

**5mm T-1 3/4  
Ambient Light Sensor**

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**Features**

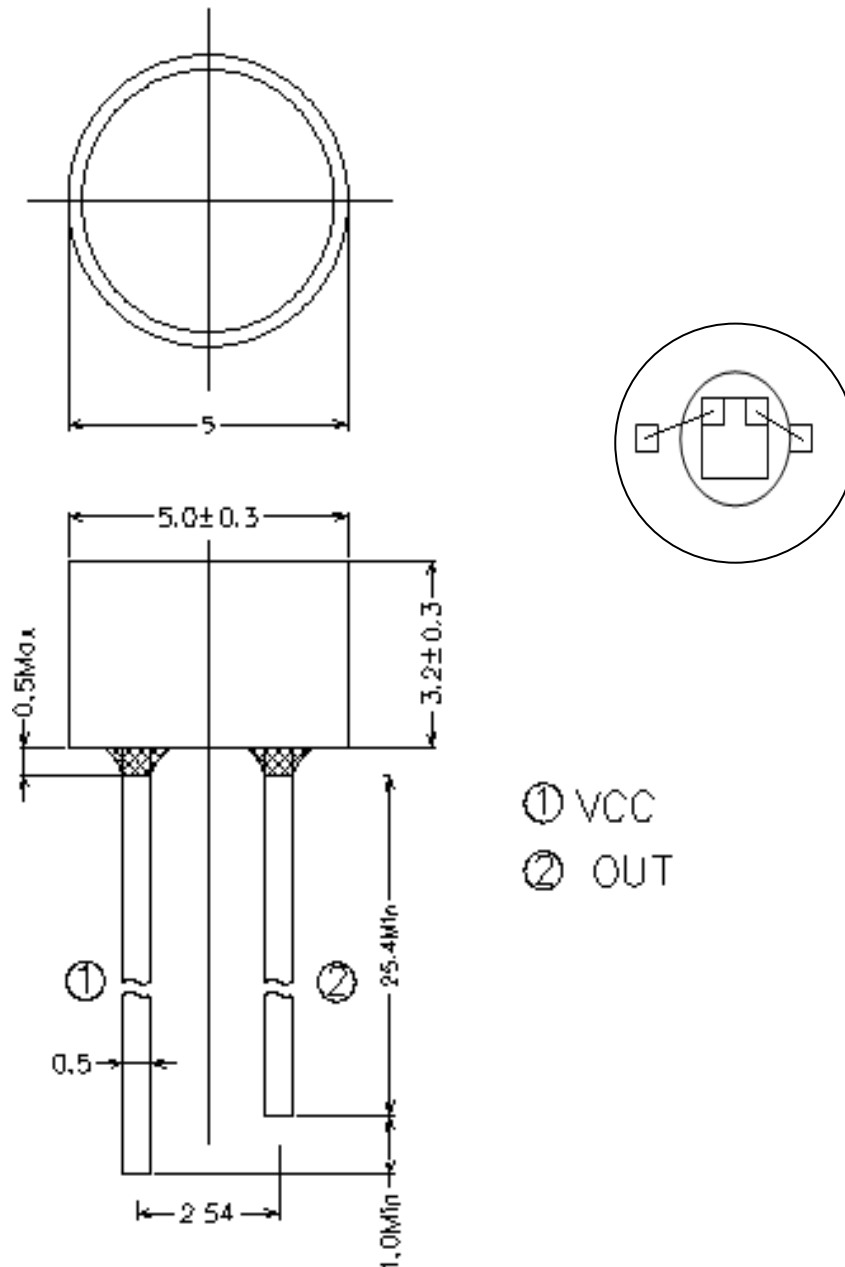
- Excellent IR-Cut performance
- Close responsively to the human eye spectrum
- Light to Current, analog output
- Good output linearity across wide illumination range
- Low sensitivity variation across various light sources
- Operation temperature performance, -40°C to 85°C
- Wide supply voltage range, 1.8V to 5.5V
- Size: 5mm Lamp (Flat lens)
- RoHS compliant package

**Description**

The ALS-PDIC243-3B(V-2) 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. Also, it is very suitable to use ALS product for opto-switch application.

**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

**5mm T-1 3/4  
Ambient Light Sensor****Preliminary  
ALS-PDIC243-3B(V-2)****Package Dimensions**

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

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Ambient Light Sensor****Preliminary  
ALS-PDIC243-3B(V-2)****Absolute Maximum Ratings (Ta=25°C)**

| 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 (Ta=25°C)**

| 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    |

**Rankings**

| BIN | Symbol           | Min. | Max. | Unit | Test Condition                                 |
|-----|------------------|------|------|------|------------------------------------------------|
| 1   | I <sub>ph2</sub> | 10   | 16   | uA   | V <sub>cc</sub> =3V<br>E <sub>v</sub> = 100Lux |
| 2   | I <sub>ph2</sub> | 14   | 23   | uA   |                                                |
| 3   | I <sub>ph2</sub> | 20   | 30   | uA   |                                                |
| 4   | I <sub>ph2</sub> | 26   | 35   | uA   |                                                |

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**Electrical and Optical Characteristics (Ta=25°C)**

| Parameter                    | Symbol              | MIN | TYP  | MAX. | Unit | Test Condition                             |
|------------------------------|---------------------|-----|------|------|------|--------------------------------------------|
| Dark Current                 | $I_D$               | --- | 0.05 | 0.1  | uA   | $V_{CC}=3V$ , $E_v=0\text{Lux}$            |
| Light Current                | $I_{PH1}$           | 1   |      | 3.5  | uA   | $V_{CC}=3V$ , $E_v=10\text{Lux}$ [Note1]   |
|                              | $I_{PH2}$           | 10  |      | 35   | uA   | $V_{CC}=3V$ , $E_v=100\text{Lux}$ [Note1]  |
|                              | $I_{PH3}$           | 100 |      | 350  | uA   | $V_{CC}=3V$ , $E_v=1000\text{Lux}$ [Note1] |
|                              | $I_{PH4}$           | 100 | 300  | ---  | uA   | $V_{CC}=3V$ , $E_v=1000\text{Lux}$ [Note2] |
| Photocurrent Ratio           | $I_{PH4} / I_{PH3}$ | --- | 1    | ---  | ---  | $V_{CC}=3V$ , $E_v=1000\text{Lux}$         |
| Peak Sensitivity Wavelength  | $\lambda_p$         | --- | 560  | ---  | nm   |                                            |
| Sensitivity Wavelength Range | $\lambda$           | 390 | ---  | 700  | nm   |                                            |
| Rise time                    | $t_r$               | --- | 0.36 | ---  | ms   | $V_{CC} = 3V$<br>$R_L = 27K\Omega$         |
| Fall time                    | $t_f$               | --- | 1.13 | ---  | ms   |                                            |
| Angle of half Sensitivity    | $2\theta_{1/2}$     | --- | 143  | ---  | Deg. | $V_{CC} = 3V$                              |

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

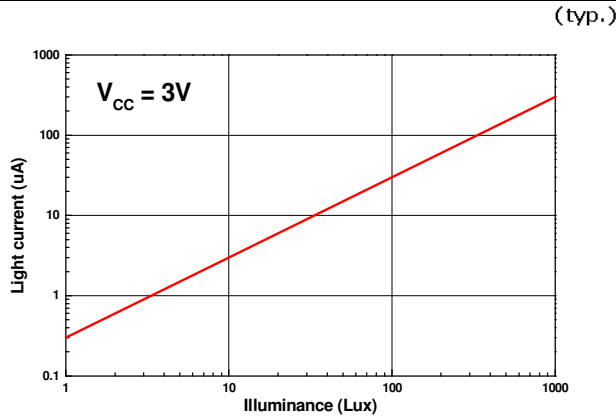


Fig.2 Output Voltage vs. Illuminance

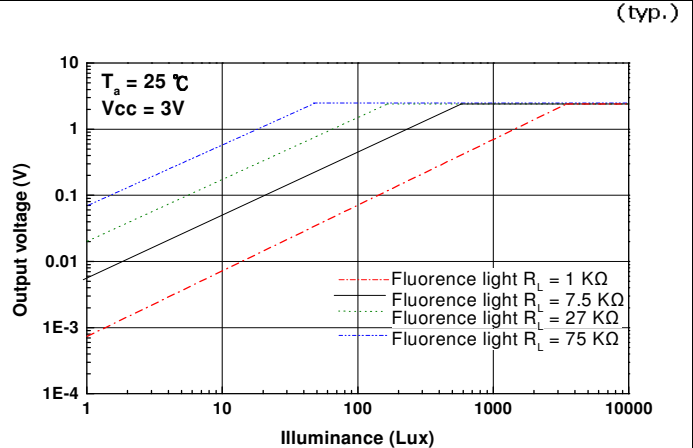


Fig.3 Spectral Response

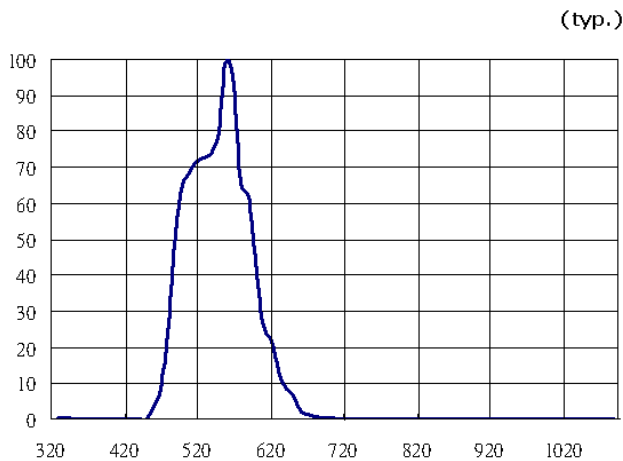


Fig.4 Light current vs. Supply Voltage

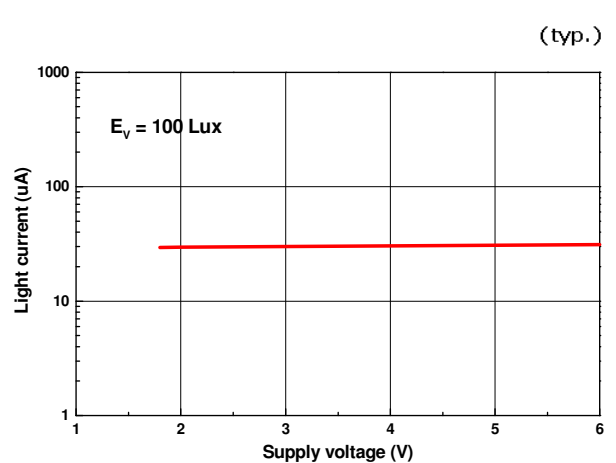


Fig.5 Light Current vs. Temperature

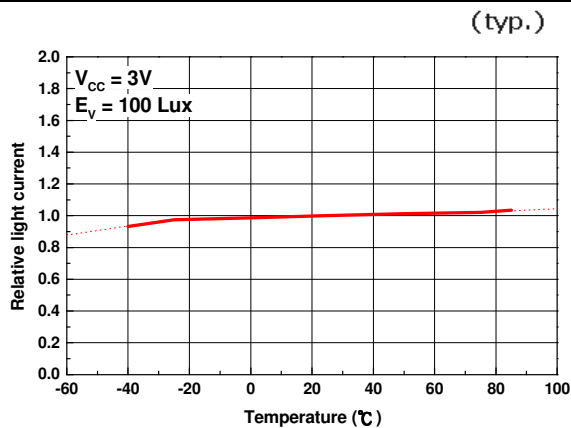
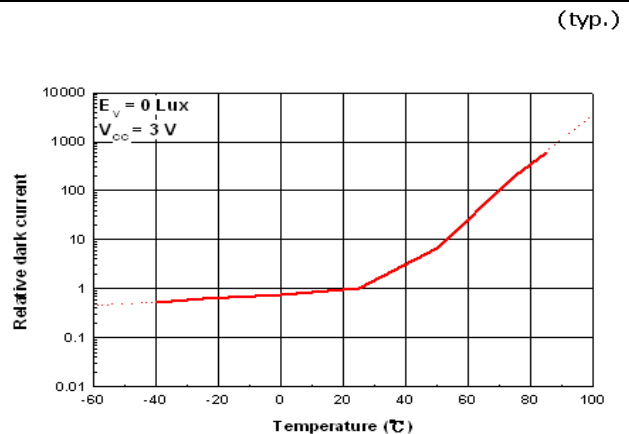
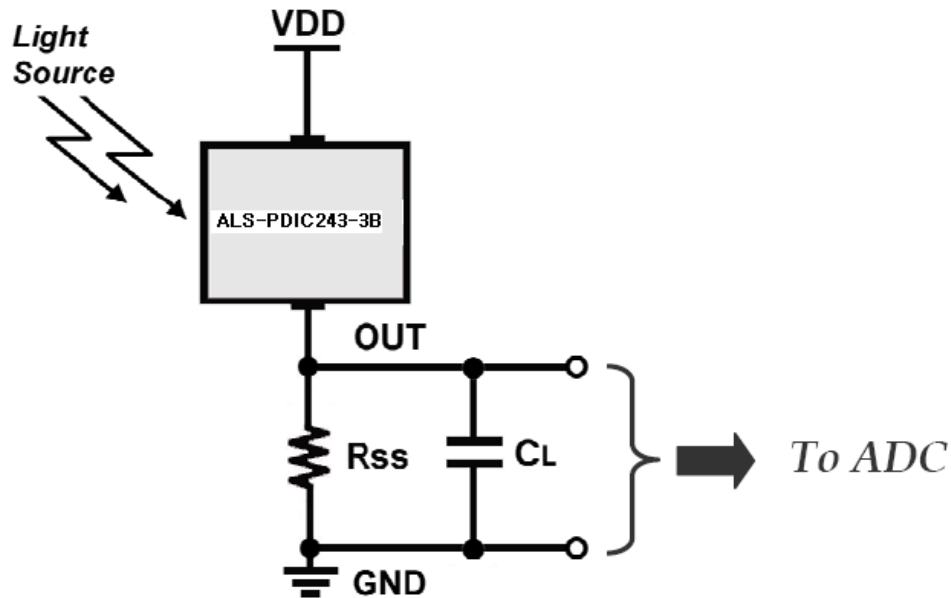


Fig.6 Dark Current vs. Temperature



## 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:

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

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**Packing Quantity Specification**

1.500PCS/1Bag , 5Bags/1Box

2.10Boxes/1Carton

**Label Format**



**EVERLIGHT**

**10**

CPN:



P/N:



**RoHS**

QTY:



LOT NO:



Reference:



CAT:

HUE:

REF:

CPN: Customer's Production Number

P/N : Production Number

QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

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**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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