



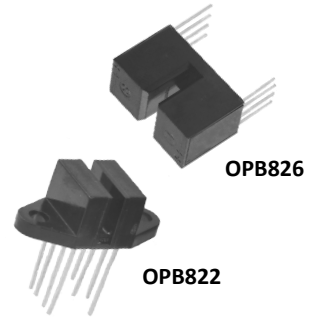
# THE DATASHEET OF OPB822SD



# Dual Channel Encoder

OPB822S, OPB822SD

OPB826S, OPB826SD



## Features:

- Non-contact switching
- Single or double apertures for high resolution
- Choice of slot widths
- Choice of side-by-side or over/under dual channels
- Choice of electrical outputs

## Description:

Each **OPB822** and **OPB826** slotted switch consists of two infrared emitting diodes and two NPN silicon phototransistors mounted on opposite sides of a 0.090" (2.29 mm) wide slot (**OPB822**) or a 0.100" (2.54 mm) wide slot (**OPB826**).

**OPB822** uses an side-by-side mounting configuration, while **OPB826** uses an over/under mounting configuration. **OPB822S** has 0.01" by 0.04" (0.25 mm x 1.02 mm) apertures in front of both phototransistors while the **OPB822SD** has the aperture in front of both phototransistors and both emitters. The **OPB826S** has 0.04" by 0.04" (1.02 mm x 1.02 mm) apertures in front of both phototransistors while the **OPB826SD** has the aperture in front of both phototransistors and both emitters.

Dual channels enable direction of travel sensing, with the low-cost plastic housing reduces possible interference from ambient light and provides protection from dust and dirt.

Phototransistor switching occurs when an opaque object passes through the device slot.

For information on encoder design, see Application Bulletin 203 at:

Custom electrical, wire and cabling and connectors are available. Contact your local representative or OPTEK for more information.

## Applications:

- Encoders
- Non-contact object sensing
- Assembly line automation
- Machine automation
- Equipment security
- Machine safety

Part Number	LED Peak Wavelength	Sensor	Slot Width / Depth	Aperture Emitter / Sensor	Lead Length / Spacing
<b>OPB822S</b>	Dual 935 nm	Dual Transistor	0.09" / 0.30"	None / 0.01"	0.35" /
<b>OPB822SD</b>				0.01" / 0.01"	0.30"
<b>OPB826S</b>	Dual 890 nm	Dual Transistor	0.10" / 0.42"	NA / 0.04"	0.20" /
<b>OPB826SD</b>				0.04" / 0.04"	0.74"



RoHS

## General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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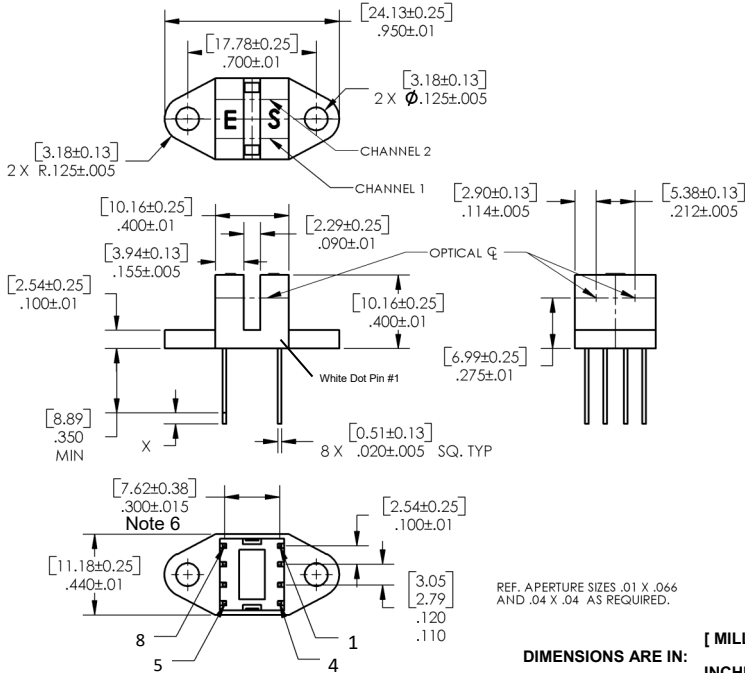
# Dual Channel Encoder

## OPB822S, OPB822SD

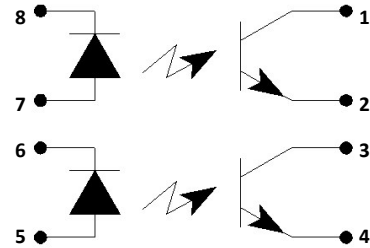
## OPB826S, OPB826SD



### OPB822

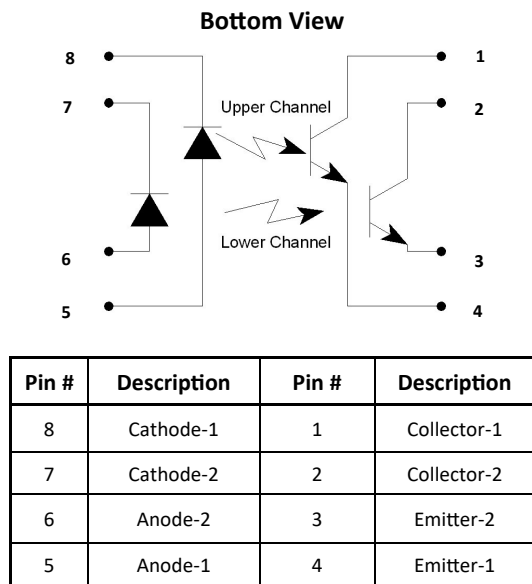


Bottom View

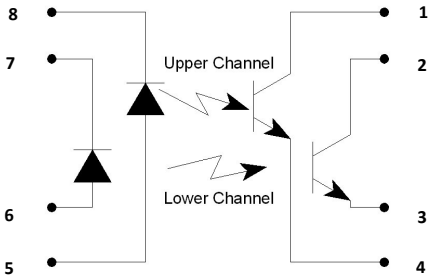


Pin #	Description	Pin #	Description
8	Cathode-1	1	Collector-1
7	Anode-1	2	Emitter-1
6	Cathode-2	3	Collector-2
5	Anode-2	4	Emitter-2

### OPB826



Bottom View



Pin #	Description	Pin #	Description
8	Cathode-1	1	Collector-1
7	Cathode-2	2	Collector-2
6	Anode-2	3	Emitter-2
5	Anode-1	4	Emitter-1

**CONTAINS POLYSULFONE**

To avoid stress cracking, we suggest using ND Industries' **Vibra-Tite** for thread-locking. **Vibra-Tite** evaporates fast without causing structural failure in OPTEK's molded plastics.

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# Dual Channel Encoder

OPB822S, OPB822SD

OPB826S, OPB826SD



## Absolute Maximum Ratings (T<sub>A</sub> = 25° C unless otherwise noted)

Storage & Operating Temperature Range	-40° C to +85° C
Lead Soldering Temperature [1/16 inch (1.6mm) from the case for 5 sec. with soldering iron] <sup>(1)</sup>	240°C

### Input Diode

Forward DC Current OPB822S, OPB822SD OPB826S, OPB826SD	50 mA 40 mA
Peak Forward Current (1 μs pulse width, 300 pps)	1 A
Reverse DC Voltage	2 V
Power Dissipation <sup>(2)</sup>	100 mW

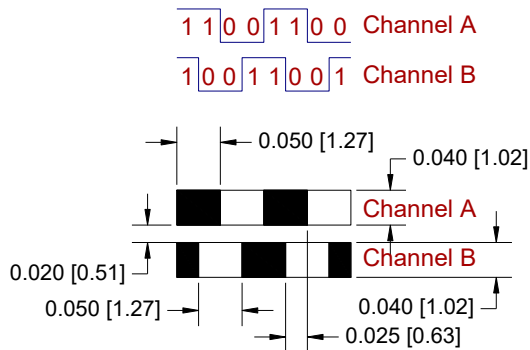
### Output Phototransistor

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Collector DC Current	30 mA
Power Dissipation <sup>(2)</sup>	100 mW

#### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds maximum 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. Spray and wipe; do not submerge.
- (4) Derate linearly 3.33 mW/°C above 25° C.
- (5) All parameters tested using pulse techniques.
- (6) Feature controlled at body.

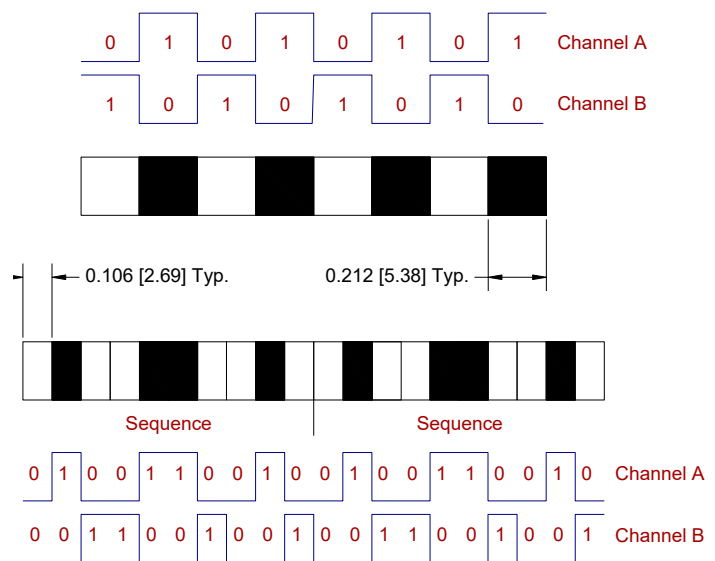
### Encoder Sequence for OPB826



For information on encoder design,  
see Application Bulletin 203 at:

[http://www.optekinc.com/pdf/App\\_Note\\_203.pdf](http://www.optekinc.com/pdf/App_Note_203.pdf)

### Encoder Sequence for OPB822



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# Dual Channel Encoder

OPB822S, OPB822SD

OPB826S, OPB826SD



## Electrical Characteristics (OPB822, OPB826) ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
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### Input Diode (see OP140 for OPB822 or OP266 for OPB826 for additional information)

$V_F$	Forward Voltage	-	-	1.7	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2\text{ V}$

### Output Phototransistor (see OP550 for OPB822 or OP506 for OPB826 for additional information)

$V_{(BR)(CEO)}$	Collector-Emitter Breakdown Voltage	30	-	-	V	$I_C = 1\text{ mA}$
$V_{(BR)(ECO)}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$I_{CEO}$	Collector-Emitter Leakage Current	-	-	100	nA	$V_{CE} = 10\text{ V}, I_F = 0, E_E = 0$

### Coupled

$I_{C(ON)}$	On-State Collector Current					
	OPB822S	250	-	-	$\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$
	OPB822SD	100	-	-	$\mu\text{A}$	$V_{CE} = 5\text{ V}, I_F = 20\text{ mA}$
	OPB826S	250	-	-	$\mu\text{A}$	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$
$V_{CE(SAT)}$	OPB826SD	100	-	-	$\mu\text{A}$	$V_{CE} = 10\text{ V}, I_F = 20\text{ mA}$
	Collector-Emitter Saturation Voltage					
	OPB822S	-	-	0.4	V	$I_C = 125\ \mu\text{A}, I_F = 20\text{ mA}$
	OPB822SD	-	-	0.4	V	$I_C = 50\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{CX1}$	OPB826S	-	-	0.4	V	$I_C = 125\ \mu\text{A}, I_F = 20\text{ mA}$
	OPB826SD	-	-	0.4	V	$I_C = 50\ \mu\text{A}, I_F = 20\text{ mA}$
$I_{CX1}$	Crosstalk					
	OPB822D, OPB822SD	-	-	250	$\mu\text{A}$	$I_{F1} = 0\text{ mA}, I_{F2} = 20\text{ mA}, V_{CE} = 10\text{ V}$
	OPB826S	-	-	20		
	OPB826SD	-	-	10		

#### Notes:

- (1) All parameters tested using pulse techniques.

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