

Ambient Light Sensor 3mm T-1 ALS-PT204-6C/L177

Features

- Close responsively to the human eye spectrum
- Light to Current, analog output
- Good output linearity across wide illumination range
- Low sensitivity variation across various light sources
- Operating temperature performance, -40°C to 85°C
- Wide supply voltage range, 2.5V to 5.5V
- Size : 3mm Lamp
- RoHS compliant and Pb Free package



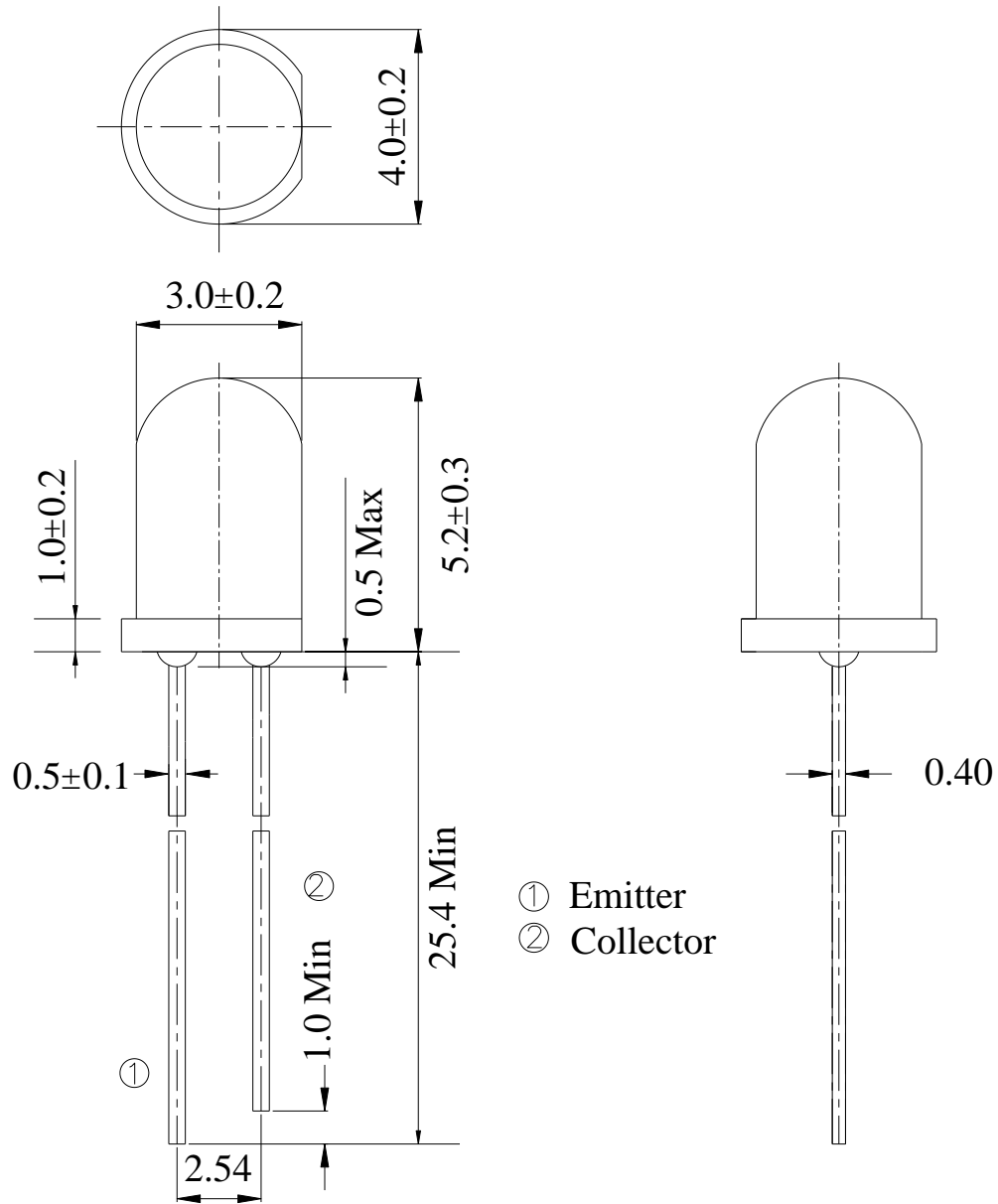
Description

The ALS-PT204-6C/L177 is an ambient light sensor; It consists of a phototransistor in 3mm lamp. EVERLIGHT ALS series products are good effective solution to the power saving of display backlighting of mobile appliances, such as the mobile phones, NB and PDAs. Due to the high rejection ratio of infrared radiation, the spectral response of the ambient light sensor is close to human eyes.

Applications

- Detection of ambient light to control display backlighting
 - Mobile devices – mobile phones, PDAs
 - Computing device – TFT LCD monitor for Notebook computer
 - Consumer device – TFT LCD TV, video camera, digital camera, toys
- Automatic residential and commercial management
- Automatic contrast enhancement for electronic signboard
- Ambient light monitoring device for daylight and artificial light
 - Street light, CCD/CCTV

Package Dimensions



Notes: 1.All dimensions are in millimeters
2.Tolerances unless dimensions ± 0.1 mm

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply Voltage	V _{cc}	-0.5~6.0	V
Operating Temperature Range	T _{opr}	-40 ~ +85	°C
Storage Temperature Range	T _{stg}	-40 ~ +100	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	T _{opr}	-40	+85	°C
Supply Voltage	V _{cc}	2.5	5.5	V

Rankings

Bin	Symbol	Min	Max	Unit	Test Condition
1	I _{PH} (ON)	15	45	μA	V _{CE} =5V Ev=100Lux
2		35	70		
3		60	100		
4		81	127		
5		104	150		

Electrical and Optical Characteristics (T_a=25°C)

Parameter	Symbol	MIN	TYP	MAX.	Unit	Test Condition
Dark Current	I _{CEO}	---	---	0.1	uA	V _{CE} =10V, E _v = 0Lux
Collector-Emitter Saturation Voltage	V _{CE(sat)}	---	---	0.4	V	I _C =0.5mA, E _v = 1000Lux
Light Current	I _{PH1}	15	---	100	uA	V _{CE} =5V, E _v =100Lux [Note1]
	I _{PH2}	150	---	1000	uA	V _{CE} =5V, E _v = 1000Lux [Note1]
	I _{PH3}	180	690	---	uA	V _{CE} =5V, E _v = 1000Lux [Note2]
Photocurrent Ratio	I _{PH3} / I _{PH2}	---	1.2	---	---	V _{CE} =5V, E _v = 1000Lux
Saturation Output Voltage	V _O	4.5	4.6	---	V	V _{CC} =5V, E _v = 1000Lux R _L =75KΩ [Note2]
Peak Sensitivity Wavelength	λ _p	---	630	---	nm	---
Sensitivity Wavelength Range	λ	370	---	670	nm	---
Rise time	t _r	---	0.11	---	ms	V _{CC} =5V R _L = 7.5KΩ
Fall time	t _f	---	0.12	---	ms	
Angle of half Sensitivity	2θ _{1/2}	---	30	---	Deg.	I _F = 20 mA

Note:

1. White Fluorescent light (Color Temperature = 6500K) is used as light source. However, White LED is substituted in mass production.
2. Illuminance by CIE standard illuminant-A / 2856K, incandescent lamp.

Typical Electrical and Optical Characteristics Curves

Fig.1 Light Current vs. illuminance

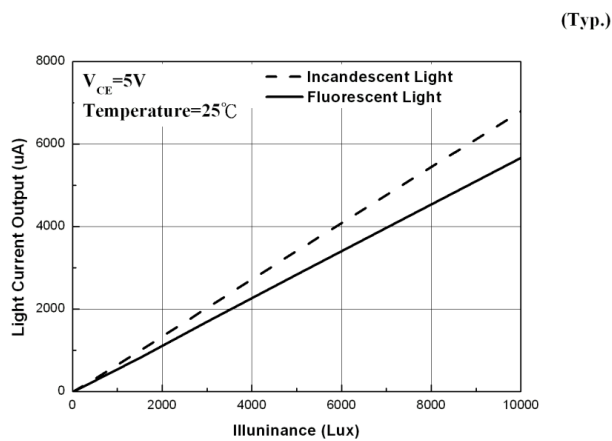


Fig.2 Output Voltage vs. illuminance

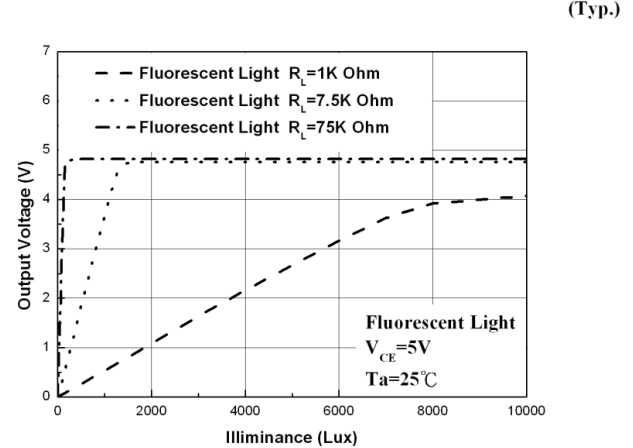


Fig.3 Spectral Response

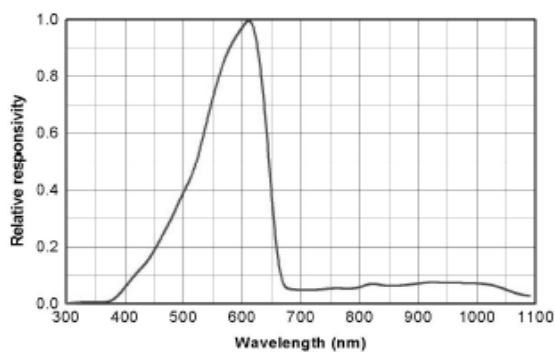


Fig.4 Light current vs. Supply Voltage

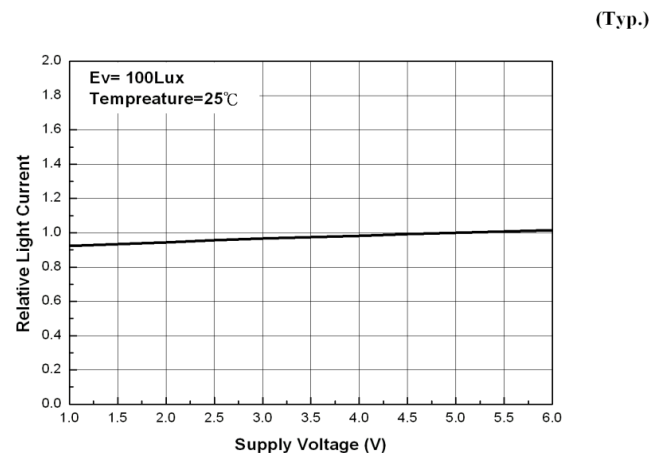


Fig.5 Light Current vs. Temperature

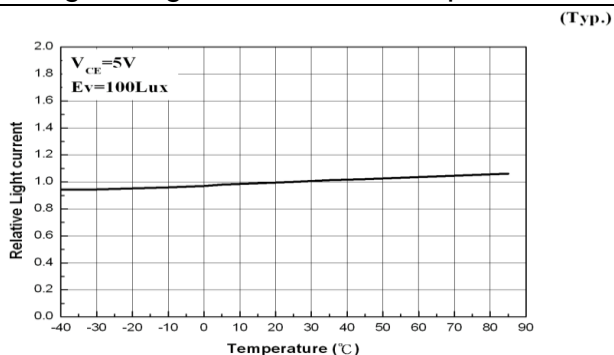
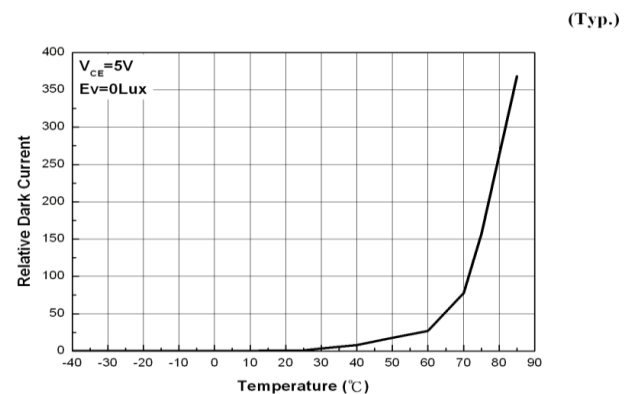
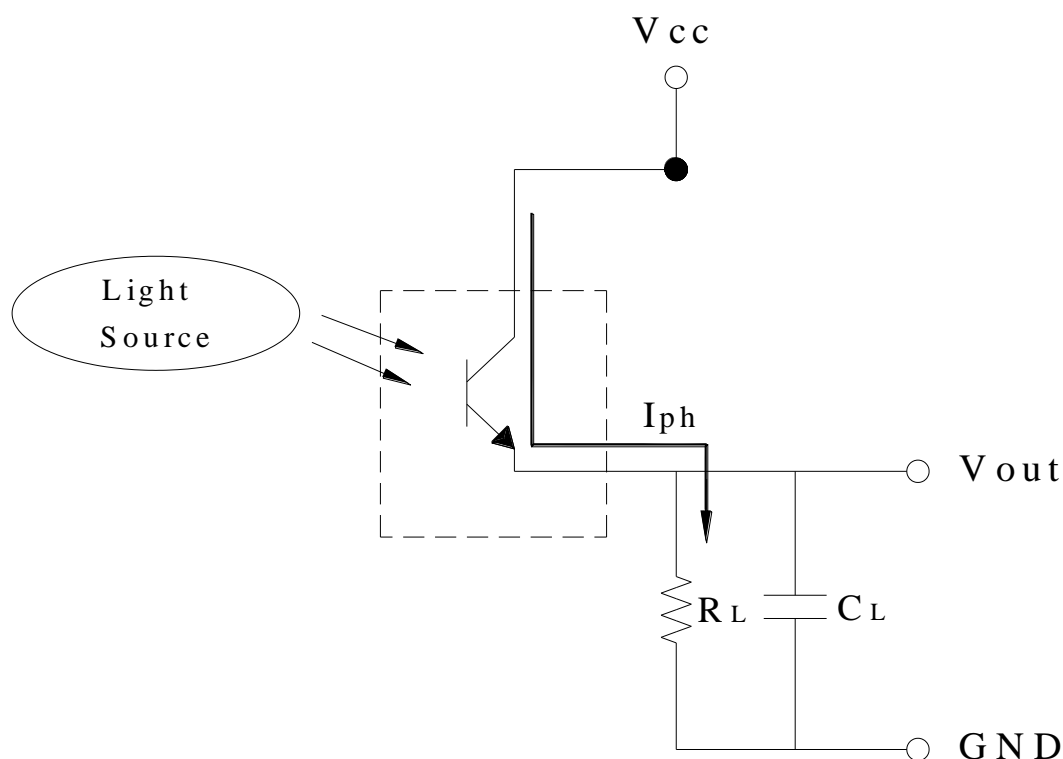


Fig.6 Dark Current vs. Temperature



Converting Photocurrent to Voltage



Note:

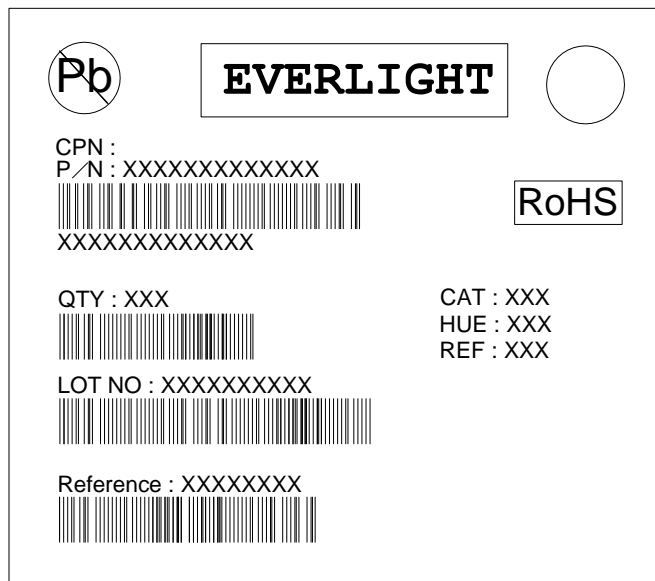
1. The output voltage (V_{out}) is the product of photocurrent (I_{PH}) and loading resistor (R_L)
2. A right loading resistor shall be chosen to meet the requirement of maximum ambient light, and output saturation voltage:

$$V_{out(max.)} = I_{out(max.)} \times R_L \leq V_{out(saturation)} = V_{CC} - 0.4V$$

Packing Quantity Specification

1.500PCS/1Bag , 5Bags/1Box
2.10Boxes/1Carton

Label Format



CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN TAIWAN: Production Place

Note

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and instructions included in these specification sheets.
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