

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)

General Description

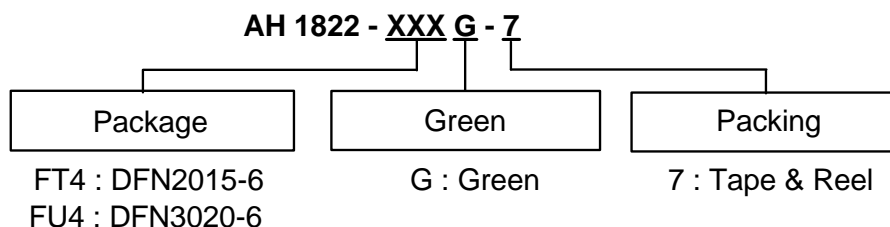
AH1822 is comprised of two Hall effect plates and an open-drain output driver, mainly designed for battery-operation, hand-held equipment (such as Cellular and Cordless Phone, PDA). The total power consumption in normal operation is typically 24μW with a 3V power source.

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.

Applications

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

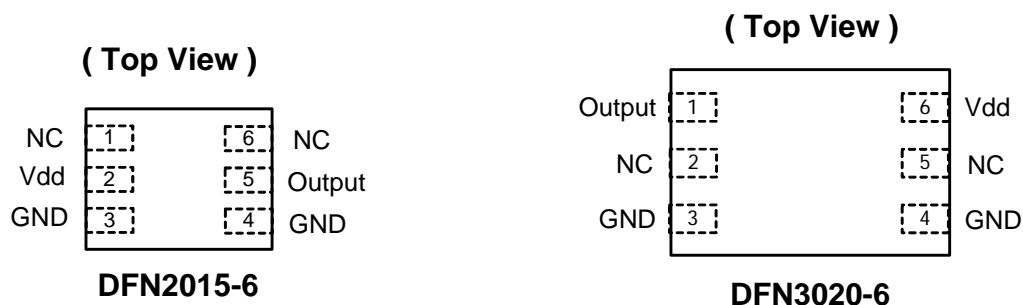
Ordering Information



Device	Package Code	Packaging (Note 2)	7" Tape and Reel	
			Quantity	Part Number Suffix
AH1822-FT4G-7	FT4	DFN2015H4-6	3000/Tape & Reel	-7
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*.
 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>.

Pin Assignments

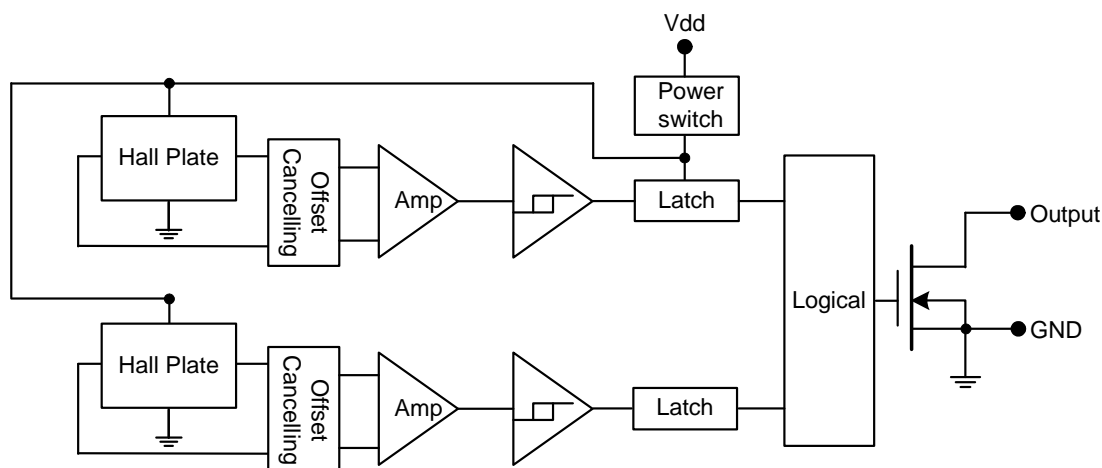


Notes: 3. NC is "No Connection" which is recommended to be tied to ground.

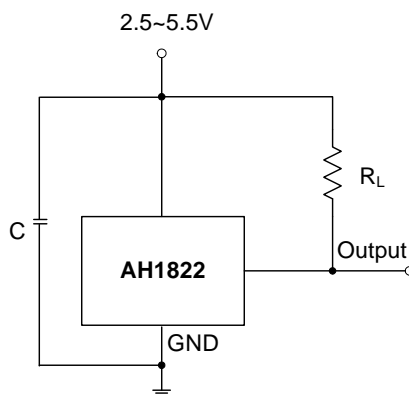
Pin Descriptions

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

Block Diagram



Typical Circuit



Notes: 4. C is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 10nF~100nF.
R_L is the pull-up resistor, the recommended resistance is 10KΩ~100KΩ.

Absolute Maximum Ratings (at T_A= 25°C)

Symbol	Characteristics	Values	Unit
V _{dd}	Supply voltage	7	V
B	Magnetic flux density	Unlimited	
T _{ST}	Storage Temperature Range	-65 to +150	°C
P _D	Package Power Dissipation	230	mW
T _J	Maximum Junction Temperature	150	°C

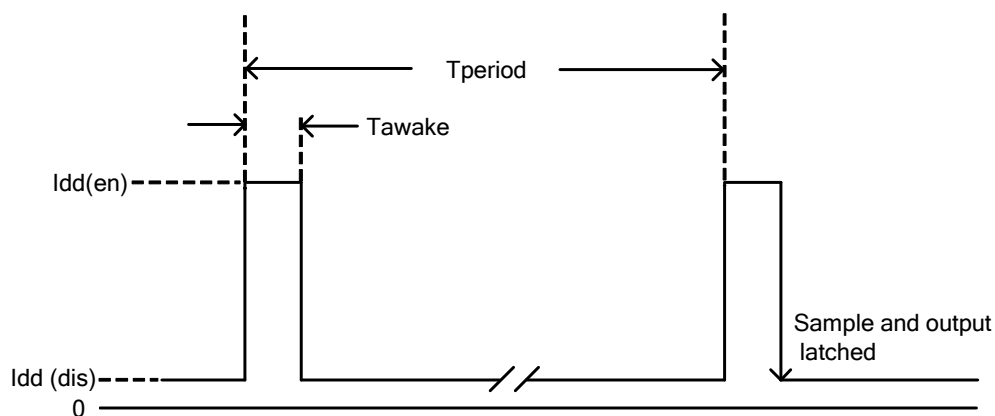
Recommended Operating Conditions

Symbol	Parameter	Conditions	Rating	Unit
V _{dd}	Supply Voltage	Operating	2.5~5.5	V
T _A	Operating Temperature Range	Operating	-40 to +85	°C

Electrical Characteristics ($T_A = +25^\circ\text{C}$, $V_{DD} = 3\text{V}$; unless otherwise specified)

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	$V_{out}=5.5\text{V}$, Output off	—	<0.1	1	μA
$I_{dd(en)}$	Supply Current	Chip enable, $T_A = 25^\circ\text{C}$, $V_{DD} = 3\text{V}$	—	3	6	mA
$I_{dd(en)}$		Chip enable, $T_A = -40\sim 85^\circ\text{C}$, $V_{DD} = 2.5\sim 5.5\text{V}$	—	3	10	mA
$I_{dd(dis)}$		Chip disable, $T_A = 25^\circ\text{C}$, $V_{DD} = 3\text{V}$	—	5	10	μA
$I_{dd(dis)}$		Chip disable, $T_A = -40\sim 85^\circ\text{C}$, $V_{DD} = 2.5\sim 5.5\text{V}$	—	5	18	μA
$I_{dd(ave)}$		Average supply current, $T_A = 25^\circ\text{C}$, $V_{DD} = 3\text{V}$	—	8	16	μA
$I_{dd(ave)}$		Average supply current, $T_A = -40\sim 85^\circ\text{C}$, $V_{DD} = 2.5\sim 5.5\text{V}$	—	8	28	μA
F_C	Chopping Frequency	For design information only	—	300	—	KHz
T_{wake}	Awake Time	(Note 5)	—	75	150	μs
T_{period}	Period	(Note 5)	—	75	150	ms
D.C.	Duty Cycle		—	0.1	—	%

Notes: 5. When power is initially on, the operating V_{DD} (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).

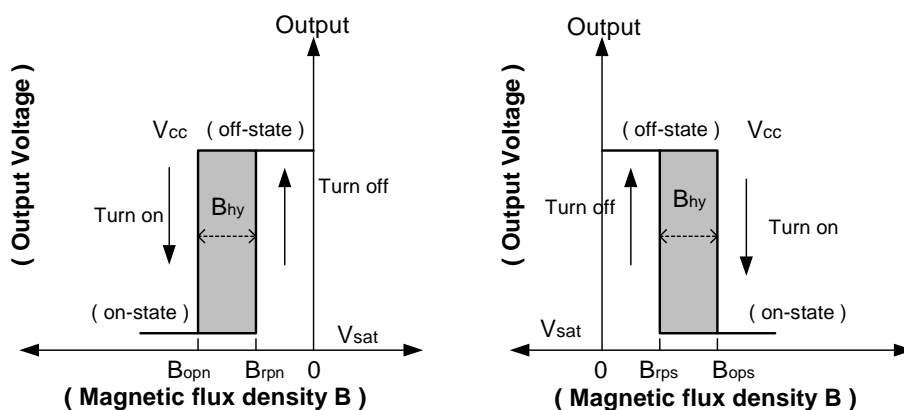


Magnetic Characteristics (TA=25°C, Vdd=3V, Note 6, 7)

(1mT=10 Gauss)

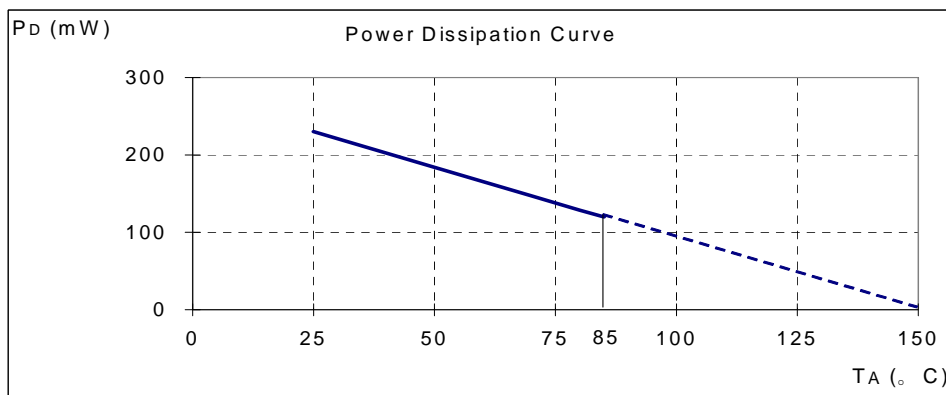
Symbol	Characteristic	Min	Typ.	Max	Unit
Bops(south pole to brand side)	Operate Point	-	28	55	Gauss
Bopn(north pole to brand side)		-55	-28	-	
Brps(south pole to brand side)	Release Point	10	20	-	
Brpn(north pole to brand side)		-	-20	-10	
Bhy(Bopx - Brpx)	Hysteresis	5	8	-	

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

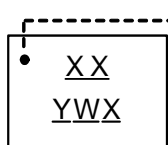
TA (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
PD (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0



Marking Information

(1) DFN2015-6

(Top View)

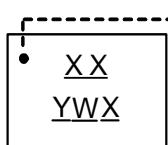


Pin 1 indicator
XX : Identification Code
Y : Year : 0~9
W : Week : A~Z : 1~26 week;
a~z : 27~52 week; z represents
52 and 53 week
X : A~Z : Green

Part Number	Package	Identification Code
AH1822	DFN2015-6	K7

(2) DFN3020-6

(Top View)

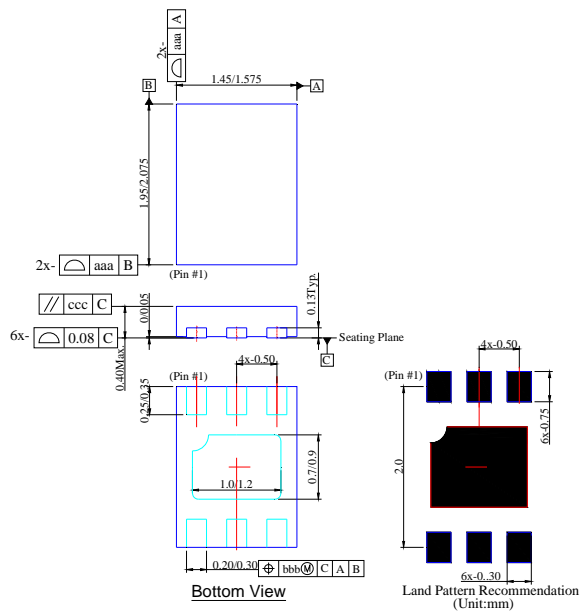


Pin 1 indicator
XX : Identification Code
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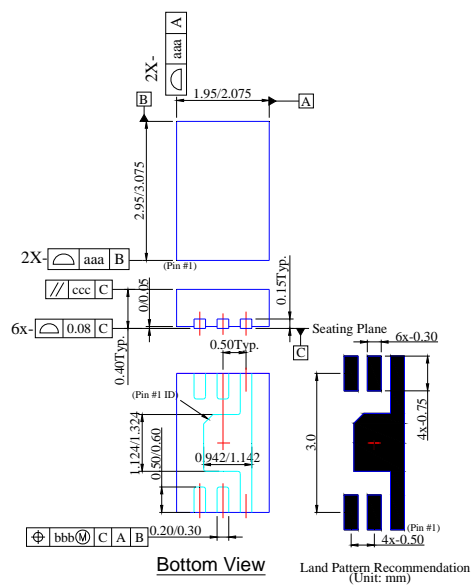
Part Number	Package	Identification Code
AH1822	DFN3020-6	K8

Package Information (All Dimensions in mm)

(1) Package type: DFN2015-6

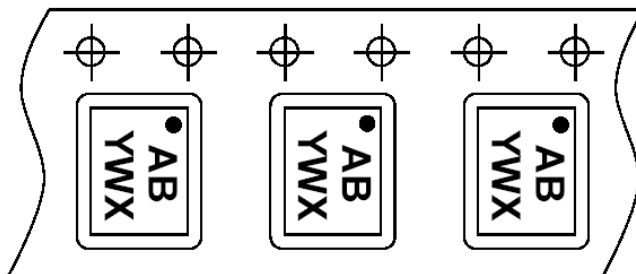


(2) Package type: DFN3020-6

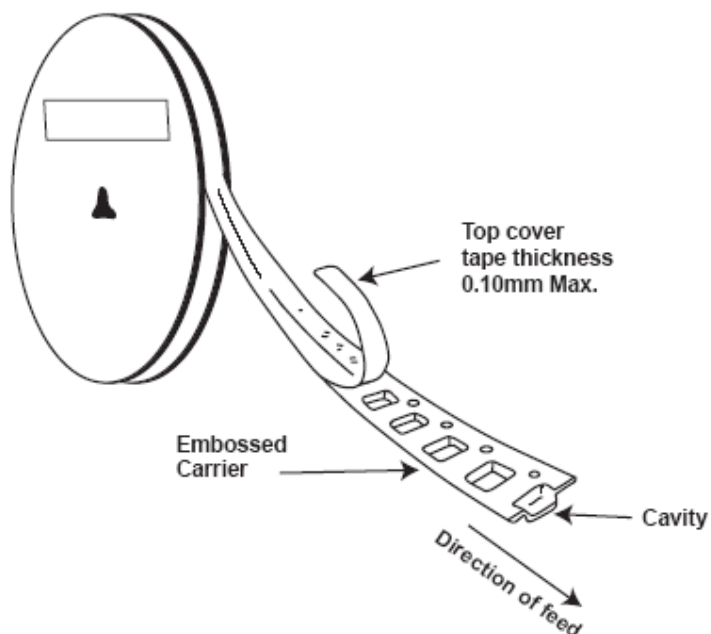
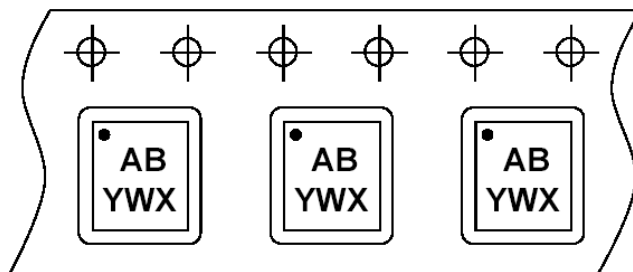


Taping Orientation

(1) DFN2015-6



(2) DFN3020-6



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

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