



AH182/AH183

LOW POWER HALL EFFECT SWITCH

Features

- Micropower operation
- 2.5V to 5.5V battery operation
- Offset Canceling Technology
- Superior temperature stability
- Extremely Low Switch-Point Drift
- Insensitive to Physical Stress
- -40°C to 85°C operating temperature
- Lead Free packages: SIP-3L and SC59 (Commonly known as SOT23 in Asia)
- Lead Free Finish / RoHS Compliant (Note 1)

General Description

AH182/AH183 is a three-terminal Hall effect sensor device with an output driver, mainly designed for battery-operation, hand-held equipment (such as cellular and cordless phones, and PDA's) The total operation power is down to 15uW in the 2.75V supply.

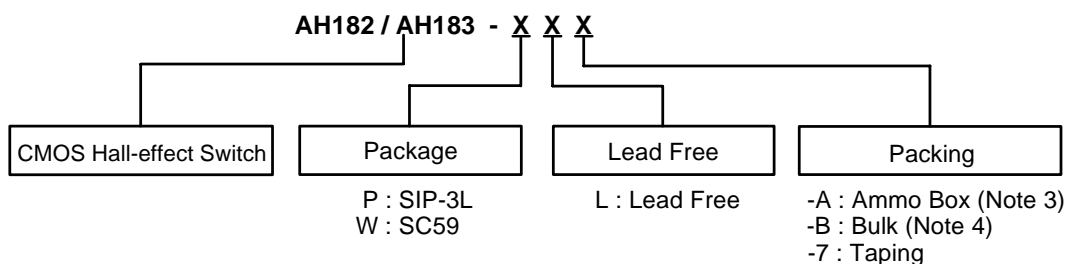
The south pole of sufficient strength will turn the output on in SIP-3L but the north pole of sufficient strength will turn the output on in SC59 package. The output will be turned off under no magnetic field.

While the magnetic flux density (**B**) is larger than operation point (**Bop**), the output will be turned on (low), the output is held until **B** is lower than the release point (**Brp**), then turned off. The difference between AH182 and AH183 is that the former consumes less power than that of the latter in the Hall sensor operation.

Applications

- Cover detector
- Speed measurement
- Home safety

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)	Bulk		7" Tape and Reel		Ammo Box	
			Quantity	Part Number Suffix	Quantity	Part Number Suffix	Quantity	Part Number Suffix
AH182/AH183-P	P	SIP-3L	1000	-B	NA	NA	4000/Box	-A
AH182/AH183-W	W	SC59	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. Ammo Box is for SIP-3L Spread Lead.
 4. Bulk is for SIP-3L Straight Lead.



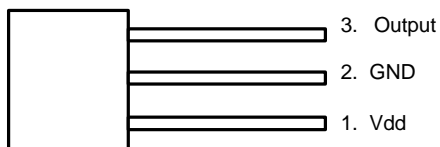
AH182/AH183

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Pin Assignments

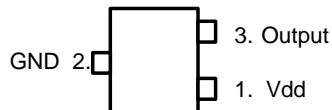
(1) SIP-3L

(Top view)



(2) SC59

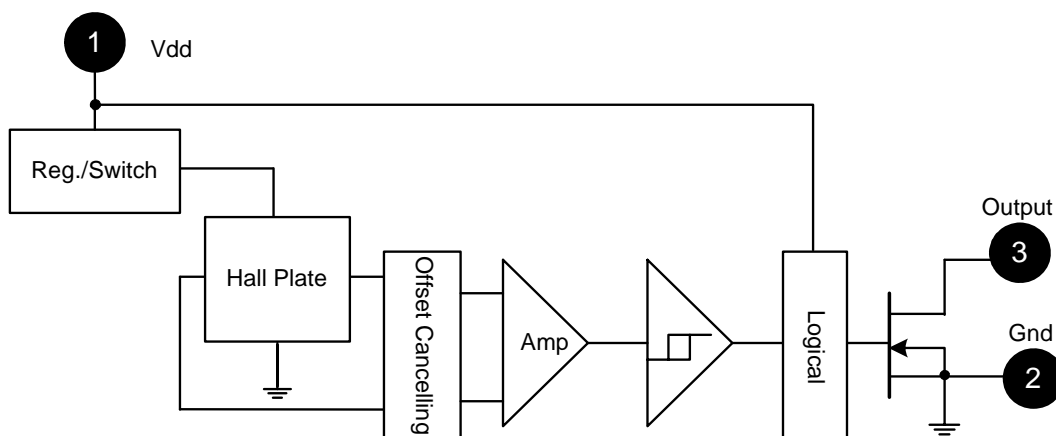
(Top view)



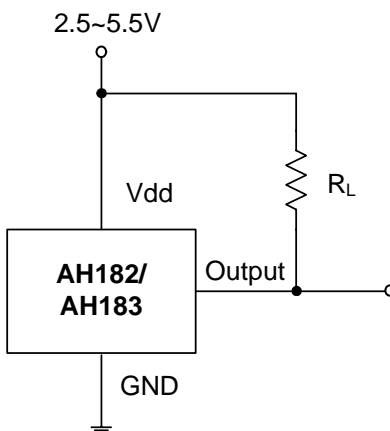
Pin Description

Name	P/I/O	Pin #	Description
Vdd	P/I	1	Power Supply Input
GND	P	2	Ground
Output	O	3	Output Pin

Block Diagram



Typical Circuit



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

Symbol	Parameter	Rating	Unit
V_{dd}	Supply Voltage	7	V
B	Magnetic Flux Density	Unlimited	
I_{OUT}	Output current	10	
P_D	Power Dissipation	SIP-3L	mW
		SC59	mW
$T_{J(MAX)}$	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{ST}	Storage Temperature Range	-65 to +150	$^\circ\text{C}$

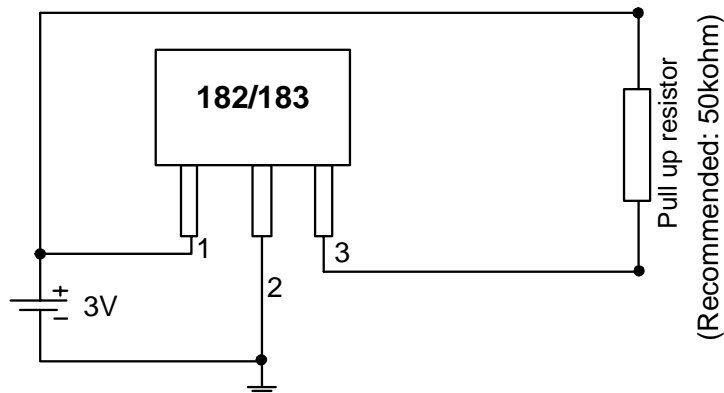
Recommended Operating Conditions ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Min	Max	Unit
V_{dd}	Supply Voltage	Operating	2.5	5.5	V
T_A	Operating Ambient Temperature	Operating	-40	85	$^\circ\text{C}$

Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V_{dd} = 3\text{V}$)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
V_{out}	Output On Voltage	$I_{out} = 1\text{mA}$	-	0.1	0.3	V
I_{off}	Output Leakage Current	$V_{out} = 5.5\text{V}$, $B < Brp$	-	<0.1	1	μA
$I_{dd(en)}$	Supply Current	Chip enable	-	-	2.0	mA
$I_{dd(dis)}$		Chip disable	-	-	8.0	μA
$I_{dd(ave)}$		AH182: average supply current	-	5	10	μA
$I_{dd(ave)}$		AH183: average supply current	-	280	500	μA
T_{awake}	Awake Time		-	50	100	μs
T_{period}	Period	AH182	-	50	100	ms
		AH183	-	200	400	μs
D.C.	Duty Cycle	AH182	-	0.1	-	%
		AH183	-	25	-	%

Test Circuit





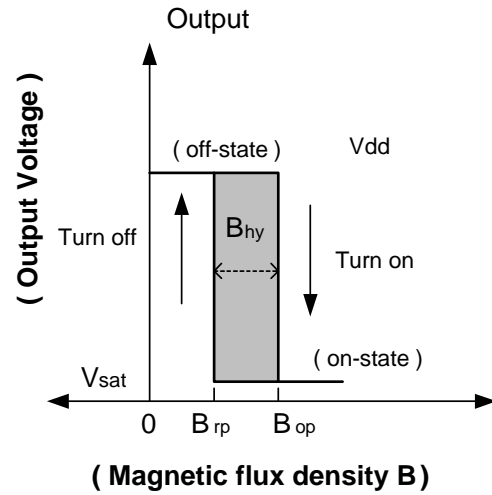
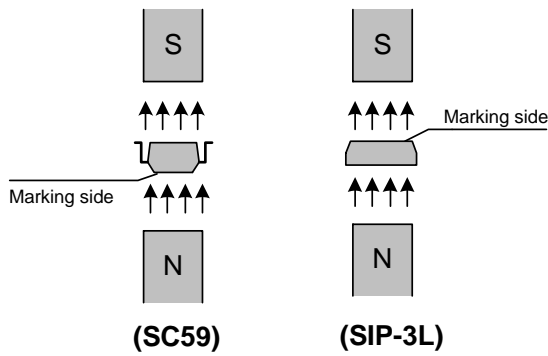
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Magnetic Characteristics ($T_A = 25^\circ\text{C}$, $V_{dd} = 3\text{V}$)

(1mT = 10 Gauss)

Symbol	Characteristic	Min	Typ.	Max	Unit
Bop	Operation Point	-	40	60	Gauss
Brp	Release Point	10	30	-	
Bhy (Bop-Brp)	Hysteresis	-	10	-	

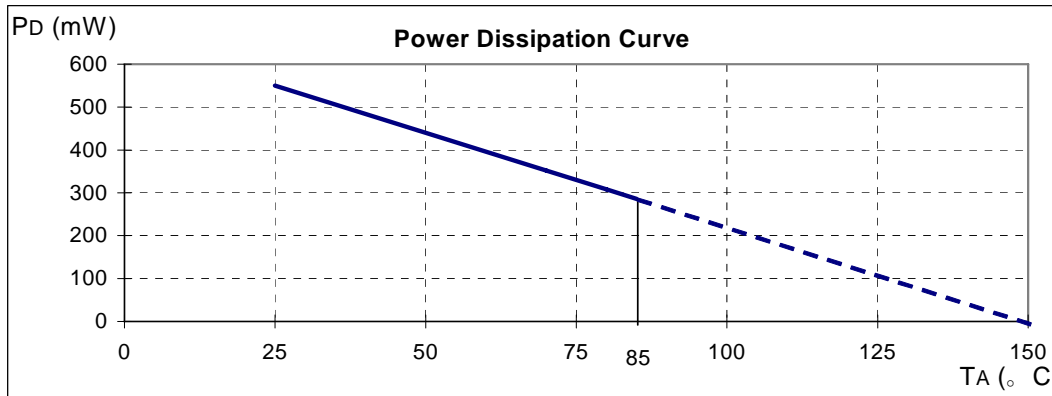




Performance Characteristics

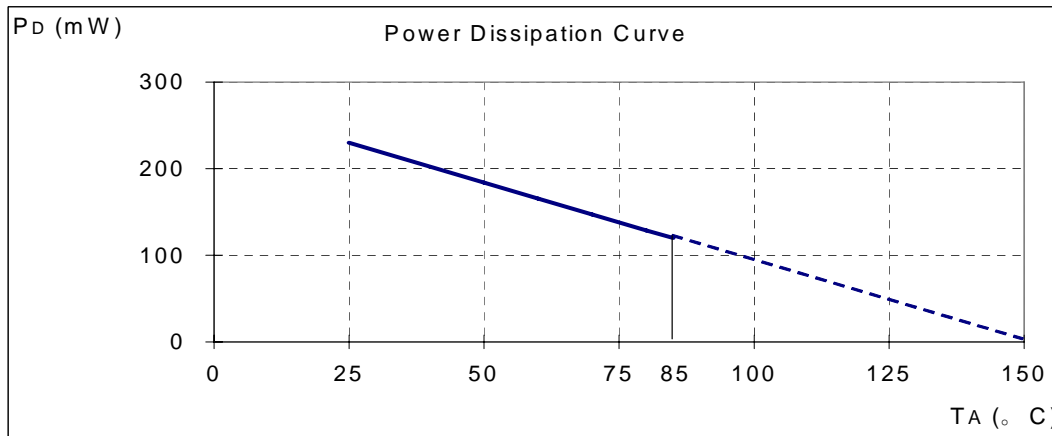
(1) SIP-3L

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



(2) SC59

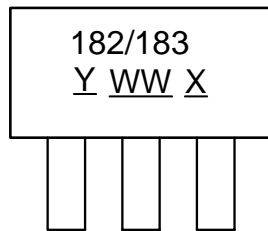
TA (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
PD (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0



Marking Information

(1) SIP-3L

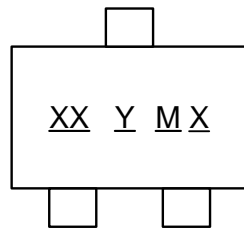
(Top View)



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

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

(Top View)

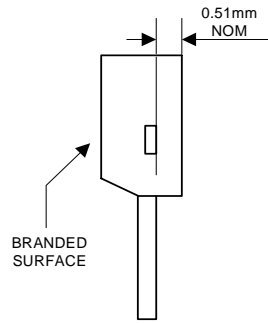


XX : K2 : AH182
 K3 : AH183
Y : Year 0~9
M : Month A~L
X : Internal code
 a~z : Lead Free

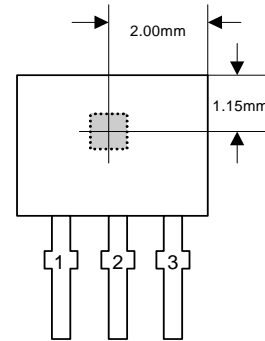
Part Number	Package	Identification Code
AH182	SC59	K2
AH183	SC59	K3

Package Information (unit: mm)

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

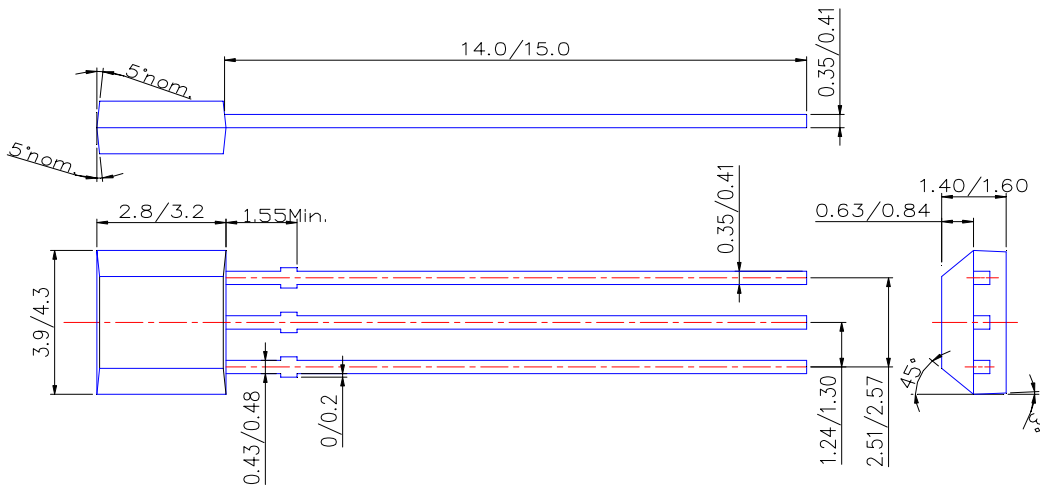


Active Area Depth



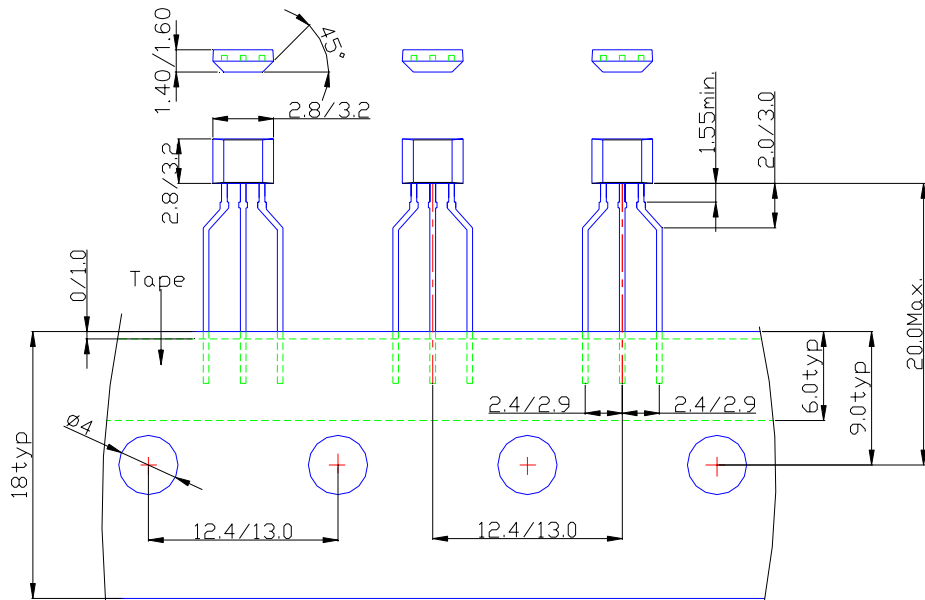
Sensor Location

Package Dimension

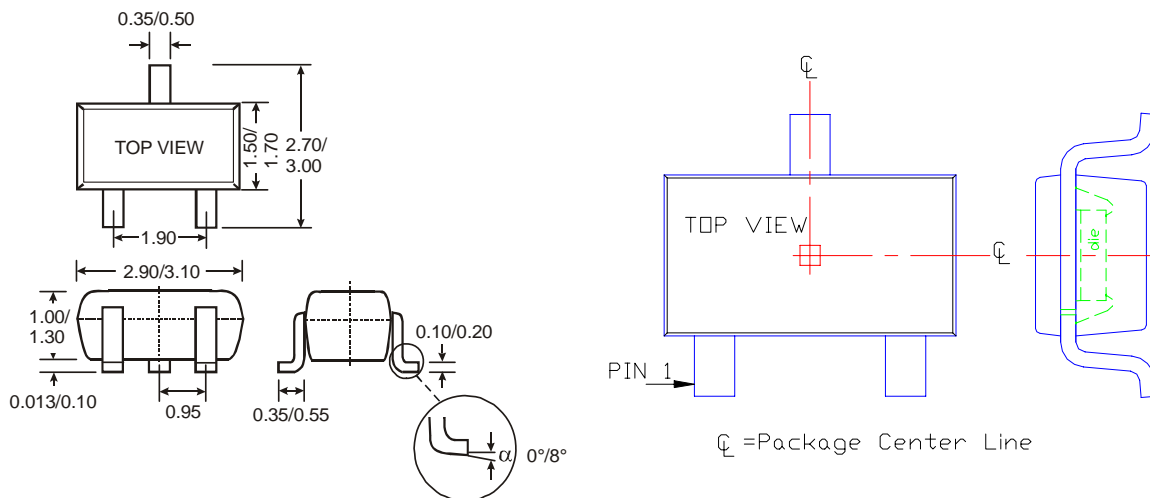


Package Information (Continued)

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



(3) Package Type: SC59 (commonly known as SOT23 in Asia)





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