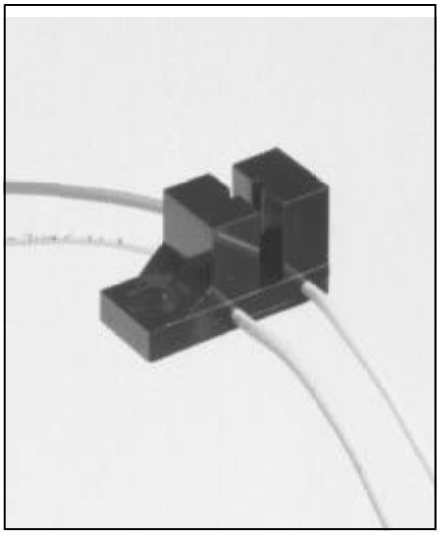
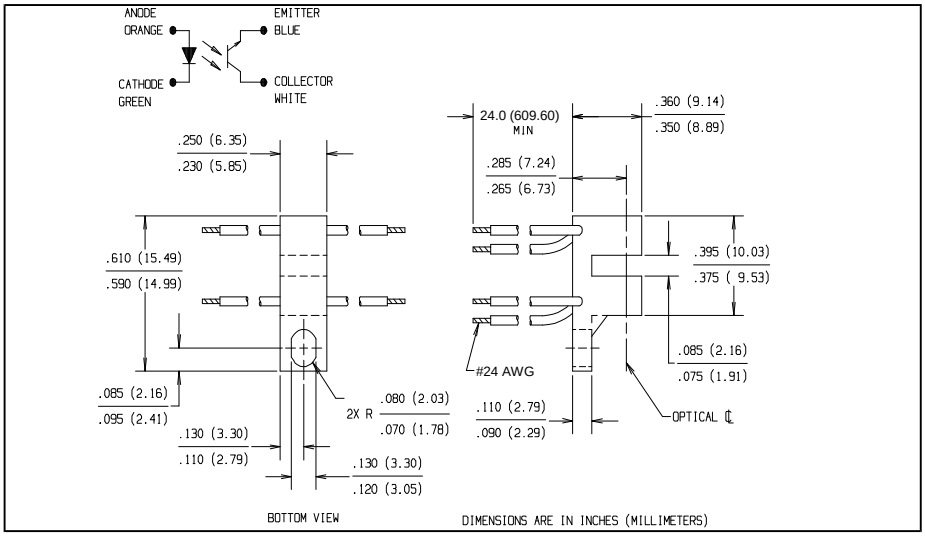
Hi-Rel Slotted Optical Switches
Types OPB821TX, OPB821TXV





Features

- Non-contact switching
- Hermetically sealed components
- Components processed to Optek's screening program patterned after MIL-PRF-19500 for TX and TXV devices

Description

The OPB821TX or OPB821TXV consists of a gallium aluminum arsenide LED and a silicon phototransistor soldered into a printed circuit board, then mounted in a high temperature plastic housing on opposite sides of an 0.080 inch (2.03 mm) wide slot. Lead wires are #24 AWG polytetraflouroethylene (PTFE) insulated conforming to MIL-W-16878.
Phototransistor switching takes place whenever an opaque object passes through the slot. For maximum output signal, neither the LED or the phototransistor in the OPB821TX or the OPB821TXV is apertured.
The OPB821TX and OPB821TXV use optoelectronic components that have been processed and tested as either TX or TXV components per MIL-PRF-19500. Typical screening and lot acceptance tests are provided on page 13-4.

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

Operating Temperature Range . . . . . -65° C to +125° C
Storage Temperature Range . . . . . -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) Methanol or isopropanol are recommended cleaning agents.

Types OPB821TX, OPB821TXV

Electrical Characteristics (T_A = 25^o C unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
Input Diode						
V_F	Forward Voltage(3)	1.00	1.35	1.70	V	I_F = 20.0 mA
		1.20	1.55	1.90	V	I_F = 20.0 mA, T_A = -55^o C
		0.80	1.20	1.60	V	I_F = 20.0 mA, T_A = 100^o 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		0.2	100	nA	V_{CE} = 10.0 V, I_F = 0
			10	100	µA	V_{CE} = 10.0 V, I_F = 0, T_A = 100^o C
Coupled						
$I_{C(on)}$	On-State Collector Current(3)	800			µA	V_{CE} = 10.0 V, I_F = 20.0 mA
		500			µA	V_{CE} = 10.0 V, I_F = 20.0 mA, T_A = -55^o C
		500			µA	V_{CE} = 10.0 V, I_F = 20.0 mA, T_A = 100^o C
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.20	0.30	V	I_C = 250 µA, I_F = 20.0 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	

(3) 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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