# **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 <sub>ΡCΕ</sub> (μΑ)	φ (deg)	λ <sub>0.5</sub> (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 <sub>PCE</sub> 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

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







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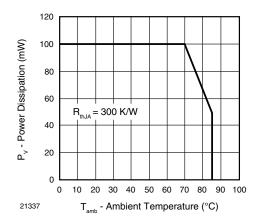


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

<b>BASIC CHARACTERISTICS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	TEST CONDITION SYMBOL MIN.		TYP.	MAX.	UNIT
Collector emitter breakdown voltage	I <sub>C</sub> = 0.1 mA	V <sub>CEO</sub>	6	-	-	V
Collector dark current	$V_{CE} = 5 V, E = 0$	I <sub>CEO</sub>	-	3	50	nA
Collector emitter capacitance	$V_{CE} = 0 V, f = 1 MHz, E = 0$	C <sub>CEO</sub>	-	16		pF
Collector light current	$E_v = 20$ lx, CIE illuminant A, $V_{CE} = 5$ V	I <sub>PCE</sub>	15	-	70	μA
	$E_v = 100 \text{ Ix, CIE illuminant A,} V_{CE} = 5 \text{ V}$	I <sub>PCE</sub>	-	200	-	μA
Angle of half sensitivity		φ	-	± 30	-	deg
Wavelength of peak sensitivity		λ <sub>p</sub>	-	570	-	nm
Range of spectral bandwidth		λ <sub>0.5</sub>	-	440 to 800	-	nm
Collector emitter saturation voltage	$E_v$ = 20 lx, CIE illuminant A, I <sub>PCE</sub> = 1.2 µA	V <sub>CEsat</sub>	-	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 <sub>PCE</sub>	15	28.4	μA
		В	I <sub>PCE</sub>	23.5	44.6	μA
		С	I <sub>PCE</sub>	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<sub>amb</sub> = 25 °C, unless otherwise specified)

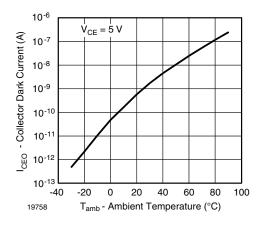


Fig. 2 - Collector Dark Current vs. Ambient Temperature

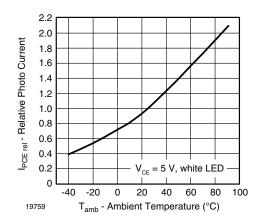


Fig. 3 - Relative Photo Current vs. Ambient Temperature

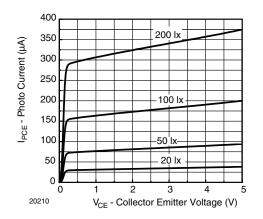


Fig. 4 - Photo Current vs. Collector Emitter Voltage

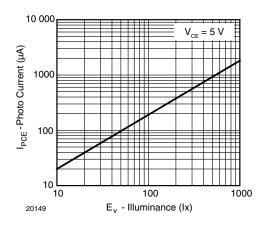


Fig. 5 - Photo Current vs. Illuminance

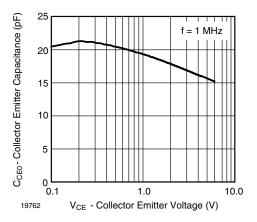


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

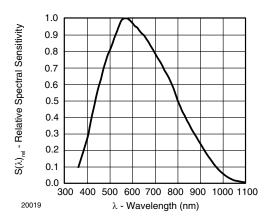


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

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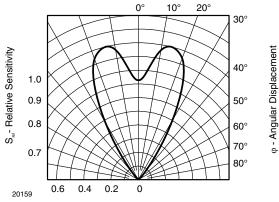
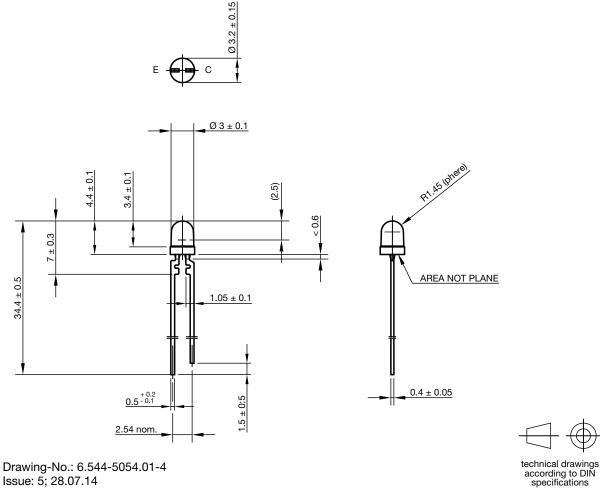


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

### **PACKAGE DIMENSIONS** in millimeters



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