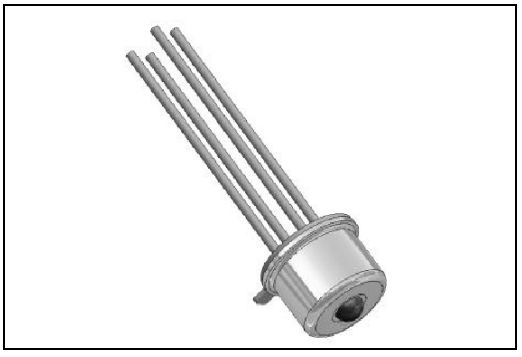


Features

- Data rate up to 200 Mbps
- 1310 - 1550 nm PIN
- TO-46 Assembly
- TIA with AGC
- Single 3.3 V supply
- Low power consumption

Applications

- Sonet OC-3
- SDH STM-1
- ATM 155 Mbps
- FDDI, Ethernet

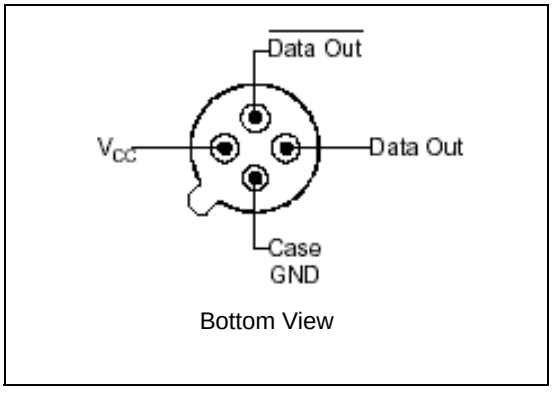


Figure 1 - Pin Diagram

June 2004

Ordering Information

ZL60009/TBD TO-46 with lens

-40°C to +85°C

Description

This optical receiver is a 3.3 V device which contains a PIN photodiode and a low noise transimpedance amplifier assembled in a TO-46 package. It is designed for OC-3/STM-1 operation. Its optical system is designed for single mode fiber as well as for multi mode fiber with a core diameter up to 62.5 µm. Reliability Assurance based on Telcordia GR-468-CORE.

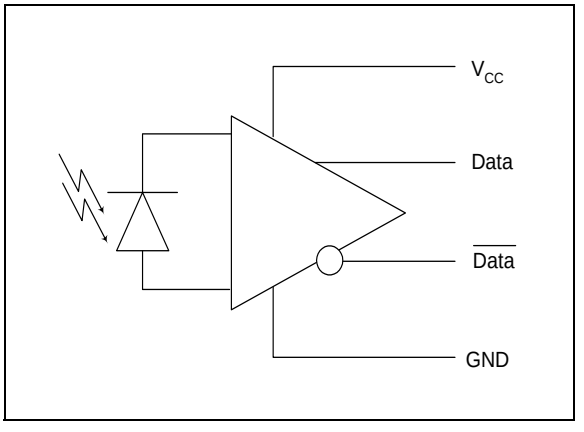


Figure 2 - Functional Schematic

Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Responsivity, differential	R	13	39		kV/W	λ=1310 nm R_L = 100 Ω, Note 1
Output Voltage amplified, differential	ΔV_O		270		mV_{pp}	R_L = 100 Ω, Note 2
Bandwidth (3 dB_{el})	f_c		140		MHz	P_f = 10 µW, RL=100 Ω
Optical Saturation level, (average)		0	3		dBm	λ=1310 nm ER = ∞ , Note 3
Noise-Equivalent Power	*NEP*		-47		dBm	λ=1310 nm, Note 4
Dynamic Range			40		dB	
Sensitivity (BER 10^{-9})	S		-37	-36	dBm	λ=1310 nm ER = ∞ , Note 3, 5
Output Resistance (single)	R_O		40	100	Ω	
Power Dissipation	P_D		72	115	mW	
Power Supply Current	I_{DD}		22	32	mA	

Operating Conditions: 25°C Case Temperature/3.3 V Supply Voltage/Fiber: Single-mode to multi-mode 62.5/125 µm fiber

Note 1: P_f = 2µW Peak-Peak power at 10 MHz 50% duty cycle

Note 2: P_f =100µW Peak-Peak average Power at 10 MHz 50% duty cycle

Note 3: Measured at 10^{-9}BER with a 2^{23}-1 PRBS at 155 Mbps

Note 4: Measured with STM-1 filter on electrical output i.e. 116 MHz

Note 5: Penalty at 10^{-10} BER equals 0.26dB

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	-0.5	4.5	V
Storage Temperature	T_{stg}	-55	125	°C

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage	V_{CC}	3	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 prevented by a following limiting amplifier.

Typical Responsivity

	Wavelength	Fiber Core/Cladding Diameter Numerical Aperture		
		10/125 µm, NA=0.11	**50/125 µm, NA=0.20**	**62.5/125 µm, NA=0.275**
Differential responsivity	1310 nm	39 kV/W	39 kV/W	39 kV/W
Differential responsivity	1550 nm	47 kV/W	47 kV/W	47 kV/W

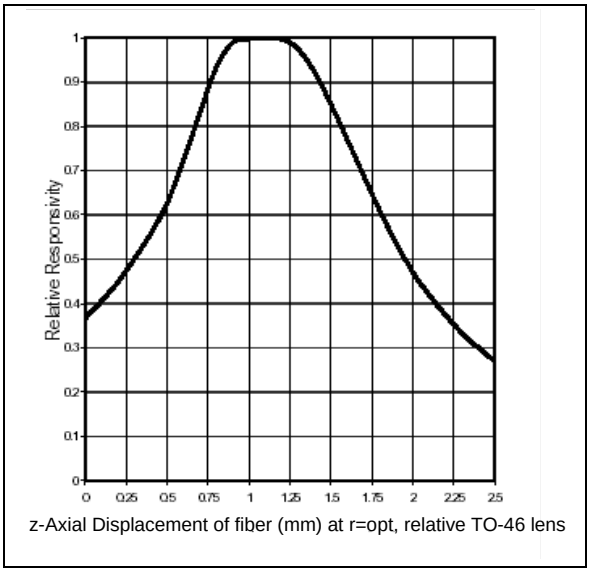


Figure 3 - Typical Responsivity Versus Axial Displacement for a Multimode Fiber

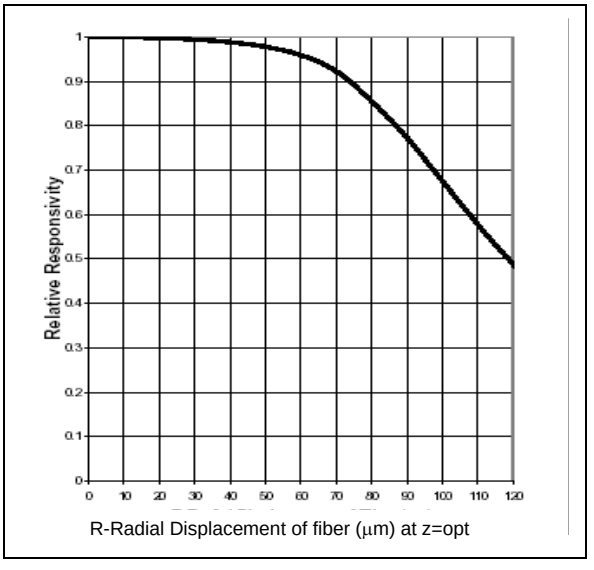


Figure 4 - Typical Responsivity Versus Radial Displacement for a Multimode Fiber

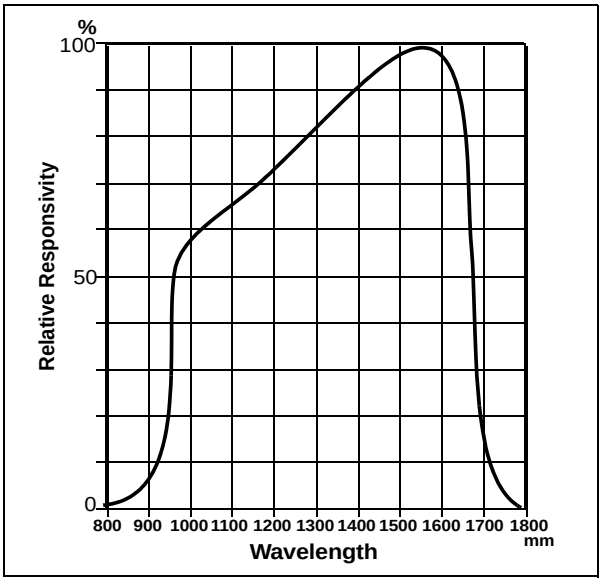


Figure 5 - Responsivity Versus Wavelength of Coupled Input Power

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.

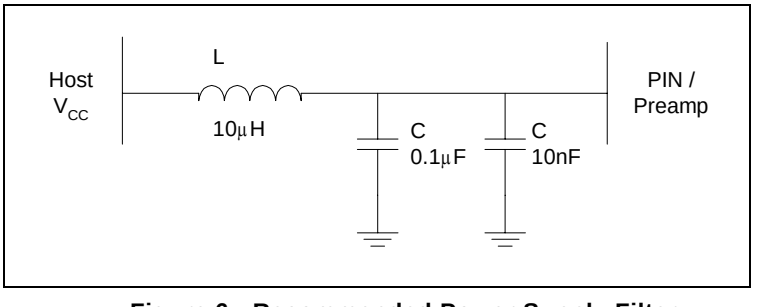


Figure 6 - Recommended Power Supply Filter

Data Outputs

Outputs, Data and $\overline{\text{Data}}$, need to be AC-coupled according to Figure 8. The capacitor determines the low-frequency cut-off for the system.

For improved sensitivity the optional filter capacitor C_F should be chosen to constitute a 0.75*bit rate BW filter.

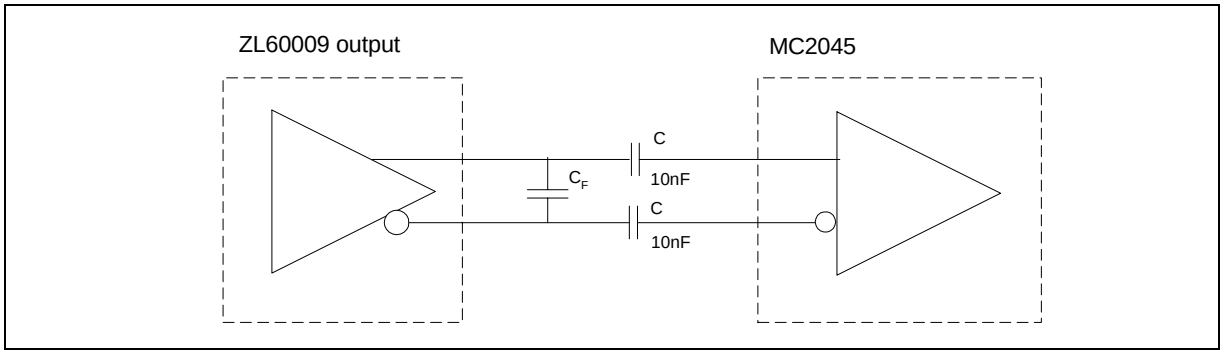
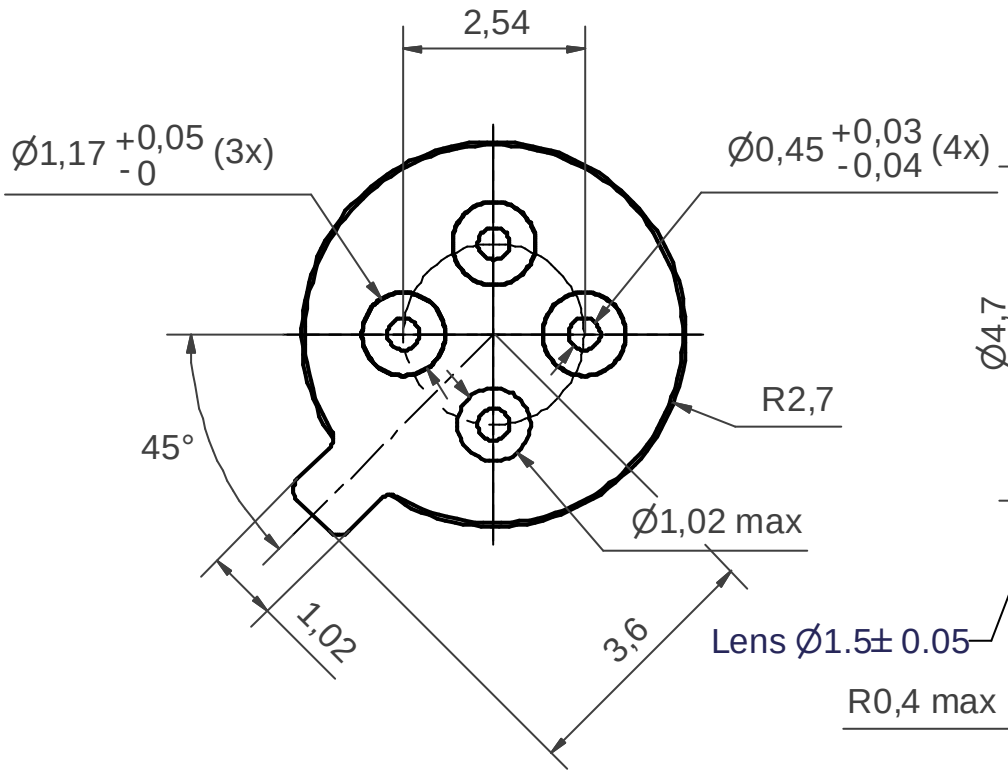
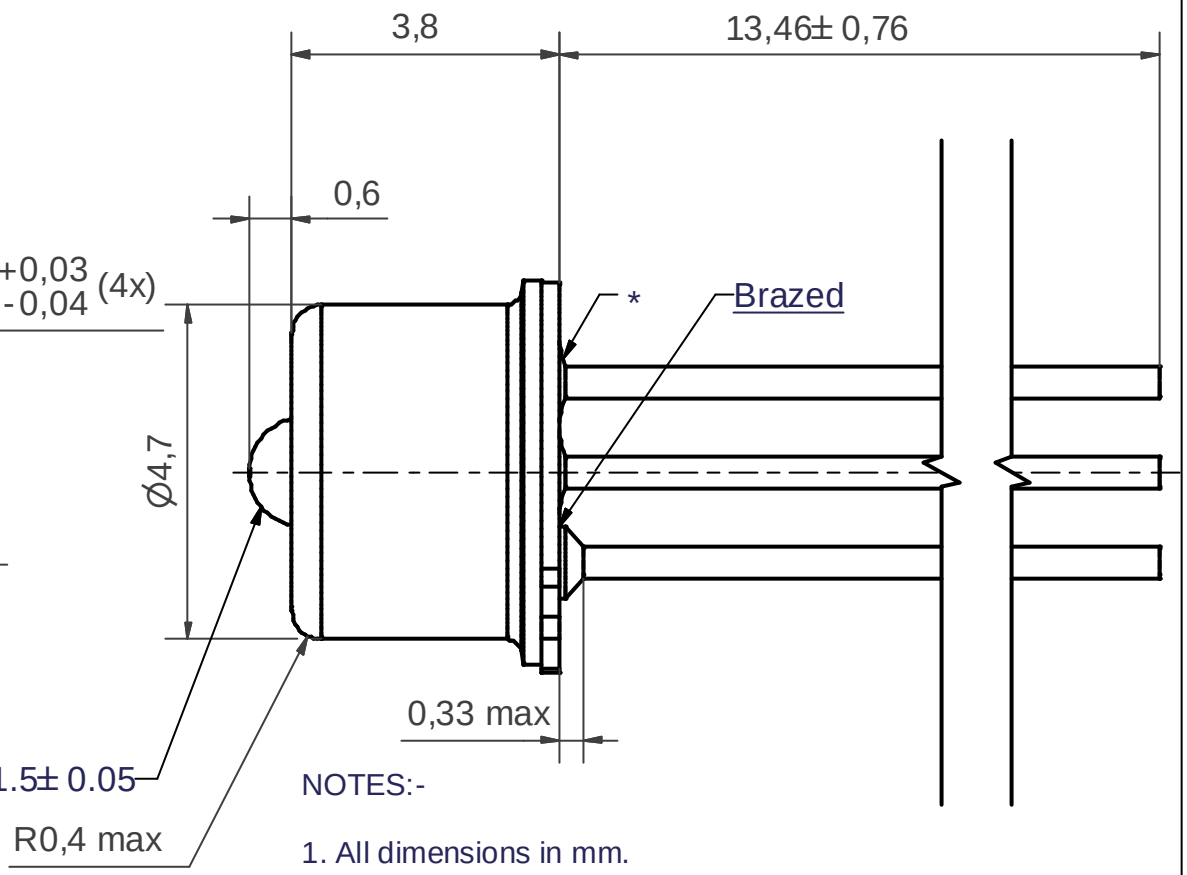


Figure 7 - Required coupling and filter capacitors

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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