



UHE4913

Preliminary

CMOS IC

LOW POWER HALL EFFECT SWITCH

DESCRIPTION

UHE4913 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 is 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 UHE4913 is down to 10μW in 2.7V supply.

The output will be at the "High" level when no magnetic field is applied. When the applied magnetic flux density is stronger than the switching threshold, the output would be at the "Low" level.

FEATURES

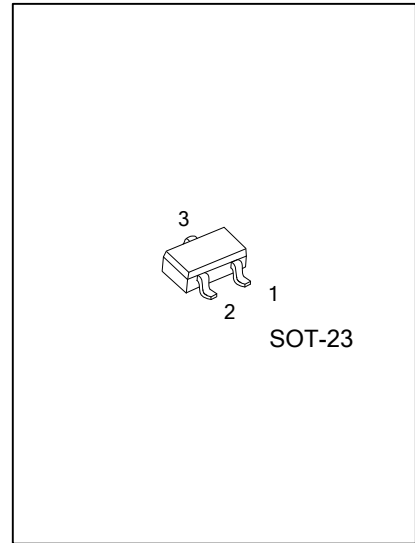
- * Micropower Operation
- * 2.4V to 5.5V Battery Operation
- * Switching for both poles of magnet
- * Offset Canceling Technology
- * Superior Temperature Stability
- * Extremely Low Switch-Point Drift
- * Insensitive to Physical Stress

ORDERING INFORMATION

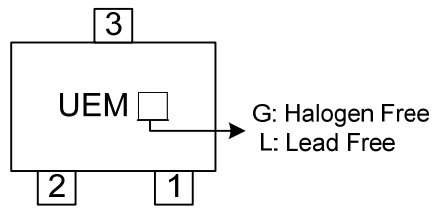
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UHE4913L-AE3-R	UHE4913G-AE3-R	SOT-23	O	I	G	Tape Reel

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

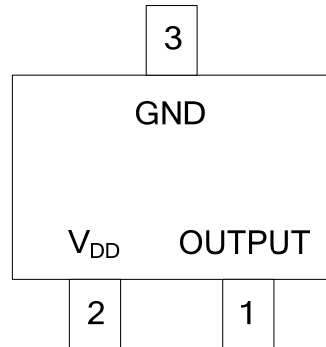
<p>UHE4913L-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) R:Tape Reel (2) AE3:SOT-23 (3) G:Halogen Free, L: Lead Free</p>
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■ MARKING INFORMATION



■ PIN CONFIGURATION

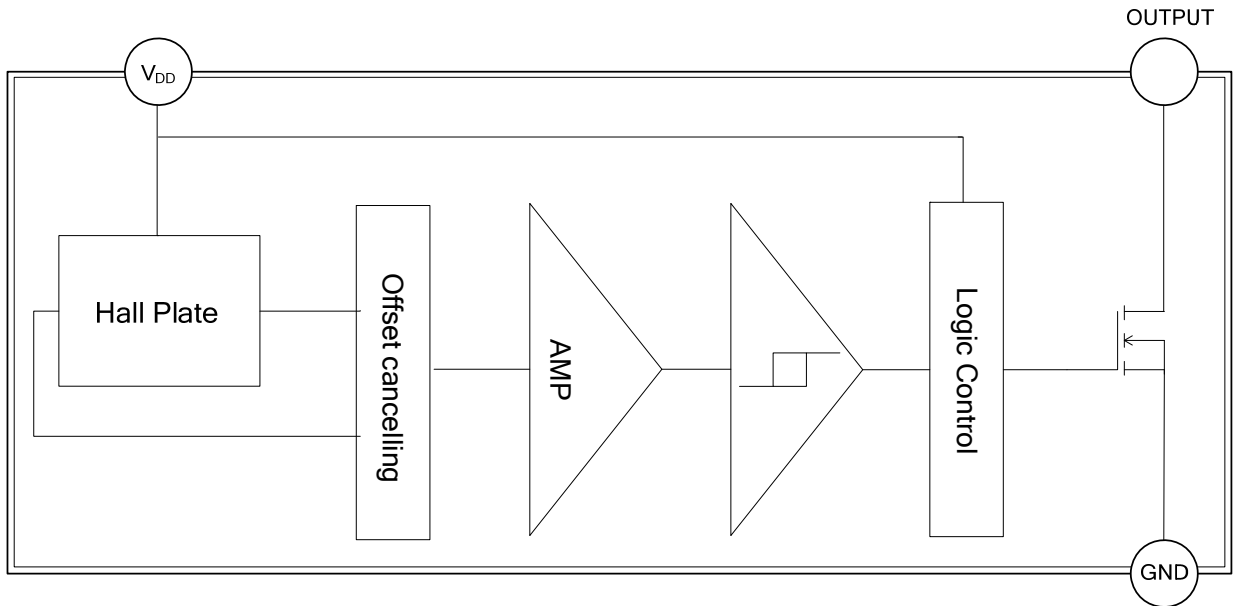


■ PIN DESCRIPTION

PIN NAME	PIN TYPE	PIN DESCRIPTION
V _{OUT}	O	Digital Output
V _{DD}	I	Power Supply
GND	G	Ground

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

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	5.5	V
Supply current	I_Q	-1 ~ +2.5	mA
Magnetic Flux Density	B	Unlimited	mT
Junction Temperature	T_J	150	°C
Operation Temperature	T_{OPR}	-40 ~ +85	°C
Storage Temperature	T_{STG}	-40 ~ +150	°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	2.4	2.7	5.5	V
Output Voltage	V_{OUT}		-0.3	2.7	5.5	V
Ambient Temperature	T_A		-40	25	85	°C

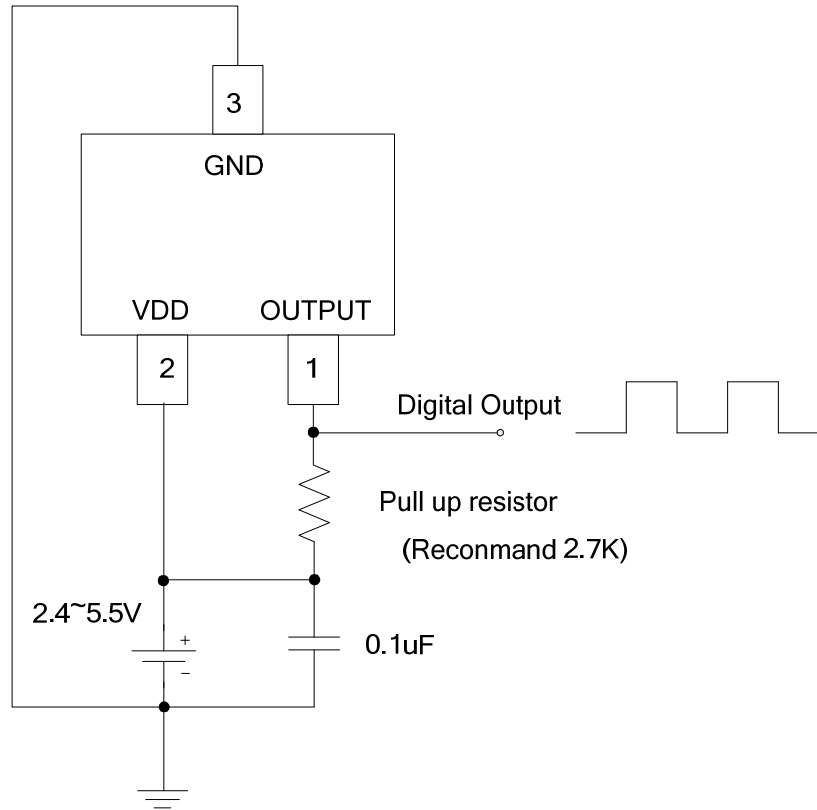
■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Output Saturation Voltage	V_{SAT}	$V_{DD}=2.7\text{V}$		0.1		V
Output Leakage Current	I_{OFF}			0.01		μA
Supply Current	$I_{DD(EN)}$	$V_{DD}=2.7\text{V}$		1.1		mA
	$I_{DD(DIS)}$			2.5		μA
	$I_{DD(AVG)}$			3	20	μA
Operating Time	T_{OP}	$V_{DD}=2.7\text{V}$		50		μs
Standby Time	T_{SD}			130		ms
Duty Cycle	D.C.			0.04		%
Output Rise Time	t_R	$R_L=2.7\text{K}\Omega, C_L=10\text{pF}$		0.5	1	μs
Output Fall Time	t_F	$R_L=2.7\text{K}\Omega, C_L=10\text{pF}$		0.1	1	μs

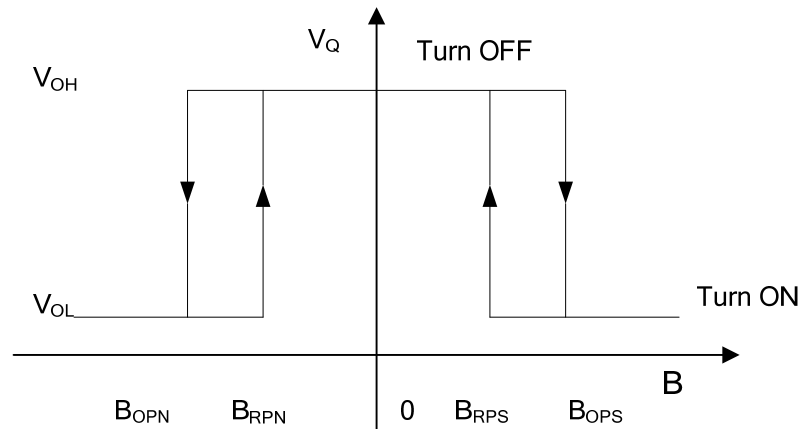
■ MAGNETIC CHARACTERISTICS ($T_A=25^\circ\text{C}, V_{DD}=2.7\text{V}$)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operation Points	$ B_{OP} $	20	35	50	Gauss
Release Points	$ B_{RP} $	12	27	42	
Hysteresis	$ B_{OP}-B_{RP} $	2	8	16	

■ TYPICAL APPLICATION CIRCUIT



■ MAGNETIC FLUX



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