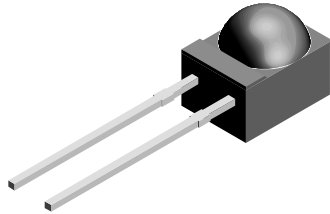


## Silicon PIN Photodiode, RoHS Compliant



16936

### DESCRIPTION

TESP5700 PIN photodiode is applicable to high speed data transmission specifically at low reverse voltage. Black epoxy package include side view lens and daylight blocking filter, matched to high speed IR emitters.

### FEATURES

- Package type: leaded
- Package form: side view
- Dimensions (L x W x H in mm): 4.5 x 5 x 6
- Radiant sensitive area (in mm<sup>2</sup>): 2.2
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- High cut-off frequency at  $V_R = 2$  V: 35 MHz
- Angle of half sensitivity:  $\varphi = \pm 60^\circ$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### APPLICATIONS

- High speed data transmission specifically using low supply voltage
- High speed detector for infrared radiation
- Infrared remote control and free air data transmissionsystems, e.g. in combination with TSFFxxxx series IR emitters

### PRODUCT SUMMARY

COMPONENT	$I_{ra}$ ( $\mu$ A)	$\varphi$ (deg)	$\lambda_{0.5}$ (nm)
TESP5700	25	$\pm 60$	790 to 980

#### Note

Test condition see table "Basic Characteristics"

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
TESP5700	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view

#### Note

MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	60	V
Power dissipation	$T_{amb} \leq 25^\circ\text{C}$	$P_V$	215	mW
Junction temperature		$T_j$	100	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	- 40 to + 100	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	- 40 to + 100	$^\circ\text{C}$
Soldering temperature	$t \leq 5$ s	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm <sup>2</sup>	$R_{thJA}$	350	K/W

#### Note

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

BASIC CHARACTERISTICS						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward voltage	$I_F = 50 \text{ mA}$	$V_F$		0.9	1.3	V
Breakdown voltage	$I_R = 100 \text{ }\mu\text{A}, E = 0$	$V_{(BR)}$	60			V
Reverse dark current	$V_R = 10 \text{ V}, E = 0$	$I_{ro}$		1	10	nA
Diode capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}, E = 0$	$C_D$		17		pF
Serial resistance	$V_R = 2 \text{ V}, f = 1 \text{ MHz}$	$R_S$		40		$\Omega$
Open circuit voltage	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$	$V_o$		430		mV
Temperature coefficient of $V_o$	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$	$TK_{V_o}$		-2.6		mV/K
Short circuit current	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$	$I_k$		23		$\mu\text{A}$
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}, V_R = 2 \text{ V}$	$I_{ra}$	16	25		$\mu\text{A}$
Temperature coefficient of $I_{ra}$	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}, V_R = 2 \text{ V}$	$TK_{I_{ra}}$		0.13		%/K
Absolute spectral sensitivity	$V_R = 2 \text{ V}, \lambda = 870 \text{ nm}$	$s(\lambda)$		0.57		A/W
	$V_R = 5 \text{ V}, \lambda = 950 \text{ nm}$	$s(\lambda)$		0.37		A/W
Angle of half sensitivity		$\phi$		$\pm 60$		deg
Wavelength of peak sensitivity		$\lambda_p$		870		nm
Range of spectral bandwidth		$\lambda_{0.5}$		790 to 980		nm
Rise time	$V_R = 2 \text{ V}, R_L = 50 \text{ }\Omega, \lambda = 870 \text{ nm}$	$t_r$		10		ns
Fall time	$V_R = 2 \text{ V}, R_L = 50 \text{ }\Omega, \lambda = 870 \text{ nm}$	$t_f$		10		ns
Cut-off frequency	$V_R = 2 \text{ V}, R_L = 50 \text{ }\Omega, \lambda = 870 \text{ nm}$	$f_c$		35		MHz

**Note**

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

**BASIC CHARACTERISTICS**

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

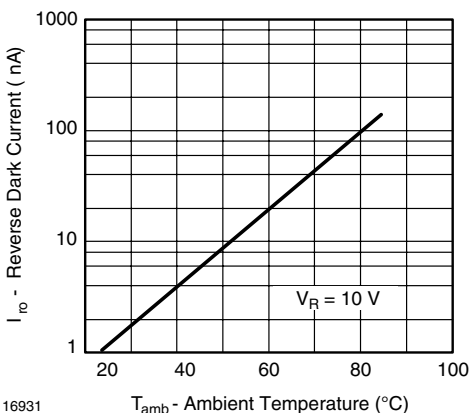


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

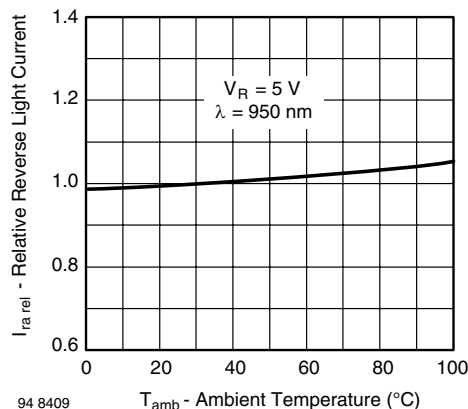


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

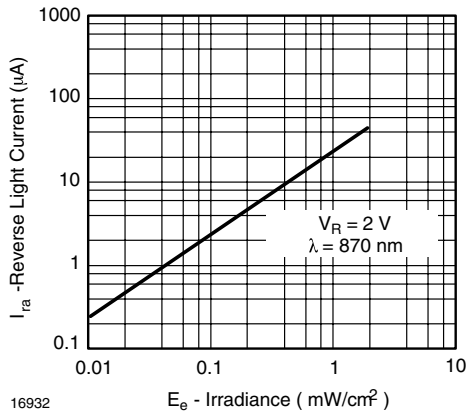


Fig. 3 - Reverse Light Current vs. Irradiance

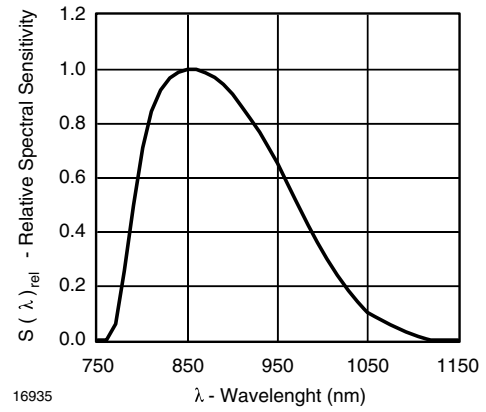


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

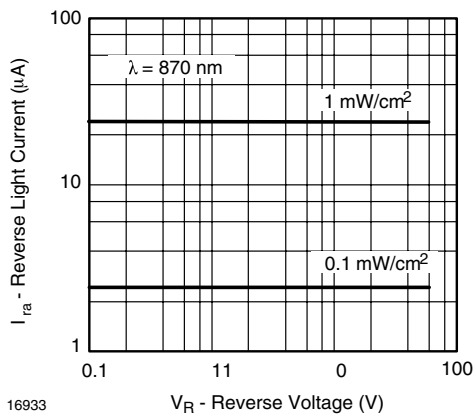


Fig. 4 - Reverse Light Current vs. Reverse Voltage

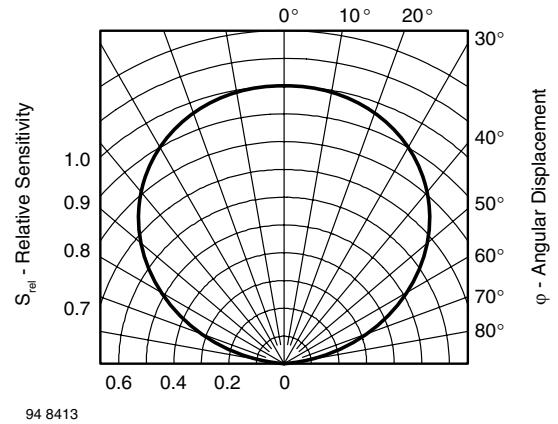


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

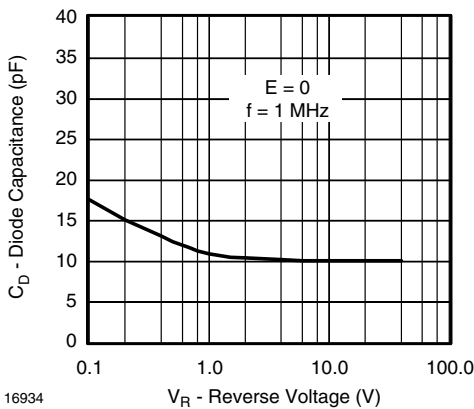
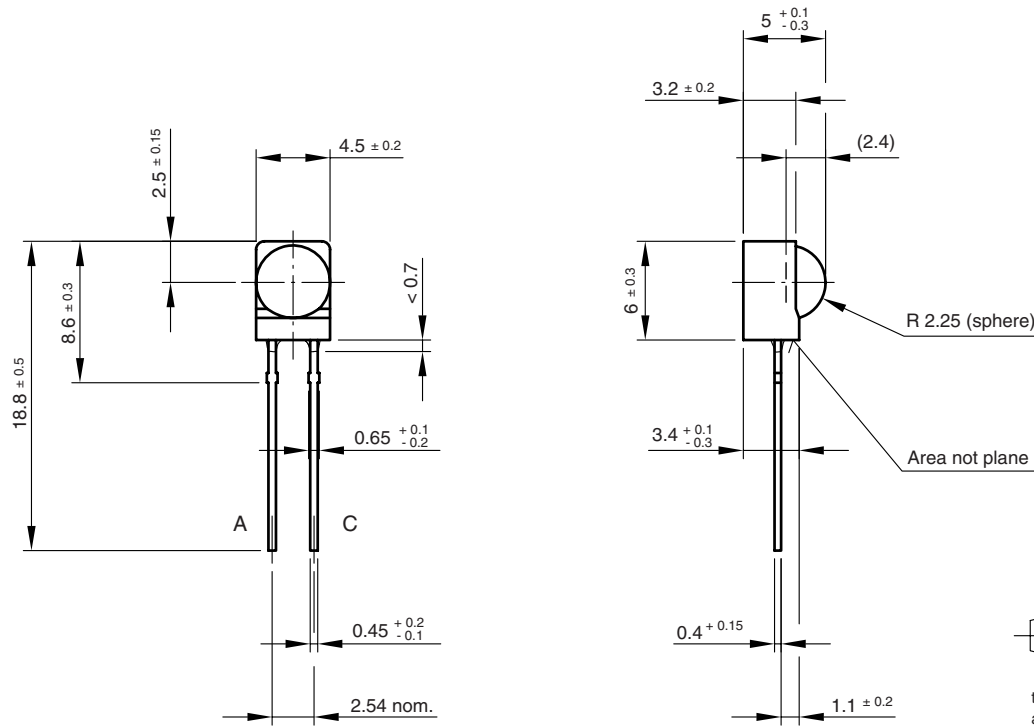


Fig. 5 - Diode Capacitance vs. Reverse Voltage

## PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.544-5199.01-4  
 Issue: 2; 19.06.01  
 95 11475



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