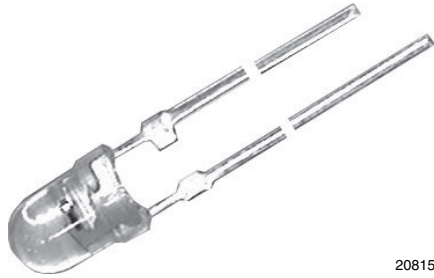


Ambient Light Sensor



20815

FEATURES

- Package type: leaded
- Package form: T-1
- Dimensions (in mm): \varnothing 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



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

DESCRIPTION

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 sensitivity at 570 nm.

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 | I_{PCE} (μ A) | φ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|----------------------|-----------------|----------------------|
| TEPT4400 | 200 | ± 30 | 440 to 800 |

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|---|--------------|
| TEPT4400 | 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 ($T_{amb} = 25^\circ\text{C}$, 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 | | I_C | 20 | mA |
| Power dissipation | $T_{amb} \leq 55^\circ\text{C}$ | P_V | 100 | mW |
| Junction temperature | | T_j | 100 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | -40 to +85 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -40 to +100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 3$ s | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction / ambient | JESTD 51 | R_{thJA} | 300 | K/W |

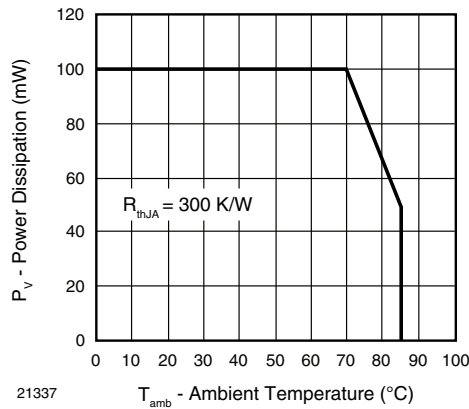


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|---|-----------------|------|------------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Collector emitter breakdown voltage | $I_C = 0.1\text{ mA}$ | V_{CEO} | 6 | - | - | V |
| Collector dark current | $V_{CE} = 5\text{ V}$, $E = 0$ | I_{CEO} | - | 3 | 50 | nA |
| Collector emitter capacitance | $V_{CE} = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_{CEO} | - | 16 | | pF |
| Collector light current | $E_v = 20\text{ lx}$, CIE illuminant A, $V_{CE} = 5\text{ V}$ | I_{PCE} | 15 | - | 70 | μA |
| | $E_v = 100\text{ lx}$, 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 | | $\lambda_{0.5}$ | - | 440 to 800 | - | nm |
| Collector emitter saturation voltage | $E_v = 20\text{ lx}$, CIE illuminant A, $I_{PCE} = 1.2\text{ }\mu\text{A}$ | V_{CEsat} | - | 0.1 | - | V |

| TYPE DEDICATED CHARACTERISTICS | | | | | | |
|---------------------------------------|---|--------------|-----------|------|------|---------------|
| PARAMETER | TEST CONDITION | BINNED GROUP | SYMBOL | MIN. | MAX. | UNIT |
| Photo current | $E_v = 20\text{ lx}$, CIE illuminant A, $V_{CE} = 5\text{ V}$, $T_{amb} = 25\text{ }^{\circ}\text{C}$ | A | I_{PCE} | 15 | 28.4 | μA |
| | | B | I_{PCE} | 23.5 | 44.6 | μA |
| | | C | 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 ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

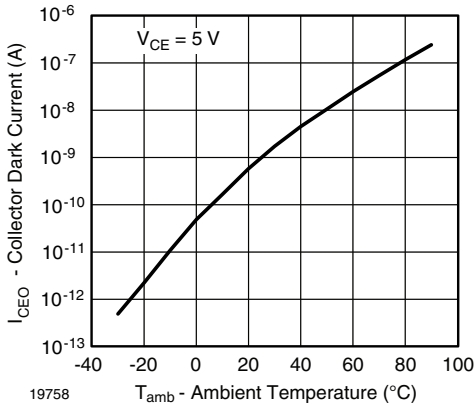


Fig. 2 - Collector Dark Current vs. Ambient Temperature

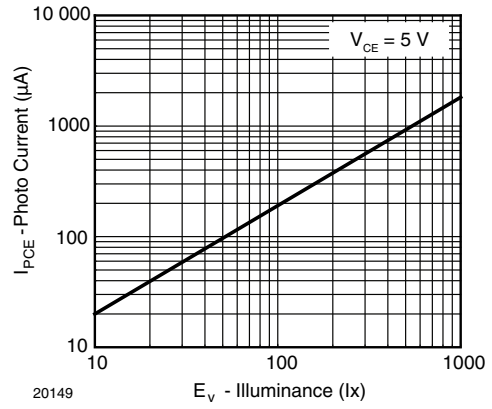


Fig. 5 - Photo Current vs. Illuminance

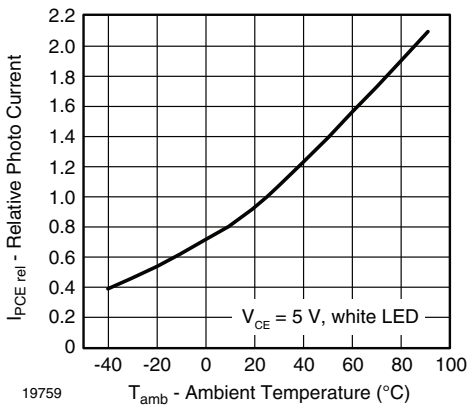


Fig. 3 - Relative Photo Current vs. Ambient Temperature

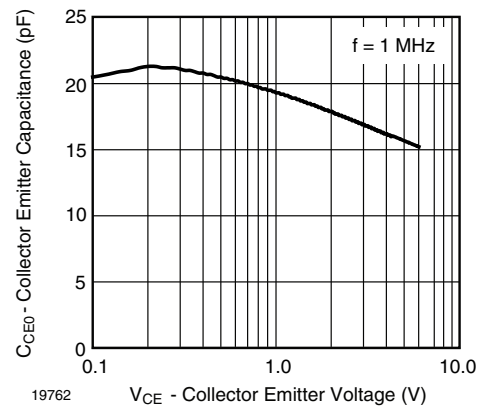


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

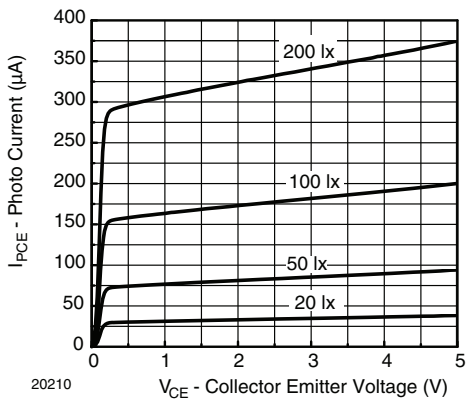


Fig. 4 - Photo Current vs. Collector Emitter Voltage

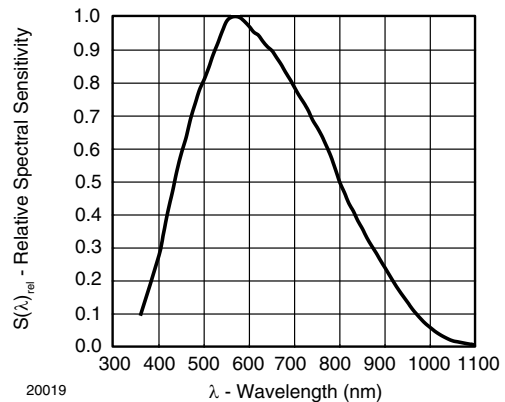


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

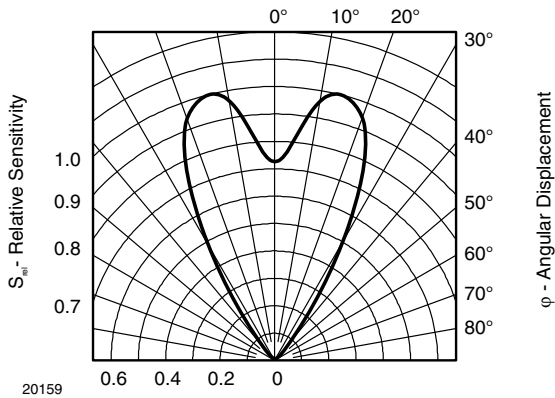
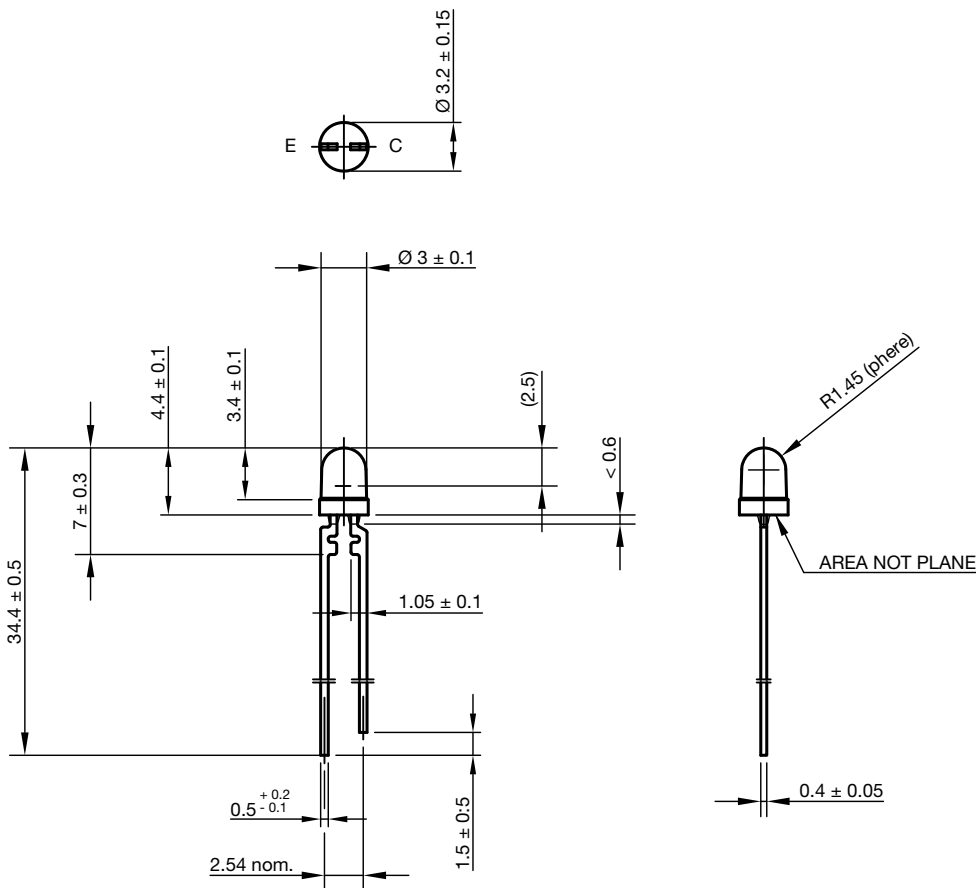
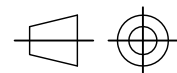


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5054.01-4
Issue: 5; 28.07.14



technical drawings according to DIN specifications



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