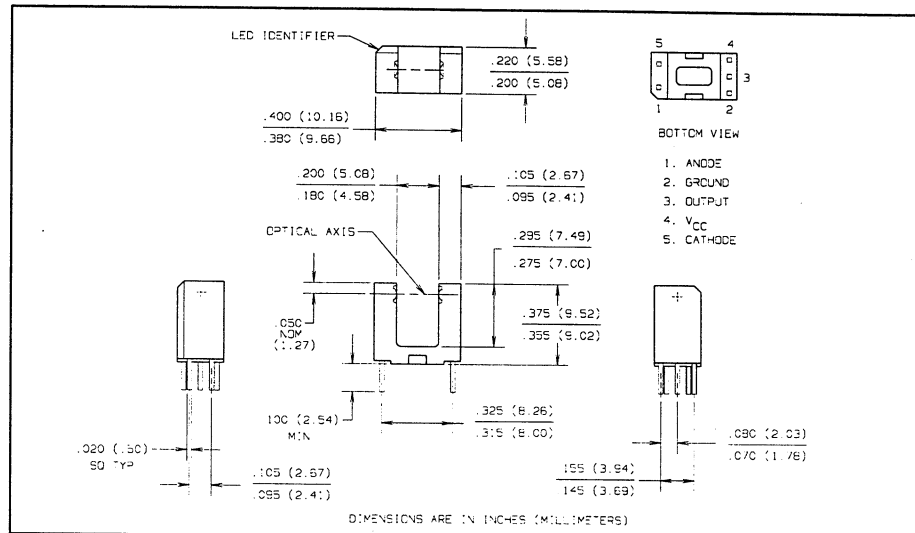
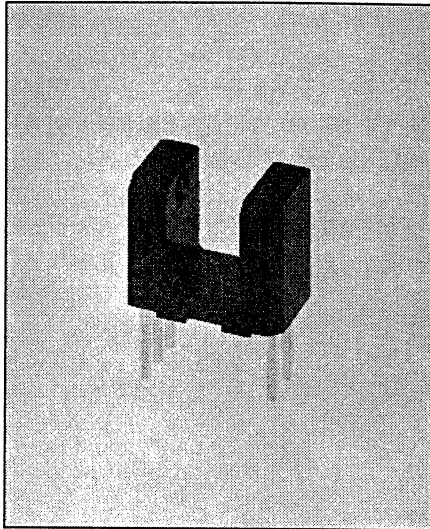


Photologic® Slotted Optical Switch

Types OPB625, OPB626, OPB627, OPB628



Features

- Non-contact switching
- Printed circuit board mounting
- 0.320" (8.13 mm) Lead centers
- 0.190" (4.83 mm) Gap
- Enhanced signal to noise ratio
- Four output options

Description

The OPB625 series slotted optical switches consist of an infrared emitting diode and a monolithic integrated circuit which incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single silicon chip.

The device features TTL/LSTTL compatible logic level output. Open collector output versions can drive up to 10 TTL loads over a voltage range from 4.5V to 16V.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range -40°C to $+100^\circ\text{C}$
 Operating Temperature Range -40°C to $+100^\circ\text{C}$
 Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] $240^\circ\text{C}^{(1)}$

Input Diode

Forward DC Current 50 mA
 Peak Forward Current (1 μs pulse width, 300 pps) 3.0 A
 Reverse DC Voltage 3.0 V
 Power Dissipation 100 mW⁽²⁾

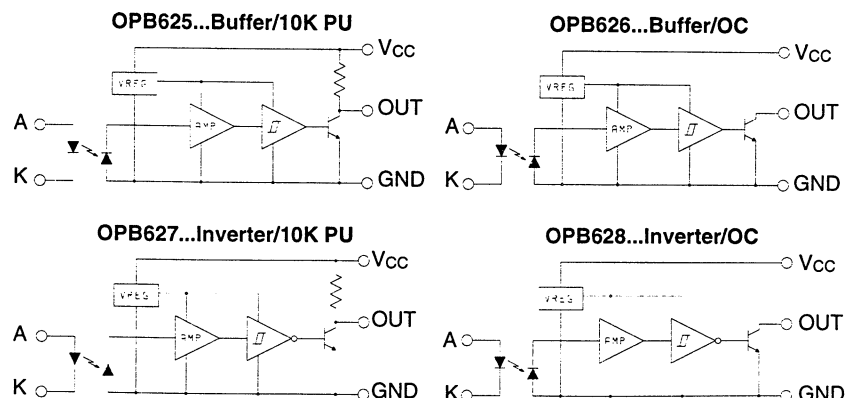
Output Photologic®

Supply Voltage, V_{CC} 18 V
 Duration of Output Short To V_{CC} 1.00 sec
 Voltage at Output 30 V
 Low Level Output Current (sinking) 16 mA
 Power Dissipation 240 mW⁽³⁾

Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
 (2) Derate linearly 1.33 mW/ $^\circ\text{C}$ above 25°C .
 (3) Derate linearly 2.50 mW/ $^\circ\text{C}$ above 30°C .

Schematics



Types OPB625, OPB626, OPB627, OPB628

Electrical Characteristics ($T_A = 25^\circ \text{C}$, $V_{CC} = 4.5 \text{ V}$ to 16 V unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode						
V_F	Forward Voltage			1.6	V	$I_F = 10 \text{ mA}$
I_R	Reverse Current			100	μA	$V_R = 3.0 \text{ V}$
Output Photologic[®] Sensor						
V_{CC}	Operating D.C. Supply Voltage	4.5		16.0	V	
$I_F(+)$	LED Positive-Going Threshold Current	0.1	0.6	3.0	mA	
$I_F(+)/I_F(-)$	Hysteresis Ratio		1.6			
I_{CCH}	High Level Supply Current:					
	Buffer, 10K Pull-up OPB625		5.0	12.0	mA	$I_F = 5 \text{ mA}$, No Load On Output
	Buffer, Open-Collector OPB626					
	Inverter, 10K Pull-up OPB627		4.0	12.0	mA	$I_F = 0 \text{ mA}^{(4)}$, No Load On Output
	Inverter, Open-Collector OPB628					
I_{CCL}	Low Level Supply Current:					
	Buffer, 10K Pull-up OPB625		5.5	12.0	mA	$I_F = 0 \text{ mA}^{(4)}$, No Load On Output
	Buffer, Open-Collector OPB626		4.0	12.0		
	Inverter, 10K Pull-up OPB627		6.5	12.0	mA	$I_F = 5 \text{ mA}$, No Load On Output
	Inverter, Open-Collector OPB628		5.0	12.0		
V_{OH}	High Level Output Voltage:					
	Buffer, 10K Pull-up OPB625	$(V_{CC}-1.5)$			V	$I_F = 5 \text{ mA}$, $I_{OH} = 100 \mu\text{A}$
	Inverter, 10K Pull-up OPB627	$(V_{CC}-1.5)$			V	$I_F = 0 \text{ mA}^{(4)}$, $I_{OH} = 100 \mu\text{A}$
I_{OH}	High Level Output Current:					
	Buffer, Open-Collector OPB626			100	μA	$I_F = 5 \text{ mA}$, $V_{OH} = 30 \text{ V}$
	Inverter, Open-Collector OPB628			100	μA	$I_F = 0 \text{ mA}^{(4)}$, $V_{OH} = 30 \text{ V}$
V_{OL}	Low Level Output Voltage:					
	Buffer, 10K Pull-up OPB625			0.4	V	$I_F = 0 \text{ mA}^{(4)}$, $I_{OL} = 16 \text{ mA}$
	Buffer, Open-Collector OPB626					
	Inverter, 10K Pull-up OPB627			0.4	V	$I_F = 5 \text{ mA}$, $I_{OL} = 16 \text{ mA}$
	Inverter, Open-Collector OPB628					
t_r, t_f	Output Rise Time, Output Fall Time		30		ns	
t_{PLH}	Propagation Delay, Low-High					
	Buffer, 10K Pull-up OPB625		0.6		μs	
	Buffer, Open-Collector OPB626					
	Inverter, 10K Pull-up OPB627		3.0		μs	$I_F = 0$ or 5 mA , $f = 10 \text{ kHz}$, DC = 50%, $R_L = 300 \Omega$
	Inverter, Open-Collector OPB628					
t_{PHL}	Propagation Delay, High-Low					
	Buffer, 10K Pull-up OPB625		3.0		μs	
	Buffer, Open-Collector OPB626					
	Inverter, 10K Pull-up OPB627		0.6		μs	
	Inverter, Open-Collector OPB628					
Data Rate	Data Rate		100		KHz	$I_F = 0$ or 5 mA , DC = 50%, $R_L = 300 \Omega$

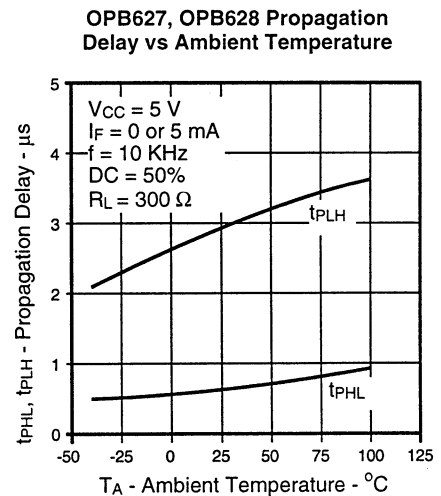
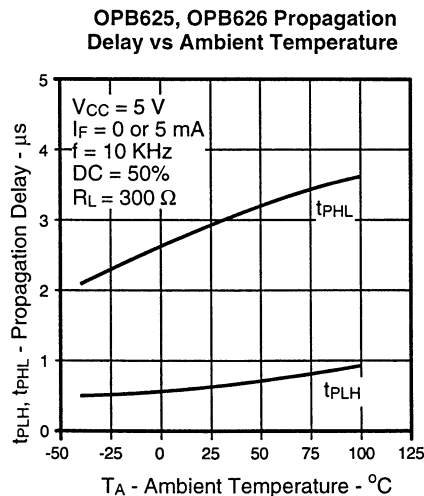
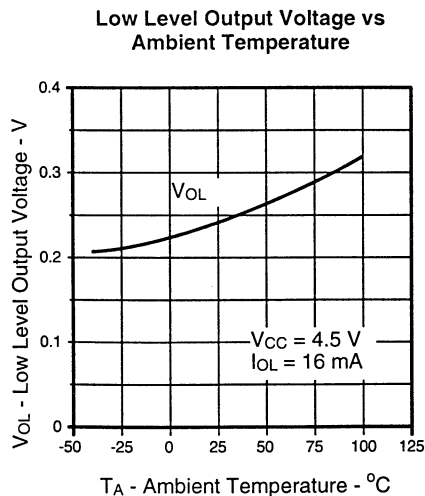
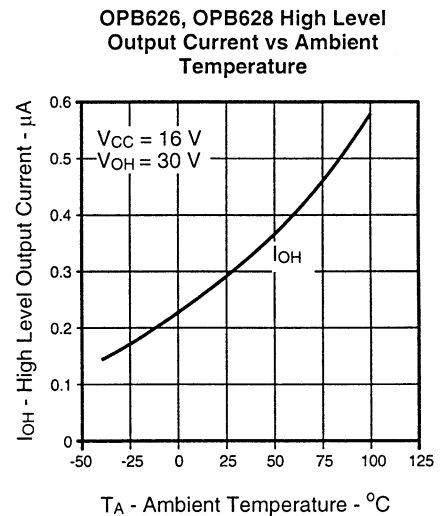
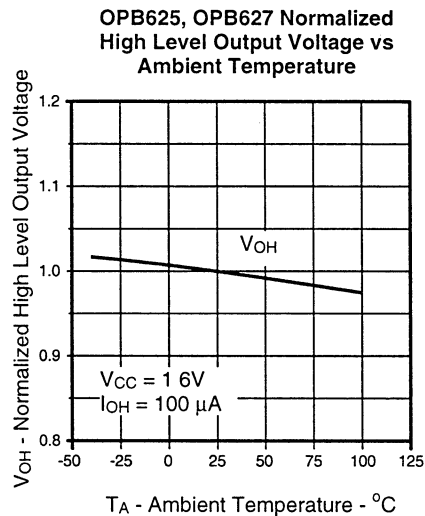
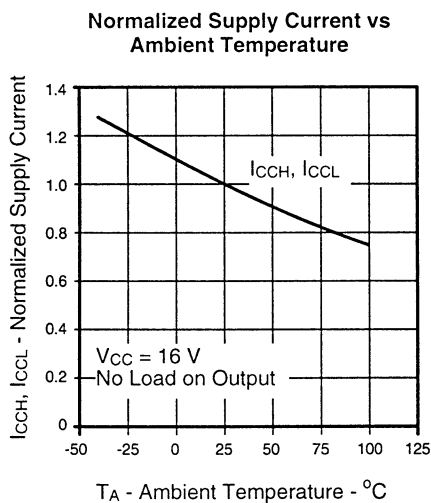
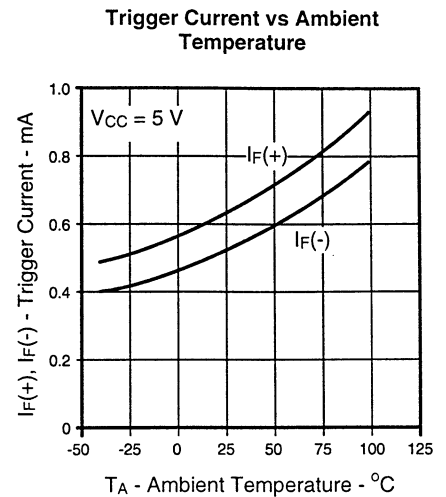
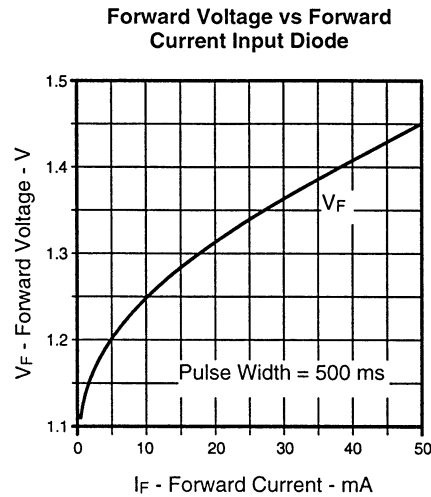
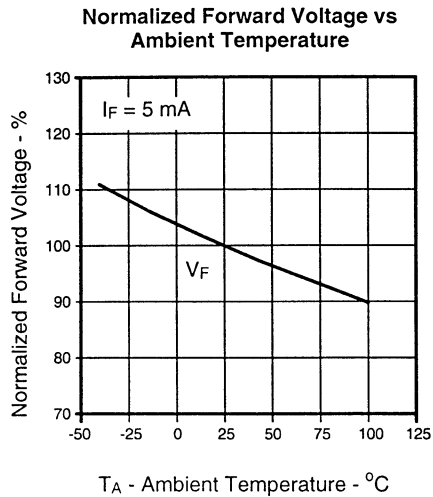
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(4) Normal application would be with light source blocked, simulated by $I_F = 0 \text{ mA}$.

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

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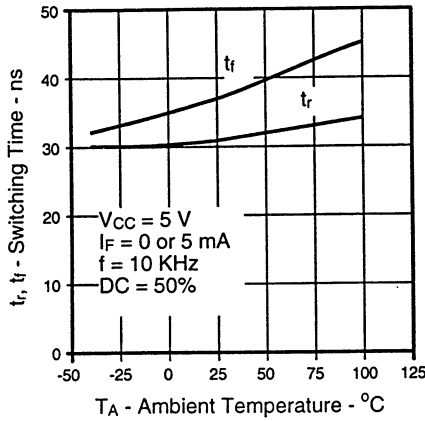
Typical Performance Curves



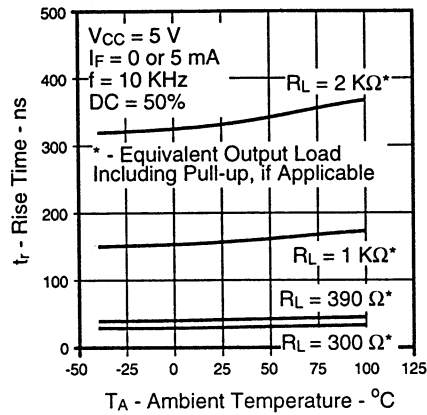
Types OPB625, OPB626, OPB627, OPB628

Typical Performance Curves

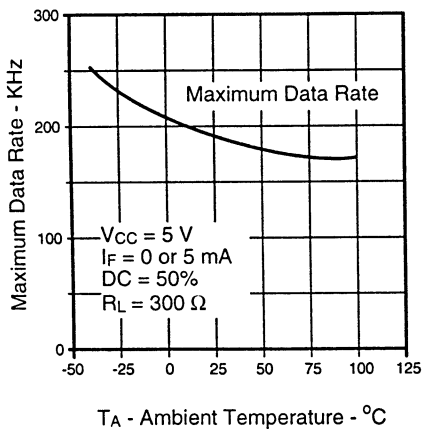
Rise Time and Fall Time vs Ambient Temperature



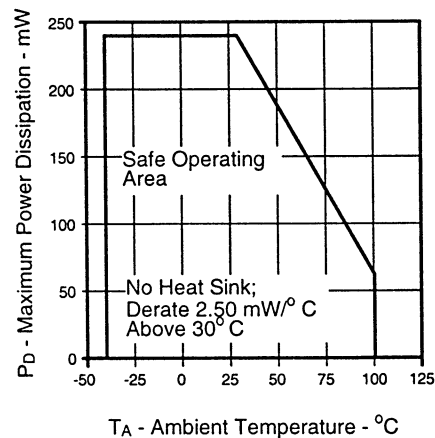
Rise Time vs Output Load vs Ambient Temperature



Maximum Data Rate vs Ambient Temperature



Typical Thermal Derating Curve



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