

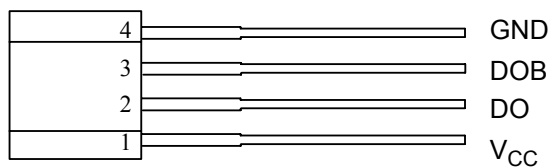
**COMPLEMENTARY OUTPUT HALL EFFECT LATCH****AH277A****Pin Configuration**Z4 Package  
(TO-94)

Figure 2. Pin Configuration of AH277A (Front View)

**Pin Description**

Pin Number	Pin Name	Function
1	V <sub>CC</sub>	Supply voltage
2	DO	Output 1
3	DOB	Output 2
4	GND	Ground



COMPLEMENTARY OUTPUT HALL EFFECT LATCH

AH277A

Functional Block Diagram

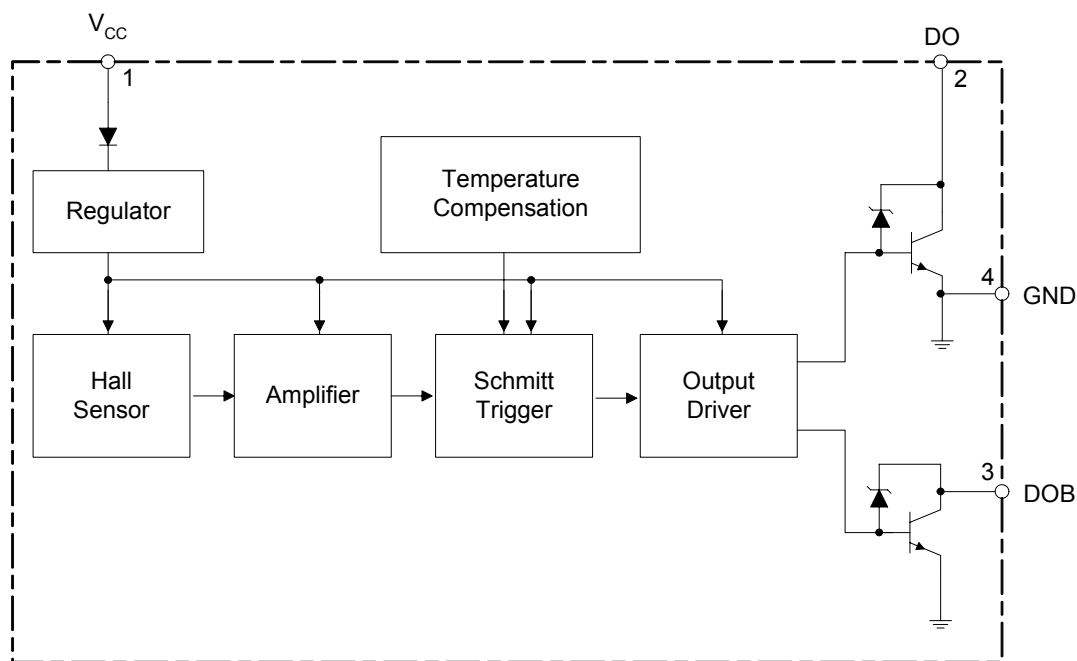
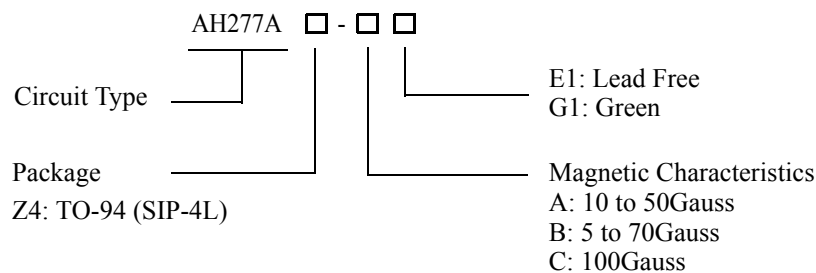


Figure 3. Functional Block Diagram of AH277A

Ordering Information



Package	Temperature Range	Part Number		Marking ID		Packing Type
		Lead Free	Green	Lead Free	Green	
TO-94	-20 to 85°C	AH277AZ4-AE1	AH277AZ4-AG1	AH277A	AH277A-G1	Bulk
		AH277AZ4-BE1	AH277AZ4-BG1	AH277A	AH277A-G1	Bulk
		AH277AZ4-CE1	AH277AZ4-CG1	AH277A	AH277A-G1	Bulk

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green package.

**COMPLEMENTARY OUTPUT HALL EFFECT LATCH****AH277A****Absolute Maximum Ratings (Note 1)**(T<sub>A</sub>=25°C)

Parameter		Symbol	Value	Unit
Supply Voltage		V <sub>CC</sub>	20	V
Reverse Protection Voltage		V <sub>RCC</sub>	-20	V
Magnetic Flux Density		B	Unlimited	Gauss
Output Current	Continuous	I <sub>O</sub>	400	mA
	Hold		600	mA
	Peak (start up)		800	mA
Power Dissipation		P <sub>D</sub>	550	mW
Thermal Resistance	Die to atmosphere	θ <sub>JA</sub>	227	°C/W
	Die to package case	θ <sub>JC</sub>	49	°C/W
Storage Temperature		T <sub>STG</sub>	-50 to 150	°C
ESD (Machine Model)			300	V
ESD (Human Body Model)			2000	V

Note 1: Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. "Absolute Maximum Ratings" for extended period may affect device reliability.

**Recommended Operating Conditions**(T<sub>A</sub>=25°C)

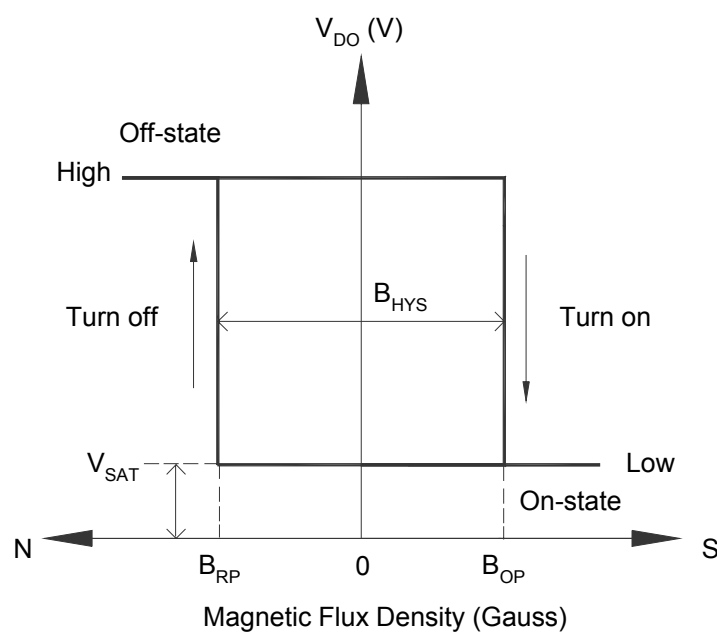
Parameter	Symbol	Min	Max	Unit
Supply Voltage	V <sub>CC</sub>	3.5	16	V
Ambient Temperature	T <sub>A</sub>	-20	85	°C

**COMPLEMENTARY OUTPUT HALL EFFECT LATCH****AH277A****Electrical Characteristics**(T<sub>A</sub>=25°C, V<sub>CC</sub>=14V, unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output Saturation Voltage	V <sub>SAT</sub>	V <sub>CC</sub> =3.5V, I <sub>O</sub> =100mA		0.4		V
		I <sub>O</sub> =400mA		0.35	0.6	V
Output Leakage Current	I <sub>OL</sub>	V <sub>CE</sub> =16V		0.1	10	μA
Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =16V, Output Open		12	16	mA
Output Rise Time	t <sub>r</sub>	R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		3.0	10	μs
Output Fall Time	t <sub>f</sub>	R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		0.3	1.5	μs
Switch Time Differential	Δt	R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		3.0	10	μs
Output Zener Breakdown Voltage	V <sub>Z</sub>			55		V

**Magnetic Characteristics**(T<sub>A</sub>=25°C)

Parameter	Symbol	Grade	Min	Typ	Max	Unit
Operating Point	B <sub>OP</sub>	A	10	30	50	Gauss
		B	5		70	Gauss
		C			100	Gauss
Releasing Point	B <sub>RP</sub>	A	-50	-30	-10	Gauss
		B	-70		-5	Gauss
		C	-100			Gauss
Hysteresis	B <sub>HYS</sub>			60		Gauss



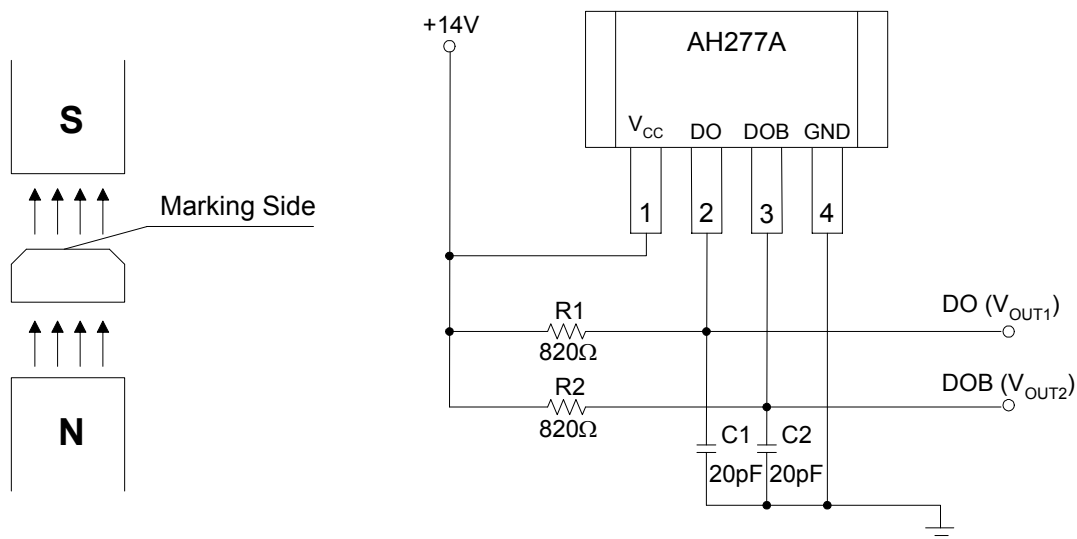
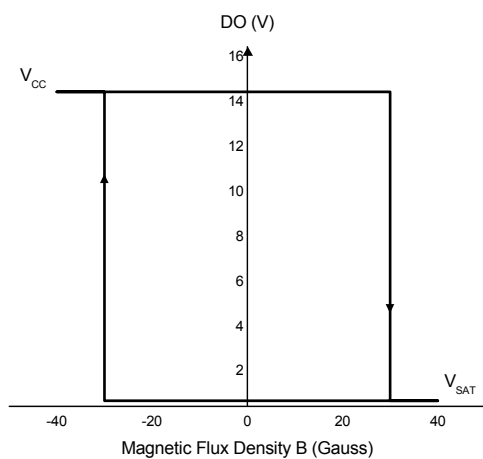
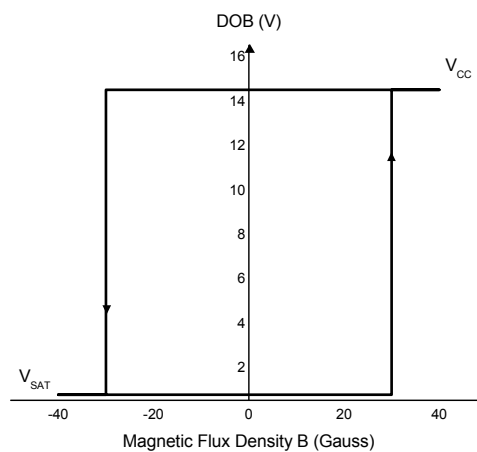
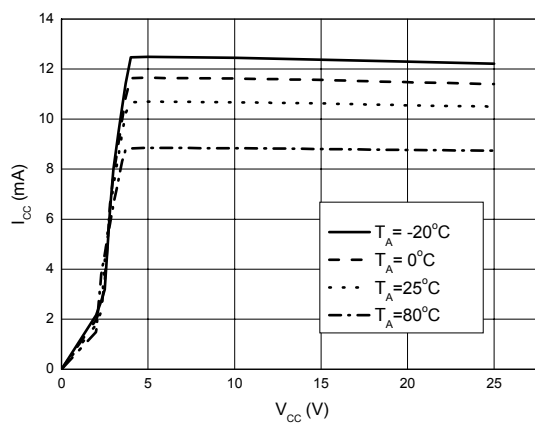
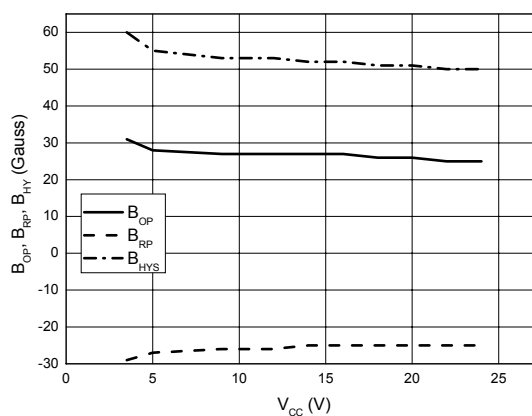
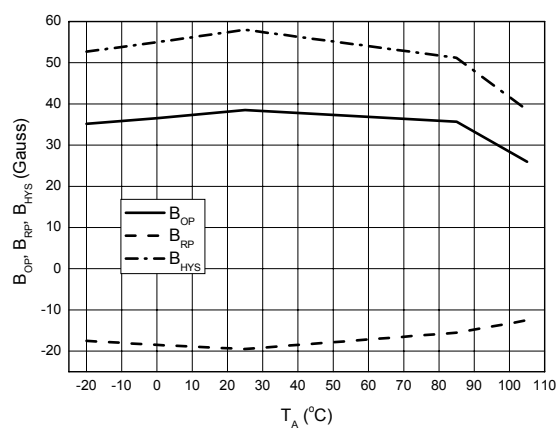
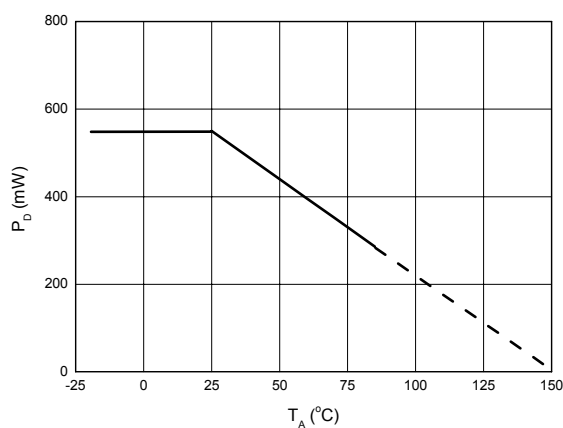
**COMPLEMENTARY OUTPUT HALL EFFECT LATCH**
**AH277A**
**Magnetic Characteristics (Continued)**


Figure 4. Basic Test Circuit


Figure 5.  $V_{DO}$  vs. Magnetic Flux Density

Figure 6.  $V_{DOB}$  vs. Magnetic Flux Density

**COMPLEMENTARY OUTPUT HALL EFFECT LATCH****AH277A****Typical Performance Characteristics**Figure 7. I<sub>CC</sub> vs. V<sub>CC</sub>Figure 8. B<sub>OP</sub>/B<sub>RP</sub>/B<sub>HYS</sub> vs. V<sub>CC</sub>Figure 9. B<sub>OP</sub>/B<sub>RP</sub>/B<sub>HYS</sub> vs. Ambient TemperatureFigure 10. P<sub>D</sub> vs. Ambient Temperature

# COMPLEMENTARY OUTPUT HALL EFFECT LATCH

AH277A

## Typical Performance Characteristics (Continued)

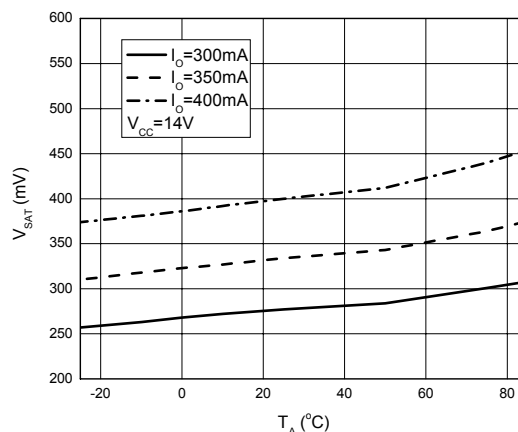
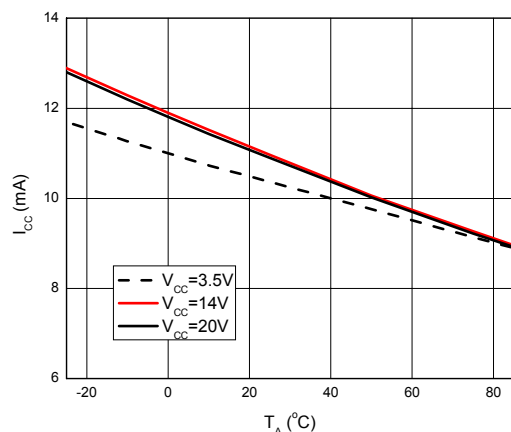


Figure 11. Supply Current vs. Ambient Temperature

Figure 12. Saturation Voltage vs. Ambient Temperature

## Typical Applications

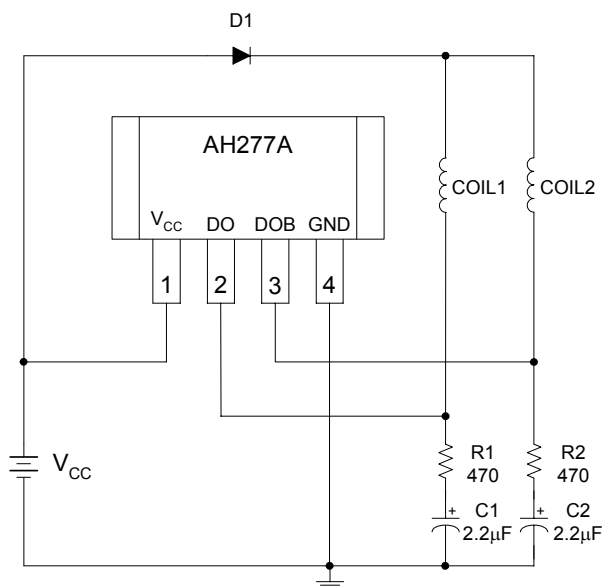
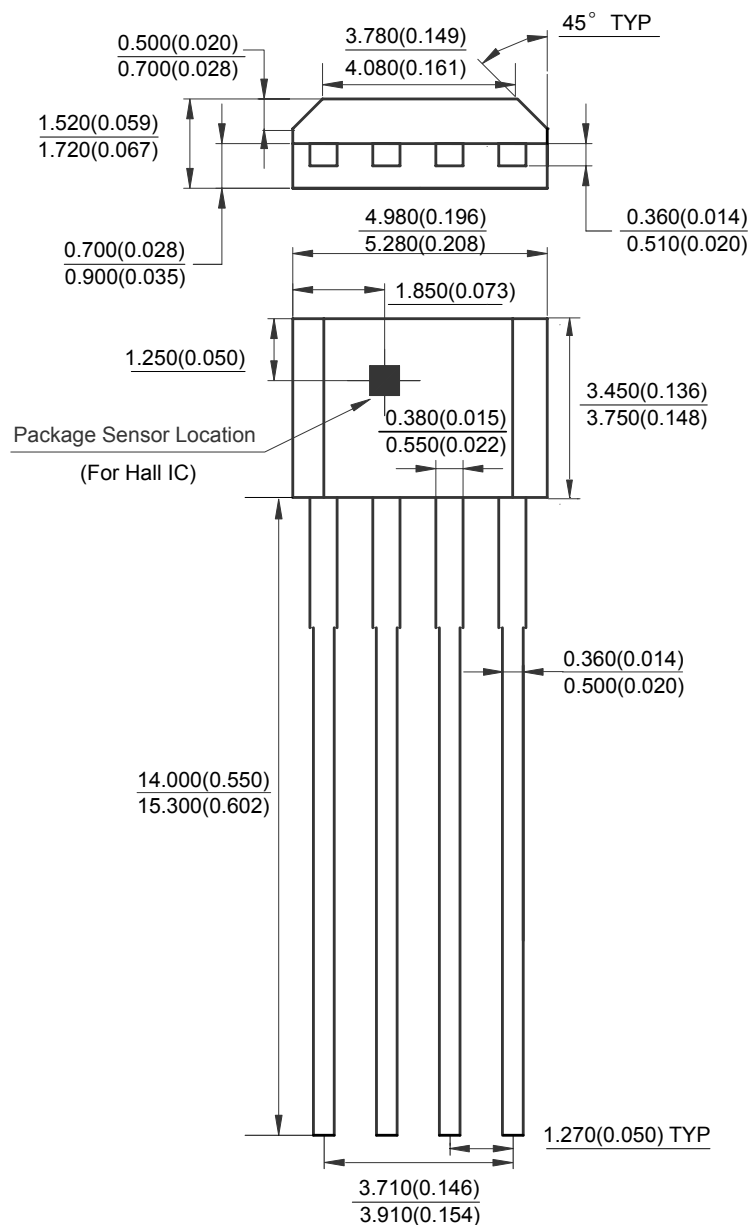


Figure 13. Typical Application Circuit with D1(Note 2)

Note 2: AH277A has Reversed Supply Voltage Protection. For DC fan application, sometimes need to test power reverse connection condition. The internal diode only protects chip-side but not for coil-side. It is recommended to add one external diode D1 in application to block the reverse current from coil-side as shown in Figure 13.

**COMPLEMENTARY OUTPUT HALL EFFECT LATCH****AH277A****Mechanical Dimensions****TO-94****Unit: mm(inch)**





## **BCD Semiconductor Manufacturing Limited**

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