MicroPower , Ultra-Sensitive CMOS Hall IC

■ General Description

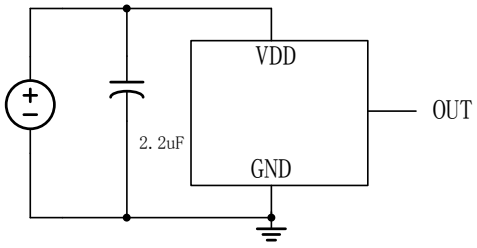
LN4919 is with proprietary Hall effect plate and single CMOS output driver, mainly designed for battery–powered, hand-held equipment (such as Cellular and Cordless Phone, PDA).

When north-pole of sufficient strength on chip or south-pole of sufficient strength under chip, the LN4919 will turn on the OUT output. When south-pole of sufficient strength on chip or north-pole of sufficient strength under chip, the LN4919 will turn on the OUT output.

LN4919 series have above two kinds Hall effect output, please select appropriate model for different application.

While the magnetic flux density (B) is larger than operate point BOP, the OUT will be turned on (low), the output is held until B is lower than release point BRP, then turned off (high).

■ Typical Application Circuit



■ Features

- 1.8V to 4.5V 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 HBM bigger than 4kV
- Lead Free Finish/RoHS Compliant

■ Application

- Mobile phones and Portable electronic devices
- Notebook

■ Package

- SOT-23-3L
- DFN1216-4L
- DF2020-3L

■ Ordering Information

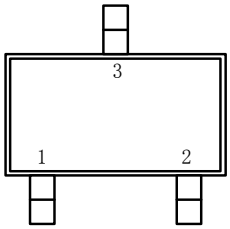
LN4919①②②

SYMBOL	Description
①	S:Sout pole
	N:North pole
②	M->SOT23-3L
	D->DFN1216-4L
	E->DFN2020-3L
③	Device Orientation: R=Embossed Taped :Standard feed **L=Embossed Taped: Reverse feed**

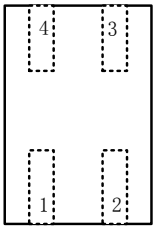
■ Marking

Part Number	Package	Marking	Part Number	Package	Marking
LN4919SMR	SOT-23-3L	9SMY	LN4919NMR	SOT23-3L	9NMY
LN4919SDR	DFN1216-4L	9SKY	LN4919NDR	DFN1216-4L	9NDY
LN4919SER	DFN2020-3L	9SNY	LN4919NER	DFN2020-3L	9NER

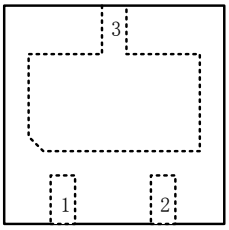
■ Pin Configuration



SOT23-3L
(TOP VIEW)



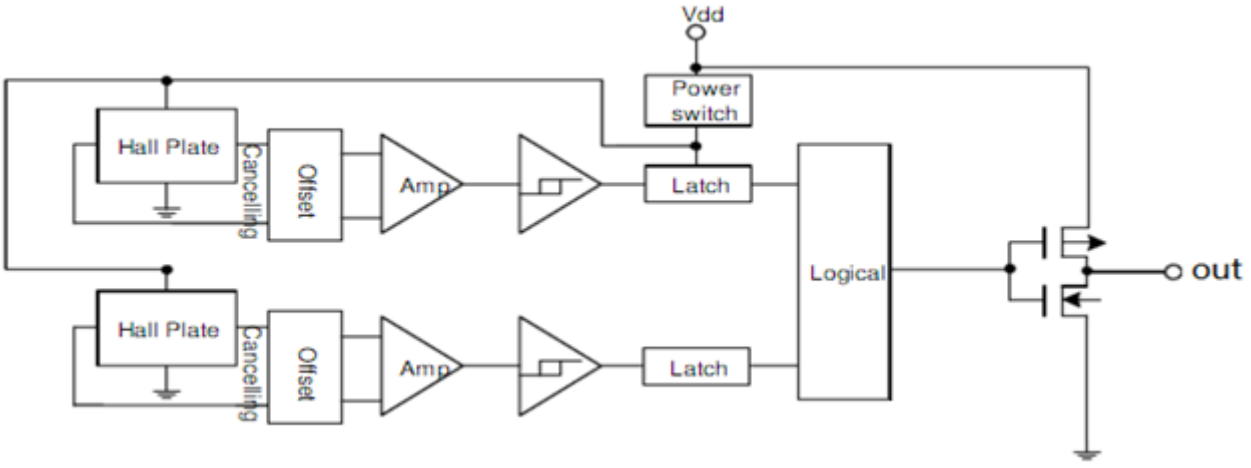
DFN1216-4L
(TOP VIEW)



DFN2020-3L
(TOP VIEW)

Pin Number	4919 Pin Name							Pin Name	Function Description
	SMR	NMR	SDR	NDR	SER	NER			
1	VDD	VDD	NC	NC	VDD	VDD		VDD	Power
2	SOUT	NOUT	GND	GND	SOUT	NOUT		GND	Ground
3	GND	GND	SOUT	NOUT	GND	GND		SOUT	South Output
4	-	-	VDD	VDD	-	-		NOUT	North Output
								NC	Floating

■ Function Block Diagram



■ Absolute Maximum Ratings

Symbol	Characteristics	Values	Unit
Vdd	Supply voltage	1.65~5	V
I_{DD}	Operating current	-1-4.5	mA
V_{OUT}	Output voltage	-0.3-5	V
I_{OUT}	Output current	-1-2.0	mA
T_S	Storage temperature range	-40～+150	℃
T_J	Maximum junction temperature	150	℃
-	ESD Protection	4000	V

■ Electrical Characteristics

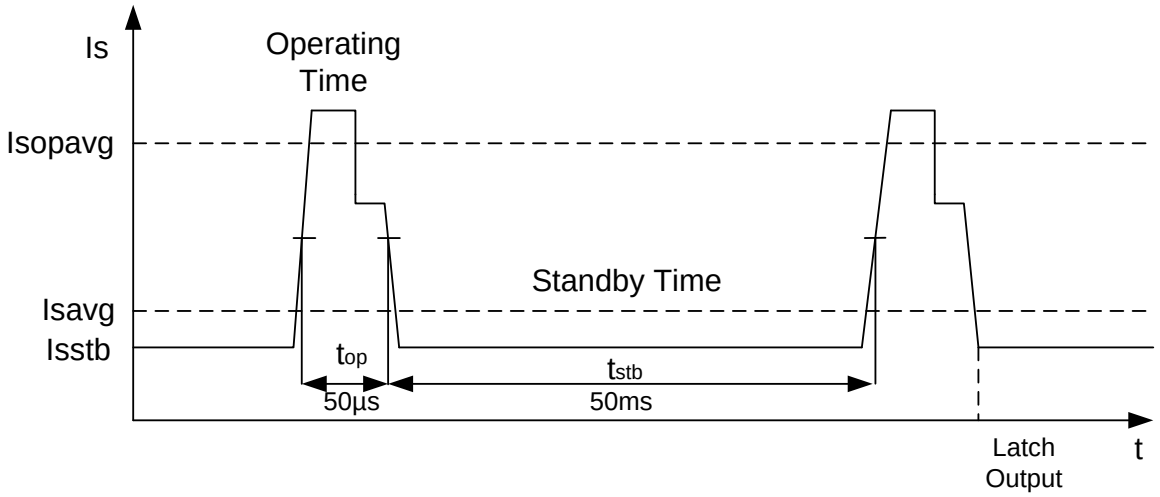
AC/DC Characteristics (T_A=+25℃,V_{DD}=3.0V,Unless otherwise specified)

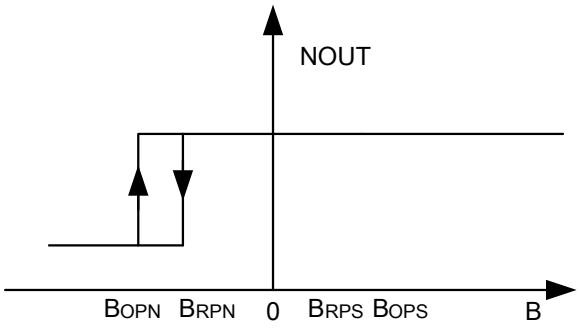
Symbol	Characteristic	Conditions	Min	Typ	Max	Unit
VDD	Supply voltage	—	1.8	—	4.5	V
I_{SAVG}	Averaged supply current		3	5	7	uA
I_{SOPAVG}	Averaged current during operating time		0.5	0.7	1	mA
I_{SOPT}	Peak current during operating time				2	mA
I_{SSTB}	Supply current during standby time		1		2	uA
V_{OH}	Output High Voltage	IOUT=-0.5mA	2.7	2.9		V
V_{OL}	Output low Voltage	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		40	50	60	us
t_{stb}	Standby time		40	50	60	ms
t_{op}/t_{stb}	Duty cycle			0.1		%
t_{stu}	Start-up time of IC			7	13	us

■ Mangentic Characteristics

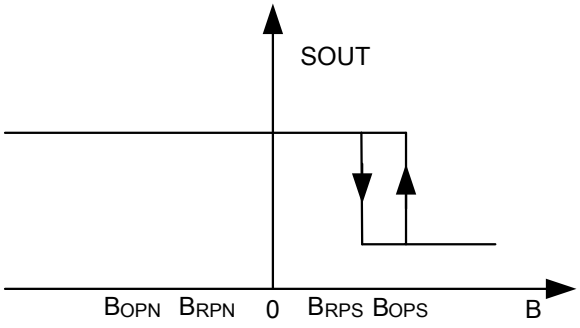
(T_A=+25℃,V_{DD}=3.0V, Unless otherwise specified)

Symbol	Min	Typ	Max	Unit
BOPS	2	3.5	5.5	mT
BRPS	1	2.0	4.0	mT
BOPN	-5.5	-3.5	-2.0	mT
BRPN	-4.0	-2.0	-1	mT





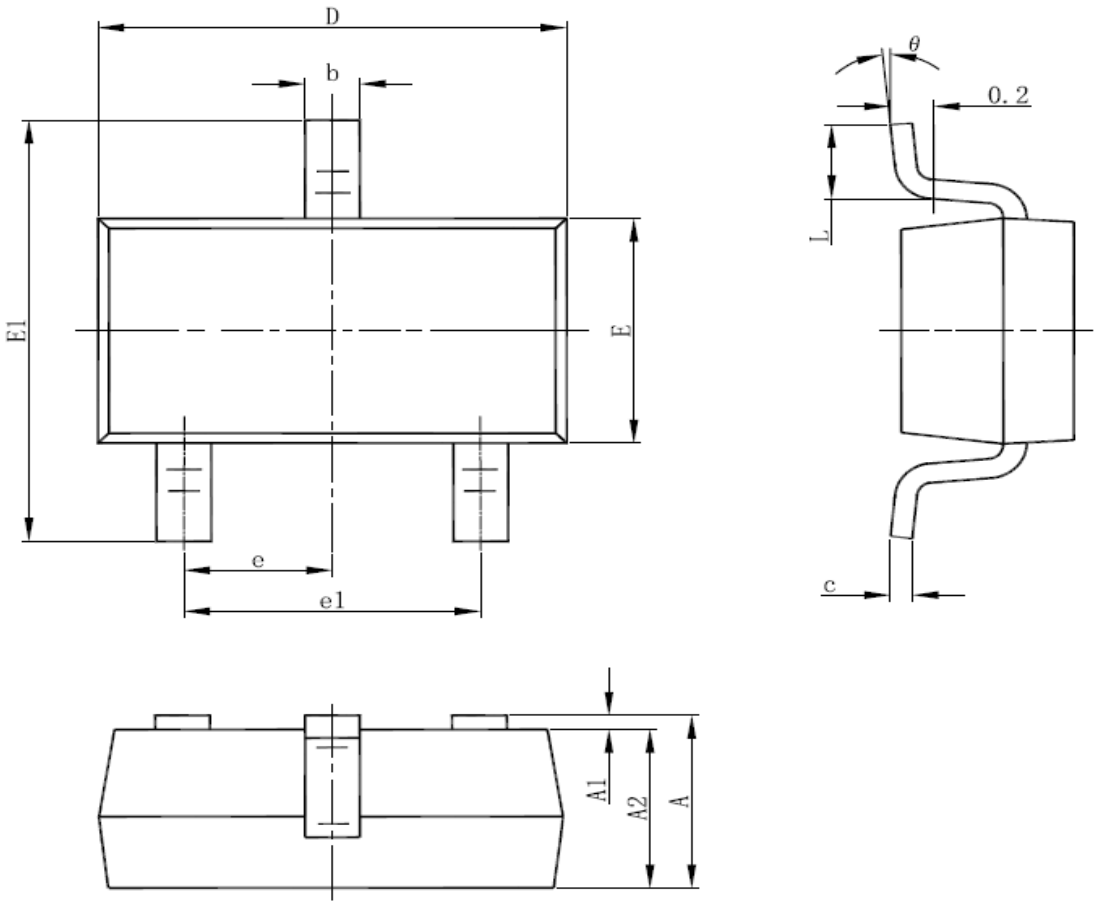
Nout function



Sout function

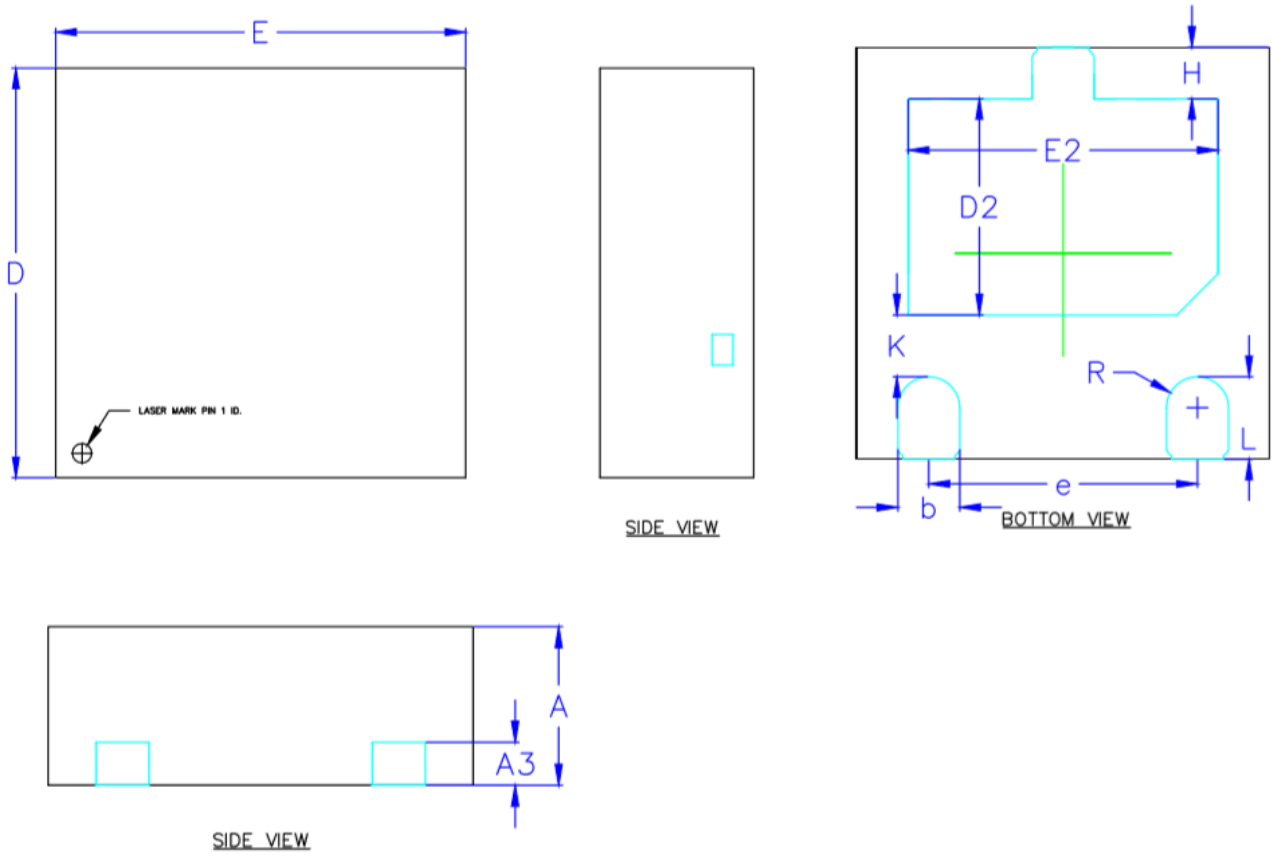
■ Package

- **SOT-23-3L**



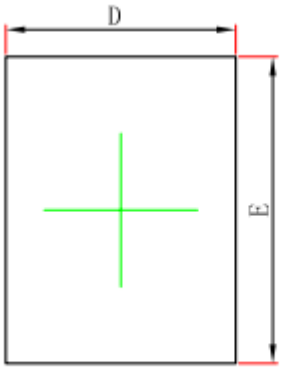
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)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

- **DFN2020-3L**

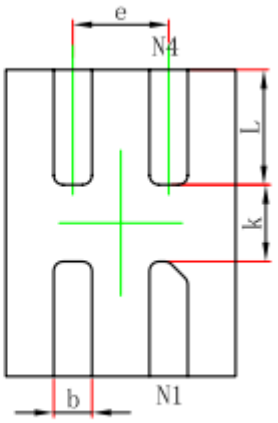


COMMON DIMENSION (MM)			
PKG	DFN2020		
REF.	MIN.	NOM.	MAX
A	0.527	0.552	0.577
A3		0.127 REF	
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.95	1.05	1.15
E2	1.40	1.50	1.60
e	1.20	1.30	1.40
H	0.20	0.25	0.30
K	0.20	0.30	0.40
L	0.35	0.40	0.45
R1	0.13	—	—

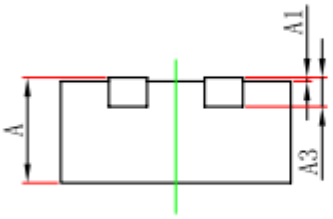
- **DFN1216-4L**



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.500	0.600	0.020	0.024
A1	0.000	0.050	0.000	0.002
A3	0.152REF.		0.006REF.	
D	1.150	1.250	0.045	0.049
E	1.550	1.650	0.061	0.065
b	0.150	0.250	0.006	0.010
e	0.500TYP.		0.020TYP.	
L	0.550	0.650	0.022	0.026
k	0.300MIN.		0.012MIN.	