



New Product Announcement

AH1902 – Package Addition

AH1902: Low Voltage High Performance Micropower Omnipolar Hall Effect Switch Family

The AH1902 is a low voltage high performance micropower Omnipolar function Hall-Effect switch designed for consumer equipment ranging from portable and battery powered to home appliances and industrial applications.

The AH1902 extends the solution options and flexibility provided by AH189x, AH1812, AH1903 and AH3360 family of Omnipolar and Unipolar devices.

Although designed for variety of applications, it is optimized to operate over the supply range of 1.6V to 3.6V and consumes an average current of 4.3uA typical at 1.8V.

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

To help achieve the small solution and to minimize component placement, the device has an internal push-pull output structure and is available in a small low profile X1-DFN1216, ultra thin X2-DFN2015-6 and leaded SOT553 packages.



The Diodes Advantage

The AH1902 provides a small, simple and flexible contactless switch solution for multiple applications.

- **Omnipolars/Unipolar function and operating switch point options**
 - Omnipolar AH1902 : Operates with either a North or South pole
 - Internal push-pull output structure - No external pull-up required– Minimal external component
- **Designed for portable battery powered equipment, home appliances and industrial applications**
 - Supply voltage optimized to 1.6V to 3.6V to support battery applications
 - 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 for VDD, GND and Output pins
- **Small solution in low profile or industry standard packages**
 - Small low profile X1-DFN1216 (1.2mm x 1.6mm x 0.5mm))
 - Ultra thin X2-DFN2015-6 (2mm x 1.5mm x 0.39mm) max height 0.4mm
 - Small low profile leaded SOT553 (1.6mm x1.6mm x1.6mm)

Applications

- Tablets, E-readers and ultrabooks,
- Cellphones slide/flip and smart cover
- Handheld game consoles
- Home appliances and industrial contactless switches
- Safety and security

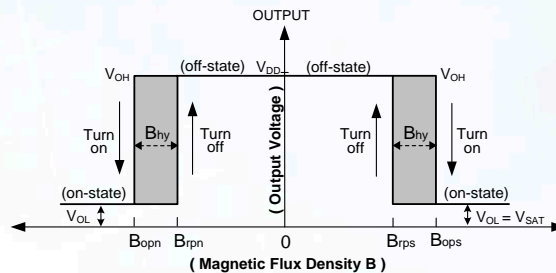
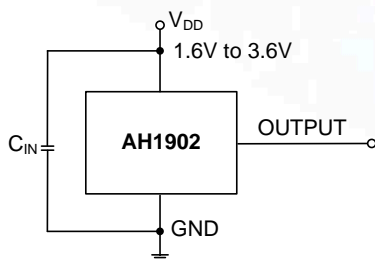


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Typical Applications Circuit

AH1902 Omnipolar



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
AH1902-FA-7	Omnipolar	Single Push-pull	1.6 to 3.6	4.3	Yes	8kV	±47	±13	-40 to 85	X1-DFN1216-4
AH1902-FT4-7										X2-DFN2015-6
AH1902-Z-7										SOT553

Ordering Information

Device	Packaging ⁽¹⁾	Part mark ID	Reel size	Tape width	Quantity
AH1902-FA-7	X1-DFN1216-4	F2	7"	8mm	3000
AH1902-FT4-7	X1-DFN1216-4	D2	7"	8mm	3000
AH1902-FT4-7	SOT553	D2	7"	8mm	3000

⁽¹⁾ "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	Average Supply Current	Operating Point Bop			Release Point Brp			Temp Range	Package
			(V)	(µA)	(Gauss)			(Gauss)			(°C)	
					Min	Typ	Max	Min	Typ	Max		
AH180	Single	Open Drain	2.5 to 5.5	8	-60	40 -40	60 -	10 -	0 -30	-10	-40 to +85	DFN2020-3, DFN2020-6, SC59, SIP3
AH180N	Single	Open Drain	2.5 to 5.5	8	-50	35 -35	50 -	10 -	25 -25	-10	-40 to +85	SOT553, TSOT23, SC59
AH1801	Single	Open-Drain	2.5 to 5.5	8	-60	40 -40	60 -	10 -	30 -30	-10	-40 to +85	DFN2020-3, DFN2020-6, SC59
AH1802	Single	Open Drain	2.5 to 5.5	8	20 -40	28 -28	40 -20	10 -	20 -20	-10	-40 to +85	DFN2015H4, DFN2020-3, DFN2020-6, SC59
AH1803	Single	Open Drain	2.5 to 5.5	8	20 -40	28 -28	40 -20	10 -	20 -20	-10	-40 to +85	DFN2020-6, SC59
AH1804	Single	Push-Pull	2.5 to 3.6	12	20 -60	40 -40	60 -20	15 -	32 -32	-15	-40 to +85	DFN1216, SC59
AH9247	Single	Int. Pull-up	2.5 to 5.5	10	0 -55	30 -30	55 0	5 -	20 -20	-5	40 to +85	SOT23, DFN2020-3, SIP3
AH9248	Single	Open Drain	2.5 to 5.5	10	0 -55	30 -30	55 0	5 -	20 -20	-5	40 to +85	DFN2020-3, SIP3
AH1806	Single	Open-Drain	2.5 to 3.6	8	15 -45	30 -30	45 -15	10 -40	20 -20	40 -10	-40 to +85	SC59 SOT553
AH1808	Single	Open Drain	2.5 to 3.6	8	20 -60	40 -40	60 -20	10 -50	30 -30	50 -10	-40 to +85	SC59, SOT553
AH1807	Single	Open Drain	2.5 to 5.5	8	50 -115	80 -80	115 -50	40 -100	65 -65	100 -45	-40 to +125	SC59, SOT553, SIP-3
AH1809	Single	Open Drain	2.5 to 5.5	8	90 -185	130 -130	185 -90	80 -170	115 -115	170 -80	-40 to +125	SC59, SOT553, SIP-3
AH1883	Single	Push-Pull	1.65 to 3.3	7	-55	37 -37	55 -	6 -	29 -29	-6	-40 to +85	SOT553, U-DFN2020-3
AH1884	Dual, Compl	Push-Pull	1.65 to 3.3	7	-55	37 -37	55 -	15 -	29 -29	-15	-40 to +85	SOT553
AH1886	Dual, Compl	Push-Pull	1.65 to 3.3	7	18 -55	37 -37	59 -18	6 -	29 -29	-6	-40 to +85	SOT553
AH1886	Dual, Compl	Push-Pull	1.65 to 3.3	7	18 -55	37 -37	59 -18	15 -	29 -29	-15	-40 to +85	SOT553
AH1888	Dual, Compl	Push-Pull	1.65 to 3.3	7	-79	61 -61	79 -	35 -	53 -53	-35	-40 to +85	SOT553, DFN2020-3
AH1891	Dual, Compl	Push-Pull	1.8 to 3.3	7	20 -60	40 -40	60 -20	12 -50	25 -25	50 -12	-40 to +85	U-WLB0808-4 (CSP)
AH1812	Single	Push-Pull	1.6 to 3.6	4.3	16 -40	30 -30	40 -16	11 -35	20 -20	35 -11	-40 to +85	X1-DFN1216-4
AH1892	Single Prog.	Push-Pull	1.6 to 3.6	4.3	LB: 18 LB: -55	35 -35	55 -18	12 -45	25 -25	45 -12	-40 to +85	SOT553, X1-WLB0707-4
AH1898					HB: 43 HB: -80	60 -60	80 -43	35 -70	50 -50	70 -35		X1-WLB0808-4
AH1893	Single	Push-Pull	1.6 to 3.6	4.3	14 -42	30 -30	42 -14	9 -35	20 -20	35 -9	-40 to +85	SOT553, X1-DFN1216-4
AH1895	Single	Push-Pull	1.6 to 3.6	4.3	40 -80	60 -60	80 -40	35 -65	50 -50	65 -35	-40 to +85	SOT553, X1-DFN1216-4
AH1897	Single	Push-Pull	1.6 to 3.6	4.3	16 -40	30 -30	40 -16	11 -35	20 -20	35 -11	-40 to +85	X1-DFN1216-4
AH1902	Single	Push-Pull	1.6 to 3.6	4.3	23 -48	33 -33	48 -23	9 -35	23 -23	35 -9	-40 to +85	SOT553 X1-DFN1216-4 X2-DFN2015-6
AH1903	Single, Prog. Uni/Omni	Push-Pull	1.6 to 3.6	4.3	23 -47	33 -33	48 -23	12 -35	23 -23	35 -12	-40 to +85	X1-DFN1216-4
AH1894	Single Prog.	Push-Pull	1.6 to 3.6	4.3	LB: 18 HB: -55	35 -35	55 -18	12 -45	25 -25	45 -12	-40 to +85	SOT553, X1-DFN1216-4

Prog: Programmable
Uni/Omni: Unipolar/Omnipolar



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Product Portfolio – Unipolar Hall Effect Switches

Part	Output	Output Type	Operating Voltage	Average Supply Current	Typical Output Current	Grade/ Output	Operating Point Bop			Release Point Brp			Temp Range	Package
							(Gauss)			(Gauss)				
			(V)	(uA)	(mA)			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	-	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	Single, Prog. Uni/ Omni	Push-pull	1.6 to 3.6	4.3	1	Unipolar Mode	23	33	47	12	23	35	-40 to 85	X1-DFN1216-4
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

Prog: Programmable
Uni/Omni: Unipolar/Omnipolar

To find out more information:

Omnipolar Portfolio Page:

http://www.diodes.com/catalog/omnipolar_hall_effect_switches_113

Unipolar Portfolio page:

http://www.diodes.com/catalog/unipolar_hall_effect_switches_112

AH1902 Datasheet:

<http://www.diodes.com/datasheets/AH1902.pdf>