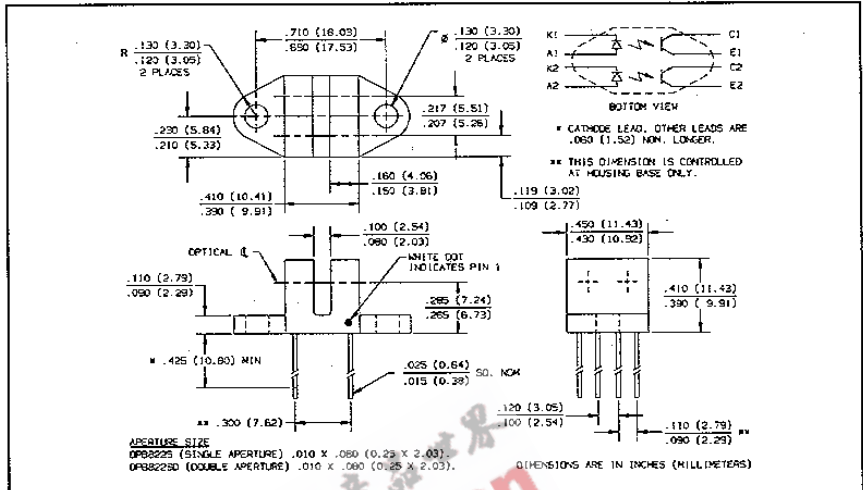
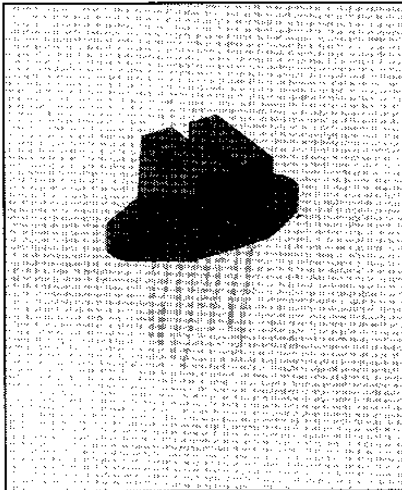




Product Bulletin OPB822S
July 1996

Dual Channel Slotted Optical Switches Types OPB822S, OPB822SD



Features

- Dual channels side-by-side
- 0.090" (2.29 mm) wide slot
- Non-contact switching
- Single or double apertures for high resolution
- OPB822S (apertures on sensors only)
- OPB822SD (apertures on both emitters and sensors)

Description

The OPB822S and OPB822SD each consist of two infrared emitting diodes and two NPN silicon phototransistors mounted in a "side-by-side" configuration on opposite sides of a 0.090" (2.29 mm) wide slot. Phototransistor switching takes place whenever an opaque object passes through the device slot. The OPB822S has 0.010" (0.25 mm) by 0.080" (2.03 mm) apertures in front of both phototransistors. The OPB822SD has the same sized apertures in front of both phototransistors and both emitters. Dual channels enable direction of travel sensing. The low cost IR transmissive plastic housing reduces possible interference from ambient light and provides dust and dirt protection.

Dual channel (over/under) configuration available as OPB826 series.

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

Storage and Operating Temperature -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

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(s)

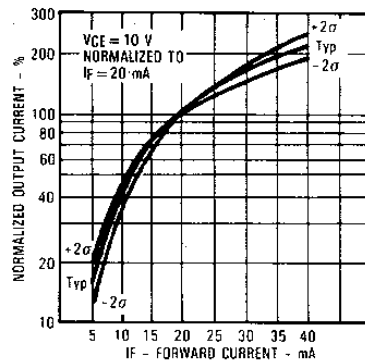
Collector-Emitter Voltage 30 V
 Emitter-Collector Voltage 5.0 V
 Power Dissipation 100 mW⁽²⁾

Notes:

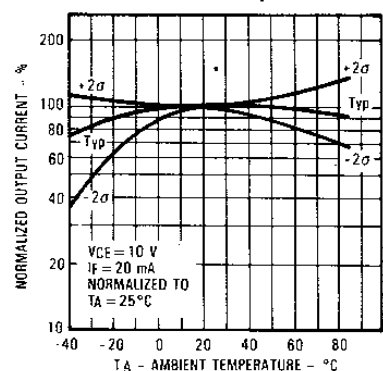
- (1) RMA flux is recommended. Duration can be extended to 10 sec. max when flow soldering.
- (2) Derate linearly 1.67 mW/°C above 25° C.
- (3) Methanol or isopropanol are recommended as cleaning agents. Plastic housing is soluble in chlorinated hydrocarbons and ketones.
- (4) All parameters tested using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

Typical Performance Curves

Normalized Output Current vs. Forward Current



Normalized Output Current vs. Ambient Temperature



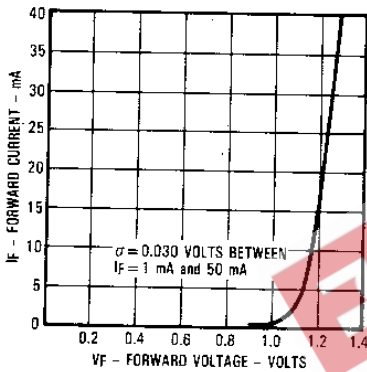
Types OPB822S, OPB822SD

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

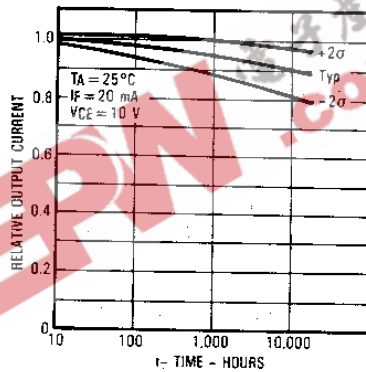
SYMBOL	PARAMETER	MIN	MAX	UNITS	TEST CONDITIONS
Input Diode					
V_F	Forward Voltage		1.70	V	$I_F = 20\text{ mA}$
I_R	Reverse Current		100	μA	$V_R = 2\text{ V}$
Output Phototransistor					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30		V	$I_C = 1\text{ mA}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0		V	$I_E = 100\ \mu\text{A}$
I_{CEO}	Collector-Emitter Dark Current		100	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_0 = 0$
Coupled					
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	OPB822S OPB822SD	0.4 0.4	V V	$I_C = 125\ \mu\text{A}, I_F = 20\text{ mA}$ $I_C = 50\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{C(ON)}$	On-State Collector Current	OPB822S OPB822SD	250 100	μA μA	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$ $V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$

Typical Performance Curves (All Assemblies)

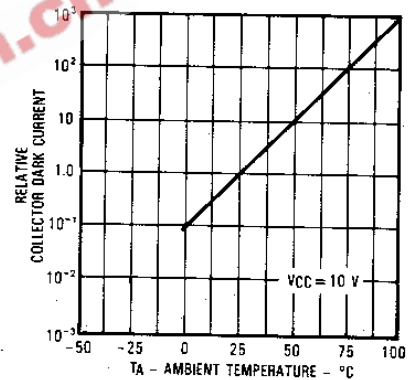
Forward Current vs Forward Voltage Input Diode



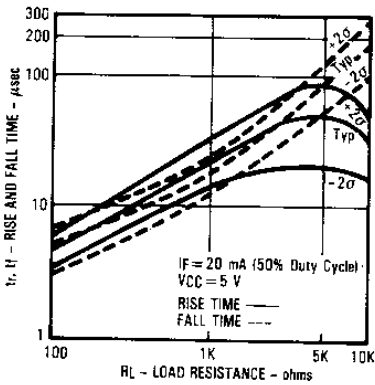
Relative Output Current vs Time



Relative Collector Dark Current vs Ambient Temperature



Rise and Fall Time vs Load Resistance



Reduction in Output Current Due to LED Heating vs Forward Current

