

# AH276Q

#### COMPLEMENTARY OUTPUT HALL EFFECT LATCH

#### **Features**

#### On-chip Hall sensor with two different sensitivity and hysteresis settings for AH276

- Built-in protecting diode only for chip reverse power connecting
- -20°C to 85°C operating temperature
- Lead Free Finish/RoHS Compliant for Lead Free products (Note 1)
- Lead Free Package: SIP-4L

### **General Description**

AH276 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

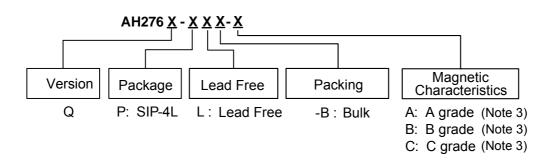
(Brp), and then  $\rm DO,\ DOB$  transfer each state.

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**



Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see EU Directive Annex Notes 5 and 7.

	Device	Package	Packaging	Tube/Bulk		
	Device	Code	(Note 2)	Quantity	Part Number Suffix	
<b>B</b>	AH276Q-P	Р	SIP-4	1000	-В	

Note: 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.

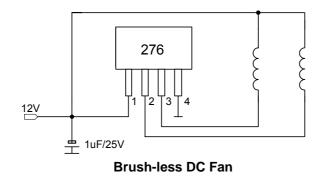
3. Please refer to page 4 (Magnetic Characteristics table).



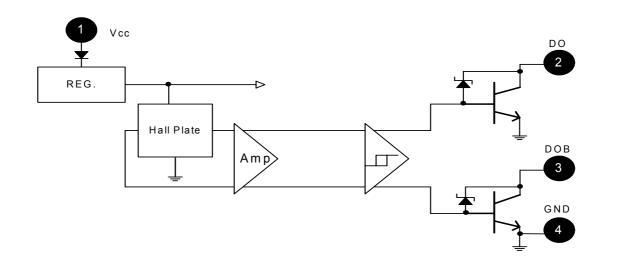
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## **Typical Application Circuit**



### Block Diagram



### **Pin Assignment**

276	Front View	Name	P/I/O	Pin #	Description
	1 : Vcc	Vcc	Р	1	Power Supply Input
	2 : DO	DO	0	2	Output Pin
	3 : DOB	DOB	0	3	Output Pin
	4 :GND	GND	Р	4	Ground

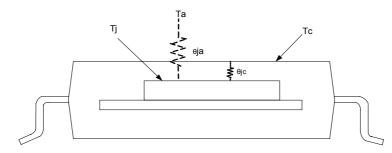


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## Absolute Maximum Ratings (@ TA=25°C)

Characteristics		Symbol	Rating	Unit	
Supply voltage		V <sub>cc</sub>	20	V	
Reverse V <sub>CC</sub> Polarity Voltage		V <sub>RCC</sub>	-20	V	
Magnetic flux density		В	Unlimited		
	Continuous		0.4		
Output "on" current*	Hold	lo	0.5	A	
	Peak (Start Up)	-	0.7		
Operating temperature range		ТА	-20~+85	°C	
Storage temperature ra	ange	Ts	-65~+150	°C	
Package Power Dissip	ation (SIP-4)	PD	550	mW	
Maximum Junction Temp		Tj	150	°C	
Thermal Resistance (SIP-4)		θјс	227	°C/W	

\*Note: 4. Pd shall be within Safety Operation Area.



## **Electrical Characteristics** (TA=+25°C)

Characteristic Symbol		Conditions		Тур	Max	Units
Supply Voltage	Vcc	(Note 5)	3.5	-	20	V
Output Zener Breakdown	Vz	(Note 6)	-	35	-	V
Output Saturation Voltage	Vce(sat)	Vcc=14V, I <sub>L</sub> =400mA	-	0.6	0.9	V
Output Leakage Current	lcex	Vce=14V, Vcc=14V	-	<0.1	10	μA
Supply Current	lcc	Vcc=20V, Output Open	7	16	25	mA

Note: 5. The output DO/DOB is switching as magnetic field change (S>300G, N<-300G). 6. Vz is a typical value for design reference. Vz will vary with different coils design.

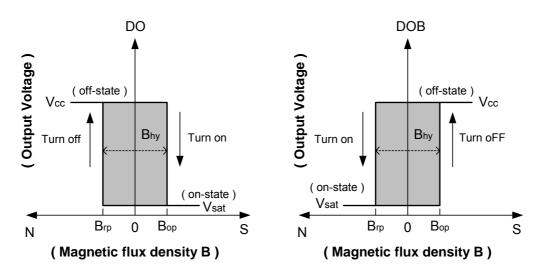


### COMPLEMENTARY OUTPUT HALL EFFECT LATCH

### Magnetic Characteristics (TA=+25°C, V<sub>cc</sub>=14V, Note 7)

A grade									
Characteristic	Symbol	Min.	Тур.	Max.	Unit				
Operate Point	Вор	10	-	50	Gauss				
Release Point	Brp	-50	-	-10	Gauss				
Hysteresis	Bhy	-	75	-	Gauss				
B grade	3 grade								
Characteristic	Symbol	Min.	Тур.	Max.	Unit				
Operate Point	Вор	5	-	70	Gauss				
Release Point	Brp	-70	-	-5	Gauss				
Hysteresis	Bhy	-	75	-	Gauss				
C grade	C grade								
Characteristic	Symbol	Min.	Тур.	Max.	Unit				
Operate Point	Вор	-	-	100	Gauss				
Release Point	Brp	-100	-	-	Gauss				
Hysteresis	Bhy	-	75	-	Gauss				

Note: 7. Magnetic characteristics are for design information, which will vary with supply voltage, operating temperature and after soldering.

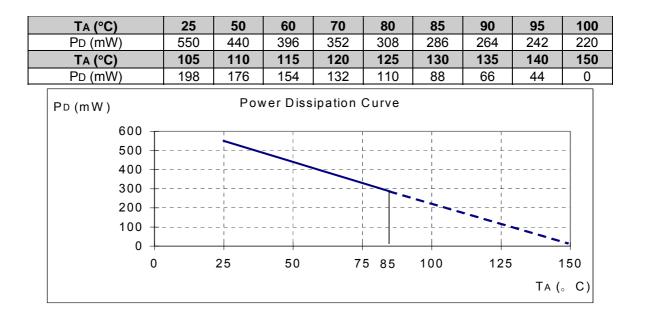




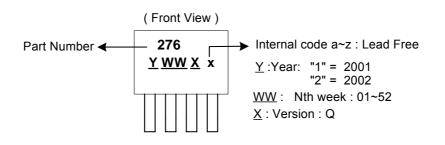
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### **Performance Characteristics (SIP-4L)**



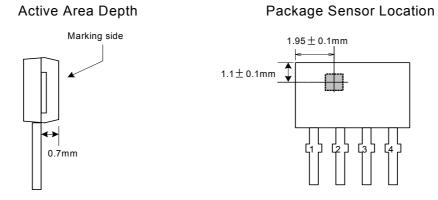
### **Marking Information**



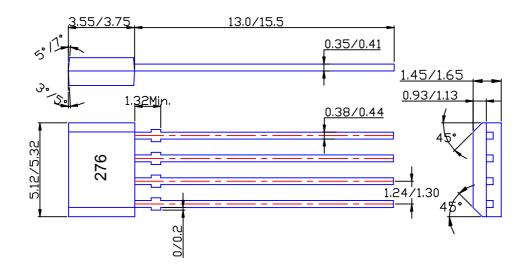


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### Sensor Location (unit: mm)



### Package Information (unit: mm)



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