

# Reflective Object Sensor

Type OPB733TR



## Features:

- Unfocused for sensing diffuse surfaces
- Uses lensed devices for collimation of light beam
- Low-cost plastic housing
- Compact surface mount package 0.300" x 0.160" x 0.114" [7.6mmx4.1mmx2.9mm]
- Typical peak emission wavelength 890nm
- Reduced visible ambient light sensitivity
- Optimal operating distance range 0.4" [10.2mm] to 1.0" [25.4mm]



## Description:

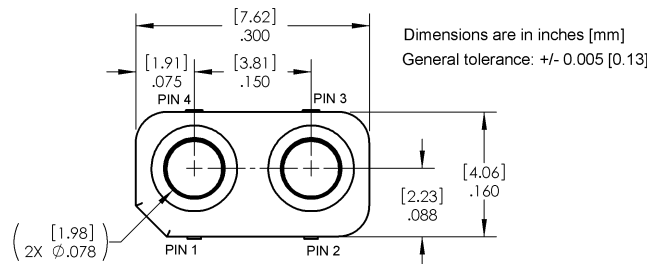
The **OPB733TR** consists of an 890nm, Infrared Light Emitting Diode (LED) and an NPN silicon Phototransistor, which are mounted "side-by-side" on parallel axes in a miniature surface mount black plastic housing. The Phototransistor is molded in a dark epoxy package, which minimizes visible ambient light sensitivity. The phototransistor responds to radiation from the LED when a reflective object passes within its field of view. This unfocused reflective object sensor is ideal for non-contact detection of materials such as paper, labels, white plastic and many other reflective materials. The OPB733TR sensors are packaged in 16mm tape on 7" [178mm] diameter reels, 500 pcs per reel. Tape and Reel package compatible with most automatic placement equipment.

Custom electrical, PCB assembly, wire and connectors are available. Contact your local OPTEK authorized representative or OPTEK for more information.

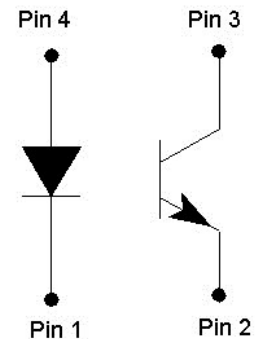
## Applications:

- Assembly line automation
- ATM (Card Reader, Receipt Dispenser)
- Auto-dispense equipment
- Amusement equipment
- End-of-travel sensor
- Door sensor
- Edge detection
- Paper jam detection
- Mark detection
- Counters and sorters
- Proximity sensing
- Medical equipment
- Machine safety

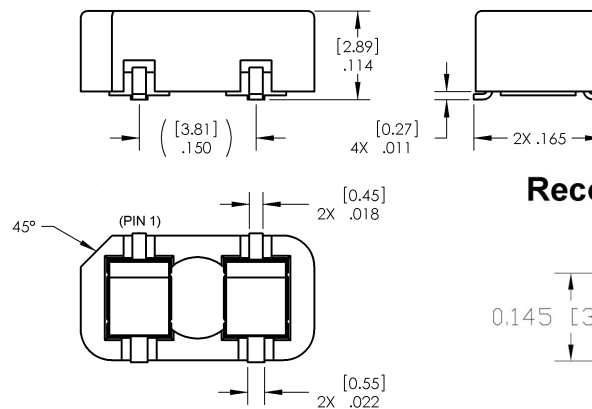
Ordering Information	
Part Number	Description
OPB733TR	SMD Reflective Object Sensor



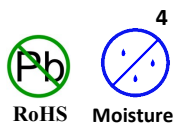
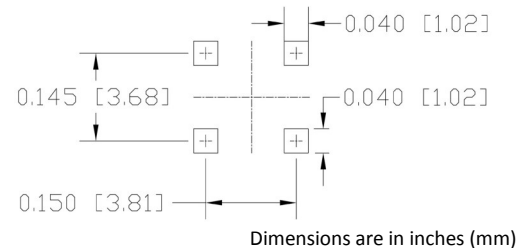
## OPB733TR



Pin #	Function
1	Cathode
2	Emitter
3	Collector
4	Anode



## Recommended Solder Pad



General Note  
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
Storage and Operating Temperature Range						-25°C to +85°C
Soldering Temperature. (see reflow solder temperature profile figure)						260°C
Input LED						
Forward DC Current						50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)						1 A
Reverse DC Voltage						5 V
Power Dissipation <sup>(2)</sup>						130 mW
Output Phototransistor						
Collector-Emitter Voltage						30 V
Emitter-Collector Voltage						5 V
Collector DC Current						20 mA
Power Dissipation <sup>(3)</sup>						75 mW
Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input IR LED (see OP271 for additional information)						
$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	10	$\mu\text{A}$	$V_R = 5\text{ V}$
$\theta_{HP}$	Emission angle at half power points	-	25	-	Degree	$I_F = 20\text{ mA}$
$\lambda_P$	Peak Emission Wavelength	-	890	-	nm	$I_F = 10\text{ mA}$
Output Phototransistor (see OP571 for additional information)						
$V_{(BR)CEO}$	Collector Emitter Breakdown Voltage	30	-	-	V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter Collector Breakdown Voltage	5	-	-	v	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector Dark Current	-	-	100	nA	$V_{CE} = 10\text{ V}, I_F = 0$
$T_r$	Rise Time	-	15	-	$\mu\text{s}$	$V_{CE} = 5\text{ Volts}^{(3)}$
$T_f$	Fall Time	-	15	-	$\mu\text{s}$	$I_C = 1\text{ mA}$ $R_L = 1\text{ K}\Omega$
Coupled Characteristics						
$V_{CE(SAT)}$	Collector Emitter Saturation Voltage	-	-	0.4	V	$d = 0.5'' (12.7\text{ mm})^{(1)(2)}$ $I_C = 50\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	0.1	-	-	mA	$d = 0.5'' (12.7\text{ mm})^{(1)(2)}$ $I_F = 20\text{ mA}, V_{CE} = 5\text{ V}$

**Notes:**

1. "d" is the distance from the assembly's top surface to the reflective surface.
2. Measured using Eastman Kodak neutral white test card with 90% diffuse reflectance as a reflecting surface.
3. By designed but not tested.
4. Methanol or Isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.

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