

6501124 NATL SEMICOND, (LINEAR)

61C 49484

DT-52-23-03

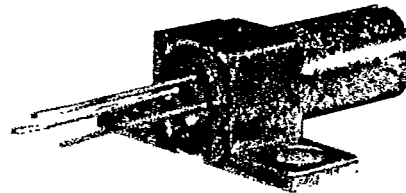
FOR361B-1/FOR361B-2



FOR361B-1/FOR361B-2 Fiber-Optic Receiver

General Description

The FOR361B is a series of self-contained monolithic TTL-compatible receivers designed for data transmission via optical fibers with the female portion of the connector integral to the low profile cast metal housing. The FOR361B series is designed to mount directly to PC boards with 0.5" or greater board-to-board spacing. To ensure reliable and repeatable optical coupling with minimum source-to-fiber alignment losses, the package mates with the Amphenol™ micro bayonet connector. When used with the FOE380B series of Fiber-Optic Emitters, the system is ideal for data rates from DC to 10Mbits/s NRZ.



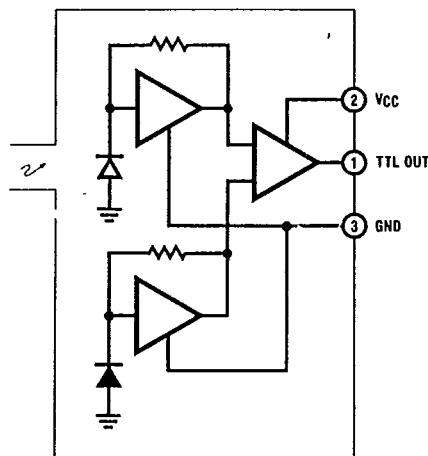
Features

- Single +5V supply
- Optical input, TTL output
- 10Mbits/s NRZ data rate
- $<10^{-10}$ bit error rate
- Low profile—under 0.3"
- Eliminates receptacle housing
- Quickly demountable Amphenol bayonet-type optical connector
- Efficient and reliable optical coupling
- Temperature compensated input

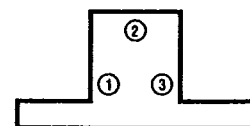
Applications

- Data communication networks
- Optical modem
- Industrial machine control
- Peripheral control/communications
- Secure communications
- Video transmission
- FCC compliant interconnections

Equivalent Schematic and Connection Diagram



TLK/5082-1



Back View

TLK/5082-2

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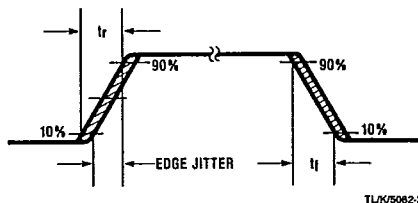
Absolute Maximum Ratings

V_{CC}	Supply Voltage	+6V
T_A	Operating Temperature Range	-25°C to +85°C
T_{STG}	Storage Temperature	-25°C to +85°C
	Lead Temperature (Soldering, 10 seconds)	300°C

Electrical and Optical Characteristics $0^\circ \leq V_{CC} = +5V$, $T_A = 25^\circ C$, $\lambda = 820nm$.

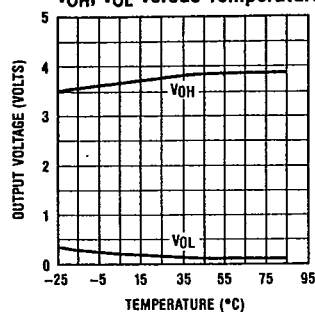
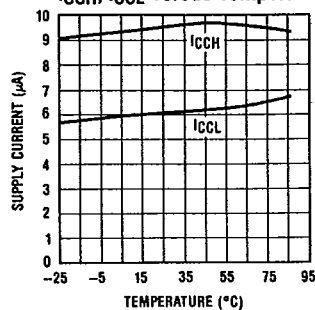
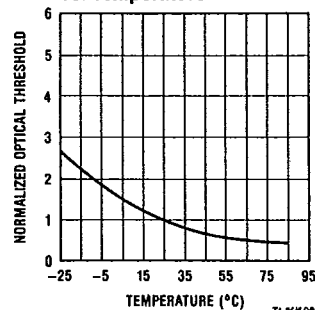
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
I_{CC}	Supply Current Output High Output Low	$V_{CC} = 5.5V$	4 6	12 16	15 20	mA
V_{OL}	Output Low Voltage	$P_{IN} = 20\mu W$, $I_{OL} = 16mA$			0.4	V
V_{OH}	Output High Voltage	$P_{IN} = 0\mu W$, $I_{OH} = -400\mu A$	2.4			V
BW	Data Rate (NRZ)	$P_{IN} = 20\mu W$, BER $< 10^{-10}$		10		Mbits/s
NA	Numerical Aperture			0.5		
	Optical Port (Fiber Core Diameter)			400		μm
NEP	Noise Equivalent Power	10Hz to 10MHz		14		nW
t_r	Output Rise Time	$P_{IN} = 25\mu W$, peak		40	70	ns
t_f	Output Fall Time	$P_{IN} = 25\mu W$, peak		40	70	ns
t_{pd}	Propagation Delay: Optical Input to TTL Output	$P_{IN} = 25\mu W$, peak		80		ns
	Coupled Optical Threshold FOR361B-1 FOR361B-2	Transition from High to Low (Note 1)	20 15			μW
	Logic Output Edge Jitter	$P_{IN} = 30\mu W$ peak $f = 5MHz$ square wave		1.5		ns

Note 1: Coupled optical threshold is measured at the end of a 1-meter-long 200 μm glass-core fiber with a numerical aperture of 0.4 and includes all optical loss through the connector. The actual method for determining optical threshold (sensitivity) is outlined in the application section under optical sensitivity measurement. The optical threshold is defined as the minimum amount of optical power required by the receiver to change from logic high to logic low.



TLK/5062-3

FIGURE 1. Digital Edge Jitter Waveform

Typical Performance Characteristics **V_{OH} , V_{OL} Versus Temperature** **I_{CCH} , I_{CCL} Versus Temperature****Normalized Optical Threshold
Vs. Temperature**

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Test Circuit

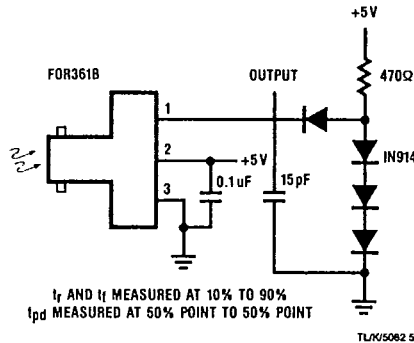


FIGURE 2. Timing Measurement Circuit

Optical Sensitivity Measurement

To measure the coupled optical threshold (sensitivity) of the receiver, the device is placed in the circuit as shown in Figure 3. The emitter used is the FOE380B which is compatible with Amphenol's micro bayonet-type connector. The fiber used is Seicor #155 glass fiber cable with a core diameter of 200μm and a numerical aperture of 0.4.

When there is no optical input to the FOR361B, the output remains in the logic 1 state. The current is then increased in the emitter until the receiver's optical threshold is crossed and the device changes to the logic 0 state.

With the emitter current set at the same level, the fiber cable is removed from the device and then connected to a photometer such as the Photodyne 88XLA, UDT S-550 or EG&G 550 to measure the light output. To measure the power readout correctly it is important to have the photometer calibrated to read total power (in microwatts) at 820nm wavelength. The readout is the optical sensitivity of the device as specified in the data sheet under coupled optical threshold. This measurement method includes all connector related losses at the cable/receiver interface.

Typical Application

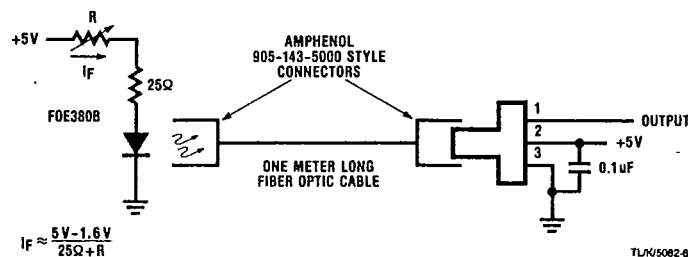


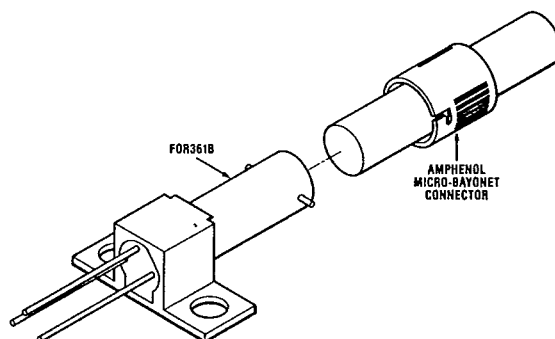
FIGURE 3. Optical Sensitivity Measurement Configuration

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RECEIVER WITH BAYONET CONNECTOR



FOR361B-1/FOR361B-2

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