

Low power Hall Effect Switch

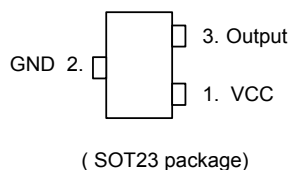
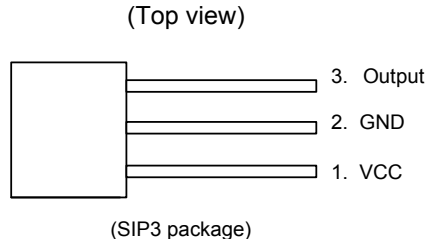
■ Features

- 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
- Low profile 3 pin SIP/SOT23 package

■ Applications

- Cover detector
- Speed measurement
- Home safety

■ Pin Assignments



■ 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 Phone, PDA). The total operation power is down to 15uW in the 2.75V supply.

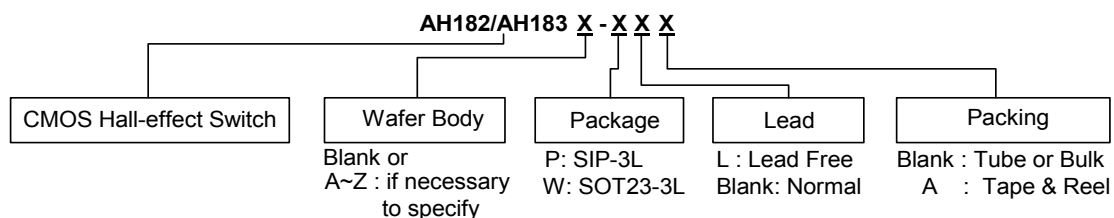
The south pole of sufficient strength will turn the output on in SIP3 but the north pole of sufficient strength will turn the output on in SOT23 package. The output will be turned off under no magnetic field.

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

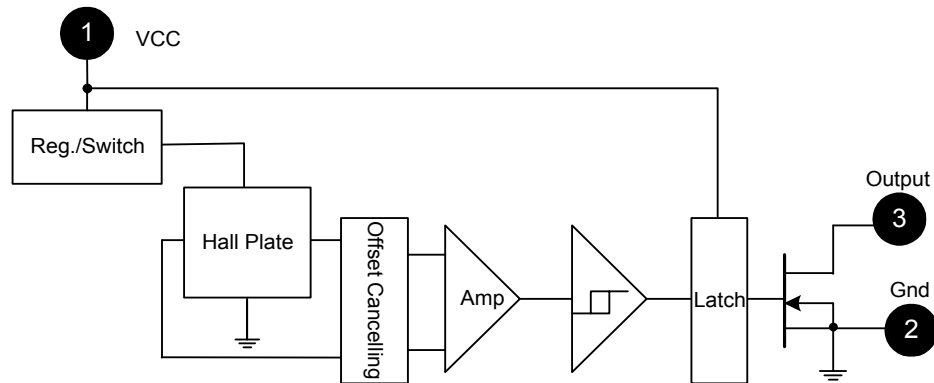
■ Pin Descriptions

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

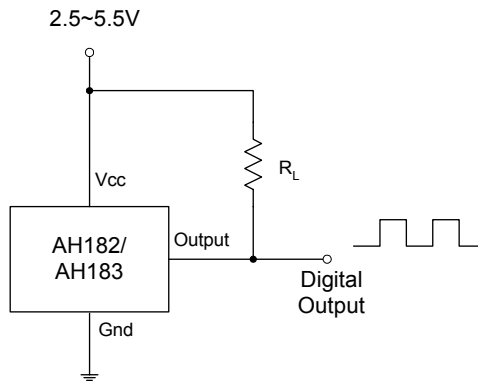
■ Ordering Information



■ Block Diagram



■ Typical Circuit



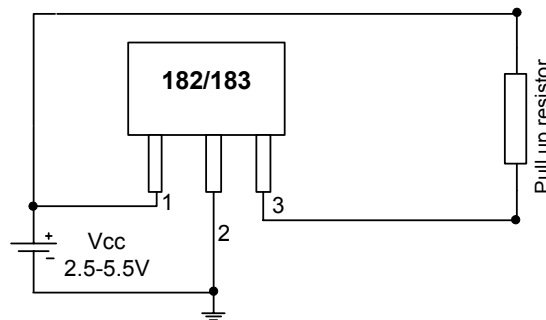
■ Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Values	Unit	
Supply voltage	V _{CC}	7	V	
Magnetic flux density	B	Unlimited		
Operating Temperature Range	T _a	-40 to +85	°C	
Storage Temperature Range	T _s	-65 to +170	°C	
Package Power Dissipation	PD	SIP3	550	mW
		SOT23-3	230	mW
Maximum Junction Temp	T _{jc}	150	°C	

■ Electrical Characteristics (Ta = +25°C, Vcc = 3V)

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	Vcc	Operating	2.5	3	5.5	V
Output On Voltage	Vout	Iout=1mA		0.1	0.3	V
Output Leakage Current	Ioff	Vout=5.5V, B < Brp		<0.1	1	μA
Supply Current	Icc(en)	Chip enable			2.0	mA
	Icc(dis)	Chip disable			8.0	uA
	Icc(avg)	AH182:average supply current		5	10	uA
	Icc(avg)	AH183:average supply current		280	500	uA
Awake Time	Tawake			50	100	μs
Period	Tperiod	AH182		50	100	ms
		AH183		200	400	us
Duty Cycle	D.C.	AH182		0.1		%
		AH183		25		%

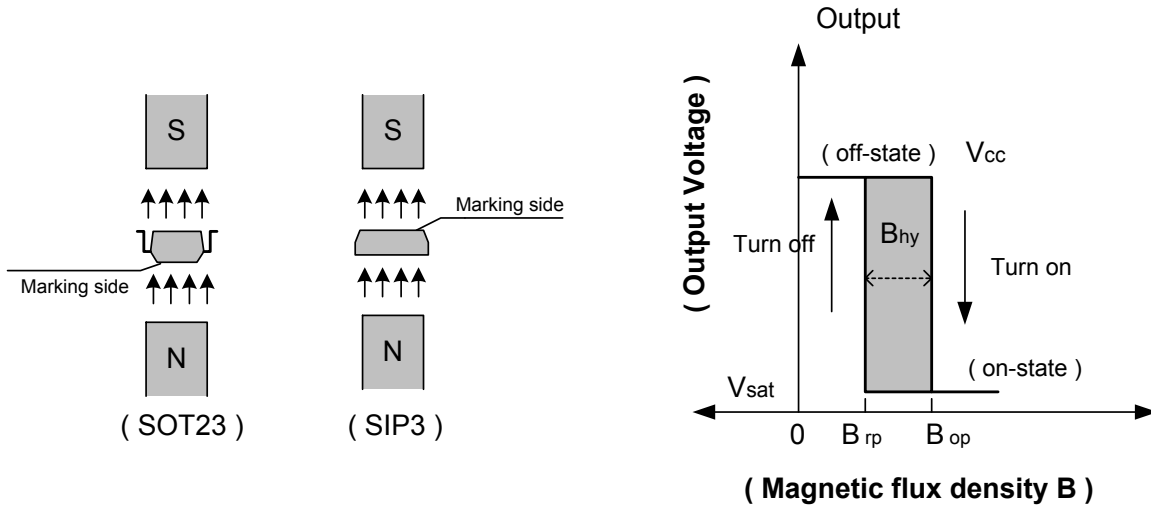
■ Test Circuit



■ Magnetic Characteristics (Ta=-40°C to +85°C)

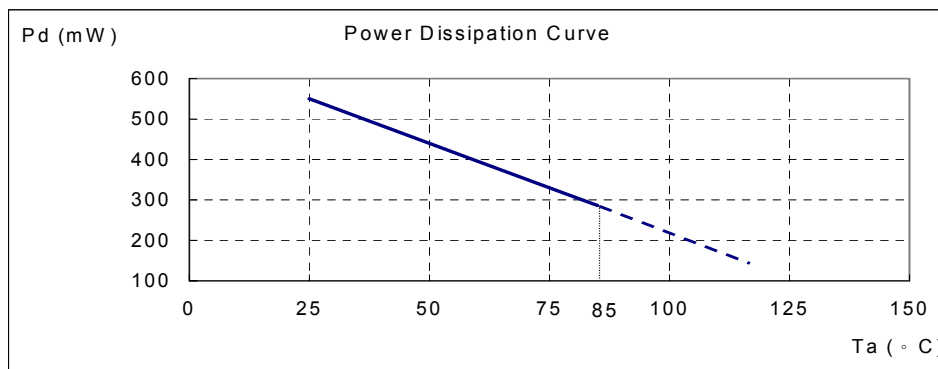
(1mT=10 Gauss)

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



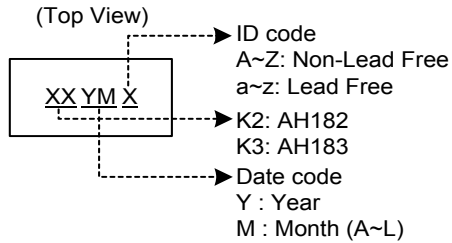
■ Performance Characteristics (SIP3)

Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
Pd (mW)	550	440	396	352	308	286	264	242	220	198	176	154	132

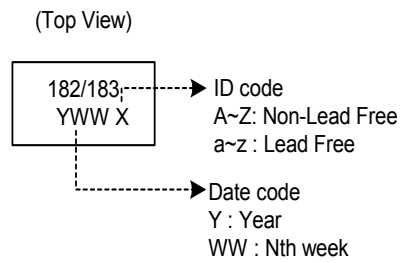


■ Marking Information

(1) SOT23

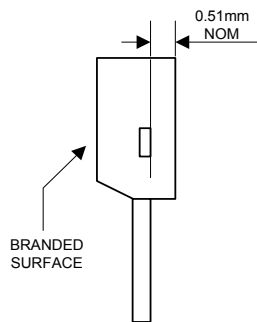


(2) SIP3

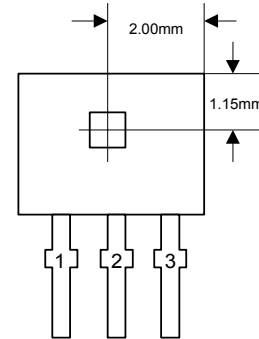


■ Package Information

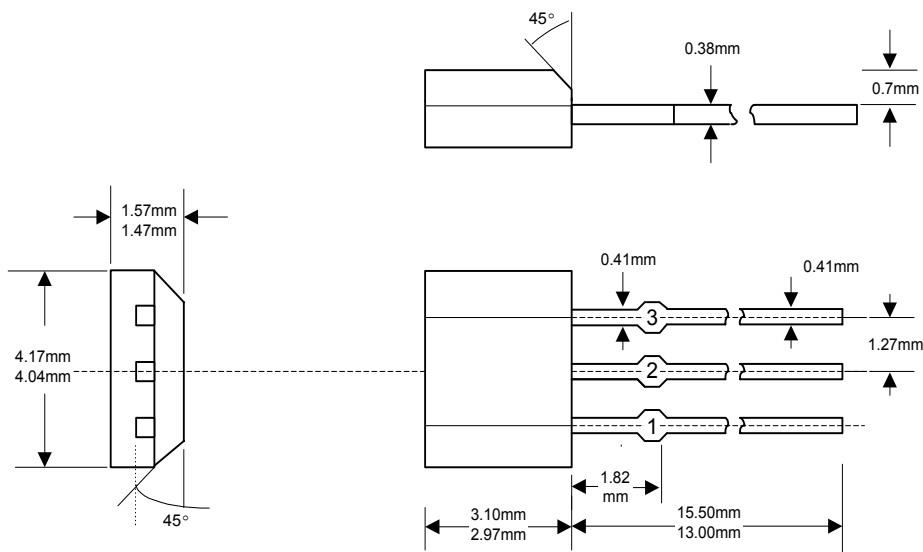
(1) Package type: SIP-3L



Active Area Depth

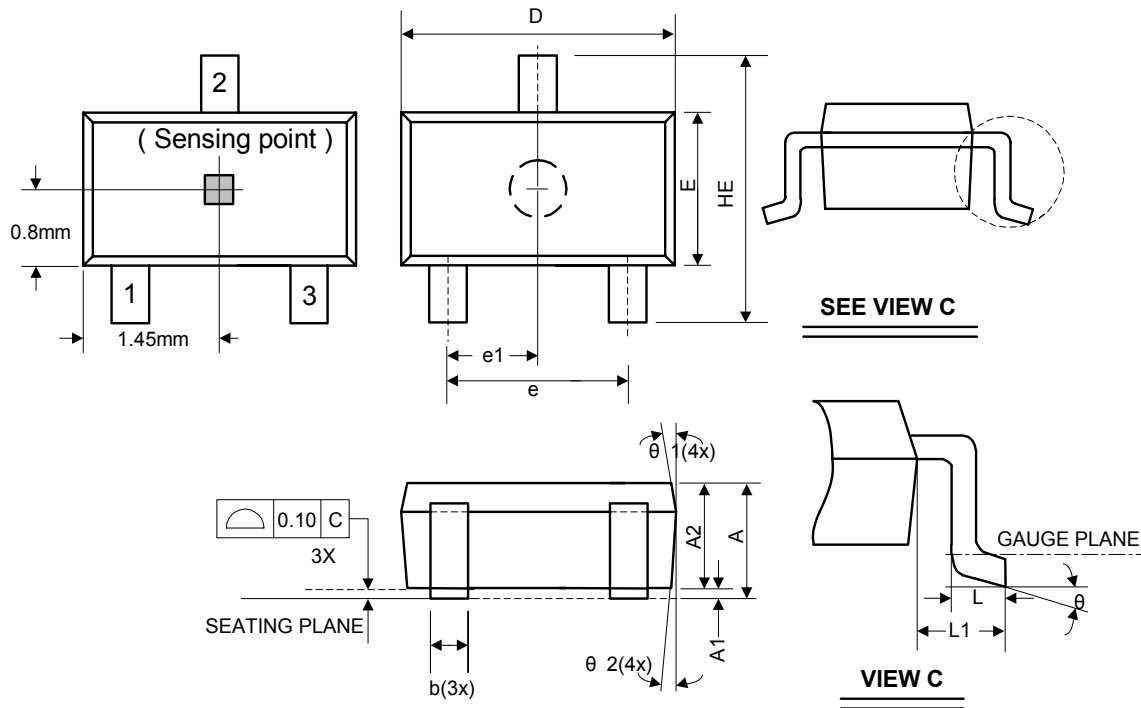


Sensor Location



Package Dimension

(2) Package type: SOT23-3L



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	1.05	-	1.35	0.041	-	0.053
A1	0.05	-	0.15	0.002	-	0.006
A2	1.00	1.10	1.20	0.039	0.043	0.047
b	0.25	-	0.50	0.010	-	0.020
C	0.08	-	0.20	0.003	-	0.008
D	2.70	2.90	3.00	0.106	0.114	0.118
E	1.50	1.60	1.70	0.059	0.063	0.067
HE	2.60	2.80	3.00	0.102	0.110	0.118
L	0.30	-	0.55	0.012	-	0.022
L1	0.50	0.60	0.70	0.020	0.024	0.028
e	1.80	1.90	2.00	0.071	0.075	0.079
e1	0.85	0.95	1.05	0.033	0.037	0.041
θ	0°	5°	10°	0°	5°	10°
θ1	3°	5°	7°	3°	5°	7°
θ2	6°	8°	10°	6°	8°	10°