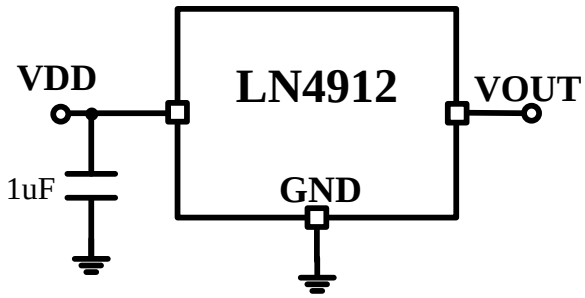
Micropower, Ultra-Sensitive Hall Effect Switch

■ General Description

LN4912 is with two Hall effect plates and a CMOS output driver, mainly designed for battery–powered, hand-held equipment (such as Cellular and Cordless Phone, PDA). E.g. as an On/Off switch in Cellular Flip-Phones, with battery operating voltages of 2.4V-5.5V.

Either north or south pole of sufficient strength will turn the output on. The output will be turned off under no magnetic field. While the magnetic flux density (B) is larger than operate point (Bop), the output will be turned on (low), the output is held until B is lower than release point (Brp), then turned off.

■ Typical Application Circuit



■ Operating Conditions

- Operating temperature range
  $T_{MIN} \le T_A \le T_{MAX}$ $-40°C \le T_A \le 85°C$
- Operating voltage range $2.4V \le VDD \le 5.5V$

■ 产品特点

- 2.4V to 5.5V battery operation
- Operation with North or South Pole
- Chopper stabilized
- Superior temperature stability
- Extremely Low Switch-Point Drift
- Insensitive to Physical Stress
- Good RF noise immunity
- ESD ＞ 4KV in human body mode
- Lead Free Finish/RoHS Compliant

■ Applications

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

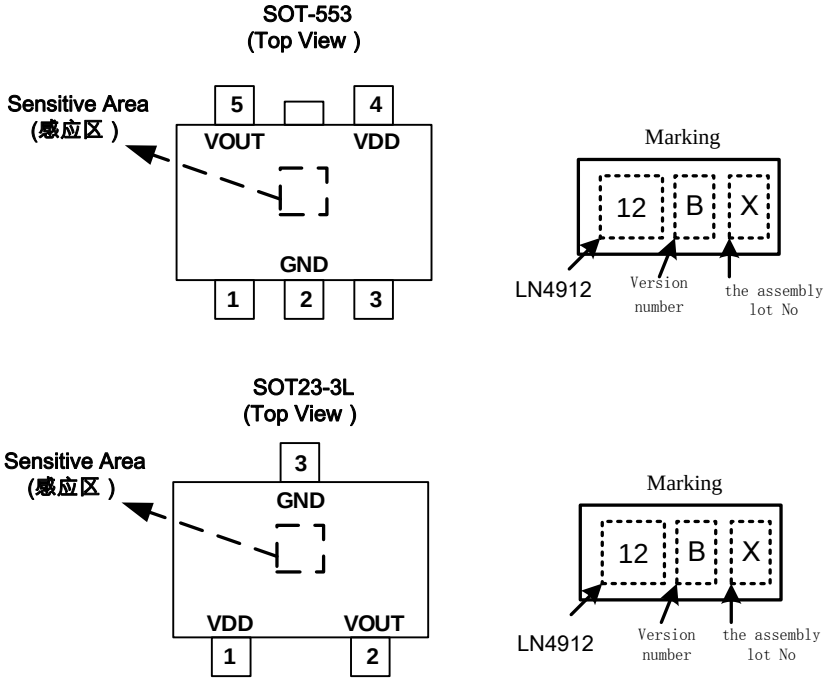
■ Package

- SOT-553
- SOT23-3L

■ Ordering Information

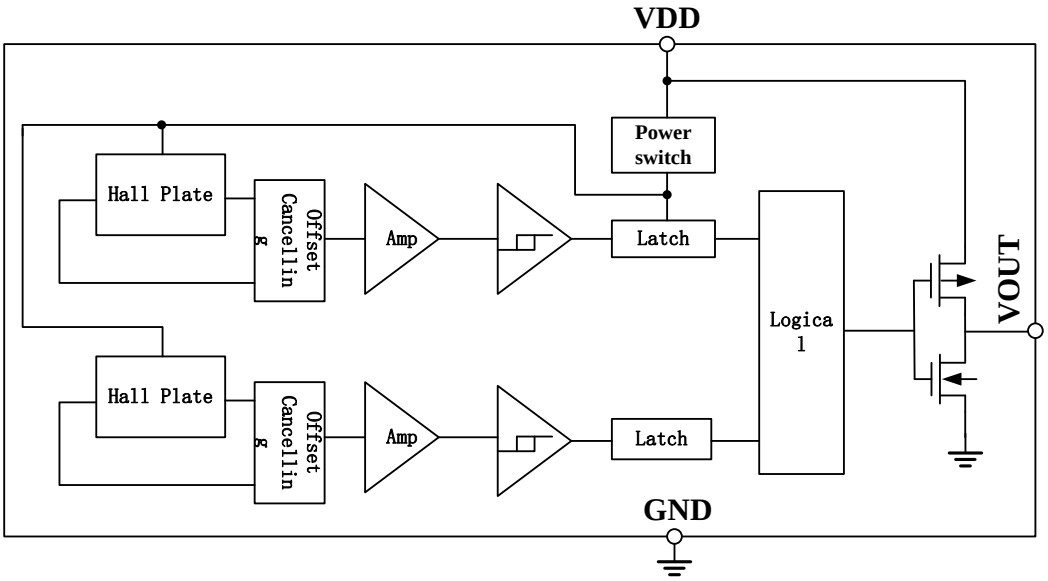
Part Number	Package Code	Packaging
LN4912ZR	Z	SOT-553
LN4912MR	M	SOT23-3L

■ Pin Configuration



Pin Number		Pin Name	Function
SOT553	SOT23-3L		
4	1	VDD	Supply voltage
5	2	VOUT	Output Voltage
2	3	GND	GND
1，3		NC	No Connection

■ Function Block Diagram



■ Absolute Maximum Ratings

Characteristics	Symbol	Values	Unit
Supply voltage	V_{DD}	-0.3—6.0	V
Operating current	I_S	-1—5	mA
Output voltage	V_{OUT}	-0.3—6.0	V
Output current	I_{OUT}	-1—2	mA
Storage temperature range	Tstg	-45—150	℃
Maximum junction temperature	—	150	℃
ESD Protection	—	4000	V

■ Electrical Characteristics

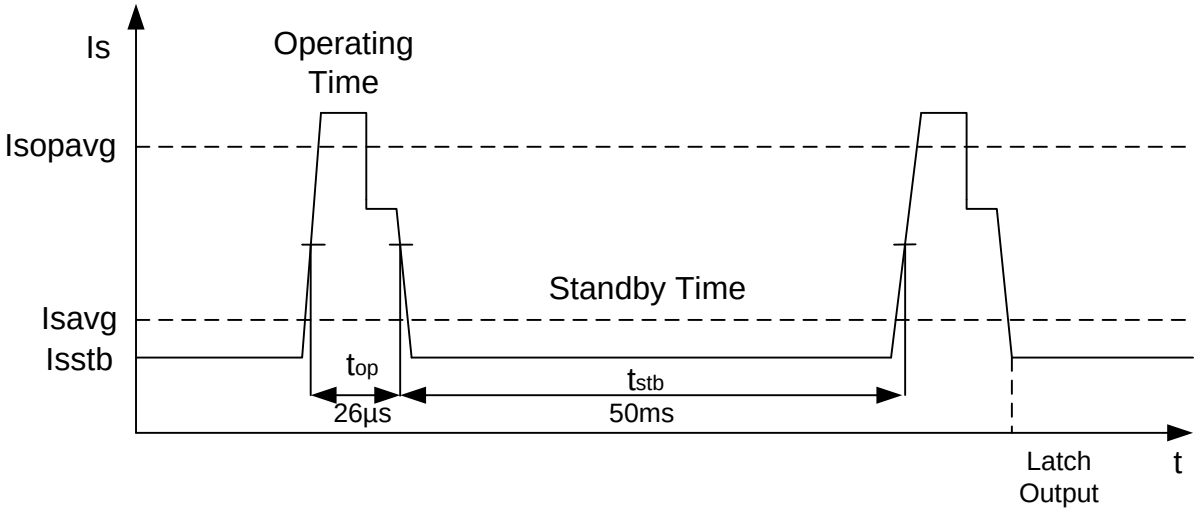
AC/DC Characteristics (T_A=+25℃,V_{DD}=3.0V,Unless otherwise specified)

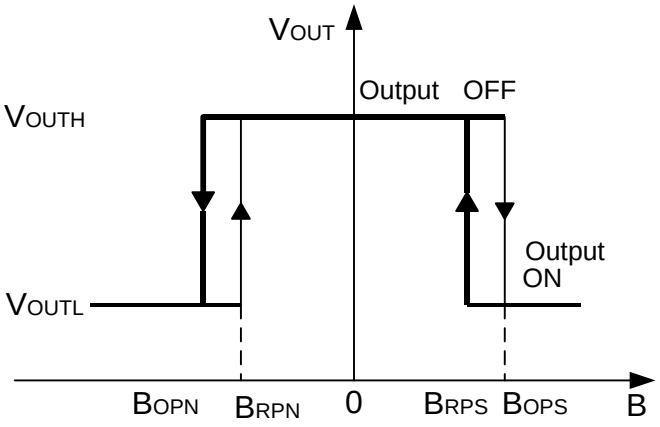
Symbol	Characteristic	Conditions	Min	Typ	Max	Symbol
VDD	Supply voltage	—	2.4	—	6.0	V
I_{SAVG}	Averaged supply current		1	4	10	uA
I_{SOPAVG}	Averaged current during operating time		0.5	2.0	3.5	mA
I_{SOPT}	Peak current during operating time				4.5	mA
I_{SSTB}	Supply current in standby time		1	1.9	8	uA
V_{OH}	Output on voltage(high side)	IOUT=-0.5mA	2.7	2.9		V
V_{OL}	Output on voltage (low side)	IOUT=0.5mA		0.1	0.3	V
t_r	Output rise time	R_L=2.7KΩ C_L=10pF		0.5	1	us
r_f	Output fall time	R_L=2.7KΩ C_L=10pF		0.1	1	us
t_{op}	Operating time		25	60	100	us
t_{stb}	Standby time		50	100	150	ms
t_{stu}	Start-up time of IC			12	20	us

■ Mangentic Characteristics

（VDD=3V，除非特别说明，T_a=25℃）

Symbol	Min	Typ	Max	Unit
BOPS	1.5	3.0	4.5	mT
BOPN	-4.5	-3.0	-1.5	mT
BRPS	1.5	2.0	2.5	mT
BRPN	-2.5	-2.0	-1.5	mT
BHYS	0.4	1.0	1.6	mT

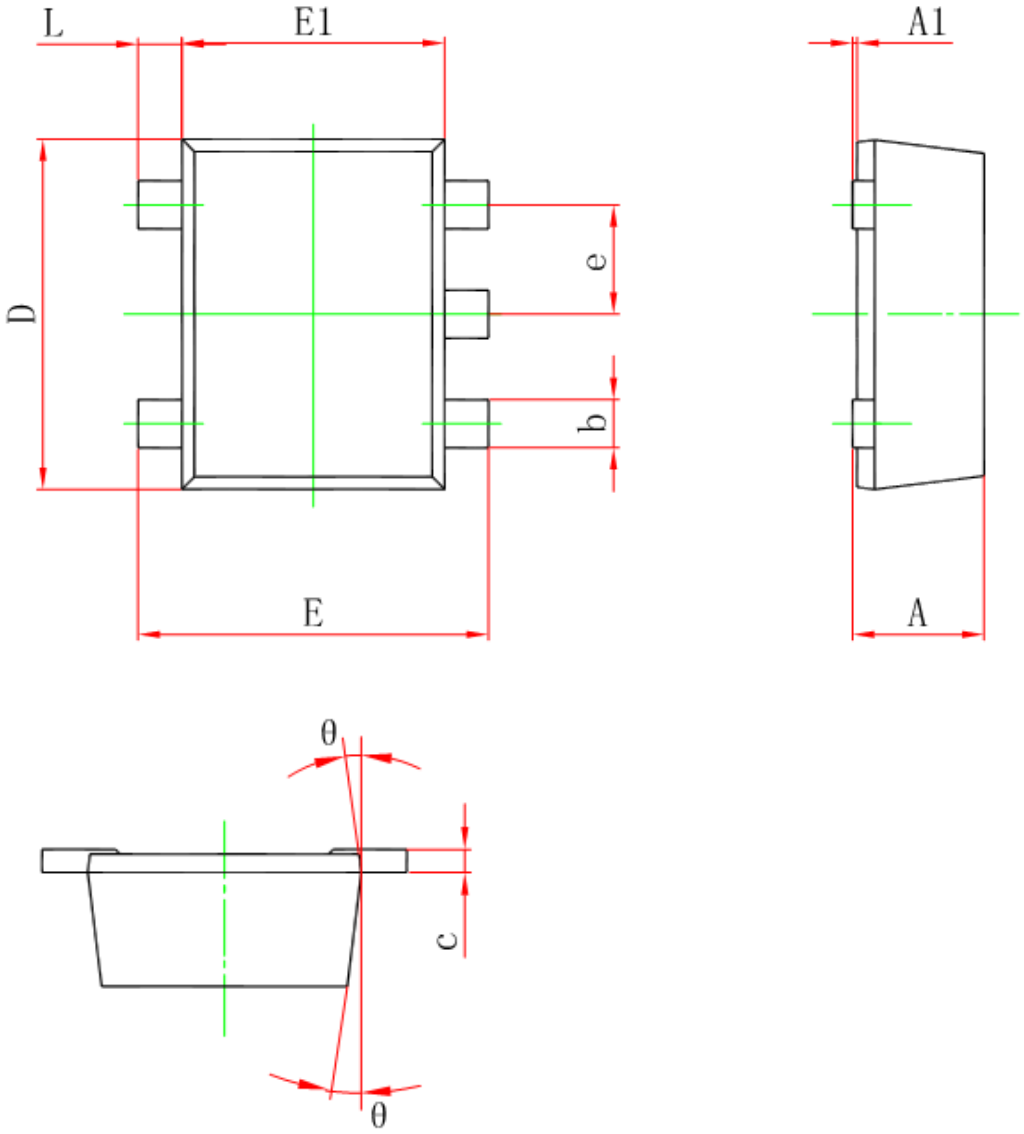




VOUT as function of the applied B-Field

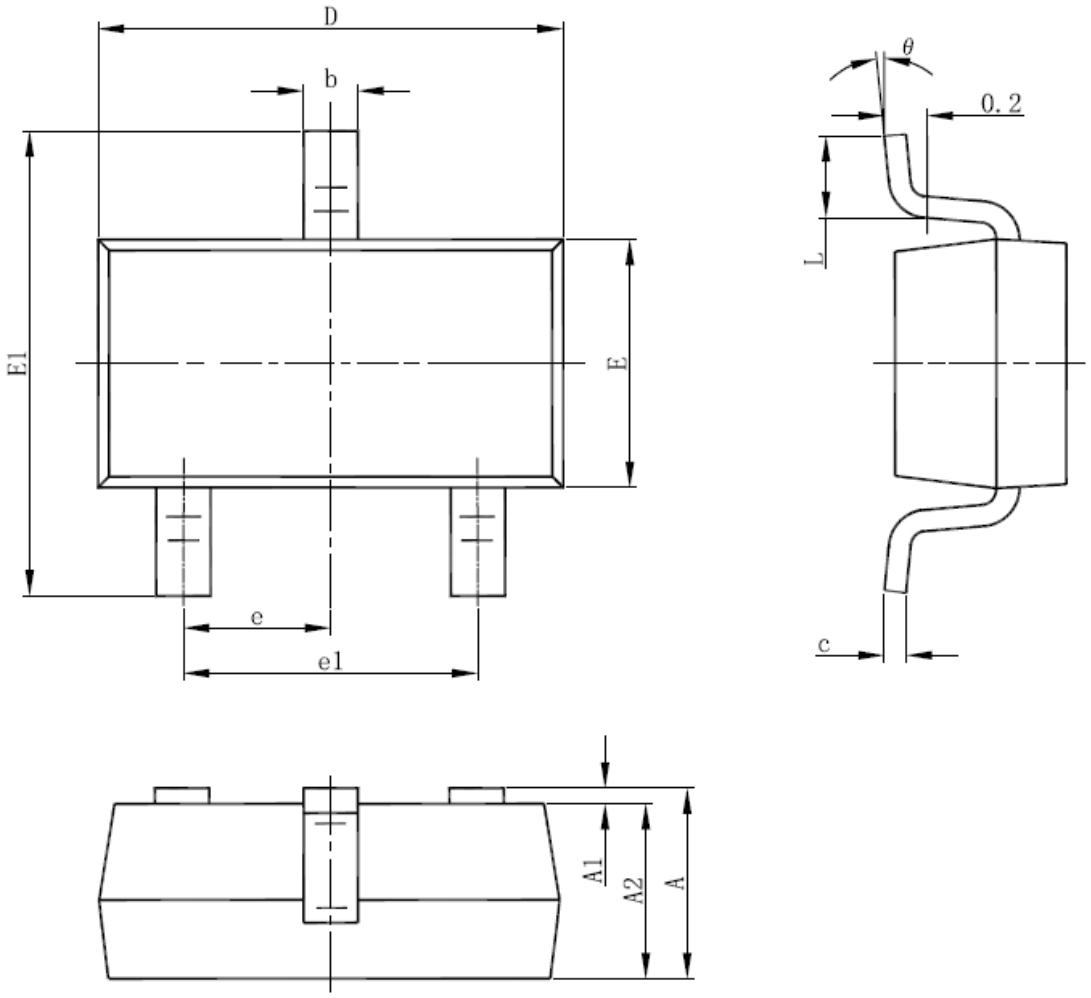
■ Package

- **SOT-553**



Symbol	Dimensions In Millimeters		Dimensions in inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7 °REF.		7 °REF.	

- **SOT-23-3L**



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°