Ultra-High Sensitivity, Dual-Output Unipolar Hall Effect Switch Lowers System Cost and Extends Battery Life

The AH1390 is a miniature micropower and ultra-high sensitivity dual-unipolar output Hall effect switch IC. It is ideal for proximity detection in portable and battery-powered consumer equipment as well as home appliances and industrial applications.

The switch’s 1.6V to 3.6V supply voltage supports battery-powered equipment and low-voltage microcontrollers. With sleep function, its average supply current is only 1.3μA at 1.85V.

The dual-unipolar outputs allow the switch to independently detect north and south poles. A north pole of sufficient strength turns Output1 on (pulled low) and a south pole of sufficient strength turns Output2 on (pulled low).

The dual-unipolar output also enables it to independently detect both north and/or south poles, increasing functionality and versatility.

To minimize PCB space, the AH1390 is packaged in the small low-profile X2-DFN1410-4.

**DIODES Advantage**

The AH1390 provides a micropower versatile solution with ultra-high sensitivity for proximity detection in battery-powered home appliances and industrial applications.

- Designed for Battery-Powered Equipment and Ultra-Low Power Consumption Application
  - Only 1.3μA at 1.85V ultra-low supply current extends battery lifetime

- Very Tight Switching Point Tolerance with Independent Detection of North and South Poles
  - Output1 only responds to north pole; Output2 only responds to south pole
  - Increases functionality and versatility within proximity detection applications

- Push-Pull Output Removes the Requirements for an External Pull-up Resistor
  - Minimal external components

- Small Footprint and Low Profile
  - X2-DFN1410-4 only 1mm² on PCB and 0.5mm thick
  - Minimizes PCB layout and meets portable equipment height restrictions

**Applications**

- Level, Proximity and Position Detection
  - Smart Cover or Dock Detection for Cell Phones and Tablets
  - Medical Devices, IoT Systems
  - Contact-less Switches in Industrial Applications
  - E-Locks, Smoke Detectors, Home Appliances
**New Product Announcement**

**AH1390**

**Typical Application Schematic**

![Typical Application Schematic](image)

**Product Portfolio**

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<tr>
<th>Part</th>
<th>Output Type</th>
<th>Operating Voltage</th>
<th>Average Supply Current</th>
<th>Output</th>
<th>Operating Point Bop</th>
<th>Release Point Brp</th>
<th>Temp Range</th>
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<tr>
<td>AH1390</td>
<td>Push-Pull</td>
<td>1.6 to 3.6</td>
<td>1.3</td>
<td>Dual</td>
<td>Output2 (S)</td>
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<td>25</td>
<td>40 to +85</td>
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<td>Output1 (N)</td>
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<td>-17</td>
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For more information: AH1390: [https://www.diodes.com/part/AH1390](https://www.diodes.com/part/AH1390)

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Packaging</th>
<th>Packaging Code</th>
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<td>X2-DFN1410-4</td>
<td>HK4</td>
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