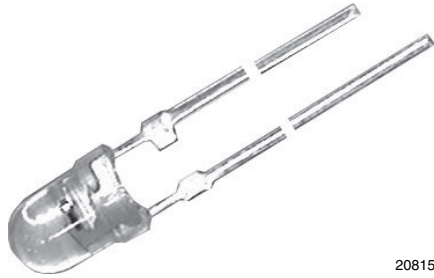


## Ambient Light Sensor



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](http://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	$I_{PCE}$ ( $\mu$ A)	$\varphi$ (deg)	$\lambda_{0.5}$ (nm)
TEPT4400	200	$\pm 30$	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

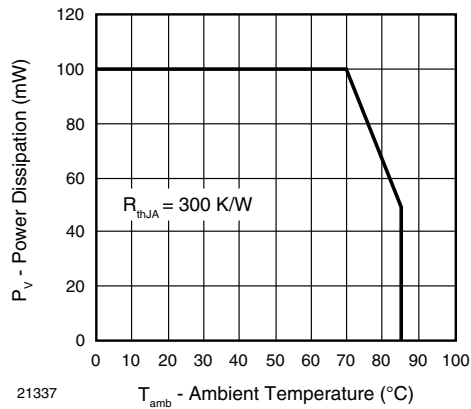


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , 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	$\mu\text{A}$
	$E_v = 100\text{ lx}$ , CIE illuminant A, $V_{CE} = 5\text{ V}$	$I_{PCE}$	-	200	-	$\mu\text{A}$
Angle of half sensitivity		$\varphi$	-	$\pm 30$	-	deg
Wavelength of peak sensitivity		$\lambda_p$	-	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

<b>TYPE DEDICATED CHARACTERISTICS</b>						
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	$\mu\text{A}$
		B	$I_{PCE}$	23.5	44.6	$\mu\text{A}$
		C	$I_{PCE}$	36.9	70	$\mu\text{A}$

**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)

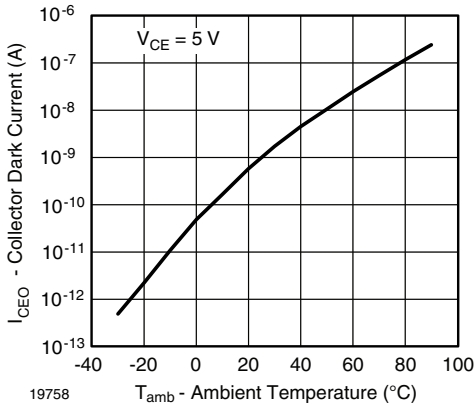


Fig. 2 - Collector Dark Current vs. Ambient Temperature

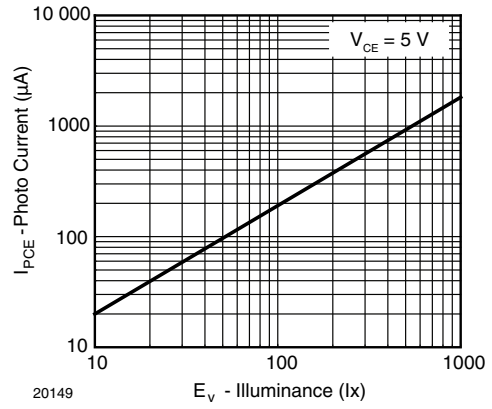


Fig. 5 - Photo Current vs. Illuminance

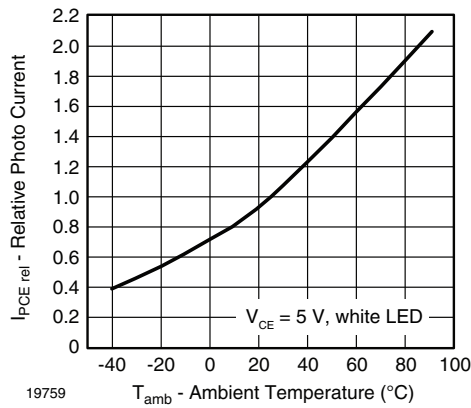


Fig. 3 - Relative Photo Current vs. Ambient Temperature

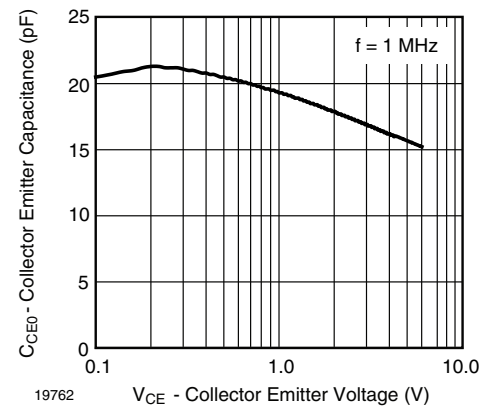


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

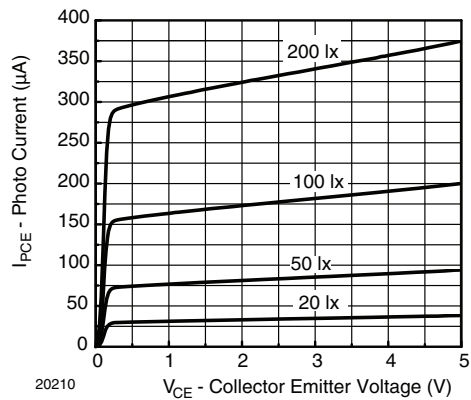


Fig. 4 - Photo Current vs. Collector Emitter Voltage

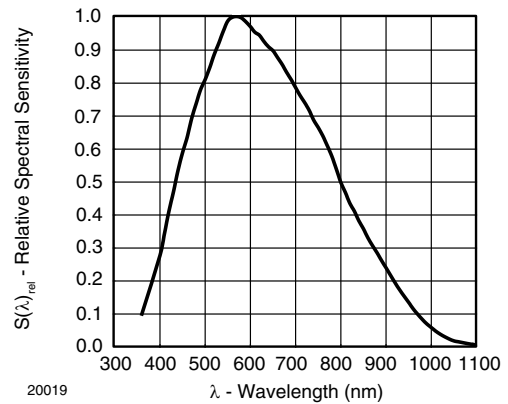


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

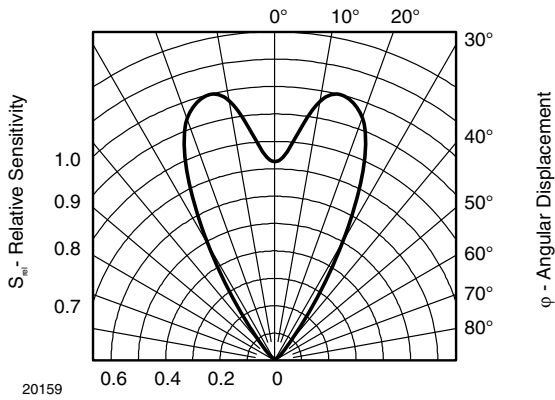
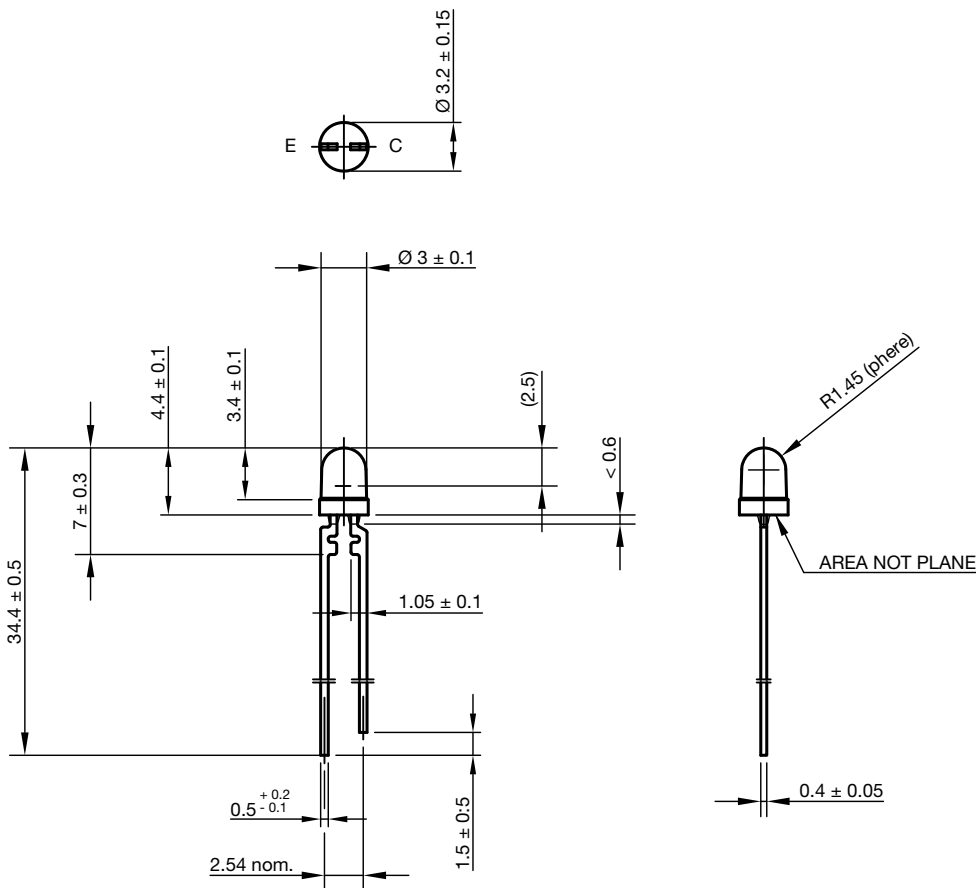
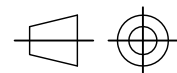


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

**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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