

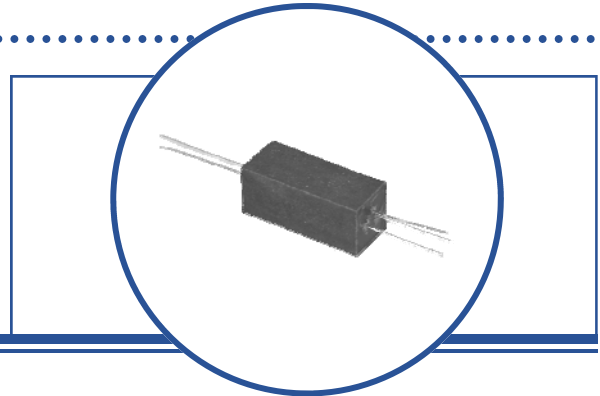
Photologic® Optically Coupled Isolator

OPI125, OPI126, OPI127, OPI127-032, OPI128



Features:

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



Description:

Each **OPI125**, **OPI126**, **OPI127**, **OPI127-032** 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 KBit/s, with typical rise and fall times of 70 nanoseconds. *UL recognition is for 15KV_{DC} to 100° C.

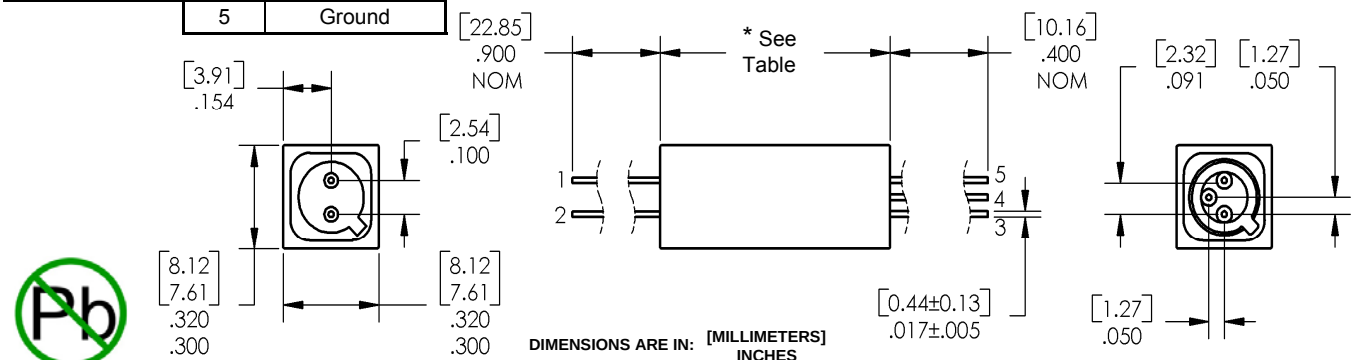
TX and TXV processing is available. For more information, contact your local representative or OPTEK.

Applications:

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

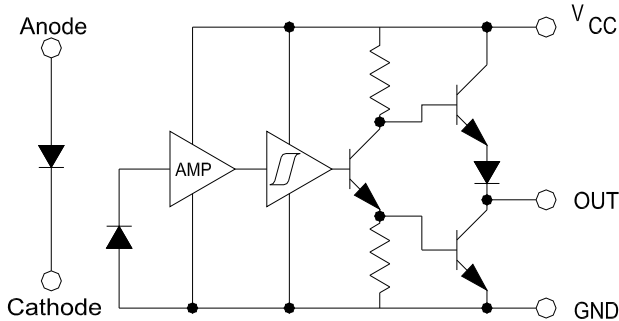
Ordering Information								
Part Number	LED Peak Wavelength	Sensor Photologic®	Isolation Voltage (,000)	t _{PLH} / t _{PHL} Typ (μs)	I _F (mA) Typ / Max	V _{CE} (Volts) Max	Lead Length / Spacing	*Length
OPI125	890 nm or 935 nm	Totem Pole	15	5 / 5	7.5 / 25	35.0	0.40" / 0.75"	0.75" [19mm]
OPI126		Open Collector						
OPI127		Inverted Totem Pole						1.26" [32mm]
OPI127-032		Inverted Totem Pole						
OPI128		Inverted Open Collector						0.75" [19mm]

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

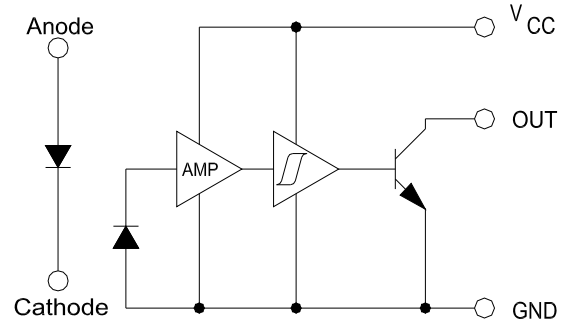


OPTEK reserves the right to make changes at any time in order to improve design and to supply the best product possible.

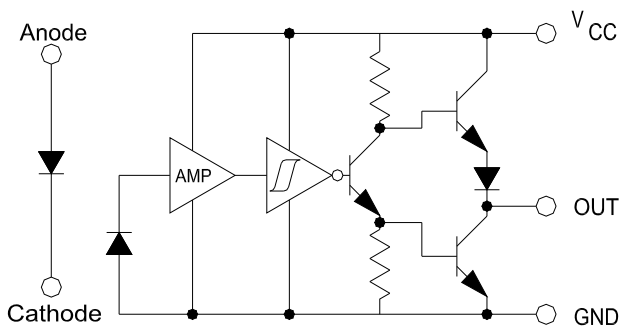
OPI125 - Totem Pole Output



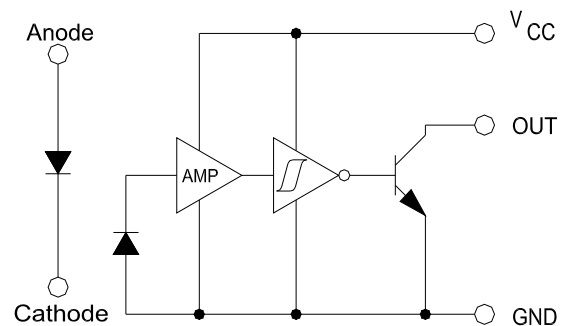
OPI126 - Open Collector Output



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.

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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	-	100	-	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	-	100	-		$V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$, $I_F = 0$ 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%, $R_L = 360\text{ }\Omega$

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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.