



## 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

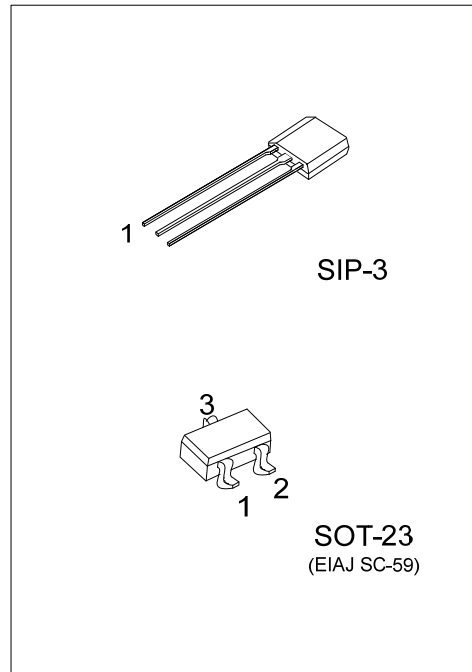
- \*Micro Switch
- \*Handheld Wireless Application Wake Up Switch
- \*Clamp Shell Type Application Switch
- \*Magnet Switch in Low Duty Cycle Applications

#### ORDERING INFORMATION

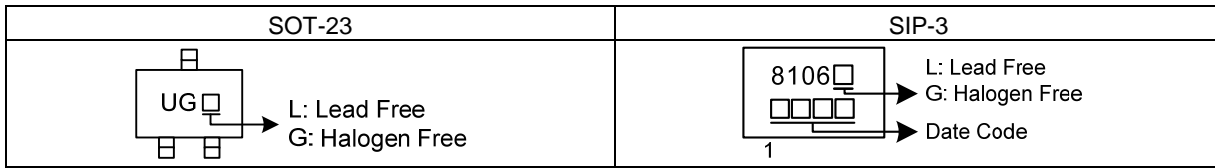
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UH8106XXL-AE3-R	UH8106XXG-AE3-R	SOT-23	I	O	G	Tape Reel
UH8106XXL-G03-B	UH8106XXG-G03-B	SIP-3	G	I	O	Tape Box
UH8106XXL-G03-K	UH8106XXG-G03-K	SIP-3	G	I	O	Bulk

Note: Pin Assignment: I: V<sub>CC</sub> O: V<sub>OUT</sub> G: GND

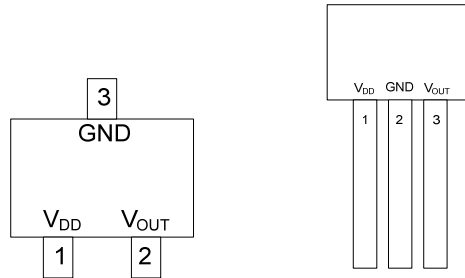
UH8106XXG-AE3-R	(1) Packing Type	(1) R: Tape Reel, B: Tape Box, K: Bulk
	(2) Package Type	(2) AE3:SOT-23, G03: SIP-3
	(3) Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free
	(4) Magnetic Character	(4) 1: 1.3~2.3 mT, 2: 1.0~4.0mT
	(5) Output Type	(5) I: Internal, N: NMOS, C: CMOS



### MARKING



### PIN CONFIGURATIONS



### PIN DESCRIPTION

PIN NAME	TYPE	DESCRIPTION
V <sub>DD</sub>	P/I	Power Supply Input
V <sub>OUT</sub>	O	Output
GND	P	Ground

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

### PRODUCT LIST

Internal pull-up resistor output

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

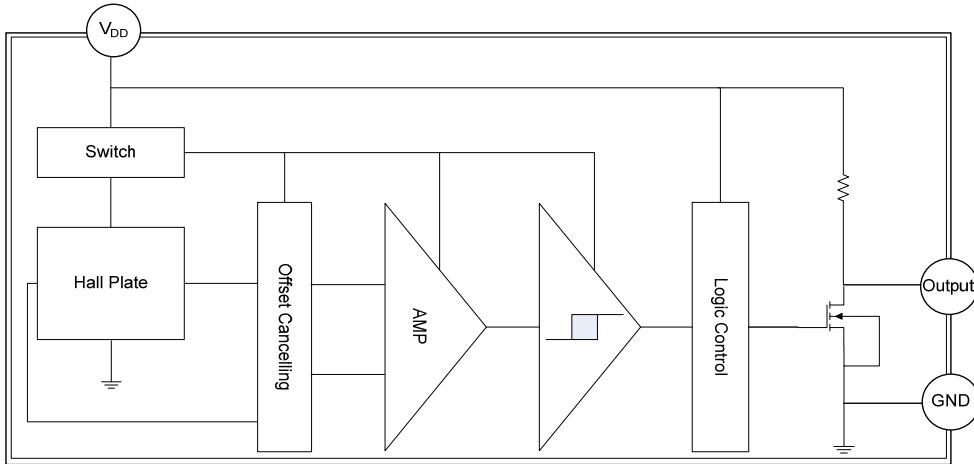
NMOS open-drain output

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

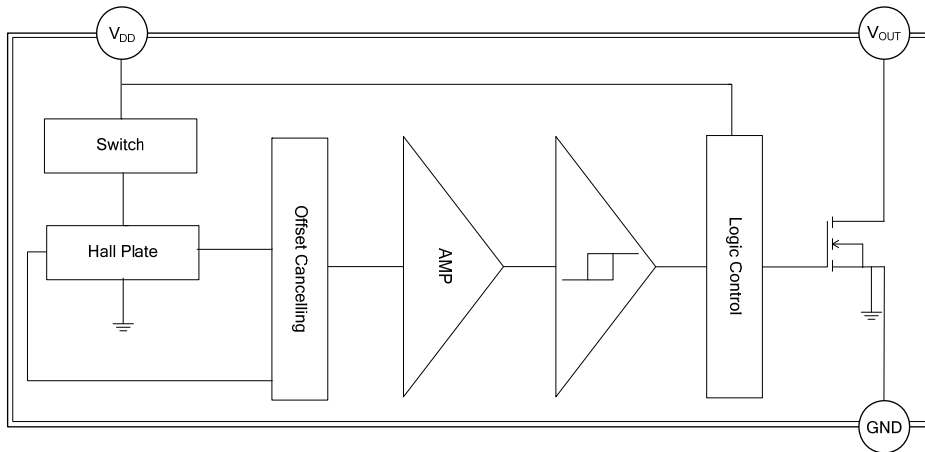
CMOS push-pull output

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

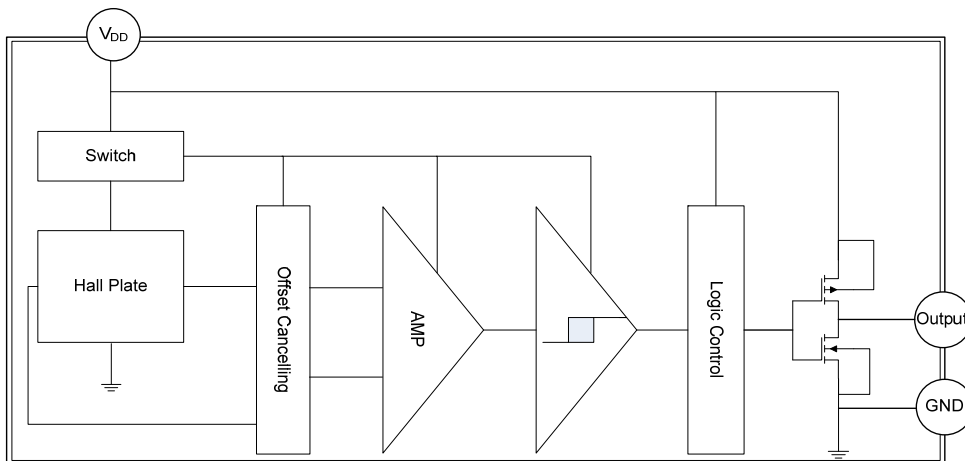
■ BLOCK DIAGRAM



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

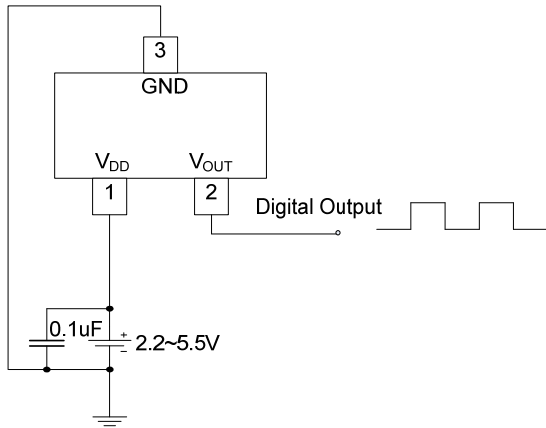
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	$V_{DD}$	Operating	2.2		5.5	V
Supply Current	$I_{DD}$	Average ( $ B  <  B_{rp} $ , $V_{DD}=3.6\text{V}$ )		4	6	$\mu\text{A}$
		Awake ( $ B  <  B_{rp} $ , $V_{DD}=3.6\text{V}$ )		2	3	mA
		Sleep ( $ B  <  B_{rp} $ , $V_{DD}=3.6\text{V}$ )		2	3	$\mu\text{A}$
Output Leakage Current	$I_{OFF}$	$V_{OUT} = 5\text{V}$ , only for UH8106N			0.1	$\mu\text{A}$
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		$\mu\text{s}$
Period	$t_{PERIOD}$			35		mS
Duty cycle	d.c.			0.17		%

■ MAGNETIC CHARACTERISTICS

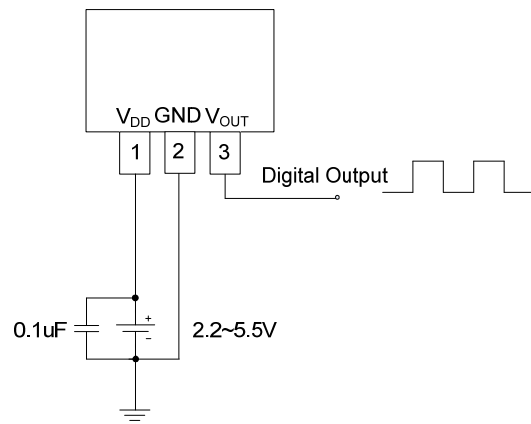
( $V_{DD}=2.2\text{V}$  to  $5.5\text{V}$ ,  $1\text{mT}=10\text{Gauss}$ ,  $T_A=25^\circ\text{C}$ , unless otherwise specified)

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

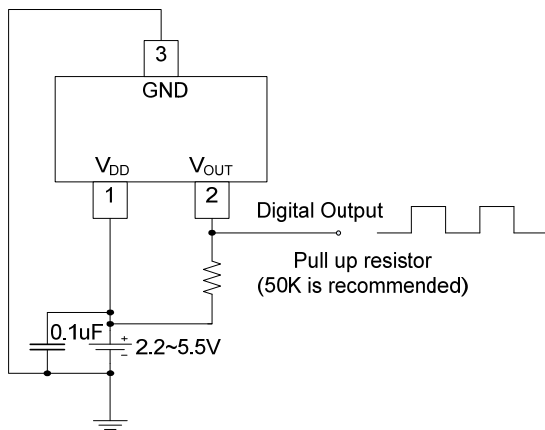
■ TYPICAL CIRCUIT



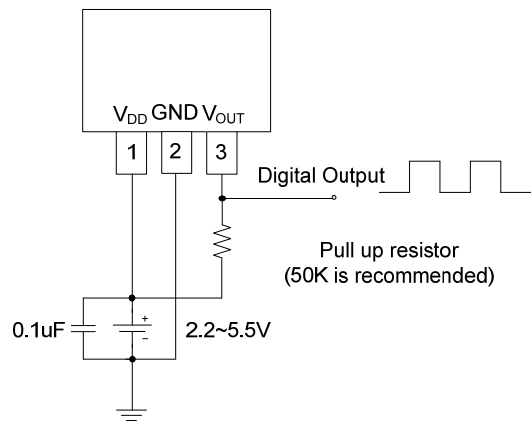
SOT-23 (Internal pull-up resistor output)



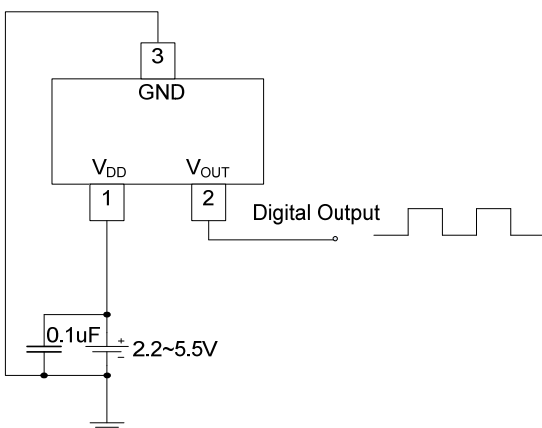
SIP-3 (Internal pull-up resistor output)



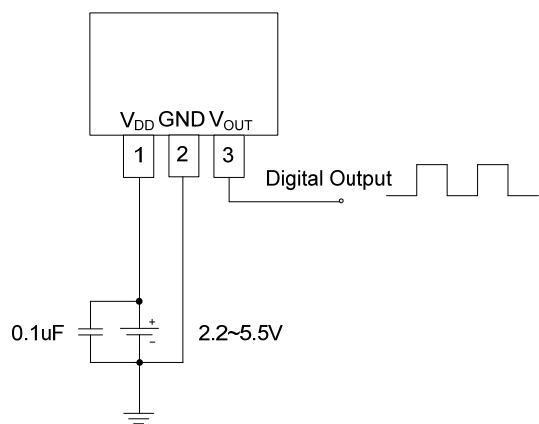
SOT-23 (NMOS open-drain output)



SIP-3 (NMOS open-drain output)

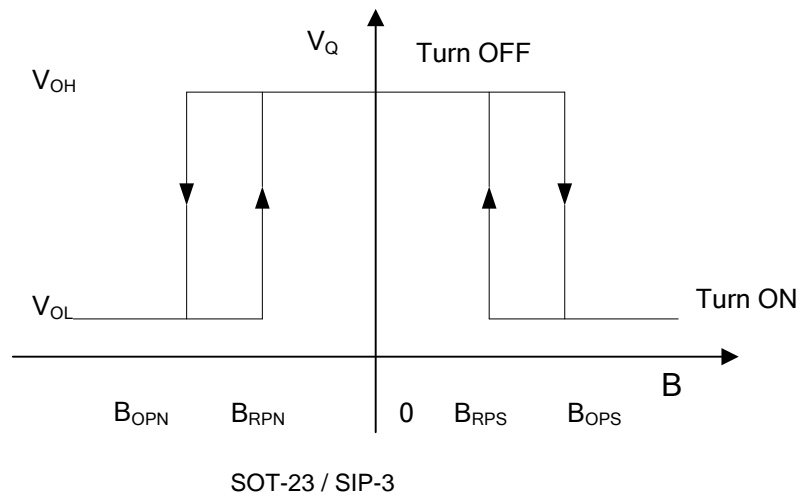


SOT-23 (CMOS push-pull output)



SIP-3 (CMOS push-pull output)

■ MAGNETIC FLUX



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