

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

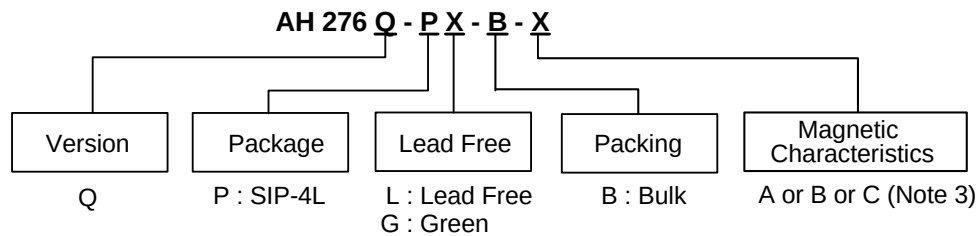
AH276 are integrated Hall sensors with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-collector outputs (**DO**, **DOB**).

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

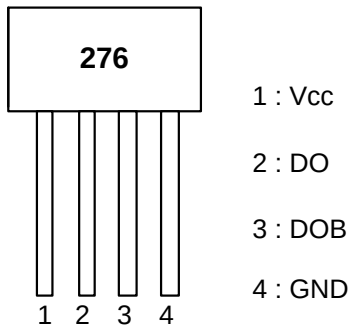


Device	Package Code	Packaging (Note 2)	Bulk		Magnetic Characteristics
			Quantity	Part Number Suffix	
 AH276Q-PL-B-A	P	SIP-4L	1000	-B	A
 AH276Q-PL-B-B	P	SIP-4L	1000	-B	B
 AH276Q-PL-B-C	P	SIP-4L	1000	-B	C
 AH276Q-PG-B-A	P	SIP-4L	1000	-B	A
 AH276Q-PG-B-B	P	SIP-4L	1000	-B	B
 AH276Q-PG-B-C	P	SIP-4L	1000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

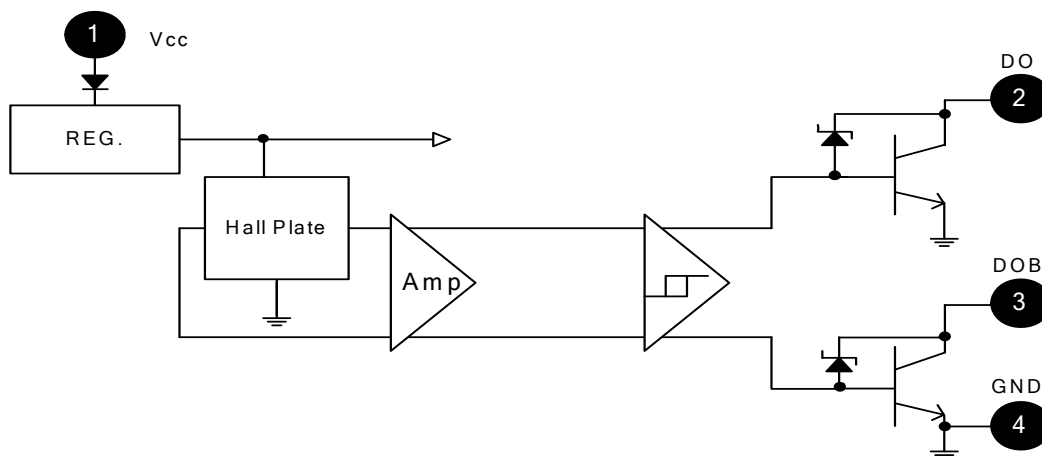
(Top View)



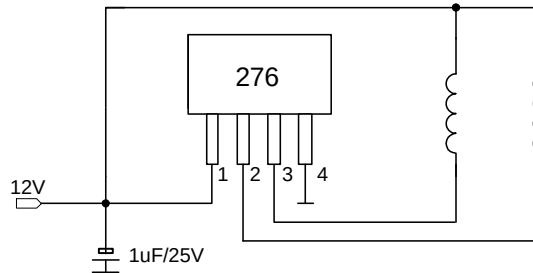
Pin Descriptions

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

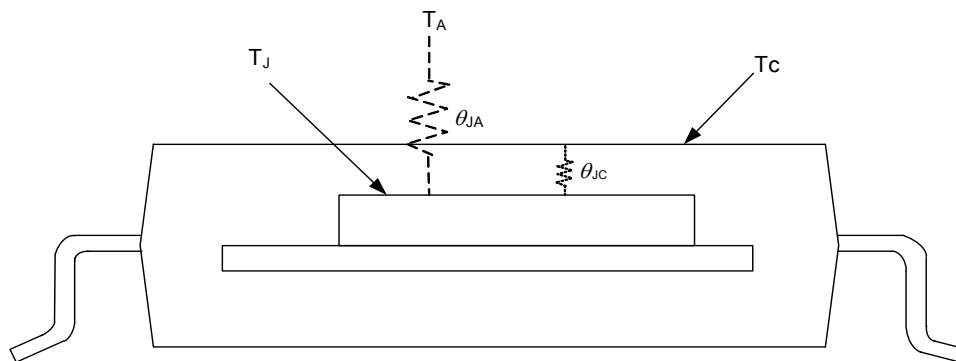


Brush-less DC Fan

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

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	$^{\circ}\text{C}$
θ_{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°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	μA
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

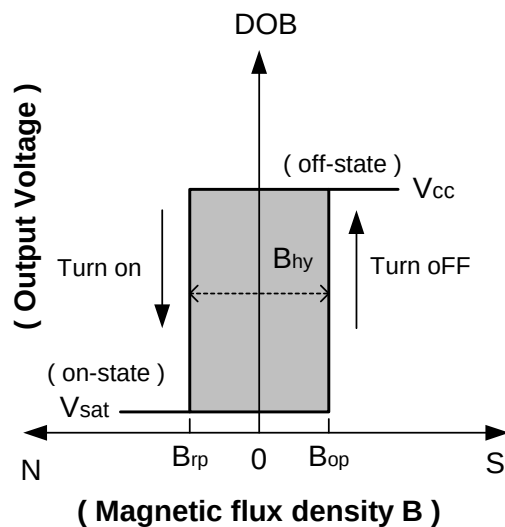
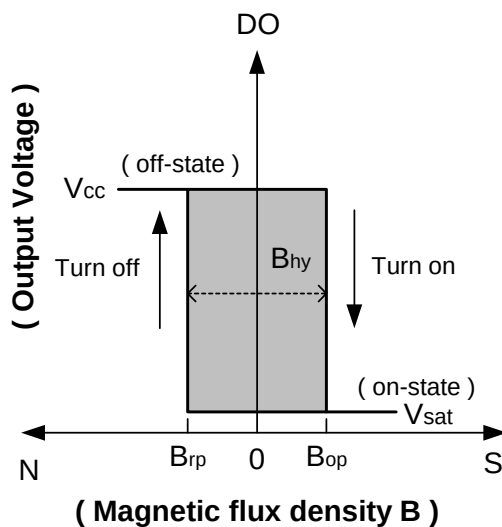
B grade

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

C grade

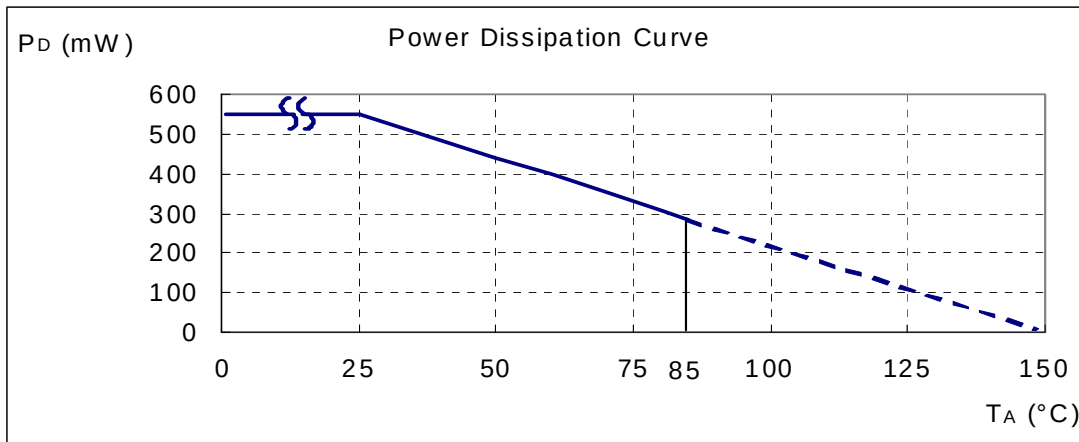
Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operate Point	-	-	100	Gauss
Brp	Release Point	-100	-	-	Gauss
Bhy	Hysteresis	-	75	-	Gauss

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

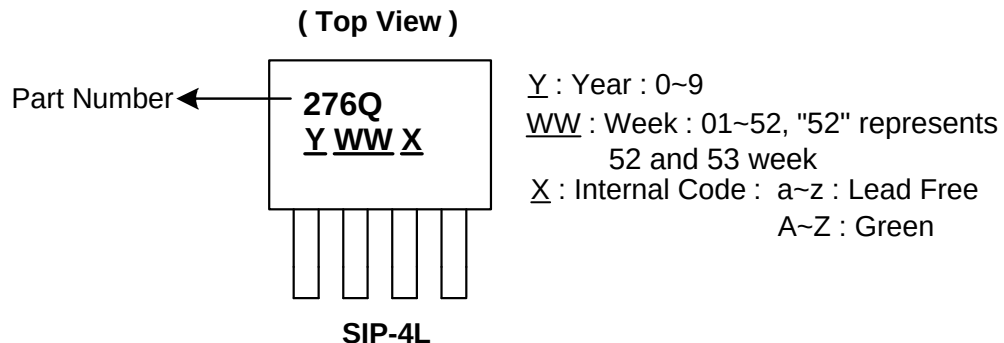


Performance Characteristics

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

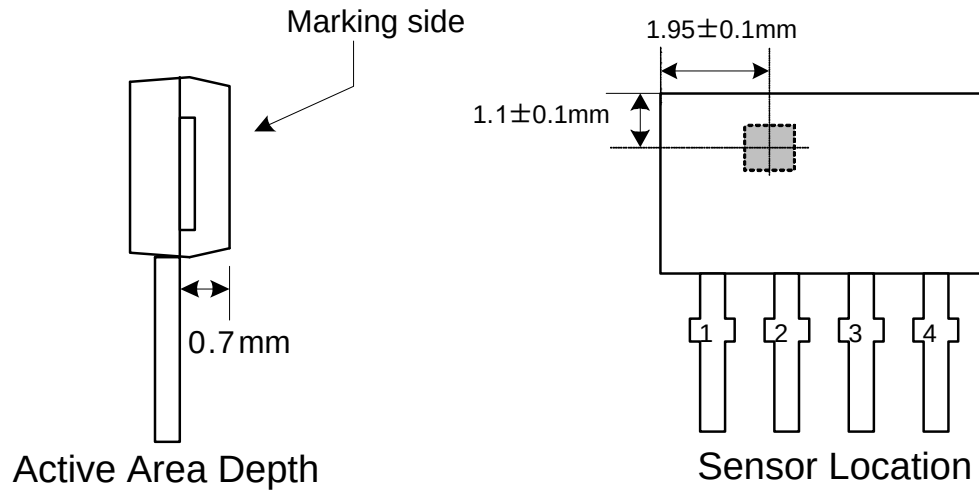


Marking Information

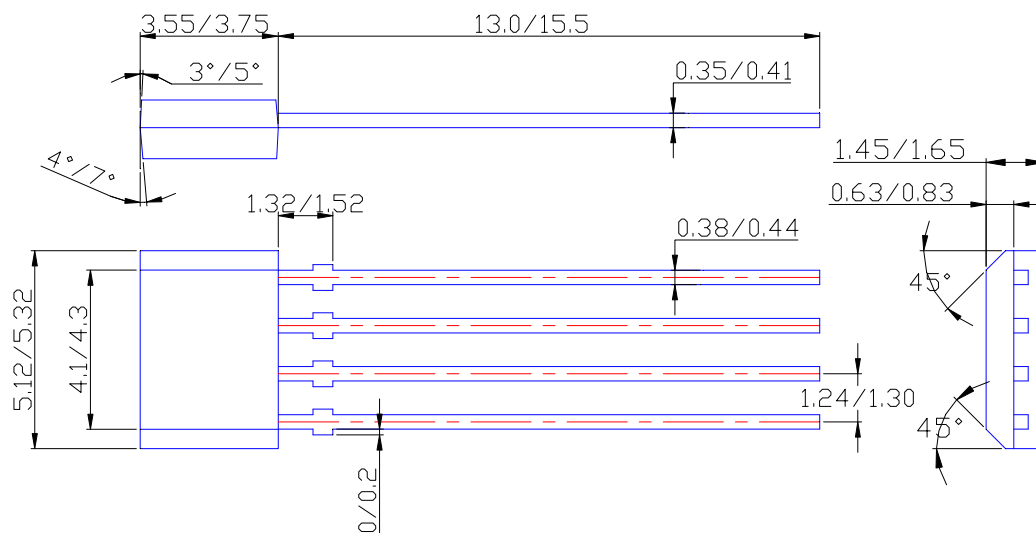


Package Information (All Dimensions in mm)

(1) Package type: SIP-4L



Package Dimension



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