

MicroPower, Ultra-sensitive Hall Effect Switch

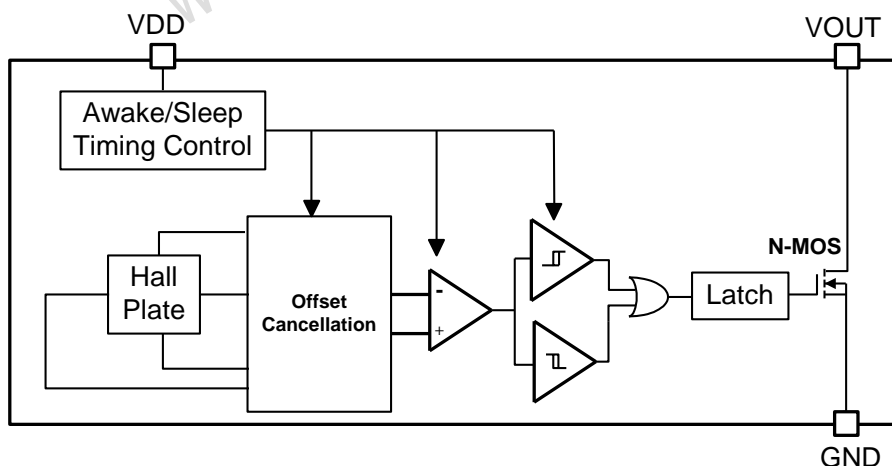
❖ GENERAL DESCRIPTION

AX8104 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). For AX8104, 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 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.

❖ FEATURES

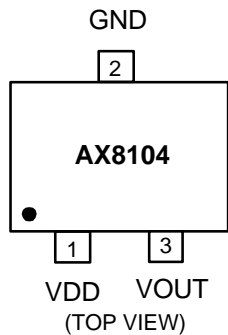
- Micro Power Operation for Battery Applications
- 2.4V to 5.5V battery operation
- Chopper Stabilized Technology
- Operation with North or South Pole
- High sensitivity and high stability of the magnetic switching points
- 3-pin TSOT-23 package

❖ BLOCK DIAGRAM



❖ **PIN ASSIGNMET**

The package of AX8104 is TSOT-23-3L; the pin assignment is given by:



Name	Pin	Description
VDD	1	Power Input
GND	2	Ground
VOUT	3	B>Bops or B<Bopn, Output is Low. B<Brps or B> Brpn, Output is High.

❖ **ORDER/MARKING INFORMATION**

Order Information	Top Marking
<p>AX8104 XX X</p> <p>Package Type Packing RT: TSOT-23-3L Blank : Tube A : Taping</p>	<p>H4 Y W X → ID code: internal</p> <p> → WW: 01~26 (A~Z) 27~52 (a~z)</p> <p> → Year: A = 2010 1 = 2011</p>

❖ **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
Power Dissipation[PD=(T _J -T _A) / θ _{JA}]	PD	400	mW
Thermal Resistance from Junction to case	θ _{JC}	180	°C/W
Thermal Resistance from Junction to ambient	θ _{JA}	250	°C/W

Note: θ_{JA} is measured with the PCB copper area of approximately 1 in²(Multi-layer).

❖ ELECTRICAL CHARACTERISTICS

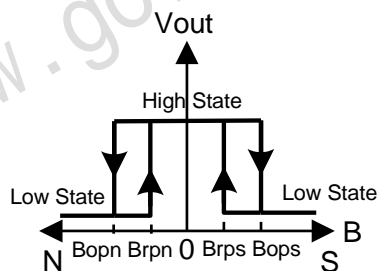
($V_{DD} = 2.75V$, $T_A=25^{\circ}C$, unless otherwise specified)

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	-	%

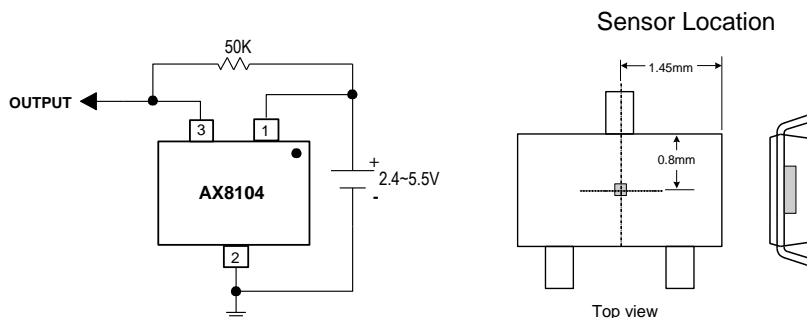
❖ MAGNETIC CHARACTERISTICS

($V_{DD} = 2.75V$, $T_A=25^{\circ}C$, unless otherwise specified)

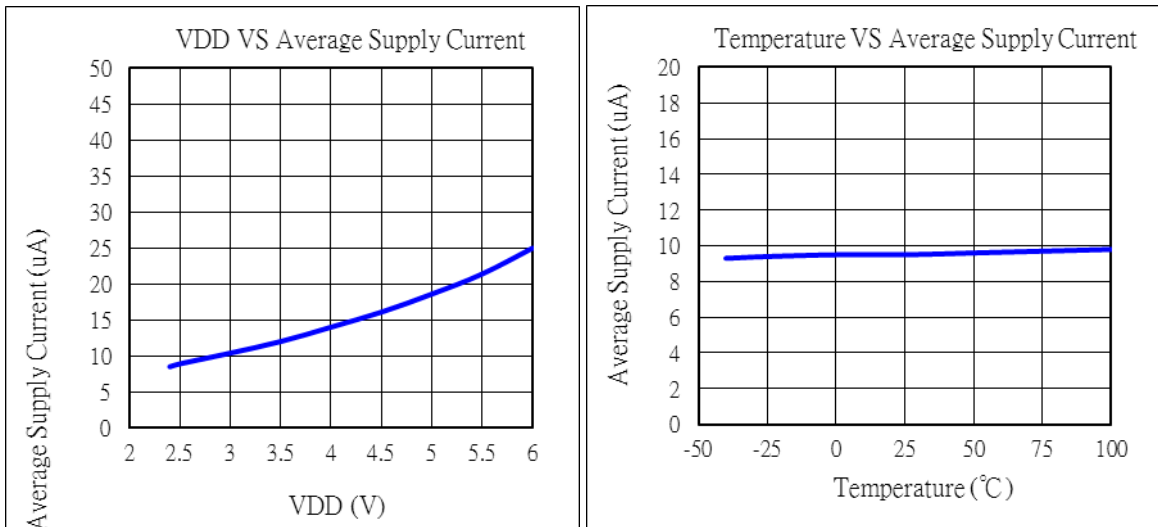
Characteristics	Symbol	Conditions	Min	Typ	Max	Units
Operating Points	B_{OPS}		-	30	42	Gauss
	B_{OPN}		-42	-30	-	
Release Points	B_{RPS}		10	20	-	
	B_{RPN}		-	-20	-10	
Hysteresis	B_{Hys}		-	10	-	



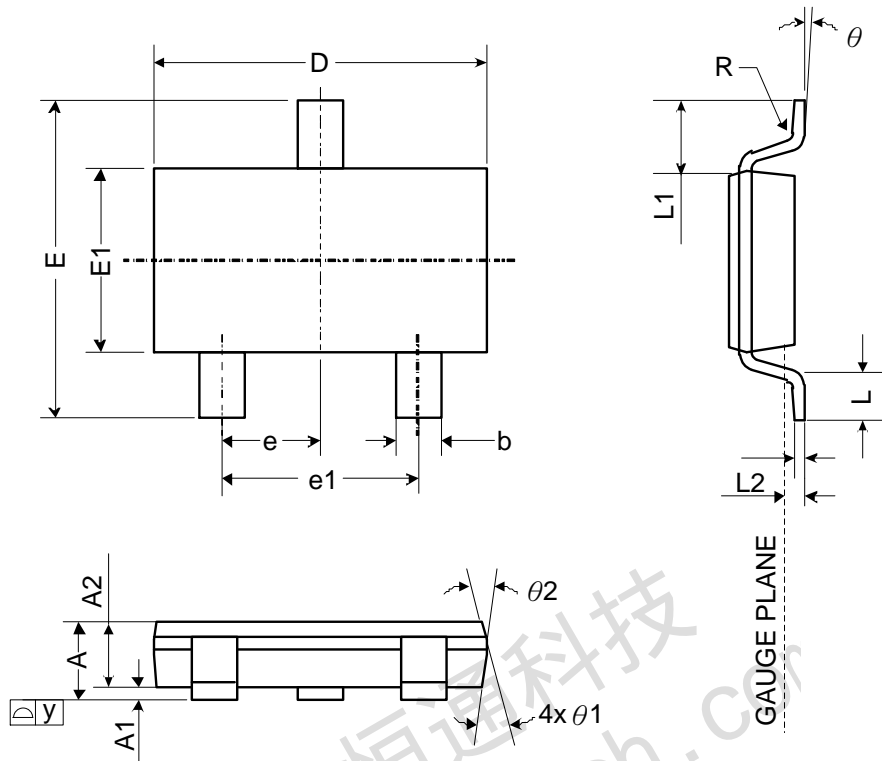
❖ APPLICATION CIRCUIT



❖ **TYPICAL CHARACTERISTICS**



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❖ PACKAGE OUTLINES


Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.75	-	0.9	0.03	-	0.035
A1	0	-	0.1	0	-	0.004
A2	0.7	0.75	0.8	0.028	0.03	0.031
b	0.35	-	0.51	0.014	-	0.02
C	0.1	-	0.25	0.004	-	0.01
D	2.8	2.9	3	0.11	0.114	0.118
E	2.6	2.8	3	0.102	0.11	0.118
E1	1.5	1.6	1.7	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	-	-	0.1	-	-	0.004
R	0.1	-	-	0.004	-	-
θ	0°	-	8°	0°	-	8°
$\theta 1$	7° NOM.			7° NOM.		
$\theta 2$	5° NOM.			5° NOM.		