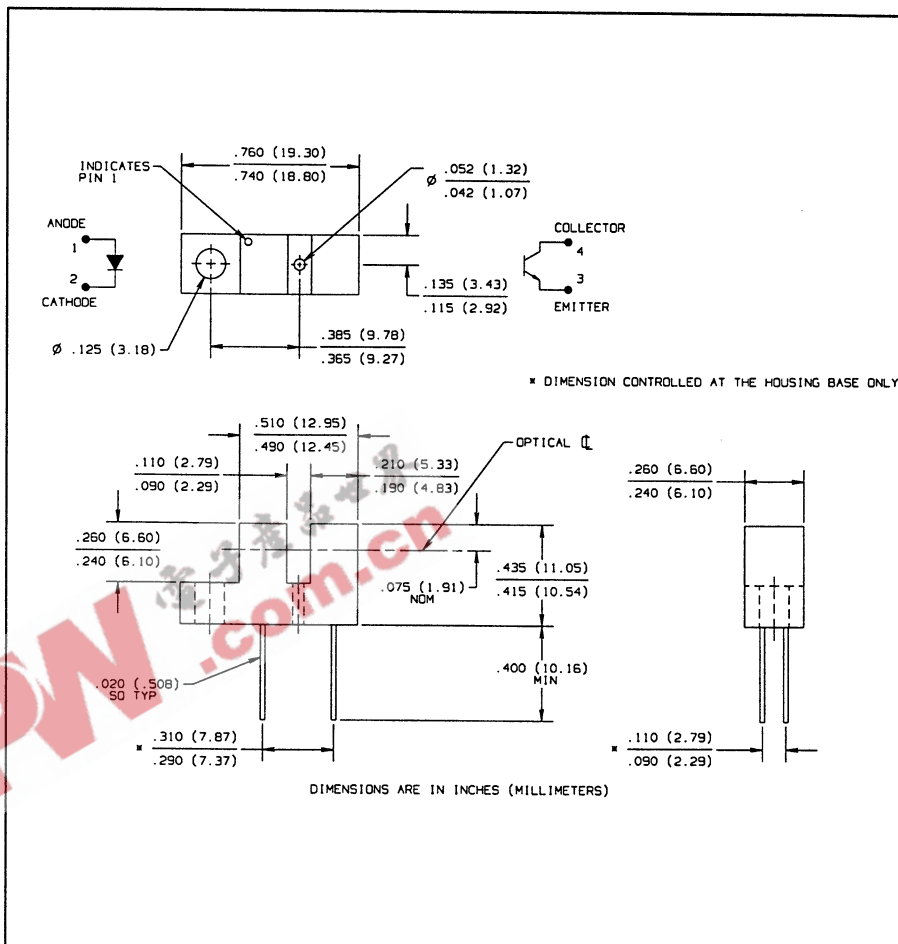
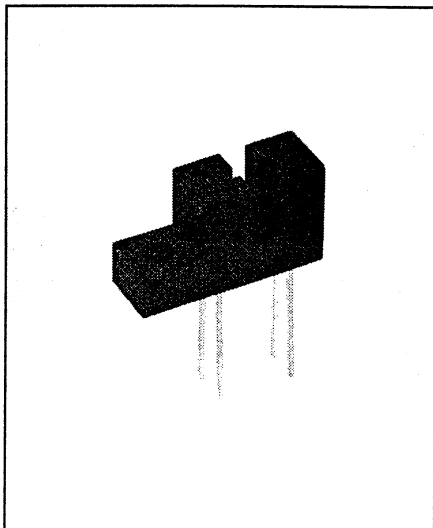


# Slotted Optical Switches

## Types OPB854A2, OPB854B2



### Features

- Non-contact switching
- Printed circuit board mounting
- 0.100" (2.54 mm) wide slot
- 0.300" (7.62 mm) lead spacing
- Opaque plastic housing

### Description

The OPB854A2 and OPB854B2 each consist of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of a .100" (2.54 mm) wide slot in an inexpensive plastic housing. Switching of the phototransistor occurs whenever an opaque object passes through the slot. Also available without mounting tab as OPB854A1 and OPB854B1, or with two mounting tabs as OPB854A3 and OPB854B3.

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

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

#### Input Diode

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

#### Output Phototransistor

Collector-Emitter Voltage ..... 30 V  
Emitter-Collector Voltage ..... 5.0 V  
Collector DC Current ..... 30 mA  
Power Dissipation ..... 100 mW<sup>(2)</sup>

#### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (2) Derate Linearly 1.67 mW/° C above 25° C.
- (3) All parameters tested using pulse technique.
- (4) Methanol or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.

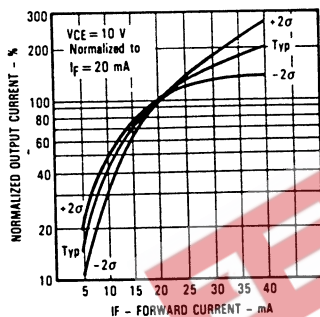
# Types OPB854A2, OPB854B2

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

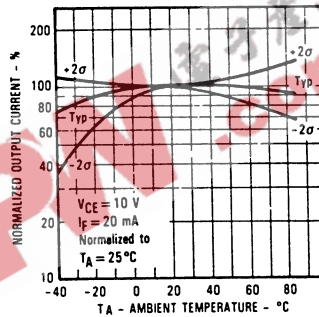
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current		10	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>Output Phototransistor</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1\text{ mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_e = 0$
<b>Coupled</b>					
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	OPB854A2 OPB854B2	0.6 0.4	V	$I_C = 2\text{ mA}, I_F = 16\text{ mA}$ $I_C = 250\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	OPB854A2 OPB854B2	3.0 1.0	mA mA	$V_{CE} = 1\text{ V}, I_F = 16\text{ mA}$ $V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$

## Typical Performance Curves

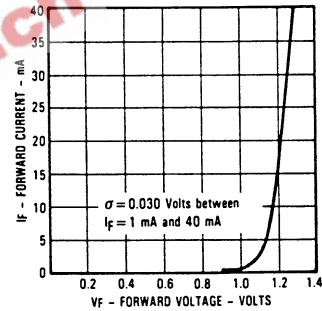
Normalized Output Current vs Forward Current



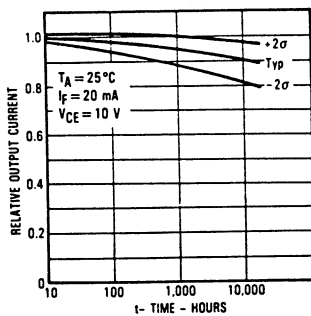
Normalized Output Current vs Ambient Temperature



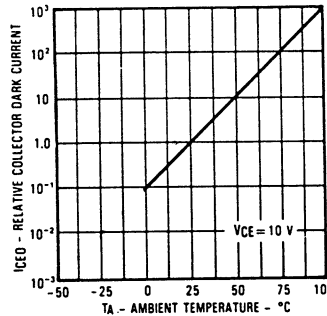
Forward Current vs Forward Voltage Input Diode



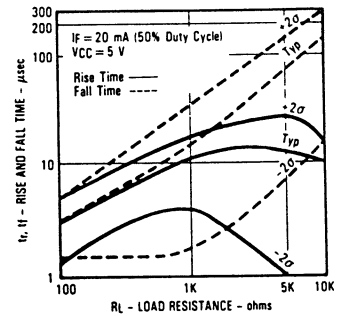
Relative Output Current vs Time



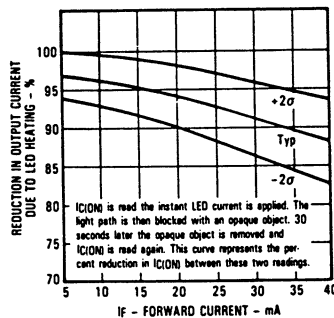
Collector Dark Current vs Ambient Temperature



Rise and Fall Time vs Load Resistance



Reduction in Output Current Due to LED Heating vs Forward Current



SLOTTED OPTICAL SWITCHES