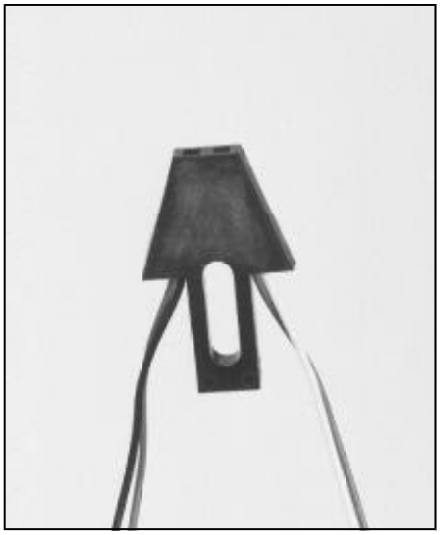
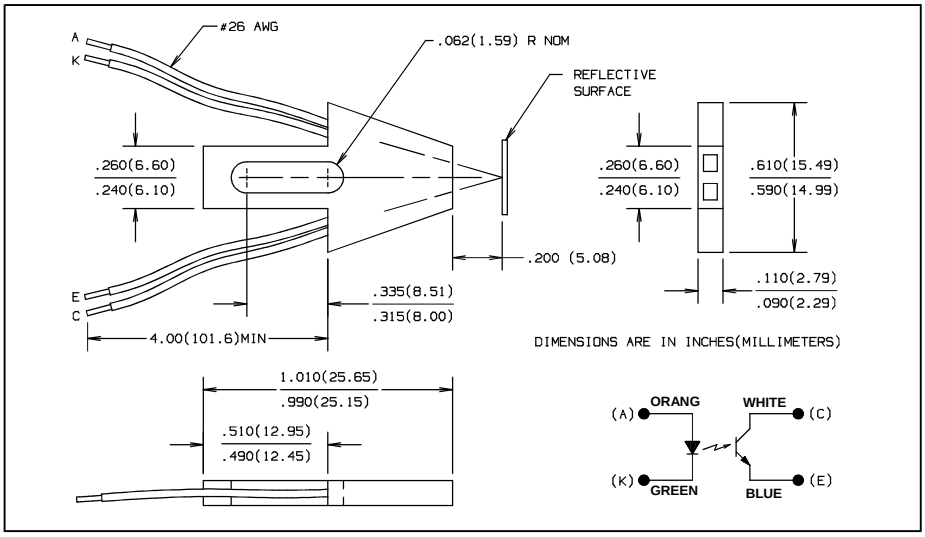
Hi-Reliability Reflective Object Sensor
Types OPB700TX, OPB700TXV





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 polytetraflouroethylene (PTEF) insulated conforming to MIL-W-16878. Typical screening and lot acceptance tests are provided on page 13-4.

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Operating Temperature . . . . . -65° C to +125° C
Storage Temperature. . . . . -65° C to +150° C

Input Diode

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

Output Phototransistor

Collector-Emitter Voltage. . . . . 50 V
Emitter-Collector Voltage . . . . . 7.0 V
Power Dissipation . . . . . 100 mW(1)

Notes:

(1) Derate linearly 1.00 mW/° C above 25° 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° C unless otherwise noted)

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

(6) Measurement is taken during the last 500 µs of a single 1.0 ms test pulse. Heating due to increased pulse rate or pulse width can cause change in measurement results.

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