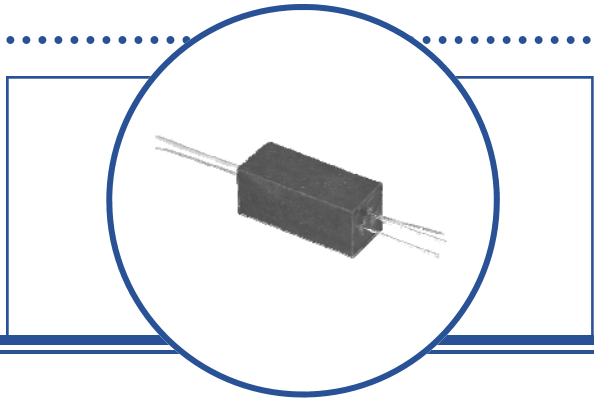
Photologic® Optically Coupled Isolator
OPI125, OPI126, OPI127, OPI127-032, OPI128

TT electronics
OPTEK Technology

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.

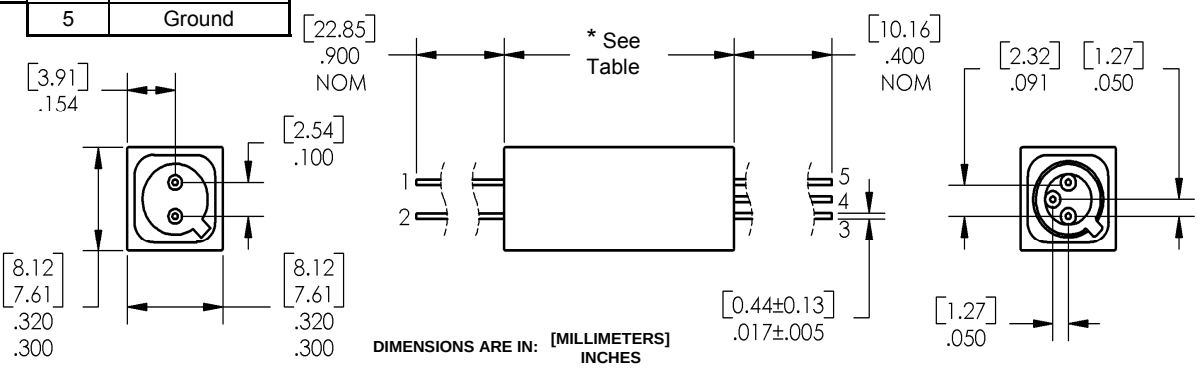
Applications:

- 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						
OPI127-032		Inverted Totem Pole						1.26" [32mm]
OPI128		Inverted Open Collector						0.75" [19mm]

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



RoHS

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

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
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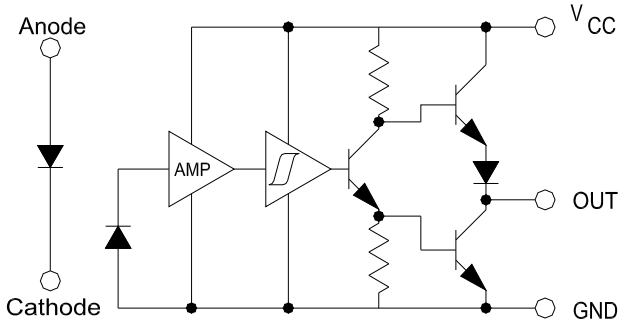
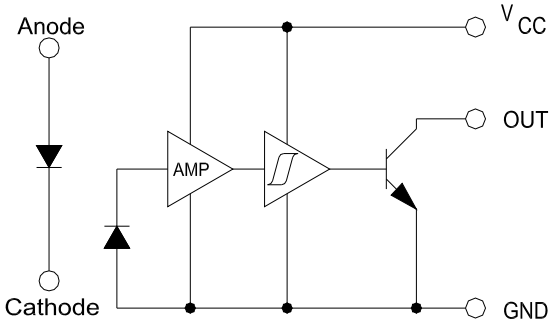
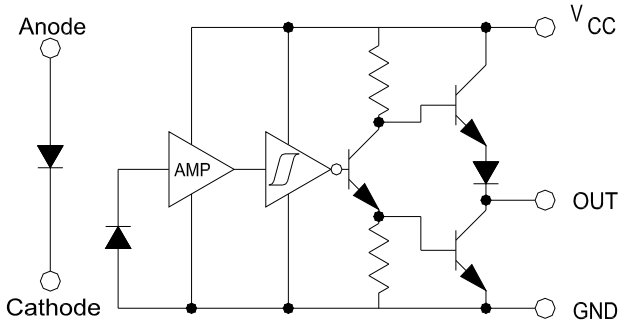
OPI125 - Totem Pole Output



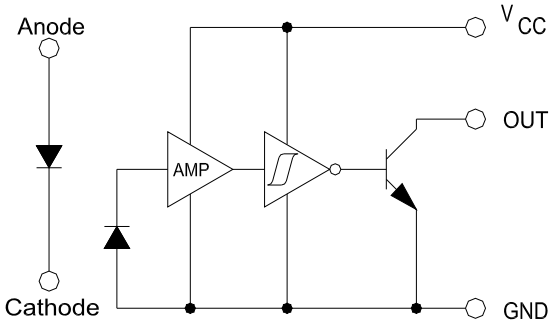
OPI126 - Open Collector Output



OPI127 - Inverted Totem Pole Output



OPI128 - Inverted Open Collector Output



Absolute Maximum Ratings (T_A = 25° 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 VCC or Ground (OPI125, OPI127)	1.00 second
Duration of Output Short to VCC (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° C to +85° 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 mA, T_A = 25° C
I_R	Reverse Current	-	-	100	µA	V_R = 2 V, T_A = 25° C
$I_F(+)$	LED Positive-Going threshold Current	-	-	7.5	mA	V_{CC} = 5 V, T_A = 25° 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 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 V, I_{OL} = 13 mA, I_F = 0 mA V_{CC} = 4.5 V, I_{OL} = 13 mA, I_F = 0 mA V_{CC} = 4.5 V, I_{OL} = 13 mA, I_F = 7.5 mA V_{CC} = 4.5 V, I_{OL} = 13 mA, I_F = 7.5 mA
V_{OH}	High Level Output Voltage OPI125 OPI127	2.4 2.4	- -	- -	V	V_{CC} = 4.5 V, I_{OH} = -800 µA, I_F = 7.5 mA V_{CC} = 4.5 V, I_{OH} = -800 µA, I_F = 0 mA
I_{OS}	Short Circuit Output Current OPI125 OPI127	 -20 -20	 - -	 -120 -120	mA	 V_{CC} = 5.5 V, I_F = 7.5mA, Output = GND V_{CC} = 5.5 V, I_F = 0 mA, Output = GND
I_{OH}	High Level Output Current OPI126 OPI128	 - -	 - -	 100 100	µA	 V_{CC} = 4.5 V, V_{OH} = 30 V, I_F = 7.5 mA V_{CC} = 4.5 V, V_{OH} = 30 V, I_F = 0 mA
t_r, t_f	Output Rise Time, Output Fall Time OPI125, OPI127	-	100	-	ns	V_{CC} = 5 V, T_A = 25° C, I_F = 0 or 10 mA, f = 10 kHz, D.C. = 50%, RL = 8 TTL loads
	Output Rise Time, Output Fall Time OPI126, OPI128	-	100	-		V_{CC} = 5 V, T_A = 25° C, I_F = 0 or 10 mA, f = 10 kHz, D.C. = 50%, RL = 360 Ω
t_{PLH}, t_{PHL}	Propagation Delay, Low-High, High-Low OPI125, OPI127	-	5	-	µs	V_{CC} = 5 V, T_A = 25° C, I_F = 0 or 10 mA, f = 10 kHz, D.C. = 50%, RL = 8 TTL loads
	Propagation Delay, Low-High, High-Low OPI126, OPI128	-	5	-		V_{CC} = 5 V, T_A = 25° C, I_F = 0 or 10 mA, f = 10 kHz, D.C. = 50%, RL = 360 Ω

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.