THE DATASHEET OF

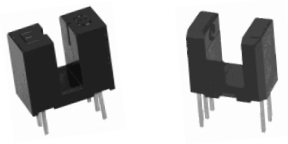
OPB625

Photologic® Slotted Optical Switch

OPB615, OPB616, OPB618 Series

OPB625, OPB626, OPB627, OPB628 Series

OPB665N, OPB666N, OPB667N Series



Features:

- Non-contact switching
- PCBoard mounting
- Enhanced signal to noise ratio
- Choice of four Logical output options

Description:

Each OPB615, OPB625 and OPB665 series slotted optical switch consists of an 890 nm, infrared Light Emitting Diode (LED) and a monolithic integrated circuit that incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single silicon chip.

All devices in this series exhibit performance over supply voltages ranging from 4.5 V to 16.0 V, and may be specified as Buffered or Inverted with 10 kW Pull-up or Open Collector output. Devices are also TTI/LST TL compatible and can drive up to 10 TTL loads.

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

Applications:

- Mechanical switch replacement
- Speed indication (tachometer)
- Mechanical limit indication
- Edge sensing

Ordering Information

Part Number	Package Style	Sensor Photologic®	Aperture Emitter / Sensor	Slot Width / Depth	Lead Length / Spacing
OPB615	N	10k Pull-up	None	0.150" / 0.240"	0.100" (min) / 0.275"
OPB616		Open Collector			
OPB617 Obsolete		Inv-10k Pull-up			
OPB618		Inv-Open Collector			
OPB625		10k Pull-up	None	0.190" / 0.285"	0.100" (min) / 0.320"
OPB626		Open Collector			
OPB627		Inv-10k Pull-up			
OPB628		Inv-Open Collector			
OPB665N		10k Pull-up	0.05"/ 0.01"	0.125" / 0.345"	
OPB666N		Open Collector			
OPB667N		Inv-10k Pull-Up			
OPB668N Obsolete		Inv-Open Collector			
OPB665T Obsolete	T	10k Pull-up			
OPB666T Obsolete		Open Collector			
OPB667T Obsolete		Inv-10k Pull-up			
OPB668T Obsolete		Inv-Open Collector			

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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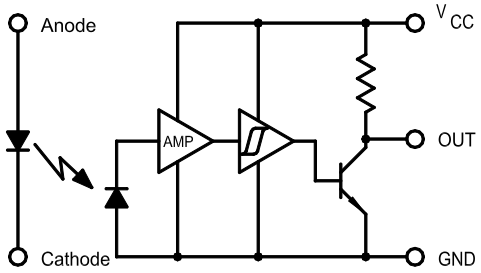
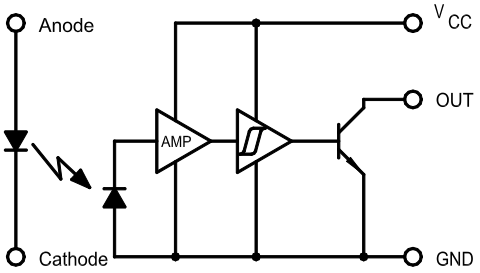
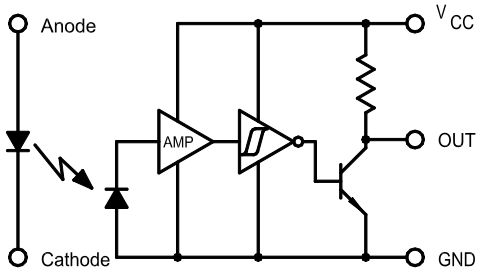
OPB615/625/665N Buffered 10 K Pull-Up



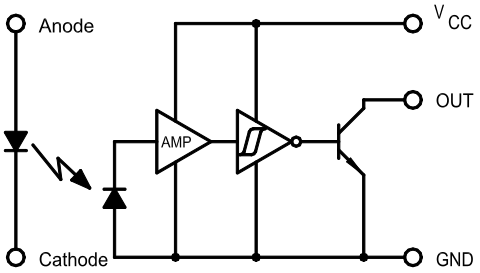
OPB616/626/666N Buffered Open-Collector



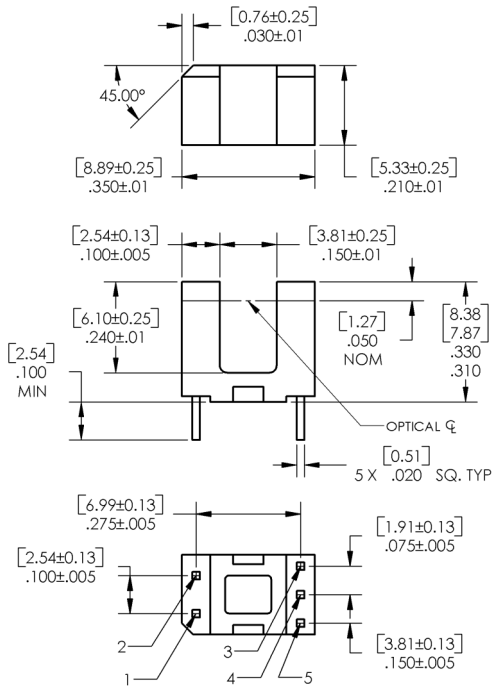
Photologic with Pull-Up-Resistor Inverted Output



Photologic with Open Collector InvertedOutput



OPB615, OPB616, OPB618



Pin Color/ Number	Description
1	Anode
2	Cathode
3	V_{CC}
4	Output
5	Ground

DIMENSIONS ARE IN: **[MILLIMETERS]**

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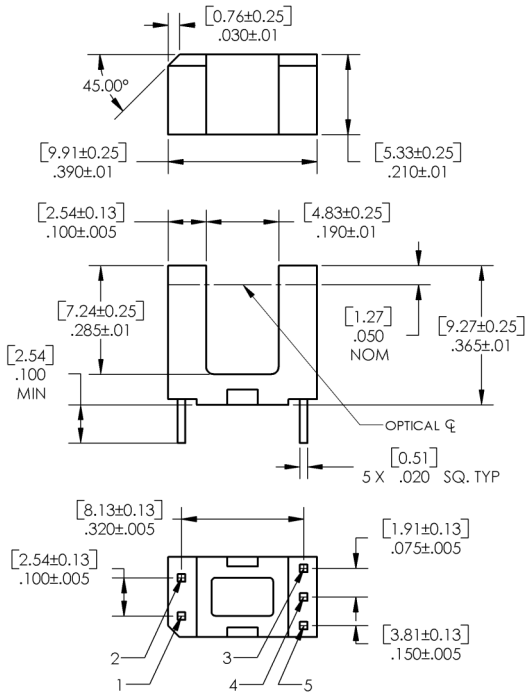
OPB625, OPB626, OPB627, OPB628

Pin Color/ Number	Description
1	Anode
2	Cathode
3	V_{CC}
4	Output
5	Ground



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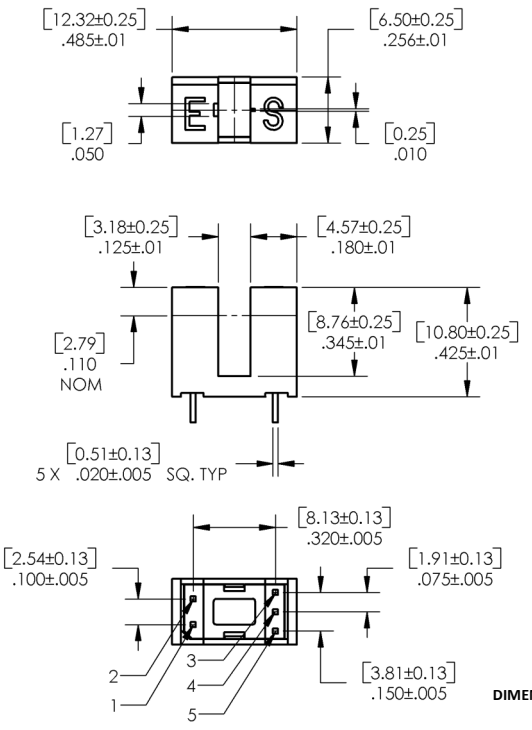
OPB665N, OPB666N, OPB667N



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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)	3 A
Reverse DC Voltage	3 V
Power Dissipation(2)	100 mW
Output Photologic®	
Supply Voltage, V_{CC}	18 V
Duration of Output Short to V_{CC}	1 second
Voltage at Output(5)	V_{CC}
Low Level Output Current (sinking)	16 mA
Power Dissipation(3)	240° mW

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
(2) Derate linearly 1.33 mW/° C above 25° C.
(3) Derate linearly 2.50 mW/° C above 25° C.
(4) Normal application would be with light source blocked, simulated by I_F = 0 mA.
(5) Open Collector devices = 30 volts.

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

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode							
V_F	Forward Voltage		-	-	1.6	V	I_F = 10 mA
I_R	Reverse Current		-	-	100	µA	V_R = 3 V
Output Photologic® Sensor							
V_{CC}	Operating DC Supply Voltage		4.5	-	16	V	
$I_{F(+)}$	LED Positive-Going Threshold Current	OPB615-618 OPB625-628 OPB665-667	0.1 0.1 0.1	0.55 0.6 1.6	3 3 10	mA	V_{CC} = 5 V
$I_{F(+)}/I_{F(-)}$	Hysteresis		1.05	1.20	1.90	-	V_{CC} = 5 V

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

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
Output Photologic® Sensor							
I_{CCH}	High Level Supply Current: Buffer, 10k Pull-up Buffer, Open-Collector	 OPB615, 625, 665 OPB616, 626, 666	 - -	 5 5	 12 12	mA	NO LOAD on Output(3)
	Inverted, 10k Pull-up Inverted, Open-Collector	OPB627, 667 OPB618, 628	- -	4 4	12 12	mA	NO LOAD on Output I_F = 0 mA
I_{CCL}	Low Level Supply Current: Buffer, 10k Pull-up Buffer, Open-Collector	 OPB615, 625, 665 OPB616, 626, 666	 - -	 5.5 4.0	 12 12	mA	NO LOAD on Output I_F = 0 mA
	Inverted, 10k Pull-up Inverted, Open-Collector	OPB627, 667 OPB618, 628	- -	6.5 5.0	12 12	mA	NO LOAD on Output(3)
V_{OH}	High Level Output Voltage: Buffer, 10k Pull-up Buffer, Open-Collector	 OPB615, 625, 665 OPB616, 626, 666	V_{CC}- 1.5	- -	- -	V	I_{OH} = 100 µA(3)
	Inverter, 10k Pull-up Inverter, Open-Collector	OPB627, 667 OPB618, 628	V_{CC}- 1.5	- -	- -	V	I_{OH} = 100 µA(1) I_F = 0 mA
I_{OH}	High Level Output Voltage: Buffer, Open-Collector	 OPB616, 626, 666	-	-	100	µA	V_{OH} = 30 V(3)
	Inverter, Open-Collector	OPB618, 628	-	-	100	µA	I_F = 0 mA, V_{OH} = 30 V(1)
V_{OL}	Low Level Output Voltage: Buffer, 10k Pull-up Buffer, Open-Collector	 OPB615, 625, 665 OPB616, 626, 666	-	-	0.4	V	I_{OL} = 16 mA, V_{CC} = 4.5 V(3)(1)
	Inverter, 10k Pull-up Inverter, Open-Collector	OPB627, 667 OPB618, 628	-	-	0.4	V	I_{OL} = 16 mA, I_F = 0 mA
t_r, t_f	Output Rise Time, Output Fall Time		-	30	-	ns	f = 10 kHz, R_L = 300 Ω, DC = 50%(3)
t_{PLH}	Propagation Delay, Low-High Buffer, 10k Pull-up Buffer, Open-collector	 OPB615, 625, 665 OPB616, 626, 666	-	0.6	-	µs	
	Inverter, 10k Pull-up Inverter, Open-Collector	OPB627, 667 OPB618, 628	-	3.0	-	µs	
t_{PHL}	Propagation Delay, High-Low Buffer, 10k Pull-up Buffer, Open-collector	 OPB615, 625, 665 OPB616, 626, 666	-	3.0	-	µs	
	Inverter, 10k Pull-up Inverter, Open-Collector	OPB627, 667 OPB618, 628	-	0.6	-	µs	
Data Rate			-	100	-	kHz	R_L = 300 Ω, DC = 50%(4)

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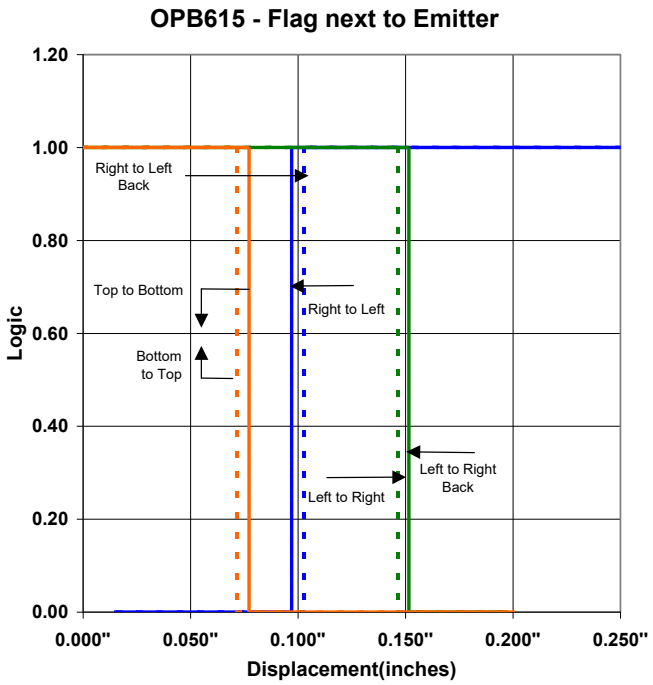

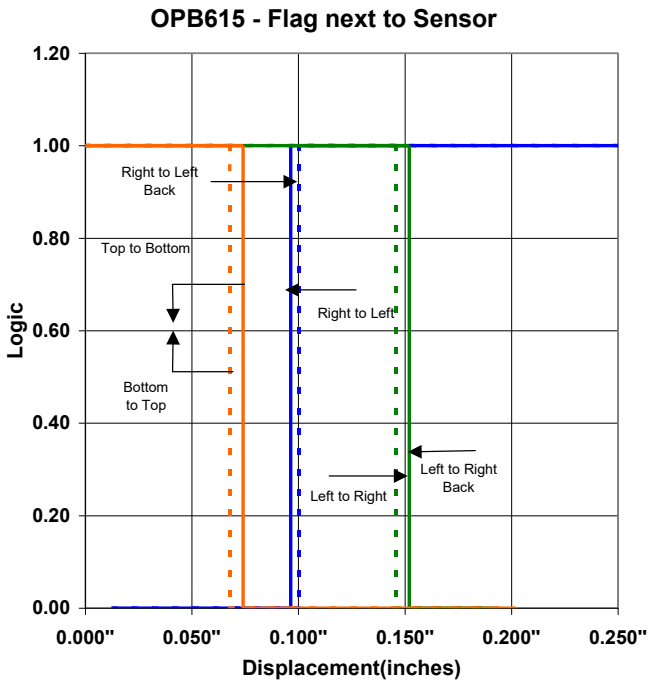

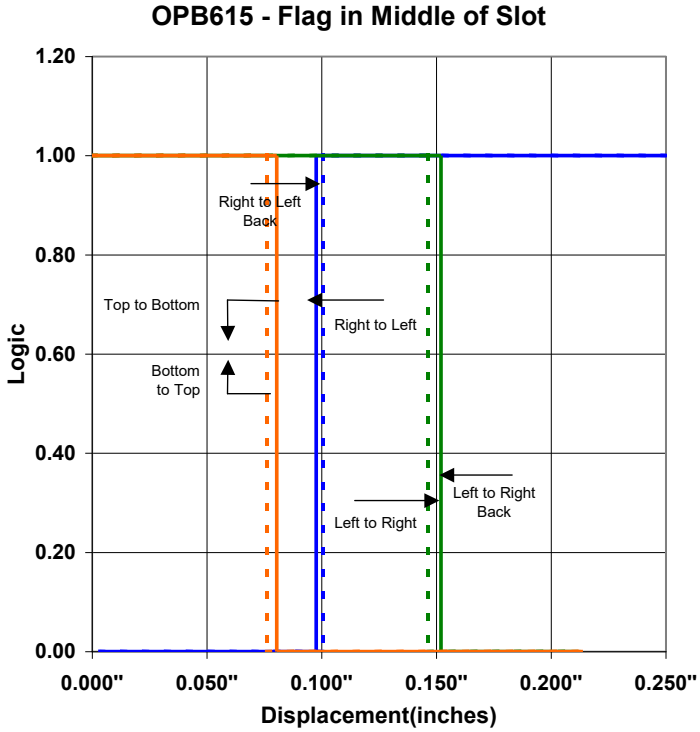

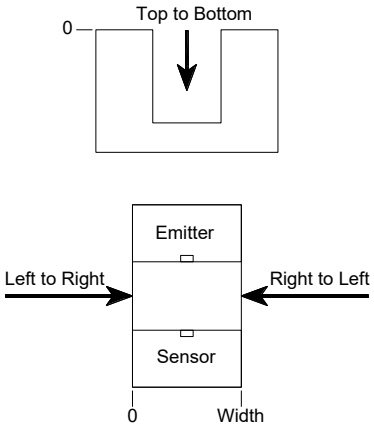

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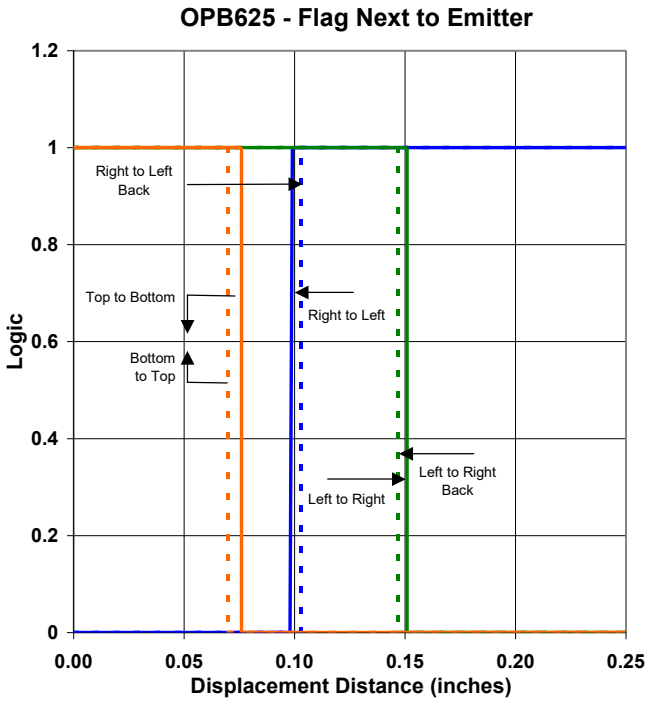

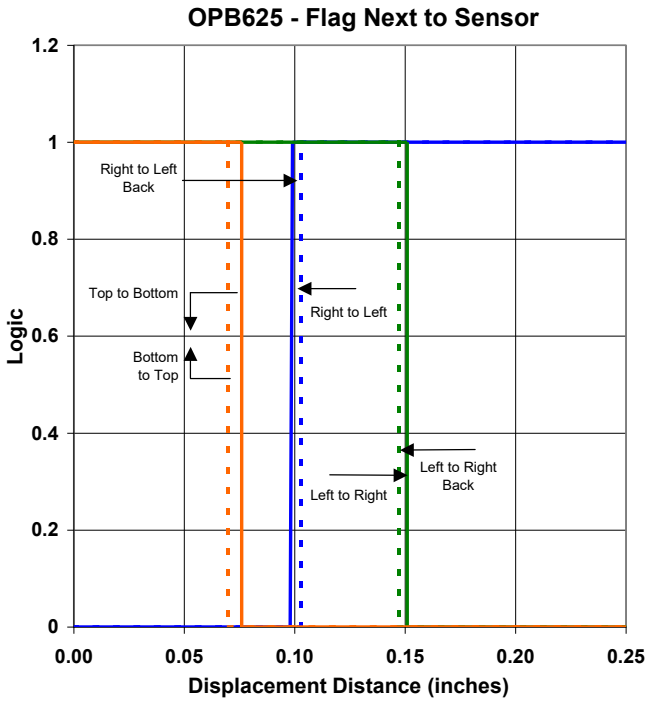

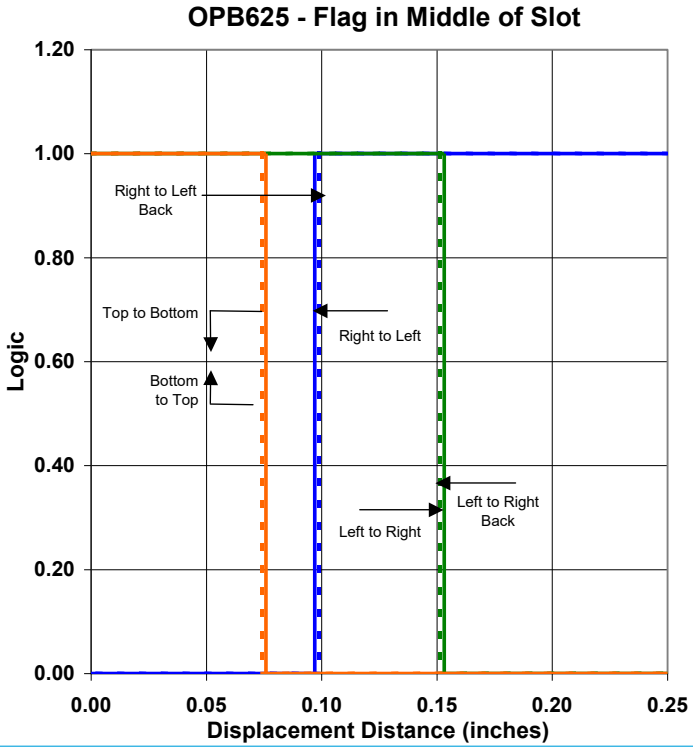

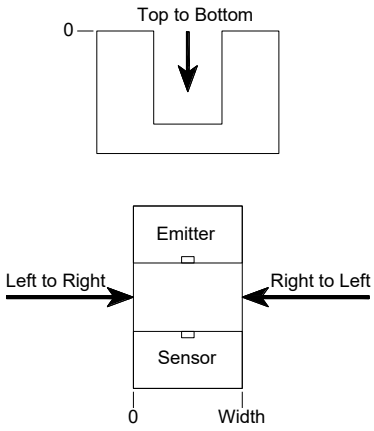

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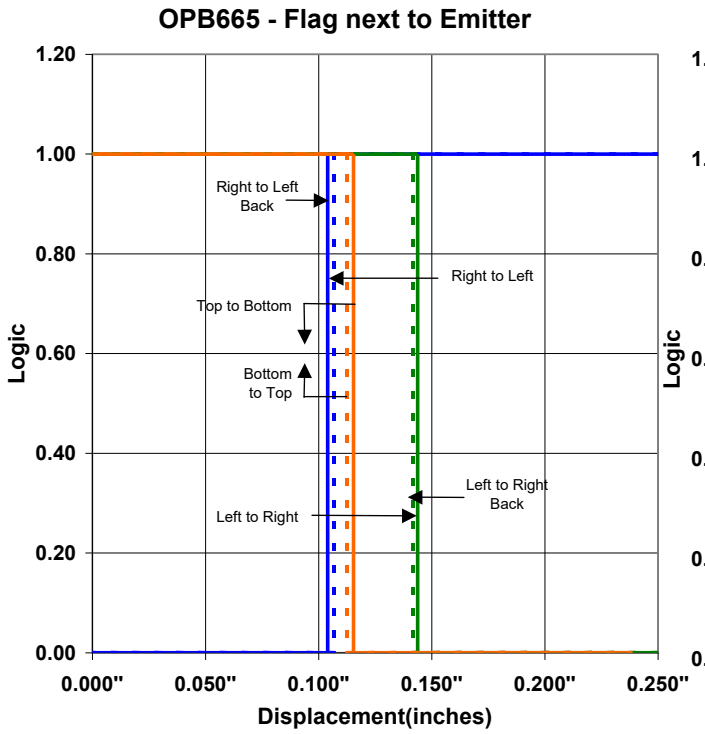

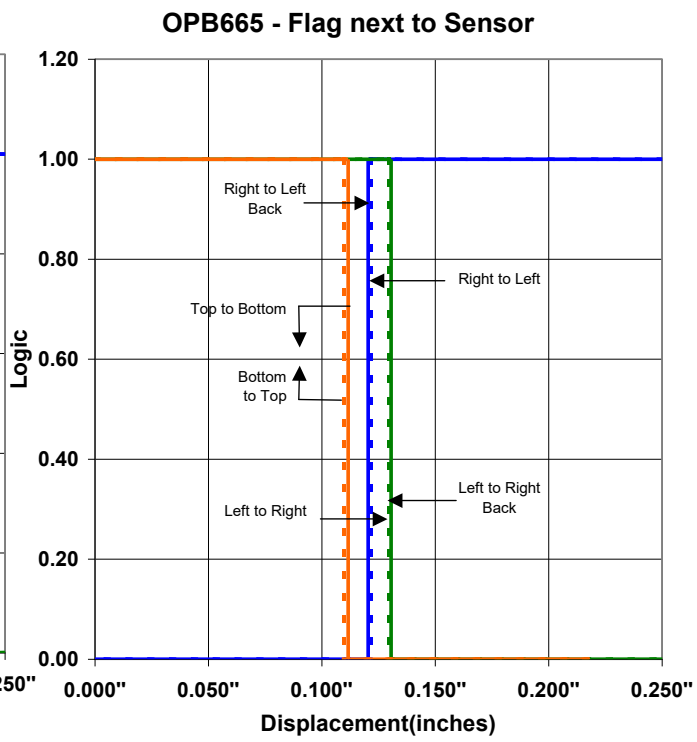

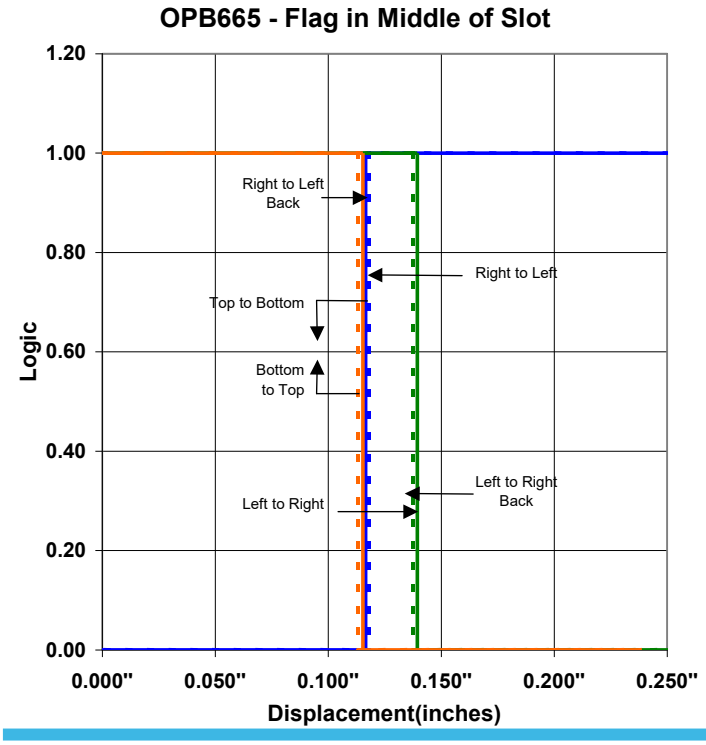

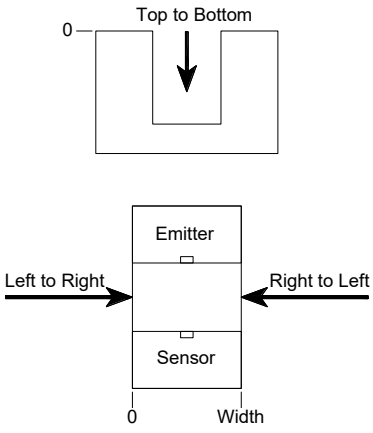

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