

Version:
November 30, 2018



TOKEN

(PT-A1-AC-3528-850)
Surface Mount Ambient
Visible Light Sensor

Token Electronics Industry Co., Ltd.

Taiwan: No.137, Sec. 1, Zhongxing Rd., Wugu District,
New Taipei City, Taiwan, R.O.C. 24872
Tel: +886 2981 0109 **Fax:** +886 2988 7487

China: 12F, Zhong Xing Industry Bld., Chuang Ye Road,
Nan Shan District, Shen Zhen City,
Guang Dong, China 518054
Tel: +86 755 26055363; **Fax:** +86 755 26055365

[Web: www.token.com.tw](http://www.token.com.tw)

[Email: rfq@token.com.tw](mailto:rfq@token.com.tw)



▶ Product Introduction

The (PTA1AC3528-850) is a sensor with near the human eye that measures the intensity of visible light.

Features :

- Fast response speed and stable performance, Good batch consistency, Small static current.

Applications :

- No cadmium, lead free and other harmful substances, compliant with EU RoHS standards.
- Suitable for all kinds of infrared light control, infrared radiation, infrared reflection,
- applicable to all types of light control lighting products: such as small night Lights, lawn lights, solar lamps.
- Suitable for all kinds of high illumination or visible light interference strong products, automatic adjustment background light:
- such as LCD, mobile phone, camera, computer camera, installation control machine.
- Control all kinds of optical control video control toys and All kinds of optical control infrared testing equipment.

Custom Design :

- For the convenience of installation in all kinds of products in any position, different sizes are available upon request.
- Provide bright current / dark current (bright resistance / dark resistance) for the most suitable product.

Light sensors are most commonly present in industrial lighting, electronic devices, and automotive systems, where they provide settings to be adjusted automatically in response to changing ambient light conditions. By activating, switching off, or modifying features, ambient light sensors can conserve electric batteries and supply extra safety while eliminating the requirement for manual adjustments. Token offers a wide variety of ambient light sensors in leaded and surface mount packages, with photodiode or phototransistor outputs.

In portable electronic products, lowering the power consumption to supply the consumer with elevated battery existence is among today's critical design factors. The liquid crystal display (LCD) which is connected backlighting are the more power hungry loads in portable products. Consequently, using an ambient light sensor (ALS) to optimize the whole process of the backlight LEDs under a number of ecological lighting situations is growing while, simultaneously, the most well-liked technology choices open to designers for sensing have shifted towards more integrated solutions.

Token chip ambient light sensors can be used in a variety of LCD-equipped portable products including PDAs, notebook PCs, digital cameras, video players, GPS-based navigation systems, and more. Any portable product by having an LCD is really a candidate for ALS technology to lessen power consumption.

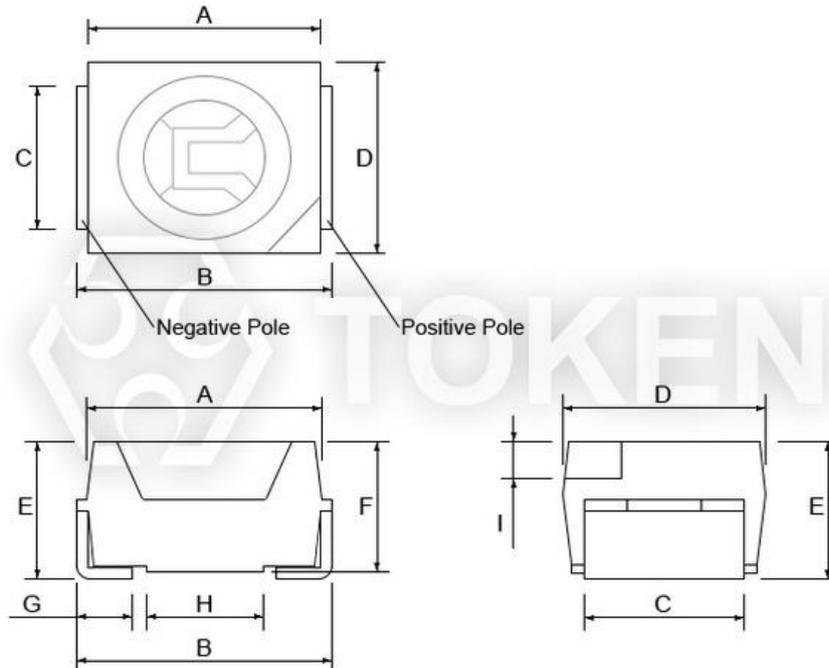
Token taking the advantage of temperature compensation internal process on the chip, (PTA1AC3528-850) features one times higher temperature resistance than other similar products while working on high temperature environment. By selecting the accuracy of chips, under strict management of production process, chip visible light sensors finished batch consistency uniform. The consistency is 3 to 5 times higher on comparison of similar photosensitive devices. Please contact our sales or link to Token official website "[Ambient-light-sensors](http://www.token.com.tw)" for more information.



► **Dimensions**

Dimensions & Configurations (Unit: mm) (PT-A1-AC-3528-850)

Part NO.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	I (mm)
PT-A1-AC-3528-850	3.20 ± 0.1	3.50 ± 0.1	2.10 ± 0.1	2.80 ± 0.1	1.90 ± 0.05	1.81 ± 0.05	0.80 ± 0.2	1.50 ± 0.2	0.50 ± 0.1



SMD IR Light Sensor (PT-A1-AC-3528-850) Dimensions

► Electro-Optical Characteristics

Electro-Optical Characteristics: (Ta=25 ° C) (PT-A1-AC-3528-850)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Peak Wavelength	λ_p	\	-	850	-	nm
Spectral Response Bandwidth	λ	\	400	-	1100	nm
Collector-Emitter Breakdown Voltage	B_{vceo}	$I_{ce}=100\mu A$ $E_e=0m^W/cm^2$	30	-	-	V
Emitter-Base Breakdown Voltage	B_{veco}	$I_{ce}=100\mu A$ $E_e=0m^W/cm^2$	3	-	-	V
Collector-Emitter Saturation Voltage	V_{ce} (sat)	$I_{ce}=2mA$ $E_e=1m^W/cm^2$	-	-	0.4*	V
Photo Current	$I_{L(1)}$	$V_{cc}=5V$ $E_v=10Lux$	2.5	3.5	5	μA
	$I_{L(2)}$	$V_{cc}=5V$ $E_v=30Lux$	7.5	10.5	15	μA
	$I_{L(3)}$	$V_{cc}=5V$ $E_v=100Lux$	25	35	50	μA
Collector Dark Current	I_{ceo}	$V_{ce}=5V$ $E_v=0Lux$	-	-	0.1	μA
Rise Time	t_r	$V_{cc}=5V$ $I_{ce}=1mA$	15		15	μs
Fall Time	t_f	$RL=1000\Omega$				

Absolute Maximum Ratings: (Ta=25 ° C) PT-A1-AC-3528-850

Parameter	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Collector-Voltage	V_{ECO}	3	V
Power Dissipation	P_C	70	m^W
Operating Temperature Range	T_{opr}	-25 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C

► Curve

Relative Spectral Sensitivity vs. Wavelength (PT-A1-AC-3528-850)

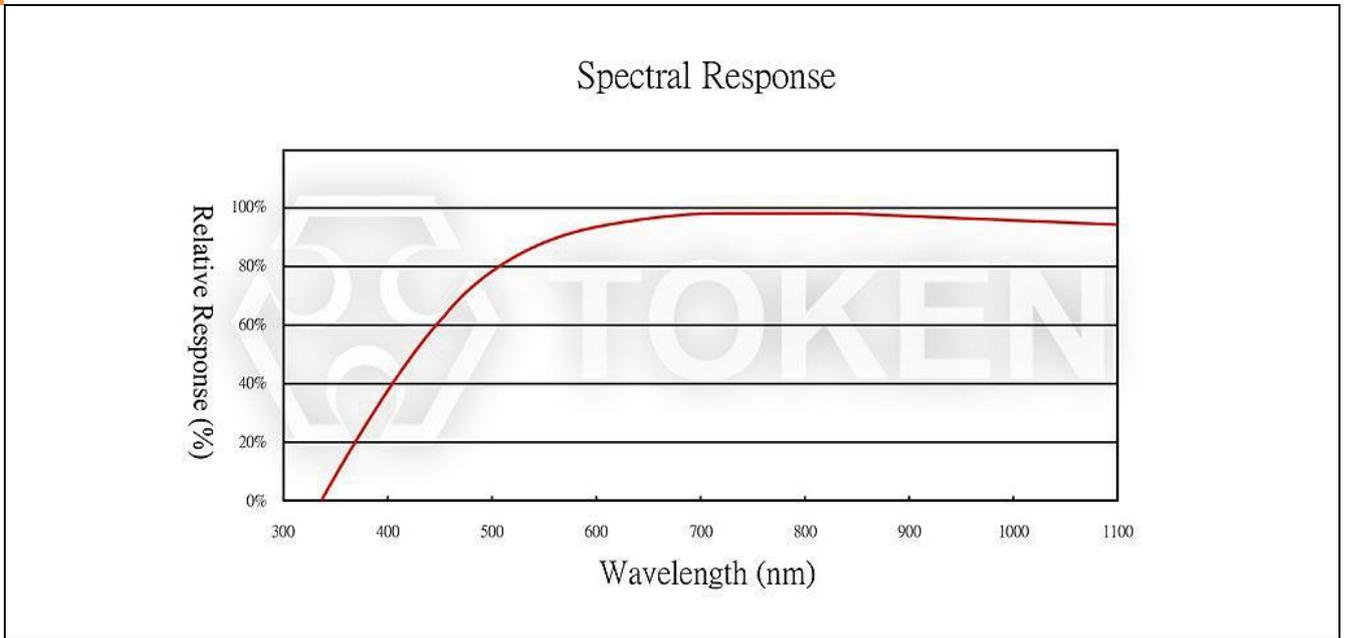
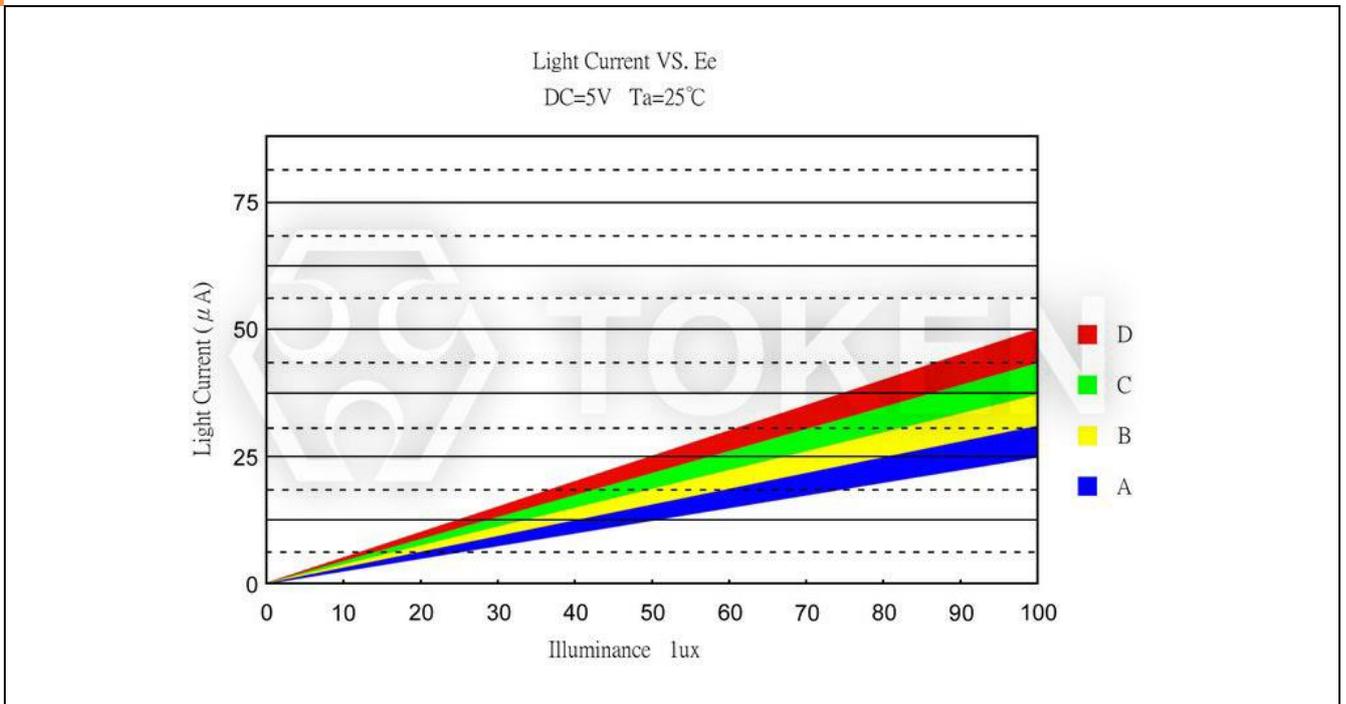
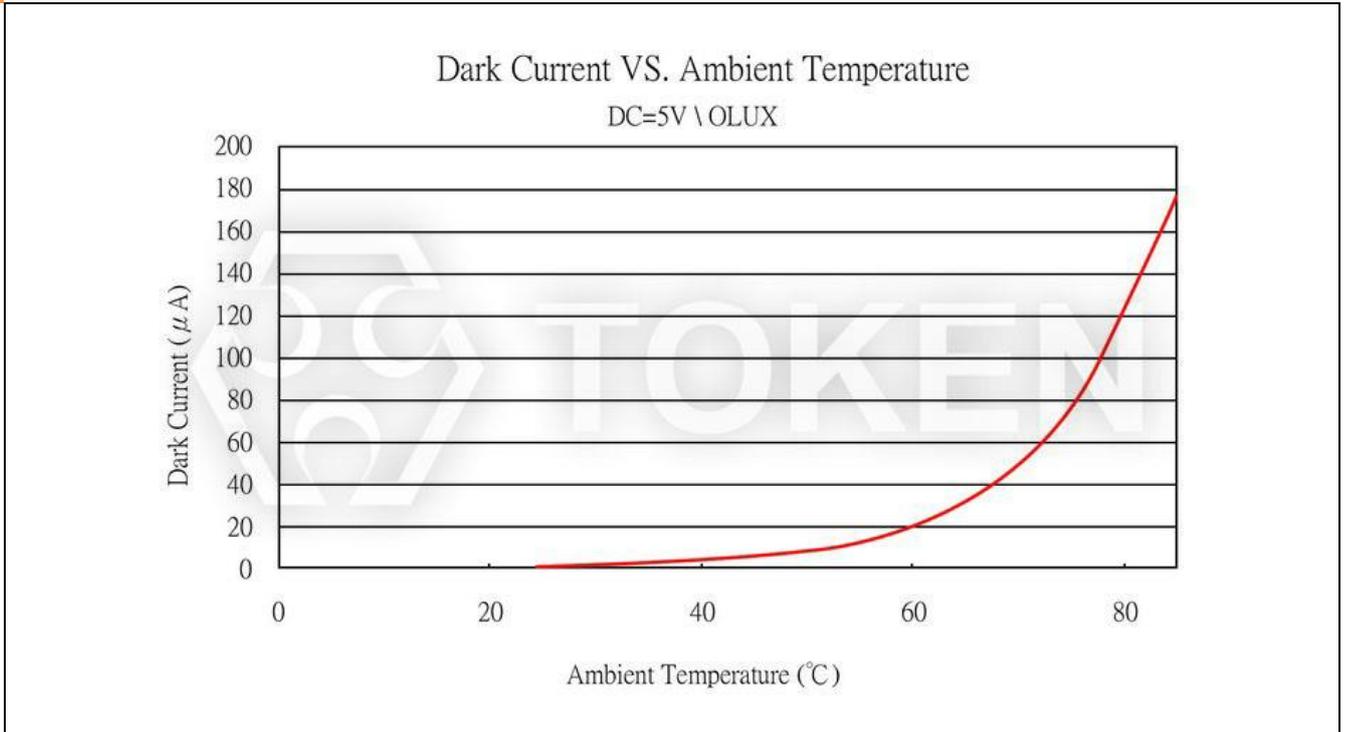


Photo Current vs. Illuminance (PT-A1-AC-3528-850)



Dark Current vs. Ambient Temperature (PT-A1-AC-3528-850)



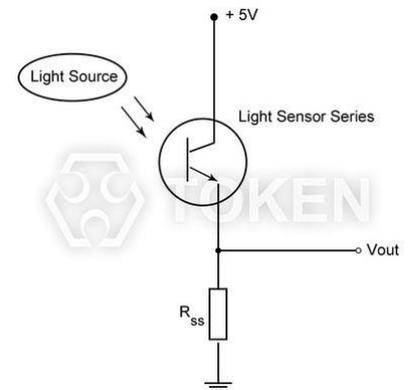
► Note

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°C to 30°C , humidity below 60% R.H. (Avoid freezingand 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.



▶ **Order Codes**

Order Codes (PT-A1-AC-3528-850)

PT	-	A1	-	AC	-	3528	-	850
Part Number		Chip Type		Lens Color		Size		Spectral Bandwidth
PT		A1		AC	Water Clear	3528	3.5mm × 2.8mm	850 850 nm