

OH9213 Low Current Consumption High Sensitivity CMOS Hall IC



General Description

Part No.: OH9213 Operate Temperature: -40 to 85°C Package: 3000 Pcs/Reel

OH9213 is an integrated hall-effect sensor designed specifically to meet the requirements of low-power devices, such as an On/Off switch in Cellular Flip-Phones, with battery operating voltages of 2.4V-5.5V. Precise magnetic switching points and high temperature stability are achieved through the unique design of the internal circuit. An onboard clock scheme is used to reduce the average operating current of the IC. During the operate phase the IC compares the actual magnetic field detected with the internally compensated switching points. The output Q is switched at the end of each operating phase. During the Stand-by phase the output stage is latched and the current consumption of the device reduced to some μA . The IC switching behavior is Omnipolar, it can be switched on with either the North or South pole of a magnet.

Features

- Micropower design
- High sensitivity and high stability of the magnetic switching points
- High resistance to mechanical stress
- Switching for both poles of a magnet (omnipolar)

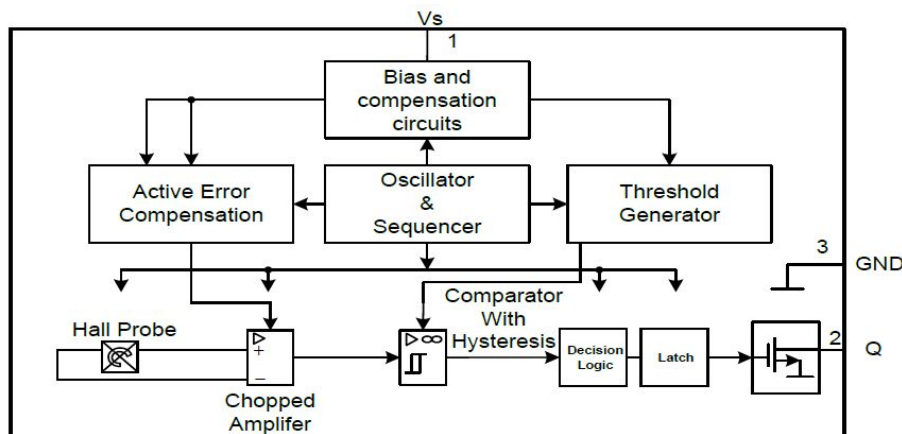
Applications

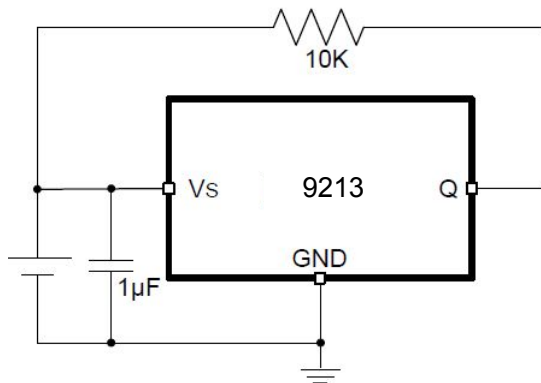
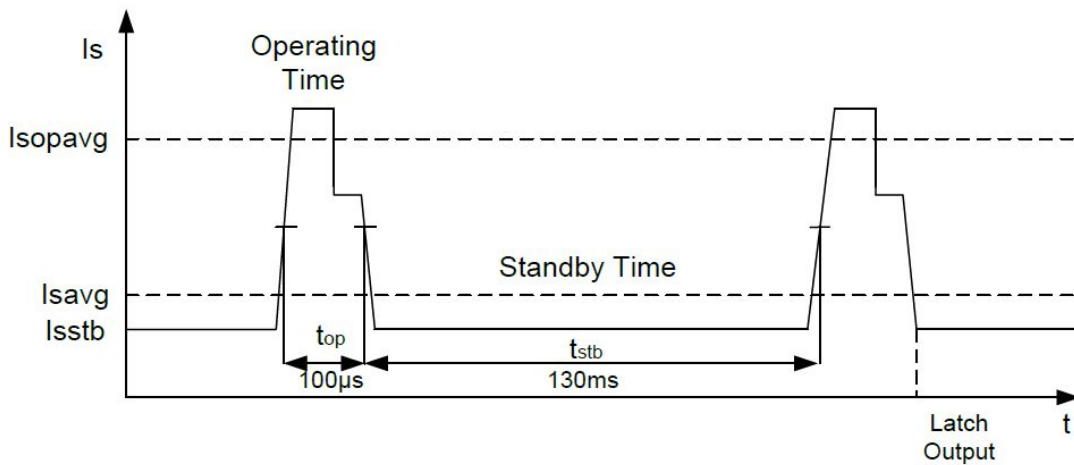
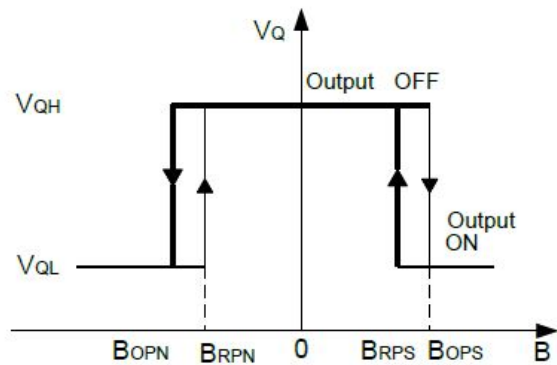
- Cover switch in clam-shell cellular phones
- Cover switch in Notebook PC/PDA
- Contact-less switch in consumer products

Absolute Maximum Ratings (T_A=25°C)

Supply Voltage VCC	6V	Supply Current (Fault) ICC	4.5mA
Output Voltage VOUT	6V	Output Current IOUT	2 mA
Storage Temperature	-45 to 150 °C	ESD Protection	4000V

Functional Block Diagram



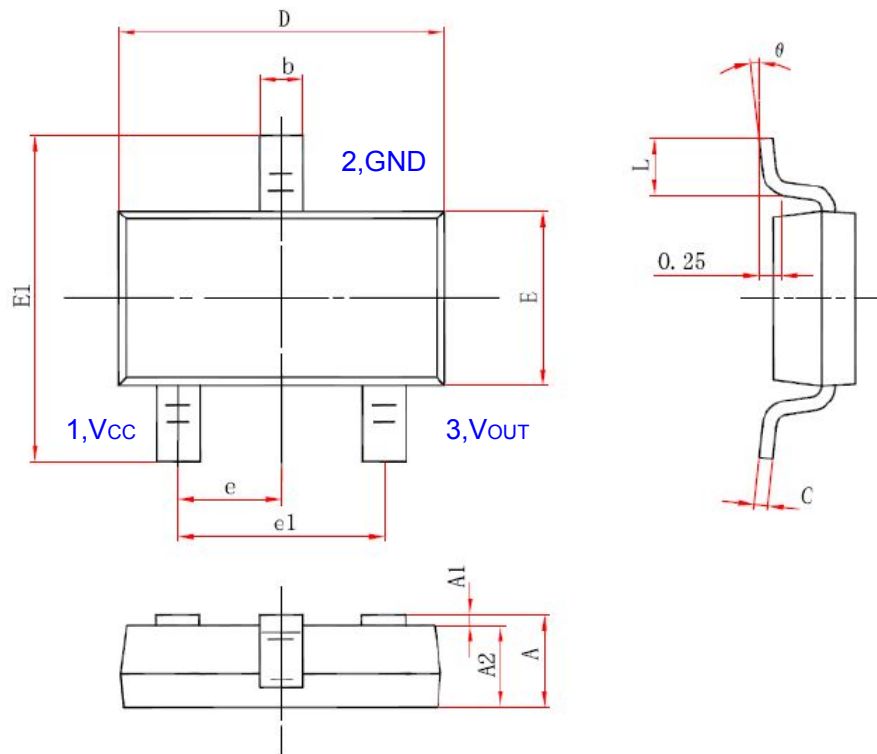
Typical Application Circuit

Output Voltage vs. Magnetic Flux Density


Magnetic Characteristics $V_{CC} = 3V, T_A = 25^{\circ}C, (1mT = 10 \text{ Gauss})$

Parameter	symbol	Conditions	Value			Unit
			Min	Typ	Max	
Operate Point	B _{OPS}	South pole to branded side B>BOPS,VOUT=low(output on)	20	35	50	GS
	B _{OPN}	North pole to branded side B>BOPN,VOUT=low(output on)	-50	-35	-20	GS
Release Point	B _{RPS}	South pole to branded side B<BRPS,VOUT=high(output off)	12	27	42	GS
	B _{RPN}	North pole to branded side B<BRPN,VOUT=high(output off)	-42	-26	-12	GS
Hysteresis	B _H	BOPX - BRPX	2	8	16	GS

Electrical Characteristics $V_{CC} = 3V, T_A = 25^{\circ}C$

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Supply Voltage	V _{CC}		2.4	-	6	V
Supply Current	I _{AW}	Awake	0.5	2	3.5	mA
	I _{SL}	Sleep	1	1.9	8	μA
	I _{AVG}	Average	1	3	10	μA
Output Current	I _{OUT}				1.0	mA
Output Leakage Current	I _{LEAK}	B < BRP	-	0.01	1.0	μA
Saturation Voltage	V _{SAT}	I _{OUT} = 1.0mA	-	0.13	0.4	V
Output rise time	t _r	R _L =2.7KΩ CL=10pF				
Output fall time	t _f	R _L =2.7KΩ CL=10pF				
Awake Mode Time	t _{AW}	OPERATING	25	100	160	μs
Sleep Mode Time	t _{SL}	OPERATING	60	140	240	ms
Duty Cycle	Top/Tstb			0.071		%
Start-up time of IC	T _{stu}			12	20	us

Mechanical Dimension Unit:(mm/inch)


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b	0.350	0.500	0.014	0.020
c	0.080	0.200	0.003	0.008
D	2.820	3.020	0.111	0.119
E	1.600	1.700	0.063	0.067
E1	2.650	2.950	0.104	0.116
e	0.95 (BSC)		0.037(BSC)	
e1	1.90 (BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°