

Features

General Description

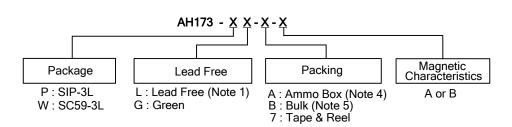
- Bipolar Hall Effect Latch Sensor
- 3V to 20V DC Operation Voltage
- Built-in Pull-Up Resistor
- 25mA Output Sink Current
- Operating Temperature: -40°C ~ +125°C
- Lead Free Packages: SC59-3L and SIP-3L (Note 1)
- SC59-3L (commonly known as SOT23 in Asia): Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 2)

AH173 is a single-digital-output Hall-effect sensor with pull-up resistor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, and an output driver with a pull-up resistor (Rpu). An internal band-gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. While the magnetic flux density (B) is larger than operate point (Bop), the OUT pin turns on (low). If B moves toward release point (Brp), the OUT pin is latched "on" state prior to B < Brp. When B < Brp, the OUT pin goes into "off" state.

Applications

- Rotor Position Sensing
- **Current Switch**
- Encoder
- **RPM Detection**

Ordering Information



				Tube	/Bulk	7" Tape and Reel		Ammo	Вох	
GF GF	Device	Packag e Code	Packaging (Note 3)	Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix	Magnetic Characteristics
5	AH173-PL-A-A	Р	SIP-3L	NA	NA	NA	NA	4000/Box	-A	Α
2	AH173-PL-A-B	Р	SIP-3L	NA	NA	NA	NA	4000/Box	-A	В
2	AH173-PL-B-A	Р	SIP-3L	1000	-B	NA	NA	NA	NA	Α
	AH173-PL-B-B	Р	SIP-3L	1000	-B	NA	NA	NA	NA	В
ъ	AH173-WL-7-A	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA	Α
ъ	AH173-WL-7-B	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA	В
1	AH173-WG-7-A	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA	Α
1	AH173-WG-7-B	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA	В

Notes:

Pk P PD, PD,

- 1. SIP-3L is available in "Lead Free" product only.
 2. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
- 3. 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.
- 4. Ammo Box is for SIP-3L Spread Lead.
- 5. Bulk is for SIP-3L Straight Lead.

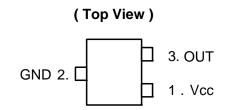


Pin Assignment

(1) SIP-3L (2) SC59-3L

3. OUT
2. GND
1. Vcc

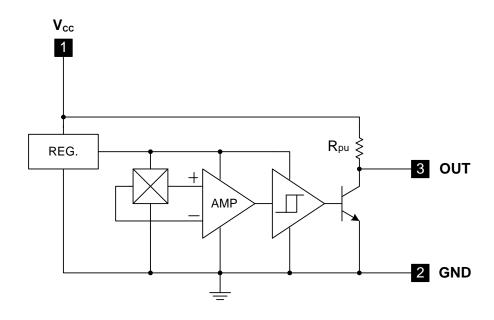
(Top View)



Pin Descriptions

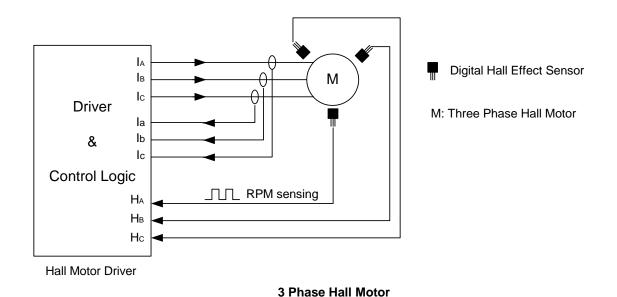
Name	Pin#	Description			
Vcc	1	Positive Power Supply			
GND	2	Ground			
OUT	3	Output Stage			

Block Diagram





Functional Application Circuit



Absolute Maximum Ratings (T_A = 25°C)

Symbol	Characteristics	Values	Unit	
V _{CC}	Supply Voltage		20	V
V _{OUT} (off)	Output "Off" Voltage	20	V	
Io (sink)	Output "On" Current	25	mA	
Ts	Storage Temperature Range	-65~+150	°C	
TJ	Maximum Junction Temperature	+150	°C	
В	Power Discipation	SIP-3L	550	mW
P _D	Power Dissipation	SC59-3L	230	mW

Recommended Operating Conditions

Symbol	Characteristic	Conditions	Min	Max	Unit
Vcc	Supply Voltage	Operating	3	20	V
T _A	Operating Ambient Temperature	Operating	-40	125	°C



Electrical Characteristics (T_A = 25°C)

Symbol	Characteristics	Conditions	Min	Тур.	Max	Unit
V _{OUT (SAT)}	Output Saturation Voltage	$V_{CC} = 12V$, OUT "ON" $I_O = 10$ mA	-	300	400	mV
Icc	Supply Current	V _{CC} = 12V, OUT "OFF"	-	3.5	6	mA
Rpu	Internal Pull-up Resistor		7	10	13	ΚΩ
V_d	Dropout Voltage	$V_d = V_{cc} - V_{ce}$	-	-	0.3	V

Magnetic Characteristics

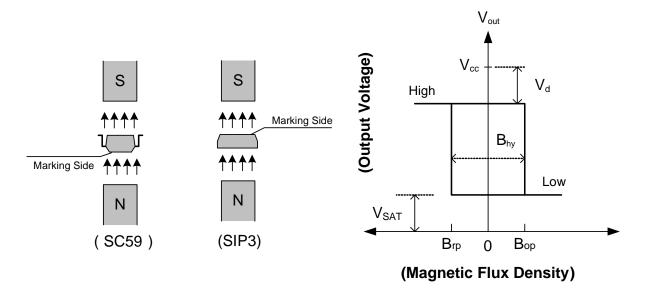
(1mT = 10 Gauss)

A grade

Symbol	Characteristics	Min	Тур.	Max	Unit
Bops(south pole to brand side)	Operation Point	15	1	60	Gauss
Brps(south pole to brand side)	Release Point	-60	1	-15	Gauss
Bhy(Bopx - Brpx)	Hysteresis	-	80	-	Gauss

B grade

Symbol	Characteristics	Min	Тур.	Max	Unit
Bops(south pole to brand side)	Operation Point	5	-	80	Gauss
Brps(south pole to brand side)	Release Point	-80	-	-5	Gauss
Bhy(Bopx - Brpx)	Hysteresis	-	80	-	Gauss

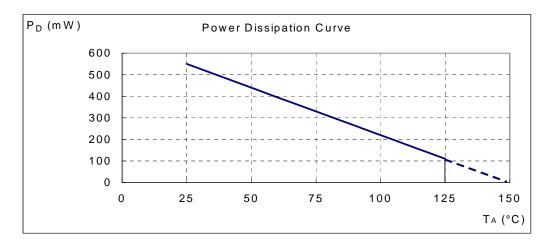




Performance Characteristics

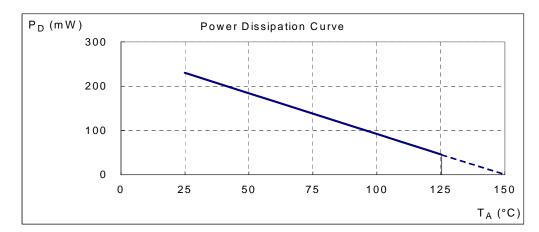
(1) SIP-3L

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



(2) SC59-3L (commonly known as SOT23 in Asia)

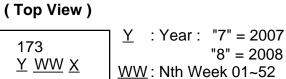
TA (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
PD (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0





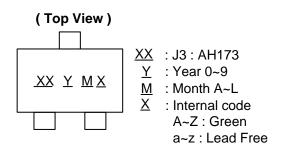
Marking Information

(1) SIP3-3L



X : Internal code a~z : Lead Free

(2) SC59 (Commonly known as SOT23 in Asia)

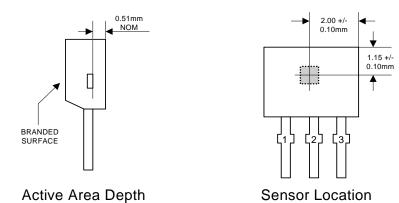


Part Number	Package	Identification Code
AH173	SC59-3L	J3

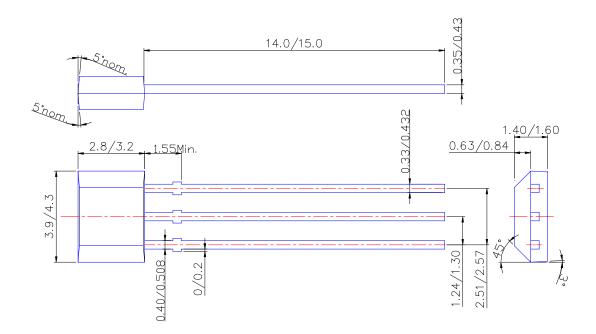


Package Information (All Dimensions in mm)

(1) Package Type: SIP-3L for Bulk pack



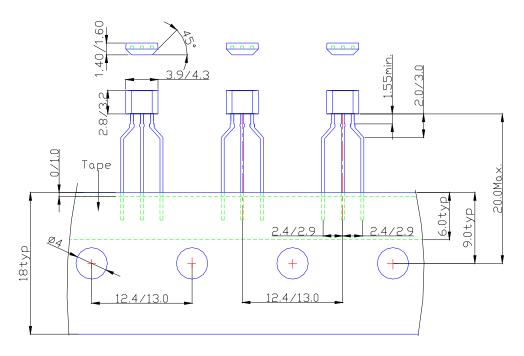
Package Dimension



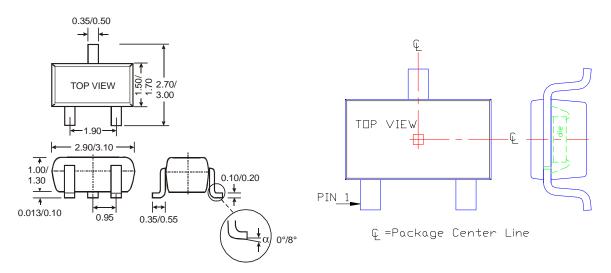


Package Information (Continued)

(2) Package Type: SIP-3L for Ammo pack



(3) SC59 (Commonly known as SOT23 in Asia)





IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.