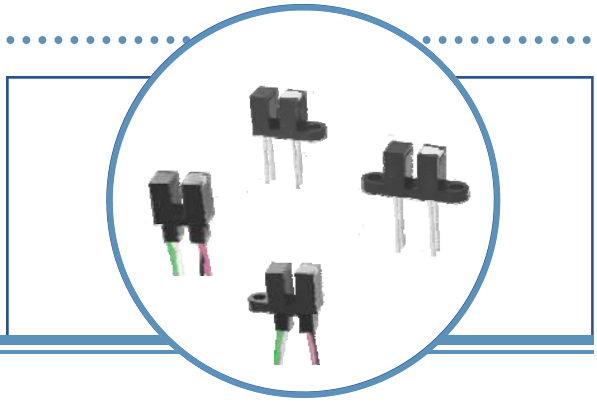
Slotted Optical Switch
Series: OPB355, OPB360, OPB370, OPB380, OPB390
OPB859, OPB860, OPB870, OPB880, OPB890

TT electronics
OPTEK Technology

Features:

- 0.125” (3.175 mm) slot width
- Choice of aperture (0.050” or 0.010” width)
- Choice of opaque or IR transmissive shell material
- Choice of mounting configurations
- Choice of lead spacing or wires



Description:

The slotted optical sensors in this series provide the flexibility of a custom device from a standard product line.

Building from a standard housing with a 0.125” (3.18mm) wide slot, the user can specify output logic state, output driver circuit, aperture width, aperture surface and mounting tab locations. Furthermore, an option of wire or PCB leads allows electrical interface flexibility.

The device body is an opaque plastic which minimizes sensitivity to both visible and near-infrared external light sources which may impact operation. Aperture width choices provide different optical resolution for motion sensing. A covered aperture provides dust protection, while an open aperture provides maximum protection against external light sources.

Phototransistor sensor devices are: OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890. The OPB355 provides a photodiode detector, which has a lower linear output-versus-light.

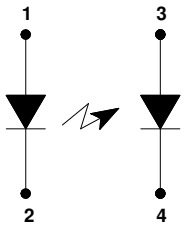
Wide electrical output current ranges are available. LED emissions are near-infrared (850-940nm).

Custom electrical, wire and cabling services are available.
Contact your local representative or OPTEK for more information. Compliant to EU RoHS Directive 2002/95/EC.

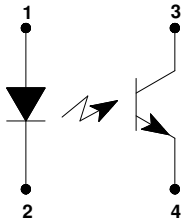
Applications:

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

OPB355



OPB360, OPB370, OPB380, OPB390
OPB859
OPB860, OPB870, OPB880, OPB890



Wire Colors	
Color #	**Description**
1	Red
2	Black
3	White
4	Green

RoHS

CONTAINS POLYSULFONE
To avoid stress cracking, we suggest using ND Industries’ **Vibra-Tite** for thread-locking. **ND Vibra-Tite Formula 3** evaporates fast without causing structural failure in OPTEK’s molded plastics.
Applies to: OPB360, OPB370, OPB380, OPB390 and OPB860, OPB870, OPB880, OPB890.

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Part Number Guide — OPB355

OPB 3 X X X

Optek Assembly

Phototransistor Output Family

Mounting Configurations:
L - Emitter side mounting tab only
N - No mounting tabs
P - Sensor side mounting tab only
T - Two mounting tabs

Part Number Guide — OPB360 / OPB370

OPB 3 X X X X X

Optek Assembly

Phototransistor Output Family

Discrete Shell Material:
6 - Covered (apertures not visible), PCB leads
7 - Open (apertures visible), PCB leads

Sensor Aperture:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Emitter Sensor:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Mounting Configurations:
L - Emitter side mounting tab only
N - No mounting tabs
P - Sensor side mounting tab only
T - Two mounting tabs

Lead Spacer Designator:
0 = 0.320" (8.12 mm) lead space
5 = 0.220" (5.59 mm) lead space

Part Number Guide — OPB380 / OPB390

OPB 3 X 0 X X X Z

Optek Assembly

Phototransistor Output Family

Discrete Shell Material:
8 - Covered (apertures not visible), Wires
9 - Open (apertures visible), Wires

RoHS Compliant

Sensor Aperture:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Emitter Sensor:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Mounting Configurations:
L - Emitter side mounting tab only
N - No mounting tabs
P - Sensor side mounting tab only
T - Two mounting tabs

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

Part Number Guide — OPB859

OPB 8 5 9

Optek Assembly

Phototransistor Output Family

Emitter Aperture: 0.050" (1.270 mm)
Sensor Aperture: 0.050" (1.270 mm)
Mounting Configurations:
T - Two mounting tabs

Part Number Guide — OPB860 / OPB870

OPB 8 X X X X X

Optek Assembly

Phototransistor Output Family

Discrete Shell Material:
6 - Covered (apertures not visible), PCB leads
7 - Open (apertures visible), PCB leads

Electrical Specification Variations:
0 = Electrical Parameter A (lead spacing = 0.320")
1 = Electrical Parameter B (lead spacing = 0.320")
2 = Electrical Parameter C (lead spacing = 0.320")
5 = Electrical Parameter A (lead spacing = 0.220")
6 = Electrical Parameter B (lead spacing = 0.220")
7 = Electrical Parameter C (lead spacing = 0.220")

Note: Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.

Sensor Aperture:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Emitter Sensor:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Mounting Configurations:
L - Emitter side mounting tab only
N - No mounting tabs
P - Sensor side mounting tab only
T - Two mounting tabs

Part Number Guide — OPB880 / OPB890

OPB 8 X X X X X Z

Optek Assembly

Phototransistor Output Family

Discrete Shell Material:
8 - Covered (apertures not visible), Wires
9 - Open (apertures visible), Wires

Electrical Specification Variations:
0 = Electrical Parameter A
1 = Electrical Parameter B
2 = Electrical Parameter C

NOTE: Assemblies with dual 0.010" apertures are currently available with electrical parameter "A" only.
Wires = 26AWG - 24" long. UL approved.

RoHS Compliant

Sensor Aperture:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

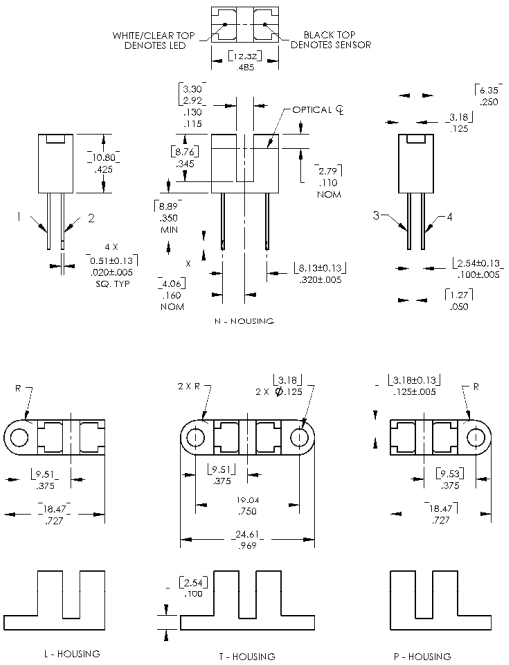
Emitter Sensor:
1 - 0.010" (0.254 mm)
5 - 0.050" (1.270 mm)

Mounting Configurations:
L - Emitter side mounting tab only
N - No mounting tabs
P - Sensor side mounting tab only
T - Two mounting tabs

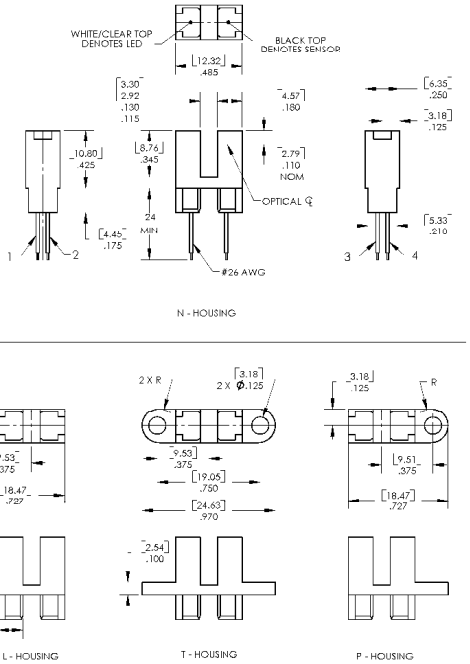
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Slotted Optical Switch
Series: OPB355, OPB360, OPB370, OPB380, OPB390
OPB859, OPB860, OPB870, OPB880, OPB890

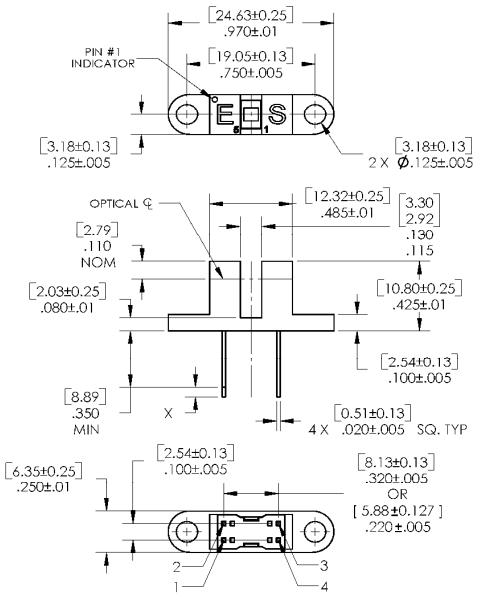
OPB355, OPB360, OPB370



OPB380, OPB390

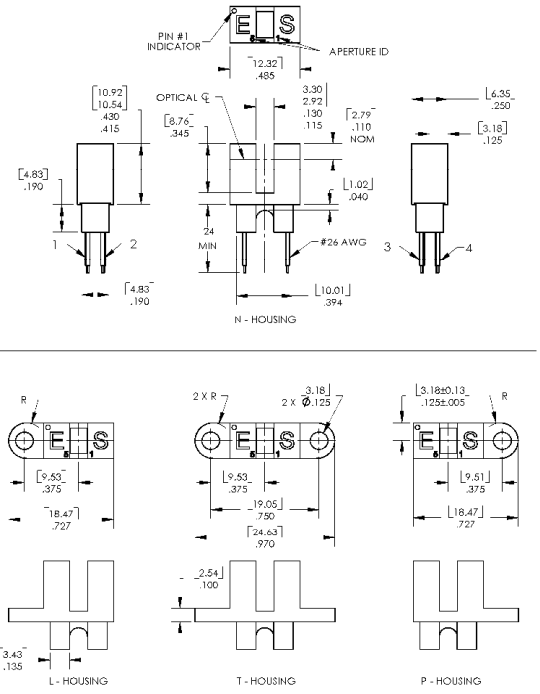


OPB859



Pin #	Emitter	Pin #	Transistor/Diode
1	Anode	3	Collector / Anode
2	Cathode	4	Emitter / Cathode

OPB880, OPB890

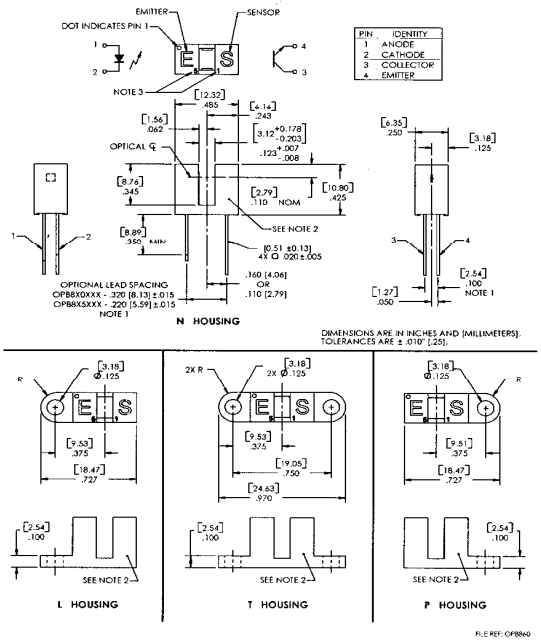


DIMENSIONS ARE IN: **[MILLIMETERS]**
INCHES

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

OPB860, OPB870



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

Storage Temperature[1] [2] OPB355, OPB360, OPB370, OPB859, OPB860, OPB870 Series OPB380, OPB390, OPB880, OPB890 Series	 -40° C to +100° C -40° C to +85° C
Operating Temperature[1] [2]	-40° C to +85° C
Lead Soldering Temperature[7]	260° C

Input LED

Forward DC Current OPB355, OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890	50 mA
Peak Forward Current (1µs pulse width, 300 pps)	1 A
Reverse DC Voltage	2 V
Power Dissipation[2]	75 mW

Output Phototransistor/Diode

Cathode-Anode Reverse Voltage -OPB355	60 V
Collector-Emitter Voltage OPB360, OPB370, OPB380, OPB390, OPB859, OPB860, OPB870, OPB880, OPB890 Series	30 V
Emitter-Collector Voltage	5 V
Collector DC Current	30 mA
Power Dissipation[1]	100 mW

Notes:
(1) For wire series (OPB380, OPB390, OPB880 and OPB890), maximum storage and operating temperature is limited by the temperature rating of the lead wires.
(2) Derate linearly 1.67 mW/° C above 25° C.
(3) For OPB355, OPB360 and OPB370, polarity is denoted by color of housing top: LED (clear); sensor (black).
(4) Cleaning agents methanol and isopropanol are recommended. Spray or wipe; do not submerge.
(5) OPB380 and OPB390 wire terminations have 24" of 7-strand 26 AWG UL approved insulated wire on each terminal. These devices incorporate a wire strain relief at the housing surface. The insulation colors and functions are: IRED anode (red); IRED cathode (black); phototransistor collector (white); phototransistor emitter (green).
(6) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(7) All parameters were tested using pulse technique.

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

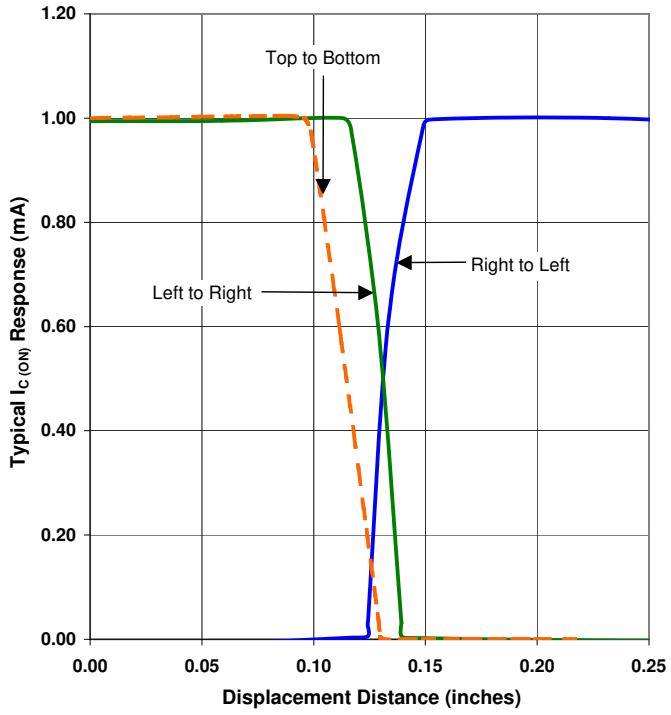
OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

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

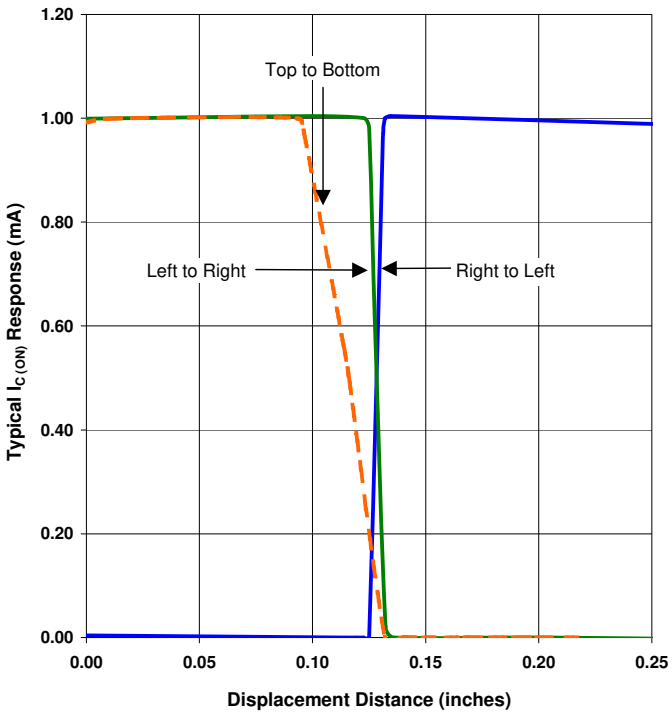
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Transistor/Diode (See OP240 for additional information—for reference only)						
V_F	Forward Voltage	-	1.3	1.8	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 V
Output Diode — OPB355 (See OPB950 for additional information — for reference only)						
V_{BR}	Reverse Diode Breakdown Voltage	60	-	-	V	I_R = 100 µA, I_F = 0, E_E = 0
V_{FD}	Forward Voltage Photodiode	-	-	1.2	V	I_F = 1 mA, I_F = 0, E_E = 0
ID	Reverse Dark Current	-	-	60	nA	V_R = 30 V, E_E = 0, I_F = 0
Output Transistor (See OP550 for additional information—for reference only)						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	I_C = 1 mA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA
I_{CEO}	Collector-Emitter Dark Current	-	-	100	nA	V_{CE} = 10 V, I_F = 0, E_E = 0
Coupled						
I_L	On-State Collector Current OPB355 (L, N, P, T)	10	-	200	µa	V_R = 5 V, I_F = 40 mA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage OPB859 OPB860/870/865/875 (Para. A) OPB861/871/866/876 (Para. B) OPB862/872/867/877 (Para. C) OPB880/890/ (Para. A) OPB881/891 (Para. B) OPB882/892 (Para. C)	 - - - - - - -	 - - - - - - -	 0.4 0.4 0.4 0.6 0.4 0.4 0.6	 V	 I_C = 125 µA, I_F = 20 mA I_C = 400 µA, I_F = 20 mA I_C = 800 µA, I_F = 20 mA I_C = 1800 µA, I_F = 20 mA I_C = 400 µA, I_F = 20 mA I_C = 800 µA, I_F = 10 mA I_C = 1800 µA, I_F = 20 mA
$I_{C(ON)}$	On-State Collector Current OPB36X, OPB37X (T, N, L, P 11) OPB36X, OPB37X (T, N, L, P 51) OPB36X, OPB37X (T, N, L, P 55) OPB38X, OPB39X (T, N, L, P 11) OPB38X, OPB39X (T, N, L, P 51) OPB38X, OPB39X (T, N, L, P 55)	 1.0 2.5 3.5 1.0 2.5 3.5	 - - - - - -	 5 10 14 5 10 14	 mA	 V_{CE} = 0.4 V, I_F = 20 mA
	OPB859	250	-	-	µA	V_{CE} = 10 V, I_F = 20 mA
	OPB860/870/865/875 (Para. A) OPB861/871/866/876 (Para. B) OPB862/872/867/877 (Para. C) OPB880/890/ (Para. A) OPB881/891 (Para. B) OPB882/892 (Para. C	0.5 1.0 1.8 0.5 1.0 1.8	- - - - - -	- - - - - -	mA	V_{CE} = 10 V, I_F = 20 mA V_{CE} = 5 V, I_F = 10 mA V_{CE} = 0.6 V, I_F = 20 mA V_{CE} = 10 V, I_F = 20 mA V_{CE} = 5 V, I_F = 10 mA V_{CE} = 0.6 V, I_F = 20 mA

OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

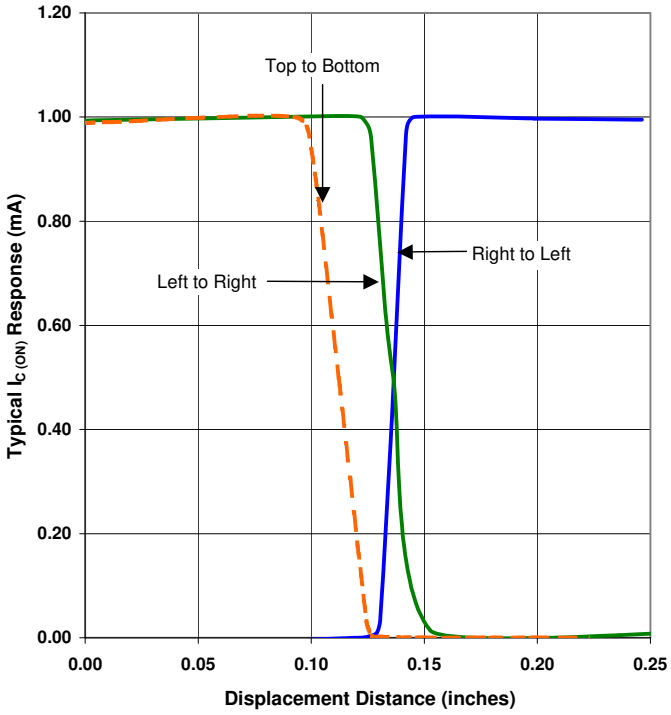
OPB355 - Flag Next to Emitter

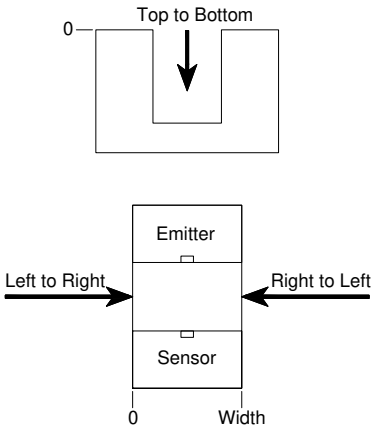


OPB355 - Flag Next to Sensor



OPB355 - Flag in Middle of Slot

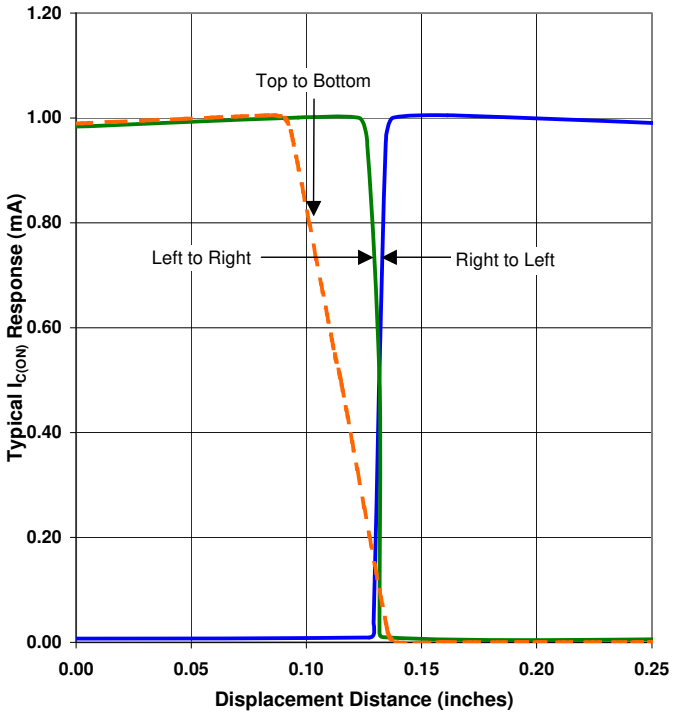




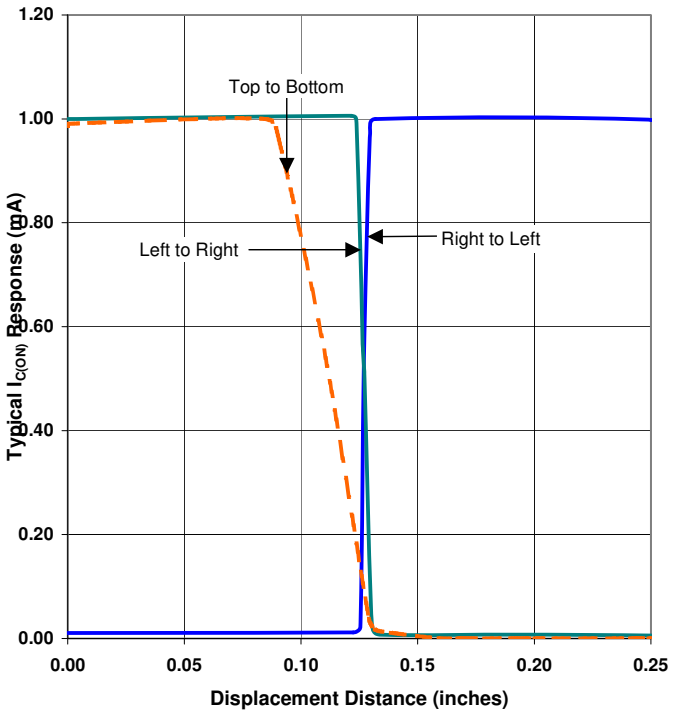
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

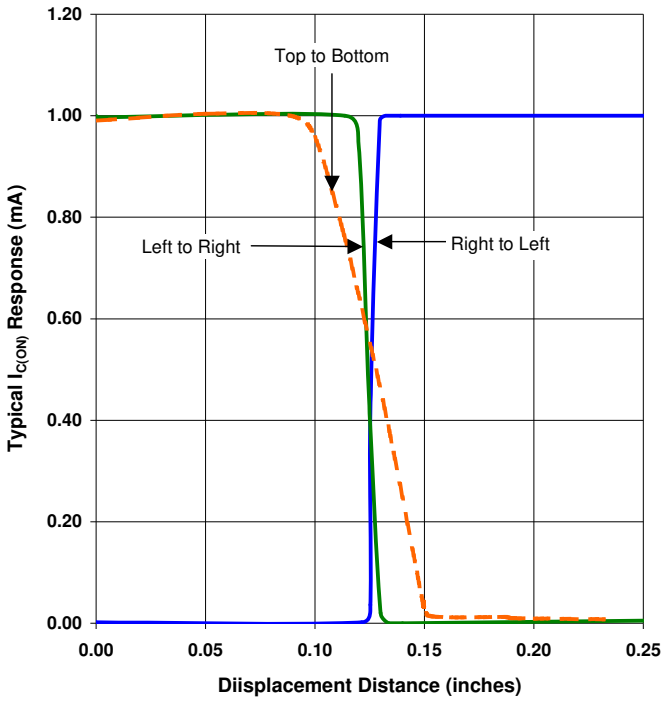
Aperture Configuration 11 - Flag Next to Emitter

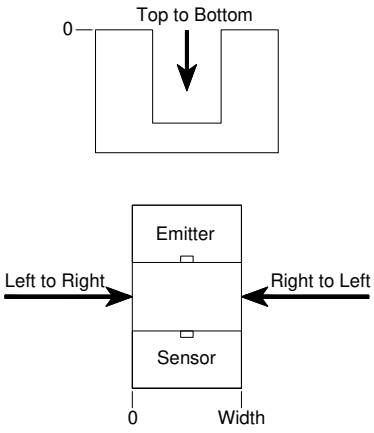


Aperture Configuration 11 - Flag Next to Sensor



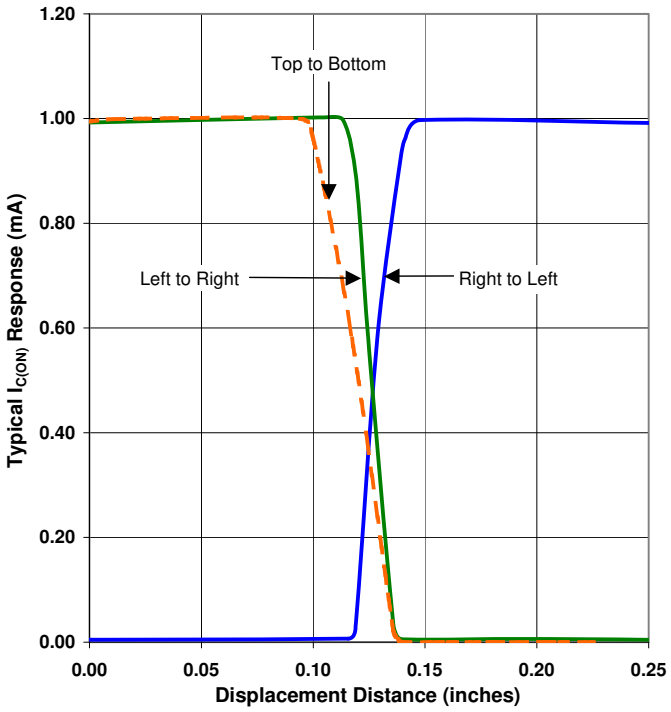
Aperture Configuration 11 - Flag in Middle of Slot



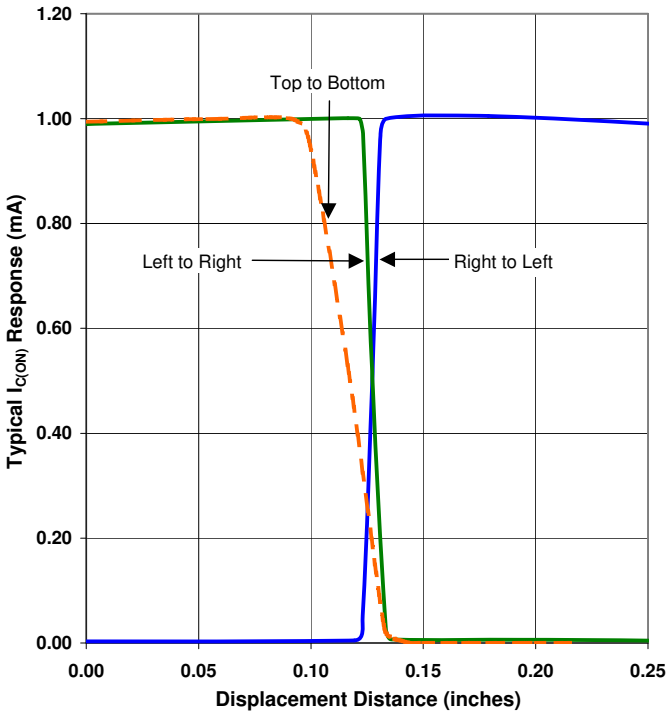


OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

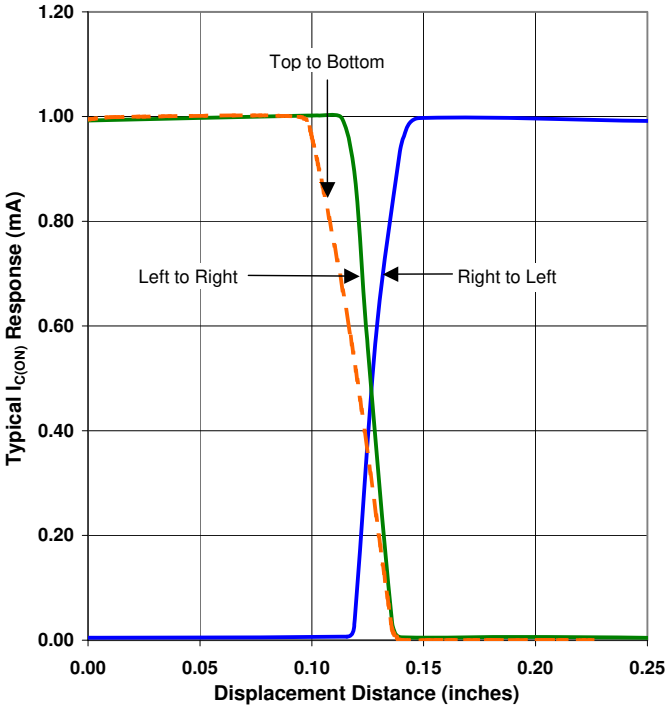
Aperture Configuration 51 - Flag Next to Emitter

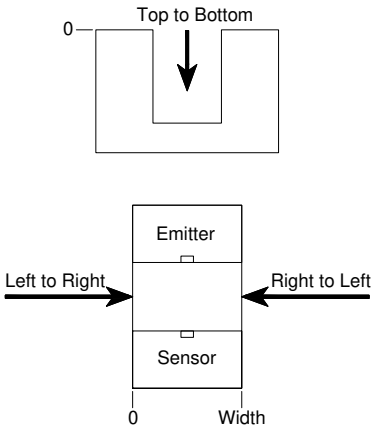


Aperture Configuration 51 - Flag Next to Sensor



Aperture Configuration 51 - Flag in Middle of Slot

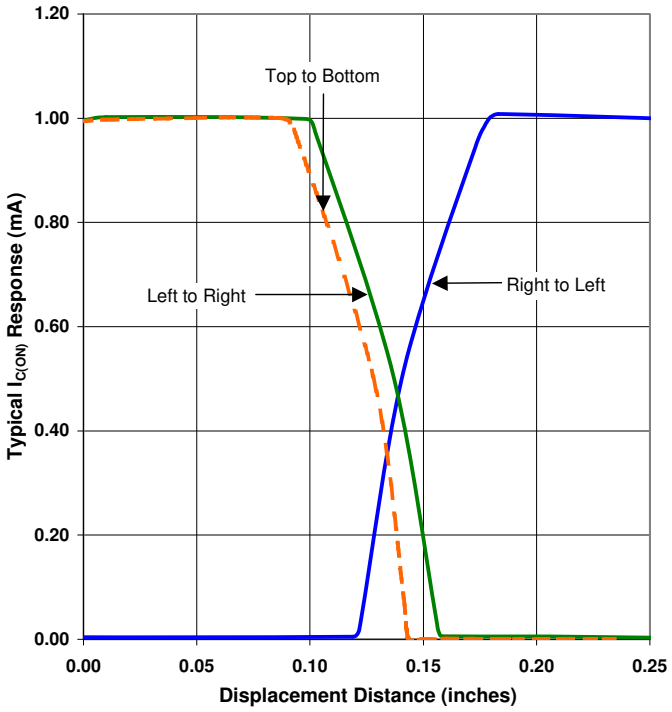




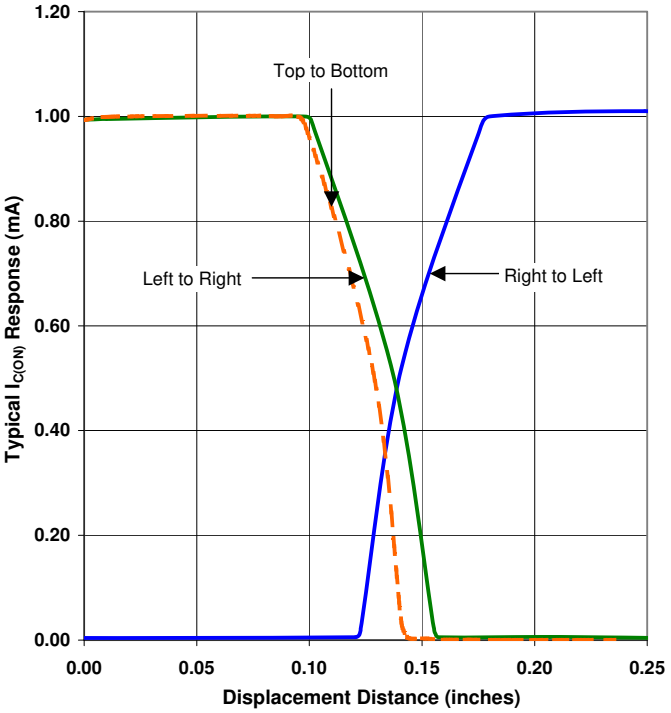
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

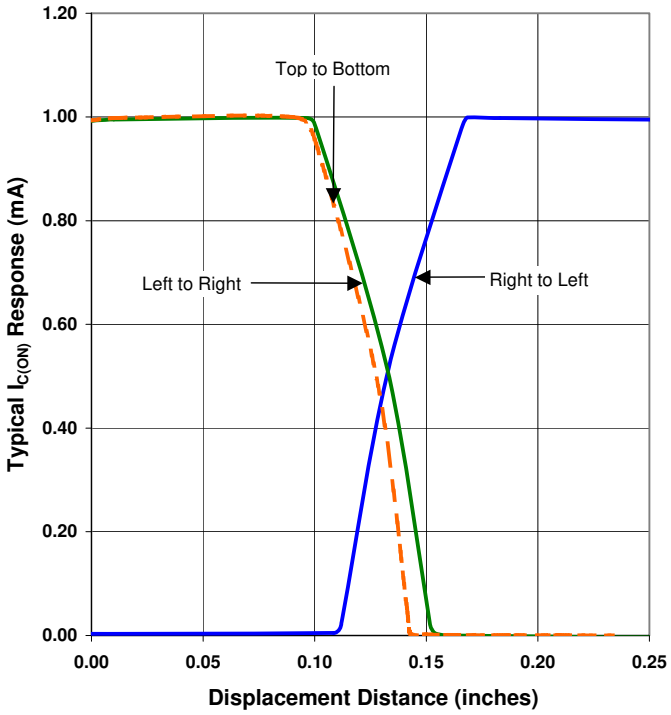
Aperture Configuration 55 - Flag Next to Emitter

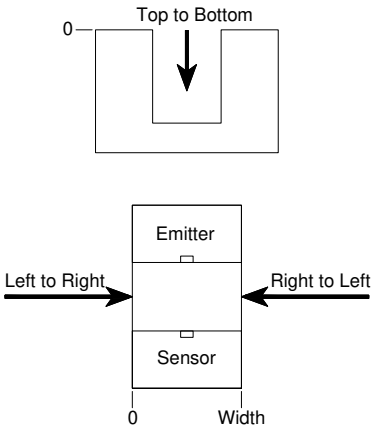


Aperture Configuration 55 - Flag Next to Sensor



Aperture Configuration 55 - Flag in Middle of Slot





OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.