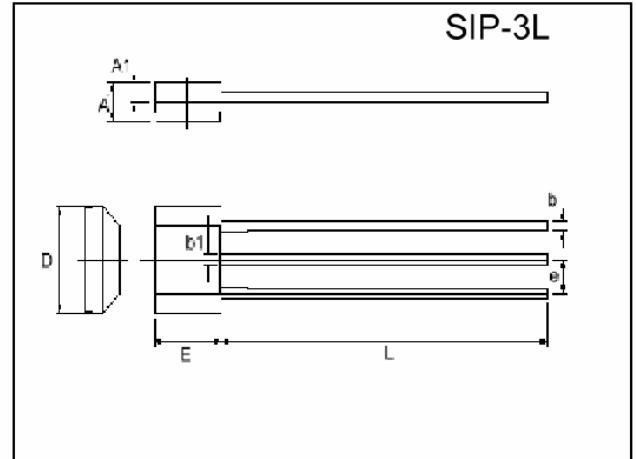


Description

The SH177 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 B_{op} , DO is turned on (low). The output state is held until a magnetic flux density reversal falls below B_{rp} causing DO to be turned off (high). SH177 is rated for operation over temperature range from -20°C to 100°C and voltage range from 3.5V to 28V. The devices are available in low cost die forms or rugged 3 pin SIP packages.



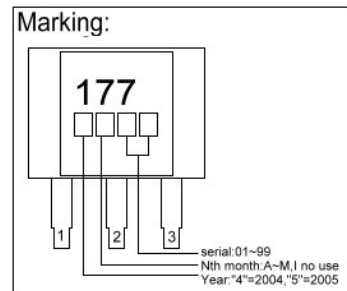
Features

- * Internal Bandgap Regulator Allows Temperature Compensated Operations And A Wide Operating Voltage Range
- * Build In Protection Diode For Chip Reverse Power Connecting
- * TTL and MOS ICs Directly Drivable By Output
- * Wide Range Of Supply Voltage: 3.5V to 28V
- * High Sensitivity With A Small Magnet

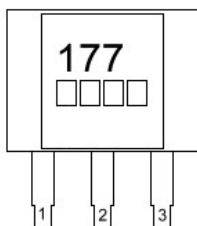
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.245	1.753	D	3.962	4.216
A1	0.750 REF.		E	2.870	3.124
b	0.330	0.432	L	13.60	15.60
b1	0.406	0.508	e	1.27 REF.	

Applications

- * Rotation Sensors
- * Speed Measurement
- * Keyboard Switches
- * Brushless DC Fan
- * Position Sensors
- * Microswitches
- * Brushless DC Motor
- * Revolution Counting

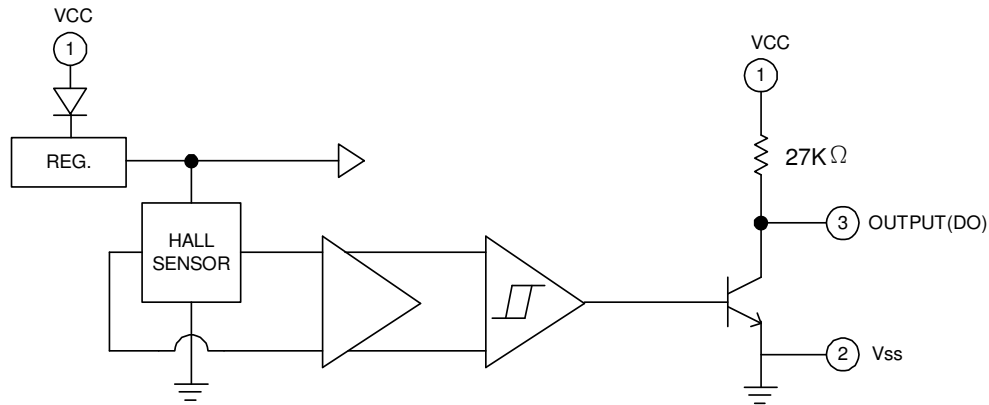


Pin Descriptions



Name	P/I/O	Pin#	Description
V _{CC}	P	1	Positive power supply
V _{SS}	P	2	Ground
DO	O	3	Digital output

Function Block Diagrams



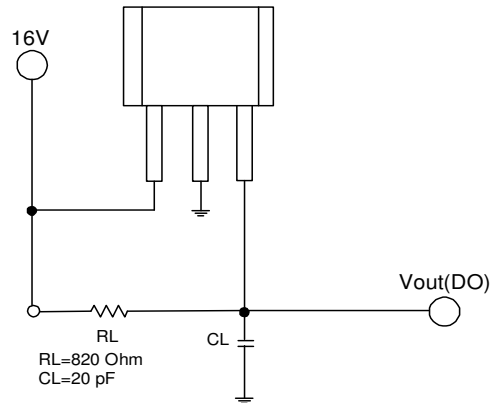
Absolute Maximum Ratings at Ta= 25°C

Parameter	Symbol	Value	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	I _c Continuous	25	mA
Operating Temperature Range	T _A	-20~100	°C
Storage Temperature Range	T _S	-65~150	°C
Package Power Dissipation	P _D	250	mW
Max. Junction Temperature	T _J	175	°C

Electrical Characteristics Ta=25°C

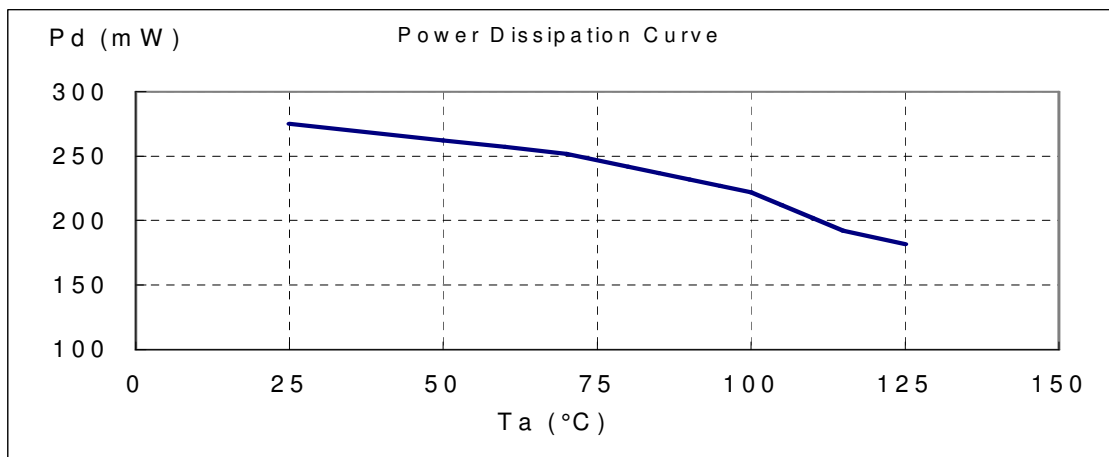
Parameter	Symbol	Test Conditions	Min	Typ.	Max.	Unit
Supply Voltage	V _{CC}	-	3.5	-	28	V
Low output voltage	V _{OL}	V _{CC} =16V, I _o =12mA, B=130 Gauss	-	-	0.4	V
		V _{CC} =3.6V, I _o =12mA, B=130 Gauss	-	-	0.4	V
High output voltage	V _{OH}	V _{CC} =16V, I _o =-30 A, B=-130 Gauss	14.6	-	-	V
		V _{CC} =3.6V, I _o =-30 A, B=-130 Gauss	2.2	-	-	V
Output Leakage Current	I _{CEX}	V _{CC} =16V, V _{CC} =16V	-	<0.1	10	uA
Output Short-circuit Current	-I _{OS}	V _{CC} =16V, V _o =0V, B=-130 Gauss	0.4	-	0.9	mA
Supply Current	I _{CC}	V _{CC} =24V, Output Open	-	5	10	mA
Output Rise Time	t _r	V _{CC} =16V, R _L =820 CL=20pf	-	0.3	1.5	us
Output Falling Time	t _f	V _{CC} =16V, R _L =820 CL=20pf	-	0.3	1.5	us

Test Circuit

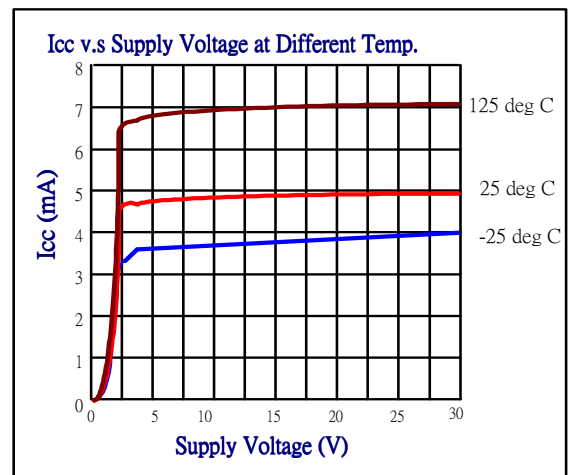
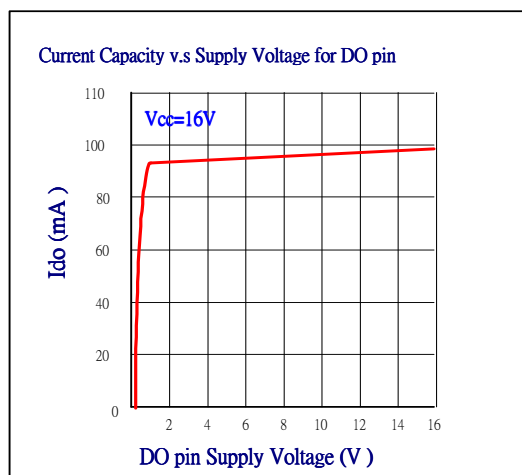


Power dissipation VS. Environment Temperature

Ta(°C)	25	50	60	70	80	85	90	95	100	105	110	115	125
Pd(mW)	275	262	257	252	242	237	232	227	222	212	202	192	182



Electrical Characteristics Curves



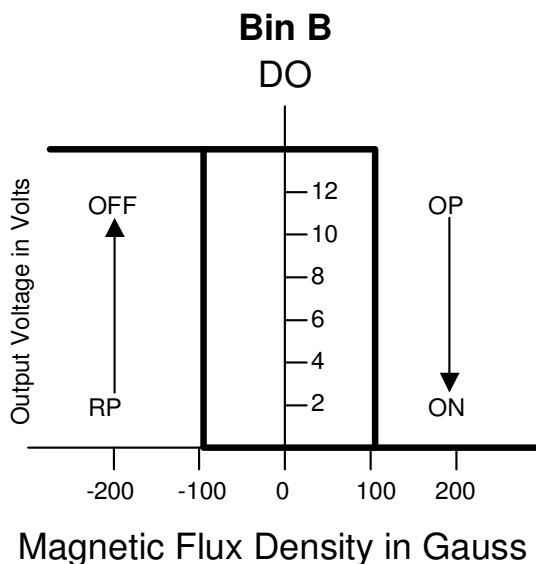
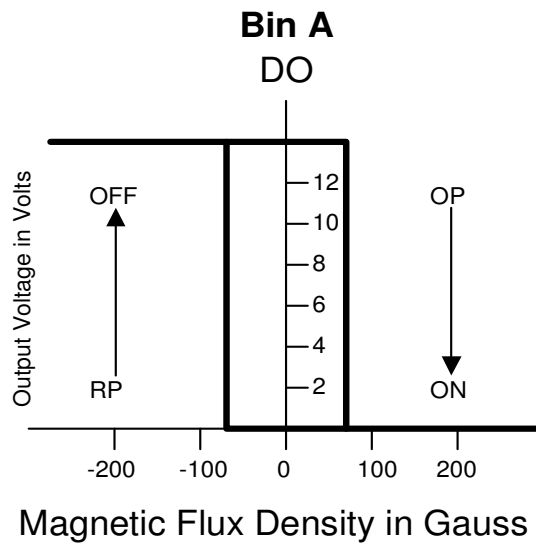
Current capacity vs. supply voltage for DO pin

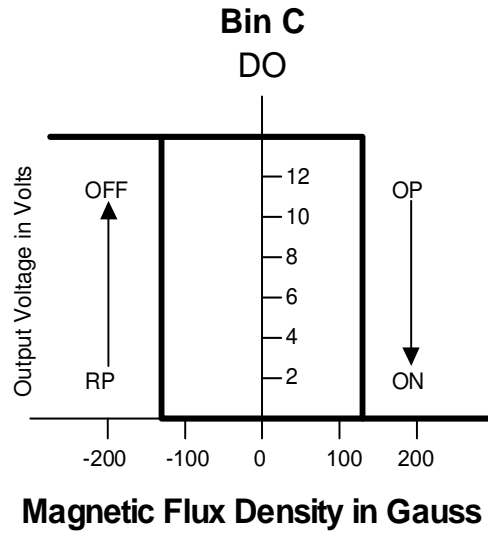
Icc v.s Vcc at Different Temp

Magnetic Characteristics

Characteristic		Symbol	Ta=+25°C		Ta=-0°C to +70°C		Unit
			Min	Max	Min	Max	
Operate Point	BIN A	Bop	0	70	0	70	Gauss
	BIN B	Bop	-	100	-	100	Gauss
	BIN C	Bop	-	130	-	130	Gauss
Release Point	BIN A	Brp	-70	0	-70	0	Gauss
	BIN B	Brp	-100	-	-100	-	Gauss
	BIN C	Brp	-130	-	-130	-	Gauss
Hysteresis	BIN A	Bhys	40	110	20	140	Gauss
	BIN B	Bhys	50	150	30	200	Gauss
	BIN C	Bhys	60	160	40	220	Gauss

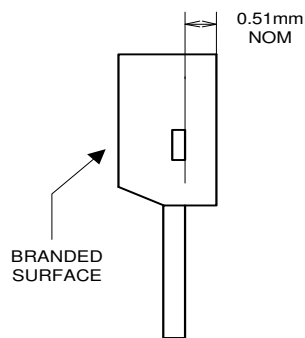
Hysteresis Characteristics





Package Information

Active Area Depth



Package Sensor Location

