

Photologic® Slotted Optical Switch



OPB615, OPB616, OPB617, OPB618 Series

OPB625, OPB626, OPB627, OPB628 Series

OPB665, OPB666, OPB667, OPB668 (N and T 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. OPB655 offers two mounting options—no tabs (N) or two tabs (T).

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		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	Inv-Open Collector				
OPB665T	T			10K Pull-up	
OPB666T				Open Collector	
OPB667T				Inv-10K Pull-up	
OPB668T				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.

OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006 | Ph: +1 972 323 2200
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OPB615/625/665N Buffered 10K Pull-Up



Photologic with Pull-Up-Resistor Inverted Output



OPB 616/626/666N Buffered Open-Collector



Photologic with Open Collector Inverted Output



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Pin Color/Number	Description
1	Anode
2	Cathode
3	Vcc
4	Output
5	Ground

DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

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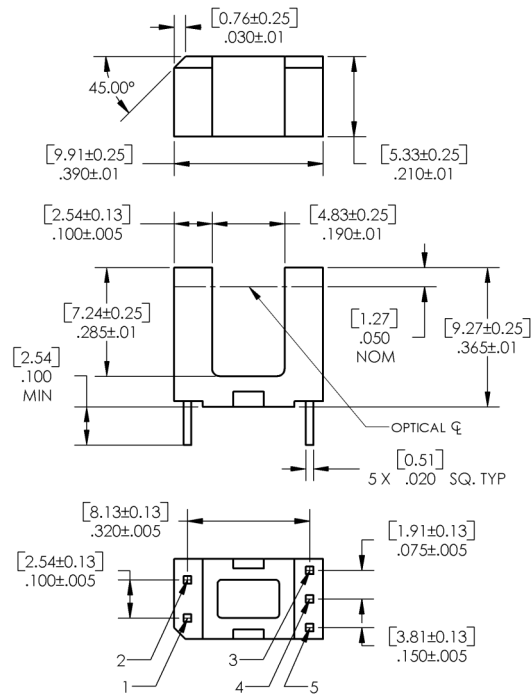
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Absolute Maximum Ratings (T _A = 25° C unless otherwise noted)	
Storage & Operating Temperature Range	-40° C to +100° C
Lead Soldering Temperature (1/16 inch (1.6mm) from the case for 5 sec. with soldering iron) ⁽¹⁾	260° C
Input Diode	
Forward DC Current	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	0.1	0.55	3	mA	V _{CC} = 5 V
		OPB625-628	0.1	0.6	3		
		OPB665-668	0.1	1.6	10		
I _{F(+)} /I _{F(-)}	Hysteresis		1.05	1.20	1.90		V _{CC} = 5 V

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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	OPB615, 625, 665	-	5	12	mA	NO LOAD on Output ⁽³⁾
Buffer, Open-Collector	OPB616, 626, 666	-	5	12	mA		
I _{CCL}	Inverted, 10k Pull-up	OPB617, 627, 667	-	4	12	mA	NO LOAD on Output I _F = 0 mA
	Inverted, Open-Collector	OPB618, 628, 668	-	4	12	mA	
I _{CCL}	Low Level Supply Current:						
	Buffer, 10k Pull-up	OPB615, 625, 665	-	5.5	12	mA	NO LOAD on Output I _F = 0 mA
Buffer, Open-Collector	OPB616, 626, 666	-	4.0	12	mA		
V _{OH}	Inverted, 10k Pull-up	OPB617, 627, 667	-	6.5	12	mA	NO LOAD on Output ⁽³⁾
	Inverted, Open-Collector	OPB618, 628, 668	-	5.0	12	mA	
V _{OH}	High Level Output Voltage:						
	Buffer, 10k Pull-up	OPB615, 625, 665	V _{CC} -1.5	-	-	V	I _{OH} = 100 μA ⁽³⁾
Buffer, Open-Collector	OPB616, 626, 666	-	-	-	V		
I _{OH}	Inverter, 10k Pull-up	OPB617, 627, 667	V _{CC} -1.5	-	-	V	I _{OH} = 100 μA ⁽¹⁾ I _F = 0 mA
	Inverter, Open-Collector	OPB618, 628, 668	-	-	-	V	
I _{OH}	High Level Output Voltage:						
	Buffer, Open-Collector	OPB616, 626, 666	-	-	100	μA	V _{OH} = 30 V ⁽³⁾
V _{OL}	Inverter, Open-Collector	OPB618, 628, 668	-	-	100	μA	I _F = 0 mA, V _{OH} = 30 V ⁽¹⁾
	Low Level Output Voltage:						
V _{OL}	Buffer, 10k Pull-up	OPB615, 625, 665	-	-	0.4	V	I _{OL} = 16 mA, V _{CC} = 4.5 V ⁽³⁾⁽¹⁾
	Buffer, Open-Collector	OPB616, 626, 666	-	-	0.4	V	
t _r , t _f	Inverter, 10k Pull-up	OPB617, 627, 667	-	-	0.4	V	I _{OL} = 16 mA, I _F = 0 mA
	Inverter, Open-Collector	OPB618, 628, 668	-	-	0.4	V	
t _r , t _f	Output Rise Time, Output Fall Time			30		ns	
t _{PLH}	Propagation Delay, Low-High						
	Buffer, 10k Pull-up	OPB615, 625, 665		0.6		μs	f = 10 kHz, R _L = 300 Ω, DC = 50% ⁽³⁾
Buffer, Open-collector	OPB616, 626, 666				μs		
t _{PHL}	Inverter, 10k Pull-up	OPB617, 627, 667		3.0		μs	
	Inverter, Open-Collector	OPB618, 628, 668				μs	
t _{PHL}	Propagation Delay, High-Low						
	Buffer, 10k Pull-up	OPB615, 625, 665		3.0		μs	
t _{PHL}	Buffer, Open-collector	OPB616, 626, 666				μs	
	Inverter, 10k Pull-up	OPB617, 627, 667		0.6		μs	
t _{PHL}	Inverter, Open-Collector	OPB618, 628, 668				μs	
	Data Rate		-	100	-	kHz	R _L = 300 Ω, DC = 50% ⁽⁴⁾

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OPB615 - Flag next to Emitter



OPB615 - Flag next to Sensor



OPB615 - Flag in Middle of Slot



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OPB625 - Flag Next to Emitter



OPB625 - Flag Next to Sensor



OPB625 - Flag in Middle of Slot



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OPB665 - Flag next to Emitter



OPB665 - Flag next to Sensor



OPB665 - Flag in Middle of Slot



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