

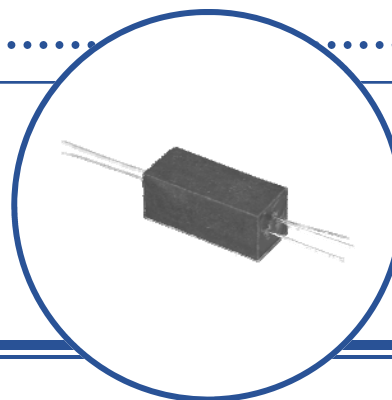
Photologic® Optically Coupled Isolator

OPI125, OPI126, OPI127, OPI128



Features:

- Four output options
- 15 kV input-to-output isolation voltage
- Direct TTL/STTL interface
- High noise immunity
- Data rates to 250 kBaud
- Hermetically sealed
- TX-TXV process available
- UL File No. E 58730*



Description:

Each **OPI125**, **OPI126**, **OPI127** and **OPI128** consists of an optically coupled isolator with a gallium arsenide infrared emitting diode coupled to a monolithic integrated circuit. This circuit incorporates a photodiode, a linear amplifier and a Schmitt trigger on a single silicon chip. For maximum long-term stability, both the diode and the Photologic® sensor are hermetically sealed in separate packages and then mounted in a high dielectric plastic housing.

These devices feature TTL/LSTTL compatible logic level output that can drive up to 8 TTL loads directly without additional circuitry. Also featured are medium-speed data rates to 250 kBaud, with typical rise and fall times of 25 nanoseconds. *UL recognition is for 3750 VAC to 100° C.

TX and TXV processing is available. For more information, contact your local representative or OPTEK.

Applications:

- High voltage isolation between input and output
- Electrical isolation in dirty environments
- Industrial equipment
- Medical equipment
- Office equipment

Pin #	LED	Pin #	Photologic®
1	Anode	3	Output
2	Cathode	4	Vcc
		5	Ground

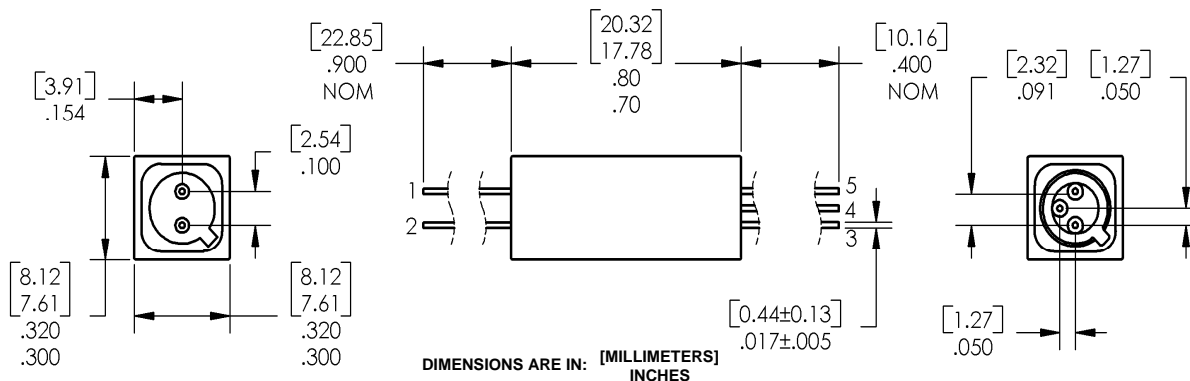
Ordering Information

Part Number	LED Peak Wavelength	Sensor Photologic®	Isolation Voltage (,000)	t _{PLH} / t _{PHL} Typ (ns)	I _F (mA) Typ / Max	V _{CE} (Volts) Max	Lead Length / Spacing
OPI125	890 nm or 935 nm	Totem Pole	15	5 / 5	7.5 / 25	35.0	0.40" / 0.75"
OPI126		Open Collector					
OPI127		Inverted Totem Pole					
OPI128		Inverted Open Collector					

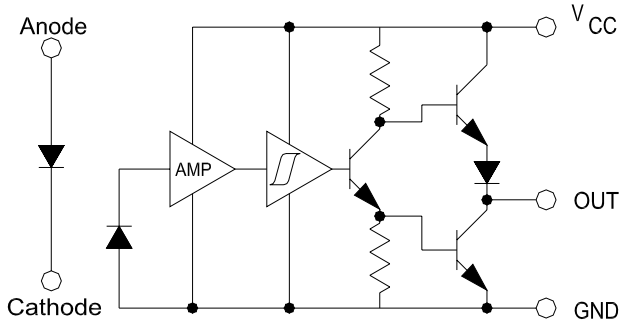


RoHS

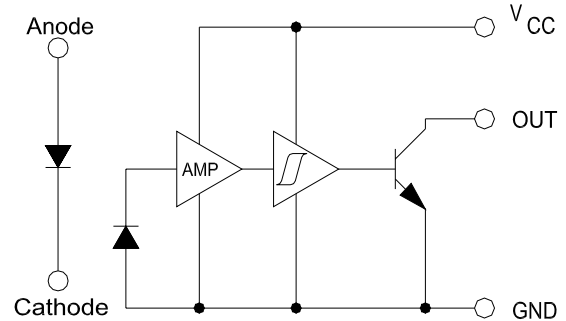
OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.



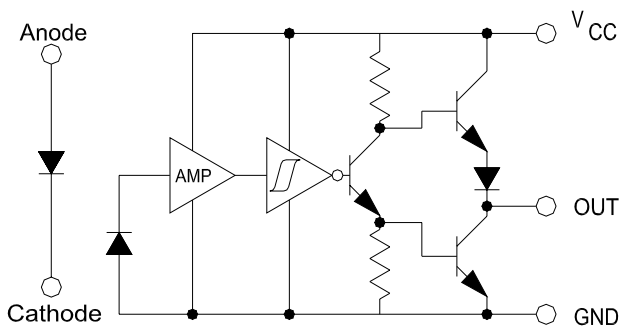
OPI125 - Totem Pole Output



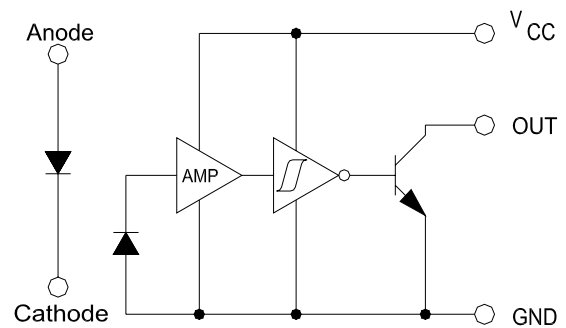
OPI126 - Open Collector Output



OPI127 - Inverted Totem Pole Output



OPI128 - Inverted Open Collector Output



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

Storage Temperature	-55° C to +100° C
Operating Temperature	-55° C to +100° C
Supply Voltage, V_{CC} (not to exceed 3 seconds)	+10 V
Input-to-Output Isolation Voltage ⁽¹⁾⁽²⁾	± 15 kVDC
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) ⁽³⁾	260° C

Input Diode

Forward DC Current	25 mA
Reverse DC Voltage	2 V
Power Dissipation ⁽⁴⁾	200 mW

Output Photosensor

Output Photologic® Power Dissipation ⁽⁵⁾	120 mW/° C
Duration of Output Short to V_{CC} or Ground (OPI125, OPI127)	1.00 second
Duration of Output Short to V_{CC} (OPI126, OPI128)	1.00 second
Voltage at Output Lead (OPI126, OPI128)	35 V

Notes:

- (1) Measured with input and output leads shorted.
- (2) UL recognition is for 3750 VAC to 100° C.
- (3) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering.
- (4) Derate linearly 1.33 mW/° C above 25° C.
- (5) Derate linearly 3.40 mW/° C above 25° C.

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

Electrical Characteristics ($T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Diode Input (See OP130 and OP230 for additional information - for reference only)						
V_F	Forward Voltage	-	-	1.5	V	$I_F = 10\text{ mA}$, $T_A = 25^\circ\text{C}$
I_R	Reverse Current	-	-	100	μA	$V_R = 2\text{ V}$, $T_A = 25^\circ\text{C}$
$I_F(+)$	LED Positive-Going threshold Current	-	-	7.5	mA	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$
$I_F(+)/I_F(-)$	Hysteresis Ratio	-	2.0	-	-	-
Photologic® Output (See OP800 and OP801 for additional information - for reference only)						
V_{CC}	Operating Supply Voltage	45	-	5.5	V	-
I_{CC}	Supply Current	-	-	20	mA	$V_{CC} = 5.5\text{ V}$, $I_F = 0$ or 7.5 mA
V_{OL}	Low Level Output Voltage OPI125 OPI126 OPI127 OPI128	- - - -	- - - -	0.40 0.40 0.40 0.40	V	$V_{CC} = 4.5\text{ V}$, $I_{OL} = 13\text{ mA}$, $I_F = 0\text{ mA}$ $V_{CC} = 4.5\text{ V}$, $I_{OL} = 13\text{ mA}$, $I_F = 0\text{ mA}$ $V_{CC} = 4.5\text{ V}$, $I_{OL} = 13\text{ mA}$, $I_F = 7.5\text{ mA}$ $V_{CC} = 4.5\text{ V}$, $I_{OL} = 13\text{ mA}$, $I_F = 7.5\text{ mA}$
V_{OH}	High Level Output Voltage OPI125 OPI127	2.4 2.4	- -	- -	V	$V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 7.5\text{ mA}$ $V_{CC} = 4.5\text{ V}$, $I_{OH} = -800\text{ }\mu\text{A}$, $I_F = 0\text{ mA}$
I_{OS}	Short Circuit Output Current OPI125 OPI127	-20 -20	- -	-120 -120	mA	$V_{CC} = 5.5\text{ V}$, $I_F = 7.5\text{ mA}$, Output = GND $V_{CC} = 5.5\text{ V}$, $I_F = 0\text{ mA}$, Output = GND
I_{OH}	High Level Output Current OPI126 OPI128	- -	- -	100 100	μA	$V_{CC} = 4.5\text{ V}$, $V_{OH} = 30\text{ V}$, $I_F = 7.5\text{ mA}$ $V_{CC} = 4.5\text{ V}$, $V_{OH} = 30\text{ V}$, $I_F = 0\text{ mA}$
t_r, t_f	Output Rise Time, Output Fall Time OPI125, OPI127	-	70	-	ns	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ or 10 mA , $f = 10\text{ kHz}$, D.C. = 50%, $R_L = 8\text{ TTL loads}$
	Output Rise Time, Output Fall Time OPI126, OPI128	-	70	-		$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ or 10 mA , $f = 10\text{ kHz}$, D.C. = 50%, $R_L = 360\text{ }\Omega$
t_{PLH}, t_{PHL}	Propagation Delay, Low-High, High-Low OPI125, OPI127	-	5	-	μs	$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ or 10 mA , $f = 10\text{ kHz}$, D.C. = 50%, $R_L = 8\text{ TTL loads}$
	Propagation Delay, Low-High, High-Low OPI126, OPI128	-	5	-		$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ or 10 mA , $f = 10\text{ kHz}$, D.C. = 50%, $R_L = 360\text{ }\Omega$

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

Notes:

- (1) Measured with input and output leads shorted in air with a maximum relative humidity of 50%. If suitably encapsulated or oil-immersed, the isolation voltage is increased to 25 kV minimum.