

## Ambient Light Sensor



20118

### DESCRIPTION

TEPT5700 ambient light sensor is a silicon NPN epitaxial planar phototransistor in a T-1 $\frac{3}{4}$  package. It is sensitive to visible light much like the human eye and has peak sensitivity at 570 nm.

### FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm):  $\varnothing$  5
- High photo sensitivity
- Adapted to human eye responsivity
- Angle of half sensitivity:  $\varphi = \pm 50^\circ$
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



### Note

- \*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### 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

PRODUCT SUMMARY			
COMPONENT	$I_{PCE}$ (mA)	$\varphi$ (deg)	$\lambda_{0.5}$ (nm)
TEPT5700	75	$\pm 50$	440 to 800

### Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TEPT5700	Bulk	MOQ: 4000 pcs, 4000 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 $\frac{3}{4}$

### 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	$t \leq 5$ s, 2 mm distance to package	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	$R_{thJA}$	230	K/W

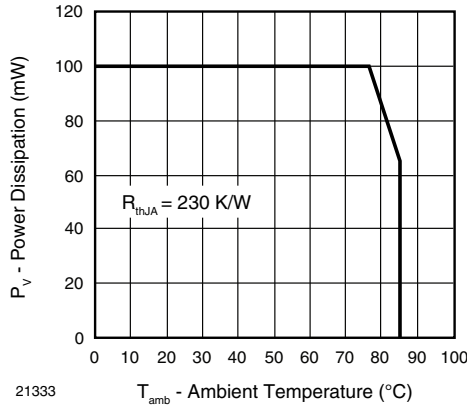


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

<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	$E_v = 20\text{ lx}, \text{CIE illuminant A}, V_{CE} = 5\text{ V}$	$I_{PCE}$	5.2		24	$\mu\text{A}$
	$E_v = 100\text{ lx}, \text{CIE illuminant A}, V_{CE} = 5\text{ V}$	$I_{PCE}$		75		$\mu\text{A}$
Angle of half sensitivity		$\phi$		$\pm 50$		deg
Wavelength of peak sensitivity		$\lambda_p$		570		nm
Range of spectral bandwidth		$\lambda_{0.5}$		440 to 800		nm
Collector emitter saturation voltage	$E_v = 20\text{ lx}, \text{CIE illuminant A}, I_{PCE} = 1.2\text{ }\mu\text{A}$	$V_{CEsat}$		0.1		V

<b>TYPE DEDICATED CHARACTERISTICS</b>						
PARAMETER	TEST CONDITION	BINNED GROUP	SYMBOL	MIN.	MAX.	UNIT
Photo current	$E_v = 20\text{ lx}, \text{CIE illuminant A}, V_{CE} = 5\text{ V}, T_{amb} = 25\text{ }^{\circ}\text{C}$	A	$I_{PCE}$	5.2	9.9	$\mu\text{A}$
		B	$I_{PCE}$	8.2	15.4	$\mu\text{A}$
		C	$I_{PCE}$	12.7	24	$\mu\text{A}$

**Note**

- Each 4000 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)

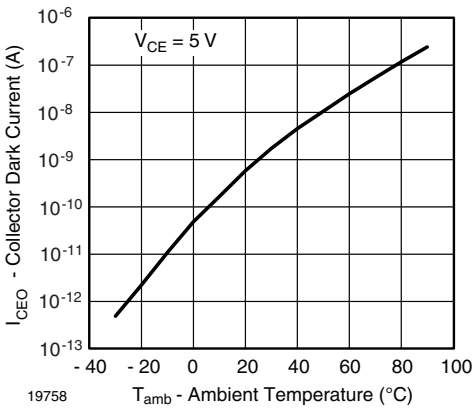


Fig. 1 - Collector Dark Current vs. Ambient Temperature

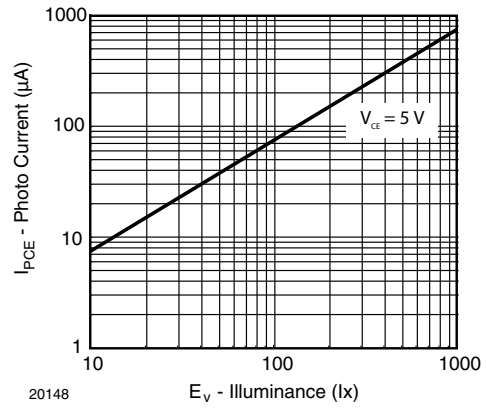


Fig. 4 - Photo Current vs. Illuminance

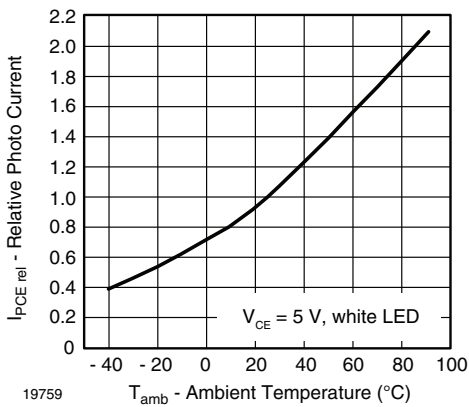


Fig. 2 - Relative Photo Current vs. Ambient Temperature

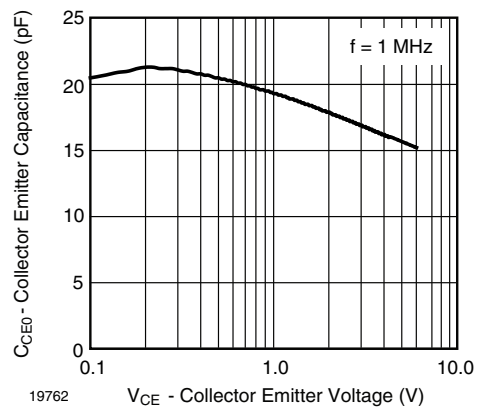


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

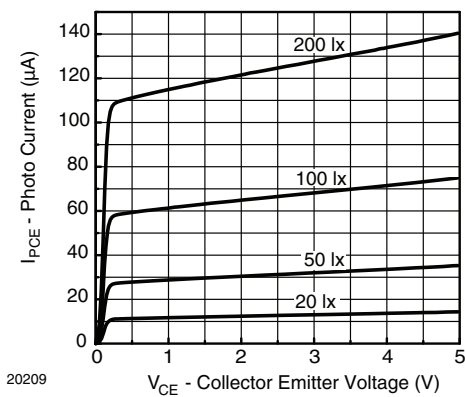


Fig. 3 - Photo Current vs. Collector Emitter Voltage

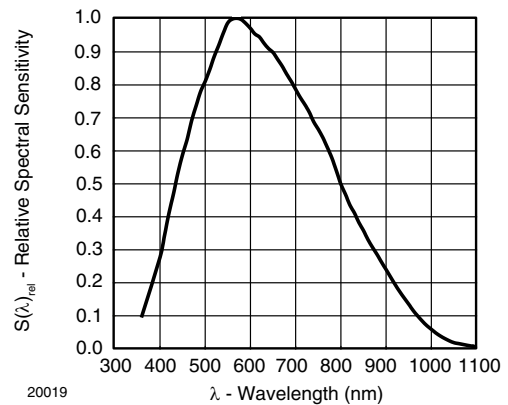


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

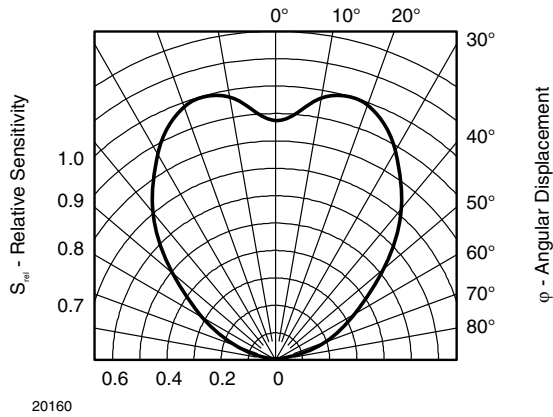
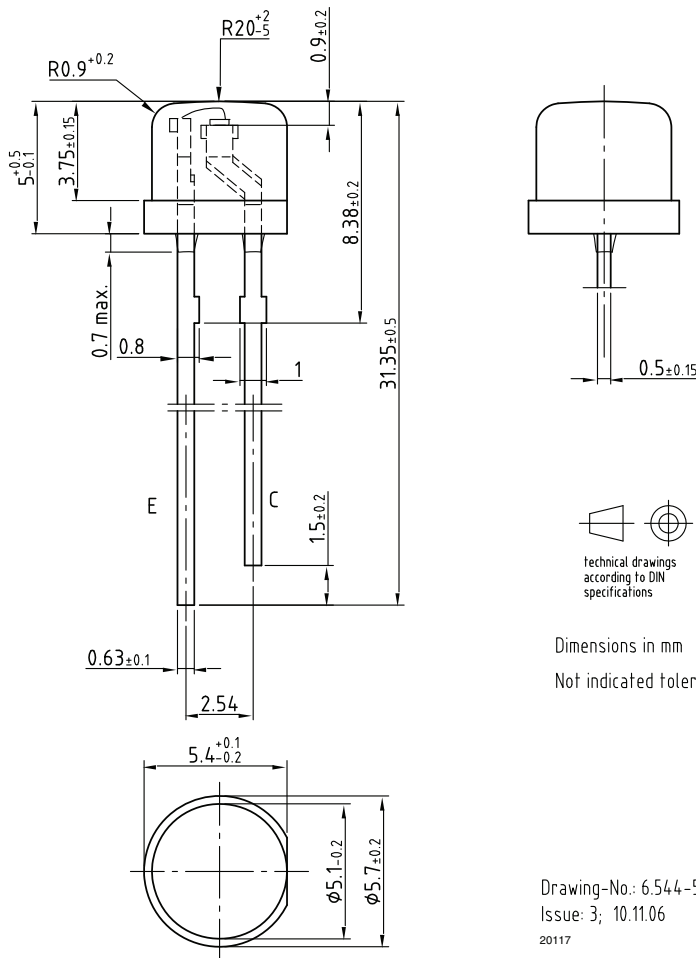


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



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