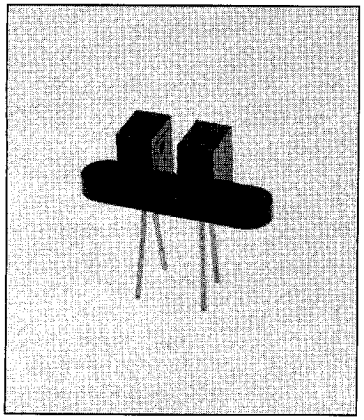
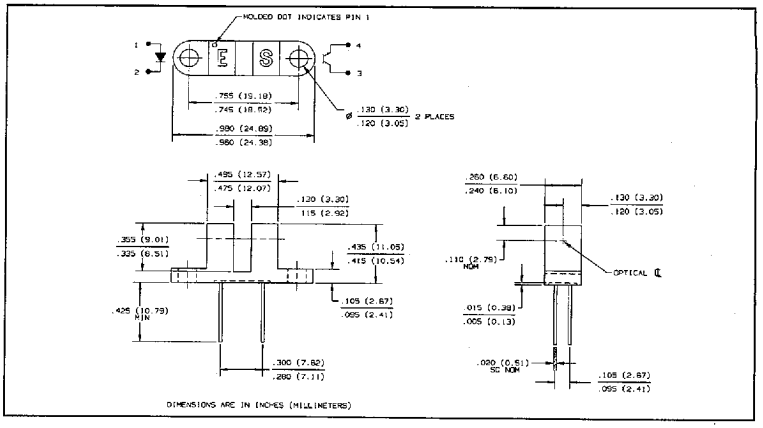
Slotted Optical Switches
Types OPB852A1, OPB852A2, OPB852A3





Features

- Inexpensive opaque plastic housing
- 0.125" (3.18 mm) wide slot
- 0.290" (7.37 mm) lead spacing
- Apertured for high resolution

Description

The OPB852A series of slotted optical switches consist of an infrared emitting diode and an NPN silicon phototransistor. They are mounted on opposite sides of a 0.125" (3.18 mm) wide slot. The emitter has a 0.050" X 0.050" (1.27 mm X 1.27 mm) molded-in aperture while the phototransistor has a 0.010" X 0.050" (0.254 mm X 1.27 mm) molded-in aperture.

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	40 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
Power Dissipation	100 mW(2)

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 and isopropanol are recommended as cleaning agents. Housings are soluble in chlorinated hydrocarbons and ketones. Highly activated, water soluble fluxes may attack housings in some situations.

Types OPB852A1, OPB852A2, OPB852A3

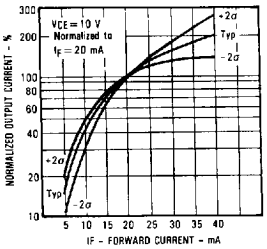
Electrical Characteristics (T_A = 25° C unless otherwise noted) 6798580 0003085 754

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
Coupled						
$V_{CE(SAT)}$	Saturation Voltage	OPB852A1		0.40	V	I_C = 500 µA, I_F = 20 mA
		OPB852A2		0.40	V	I_C = 500 µA, I_F = 20 mA
		OPB852A3		0.40	V	I_C = 1.8 mA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current	OPB852A1	1.0		mA	V_{CE} = 5 V, I_F = 20 mA
		OPB852A2	2.0		mA	V_{CE} = 5 V, I_F = 20 mA
		OPB852A3	4.0		mA	V_{CE} = 5 V, I_F = 20 mA

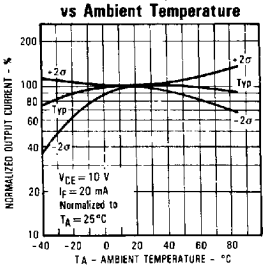
SLOTTED OPTICAL SWITCHES

Typical Performance Curves

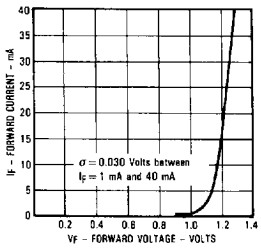
Normalized Output Current vs Forward Current



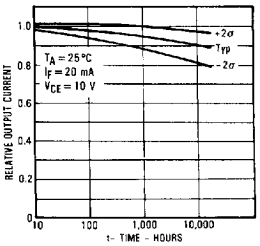
Normalized Output Current vs Ambient Temperature



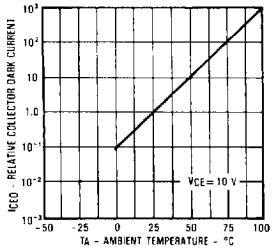
Forward Current vs Forward Voltage Input Diode



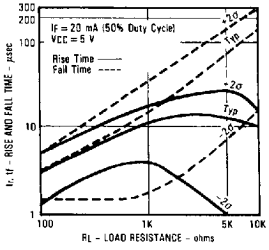
Relative Output Current vs Time



Collector Dark Current vs Ambient Temperature



Rise and Fall Time vs Load Resistance



Reduction in Output Current Due to LED Heating vs Forward Current