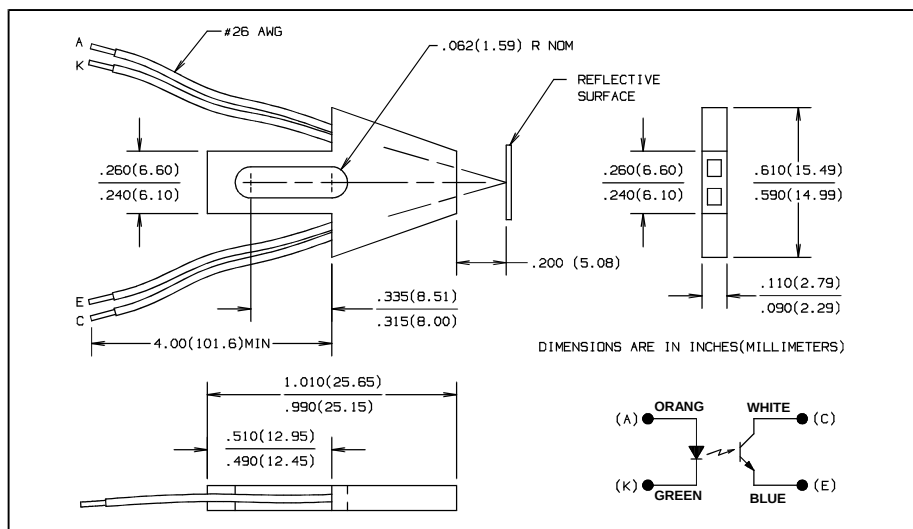


Hi-Reliability Reflective Object Sensor

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 ⁰ C to +125 ⁰ C
Storage Temperature	-65 ⁰ C to +150 ⁰ 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/⁰ C above 25⁰ 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
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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