Obsolescence Notice

ZARLINK SEMICONDUCTOR

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# 1310 nm, 1550 nm, 155 Mbps PIN with Preamplifier

Data Sheet

January 2004

**Ordering Information**

| | |
|---|---|
| MF443 | TO-46 with lens |
| MF443ST | ST receptacle |
| MF443PT | Pigtail including 1.4 m of 50/125 mm multi-mode fiber and SC connector |

**-40°C to +85°C**

Note: The rated Responsivity applies to all options.

## Features

- 1310-1550 nm PIN/TIA
- Data-rate up to 200 Mbps
- TIA with AGC
- Low power consumption

## Applications

- Sonet OC-3
- FDDI
- ATM 155 Mbps
- General Purpose

## Description

This device consists of a PIN photodiode and a transimpedance amplifier assembled in a TO-46 package. It is designed for FDDI, ATM and SDH/ Sonet up to 155 Mbps. The AGC (Automatic Gain Control) ensures a wide dynamic range. Its double-lens optical system is designed for single-mode fiber as well as for multimode fiber with core diameter up to 62.5 μm.

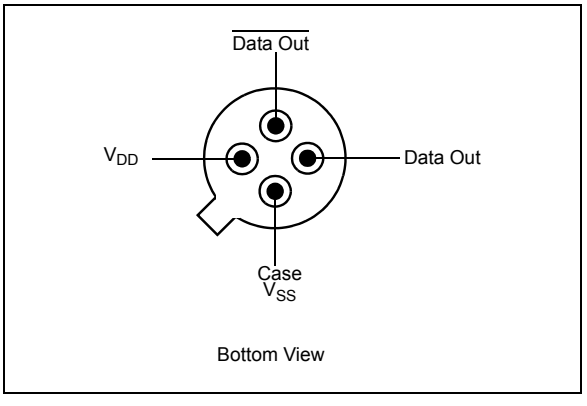



**Figure 1 - Pin Diagram**

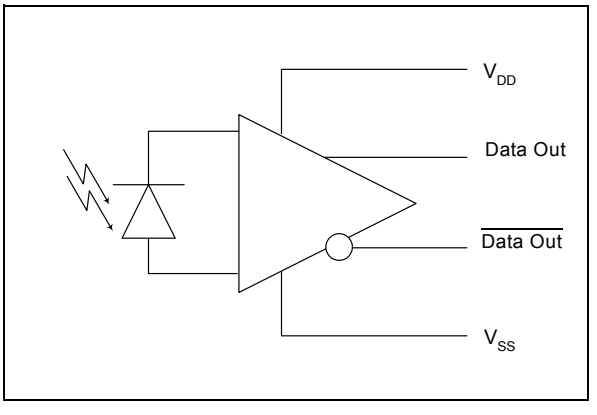



**Figure 2 - Functional Schematic**

**Optical and Electrical Characteristics - Case Temperature 25$^0$C**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Responsivity, single<br>differential | R | | 100<br>200 | | kV/W | $\lambda$ = 1300 nm<br>Note 1 |
| Output Voltage<br>(differential, peak to peak) | $V_o$ | | | 1.2 | V | |
| Bandwidth (3 $dB_{el}$) | fc | | 140 | | MHz | $P_f$ = 1 $\mu$W |
| Noise-Equivalent Power | NEP | | 15 | | nW | $\lambda$ = 1300 nm |
| Sensitivity (BER $10^{-9}$) | S | | -39 | | dBm | $\lambda$ = 1300 nm<br>Extinction Ratio = 0 |
| Dynamic Range | | 36 | 40 | | dB | |
| Output Resistance<br>(differential) | $R_0$ | | 50 | | $\Omega$ | |
| Power Supply Current | $I_{DD}$ | | 32 | 40 | mA | |

**Operating Conditions:** See table. Fiber: Single-mode to multimode 62.5/125 $\mu$m.

Note 1: Pf = 1 µW average power at 10 MHz/50% duty cycle.

**Absolute Maximum Ratings**

| Parameter | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| Supply voltage | $V_{DD}$-$V_{SS}$ | 0 | 6.0 | V |
| Operating Temperature | $T_{op}$ | -40 | +85 | $^o$C |
| Storage Temperature | $T_{stg}$ | -55 | +125 | $^o$C |

**Recommended Operating Conditions**

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Supply Voltage | $V_{DD}$-$V_{SS}$ | 4.5 | 5.0 | 5.2 | V |
| Output Differential Load | $R_L$ | 1 | 3 | | k$\Omega$ |

**Typical Responsivity**

| | Core Diameter/Cladding Diameter Numerical Aperture | | |
|---|---|---|---|
| | 10/125 $\mu$m<br>0.11 | 50/125 $\mu$m<br>0.20 | 62.5/125 $\mu$m<br>0.275 |
| Single | 100 kV/W | 100 kV/W | 100 kV/W |
| Differential | 200 kV/W | 200 kV/W | 200 kV/W |

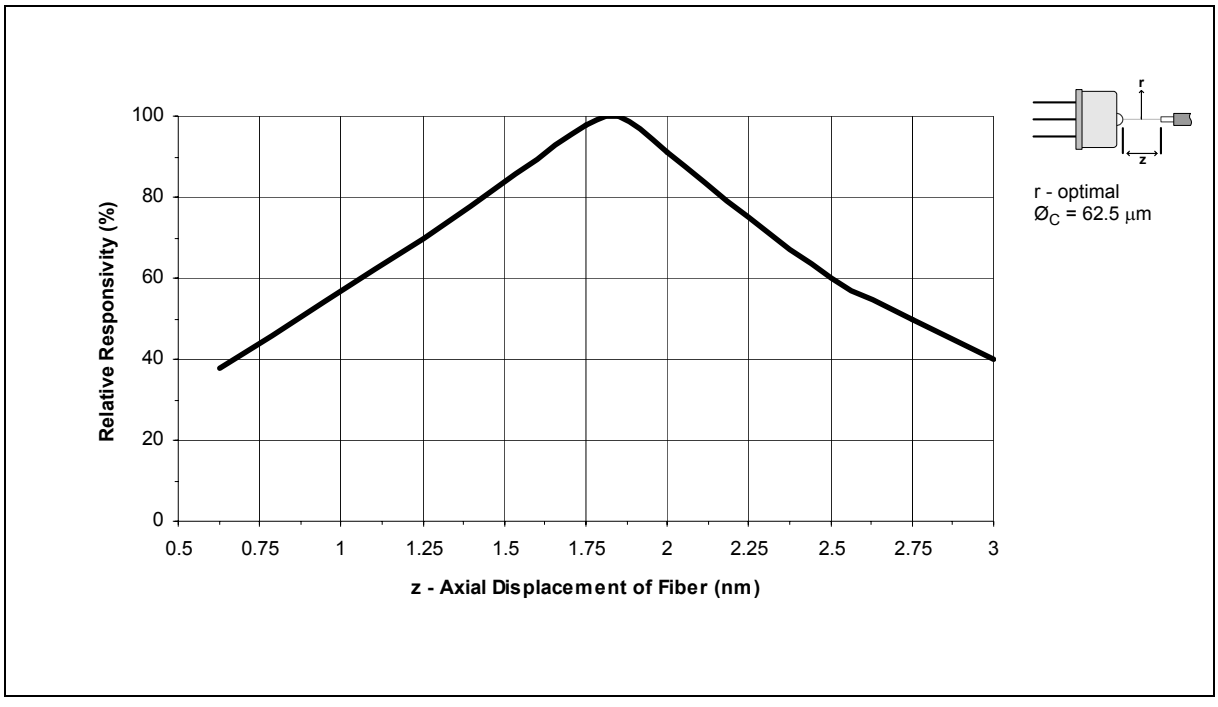



**Figure 3 - z - Axial Displacement of Fiber**

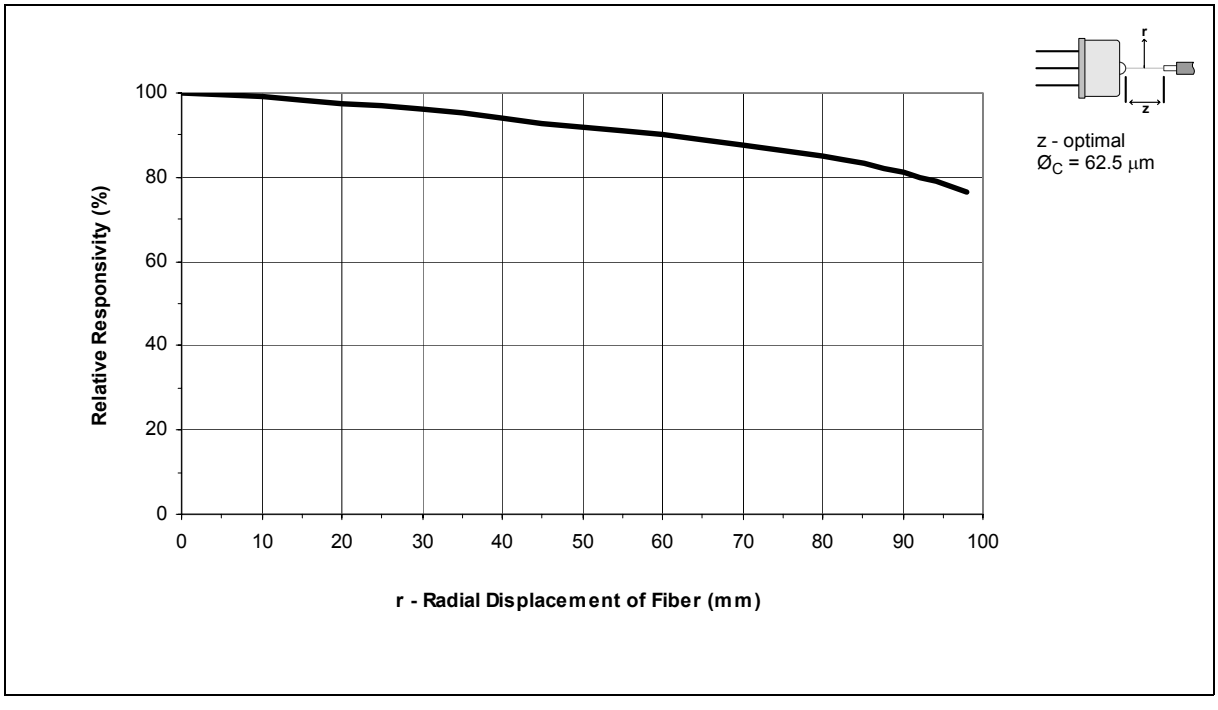



**Figure 4 - r - Radial Displacement of Fiber**

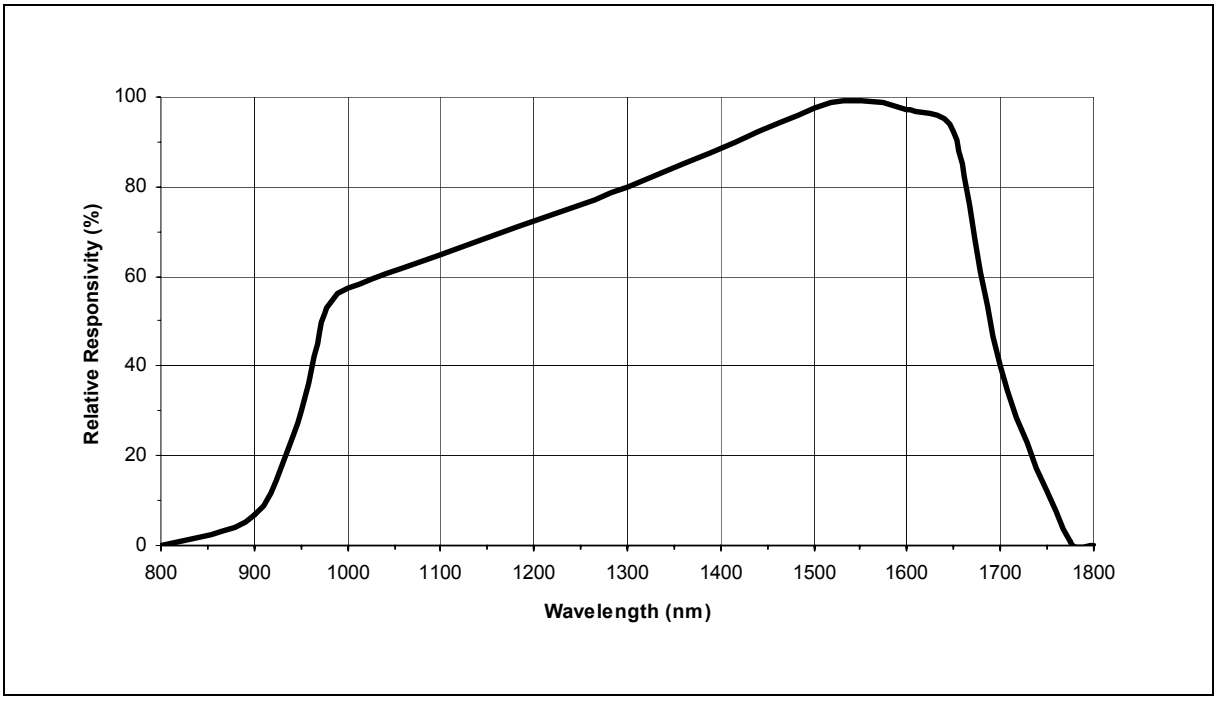
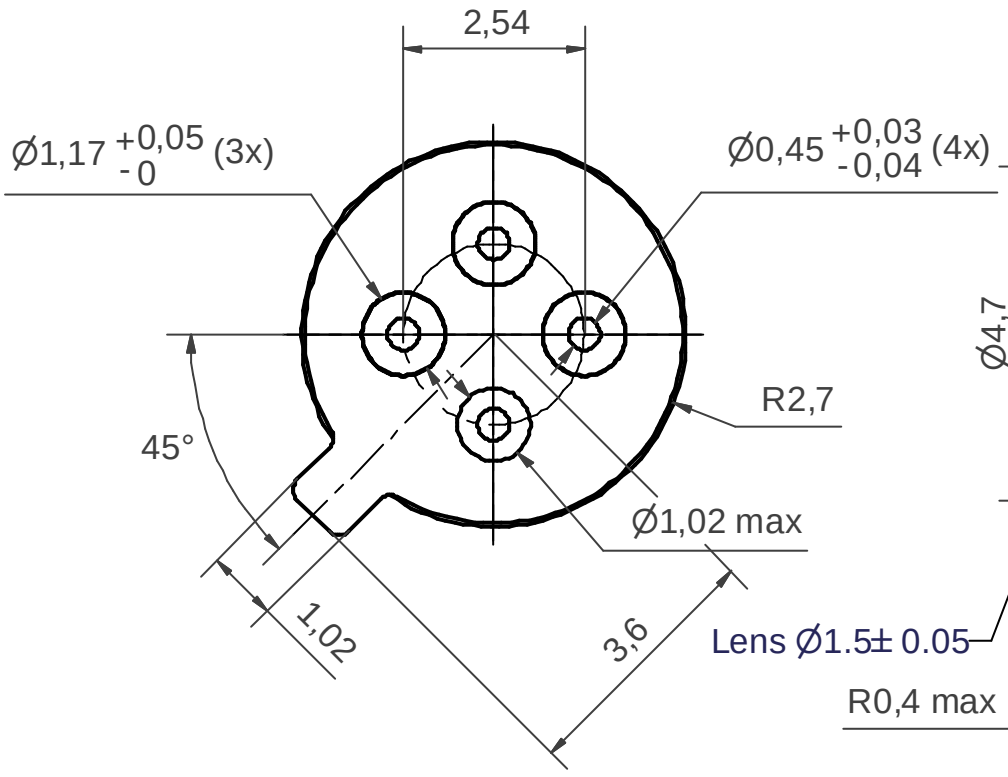
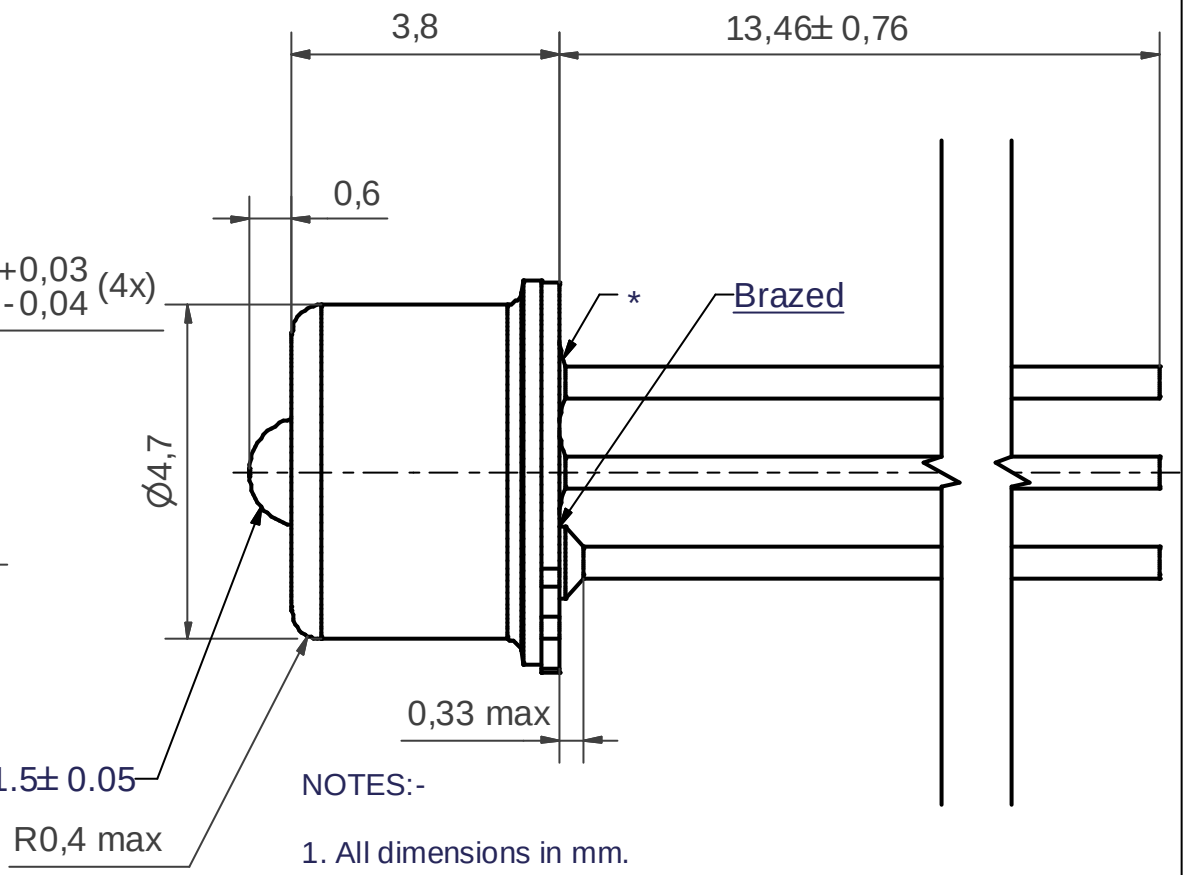



**Figure 5 - Relative Responsivity vs. Wavelength**

## 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)



| | | | | |
|---|---|---|---|---|
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ZARLINK SEMICONDUCTOR

Previous package codes

Package code TB

Drawing type
Package drawing, TO-46 with lens

Title JS004078

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