

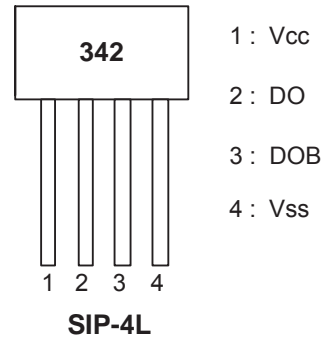
ACTIVE HIGH/LOW COMPLEMENTARY OUTPUT HALL-EFFECT LATCH

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 Assignments

(Top View)



Features

- Digital dual complementary sink/source outputs
- Reverse Voltage Polarity protection for full supply range
- High output current capability
- Low profile packages: SIP-4L
- Lead Free Package: SIP-4L
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**

Applications

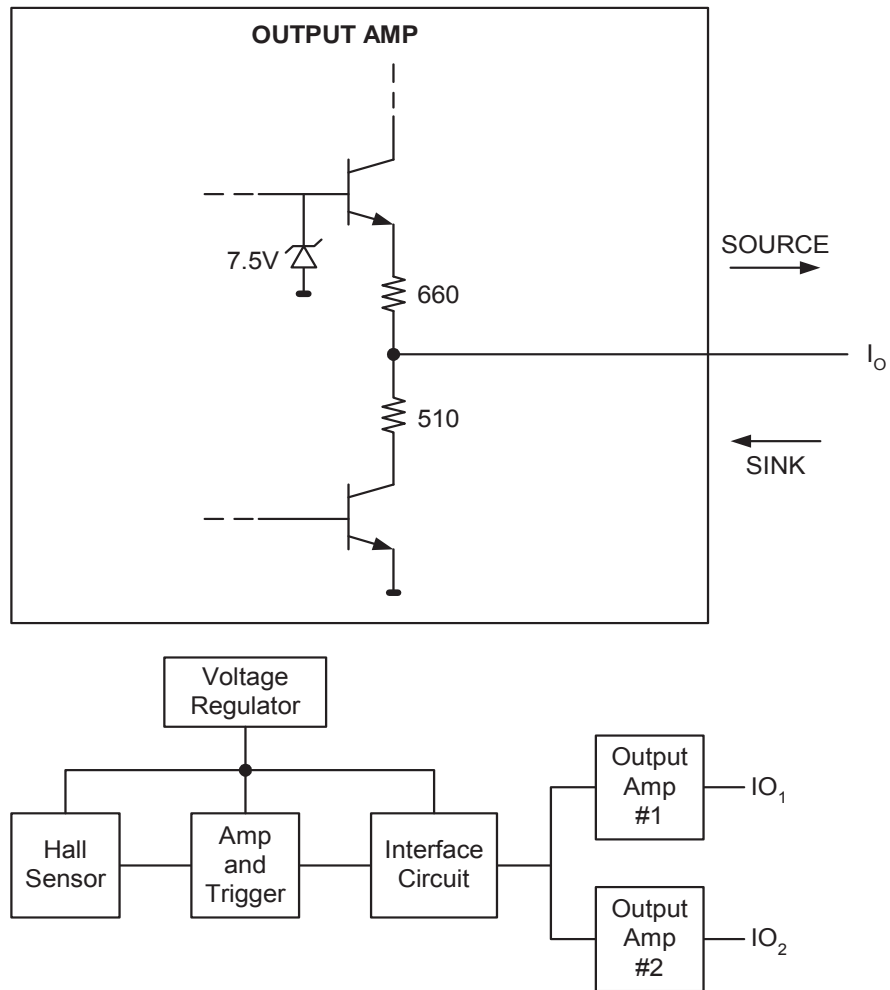
- Conveyors
- Motor Control
- Power Sensing
- Linear or Rotary Motion Detection
- RPM Sensing

Notes: 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.

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
Vss	P	4	Ground

Functional Block Diagram



Absolute Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.) (Note 3)

Symbol	Parameter	Rating	Unit
V_{CC}	Supply Voltage	± 28	V
V_{out}	Voltage Externally Applied to Output	-1.2 to +5	V
I_c	Output Current	± 10	mA
B	Magnetic Flux Density	Unlimited	Gauss
T_{ST}	Storage Temperature Range	-40 to +150	$^\circ\text{C}$

Note: 3. 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.

Recommended Operating Conditions (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Symbol	Characteristic	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating	4.5	28	V
T_A	Operating Ambient Temperature (Note 4)	Operating	-40	+125	$^\circ\text{C}$

Note: 4. Shall not exceed P_D and Safety Operation Area.

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.) (Note5,6)

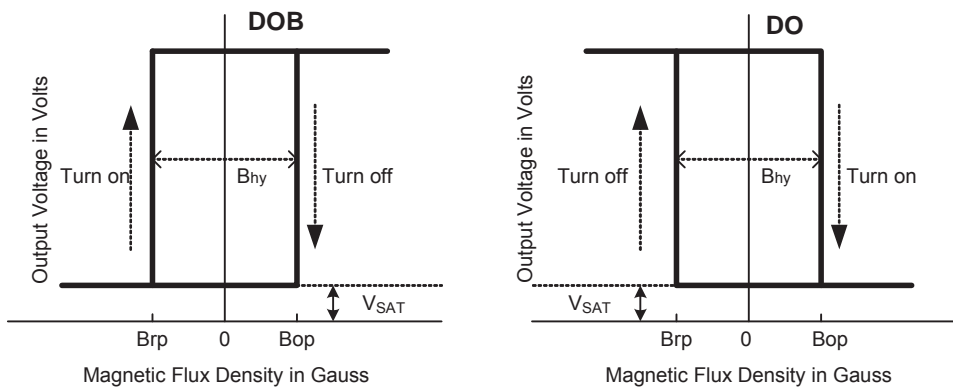
Symbol	Characteristic	Conditions	24°C ± 2°C			-40°C to +125°C			Units
			Min	Typ	Max	Min	Typ	Max	
I _{CC}	Supply Current	28V±0.5% supply	4	4.5	6	3	4.5	7	mA
Output Voltage									
V _{OUT}	#1 Sourcing	Switch magnetically operated:	6.0	7.0	7.5	-	-	-	V
	#2 Sinking	No load 28V±0.5% supply.	0	0.1	0.2	-	-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

Magnetic Characteristics

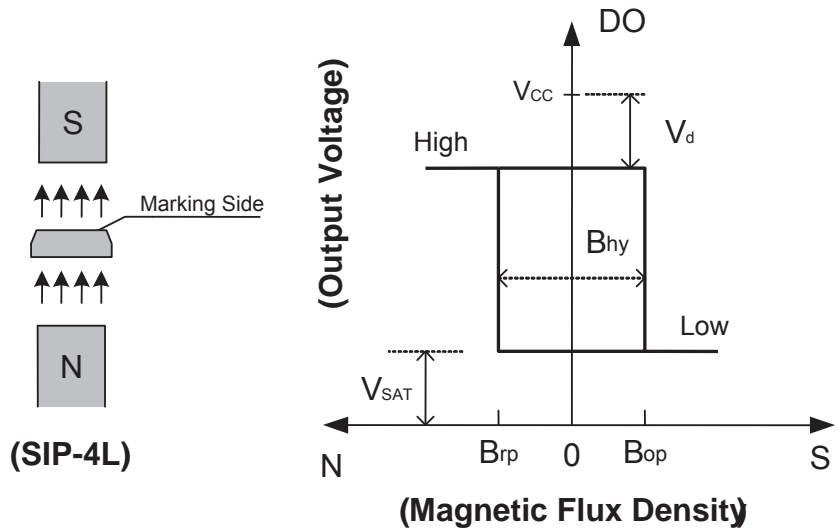
(1mT = 10 Gauss)

Symbol	Characteristic	24°C ± 2°C		-40°C to +125°C		Unit
		V _S = 12V _{DC} ± 0.5%V _{DC}		V _S = 4.5V _{DC} to 28V _{DC}		
		Min	Max	Min	Max	
B _{op}	Operate Point	40	120	30	150	Gauss
B _{rp}	Release Point	-120	-40	-150	-30	Gauss
B _{hy}	Hysteresis	120	200	120	200	Gauss

- Notes:
- 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.
 - 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.

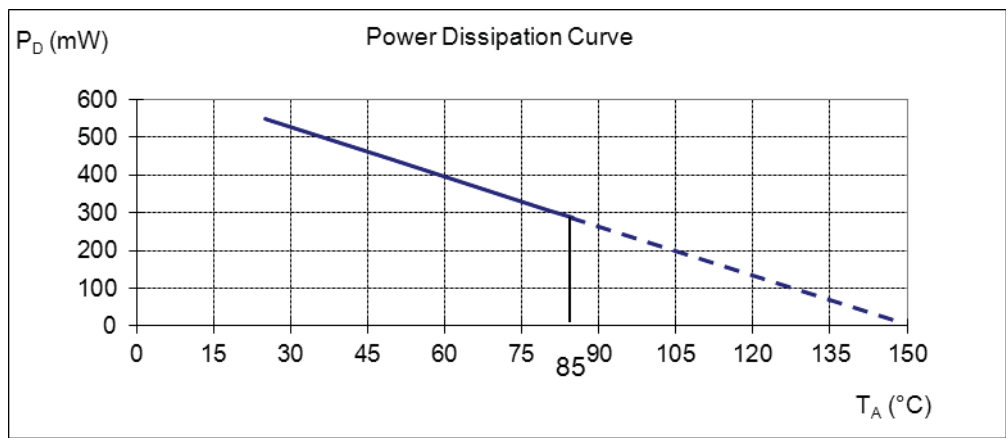


Operation Characteristics

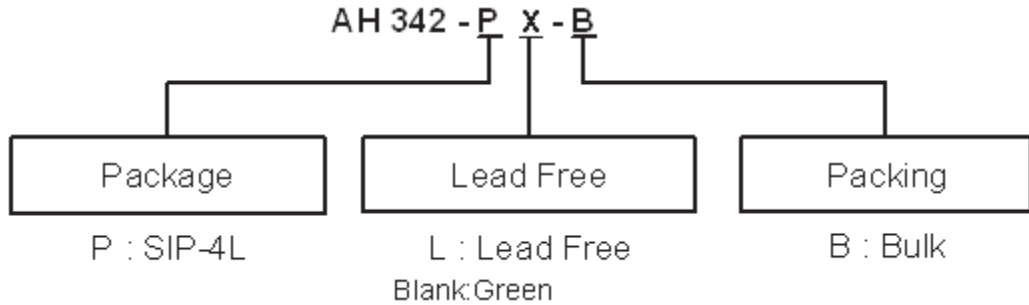


Performance Characteristics

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

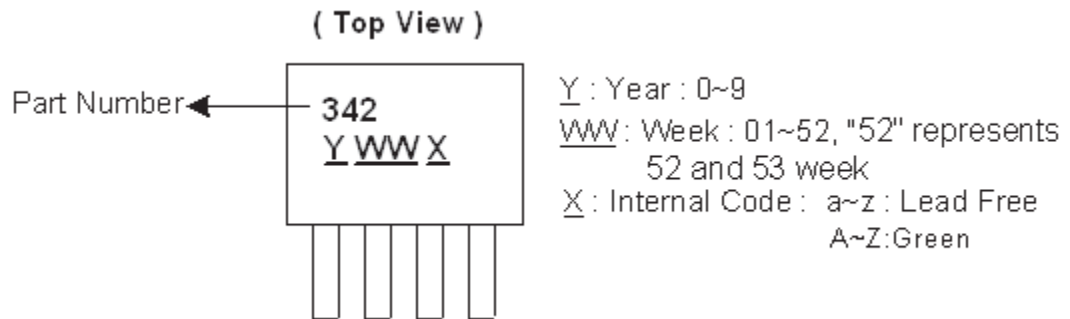


Ordering Information



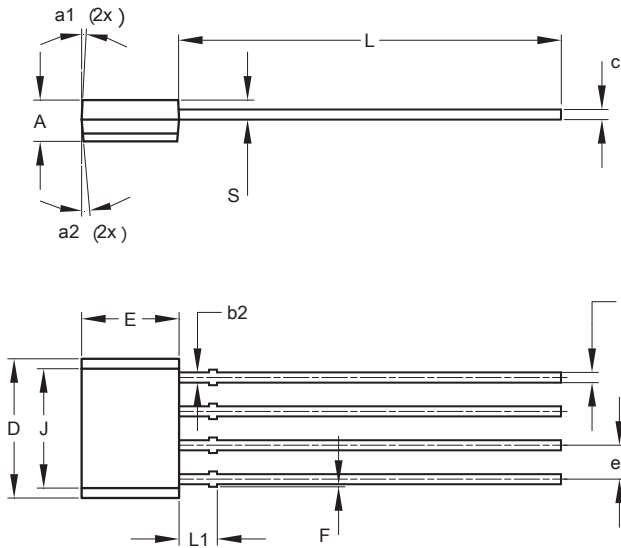
Part Number	Package Code	Packaging	Bulk	
			Quantity	Part Number Suffix
AH342-PL-B	P	SIP-4	1000	-B
AH342-P-B	P	SIP-4	1000	-B

Marking Information



Package Outline Dimensions (All dimensions in mm.)

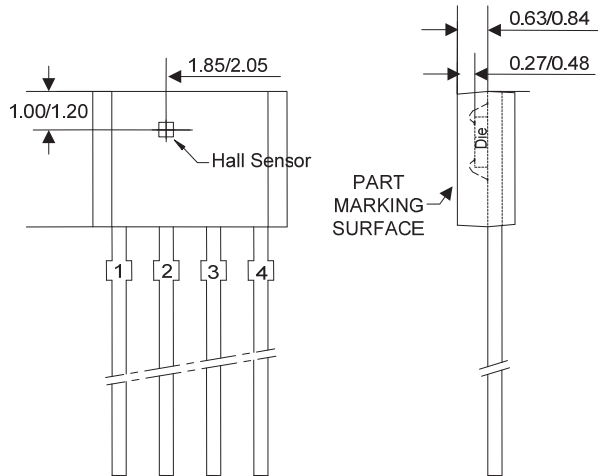
(1) Package type: SIP-4L



SIP-4			
Dim	Min	Max	Typ
A	1.45	1.65	1.55
b1	0.38	0.44	0.40
b2	-	-	0.48
c	0.35	0.45	0.40
D	5.12	5.32	5.22
e1	1.24	1.30	1.27
E	3.55	3.75	3.65
F	0.00	0.20	-
J	4.10	4.30	4.20
L	14.00	14.60	14.30
L1	1.32	1.52	1.42
S	0.63	0.83	0.73
a1	-	5°	3°
a2	4°	7°	5°
a3	4°	7°	5°
a4	-	5°	3°

All Dimensions in mm

Min/Max (in mm)



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