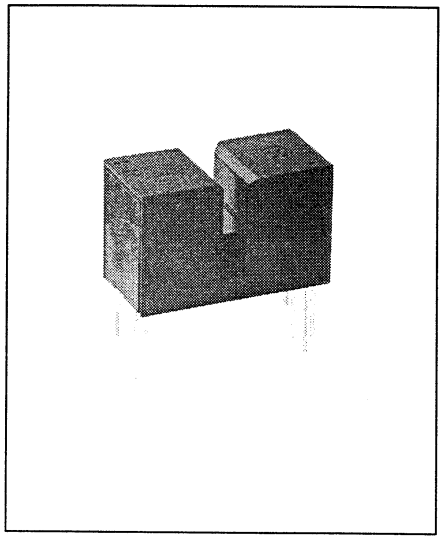
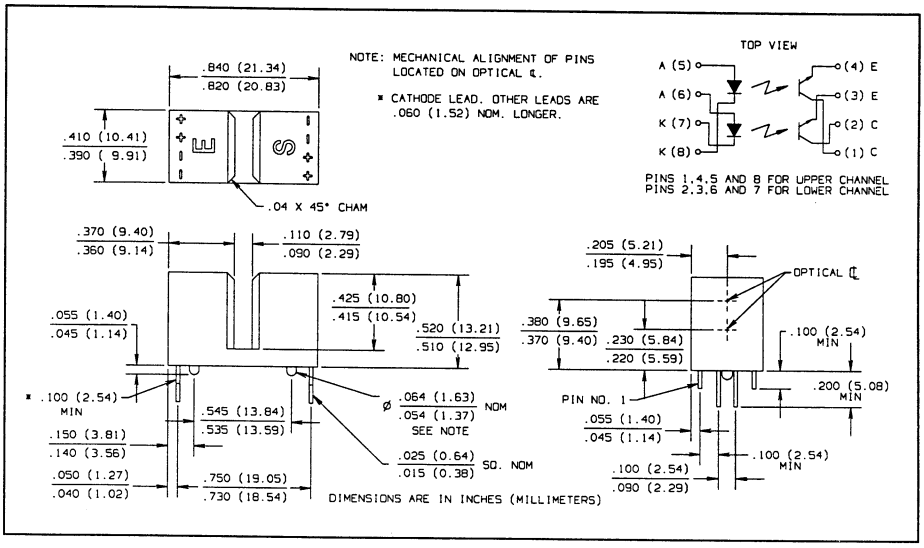
Dual Channel Slotted Optical Switches
Types OPB826S, OPB826SD





Features

- Dual channels over/under
- Direction of travel sensing
- Single or double apertures for high resolution
- 0.100" (2.54 mm) wide slot
- OPB826S (apertures on sensors only)
- OPB826SD (apertures on both emitters and sensors)

Description

The OPB826S and OPB826SD each consist of two infrared emitting diodes and two NPN silicon phototransistors mounted in an over/under configuration on opposite sides of a 0.100" (2.54 mm) wide slot. Phototransistor switching takes place when an opaque object passes through the slot. The OPB826S has 0.010" (0.25 mm) by 0.040" (1.02 mm) apertures in front of both phototransistors. The OPB826SD 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 (side-by-side) configuration available as OPB822 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	40 mA
Peak Forward Current (1 µs pulse width, 300 pps)	3.0 A
Reverse Voltage	2.0 V
Power Dissipation	100 mW(2)

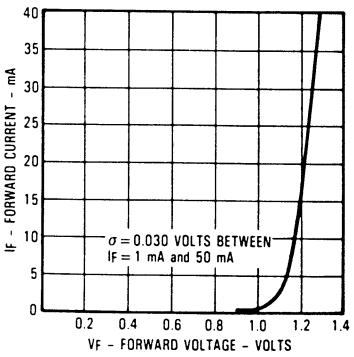
Output Phototransistor (s)

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

Forward Current vs Forward Voltage Input Diode



Types OPB826S, OPB826SD

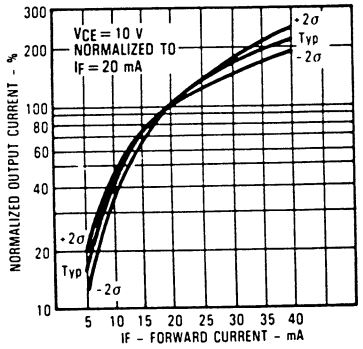
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER		MIN	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.70	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, I_F = 0, E_e = 0
Coupled						
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	OPB826S OPB826SD		0.40 0.40	V V	I_C = 125 µA, I_F = 20 mA I_C = 50 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current	OPB826S OPB826SD	250 100		µA µA	V_{CE} = 10 V, I_F = 20 mA V_{CE} = 10 V, I_F = 20 mA
I_{CX1}	Crosstalk	OPB826S OPB826SD		20 10	µA µA	I_{F1} = 0 mA, I_{F2} = 20 mA, V_{CE} = 10 V I_{F1} = 0 mA, I_{F2} = 20 mA, V_{CE} = 10 V
I_{CX2}	Crosstalk	OPB826S OPB826SD		20 10	µA µA	I_{F1} = 20 mA, I_{F2} = 0 mA, V_{CE} = 10 V I_{F1} = 20 mA, I_{F2} = 0 mA, V_{CE} = 10 V

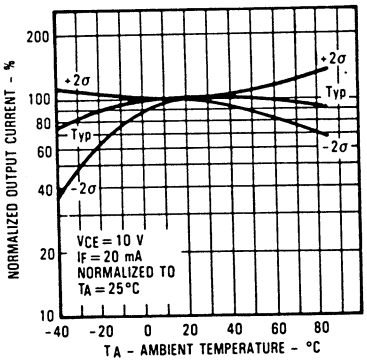
SLOTTED OPTICAL SWITCHES

Typical Performance Curves

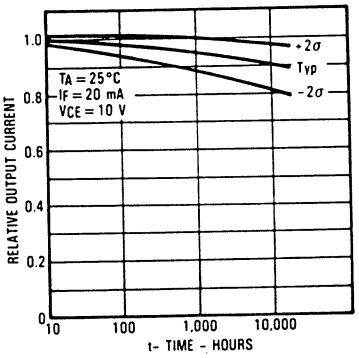
Normalized Output Current vs Input Current



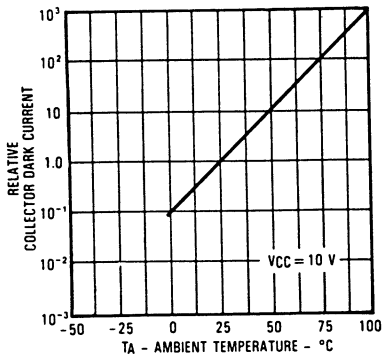
Normalized Output Current vs Ambient Temperature



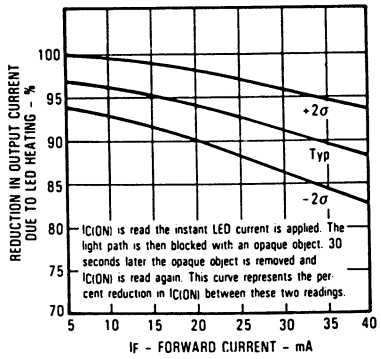
Relative Output Current vs Time



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