

# High Voltage Isolator

## OPI1266



### Features:

- TTL compatible output
- 16 kV dc isolation
- 500 kbits/s transfer rate
- $t_{PHL}-t_{PLH} \leq 500$  ns
- Creepage path: 0.970" (24.64 mm)
- Air path: 0.970" (24.64 mm)
- UL recognized file No. E58730\*



### Description:

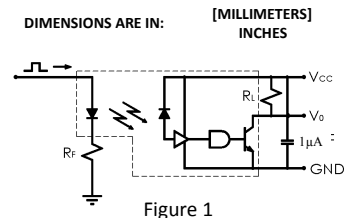
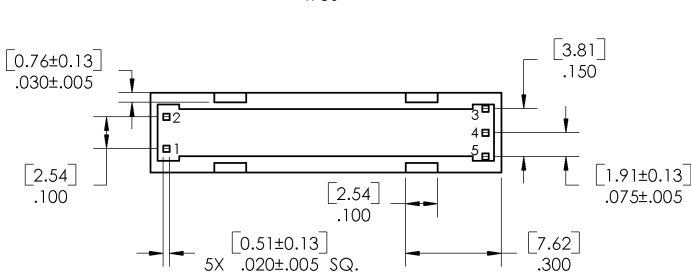
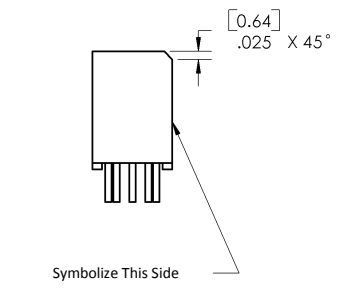
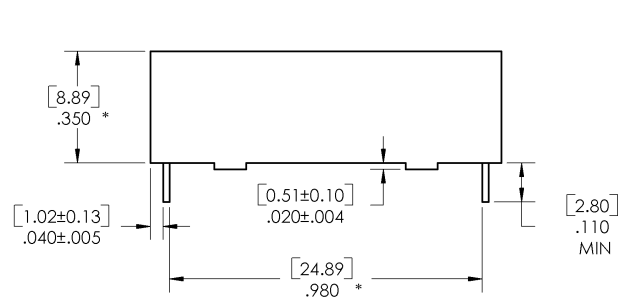
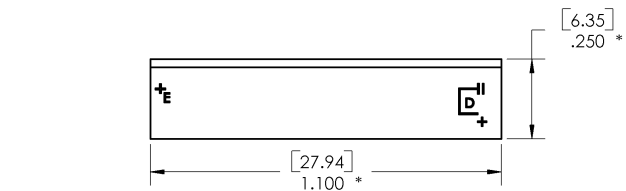
The **OPI1266** is a high voltage isolator that consists of a GaAlAs LED with a peak wavelength of 890 nm, which is coupled with a unique integrated circuit detector. Photons are collected in the detector by a photodiode and amplified by a high-gain linear amplifier that drives a Schottky clamped open collector output transistor. The circuit is temperature, current and voltage compensated. Propagation delay times are matched within 500 nanoseconds over the entire temperature range for timing purposes ( $\Delta T_p = t_{PHL}-t_{PLH}$ ). \*UL recognition is for 15kV dc. This design produces maximum DC and AC current isolation between the input and output, while providing TTL/LSTTL circuit compatibility.

### Applications:

- Data transmission for High voltage isolation
- PCBoard power system isolation
- Industrial equipment power isolation
- Medical equipment power isolation
- Office equipment

Ordering Information							
Part Number	LED Peak Wavelength	Sensor Photologic®	Isolation Voltage (,000)	$t_{PLH} / t_{PHL}$ Max (ns)	$I_f$ (mA) Typ / Max	$V_{CE}$ (V) Max	Lead Length / Spacing
OPI1266	890 nm	Open Collector	16	500 / 500	13.5 / 50	7.0	0.12" / 0.98"

Pin #	Function
1	Anode
2	Cathode
3	Vcc
4	Output
5	Ground



\* REPRESENTS CRITICAL DIMENSION TO BE SAMPLE INSPECTED.



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

Storage Temperature	-40° C to +85° C
Operating Temperature	-40° C to +70° C
Input-to-Output Isolation Voltage	16 kVDC
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron) <sup>(3)</sup>	260° C
<b>Input Diode</b>	
Continuous Forward Current	50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 300 pps)	3.0 A
Reverse Voltage	2.0 V
Power Dissipation <sup>(1)</sup>	100 mW
<b>Output IC</b>	
Maximum Supply Voltage	7 V
Power Dissipation <sup>(1)</sup>	100 mW

## Electrical Characteristics ( $T_A = 0^\circ\text{C}$ to $70^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
<b>Input Diode</b> (See OP240 for additional information—for reference only.)						
$V_F$	Forward Voltage	-	1.2	1.8	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Current	-	-	100	$\mu\text{A}$	$V_R = 2.0\text{ V}$
<b>Output IC</b> ( $V_{CC} = 4.75\text{ V}$ to $5.25\text{ V}$ ) (See OPL550 for additional information—for reference only.)						
$I_{OH}$	High Level Output Current	-	-	100	$\mu\text{A}$	$I_F = 0.0\text{ mA}$ , $V_{OH} = 5.25\text{ V}$
$V_{OL}$	Low Level Output Voltage	-	-	0.60	V	$I_F = 13.5\text{ mA}$ , $I_{OL} = 2.6\text{ mA}$
$I_{CCH}$	High Level Supply Current	2.5	-	15	mA	$I_F = 0$ , $V_{CC} = 5.25\text{ V}$
$I_{CCL}$	Low Level Supply Current	-	-	18		$I_F = 13.5\text{ mA}$ , $I_{OL} = 2.6\text{ mA}$ , $V_{CC} = 5.25\text{ V}$
<b>Coupled Characteristics</b> ( $V_{CC} = 5\text{ V}$ )						
$C_{IO}$	Coupling Capacitance	-	-	2	pF	Input and output leads shorted.
$t_{PLH}$	Propagation Delay to Low Output Level	-	-	800	ns	See Figure 1
$t_{PHL}$	Propagation Delay to High Output Level	-	-	800		
$\Delta T_P$	Difference in Propagation Delays	-500	-	500	ns	See Figure 1
$I_{ISO}$	Isolation Leakage Current <sup>(4)</sup>	-	-	20	$\mu\text{A}$	$V_{ISO} = 19.2\text{ kV dc}$ (input and output leads shorted)

### Notes:

- (1) Derate linearly 1.33 W/°C above 25°C.
- (2) UL recognition is for 15kV dc for one minute.
- (3) Derate linearly 1.33 mW/°C above 25°C.
- (4) Measured with input and output leads shorted.

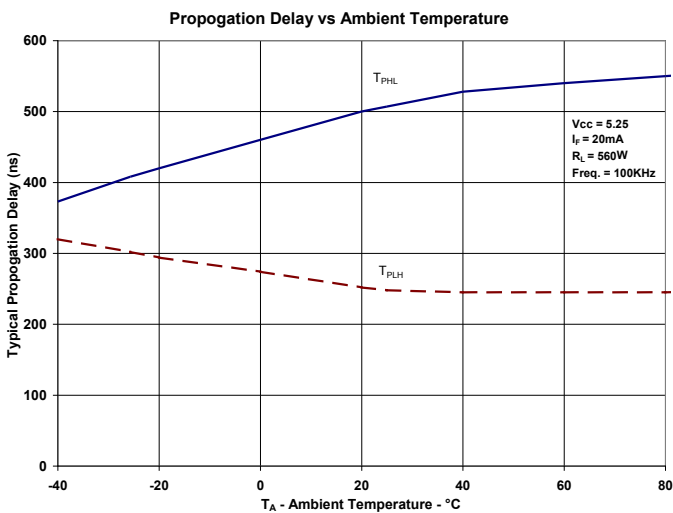
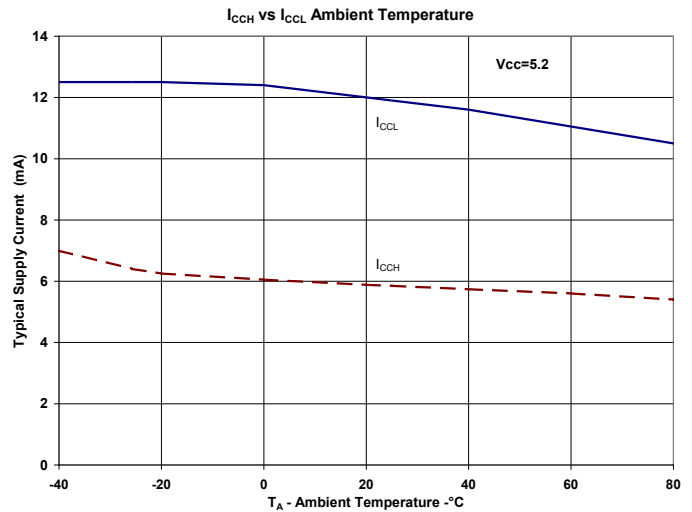
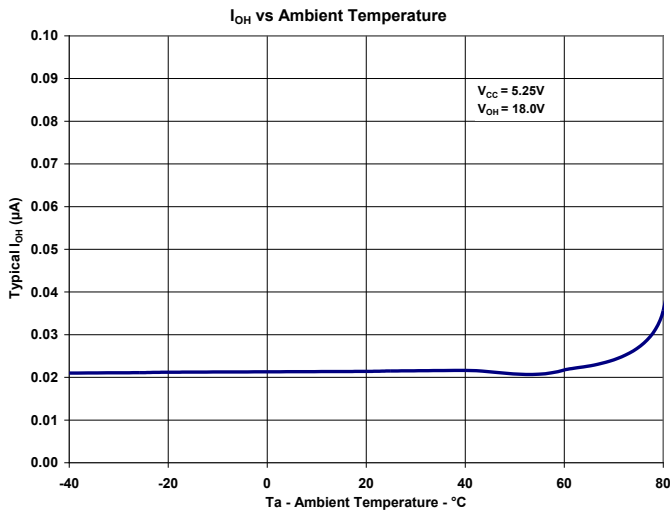
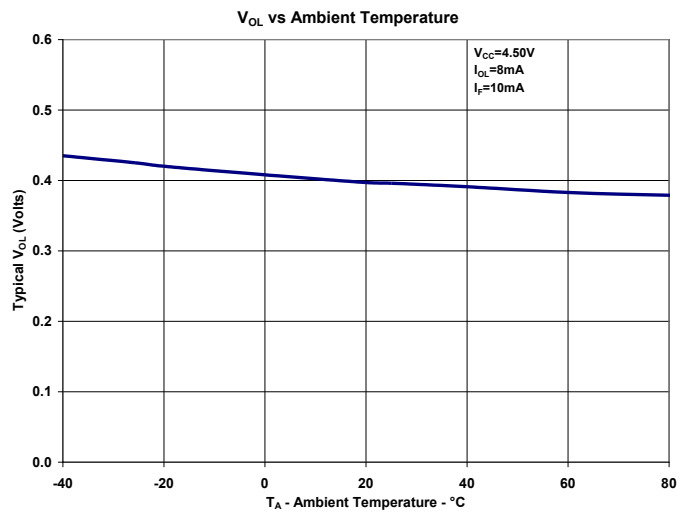
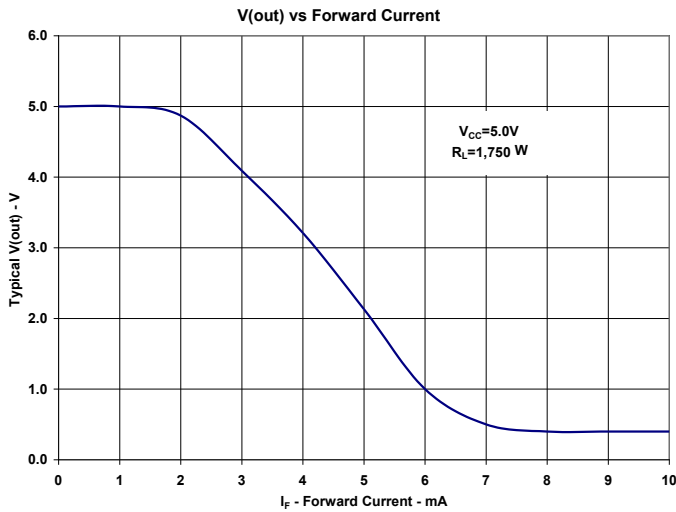
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Issue	Change Description	Approval	Date
	Initial Release of OPI1266 (July 1996).		July 1996
A	OPI1268 (from PDF Catalog)		07/04
A.1	OPI1266 new format including graphs	Trevor Schelp	11/19/07
B	Change from .01μF to 1μA on Figure 1 on page 1.	Trevor Schelp	3/30/11
C	Removed reference to UL File No E58730		12/2014
C.1	Reinstatement of reference to UL File No E58730	Cosmin Suciu	4/9/15

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