MicroPower, Ultra-sensitive Hall Effect Switch

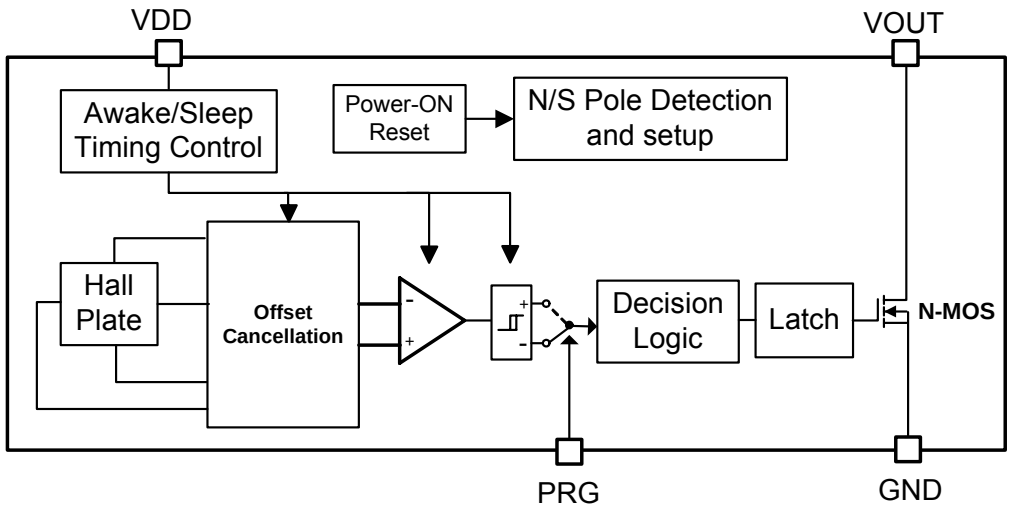
❖ GENERAL DESCRIPTION

AX8102 is a Hall Effect sensor with an output driver and an outside programming output type device, mainly designed for battery–operation, hand-held equipment (such as Cellular and Cordless Phone, PDA). After power-on, AX8102 will detect and setup the operating pole (North or South) to avoid another side magnetic noise (Patent pending). When the PRG voltage is high, the output is a pull high type. While the magnetic flux density (B) is larger than operate point (Bop), the output will be turned on that voltage is low; the output is latched until B is lower than release point (Brp), then turned off. On the contrary, output is a pull low type that be turned on voltage is high.

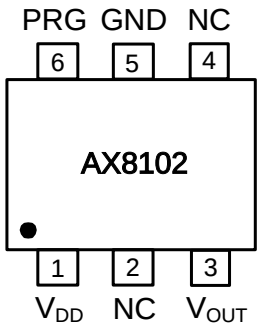
❖ FEATURES

- Micro Power Operation for Battery Applications
- 2.4V to 5.5V battery operation
- Chopper Stabilized Technology
- Operation with North or South Pole
- Outside programming output type
- High sensitivity and high stability of the magnetic switching points
- 6-pin TOST23 Pb-Free package

❖ Block Diagram



❖ PIN ASSIGNMET



TSOT23-6
(TOP VIEW)

Name	Pin	Description
VDD	1	Power Input
NC	2,4	No connect
Output	3	Output Pin
GND	5	Ground Pin
PRG	6	Output type Selection PRG=high, Output is pull high PRG=Low, Output is pull Low

❖ ORDER/MARKING INFORMATION

Order Information	Top Marking
AX8102 X X Package Type W:TSOT23-6 Packing Blank : Tube A : Taping	**XXYW** WW : 01~26(A~Z) 27~52(a~z) Year : 7 = 2007 A = 2010 Identification HA : AX8102

❖ Absolute Maximum Ratings (at T_A=25°C)

Characteristics	Symbol	Rating	Unit
VDD Pin Voltage	V_{DD}	- 0.3 to 6V	V
Output Pin Voltage	V_{OUT}	- 0.3 to 6V	V
Programming Pin Voltage	V_{PRG}	- 0.3 to 6V	V
Output Current	I_{OUT}	2	mA
Storage Temperature Range	T_{ST}	-65 to +150	°C
Junction Temperature	T_J	+125	°C
Operating Temperature Range	T_{OP}	-40 to +85	°C
Thermal Resistance from Junction to ambient	θ_{JA}	250	°C/W
Power Dissipation[PD=(T_J-T_A) / θ_{JA}]	PD	230	mW

Note : θ_{JA} is measured with the PCB copper area of approximately 1 in^2(Multi-layer).

❖ Electrical Characteristics (V_{DD} = 2.75V, T_A=25°C, unless otherwise specified)

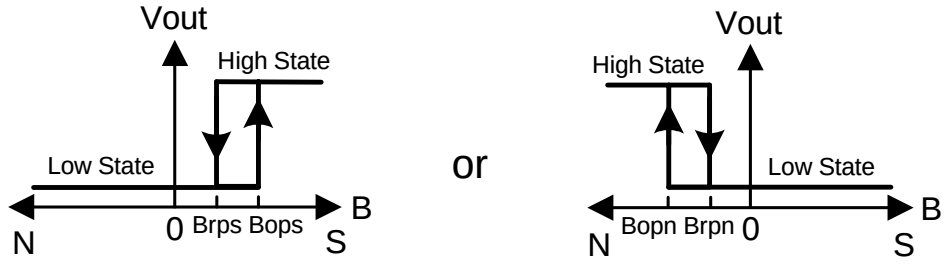
Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	V_{DD}		2.4	-	5.5	V
Supply Current	I_{DD}	Awake state	-	3	5	mA
		Sleep state	-	9	15	uA
		Average	-	12	20	uA
PRG Pin Voltage	V_{PRGL}	Output Pull Low	-0.3	0	0.3	V
	V_{PRGH}	Output Pull High	V_{DD}-0.3	V_{DD}	V_{DD}+0.3	
Output Saturation Voltage	V_{OSAT}	I_O=1mA	-	0.1	0.3	V
Output Leakage Current	I_{O-LEAK}	VOUT=5.5V, B<Brp	-	0.01	1	uA
Output Wake-Up Time	$T_{wake-up}$		-	80	120	uA
Period	T_{Period}		-	80	120	ms
Duty Cycle	D.C		-	0.1	-	%
Chopping Frequency	fc		-	300	-	KHz
North or South Pole Detection and Setup Time	T_{Set}	Continuous >B_{OPS} or <B_{OPN}	-	400	600	ms

❖ Magnetic Characteristics (V_{DD} = 2.75V, T_A=25°C, unless otherwise specified)

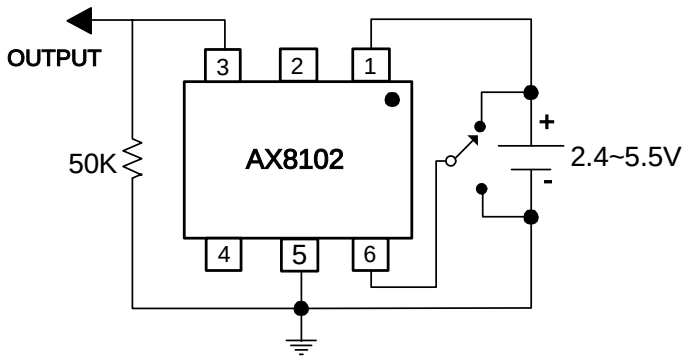
Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Operating Points	B_{OPS}		-	35	55	Gauss
	B_{OPN}		-55	-35	-	
Release Points	B_{RPS}		10	25	-	
	B_{RPN}			-25	-10	
Hysteresis	B_{Hys}		-	10	-	

1. PRG Pin Connect to V_{DD}

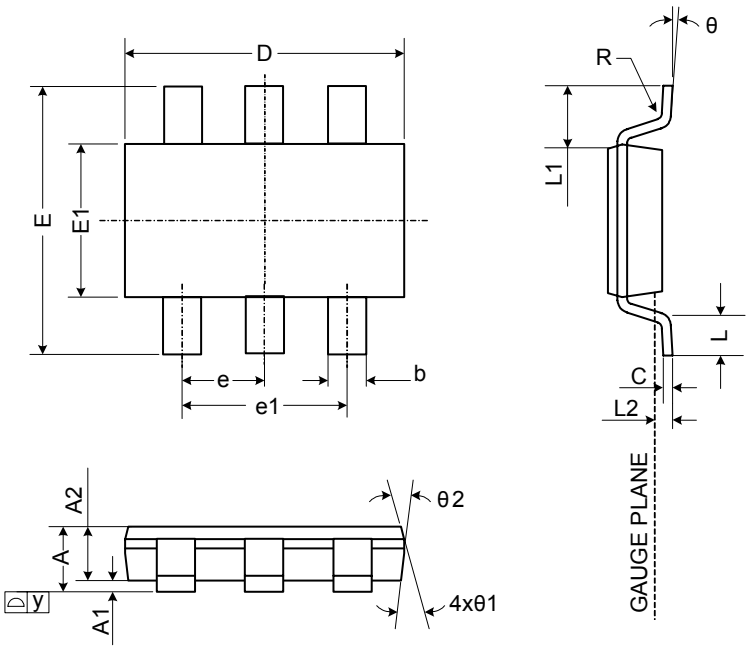
2. PRG Pin Connect to GND



❖ Application Circuit



❖ Package Outlines



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.75	-	0.90	0.030	-	0.035
A1	0.00	-	0.10	0.000	-	0.004
A2	0.70	0.75	0.80	0.028	0.030	0.031
b	0.35	-	0.51	0.014	-	0.020
C	0.10	-	0.25	0.004	-	0.010
D	2.80	2.90	3.00	0.110	0.114	0.118
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
e	0.95 BSC.			0.037		
e1	1.90 BSC.			0.075		
L	0.37	-	-	0.015	-	-
L1	0.60 REF.			0.024		
L2	0.25 BSC.			0.010		
y	-	-	0.10	-	-	0.004
R	0.10	-	-	0.004	-	-
θ	0^o	-	8^o	0^o	-	8^o
θ1	7^o NOM.			7^o NOM.		
θ2	5^o NOM.			5^o NOM.		