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Diodes Incorporated
AH1751-PG-A-A

For any questions, you can email us directly:
sales@integrated-circuit.com

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
- SIP3, SC59 and SC59R (Commonly known as SOT23 in Asia): 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

AH1751 - X G - X - A

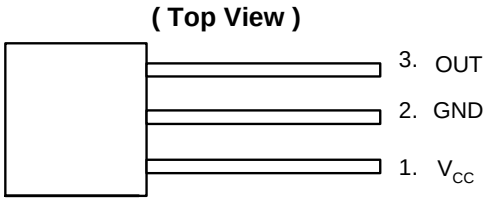
Package	Green	Packing	Magnetic Characteristics
P : SIP3 W : SC59 R : SC59R	G : Green	A : Ammo (Note 3) B : Bulk (Note 4) 7 : Tape & Reel	A

Device	Package Code	Packaging (Note 2)	Tube/Bulk		7" Tape and Reel		Ammo Box		Magnetic Characteristics
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix	
AH1751-PG-A-A	P	SIP3	NA	NA	NA	NA	4000/Box	-A	A
AH1751-PG-B-A	P	SIP3	1000	-B	NA	NA	NA	NA	A
AH1751-WG-7-A	W	SC59	NA	NA	3000/Tape & Reel	-7	NA	NA	A
AH1751-RG-7-A	R	SC59R	NA	NA	3000/Tape & Reel	-7	NA	NA	A

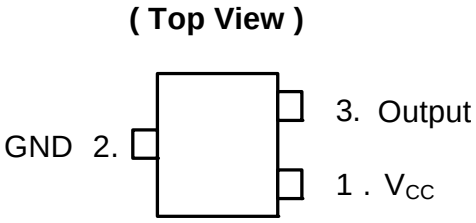
Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html
2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
3. Ammo Box is for SIP3 Spread Lead.
4. Bulk is for SIP3 Straight Lead.

Pin Assignment

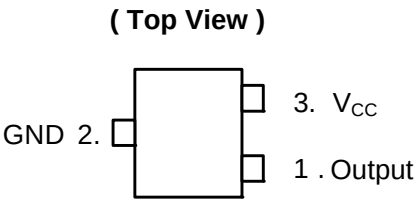
(1) SIP3



(2) SC59



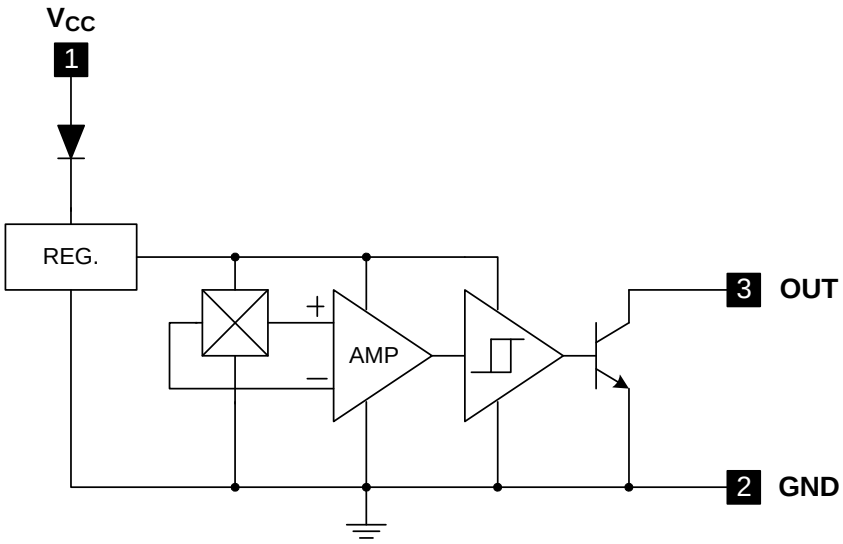
(3) SC59R



Pin Descriptions

Pin Name	Description
V_{CC}	Input Power
GND	Ground
OUT	Output Stage

Block Diagram



Absolute Maximum Ratings (T_A = 25°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_{ST}	Storage Temperature Range		-65~+150	°C
$T_{J(MAX)}$	Maximum Junction Temperature		+150	°C
P_D	Power Dissipation	SIP3	550	mW
		SC59 and SC59R	230	mW

Recommended Operating Conditions

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CC}	Supply Voltage	Operating (Note 5)	3.5	20	V
T_A	Operating Temperature Range	Operating	-40	125	°C

Notes: 5. Operating, the output is switching as magnetic field change (S>300G, N<-300G).

Electrical Characteristics (T_A = 25°C)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V_{out} ($_{SAT}$)	Output Saturation Voltage	V_{CC} = 12V, OUT "ON" I_O = 50mA	-	200	300	mV
I_{CC}	Supply Current	V_{CC} = 12V, OUT "OFF"	-	3.5	6	mA

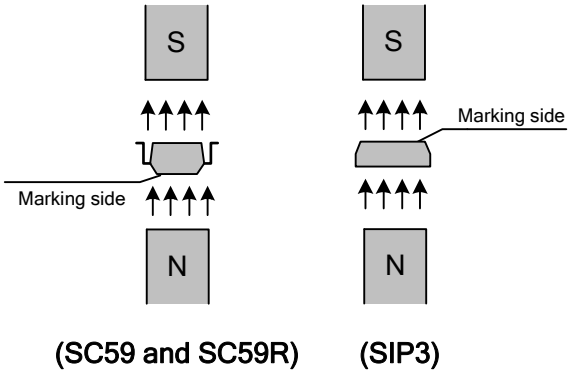
Magnetic Characteristics (T_A = 25°C, V_{CC} = 4~20V, Note 6)

A grade (1mT = 10 Gauss)

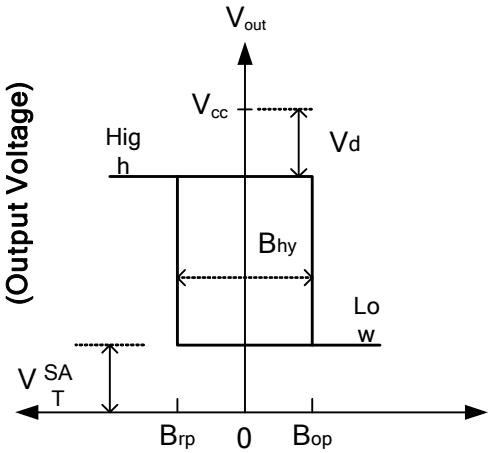
Symbol	Parameter	Min	Typ.	Max	Unit
Bops(south pole to brand side)	Operation Point	5	-	70	Gauss
Brps(south pole to brand side)	Release Point	-70	-	-5	Gauss
Bhy(|Bopx – Brpx|)	Hysteresis	-	75	-	Gauss

Notes: 6. Magnetic characteristics are for design information, which will vary with supply voltage, operating temperature and after soldering.

Operating Characteristics



(SC59 and SC59R) (SIP3)

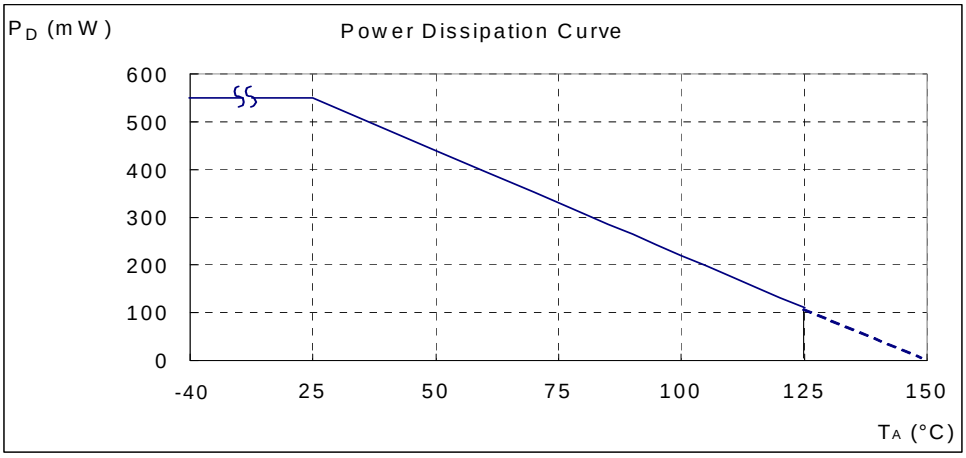


(Magnetic Flux Density)

Performance Characteristics

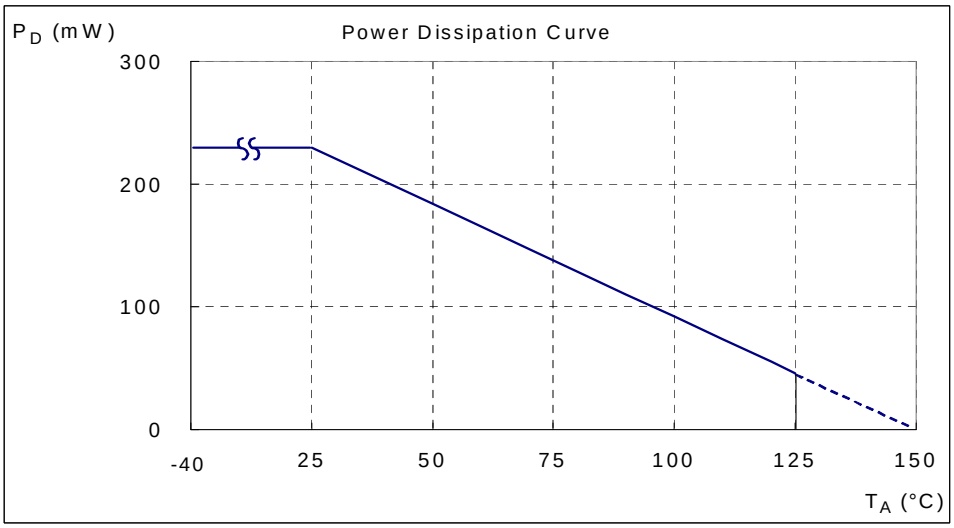
(1) SIP3

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



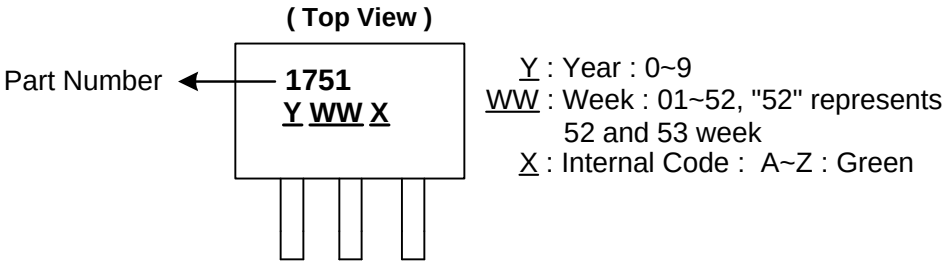
(2) SC59 and SC59R (Commonly known as SOT23 in Asia)

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

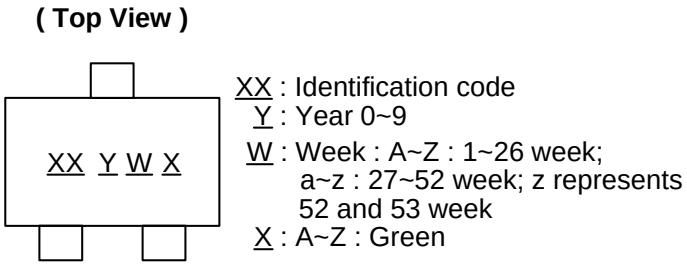


Marking Information

(1) SIP3



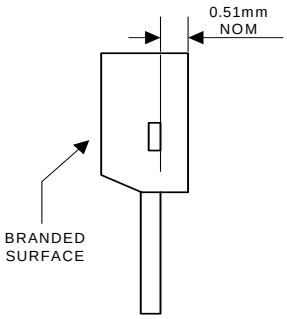
(2) SC59 and SC59R (Commonly known as SOT23 in Asia)



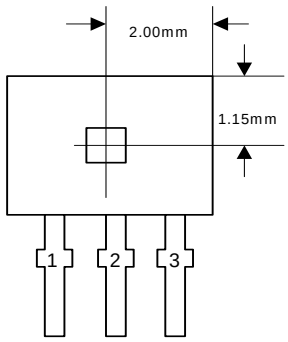
Part Number	Package	Identification Code
AH1751	SC59	RK
AH1751	SC59R	SK

Package Information (All Dimensions in mm)

(1) Package Type: SIP3 for Bulk pack

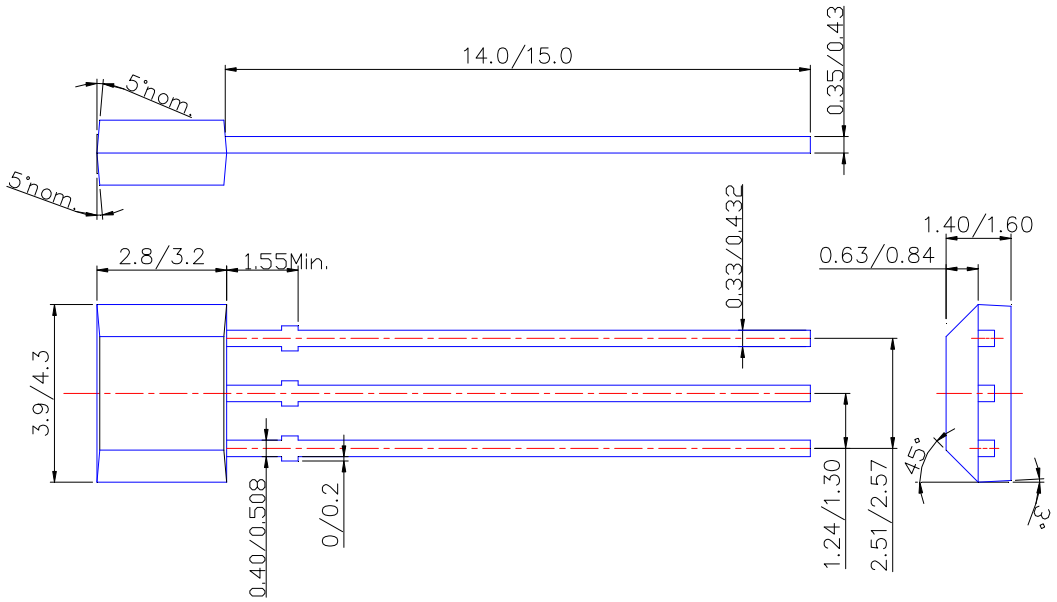


Active Area Depth



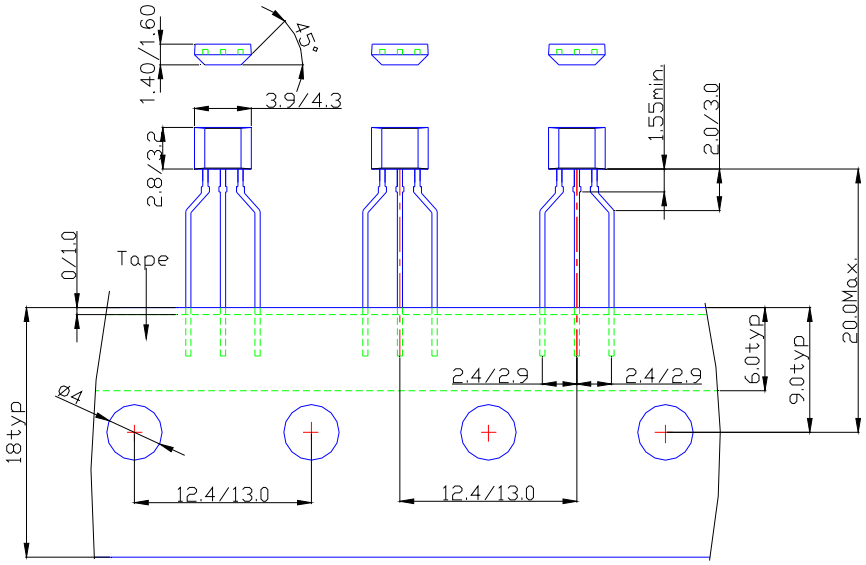
Sensor Location

Package Dimension

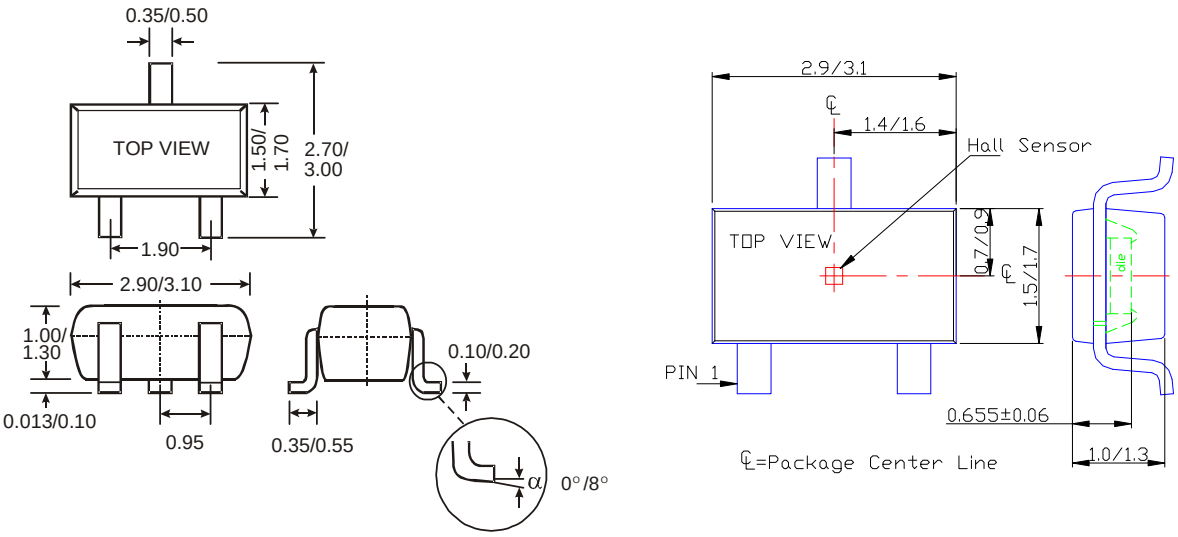


Package Information (Continued)

(2) Package Type: SIP3 for Ammo pack



(3) Package Type: SC59 and SC59R (Commonly known as SOT23 in Asia)



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