



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



### Features

- On-Chip Hall Sensor with Two Different Sensitivity and Hysteresis Settings for ATS277H
- 3.5V to 20V Operating Voltage
- 400mA (avg.) Output Sink Current
- Built-in Protecting Diode Only for Chip Reverse Power Connecting
- -20°C to 85°C Operating Temperature
- Low Profile 4 Pin SIP Package
- Lead Free package: SIP-4L
- SIP-4L: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 1)

### General Description

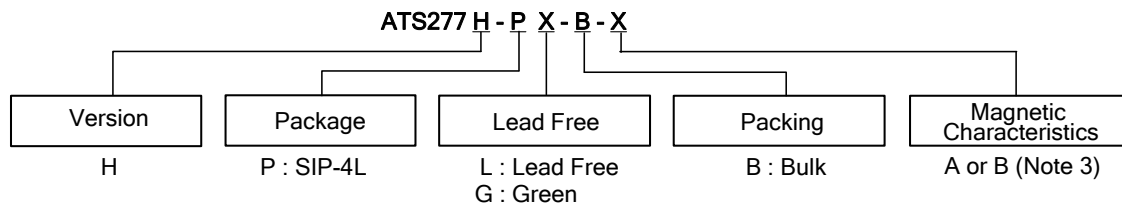
ATS277H are integrated Hall sensors with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-collector outputs (**DO**, **DOB**). While the magnetic 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.

### Applications

- Dual-Coil Brush-Less DC Motor
- Dual-Coil Brush-Less DC Fan
- Revolution Counting
- Speed Measurement

### Ordering Information

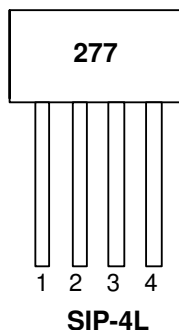


Device	Package Code	Packaging (Note 2)	Bulk		Magnetic Characteristics
			Quantity	Part Number Suffix	
 ATS277H-PL-B-A	P	SIP-4L	1000	-B	A
 ATS277H-PL-B-B	P	SIP-4L	1000	-B	B
 ATS277H-PG-B-A	P	SIP-4L	1000	-B	A
 ATS277H-PG-B-B	P	SIP-4L	1000	-B	B

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see *EU Directive 2002/95/EC Annex Notes*.
  2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. Please refer to page 4 (Magnetic Characteristics table).

**Pin Assignments**

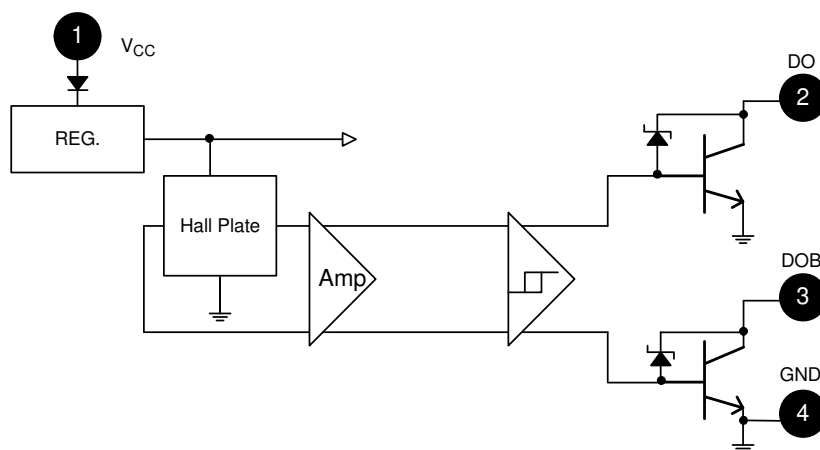
( Top View )



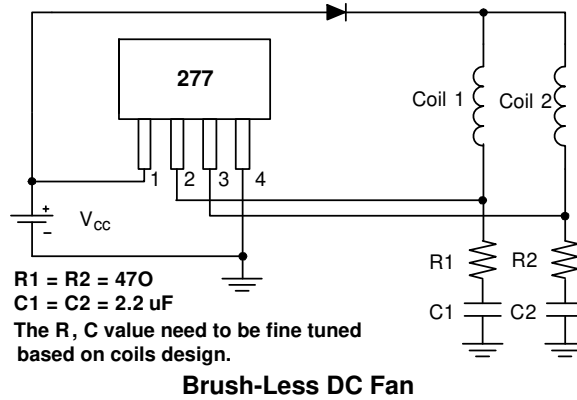
**Pin Descriptions**

Pin Name	P/I/O	Pin #	Description
V <sub>CC</sub>	P	1	Power Supply Input
DO	O	2	Output Pin
DOB	O	3	Output Pin
GND	P	4	Ground

**Block Diagram**



**Typical Application Circuit**



**Absolute Maximum Ratings (T<sub>A</sub> = 25°C)**

Symbol	Characteristics	Values	Unit
V <sub>CC</sub>	Supply Voltage	20	V
V <sub>RCC</sub>	Reverse V <sub>CC</sub> Polarity Voltage	-20	V
B	Magnetic Flux Density	Unlimited	
I <sub>c</sub>	Output "on" Current	Continuous	0.4
		Hold	0.5
		Peak (Start Up)	0.7
T <sub>S</sub>	Storage Temperature Range	-65~+150	°C
P <sub>D</sub>	Package Power Dissipation (Note 4)	550	mW
T <sub>J</sub>	Maximum Junction Temperature	150	°C

Note: 4. P<sub>d</sub> shall be within Safety Operation Area.

**Recommended Operating Conditions**

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>CC</sub>	Supply Voltage (Note 5)	Operating	3.5	20	V
T <sub>A</sub>	Operating Ambient Temperature (Note 6)	Operating	-20	85	°C

Notes: 5. The output DO/DOB is switching as magnetic field change (S>300G, N<-300G).  
6. Shall not exceed P<sub>D</sub> and Safety Operation Area.

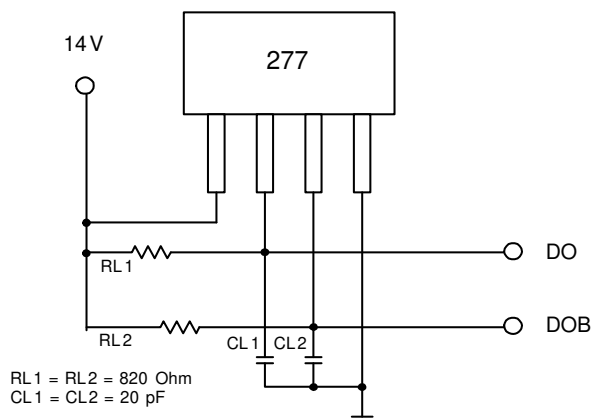


### Electrical Characteristics (T<sub>A</sub> = +25°C V<sub>CC</sub> = 4.0V to 20V)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Units
V <sub>ce</sub>	Low Supply Voltage	V <sub>CC</sub> = 3.5V, I <sub>L</sub> = 100mA		0.4		V
V <sub>Z</sub>	Output Zener Breakdown	(Note 7)		46		V
V <sub>ce(SAT)</sub>	Output Saturation Voltage	V <sub>CC</sub> = 14V, I <sub>L</sub> = 300mA		0.3	0.6	V
I <sub>ceX</sub>	Output Leakage Current	V <sub>ce</sub> = 14V, V <sub>CC</sub> = 14V		<0.1	10	μA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> = 20V, Output Open		16	25	mA
t <sub>r</sub>	Output Rise Time	V <sub>CC</sub> = 14V, R <sub>L</sub> = 820Ω, C <sub>L</sub> = 20pF		3.0	10	μs
t <sub>f</sub>	Output Falling Time	V <sub>CC</sub> = 14V, R <sub>L</sub> = 820Ω, C <sub>L</sub> = 20pF		0.3	1.5	μs
Δt	Switch Time Differential	V <sub>CC</sub> = 14V, R <sub>L</sub> = 820Ω, C <sub>L</sub> = 20pF		3.0	10	μs

Note: 7. The V<sub>Z</sub> may vary with the inductance/resistance of DC Fan. In order to reduce the risk of dynamic operation, the capacitor/ resistor is recommended to add below the DO/DOB as Application Circuit (see General Description on page 1).

### Test Circuit



### Magnetic Characteristics (T<sub>A</sub> = +25°C)

( 1mT = 10 Gauss )

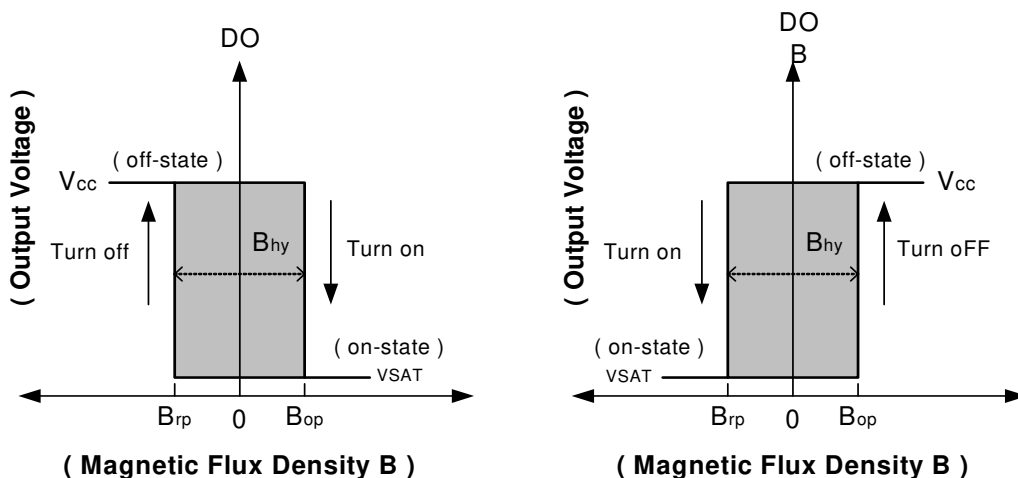
#### A grade

Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operate Point	10	-	50	Gauss
Brp	Release Point	-50	-	-10	Gauss
Bhy	Hysteresis	-	75	-	Gauss

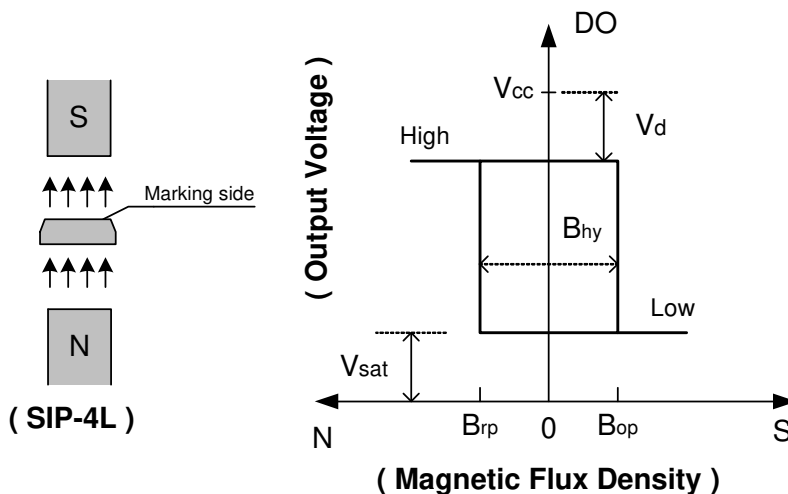
#### B grade

Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operate Point	5	-	70	Gauss
Brp	Release Point	-70	-	-5	Gauss
Bhy	Hysteresis	-	75	-	Gauss

**Magnetic Characteristics (Continued)**

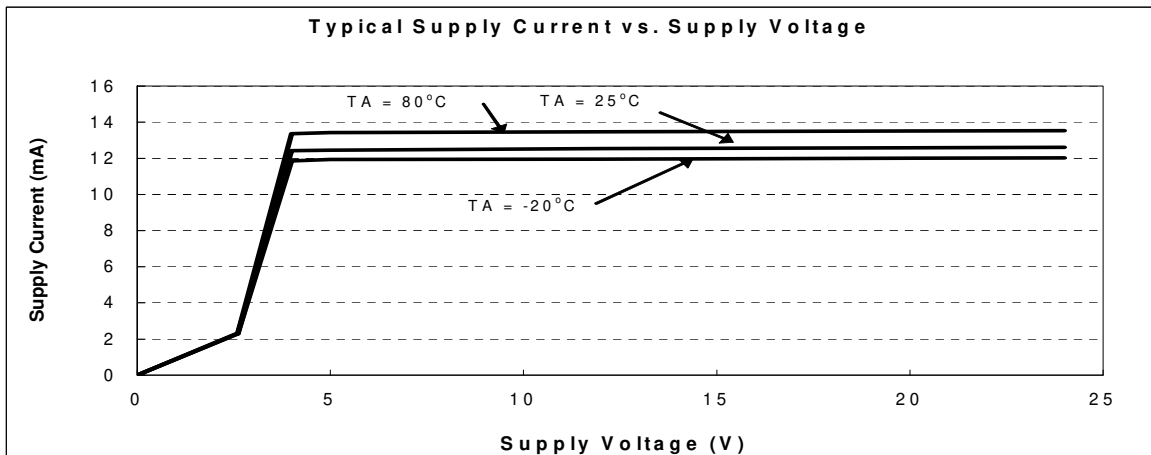
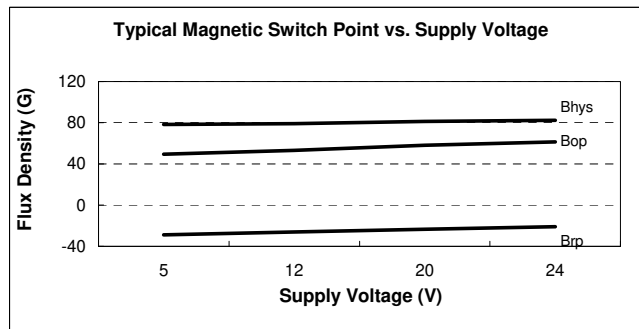
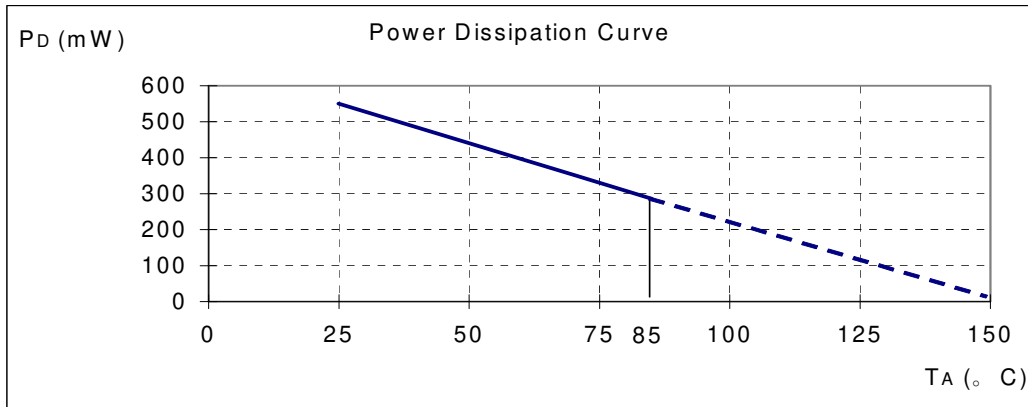


**Operating Characteristics**

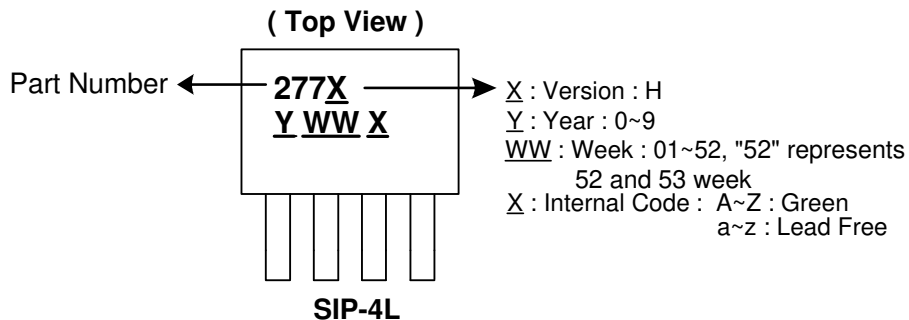


**Performance Characteristics**

$T_A$ (°C)	25	50	60	70	80	85	90	95	100
$P_D$ (mW)	550	440	396	352	308	286	264	242	220
$T_A$ (°C)	105	110	115	120	125	130	135	140	150
$P_D$ (mW)	198	176	154	132	110	88	66	44	0

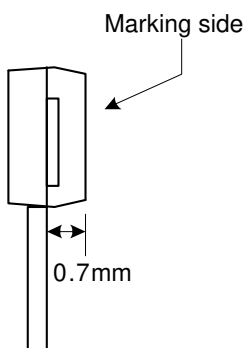


**Marking Information**

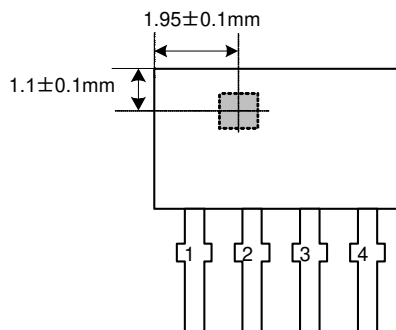


**Package Information (All Dimensions in mm)**

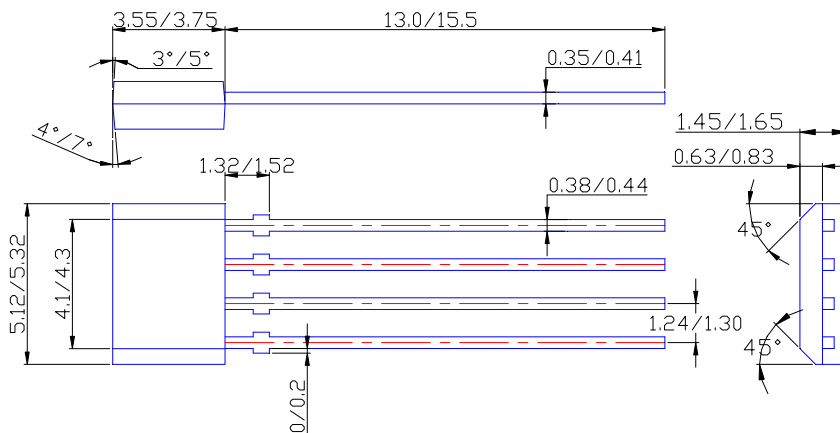
Active Area Depth



Package Sensor Location



Package Dimension





**IMPORTANT NOTICE**

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

**LIFE SUPPORT**

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.