

## 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:  $\varphi = \pm 50^\circ$
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
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(5-2008)

### 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 <sub>PCE</sub> (μA)	φ (deg)	λ <sub>0.5</sub> (nm)
TEPT5700	75	± 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 <sub>PCE</sub> 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<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		I <sub>C</sub>	20	mA
Power dissipation	T <sub>amb</sub> ≤ 55 °C	P <sub>V</sub>	100	mW
Junction temperature		T <sub>j</sub>	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 ≤ 5 s, 2 mm distance to package	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	J-STD-051, soldered on PCB	R <sub>thJA</sub>	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	$E_v = 20\text{ lx}$ , CIE illuminant A, $V_{CE} = 5\text{ V}$	$I_{PCE}$	5.2		24	$\mu\text{A}$
	$E_v = 100\text{ lx}$ , 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	$E_v = 20\text{ lx}$ , 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	$I_{PCE}$	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. 2 - Collector Dark Current vs. Ambient Temperature

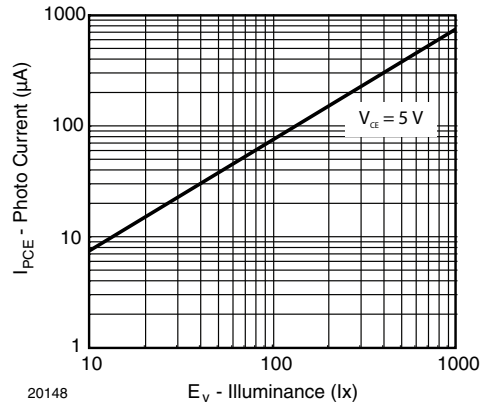


Fig. 5 - Photo Current vs. Illuminance



Fig. 3 - Relative Photo Current vs. Ambient Temperature

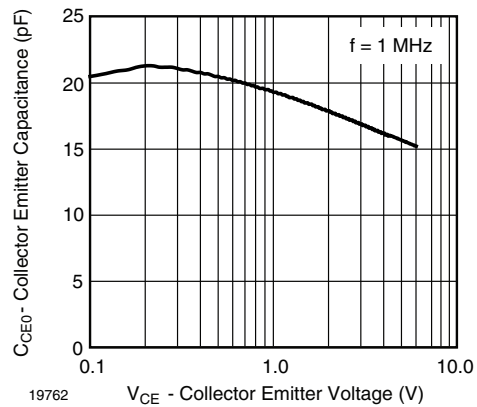


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

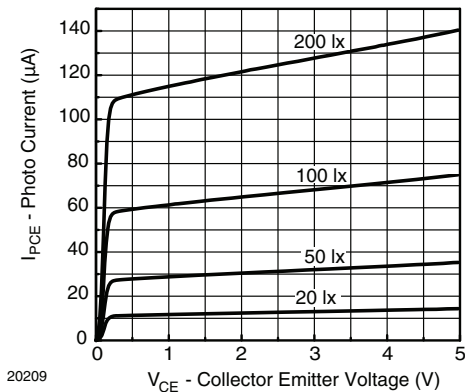


Fig. 4 - Photo Current vs. Collector Emitter Voltage

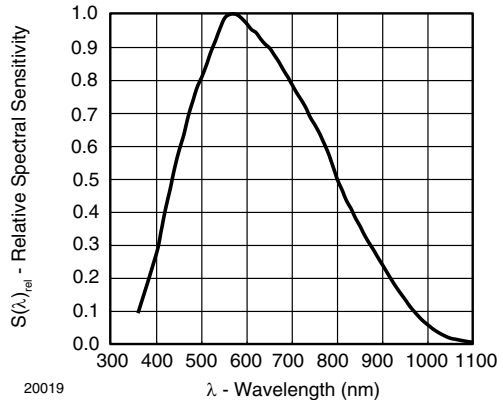


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

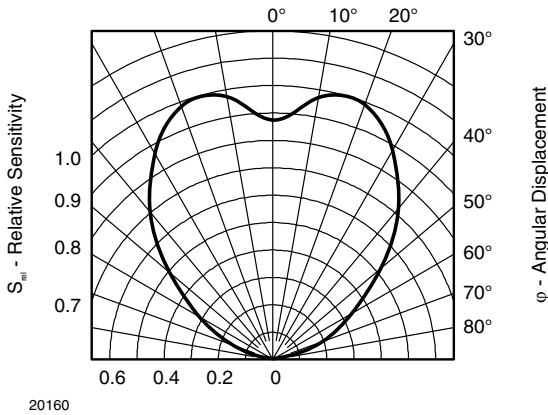
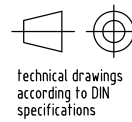
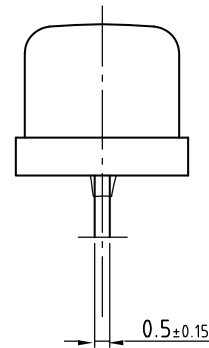
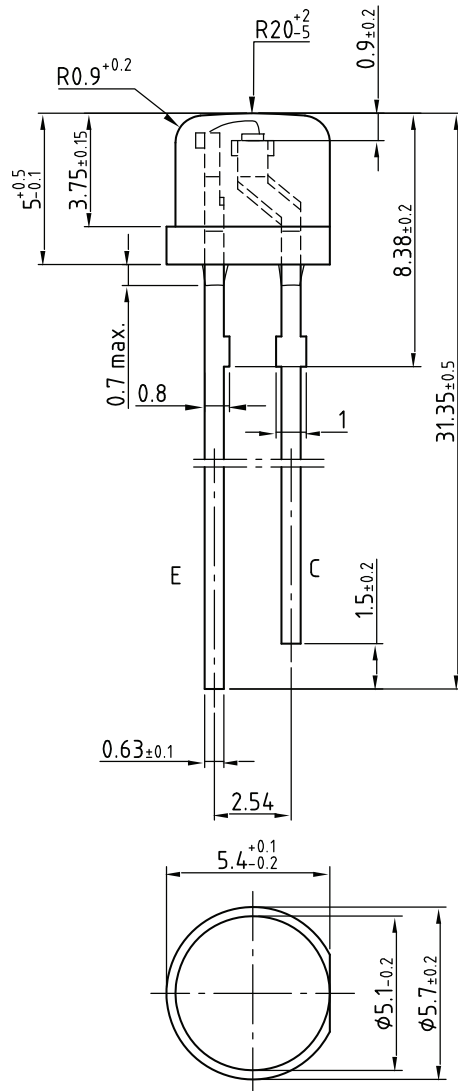


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters



Dimensions in mm  
Not indicated tolerances  $\pm 0.1$

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