AH342

Active High/Low Complementary Output Hall-effect Latch

■ Features

- Digital dual complementary sink/source outputs
- Reverse Voltage Polarity protection for full supply range.
- High output current capability
- Low profile 4 pin SIP package

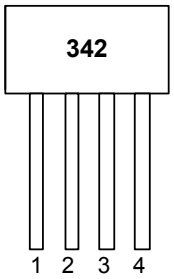
■ Applications

- Conveyors
- Motor control
- Power sensing
- Linear or rotary motion detection
- RPM sensing

■ General Description

The AH342 is a bipolar latching hall IC with a pair of complementary push/pull outputs. A dual hall element is used to offset stress induced noise and drift. The robust outputs are capable of sourcing up to 7.4mA and sinking up to 4.4mA. The device contains inherent reverse polarity protection up to the full power supply range.

■ Pin Assignment



Front View

1 : Vcc

2 : DO

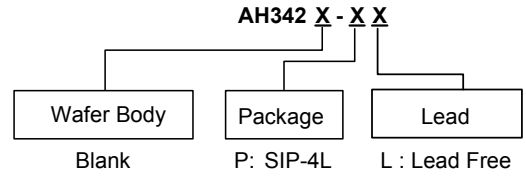
3 : DOB

4 : Vss

■ Pin Descriptions

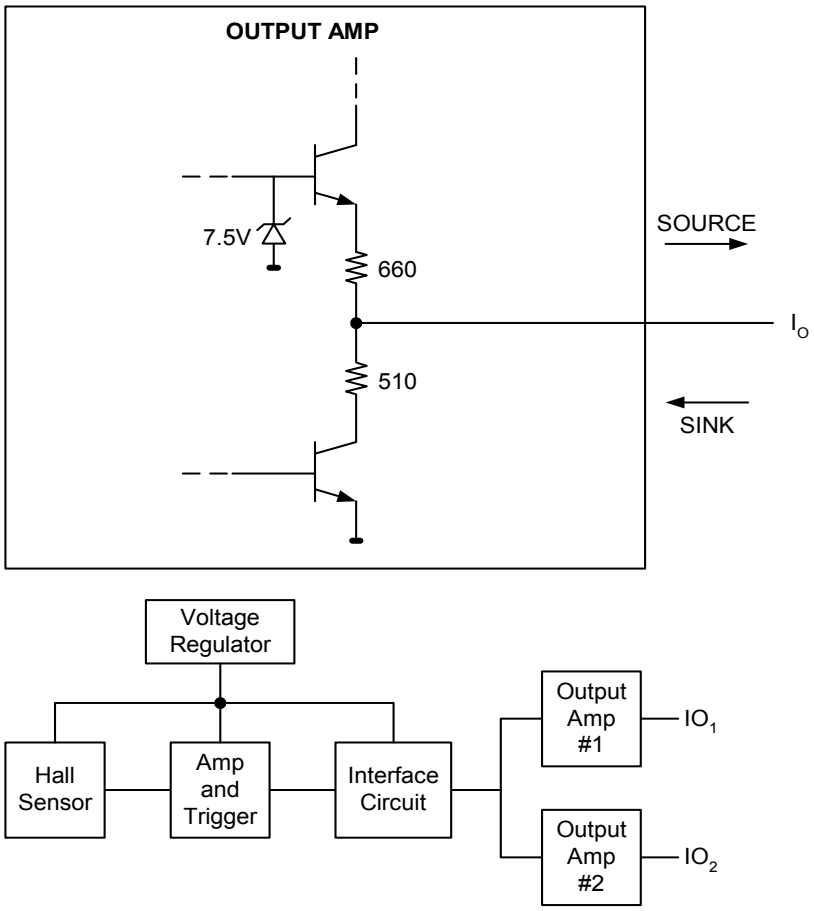
Name	P/I/O	Pin #	Description
Vcc	P	1	Positive Power Supply
DO	O	2	Output Pin
DOB	O	3	Output Pin
Vss	P	4	Ground

■ Ordering Information



*Packing: Bulk

■ Block Diagram



■ Absolute Maximum Ratings (Note 1)

Characteristics	Sym.	Conditions	Values	Unit
Supply voltage	V_{CC}	-40°C to 125°C	±28	V
Voltage Externally Applied to Output	V_{OUT}	-40°C to 125°C	-1.2 to 5	V
Output Current	Ic		±10	mA
Magnetic Flux density	B	No limit; the circuit cannot be damaged by magnetic overdrive	Unlimited	
Operation Temperature	T_{OPR}		-40 to 125	°C
Storage Temperature	T_{STG}	No power applied	-40 to 150	°C

Note 1: Absolute maximum ratings are the extreme limits that the device will withstand without damage to the device. However, the electrical and magnetic characteristics are not guaranteed as the maximum limits (above recommended operating conditions) are approached nor will the device necessarily operate at absolute maximum rating.

■ Electrical Characteristics (Note 2, 3)

Characteristic	Sym.	Conditions	24°C ± 2°C			-40°C to 125 °C			Units
			Min	Typ.	Max	Min	Typ.	Max	
Supply Voltage	V_{CC}		4.5	-	28	4.5	-	28	V
Supply Current	I_{CC}	28V±0.5% supply	4	4.5	6	3	4.5	7	mA
Output Voltage									
#1 Sourcing	V_{OUT}	Switch magnetically operated: No load 28V±0.5% supply. Switch magnetically released: No load 28V±0.5% supply.	6.0	7.0	7.5	-	-	-	V
#2 Sinking			0	0.1	0.2	-	-	-	
#1 Sinking			0	0.1	0.2	-	-	-	
#2 Sourcing			6.0	7.0	7.5	-	-	-	
Leakage (sink)	$I_{Leak(sink)}$	Apply voltage 0.2V greater than measured output source voltage measure current, no load 28V±0.5% supply.	-	-	1.0	-	-	1.0	µA
Output Current									
#1 Sourcing	I_{OUT}	Apply 2V to output and measure current. Switch magnetically operated, no load 28V±0.5%. Apply 2V to output and measure current. Switch magnetically released, no load 28V±0.5%.	5.5	7.4	8.0	5.0	7.4	8.5	mA
#2 Sinking			2.8	3.4	4.7	2.4	3.4	5.0	
#1 Sinking			2.8	3.4	4.7	2.4	3.4	5.0	
#2 Sourcing			5.5	7.4	8.0	5.0	7.4	8.5	
Output Switching Time									
Fall Time	tf	90% to 10%; no load 28V±0.5% Supply	-	-	-	-	-	1.0	µs
Rise Time	tr	10% to 90%; no load 28V±0.5% Supply	-	-	-	-	-	1.0	

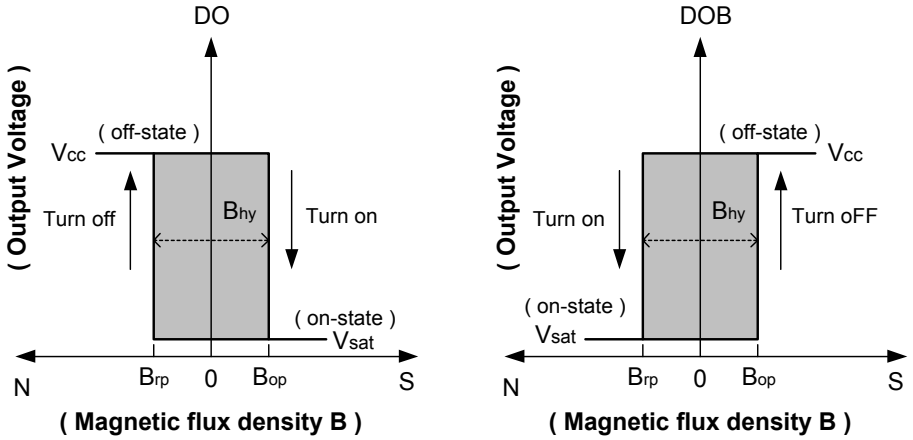
■ Magnetic Characteristics(Ta=+25°C) (Note 2, 3)

(1mT = 10 Gauss)

Characteristic	Sym.	24°C ± 2°C Vs=12Vdc ± 0.5%Vdc		-40 °C to 125 °C Vs=4.5Vdc to 28Vdc		Unit
		Min.	Max.	Min.	Max.	
Operate Point	Bop	40	120	30	150	Gauss
Release Point	Brp	-120	-40	-150	-30	Gauss
Hysteresis	Bhy	120	200	120	200	Gauss

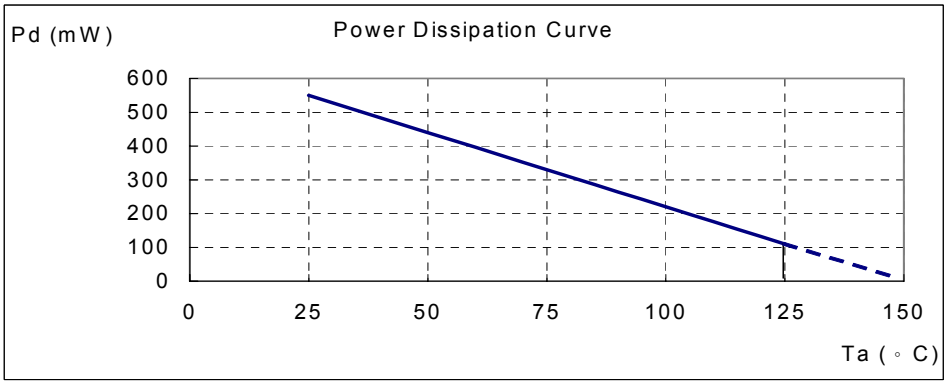
Note 2: All the parameters are tested under the 25°C only. The operation temperature (-40°C to 125°C) is guaranteed by design, it is typical value.

Note 3: The magnetic field strength (gauss) required to cause the switch to change state (operate and release) will be as specified in the magnetic characteristics. To test the switch against the specified magnetic characteristics the switch must be placed in a uniform magnetic field.



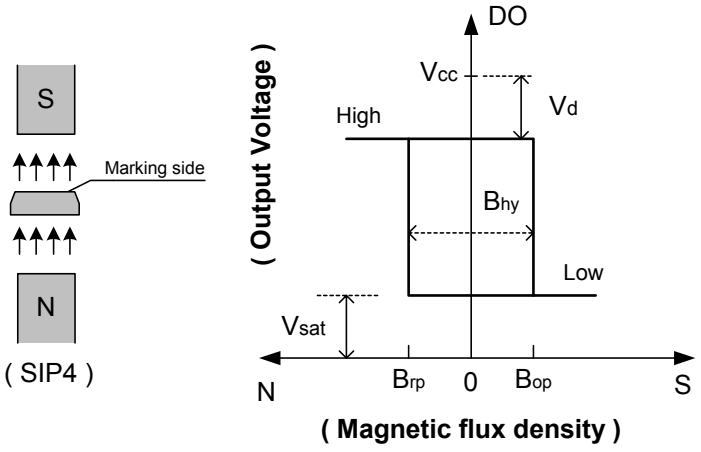
■ Performance Characteristics (SIP4)

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

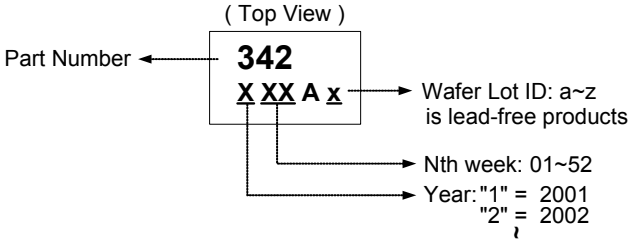


Note：SIP-4L package.

■ Operating Characteristics



■ Marking Information



■ Package Information