



ABSOLUTE MAXIMUM RATINGS				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Supply voltage (pin 3)		V_S	-0.3 to +3.6	V
Supply current (pin 3)		I_S	5	mA
Output voltage (pin 1)		V_O	-0.3 to +3.6	V
Voltage at output to supply		$V_S - V_O$	-0.3 to ($V_S + 0.3$)	V
Output current (pin 1)		I_O	5	mA
Junction temperature		T_j	100	°C
Storage temperature range		T_{stg}	-25 to +85	°C
Operating temperature range		T_{amb}	-25 to +85	°C
Power consumption	$T_{amb} \leq 85\text{ °C}$	P_{tot}	10	mW

Note

- Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect the device reliability

ELECTRICAL AND OPTICAL CHARACTERISTICS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply current (pin 3)	$E_v = 0, V_S = 3.3\text{ V}$	I_{SD}	0.25	0.37	0.45	mA
	$E_v = 40\text{ klx, sunlight}$	I_{SH}	-	0.8	-	mA
Supply voltage		V_S	2.0	-	3.6	V
Transmission distance	$E_v = 0, \text{IR diode TSAL6200, } I_F = 50\text{ mA, test signal see Fig. 1}$	d	-	12	-	m
Output voltage low (pin 1)	$I_{OSL} = 0.5\text{ mA, } E_e = 2\text{ mW/m}^2, \text{ test signal see Fig. 1}$	V_{OSL}	-	-	100	mV
Minimum irradiance	Pulse width tolerance: $t_{pi} - 5/f_0 < t_{po} < t_{pi} + 6/f_0,$ test signal see Fig. 1	$E_e \text{ min.}$	0.32	0.4	0.5	mW/m^2
Maximum irradiance	$t_{pi} - 5/f_0 < t_{po} < t_{pi} + 6/f_0,$ test signal see Fig. 1	$E_e \text{ max.}$	30	-	-	W/m^2
Directivity	Angle of half transmission distance	$\phi_{1/2}$	-	± 45	-	°

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

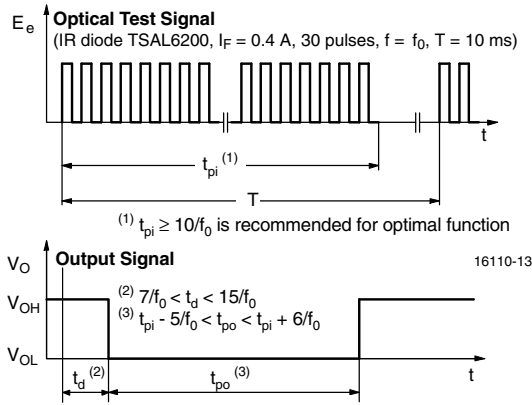


Fig. 1 - Output Delay and Pulse Width

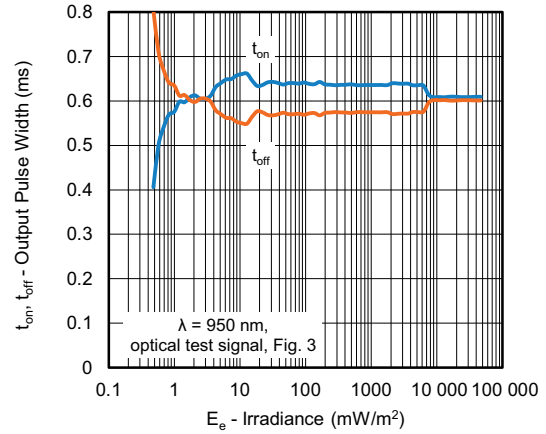


Fig. 4 - Output Pulse Diagram

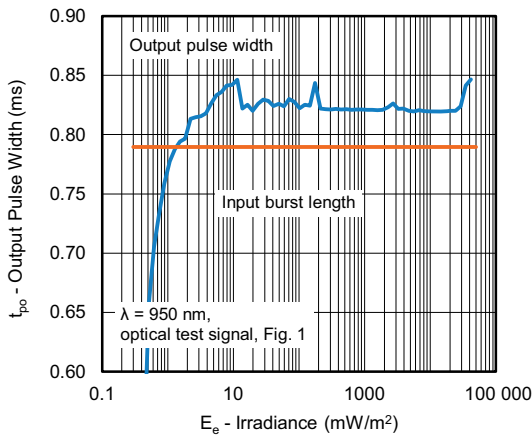


Fig. 2 - Pulse Length and Sensitivity in Dark Ambient

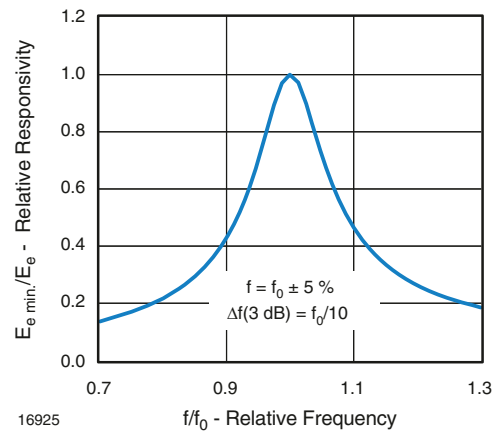


Fig. 5 - Frequency Dependence of Responsivity

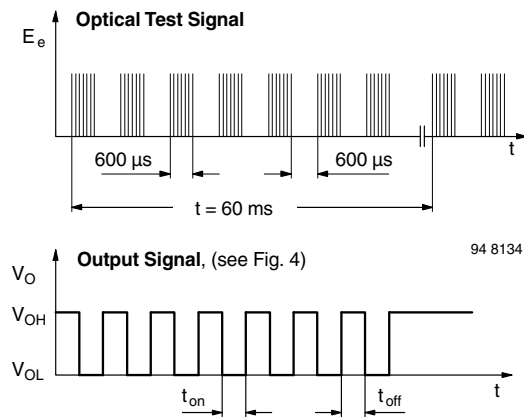


Fig. 3 - Test Signal

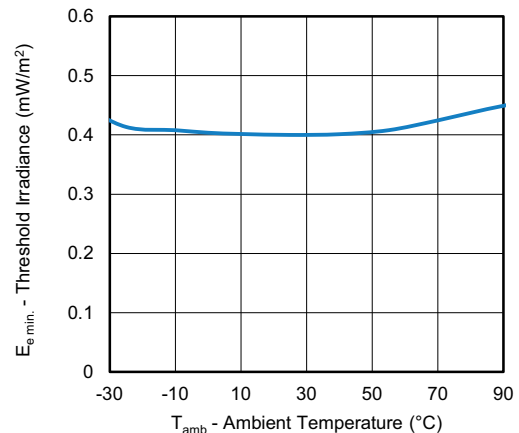
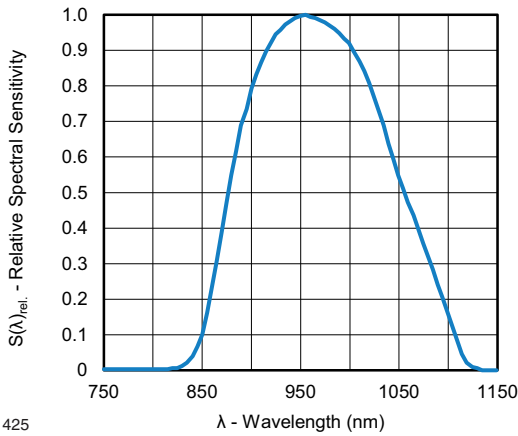


Fig. 6 - Sensitivity vs. Ambient Temperature



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Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

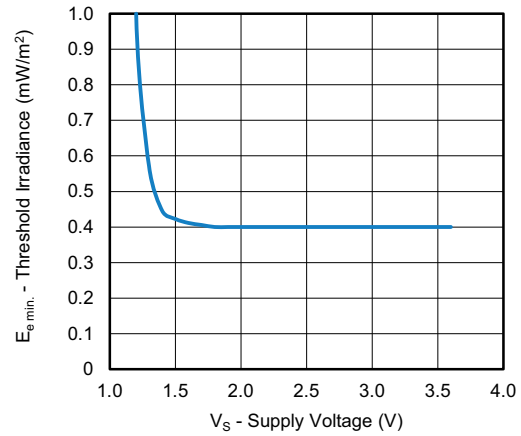


Fig. 9 - Sensitivity vs. Supply Voltage

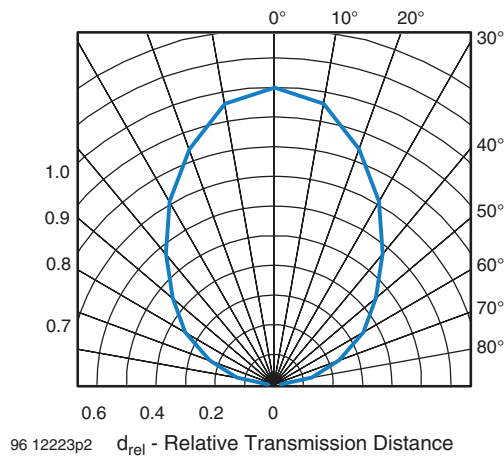
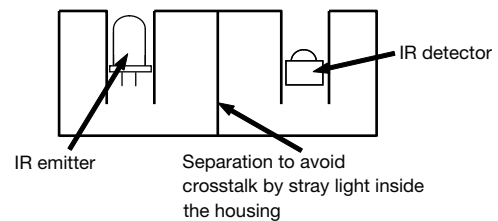


Fig. 8 - Directivity

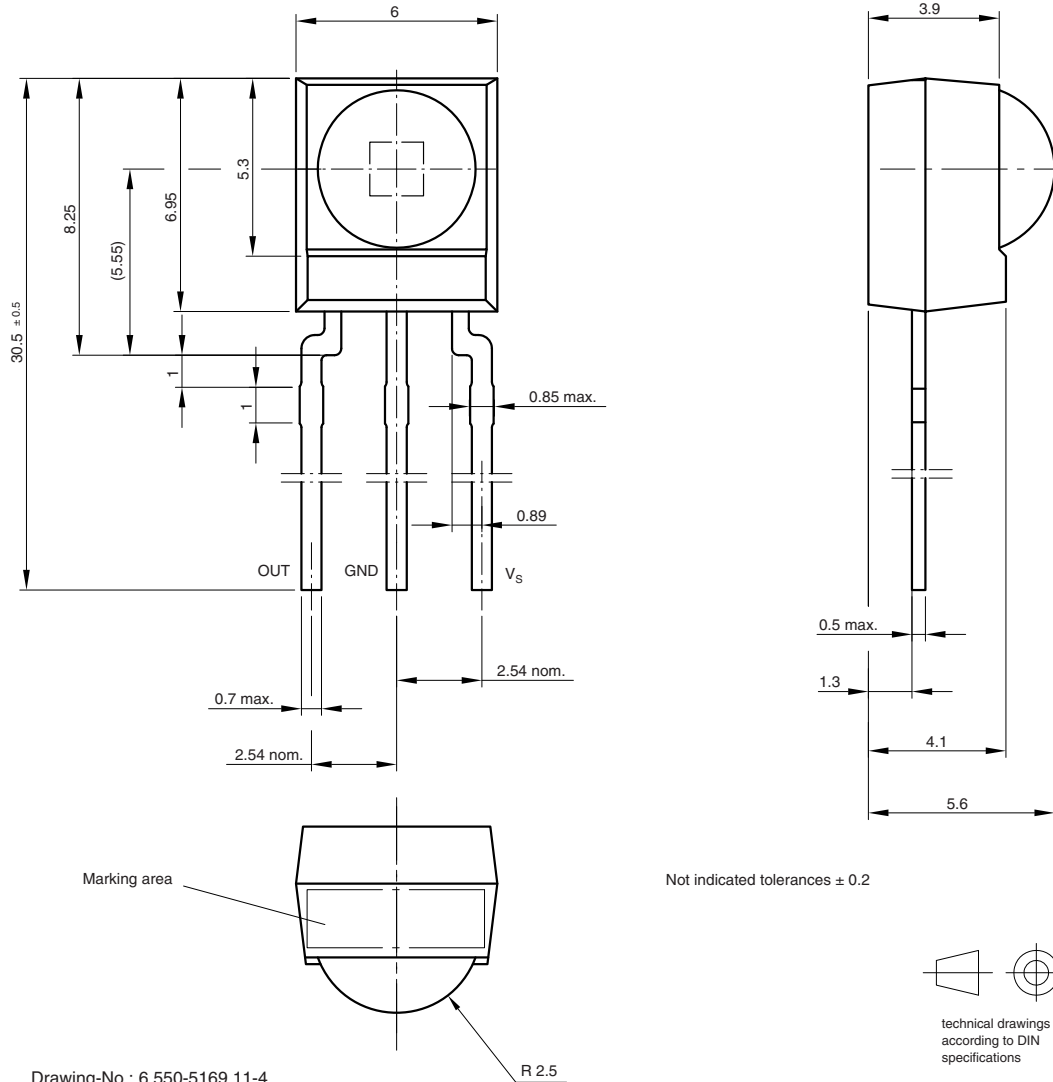
The typical application of these devices is a reflective or beam break sensor with active low “detect” or “no detect” information contained in its output. The TSSP940.. is also suitable for fast (~ 15 ms) proximity sensor applications for ranges between 10 cm and 2 m, if a burst pattern with variable intensity is used.

Example for a sensor hardware:



There should be no common window in front of the emitter and detector in order to avoid crosstalk via guided light through the window.

PACKAGE DIMENSIONS in millimeters



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