Slotted Optical Switch

OPB660N

Features:

- Non-contact switching
- Printed circuit board mounting
- Enhanced signal to noise ratio
- Gap 0.125” (3.18 mm) wide and 0.345” (8.76 mm) deep slot
- Emitter Aperture 0.050” X 0.060” (1.27 mm X 1.52 mm)
- Sensor Aperture 0.010” X 0.060” (0.25 mm X 1.52 mm)

Description:

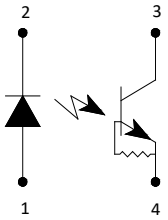
The OPB660N slotted optical switch consists of an infrared emitting diode and a NPN silicon phototransistor, combined with an enhanced low current roll-off that improves contrast ratio and provides immunity to background irradiance. Housings are made from an opaque grade of injection-molded plastic to minimize sensitivity to both visible and near-infrared light.

For application information, refer to Application Bulletins 248 and 213

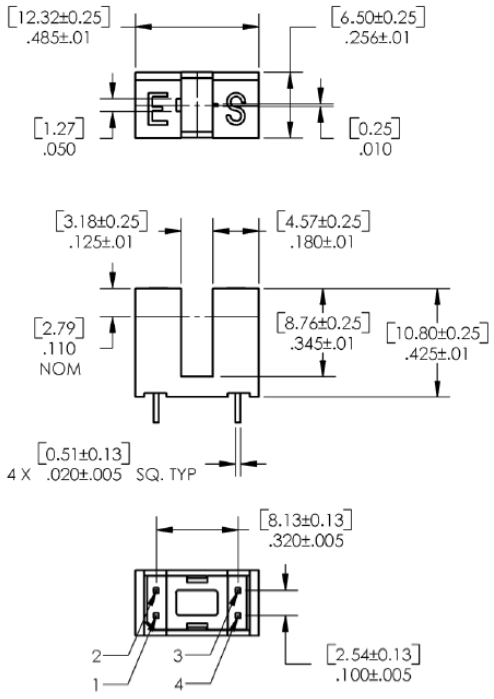
Applications:

- Non-contact transmissive object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Part Number	LED Peak Wavelength	Sensor	Slot Width / Depth	Aperture Emitter/Sensor	Lead Length / Spacing
OPB660N	890 nm	Rbe Transistor	0.125" / 0.345”	0.050" / 0.010"	0.100" / 0.320" (MIN)



Pin #	LED	Pin #	Transistor
1	Anode	3	Collector
2	Cathode	4	Emitter



Electrical Specifications

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

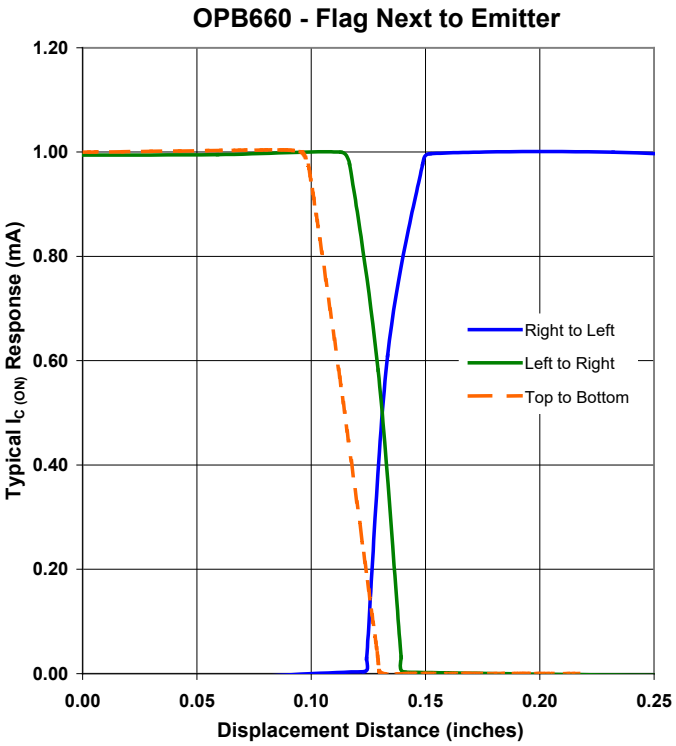
Storage & Operating Temperature Range	-40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] (1)	260° C
Input Diode	
Forward DC Current	50 mA
Peak Forward Current (1 µs pulse width, 300 pps)	1 A
Reverse DC Voltage	3 V
Power Dissipation (2)	100 mW
Output Phototransistor	
Collector-Emitter Voltage	24 V
Collector DC Current	30 mA
Power Dissipation (3)	200 mW

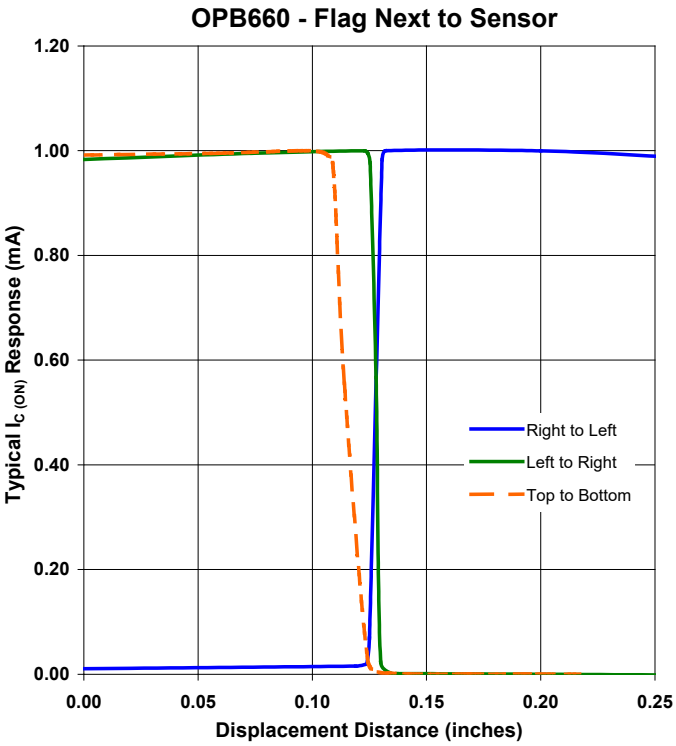
Electrical Characteristics (T_A = 25° C unless otherwise noted)

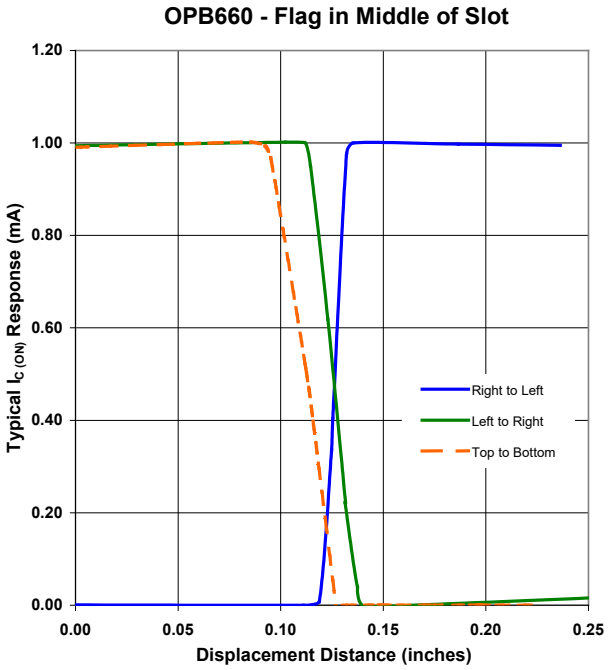
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage	1.0	-	1.6	V	I_F = 10 mA
I_R	Reverse Current	-	-	100	µA	V_R = 3 V
Output Phototransistor						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	24	-	-	V	I_{CE} = 100 µA
BV_{ECO}	Emitter Reverse Breakdown Voltage	0.4	-	-	V	I_{EC} = 100 µA
I_{CEO}	Collector-Emitter Dark Current	-	-	100	µA	V_{CE} = 5 V
Combined						
V_{SAT}	Collector-Emitter Saturation Voltage	-	-	0.4	V	I_F = 10 mA, I_C = 100 µA, (gap unblocked)
$I_{C(ON)}$	On-State Collector Current	600	-	-	µA	I_F = 10 mA, V_{CE} = 5 V

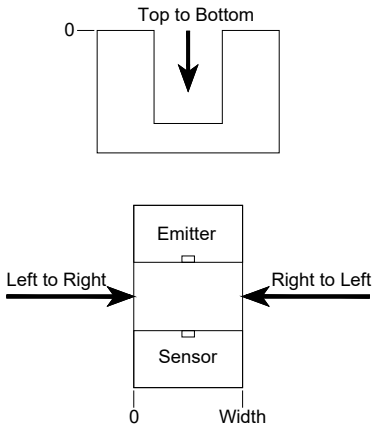
Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum of 20 grams force may be applied to leads when soldering.
(2) Derate linearly 1.07 mW/° C above 25° C.
(3) Derate linearly 2.0 mW/° C above 25° C.

Typical Performance



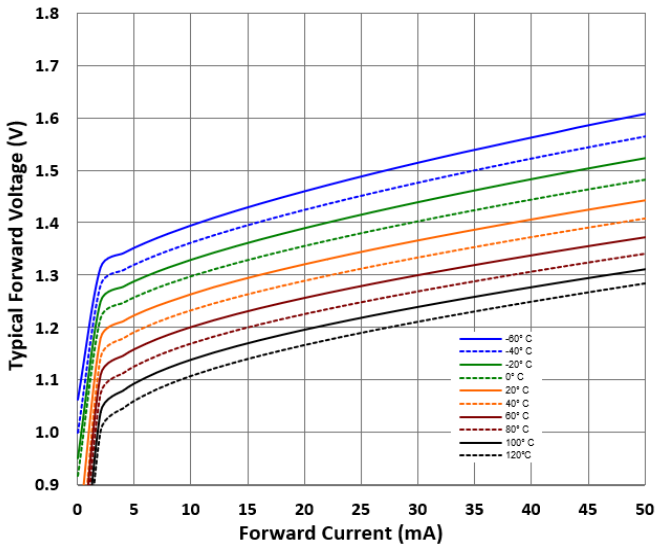




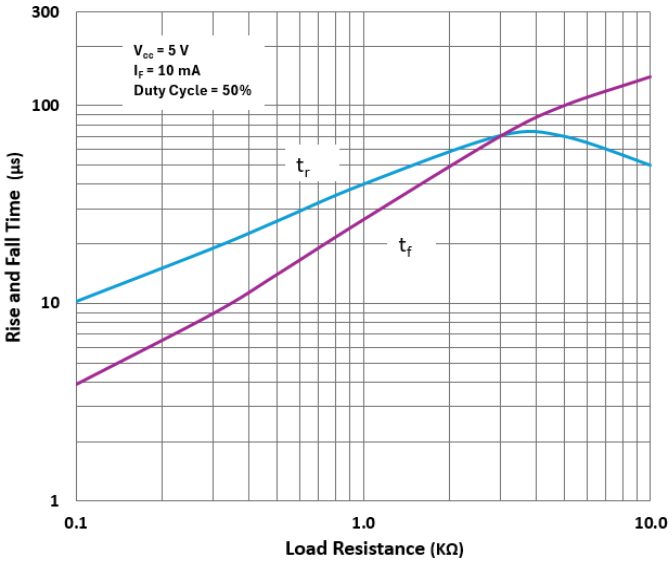


Typical Performance

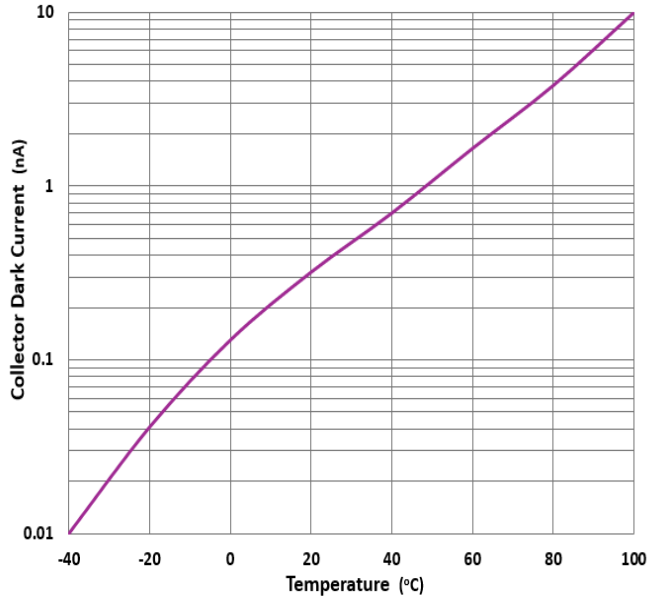
LED Forward Voltage vs I_F vs Temp



Transistor Output - Rise and Fall Time



Collector Dark Current vs Temperature



Output Current vs Temperature