

Version:  
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**(PT-IC-BC)**  
**IR Visible Light Sensor**

**Token Electronics Industry Co., Ltd.**

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## ► Product Introduction

**Token IR visible light sensors precise light measurement across a wide spectrum of wavelengths.**

### Features :

- Simulate the human eye, peak wavelength 550nm.
- Using super 82 layer coating process on the Chip. 100% Filter infrared interference.
- Good batch consistency, completely solve the infrared light start too early.
- Fast response, stable performance, aging at +85°C/ 65% humidity for 1000 Hr.
- The starting point does not drift. Nice appearance.

### Applications :

- Replace the traditional CDS photoresistor.
- Cadmium and lead free with RoHS compliant.
- Dedicated to infrared monitoring products.
- When control the infrared light, it is no need to add extra casing and filter on low illumination.

### Customization :

- For the convenience of installation in all kinds of products in any position, different sizes are available upon request.
- Token offers various option of the bright current/dark current (bright resistance/dark resistance) to costume the most products.

The (PT-IC-BC) series is the only visible light sensor family available in the market links in a cost effective package with the IR characteristic designed in a plastic epoxy package. The spectral response is similar to the human eye and a photocell, making it ideal for applications where the response should only be influenced by the visible light.

As part of the IR family of visible light sensor, the (PT-IC-BC) is silicon phototransistors in a standard Plate Edge 3.00 mm end-looking package. They provide the time-proven Token silicon phototransistor chip that users have come to count on through the years, with the more IR function incorporated in the plastic epoxy package. As such they give an excellent response in the visible spectral range, giving a RoHS-compliant alternative to Cadmium Sulphide photocells.



The (PT-IC-BC) Visible Light Detector family using high quality chip packaging and processing super-plated infrared filter membrane on chip surface, so this sensor can fully filter infrared interference. It is no need to add the casing and extra filter and effective filtering out the effect of light reflection due to infrared emission on security products.

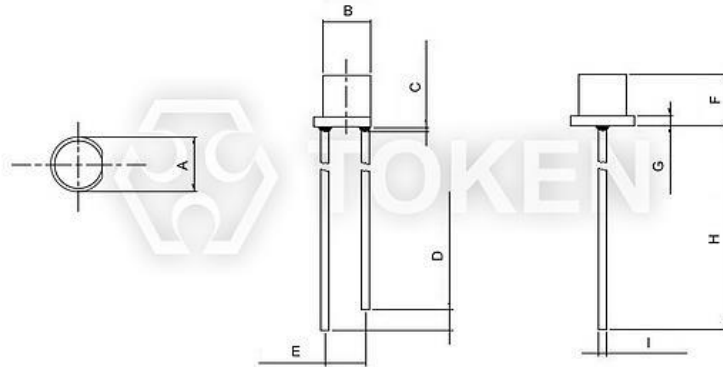
By selecting the accuracy of chips, under strict management of production process, (PT-IC-BC) visible light sensors finished batch consistency uniform. The consistency is 3 to 5 times higher on comparison of similar photosensitive devices. The precision can be controlled as narrow as 10%. Fully meet the customer requirements for starting the LUX value. Token taking the advantage of temperature compensation internal process on the chip, (PT-IC-BC) features one times higher temperature resistance than other similar products while working on high temperature environment. Please contact our sales or link to Token official website "[Visible Light Sensors](http://www.token.com.tw)" for more information.



► **Dimensions**

**Dimensions & Configurations (Unit: mm) (PT-IC-BC) Plate Edge**

Part NO.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)
PT-IC-BC-3-PE-550	4.05 ± 0.20	3.00 ± 0.20	1.50 Max.	1.50 ± 0.5	2.54 ± 0.20	3.85 ± 0.20	0.75 ± 0.20	25.4 Min.	0.50 ± 0.20
PT-IC-BC-5-PE-550	5.80 ± 0.20	5.00 ± 0.20	1.50 Max.	1.50 ± 0.50	2.54 ± 0.20	5.30 ± 0.20	1.00 ± 0.20	25.4 Min.	0.50 ± 0.50



IR-blocking Visible Light Sensor (PT-IC-BC) Plate Edge Dimensions



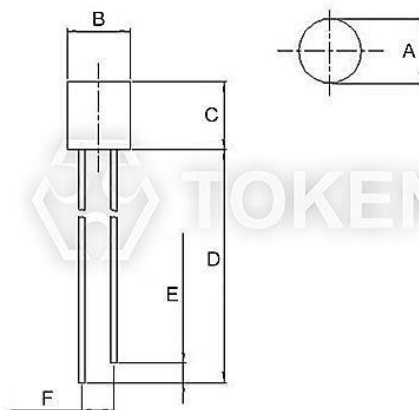
Plate Edge IR-blocking Visible Light Sensor (PT-IC-BC-5-PE-550)

Remark:

- The epoxy resin highest: 1.5mm max.
- Product images, plastic color of appearance, and all other information is for reference only, goods in-kind prevail.
- Short Lead—Positive Electrode    Long Lead—Negative Electrode.

**Dimensions & Configurations (Unit: mm) (PT-IC-BC) Plate None**

Part NO.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)
PT-IC-BC-5-PN-550	5.00 ± 0.20	5.00 ± 0.20	5.30 ± 0.20	25.4 Min.	1.50 ± 0.50	2.54 ± 0.20



IR-blocking Visible Light Sensor (PT-IC-BC) Plate None Dimensions



Plate None IR-blocking Visible Light Sensor (PT-IC-BC-5-PN-550)

Remark:

- The epoxy resin highest: 1.5mm max.
- Product images, plastic color of appearance, and all other information is for reference only, goods in-kind prevail.
- Short Lead—Positive Electrode    Long Lead—Negative Electrode.

## ► Electro-Optical Characteristics

### Electro-Optical Characteristics (Ta=25 ° C) (PT-IC-BC-3-PE-550)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Wavelength	$\lambda_p$	\	-	550	-	nm
Spectral Response Bandwidth	$\lambda$	\	400	-	-	nm
Operating Voltage	$V_{cc}$	\	-	5	-	V
Photo Current	$I_{L(1)}$	$V_{cc}=5V$ $E_v=10Lux$	1.5	3.0	5	$\mu A$
	$I_{L(2)}$	$V_{cc}=5V$ $E_v=30Lux$	4.5	9.0	15	$\mu A$
	$I_{L(3)}$	$V_{cc}=5V$ $E_v=100Lux$	15	30	50	$\mu A$
Collector Dark Current	$I_d$	$V_{cc}=5V/85^\circ C$ $E_v=0Lux$	-	-	0.8	$\mu A$
IR Receiving Current	$I_{L(4)}$	$V_{cc}=5V/850nm$ ir LED $E_e=1m^W/cm^2$	-	-	0.1	$\mu A$
Rise Time	$t_r$	$V_{cc}=5V$ $E_v=30Lux$	4.5			ms
Fall Time	$t_f$	$RL=1000\Omega$	4.5			

### Electro-Optical Characteristics (Ta=25 ° C) (PT-IC-BC-5-PE-550)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Wavelength	$\lambda_p$	\	-	550	-	nm
Spectral Response Bandwidth	$\lambda$	\	400	-	-	nm
Operating Voltage	$V_{cc}$	\	-	5	-	V
Photo Current	$I_{L(1)}$	$V_{cc}=5V$ $E_v=10Lux$	2.5	4.0	5.5	$\mu A$
	$I_{L(2)}$	$V_{cc}=5V$ $E_v=30Lux$	7.5	12	16.5	$\mu A$
	$I_{L(3)}$	$V_{cc}=5V$ $E_v=100Lux$	25	40	55	$\mu A$
Collector Dark Current	$I_D$	$V_{cc}=5V/85^\circ C$ $E_v=0Lux$	-	-	0.8	$\mu A$
IR Receiving Current	$I_{L(4)}$	$V_{cc}=5V/850nm$ ir LED $E_e=1m^W/cm^2$	-	-	0.1	$\mu A$
Rise Time	$t_r$	$V_{cc}=5V$ $E_v=30Lux$	4.5			ms
Fall Time	$t_f$	$RL=1000\Omega$	4.5			

**Electro-Optical Characteristics (Ta=25 ° C) (PT-IC-BC-5-PN-550)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Wavelength	$\lambda_p$	\	-	550	-	nm
Spectral Response Bandwidth	$\lambda$	\	400	-	-	nm
Operating Voltage	$V_{cc}$	\	-	5	-	V
Photo Current	$I_{L(1)}$	$V_{cc}=5V$ $E_v=10Lux$	2.5	4.0	5.5	$\mu A$
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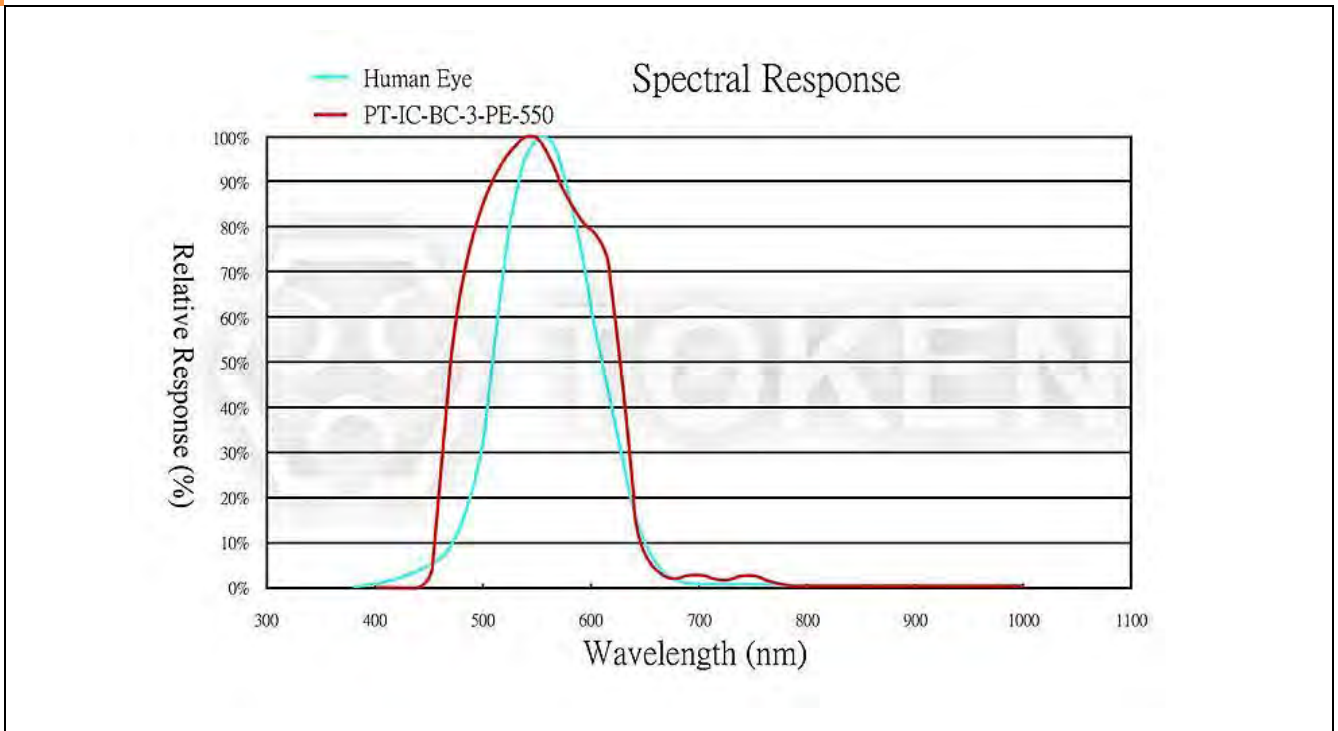
**Absolute maximum ratings (Ta=25 ° C) (PT-IC-BC)**

Parameter	Symbol	Value		Unit
		Min.	Max.	
Operating Voltage	$V_{cc}$	Min.	Max.	V
		1	10	V
Power Dissipation	$P_c$	70		mW
Operating Temperature Range	$T_{opr}$	-25 ~ +85		$^\circ C$
Storage Temperature	$T_{stg}$	-40 ~ +100		$^\circ C$

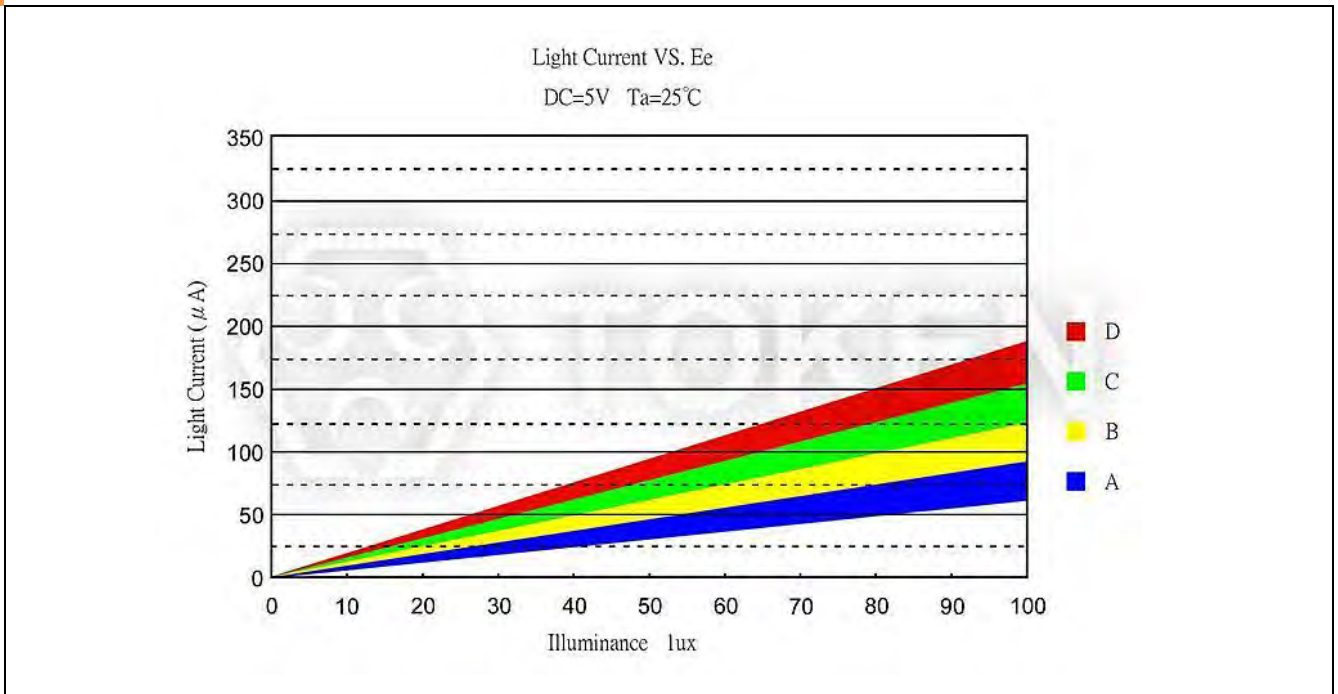


▶ **Curve PTICBC3PE550**

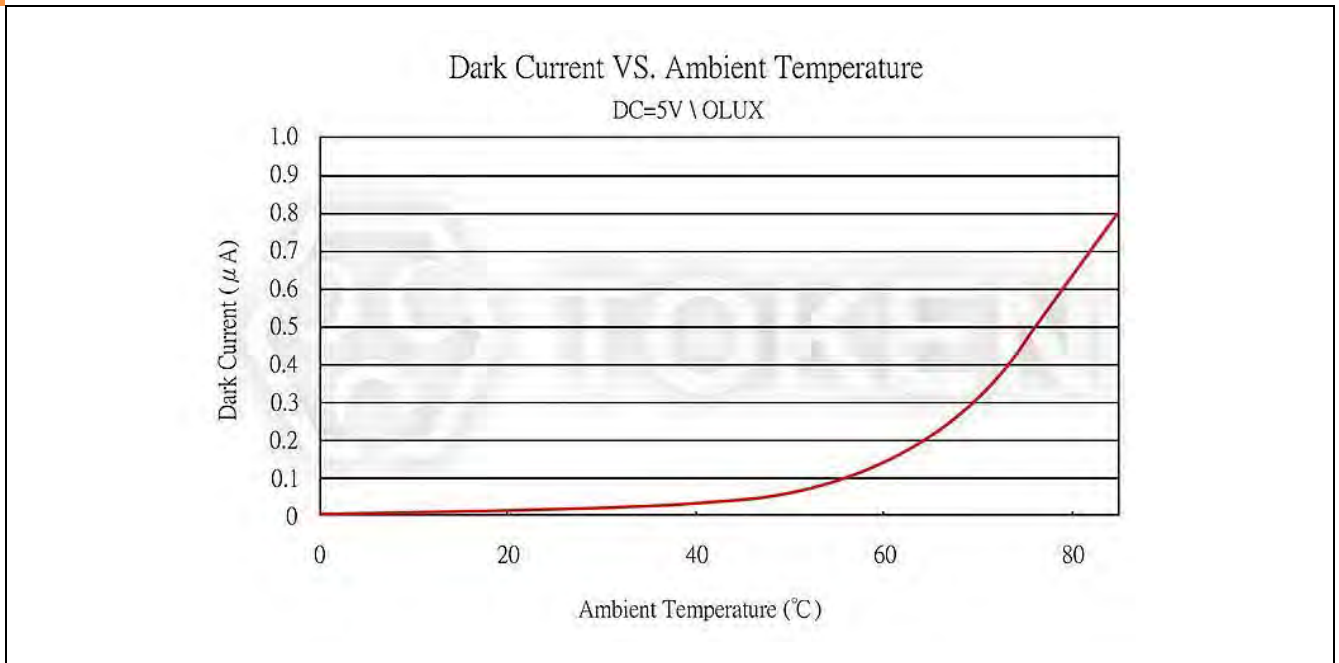
**Relative Spectral Sensitivity vs. Wavelength (PT-IC-BC-3-PE-550)**



**Photo Current vs. Illuminance (PT-IC-BC-3-PE-550)**



Dark Current vs. Ambient Temperature (PT-IC-BC-3-PE-550)



► Curve PTICBC5PE550

Relative Spectral Sensitivity vs. Wavelength (PT-IC-BC-5-PE-550)

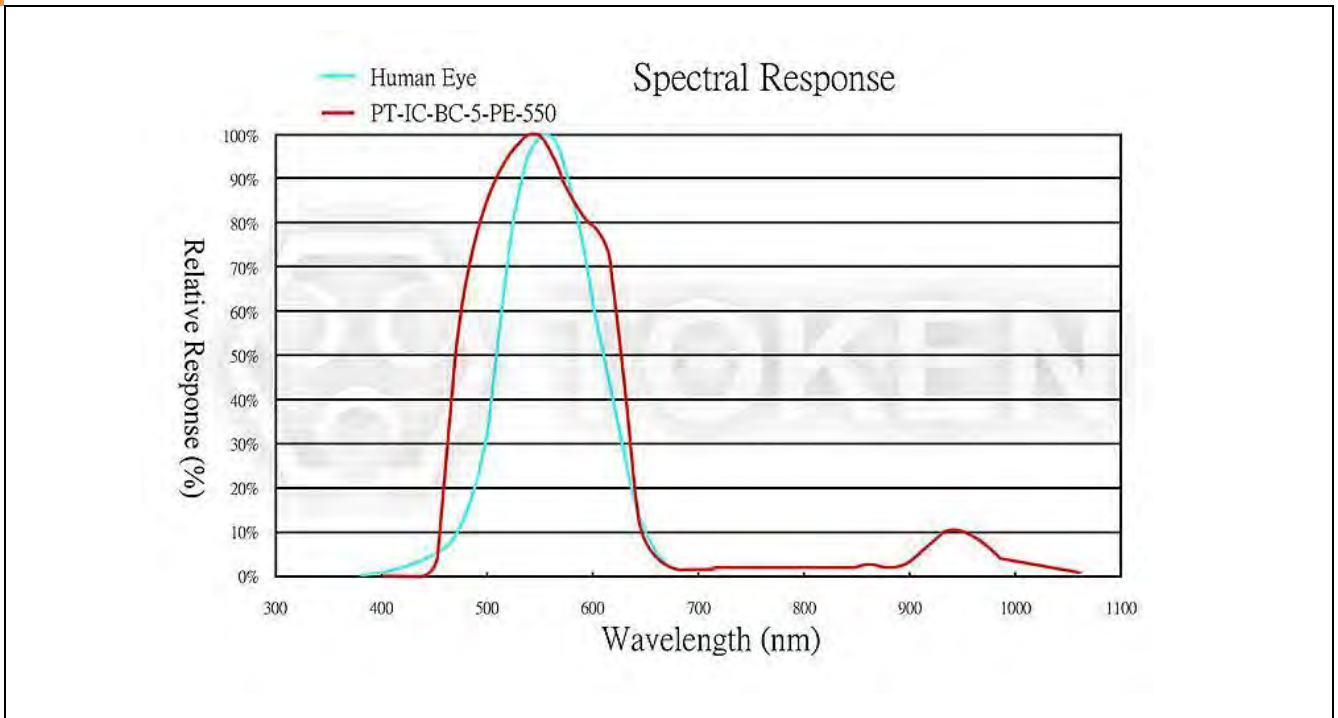
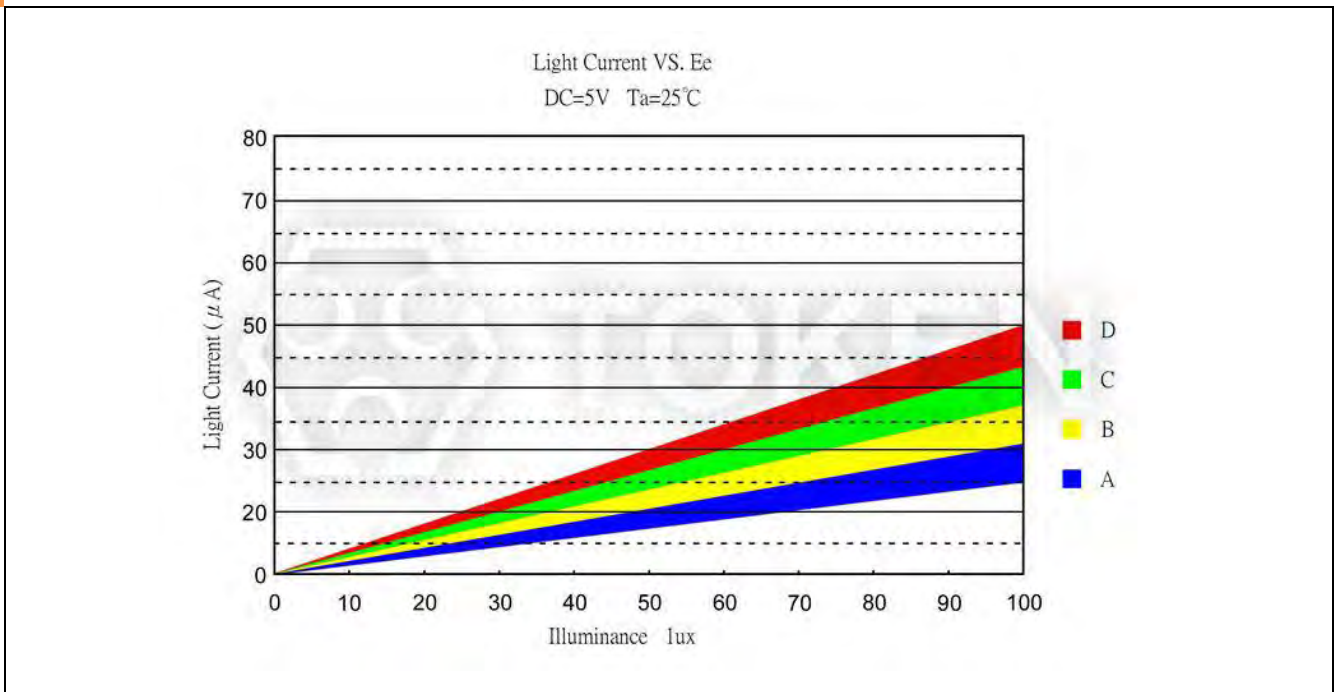
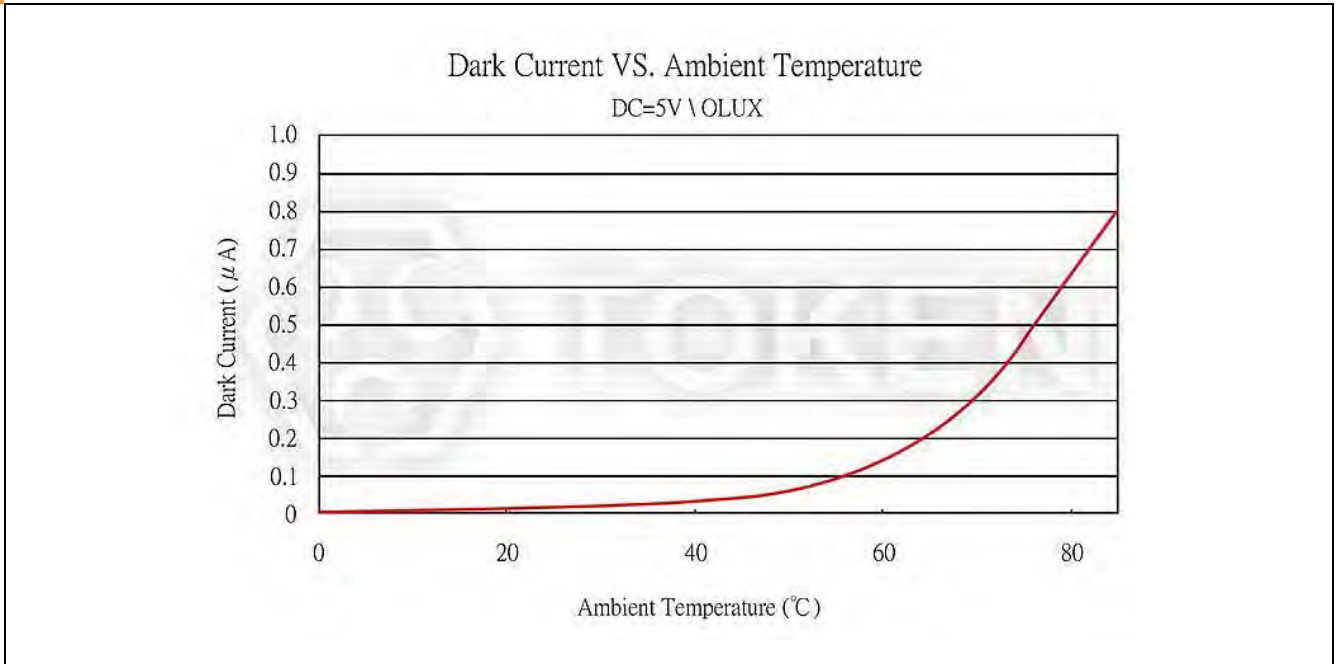


Photo Current vs. Illuminance (PT-IC-BC-5-PE-550)





Dark Current vs. Ambient Temperature (PT-IC-BC-5-PE-550)



► Curve PTICBC5PN550

Relative Spectral Sensitivity vs. Wavelength (PT-IC-BC-5-PN-550)

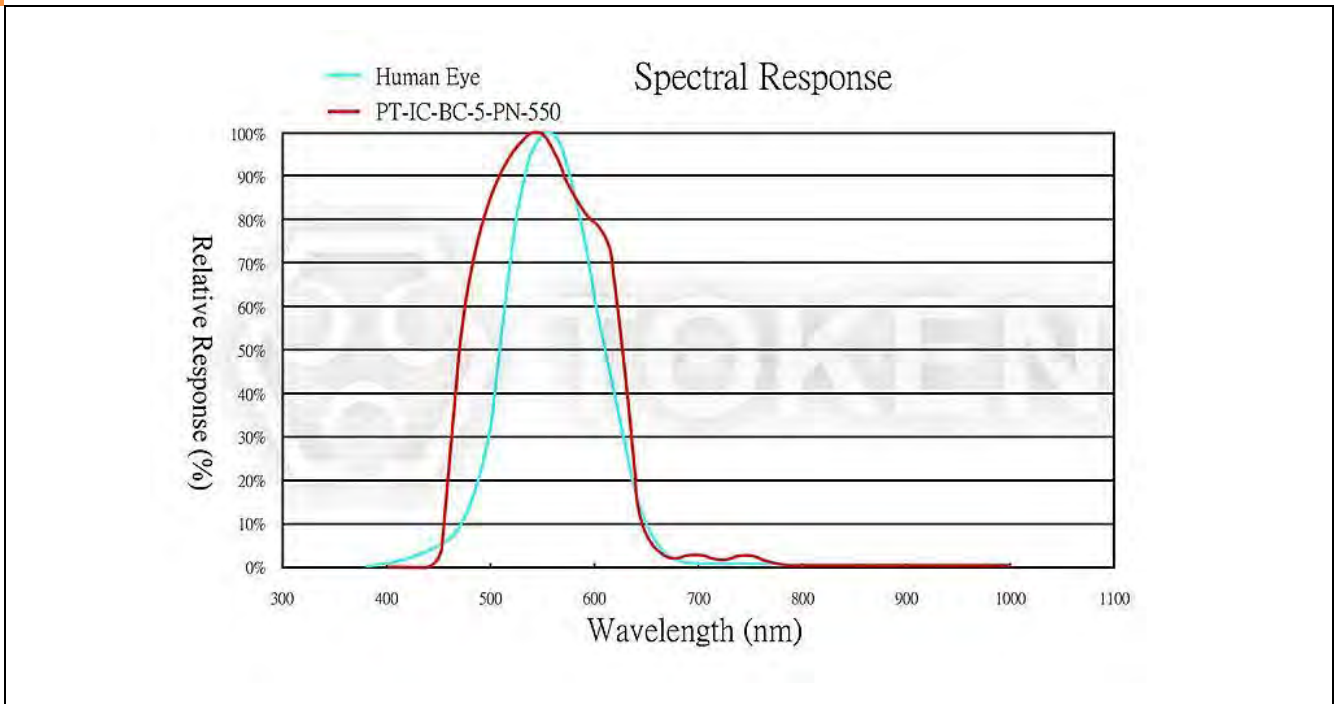
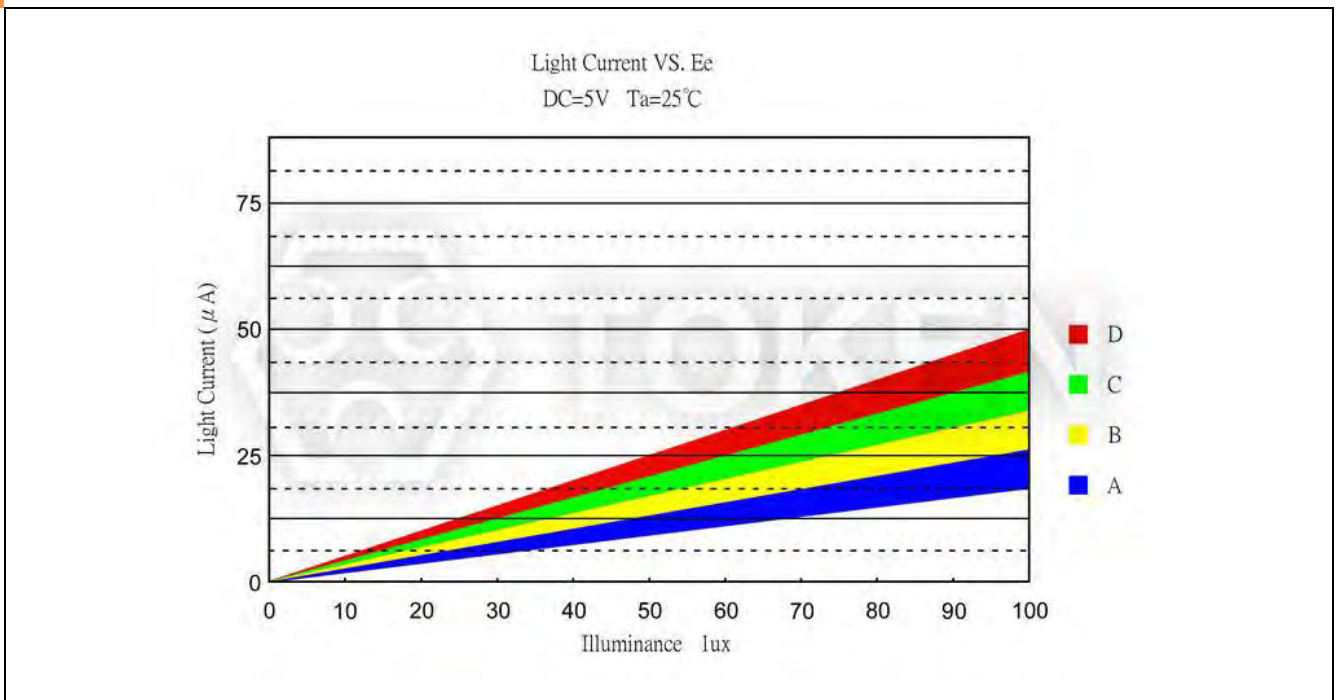
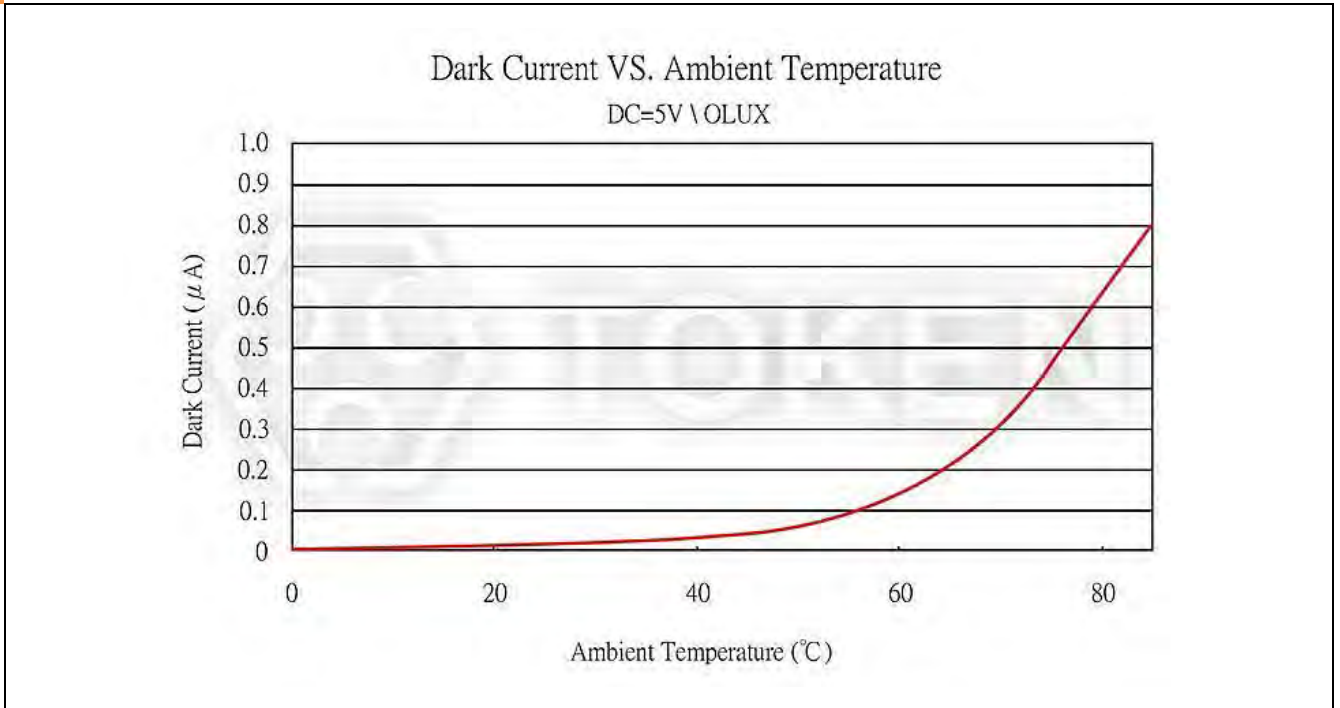


Photo Current vs. Illuminance (PT-IC-BC-5-PN-550)



Dark Current vs. Ambient Temperature (PT-IC-BC-5-PN-550)



► **Note**

**Visible Light Detector (3PE550BCIC) Precaution Usage :**

**Mounting :**

- While packages are on one circuit board, avoid mismatching in the thermal expansion of each component, generate cracks in the package and break the bonding wire.

**Soldering :**

- Do not immerse plastic parts in tin tank.
- During soldering, when adding thermal stress in a moisture absorbing state, moisture evaporates, swells and generates stress to the internal package.
- To avoid swellings and cracks in the surface of the package, followsoldering conditions below.
- Wave soldering method:  $120^{\circ}\text{C} < 60\text{s}$  、  $260^{\circ}\text{C} < 5\text{s}$ .
- Manual soldering:  $260^{\circ}\text{C} < 5\text{s}$  、  $340^{\circ}\text{C} < 3\text{s}$ .

**Lead-forming and cuttings :**

- Before soldering, perform lead forming at normal temperature.
- While forming or cutting the lead, stay the area at a distance of 5 mm or greater from the root of the lead.
- Avoid mounting which may cause force on the root of the lead.

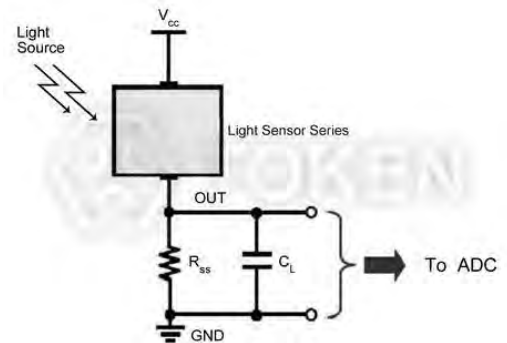
**Storage :**

The sensor is incorporated in the transparent resin package. Because of its sensitivity to humidity, the package is moisture-proof. When storing the sensor, do as instructed below.

- Quickly use after opening. (within 2 days, below  $30^{\circ}\text{C}/60\%$  R.H.).
- Once unpacked, use within three months, or keeping within a moisture-proof method, which include maintaining within a moisture-proof container with silica gels, is suggested for longterm safe-keeping.
- Very bad storage conditions may deteriorate solderability or characteristics, and defect the appearance. Recommended conditions of the storage place, temperature  $0^{\circ}\text{C}$  to  $30^{\circ}\text{C}$ , humidity below 60% R.H. (Avoid freezing and dew condensation).

**Cleaning :**

- Do not wash with water to avoid corrosion.
- Under any circumstance, the cleaning time should be within 1 minute of normal temperature.
- Alcohol is recommended as a cleaning agent when cleaning products.
- If you use other cleaning agents, you need to confirm whether the cleaning agent will corrode the epoxy body.
- Freon can not be used as a cleaning agent.
- When cleaning products with ultrasonic cleaning, ultrasonic power and time should be less than 300W and 30 seconds, respectively.
- PCB and product can not touch the oscillator. Can not make the product on the PCB resonance.
- This model is static sensitive devices, so static electricity and surges can damage the product.
- To all the equipment, machines, tables, and the ground must be anti-static ground.
- Requires the use of anti-static wrist strap wear.



**Photo Current Measurement Method - 3PE550BCIC**

▶ Order Codes

Order Codes (PT-IC-BC)

PT		-	IC		-	BC		-	3		-	PE		-	550	
Part Number			Chip Type			Lens Color			Size			Shape			Spectral Bandwidth	
PT			IC			BC	Dark Blue		3	3 mm		PE	Plate Edge		550	550 nm
									5	5 mm		PN	Plate None			