



**Ordering Information**

ZL60007/TBD TO-46 with lens

**-40°C to +85°C**

**Features**

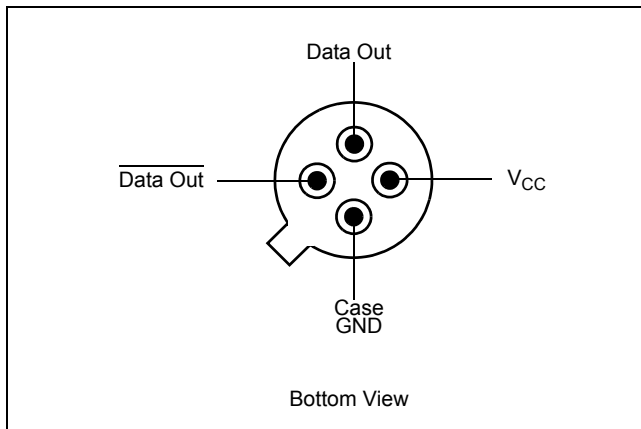
- Data rate up to 622Mbps
- 1310, 1550 nm PIN
- TIA with AGC
- TO-46 Assembly
- 3.3V power supply

**Applications**

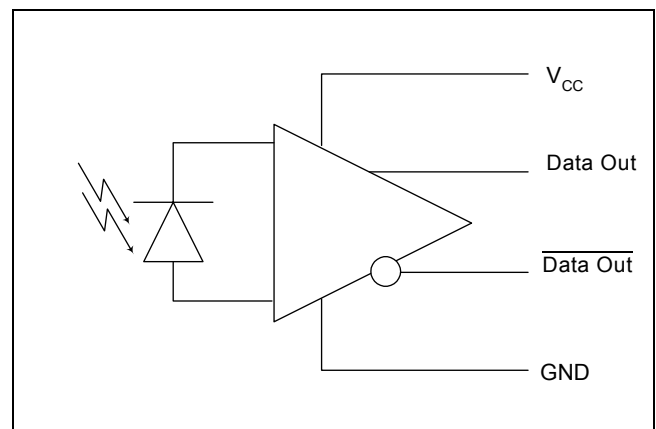
- Sonet OC-12
- SDH STM-4
- ATM 622Mbps

**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	$\lambda=1310\text{nm}$ , $R_L=100\Omega$ , Note 1
Output Voltage amplitude, differential	$\Delta V_o$		1.4		V	$R_L=100\Omega$ , $ER = \infty$ Note 2
Bandwidth (3dB <sub>el</sub> )	$f_c$		450		MHz	$P_f = 10\mu\text{W}$ , $R_L = 100\Omega$
Optical Saturation Level (average)	$P_{\text{sat}}$	0	3		dBm	$\lambda=1310\text{nm}$ $ER = \infty$ Note 3
Noise-Equivalent Power	$NEP$		-40		dBm	$\lambda=1310\text{nm}$ Note 4
Sensitivity (BER $10^{-9}$ )	$S$		-32	-30	dBm	$\lambda=1310\text{nm}$ $ER = \infty$ Note 3, 5
Dynamic Range			35		dB	
Output Resistance (single)	$R_O$		50		$\Omega$	
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 62.5/125 $\mu\text{m}$

Note 1:  $P_f=5\mu\text{W}$  Peak-Peak power at 10MHz/50% duty cycle

Note 2:  $P_f = 1\text{mW}$  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	$T_{\text{stg}}$	-55	125	°C

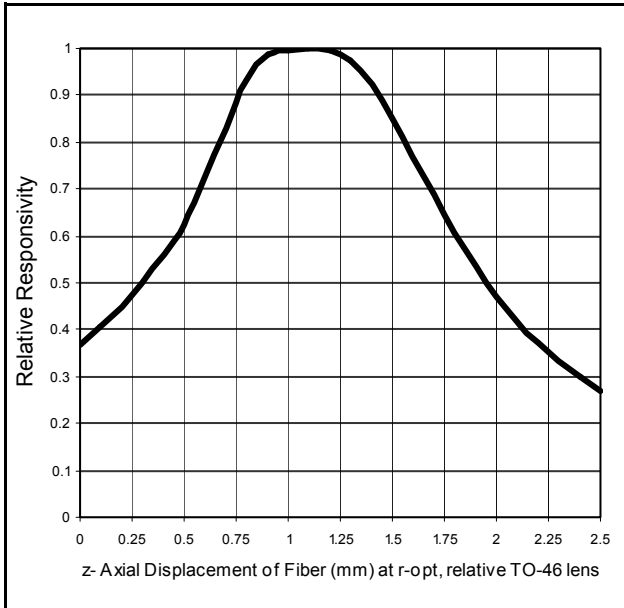
## Recommended Operating Conditions

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		$\Omega$
Operating Temperature	$T_{OP}$	-40		85	°C

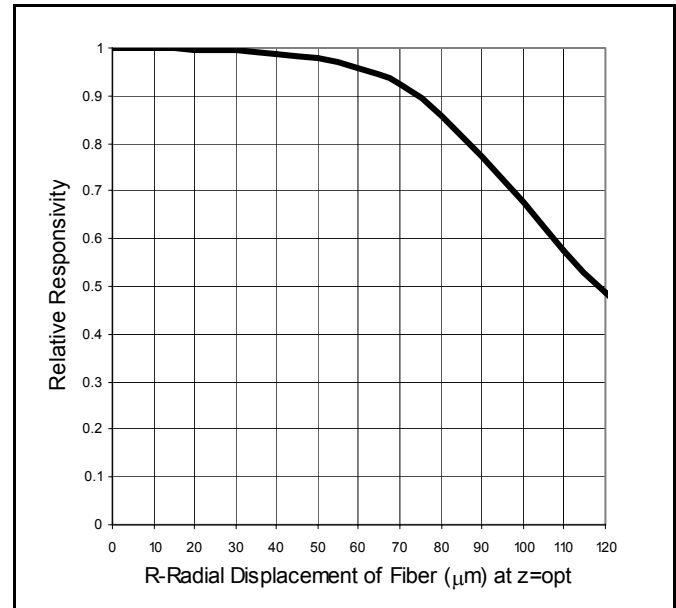
Note 6: The typical value corresponds to the load presented by a following limiting amplifier

**Typical Responsivity**

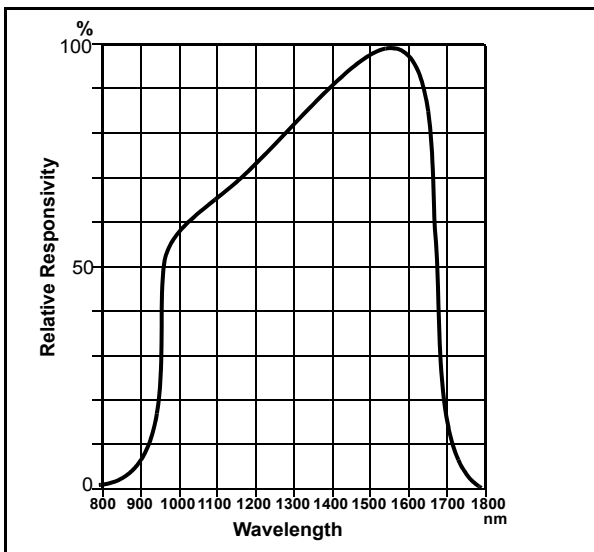
	Wavelength	Fiber Core/cladding Diameter Numerical Aperture		
		10/125 $\mu\text{m}$ , NA=0.11	50/125 $\mu\text{m}$ , NA=0.20	62.5/125 $\mu\text{m}$ , NA=0.275
Differential responsivity	1310nm	22kV/W	22kV/W	22kV/W
Differential responsivity	1550nm	27kV/W	27kV/W	27kV/W



**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**

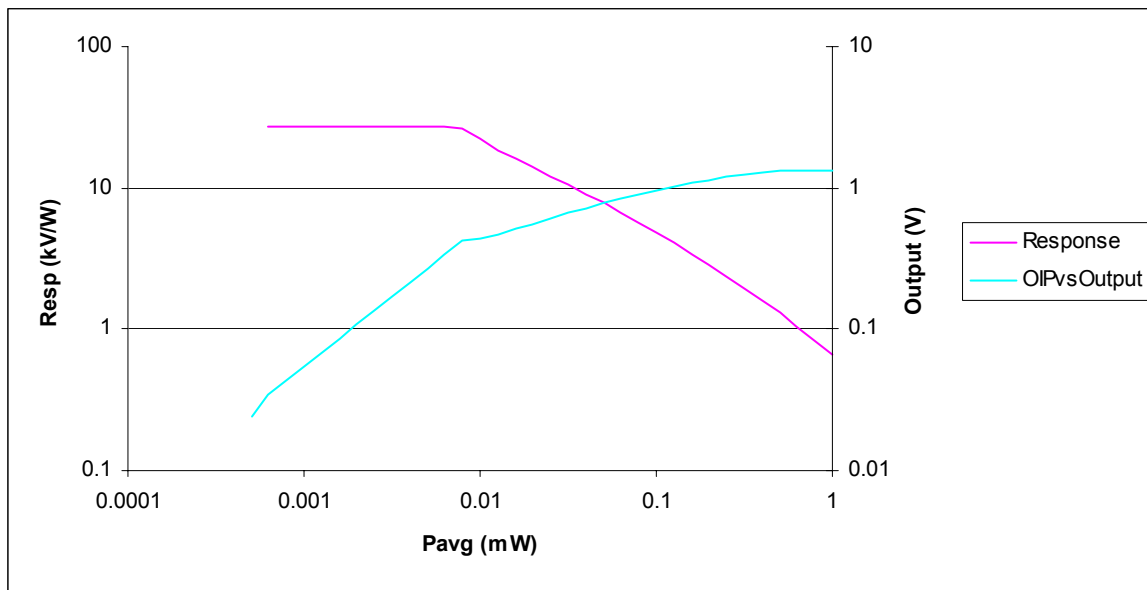


Figure 6 - Output Voltage vs Input Power

### 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.

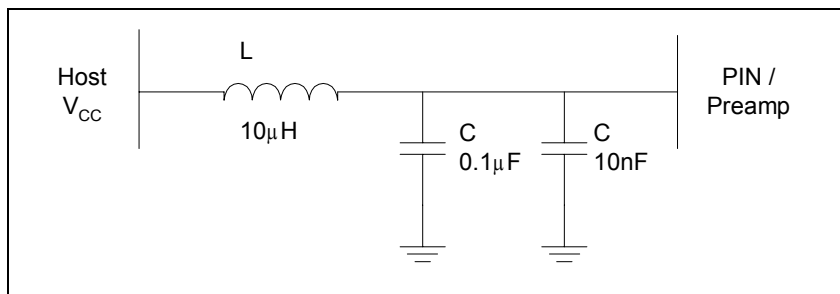
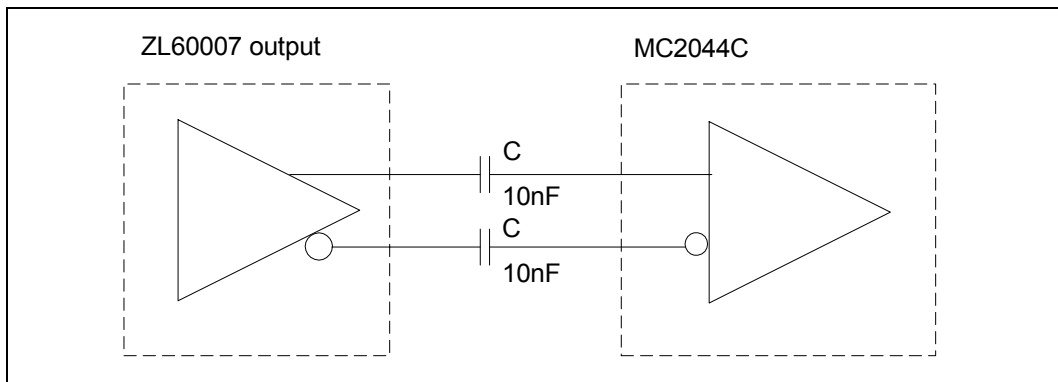


Figure 7 - Recommended Power Supply Filter

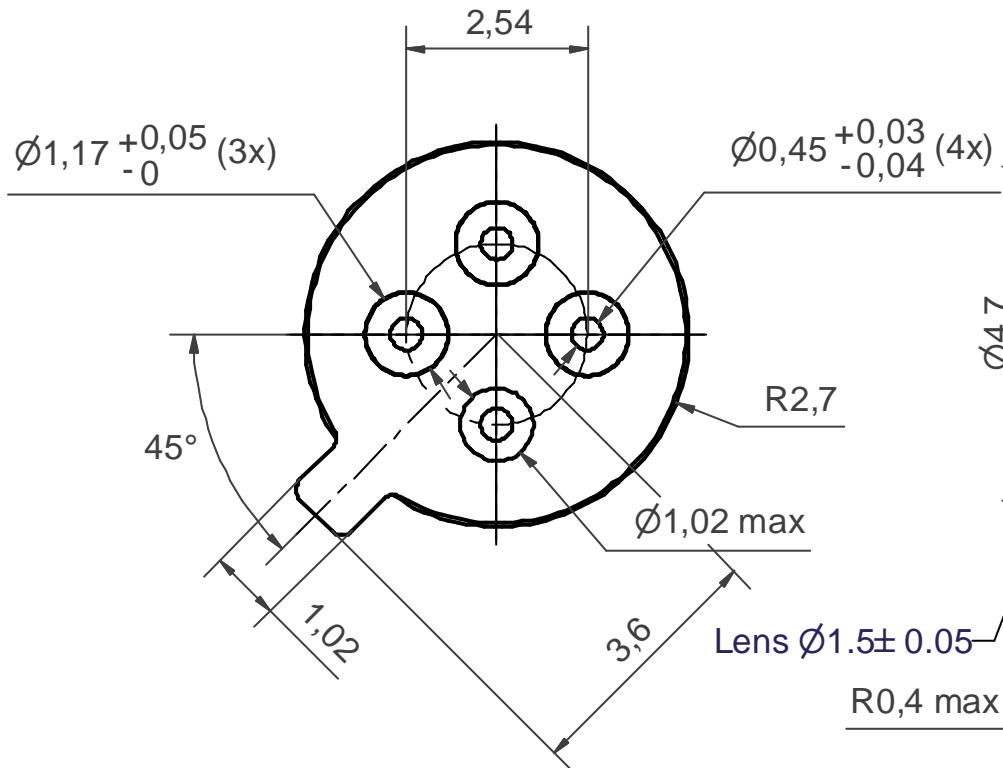
## Data Outputs

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

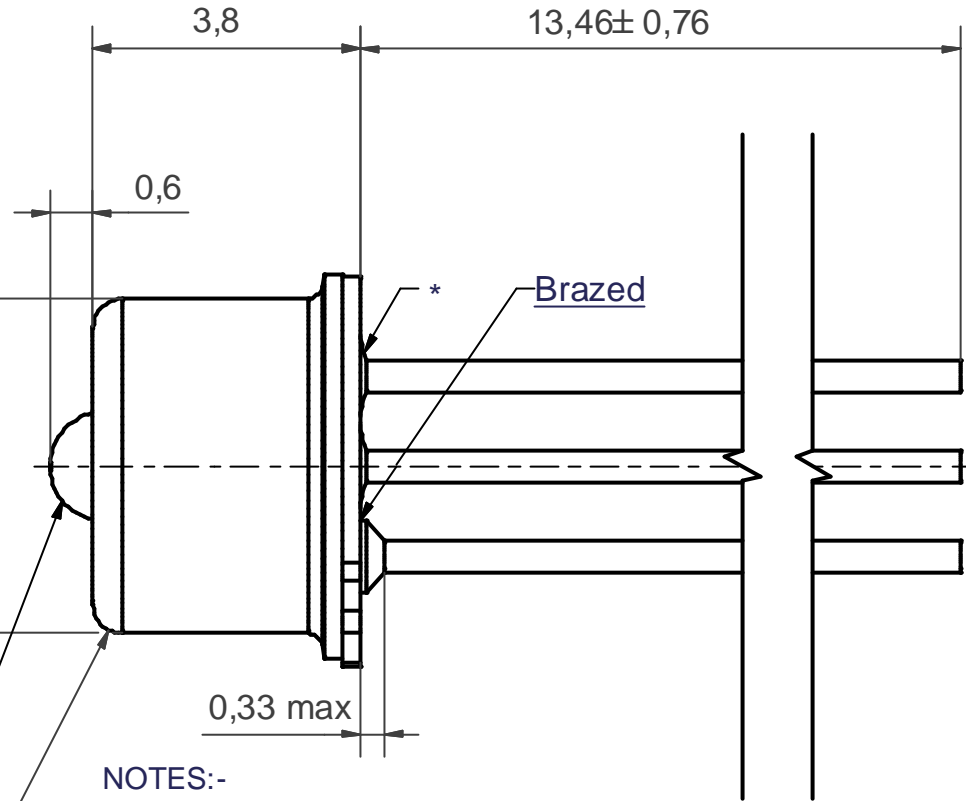


**Figure 8 - Recommended Post Amplifier and Coupling Capacitors**

# 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  $\mu$ m.  
Header: Ni min 0,5  $\mu$ m / Au min 1,5  $\mu$ m.

\* 0,25 max glass overmould (3x)

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