

ATS276/277

Complementary Output Hall Effect Latch

■ Features

- On-chip Hall sensor with two different sensitivity and hysteresis settings for ATS276/277
- 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

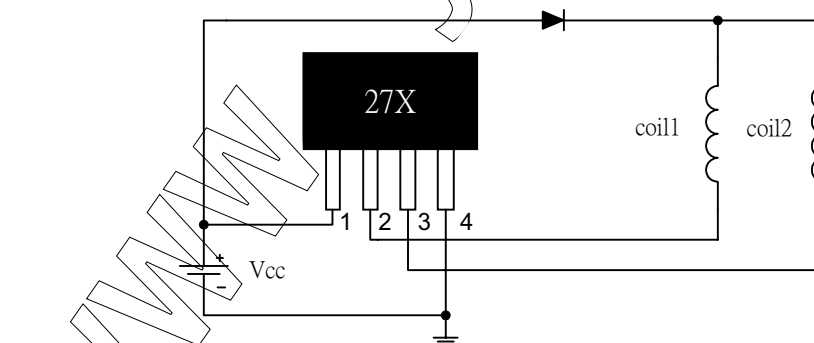
■ Applications

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

■ Ordering Information

Number	Operating Temp.	Package	Packing
ATS276	-20°C ~ +85°C	SIP4	Bulk
ATS277			

■ Typical Application Circuit



Brush-less DC Fan

■ General Description

ATS276/277 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.

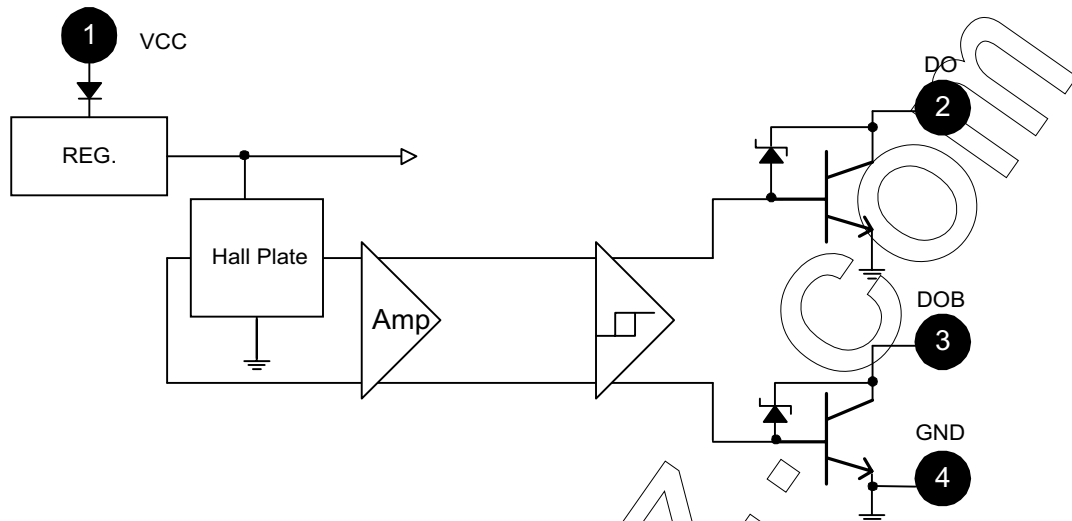
For DC fan application, sometimes need to test power reverse connection condition. Internal diode only protects chip-side but not for coil-side. If necessary, add one external diode to block the reverse current from coil-side.

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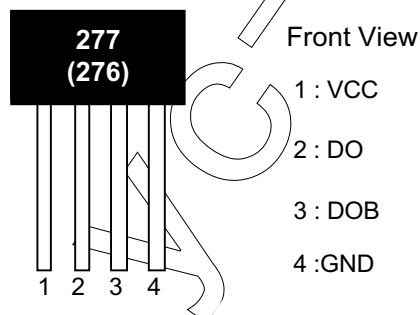
Complementary Output Hall Effect Latch

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■ Block Diagram



■ Pin Assignment



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

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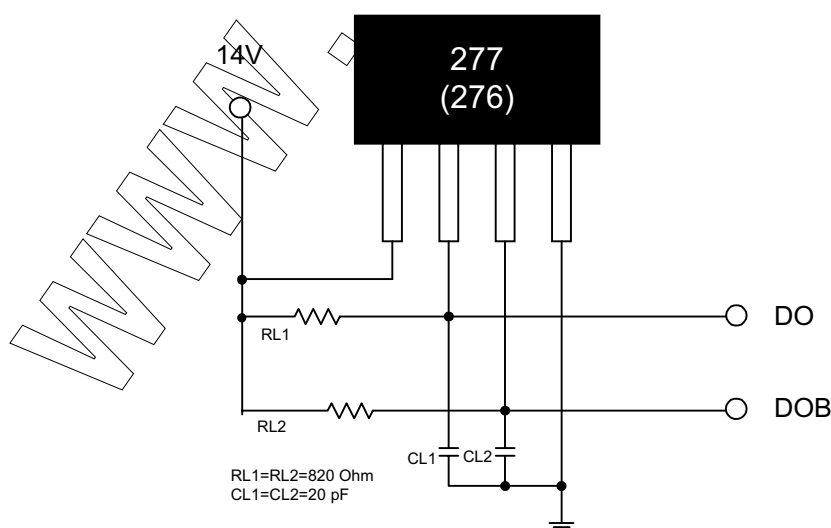
■ Absolute Maximum Ratings (at Ta=25°C)

Supply Voltage, Vcc-----	20V
Reverse V _{CC} Polarity Voltage, V _{RCC} -----	-20V
Magnetic flux density, B-----	Unlimited
Output ON Current, I _c	
Continuous -----	0.4A
Hold-----	0.5A
Peak (Start Up)-----	0.7A
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

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

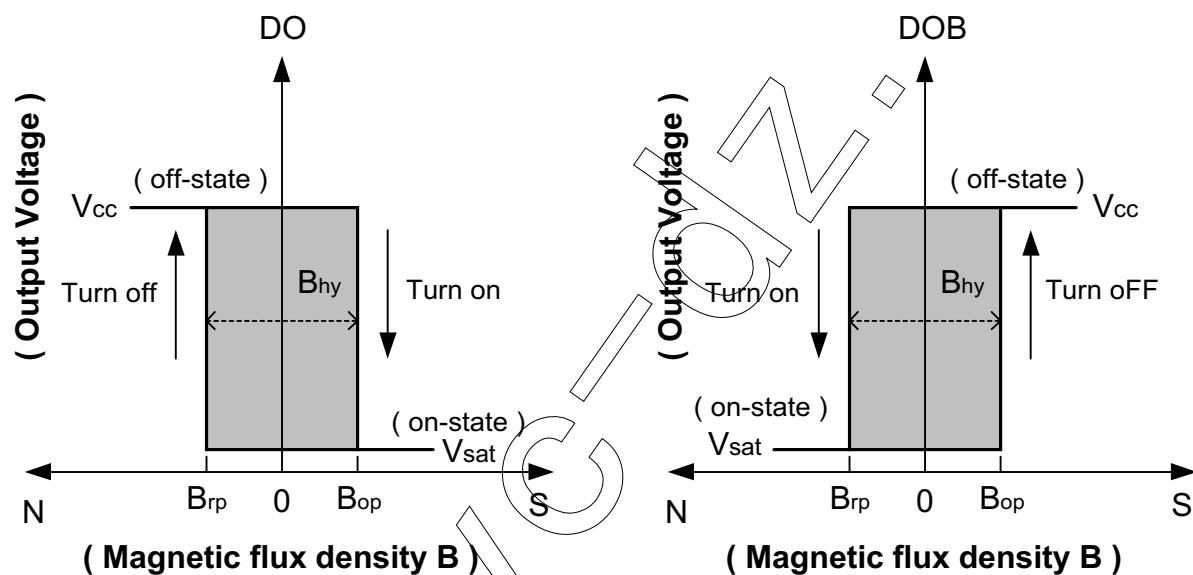
Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Low Supply Voltage	V _{ce}	V _{cc} =3.5V, I _L =100mA		0.4		V
Supply Voltage	V _{cc}		3.5		20	V
Output Zener Breakdown	V _z			46		V
Output Saturation Voltage	V _{ce(sat)}	V _{cc} =14V, I _L =300mA		0.3	0.6	V
Output Leakage Current	I _{cex}	V _{ce} =14V,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

■ Test Circuit



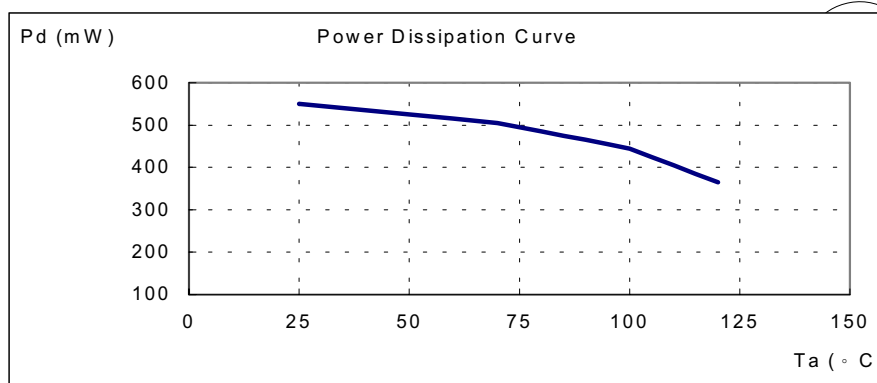
■ Magnetic Characteristics

Characteristic		Symbol	Ta=+25°C		Ta=-20°C to +85°C		Units
			Min	Max	Min	Max	
Operate Point	ATS276	Bop	5	100	5	100	G
	ATS277	Bop	5	70	5	70	G
Release Point	ATS276	Brp	-100	-5	-100	-5	G
	ATS277	Brp	-70	-5	-70	-5	G
Hysteresis	ATS276	Bhys	50	200	30	200	G
	ATS277	Bhys	20	140	10	140	G

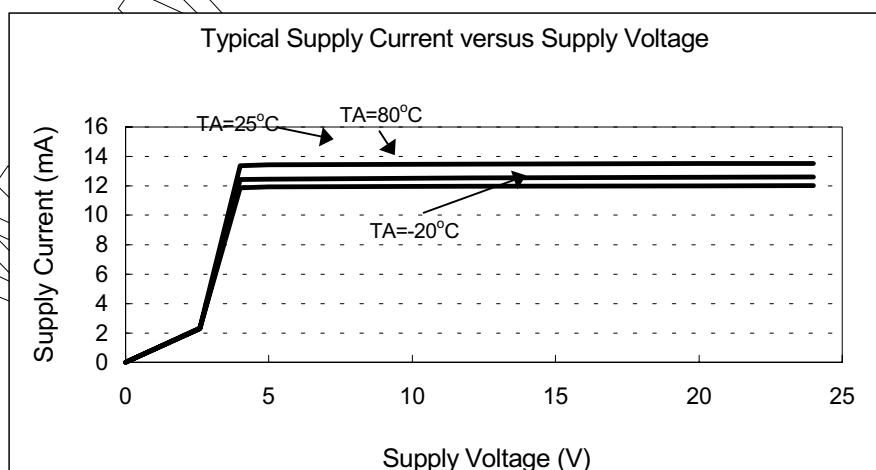
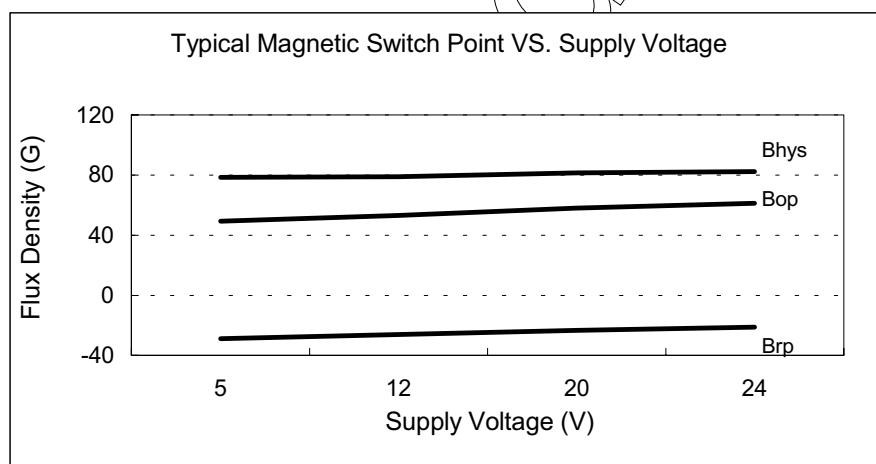


■ Performance Characteristics

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

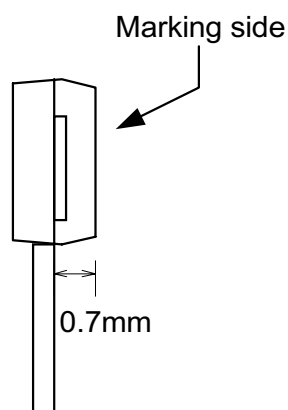


Note : SIP-4L package.

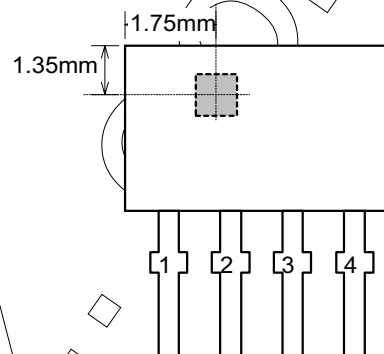


■ Package Information

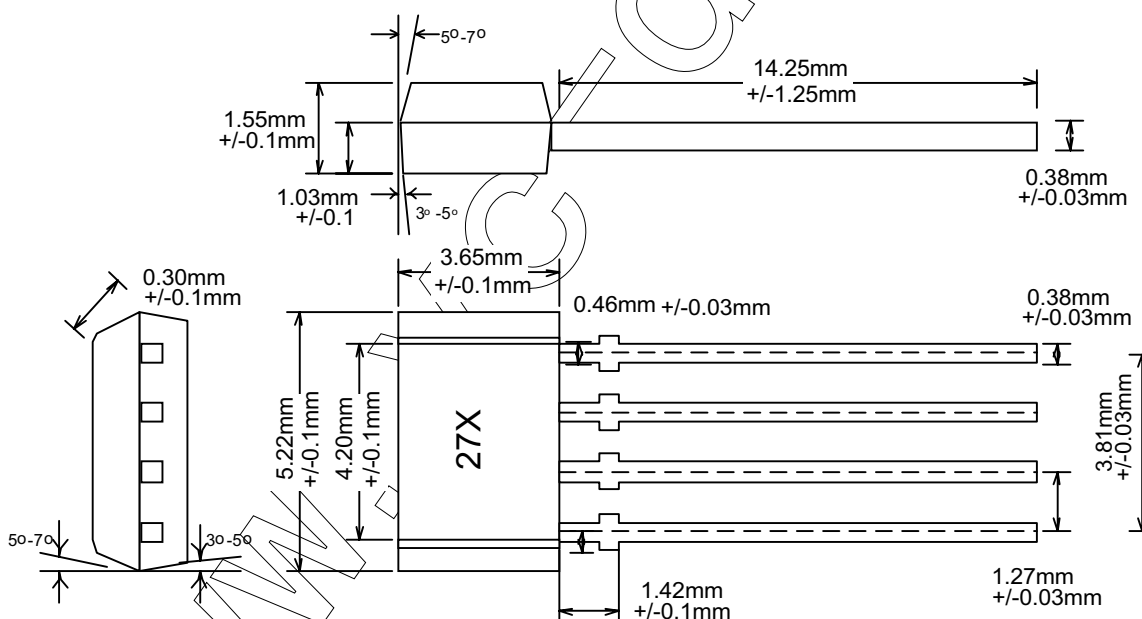
Active Area Depth



Package Sensor Location



Package Dimension



■ Marking Information

