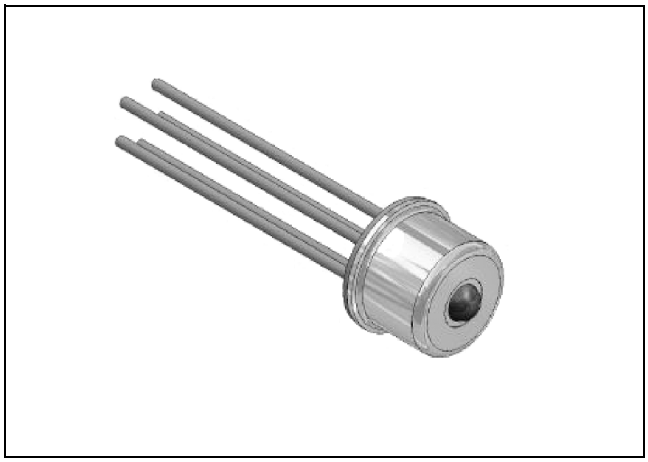
ZL60006

1310 nm, 1550 nm 2.5 Gbps PIN with Preamplifier

Data Sheet

April 2004



Ordering Information

ZL60006TED SC Housing
ZL60006/TBD TO-46 with lens
ZL60006/TDD ST Housing
-40°C to +85°C

Features

- Data rate up to 3.125 Gbps
- 1310 nm, 1550 nm PIN photodiode
- TO-46 Assembly
- Integrated TIA and limiting amplifier
- Single 3.3 V supply
- Low power consumption

Description

This optical receiver is a 3.3 V device which contains a PIN photodiode and a low noise transimpedance with limiting amplifier in a TO-46 package with lens cap. It is designed for OC-48 operation and single mode fiber. Reliability Assurance based on Telcordia GR-468-CORE.

Applications

- Sonet OC-48
- SDH STM-16
- 2.125 Gbps fiber channel
- 2.5 to 3.125 Gbps general application

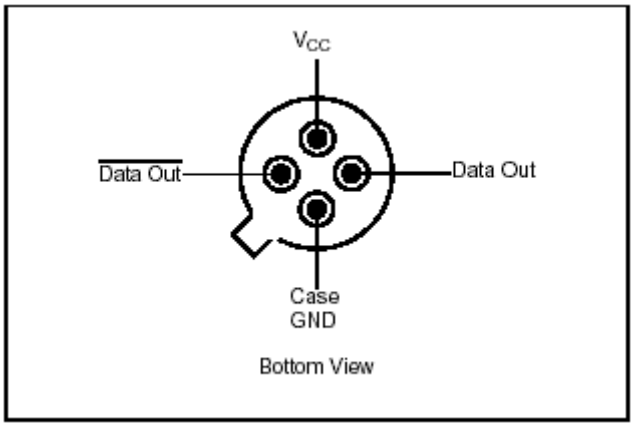


Figure 1 - Pin Diagram

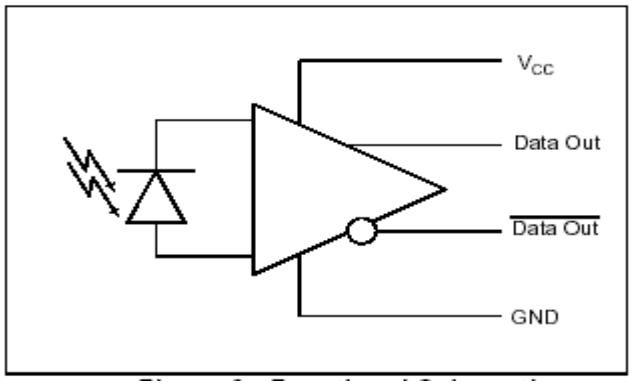


Figure 2 - Functional Schematic

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Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Responsivity, differential	R	4	6		kV/W	λ=1310 nm, $R_{L=}$100 Ω, Note 1
Output voltage amplitude, differential	ΔV_O	200	300		mV_{pp}	R_L=100 Ω Note 2
Bandwidth (3 dB_{el})	f_c		2.0		GHz	Pf = 10 μW, R_L=100 Ω
Optical Saturation Level	P_{sat}	1			dBm	λ=1310 nm, ER = ∞ Note 3
Noise-Equivalent Power	*NEP*		-35	-30	dBm	λ=1310 nm, Note 4
Sensitivity (BER 10^{-9})	*S*		-25	-23	dBm	λ=1310 nm, ER = ∞ Note 3
Dynamic Range			24		dB	
Output Resistance (single)	R_o		50		Ω	
Power Dissipation	P_D		85	140	mW	
Power Supply Current	I_{DD}		25	38	mA	Data & $\overline{\text{Data}}$ AC Coupled

Operating Conditions: 25°C Case Temperature/3.3 V Supply Voltage/Fiber: Single-mode 10/125 μm fiber.
PRBS Pattern 2^{23} -1 at 2.5 Gbps.

Note 1: Pf = 10 μW Peak-Peak Power
Note 2: Pf = 500 μW Peak-Peak Power
Note 3: Measured at 10^{-10} BER with a 2^{23}-1 PRBS at 2.5 Gbps
Note 4: Measured with STM-16 filter on electrical output, i.e., 1.875 GHz

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	0	3.6	V
Storage Temperature	T_{stg}	-40	125	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{CC}-V_{EE}	3	3.3	3.6	V
Operating Temperature	T_{op}	-40		85	°C
Signalling Rate, Note 5	f_D	1		3.125	Gbps

Note 5: Data pattern are to have maximum runlength and DC-balance shifts no more than that of a PRBS-31 pattern.

Typical Responsivity

	Wavelength	Fiber core/cladding diameter numerical aperture
		10/125 µm, NA=0.11
Differential responsivity	1310 nm	6 kV/W
Differential responsivity	1550 nm	7.4 kV/W

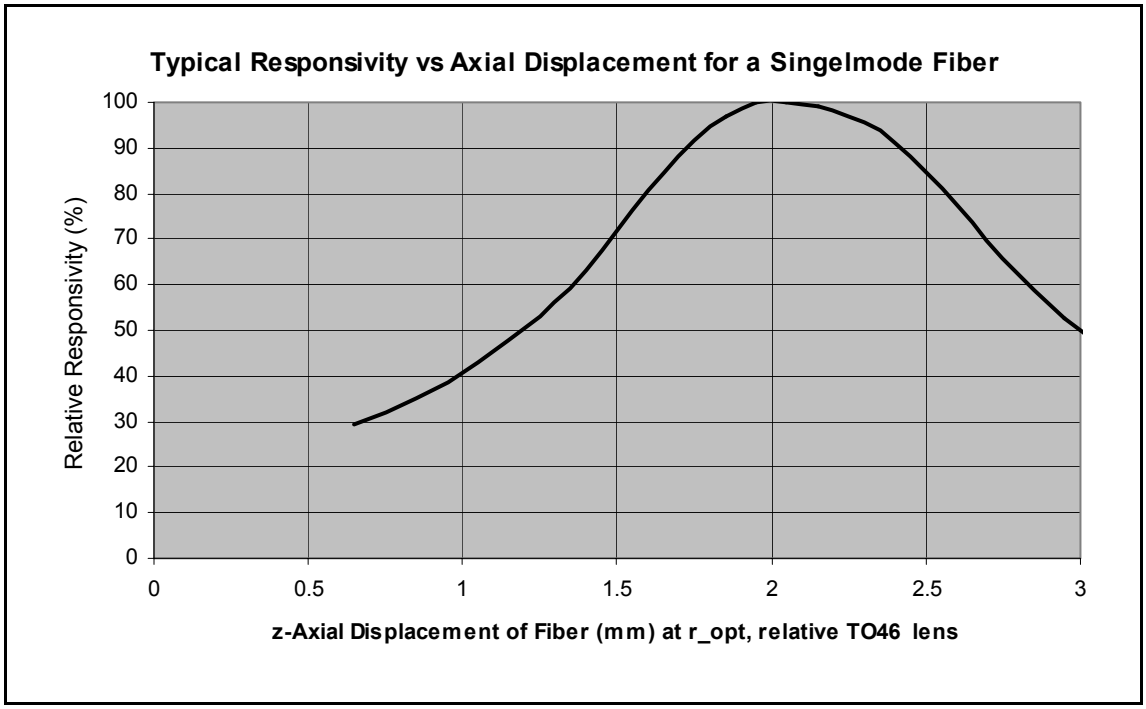


Figure 3 - Typical Responsivity vs Axial Displacement for a Singlemode Fiber

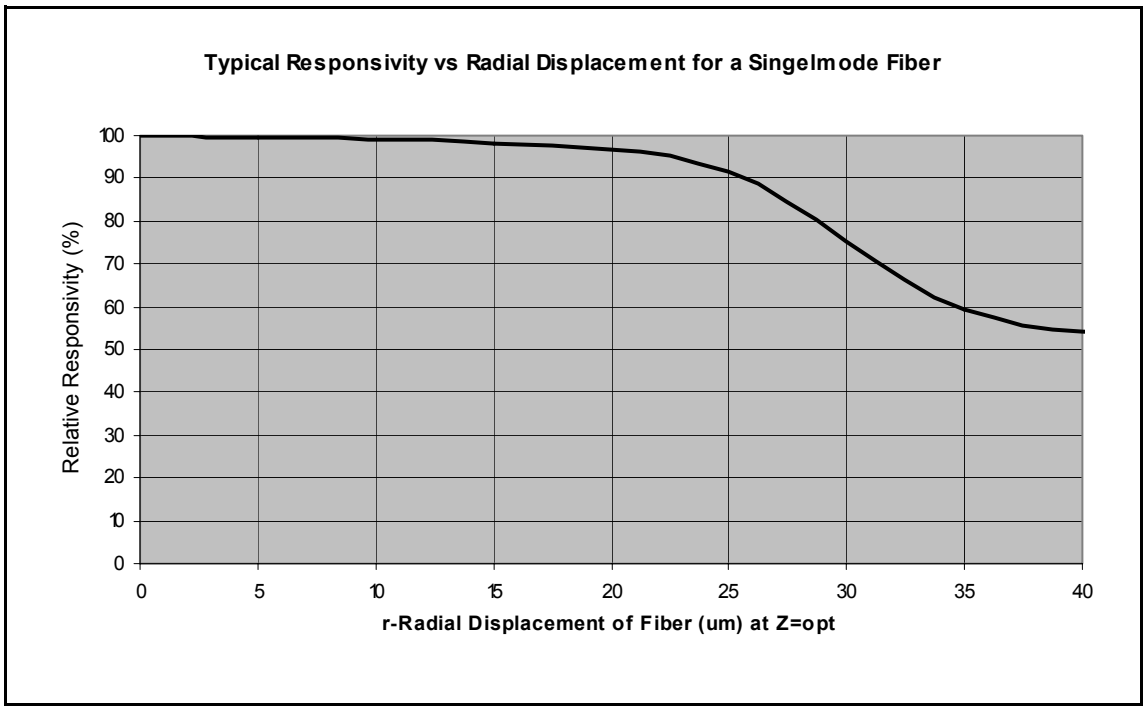


Figure 4 - Typical Responsivity vs Radial Displacement for a Singlemode Fiber

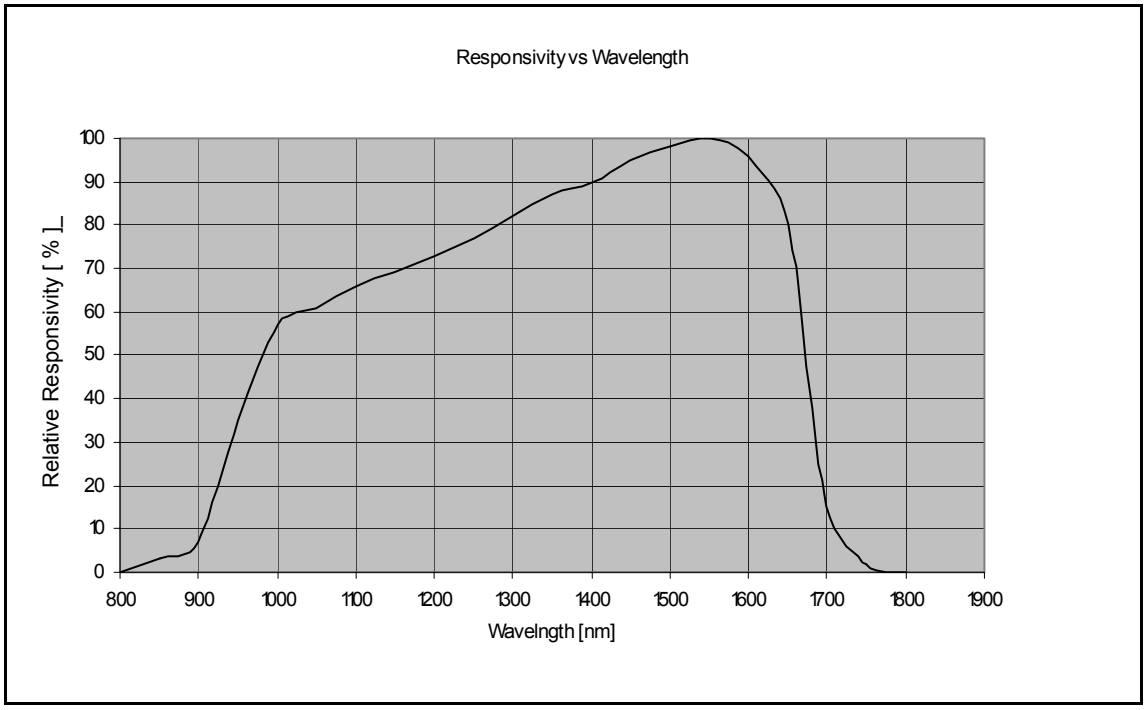


Figure 5 - Responsivity vs Wavelength of Coupled Input Power

Application Guidelines

ESD handling

The receiver is sensitive to electrostatic discharges. When handling the device, precautions for ESD sensitive devices should be taken. These precautions include use of ESD protected work area with wrist straps, controlled work benches, floors etc.

Power Supply Filter

Power Supply decoupling capacitors are recommended for optimal performance of the receiver. A filter is recommended to minimize power supply noise, see Figure 6.

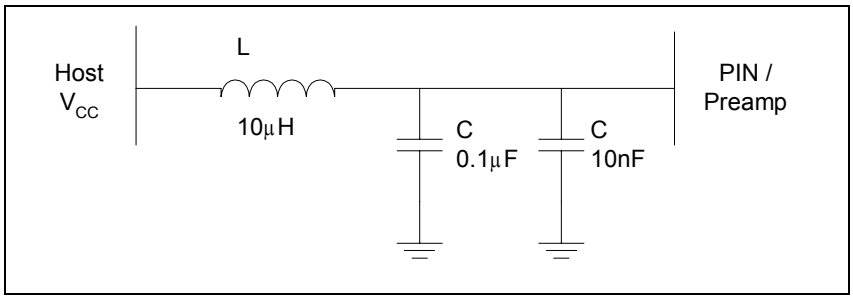
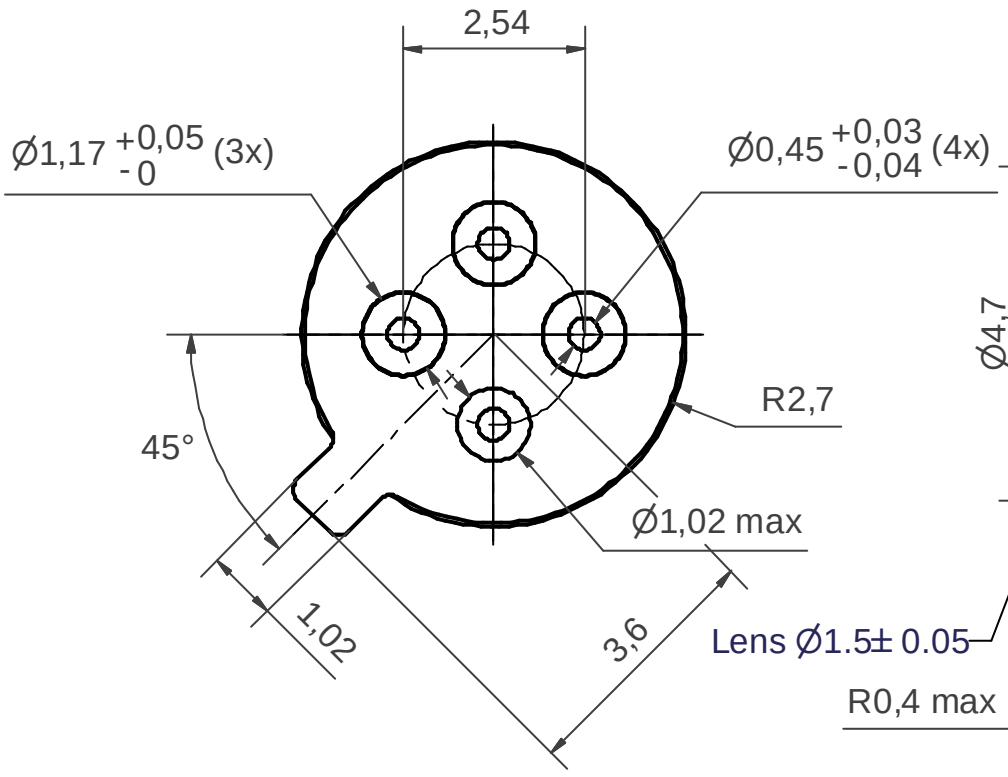


Figure 6 - Recommended Power Supply Filter

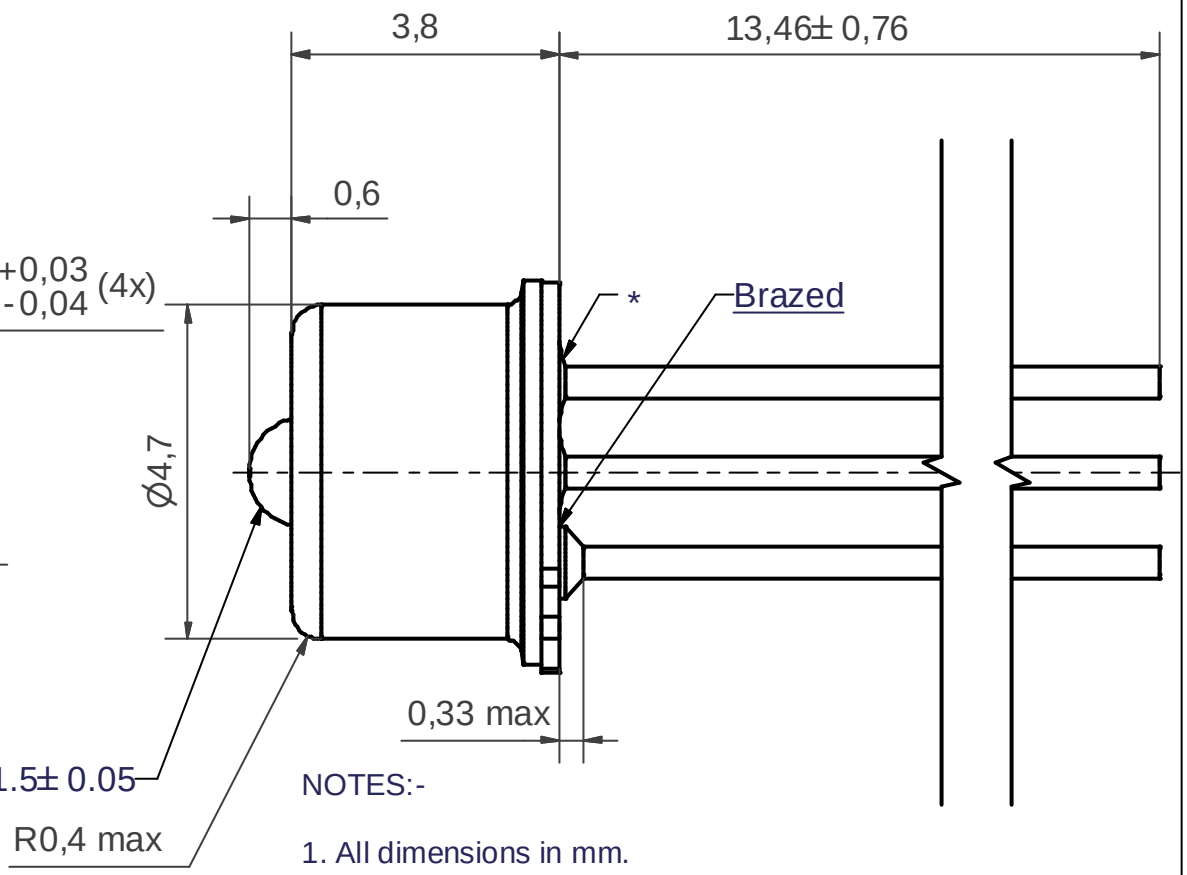
Data Outputs

The outputs Data and $\overline{\text{Data}}$, need to be AC-coupled. Typical value for the capacitors are 0.1 µF.

BOTTOM VIEW (10 : 1)



SIDE VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.
3. Coating: Case: Ni 1,5-2,5 µm.
   Header: Ni min 0,5 µm / Au min 1,5 µm.

* 0,25 max glass overmould (3x)

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ZARLINK SEMICONDUCTOR

Previous package codes

Package code TB

Drawing type
Package drawing, TO-46 with lens

Title JS004078

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