

## Ambient Light Sensor

### 3mm T-1

### ALS-PDT144-6C/L451

#### Features

- Light to Current, analog output
- Good output linearity across wide illumination range
- Operation temperature performance, -30°C to 85°C
- Wide supply voltage range, 3V to 24V
- High efficiency light current output
- Lower dark current 0.1uA
- Lower cost
- Size : 3mm 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)



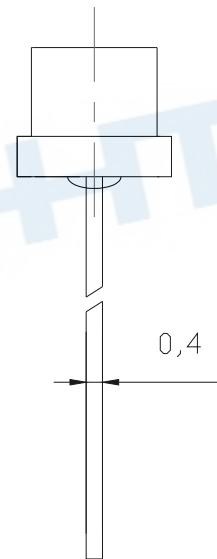
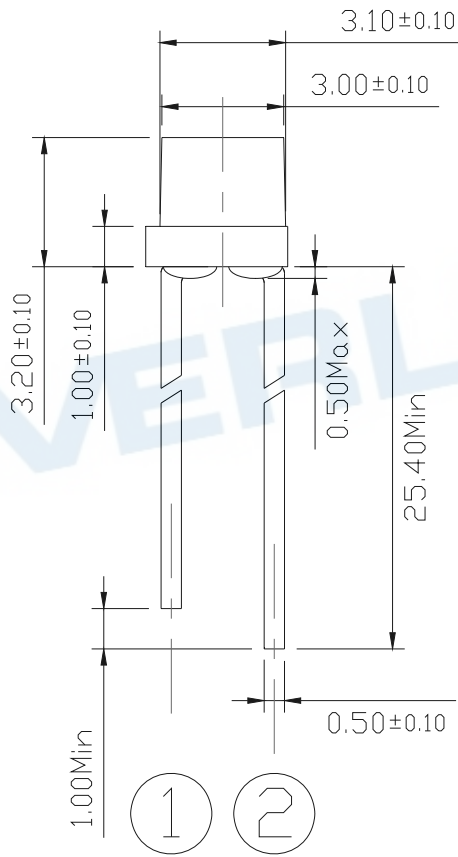
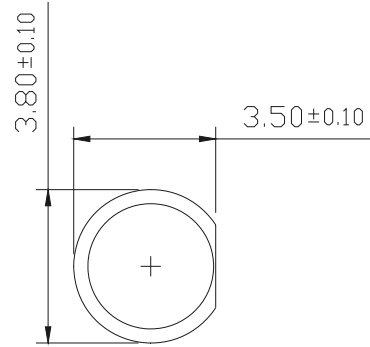
#### Description

- The ALS-PDT144-6C/L451 is an ambient light sensor using a photo transistor in a DIP package. It is used to replace traditional CdS sensors, since Cadmium is no longer allowed by RoHS.

#### Applications

- Detection of ambient light to control electrical unit
  - Lighting devices – Road lamp, Night lamp
  - Consumer device – LCD TV, Toys, Gaming

Package Dimensions



- ① Emitter
- ② Collector

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

**Absolute Maximum Ratings**

Parameter	Symbol	Rating	Unit
Operating Temperature Range	Topr	-30~85	°C
Storage Temperature Range	Tstg	-30~100	°C
Collector-Emitter Breakdown Voltage	V(BR)CEO	60	V
Emitter-Collector Breakdown Voltage	V(BR)ECO	8	V
Supply Voltage	V <sub>CC</sub>	2~24	V
Soldering Temperature Range	T <sub>sol</sub>	260	°C

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Max.	Unit
Operating Temperature	Topr	-30	85	°C
Supply Voltage	V <sub>CC</sub>	3	24	V

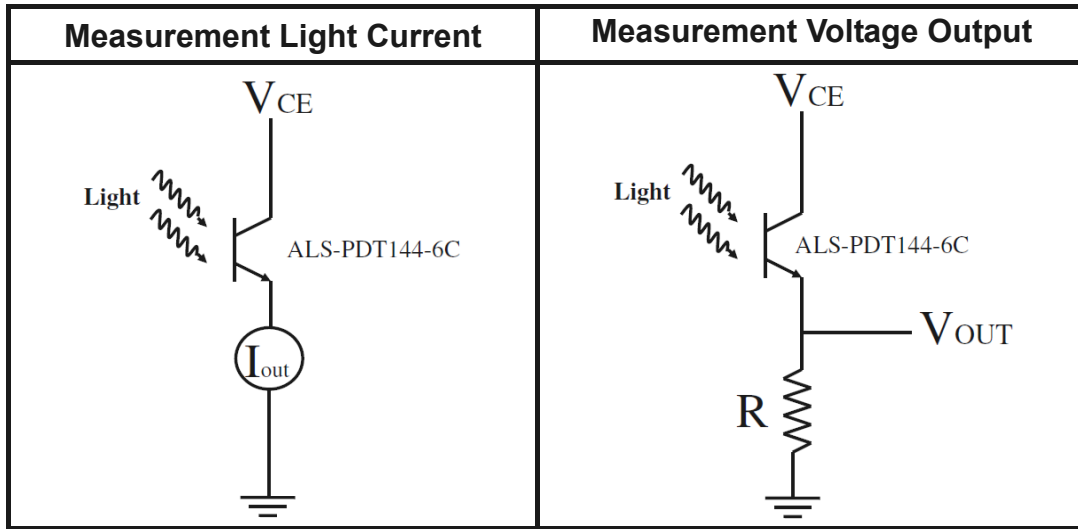
**Electrical and Optical Characteristics (T<sub>a</sub>=25°C)**

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Test Condition
Collector –Emitter Breakdown Voltage	BV <sub>CEO</sub>	---	60	---	V	I <sub>ceo</sub> =500uA
Dark Current	I <sub>CEO</sub>	---	---	0.1	uA	V <sub>CE</sub> =20V, E <sub>v</sub> = 0Lux
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	---	---	1	V	I <sub>C</sub> =50mA, E <sub>v</sub> = 1000Lux
Light Current	I <sub>PH1</sub>	20	---	60	μA	V <sub>CE</sub> =5V, E <sub>v</sub> = 10Lux [Note1]
	I <sub>PH2</sub>	0.28	---	0.7	mA	V <sub>CE</sub> =5V, E <sub>v</sub> = 100Lux [Note1]
	I <sub>PH3</sub>	---	6	---	mA	V <sub>CE</sub> =5V, E <sub>v</sub> = 100Lux [Note2]
Saturation Output Voltage	V <sub>O</sub>	---	4.7	---	V	V <sub>CE</sub> =5V, E <sub>v</sub> = 1000Lux R <sub>L</sub> =2KΩ [Note2]
Peak Sensitivity Wavelength	λ <sub>p</sub>	---	790	---	nm	---
Sensitivity Wavelength Range	λ	400	---	1020	nm	---
Angle of half Sensitivity	2θ <sub>1/2</sub>	---	110	---	Deg.	---

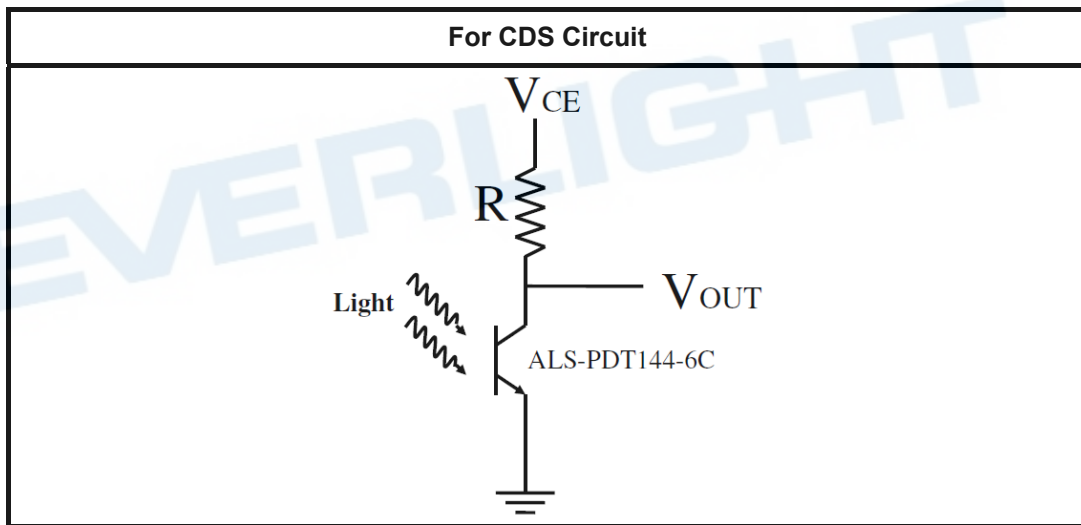
**Notice:**

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.

Recommend Application Circuit (ALS)



Recommend Application Circuit (CDS)



Typical Electrical and Optical Characteristics Curves

Fig.1 Light Current vs. Illuminance

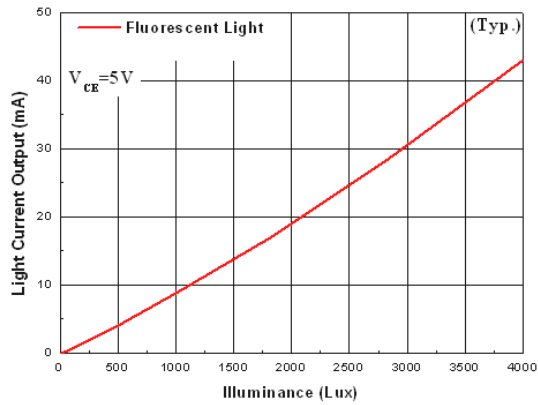


Fig.2 Dark Current vs. Temperature

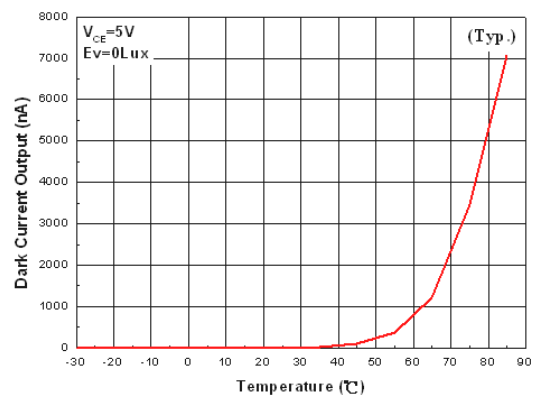


Fig.3 Light current vs. Temperature

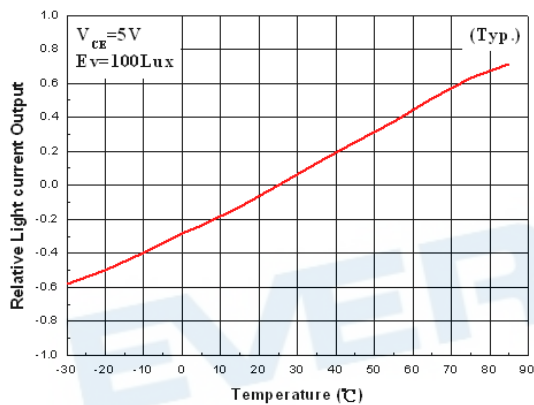


Fig.4 Light current vs. Supply Voltage

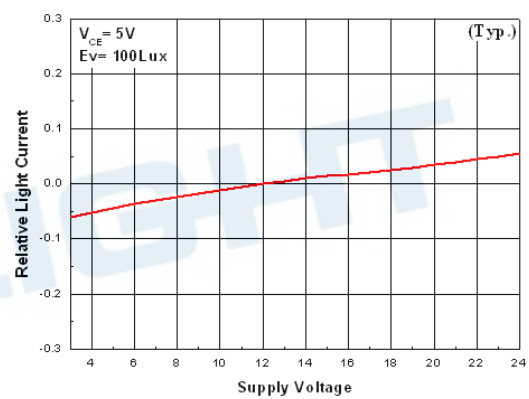


Fig.5 Spectral Response

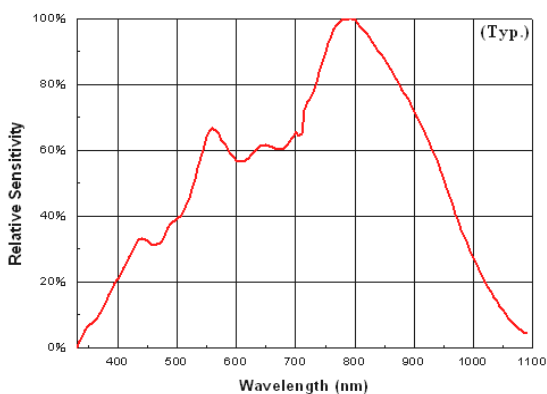
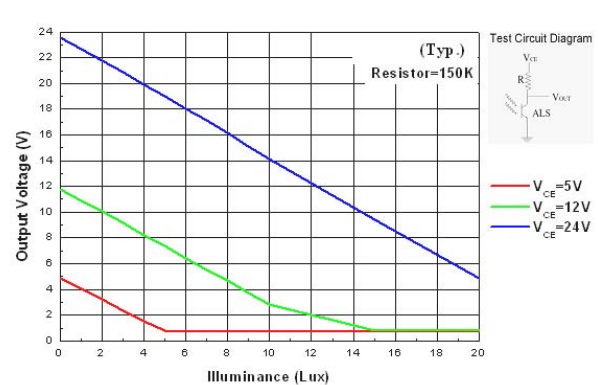
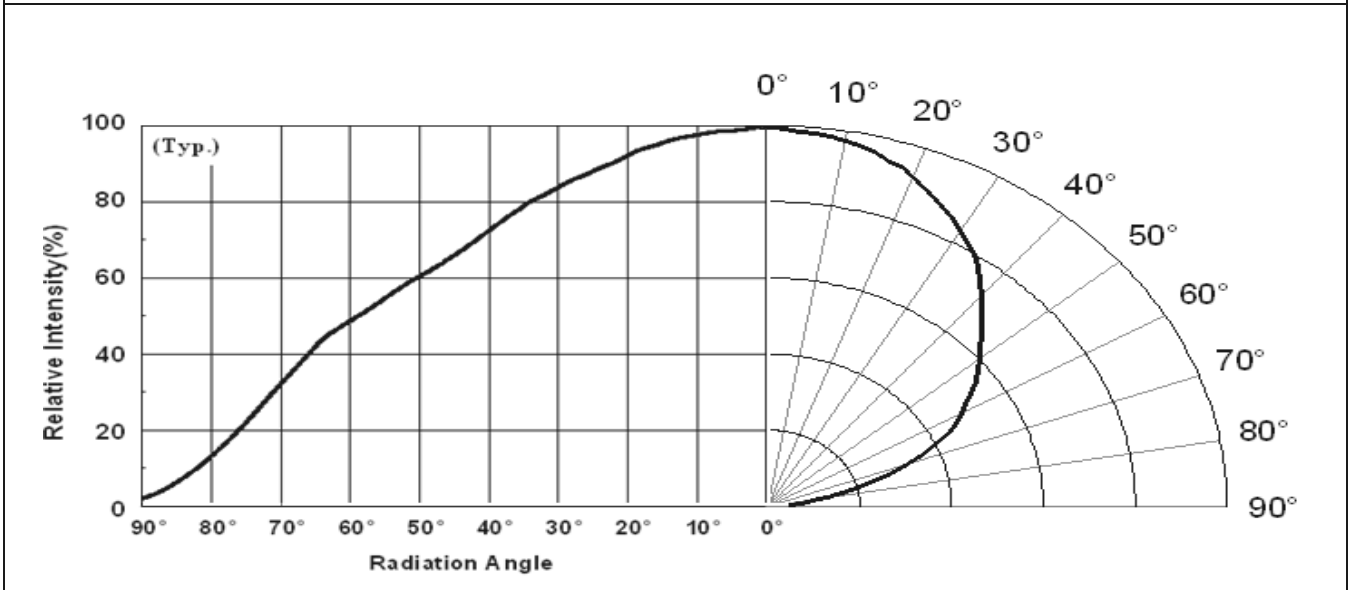


Fig.6 Voltage Output vs. Illuminance



**Fig.7 Relative Intensity vs. Angle Displacement**



**Packing Quantity Specification**

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

**Label Format**

RoHS **(Pb) EVERLIGHT** 5

CPN : XXXXXXXXXXXXXXXXXXXX  
 XXXXXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXX  
 P/N : XXXXXXXXXXX  
 XXXXXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXXXX-XXXXXX  
 LOT NO : Y150716XXX-XXXXXXXX-XXXXXXXX  
 QTY : 0123456789 HUE : XXXXXXXXXXX  
 CAT : XXXXXXXXXXX REF : XXXXXXXXXXX  
 REFERENCE : BTPYMMDDXXXXX

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



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