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)**.

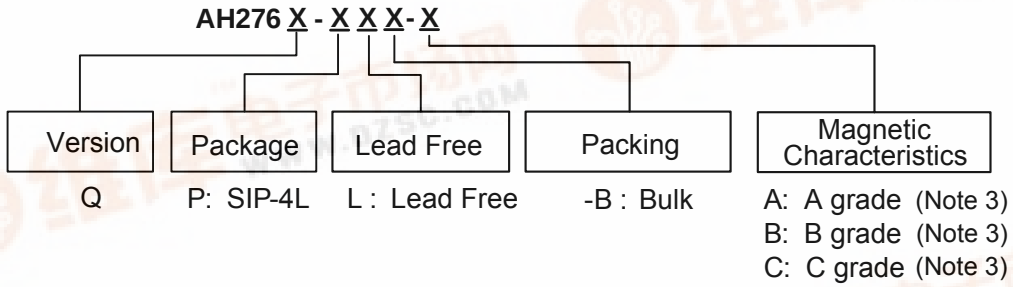
While the magnetic flux density **(B)** is larger than operate point **(Bop)**, **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point **(Brp),** and then **DO**、**DOB** transfer each state.

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

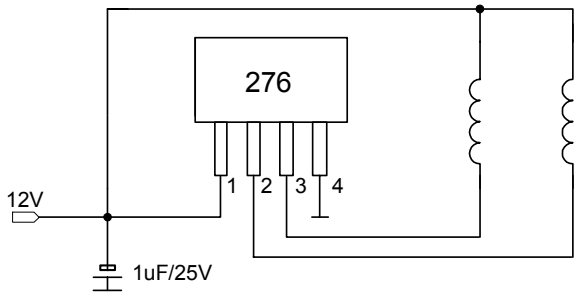


Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

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

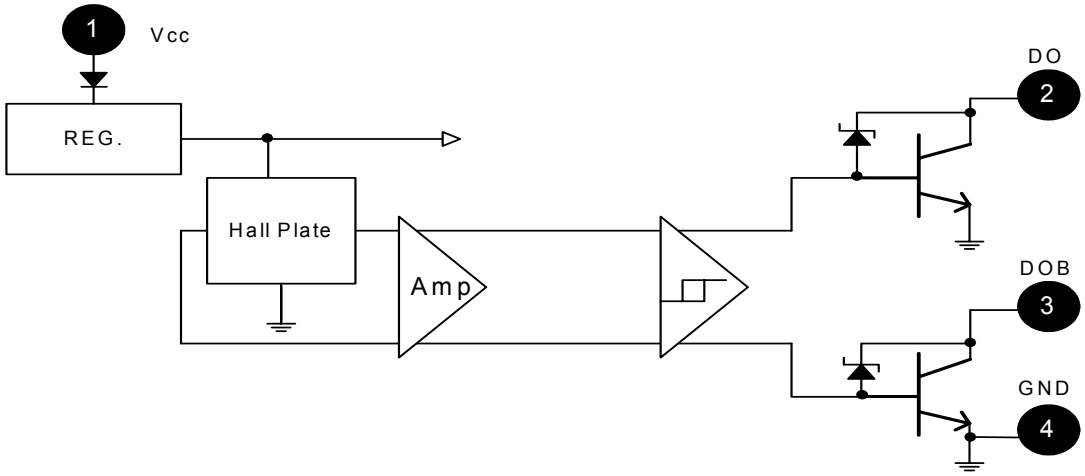
Note: 2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
3. Please refer to page 4 (Magnetic Characteristics table).

Typical Application Circuit

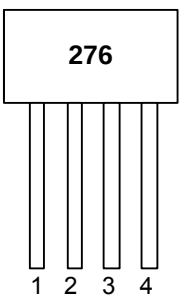


Brush-less DC Fan

Block Diagram



Pin Assignment



Front View

1 : Vcc

2 : DO

3 : DOB

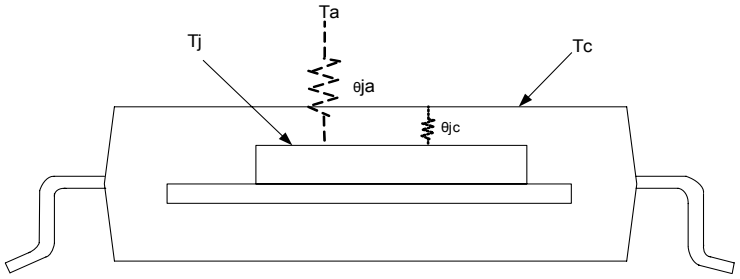
4 :GND

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

Absolute Maximum Ratings (@ TA=25°C)

Characteristics		Symbol	Rating	Unit
Supply voltage		V_{CC}	20	V
Reverse V_{CC} Polarity Voltage		V_{RCC}	-20	V
Magnetic flux density		B	Unlimited	
Output “on” current*	Continuous	Io	0.4	A
	Hold		0.5	
	Peak (Start Up)		0.7	
Operating temperature range		TA	-20~+85	°C
Storage temperature range		Ts	-65~+150	°C
Package Power Dissipation (SIP-4)		PD	550	mW
Maximum Junction Temp		Tj	150	°C
Thermal Resistance (SIP-4)		θ jc	227	°C/W

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



Electrical Characteristics (TA=+25°C)

Characteristic	Symbol	Conditions	Min	Typ	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_L=400mA	-	0.6	0.9	V
Output Leakage Current	Icex	Vce=14V, Vcc=14V	-	<0.1	10	μA
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).
6. Vz is a typical value for design reference. Vz will vary with different coils design.

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

A grade

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

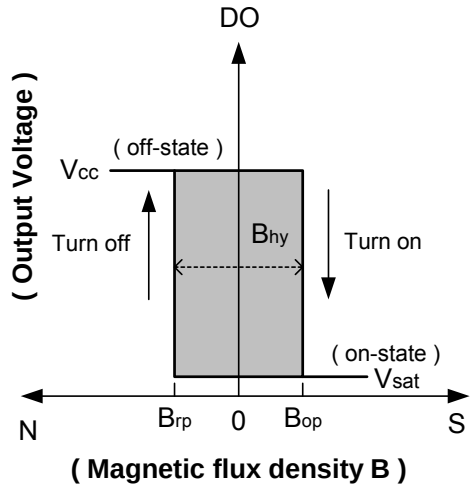
B grade

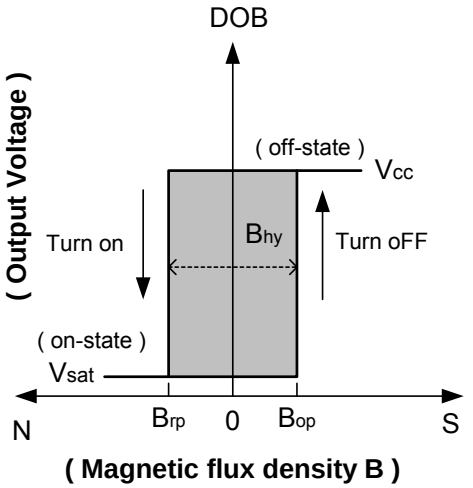
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	5	-	70	Gauss
Release Point	Brp	-70	-	-5	Gauss
Hysteresis	Bhy	-	75	-	Gauss

C grade

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	-	-	100	Gauss
Release Point	Brp	-100	-	-	Gauss
Hysteresis	Bhy	-	75	-	Gauss

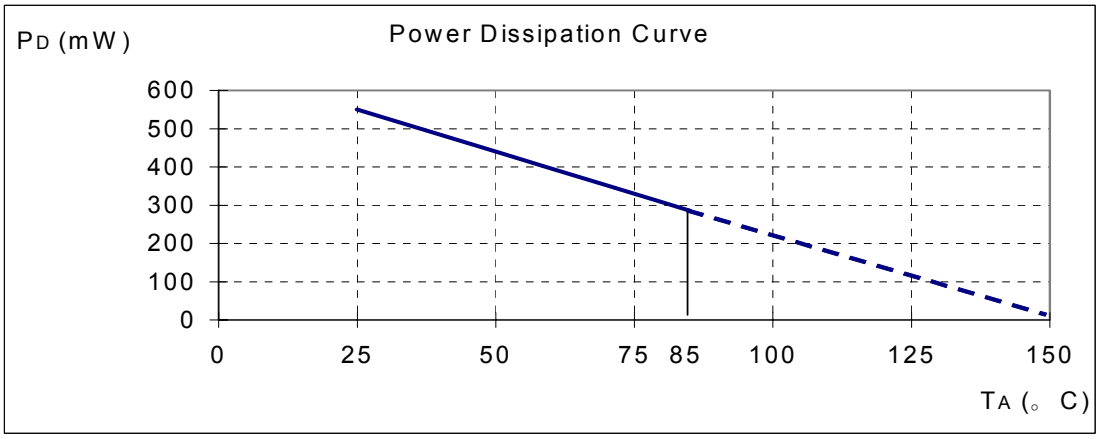
Note: 7. Magnetic characteristics are for design information, which will vary with supply voltage, operating temperature and after soldering.



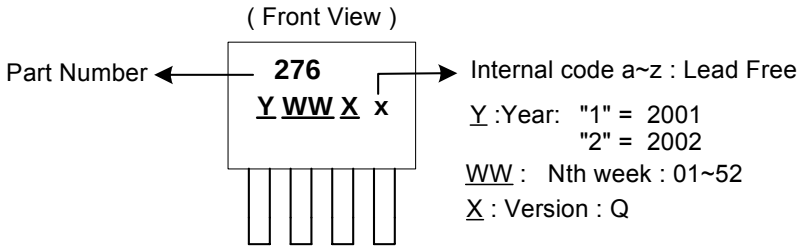


Performance Characteristics (SIP-4L)

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

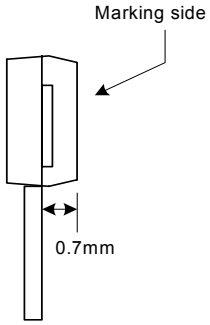


Marking Information

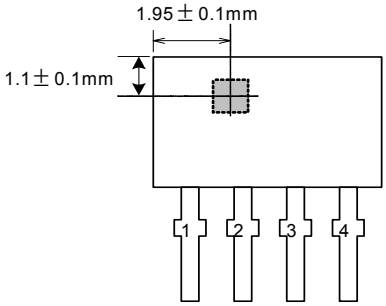


Sensor Location (unit: mm)

Active Area Depth



Package Sensor Location



Package Information (unit: mm)