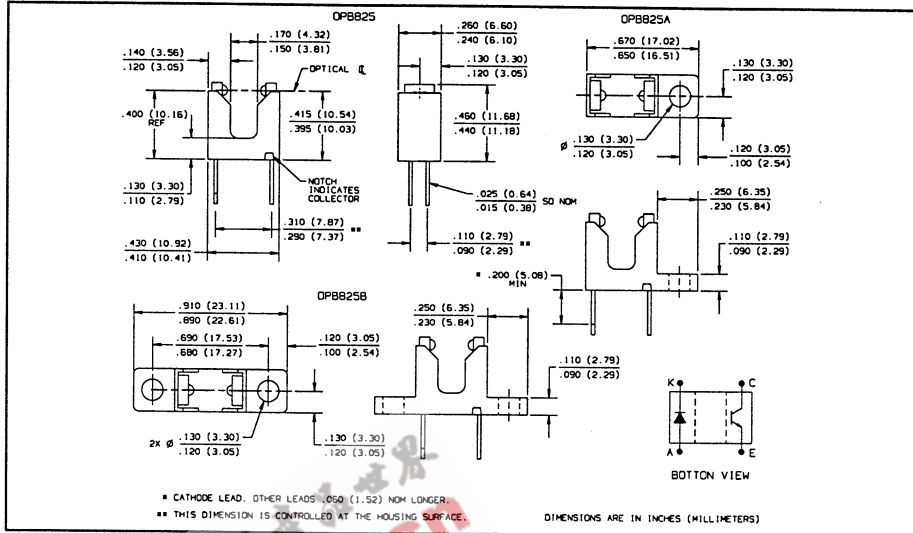
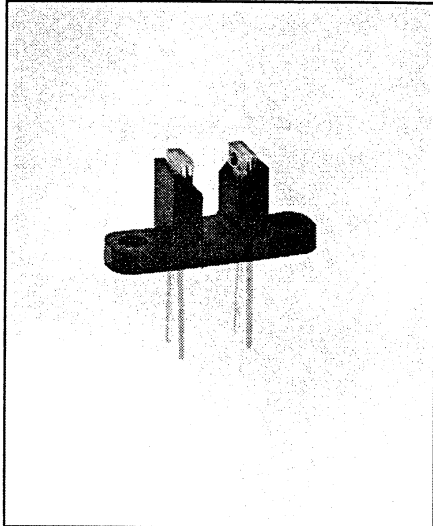


# Slotted Optical Switches

## Types OPB825, OPB825A, OPB825B



### Features

- Non-contact switching
- 0.160" (4.06 mm) wide slot
- 0.300" (7.62 mm) lead spacing
- Fast switching speed

### Description

The OPB825, OPB825A, and OPB825B 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 0.160" (4.06mm) wide slot. Phototransistor switching takes place whenever an opaque object passes through the slot. The OPB825 has no mounting tabs and is intended for direct insertion into PC boards or dual-in-line sockets. The OPB825A has a single mounting tab on the phototransistor side. The OPB825B has mounting tabs on both sides.

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage and Operating Temperature .....  $-40^\circ\text{C}$  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  $\mu\text{s}$  pulse width, 300 pps) ..... 3.0 A  
 Reverse Voltage ..... 2.0 V  
 Power Dissipation .....  $100\text{ mW}^{(2)}$

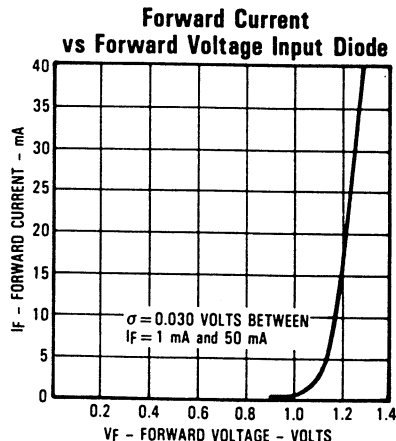
### Output Phototransistor

Collector-Emitter Voltage ..... 30 V  
 Emitter-Collector Voltage ..... 5.0 V  
 Power Dissipation .....  $100\text{ mW}^{(2)}$

### Notes:

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

### Typical Performance Curves



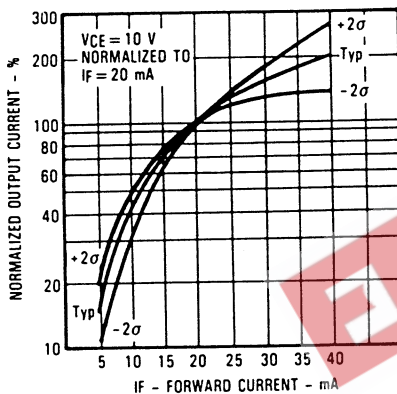
# Types OPB825, OPB825A, OPB825B

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

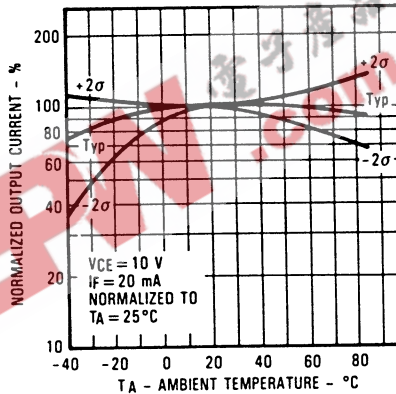
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b>					
$V_F$	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current		100	$\mu\text{A}$	$V_R = 2\text{ V}$
<b>Output Phototransistor</b>					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1\text{ mA}$
$V_{(BR)ECO}$	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		0.40	V	$I_C = 250\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	500		$\mu\text{A}$	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$

## Typical Performance Curves

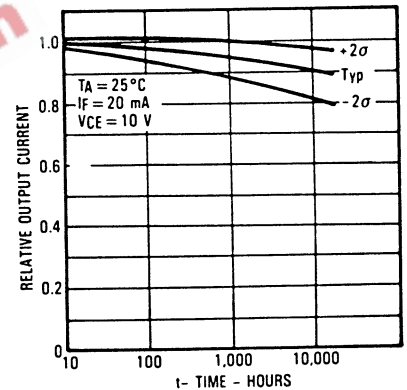
Normalized Output Current vs Forward Current



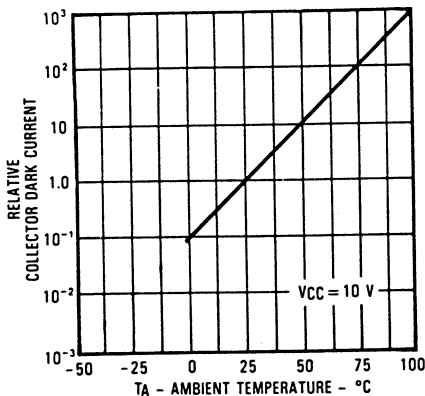
Normalized Output Current vs Ambient Temperature



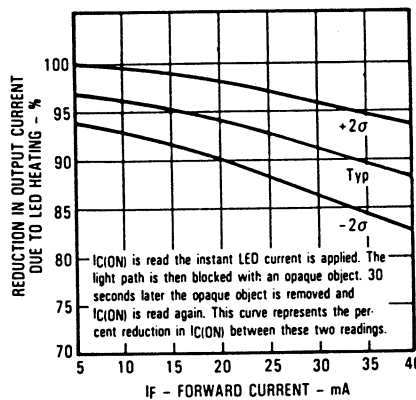
Relative Output Current vs Time



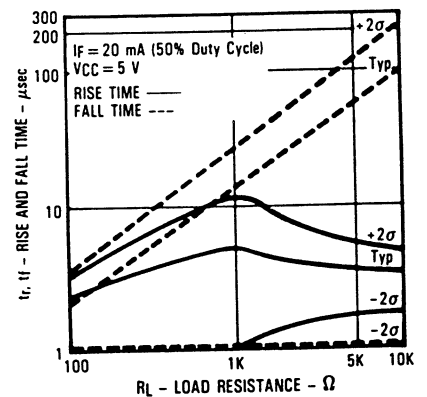
Relative Collector Dark Current vs Ambient Temperature



Reduction in Output Current Due to LED Heating vs Forward Current



Rise and Fall Time vs Load Resistance



SLOTTED OPTICAL QUANTITIES