

### Ambient Light Sensor – DIP 3mm T-1 ALS-PDIC144-6C/L378

#### 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, 1.8V to 5.5V
- Size: 3mm Lamp (Flat lens)
- RoHS compliant and Pb free package



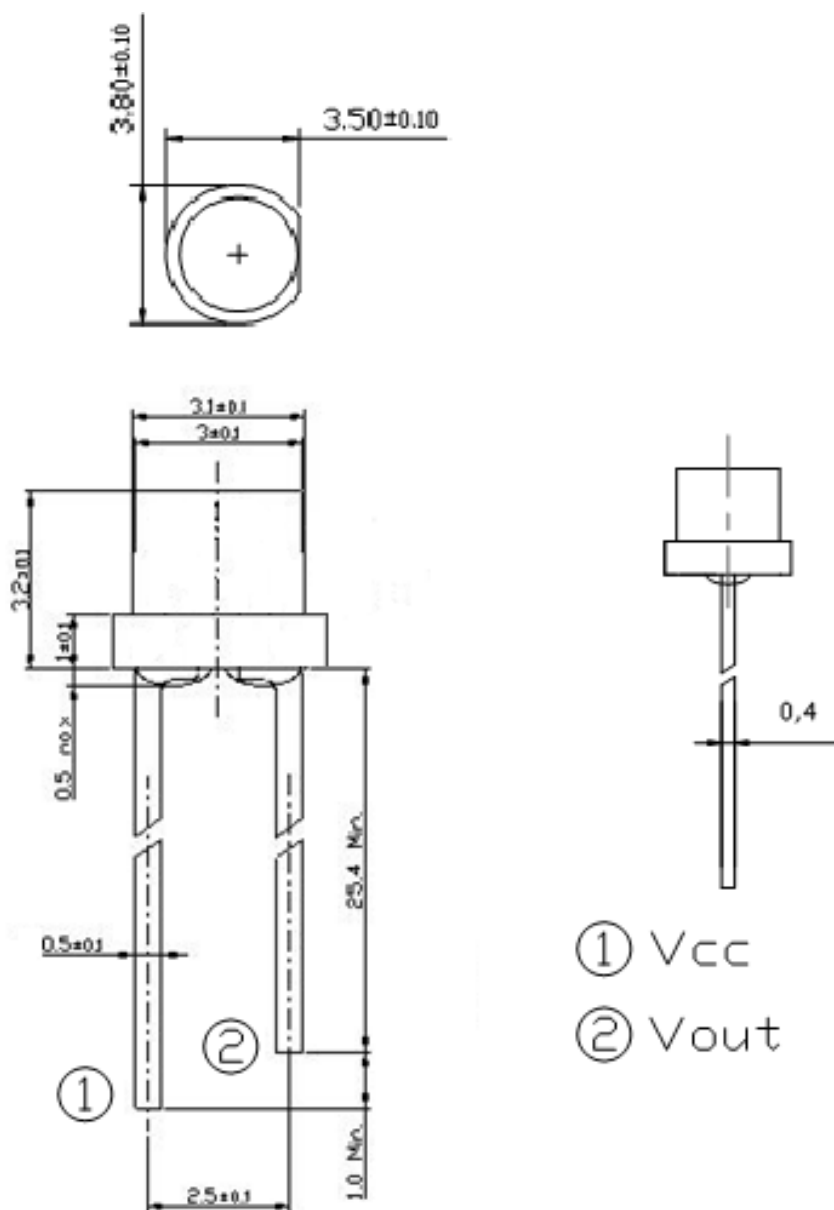
#### Description

The ALS-PDIC144-6C/L378 is an ambient light sensor, which incorporates a photodiode and a current amplifier IC in DIP package. EVERLIGHT ALS series products are a 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  $\pm 0.1$ mm

### Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	-0.7 ~ 6.5	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

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	T <sub>opr</sub>	-40	+85	°C
Supply Voltage	V <sub>CC</sub>	1.8	5.5	V

**Electrical and Optical Characteristics (T<sub>a</sub>=25°C)**

Parameter	Symbol	MIN	TYP	MAX.	Unit	Test Condition
Dark Current	I <sub>D</sub>	1	---	100	nA	V <sub>CC</sub> =3V, E <sub>v</sub> = 0Lux
Light Current	I <sub>PH1</sub>	2.2	---	4.4	uA	V <sub>CC</sub> =3V, E <sub>v</sub> = 10Lux
	I <sub>PH2</sub>	22	---	44	uA	V <sub>CC</sub> =3V, E <sub>v</sub> = 100 Lux [Note1]
	I <sub>PH3</sub>	220	---	440	uA	V <sub>CC</sub> =3V, E <sub>v</sub> = 1000Lux [Note1]
	I <sub>PH4</sub>	264	---	528	uA	V <sub>CC</sub> =3V, E <sub>v</sub> = 1000Lux [Note2]
Photocurrent Ratio	I <sub>PH4</sub> / I <sub>PH3</sub>	---	1.2	---	---	V <sub>CC</sub> =3V, E <sub>v</sub> = 1000Lux
Peak Sensitivity Wavelength	λ <sub>p</sub>	---	550	---	nm	---
Sensitivity Wavelength Range	λ	390	---	700	nm	---
Rise time	t <sub>r</sub>	---	0.36	---	ms	V <sub>CC</sub> =3V R <sub>L</sub> = 27KΩ
Fall time	t <sub>f</sub>	---	1.13	---	ms	
Angle of half Sensitivity	2θ <sub>1/2</sub>	---	143	---	Deg.	I <sub>F</sub> = 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

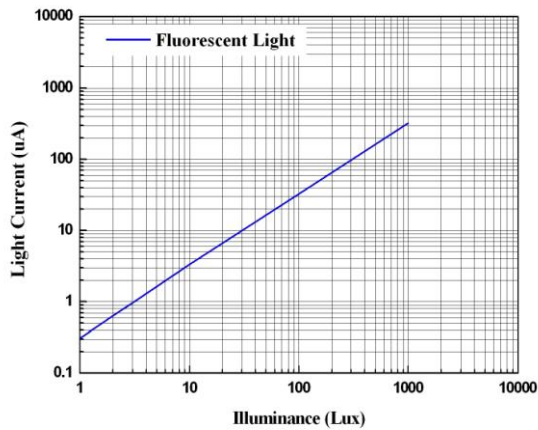


Fig.2 Output Voltage vs. illuminance

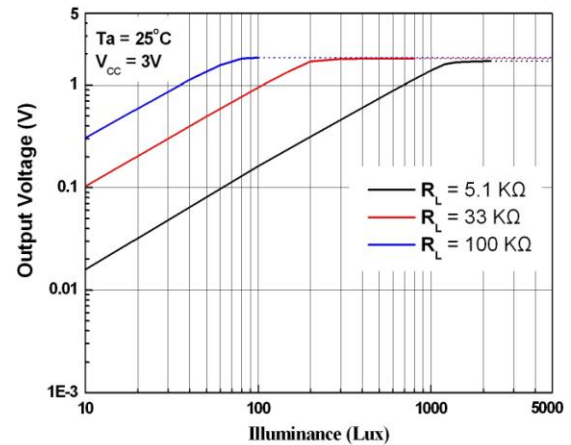


Fig.3 Spectral Response

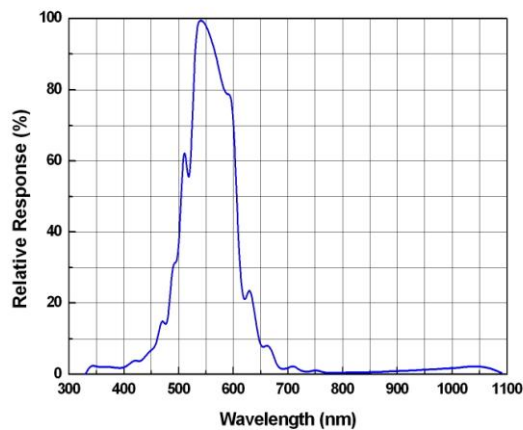


Fig.4 Light current vs. Supply Voltage

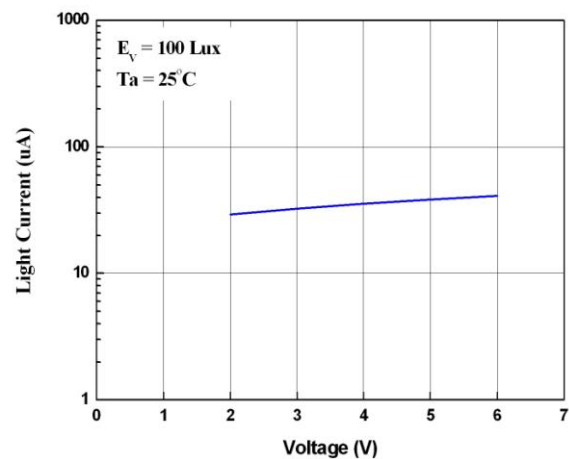


Fig.5 Light Current vs. Temperature

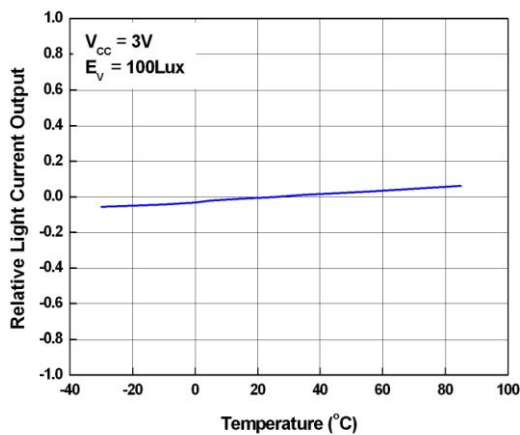
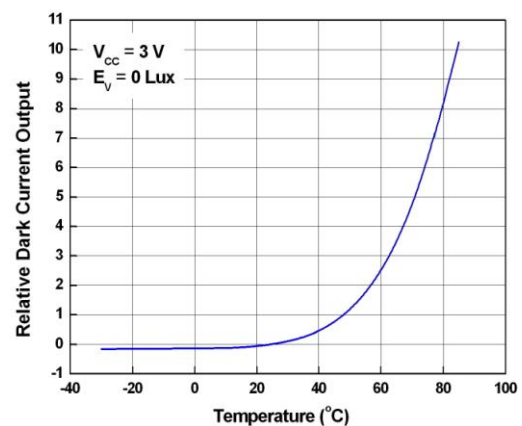
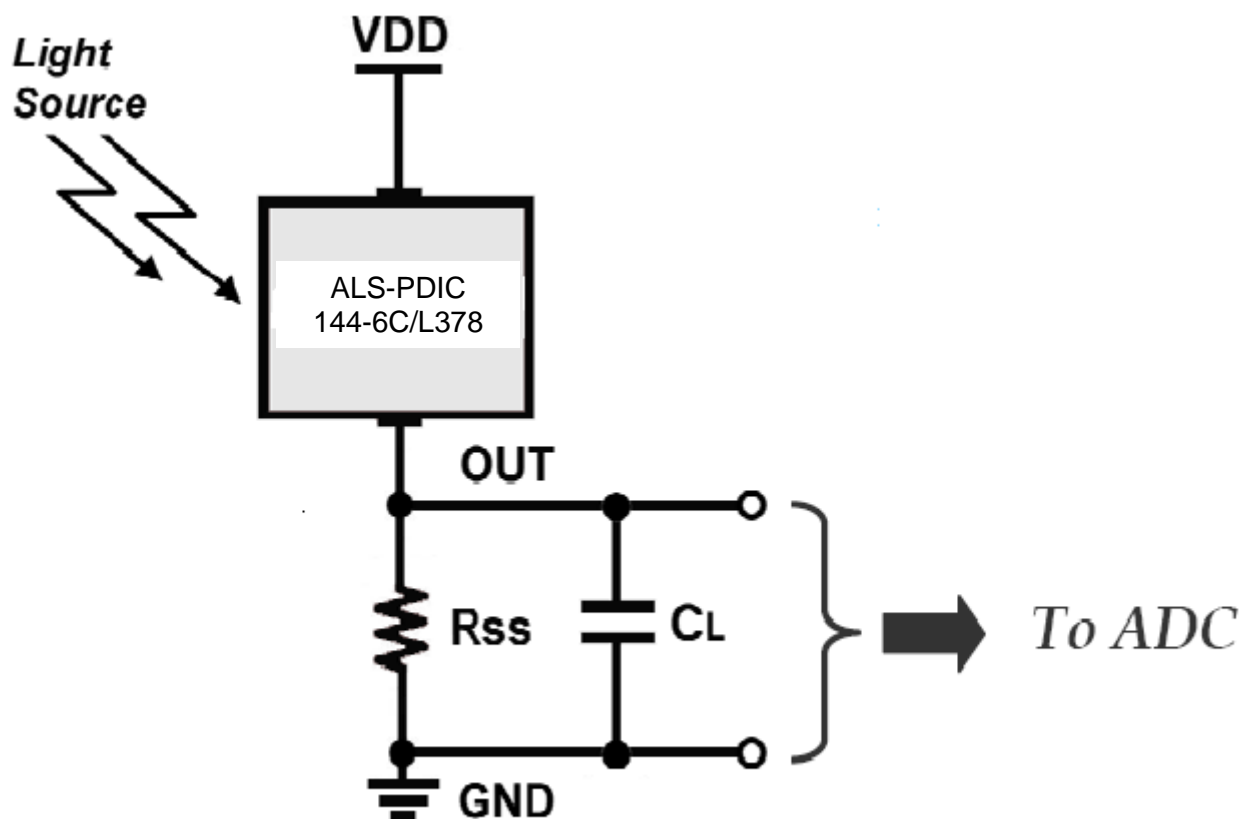


Fig.6 Dark Current vs. Temperature



## Converting Photocurrent to Voltage



### Note:

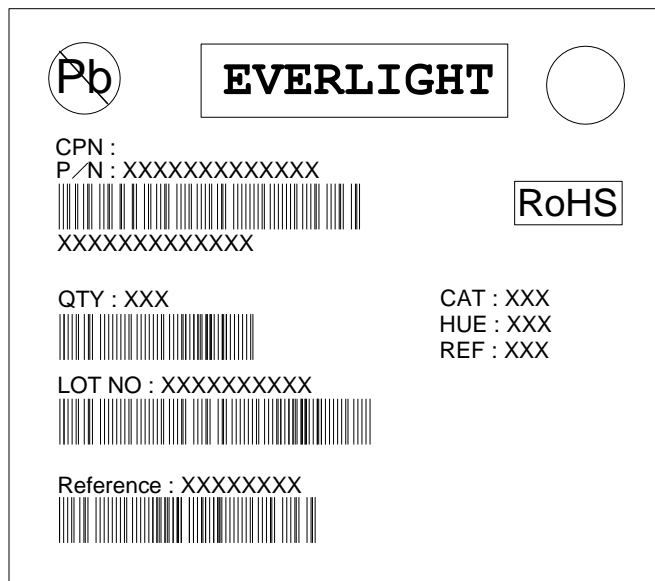
1. The output voltage ( $V_{out}$ ) is the product of photocurrent ( $I_{PH}$ ) and loading resistor ( $R_L$ )
2. A right loading resistor shall be chosen to meet the requirement of maximum ambient light, and output saturation voltage:

$$V_{out(max.)} = I_{out(max.)} \times R_L \leq V_{out(saturation)} = V_{CC} - 1.2V$$

## 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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