



# New Product Announcement

## AH8500/1 & AH8502/3

### AH8500/1 & AH8502/3 – Micropower Linear Hall Effect Sensor Family with Enable/Control Pin and High Accuracy Options

The AH8501/2/3 is a family of low power/micropower linear hall effect sensors with output voltage ratiometric to supply and magnetic field sense range of +/-400G for battery powered consumer, home appliances and industrial applications.

The high performance AH8501 and AH8503 have trimmed sensitivity accuracy of 3% with a null voltage offset below 1% of supply voltage.

Designed for a wide range of applications, they are optimized for the supply range of 1.6V to 3.6V consuming only 8.9uA in sleep mode (AH8500/AH8501) and 13uA in micropower mode (AH8502/AH8503).

The sensors have a ESD rating of 6kV for robustness.

For system flexibility the enable pin in the AH8500/1 and CNTRL pin on the AH8502/3 allow operating modes and sampling rate to minimize current consumption. In default modes, the AH8500/1 are in sleep mode while AH8502/3 operate in micropower mode.

The family of sensors are available in the small low profile U-DFN2020-6.



#### The Diodes' Advantage

The AH8500/1/2/3/4 provide a high performance and low power/micropower solutions for a wide range of applications requiring magnetic flux measurements.

##### Low Voltage, Low Power Linear Halls – With Micropower Mode

- Supply voltage of 1.6V to 3.6V is ideal for interfacing with ADC
- Typical current consumption of 8.9uA in sleep mode (AH8500/1), 13uA at micropower mode (AH8502/3) and 1.16mA at 7.14kHz sampling rate.
- Supports battery powered consumer/home appliances and industrial applications

##### High Sensitivity with High Accuracy (Trimmed) Options

- High accuracy AH8501/3 have a sensitivity of 2.25mV/G and 3.8mV/G at 1.8V and 3V respectively with accuracy of 3% at 25°C
- AH8500/2: Sensitivity of 2.1mV/G at 1.8V with accuracy of +/-15% at 25°C

##### High Performance, Reliability and Robustness

- Chopper stabilize with internal ADC and DAC architecture with low input referred noise of 0.36G and null voltage offset less than 1% of  $V_{DD}$
- Low temperature coefficient for sensitivity - effect of +/-3% over -40°C to 85°C
- High linearity – Span linearity of 99.9% +B and 100.1% for -B fields at 1.8V
- High ESD of 6kV

##### Operating temperature range -40°C to +85°C

- Suitable for a wide range of consumer and industrial applications.

#### Applications

- Position and proximity sensing
- Magnetic flux density measurements
- Liquid level sensing
- Valve position sensing
- Multi position button detect
- Joysticks
- Smart meters
- Smart phone accessories detect
- Rotary encoder



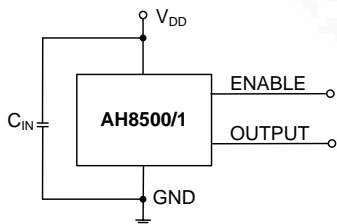
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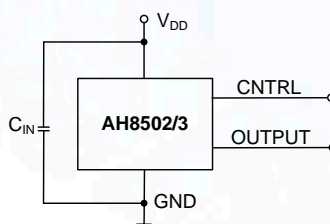
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#### Typical Application Circuit

AH8500/AH8501



AH8502/AH8503



#### Electrical Characteristics

Part Number	Operating Voltage	Typical IC supply current	Typical Sensitivity	Sensitivity Accuracy at 25C	Typical Linear Magnetic Range	Output Voltage Span	V Null (B = 0G)	Operating Temp.	Package
	(V)	(mA)	(mV/G)	(%)	(G)	(V)	(V)	(°C)	
AH8500	1.6 to 3.6	8.9uA in Sleep Mode 12uA at 20Hz 1.0mA in Auto-Run Mode	2.10 @ 1.8V 3.55 @ 3V 3.82 @ 3.3V	±15%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8501	1.6 to 3.6	8.9uA in Sleep Mode 12uA at 20Hz 1.0mA Auto-Run Mode	2.25 @ 1.8V 3.80 @ 3V 4.11 @ 3.3V	±3%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8502	1.6 to 3.6	13uA in Micropower Mode 1.0mA in Turbo Mode	2.10 @ 1.8V 3.55 @ 3V 3.82 @ 3.3V	±15%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8503	1.6 to 3.6	13uA Micropower Mode 1.0mA in Turbo Mode	2.25 @ 1.8V 3.80 @ 3V 4.11 @ 3.3V	±3%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6

#### Ordering Information

Device	Packaging (Note 1 and 2)	Reel size or Bulk	Tape width	Quantity
AH8500-FDC-7	U-DFN2020-6	7"	8mm	3k
AH8501-FDC-7	U-DFN2020-6	7"	8mm	3k
AH8502-FDC-7	U-DFN2020-6	7"	8mm	3k
AH8503-FDC-7	U-DFN2020-6	7"	8mm	3k



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#### Linear Hall Portfolio

Part Number	Operating Voltage	Typical IC Supply Current	Typical Sensitivity	Sensitivity Accuracy at 25C	Typical Linear Magnetic Range	Output Voltage Span	V Null (B = 0G)	Operating Temp.	Package
	(V)	(mA)	(mV/G)	(%)	(G)	(V)	(V)	(°C)	
AH49E	3 to 6.5	3.5	1.6		±1000	0.8 to V <sub>CC</sub> -0.8	V <sub>CC</sub> /2	-40 to 85	TO92S SOT23
AH49F	3 to 8	3	2.1	±19%	±800	0.8 to V <sub>CC</sub> -0.8	V <sub>CC</sub> /2	-40 to 105	TO92S SOT23 U-DFN2020-6
AH49H	3 to 8	2	0.33		±3000	0.8 to V <sub>CC</sub> -0.8	V <sub>CC</sub> /2	-40 to 105	TO92S SOT23
AH8500	1.6 to 3.6	8.9uA in Sleep Mode 12uA at 20Hz 1.0mA in Auto-Run Mode	2.10 @ 1.8V 3.55 @ 3V 3.82 @ 3.3V	±15%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8501	1.6 to 3.6	8.9uA in Sleep Mode 12uA at 20Hz 1.0mA Auto-Run Mode	2.25 @ 1.8V 3.80 @ 3V 4.11 @ 3.3V	±3%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8502	1.6 to 3.6	13uA in Micropower Mode 1.0mA in Turbo Mode	2.10 @ 1.8V 3.55 @ 3V 3.82 @ 3.3	±15%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6
AH8503	1.6 to 3.6	13uA Micropower Mode 1.0mA in Turbo Mode	2.25 @ 1.8V 3.80 @ 3V 4.11 @ 3.3V	±3%	±430	0 to V <sub>DD</sub>	V <sub>DD</sub> /2	-40 to 85	U-DFN2020-6

#### To find out more information:

Linear Hall Portfolio page:

<http://www.diodes.com/products/catalog/browse.php?parent-id=198>

AH8500 Datasheet:

<http://www.diodes.com/datasheets/AH8500.pdf>

AH8501 Datasheet:

<http://www.diodes.com/datasheets/AH8501.pdf>

AH8502 Datasheet:

<http://www.diodes.com/datasheets/AH8502.pdf>

AH8503 Datasheet:

<http://www.diodes.com/datasheets/AH8503.pdf>