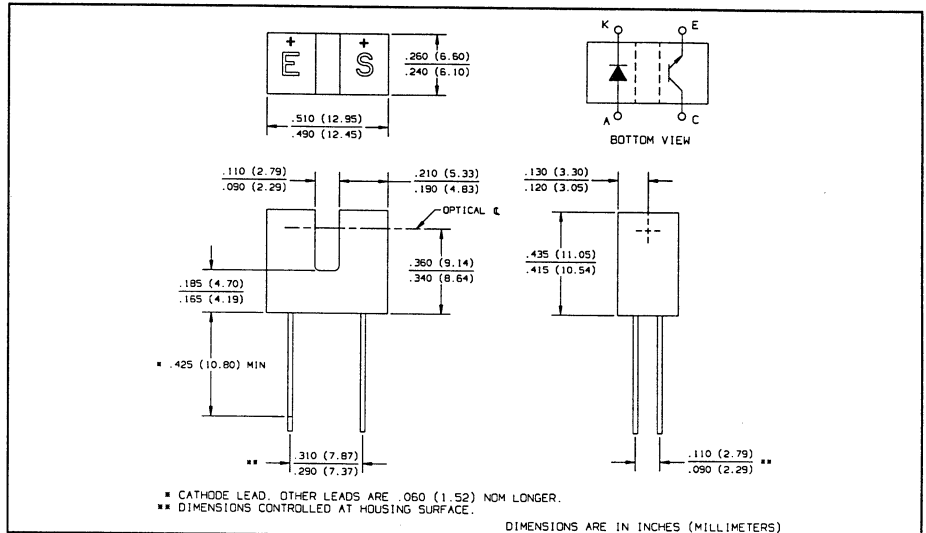
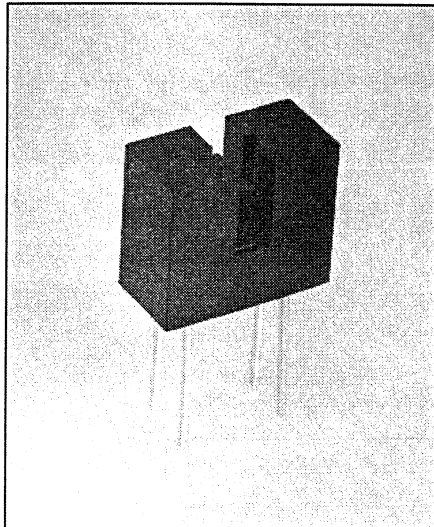


Slotted Optical Switches

Types OPB847, OPB848



Features

- Non-contact switching
- Apertured for high resolution
- Fast switching speed
- 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 ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

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⁾

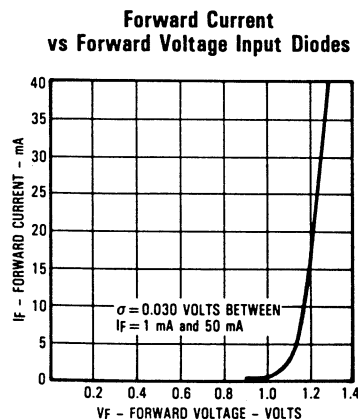
Output Phototransistor

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/ $^\circ\text{C}$ above 25°C .
- (3) Methanol or isopropanol are recommended as cleaning agents.
- (4) All parameters tested using pulse technique.

Typical Performance Curves



Types OPB847, OPB848

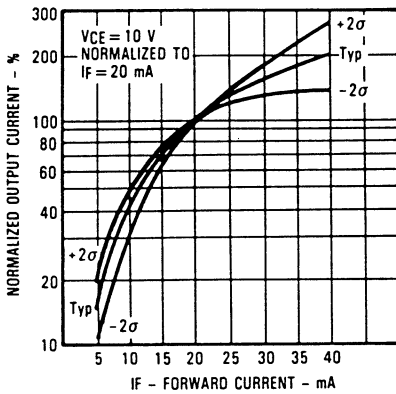
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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

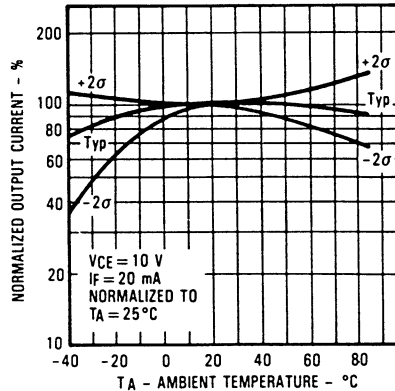
SLOTTED OPTICAL SWITCHES

Typical Performance Curves

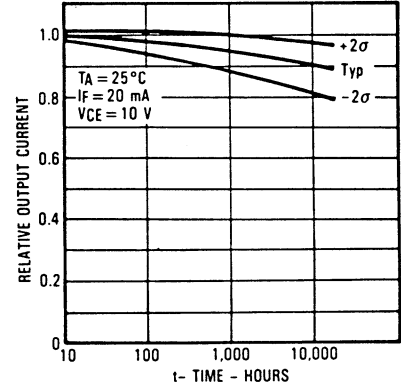
Normalized Output Current vs Forward Current



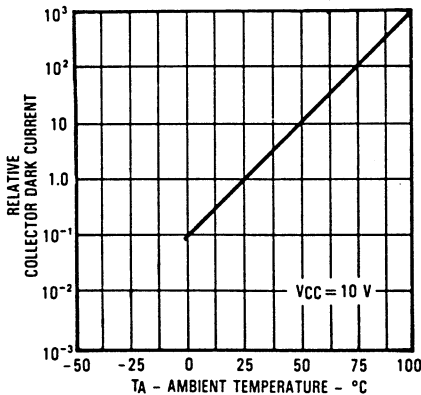
Normalized Output Current vs Ambient Temperature



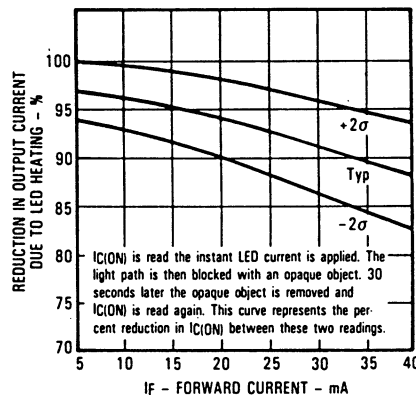
Relative Output Current vs Time



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

