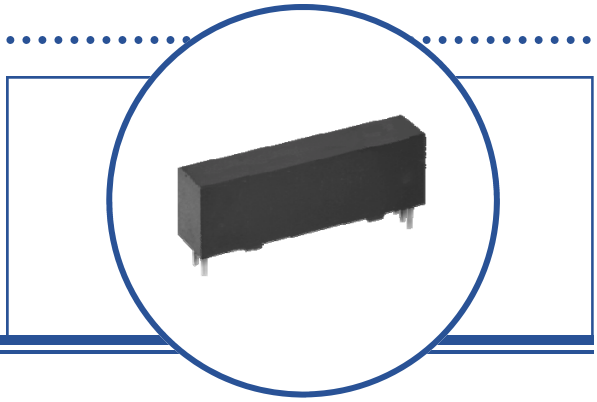
High Voltage Isolator
OPI1266, OPI1268

TT electronics
OPTEK Technology

Features:

- TTL compatible output
- 16 KV isolation
- 500 kbits/s transfer rate
- t_{PHL}-t_{PLH} ≤ 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 5833 VAC for one minute. This design produces maximum DC and AC current isolation between the input and output, while providing TTL/LSTTL circuit compatibility.

The **OPI1268** is a high voltage isolator with a digital output that is capable of high speed data transmission. The input of the OPI1268 consists of a high-efficiency GaAlAs LED with a peak wavelength of 850 nm, which is optically coupled to the output optical IC. A photodiode in the output IC detects the incoming modulated light and converts it to a proportionate current. This current is fed into a high-gain linear amplifier which is temperature, current and voltage compensated. The result is a highly stable digital output with an open collector inverter configuration. This device produces DC and AC voltage isolation between the input and output circuitry, while providing TTL signal integrity.

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"
OPI1268				100 / 200	10 / 50	18	

Pb
RoHS

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

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage Temperature	-40° C to +85° C
Operating Temperature	-40° C to +70° C
Input-to-Output Isolation Voltage(1)(2)	16 KVDC
Lead Soldering Temperature (1/16" (1.6 mm) from case for 5 seconds with soldering iron)(3)	260° C

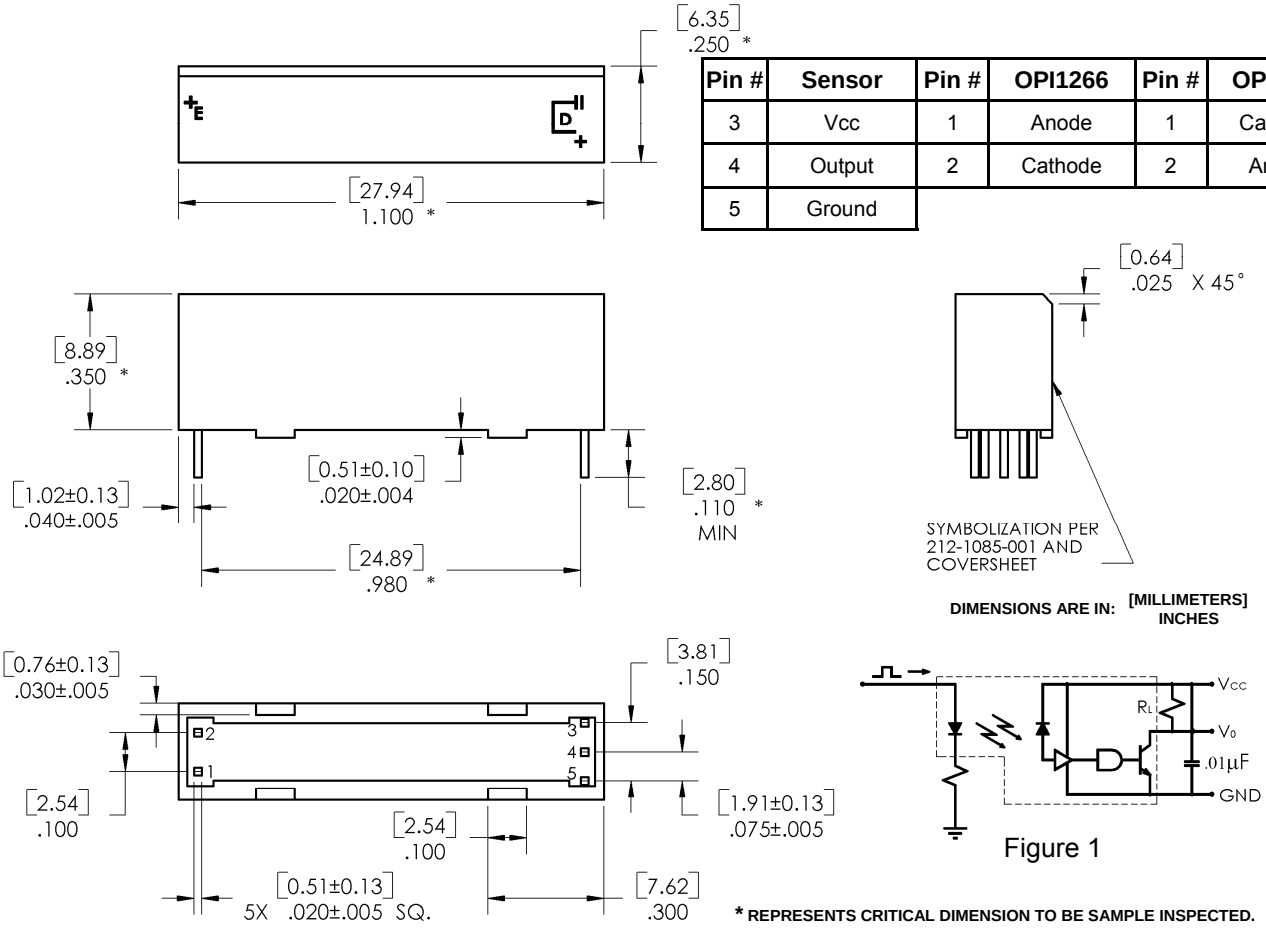
Input Diode

Continuous Forward Current	50 mA
Peak Forward current (1 µs pulse width, 300 pps)	3.0 A
Reverse Voltage	2.0 V
Power Dissipation(1)	100 mW

Output IC

Maximum Supply Voltage	7 V
Power Dissipation(1)	100 mW

Notes:
(1) Derate linearly 1.33 W/°C above 25°C
(2) UL registered under E58730.
(3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.



Pin #	Sensor	Pin #	OPI1266	Pin #	OPI1268
3	Vcc	1	Anode	1	Cathode
4	Output	2	Cathode	2	Anode
5	Ground				

Figure 1

*** REPRESENTS CRITICAL DIMENSION TO BE SAMPLE INSPECTED.**

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OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
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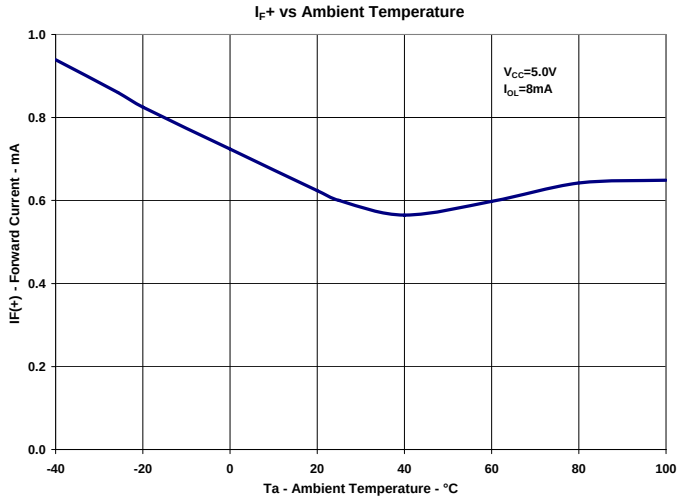
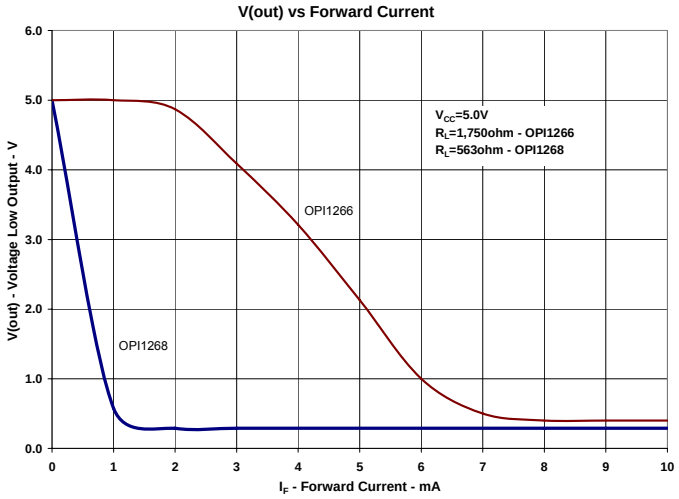
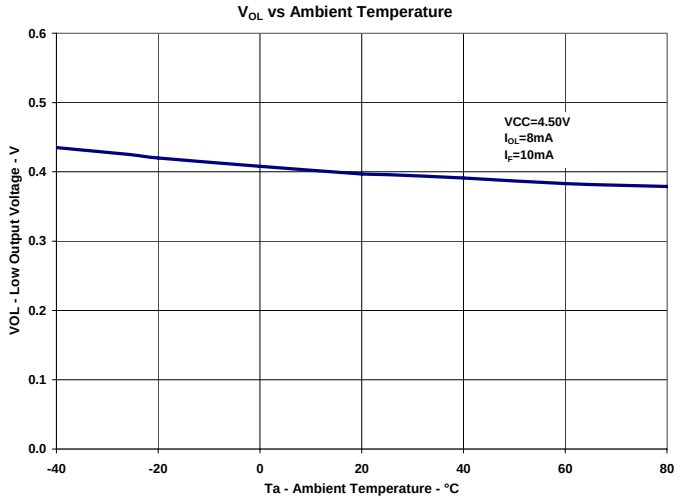
Electrical Characteristics (T_A = 0° C to 70° C unless otherwise noted)

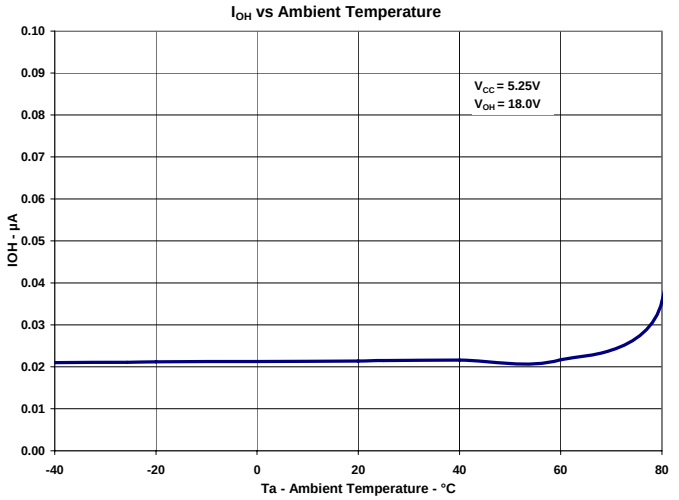
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode (See OP240 for OPI1266, and OP401 for OPI1268, for additional information—for reference only.)						
V_F	Forward Voltage OPI1266 OPI1268	 - -	 1.2 1.3	 1.6 1.8	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2.0 V
Output IC (V_{CC} = 4.75 V to 5.25 V) (See OPL550 for additional information—for reference only.)						
I_{OH}	High Level Output Current OPI1266 OPI1268	 - -	 - -	 100 150	µA	 I_F = 0.0 mA, V_{OH} = 5.25 V I_F = 0.9 mA, V_{OH} = 18.0 V
V_{OL}	Low Level Output Voltage OPI1266 OPI1268	 - -	 - -	 0.60 0.55	V	 I_F = 13.5 mA, I_{OL} = 2.6 mA I_F = 10.0 mA, I_{OL} = 8.0 mA
I_{CCH}	High Level Supply Current OPI1266 OPI1268	 2.5 -	 - -	 15 7	mA	 I_F = 0, Vcc = 5.25V
I_{CCL}	Low Level Supply Current OPI1266 OPI1268	 2.5 0.5	 - -	 18 10		 I_F = 13.5 mA, I_{OL} = 2.6 mA, Vcc = 5.25 V I_F = 10.0 mA, Vcc = 5.25 V
Coupled Characteristics (V_{CC} = 5 V)						
C_{IO}	Coupling Capacitance	-	-	2	pF	Input and output leads shorted.
t_{PLH}	Propagation Delay to Low Output Level OPI1266 OPI1268	 - -	 - -	 800 100	ns	See Figure 1
t_{PHL}	Propagation Delay to High Output Level OPI1266 OPI1268	 - -	 - -	 800 200		
ΔT_P(2)	Difference in Propagation Delays OPI1266	 -500	 -	 500	ns	See Figure 1
I_{ISO}	Isolation Leakage Current	-	-	1	µA	VISO = @ 7kV RMS (input and output leads shorted)
I_F+	LED Positive Going Threshold Current OPI1268	 0.9	 4.0	 10.0	mA	 V_{CC} = 5V, I_{OL} = 8.0mA

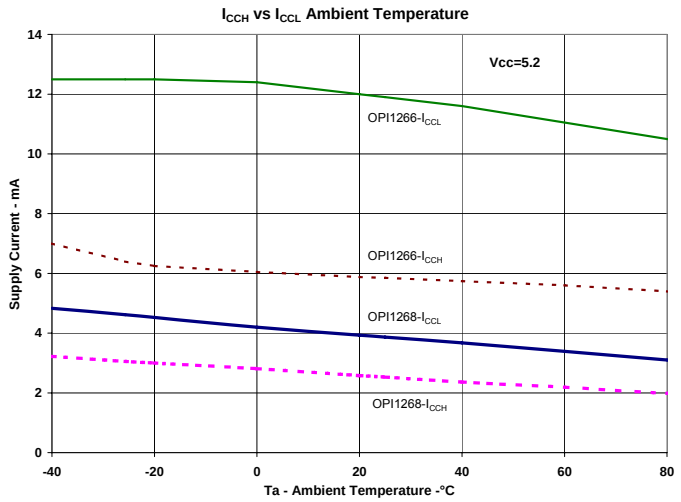
Notes:
(1) Measured with input and output leads shorted. Typical input/output capacitance is 0.05 pF.
(2) UL recognition is for 5833 VAC for one minute.
(3) RMA flux is recommended. The duration can be extended to 10 seconds maximum when flow soldering.
(4) $\Delta T_P = t_{PHL} - t_{PLH}$

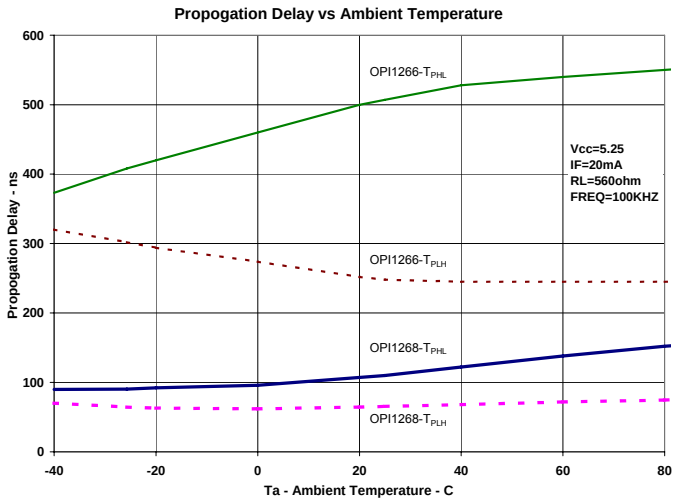












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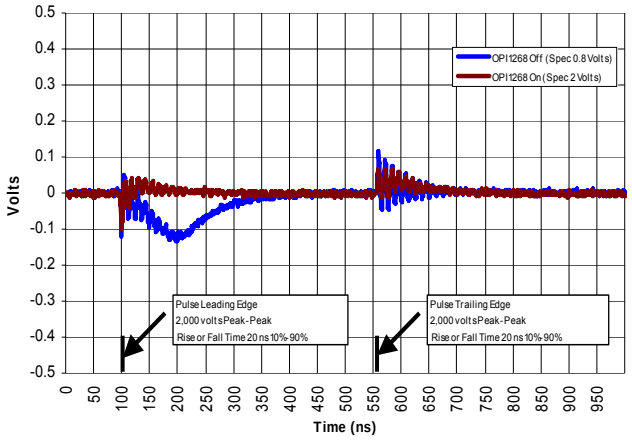
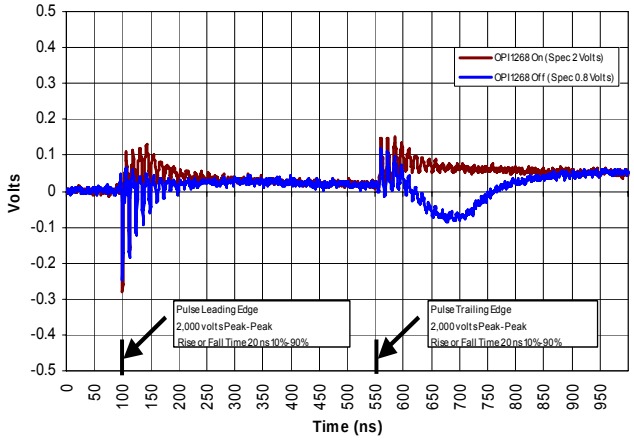
dV/dT

OPI1268 dV/dT Emitter



OPI1268 dV/dT Sensor



Notes: