PIR Controller IC for LED Lamp Specification

GENERAL DESCRIPTION

The PIR0001 IC is a CMOS chip designed to PIR controller IC for DC LED lamp . It can use PHOTO transistor or CDS application. The chip built-in regulator provides stable power. The chip is equipped with amplifiers, comparator, timer, control circuits, system oscillator, and output timing oscillator. Its PIR sensor detects infrared power variation induced by the motion of a human body and transforms it to a voltage variation. If PIR output voltage variation conforms to the criteria, then the lamp LED is turned on with an adjustable duration.

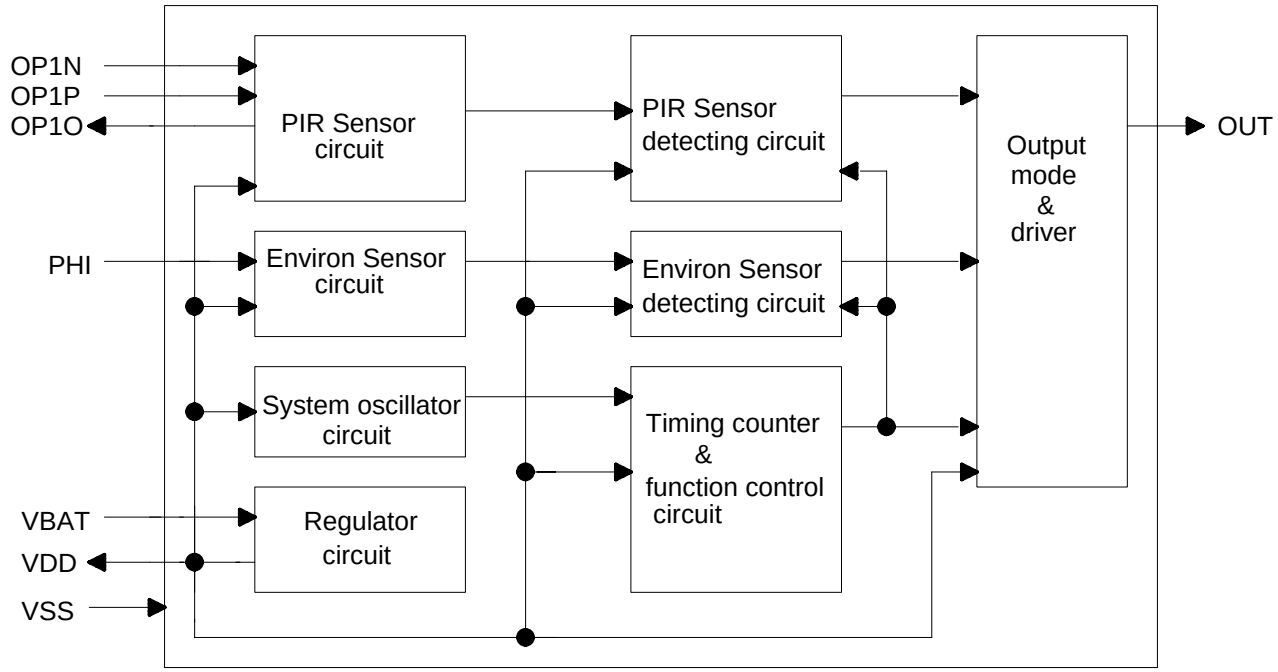
FEATURES

- Operating voltage 3.6V~5.5V, Built-in regulator 3.0V±0.36V .
- Built-in 16Khz oscillator for system clock.
- Operating current @VBAT=4.5V, no load standby current< 20uA
- Provides **PHOTO** or **CDS** sensor detect environment **Day_time** or **Night_time**.
- Provide turn on delay timer fix 16 sec.
- After power-on have about 1sec stable-time and 16sec warm-up time.
- When lamp turn on change to turn off, then disable PIR 1sec

APPLICATION

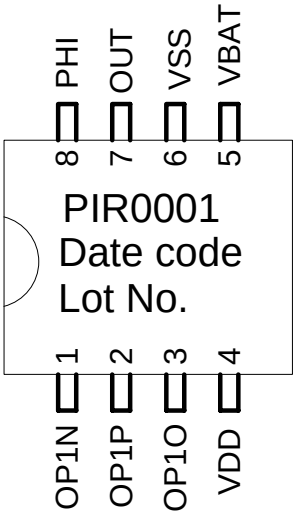
- Wide consumer products

BLOCK DIAGRAM



PACKAGE LIST

PIR0001A : DIP 8 pin
PIR0001B : SOP 8 pin



PAD DESCRIPTION

Pad No.	Pad Name	I/O Type	Pad Description
1	OP1N	I	PIR first OP AMP(-) input pin
2	OP1P	I	PIR first OP AMP(+), 0.4VDD voltage input pin
3	OP1O	O	PIR first OP AMP (out) output pin
4	VDD	O	Built-in regulator output pin
5	VBAT	P	DC 3.6V～5.5V power pin
6	VSS	P	Negative power supply, ground
7	OUT	O	LED output pin
8	PHI	I	Detect environment sensor input pin

Pin Type

I : CMOS input only
O : CMOS output
P : Power / Ground

ELECTRICAL CHARACTERISTICS

• Absolute Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Operating Temperature	T_{OP}	—	-20 ~ +60	℃
Storage Temperature	T_{STG}	—	-50 ~ +125	℃
Power Supply Voltage	VBAT	Ta=25°C	VSS-0.3 ~ VSS+5.5	V
Input Voltage	V_{IN}	Ta=25°C	VSS-0.3 ~ VDD+0.3	V
Human Body Mode	ESD	—	4	KV
Note：VSS symbolizes for system ground				

• DC/AC Characteristics：(Test condition at room temperature=25℃)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Operating Voltage	VBAT		3.6	4.5	5.5	V
Internal Regulator Output	**VDD**		2.64	3.0	3.36	**V**
System oscillator	Fsys	VDD=3V		16K		Hz
Standby Current	Istby	VDD=3V@VBAT=4.5V		20	30	uA
OUT open sinking current	I_{OL}	VDD=3V, V_{DS}=0.3V	250			mA
Turn on delay time	T_{dly}			16		Sec

FUNCTION DESCRIPTION

1. PIR sensor detection recognizes condition. **(PIR_on=1)**
   1-1. Build-in Low offset op with gain about 20 multiple
   1-2. When lamp turn on change to turn off , then disable PIR 1 sec.

2. The PHI is a CMOS schmitt trigger input structure**.** It can use PHOTO transistor or CDS sensor to distinguish between **Day_time and Night_time.**
   2-1. PHI voltage ≧ 2/3VDD debonce 2sec, judge environment is **Night_time**
   2-2. PHI voltage ≦1/3VDD debonce 2sec, judge environment is **Day_time**
   2-3. 1/3VDD ＜ PHI voltage ＜ 2/3VDD, keep last state (**Day_time or Night_time**)
   2-4. PHI debounce noise
   2-5. The initial state is **Night_time** after power on
   2-6. When lamp turn on, keep environment **Night_time** state .

3. Turn on delay time(**TD_time**) fix 16 sec

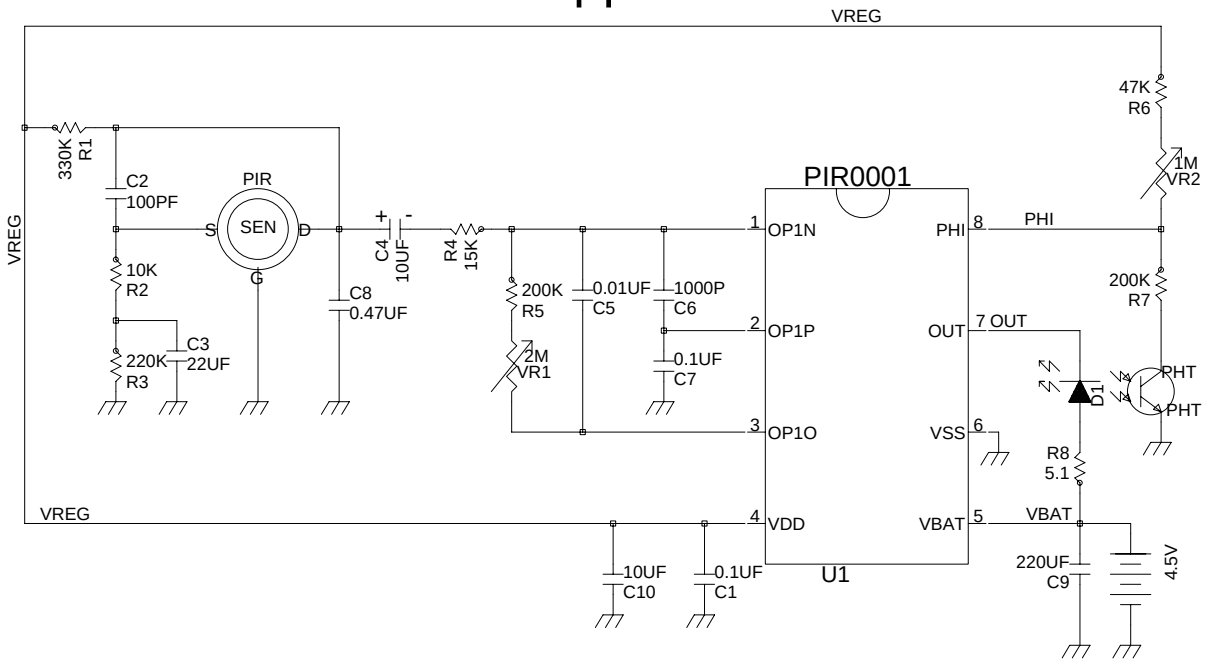
4.PIR0001 OUT pin turn on and turn off state and timming as below :
Turn off : OUT pin is floating.
Turn on : OUT pin is PWM output ➔ 0 : floating = 8mS : 4mS

5. Lamp turn on and turn off condition and **TD_time** recount condition as below table
   Turn on condition : **Night_time and PIR_on=1**
   Turn off condition : **TD_time end**
   TD_time recount condition : **PIR_on=1**

6. PIR0001 has a **Initial_mode** time after power on. **Initial_mode** has 1 sec stable time and has fix 16 sec **Initial_TD_time** warm-up time. The warm-up time end depend on **Initial_TD_time** only.
   Initial_**TD_time** recount condition : **PIR_on=1.**

APPLICATION CIRCUIT

PIR0001 application



ORDER INFORMATION

A: Package form:
PIR0001A : DIP 8 pin
PIR0001B : SOP 8 pin

REVISE HISTORY

1. 2011/01/18
-Original version：V_0.1