



# New Product Announcement

## AH138x AH139x

## Low Voltage, Single/Dual Output, Unipolar Hall-Effect Switch Family for Portable Proximity Detection Applications

The AH138x and AH139x are miniature micropower, unipolar Hall-effect switch ICs with single and dual outputs. They are suited for portable and battery-powered consumer electronics, home appliances, and industrial applications.

Their 1.6V to 5.5V supply voltage supports battery-powered equipment and low-voltage microcontrollers. With the sleep function, the average supply current is only 0.6 $\mu$ A.

For the AH139x, a North pole of sufficient strength turns OUTPUT1 on (pulled low). A South pole of sufficient strength turns on the AH139x's OUTPUT2 and the AH138x's OUTPUT (pulled low).

Their advanced chopper-stabilized design provides superior stability switch operating point across temperature and supply voltage. High ESD withstand capability, up to 8kV of AH138x and 6kV of AH139x, helps to improve system robustness.

To minimize the external component count, the AH138x and AH139x have an internal push-pull output structure, so there is no need for a pull-up resistor. This makes the design simpler and smaller.

The AH139x are available in the small, low-profile X2-DFN1010-4 and X2-DFN1410-4 packages, while the AH138x are also available in additional SOT23 packages.

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### The DIODES Advantage

**The AH138x/AH139x families provide small, simple, and flexible contactless switch solutions for portable applications.**

- **AH139x are Dual Push-Pull Output (Different Outputs for North and South Detection) Unipolar Hall-Effect Switches**  
Require no external pull-up resistor, saving board space for applications that need to differentiate between magnetic poles
- **AH138x are Single-Output Unipolar Hall-Effect Switches**  
Simple, cost-effective, single-pole proximity detection
- **1.6 $\mu$ A Micropower Supply Current at 1.6V to 5.5V Operating Voltage, as well as 1.1 $\mu$ A at 1.85V**  
Designed for portable and battery-powered equipment
- **Chopper Stabilized to Provide Minimal Switch Point Drift and Superior Temperature Stability**  
Tight operating window (less magnetic spread) across -40°C to +85°C
- **High ESD Rating of 8kV (AH1381/2/3) and 6kV (AH1391/2)**  
Improved reliability
- **Very Small, Low-Profile DFN1010 and DFN1410 Packages**  
Simple, cost-effective, space-saving footprint for proximity detection in portable applications

### Applications

- Smart cover or dock detect for cellphones and tablets
- Screen position detection for digital still/video cameras and handheld gaming consoles
- Door, lids, and tray position detection switches for home appliances and industrial applications
- Level, proximity, and position switches

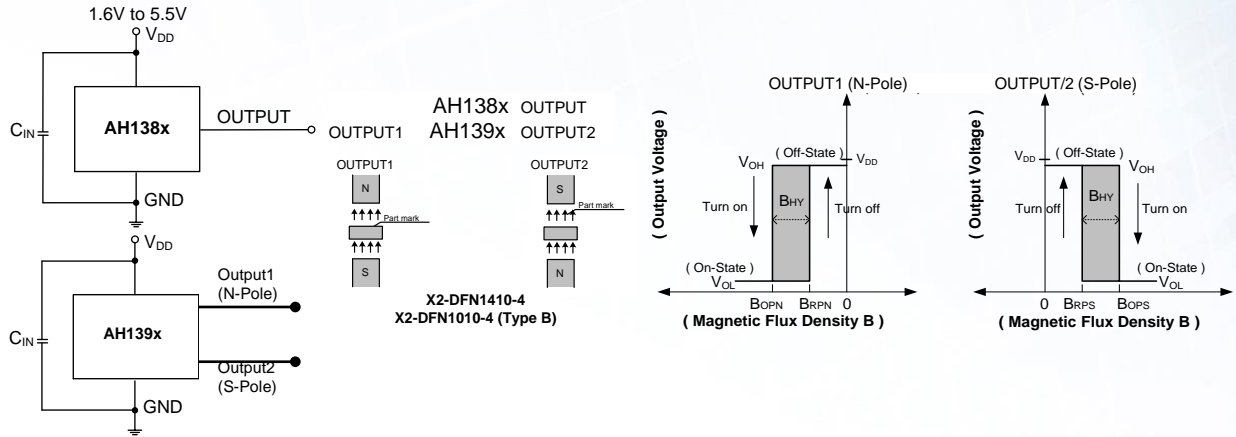


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### Typical Application



Note:  $C_{IN}$  is for power stabilization and to strengthen the noise immunity; the recommended capacitance is 100nF typical and should be placed as close to the supply pin as possible.

### Micropower Single/Dual Output Unipolar Portfolio

Part Number	Output Type	Operating Voltage	Supply Current	ESD HBM	Output	Bop (Gauss)	Brp (Gauss)	Temp Range	Package
		V	$\mu A$	kV		Typ	Typ	$^{\circ}C$	
<a href="#">AH1381</a>	Push-Pull	1.6 to 5.5	1.6	8	Single	18	11	-40 to +85	DFN1010-4, DFN1410-4, SOT23
<a href="#">AH1382</a>	Push-Pull	1.6 to 5.5	1.6	8	Single	30	20	-40 to +85	DFN1010-4, DFN1410-4, SOT23
<a href="#">AH1383</a>	Push-Pull	1.6 to 5.5	1.6	8	Single	45	35	-40 to +85	DFN1010-4, DFN1410-4, SOT23
<a href="#">AH1391</a>	Push-Pull	1.6 to 5.5	1.6	6	Dual	Output1: -25 Output2: 25	-20 20	-40 to +85	DFN1010-4, DFN1410-4
<a href="#">AH1392</a>	Push-Pull	1.6 to 5.5	1.6	6	Dual	Output1: -30 Output2: 30	-20 20	-40 to +85	DFN1010-4, DFN1410-4

### Ordering Information

Orderable Part Number	Compliance (Only Automotive Supports PPAP)	Packaging	Moisture Sensitivity	Packing	
				Quantity	Carrier
<a href="#">AH1381-HK4-7</a>	<a href="#">Standard</a>	X2-DFN1410-4	MSL-1	4,000	7" Tape & Reel
<a href="#">AH1381-FS4-7</a>	<a href="#">Standard</a>	X2-DFN1010-4 (Type B)	MSL-1	5,000	7" Tape & Reel
<a href="#">AH1381-SA-7</a>	<a href="#">Standard</a>	SOT23	MSL-1	3,000	7" Tape & Reel
<a href="#">AH1382-HK4-7</a>	<a href="#">Standard</a>	X2-DFN1410-4	MSL-1	4,000	7" Tape & Reel
<a href="#">AH1382-FS4-7</a>	<a href="#">Standard</a>	X2-DFN1010-4 (Type B)	MSL-1	5,000	7" Tape & Reel
<a href="#">AH1382-SA-7</a>	<a href="#">Standard</a>	SOT23	MSL-1	3,000	7" Tape & Reel
<a href="#">AH1383-HK4-7</a>	<a href="#">Standard</a>	X2-DFN1410-4	MSL-1	4,000	7" Tape & Reel
<a href="#">AH1383-FS4-7</a>	<a href="#">Standard</a>	X2-DFN1010-4 (Type B)	MSL-1	5,000	7" Tape & Reel
<a href="#">AH1383-SA-7</a>	<a href="#">Standard</a>	SOT23	MSL-1	3,000	7" Tape & Reel
<a href="#">AH1391-HK4-7</a>	<a href="#">Standard</a>	X2-DFN1410-4	MSL-1	4,000	7" Tape & Reel
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