

### 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 Package: SIP-4L
- Lead Free Finish/RoHS Compliant (Note 1)

### 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**).

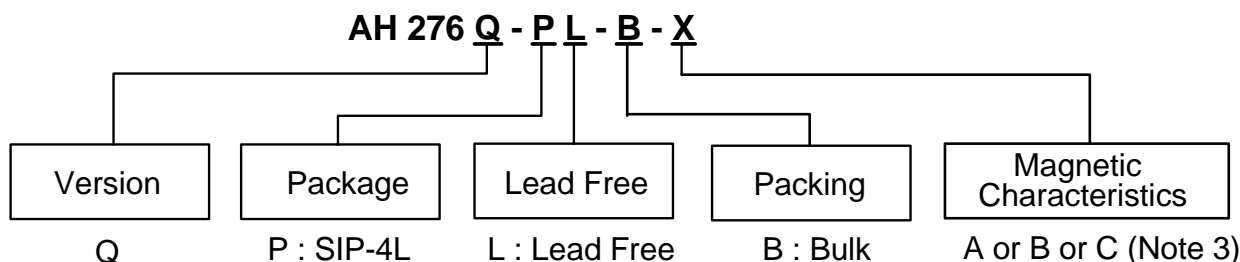
While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**, **DOB** transfer each state.




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

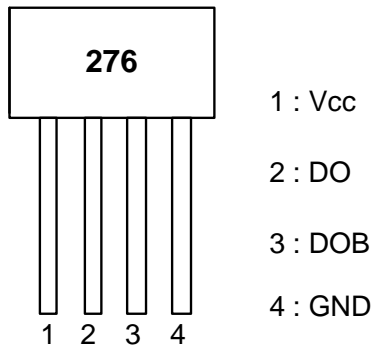


	Device	Package Code	Packaging (Note 2)	Bulk	
				Quantity	Part Number Suffix
	AH276Q-PL-B-A	P	SIP-4L	1000	-B
	AH276Q-PL-B-B	P	SIP-4L	1000	-B
	AH276Q-PL-B-C	P	SIP-4L	1000	-B

- 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 Assignment

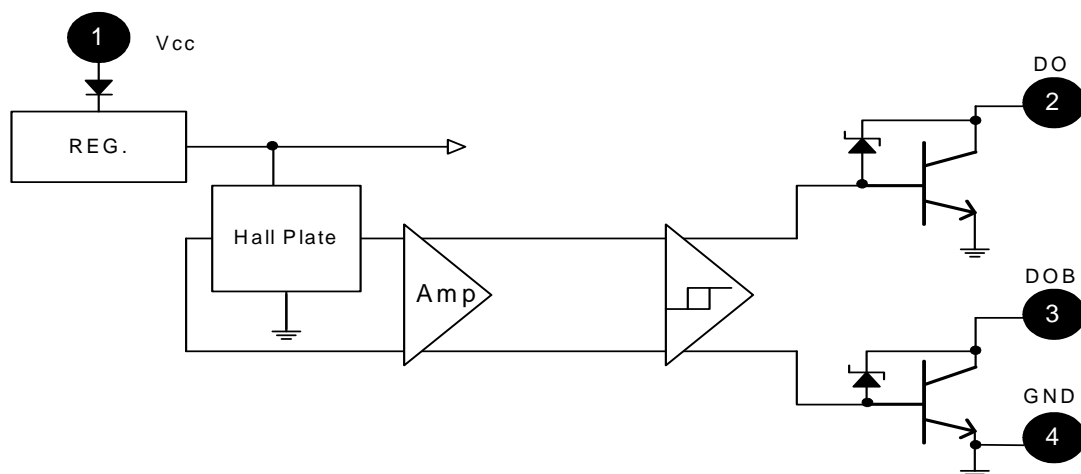
( Top View )



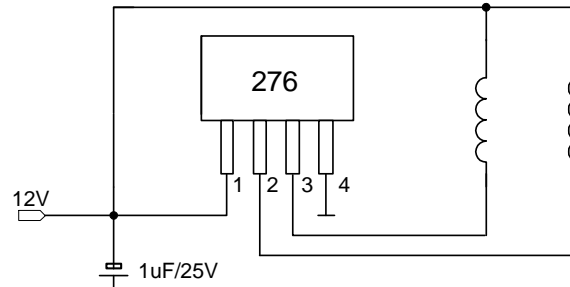
## Pin Descriptions

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

## Block Diagram



## Typical Application Circuit

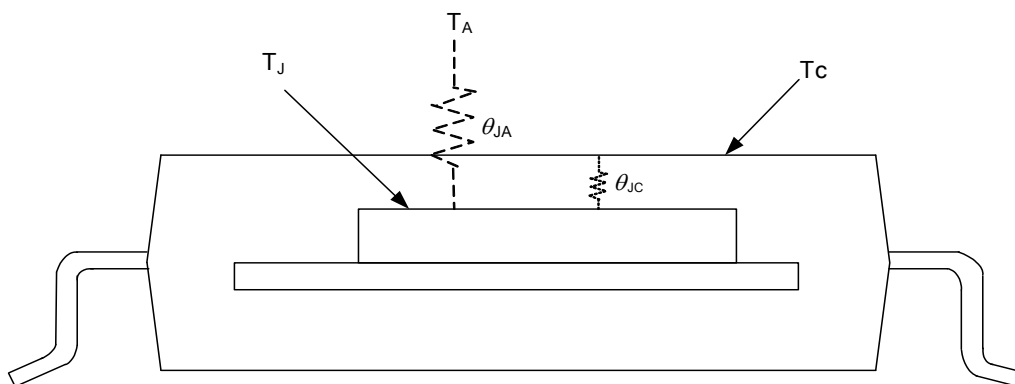


**Brush-less DC Fan**

## Absolute Maximum Ratings ( @ $T_A=25^{\circ}\text{C}$ )

Symbol	Characteristics	Rating	Unit
$V_{CC}$	Supply Voltage	20	V
$V_{RCC}$	Reverse $V_{CC}$ Polarity Voltage	-20	V
B	Magnetic Flux Density	Unlimited	
$I_o$	Output "on" current (Note 4)	Continuous	A
		Hold	
		Peak (Start Up)	
$T_s$	Storage Temperature Range	-65~+150	$^{\circ}\text{C}$
$P_D$	Package Power Dissipation (SIP-4L)	550	mW
$T_J$	Maximum Junction Temperature	150	$^{\circ}\text{C}$
$\theta_{JC}$	Thermal Resistance (SIP-4L)	227	$^{\circ}\text{C/W}$

Notes: 4.  $P_D$  shall be within Safety Operation Area.



### Recommended Operating Conditions

Symbol	Characteristic	Conditions	Min	Max	Unit
$V_{CC}$	Supply Voltage (Note 5)	Operating	3.5	20	V
$T_A$	Operating Ambient Temperature	Operating	-20	85	°C

Notes: 5. The output DO/DOB is switching as magnetic field change ( $S > 300G$ ,  $N < -300G$ ).

### Electrical Characteristics ( $T_A = +25^{\circ}C$ )

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
$V_Z$	Output Zener Breakdown	(Note 6)	-	35	-	V
$V_{ce(sat)}$	Output Saturation Voltage	$V_{CC}=14V$ , $I_L=400mA$	-	0.6	0.9	V
$I_{cex}$	Output Leakage Current	$V_{ce}=14V$ , $V_{CC}=14V$	-	<0.1	10	$\mu A$
$I_{CC}$	Supply Current	$V_{CC}=20V$ , Output Open	7	16	25	mA

Notes: 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**

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

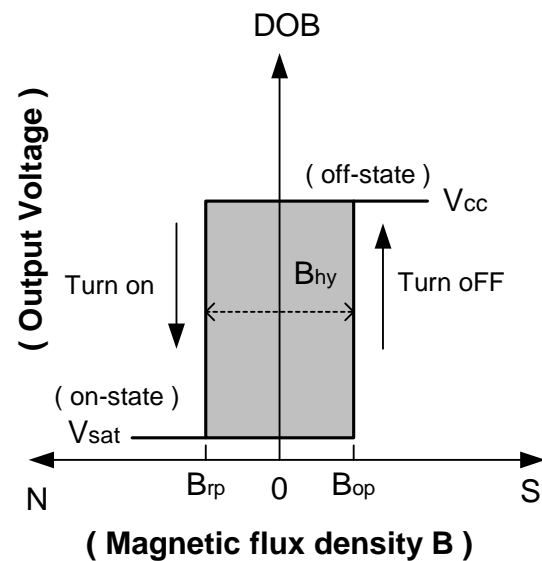
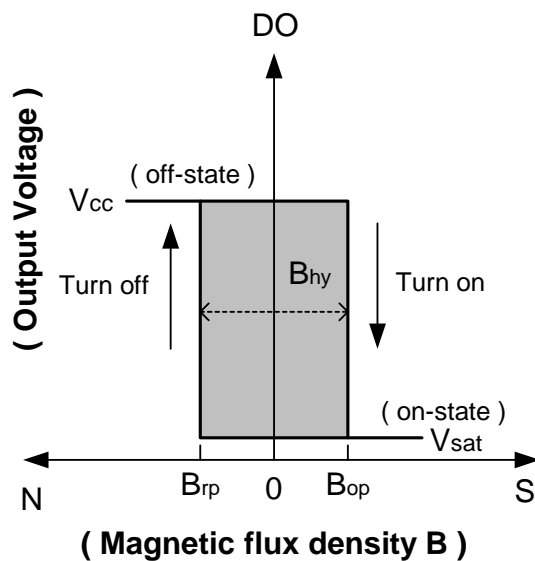
**B grade**

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

**C grade**

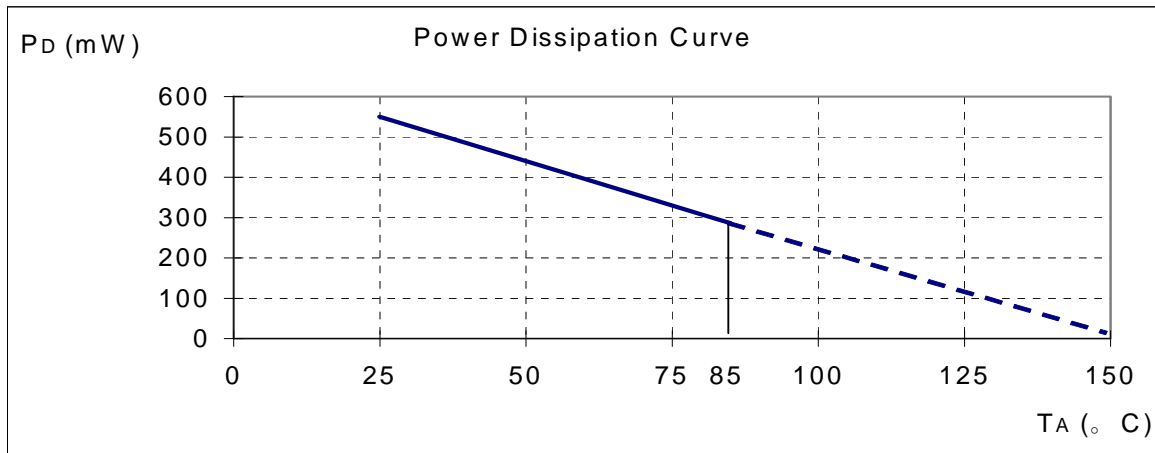
Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operate Point	-	-	100	Gauss
Brp	Release Point	-100	-	-	Gauss
Bhy	Hysteresis	-	75	-	Gauss

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

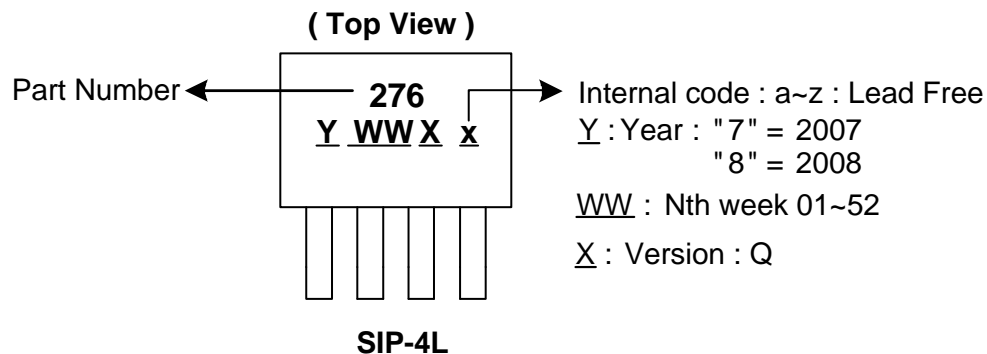


## Performance Characteristics

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
PD (mW)	198	176	154	132	110	88	66	44	0

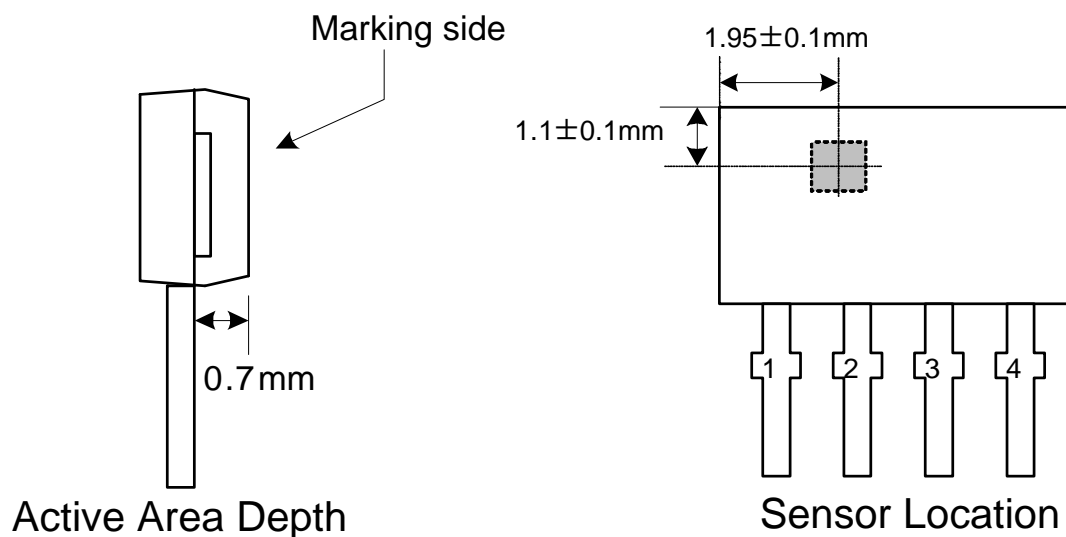


## Marking Information

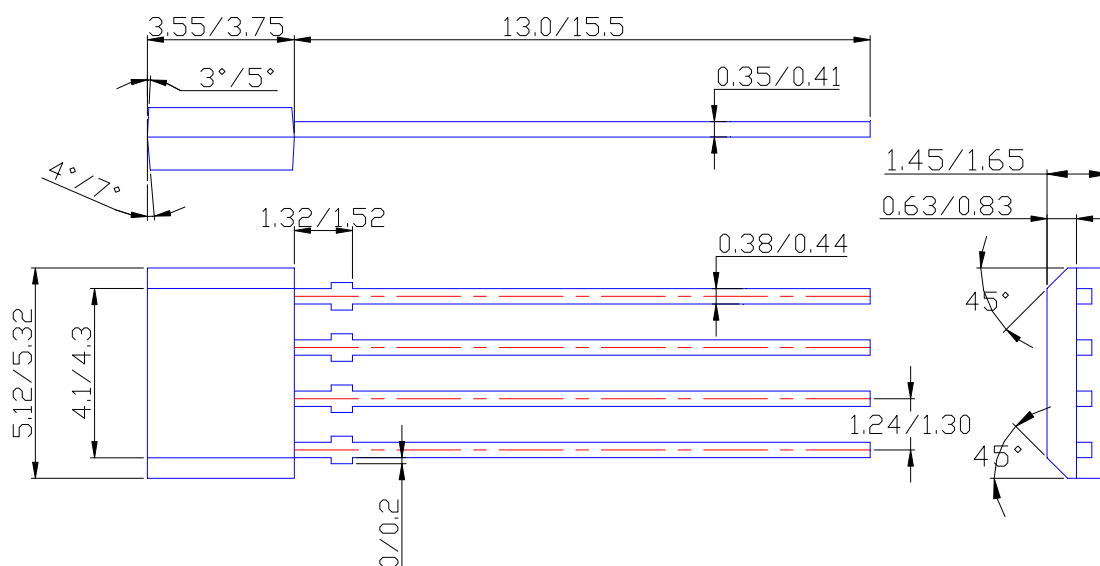


**Package Information** (All Dimensions in mm)

**(1) Package type: SIP-4L**



**Package Dimension**



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