ZL60006

1310nm, 1550nm 2.5Gbps PIN with Preamplifier

Data Sheet

November 2003

Ordering Information

ZL60006TED	SC Housing
ZL60006/TBD	TO-46 with lens
ZL60006TDD	ST Housing

-40°C to +85°C

Features

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

Applications

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

Description

This optical receiver is a 3.3V device which contains a PIN photodiode, a low noise transimpedance amplifier with DC-restoration and limiting amplifier assembled in a TO-46 package. It is designed for ATM/Sonet OC-48 operation. Its double lens optical system is designed for singlemode fiber as well as for multimode fiber with core diameter up to 62.5μm. Reliability Assurance based on Telcordia GR-468-CORE.

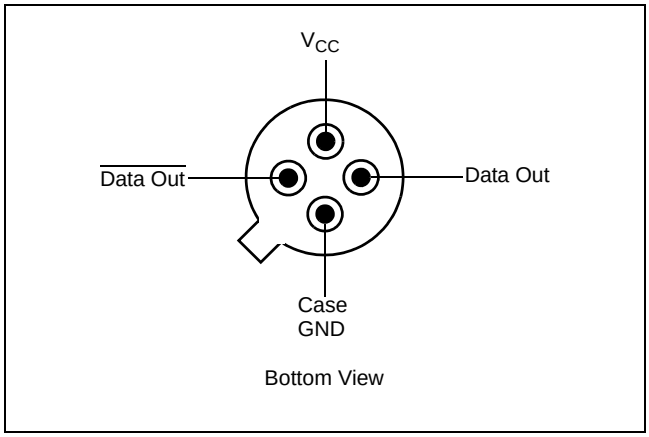


Figure 1 - Pin Diagram

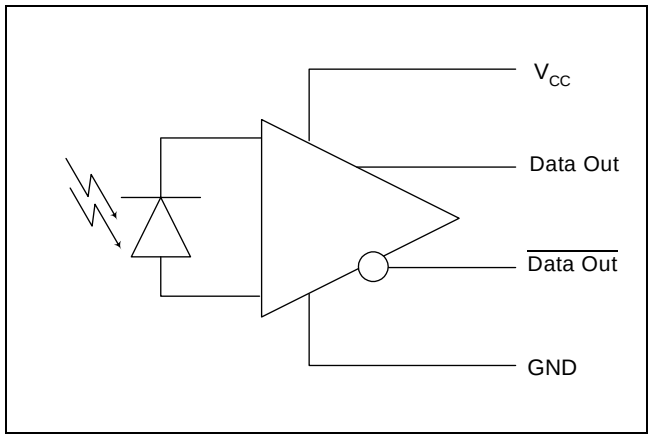


Figure 2 - Functional Schematic

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Responsivity, differential	*R*	15	26		kV/W	λ=1310nm, $R_{L=}$100Ω, Note 1
Output voltage amplitude, differential	ΔV_O		450		mV_{pp}	R_L=100Ω Note 2
Bandwidth ($3dB_{el}$)	f_c		2.2		GHz	P_f=10μW, R_L=100Ω
Optical Saturation Level (average)	P_{sat}	1			dBm	λ=1310nm, ER = ∞ Note 3
Noise-Equivalent Power	*NEP*		-32	-30	dBm	λ=1310nm Note 4
Sensivity (BER 10^{-9})	*S*		-23	-21	dBm	λ=1310nm, ER = ∞ Note 3, 5
Dynamic Range			24		dB	
Output Resistance (single)	R_o		50		Ω	
Power Dissipation	P_D		180	270	mW	
Power Supply Current	I_{DD}		55	75	mA	

Operating Conditions: 25°C case temperature/3.3V Supply Voltage/Fiber: Single-mode to multi-mode 62.5/125μm. Pattern PRBS 2^{23} -1 at 2.5Gbps.

Note 1: P_f = 10uW Peak-Power
Note 2: P_f = 500uW Peak-Power
Note 3: Measured at 10^{-9} BER with a 2^{23}-1 PRBS at 2.5Gbps
Note 4: Measured with STM-16 filter on electrical output, i.e 1.875 GHz
Note 5: Typical penalty at 10^{-10} BER equals 0.26dB

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}	3	3.3	3.6	V
Operating Temperature	T_{op}	-40		85	°C
Signaling Rate, note 6	f_D	1		3.125	Gbps

Note 6: Data pattern are to have maximum run-length and DC-balance shifts no more than that of a PRBS-23 pattern.

Typical Responsivity

	Wavelength	Fiber core/cladding diameter numerical aperture		
		10/125µm, NA=0.11	**50/125µm, NA=0.20**	**62.5/125µm, NA=0.275**
Differential responsivity	1310nm	26kV/W	26kV/W	26kV/W
Differential responsivity	1550nm	32kV/W	32kV/W	32kV/W

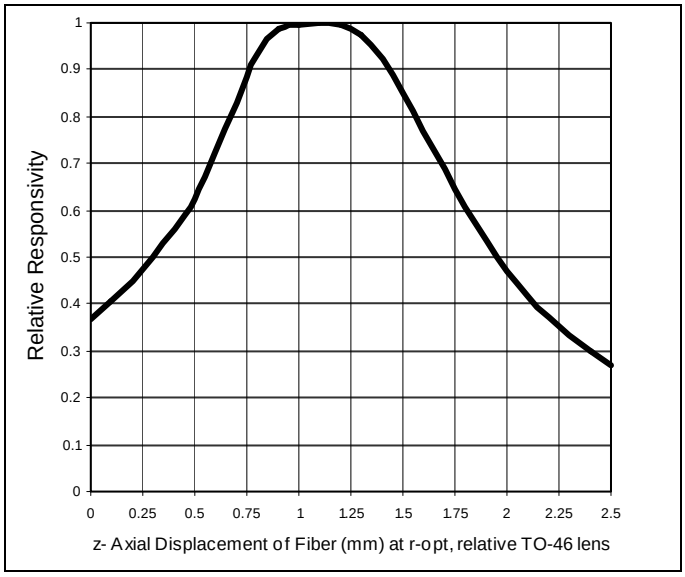


Figure 3 - Typical Responsivity vs Axial Displacement for a Multimode Fiber

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

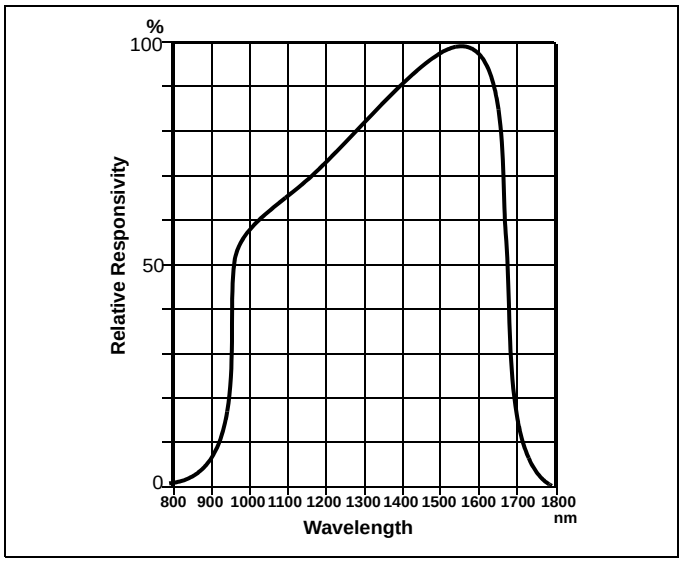


Figure 5 - Responsivity vs. Wavelength of Coupled Input Power

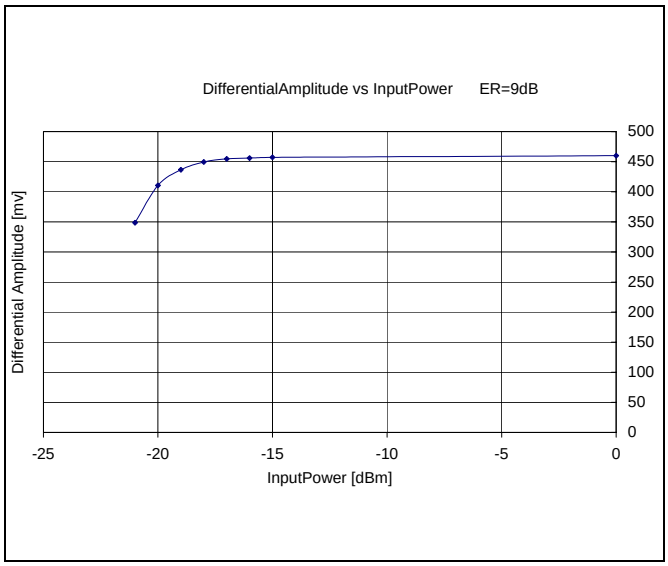


Figure 6 - Differential Amplitude vs Input Power

Application Guidelines

ESD handling

The receiver is sensitive to electrostatic discharges. When handling the device, precaution 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 minimise power supply noise. See Figure 7.

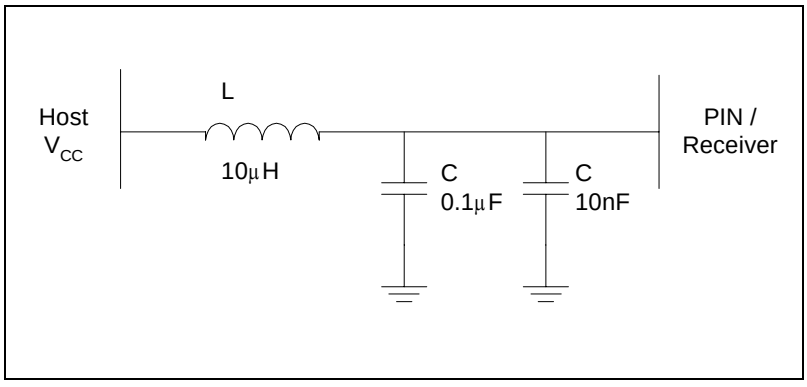
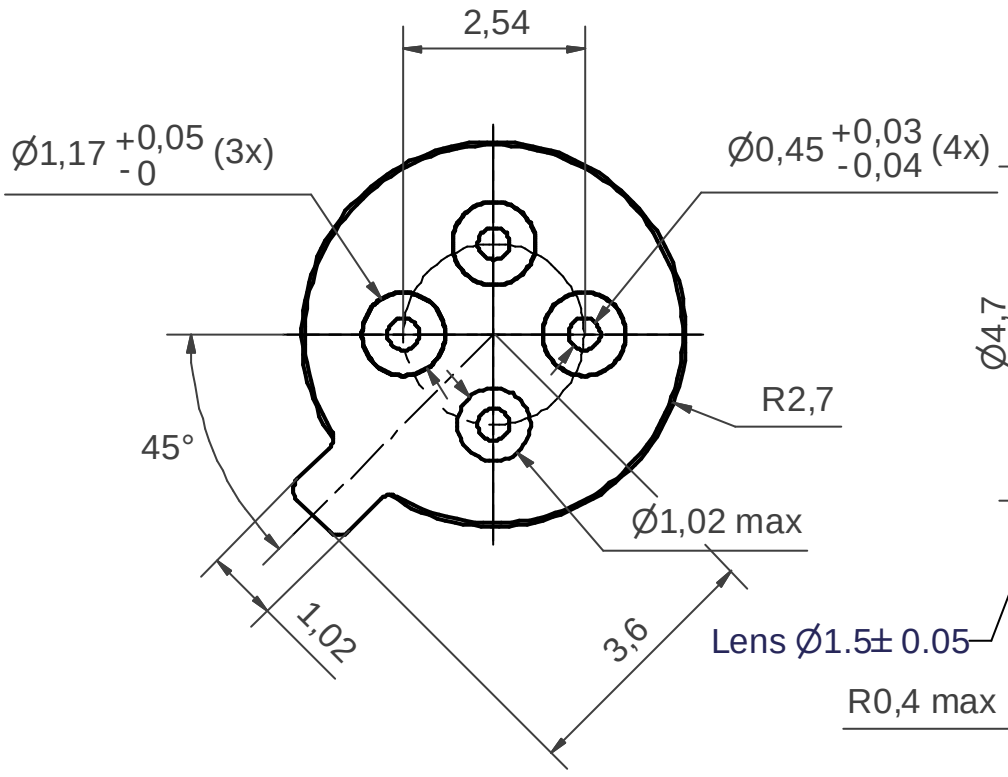
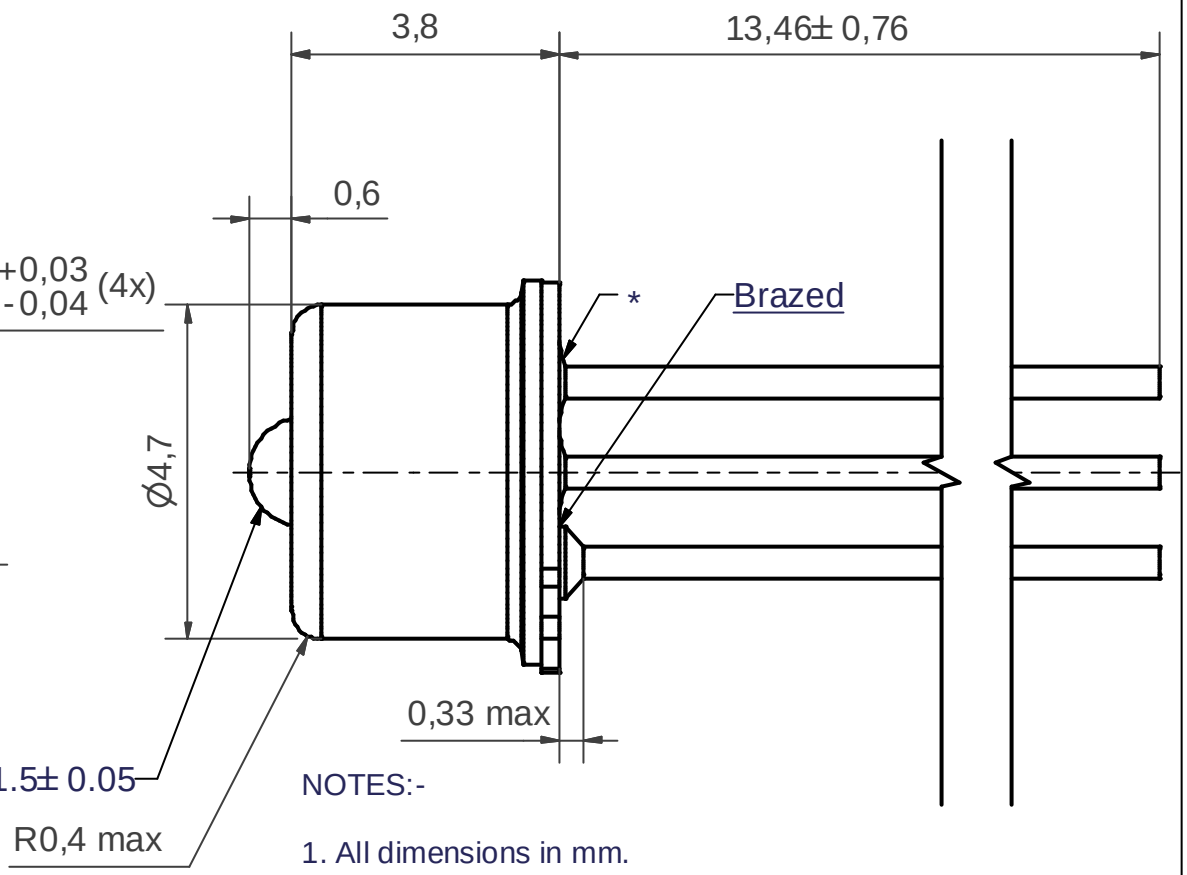


Figure 7 - Recommended Power Supply Filter

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)

ISSUE	1			
ACN	JS004078R1A			
DATE	22-MAR-03			
APPRD.	TD/BE			

ZARLINK SEMICONDUCTOR

Previous package codes

Package code TB

Drawing type
Package drawing, TO-46 with lens

Title JS004078

For more information about all Zarlink products
visit our Web Site at

www.zarlink.com