



## UH8100

CMOS IC

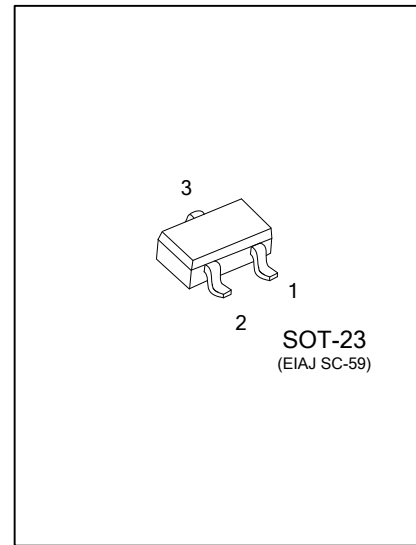
### LOW POWER HALL EFFECT SWITCH

#### DESCRIPTION

**UH8100** 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. The typical power consumption of **UH8100** is down to 15uW at 2.75V supply.

For **UH8100**, the output will be high when no magnetic field is applied and be low when the applied magnetic flux density is stronger than the switching threshold. The difference between **UH8100A** and **UH8100B** is that **UH8100A** consumes less power than **UH8100B** in the Hall sensor operation.



#### FEATURES

- \* Micro power Operation
- \* 2.5V to 5.5V Battery Operation
- \* Offset Canceling Technology
- \* Superior Temperature Stability
- \* Extremely Low Switch-Point Drift
- \* Insensitive to Physical Stress

#### ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UH8100AG-AE3-R	SOT-23	O	I	G	Tape Reel
UH8100BG-AE3-R	SOT-23	O	I	G	Tape Reel

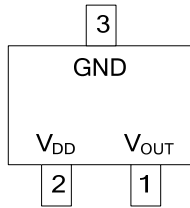
Note: Pin Assignment: O: V<sub>OUT</sub>, I: V<sub>DD</sub>, G: GND

<p>UH8100XG-AE3-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Green Package</li> <li>(4) Average Supply Current</li> </ul>	<ul style="list-style-type: none"> <li>(1) R: Tape Reel</li> <li>(2) AE3: SOT-23</li> <li>(3) G: Halogen Free and Lead Free</li> <li>(4) refer to Electrical Characteristics</li> </ul>
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#### MARKING

<p>UH8100A</p>	<p>UH8100B</p>
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■ PIN CONFIGURATIONS

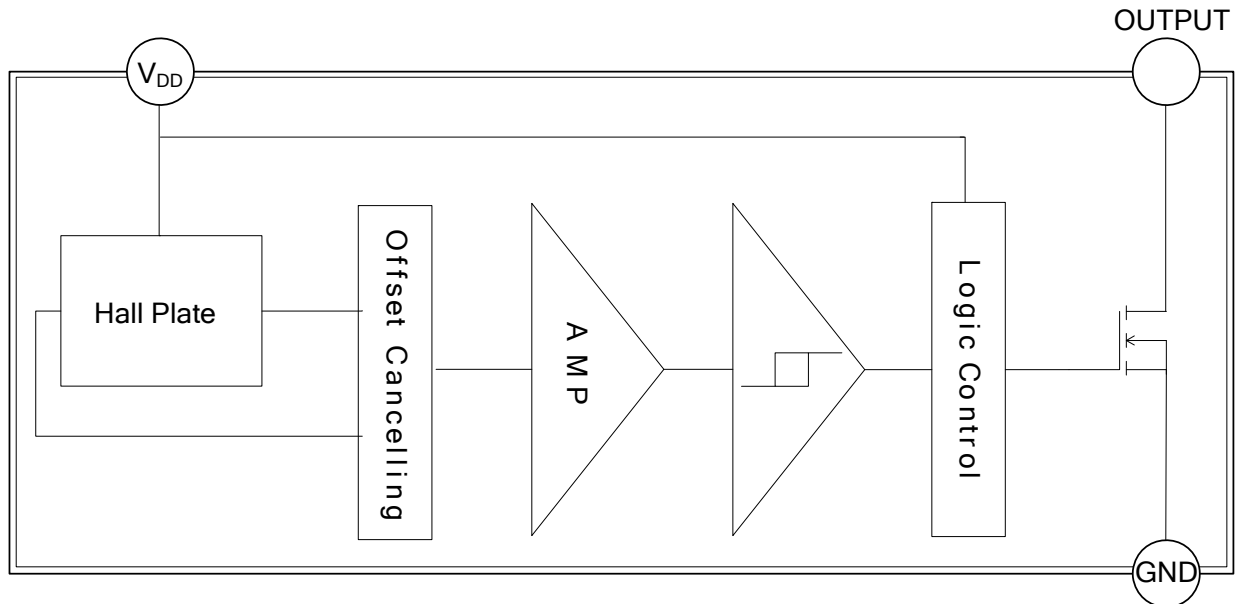


■ PIN DESCRIPTION

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

Note: O=Output, P=Power Supply, G=Ground

■ BLOCK DIAGRAM



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

PARAMETER	SYMBOL	RATINGS	UNIT
Magnetic Flux Density	B	Unlimited	mT
Supply Voltage	$V_{DD}$	7	V
Output Current	$I_O$	10	mA
Package Power Dissipation	$P_D$	230	mW
Junction Temperature	$T_J$	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 ( $T_A=25^\circ\text{C}$ )

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{DD}$	Operating	2.5		5.5	V

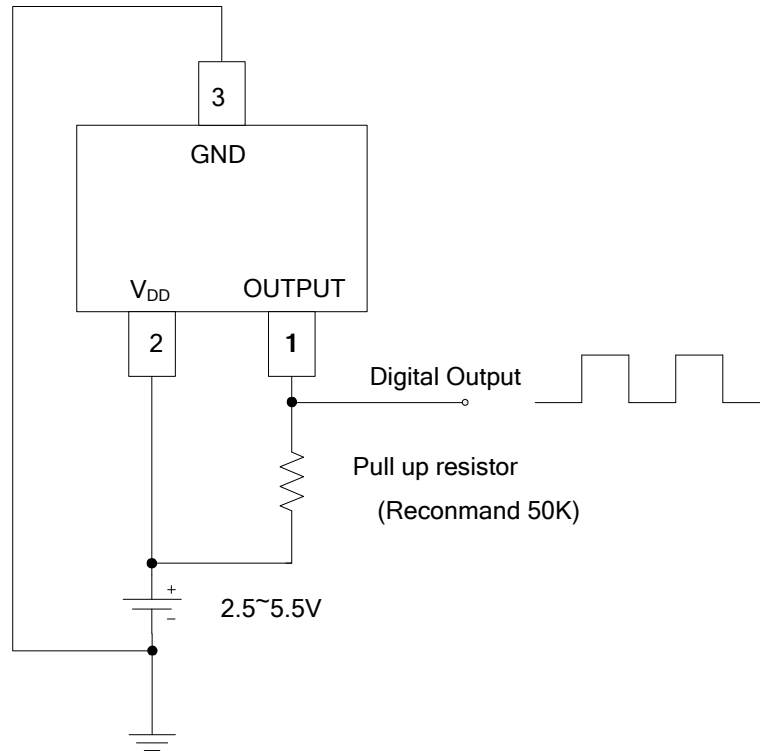
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ )

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Output On Voltage	$V_{OUT}$	$V_{DD}=3\text{V}$ , $I_{OUT}=1\text{mA}$		0.1	0.3	V
Output Leakage Current	$I_{OFF}$	$V_{DD}=3\text{V}$ , $V_{OUT}=5.5\text{V}$ , $B < B_{RP}$		0.01	1	$\mu\text{A}$
Supply Current	$I_{DD(AVG)}$	$V_{DD}=3\text{V}$ , average supply current	UH8100A	5	10	$\mu\text{A}$
			UH8100B	280	500	$\mu\text{A}$
Awake Time	$T_{AWAKE}$	$V_{DD}=3\text{V}$		50	100	$\mu\text{s}$
Period	$T_{PERIOD}$	$V_{DD}=3\text{V}$ , UH8100A		50	100	ms
		$V_{DD}=3\text{V}$ , UH8100B		200	400	$\mu\text{s}$
Duty Cycle	D.C.	$V_{DD}=3\text{V}$ , UH8100A		0.1		%
		$V_{DD}=3\text{V}$ , UH8100B		25		%

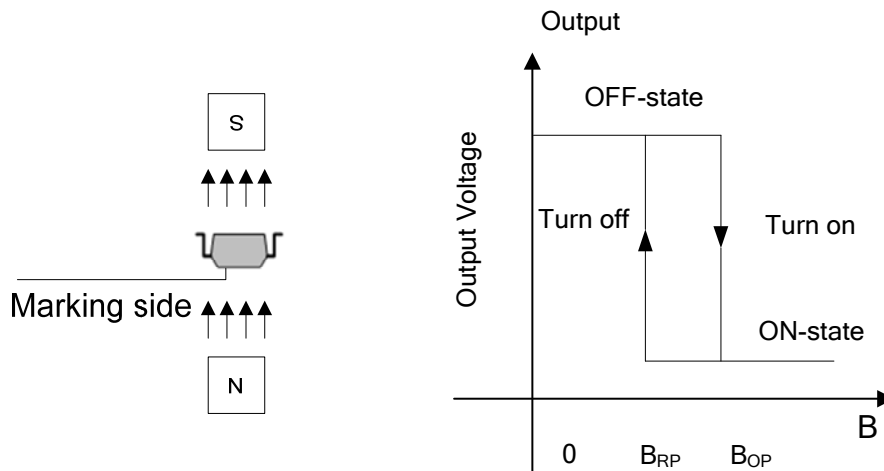
■ MAGNETIC CHARACTERISTICS ( $T_A=25^\circ\text{C}$ ,  $V_{DD}=3\text{V}$ )

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operation Points	$ B_{OP} $		40	60	Gauss
Release Points	$ B_{RP} $	10	30		
Hysteresis	$ B_{OP}-B_{RP} $		10		

## ■ TYPICAL APPLICATION CIRCUIT



## ■ MAGNETIC FLUX



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