



New Product Announcement

AH189x, AH1812 and AH3360

AH189x, AH1812 & AH3360: Low Voltage High Performance Micropower Omnipolar/Unipolar Hall Effect Switch Family

The AH189x, AH1812 and AH3360 are low voltage high-performance Micropower Omnipolar and Unipolar Hall-Effect switch Ic's. They are designed for consumer equipment ranging from portable, battery powered to home appliances and industrial applications.

Although designed for variety of applications, they are optimized to operate over the supply range of 1.6V to 3.6V and consume an average power of 7.7uW typical at 1.8V.

Based on chopper stabilized architecture and a ESD rating of 8kV, they provide a reliable and robust solution over the whole operating range.

To help achieve a small solution and to minimize component placement, the AH189x and the AH3360 have internal push-pull output structure.

The AH1812 has open drain output providing system pull-up flexibility.

They are available in the small low profile X1-DFN1216 and standard small leaded SOT553 packages.



The Diodes Advantage

The AH189x, AH1812 and AH3360 provide a small, simple and flexible contactless switch solution for multiple applications.

- **Omnipolars/Unipolar Function and Operating Switch Point Options**
 - Omnipolar : Operates with either a North or South pole (AH1812 & AH189x)
 - Unipolar: Operates with a South pole to the part marking surface (AH3360)
 - Selection of typical operate points: 30G (AH1812, AH1893, AH1897, AH3360), 60G (AH1895) and selectable sensitivity 30G or 40G (AH1894)
 - No external pull-up required (except Ah1812) – Minimal external component
 - System pull-up flexibility with AH1812 open drain output structure
- **Designed for Portable and Battery Powered Equipment**
 - Supply voltage designed for battery applications (1.6V to 3.6V)
 - Micropower operation with an average supply current of 4.3uA at 1.85V
- **High Performance and Reliability**
 - Tight operating window (less magnetic spread)
 - Chopper stabilized design to provide minimal switch point drift and superior temperature stability
 - Operating temperature range -40°C to 85°C
 - High ESD rating of 8kV (AH1893/4/5, AH3360) and 4kV (AH1812 & AH1897)
- **Small Solution in Low Profile or Industry Standard Packages**
 - Small low profile X1-DFN1216 (1.2mmx 1.6mmx0.5mm) and leaded SOT553 (1.6mm x1.6mmx0.6mm) packages

Applications

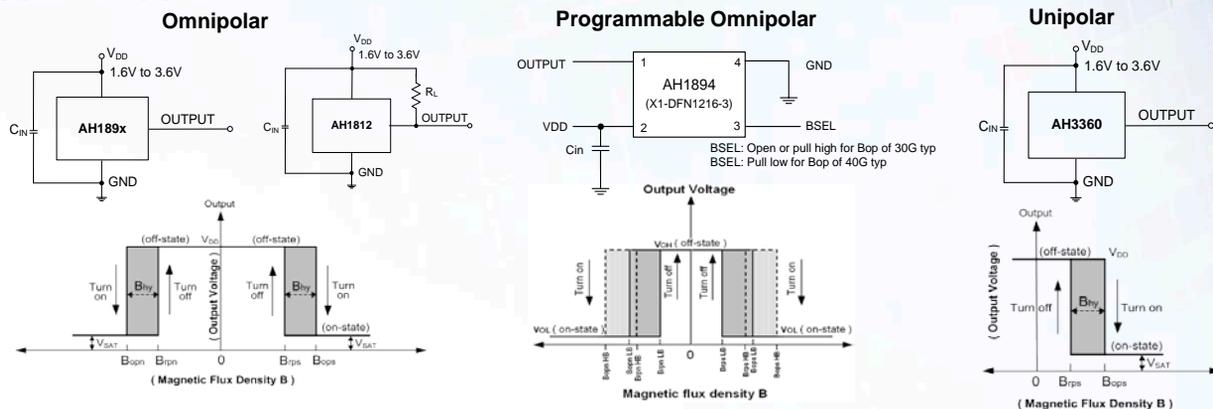
- Tablets, E-readers and ultrabooks,
- Cellphones slide/flip and smart cover
- Handheld game consoles
- Home appliance and industrial contactless switches
- Smart meters / E-meters



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Typical Applications Circuit



Note: Cin is for power stabilization and to strengthen the noise immunity, C = 100nF or higher must be used.

Electrical Characteristics

Part Number	Function	Output Type	Operating Voltage (V)	Average Supply Current (uA)	Chopper Stabilized	ESD	Max. Operating Point (Bop) (Gauss)	Min Release Point (Brp) (Gauss)	Temp Range (°C)	Package Outlines
AH1812-FA-7	Omnipolar	Single Open Drain	1.6 to 3.6	4.3	Yes	8kV	±40	±11	-40 to 85	X1-DFN1216-4
AH1893-FA-7	Omnipolar	Single Push-pull	1.6 to 3.6	4.3	Yes	8kV	±46	±9	-40 to 85	X1-DFN1216-4
AH1893-Z-7		SOT553								
AH1894-FA-7	Programmable Omnipolar	Single Push-pull	1.6 to 3.6	4.3	Yes	8kV ⁽¹⁾	±45	±10	-40 to 85	X1-DFN1216-4
AH1894-Z-7		SOT553								
AH1895-FA-7	Omnipolar	Single Push-pull	1.6 to 3.6	4.3	Yes	8kV	±80	±35	-40 to 85	X1-DFN1216-4
AH1895-Z-7		SOT553								
AH1897-FA-7	Omnipolar	Single	1.6 to 3.6	4.3	Yes	8kV	±40	±10	-40 to 85	X1-DFN1216-4
AH3360-FA-7	Unipolar	Single Push-pull	1.6 to 3.6	4.3	Yes	8kV	±46	±9	-40 to 85	X1-DFN1216-4
AH3360-FT4-7										X2-DFN2015-6
AH3360-Z-7										SOT553

⁽¹⁾ ESD rating of AH1894: V_{DD}, OUTPUT and GND pins: 8kV; Logic BSEL pin: 6kV,

Ordering Information

Device	Packaging ⁽²⁾	Part mark ID	Reel size	Tape width	Quantity
AH1812-FA-7	X1-DFN1216-4	H2	7"	8mm	3000
AH1893-FA-7	X1-DFN1216-4	B3	7"	8mm	3000
AH1893-Z-7	SOT553	B3	7"	8mm	3000
AH1894-FA-7	X1-DFN1216-4	B4	7"	8mm	3000
AH1894-Z-7	SOT553	B4	7"	8mm	3000
AH1895-FA-7	X1-DFN1216-4	B5	7"	8mm	3000
AH1895-Z-7	SOT553	B5	7"	8mm	3000
AH1897-FA-7	X1-DFN1216-4	B5	7"	8mm	3000
AH3360-FA-7	X1-DFN1216-4	KZ	7"	8mm	3000
AH3360-FT4-7	X2-DFN2015-6	NZ	7"	8mm	3000
AH3360-Z-7	SOT553	KZ	7"	8mm	3000

⁽²⁾ "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.



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Product Portfolio – Omnipolar Hall Effect Switches

Part	Output	Output Type	Operating Voltage (V)	Average Supply Current (μ A)	Operating Point Bop			Release Point Brp			Temp Range ($^{\circ}$ C)	Package
					(Gauss)			(Gauss)				
					Min	Typ	Max	Min	Typ	Max		
AH180	Single	Open Drain	2.5 to 5.5	8	-60	40	60	10	0	-10	-40 to +85	DFN2020-3, DFN2020-6, SC59, SIP3
AH180N	Single	Open Drain	2.5 to 5.5	8	-50	35	50	10	25	-25	-40 to +85	SOT553, TSOT23, SC59
AH1801	Single	Open-Drain	2.5 to 5.5	8	-60	40	60	10	30	-30	-40 to +85	DFN2020-3, DFN2020-6, SC59
AH1802	Single	Open Drain	2.5 to 5.5	8	20	28	40	10	20	-20	-40 to +85	DFN2015H4, DFN2020-3, DFN2020-6, SC59
AH1803	Single	Open Drain	2.5 to 5.5	8	20	28	40	10	20	-20	-40 to +85	DFN2020-6, SC59
AH1804	Single	Push-Pull	2.5 to 3.6	12	20	40	60	15	32	-32	-40 to +85	DFN1216, SC59
AH9247	Single	Int. Pull-up	2.5 to 5.5	10	0	30	55	5	20	-20	40 to +85	SOT23, DFN2020-3, SIP3
AH9248	Single	Open Drain	2.5 to 5.5	10	0	30	55	5	20	-20	40 to +85	DFN2020-3, SIP3
AH1806	Single	Open-Drain	2.5 to 3.6	8	15	30	45	10	20	40	-40 to +85	SC59 ⁽¹⁾ , SOT553
AH1808	Single	Open Drain	2.5 to 3.6	8	20	40	60	10	30	50	-40 to +85	SC59 ⁽¹⁾ , SOT553
AH1807	Single	Open Drain	2.5 to 5.5	8	50	80	115	40	65	100	-40 to +125	SC59 ⁽¹⁾ , SOT553, SIP-3
AH1809	Single	Open Drain	2.5 to 5.5	8	90	130	185	80	115	170	-40 to +125	SC59 ⁽¹⁾ , SOT553, SIP-3
AH1883	Single	Push-Pull	1.65 to 3.3	7	-55	37	55	6	29	-29	-40 to +85	SOT553, U-DFN2020-3
AH1884	Dual, Compl	Push-Pull	1.65 to 3.3	7	-55	37	55	15	29	-29	-40 to +85	SOT553
AH1886	Dual, Compl	Push-Pull	1.65 to 3.3	7	18	37	59	6	29	-29	-40 to +85	SOT553
AH1886	Dual, Compl	Push-Pull	1.65 to 3.3	7	18	37	59	15	29	-29	-40 to +85	SOT553
AH1888	Dual, Compl	Push-Pull	1.65 to 3.3	7	-79	61	79	35	53	-53	-40 to +85	SOT553, DFN2020-3
AH1891	Dual, Compl	Push-Pull	1.8 to 3.3	7	20	40	60	12	25	50	-40 to +85	U-WLB0808-4 (CSP)
AH1812	Single	Push-Pull	1.6 to 3.6	4.3	16	30	40	11	20	35	-40 to +85	X1-DFN1216-4
AH1892	Single Prog.	Push-Pull	1.6 to 3.6	4.3	LB: 18	35	55	12	25	45	-40 to +85	SOT553, X1-WLB0707-4
AH1898					LB: -55	-35	-18	-45	-25	-12		
					HB: 43	60	80	35	50	70		X1-WLB0808-4
					HB: -80	-60	-43	-70	-50	-35		
AH1893	Single	Push-Pull	1.6 to 3.6	4.3	14	30	42	9	20	35	-40 to +85	SOT553, X1-DFN1216-4
					-42	-30	-14	-35	-20	-9		
AH1895	Single	Push-Pull	1.6 to 3.6	4.3	40	60	80	35	50	65	-40 to +85	SOT553, X1-DFN1216-4
					-80	-60	-40	-65	-50	-35		
AH1897	Single	Push-Pull	1.6 to 3.6	4.3	16	30	40	11	20	35	-40 to +85	X1-DFN1216-4
					-40	-30	-16	-35	-20	-11		
AH1902 ⁽¹⁾	Single	Push-Pull	1.6 to 3.6	4.3	23	33	47	12	23	35	-40 to +85	SOT553, X1-DFN1216-4
					-47	-33	-23	-35	-23	-12		X2-DFN2015-6
AH1903 ⁽¹⁾	Single, Prog. Uni/Omni	Push-Pull	1.6 to 3.6	4.3	23	33	47	12	23	35	-40 to +85	X1-DFN1216-4
					-47	-33	-23	-35	-23	-12		
					23	33	47	12	23	-12		
AH1894	Single Prog.	Push-Pull	1.6 to 3.6	4.3	LB: 18	35	55	12	25	45	-40 to +85	SOT553, X1-DFN1216-4
					LB: -55	-35	-18	-45	-25	-12		
					HB: 43	60	80	35	50	70		
					HB: -80	-60	-43	-70	-50	-35		

(1) Advanced information: please refer to Diodes for product updates and availability.

Prog: Programmable
Uni/Omni: Unipolar/Omnipolar



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Product Portfolio – Unipolar Hall Effect Switches

Part	Output	Output Type	Operating Voltage (V)	Average Supply Current (uA)	Typical Output Current (mA)	Grade/ Output	Operating Point Bop (Gauss)			Release Point Brp (Gauss)			Temp Range (°C)	Package
							Min	Typ	Max	Min	Typ	Max		
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
AH337	Single	Open Drain	4.2 to 28	2000	25		90	120	150	30	60	90	-40 to 125	SC59 SIP3
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 ⁽¹⁾	Single	Open Collector	3.5 to 20	5000	25	A B	- -	- -	100 130	10 10	- -	- -	-20 to 85	SC59-3L SIP3-3L
AH1887	Dual (North, South)	Push-pull	1.65 to 3.3	7	1	Output1 Output2	- -50	35 -35	50 -	6 -	20 -20	- -6	-40 to 85	SOT553
AH1889	Dual (North, South)	Push-pull	1.65 to 3.6	5000	1	Output1 Output2	- -50	35 -35	50 -	6 -	20 -20	- -6	-40 to 85	SOT553
AH1903 ⁽²⁾	Single Prog Uni/Omni	Push-pull	1.6 to 3.6	4.3	1		23	33	47	12	23	35	-40 to 85	X1-DFN1216-4 X2-DFN2015-6
AH3360	Single	Push-pull	1.6 to 3.6	4.3	1		14	30	46	9	20	39	-40 to 85	X1-DFN1216-4 X2-DFN2015-6 SOT553

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

Prog: Programmable
 Uni/Omni: Unipolar/Omnipolar

To find out more information:

Omnipolar Portfolio page: <http://www.diodes.com/products/catalog/list.php?parent-id=113>
 Unipolar Portfolio page: <http://www.diodes.com/products/catalog/list.php?parent-id=112>