

OH9213 Series Omnipolar CMOS Hall IC

1. General Description

OH9213 series IC is an integrated hall-effect sensor explicitly designed to meet the requirements of low-power devices, for example, 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 operating 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, and it can be switched on with either the North or South pole of a magnet.

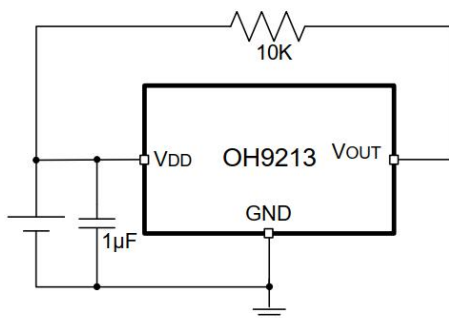
2. Features

- 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)

3. Applications

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

4. Typical Application Circuit



5. Order information

Part number	Package
OH9213S	SOT23-3
OH9213TS	TSOT23-3
OH9213DL	DFN2*2-3

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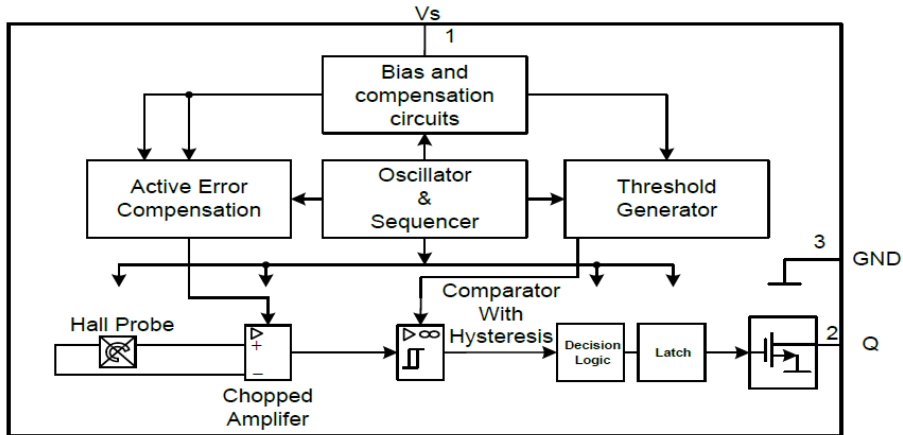
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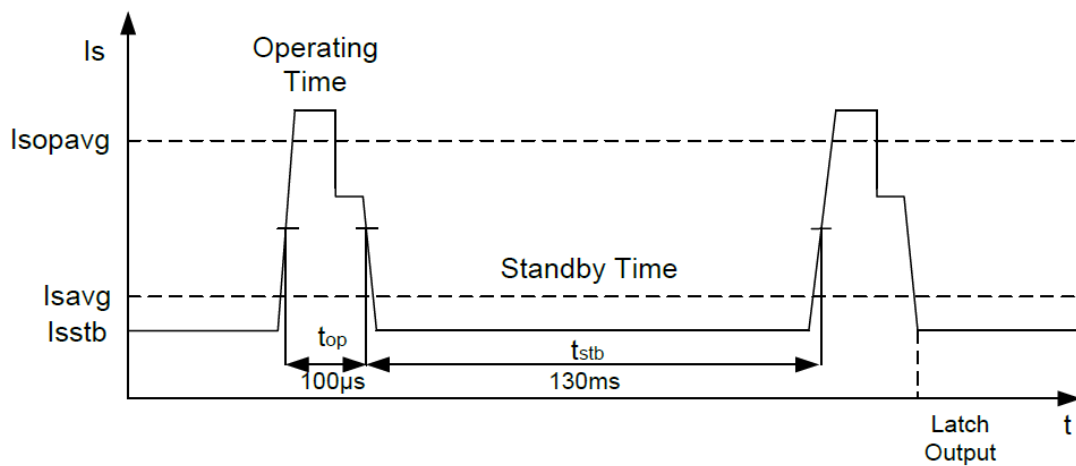
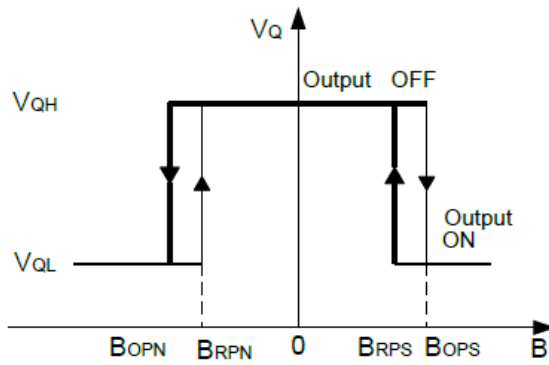
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6. Functional Block Diagram



7. Output Voltage vs. Magnetic Flux Density



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8. Absolute Maximum Ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Supply Voltage	Vdd	-0.3 to 6.0	V
Operating current	Idd	-1 to 4.5	mA
Output voltage	Vout	-0.3 to 6.0	V
Output current	Iout	-1 to 2	mA
Storage temperature range	Tstg	-45 to 150	°C
Maximum junction temperature	-	-150	°C
ESD Protection	-	4000	V

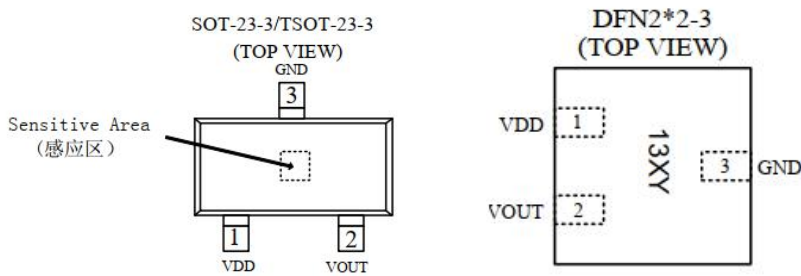
9. Electrical Characteristics
AC/DC Characteristics (TA=+25°C, VDD=3.0V, Unless otherwise specified)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Supply Voltage	Vdd		1.65	-	6	V
Supply Current	I _{AW}	Awake	0.5	2	4.5	mA
	I _{SL}	Sleep	1	1.9	8	μA
	I _{AVG}	Average	1	3	10	μA
Output Leakage Current	I _{LEAK}	B< B _{RP}		0.01	1.0	μA
Output Saturation Voltage	V _{SAT}	I _{OUT} = 1.0mA	-	0.13	0.4	V
Output rise time	t _{AW}	R _L =2.7KΩ C _L =10pF	-	0.5	1	μs
Output fall time	t _{SL}	R _L =2.7KΩ C _L =10pF		0.1	1	μs
Operating time	T _{op}	Operating	25	100	160	μs
Standby Time	T _{stb}		60	140	240	ms
Duty Cycle	t _r		-	0.071		%
Start-up time of IC	t _r		-	12	20	μS



10. Magnetic Characteristics (TA=+25°C, VDD=2.7V, Unless otherwise specified)

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

11. Pin configuration


Pin Name	Pin number		Function description
	SOT23-3/T-SOT23-3	DFN2*2-3	
VOUT	2	2	Output
GND	3	3	Ground
VDD	1	1	Supply Voltage

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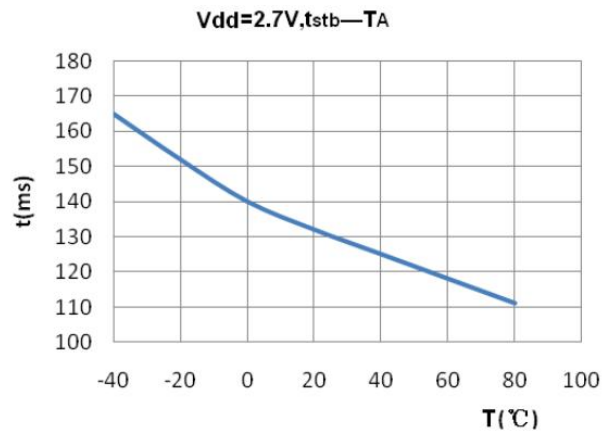
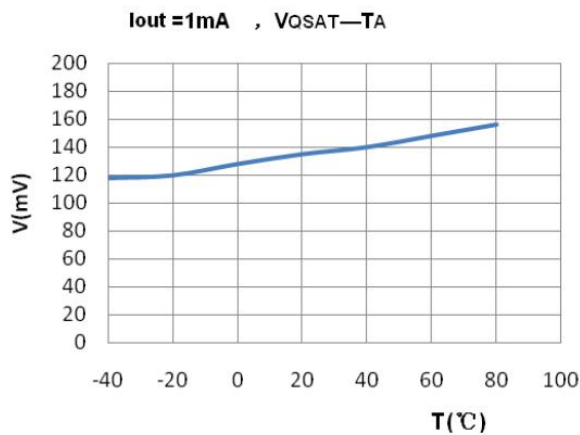
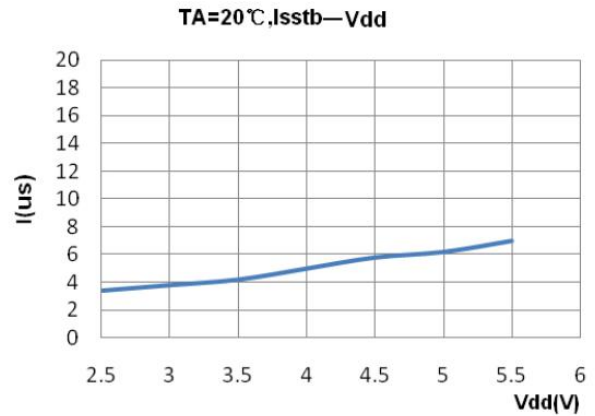
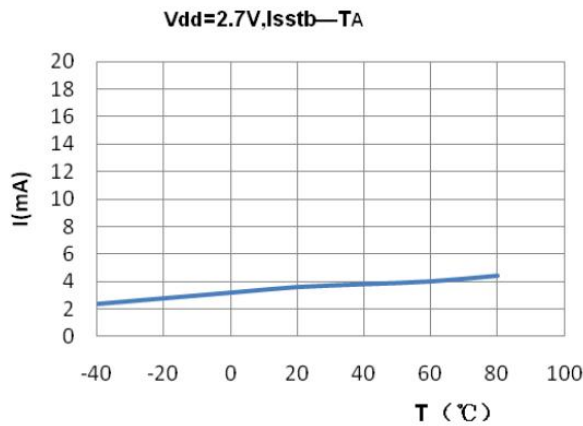
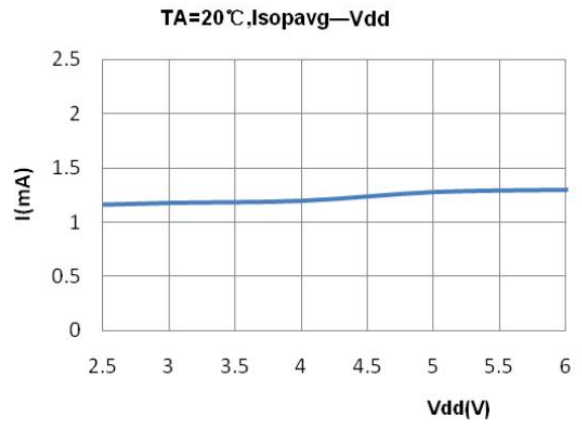
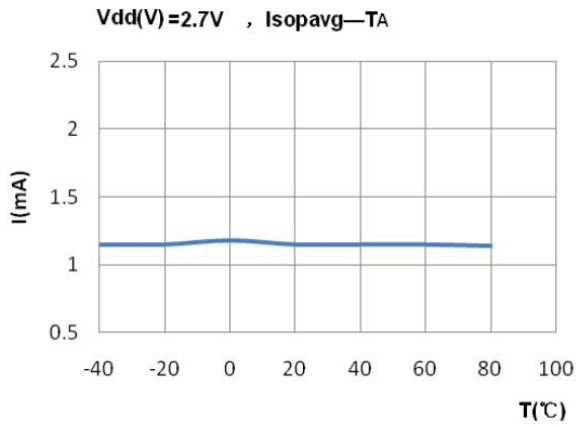
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12. Typical Operating Characteristics



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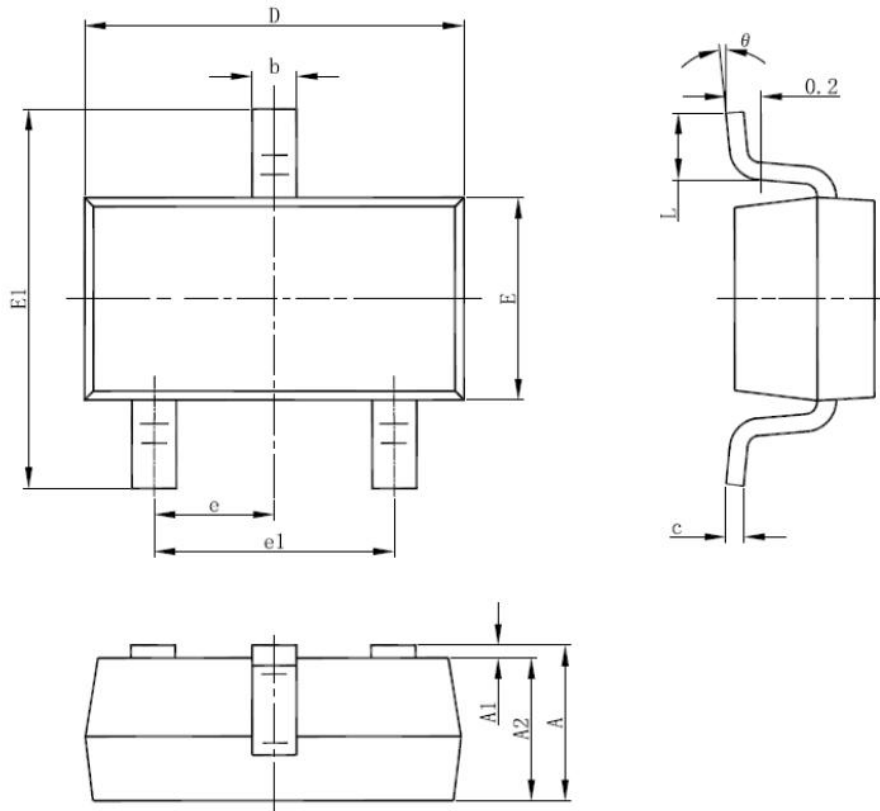
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13. Dimension Unit: mm

SOT23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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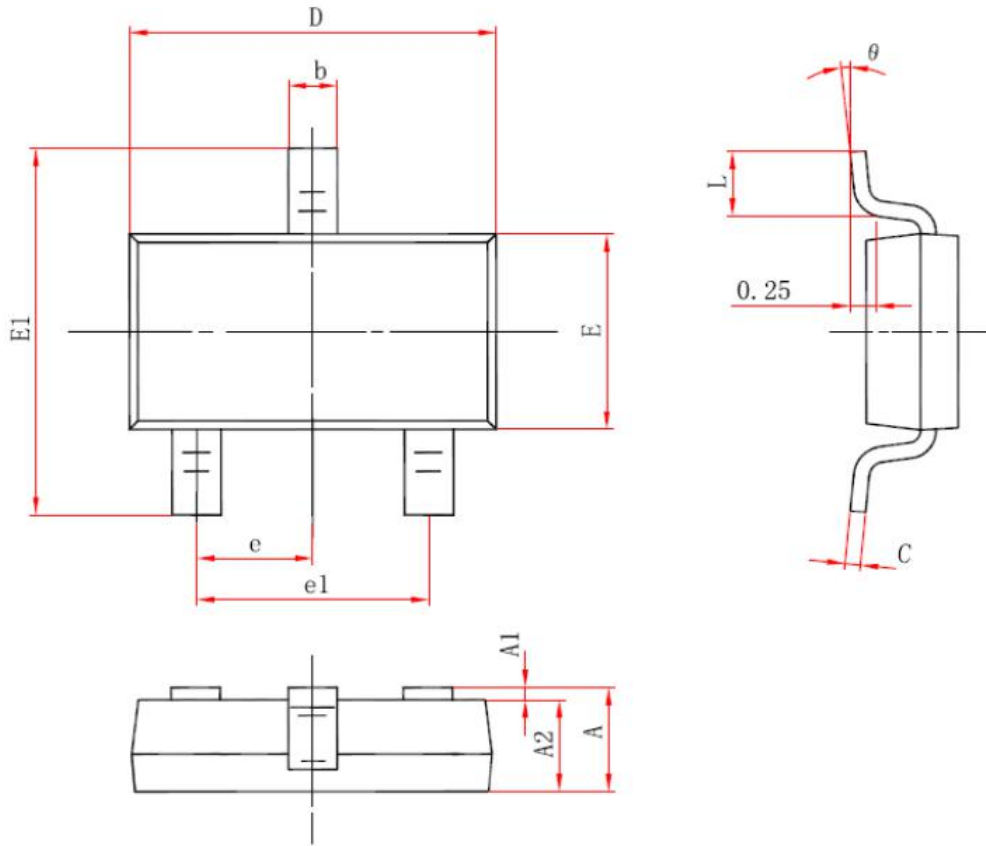
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TSOT-23-3



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°

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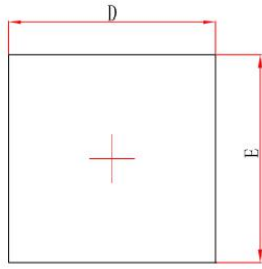
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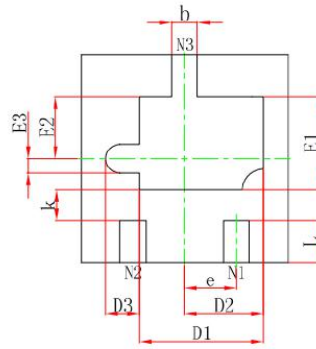
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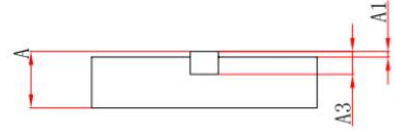
DFN2*2-3



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450/0.550	0.550/0.650	0.018/0.022	0.022/0.026
A1	0.000	0.050	0.000	0.002
A3	0.152REF.		0.006REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	1.100	1.300	0.043	0.051
D2	0.763REF.		0.030REF.	
D3	0.325REF.		0.013REF.	
E1	0.800	1.000	0.031	0.039
E2	0.600REF.		0.024REF.	
E3	0.138REF.		0.005REF.	
k	0.200MIN.		0.008MIN.	
b	0.200	0.300	0.008	0.012
e	0.500TYP.		0.020TYP.	
L	0.324	0.476	0.013	0.019

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For more information:

Ouzhuo Technology service you through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, you could reach us the way you are convenient, thank you for your support!

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NOTICE:

The information presented in this datasheet is for reference only. Specifications may change without notice.

