Ambient Light Sensor

FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): Ø 3
- · High photo sensitivity
- Adapted to human eye responsivity
- Angle of half sensitivity: $\varphi = \pm 30^{\circ}$
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

- · Ambient light sensor for control of display backlight dimming in LCD displays and keypad backlighting of mobile devices and in industrial on / off-lighting operation
- Replacement of CdS photoresistors

| PRODUCT SUMMARY | | | | | |
|-----------------|-----------------------|---------|-----------------------|--|--|
| COMPONENT | Ι _{ΡCΕ} (μΑ) | φ (deg) | λ _{0.5} (nm) | | |
| TEPT4400 | 200 | ± 30 | 440 to 800 | | |

Note

DESCRIPTION

sensitivity at 570 nm.

Test condition see table "Basic Characteristics"

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TEPT4400 ambient light sensor is a silicon NPN epitaxial

planar phototransistor in a T-1 package. It is sensitive to

visible light much like the human eye and has peak

20815

| ORDERING INFORMATION | | | | | | |
|----------------------|-----------|--|--------------|--|--|--|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM | | | |
| ТЕРТ4400 | Bulk | MOQ: 5000 pcs, 1000 pcs/bulk. Label with I _{PCE} group on each bulk. Specifications of group A / B / C see table "Type Dedicated Characteristics" on page 2 | T-1 | | | |

Note

MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) | | | | | | |
|--|--------------------------|-------------------|-------------|------|--|--|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT | | |
| Collector emitter voltage | | V _{CEO} | 6 | V | | |
| Emitter collector voltage | | V _{ECO} | 1.5 | V | | |
| Collector current | | Ι _C | 20 | mA | | |
| Power dissipation | T _{amb} ≤ 55 °C | Pv | 100 | mW | | |
| Junction temperature | | Тj | 100 | °C | | |
| Operating temperature range | | T _{amb} | -40 to +85 | °C | | |
| Storage temperature range | | T _{stg} | -40 to +100 | °C | | |
| Soldering temperature | t ≤ 3 s | T _{sd} | 260 | °C | | |
| Thermal resistance junction / ambient | JESTD 51 | R _{thJA} | 300 | K/W | | |







(5-2008)

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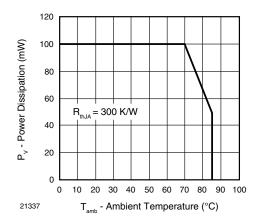


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) | | | | | | |
|---|--|----------------------------|----|------------|------|------|
| PARAMETER | TEST CONDITION | TEST CONDITION SYMBOL MIN. | | TYP. | MAX. | UNIT |
| Collector emitter breakdown voltage | I _C = 0.1 mA | V _{CEO} | 6 | - | - | V |
| Collector dark current | $V_{CE} = 5 V, E = 0$ | I _{CEO} | - | 3 | 50 | nA |
| Collector emitter capacitance | $V_{CE} = 0 V, f = 1 MHz, E = 0$ | C _{CEO} | - | 16 | | pF |
| Collector light current | $E_v = 20$ lx, CIE illuminant A, $V_{CE} = 5$ V | I _{PCE} | 15 | - | 70 | μA |
| | $E_v = 100 \text{ Ix, CIE illuminant A,} V_{CE} = 5 \text{ V}$ | I _{PCE} | - | 200 | - | μA |
| Angle of half sensitivity | | φ | - | ± 30 | - | deg |
| Wavelength of peak sensitivity | | λ _p | - | 570 | - | nm |
| Range of spectral bandwidth | | λ _{0.5} | - | 440 to 800 | - | nm |
| Collector emitter saturation voltage | E_v = 20 lx, CIE illuminant A, I _{PCE} = 1.2 µA | V _{CEsat} | - | 0.1 | - | V |

| TYPE DEDICATED CHARACTERISTICS | | | | | | |
|--------------------------------|--|--------------|------------------|------|------|------|
| PARAMETER | TEST CONDITION | BINNED GROUP | SYMBOL | MIN. | MAX. | UNIT |
| Photo current | $\begin{array}{l} E_{V} = 20 \; lx, \\ CIE \; illuminant \; A, \\ V_{CE} = 5 \; V, \; T_{amb} = 25 \; ^{\circ}C \end{array}$ | А | I _{PCE} | 15 | 28.4 | μA |
| | | В | I _{PCE} | 23.5 | 44.6 | μA |
| | | С | I _{PCE} | 36.9 | 70 | μA |

Note

• Each 5000 piece bag will contain a single group. The label on the bag will indicate which binned group is in the bag. A specific group cannot be ordered. Production shipments containing multiple bags will likely include multiple groups. Please design accordingly.



BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

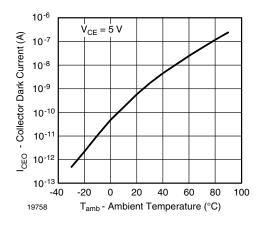


Fig. 2 - Collector Dark Current vs. Ambient Temperature

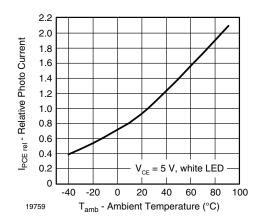


Fig. 3 - Relative Photo Current vs. Ambient Temperature

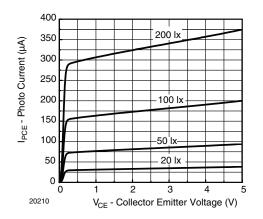


Fig. 4 - Photo Current vs. Collector Emitter Voltage

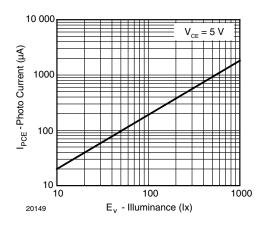


Fig. 5 - Photo Current vs. Illuminance

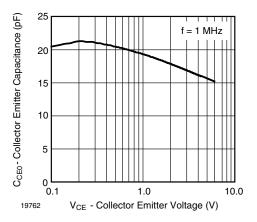


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

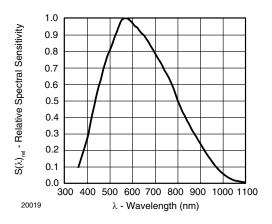


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

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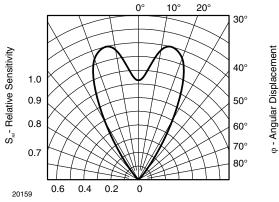
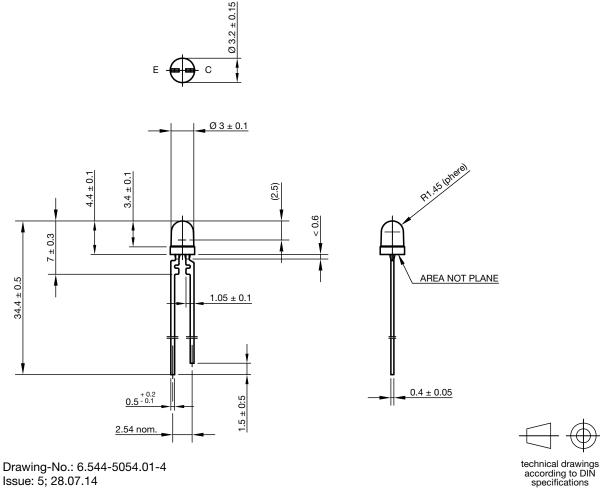


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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