



UH8106

Advance

CMOS IC

CMOS, OMNI-POLAR, LOW POWER HALL SENSOR

DESCRIPTION

UH8106 is a low-power integrated Hall switch designed to sense the applied magnetic flux density and give a digital output, which indicates the present condition of the magnitude sensed.

It mainly designed for battery-powered system and hand-held equipment, such as cellular flip-phones and PDA's, in which power consumption is one major concern.

There are three output types (Internal 100K pull-up resistor, NMOS open-drain and CMOS push-pull) and two ranks of magnetic characters for user to choose.

FEATURES

- *Omni-polar magnetic type
- *2.2V to 5.5V battery operation
- *Offset Canceling Technology
- *Independent of North or South Pole Magnet,
- *Superior temperature stability
- *Extremely Low Switch-Point Drift

APPLICATIONS

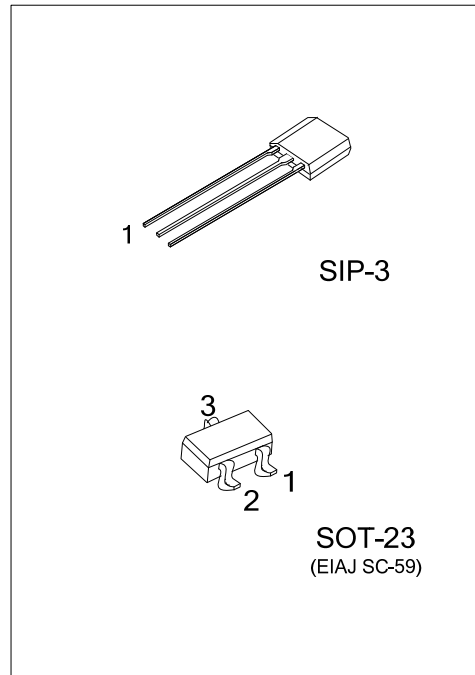
- *Micro Switch
- *Handheld Wireless Application Wake Up Switch
- *Clamp Shell Type Application Switch
- *Magnet Switch in Low Duty Cycle Applications

ORDERING INFORMATION

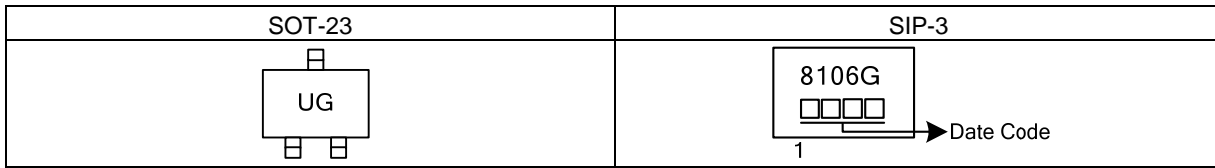
Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UH8106XXG-AE3-R	SOT-23	O	I	G	Tape Reel
UH8106XXG-G03-B	SIP-3	I	G	O	Tape Box
UH8106XXG-G03-K	SIP-3	I	G	O	Bulk

Note: Pin Assignment: I: V_{CC} O: V_{OUT} G: GND

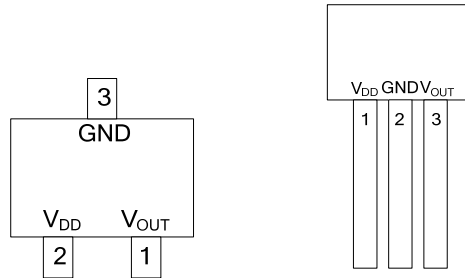
UH8106XXG-AE3-R	(1) Packing Type	(1) R: Tape Reel, B: Tape Box, K: Bulk
	(2) Package Type	(2) AE3:SOT-23, G03: SIP-3
	(3) Green Package	(3) L: Lead Free, G: Halogen Free and Lead Free
	(4) Magnetic Character	(4) 1: 1.3~2.3 mT, 2: 1.0~4.0mT
	(5) Output Type	(5) I: Internal, N: NMOS, C: CMOS



MARKING



PIN CONFIGURATIONS



PIN DESCRIPTION

PIN NAME	TYPE	DESCRIPTION
V _{OUT}	O	Output
V _{DD}	P/I	Power Supply Input
GND	P	Ground

Note: P: power supply, I: input, O: output

PRODUCT LIST

Internal pull-up resistor output

PRODUCT NAME	OUTPUT	V _{OUT} (When B > B _{OP})	B _{OP}
UH8106I1	Internal pull-up resistor	LOW	1.3~2.3 mT
UH8106I2	Internal pull-up resistor	LOW	1.0~4.0 mT

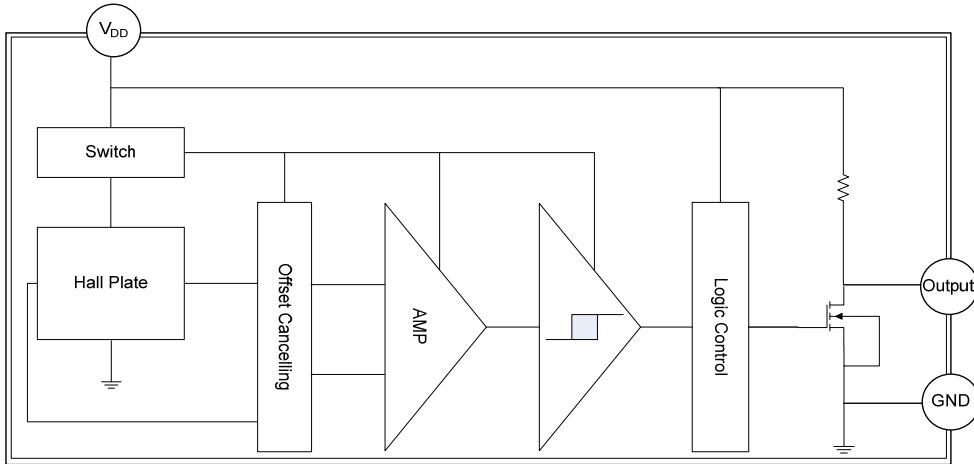
NMOS open-drain output

PRODUCT NAME	OUTPUT	V _{OUT} (When B > B _{OP})	B _{OP}
UH8106N1	NMOS open-drain	LOW	1.3~2.3 mT
UH8106N2	NMOS open-drain	LOW	1.0~4.0 mT

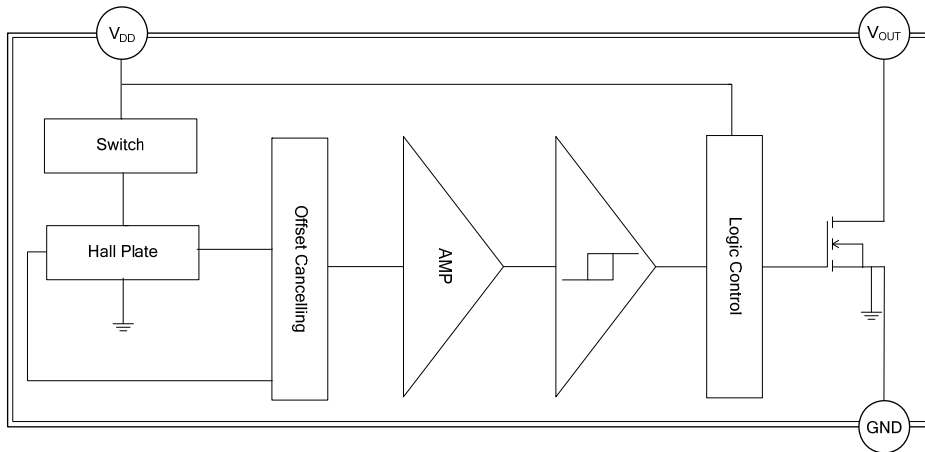
CMOS push-pull output

PRODUCT NAME	OUTPUT	V _{OUT} (When B > B _{OP})	B _{OP}
UH8106C1	CMOS push-pull	LOW	1.3~2.3 mT
UH8106C2	CMOS push-pull	LOW	1.0~4.0 mT

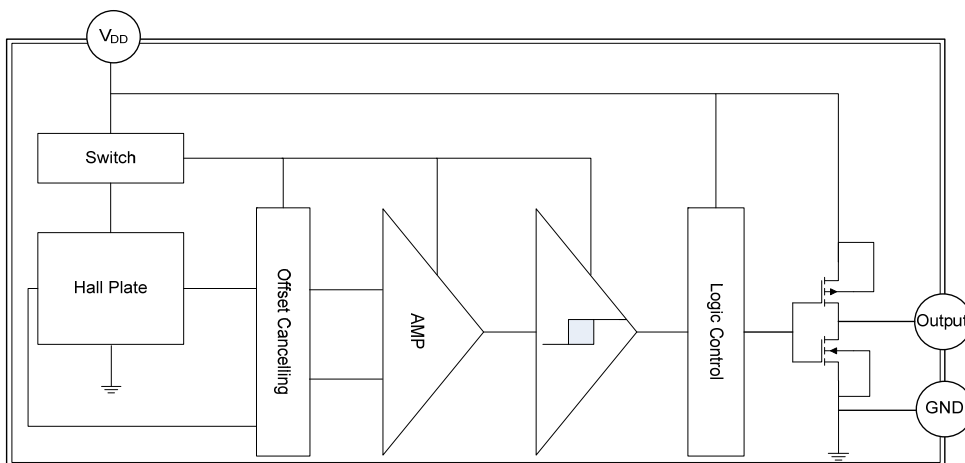
■ BLOCK DIAGRAM



Internal pull-up resistor output



NMOS open-drain output



CMOS push-pull output

■ ABSOLUTE MAXIMUM RATING ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Magnetic Flux Density	B	Unlimited	mT
Supply Voltage	V_{DD}	7	V
Output Current	I_O	1	mA
Power Dissipation	SIP-3	P_D	400
	SOT-23		200
Maximum Junction Temp	T_J	150	$^\circ\text{C}$
Operation Temperature	T_{OPR}	-40 ~ +85	$^\circ\text{C}$
Storage Temperature	T_{STG}	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	Conditions	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}	Operating	2.2		5.5	V
Ambient Temperature	T_A		-40		85	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS

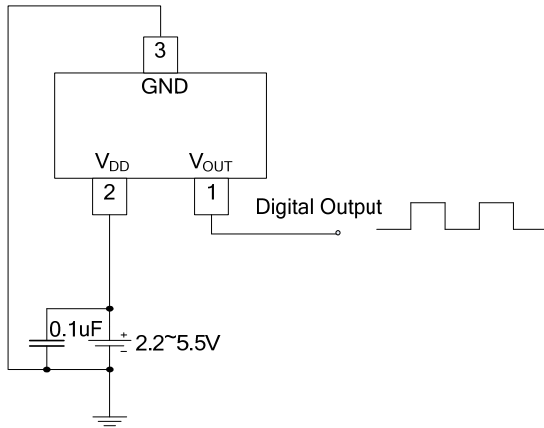
$V_{DD}=2.2\text{V}$ to 5.5V , $T_A=25^\circ\text{C}$, unless otherwise specified

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	V_{DD}	Operating	2.2		5.5	V
Supply Current	I_{DD}	Average ($ B < B_{RP} $, $V_{DD}=3.6\text{V}$)		4	6	μA
		Awake ($ B < B_{RP} $, $V_{DD}=3.6\text{V}$)		2	3	mA
		Sleep ($ B < B_{RP} $, $V_{DD}=3.6\text{V}$)		2	3	μA
Output Leakage Current	I_{OFF}	$V_{OUT} = 5\text{V}$, only for UH8106N			0.1	μA
Output Low Voltage	V_{OL}	$I_{SINK} = 1\text{mA}$, $ B > B_{OP} $		0.02	0.4	V
Output High Voltage	V_{OH}	$I_{SOURCE} = 1\text{mA}$, $ B < B_{RP} $, only for UH8106C	$V_{DD}-0.4$			V
Wake up Time	t_{AWAKE}			50		μs
Period	t_{PERIOD}			35		mS
Duty cycle	d.c.			0.17		%

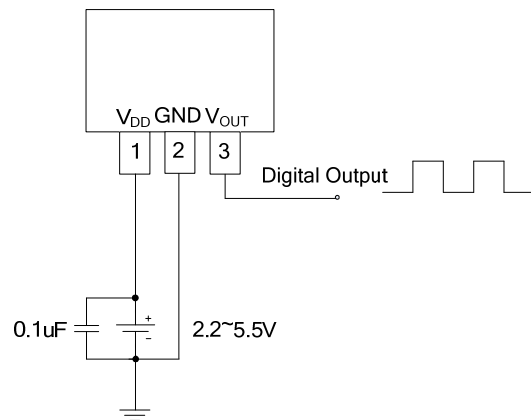
■ MAGNETIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, $V_{DD}=2.2\text{V}$ to 5.5V , $1\text{mT}=10\text{Gauss}$)

RANK	PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
1	Operation Points	$ B_{OP} $	$ B > B_{OP} $	13	18	23	Gauss
	Release Points	$ B_{RP} $	$ B < B_{RP} $	5	10	15	Gauss
	Hysteresis	$ B_{HYS} $	$ B_{OPX}-B_{RPX} $		8		Gauss
2	Operation Points	$ B_{OP} $	$ B > B_{OP} $	10	18	40	Gauss
	Release Points	$ B_{RP} $	$ B < B_{RP} $	5	10	35	Gauss
	Hysteresis	$ B_{HYS} $	$ B_{OPX}-B_{RPX} $		8		Gauss

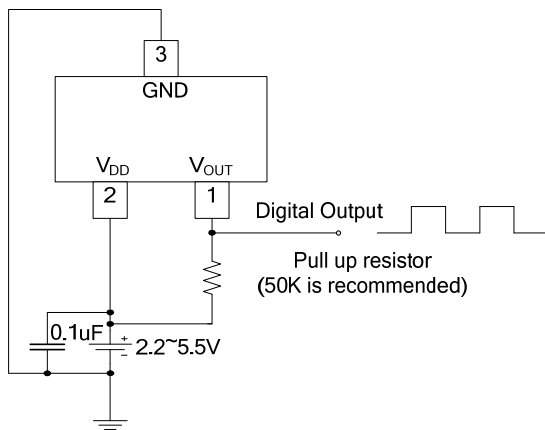
■ TYPICAL CIRCUIT



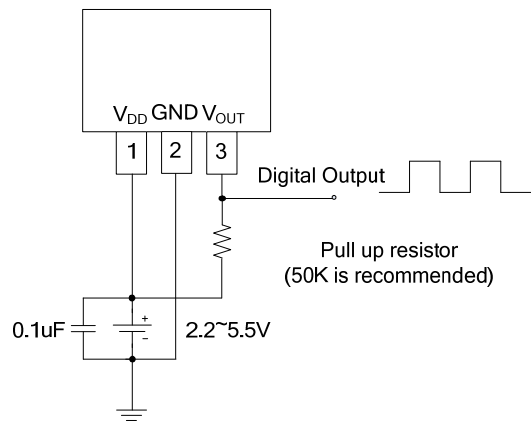
SOT-23 (Internal pull-up resistor output)



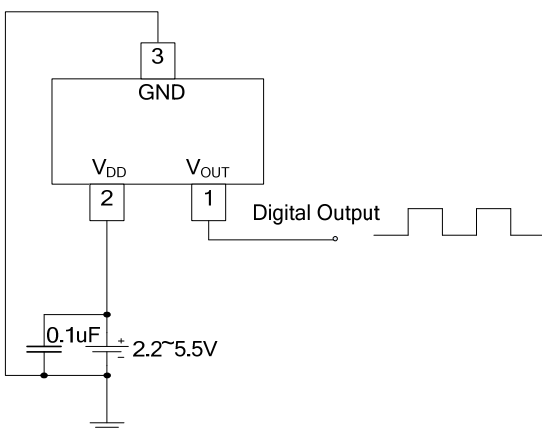
SIP-3 (Internal pull-up resistor output)



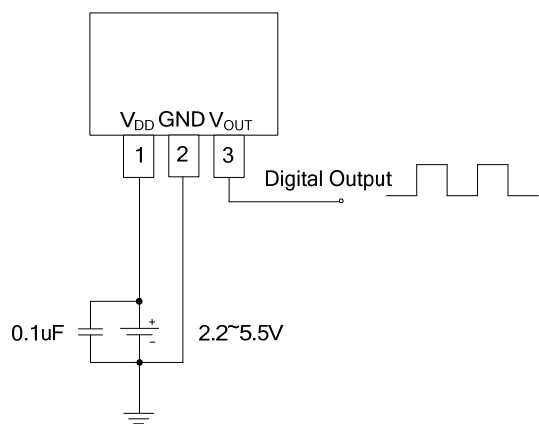
SOT-23 (NMOS open-drain output)



SIP-3 (NMOS open-drain output)

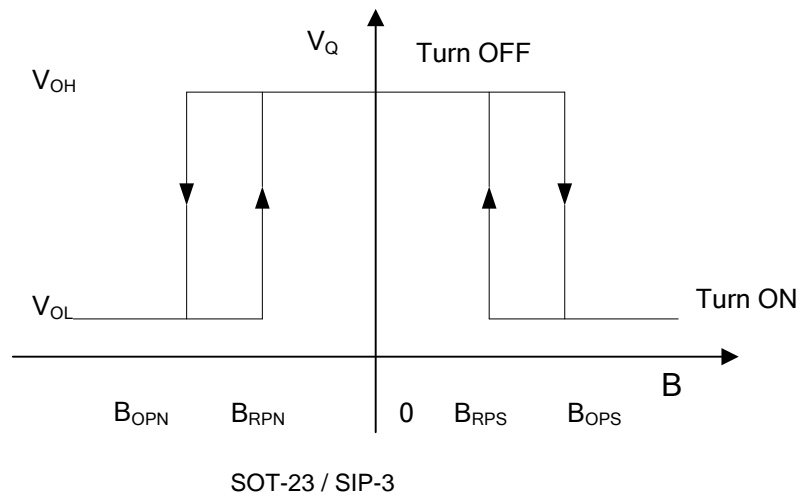


SOT-23 (CMOS push-pull output)



SIP-3 (CMOS push-pull output)

■ MAGNETIC FLUX



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.