



AH175

HALL EFFECT LATCH FOR HIGH TEMPERATURE

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 Finish/RoHS Compliant for Lead Free products (Note 1)
- Lead Free Packages: SIP-3L, SC59-3L
- Green Package: SC59-3L

General Description

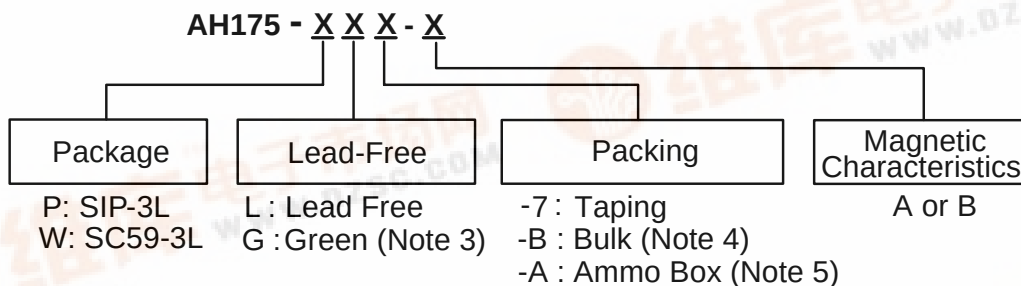
AH175 is a single-digital-output Hall-effect sensor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, and an open-collector output pre-driver. 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. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see EU Directive Annex Notes 5 and 7.

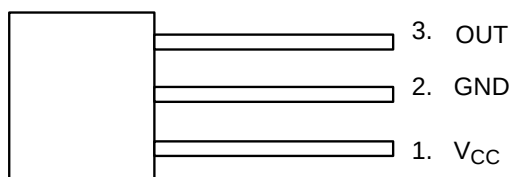
Device	Package Code	Packaging (Note 2)	Tube/Bulk		7" Tape and Reel		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH175-P	P	SIP-3L	1000	-B	NA	NA	4000/Box	-A
AH175-W	W	SC59-3L	NA	NA	3000/Tape & Reel	-7	NA	NA

Note: 2. 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>.

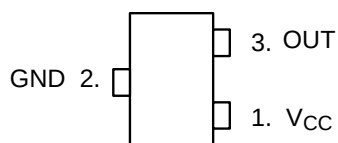
3. Green is only available for SC59-3L.
4. Bulk is for SIP-3 Straight Lead.
5. Ammo Box is for SIP-3 Spread Lead.

Pin Assignment

(Top View)



(SIP-3L package)

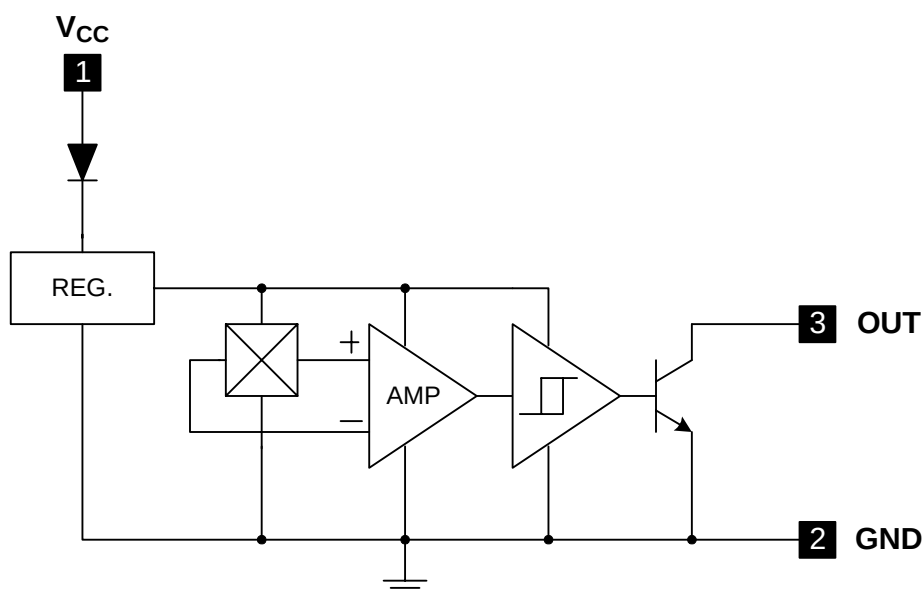


(SC59-3L Package)

Pin Description

Name	Description
V _{CC}	Input Power
GND	Ground
OUT	Output Stage

Block Diagram



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

Parameter	Symbol	Rating	Unit
Supply Voltage	V_{CC}	20	V
Output "OFF" Voltage	$V_{out (off)}$	20	V
Output "ON" Current	I_o (sink)	25	mA
Operating Temperature Range	Top	-40~+150	$^\circ\text{C}$
Storage Temperature Range	Tstg	-65~+150	$^\circ\text{C}$
Maximum Junction Temperature	T_j	+150	$^\circ\text{C}$
Power Dissipation	SIP-3L	550	mW
	SC59-3L	230	mW

Recommended Operating Conditions

Parameter	Symbol	Conditions	Rating	Unit
Supply Voltage	V_{CC}	Operating	3.5 ~ 20	V

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

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

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

(1mT = 10 Gauss)

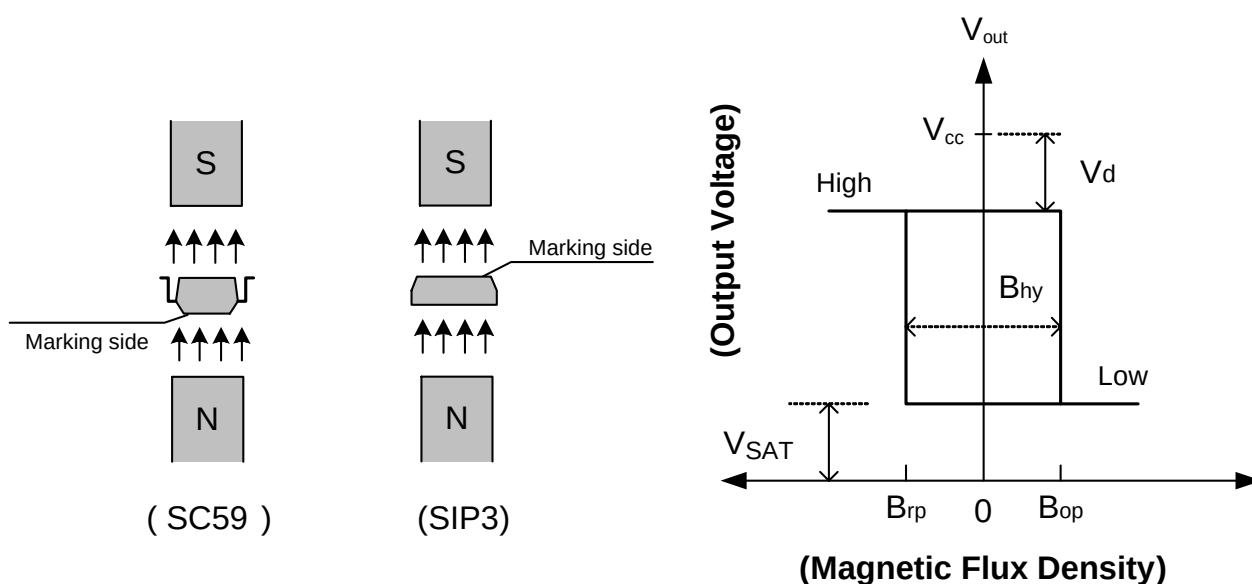
A grade

	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

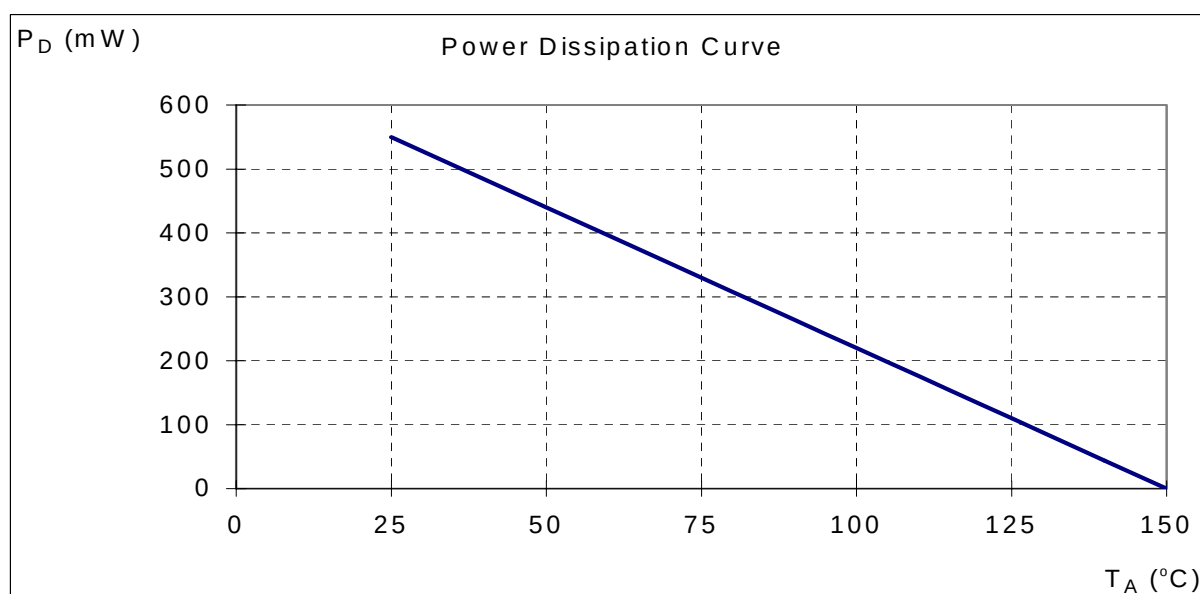
	Symbol	Min.	Typ.	Max.	Unit
Operation Point	Bop	5	-	80	Gauss
Release Point	Brp	-80	-	-5	Gauss
Hysteresis	Bhy	10	80	160	Gauss

Operating Characteristics



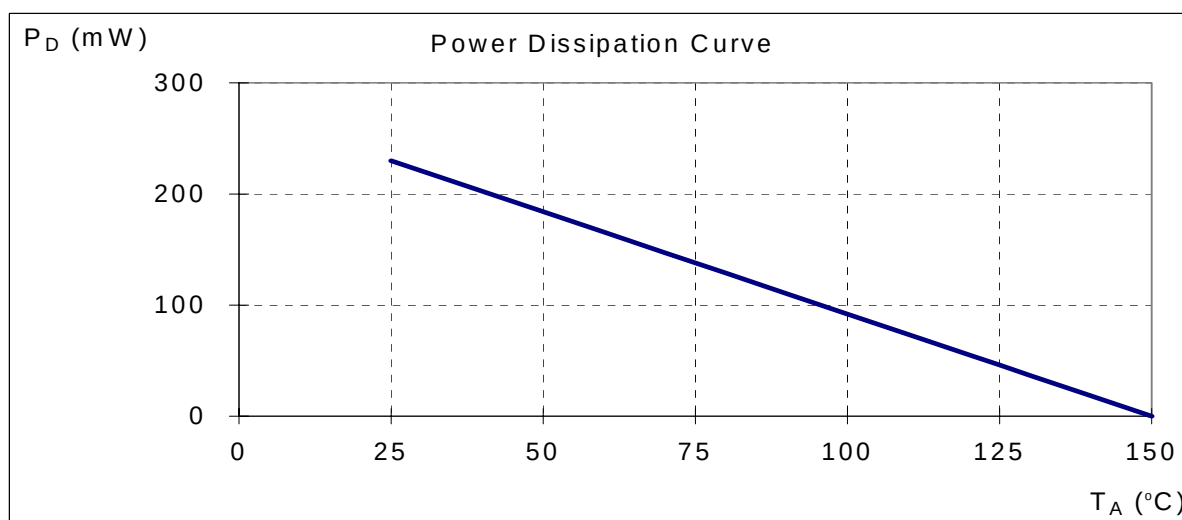
Performance Characteristics (SIP-3L)

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 (SC59-3L)

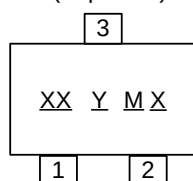
T _A (°C)	25	50	60	70	80	90	100	110	120	125	130	140	150
P _D (mW)	230	184	166	147	129	110	92	74	55	46	37	18	0



Marking Information

(1) SC59-3L

(Top View)



XX : J5: AH175

Y : Year 0~9

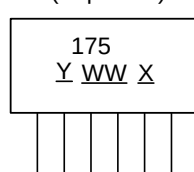
M : Month A~L

X : Internal code a~z: Lead Free
A~Z: Green

Part Number	Package	Identification Code
ATS137	SC59-3L	JA

(2) SIP3-3L

(Top View)



Y : Year: "1"=2001

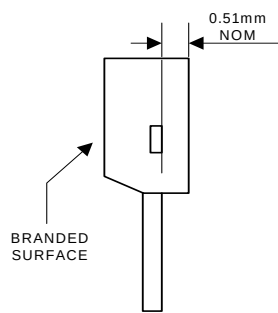
"2"=2002

WW: Nth Week 01~52

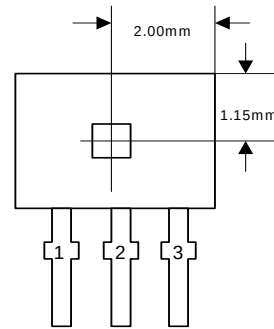
X : Internal code
a~z: Lead Free

Package Information

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

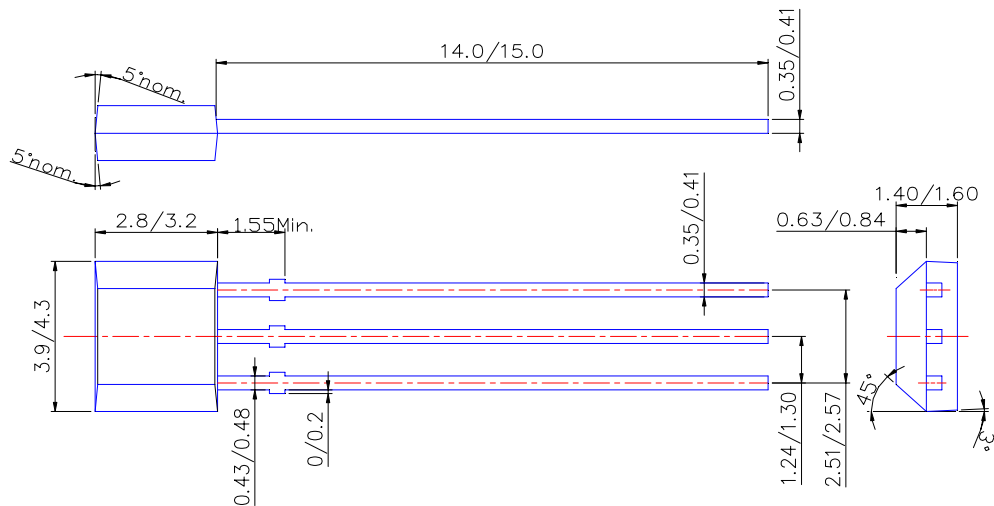


Active Area Depth



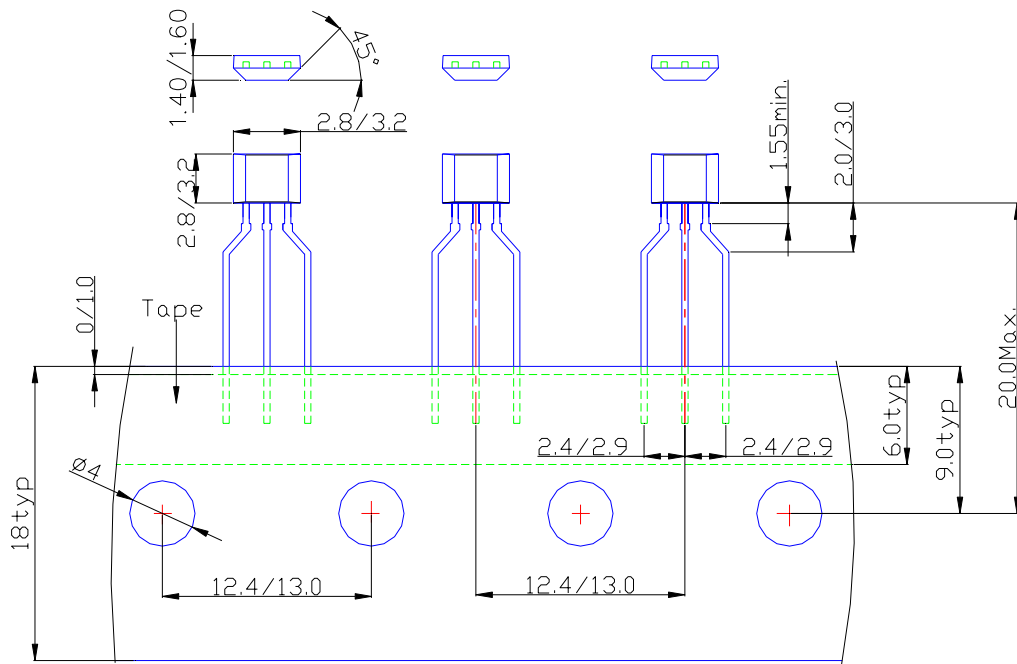
Sensor Location

Package Dimension

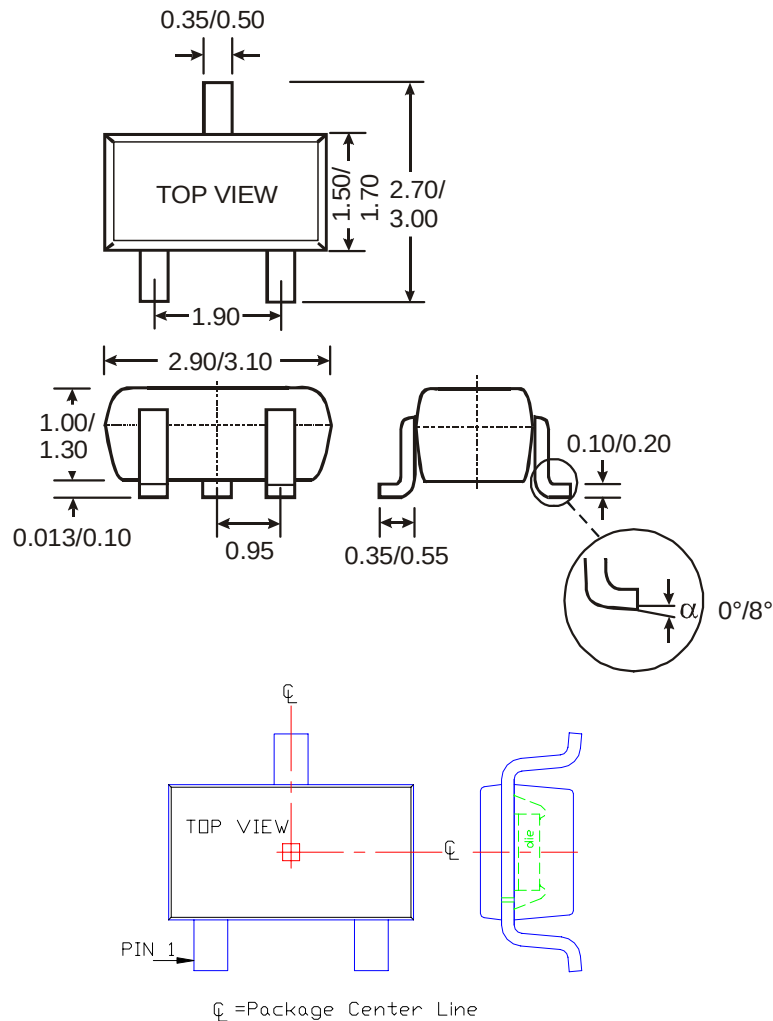


Package Information (Continued)

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



Package Information (Continued)

(3) Package Type: SC59-3L

Sensor Location
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