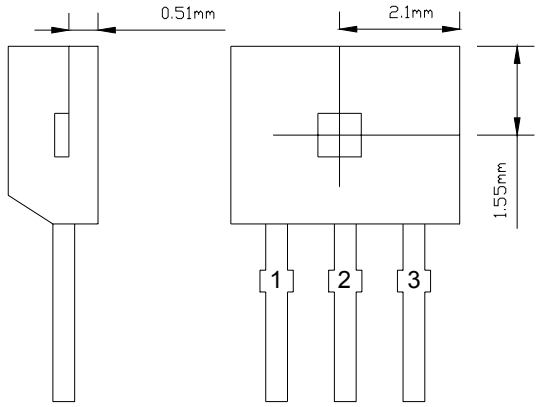
Package Information

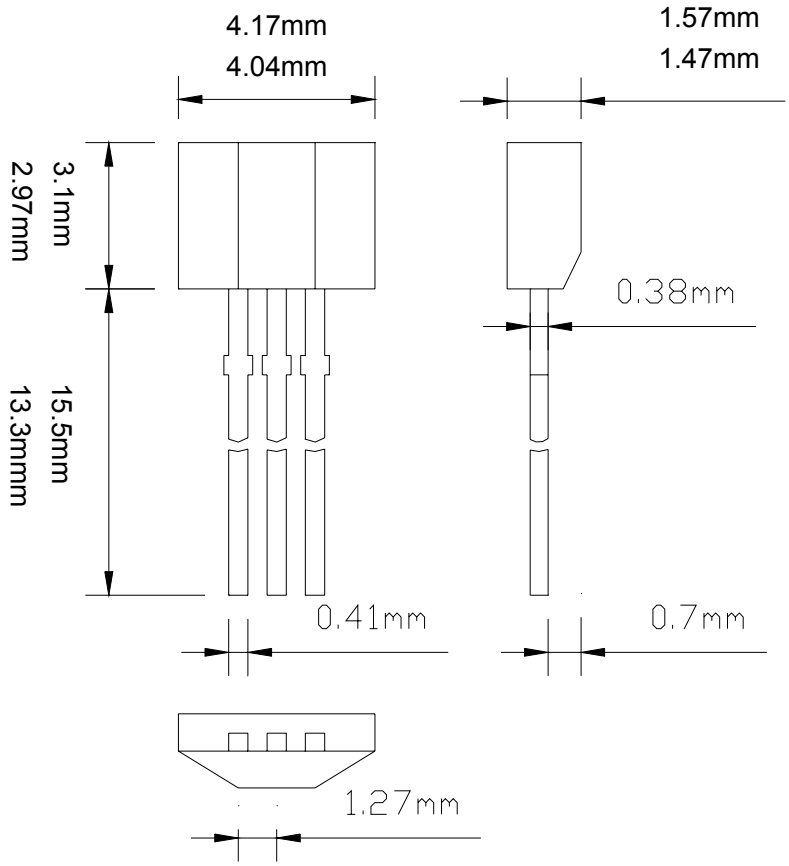


Active Area Depth Sensor Location

Pin Descriptions

1. VCC Input power
2. GND Ground
3. OUT Output stage

Package Dimension



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