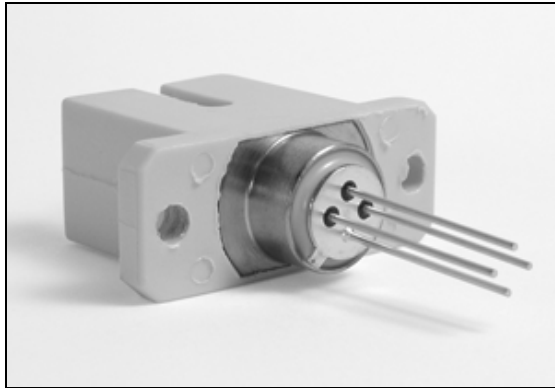


December 2003



Ordering Information

ZL60013TED, TO-46 with lens in SC-housing

-40°C to +85°C

Description

This optical receiver is designed for SDI (Serial Digital Interface) HDTV (high definition television) optical fiber transmission systems. The product follows the ANSI/SMPTE 292 M standard and is capable of handling DC-unbalanced (pathological) signals.

The receiver operates at 3.3 V and contains an InGaAs PIN photodiode and a transimpedance amplifier with AGC (Automatic Gain Control), assembled in a TO-46 package. Its double-lens optical system is designed for use with single-mode fiber as well as multi-mode fiber with a core diameter up to 62.5 μm. Reliability assurance is based on Telecordia GR-468-CORE. The product is supplied in SC-housing as standard as defined by ANSI/SMPTE 292 M standard.

Features

- Data rate up to 1.5 Gbps
- 1310 nm, 1550 nm PIN
- TIA with AGC
- Handles DC-unbalanced signals
- Wide dynamic range
- TO-46 assembly
- 3.3 V power supply
- SMF and MMF

Applications

- ANSI/SMPTE 292M

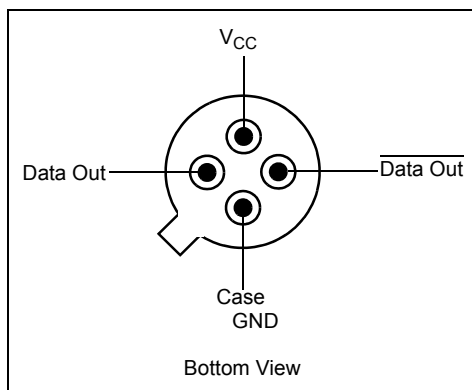


Figure 1 - Pin Diagram

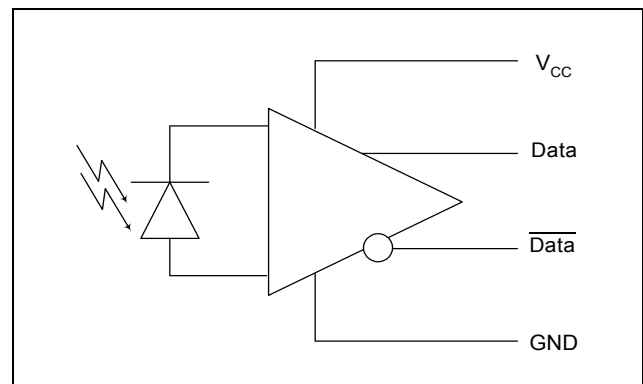


Figure 2 - Functional Schematic

Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Responsivity, differential	R	4	8	12	kV/W	$\lambda = 1310$ nm $R_L = 100 \Omega$, Note 1
Output Voltage amplitude differential	ΔV_O		400		mV, p-p	$R_L = 100 \Omega$ Note 2
Data rate	f_R			1.5	Gbps	$R_L = 100 \Omega$
Optical Saturation Level (average)	P_{sat}		-2		dBm	$\lambda = 1310$ nm, $E_R = \infty$ Note 5
Noise-Equivalent Power	NEP		-36		dBm	$\lambda = 1310$ nm
Sensitivity (BER 10^{-9})	S_{OMA}		5	10	μ W	$\lambda = 1310$ nm, Note 3 and 4
Sensitivity (BER 10^{-9})	S		-26	-23	dBm	$\lambda = 1310$ nm, $E_R = \infty$ Note 5
Dynamic Range			24		dB	
Output Resistance (single-ended)	R_O		50		Ω	
Power Supply Current	I_{DD}		34	47	mA	
Power Dissipation				169	mW	

Test conditions: 25°C Case Temperature/3.3 V Supply Voltage. Fiber: Single-mode to multi-mode 62.5/125 μ m

Note 1: $P_f = 2 \mu$ W Peak-Peak power at 10 MHz/50% duty cycle.

Note 2: $P_f = 500 \mu$ W Peak-Peak power at 10 MHz/50% duty cycle.

Note 3: Measured using DC-unbalanced patterns with 5% and 95% duty cycles, respectively at 1.48 Gbps.

Note 4: An OMA value has been quoted as this is more meaningful for DC unbalanced signals.

Note 5: Measured with a DC balanced signal with a $2^{23}-1$ PRBS at 1.48 Gbps.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V_{CC}	0	6	V
Storage Temperature	T_{stg}	-55	125	$^{\circ}$ C

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max	Unit
Supply Voltage	V_{CC}	3.0		5.5	V
Output Differential Load	R_L		100		Ω
Operating Temperature	T_{op}	-40		85	$^{\circ}$ C

Typical Responsivity

	Fiber Core/Cladding Diameter Numerical Aperture			
	Wavelength	10/125 NA = 0.11	50/125 NA = 0.20	62.5/125 NA = 0.275
Differential responsivity	1310 nm	8 kV/W	8 kV/W	8 kV/W
Differential responsivity	1550 nm	9.5 kV/W	9.5 kV/W	9.5 kV/W

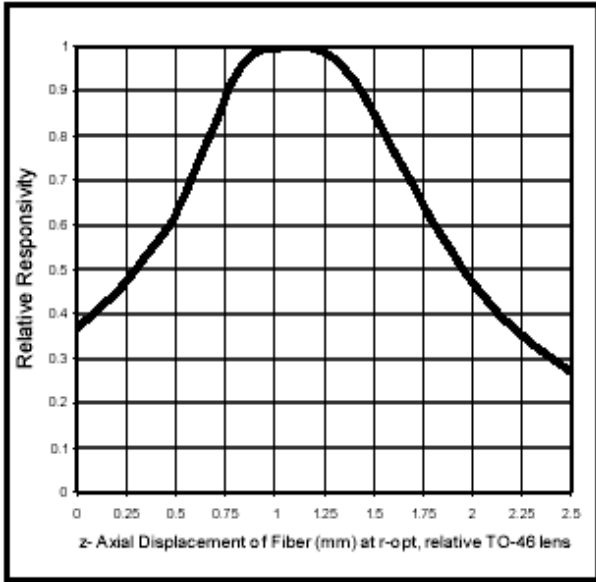


Figure 3 - Typical Responsivity vs Axial Displacement for a Multi-mode Fiber

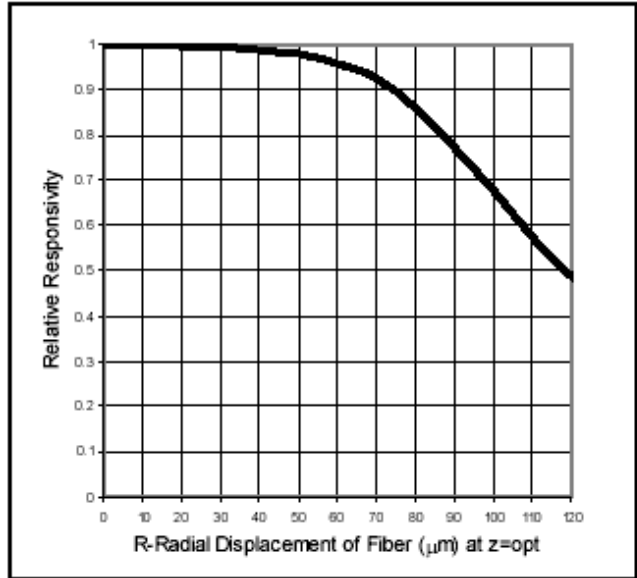


Figure 5 - Typical Responsivity vs. Radial Displacement for a Multi-mode Fiber

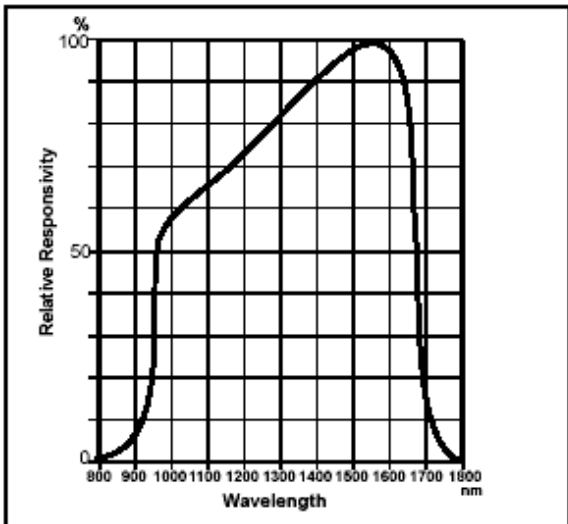


Figure 4 - Responsivity vs. Wavelength of Coupled Input Power

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 minimize power supply noise. See Figure 6.

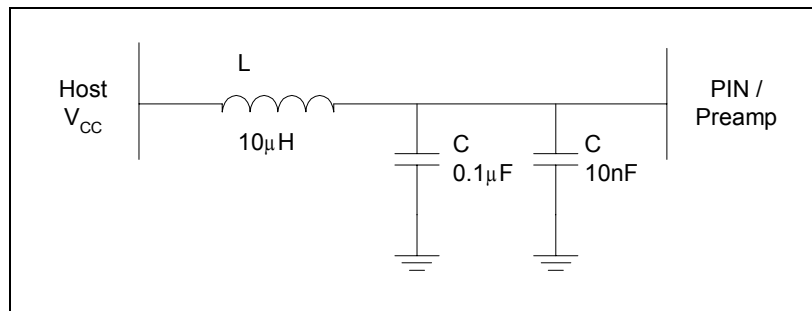
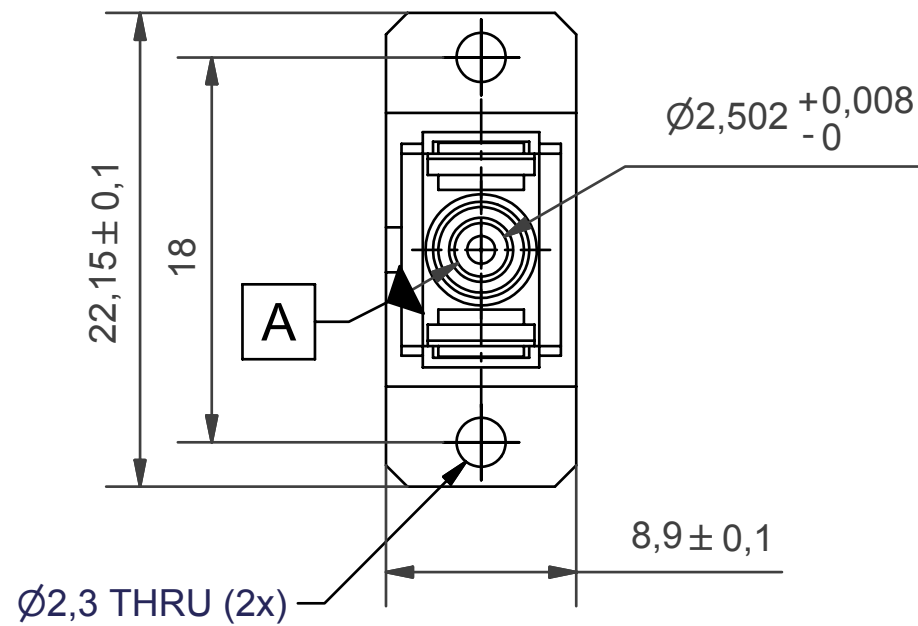
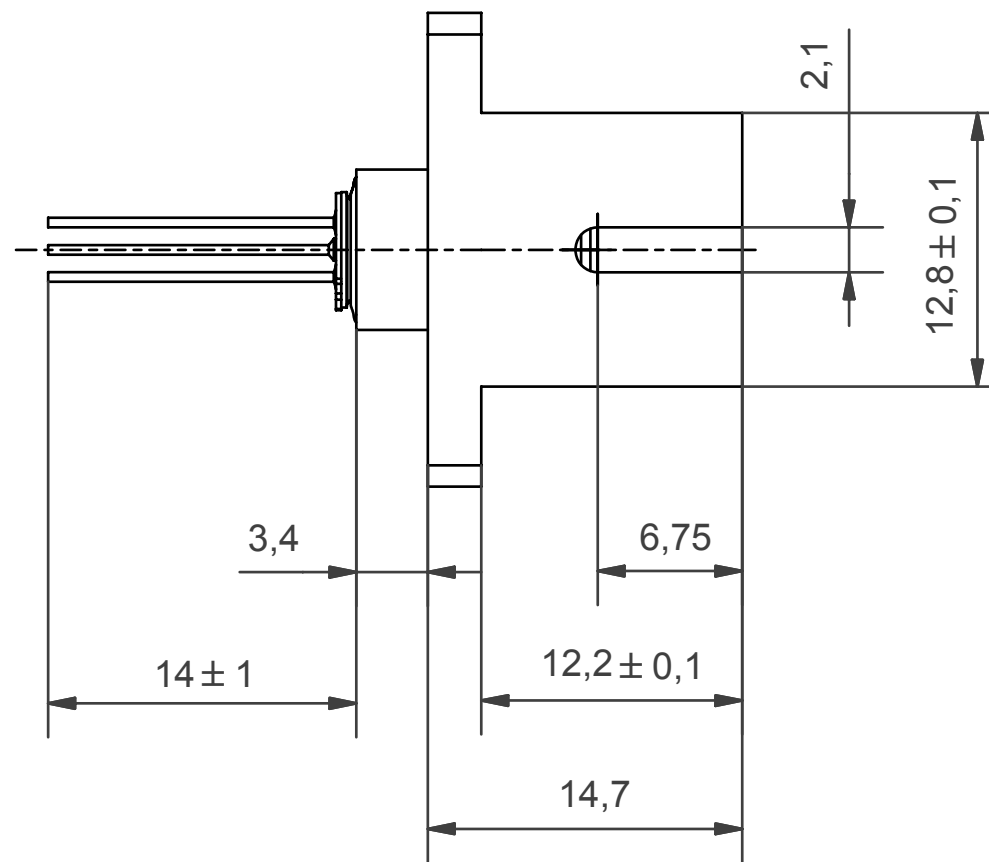


Figure 6 - Recommended Power Supply Filter

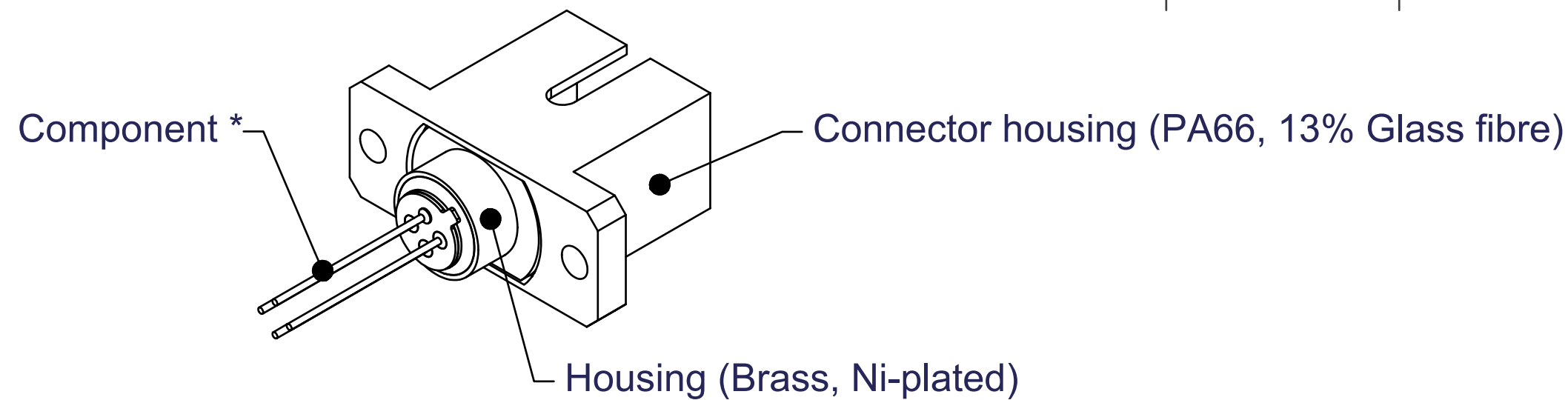
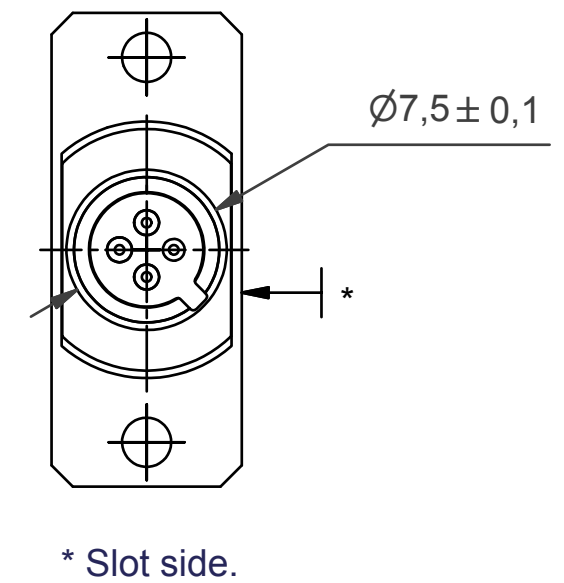
FRONT VIEW (2 : 1)



SIDE VIEW



BOTTOM VIEW



NOTES:-

1. All dimensions in mm.
2. General tol. ISO-2768-mK.

* For details of the component, see separate data sheet and/or package drawing.

Projection Method

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ISSUE	1			
ACN	102546rev 1			
DATE	9-DEC-03			
APPRD.	MD/MA			



Package code	TE
Previous package codes	
Title	102546

Drawing type	TO-46 Package Outline in SC Connector housing
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