

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).

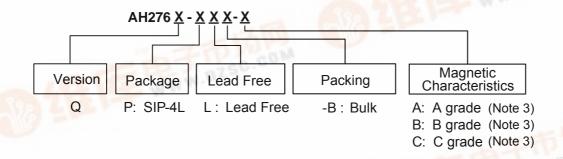
While the magnetic flux density (B) is larger than operate point (Bop), DO will turn on (low), and meanwhile DOB will turn off (high). Each output is latched until B is lower than release point (Brp), and then DO, DOB transfer each state.

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.

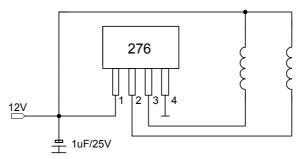
	Device	Package	Packaging	Tube/Bulk			
	Device	Code	(Note 2)	Quantity	Part Number Suffix		
(Pb)	AH276Q-P	Р	SIP-4	1000	-B		

- Note: 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. Please refer to page 4 (Magnetic Characteristics table)



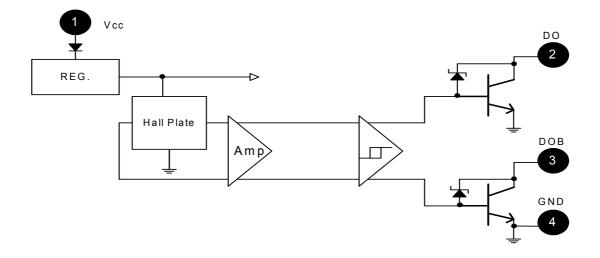


Typical Application Circuit

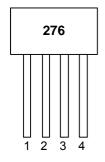


Brush-less DC Fan

Block Diagram



Pin Assignment



Front View

1 : Vcc

2: DO

3 : DOB

4 :GND

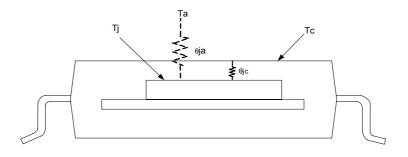
Name	P/I/O	Pin #	Description			
Vcc	Р	1	Power Supply Input			
DO	0	2	Output Pin			
DOB	0	3	Output Pin			
GND	Р	4	Ground			



Absolute Maximum Ratings (@ TA=25°C)

Characteristics		Symbol	Rating	Unit
Supply voltage		V _{CC}	20	V
Reverse V _{CC} Polarity V	oltage	V_{RCC}	-20	V
Magnetic flux density		В	Unlimit	ed
	Continuous		0.4	
Output "on" current*	Hold	lo	0.5	Α
	Peak (Start Up)		0.7	
Operating temperature range		TA	-20~+85	°C
Storage temperature ra	Storage temperature range		-65~+150	°C
Package Power Dissipation (SIP-4) Maximum Junction Temp		Pb	550	mW
		Tj	150	°C
Thermal Resistance (S	IP-4)	θјс	227	°C/W

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



Electrical Characteristics (TA=+25°C)

Characteristic	Symbol	Conditions	Min	Тур	Max	Units
Supply Voltage	Vcc	(Note 5)	3.5	-	20	V
Output Zener Breakdown	Vz	(Note 6)	-	35	ı	V
Output Saturation Voltage	Vce(sat)	Vcc=14V, I _L =400mA	-	0.6	0.9	V
Output Leakage Current	Icex	Vce=14V, Vcc=14V	-	<0.1	10	μΑ
Supply Current	Icc	Vcc=20V, Output Open	7	16	25	mA

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



Magnetic Characteristics (TA=+25°C, V_{CC}=14V, Note 7)

A grade

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

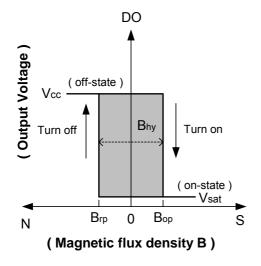
B grade

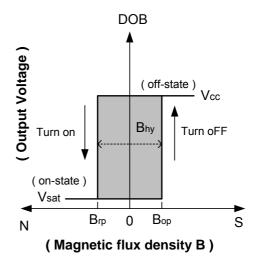
Characteristic	acteristic Symbol Min. Typ.		Max.	Unit	
Operate Point	Вор	5	-	70	Gauss
Release Point	Brp	-70	-	-5	Gauss
Hysteresis	Bhy	-	75	-	Gauss

C grade

Characteristic	cteristic Symbol Min. Typ.		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.

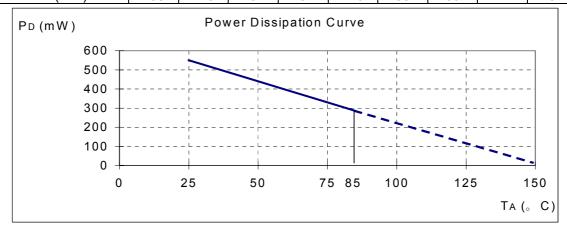




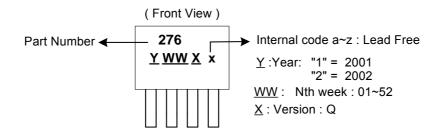


Performance Characteristics (SIP-4L)

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



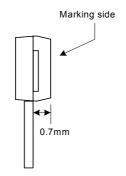
Marking Information



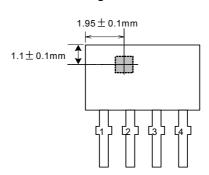


Sensor Location (unit: mm)

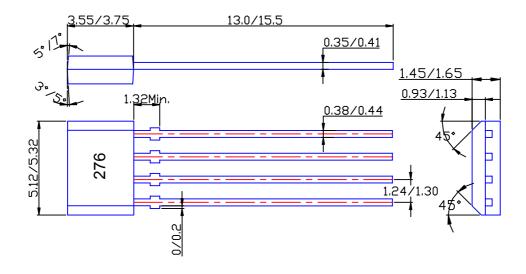
Active Area Depth



Package Sensor Location



Package Information (unit: mm)



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