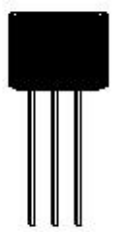
H177

Single Output Hall Effect Latch IC



SIP-3L Package

General Description

H177 is an integrated Hall effect latched sensor with output pull-high resistor driver designed for electronic commutation of brushless DC motor applications and contactless switches.

The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and output driver with pull-high resistor. An internal bandgap 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 reversal falls below Brp causing DO to be turned off (High).

H177 is rated for operation over temperature range from -20℃ to 85℃ and voltage range from 3.5V to 28V. The devices are available in low cost die forms or rugged 3 pin SIP packages.

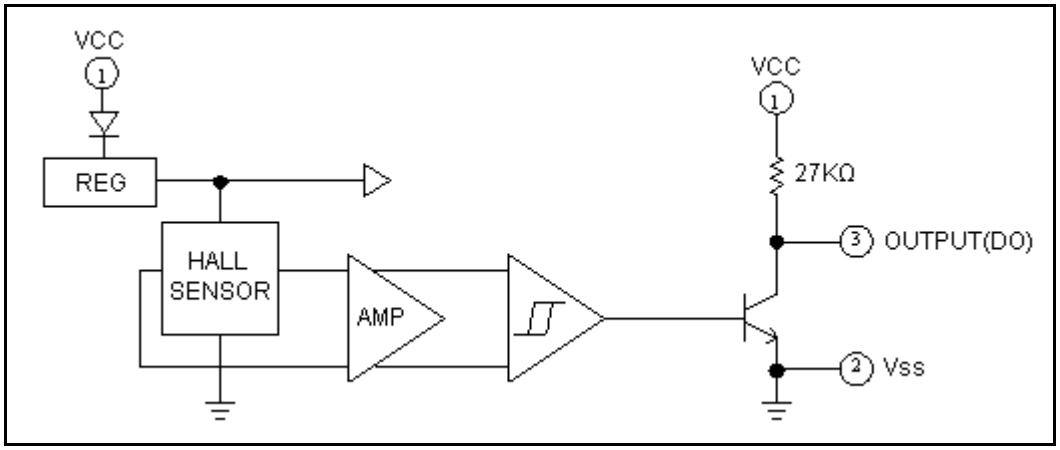
Features

- Wide range of supply voltage: 3.5V to 28V.
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- High sensitivity with a small magnet.
- TTL and MOS ICs directly drivable by output.
- Build in protection diode for chip reverse power connecting.
- Package: SIP-3L.

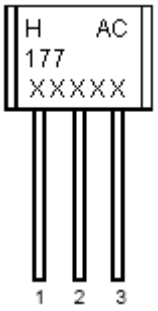
Applications

- Brushless DC Motor
- Brushless DC Fan
- Position Sensors
- Rotation Sensors
- Revolution Counting
- Speed Measurement
- Keyboard Switches
- Micro-switches

Functional Block Diagram



Pin Assignment

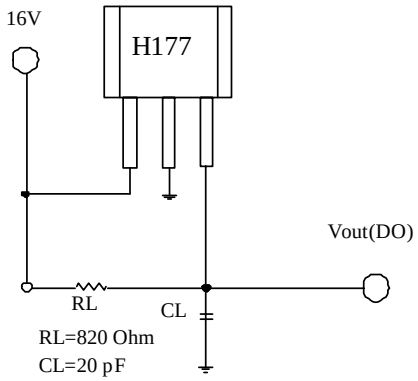


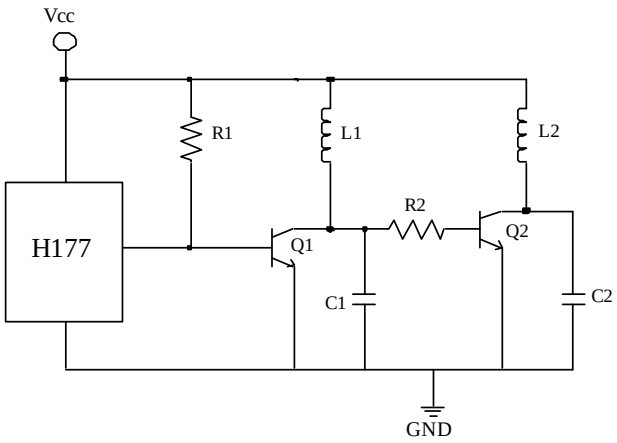
Name	P/I/O	Pin No	Description
VCC	P	1	Positive Power Supply
Vss	P	2	Gnd
DO	O	3	Output Pin

Absolute Maximum Ratings (Ta=25℃)

Characteristics	Symbol	Values	Unit
Supply Voltage	V_{CC}	28	V
Reverse V_{CC} Polarity Voltage	V_{RCC}	-28	V
Magnetic Flux Density	B	Unlimited	
Output OFF Voltage	V_{ce}	35	V
Output ON Current (continuous)	I_C	25	mA
Operating Temperature Range	T_A	-20 to +85	℃
Storage Temperature Range	T_S	-65 to +150	℃
Package Power Dissipation	P_D	250	mW
Maximum Junction Temperature	T_J	150	℃

Test Circuit & Application Circuit





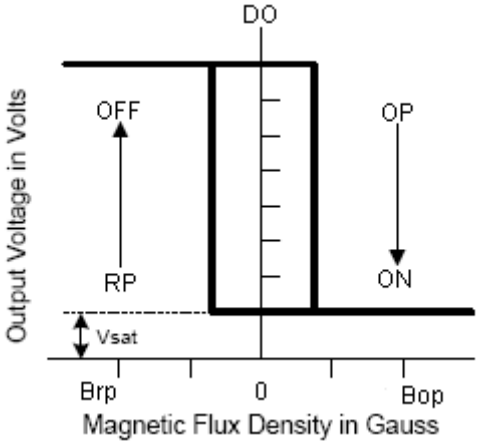
Electrical Characteristics (Ta=+25°C)

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	V_{CC}		3.5	-	28	V
Low output voltage	V_{OL}	V_{CC}=16V,Io=12mA,B=130 G	-	-	0.4	V
		V_{CC}=3.6V,Io=12mA,B=130 G	-	-	0.4	
High output voltage	V_{OH}	V_{CC}=16V,Io=-30μA,B=-130 G	14.6	-	-	V
		V_{CC}=3.6V,Io=-30μA,B=-130 G	2.2	-	-	
Output Leakage Current	Icex	Vce=16V, V_{CC}=16V	-	0.1	10	uA
Output Short-circuit Current	-Ios	V_{CC}=16V,Vo=0V,B=-130 G	0.4	-	0.9	mA
Supply Current	Icc	V_{CC}=24V, Output Open	-	5	10	mA
Output Rise Time	tr	V_{CC}=16V, RL=820Ω, CL=20Pf	-	0.3	1.5	us
Output Falling Time	tf	V_{CC}=16V, RL=820Ω, CL=20Pf	-	0.3	1.5	us

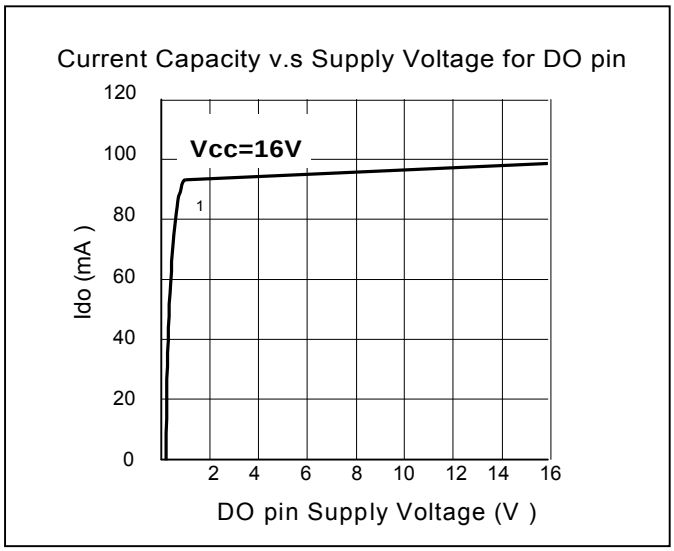
Magnetic Characteristics

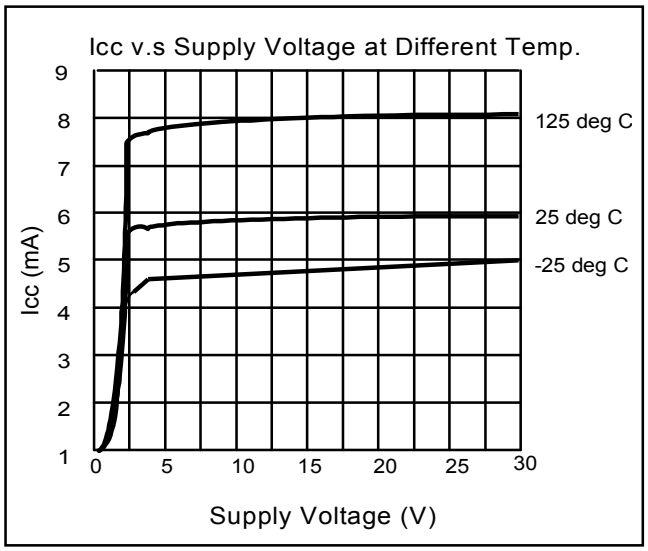
Characteristic		Symbol	Ta=+25℃		Ta=0℃ to +70℃		Unit	grade
			Min.	Max.	Min.	Max.		
H177A	Operate Point	Bop	0	70	0	70	G	A
	Release Point	Brp	-70	0	-70	0	G	
	Hysteresis	Bhys	40	110	20	140	G	
H177B	Operate Point	Bop	-	100	-	100	G	B
	Release Point	Brp	-100	-	-100	-	G	
	Hysteresis	Bhys	50	150	30	200	G	
H177C	Operate Point	Bop	-	130	-	130	G	C
	Release Point	Brp	-130	-	-130	-	G	
	Hysteresis	Bhys	60	160	40	220	G	

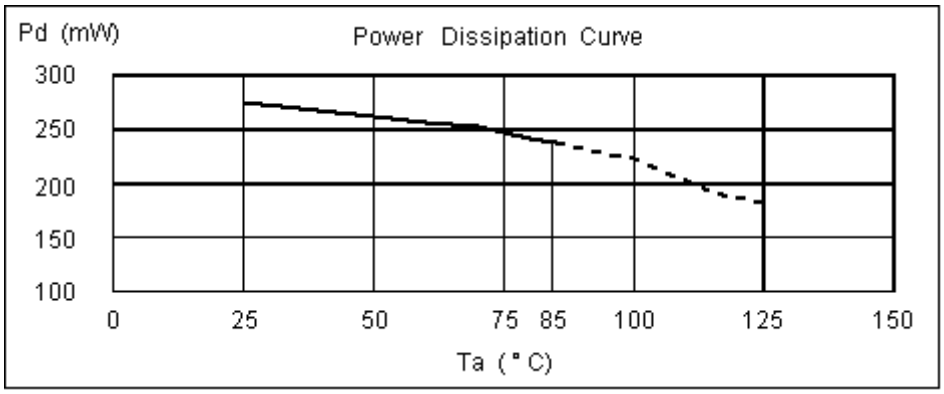
Hysteresis Characteristics Curve



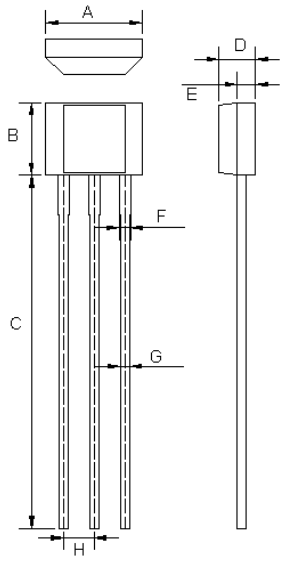
Electrical Characteristics Curve





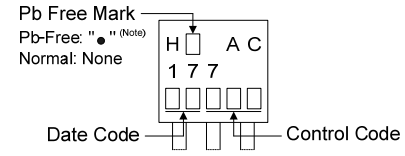


SIP-3L Dimension



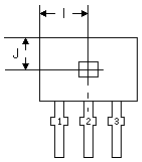
3-Lead SIP-3L Plastic
HSMC Package Code: AC

Marking:



Pin Style: 1. Vcc 2. Gnd 3. Do

Package Sensor Location



Material:
- Lead solder plating: Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	3.962	4.216
B	2.870	3.124
C	13.60	15.60
D	1.245	1.753
E	0.750REF	
F	0.406	0.508
G	0.330	0.432
H	1.27REF	
I	1.87	2.13
J	1.37	1.63

*: Typical, Unit: mm

Head Office And Factory:

- **Head Office** (Hi-Sincerity Microelectronics Corp.): 5/F., Golden Harvest Building 15 Wang Chiu Road, Kowloon Bay, Hong Kong
  Tel: +852-2755-7162 Fax: +852-2755- 7795
- AVANTICS : Shanghai Address: No.399, Cai Lum Rd. Zhangjiang Technology Industrial Park Pudong, Shanghai 201210, China
  Tel: +86(21) 61637118 Fax: +86(21)61637006