

Low power consumption and high sensitivity bipolar Hall chip

1.Introduction

SL6204 is a low-power, high-sensitivity bipolar Hall switch chip designed and produced using CMOS technology. The chip integrates a voltage regulator, Hall voltage generator, small signal amplifier, chopper regulator, Schmitt trigger and CMOS output driver. The chip has good temperature stability, strong stress resistance, high sensitivity, etc. The operating voltage is 1.8V-5.5V. It provides TO-92S direct plug-in package and SOT23-3L package, and the package complies with RoHS environmental protection standards.

2.Features

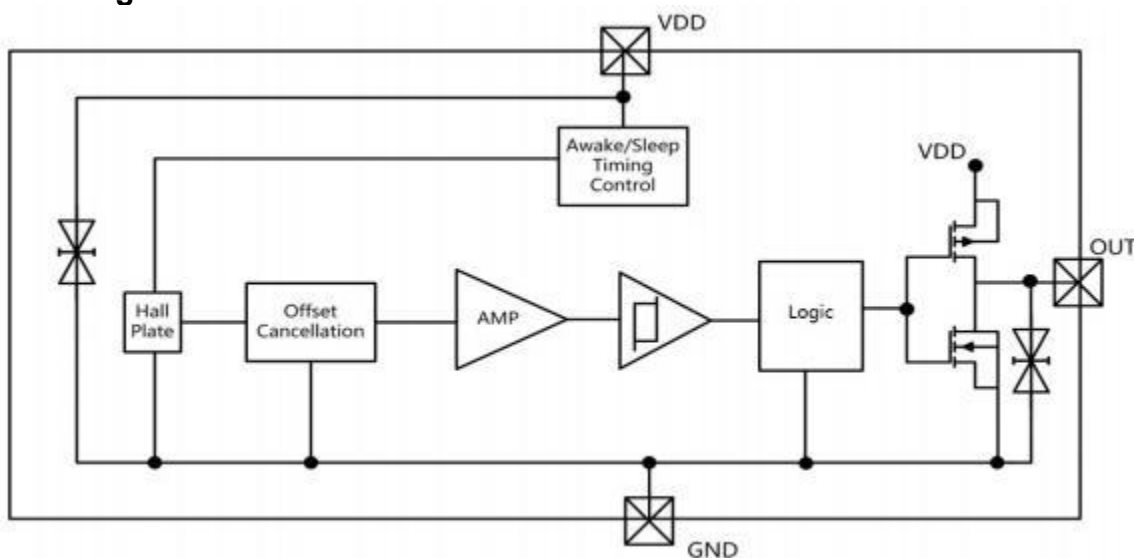
- CMOS output
- ESD performance can reach: ± 6 kV
- Operating voltage: 1.8V-5.5V
- Micropower battery powered applications
- Bipolar output switch

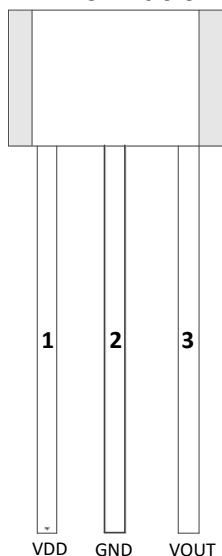
3.Applications

- Solid state switch
- Instrumentation
- Laptop
- PDA

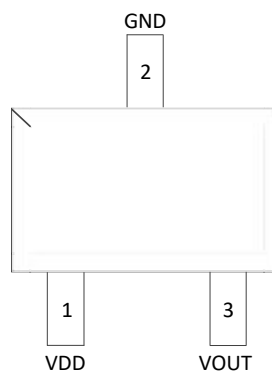


4.Functional diagram



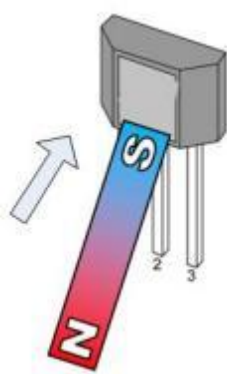
5.Pin information


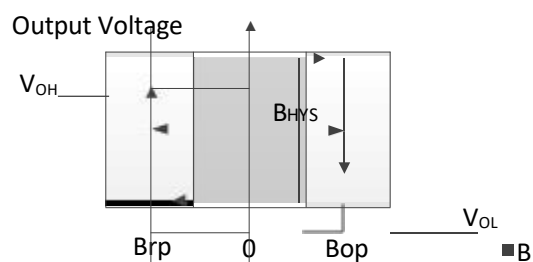
TO92S



SOT23

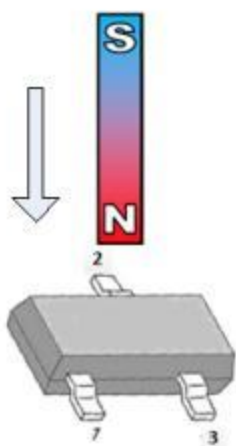
Name	Pin	Description
V _{DD}	1	Power
G _{ND}	2	Ground
V _{OUT}	3	Output

6.Application examples

 V_{OUT}=Low level

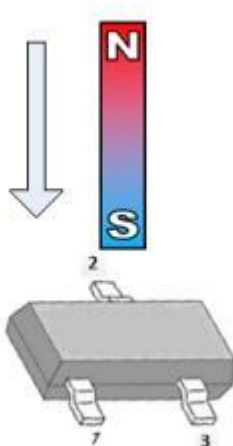
 V_{OUT}= High level


TO92S Output status

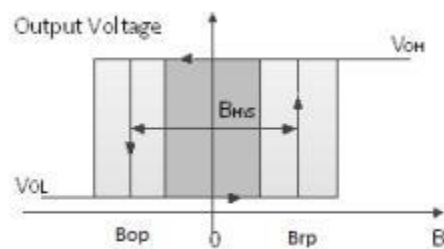
TO92S (SL6204-9)



VOUT=Low level



VOUT= High level



SOT23 Output status

SOT23 (SL6204-3)

8.Ordering Information

Serial number	Package	Boxing	Temperature range
SL6204-9	TO92S	1000/Bag	-40°C ~ 85°C
SL6204-3	SOT23-3L	3000/Roll	-40°C ~ 85°C

9.Limit parameters

Parameter	Symbol	Numeric	Unit
Supply voltage	V_{DD}	6	V
Reverse voltage	V_{DD}	-0.3	V
Output current	I_{OUT}	5	mA
Output voltage	V_{OUT}	6	V
Operating temperature range	T_a	-40~85	°C
Storage temperature range	T_s	-50~150	°C

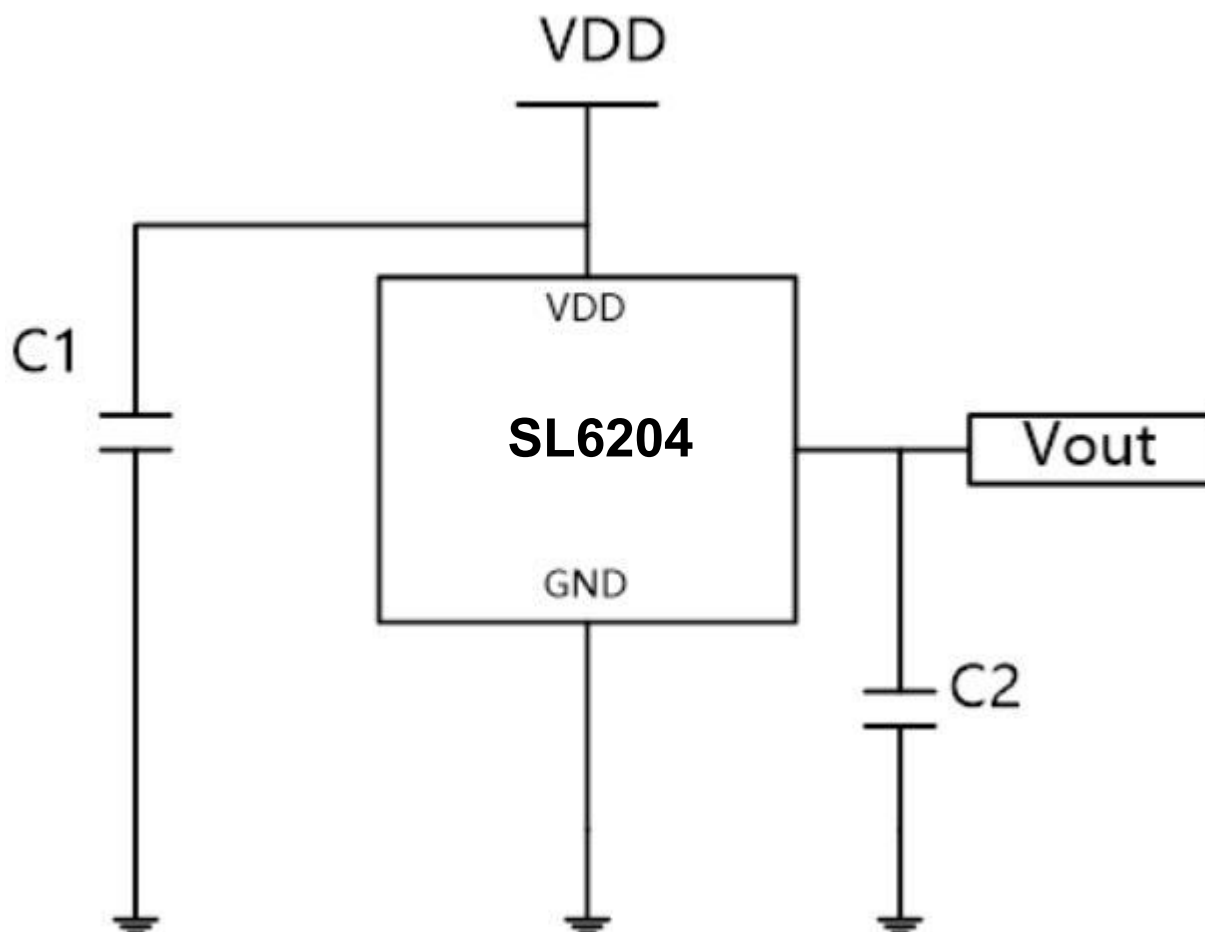
The absolute maximum ratings are the extreme values that the chip can withstand. If the value is exceeded, the chip may be permanently damaged.

10.Electromagnetic properties ($T_a=25^{\circ}\text{C}$, $V_{DD}=3.0\text{V}$)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Electrical properties						
Operating voltage	V_{DD}	At work	2.7		5.5	V
Saturation pressure drop	V_{OL}	$I_{OUT}=1\text{mA}$			0.2	V
Output voltage	I_{OUT}				3.0	mA
Average power supply current Wake-up mode time	I_{DD} T_{awk}			5		μA
		At work		20		μs
Sleep mode time	T_p	At work		20		μs
Operating frequency	F_w			50		Hz
Magnetic properties						
Working point	B_{op}			25		Gauss
Release point	B_{rp}			-25		Gauss
Hysteresis	B_{hys}	$ B_{op}-B_{rp} $		50		Gauss

11.Application circuit

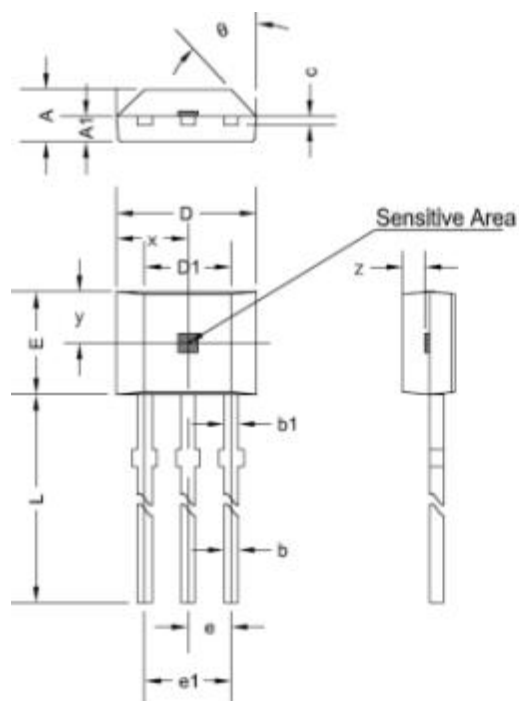
C1=2.2nF, C2=100pF



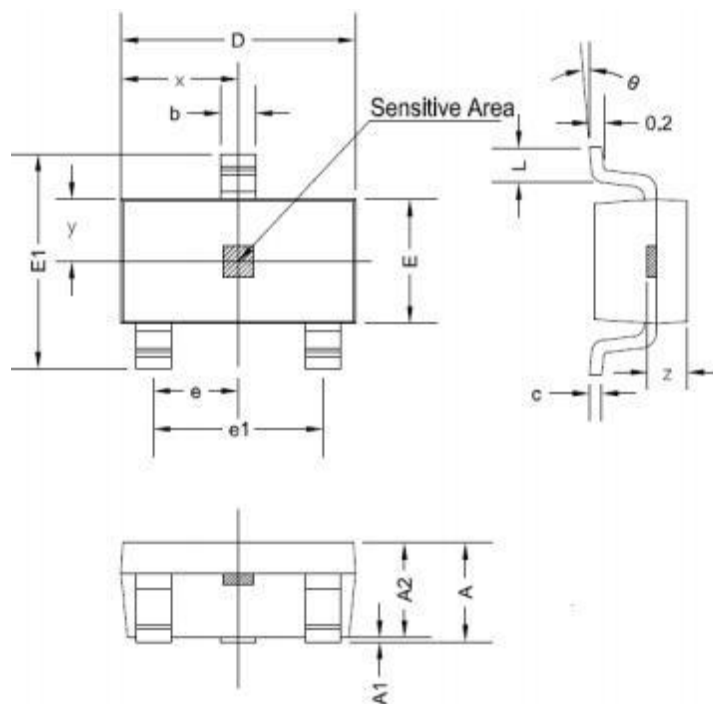
Typical application circuit

12.Dimensions

TO92S package size



Symbol	Dimensions (mm)		Dimensions (inches)	
	Min	Max	Min	Max
A	1.42	1.67	0.056	0.066
A1	0.66	0.86	0.026	0.034
b	0.35	0.56	0.014	0.022
b1	0.4	0.55	0.016	0.022
C	0.36	0.51	0.014	0.02
D	3.9	4.2	0.154	0.165
D1	2.97	3.27	0.117	0.129
E	2.9	3.28	0.114	0.129
e	1.270 TYP		0.050 TYP	
e1	2.44	2.64	0.096	0.104
L	13.5	15.5	0.531	0.61
x	2.025TYP		0.080TYP	
y	1.545TYP		0.061TYP	
z	0.500TYP		0.020TYP	
θ	45°TYP		45°TYP	

SOT23 package size


Symbol	Dimensions (mm)		Dimensions (inches)	
	Min	Max	Min	Max
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.5	0.012	0.02
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950 TYP		0.037 TYP	
e1	1.8	2	0.071	0.079
L	0.3	0.6	0.012	0.024
x	1.460TYP		0.057TYP	
y	0.800TYP		0.032TYP	
z	0.600TYP		0.024TYP	
θ	0°	8°	0°	8°

13.Precautions

1. Hall chip is a sensitive device. During installation and storage, electrostatic protection measures should be taken.
2. During installation and use, the mechanical stress applied to the device housing and leads should be minimized.
3. It is recommended that the welding temperature does not exceed 350°C and the duration does not exceed 5 seconds.
4. In order to ensure the safety and stability of the Hall chip, it is not recommended to use it for a long time beyond the parameter range.