



## UHE4913

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.

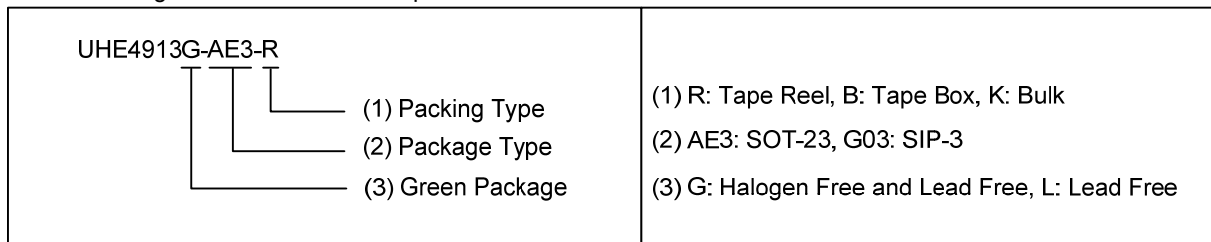
#### FEATURES

- \* 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

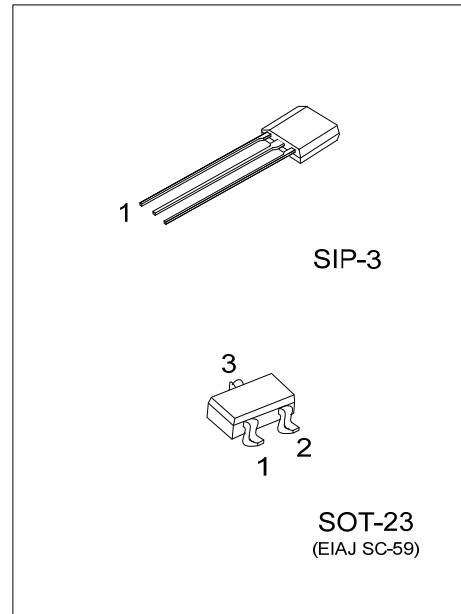
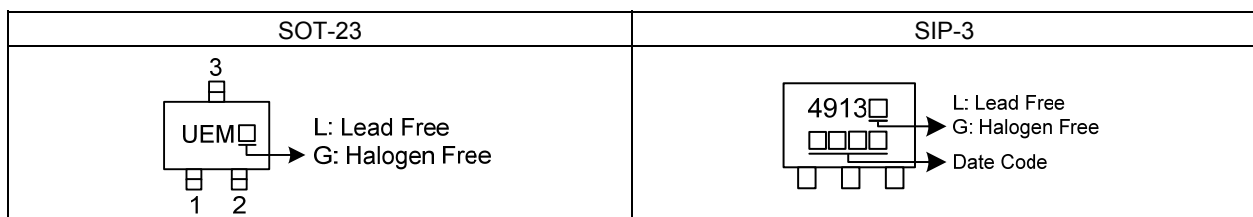
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UHE4913G-AE3-R	UHE4913G-AE3-R	SOT-23	I	O	G	Tape Reel
UHE4913L-G03-B	UHE4913G-G03-B	SIP-3	I	G	O	Tape Box
UHE4913L-G03-K	UHE4913G-G03-K	SIP-3	I	G	O	Bulk

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



#### MARKING

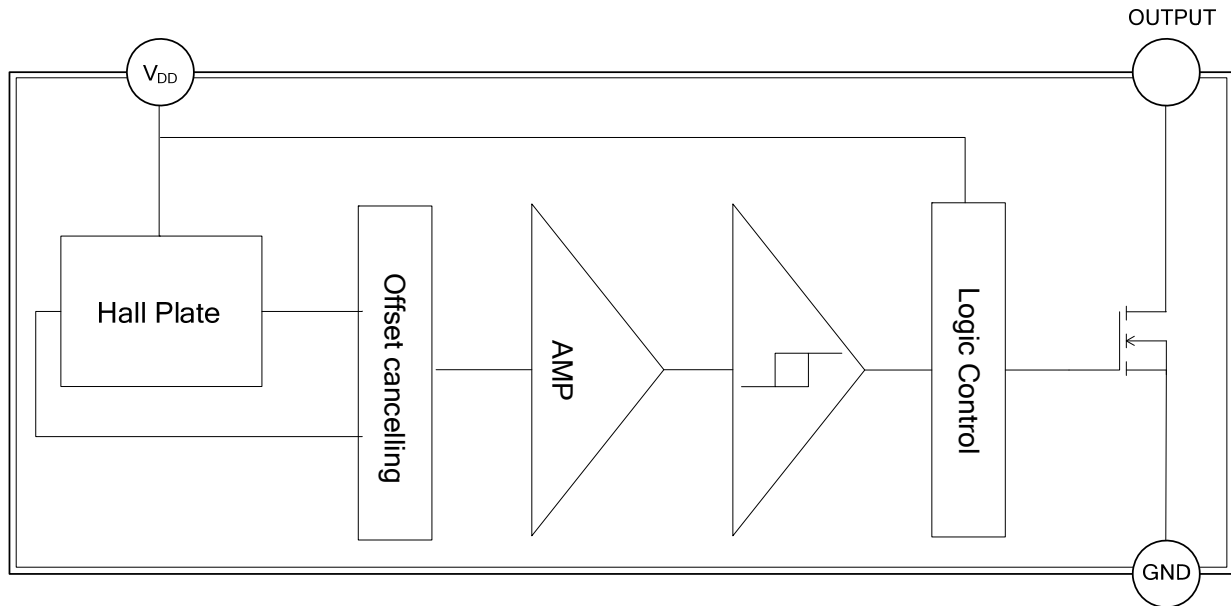


■ PIN DESCRIPTION

PIN NAME	PIN TYPE	PIN DESCRIPTION
V <sub>DD</sub>	I	Power Supply
OUTPUT	O	Digital Output
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 ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

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

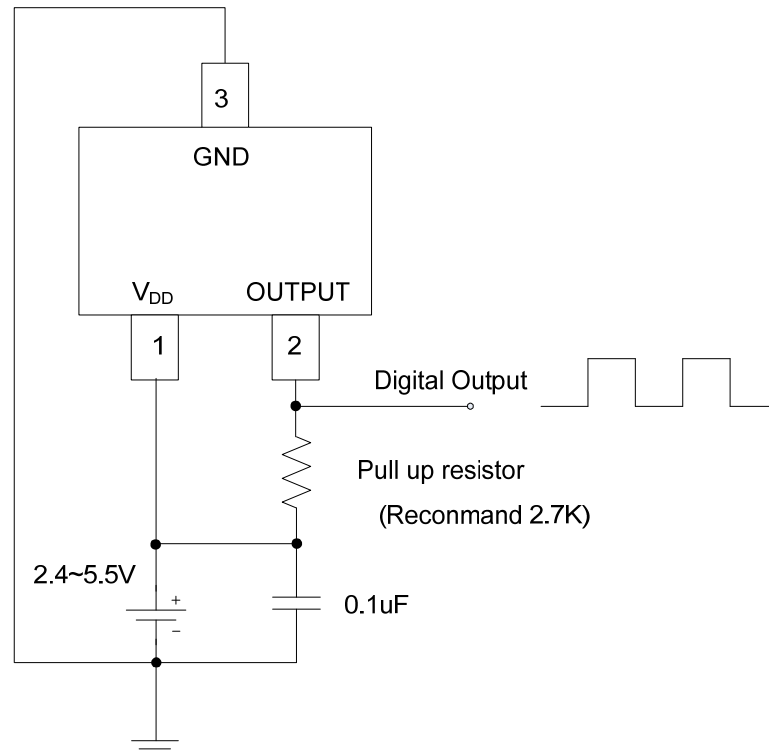
### ■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

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		$\mu\text{A}$
Supply Current	$I_{DD(EN)}$	$V_{DD}=2.7\text{V}$		1.1		mA
	$I_{DD(DIS)}$			2.5		$\mu\text{A}$
	$I_{DD(AVG)}$			3	20	$\mu\text{A}$
Operating Time	$T_{OP}$	$V_{DD}=2.7\text{V}$		50		$\mu\text{s}$
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	$\mu\text{s}$
Output Fall Time	$t_F$	$R_L=2.7\text{K}\Omega, C_L=10\text{pF}$		0.1	1	$\mu\text{s}$

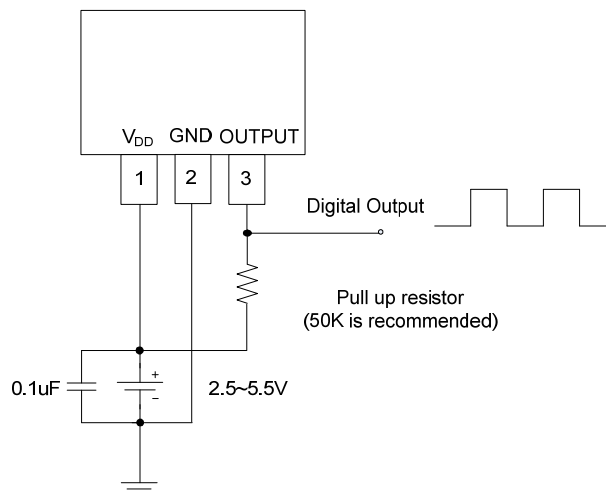
### ■ MAGNETIC CHARACTERISTICS ( $V_{DD}=2.7\text{V}$ , $T_A=25^\circ\text{C}$ , unless otherwise specified)

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

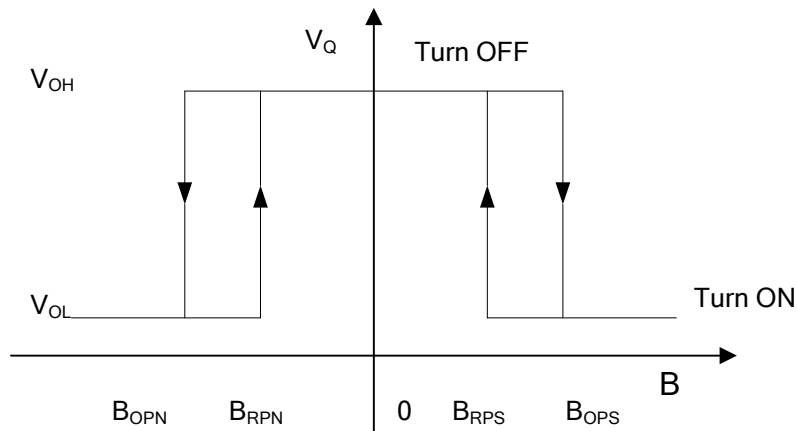


SOT-23



SIP-3

■ MAGNETIC FLUX



SOT-23 / SIP-3

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