



# AH1751

## HALL EFFECT LATCH

### Features

- Bipolar Hall Effect Latch Sensor
- 3.5V to 20V DC Operation Voltage
- Open Collector Pre-Driver
- 50mA Output Sink Current
- Chip Power Reverse-Connection Protection
- Operating Temperature: -40°C~125°C
- Package: SIP3
- SIP3: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 1)

### General Description

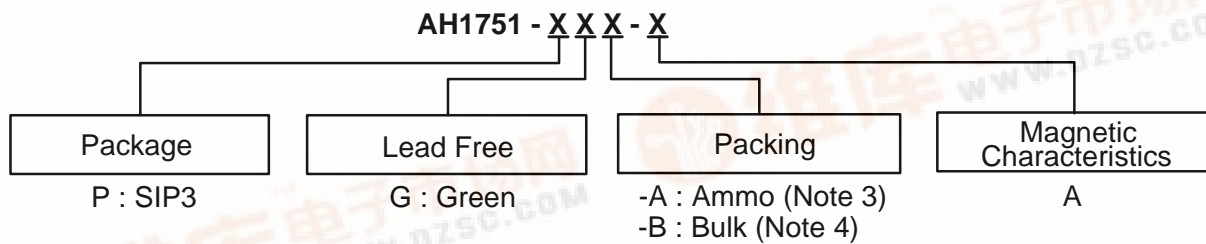
AH1751 is a single-digital-output Hall-effect sensor for high temperature operation. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier to amplify Hall voltage, and a comparator to provide switching hysteresis for noise rejection, and an open-collector output pre-driver. 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 go into "off" state.

### Applications

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

### Ordering Information

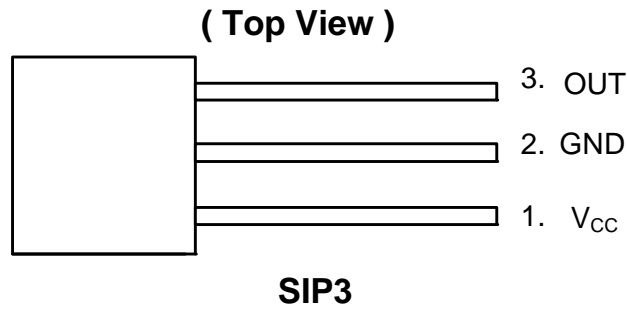


Device	Package Code	Packaging (Note 2)	Tube/Bulk		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH1751-P	P	SIP3	1000	-B	4000/Box	-A

- Notes:
1. RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied, see *EU Directive Annex Notes 5 and 7*.
  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. Ammo Box is for SIP3 Spread Lead.
  4. Bulk is for SIP3 Straight Lead.



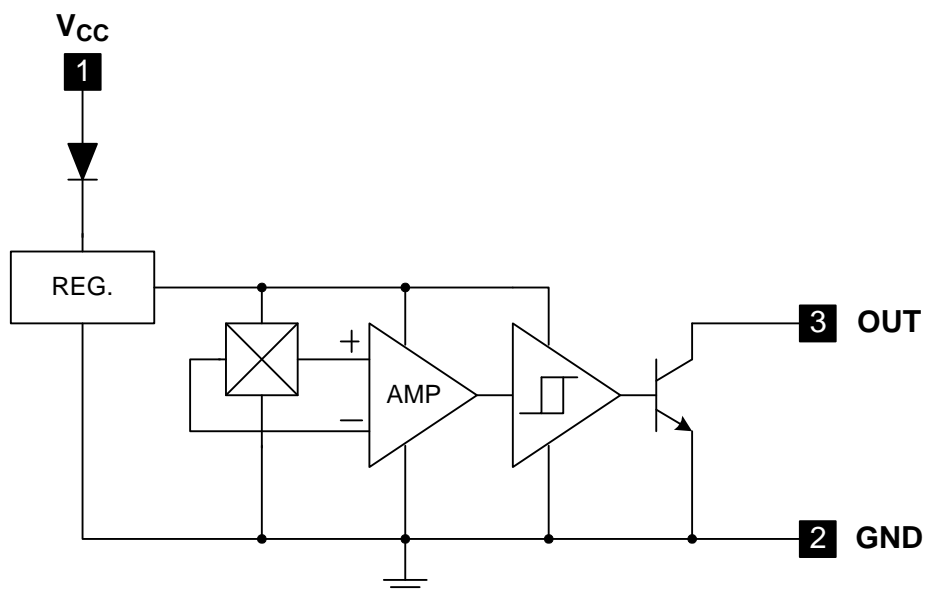
**Pin Assignment**



**Pin Descriptions**

Name	Description
V <sub>CC</sub>	Input Power
GND	Ground
OUT	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	100	mA
$T_A$	Operating Temperature Range	-40~+125	$^\circ\text{C}$
$T_{ST}$	Storage Temperature Range	-65~+150	$^\circ\text{C}$
$T_{J(MAX)}$	Maximum Junction Temperature	+150	$^\circ\text{C}$
$P_D$	Power Dissipation	SIP3	mW

**Recommended Operating Conditions**

Symbol	Parameter	Conditions	Rating	Unit
$V_{CC}$	Supply Voltage	Operating (Note 5)	3.5 ~ 20	V

**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" $I_o = 50\text{mA}$	-	200	300	mV
$I_{CC}$	Supply Current	$V_{CC} = 12\text{V}$ , OUT "OFF"	-	3.5	6	mA

**Magnetic Characteristics** ( $T_A = 25^\circ\text{C}$ ,  $V_{CC} = 4\sim 20\text{V}$ )

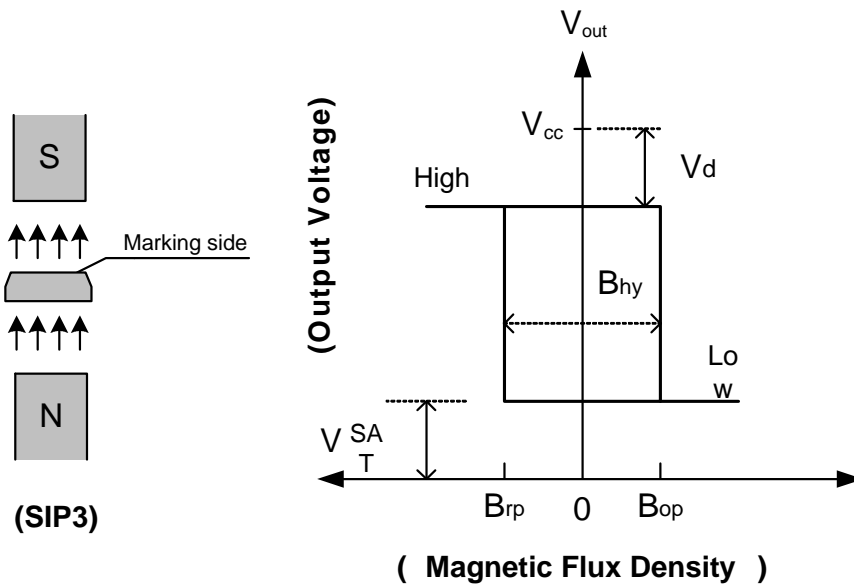
A grade

(1mT = 10 Gauss)

Symbol	Parameter	Min	Typ.	Max	Unit
Bop	Operation Point	5	-	70	Gauss
Brp	Release Point	-70	-	-5	Gauss
Bhy	Hysteresis	-	75	-	Gauss

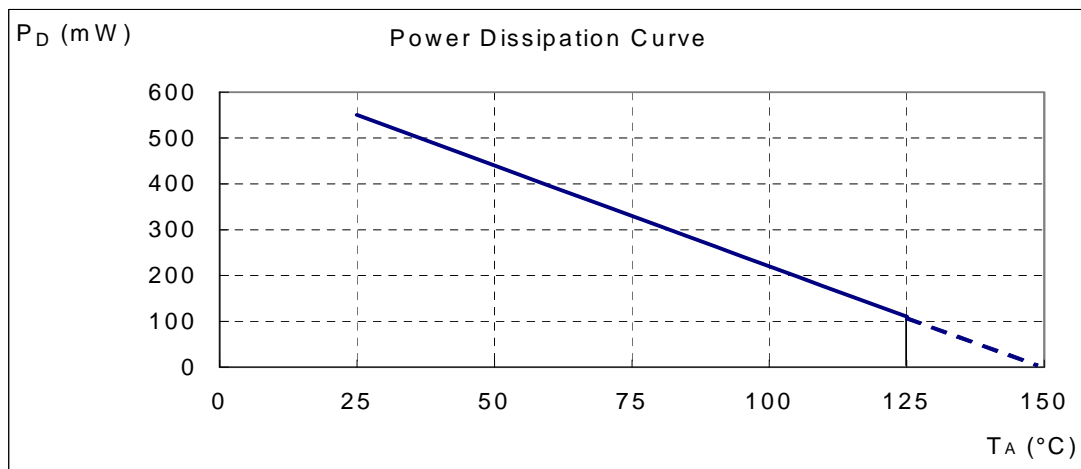
Notes: 5. Operating, the output is switching as magnetic field change (S>300G, N<-300G).  
6. Magnetic characteristics are design information, which will vary with supply voltage, operating temperature and after soldering.

**Operating Characteristics**



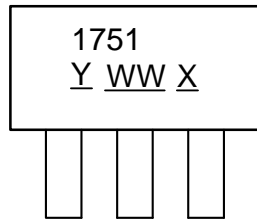
**Performance Characteristics**

$T_A$ (°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



**Marking Information**

( Top View )

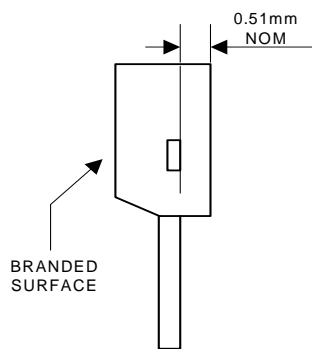


Y : Year : "7" = 2007  
"8" = 2008  
WW : Nth Week 01~52  
X : Internal code  
A~Z : Green

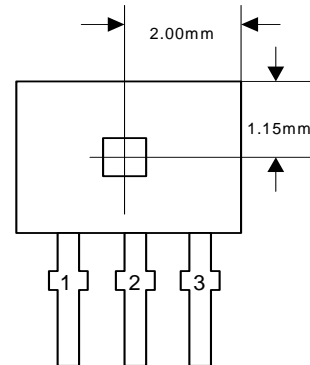
**SIP3**

**Package Information (All Dimensions in mm)**

(1) Package Type: SIP3 for Bulk pack

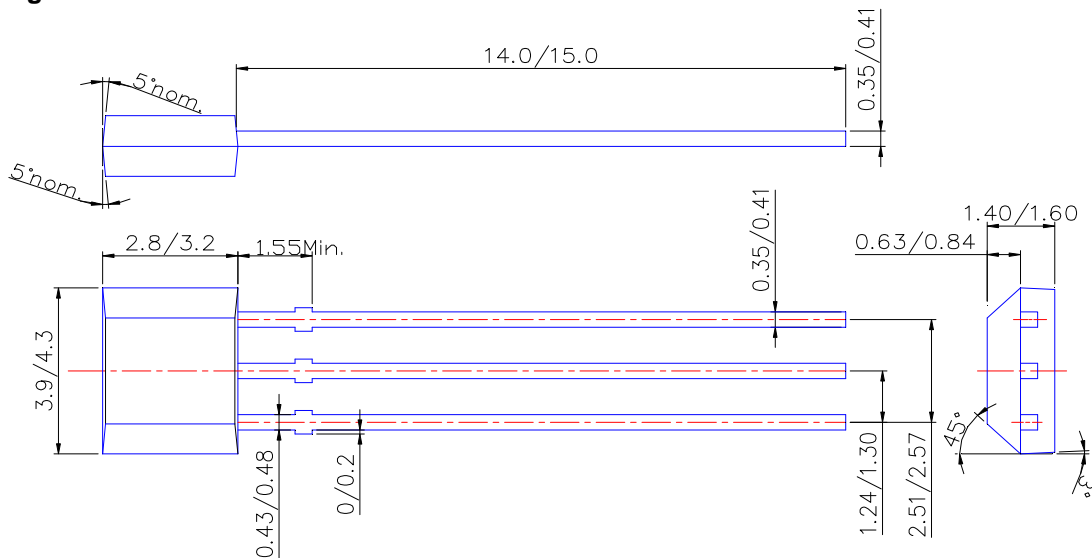


Active Area Depth



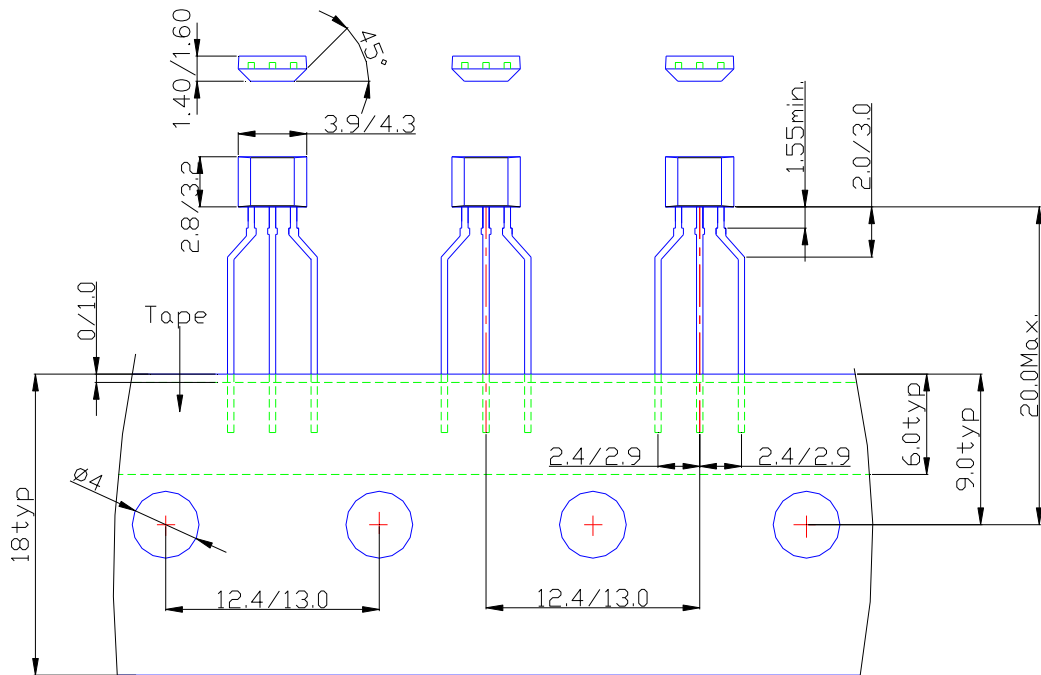
Sensor Location

**Package Dimension**



**Package Information (Continued)**

**(2) Package Type: SIP3 for Ammo pack**



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