

High Sensitivity Switch Hall IC

CL137

■ General Description

The CL137 is a single output integrated Hall sensors. It is used in field that the magnetic field response change rate is quick and magnetic density is small. The device includes a one-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal band-gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

If a magnetic flux density larger than threshold Bop, DO is turned on (low). The output state is held until a magnetic flux density falls below Brp causing DO to be turned off (high).

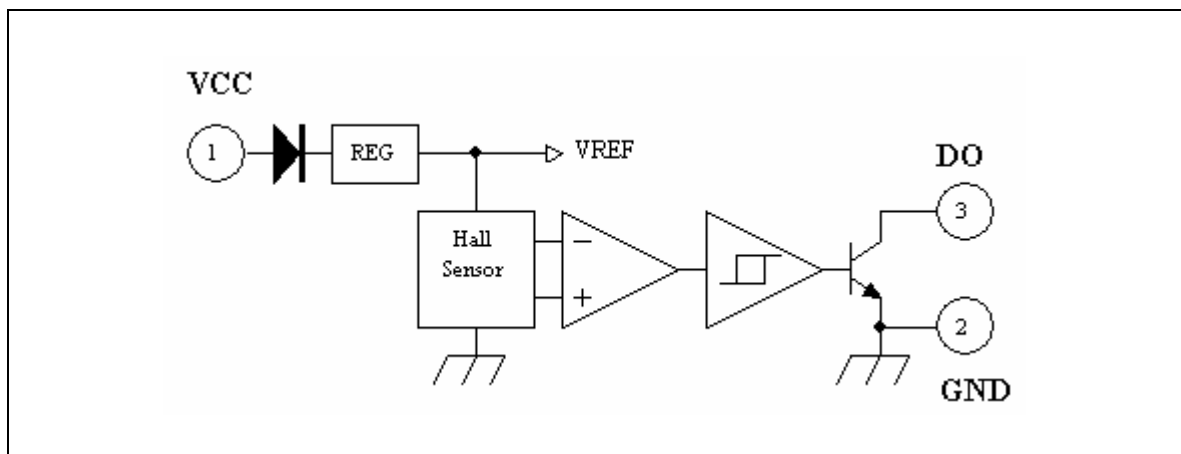
■ Features

- Wide range of operating supply voltage (3.5~20V)
- High sensitivity
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- No mobile components and high dependability
- Small size
- Output voltage compatible with Bipolar and MOS logic systems

■ Applications

- Brushless DC motor
- Brushless DC fan
- Revolution counting
- Speed measurement
- High sensitivity and unconnected switch

■ Function Block

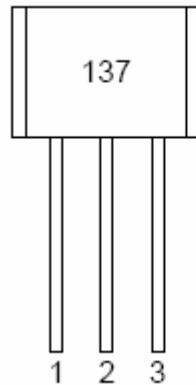


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■ Pin Descriptions

TO-92S Plastic Package



Top view

- 1: Vcc
- 2: Gnd
- 3: DO

Pin No.	Symbol	Function
1	VCC	Supply voltage
2	GND	Ground
3	DO	Output

■ Ordering Information

Package	Temperature Range	Part No.	Marking ID	Packing Type
TO-92S	-20 to 85°C	CL137-E1	CL137	Bulk

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■ Absolute Maximum Ratings (Ta= 25°C)

Symbol	Parameter	Range	Unit
VCC	Supply voltage	3.5 ~ 22	V
VRCC	Reverse VCC polarity voltage	-22	V
B	Magnetic flux density	Unlimited	G
IO	Output ON current	25	mA
PD	Package dissipation (SIP3)	0.4	W
Ta	Operation temperature	-20 ~ 85	°C
Tstg	Storage temperature	-50 ~ 150	°C

Note: Stresses greater than those listed under Maximum Ratings may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operation is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

■ Recommended Operating Conditions (Ta= 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	VCC	3.5	--	20	V
Operating temperature	Ta	-20	--	85	°C

■ Electrical Characteristics

(VCC = 12V, Ta = 25°C, unless otherwise specified)

Symbol	Parameter	Test Condition	Min	Typ.	Max	Unit
VCC	Supply Voltage		3.5		20	V
VSAT	Output saturation voltage	IO=20mA	--	0.3	0.7	V
IOL	Output leakage current	VCE=22V	--	0.1	10	μ A
ICC	Supply current	VCC=22V Output open	--	4.0	10	mA
tr	Output rise time	RL=820 Ω CL=20pF	--	0.3	1.5	μ s
tf	Output falling time	RL=820 Ω CL=20pF	--	0.3	1.5	μ s

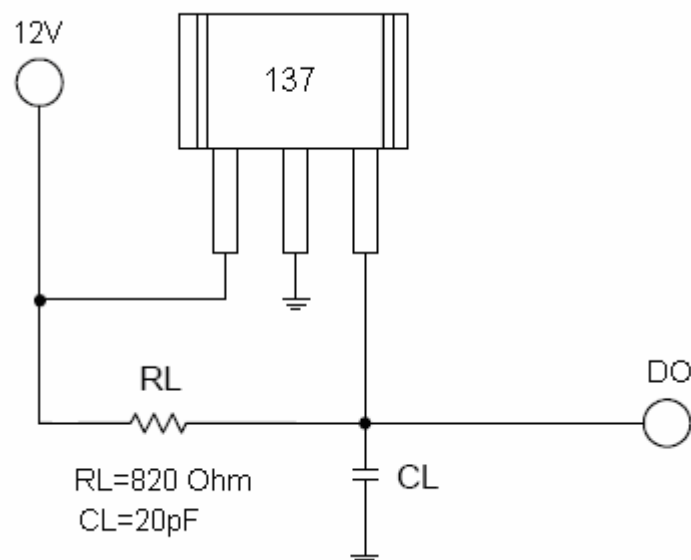
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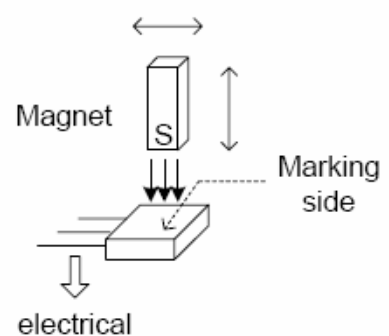
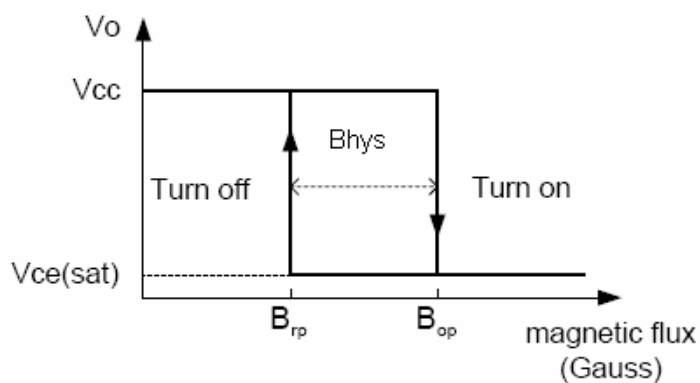
■ Magnetic Characteristics (Ta= 25°C)

Symbol	Parameter	Test Condition	Min	Typ.	Max	Unit
Bop	Operate point	VCC=12V		110	180	G
Brp	Release point	VCC=12V	10	50		G
Bhys	Hysteresis	VCC=12V		60		G

■ Test circuit



■ Hysteresis Characteristics

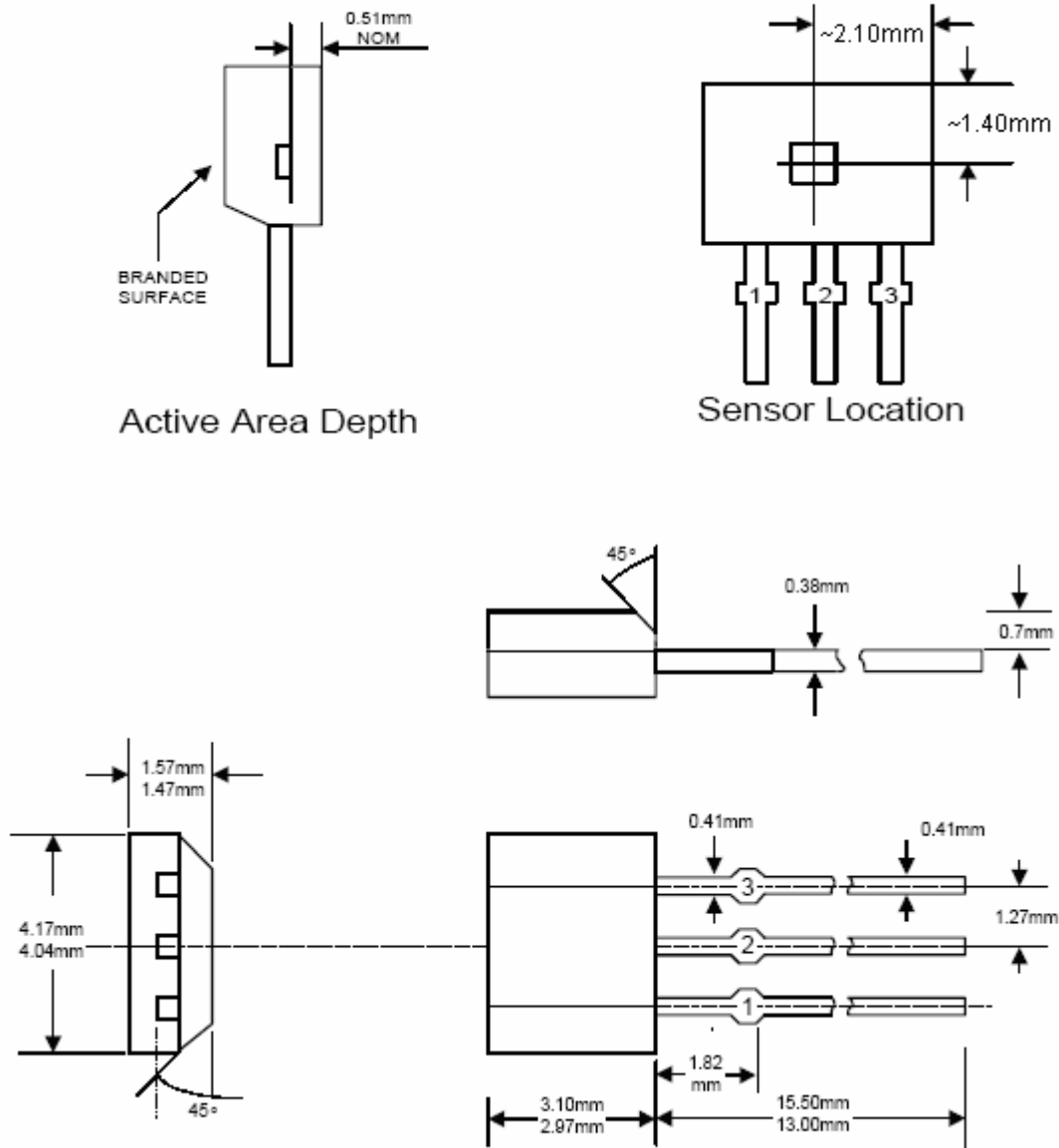


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■ Mechanical Dimensions

Package Type: TO-92S



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