Optoelectronics Division
TRW Electronic Components Group

Product Bulletin 5211
January 1985

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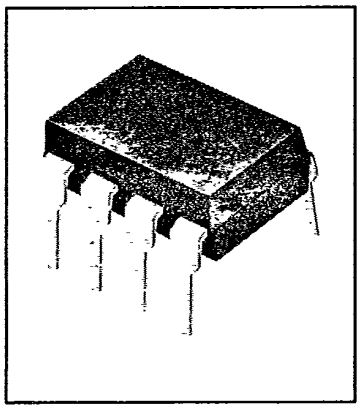
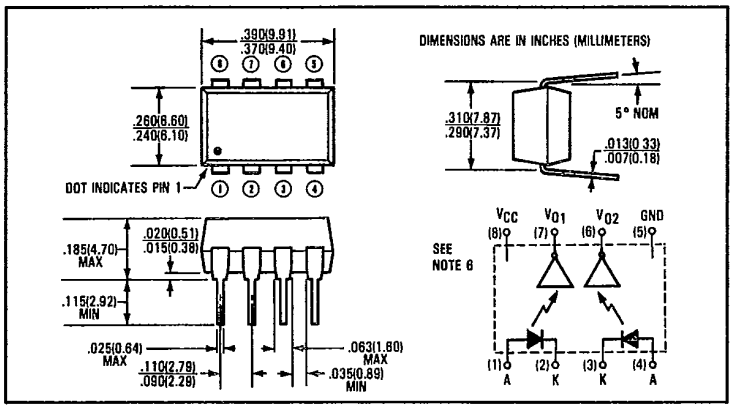
T-41-83

Optically Coupled Isolator
Type OPI2630





Features
- Guaranteed performance over temperature
- Low input current required
- 3000 VDC isolation voltage
- DTL/TTL compatible 5V supply
- Ultra high speed
- 8 pin P-DIP package

Description
The OPI2630 consists of twin emitting diodes optically coupled to a pair of photodiodes amplified by high gain linear amplifiers. Each amplifier drives a Schottky clamped open collector output transistor. The net result is a dual DTL/TTL compatible, temperature, current and voltage compensated optoisolator. Very high speeds are possible with this design.

The OPI2630 is designed for use where common mode signals must be rejected, such as in-line receivers and floating power supplies, motors, and their machine control systems. The OPI2630 also eliminates ground loops between system interfaces; for example, between a computer and peripheral equipment. In addition, high density, dual channel packaging allows increased board density and convenience.

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

Input-to-Output Isolation Voltage	±3000 VDC
Operating Temperature Range	0°C to +70°C
Storage Temperature Range	−55°C to +125°C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 3 sec. with soldering iron)(1)	260°C
Input Diode (Each Channel)	
Average Forward Current	16.0 mA
Reverse DC Voltage	5.0 V
Peak Forward Current (1 ms duration)	30 mA
Output IC	
Supply Voltage – V_{CC}	7.0 V (1 min. max.)
Output Current – I_O (each channel)	16.0 mA
Output Voltage – V_O (each channel)	7.0 V
Output Collector Power Dissipation	60 mW

Notes:
(1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering.
(2) The t_{PLH} propagation delay is measured from the 3.75 mA point on the trailing edge of the input pulse to the 1.5V point on the trailing edge of the output pulse.
(3) The t_{PHL} propagation delay is measured from the 3.75 mA point on the leading edge of the input pulse to the leading edge of the output pulse.
(4) Each channel.
(5) Measured between pins 1, 2, 3, and 4 shorted together, and pins 5, 6, 7, and 8 shorted together.
(6) A .01 μF bypass capacitor should be connected between pins 5 and 8.

Caution: This component is susceptible to damage from electrostatic discharge. Normal static prevention procedures should be used in handling.

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Electrical Characteristics (T_A = 0°C to 70°C unless otherwise noted)

Symbol	Parameter	Min.	Max.	Units	Test Conditions
I_{OH}	High Level Output Current [4]		260	μA	V_{CC} = 5.5 V, V_O = 5.5 V, I_F = 260 μA
V_{OL}	Low Level Output Voltage [4]		0.6	V	V_{CC} = 5.5 V, I_F = 5.0 mA, $I_{OL(sinking)}$ = 13.0 mA
I_{CCH}	High Level Supply Current		30	mA	V_{CC} = 5.5 V, I_F = 0 mA, (Both Channels)
I_{CCL}	Low Level Supply Current		38	mA	V_{CC} = 5.5 V, I_F = 10.0 mA (Both Channels)
V_F	Input Forward Voltage [4]		1.75	V	I_F = 10.0 mA, T_A = 25°C
I_R	Input Reverse Current [4]		10.0	μA	V_R = 5.0 V, T_A = 25°C
I_{I-O}	Input-Output Insulation Leakage Current [5]		1.0	μA	Relative Humidity = 45%, t = 5s, V_{I-I} = 500 V
t_{PLH}	Propagation Delay Time to High Output Level [2]		75	ns	R_L = 350Ω, CL = 15 pF, I_F = 7.5 mA, T_A = 25°C, V_{CC} = 5.0 V
t_{PHL}	Propagation Delay Time to Low Output Level [3]		75	ns	R_L = 350Ω, CL = 15 pF, I_F = 7.5 mA, T_A = 25°C, V_{CC} = 5.0 V

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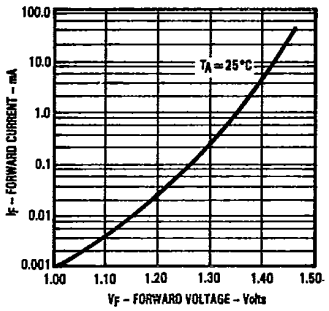
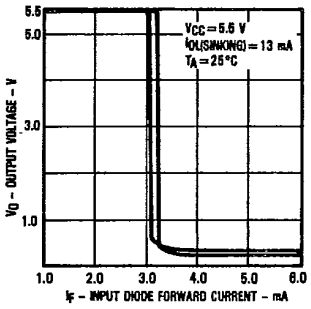
Typical Performance Curves

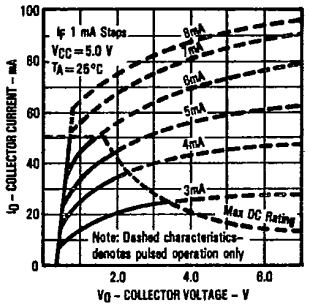
Diode Forward Current vs Forward Voltage



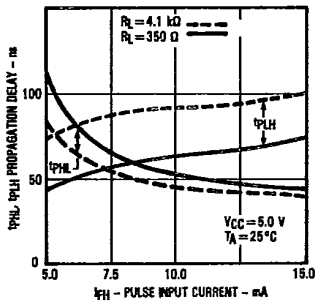
Output Voltage vs Input Diode Forward Current



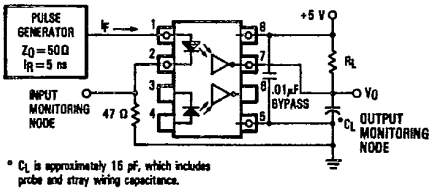
OPI2630 Transfer Characteristics



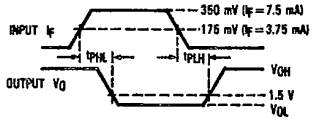
Propagation Delay, t_{PHL} and t_{PLH} vs Pulse Input Current, I_{FH}



Test Circuit for T_{PHL} and T_{PLH}



* C_L is approximately 15 pF, which includes probe and stray wiring capacitance.



TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible. Plastic color may vary.

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