



Technical Data Sheet

Ambient Light Sensor SMD Device

Preliminary

ALS-PT17-51C/L177/TR8

Features

- Close to the human eye's response
- Infrared light wavelength cut off : 390nm~700nm
- Good output linearity across wide illumination range
- Size : 2.0mm(L)*1.25mm(W)*0.8mm(H)
- Package in 8mm tape on 7" diameter reel.
- High photo sensitivity & Small junction capacitance.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Pb Free
- The product itself will remain within RoHS compliant version.

Descriptions

ALS-PT17-51C/L177/TR8 Ambient Light Sensor Device, consisting of a phototransistor in miniature SMD package, which is molded in water clear with flat top. It is a good effective solution to the power saving of display backlighting of mobile appliances, such as the mobile phones and PDAs. Due to the high rejection ration of infrared radiation, the spectral response of the ambient light sensor is close to that of human eyes.

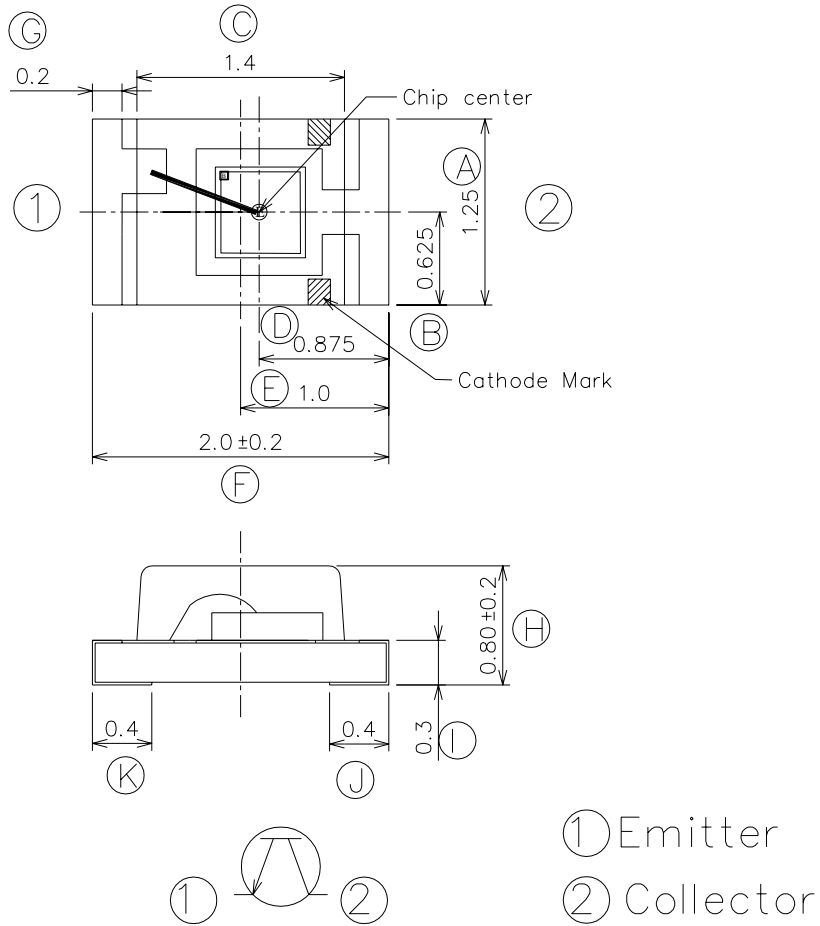
Applications

- 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, plasma TV, video camera, digital still camera
- Automatic residential and commercial management
- Automatic contrast enhancement for electronic signboard
- Ambient light monitoring device for daylight and artificial light

Device Selection Guide

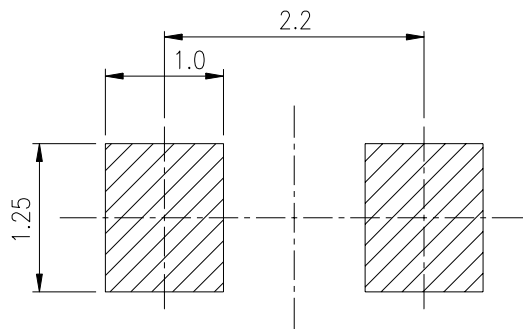
PART	MATERIAL	COLOR
Chip	Silicon	---
Package	Epoxy	Clear

Package Dimensions



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

For reflow soldering (propose)



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit	Notice
Collector-Emitter Voltage	V _{CEO}	60	V	I _{CEO} =100 μA
Emitter-Collector Voltage	V _{ECO}	4	V	I _{ECO} =100 μA
Operating Temperature	T _{opr}	-25 ~ +80	°C	
Storage Temperature	T _{stg}	-40 ~ +85	°C	
Soldering Temperature	T _{sol}	260	°C	

Notes: *1:Soldering time ≤ 5 seconds.

Electro-Optical Characteristics (Ta=25°C, and Vcc=5.0V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Dark Current	I _D	---	---	0.1	μA	V _{cc} =10V; E _v = 0Lx
Collector-Emitter Breakdown Voltage	BV _{CEO}	60	---	---	V	I _{CEO} =100 μA
Emitter-Collector Breakdown Voltage	BV _{ECO}	4	---	---	V	I _{ECO} =100 μA
Collector-Emitter Saturation Voltage	V _{CE(sat)}	---	---	0.4	V	I _C =10mA
Light Current (1)	I _{PH1}	3	5	7	μA	V _{cc} =5V; E _v = 100Lx ^[1]
Light Current (2)	I _{PH2}	110	130	150	μA	V _{cc} =5V; E _v = 1000Lx ^[1]
Light Current (3)	I _{PH3}	760	840	920	μA	V _{cc} =5V; E _v = 1000Lx ^[2]
Photocurrent Ratio	I _{PH3} / I _{PH2}	---	6.5	7.0	---	V _{cc} =5V; E _v = 1000Lx
Saturation Output Voltage	V _O	4.5	4.6	---	V	V _{cc} =5V; E _v = 1000Lx ^[1] R _L =75KΩ
Peak Wavelength	λ _p	---	630	---	nm	
Response Wavelength	λ	390	---	700	nm	> 10% Response

Notes:

*1 : White Fluorescent light (Color Temperature = 6500K) is used as light source.

*2 : Illuminance by CIE standard illuminant-A / 2856K, incandescent lamp.

Typical Electro-Optical Characteristics Curves

Fig.-1 Illuminance vs. Output Phtocurrent

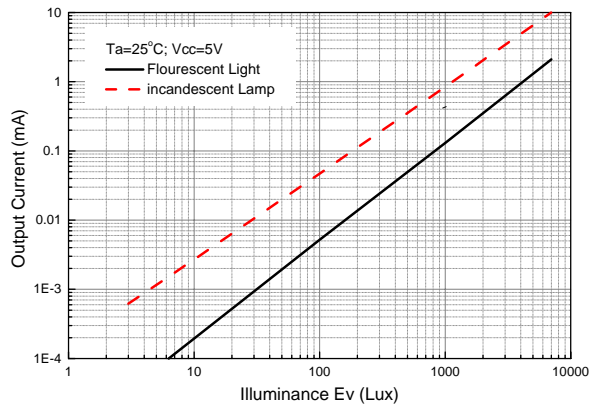


Fig.-2 Illuminance vs. Output Voltage

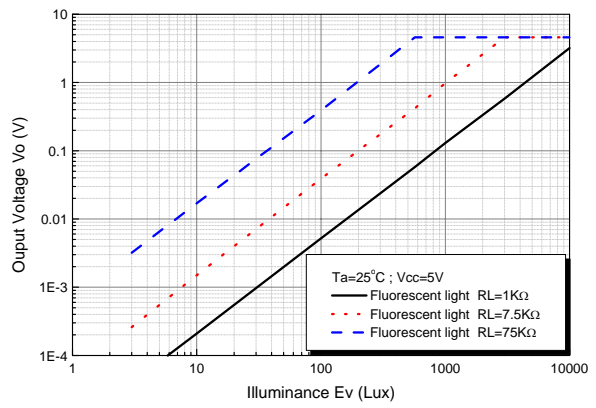
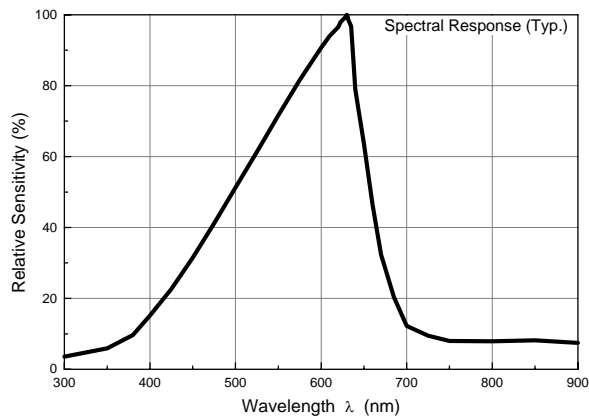
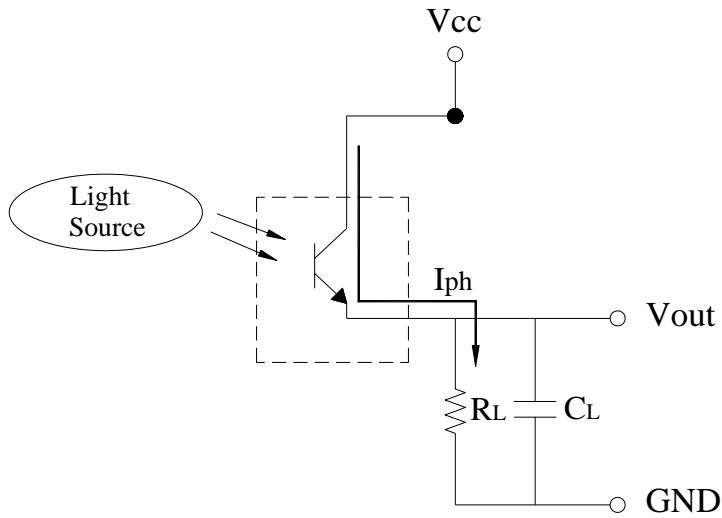


Fig.-3 Spectral Response



Converting Photocurrent to Voltage



Note:

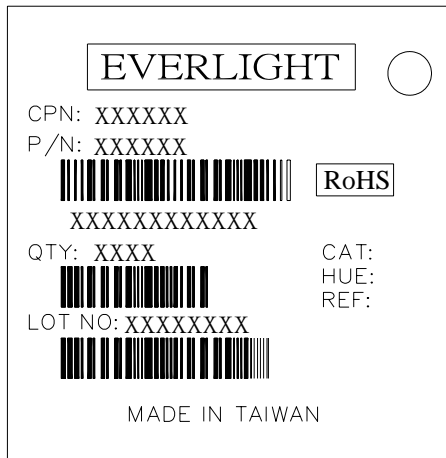
1. The output voltage (Vout) is the product of photocurrent (IPH) and loading resistor (RL)
2. A right loading resistor shall be chosen to meet the requirement of maximum ambient light, and output saturation voltage:

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

Packing Quantity Specification

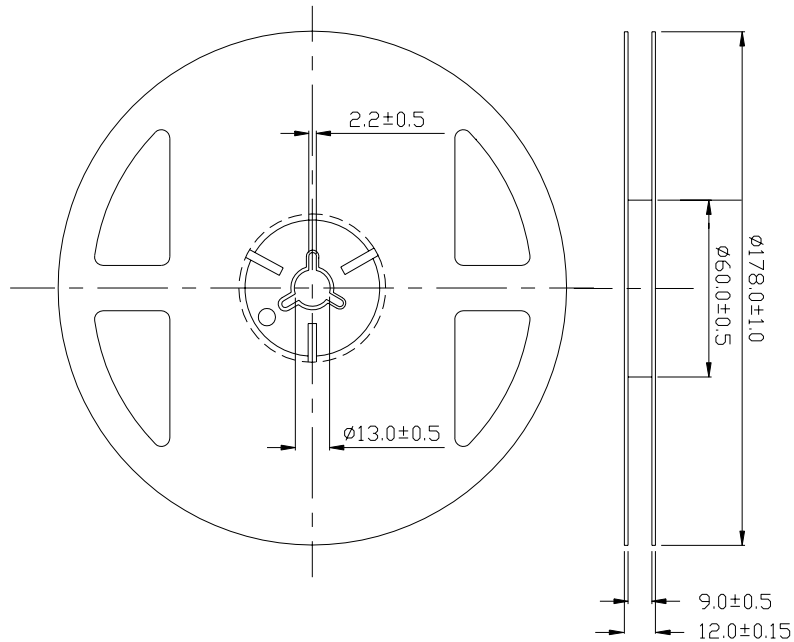
- 1. 3000 PCS/1 Reel
- 2. 10 Reel /1Carton

Label explanation



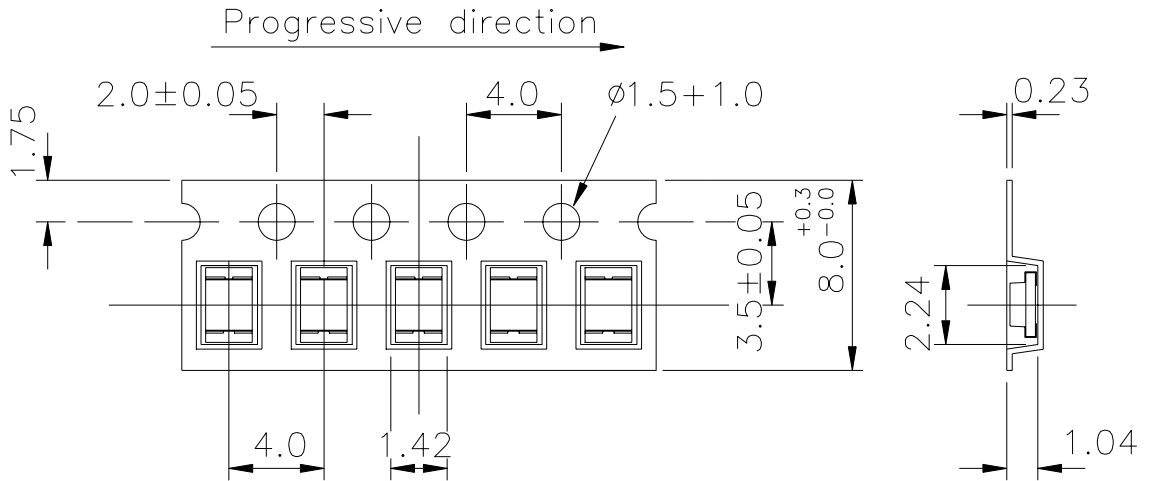
CPN: Customer's Production Number
 P/N : Production Number
 QTY: Packing Quantity
 CAT: Ranks
 HUE: None
 REF: Reference
 LOT No: Lot Number
 MADE IN TAIWAN: Production Place

Reel Dimensions



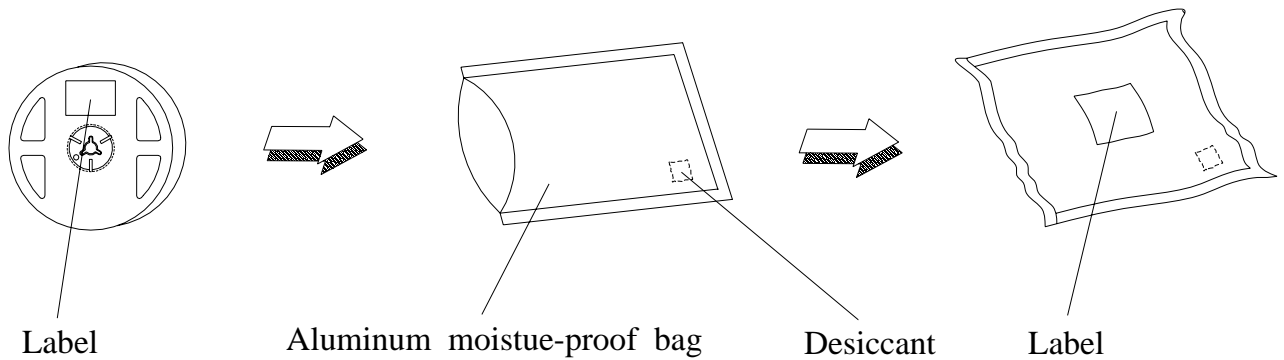
Note: The tolerances unless mentioned are ± 0.1 , Unit = mm.

Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel



Note: Tolerances Unless Dimension is $\pm 0.1\text{mm}$, Unit = mm

Moisture Resistant Packaging



Notes

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 the instructions included in these specification sheets.
3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.

EVERLIGHT ELECTRONICS CO., LTD.
*Office: No 25, Lane 76, Sec 3, Chung Yang Rd,
Tucheng, Taipei 236, Taiwan, R.O.C*

*Tel: 886-2-2267-2000, 2267-9936
Fax: 886-2267-6244, 2267-6189, 2267-6306
<http://www.everlight.com>*