

## Ambient Light Sensor

### 5mm T-1 3/4

### ALS-PT333-3C/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
- Operation temperature performance, -40°C to 85°C
- Wide supply voltage range, 2.5V to 5.5V
- Size: 5mm Lamp (Flat lens)
- The product itself will remain within RoHS compliant version
  - Compliance with EU REACH
  - Compliance Halogen Free(Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)



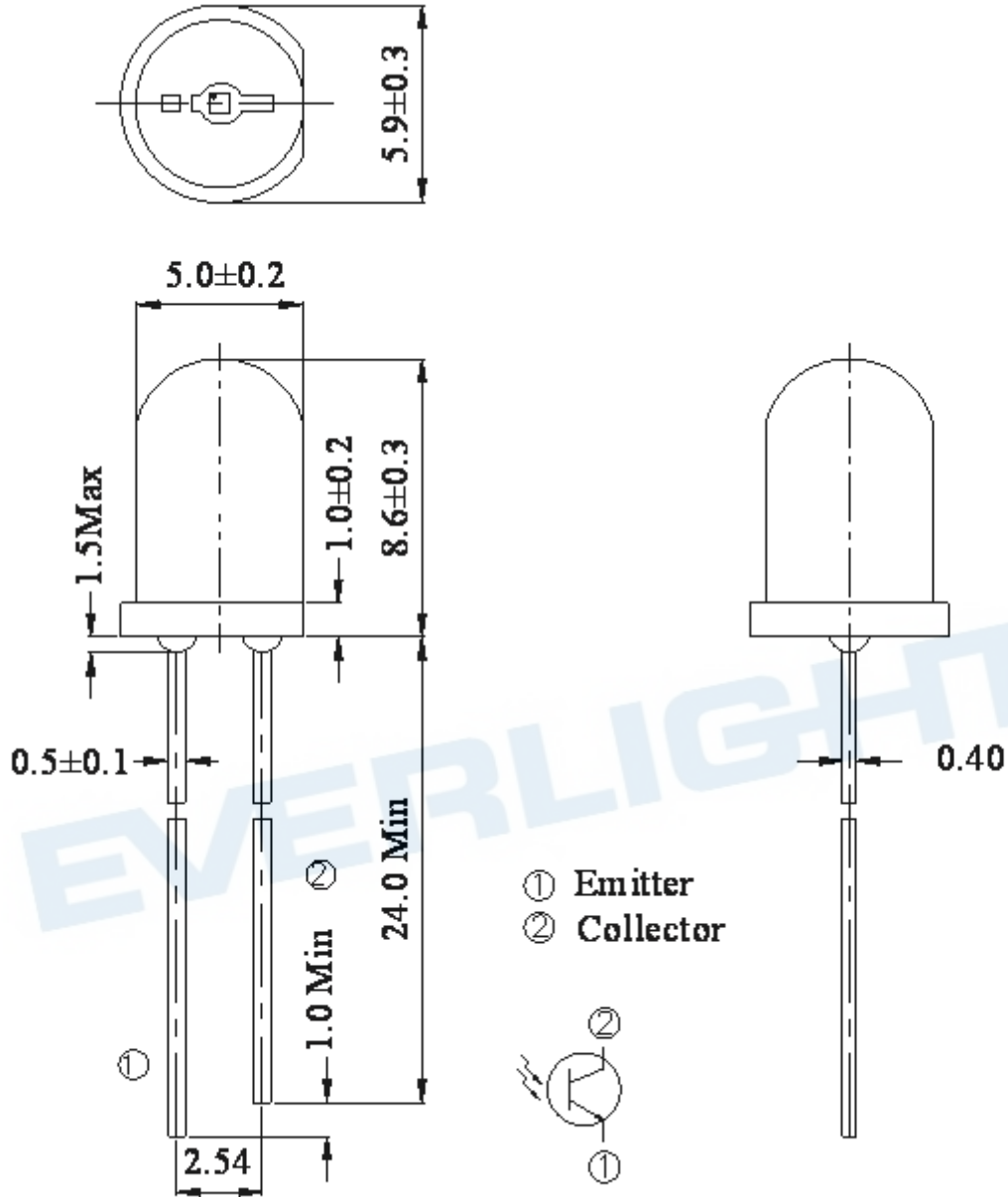
#### Description

The ALS-PT333-3C/L177 is an ambient light sensor. It consists of a phototransistor in 5mm 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

- Ambient light monitoring device for daylight and artificial light
  - CCD camera/CCTV security equipment, Street light
- Detection of ambient light to control display backlighting
  - Computing device – TFT LCD monitor for Notebook computer
  - Consumer device – TFT LCD TV, video camera, digital camera, toys

Package Dimensions



Notes:

1. All dimensions are in millimeters
2. Tolerances unless dimensions  $\pm 0.1$  mm

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>cc</sub>	-0.5~6.0	V
Operating Temperature Range	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature Range	T <sub>stg</sub>	-40 ~ +100	°C
Soldering Temperature Range	T <sub>sol</sub>	260	°C

**Recommended Operating Conditions (Ta=25°C)**

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	T <sub>opr</sub>	-40	+85	°C
Supply Voltage	V <sub>cc</sub>	2.5	5.5	V

EVERLIGHT

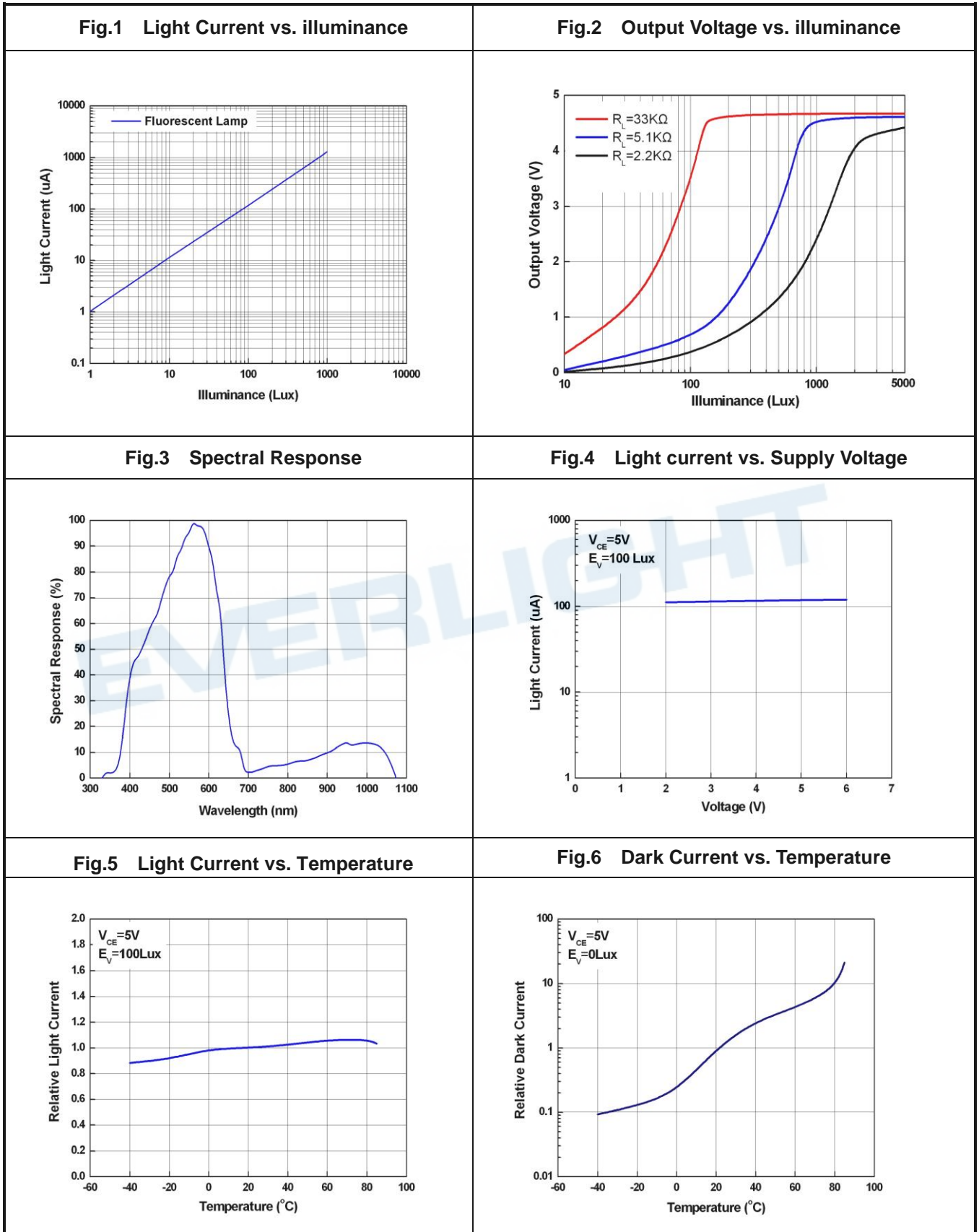
Electrical and Optical Characteristics (Ta=25°C)

Parameter	Symbol	MIN	TYP	MAX.	Unit	Test Condition
Dark Current	I <sub>D</sub>	---	---	100	nA	V <sub>CE</sub> =10V, E <sub>v</sub> = 0Lux
Light Current	I <sub>PH1</sub>	90	---	160	uA	V <sub>CE</sub> =5V, E <sub>v</sub> = 100Lux [Note1]
	I <sub>PH2</sub>	900	---	1600	uA	V <sub>CE</sub> =5V, E <sub>v</sub> = 1000Lux [Note1]
	I <sub>PH3</sub>	---	5.4	---	mA	V <sub>CE</sub> =5V, E <sub>v</sub> = 1000Lux [Note2]
Photocurrent Ratio	I <sub>PH3</sub> / I <sub>PH2</sub>	---	4.5	---	---	V <sub>CE</sub> =5V, E <sub>v</sub> = 1000Lux
Peak Sensitivity Wavelength	λ <sub>p</sub>	---	560	---	nm	---
Sensitivity Wavelength Range	λ	390	---	700	nm	---
Rise time	t <sub>r</sub>	---	0.08	---	ms	V <sub>CE</sub> =5V R <sub>L</sub> = 5.1KΩ
Fall time	t <sub>f</sub>	---	0.09	---	ms	
Angle of half Sensitivity	2θ <sub>1/2</sub>	---	64	---	Deg.	I <sub>F</sub> =20mA

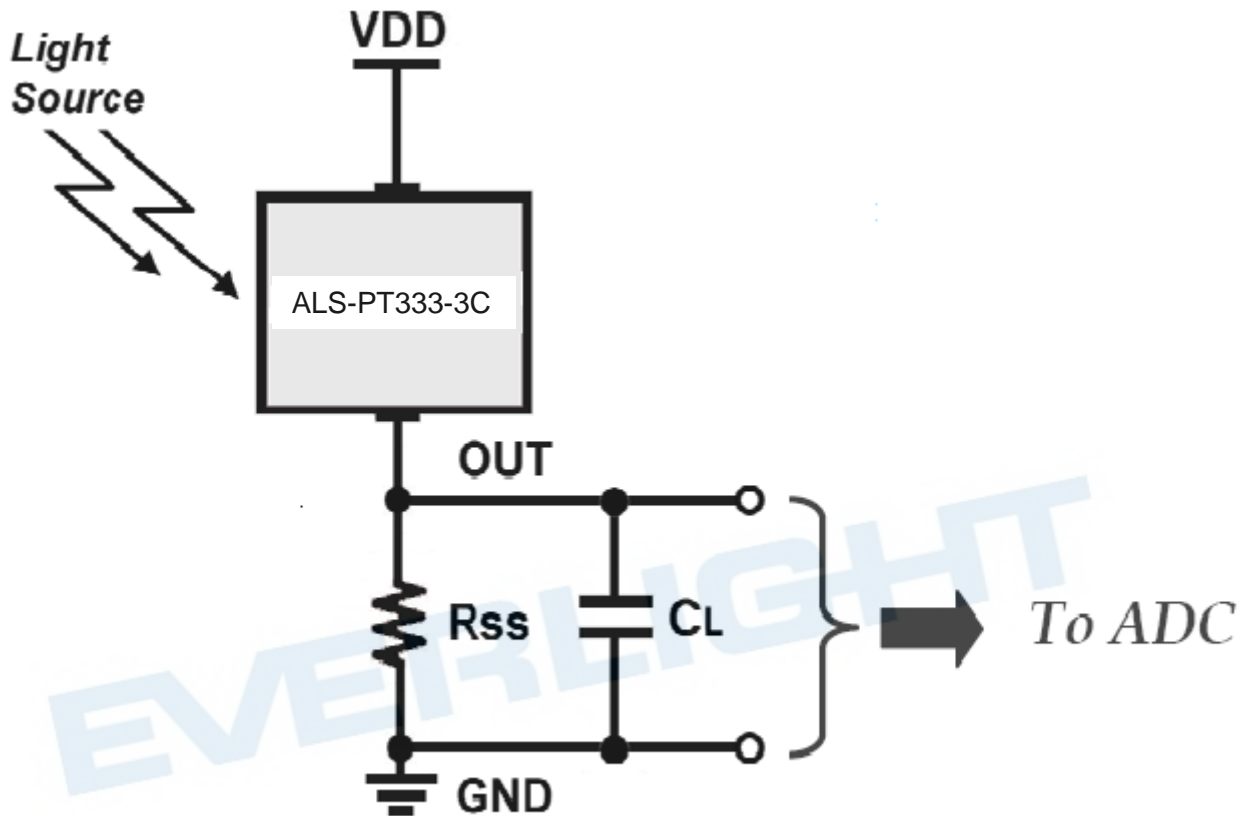
Note:

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



## 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

RoHS  EVERLIGHT 5

CPN : XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXX  
P/N : XXXXXXXXXXXX  
XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXXXX-XXXXXXXX  
LOT NO: Y150716XXX-XXXXXXXXXX-XXXXXXXXXX  
QTY: 0123456789 HUE: XXXXXXXXXXXX  
CAT: XXXXXXXXXXXX REF: XXXXXXXXXXXX  
REFERENCE: BTPYYMDDXXXXX  
MADE IN TAIWAN



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



## DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. 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 the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
5. These specification sheets include materials protected under copyright of EVERLIGHT. Reproduction in any form is prohibited without obtaining EVERLIGHT's prior consent.
6. This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or life saving applications or any other application which can result in human injury or death. Please contact authorized Everlight sales agent for special application request.

EVERLIGHT