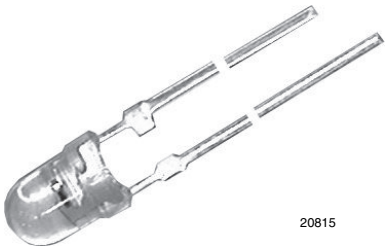
Ambient Light Sensor



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: φ = ± 30°
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free

e4

RoHS COMPLIANT

GREEN (5-2008)**

Note

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

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} (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, 5000 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		I_C	20	mA
Power dissipation	$T_{amb} \leq 55$ °C	P_V	100	mW
Junction temperature		T_j	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	J-STD-051, soldered on PCB	R_{thJA}	300	K/W

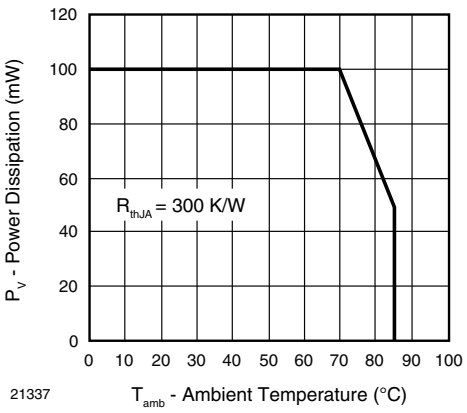


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**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 lx, CIE illuminant A, V_{CE} = 5 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 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	E_V = 20 lx, CIE illuminant A, V_{CE} = 5 V, T_{amb} = 25 °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 °C, unless otherwise specified)

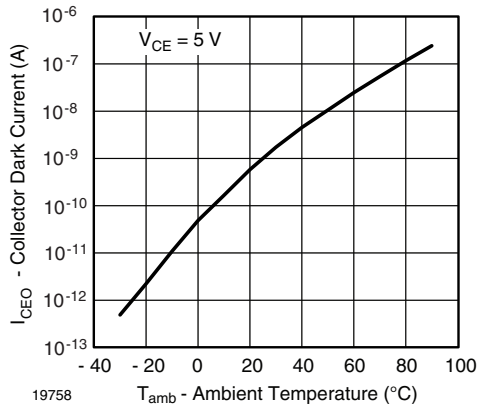


Fig. 1 - Collector Dark Current vs. Ambient Temperature

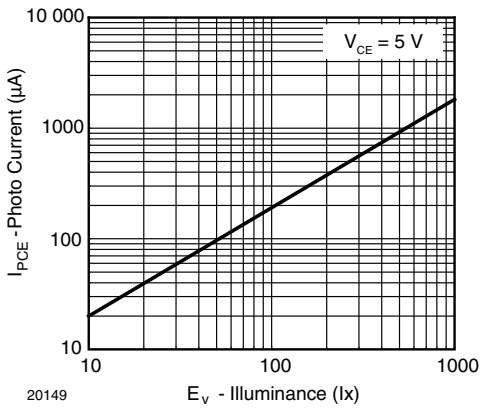


Fig. 4 - Photo Current vs. Illuminance

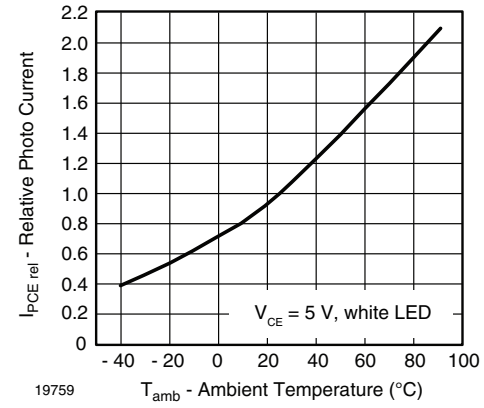


Fig. 2 - Relative Photo Current vs. Ambient Temperature

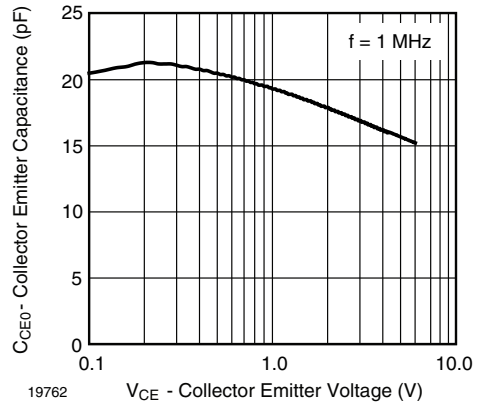


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

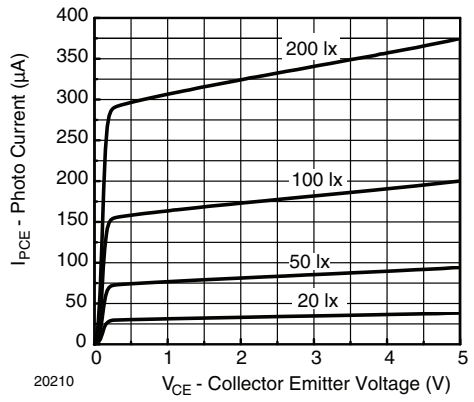


Fig. 3 - Photo Current vs. Collector Emitter Voltage

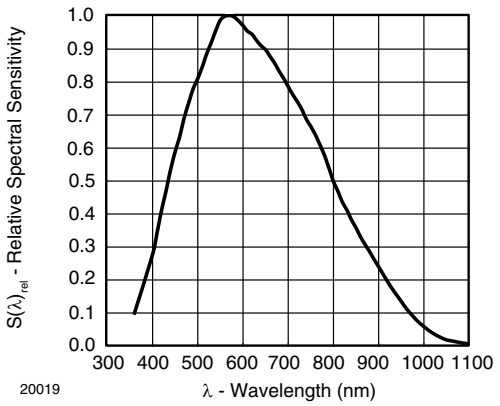


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

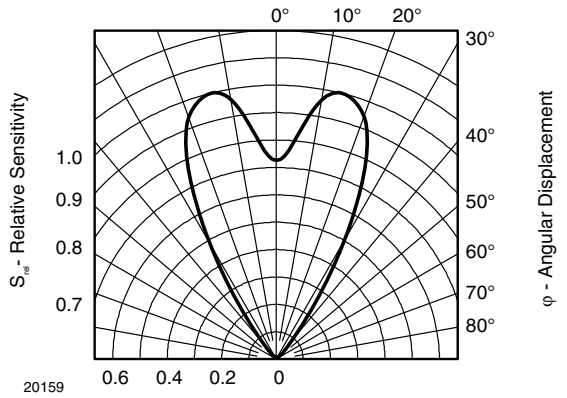
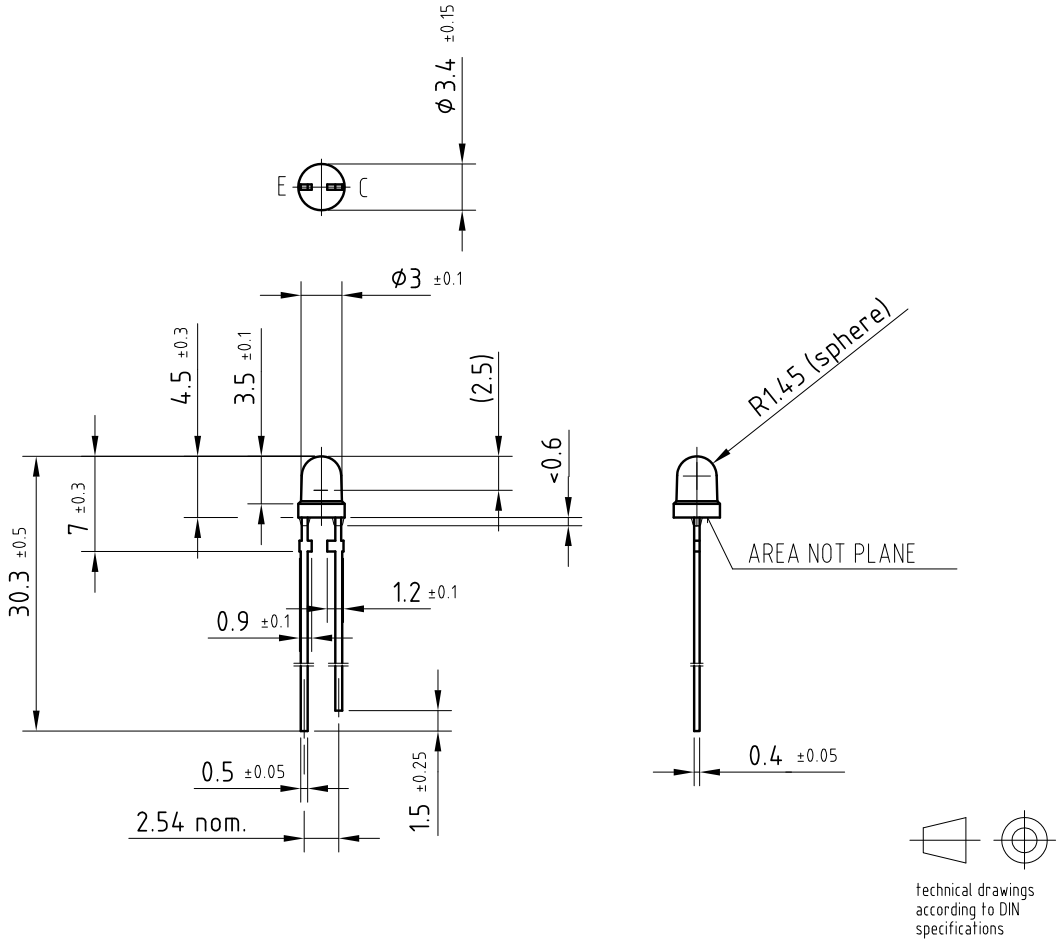


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



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