ZARLINK SEMICONDUCTOR

ZL60007

1310nm, 1550nm 622Mbps PIN with Preamplifier

Data Sheet

May 2003

Ordering Information

ZL60007/TBD TO-46 with lens

-40°C to +85°C

Features

- Data rate up to 622Mbps
- 1310, 1550 nm PIN
- TIA with AGC
- TO-46 Assembly
- 3.3V power supply

Applications

- Sonet OC-12
- SDH STM-4
- ATM 622Mbps

Description

This optical receiver is a 3.3V device which contains an InGaAs PIN photodiode and a transimpedance amplifier with Automatic Gain Control and DC restore circuit assembled in a TO-46 package. It is designed for ATM and SDH/Sonet 622Mbps. Its double-lens optical system is designed for single mode fiber as well as for multimode fiber with a core diameter up to 62.5μm. Reliability Assurance based on Telcordia GR-468-CORE.

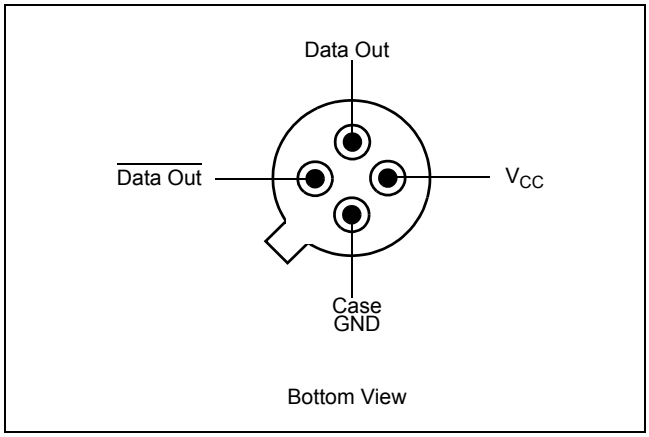


Figure 1 - Pin Diagram

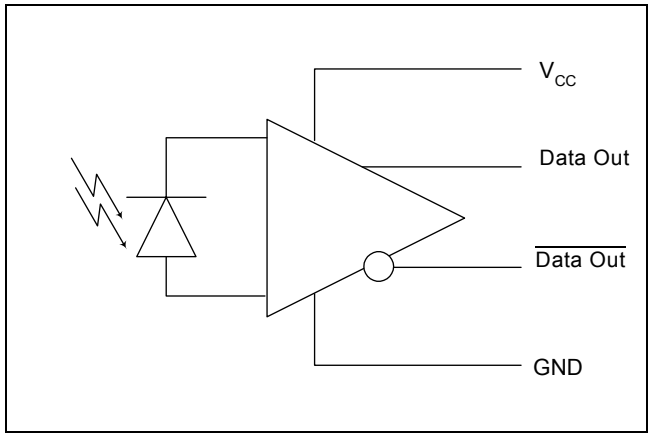


Figure 2 - Functional Schematic

Optical and Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Test condition
Responsivity, differential	*R*	14	22	33	kV/W	λ=1310nm, $R_{L=}$100Ω, Note 1
Output Voltage amplitude, differential	ΔVo		1.4		V	$R_{L=}$100Ω, ER = ∞ Note 2
Bandwidth ($3dB_{el}$)	f_c		450		MHz	P_f = 10μW, R_L = 100Ω
Optical Saturation Level (average)	P_{sat}	0	3		dBm	λ=1310nm ER = ∞ Note 3
Noise-Equivalent Power	*NEP*		-40		dBm	λ=1310nm Note 4
Sensitivity (BER 10^{-9})	*S*		-32	-30	dBm	λ=1310nm ER = ∞ Note 3, 5
Dynamic Range			35		dB	
Output Resistance (single)	R_O		50		Ω	
Power Dissipation	P_D		90	165	mW	
Power Supply Current	I_{DD}		30	45	mA	

Operating conditions: 25°C Case Temperature/3.3 V Supply Voltage/Fiber: Singlemode to multimode 62.5/125μm

Note 1: P_f=5μW Peak-Peak power at 10MHz/50% duty cycle
Note 2: Pf = 1mW average power
Note 3: BER 10^{-9} with a 2^{23}-1 PRBS at 622Mbps
Note 4: Measured with STM-4 filter on electrical output. i.e. 467 MHz
Note 5: Penalty at 10^{-10} BER equals 0.26 dB

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	0	4.5	V
Storage Temperature	T_{stg}	-55	125	°C

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Supply Voltage	V_{CC}	3.0	3.3	3.6	V
Output Differential Load, Note 6	R_L	100	1000		Ω
Operating Temperature	T_{OP}	-40		85	°C

Note 6: The typical value corresponds to the load presented by a following limiting amplifier

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	22kV/W	22kV/W	22kV/W
Differential responsivity	1550nm	27kV/W	27kV/W	27kV/W

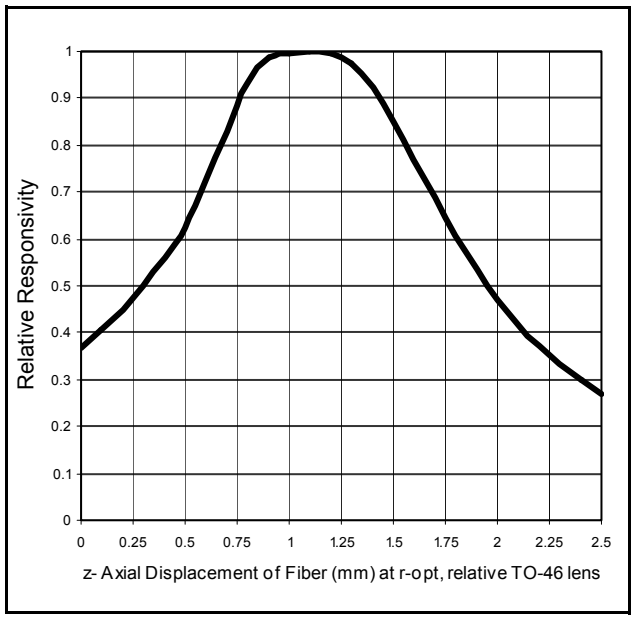


Figure 3 - Typical Responsivity vs Axial Displacement for a Multimode Fiber

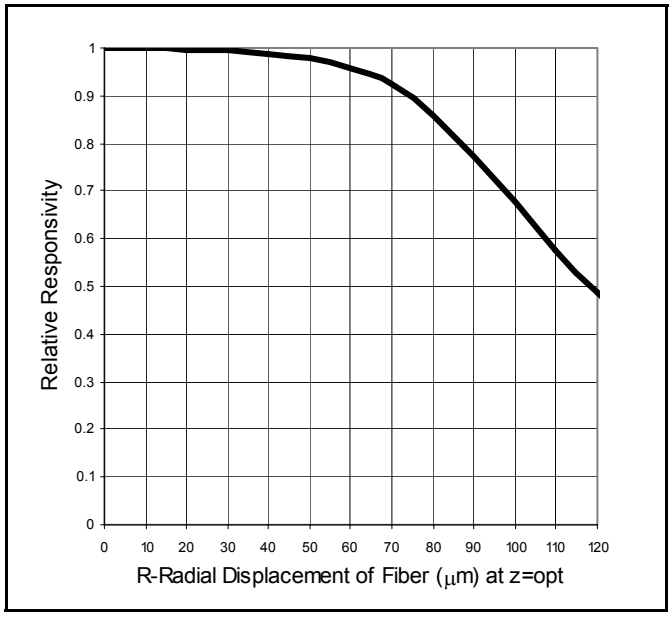


Figure 5 - Typical Responsivity vs Radial Displacement for a Multimode Fiber

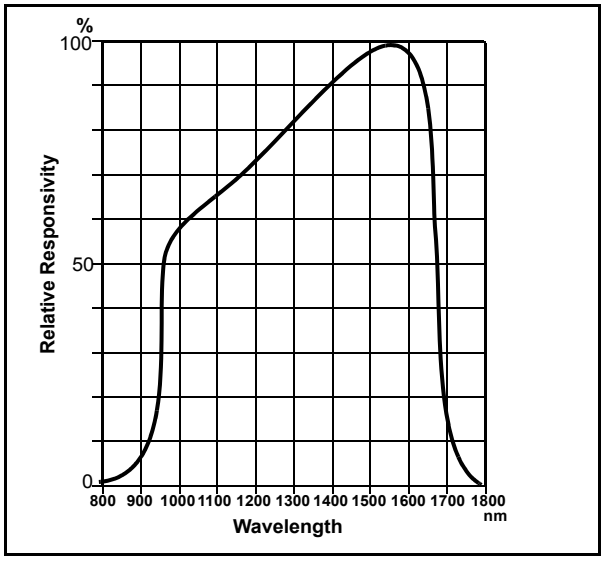


Figure 4 - Responsivity vs. Wavelength of Coupled Input Power

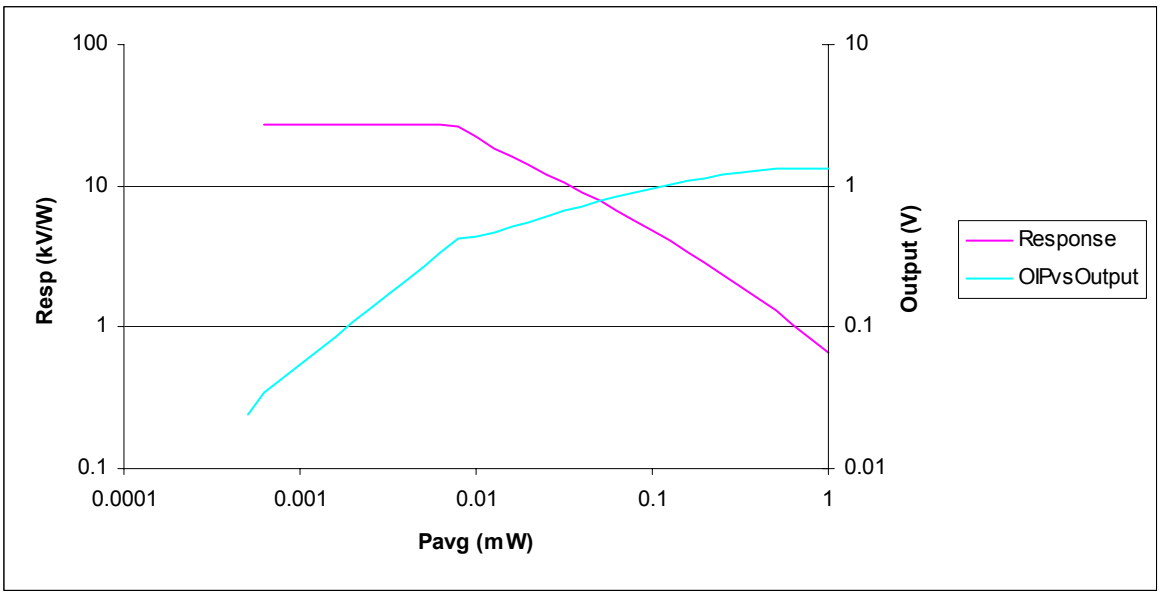


Figure 6 - Output Voltage vs Input Power

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 7.

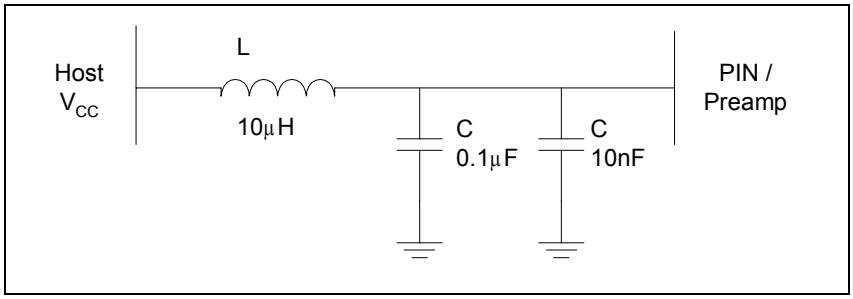


Figure 7 - Recommended Power Supply Filter

Data Outputs

The outputs Data and $\overline{\text{Data}}$ signals, are designed to drive a high load >500'Ω. It is recommended to use Mindspeed MC2044C postamplifier (R_{in}~4.5'Ω) together with ZL60007.

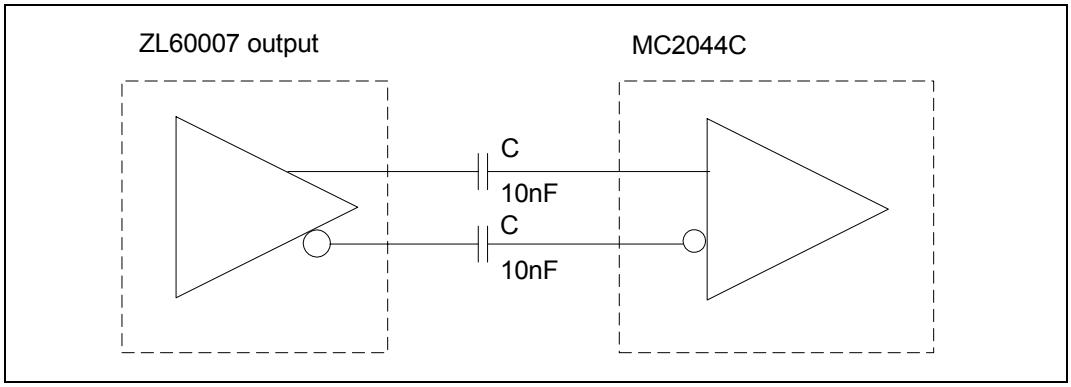
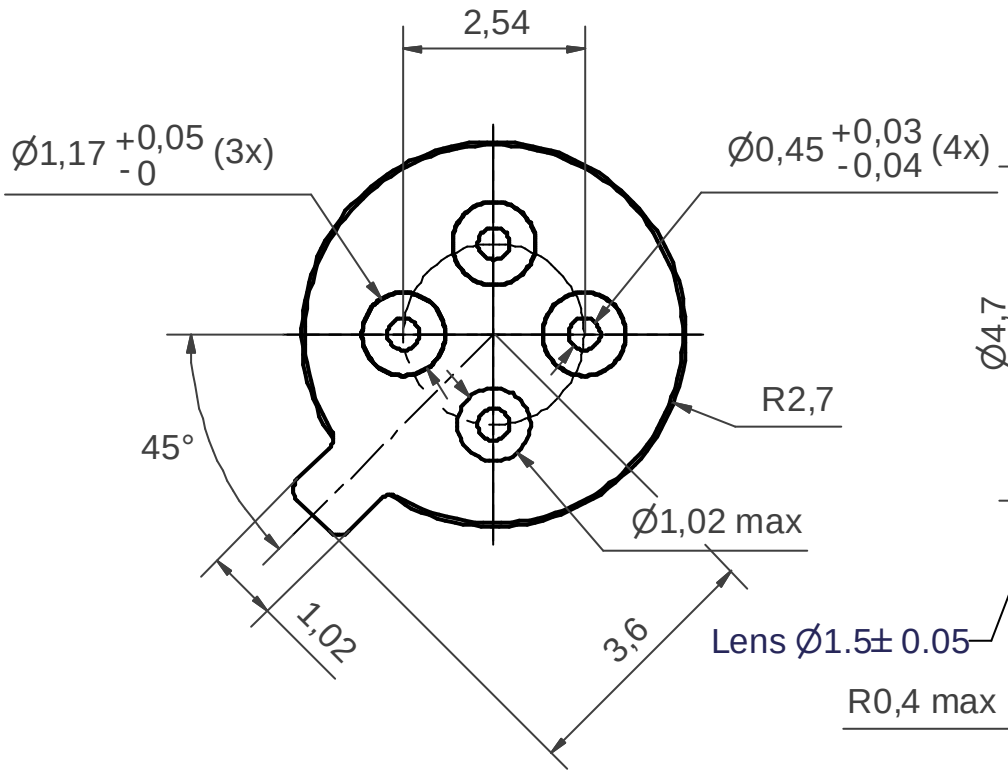
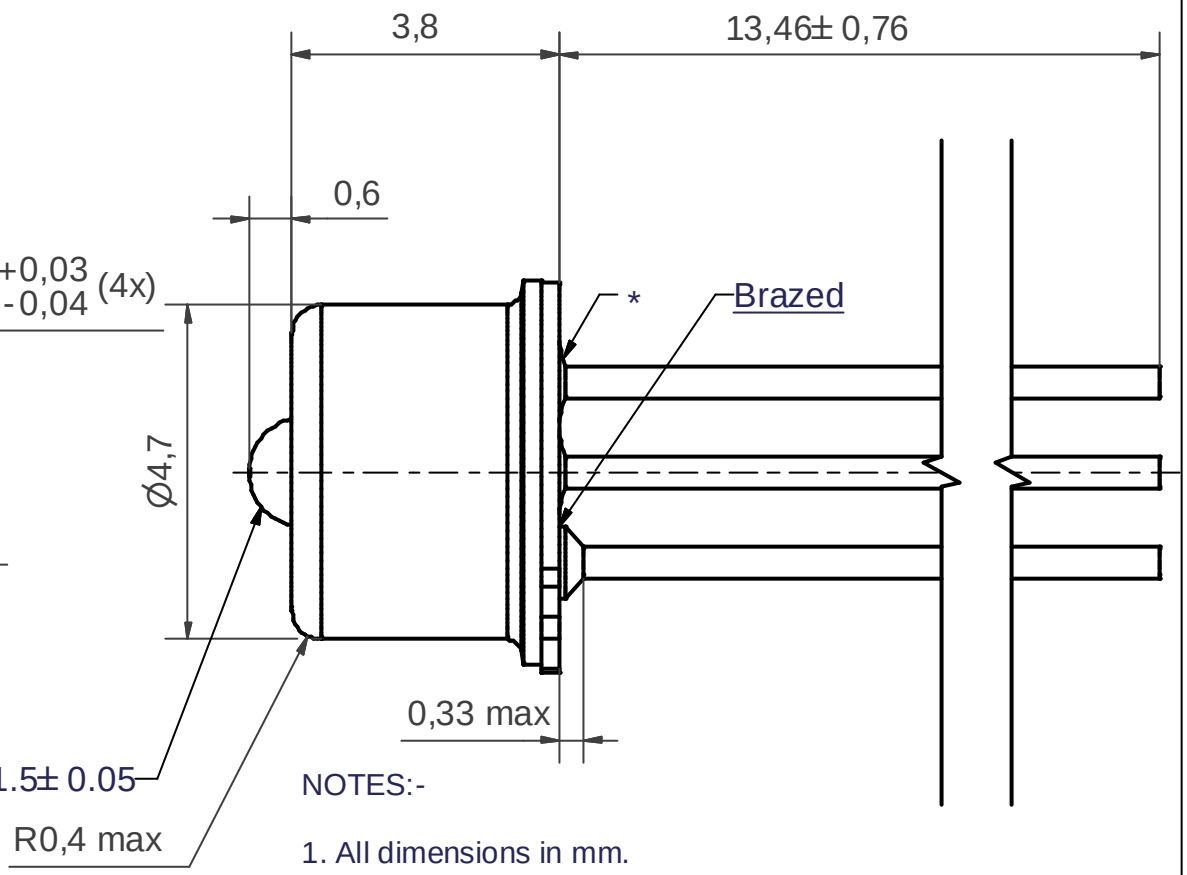


Figure 8 - Recommended Post Amplifier and Coupling Capacitors

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

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