G177 Single Output Hall Effect Latch IC

Description

The G177 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).

G177 is rated for operation over temperature range from -20℃ to 100℃ and voltage range from 3.5V to 28V. The devices are available in low cost die forms or rugged 3 pin SIP packages.

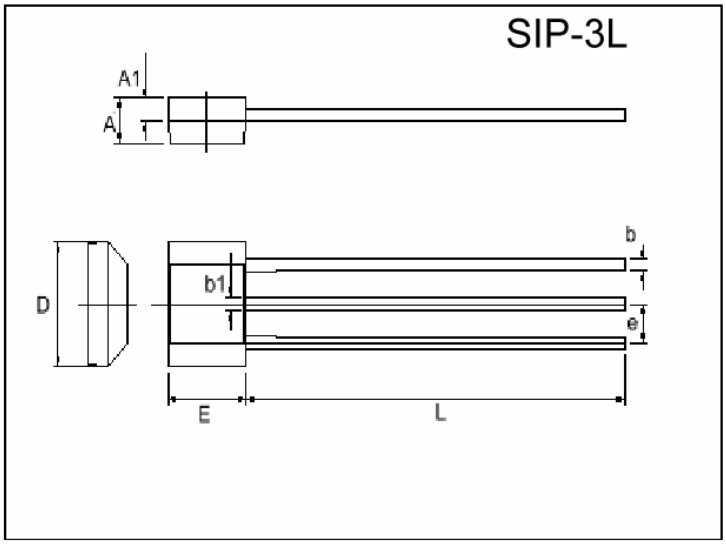
Features

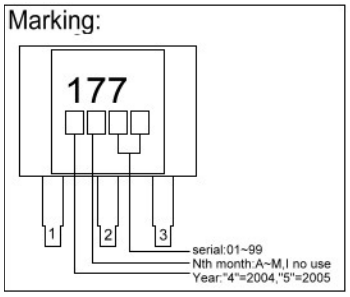
* Wide range of supply voltage: 3.5V to 28V.
* Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
* High sensitivity with a small magnet.
* TTL and MOS ICs directly drivable by output.
* Build in protection diode for chip reverse power connecting.

Application

1)Brushless DC Motor
2)Brushless DC Fan
3)Position Sensors
4)Rotation Sensors
5)Revolution Counting
6)Speed Measurement
7)Keyboard Switches
8)Microswitches

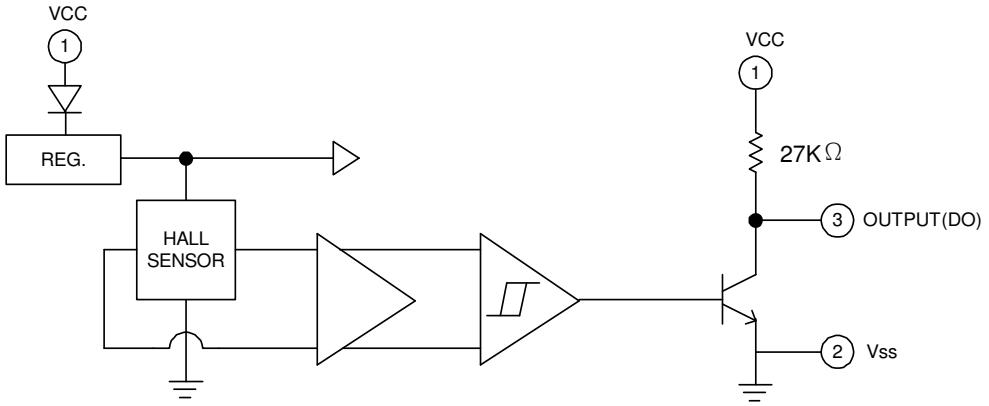
Package Dimensions



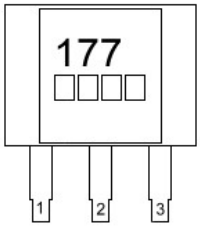


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.245	1.753	D	3.962	4.216
A1	0.750REF.		E	2.870	3.124
b	0.330	0.432	L	13.60	15.60
b1	0.406	0.508	e	1.27 REF.	

Functional Block Diagrams



Pin Descriptions



Name	P/I/O	Pin#	Description
Vcc	P	1	Positive power supply
Vss	P	2	Ground
DO	O	3	Digital output

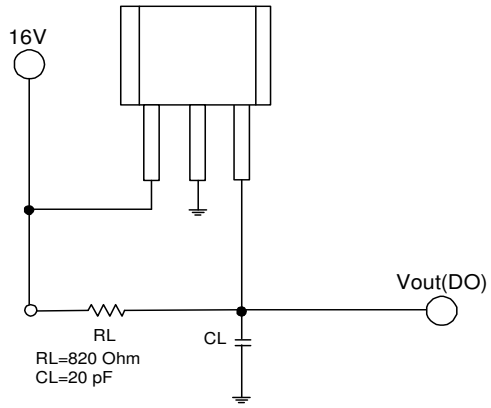
Absolute Maximum Ratings at Ta = 25℃

Parameter	Symbol	VALUE	Unit
Supply Voltage	Vcc	28V	V
Reverse Vcc Polarity Voltage	VRCC	-28V	V
Magnetic flux density	B	Unlimited	
Output OFF Voltage	Vce	35	V
Output ON Current	Ic Continuous	25	mA
Operating Temperature Range	Ta	-20~100	℃
Storage Temperature Range	Ts	-65~150	℃
Package Power Dissipation	PD	250	mW
Maximum Junction Temp.	Tj	175	℃

Electrical Characteristics (TA=+25℃)

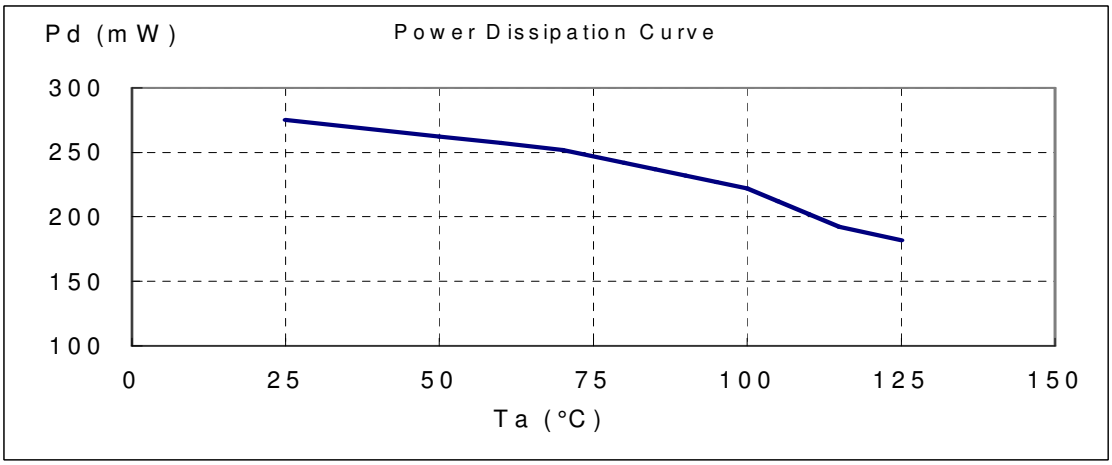
Parameter	SYMBOL	Test Conditions	Min	Typ.	Max.	Unit
Supply Voltage	VCC	-	3.5	-	28	V
Low output voltage	VOL	VCC=16V,Io=12mA,B=130 Gauss	-	-	0.4	V
		VCC=3.6V,Io=12mA,B=130 Gauss	-	-	0.4	V
High output voltage	VOH	VCC=16V, Io=-30μA,B=-130 Gauss	14.6	-	-	V
		VCC=3.6V,Io=-30μA,B=-130 Gauss	2.2	-	-	V
Output Leakage Current	Icex	VCC=16V,Vcc=16V	-	<0.1	10	uA
Output Short-circuit Current	-IOS	VCC=16V,Vo=0V,B=-130 Gauss	0.4	-	0.9	mA
Supply Current	ICC	VCC=24V,Output Open	-	5	10	mA
Output Rise Time	tr	VCC=16V,RL=820Ω CL=20pf	-	0.3	1.5	us
Output Falling Time	tf	VCC=16V,RL=820Ω CL=20pf	-	0.3	1.5	us

Test Circuit

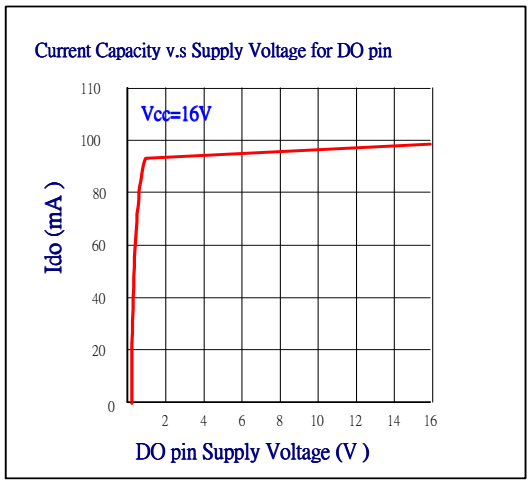


Power dissipation VS. Environment Temperature

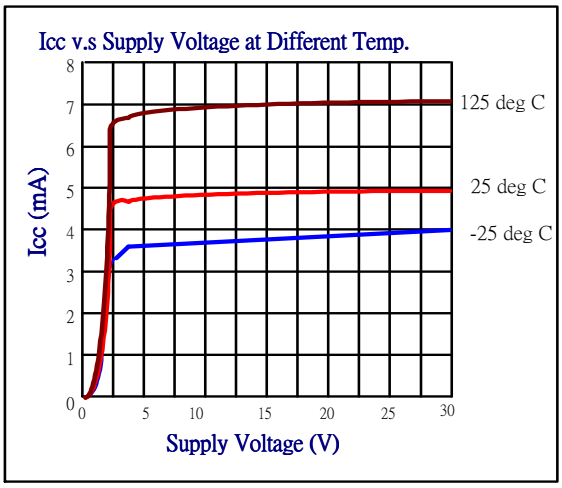
Ta(℃)	25	50	60	70	80	85	90	95	100	105	110	115	125
Pd(mW)	275	262	257	252	242	237	232	227	222	212	202	192	182



Electrical Characteristics Curves



Current capacity vs. supply voltage for DO pin



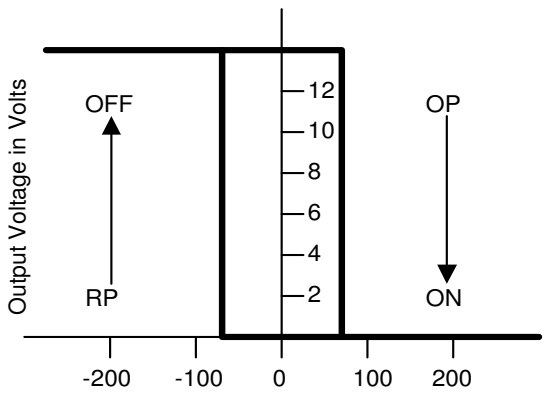
Icc v.s Vcc at Different Temp

Magnetic Characteristics

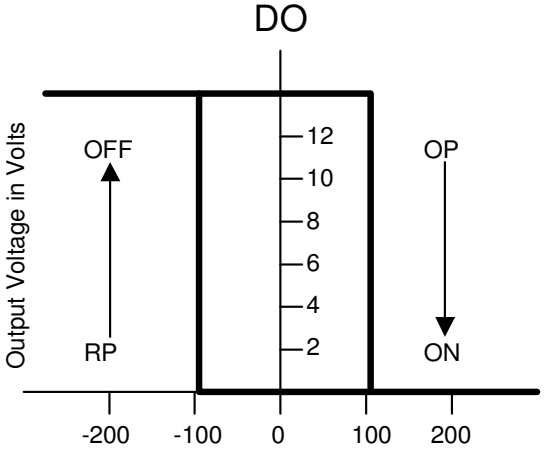
Characteristic		Symbol	Ta=+25℃		Ta=-0℃ to +70℃		Unit
			Min	Max	Min	Max	
Operate Point	BIN A	Bop	0	70	0	70	Gauss
	BIN B	Bop	-	100	-	100	Gauss
	BIN C	Bop	-	130	-	130	Gauss
Release Point	BIN A	Brp	-70	0	-70	0	Gauss
	BIN B	Brp	-100	-	-100	-	Gauss
	BIN C	Brp	-130	-	-130	-	Gauss
Hysteresis	BIN A	Bhys	40	110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

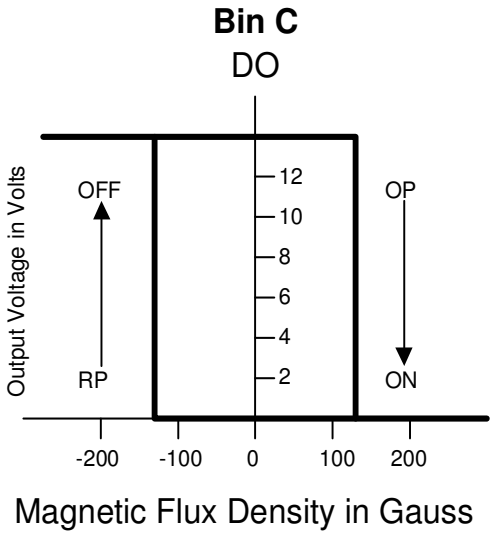
Hysteresis Characteristics

Bin A



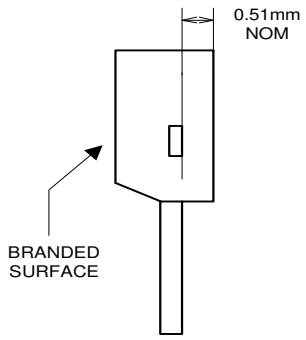
Bin B



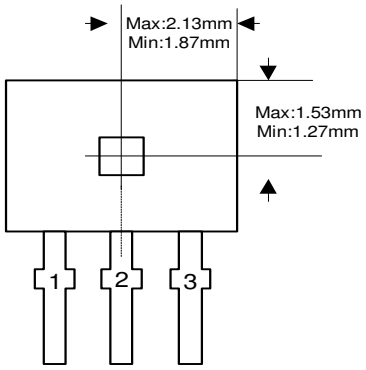


Package Information

Active Area Depth



Package Sensor Location



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