

## Ambient Light Sensor, RoHS Compliant



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:  $\varphi = \pm 50^\circ$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### 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> (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	T-1 $\frac{3}{4}$

**Note**

MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS

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> $\leq$ 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 $\leq$ 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

**Note**

 T<sub>amb</sub> = 25 °C, unless otherwise specified

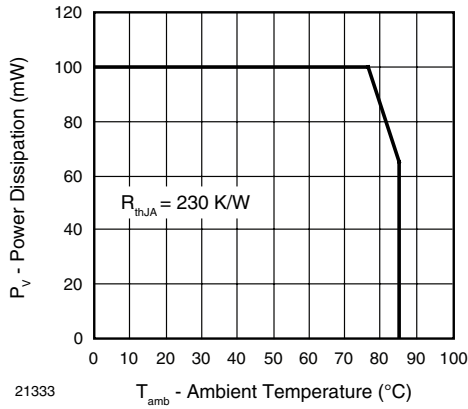


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

BASIC CHARACTERISTICS						
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	15	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	$E_v = 20 \text{ lx}, \text{ CIE illuminant A}, I_{PCE} = 1.2 \mu\text{A}$	$V_{CEsat}$		0.1		V

**Note**

$T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified

**BASIC CHARACTERISTICS**

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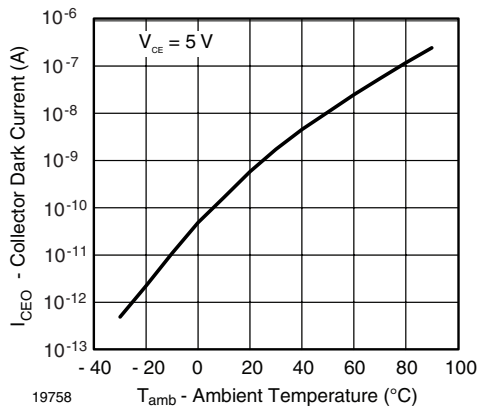


Fig. 2 - Collector Dark Current vs. Ambient Temperature

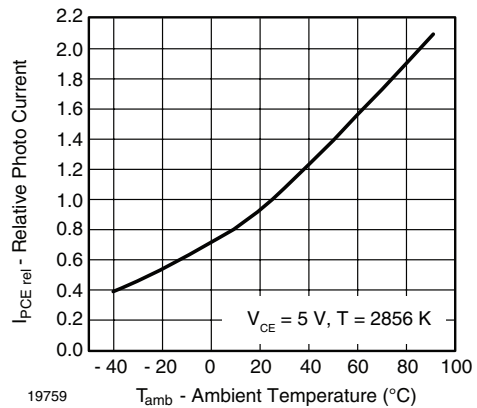


Fig. 3 - Relative Photo Current vs. Ambient Temperature

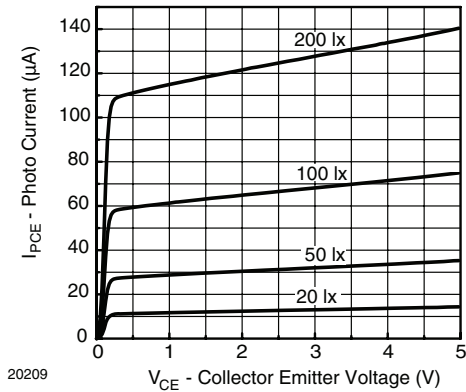


Fig. 4 - Photo Current vs. Collector Emitter Voltage

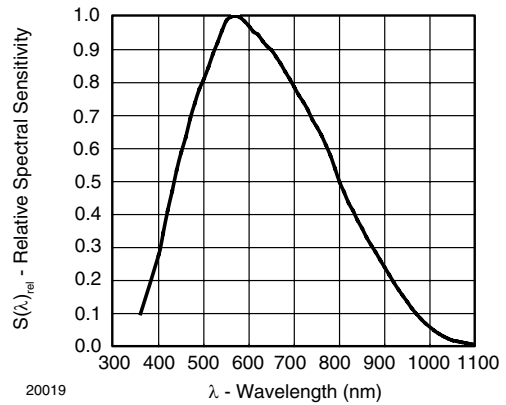


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

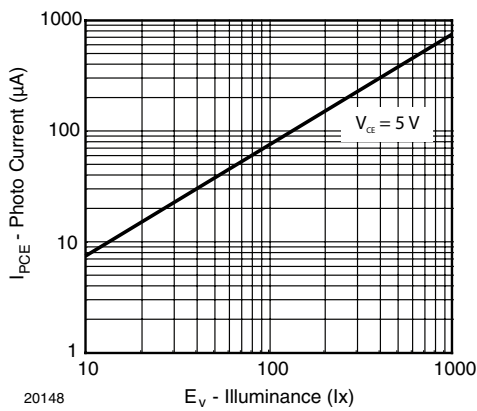


Fig. 5 - Photo Current vs. Illuminance

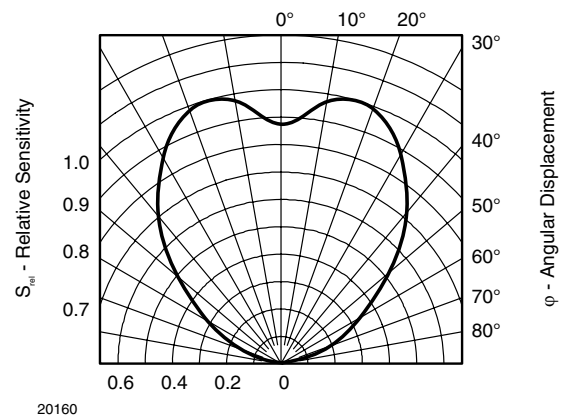


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

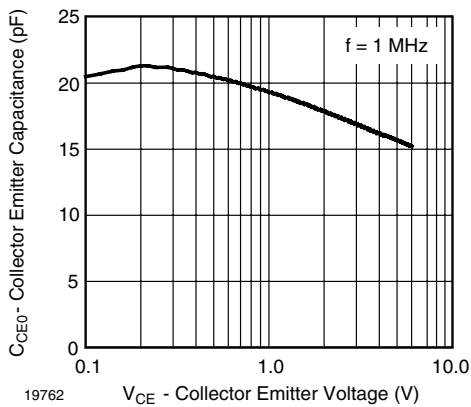
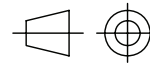
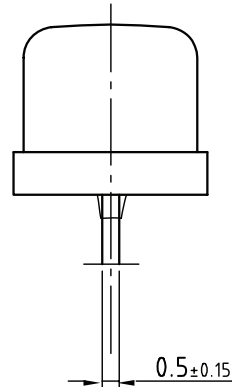
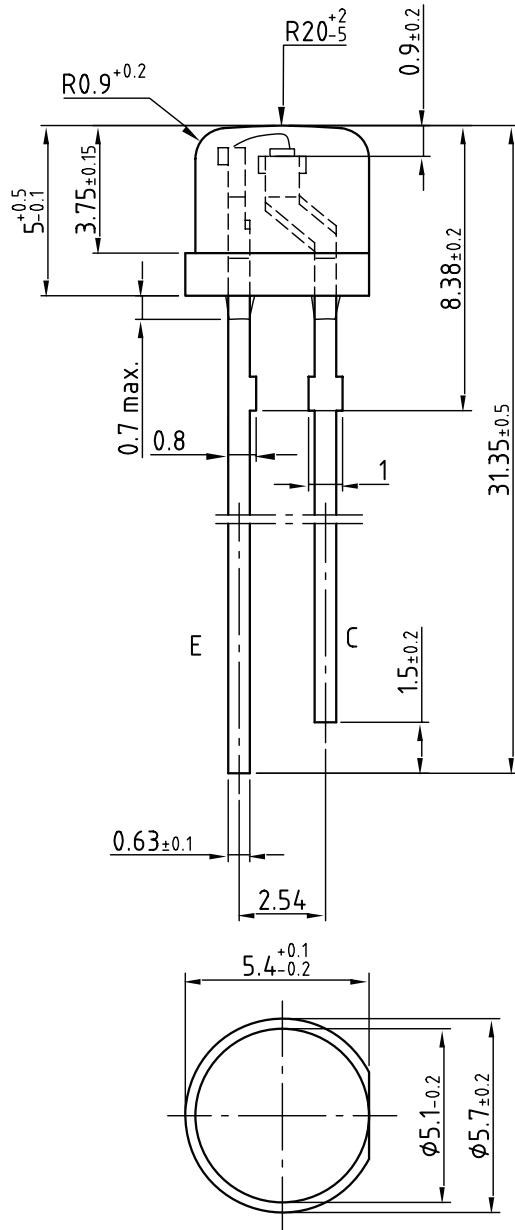


Fig. 6 - Collector Emitter Capacitance vs. Collector Emitter Voltage

**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

Dimensions in mm

Not indicated tolerances  $\pm 0.1$

Drawing-No.: 6.544-5375.01-4

Issue: 3; 10.11.06

20117



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