



## AH1889 High Sensitivity Fast Response Dual Unipolar Hall Effect Switches

The AH1889 is a high sensitivity dual output Unipolar Hall-effect switch IC which can detect either a North or South pole independently and switch one of its two outputs.

Designed for low voltage consumer and industrial applications requiring fast response (without sleep mode), the AH1889 has been optimized to operate over the supply range of 1.6V to 3.6V and without sleep function.

Based on chopper stabilized architecture and a ESD rating of 4kV, the AH1889 provides a reliable and robust solution over the whole operating range.

To help achieve the small solution, the AH1889 has internal push-pull output - therefore avoiding external pull-up.

It is available in the small low profile SOT553 packages.



### The Diodes Advantage

The AH1889 provides a small, simple and flexible contactless switch solution for multiple applications.

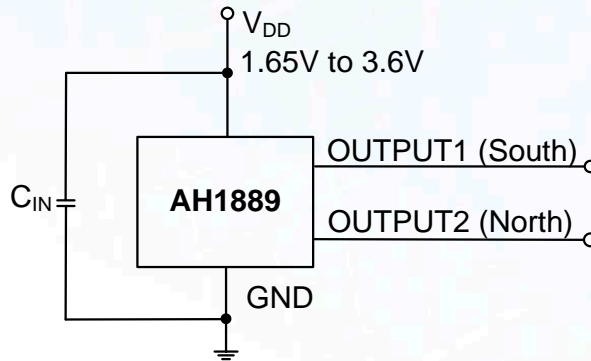
- **High sensitivity dual Unipolar Hall switch with push-pull outputs**
  - Detects either a North or South pole independently
  - Tight tolerance magnetic switch point with a typical operate point of 35G
  - No external pull-up required – Minimal external component
- **Designed for fast response in consumer and industrial equipment**
  - Fast output response without the sleep mode. No delays due to sleep period.
  - Supply voltage designed for low voltage applications (1.6V to 3.6V)
- **High performance and reliability**
  - High sensitivity with tight operating window (less magnetic spread)
  - Chopper stabilized design to provide minimal switch point drift and superior temperature stability over temperature range of -40°C to 85°C
  - High ESD rating (Human Body Model) of 4kV
- **Small solution in low profile packages**
  - A small SOT553 package (1.6mm x 1.6mm x 0.6mm)

### Applications

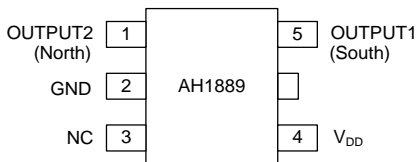
- Proximity and position detect for consumer to industrial applications
- Door, lid, tray positions detect
- Open and close detect
- Magnetic field direction detect
- Contact-less switches for fast response applications



### Typical Applications Circuit



Note:  $C_{IN}$  is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 100nF typical.



Pin Number	Pin Name	Function
1	OUTPUT2	North pole detecting output pin (active low)
2	GND	Ground
3	NC	No connection (Note 5)
4	$V_{DD}$	Power supply voltage
5	OUTPUT1	South pole detecting output pin (active low)

### Electrical Characteristics

Part Number	Output	Type	Operating Voltage (V)	Average Supply Current ( $\mu$ A)	Chopper Stabilized	Typ. Operating Point (Bop) (Gauss)	Typ Release Point (Bp) (Gauss)	Temp Range ( $^{\circ}$ C)	Package Outlines
AH1889-z-7	Dual	Push-Pull	1.6 to 3.6	2.1	Yes	Output1: 35 Output2: -35	Output1: 20 Output2: -20	-40 to 85	SOT553

### Ordering Information

Device	Packaging <sup>(1)</sup>	Part mark ID	Reel size	Tape width	Quantity
AH1889-Z-7	SOT553	KX	7"	8mm	3000

<sup>(1)</sup> "Green" mold compound with Lead Free Finish/RoHS Compliant packages. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. No purposely added lead. Halogen and Antimony free. Please visit our website at [http://www.diodes.com/products/lead\\_free.html](http://www.diodes.com/products/lead_free.html).



# New Product Announcement

## AH1889

### Product Portfolio – Unipolar Hall Effect Switches

Part	Output	Output Type	Operating Voltage	Supply Current	Typical Output Current	Grade/ Output	Operating Point Bop			Release Point Brp			Temp Range (°C)	Package
			(V)	(uA)	(mA)		(Gauss)			(Gauss)				
							Min	Typ	Max	Min	Typ	Max		
AH1887	Dual (North, South)	Push-pull	1.65 to 3.3	7	1	Output1	-	35	50	6	20	-	-40 to 85	SOT553
						Output2	-50	-35	-	-	-20	-6		
AH1889	Dual (North, South)	Push-pull	1.65 to 3.6	5000	1	Output1	-	35	50	6	20	-	-40 to 85	SOT553
						Output2	-50	-35	-	-	-20	-6		
AH1903 <sup>(1)</sup>	Single Prog Uni/Omni	Push-pull	1.6 to 3.6	4.3	1		23	33	47	12	23	35	-40 to 85	DFN1216-4
AH3360 <sup>(1)</sup>	Single	Push-pull	1.6 to 3.6	4.3	1		14	30	46	9	20	39	-40 to 85	DFN1216-4 DFN2015-6
AH182	Single	Open Drain	2.5 to 5.5	5	10		-	40	60	10	30	-	-40 to 85	SC59, SIP-3L
AH183	Single	Open Drain	2.5 to 5.5	280	10		-	40	60	10	30	-	-40 to 85	SC59, SIP-3L
AH922	Single	Open Drain	3.0 to 22.0	3000	25	- B C	80 45 85	110 - -	140 95 135	35 25 65	65 - -	95 75 115	-40 to 125	SOT23, TO-92S
ATS137 <sup>(2)</sup>	Single	Open Collect or	3.5 to 20	5000	25	A B	- -	- -	100 130	10 10	- -	- -	-20 to 85	SC59-3L SIP3-3L
AH337	Single	Open Drain	4.2 to 28	2000	25		90	120	150	30	60	90	-40 to 125	SC59 SIP3

- (1) Advanced information: please refer to Diodes for product updates and availability.  
(2) ATS137: Not recommended for new design

### Further Information:

Unipolar Portfolio page:  
Datasheet: AH1889

<http://www.diodes.com/products/catalog/list.php?parent-id=112>  
<http://www.diodes.com/datasheets/AH1889.pdf>