COMPLEMENTARY OUTPUT HALL EFFECT LATCHED SINK DRIVER

FEATURES

- On-chip Hall sensor with two different sensitivity and hysteresis settings for A277.
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- High output sinking capability up to 400mA for driving large load.
- Lower current change rate reduces the peak output voltages during switching.
- Build in protection diode for chip reverse power connecting.
- Available in die form or rugged low profile 4 pin SIP packages.

GENERAL DESCRIPTION

A277 are integrated Hall sensors with output drivers designed for electronic commutation of brushless DC motor applications. 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 complementary open-collector drivers for sinking large current loads. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

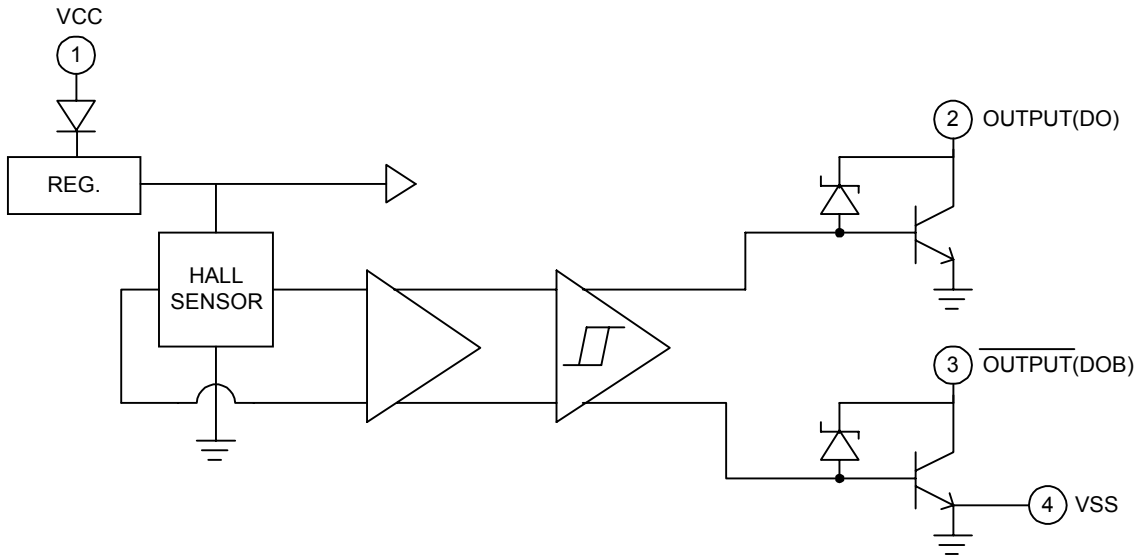
If a magnetic flux density larger than threshold Bop, DO is turned on(low) and DOB is turned off (high). The output state is held until a magnetic flux density reversal falls below Brp causing DO to be turned off and DOB turned on.

A277 are rated for operation over temperature range from -20 ^{o}C to 85 ^{o}C and voltage range from 3.5V to 20V. The devices are available in low cost die forms or rugged 4 pin SIP packages.

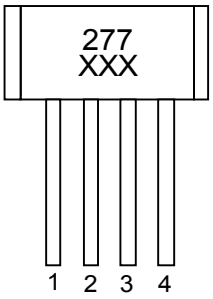
APPLICATIONS

- Brushless DC Motor
- Brushless DC Fan
- Revolution Counting
- Speed Measurement

FUNCTIONAL BLOCK DIAGRAM



PIN DESCRIPTION



1 : VCC

2 : DO

3 : D0B

4 : VSS

REMARK : XXX : DATE CODE (ex : 52Z)
52 : WEEK (ex=>52:52 WEEK . 35:35 WEEK)
Z : YEAR (ex=>Z:DC2001 , Y:DC2002 , X:DC2003)

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

ABSOLUTE MAXIMUM RATING (at Ta=25 °C)

Supply Voltage, Vcc ---------- 20V
Reverse V_{CC} Polarity Voltage, V_{RCC} ---------- -35V
Magnetic flux density, B ---------- Unlimited
Output OFF Voltage, Vce ---------- 50V(Note 1)
Output ON Current, Ic
Continuous ---------- 400mA
Hold-------- ---------- 500mA
Peak (Start Up) ---------- 700mA
Operating Temperature Range,
Ta ---------- (-20 °C to +85 °C)
Storage Temperature Range,
Ts ---------- (-65 °C to +150 °C)
Package Power Dissipation,
Pd ---------- 500mW
Maximum Junction Temp , Tj ---------- 175 °C

(Note1) Output Zener protection voltage.

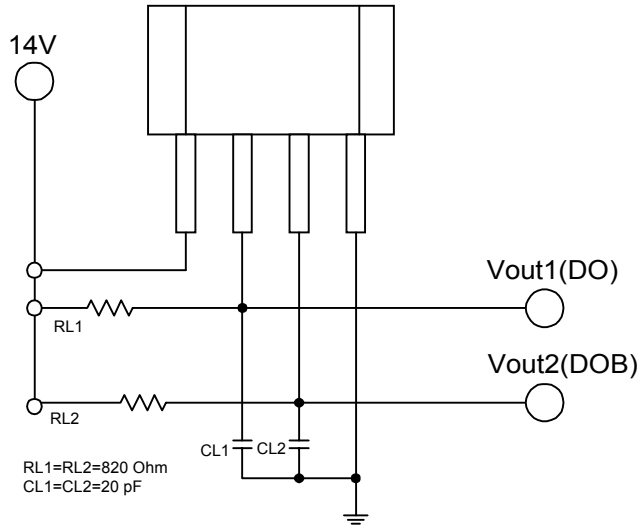
ELECTRICAL CHARACTERISTICS (Ta =+25 °C , Vcc=4.0V to 20V)

Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Low Supply Voltage	Vce	Vcc=3.5V, IL=100mA	—	0.4	—	V
Supply Voltage	Vcc	—	3.5	—	20	V
Output Saturation Voltage	Vce(sat)	Vcc=14V, IL=300mA	—	300	600	mV
Output Leakage Current	Icex	Vce=14V, Vcc=14V	—	< 0.1	10	uA
Supply Current	Icc	Vcc=20V, Output Open	—	13	20	mA
Output Rise Time	tr	Vcc=14V, RL=820Ω, CL=20pF	—	3.0	10	us
Output Falling Time	tf	Vcc=14V, RL=820Ω, CL=20pF	—	0.3	1.5	us
Switch Time Differential	Δt	Vcc=14V, RL=820Ω, CL=20pF	—	3.0	10	us

MAGNETIC CHARACTERISTICS

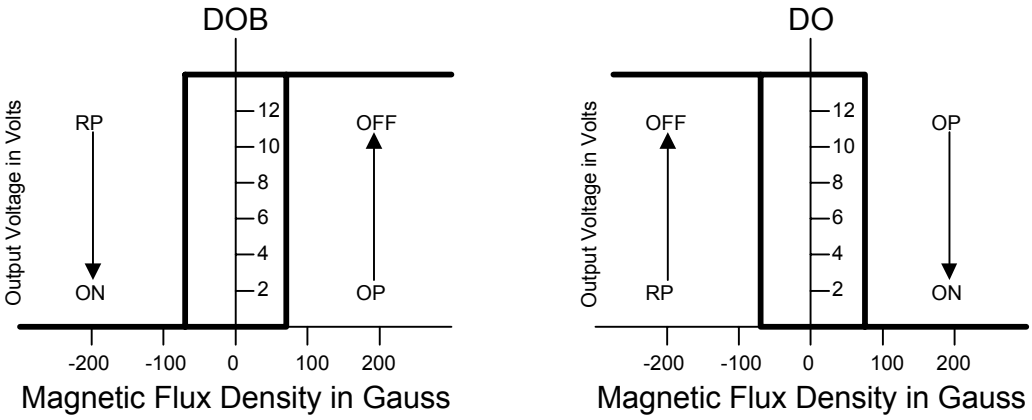
Characteristic	Symbol	Ta=+25 °C		Ta=0 °C to 70 °C		Units
		Min	Max	Min	Max	
Operate Point	Bop	0	70	0	70	G
Release Point	Brp	-70	0	-70	0	G
Hysteresis	Bhys	40	110	20	140	G

TEST CIRCUIT



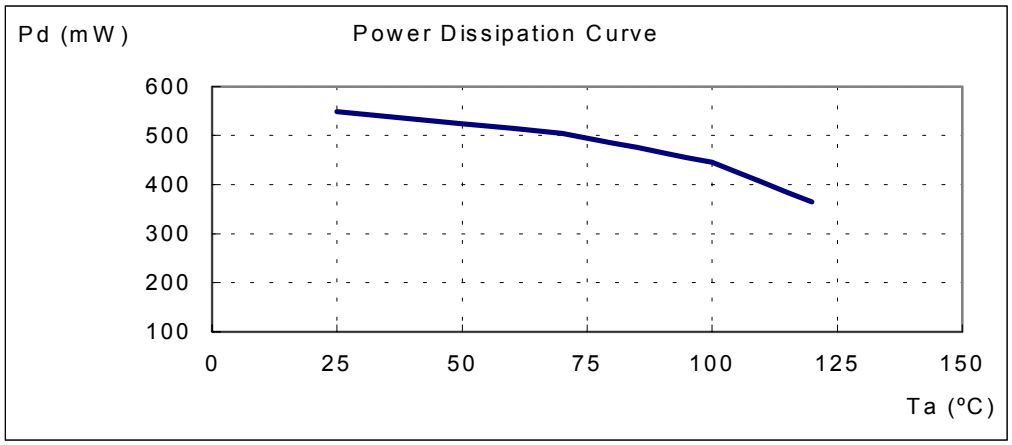
HYSTERESIS CHARACTERISTICS

A277



Power Dissipation VS. Environment Temperature

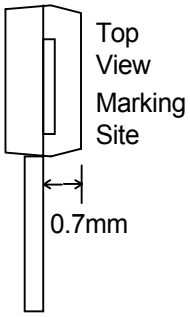
Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	525	515	505	485	475	465	455	445	425	405	385	365



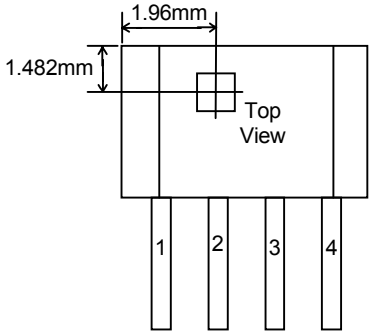
Note：TO92 4 pin (SIP-4L) package.

PACKAGE INFORMATION

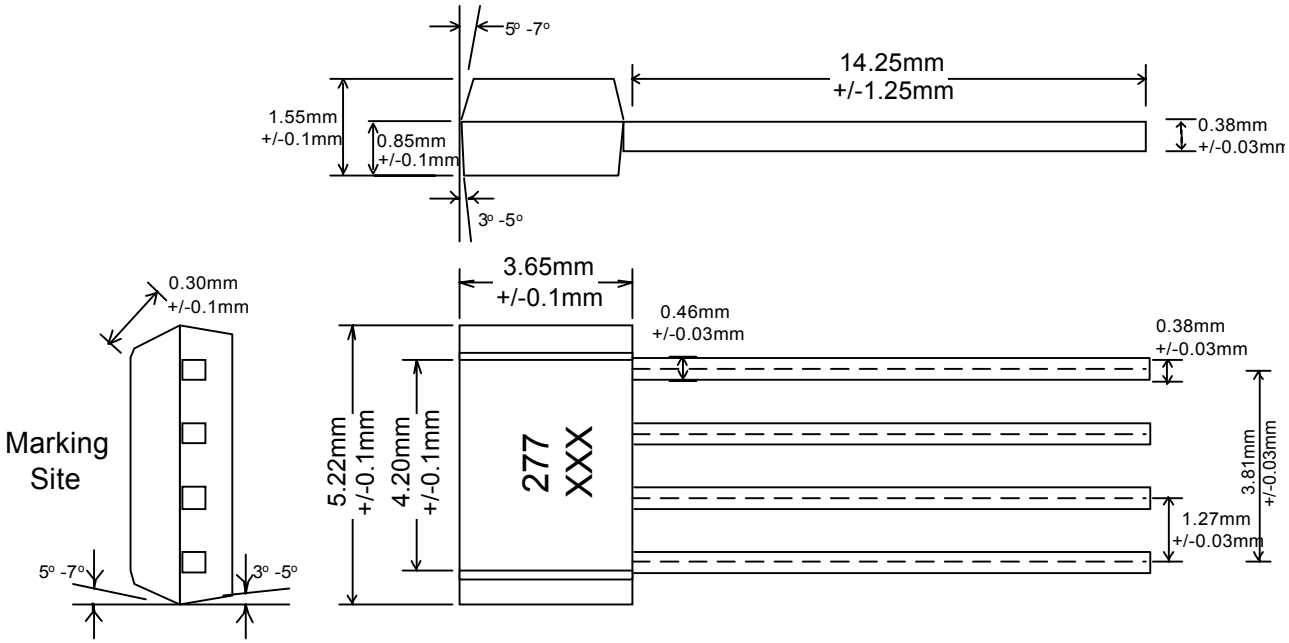
Active Area Depth



Package Sensor Location



PACKAGE DIMENSION



REMARK: XXX(DATE CODE)