



Micro-power

PT3661G-BC

Hi-Sensitivity Hall-effect Switch

Applications

- Cover detector
- Battery-operated
- Hand Held Equipment

Features

- Micro-power(5~7 μ W(typ):V_{cc}=3.0V)
- 2.4V to 5.0V operation range
- Built-in dynamic offset cancellation
- Small size
- High balance and low thermal drift magnetic sensing
- Micro power Operation
- ESD protected to 5KV(HBM)

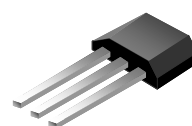
Order information

- PT3661G-BC-LH /PKG:SOT23
- PT3661G-BC-UA /PKG:TO92

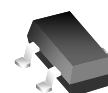
Package Type

P/N: PT3661G-BC-XX

TO92-3L (UA)



SOT23-3L (LH)



Specifications

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Rating	Units
Maximum supply voltage	V _{DD} max		7	V
Allowable power dissipation	P _d	SOT23	300*	mW
Operating temperature	T _a		-40~+85	°C
Storage temperature	T _s		-55~+150	°C
Max. output current	I _{OMAX}		5	mA

*: On 50mm x 50mm x 1.6mm glass epoxy board

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General Specifications

The PT3661G-BC is designed for battery-operated, hand-held equipment such as cellular and cordless phone, PDA and pagers application. The built-in dynamic offset cancellation of pre-amplifier stage achieves optimal symmetrical magnetic sensing. The supply voltage range is from 2.4V to 6.0V and the max output current is 5mA.

This Hall effect sensor IC integrate a sensor, pre-amplifier with dynamic offset cancellation and the differential hysteresis comparator in single chip . The architecture block diagram is shown in Fig. 1.

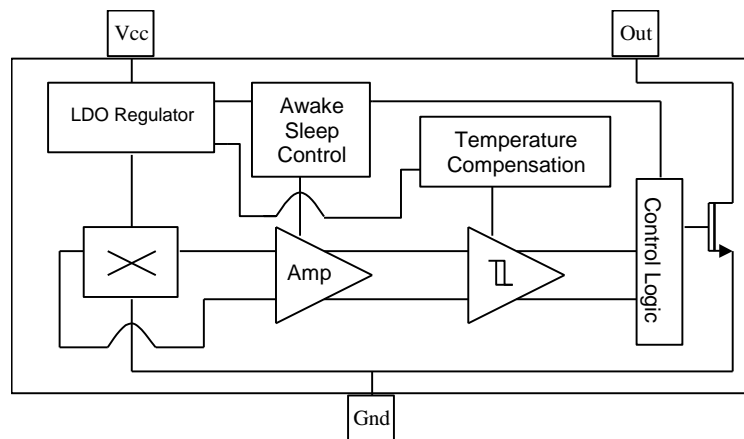


Fig 1. Function Diagram

The micro power operation is achieved by the awake/sleep timing control as shown Fig2. The chip will be automatic at awake mode for 45uS and is at sleep mode (shutdown) for the remainder of the period (90mS). At awake mode, the sensor of chip will be enable and normal operation. The sensor will be disabled to save the power and the output is latched in the previous state during sleep mode.

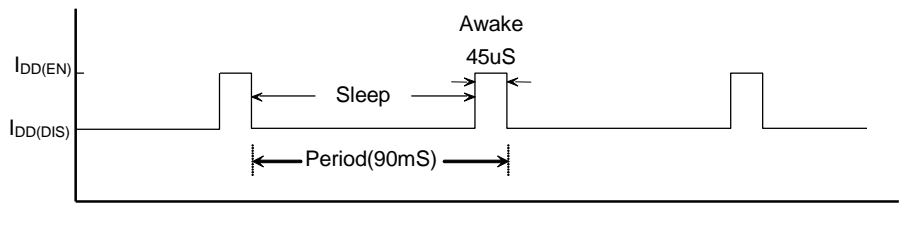


Fig 2. Awake/Sleep timing

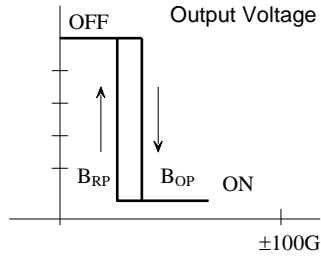
Electrical Characteristics ($T_A=+25^{\circ}\text{C}$, $V_{DD}=3.0\text{V}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V_{DD}	Operating	2.4	-	6.0	V
Output Sink Voltage	$V_{DS(ON)}$	$I_{OUT}=1\text{mA}$, $V_{DD}=3.0\text{V}$	-	0.1	0.25	V
Supply Current	I_{AWK}	Awake, $V_{DD}=3.0\text{V}$	-	3	5	mA
	I_{SLP}	Sleep, $V_{DD}=3.0\text{V}$	-	2	4	μA
	I_{AVG}	$V_{DD}=3.0\text{V}$	-	5	9	μA
Awake Time	T_{AWK}	Operating	-	45	90	μS
Period	T_P	Operating	-	90	180	mS
Duty Cycle			-	0.05	-	%

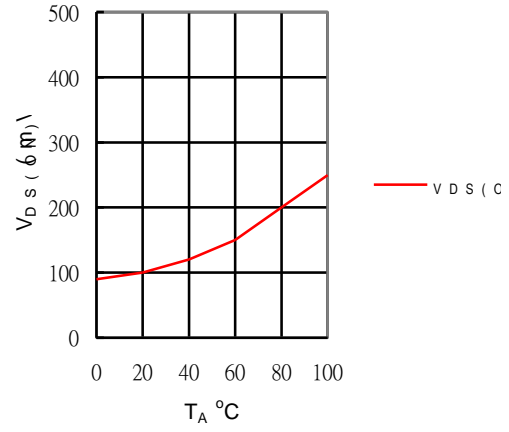
Magnetic Characteristics ($T_A=+25^{\circ}\text{C}$, $V_{DD}=3.0\text{V}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Operate Point	B_{OP}	South/North operate point	± 22	± 35	± 70	G
Release Point	B_{RP}	South/North release point	± 10	± 27	± 65	G
Hysteresis	B_{HYS}	$ B_{OPX} - B_{RPX} $	5	8	12	G

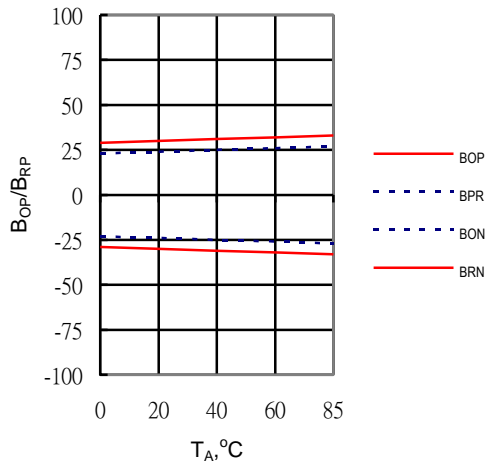
Magnetic Flux Density in Gauss



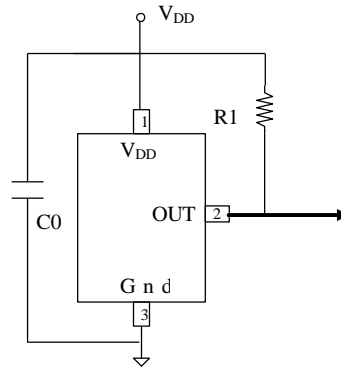
Output sink voltage v_e



B_{OP} , B_{RP} versus temperature



Application circuits



NOTE :

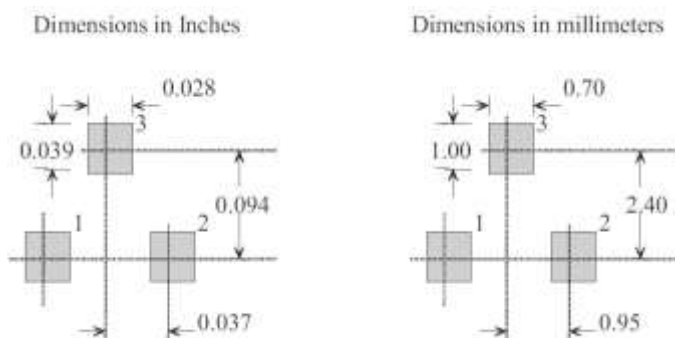
C0: 0.1uF decoupling capacitor

R1: >470Kohm is recommended

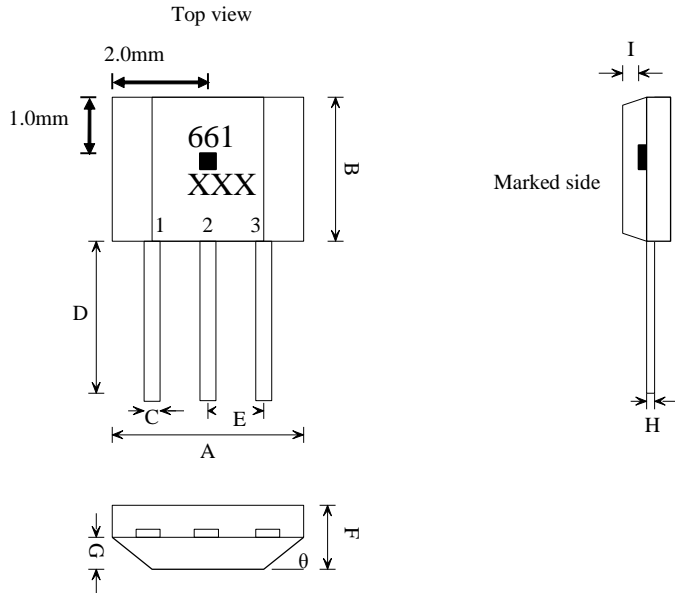
Ordering information

Part Number	Temperature Range	Package Type	Package Qty
PT3661G-BC-UA	-40°C~+85°C	TO92-3L	1000pcs/Bulk
PT3661G-BC-LH	-40°C~+85°C	SOT23-3L	3000pcs/Reel

Solder-Pad Layout



Package Outline
TO-92(UA)



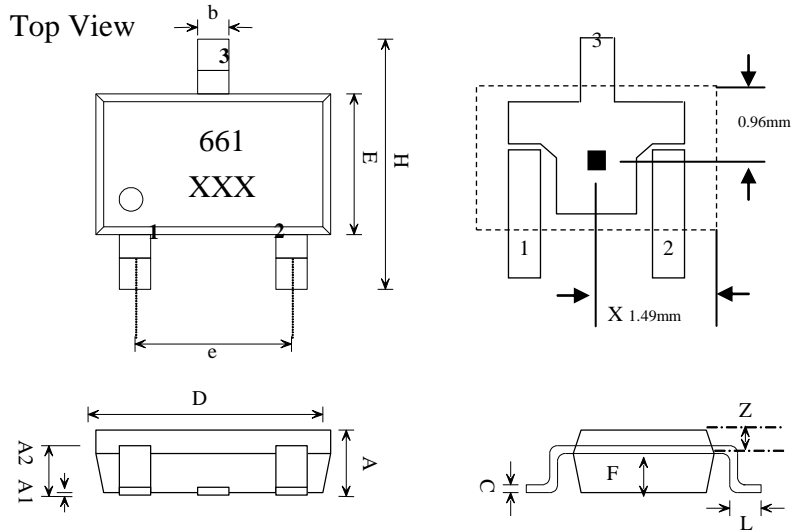
Marking:
Part Number : 661
Date Code : X(Year) XX(Week)

1. VDD/DC power supply
2. GND/DC ground
3. OUT/output pin

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	3.80	4.00	4.20
B	2.90	3.10	3.30
C	0.38	0.45	0.52
D	15.10	15.30	15.50
E	1.24	1.27	1.30
F	1.45	1.50	1.55
G	0.68	0.73	0.78
H	0.36	0.43	0.50
I	0.41	0.43	0.45
θ		45°	

Package Outline
SOT-23(LH)

Sensor location



1. VDD/DC power supply
2. GND/DC ground
3. OUT/output pin

SYMBOLS	DIMENSIONS IN MILLIMETERS(mm)		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.80	2.00
F	0.35	0.50	0.65
H	2.60	2.8	3.00
e	1.7	1.9	2.1
L	0.20	-	-
SENSOR LOCATION			
X	-	0.96	-
Y	-	1.49	-
Z	-	0.50	-