

Features

- Bipolar Hall Effect Latch Sensor
- 3.5V to 20V DC Operation Voltage
- Open Collector Pre-Driver
- 25mA Output Sink Current
- Chip Power Reverse-Connection Protection
- Operating Temperature: -40°C~+150°C
- Lead Free Packages: SIP-3L and SC59-3L (Commonly known as SOT23 in Asia)
- SC59-3L: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/RoHS Compliant (Note 1)

General Description

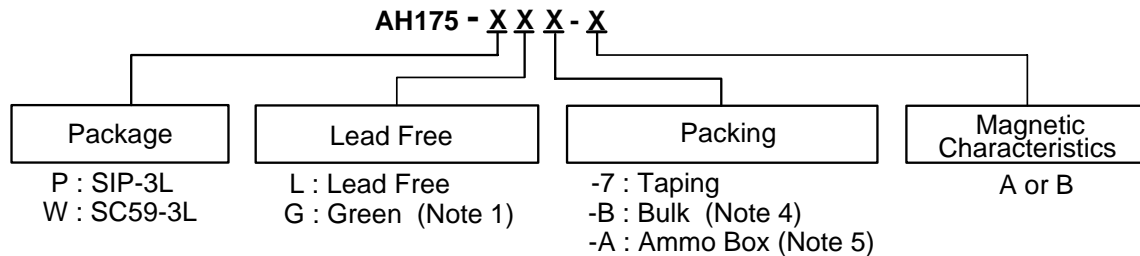
AH175 is a single-digital-output Hall-effect sensor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, and an open-collector output pre-driver. 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 threshold Bop, the OUT pin turns on (low). If B removed toward 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



- Note: 1. Green is only available for SC59-3L.
2. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7*.

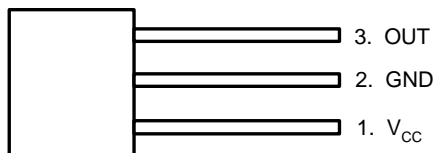
Device	Package Code	Packaging (Note 3)	Tube/Bulk		7" Tape and Reel		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH175-P	P	SIP-3L	1000	-B	NA	NA	4000/Box	-A
AH175-W	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA

- Note: 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. Bulk is for SIP-3L Straight Lead.
5. Ammo Box is for SIP-3L Spread Lead.

Pin Assignment

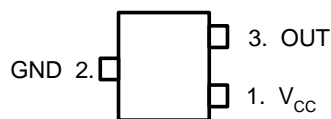
(1) SIP-3L

(Top view)



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

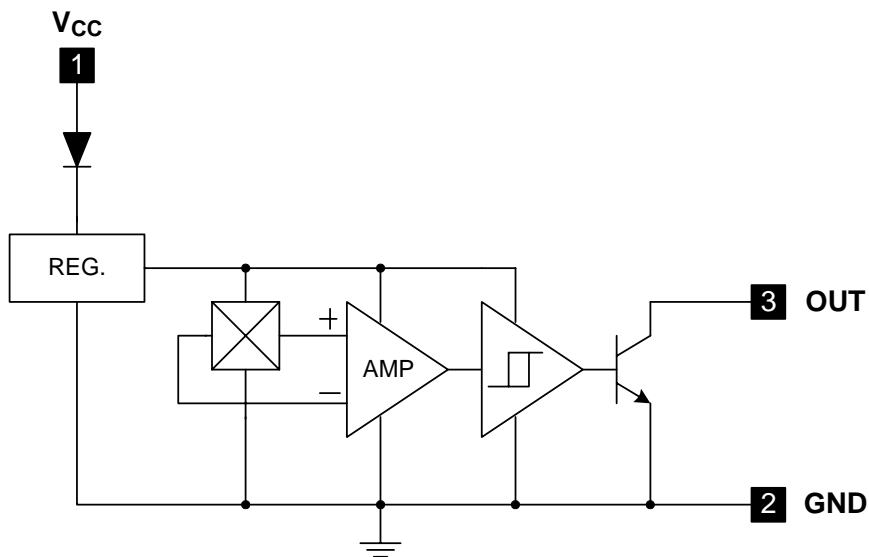
(Top view)



Pin Description

Name	Pin #	Description
V _{CC}	1	Input Power
GND	2	Ground
OUT	3	Output Stage

Block Diagram



Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Rating	Unit	
V_{CC}	Supply Voltage	20	V	
$V_{out (off)}$	Output "OFF" Voltage	20	V	
I_o (sink)	Output "ON" Current	25	mA	
P_D	Power Dissipation	SIP-3L	550	mW
		SC59-3L	230	mW
$T_{J(MAX)}$	Maximum Junction Temperature	150	$^\circ\text{C}$	
T_{ST}	Storage Temperature Range	-65~+150	$^\circ\text{C}$	

Recommended Operating Conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating	3.5	20	V
T_A	Operating Ambient Temperature (Note 6)	Operating	-40	150	$^\circ\text{C}$

Note: 6. Shall not exceed P_D and Safety Operation Area.

Electrical Characteristics ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
$V_{out (SAT)}$	Output Saturation Voltage	$V_{CC} = 12\text{V}$, OUT "ON" $I_o = 10\text{mA}$	-	300	400	mV
I_{CC}	Supply Current	$V_{CC} = 12\text{V}$, OUT "OFF"	-	3.5	6	mA

Magnetic Characteristics ($T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$)

(1mT = 10 Gauss)

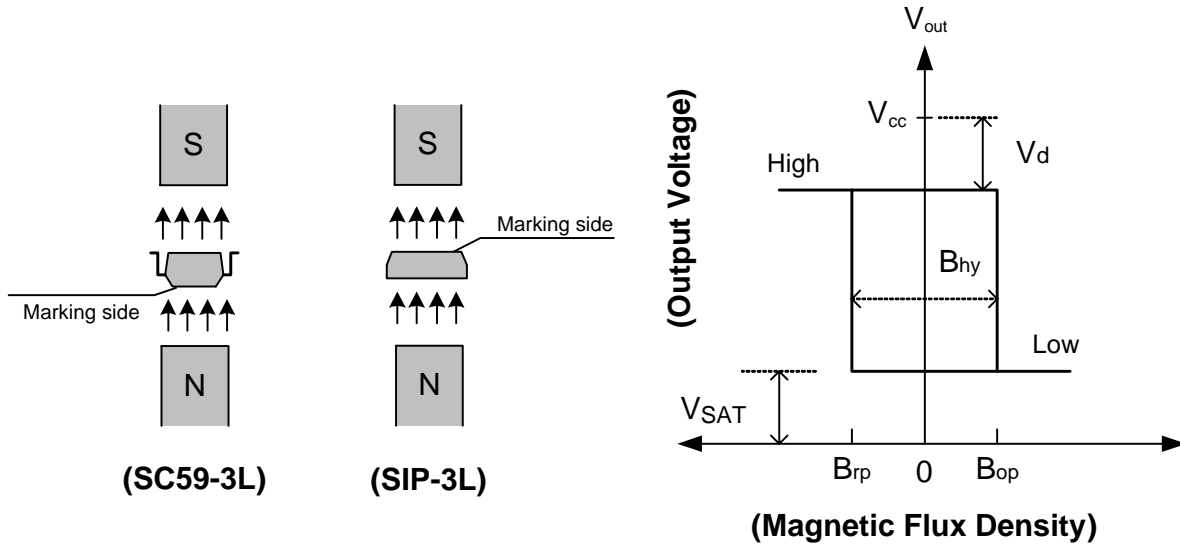
A grade

	Symbol	Min.	Typ.	Max.	Unit
Operation Point	Bop	15	-	60	Gauss
Release Point	Brp	-60	-	-15	Gauss
Hysteresis	Bhy	30	80	120	Gauss

B grade

	Symbol	Min.	Typ.	Max.	Unit
Operation Point	Bop	5	-	80	Gauss
Release Point	Brp	-80	-	-5	Gauss
Hysteresis	Bhy	10	80	160	Gauss

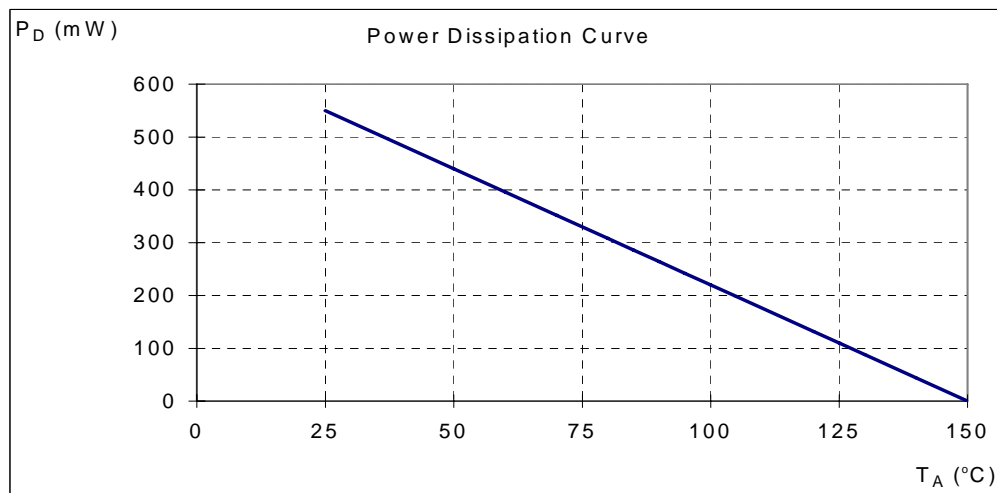
Operating Characteristics



Performance Characteristics

(1) SIP-3L

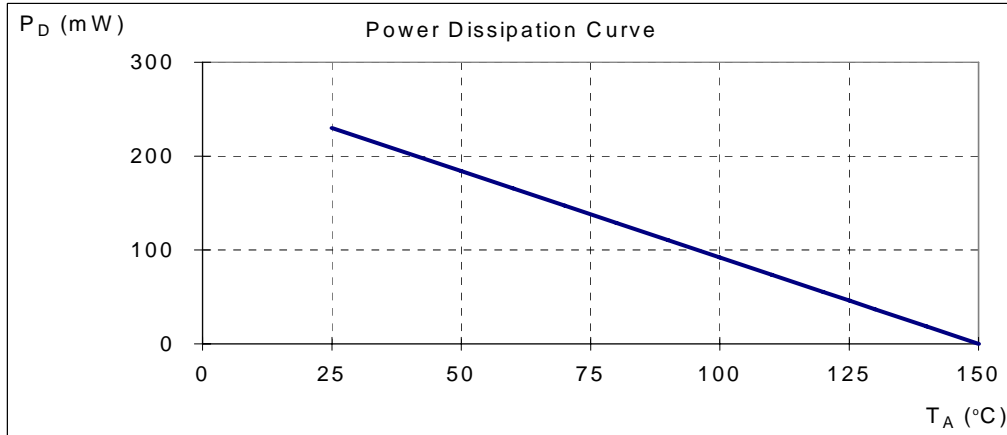
T_A (°C)	25	50	60	70	80	85	90	95	100
P_D (mW)	550	440	396	352	308	286	264	242	220
T_A (°C)	105	110	115	120	125	130	135	140	150
P_D (mW)	198	176	154	132	110	88	66	44	0



Performance Characteristics (Continued)

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

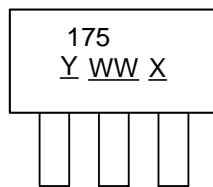
T _A (°C)	25	50	60	70	80	90	100	110	120	125	130	140	150
P _D (mW)	230	184	166	147	129	110	92	74	55	46	37	18	0



Marking Information

(1) SIP-3L

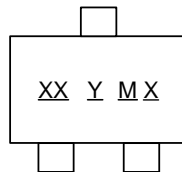
(Top View)



Y : Year : "7" = 2007
"8" = 2008
WW : Nth Week 01~52
X : Internal code
a-z : Lead Free

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

(Top View)

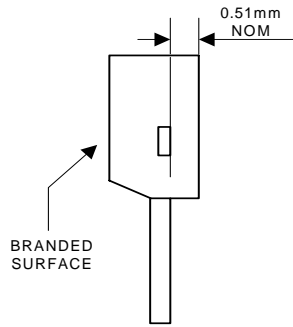


XX : J5 : AH175
Y : Year 0~9
M : Month A~L
X : Internal code
A~Z : Green
a-z : Lead Free

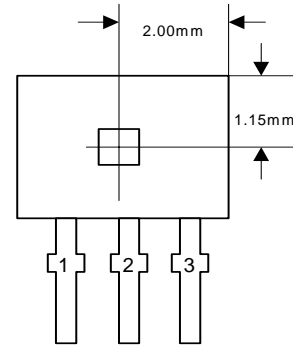
Part Number	Package	Identification Code
AH175	SC59-3L	J5

Package Information (unit: mm)

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

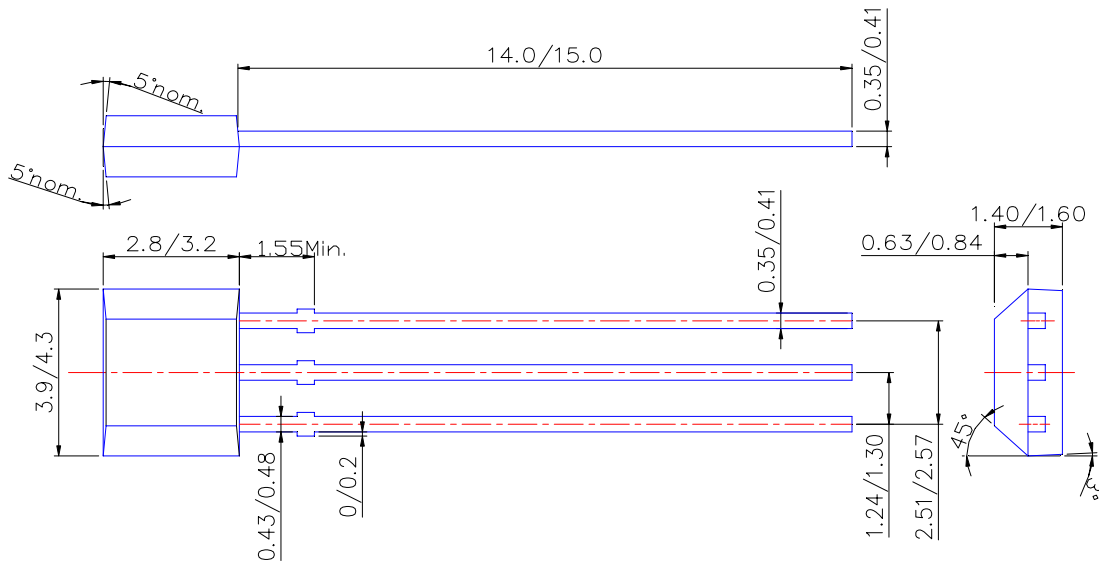


Active Area Depth



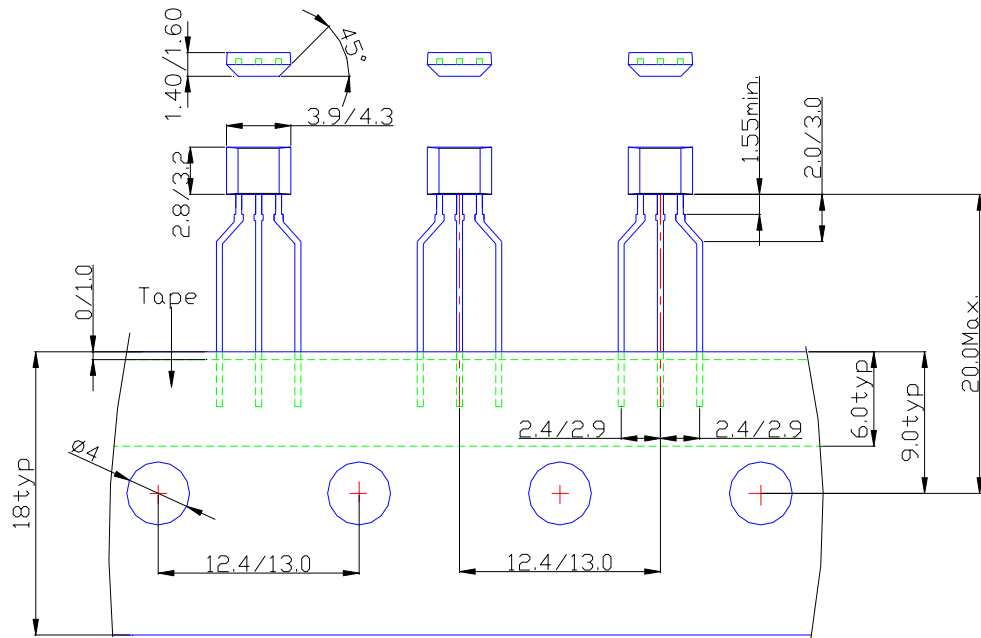
Sensor Location

Package Dimension

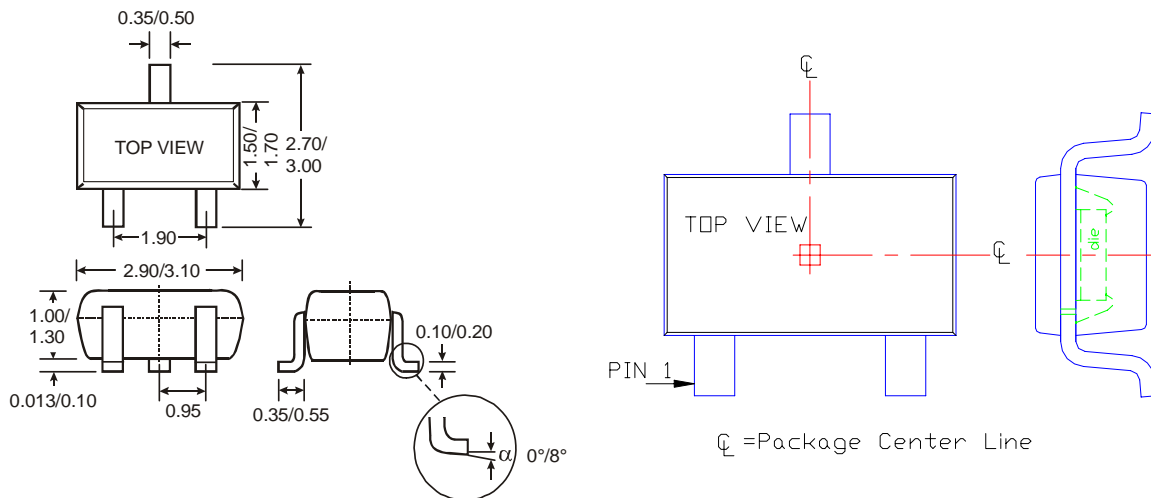


Package Information (Continued)

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



(3) Package Type: SC59-3L (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.