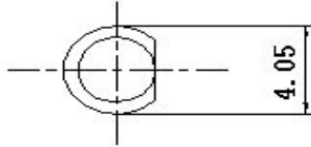


## 940nm 3mm Through-hole Photo Diode (Receiver)

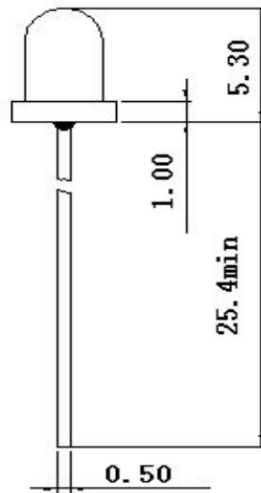
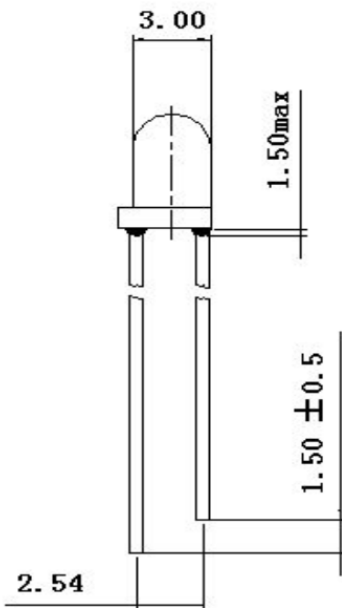
P/N: LL-30PDA940DC-F1

### ·Package Dimensions



#### NOTES:

1. All dimensions are in millimeter [unit];
2. Tolerance is  $\pm 0.15\text{mm}$  unless otherwise noted



### ·Description

PD940 infrared LED is a low power consumption diode, which is molded in DIP Photo diode. The utility model has a reception Angle that is large and uniform light reception angle. This model is suitable for small household electrical products emission and reflection, Infrared remote control transmitter electronic products and other applications.

### ·Features

- 940nm Photosensitive peak wavelength ( $\lambda_p=940\text{nm}$ )
- High reliability
- Low power consumption
- RoHS compliant

### ·Application

- Suitable for induction garbage can and hand-washing machine.
- Suitable for all kinds of infrared light control, infrared radiation, infrared reflection and other electronic products.
- Suitable for products with high illumination or visible light interference
- Light controlled toys
- Optically controlled infrared detection equipment

### ·Absolute maximum ratings (Ta=25°C)

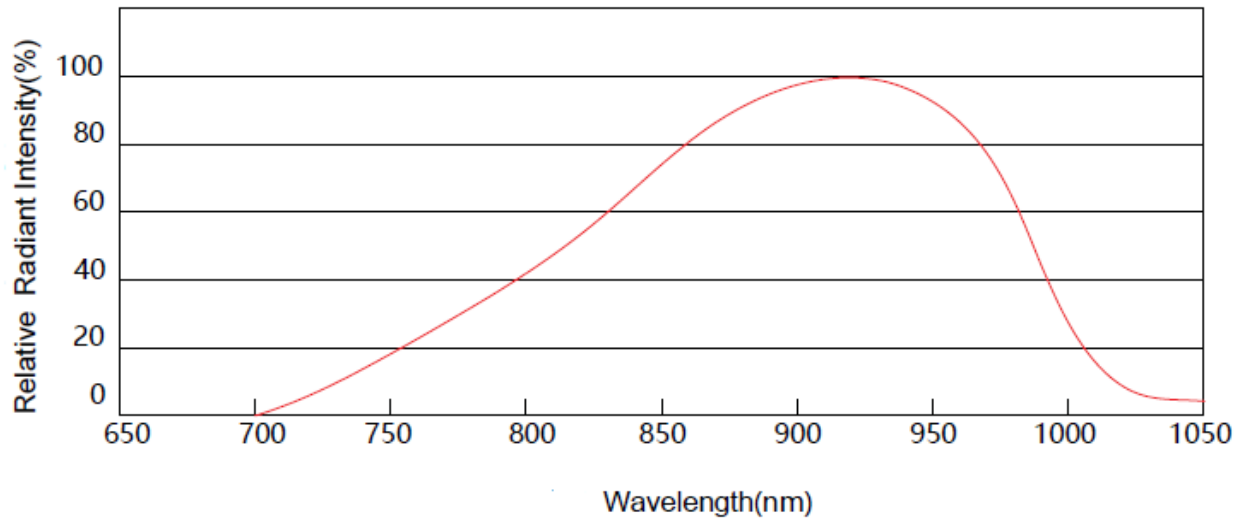
Electrical characteristics	Symbol	Rated Value	Unit
Reverse Break down Voltage	$V_{(BR)}$	30	V
Power dissipation	$P_c$	70	mW
Operating Temperature	$T_{opr}$	-30 to +85	°C
Storage Temperature	$T_{stg}$	-40 to +100	°C

### ·Optical Characteristics (Ta=25°C)

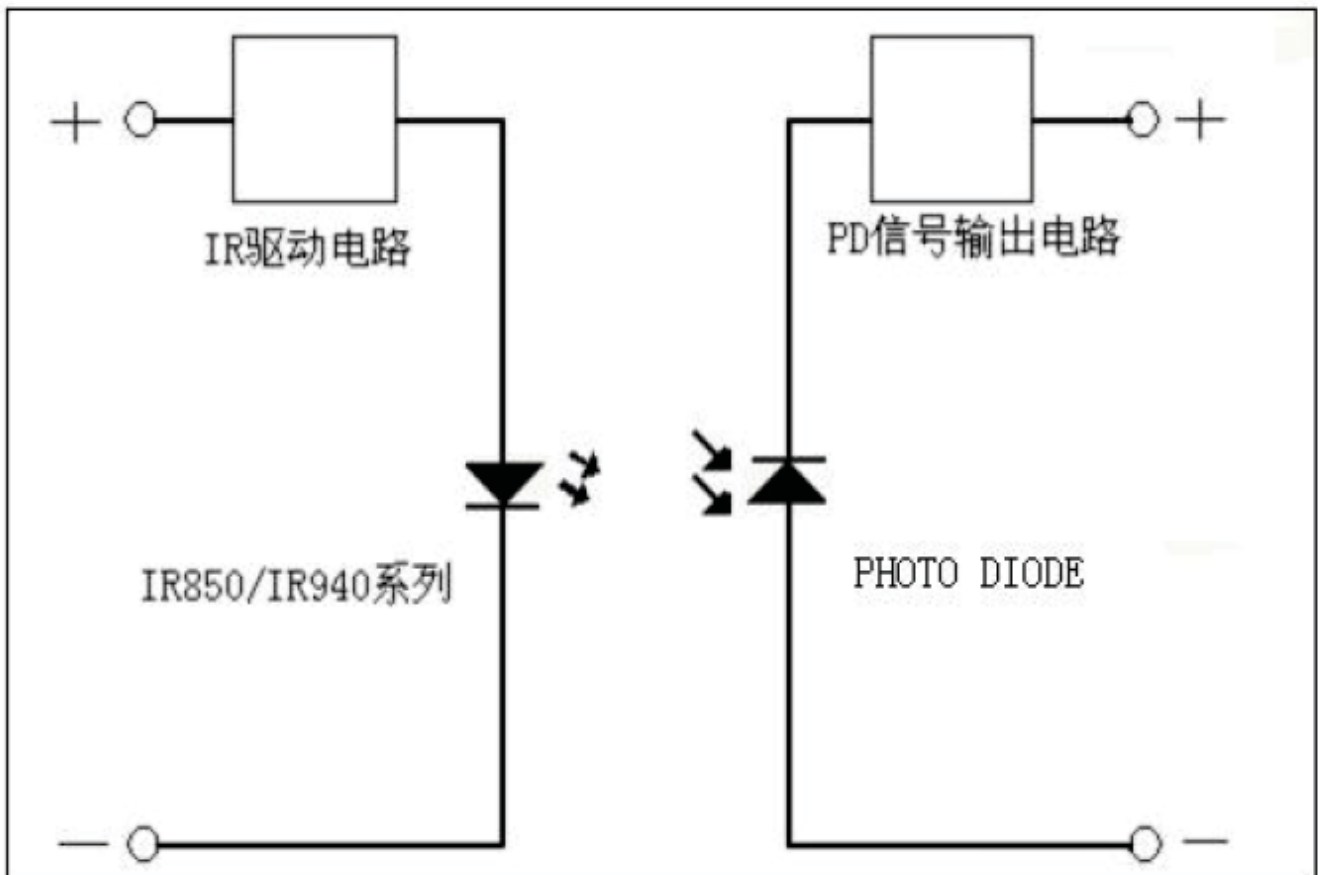
Parameters	Symbol	Condition	Value			Unit
			Min.	Typ.	Max.	
Photosensitive peak wavelength	$\lambda_p$	/	--	940	--	nm
Sensitivity wave width	$\lambda$	/	700	--	1100	nm
Reverse voltage	$V_{(BR)}$	$I_R=100\mu A$ $E_e=0mW/cm^2$	30	--	--	V
Forward voltage	$V_f$	$I_f=1mA$	--	--	1.2	V
Photo current	$I_L$	$V_r=5V$ $E_e=1mW/cm^2$	7	13	20	$\mu A$
Dark Current	$I_D$	$V_{CE}=5V$ $E_v=0Lux$	--	--	0.1	$\mu A$
Rise Time	$T_R$	$V_r=5V$ $E_e=1mW/cm^2$	50			Ns
Fall Time	$T_F$	$R_L=1000\Omega$	50			ns
Receiving angle	$\theta_{1/2}$	$V_r=5V$ $E_e=1mW/cm^2$	--	45	--	Deg

·Typical photoelectric characteristics curves

Photographic property Curve



·General Application Schematics



## ·Reliability Test

Test Parameter	Reference criterion	Test condition	Time	Qty	Ac/Re
Resistance to soldering Heat	JESD22-B106	260°C ± 5°C	10 sec	22pcs	0/1
temperature cycle	JESD22-A104	+100°C(15min) 5min -10°C(15min)	50 cycles	22pcs	0/1
Thermal shock	JESD22-A104	+105°C(30min) 5min -40°C(30min)	50 cycles	22pcs	0/1
High temperature storage	JESD22-A103	TC=+100°C	1000H	22pcs	0/1
Low temperature storage	JESD22-A119	TC=-40°C	1000H	22pcs	0/1
Life test	JESD22-A108	VCC=5V	1000H	22pcs	0/1
High temperature and high humidity	JESD22-A101	TC=85°C RH=85%	168H	22pcs	0/1

## ·Soldering

Damage may be caused during soldering, please be careful. Please note that don't put stress on product bracket or package part when soldering. And make sure to keep some distance from soldering joint to the bottom of epoxy package when soldering. The distance is determined by different soldering techniques; it's recommended to take following soldering conditions as reference.

### Recommended Soldering Conditions

	Mode	Fixed from
Manually Soldering	Soldering Iron temperature	300°C Max(30w Max)
	Soldering Time	3 sec Max
	Soldering Position	3mm min. (Form soldering joint to colloid)
Wave Soldering	Preheat	100°C Max.60 sec.max
	Temperature	260°C Max.
	Soldering Time	5 sec Max
Solder pot Soldering	Preheat	100°C Max.60 sec.max
	Preheat Temperature	260°C Max.
	Soldering Time	5 sec Max
	Soldering Position	2mm min. (From soldering joint to colloid)

It's unsuitable for reflow soldering.

Manually soldering should be done once only

Please solder the LED under 40 degrees to avoid high temperature damage the device

After soldering the LED, please keep it out of any shake or outer force before it comes to normal temperature

It is recommended that to use alcohol clean LED after soldering. Cleaning should be done under 30°C for 1 minute or 50°C for 30 seconds. When using other solvents, please confirm whether the solvents would dissolve the package or resin beforehand.

## •Precautions

Thanks for using the relevant LED products of LITEKEY. To enhance your understanding of the characteristics of our products, as far as reduce and avoid unnecessary damage of product due to man-made factors, and make the product serve your production better, we provide corresponding operation standard instructions. At the same time, even if you are using the same specifications LED, its reliability is related to overall system design level, mode of operation and conditions of use in the practical application field. These Instructions didn't cover all questions customers may encounter during using, we sincerely apologize for any inconvenience this may cause !

### 1. Product Declaration

To confirm the product is right for using purpose, pretest is necessary before use. We don't guarantee the product application introduction don't contravene any patent. The corresponding import and export legal responsibility should be taken on by customers. Please verify relevant provision about the LED product in each country and district beforehand. We may change specifications from time to time in the interest of product development, without prior notification or public announcement. An agreement of formal product specifications is required prior to mass production.

### 2. Storage

Under the storage conditions of 30°C or less and humidity less than 60%RH, the storage period of LED is 6months.Store the products in sealed containers with moisture absorbent material could prolong the storage time to a certain extent. Bad storage conditions may cause the LED pin to corrode, or LED characteristics be changed. It is recommended that the LEDs be used as soon as possible.

After opening the package, the product should be soldered within 24 hours. If not, please store at 30°C or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.

For the LED doesn't solder, if the moisture absorbent material loses efficacy or the storage condition doesn't conform to the above description, baking can help performance recovery in some extent. Baking condition :  $65 \pm 5^{\circ}\text{C}$  for 24 hours.

### 3. Static electricity

Static and electric surge would change the features of LED, such as decreasing of forward voltage. Even damages may occur in serious conditions. Please make sure you adopt effective anti-static measures. All the relative devices and machinery must be properly grounded. At the same time, it is recommended to use anti-static wrist bands, anti-electrostatic gloves, anti-electrostatic containers and so on to prevent static and electric surge.

#### **4. Design Consideration**

When designing the circuit, the voltage loaded on both ends of the photosensitive LED tube should not exceed the specified maximum value, and the protect resistance should be used. Otherwise, the tiny change of voltage would cause big current change, and it may damage the product.

The characteristics of LED are easily to be affected by the heat of it and the temperature changes of environment. The temperature increases would reduce the luminous efficiency and brightness etc. Please fully consider the heat dissipation when design.

#### **5. Lead Forming**

Any lead forming must be done before soldering. When forming leads, the leads should be bent at least 3mm from the base of the expose bulb. And avoid bending twice or even more at the same position.

Please use proper tools to hold the leads. Avoid putting press on resin especially don't regard connection part of pin and resin as fulcrum, the pressure caused by it would damage the inner part of product illumination structure and would change the characters or even damage of the product.

For the same reason, when mounting the LED on to printed circuit board, the holes on the circuit board should be exactly aligned with the leads of the LED.