DESCRIPTION

The AH8231 is designed to integrate pole independent Hall sensor with output driver together on the same chip. Either North or South magnetic field with sufficient strength will turn the output on (low). In the absence of a magnetic field, output is off (high).

The polarity independence allow AH8231 to easily replace reed switches for superior reliability and case of manufacturing.

To improve stability, it includes a temperature compensated voltage regulator, a differential amplifier, a Hysteresis controller, and an open collector output driver capable of sinking up to 20mA current load. The temperature dependent bias increases the supply voltage of the hall plates and adjusts the switching points to the decreasing induction of magnets at higher temperatures. Subsequently, the output can keep switching on/off on more precise switch point regardless to the ambient temperature. AH8231 are rated for operation over temperature range from -20℃ to +85 ℃ and voltage ranges from 2.4 V to 26 V.

AH8231 is available in a SOT-23 and TO-92S packages.

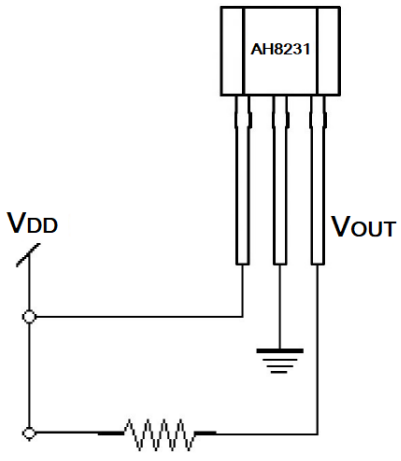
ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	AH8231E3R-X
		AH8231E3VR-X
TO-92S SPQ: 1,000pcs/Bag	ZS	AH8231ZSB-X
		AH8231ZSVB-X
Note	X= Grade A: 100 Gauss, B: 150 Gauss V: Halogen free Package R: Tape & Reel B: Bulk Packing	
AiT provides all RoHS products		

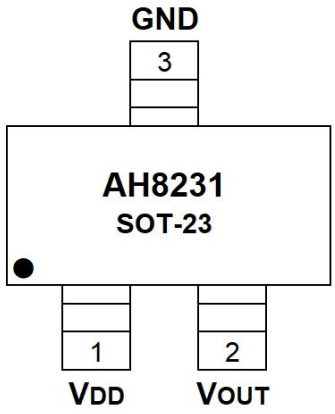
FEATURES

- Operates from 2.4 V to 26 V supply voltage
- Operation with North or South Pole
- On chip Hall Sensor and driver
- On chip temperature compensation circuitry minimizes shifts in on and off points and hysteresis over temperature and supply voltage
- On chip voltage regulator to stabilize On/Off switch point
- Wide range operating temperature -20 ~ +85℃
- On (L) with South or North magnetic field and Off (H) with No magnetic field

TYPICAL APPLICATION

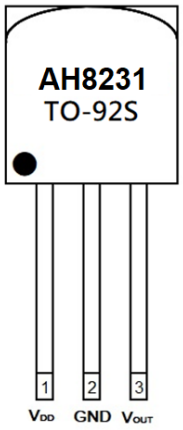


PIN DESCRIPTION



SOT-23, E3

Top View



TO-92S, ZS

Top View

Pin #		Symbol	Function
SOT-23	TO-92S		
1	1	V_{DD}	Positive Power Supply
3	2	GND	Ground
2	3	V_{OUT}	Output Pin

ABSOLUTE MAXIMUM RATINGS

Parameter		Value	Units
Supply Voltage, V_{CC}		26	V
Output Breakdown Voltage, $V_{OUT(Breakdown)}$		26	V
Magnetic Flux Density, B		Unlimited	
Reverse Protection Voltage, V_r		26	V
Output ON Current (continuous), I_C		25	mA
Operating Temperature Range, T_{OPR}		-20 to +85	℃
Storage Temperature Range, T_{STG}		-65 to +150	℃
Power Dissipation, P_D	TO-92S	500	mW
	SOT-23	400	mW

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A=25℃, V_{CC} =2.4V to 26V

Parameter	Symbol	Conditions	Min	Typ.	Max	Units
Supply Voltage	V_{CC}	-	2.4	-	26	V
Output Saturation Voltage	$V_{OUT(sat)}$	V_{CC}=12V, I_C=10mA, B>B_{op}	-	0.2	0.6	V
Output Leakage Current	$I_{Leakage}$	V_{CC}=12V, B<B_{rp}	-	<0.1	10	uA
Supply Current	I_{Supply}	V_{CC}=12V, Output Open	-	3.0	6	mA

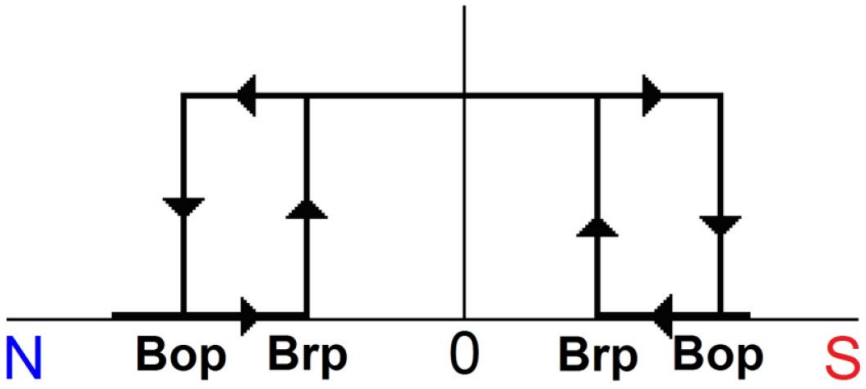
MANGENTIC CHARACTERISTICS

Parameter	Symbol	Grade	Min	Typ.	Max	Unit
Operating Point	B_{OP}	A	±20	-	±100	Gauss
		B	±20	-	±150	
Release Point	B_{RP}	A	±10	-	-	
		B	±10	-	-	
Hysteresis Window	B_{HYS}			10	30	

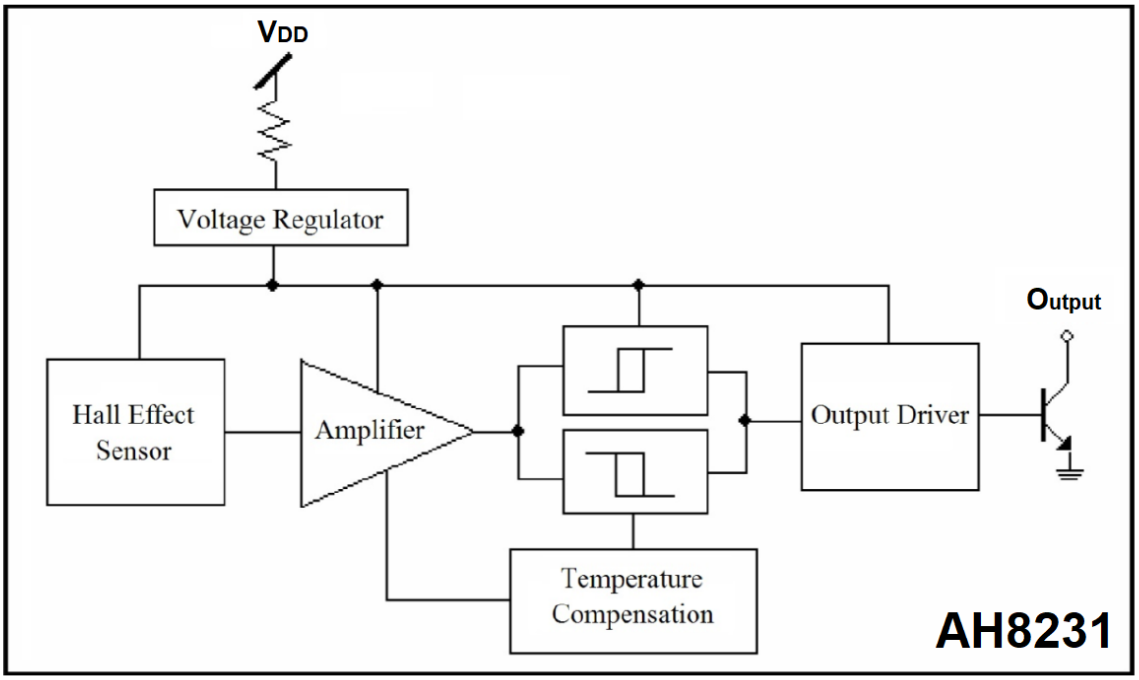
(1) "+" means South magnetic field.
(2) 1 mT = 10 Gauss.

TRANSFER CHARACTERISTICS

Output Vs. Magnetic Field

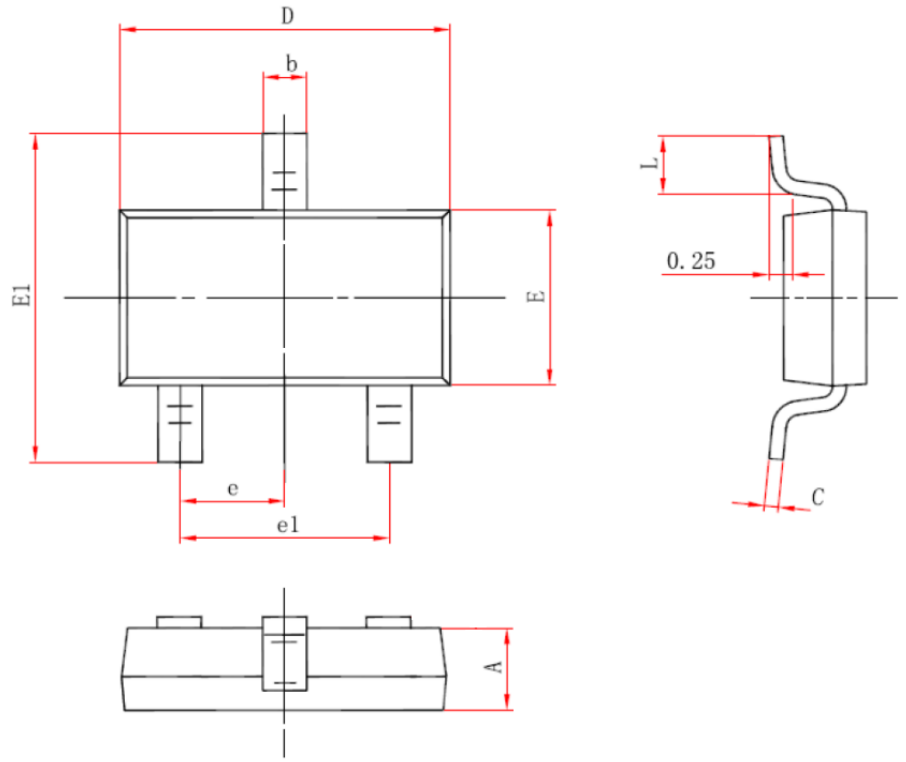


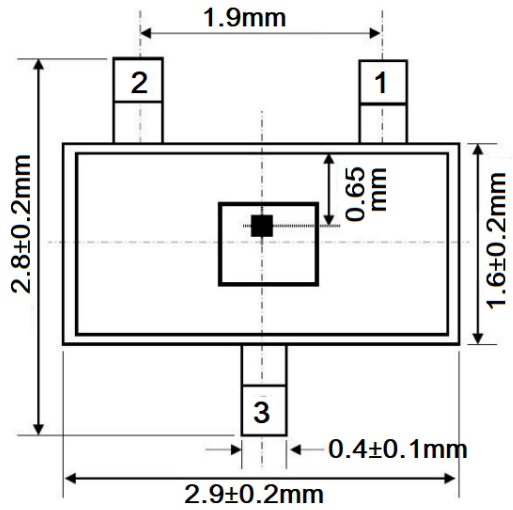
BLOCK DIAGRAM



PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)

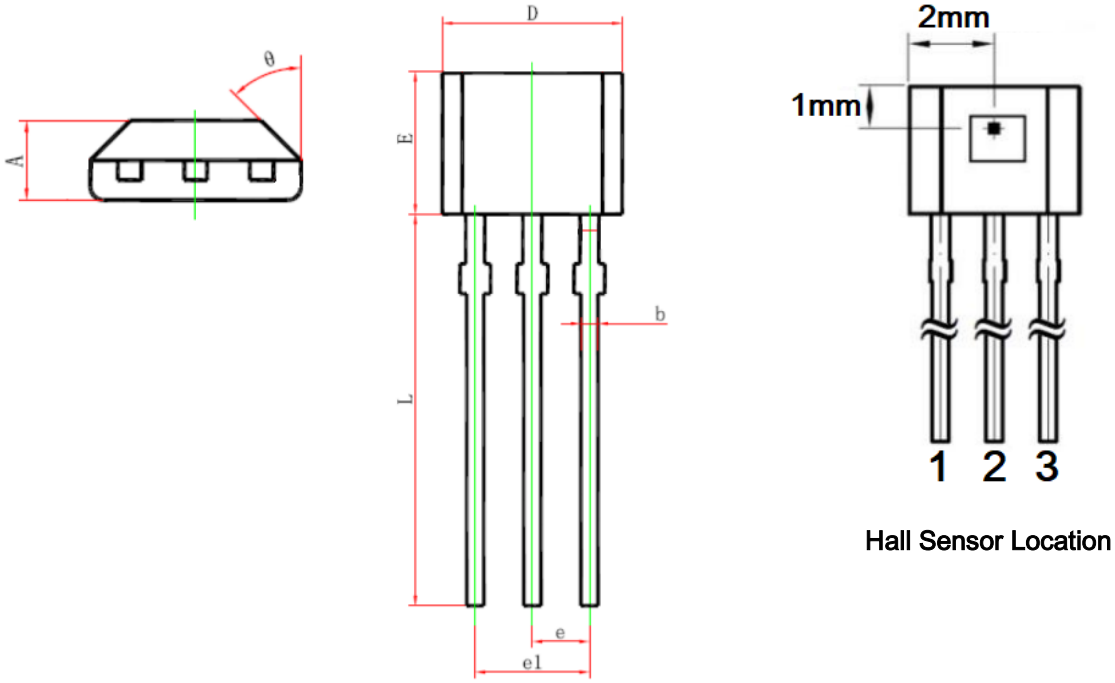




Hall Sensor Location

Symbol	Min.	Max.
A	0.900	1.300
b	0.300	0.500
C	0.050	0.250
D	2.700	3.100
E	1.400	1.800
E1	2.600	3.000
e	0.950	
e1	1.900	
L	0.300	0.600

Dimension in TO-92S (Unit: mm)



Hall Sensor Location

Symbol	Min.	Max.
A	1.420	1.620
b	0.220	0.560
D	3.900	4.100
E	2.900	3.100
e	1.270 TYP	
e1	2.540 TYP	
L	13.500	15.500
θ	45°	

IMPORTANT NOTICE

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