DESCRIPTION

AH8103 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).

For AH8103, 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.

AH8103 is available in SOT-23 & TSOT-23 packages.

ORDER INFORMATION

Package Type	Part Number	
SOT-23	E3	AH8103E3R-X
		AH8103E3VR-X
TSOT-23	TE3	AH8103TE3R-X
		AH8103TE3R-X
Note	X=Output type, A or B V: Green Package R : Tape & Reel	
AiT provides all Pb free products Suffix " V " means Green Package		

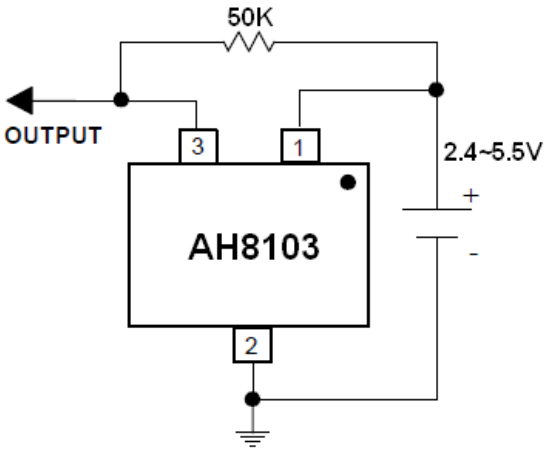
FEATURES

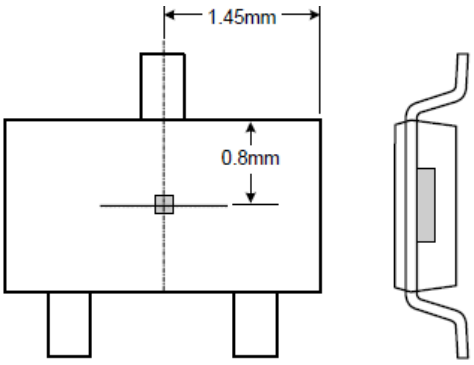
- Micro Power Operation for Battery Applications
- 2.4V to 5.5V battery operation
- Chopper Stabilized Technology
- Operation with North or South Pole
- High sensitivity and high stability of the magnetic switching points
- Available in SOT-23 and TSOT-23 Package

APPLICATION

- Cellular,
- Cordless Phone
- PDA
- Hand-held Equipments

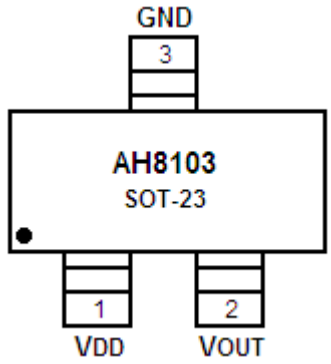
Typical Application Circuit





Sensor Location

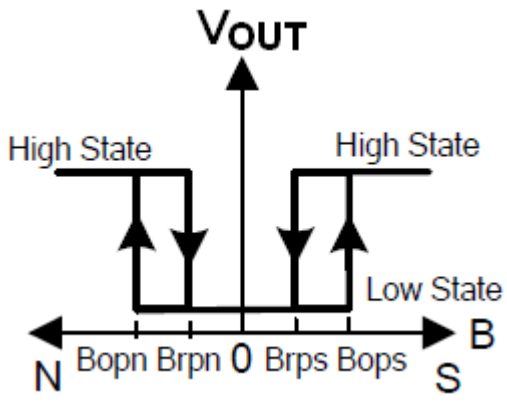
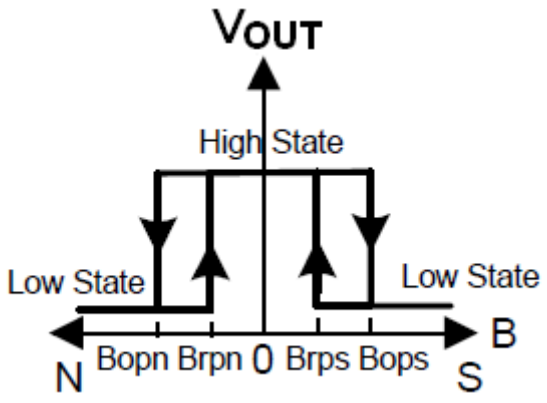
PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V_{DD}	Input Voltage Pin
2	V_{OUT}	Output Voltage Pin, A or B see below output type
3	GND	Ground Pin

OUTPUT TYPE

TYPE A	TYPE B
AH8103-A	AH8103-B
B>Bops or B<Bopn, Output is High. B<Brps or B> Brpn, Output is Low.	B>Bops or B<Bopn, Output is Low. B<Brps or B> Brpn, Output is High.
	

ABSOLUTE MAXIMUM RATINGS

V_{DD} Pin Voltage (V_{DD})	- 0.3 to 6V
Output Pin Voltage (V_{OUT})	- 0.3 to 6V
Output Current (I_{OUT})	2mA
Thermal Resistance from Junction to Ambient (θ_{JA})	550℃/W
Storage Temperature Range (T_{STG})	- 65 to 150℃
Maximum Junction Temperature (T_J)	+ 125℃
Operating Temperature Range (T_{OPR})	- 40 to 85℃
Power Dissipation (P_D)	230mW
Lead Temperature (Soldering, 10 sec)	+ 260℃

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Supply Voltage	V_{DD}		2.4		5.5	V
Supply Current	I_{DD}	Awake State		2	4	mA
		Sleep State		7	12	μA
		Average		9	16	μA
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	μA
Output Wake-Up Time	$T_{WAKE-UP}$			70	120	μs
Period	T_{PERIOD}			70	120	ms
Duty Cycle	DC			0.1		%

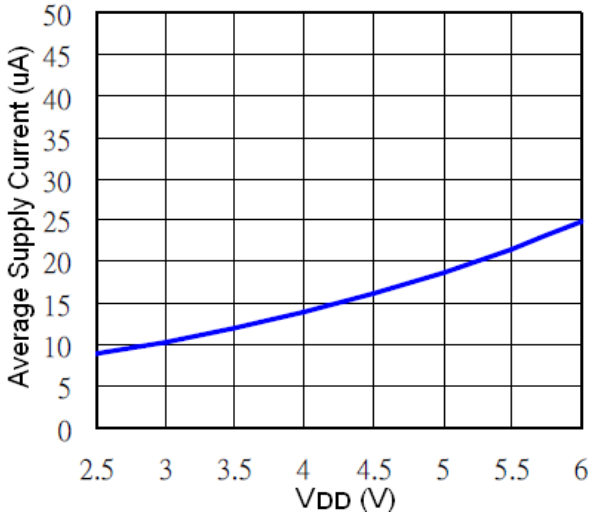
MAGNETIC CHARACTERISTICS

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

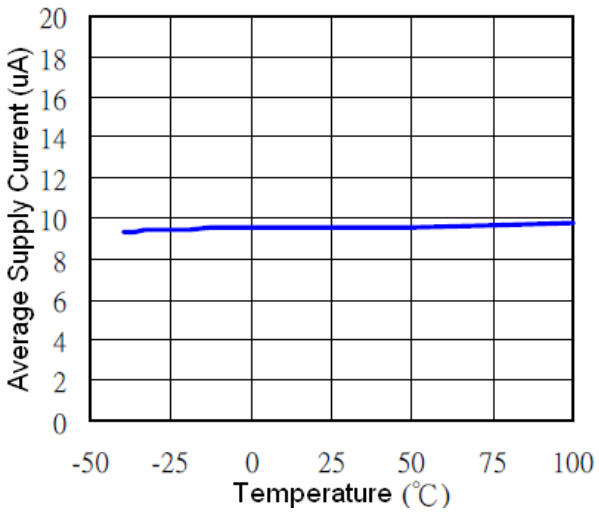
Parameter	Symbol	Conditions	MIN	TYP	MAX	Unit
Operation Points	B_{OPS}			35	55	GAUSS
	B_{OPN}		-55	-35		
Release Points	B_{RPS}		10	25		
	B_{RPN}			-25	-10	
Hysteresis	B_{HYS}			1-		

TYPICAL PERFORMANCE CHARACTERISTICS

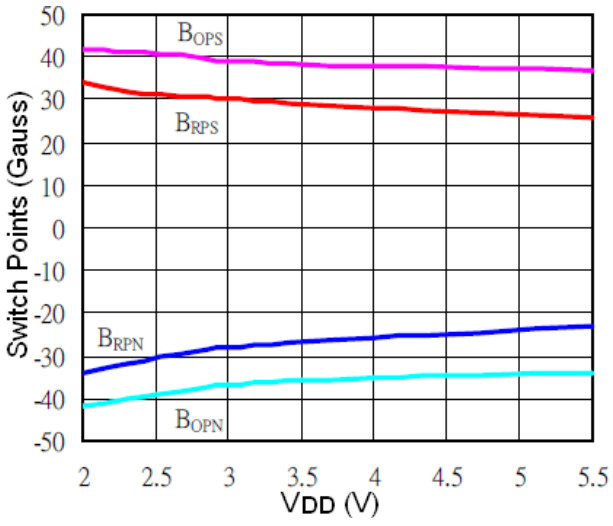
1. V_{DD} vs. Average Supply Current



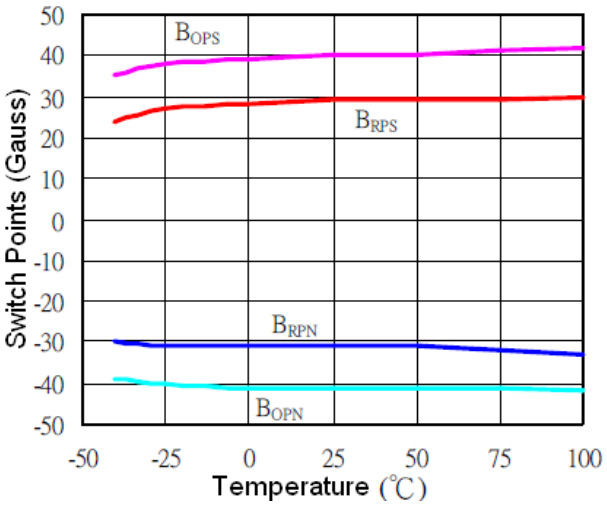
2. Temperature vs. Average Supply Current



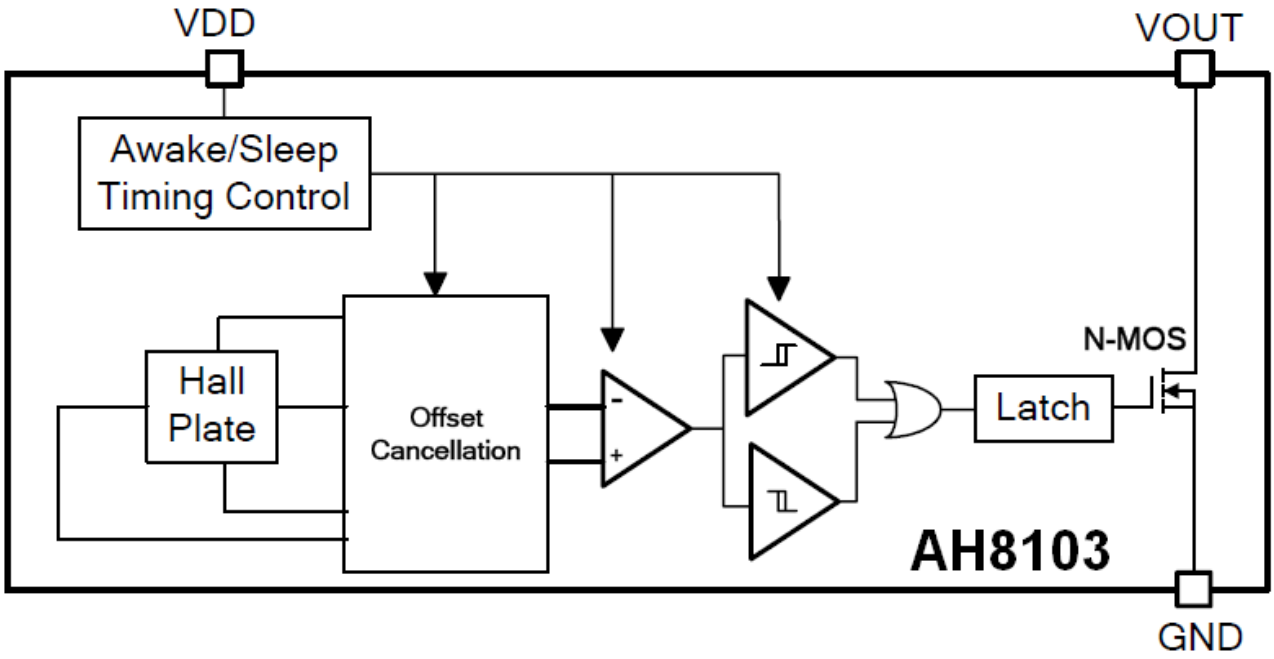
3. V_{DD} vs. Switch Points



4. Temperature vs. Switch Points

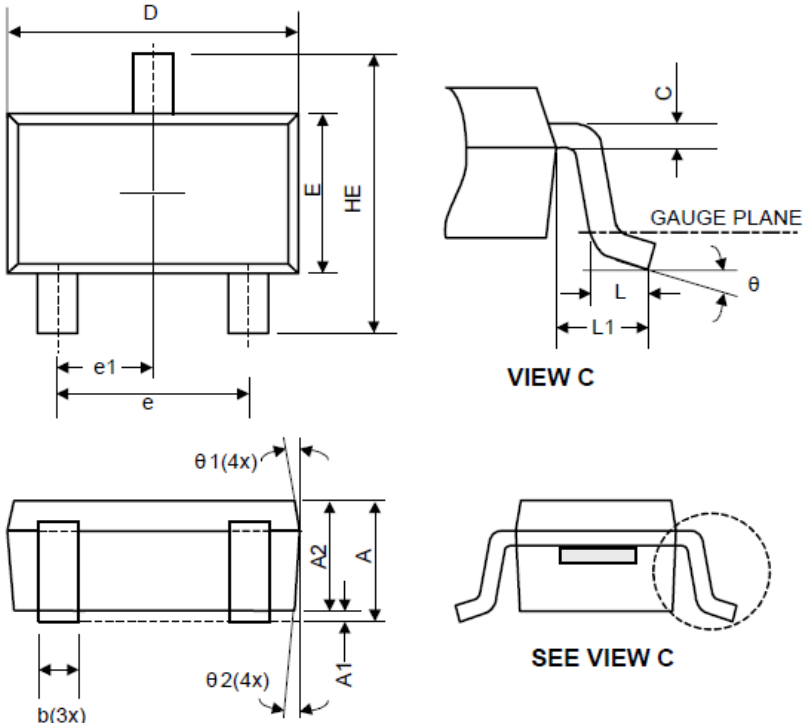


BLOCK DIAGRAM



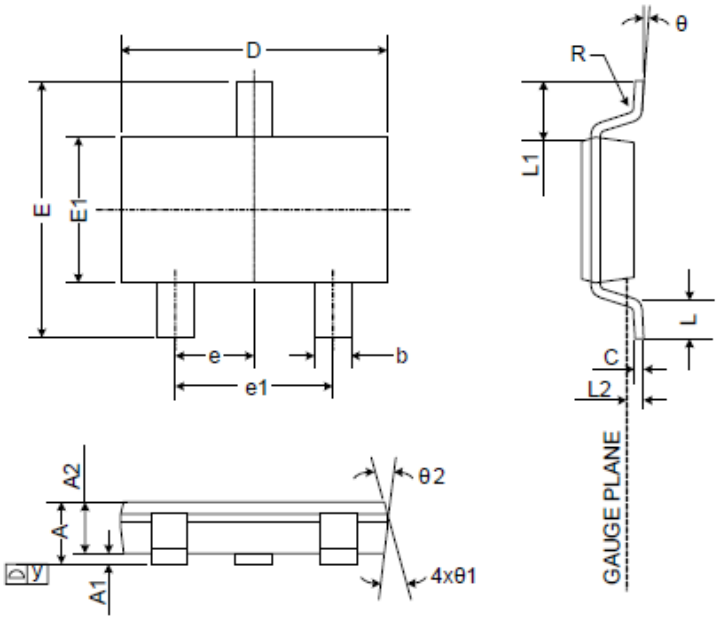
PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



Symbol	Dimensions In Millimeters		
	Min.	Nom.	
A	1.05	-	A
A1	0.05	-	A1
A2	1.00	1.10	A2
b	0.25	-	b
C	0.08	-	C
D	2.70	2.90	D
E	1.50	1.60	E
HE	2.60	2.80	HE
L	0.30	-	L
L1	0.50	0.60	L1
e	1.80	1.90	e
e1	0.85	0.95	e1
θ	0°	5°	θ
θ1	3°	5°	θ1
θ2	6°	8°	θ2

Dimension in TSOT-23 Package (Unit: mm)



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.75	-	0.90
A1	0.00	-	0.10
A2	0.70	0.75	0.80
b	0.35	-	0.51
C	0.10	-	0.25
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.95 BSC.		
e1	1.90 BSC.		
L	0.37	-	-
L1	0.60 REF.		
L2	0.25 BSC.		
y	-	-	0.10
R	0.10	-	-
θ	0°	-	8°
θ1	7° NOM.		
θ2	5° NOM.		

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