



UH8103

Preliminary

BiCMOS IC

HALL EFFECT MICRO SWITCH IC

DESCRIPTION

The UH8103 is a low power, pole independent Hall-effect switch with a latched digital output driver. It can work in 2.5 volt supply. Either a north or south pole of sufficient flux will turn the output on; in the absence of a magnetic field, the output is off.

When a magnetic field enters the hall element and exceeds the operate point B_{OPS} (or less than B_{OPN}) the output turns on (output is low). When the magnetic field is below the release point B_{RPS} , the output turns off (output is high). It is designed with open drain configuration and connecting a pull up resistor from Output to VDD is necessary.

FEATURES

- *Micropower Operation
- *2.5V to 5.5V Battery Operation
- *Offset Canceling Technology
- *Independent of North or South Pole Magnet
- *Superior Temperature Stability
- *Extremely Low Switch-Point Drift

APPLICATIONS

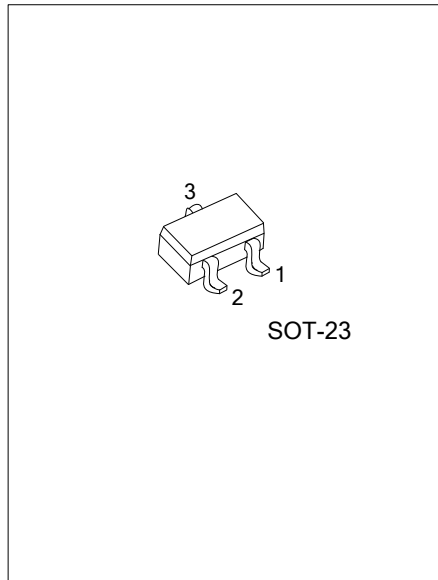
- *Micro Switch
- *Handheld Wireless Application Wake Up Switch
- *Clamp Shell Type Application Switch
- *Magnet Switch in Low Duty Cycle Applications

ORDERING INFORMATION

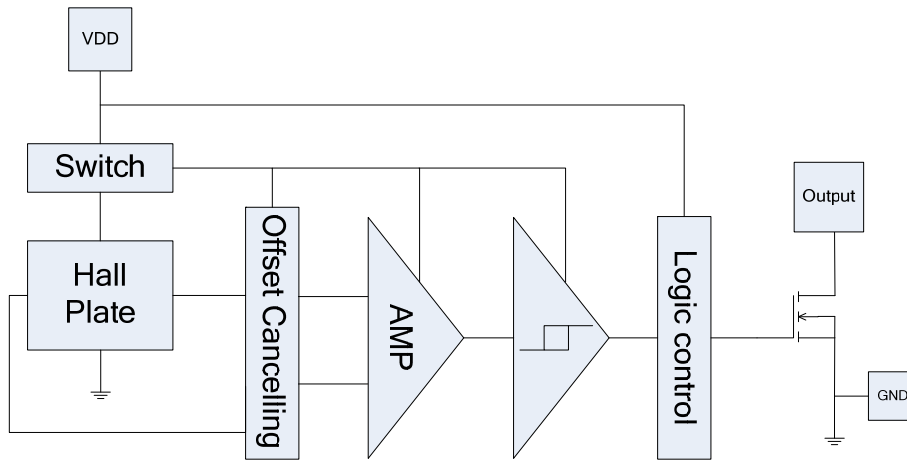
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UH8013L-AE3-R	UH8013G-AE3-R	SOT-23	O	I	G	Tape Reel

Note: O: Output, I: V_{DD} , G: GND

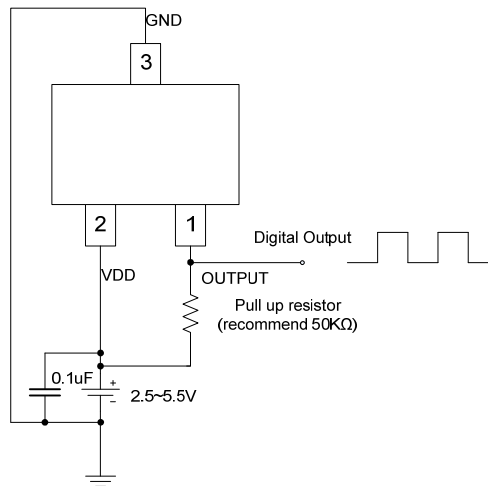
<p>UH8013L-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Halogen Free</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23 (3) G: Halogen Free, L: Lead Free</p>
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■ BLOCK DIAGRAM



■ TYPICAL CIRCUIT



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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	7	V
Magnetic Flux Density	B	Unlimited	
Output current	I_{OUT}	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

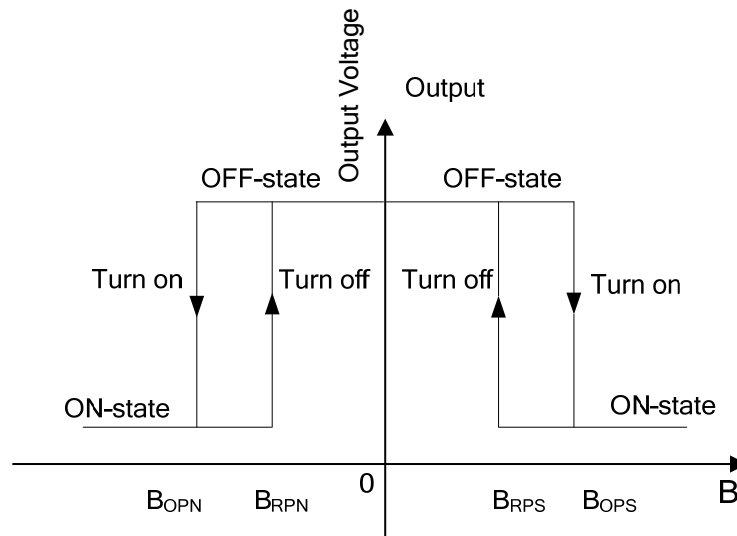
■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$)

Symbol	Characteristic	Conditions	UH8103			Unit
			Min	Typ	Max	
V_{DD}	Supply Voltage Range	Operating	2.5		5.5	V
I_{DD}	Supply Current	Average		5	10	μA
		Awake		1.2	2	mA
		Sleep		2	8	μA
I_{OFF}	Output Leakage Current	$V_{OUT} = 3.5\text{V}$, $B_{RPN} < B < B_{RPS}$			1	μA
V_{OL}	Output Low Voltage	$I_{SINK} = 1\text{mA}$		20	40	mV
t_{awake}	Wake up Time			180		μs
t_{period}	Period			60		mS
d.c.	Duty cycle			0.3		%

■ MAGNETIC CHARACTERISTICS ($T_A=25^\circ\text{C}$, $V_{DD}=3\text{V}$, $1\text{mT}=10\text{Gauss}$)

Symbol	Characteristic	MIN	TYP	MAX	UNIT
B_{OPS}	Operation Points		50	75	Gauss
B_{OPN}		-75	-50		
B_{RPS}	Release Points	10	35		
B_{RPN}			-35	-10	
B_{hys}	Hysteresis		15		

■ MAGNETIC FLUX



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