

## Complementary Output Hall Effect Latch

### ■ Features

- On-chip Hall sensor with two different sensitivity and hysteresis settings for AH276
- 3.5V to 20V operating voltage
- 400mA (avg) output sink current
- Built-in protecting diode only for chip reverse power connecting
- -20°C to 85°C operating temperature
- Low profile 4 pin SIP package

### ■ Applications

- Dual-coil Brush-less DC Motor
- Dual-coil Brush-less DC Fan
- Revolution Counting
- Speed Measurement

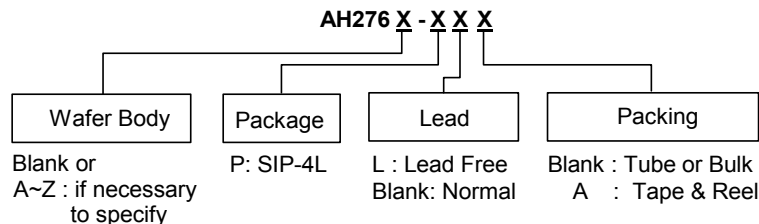
### ■ General Description

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**).

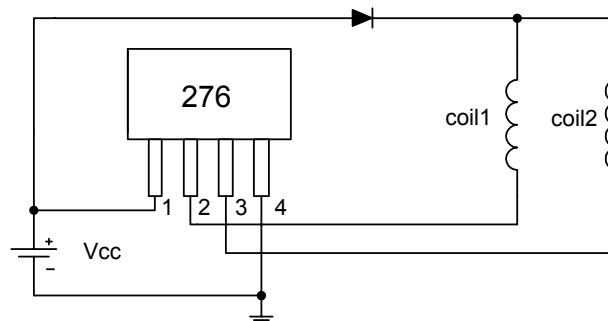
While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO** & **DOB** transfer each state.

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.

### ■ Ordering Information



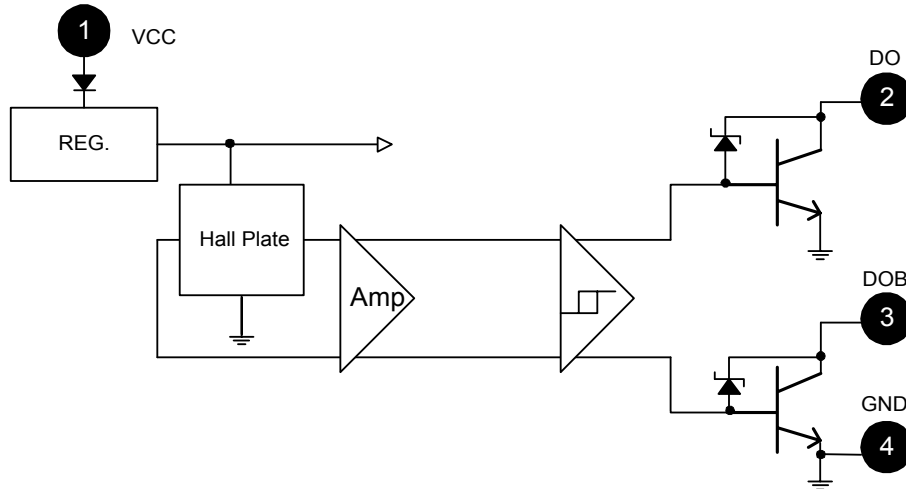
### ■ Typical Application Circuit



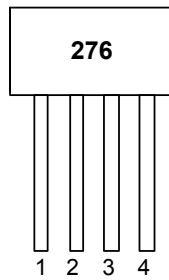
**Brush-less DC Fan**

## Complementary Output Hall Effect Latch

### ■ 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

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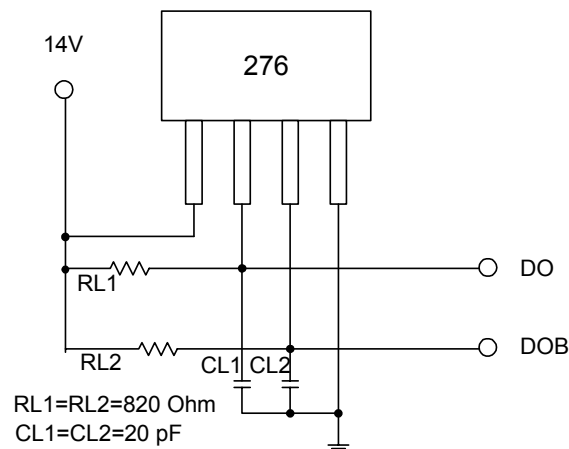
### ■ Absolute Maximum Ratings ( at Ta=25°C )

Characteristics		Symbol	Values	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	$I_c$	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		PD	550	mW
Maximum Junction Temp		$T_j$	150	°C

### ■ Electrical Characteristics (T=+25°C)

Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Low Supply Voltage	$V_{ce}$	$V_{cc}=3.5V, I_L=100mA$	-	0.4	-	V
Supply Voltage	$V_{cc}$		3.5	-	20	V
Output Zener Breakdown	$V_z$		-	46	-	V
Output Saturation Voltage	$V_{ce(sat)}$	$V_{cc}=14V, I_L=400mA$	-	0.7	0.9	V
Output Leakage Current	$I_{cex}$	$V_{ce}=14V, V_{cc}=14V$	-	<0.1	10	$\mu A$
Supply Current	$I_{cc}$	$V_{cc}=20V, \text{Output Open}$	-	16	25	mA
Output Rise Time	$t_r$	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$	-	3.0	10	$\mu s$
Output Falling Time	$t_f$	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$	-	0.3	1.5	$\mu s$
Switch Time Differential	$\Delta t$	$V_{cc}=14V, R_L=820\Omega, C_L=20pF$	-	3.0	10	$\mu s$

### ■ Test Circuit

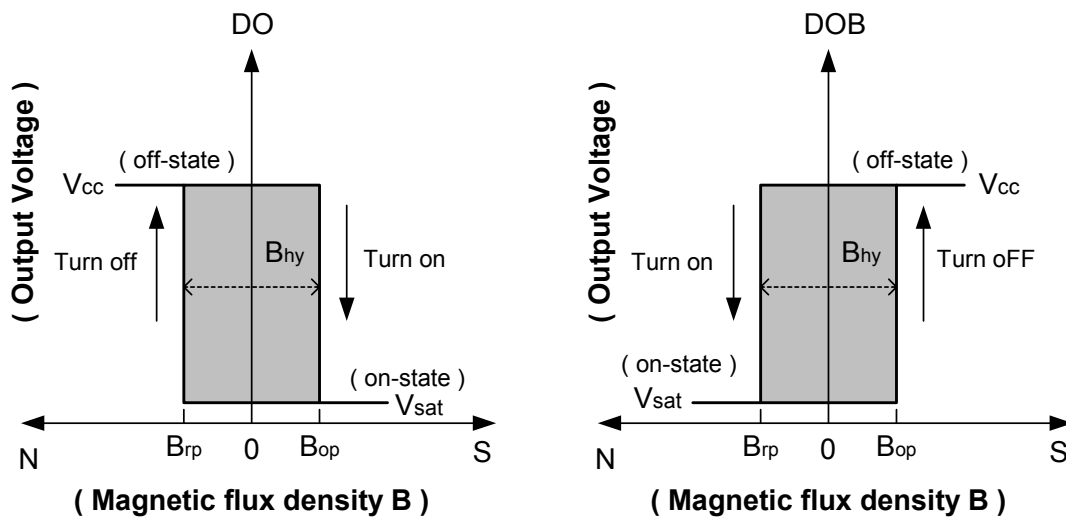


## Complementary Output Hall Effect Latch

### ■ Magnetic Characteristics (Ta=+25°C)

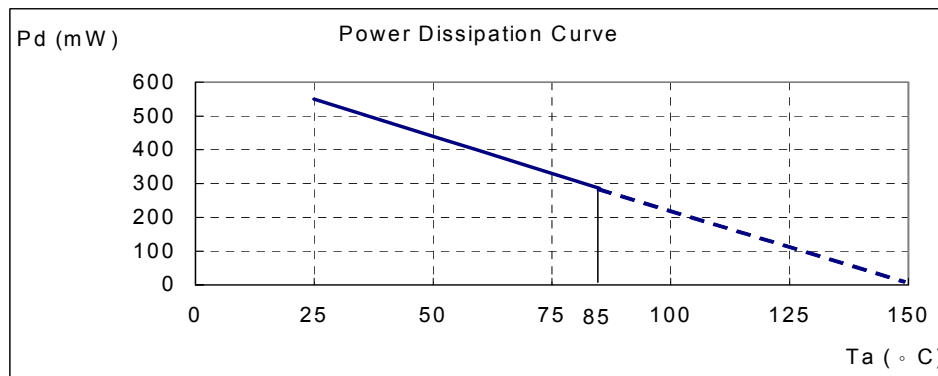
(1mT = 10 Gauss)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	Bop	-	-	110	Gauss
Release Point	Brp	-110	-	-	Gauss
Hysteresis	Bhy	-	110	-	Gauss



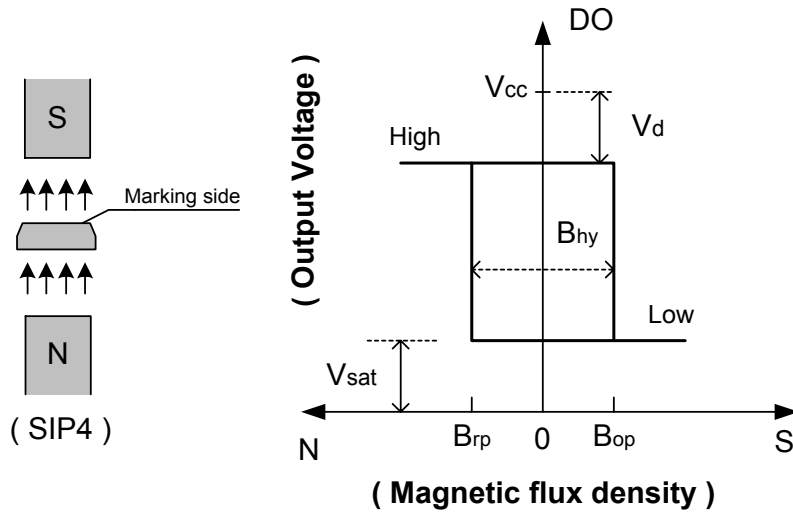
### ■ Performance Characteristics (SIP-4)

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

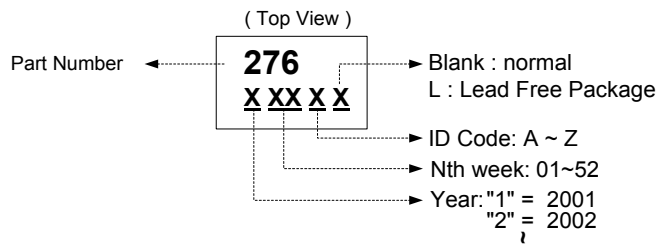


## Complementary Output Hall Effect Latch

### ■ Operating Characteristics



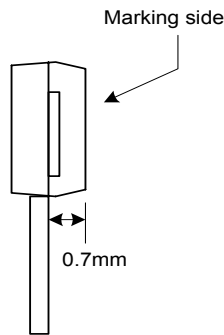
### ■ Marking Information



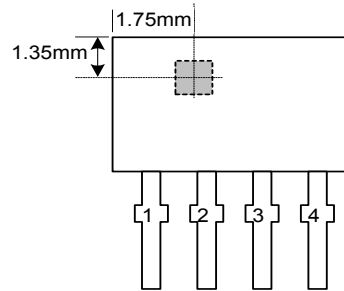
## Complementary Output Hall Effect Latch

### ■ Package Information

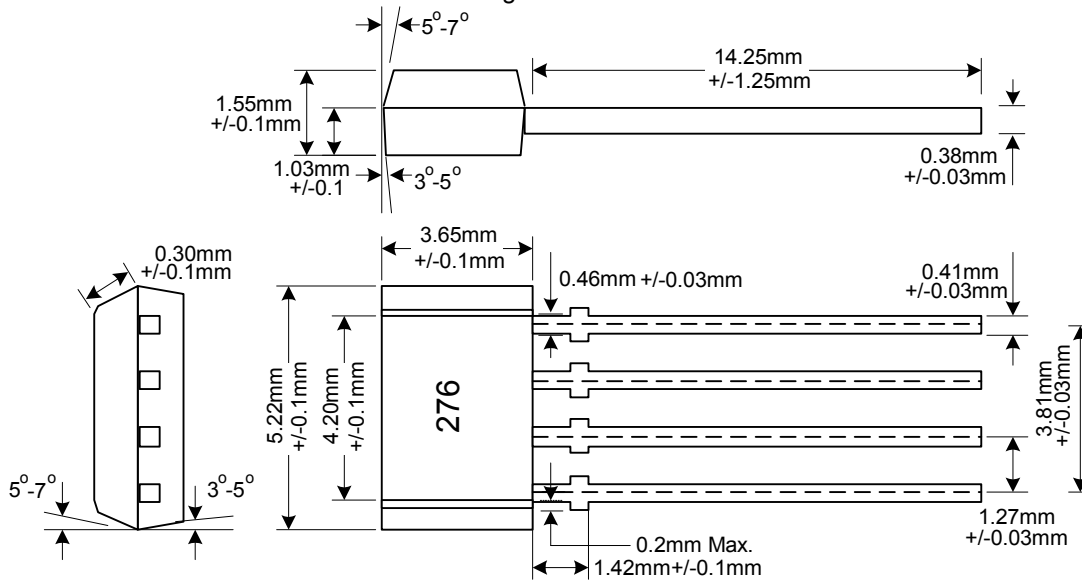
Active Area Depth



Package Sensor Location



Package Dimension



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