

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**).

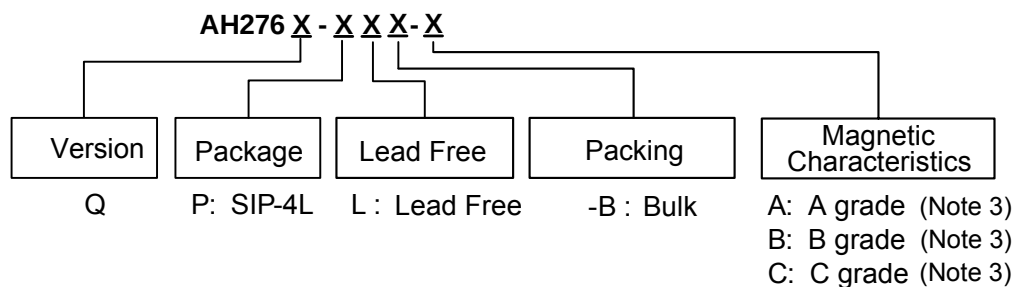
While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**, **DOB** transfer each state.

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

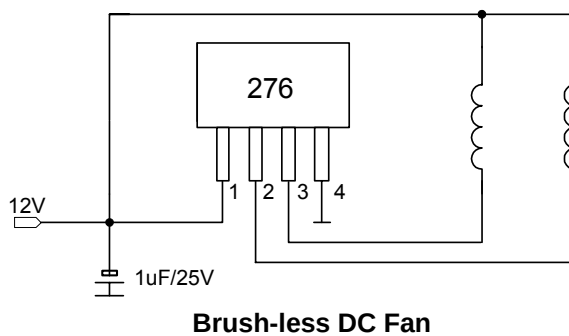


Note: 1. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

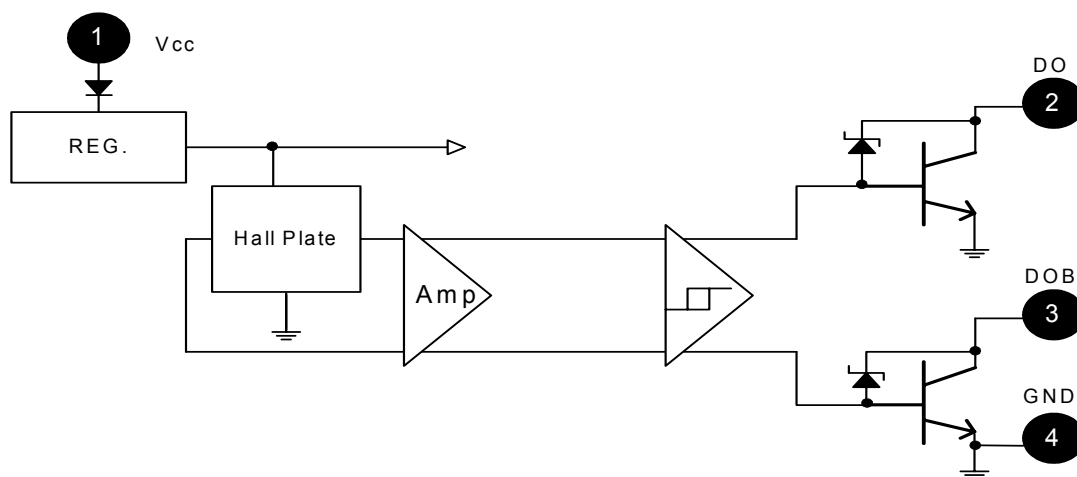
Device	Package Code	Packaging (Note 2)	Tube/Bulk	
			Quantity	Part Number Suffix
AH276Q-P	P	SIP-4	1000	-B

- 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).

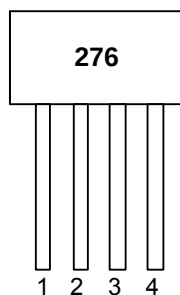
Typical Application Circuit



Block Diagram



Pin Assignment



Front View

1 : Vcc

2 : DO

3 : DOB

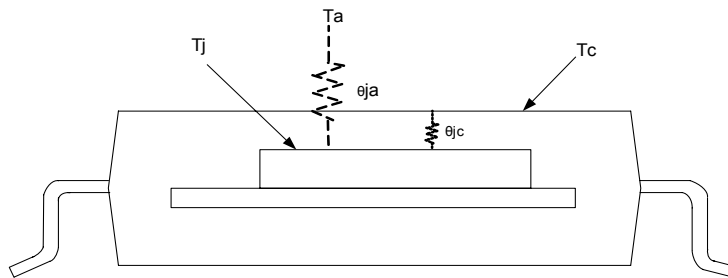
4 : GND

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	I _O	0.4	A
	Hold		0.5	
	Peak (Start Up)		0.7	
Operating temperature range		T _A	-20~+85	°C
Storage temperature range		T _S	-65~+150	°C
Package Power Dissipation (SIP-4)		P _D	550	mW
Maximum Junction Temp		T _J	150	°C
Thermal Resistance (SIP-4)		θ _{JC}	227	°C/W

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


Electrical Characteristics (TA=+25°C)

Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	V _{CC}	(Note 5)	3.5	-	20	V
Output Zener Breakdown	V _Z	(Note 6)	-	35	-	V
Output Saturation Voltage	V _{CE(sat)}	V _{CC} =14V, I _L =400mA	-	0.6	0.9	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	7	16	25	mA

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

Magnetic Characteristics ($T_A=+25^{\circ}\text{C}$, $V_{CC}=14\text{V}$, 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

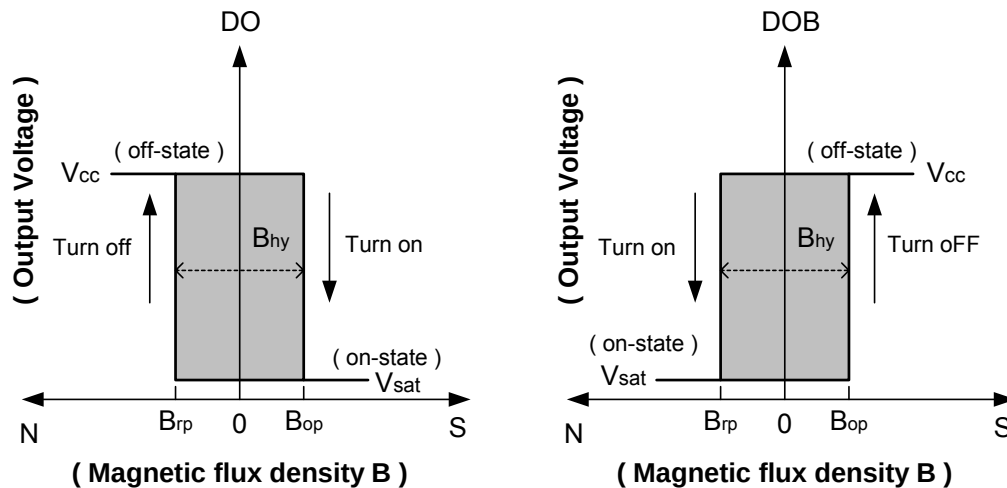
B grade

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

C grade

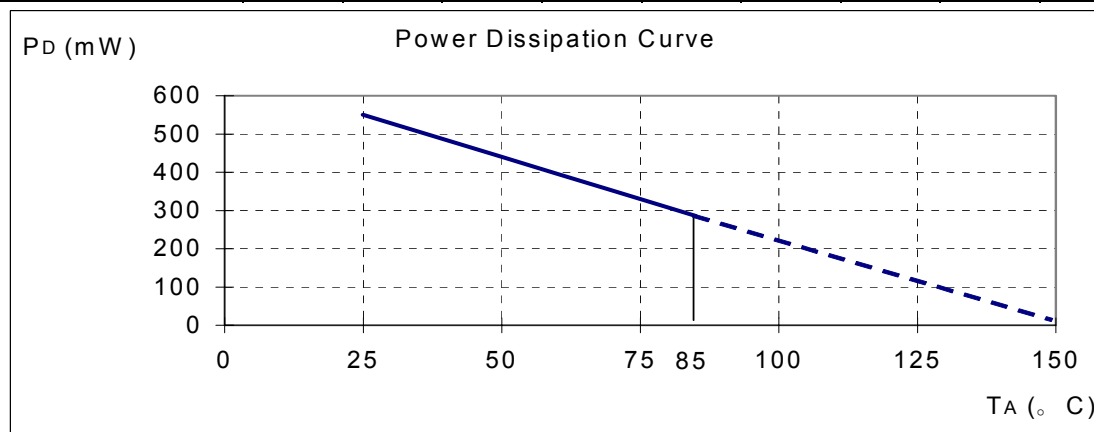
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	-	-	100	Gauss
Release Point	Brp	-100	-	-	Gauss
Hysteresis	Bhy	-	75	-	Gauss

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

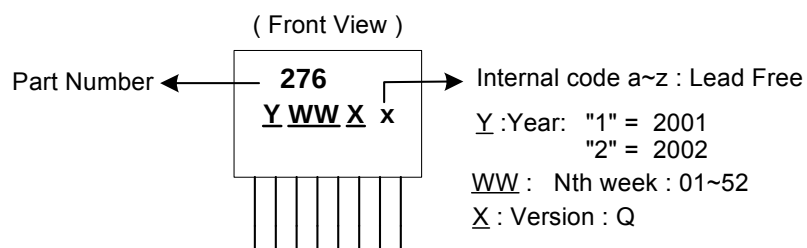


Performance Characteristics (SIP-4L)

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

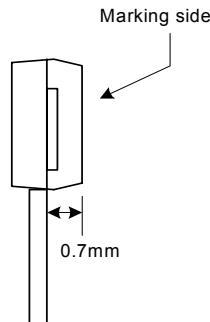


Marking Information

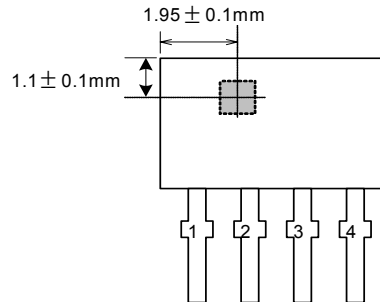


Sensor Location (unit: mm)

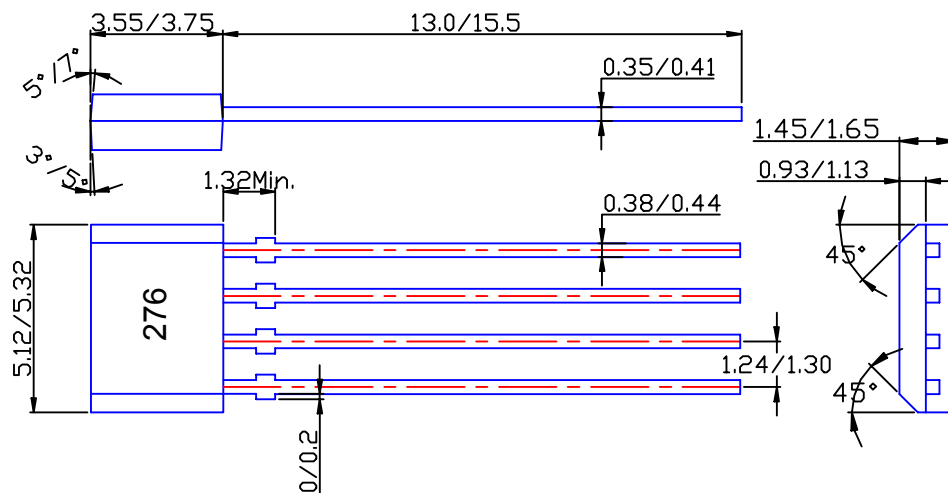
Active Area Depth



Package Sensor Location



Package Information (unit: mm)



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