

HC477

Complementary Output Hall Effect Latch

Features

- On-chip Hall sensor with two different sensitivity and hysteresis settings for HC477
- 3.5V to 20V operating voltage
- 400mA (avg) output sink current
- Build-in protecting diode only for chip reverse power connecting
- -20°C to 85°C operating temperature
- Low profile 4 pin SIP package

Applications

- Dual-coil Brush-less DC Motor
- Dual-coil Brush-less DC Fan
- Revolution Counting
- Speed Measurement

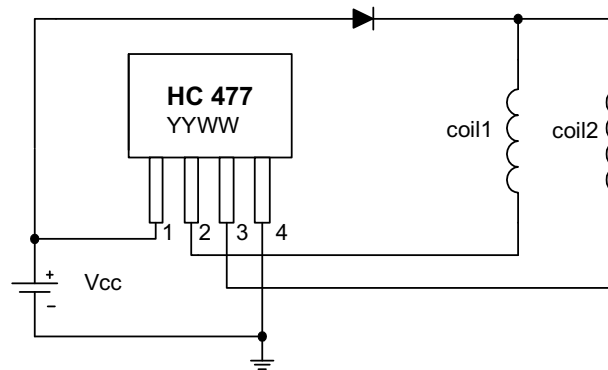
General Description

HC477 are integrated Hall sensors with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-collector outputs (**DO**, **DOB**).

While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**、**DOB** transfer each state.

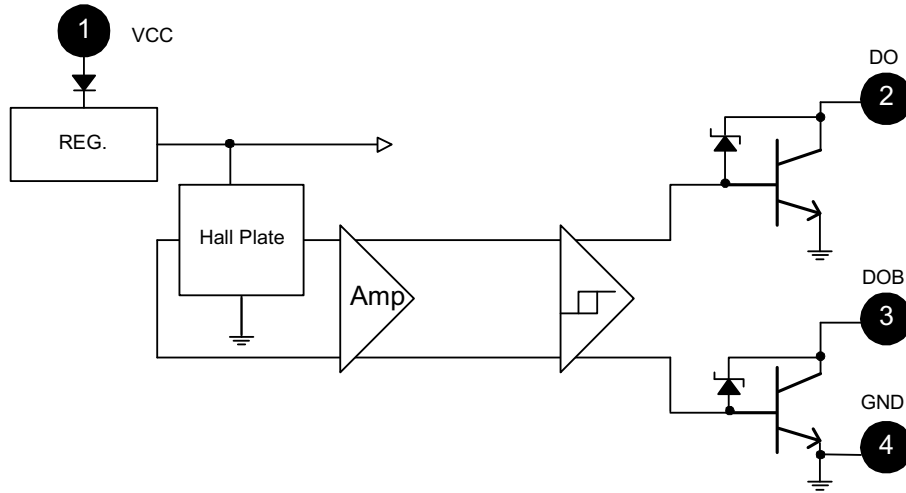
For DC fan application, sometimes need to test power reverse connection condition. Internal diode only protects chip-side but not for coil-side. If necessary, add one external diode to block the reverse current from coil-side.

Typical Application Circuit

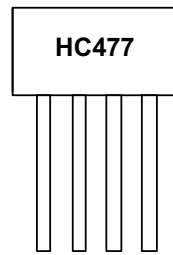


Brush-less DC Fan

Block Diagram



Pin Assignment



VCC DO DOB GND

Name	P/I/O	Pin #	Description
Vcc	P	1	Power Supply Input
DO	O	2	Output Pin
DOB	O	3	Output Pin
GND	P	4	Ground

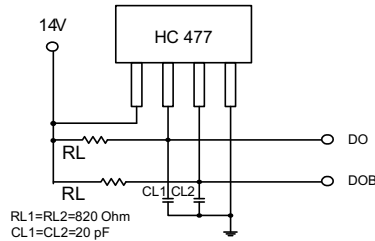
Absolute Maximum Ratings (at Ta=25°C)

Characteristics		Symbol	Values	Unit
Supply voltage		V_{CC}	22	V
Reverse V_{CC} Polarity Voltage		V_{RCC}	-22	V
Magnetic flux density		B	Unlimited	
Output "on" current	Continuous	I_c	0.3	A
	Hold		0.4	
	Peak (Start Up)		0.8	
Operating temperature range		T_a	-20~+85	°C
Storage temperature range		T_s	-65~+150	°C
Package Power Dissipation		PD	550	mW
Maximum Junction Temp		T_j	150	°C

Electrical Characteristics (T=+25°C Vcc = 4.0V to 20V)

Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Low Supply Voltage	Vce	Vcc=3.5V, I _L =100mA		0.4		V
Supply Voltage	Vcc		3.5		20	V
Output Zener Breakdown	Vz			46		V
Output Saturation Voltage	Vce(sat)	Vcc=14V, I _L =300mA		0.3	0.6	V
Output Leakage Current	I _{ceX}	Vce=14V, Vcc=14V		<0.1	10	μA
Supply Current	I _{cc}	Vcc=20V, Output Open		16	25	mA
Output Rise Time	t _r	Vcc=14V, R _L =820Ω, C _L =20pF		3.0	10	μs
Output Falling Time	t _f	Vcc=14V, R _L =820Ω, C _L =20pF		0.3	1.5	μs
Switch Time Differential	Δt	Vcc=14V, R _L =820Ω, C _L =20pF		3.0	10	μs

Test Circuit



Magnetic Characteristics(Ta=+25°C)

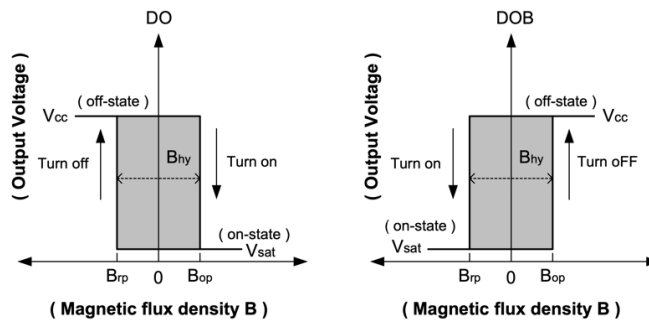
(1mT=10 Gauss)

A grade

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B _{op}	10	-	50	Gauss
Release Point	B _{rp}	-50	-	-10	Gauss
Hysteresis	B _{hy}	-	60	-	Gauss

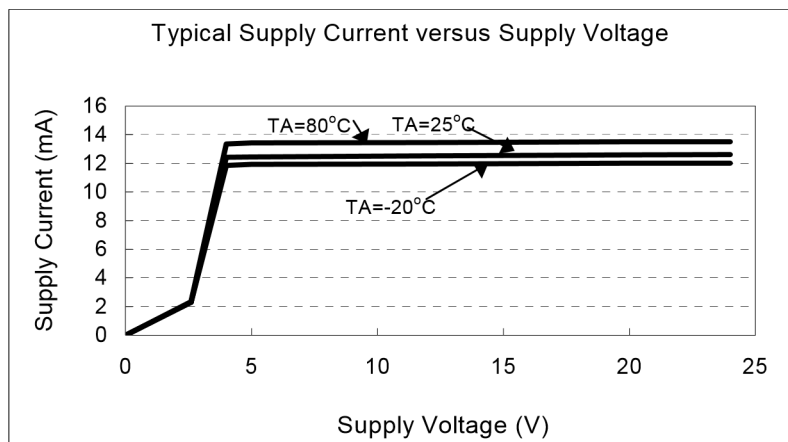
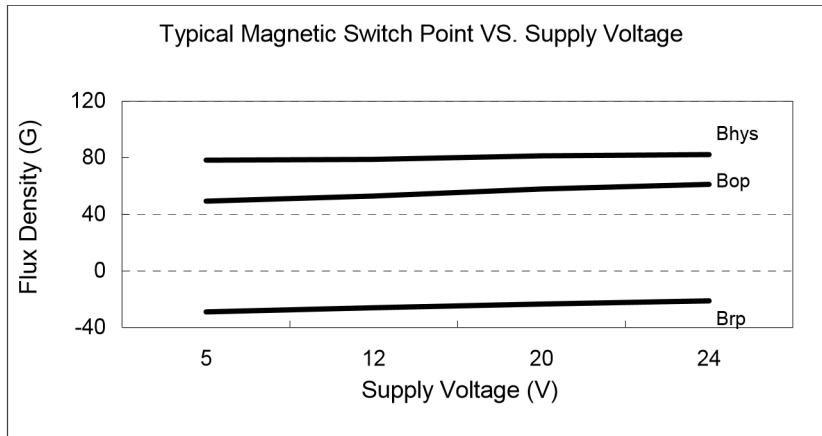
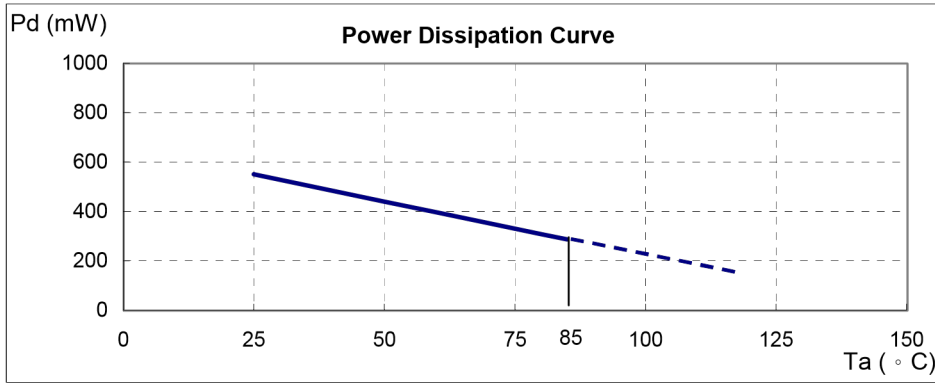
B grade

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B _{op}	5	-	70	Gauss
Release Point	B _{rp}	-70	-	-5	Gauss
Hysteresis	B _{hy}	-	75	-	Gauss

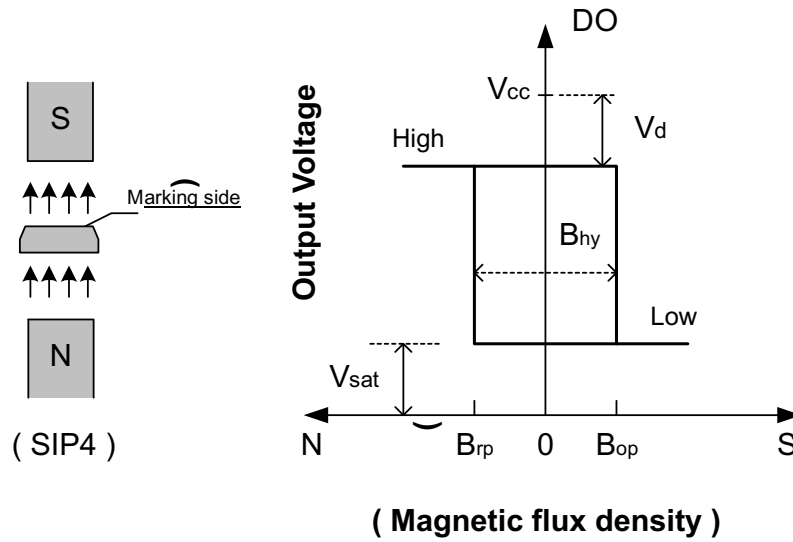


Performance Characteristics (SIP4)

Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	440	396	352	308	286	264	242	220	198	176	154	132

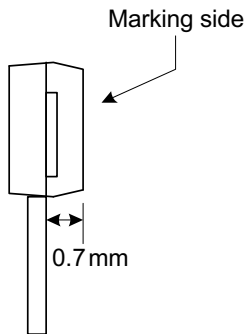


Operating Characteristics

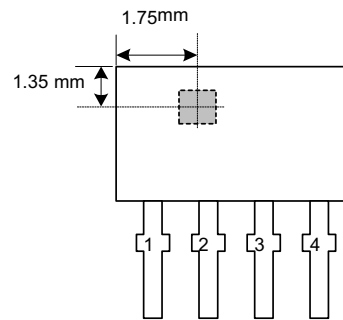


Package Information

Active Area Depth



Package Sensor Location



Package Dimension

