



UH8106

Advance

CMOS IC

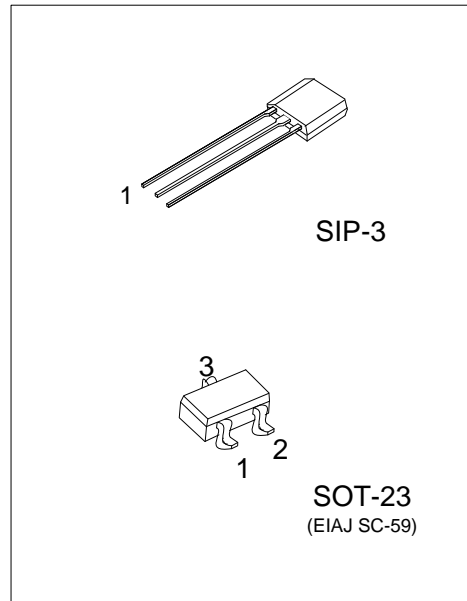
CMOS, OMNI-POLAR, LOW POWER HALL SENSOR

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

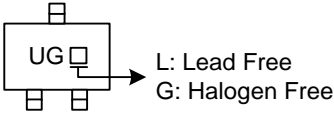
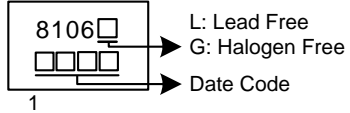
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UH8106XL-AE3-R	UH8106XG-AE3-R	SOT-23	I	O	G	Tape Reel
UH8106XL-G03-B	UH8106XG-G03-B	SIP-3	I	G	O	Tape Box
UH8106XL-G03-K	UH8106XG-G03-K	SIP-3	I	G	O	Bulk

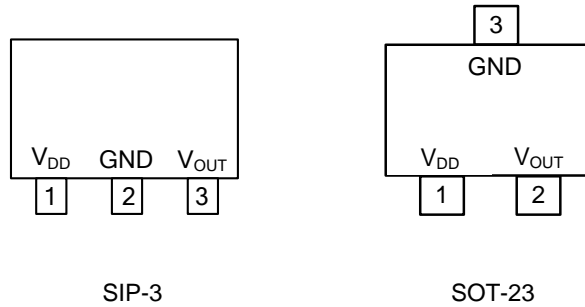
Note: Pin Assignment: I: V_{CC} O: V_{OUT} G: GND

UH8106XG-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) Output Type	(4) I: Internal, N: NMOS, C: CMOS

MARKING

SOT-23	SIP-3
	

PIN CONFIGURATION



PIN DESCRIPTION

PIN NAME	TYPE	DESCRIPTION
V _{DD}	P/I	Power Supply Input
V _{OUT}	O	Output
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}
UH8106I-1	Internal pull-up resistor	LOW	1.3~2.3 mT
UH8106I-2	Internal pull-up resistor	LOW	1.0~4.0 mT

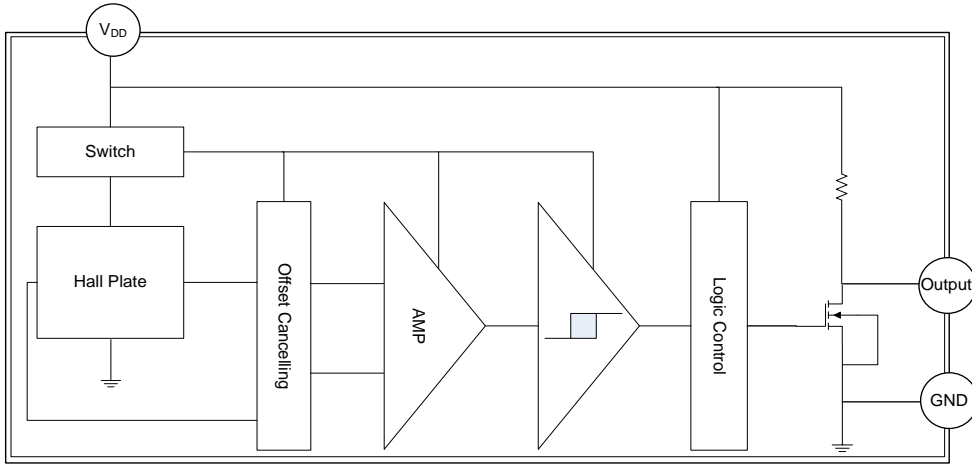
NMOS open-drain output

PRODUCT NAME	OUTPUT	V _{OUT} (When B > B _{OP})	B _{OP}
UH8106N-1	NMOS open-drain	LOW	1.3~2.3 mT
UH8106N-2	NMOS open-drain	LOW	1.0~4.0 mT

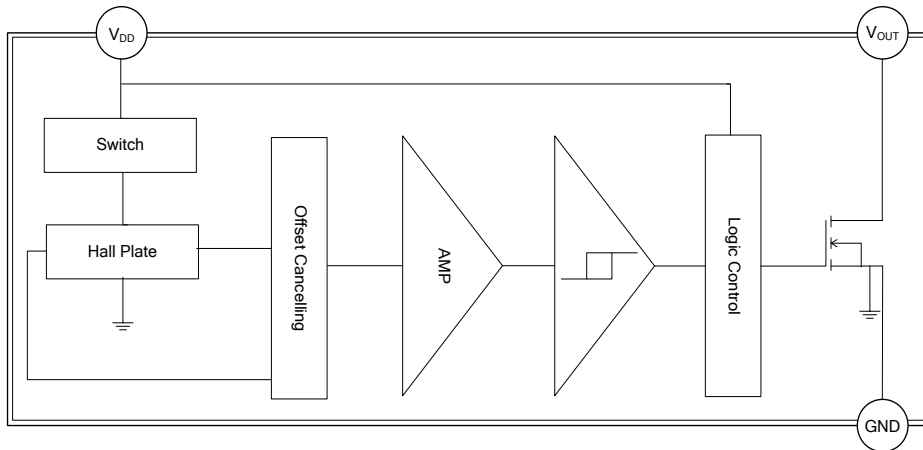
CMOS push-pull output

PRODUCT NAME	OUTPUT	V _{OUT} (When B > B _{OP})	B _{OP}
UH8106C-1	CMOS push-pull	LOW	1.3~2.3 mT
UH8106C-2	CMOS push-pull	LOW	1.0~4.0 mT

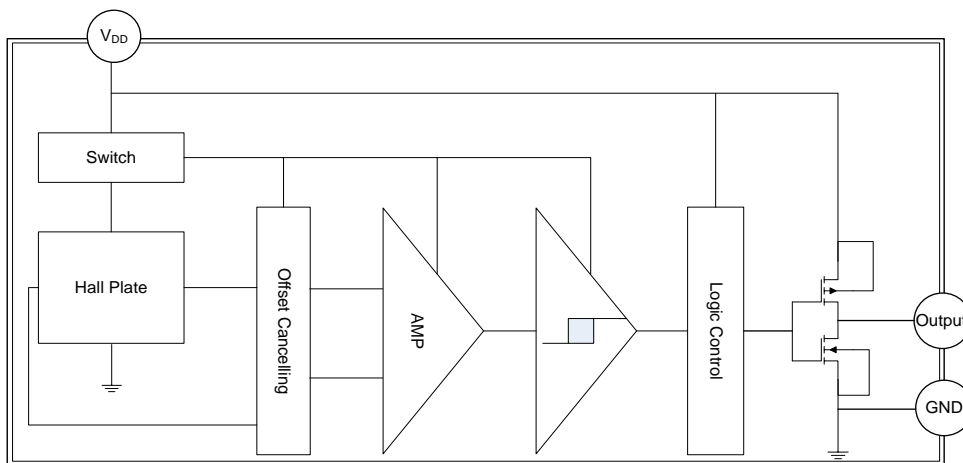
■ BLOCK DIAGRAM



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

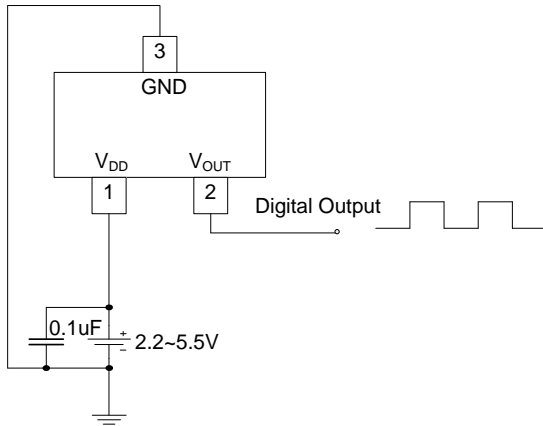
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage Range	V_{DD}	Operating	2.2		5.5	V
Supply Current	I_{DD}	Average ($ B < B_{rp} $, $V_{DD}=3.6\text{V}$)		4	6	μA
		Awake ($ B < B_{rp} $, $V_{DD}=3.6\text{V}$)		2	3	mA
		Sleep ($ B < B_{rp} $, $V_{DD}=3.6\text{V}$)		2	3	μA
Output Leakage Current	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**

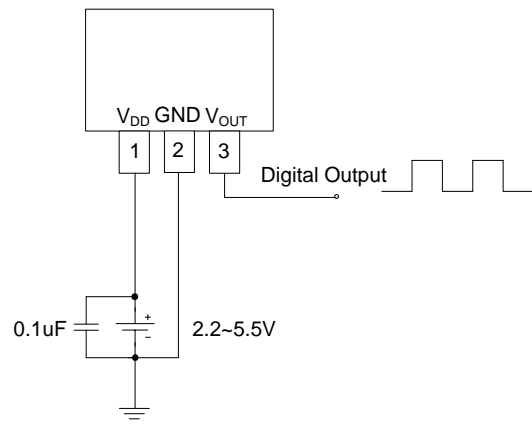
($V_{DD}=2.2\text{V}$ to 5.5V , $1\text{mT}=10\text{Gauss}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

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

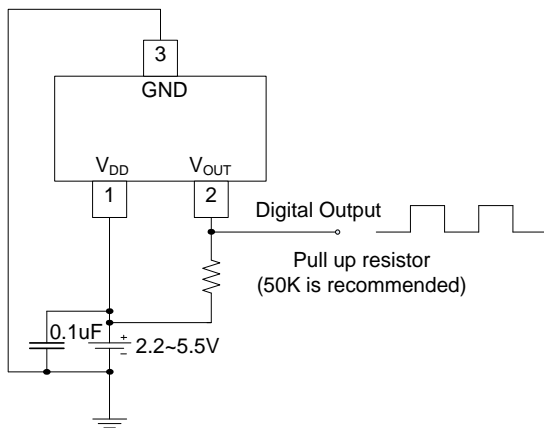
■ TYPICAL CIRCUIT



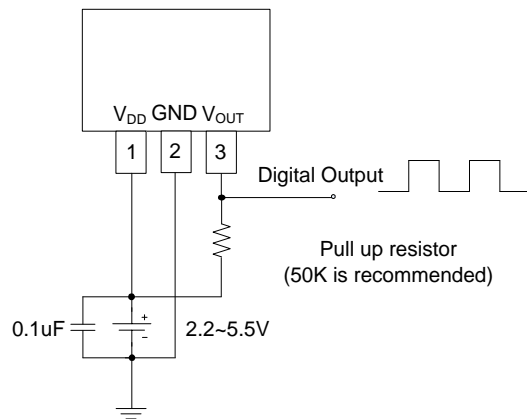
SOT-23 (Internal pull-up resistor output)



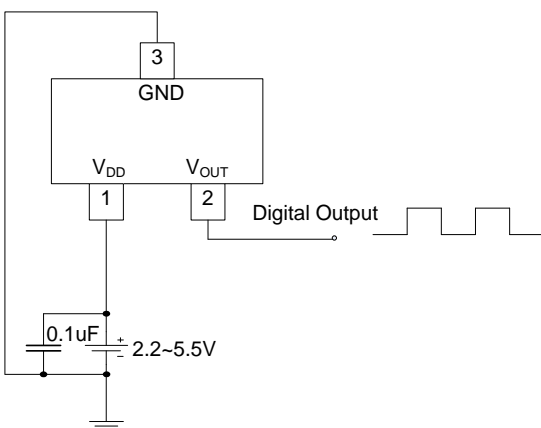
SIP-3 (Internal pull-up resistor output)



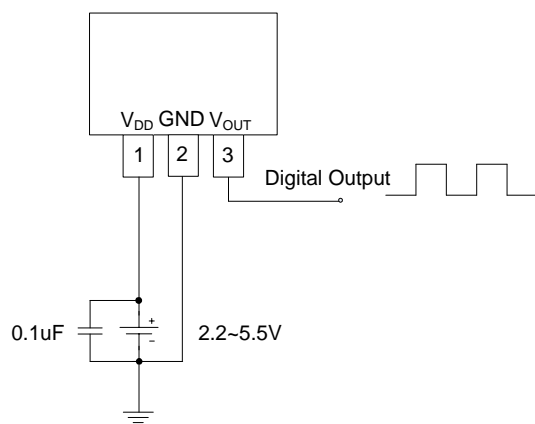
SOT-23 (NMOS open-drain output)



SIP-3 (NMOS open-drain output)

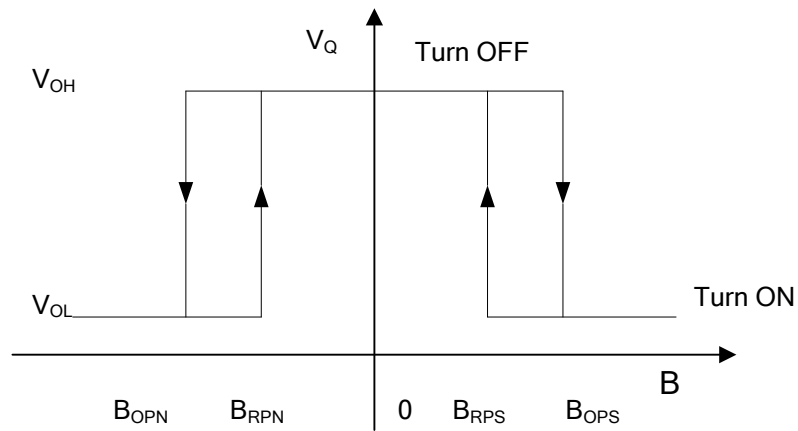


SOT-23 (CMOS push-pull output)



SIP-3 (CMOS push-pull output)

■ MAGNETIC FLUX



SOT-23 / SIP-3

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