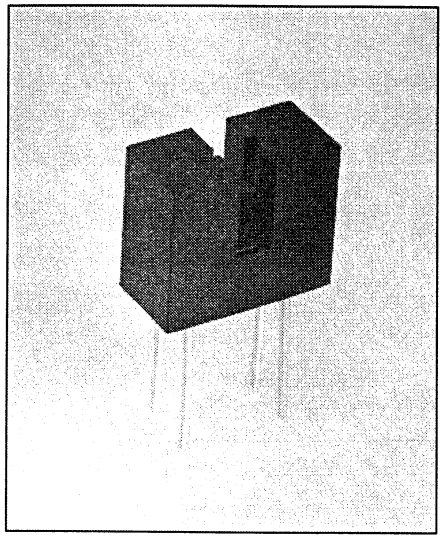
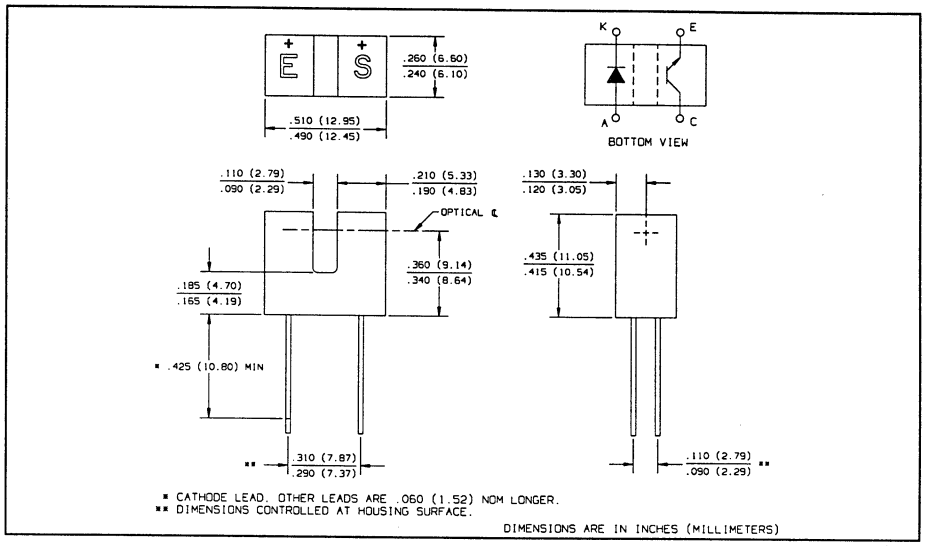
Slotted Optical Switches
Types OPB847, OPB848





Features

- Non-contact switching
- Apertured for high resolution
- Fast switching sped
- 0.300" (7.62 mm) lead spacing
- 0.100" (2.54 mm) wide slot
- TX-TXV process available (see Hi-Rel section)

Description

The OPB847 and OPB848 each consist of an infrared emitting diode and an NPN silicon phototransistor mounted in a low cost black plastic housing on opposite sides of a 0.100" (2.54 mm) wide slot. Both devices have a 0.025" (0.635 mm) by 0.060" (1.52 mm) aperture in front of the phototransistor for high resolution position sensing.

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

Storage and Operating Temperature ..... -40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] ..... 240° C(1)

Input Diode

Continuous Forward Current ..... 50 mA
Peak Forward Current (1 µs pulse width, 300 pps) ..... 3.0 A
Reverse Voltage ..... 2.0 V
Power Dissipation ..... 100 mW(2)

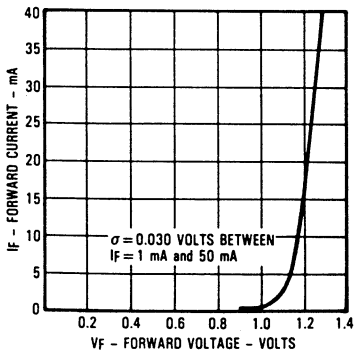
Output Phototransistor

Collector-Emitter Voltage ..... 30 V
Emitter-Collector Voltage ..... 5.0 V
Power Dissipation ..... 100 mW(2)

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 sec. max when wave soldering.
(2) Derate linearly 1.67 mW/° C above 25° C.
(3) Methanol or isopropanol are recommended as cleaning agents.
(4) All parameters tested using pulse technique.

Typical Performance Curves

Forward Current vs Forward Voltage Input Diodes



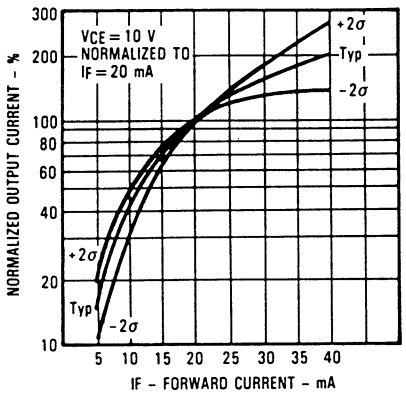
Types OPB847, OPB848

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

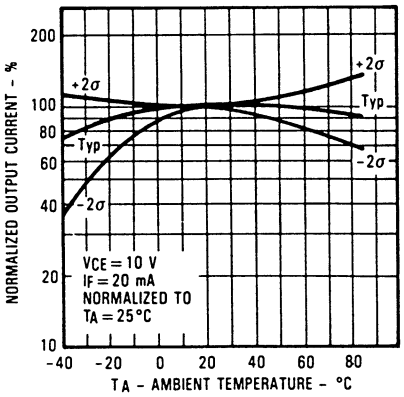
SYMBOL	PARAMETER		MIN	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.7	V	I_F = 20 mA
I_R	Reverse Current			100	µA	V_R = 2 V
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage		30		V	I_C = 1 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage		5.0		V	I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current			100	nA	V_{CE} = 10 V, I_F = 0, E_e = 0
Coupled						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	OPB847		0.40	V	I_C = 2 mA, I_F = 20 mA
		OPB848		0.40	V	I_C = 0.5 mA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current	OPB847	4.0		mA	V_{CE} = 10 V, I_F = 20 mA
		OPB848	1.0		mA	V_{CE} = 10 V, I_F = 20 mA

Typical Performance Curves

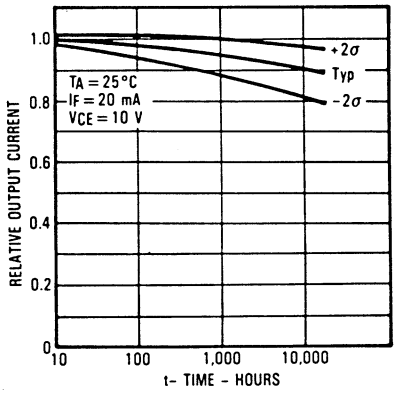
Normalized Output Current vs Forward Current



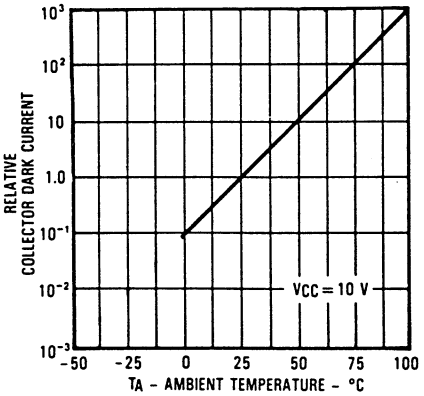
Normalized Output Current vs Ambient Temperature



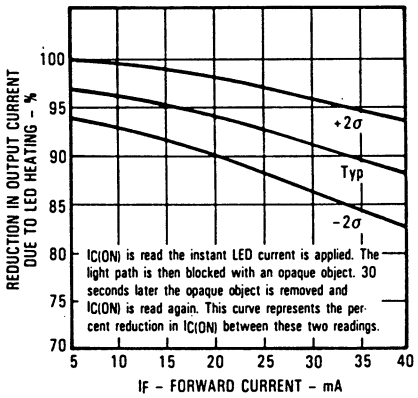
Relative Output Current vs Time



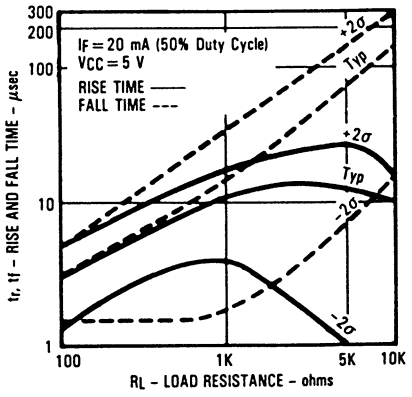
Relative Collector Dark Current vs Ambient Temperature



Reduction in Output Current Due to LED Heating vs Forward Current



Rise and Fall Time vs Load Resistance



Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396