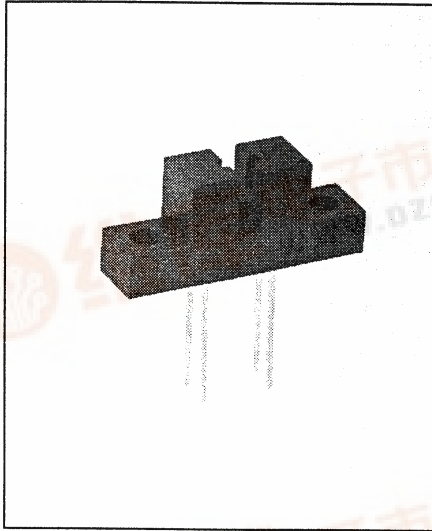


Product Bulletin OPB854A3

July 1996

Slotted Optical Switches Types OPB854A3, OPB854B3

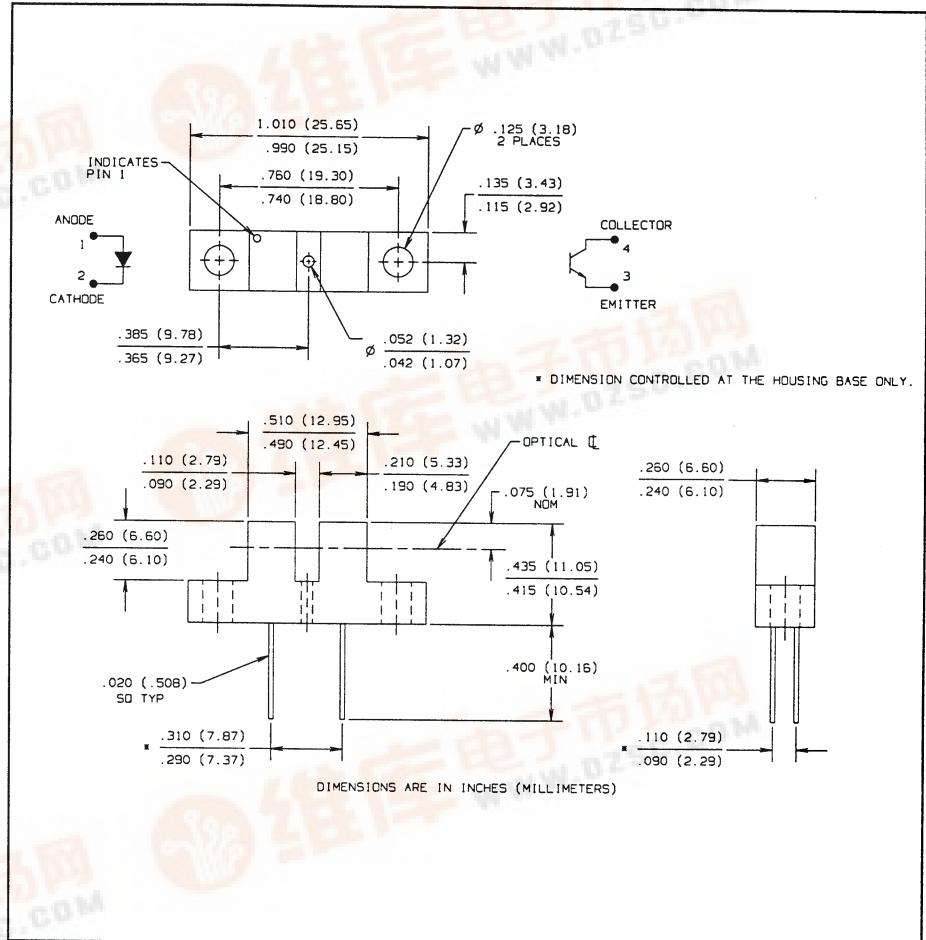


Features

- 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 OPB854A3 and OPB854B3 each consist of an infrared emitting diode and an NPN silicon phototransistor mounted on opposite sides of a 0.100" (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 one mounting tab as OPB854A2 and OPB854B2.



Absolute Maximum Ratings (T_A = 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⁽¹⁾

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⁽²⁾

Output Phototransistor

Collector-Emitter Voltage 30 V
Emitter-Collector Voltage 5.0 V
Collector DC Current 30 mA
Power Dissipation 100 mW

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 OPB854A3, OPB854B3

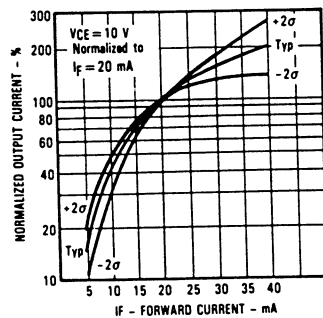
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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		10	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	$I_E = 100\text{ }\mu\text{A}$
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	OPB854A3 OPB854B3	0.6 0.4	V	$I_C = 2\text{ mA}, I_F = 16\text{ mA}$ $I_C = 250\text{ }\mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	OPB854A3 OPB854B3	3.0 1.0	mA	$V_{CE} = 1\text{ V}, I_F = 16\text{ mA}$ $V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$

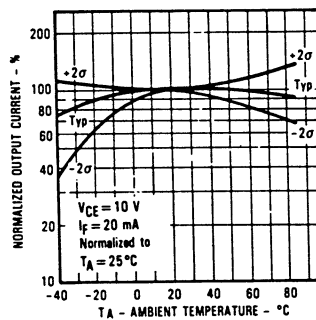
SLOTTED
OPTICAL
SWITCHES.

Typical Performance Curves

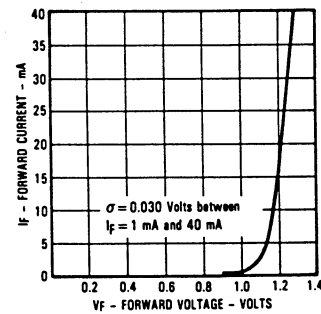
Normalized Output Current
vs Forward Current



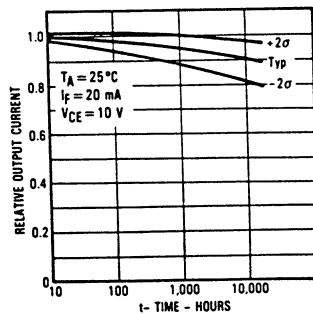
Normalized Output Current
vs Ambient Temperature



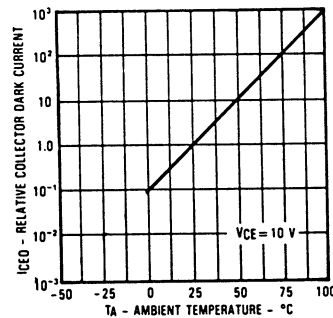
Forward Current
vs Forward Voltage Input Diode



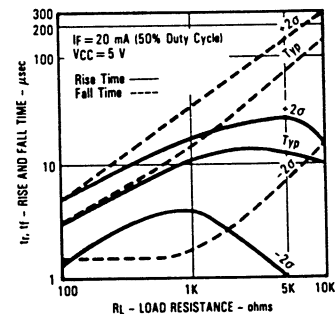
Relative Output Current
vs Time



Collector Dark Current
vs Ambient Temperature



Rise and Fall Time
vs Load Resistance



Reduction in Output Current Due to
LED Heating vs Forward Current

