Low power consumption and high sensitivity omnipolar Hall chip

Description

SL6207 is a low-power, high-sensitivity full bipolar Hall switch chip designed and manufactured using CMOS technology. Integrated within the device are a voltage regulator, Hall voltage generator, small signal amplifier, chopper stabilizer, Schmitt trigger, and CMOS output driver. This chip exhibits excellent temperature stability, strong stress resistance, and high sensitivity, operating within a voltage range of 1.8V to 5.5V. It is available in TO92S through-hole and SOT23-3L surface-mount packages, both compliant with RoHS environmental standards.

Features

- Push-pull output
- ESD performance up to ±6kV
- Operating voltage: 1.8V to 5.5V
- Ideal for low-power battery-operated applications
- Full bipolar output switch

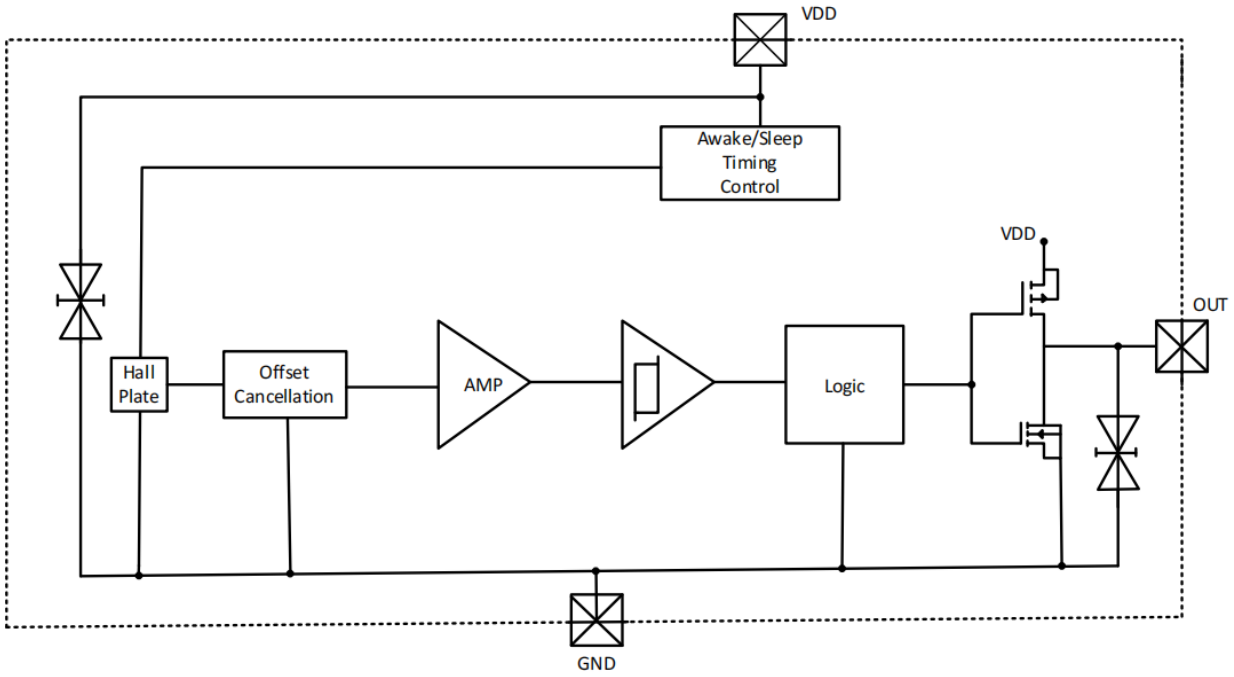
Applications

- Solid-state switch
- Bluetooth earbud charging case
- Portable disinfection box
- Laptop computer
- Magnetic sensor switch for low duty cycle applications replacing reed switches
- Liquid level sensor
- Proximity switch

Packaging

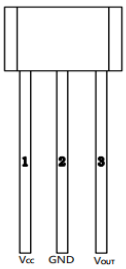
Number	Package	Temperature Range	Product Packaging
SL6207-9	TO92S	-40℃~85℃	1000/bag
SL6207-3	SOT23-3L	-40℃~85℃	3000/roll

Functional block diagram

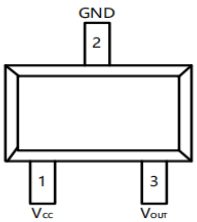


Pin information

Pin	Symbol	Description
1	V_{CC}	power supply
2	GND	ground
3	V_{OUT}	output

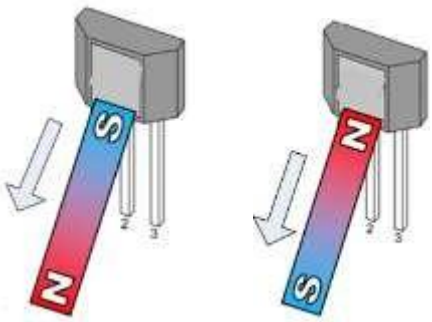


TO92S

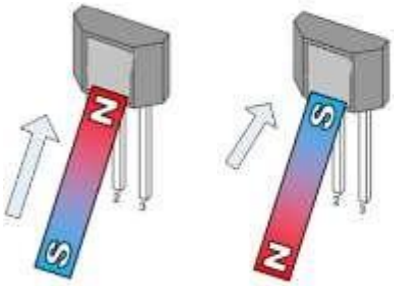


SOT23-3L

Applications

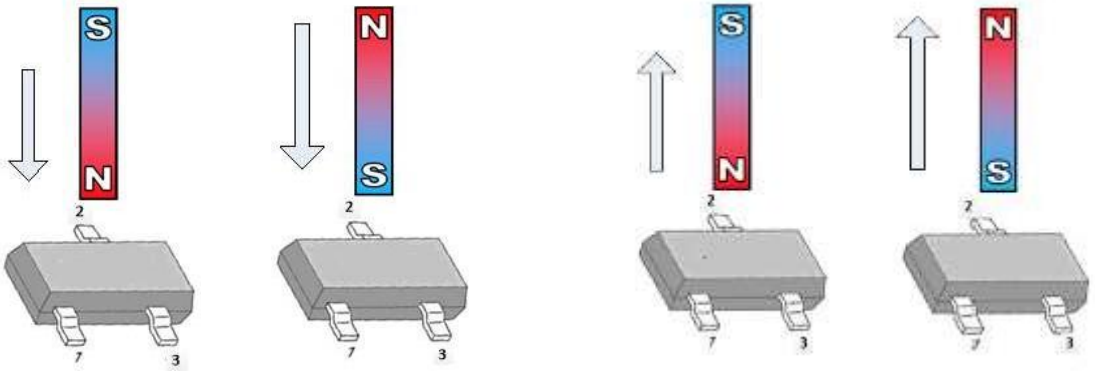


V_{OUT}=High level



V_{OUT}=Low level

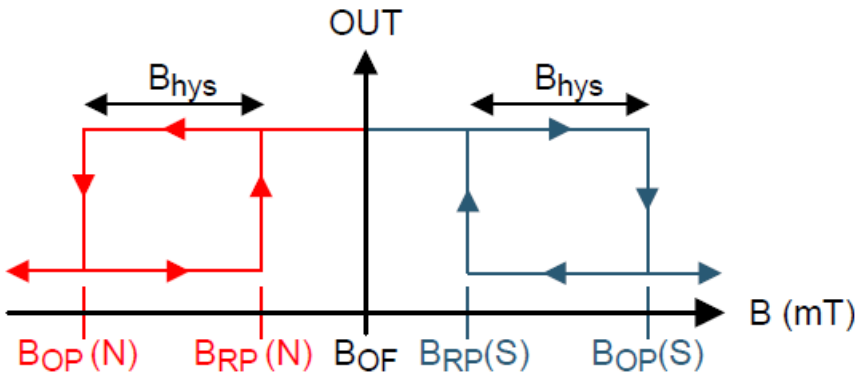
TO92S(SL6207-9)



V_{OUT}=Low level V_{OUT}=High level

SOT-23-3L(SL6207-3)

Output state diagram



Limit parameters

Parameter	Symbol	Value	Unit
Voltage	V_{CC}	6.0	V
reverse voltage	V_{CCR}	-0.3	V
output current	I_{OUT}	5	mA
output voltage	V_{OUT}	6.0	V
range of working temperature	T_A	-40～85	℃
storage temperature range	T_S	-50～150	℃

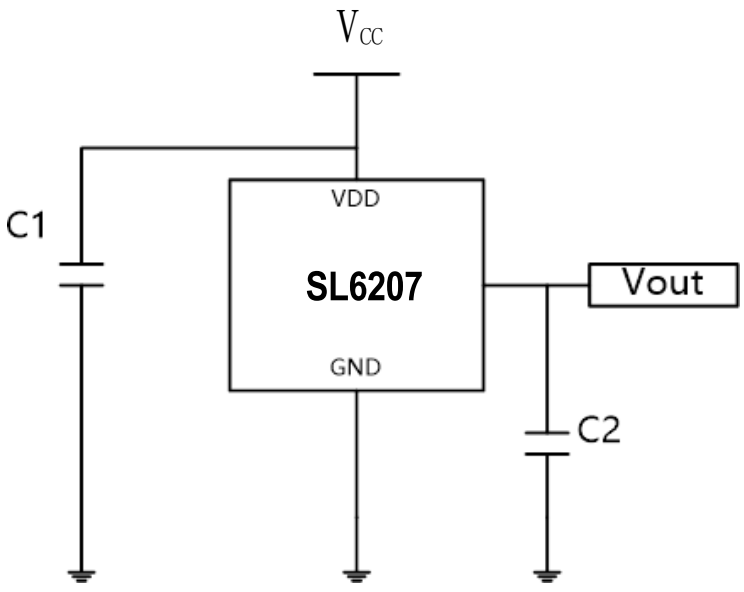
The absolute maximum ratings refer to the limits that the chip can withstand; exceeding these values may cause permanent damage to the chip

Electromagnetic properties（T_A=25˚C, V_{CC}=3.0V）

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
electrical properties						
operating voltage	V_{CC}		1.8		5.5	V
output low voltage	V_{OL}	I_{OUT}=1mA			0.2	V
output high voltage	V_{OH}	I_{OUT}=-1mA	V_{CC}-0.2			V
output current	I_{OUT}	when outputting low voltage			3.0	mA
		when outputting high voltage	-2.0			mA
working current	I_{awk}	when waking up		2.8		mA
average power supply current	I_{DD}			5	10	uA
wake-up mode time	T_{awk}			20		us
sleep mode time	T_p			20		ms
working frequency	F_w			50		Hz
magnetic properties						
working point	Bop			±22		Gs
release point	Brp			±14		Gs
hysteresis	Bhys	|Bop-Brp|		8		Gs

Application circuit

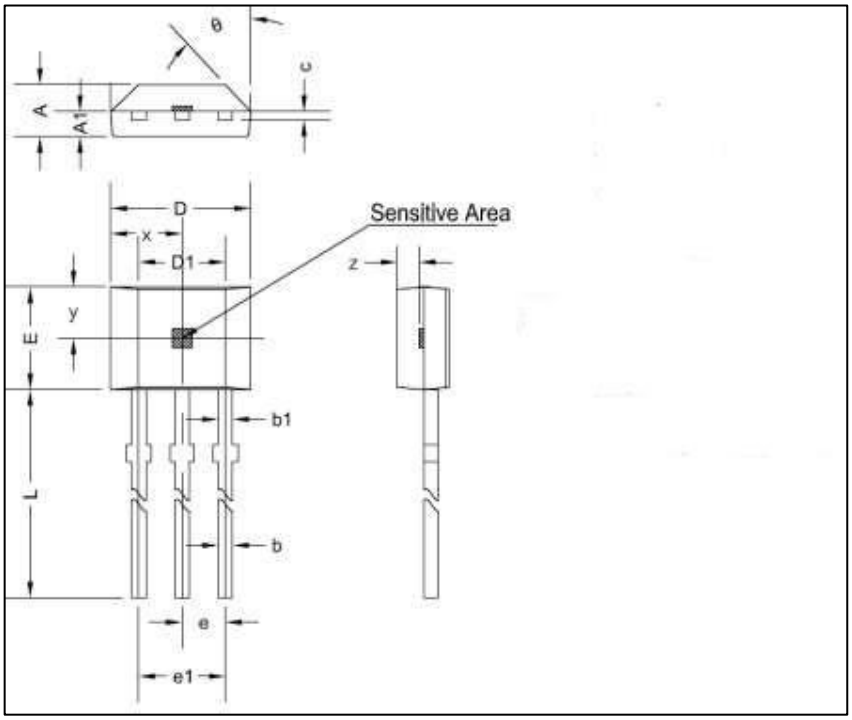
C1=0.1Uf,C2=100pF



Typical application circuit

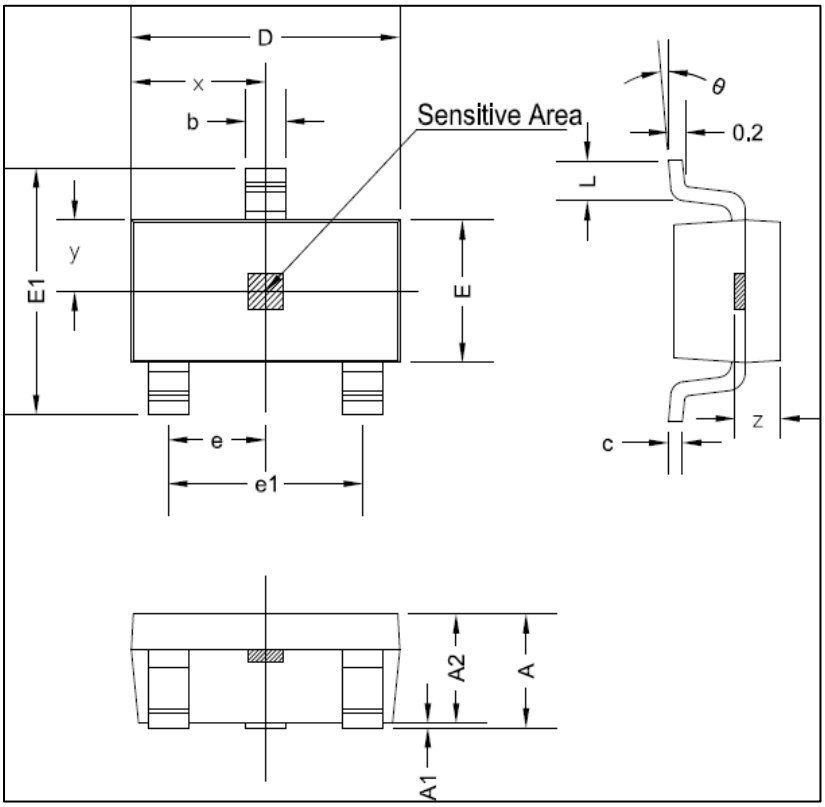
Packaging information

TO92S Package dimensions



Symbol	Dimensions（mm）		Dimensions（inch）	
	Min.	Max.	Min.	Max.
A	1.420	1.670	0.056	0.066
A1	0.660	0.860	0.026	0.034
b	0.350	0.560	0.014	0.022
b1	0.400	0.550	0.016	0.022
C	0.360	0.510	0.014	0.020
D	3.900	4.200	0.154	0.165
D1	2.970	3.270	0.117	0.129
E	2.900	3.280	0.114	0.129
e	1.270TYP		0.050TYP	
e1	2.440	2.640	0.096	0.104
L	13.500	15.500	0.531	0.610
x	2.025TYP		0.080TYP	
y	1.545TYP		0.061TYP	
z	0.500TYP		0.020TYP	
θ	45°TYP		45°TYP	

SOT23-3L Package Dimensions



Symbol	Dimensions（mm）		Dimensions（inch）	
	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	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
x	1.460TYP		0.057TYP	
y	0.800TYP		0.032TYP	
z	0.600TYP		0.024TYP	
θ	0°	8°	0°	8°

Notice

- Hall sensors are sensitive devices, and electrostatic protection measures should be taken during both usage and storage.
- During installation and use, minimize mechanical stress applied to the device package and leads.
- It is recommended to keep soldering temperatures below 350°C and duration under 5 seconds.
- To ensure the safety and stability of the Hall chip, prolonged operation beyond specified parameters is not advisable.