

AH1822 is comprised of two Hall effect plates and an open-drain

output driver, mainly designed for battery-operation, hand-held

equipment (such as Cellular and Cordless Phone, PDA). The total power consumption in normal operation is typically  $24\mu W$ 

Either north or south pole of sufficient strength will turn the output

on. The output will be turned off under no magnetic field. While

the magnetic flux density (B) is larger than operating point (Bop),

the output will be turned on (low), the output is held until B is

lower than release point (Brp), then turned off.

**General Description** 

with a 3V power source.

AH1822

### Features

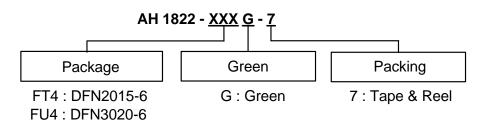
#### Micropower operation

- Operation with magnetic field of either north or south pole (omnipolar)
- 2.5V to 5.5V battery operation
- Chopper stabilized
  - Superior temperature stability
  - Extremely Low Switch-Point Drift
  - Insensitive to Physical Stress
  - Good RF noise immunity
- -40°C to 85°C operating temperature
- ESD (HBM) > 5KV
- DFN2015-6 and DFN3020-6: Available in "Green"
- Molding Compound (No Br, Sb)
  Lead Free Finish/ RoHS Compliant (Note 1)

### **Applications**

- Cover switch in clam-shell cellular phones
- Cover switch in Notebook PC/PDA
- Contact-less switch in consumer products

### **Ordering Information**



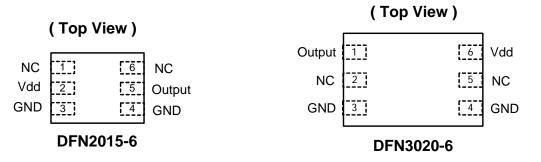
	Device	Package Package		7" Tape and Reel			
	Device	Code	(Note 2)	Quantity	Part Number Suffix		
Pb	AH1822-FT4G-7	FT4	DFN2015H4-6	3000/Tape & Reel	-7		
<b>Pb</b> ,	AH1822-FU4G-7	FU4	DFN3020H4-6	3000/Tape & Reel	-7		

Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
 Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <a href="http://www.diodes.com/datasheets/ap02001.pdf">http://www.diodes.com/datasheets/ap02001.pdf</a>.



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## **Pin Assignments**

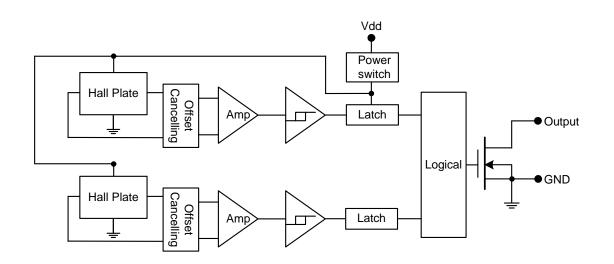


Notes: 3. NC is "No Connection" which is recommended to be tied to ground.

### **Pin Descriptions**

Pin Name	P/I/O	Description
Vdd	P/I	Power Supply Input
GND	P/I	Ground
Output	0	Output Pin
NC	NC	No Connected

### **Block Diagram**



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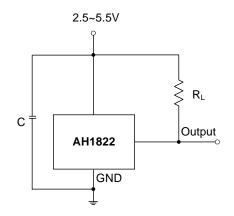
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# AH1822

MICROPOWER OMNIPOLAR HALL-EFFECT SENSOR SWITCH

# **Typical Circuit**



Notes: 4. C is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 10nF-100nF. R<sub>L</sub> is the pull-up resistor, the recommended resistance is  $10K\Omega-100K\Omega$ .

## Absolute Maximum Ratings (at TA= 25°C)

Symbol	Characteristics	Values	Unit
Vdd	Supply voltage	7	V
В	Magnetic flux density	Unlimited	
T <sub>ST</sub>	Storage Temperature Range	-65 to +150	°C
PD	Package Power Dissipation	230	mW
TJ	Maximum Junction Temperature	150	°C

# **Recommended Operating Conditions**

Symbol	Parameter	Parameter Conditions		Unit
Vdd	Supply Voltage	Operating	2.5~5.5	V
T <sub>A</sub>	Operating Temperature Range	Operating	-40 to +85	°C

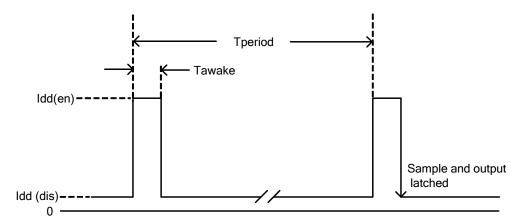


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### **Electrical Characteristics** (TA = +25°C, Vdd = 3V; unless otherwise specified)

Symbol	Characteristic	Conditions	Min	Тур.	Max	Unit
Vout	Output On Voltage	lout=1mA	_	0.1	0.3	V
loff	Output Leakage Current	Vout=5.5V, Output off	_	<0.1	1	μA
ldd(en)		Chip enable , Ta= 25°C , Vdd = 3V	_	3	6	mA
ldd(en)		Chip enable , TA= -40~85°C , Vdd = 2.5~5.5V	_	3	10	mA
Idd(dis)		Chip disable , TA= $25^{\circ}$ C , Vdd = 3V	—	5	10	μA
Idd(dis)	Supply Current	Chip disable , TA= -40~85°C , Vdd = 2.5~5.5V	_	5	18	μA
ldd(avg)		Average supply current , TA= 25°C , Vdd = 3V	_	8	16	μA
ldd(avg)		Average supply current, TA= -40~85°C,Vdd = 2.5~5.5V		8	28	μA
Fc	Chopping Frequency	For design information only	—	300		KHz
Tawake	Awake Time	(Note 5)	_	75	150	μs
Tperiod	Period	(Note 5)	_	75	150	ms
D.C.	Duty Cycle			0.1		%

Notes: 5. When power is initially on, the operating Vdd (2.5V to 5.5V) must be applied to be guaranteed for the output sampling. The output state is valid after the second operating phase (typical 150ms).





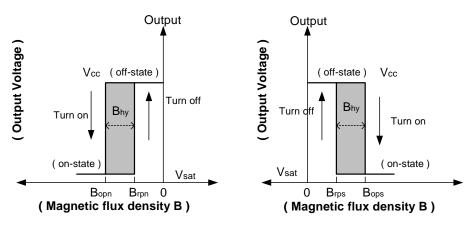
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#### **Magnetic Characteristics** (TA=25°C, Vdd=3V, Note 6, 7)

				(1m	T=10 Gauss)
Symbol	Characteristic	Min	Тур.	Max	Unit
Bops(south pole to brand side)	Operate Daint	-	28	55	
Bopn(north pole to brand side)	Operate Point	-55	-28	-	
Brps(south pole to brand side)	Release Point	10	20	-	Gauss
Brpn(north pole to brand side)	Release Point	-	-20	-10	Cauco
Bhy( Bopx – Brpx )	Hysteresis	5	8	-	

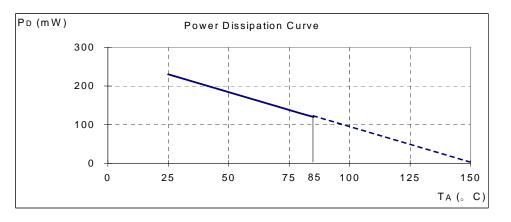
Notes:

6. Typical data is at Ta = 25°C, Vdd = 3V, and for design information only. 7. Operating point and release point will vary with supply voltage and operating temperature.



### **Performance Characteristics**

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



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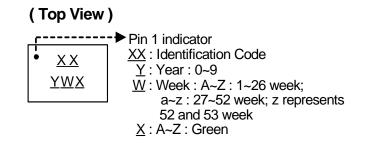
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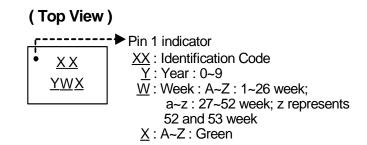
### **Marking Information**

### (1) DFN2015-6



Part Number	Package	Identification Code		
AH1822	DFN2015-6	К7		

(2) DFN3020-6



Part Number	Package	Identification Code
AH1822	DFN3020-6	K8

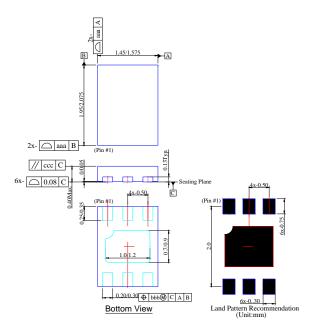


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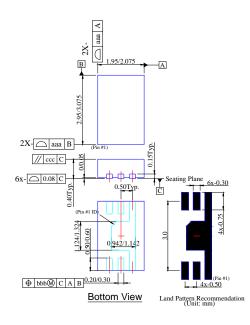
MICROPOWER OMNIPOLAR HALL-EFFECT SENSOR SWITCH

### Package Information (All Dimensions in mm)

### (1) Package type: DFN2015-6



### (2) Package type: DFN3020-6



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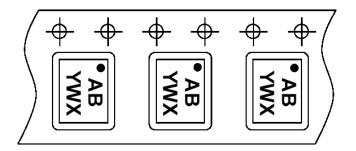


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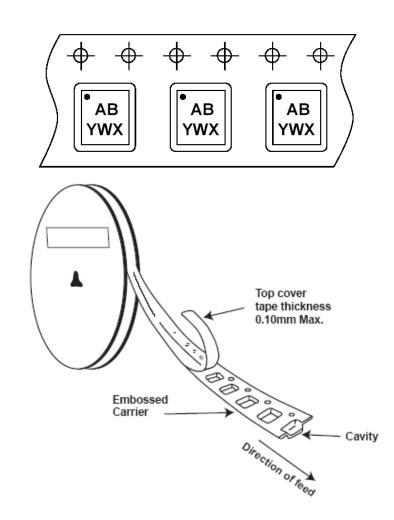
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# **Taping Orientation**

### (1) DFN2015-6



(2) DFN3020-6



Notes: 8. The taping orientation of the other package type can be found on our website at <a href="http://www.diodes.com/datasheets/ap02007.pdf">http://www.diodes.com/datasheets/ap02007.pdf</a>.

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