



Micro-power PT3666 Hi-Sensitivity Hall-effect Switch

Applications

- Cover detector
- Battery-operated
- Hand Held Equipment

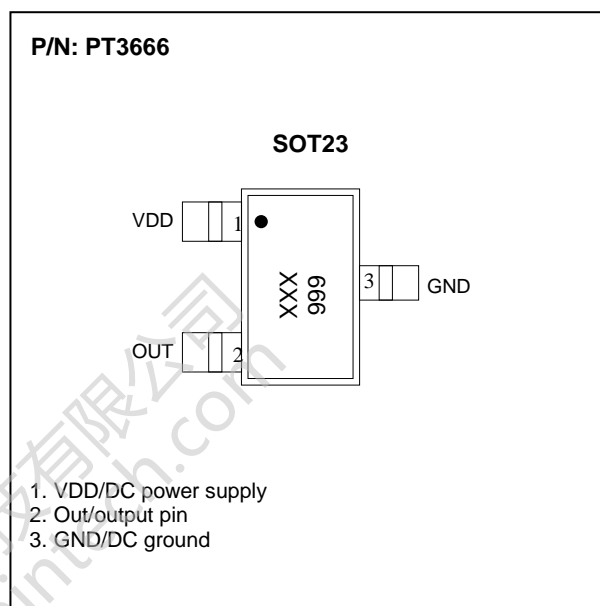
Features

- 2.4V to 5.5V 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

- PT3666 /PKG:SOT23

Package Type



Specifications

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Conditions	Rating	Units
Maximum supply voltage	V_{DDmax}		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 PT3666 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.

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.

The micro power operation is achieved by the awake/sleep timing control as shown Fig2. The chip will be automatic at awake mode for 40uS and is at sleep mode (shutdown) for the remainder of the period (40mS). 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.

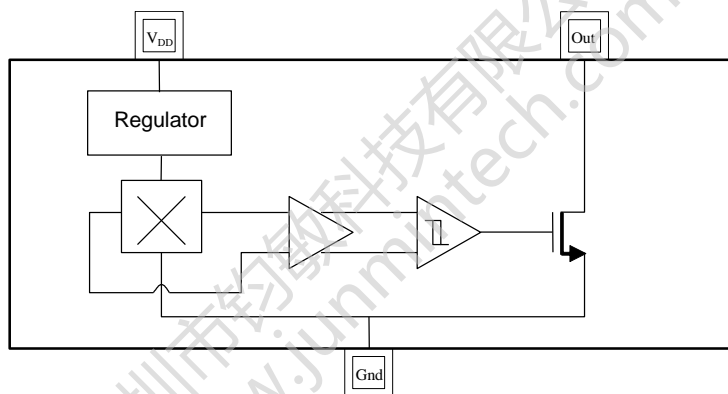


Fig. 1. Functional diagram

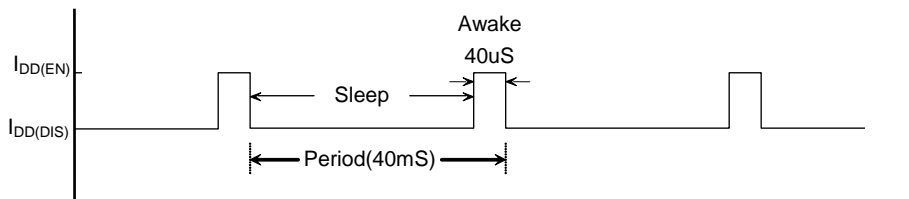


Fig 2. Awake/Sleep timing

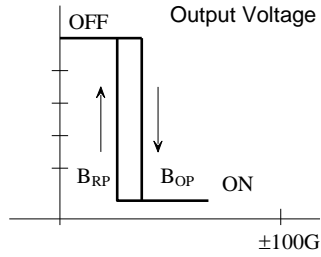
Electrical Characteristics ($T_A=+25^{\circ}\text{C}$, $V_{DD}=2.75\text{V}$)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	V_{DD}	Operating	2.4	-	5.5	V
Output Sink Voltage	$V_{DS(ON)}$	$I_{OUT}=1\text{mA}$, $V_{DD}=2.75\text{V}$	-	0.1	0.25	V
Supply Current	I_{AWK}	Awake, $V_{DD}=2.75\text{V}$	-	3	5	mA
	I_{SLP}	Sleep, $V_{DD}=2.75\text{V}$	-	2	4	μA
	I_{AVG}	$V_{DD}=2.75\text{V}$	-	4	10	μA
Awake Time	T_{AWK}	Operating	-	40	90	μS
Period	T_P	Operating	-	40	70	mS
Duty Cycle			-	0.1	-	%

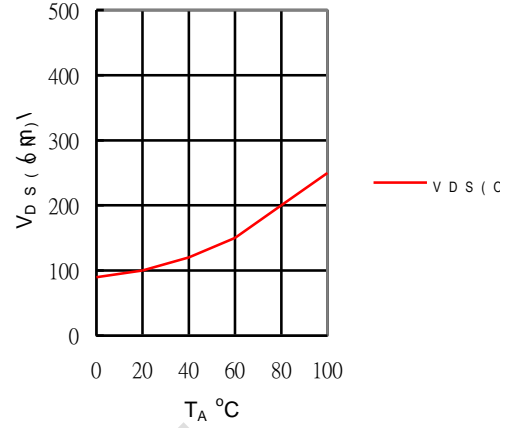
Magnetic Characteristics ($T_A=+25^{\circ}\text{C}$, $V_{DD}=2.75\text{V}$)

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

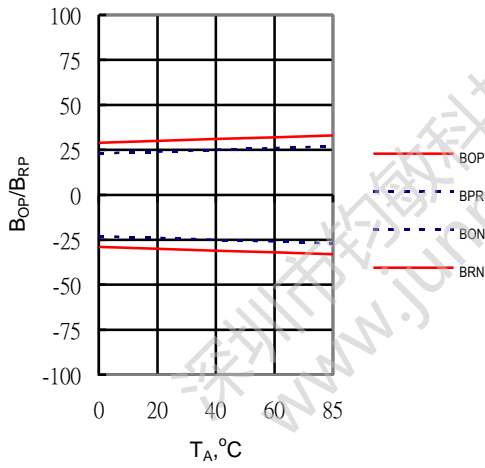
Magnetic Flux Density in Gauss



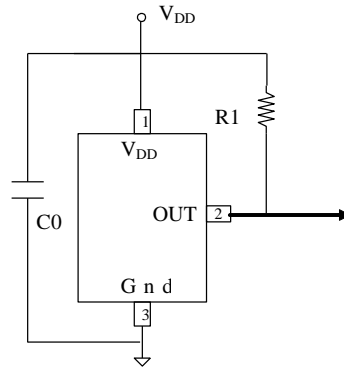
Output sink voltage vs



B_{OP} , B_{RP} versus temperature



Application circuits



NOTE :

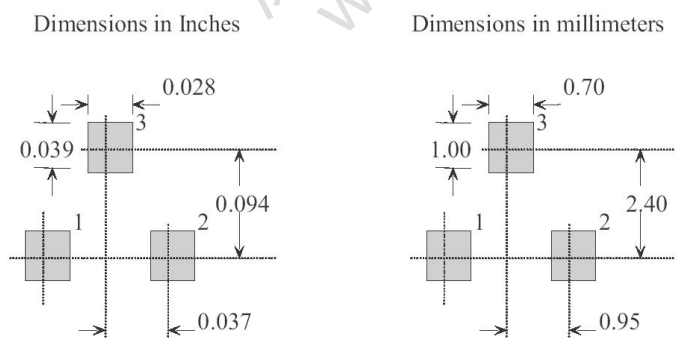
C0: 0.1uF decoupling capacitor

R1: >470Kohm is recommended

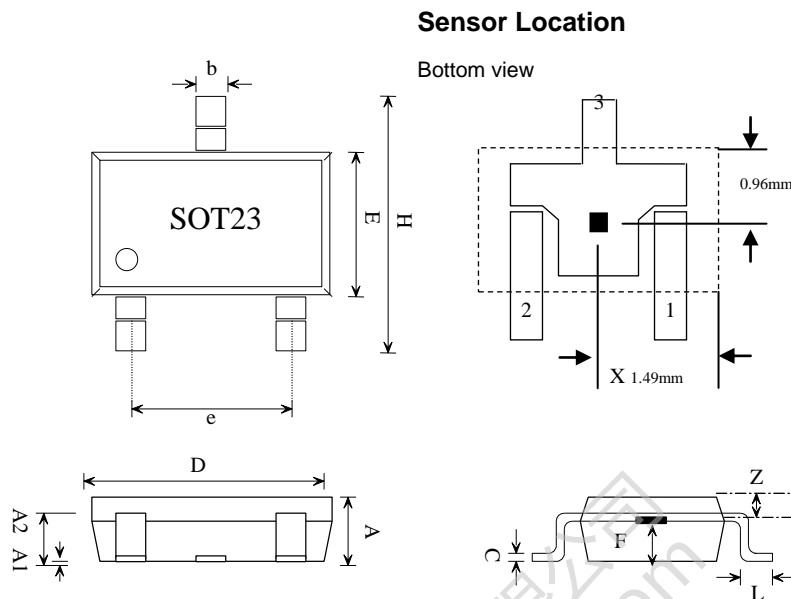
Ordering information

Part NO.	Marking NO.	Package	Temperature
PT3666	666	SOT-23	-40~85C Extended

Solder-Pad Layout



Package Outline



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	-