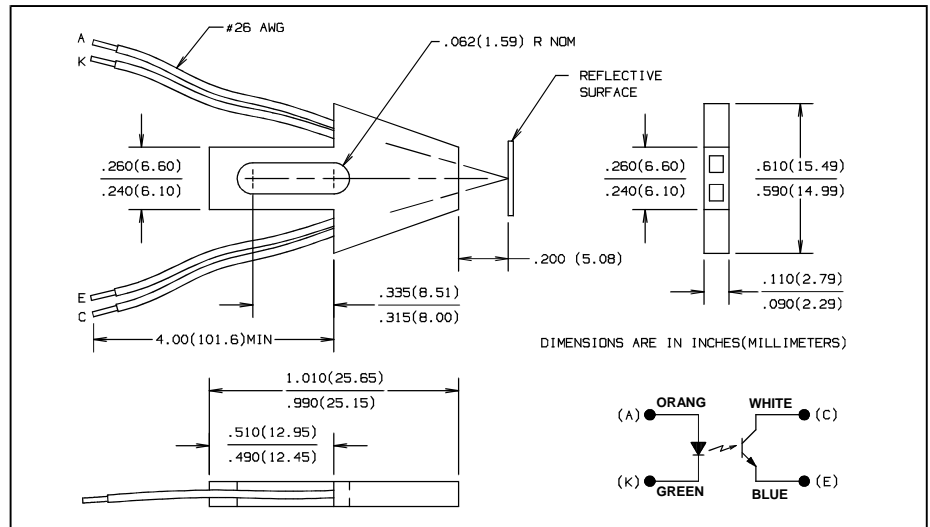
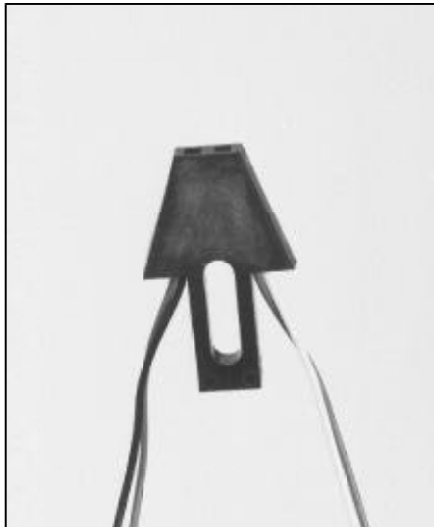


# Hi-Reliability Reflective Object Sensor

## Types OPB700TX, OPB700TXV



### Features

- Non-contact switching
- Low profile to facilitate stacking
- Hermetically sealed components
- Components processed to Optek's screening program patterned after MIL-PRF-19500 for TX and TXV devices
- 24.0 inches (457.2mm) minimum length lead wires conforming to MIL-W-16878

### Description

The OPB700TX and OPB700TXV consist of gallium aluminum arsenide LED's and silicon phototransistors mounted side-by-side on converging optical axes in a high temperature black plastic housing. The phototransistor responds to the radiation from the LED only when a reflective object passes within its field of view. Lead wires are #26 AWG polytetrafluoroethylene (PTFE) insulated conforming to MIL-W-16878. Typical screening and lot acceptance tests are provided on page 13-4.

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Operating Temperature	.....	$-65^\circ\text{C}$ to $+125^\circ\text{C}$
Storage Temperature	.....	$-65^\circ\text{C}$ to $+150^\circ\text{C}$

### Input Diode

Forward DC Current	.....	50 mA
Reverse Voltage	.....	2.0 V
Power Dissipation	.....	100 mW <sup>(1)</sup>

### Output Phototransistor

Collector-Emitter Voltage	.....	50 V
Emitter-Collector Voltage	.....	7.0 V
Power Dissipation	.....	100 mW <sup>(1)</sup>

### Notes:

- (1) Derate linearly 1.00 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (2) Measured using an Eastman Kodak neutral white test card having 90% diffuse reflectance as a reflective surface.
- (3) Crosstalk ( $I_{CX}$ ) is the collector current measured with the indicated current in the input diode and no reflecting surface.
- (4) "d" is the distance from the assembly head to the reflective surface.
- (5) Methanol or isopropyl alcohols are recommended as cleaning agents.

# Types OPB700TX, OPB700TXV

Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
<b>Input Diode</b>						
$V_F$	Forward Voltage <sup>(6)</sup>	1.10	1.60	1.80	V	$I_F = 50.0\text{ mA}$
		1.30	1.80	2.00	V	$I_F = 50.0\text{ mA}, T_A = -55^\circ\text{C}$
		0.90	1.40	1.70	V	$I_F = 50.0\text{ mA}, T_A = 100^\circ\text{C}$
$I_R$	Reverse Current		0.1	100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>Output Phototransistor</b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50	110		V	$I_C = 1.0\text{ mA}, I_F = 0$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	7.0	10.0		V	$I_E = 100\ \mu\text{A}, I_F = 0$
$I_{C(off)}$	Collector-Emitter Dark Current			100	nA	$V_{CE} = 10.0\text{ V}, I_F = 0$
			10	100	$\mu\text{A}$	$V_{CE} = 10.0\text{ V}, I_F = 0, T_A = 100^\circ\text{C}$
<b>Combined</b>						
$I_{C(on)}$	On-State Collector Current $d = 0.20\text{ in. (5.08mm)}$ <sup>(2,3,6)</sup>	50	200		$\mu\text{A}$	$V_{CE} = 5.0\text{ V}, I_F = 40.0\text{ mA}$
		25			$\mu\text{A}$	$V_{CE} = 5.0\text{ V}, I_F = 40.0\text{ mA}, T_A = -55^\circ\text{C}$
		25			$\mu\text{A}$	$V_{CE} = 5.0\text{ V}, I_F = 40.0\text{ mA}, T_A = 100^\circ\text{C}$
$I_{CX}$	Crosstalk (No Reflective Surface) <sup>(3)</sup>		2.0		$\mu\text{A}$	$V_{CE} = 5.0\text{ V}, I_F = 40.0\text{ mA}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage $d = 0.20\text{ in. (5.08mm)}$ <sup>(2,3)</sup>			0.40	V	$I_C = 10.0\ \mu\text{A}, I_F = 40.0\text{ mA}$
$t_r$	Output Rise Time		12.0	20.0	$\mu\text{s}$	$V_{CC} = 10.0\text{ V}, I_F = 20.0\text{ mA},$ $R_L = 1,000\ \Omega$
$t_f$	Output Fall Time		12.0	20.0	$\mu\text{s}$	

HI-RELOPTO  
COMPONENTS

(6) Measurement is taken during the last 500  $\mu\text{s}$  of a single 1.0 ms test pulse. Heating due to increased pulse rate or pulse width can cause change in measurement results.