MicroPower, Ultra-sensitive Hall Effect Switch

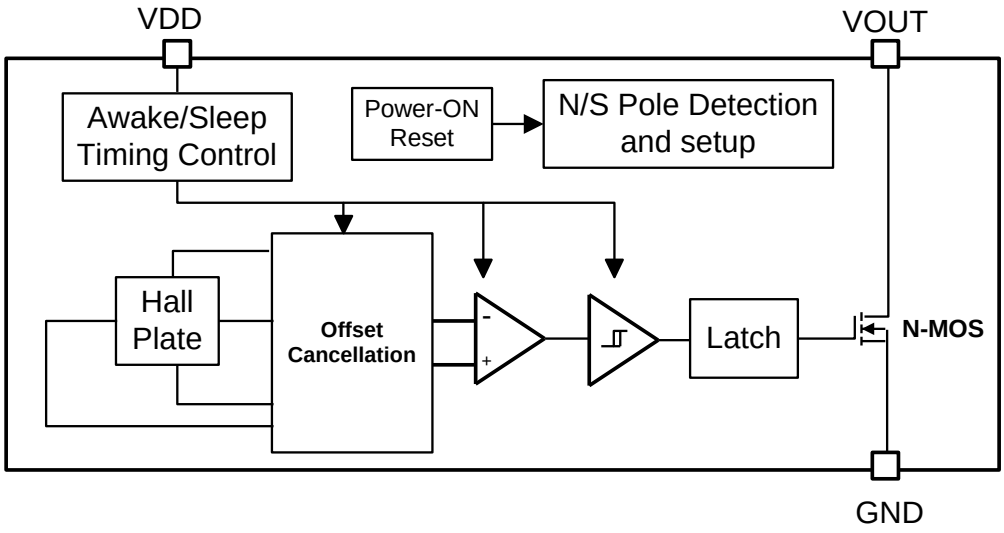
❖ GENERAL DESCRIPTION

AX8101/A is a three-terminal Hall Effect sensor device with a output driver, mainly designed for battery–operation, hand-held equipment (such as Cellular and Cordless Phone, PDA). After power-on, AX8101/A will detect and setup the operating pole (North or South) to avoid another side magnetic noise **(Patent pending)**. For AX8101, 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; the output is latched until B is lower than release point (Brp).

❖ FEATURES

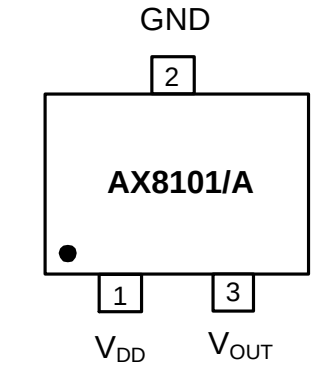
- Micro Power Operation for Battery Applications
- 2.4V to 5.5V battery operation
- Chopper Stabilized Technology
- Operation with North or South Pole
- High sensitivity and high stability of the magnetic switching points
- 3-pin SOT-23/Thin SOT-23 Pb-Free packages

❖ BLOCK DIAGRAM



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❖ PIN ASSIGNMET



(SOT-23-3L/TSOT-23-3L)

(TOP VIEW)

Name	Description
VDD	Power Input
GND	Ground
Output	AX8101: B>Bops or B<Bopn, Output is Low. B<Brps or B> Brpn, Output is High. AX8101A: B>Bops or B<Bopn, Output is High. B<Brps or B> Brpn, Output is Low.

❖ ORDER/MARKING INFORMATION

Order Information	Top Marking
AX8101 X XX X Output: Blank: Pull High; A: Pull Low Package Type: R: SOT-23-3L; RT: TSOT-23-3L Packing: Blank : Bag; A : Taping	L L Y W X → ID code:internal WW:01~26 (A~Z) 27~52 (a~z) Year: A =2010 1 =2011 Identification code H1: AX8101 H2: AX8101A

❖ 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
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}	550	°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).

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❖ 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	-	2	4	mA
		Sleep state	-	7	12	uA
		Average	-	9	16	uA
Output Saturation Voltage	V_{OSAT}	I_{OUT}=1mA	-	0.1	0.3	V
Output Leakage Current	I_{O-LEAK}	V_{OUT}=5.5V, B<Brp	-	0.01	1	uA
Output Wake-Up Time	$T_{wake-up}$		-	70	120	us
Period	T_{Period}		-	70	120	ms
Duty Cycle	D.C		-	0.1	-	%
North or South Pole Detection and Setup Time	T_{Set}	Continuous >B_{OPS} or <B_{OPN}	-	210	400	ms

❖ MAGNETIC CHARACTERISTICS

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

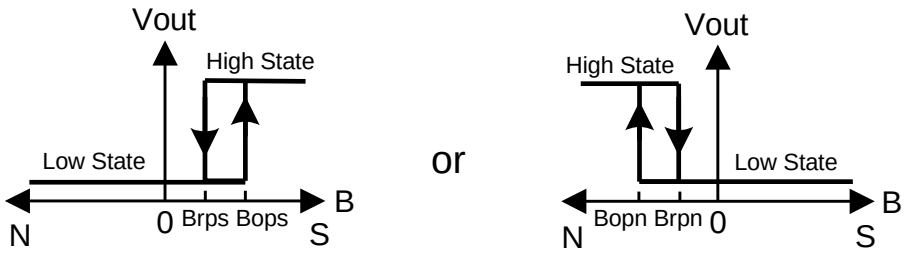
Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Operating Points	B_{OPS}		-	35	55	Gauss
	B_{OPN}		-55	-35	-	
Release Points	B_{RPS}		10	25	-	
	B_{RPN}			-25	-10	
Hysteresis	B_{Hys}		-	10	-	

1. AX8101:

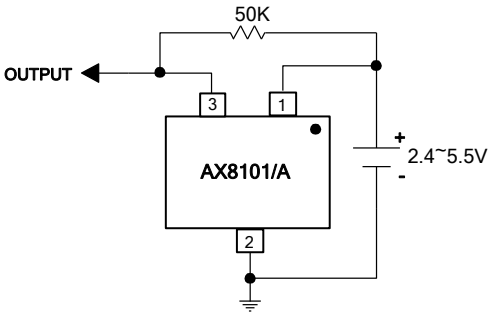


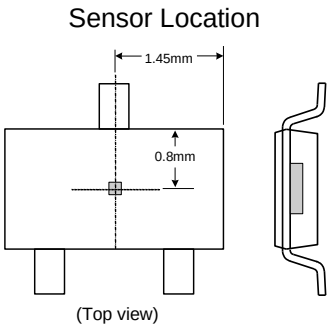
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2. AX8101A:

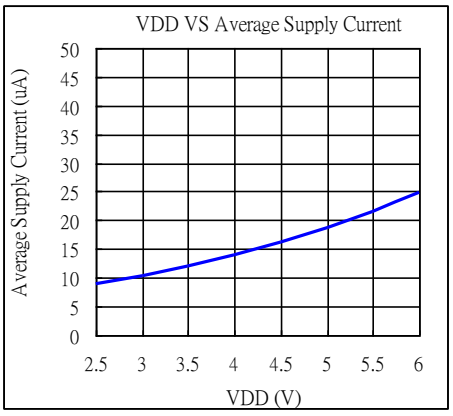


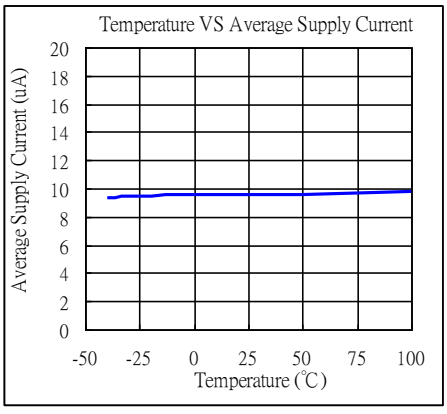
❖ APPLICATION CIRCUIT

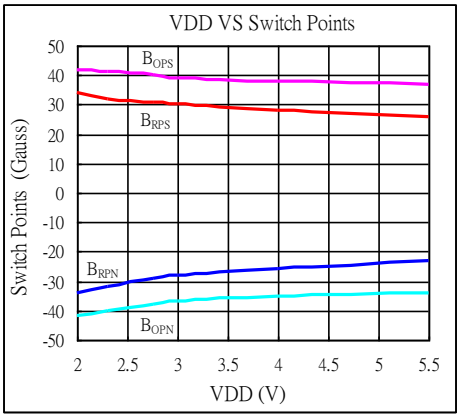


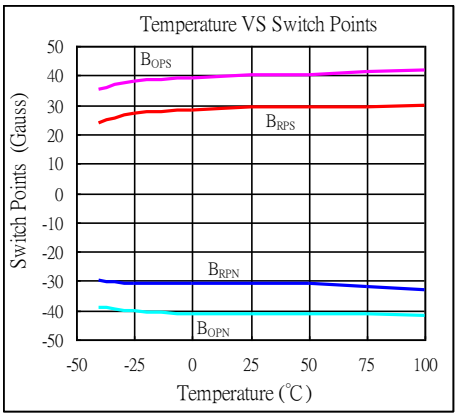


❖ TYPICAL CHARACTERISTICS





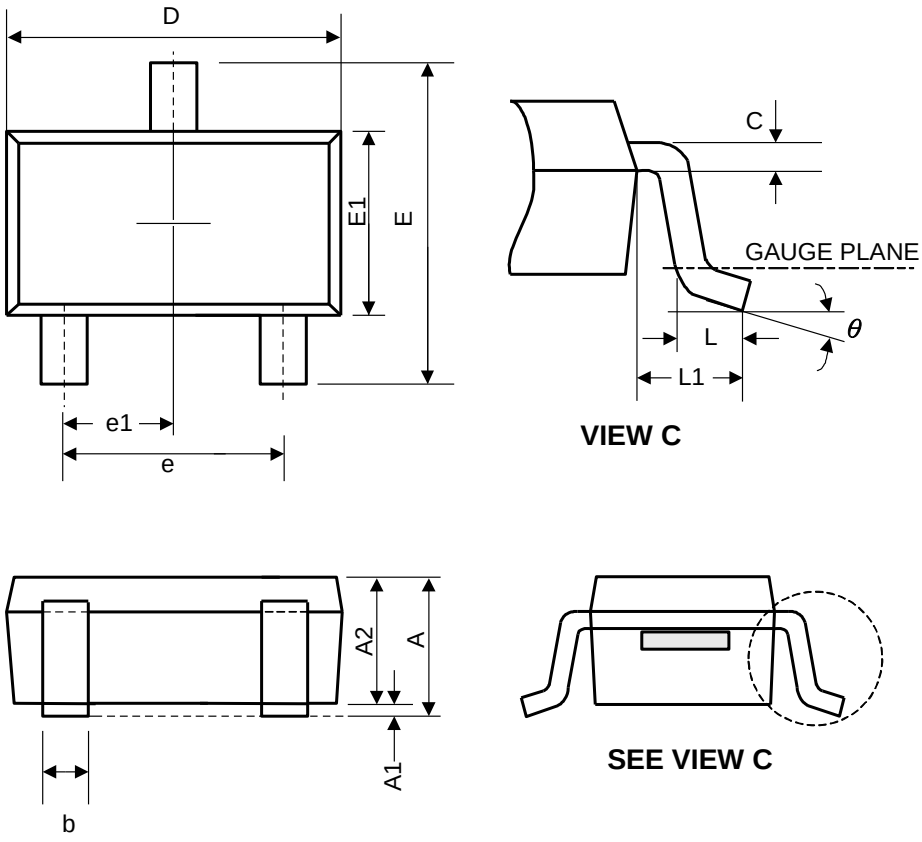




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❖ PACKAGE OUTLINES

(1) SOT-23-3L

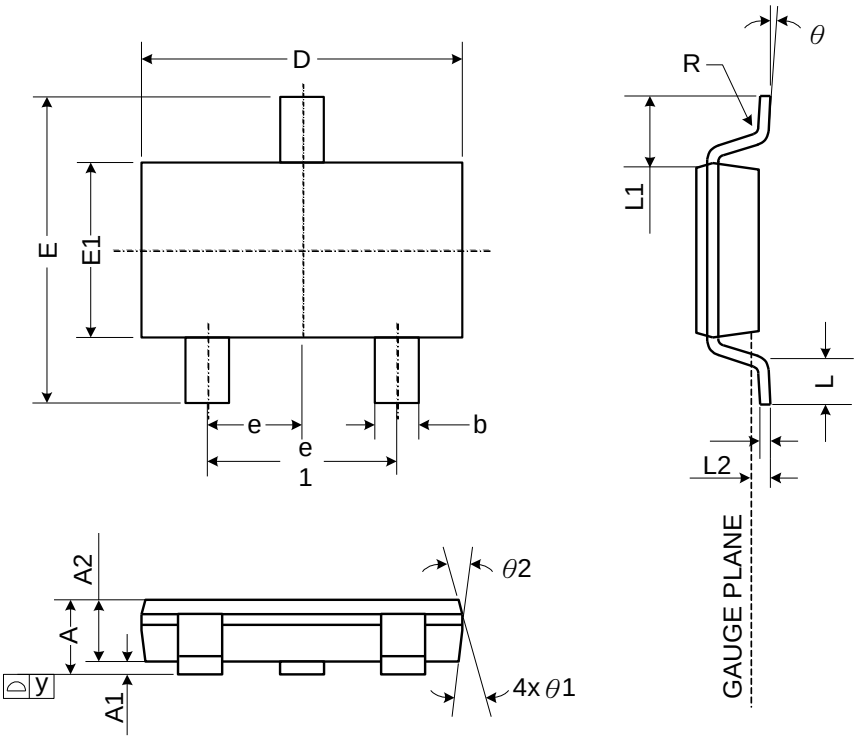


Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	-	-	1.45	-	-	0.057
A1	0.00	0.08	0.15	-	-	0.006
A2	0.90	1.10	1.30	0.035	0.043	0.051
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.08	0.15	0.22	0.003	0.006	0.009
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.40	1.60	1.80	0.055	0.063	0.071
L	0.30	0.45	0.60	0.012	0.018	0.024
L1	0.50	0.60	0.70	0.020	0.024	0.028
e	1.9 BSC			0.075 BSC		
e1	0.95 BSC			0.037 BSC		
θ	0°	4°	8°	0°	4°	8°

JEDEC outline: NA

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(2) TSOT-23-3L



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 BSC.		
e1	1.90 BSC.			0.075 BSC.		
L	0.37	-	-	0.015	-	-
L1	0.60 REF.			0.024 REF.		
L2	0.25 BSC.			0.010 BSC.		
y	-	-	0.10	-	-	0.004
R	0.10	-	-	0.004	-	-
θ	0°	-	8°	0°	-	8°
θ1	7° NOM.			7° NOM.		
θ2	5° NOM.			5° NOM.		

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