

### 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
- SIP-4L: Available in "Green" Molding Compound (No Br, Sb)
- 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**).

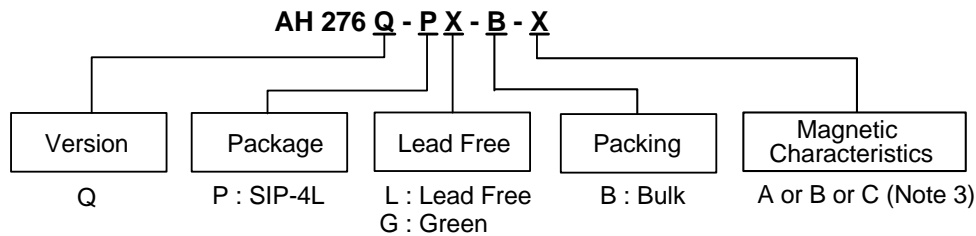
While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**, **DOB** transfer each state.

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

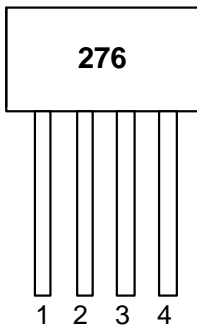


Device	Package Code	Packaging (Note 2)	Bulk		Magnetic Characteristics
			Quantity	Part Number Suffix	
AH276Q-PL-B-A	P	SIP-4L	1000	-B	A
AH276Q-PL-B-B	P	SIP-4L	1000	-B	B
AH276Q-PL-B-C	P	SIP-4L	1000	-B	C
AH276Q-PG-B-A	P	SIP-4L	1000	-B	A
AH276Q-PG-B-B	P	SIP-4L	1000	-B	B
AH276Q-PG-B-C	P	SIP-4L	1000	-B	C

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at [http://www.diodes.com/products/lead\\_free.html](http://www.diodes.com/products/lead_free.html)
  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 )

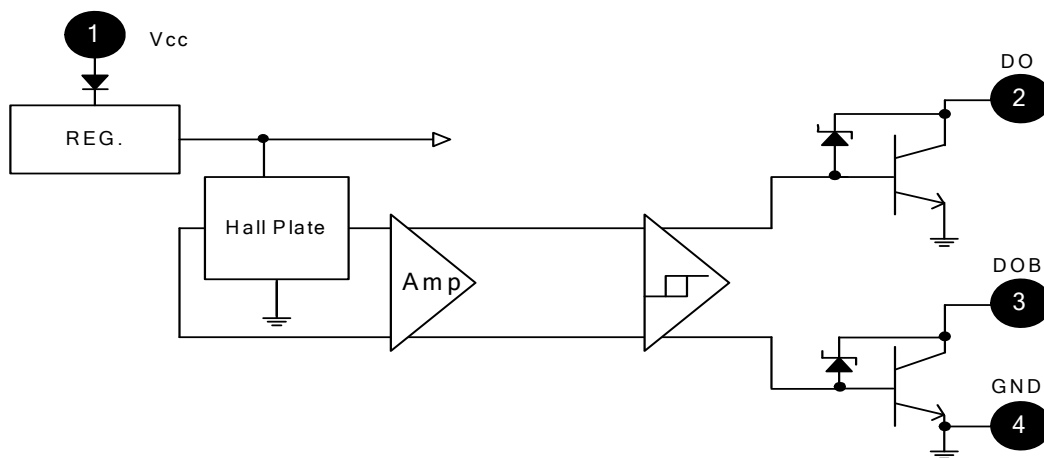


- 1 : Vcc
- 2 : DO
- 3 : DOB
- 4 : GND

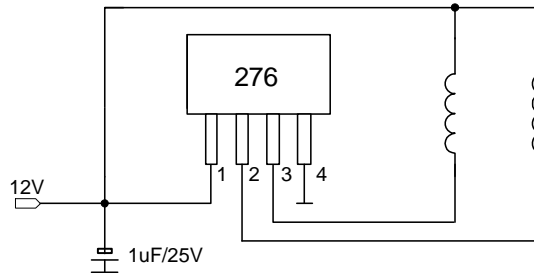
**Pin Descriptions**

Pin 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**

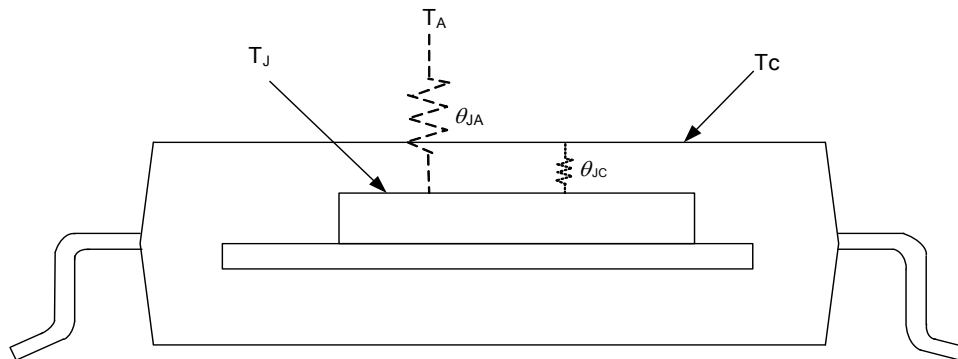


**Brush-less DC Fan**

**Absolute Maximum Ratings (@ T<sub>A</sub>=25°C)**

Symbol	Characteristics	Rating	Unit
V <sub>CC</sub>	Supply Voltage	20	V
V <sub>RCC</sub>	Reverse V <sub>CC</sub> Polarity Voltage	-20	V
B	Magnetic Flux Density	Unlimited	
I <sub>O</sub>	Output "on" current (Note 4)	Continuous	0.4
		Hold	0.5
		Peak (Start Up)	0.7
T <sub>S</sub>	Storage Temperature Range	-65~+150	°C
P <sub>D</sub>	Package Power Dissipation (SIP-4L)	550	mW
T <sub>J</sub>	Maximum Junction Temperature	150	°C
θ <sub>JC</sub>	Thermal Resistance (SIP-4L)	227	°C/W

Notes: 4. P<sub>D</sub> shall be within Safety Operation Area.



### Recommended Operating Conditions

Symbol	Characteristic	Conditions	Min	Max	Unit
V <sub>CC</sub>	Supply Voltage (Note 5)	Operating	3.5	20	V
T <sub>A</sub>	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<sub>A</sub>=+25°C)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
V <sub>Z</sub>	Output Zener Breakdown	(Note 6)	-	35	-	V
V <sub>ce(sat)</sub>	Output Saturation Voltage	V <sub>CC</sub> =14V, I <sub>L</sub> =400mA	-	0.6	0.9	V
I <sub>ceX</sub>	Output Leakage Current	V <sub>ce</sub> =14V, V <sub>CC</sub> =14V	-	<0.1	10	μA
I <sub>CC</sub>	Supply Current	V <sub>CC</sub> =20V, Output Open	7	16	25	mA

Notes: 6. V<sub>Z</sub> is a typical value for design reference. V<sub>Z</sub> 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

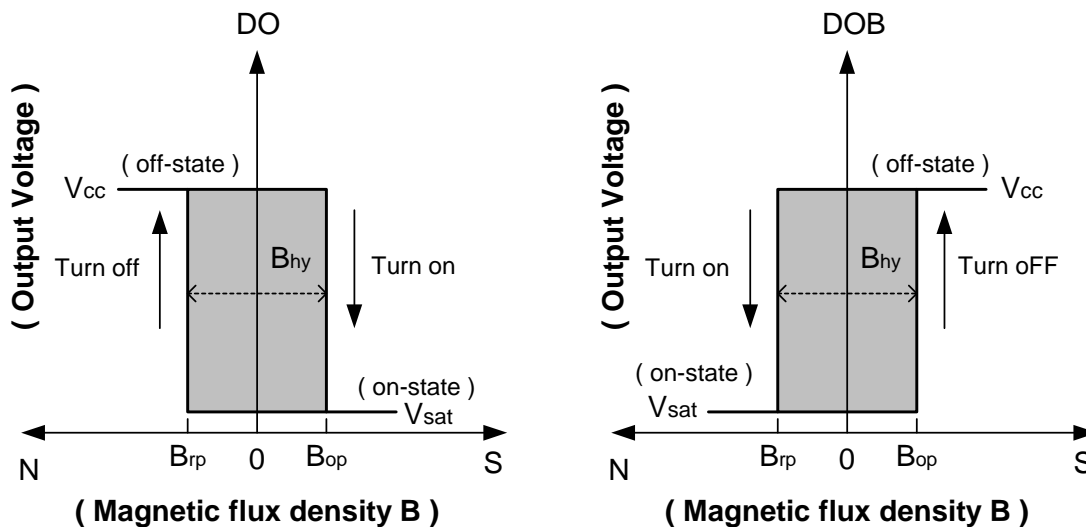
#### B grade

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

#### C grade

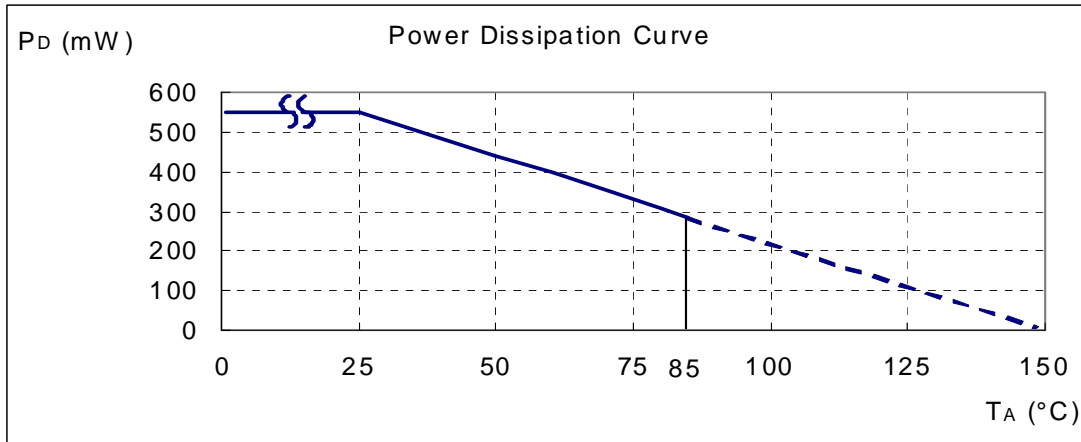
Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operate Point	-	-	100	Gauss
Brp	Release Point	-100	-	-	Gauss
Bhy	Hysteresis	-	75	-	Gauss

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

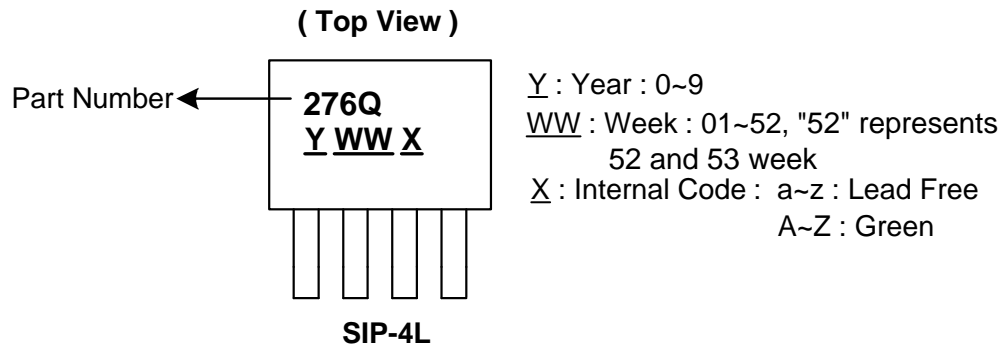


**Performance Characteristics**

$T_A$ (°C)	<b>25</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>	<b>85</b>	<b>90</b>	<b>95</b>	<b>100</b>
$P_D$ (mW)	550	440	396	352	308	286	264	242	220
$T_A$ (°C)	<b>105</b>	<b>110</b>	<b>115</b>	<b>120</b>	<b>125</b>	<b>130</b>	<b>135</b>	<b>140</b>	<b>150</b>
$P_D$ (mW)	198	176	154	132	110	88	66	44	0

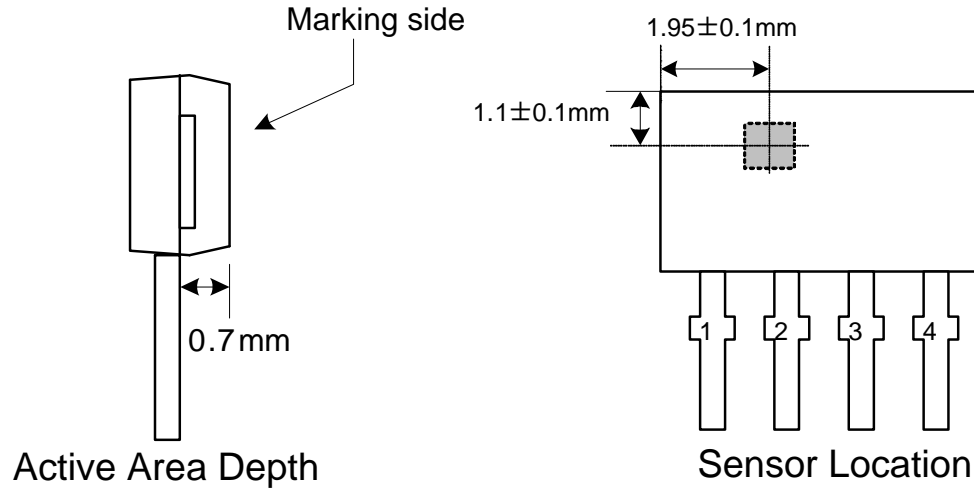


**Marking Information**

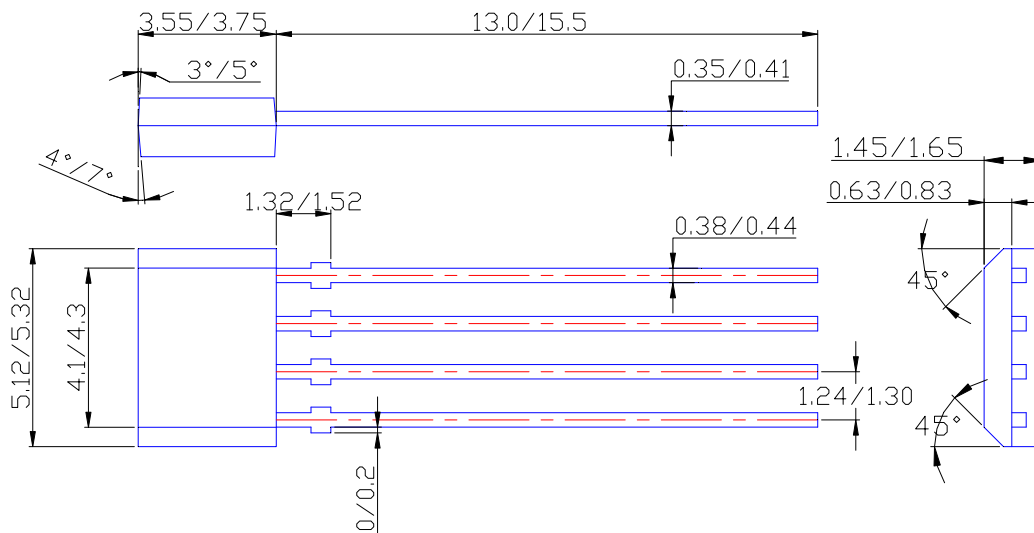


**Package Information** (All Dimensions in mm)

(1) Package type: SIP-4L



**Package Dimension**



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