Features

- Micro-power consumption
- 2.0V~5.0V power supply
- Chopper stabilized amplifier stage
- Switching for both polar of a magnet
- High Sensitivity Hall Sensor
- Package: SOT-23-3L

Applications

- Solid State Switch
- Home appliances, consumer
- Proximity Switch
- Position Detection

General Description

Y4913G is fabricated from mixed signal CMOS technology. It internally includes an on-chip Hall voltage generator, a voltage regulator for operation with supply voltages of 2.0 to 5.5V, a sleep/awake logic for low power consumption, temperature compensation circuitry, small-signal amplifier, Hall sensor with dynamic offset cancellation system, Schmitt trigger and an open-drain output.

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

The total power consumption in normal operation is typically 20μW with a 3.3V power source. Operating temperature range of the Y4913G is from -40°C to 85°C.

Block Diagram

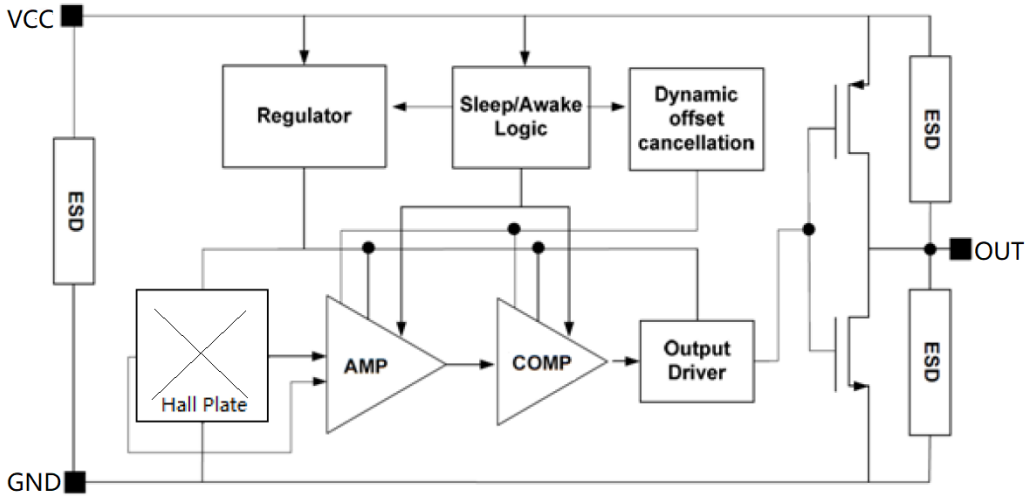


Fig 1

Pin Assignment

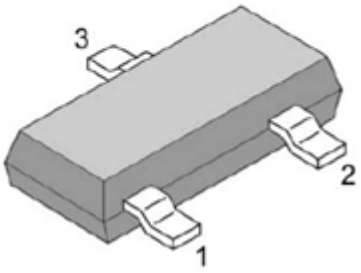


Fig2 SOT-23-3L

Pin Description

SOT Pin Number	Pin Name	Function
1	VCC	Supply Voltage
2	OUT	Open Drain Output
3	GND	Ground

Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{CC}	Supply Voltage		-0.5~6.0	V
Idd	Supply Current		5	mA
B	Magnetic Flux Density		Unlimited	Gauss
Tj	Operating Temperature Range		-40 to 85	℃
Ts	Storage Temperature		-55 to 150	℃
PD	Power Dissipation	3Pin SIP	550	mW
		SOT-23-3L	230	mW

Note: Stresses greater than those listed under “Absolut Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. “Absolute Maximum Ratings” for extended period may affect device reliability.

Recommended Operating Conditions

(TA=25℃ unless otherwise noted)

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	2.0	5.0	V
Ambient Temperature	Ta	-40	85	℃

Electrical Characteristics

(VCC=3.3V Ta=25℃, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CC}	Average Supply Current	V_{CC}=2.7V,Output Open	-	4	7	uA
I_{ON}	Supply current (opertating mode)	V_{CC}=3.3V	-	1.2	-	mA
I_{ST}	Supply current (stand-by mode)	V_{CC}=3.3V	-	3	-	uA
V_{SAT}	Output Saturation Voltage	Io=2mA,B>Bop	-	-	0.1	V
I_{OL}	Output Leakage Current	V_{OUT}=5.0V,B<Brp	-	-	1	uA
T_{awake}	Awake Time	V_{CC}=3.3V	-	90	-	us
T_{period}	Period	V_{CC}=3.3V	-	55	-	ms
ESD	Electro-Static Discharge	HBM		4		KV

Magnetic Characteristics

(VCC=3.3V Ta=25℃, unless otherwise specified)

Characteristics	Symbol	Min	Typ	Max	Unit
Operating Point	Bops (south pole to part marking side)	-	+30	+55	Gauss
	Bopn (nouth pole to part marking side)		-30	-55	Gauss
Releasing Point	Brps (south pole to part marking side)	+8	+20	-	Gauss
	Brpn (nouth pole to part marking side)	-8	-20	-	Gauss
Hysteresis	Bhys=|Bopx-Brpx|	3	10	18	Gauss

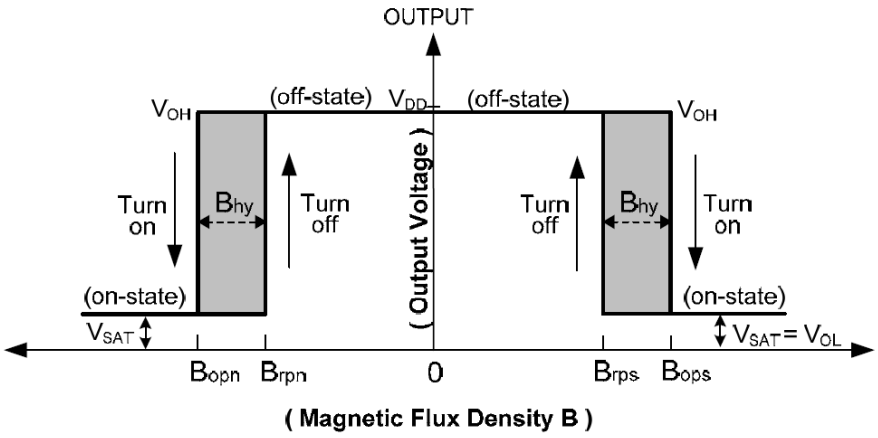


Fig 3

Typical Output Waveform

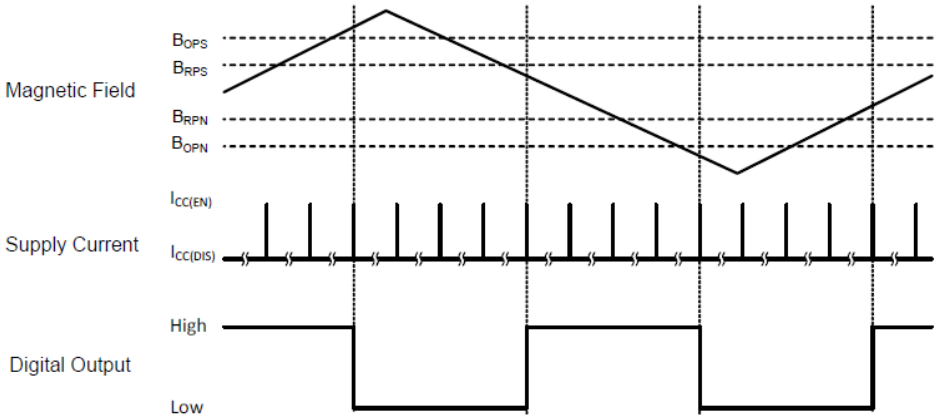


Fig 4

Application Circuits

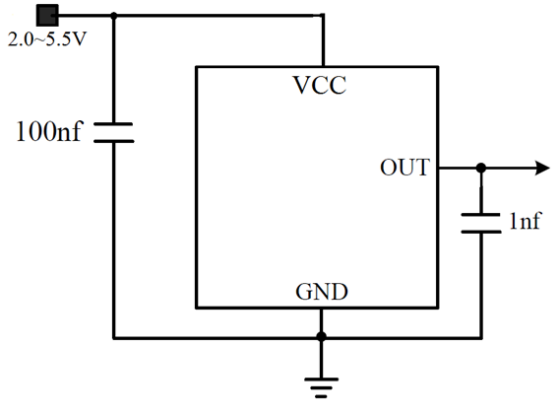


Fig 5

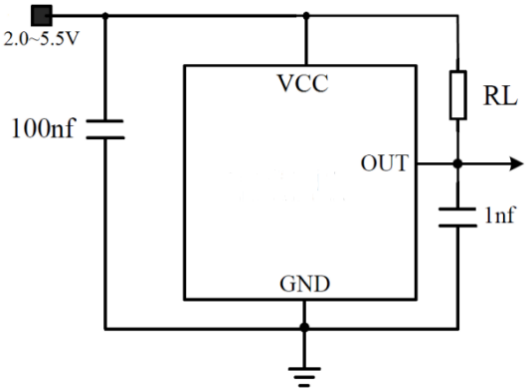
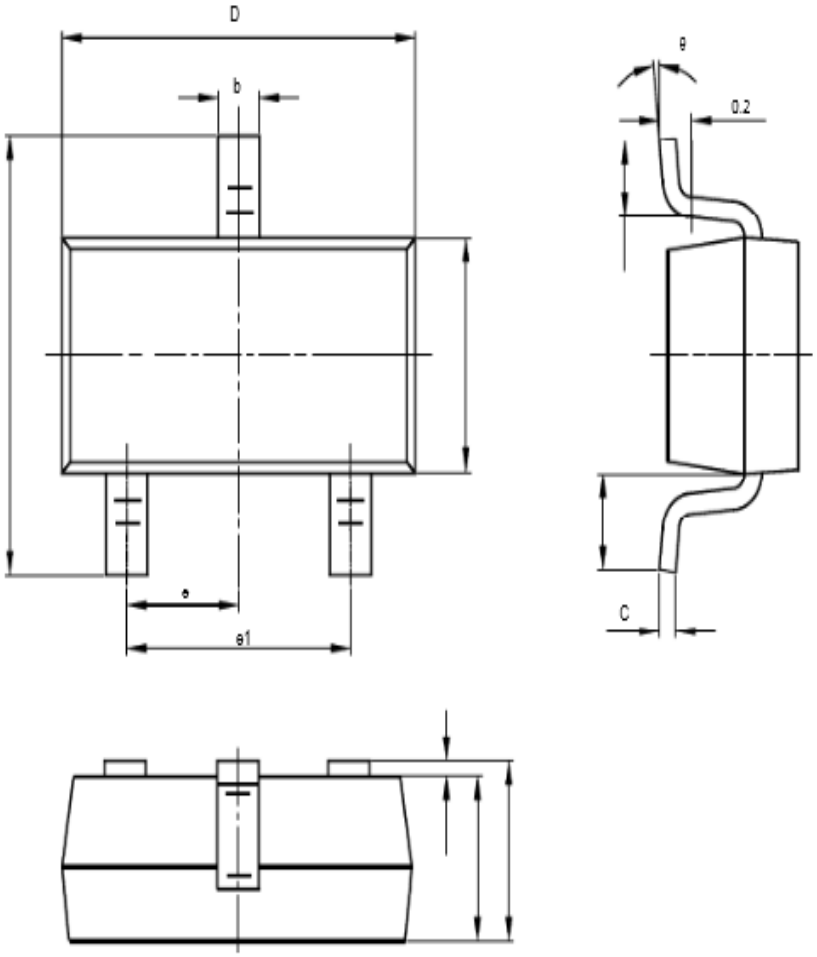


Fig 6

Package Information

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	0.400	0.012	0.016
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	0.950TPY		0.037TPY	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°