High Resolution Slotted Optical Switch

OPB821TX, OPB821TXV



Features:

- Non-contact switching
- Low profile to facilitate stacking
- Hermetically sealed components
- 24" (609.60 mm) minimum length wire conforms to MIL-W-16878
- TX and TXV components processed to MIL-PRF-19500



Description:

Each OPB821TX and OP821TXV device consists of a gallium aluminum arsenide LED and a silicon phototransistor, which are soldered into a printed circuit board and mounted in a high temperature plastic housing on opposite sides of an 0.080" (2.03 mm) wide slot. Lead wires are #24 AWG polytetraflouroethylene (PTFE) insulated, which conforms to MIL-W-16878.

Phototransistor switching takes place when an opaque object passes through the slot. For maximum output signal, neither the LED nor the phototransistor is apertured.

TX and TXV device components are processed to OPTEK's military screening program patterned after MIL-PRF-19500.

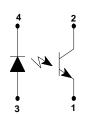
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Contact your local representative or OPTEK for more information.

Applications:

- Non-contact object sensing
- Assembly line automation
- Machine automation
- Equipment safety
- Machine safety

Part Number	LED Peak Wavelength	Sensor	Slot Width / Depth	I _{C(ON)} (mA) Min	I _F (mA) Typ / Max	V _{CE} (Volts) Max	Aperture Emitter/ Sensor	Lead Length / Spacing
OPB821TX	000	Turnsistan	0.080" /	0.00	20 / 50	20	0.040"/	24"/26
OPB821TXV	880 nm	Transistor	0.255"	0.80	20 / 50	30	0.040"	AWG wire



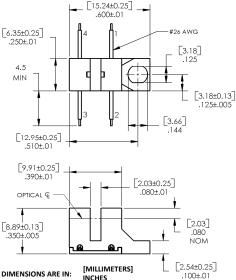
Color/Pin #

White-2

Blue-1



1	
Description	[8] .:
Collector	
Emitter	DI





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Descrip

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Absolute Maximum	Patings /T - 25	° Cunlecc	othorwica	(hatan
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Storage Temperature	-65°C to +150° C
Operating Temperature	-65°C to +125° C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 seconds with soldering iron) ⁽¹⁾	260° C
Input Diode	
Continuous Forward Current	50 mA
Reverse Voltage	2 V
Power Dissipation ⁽¹⁾	100 mW
Output Phototransistor	
Collector-Emitter Voltage	50 V
Emitter-Collector Voltage	7 V
Power Dissipation ⁽¹⁾	100 mW

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER		TYP	MAX	UNITS	TEST CONDITIONS	
Input Diode							
			1.35	1.70		I _F = 20 mA	
V_{F}	Forward Voltage ⁽³⁾	1.20	1.55	1.90	V	I _F = 20 mA, T _A = -55° C	
		0.80	1.20	1.60		I _F = 20 mA, T _A = 100° C	
I _R	Reverse Current		0.10	100	μΑ	V _R = 2 V	
Output Photo	transistor						
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	50	110	-	V	I _C = 1 mA, I _F = 0	
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage		10	-	V	$I_E = 100 \ \mu\text{A}, I_F = 0$	
,	Collector-Emitter Dark Current	-	0.20	100	nA	$V_{CE} = 10 \text{ V}, I_F = 0$	
I _{C(OFF)}		-	10	100	μΑ	$V_{CE} = 10 \text{ V}, I_F = 0, T_A = 100^{\circ} \text{ C}$	
Coupled							
			-	-		V _{CE} = 10 V, I _F = 20 mA	
I _{C(ON)}	On-State Collector Current ⁽³⁾	500	-	-	μΑ	V _{CE} = 10 V, I _F = 20 mA, T _A = -55° C	
			-	-		V _{CE} = 10 V, I _F = 20 mA, T _A = 100° C	
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage OPB820S10, OPB821S10	-	0.20	0.30	V	$I_C = 250 \mu A$, $I_F = 20 \text{ mA}$	

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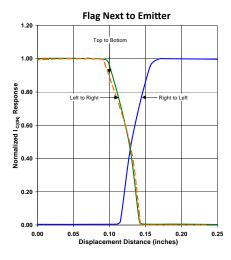
OPB821TX, OPB821TXV

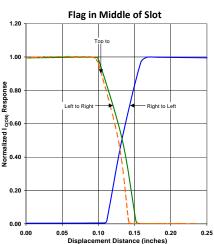
Electrical Characteristics (T_A = 25° C unless otherwise noted)

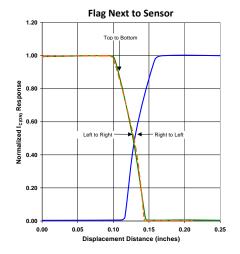
SYMBOL	SYMBOL PARAMETER		TYP	MAX	UNITS	TEST CONDITIONS
Coupled						
t _r	Output Rise Time	-	12	20		V - 10 V L - 30 mA B - 1000 O
t _f	Output Fall Time	-	12	20	μs	$V_{CC} = 10 \text{ V, I}_F = 20 \text{ mA, R}_L = 1000 \Omega$

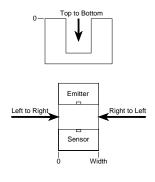
Notes:

- (1) Derate linearly 1.00 mW/° C above 25° C.
- (2) Methanol or isopropanol are recommended cleaning agents.
- (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









General Note
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