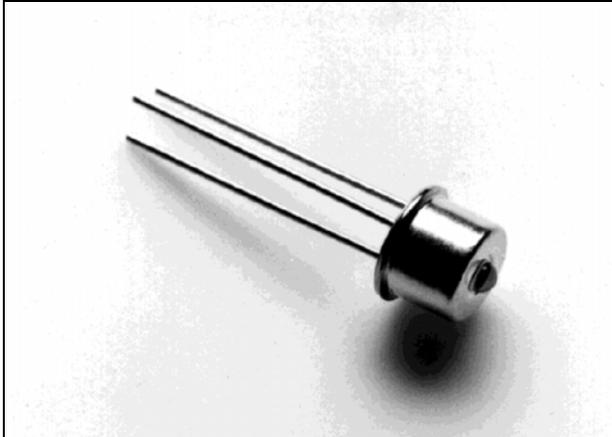


September 2004



### Ordering Information

MF446	TO-46 Package
MF446 ST	ST Housing
MF446 SMA	SMA Housing
MF446 FC	FC Housing
MF446 SC	SC Housing
MF446 PT	Pig-Tail including 1m of 62.5/125 $\mu\text{m}$ multi-mode fiber

**-40°C to +85°C**

Note: The rated Responsivity applies to all options.

### Features

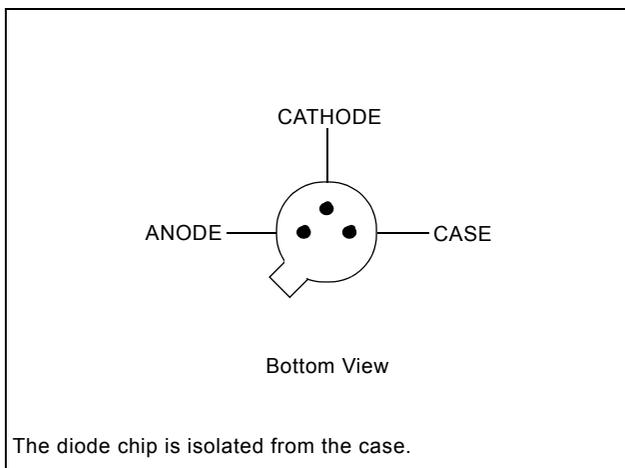
- 750-850 nm PIN Photodiode
- 1.5 GHz Bandwidth
- Designed for Single-mode and Multi-mode Fiber

### Applications

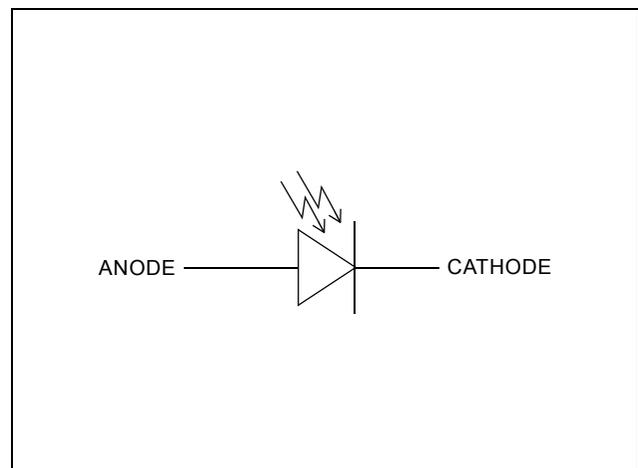
- Fast Ethernet
- Fibre Channel 1x, 2x
- Gigabit Ethernet
- Infiniband
- General Purpose

### Description

The very high speed and low capacitance of this GaAs PIN Photodiode makes it ideal for datacom and general purpose applications. Its double-lens optical system collects power from fibers with up to 100  $\mu\text{m}$  without loss in responsivity and a reverse voltage of only 3.3 Volts makes interfacing to a preamplifier easy.



**Figure 1 - Pin Diagram**



**Figure 2 - Functional Schematic**

**Optical and Electrical Characteristics - +25°C**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition	
Responsivity (Figures 3 and 4) (Table 1)	R	0.35	0.45		A/W	$V_R=3.3\text{ V}$ , 5 V $\lambda=850\text{ nm}$	Fiber: 62.5/125 $\mu\text{m}$ Graded Index NA=0.275
Bandwidth	$f_c$		1.5		GHz	$V_R=3.3\text{ V}$ , 5V RL=50 $\Omega$	
Capacitance (Figure 6)	C		0.8		pF	$V_R=3.3\text{ V}$ , 5 V, f=1 MHz	
Dark Current	$I_d$			0.4	nA	$V_R=3.3\text{ V}$ , 5 V	

**Absolute Maximum Ratings**

Parameter	Symbol	Limit
Storage Temperature	$T_{stg}$	-55 to +125°C
Operating Temperature	$T_{op}$	-40 to +85°C
Reverse Voltage	$V_R$	30 V
Soldering Temperature (2 mm from the case for 10 sec.)	$T_{sld}$	260°C

**Thermal Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Temperature Coefficient - Dark Current	$dI/dT_j$		5		%/°C

**Typical Responsivity**

Core Diameter/Cladding Diameter Numerical Aperture		
10/125 $\mu\text{m}$ 0.11	50/125 $\mu\text{m}$ 0.20	62.5/125 $\mu\text{m}$ 0.275
0.45 A/W	0.45 A/W	0.45 A/W

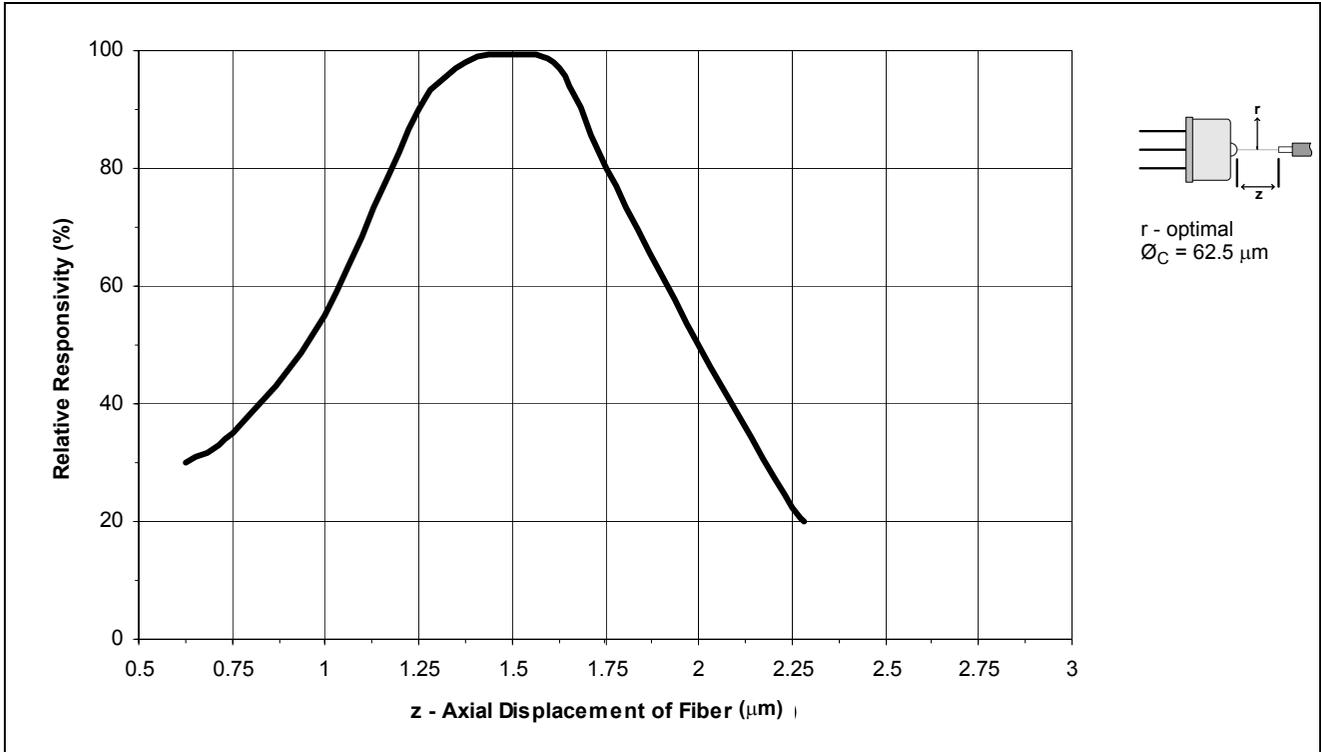


Figure 3 - Relative Responsivity vs. z - Axial Displacement of Fiber



Figure 4 - Relative Responsivity vs. r - Radial Displacement of Fiber

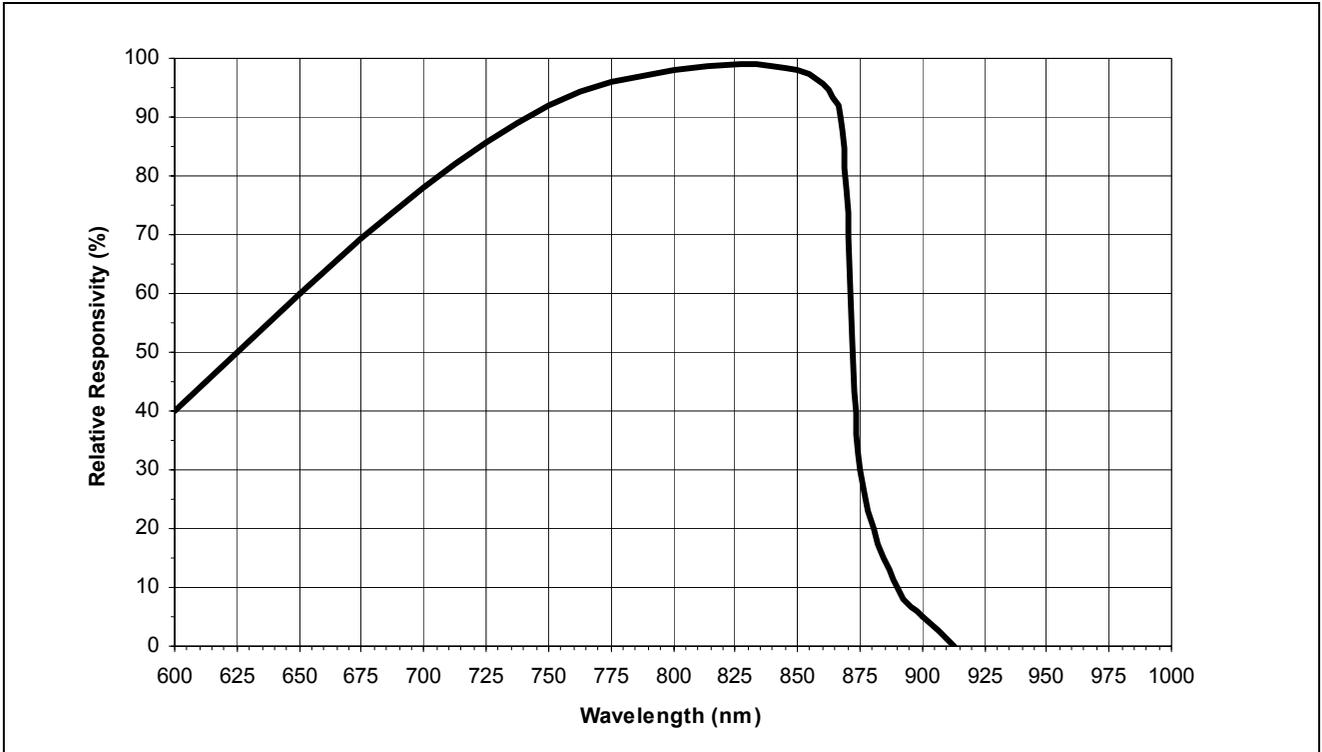


Figure 5 - Relative Responsivity vs. Wavelength

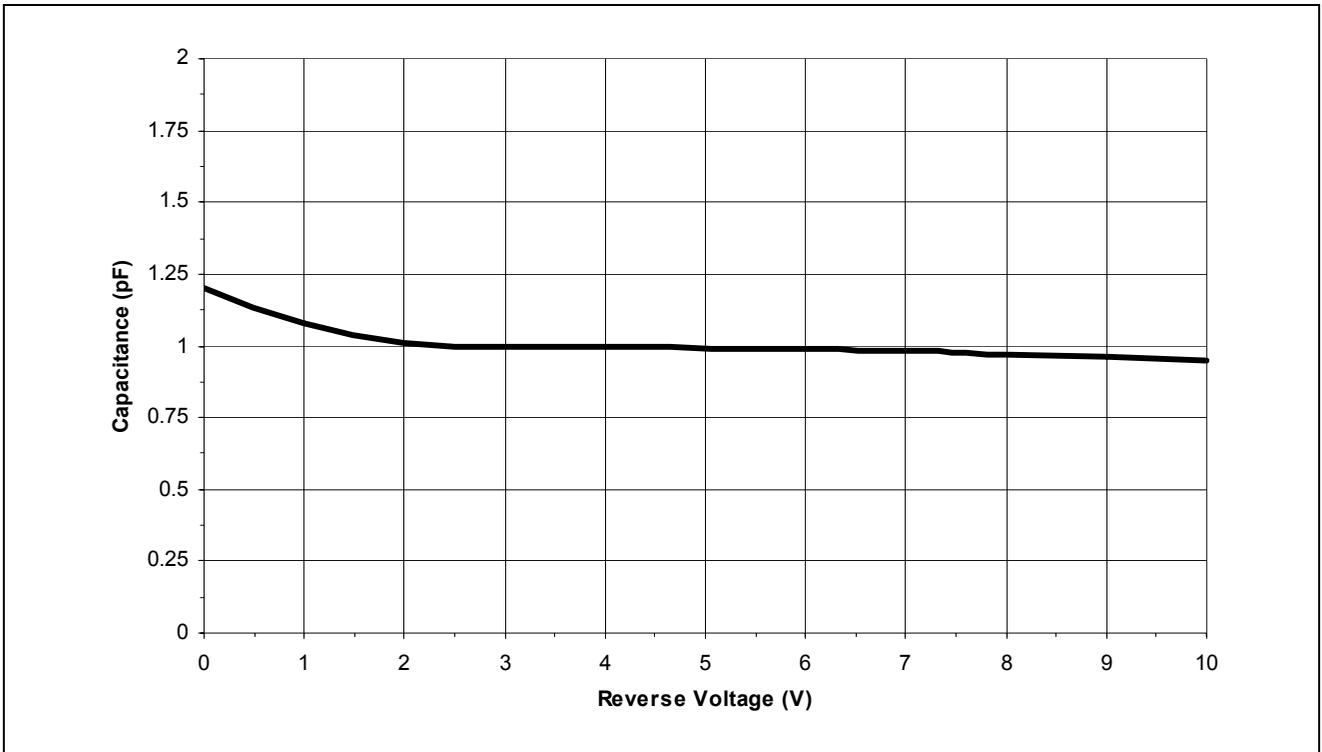
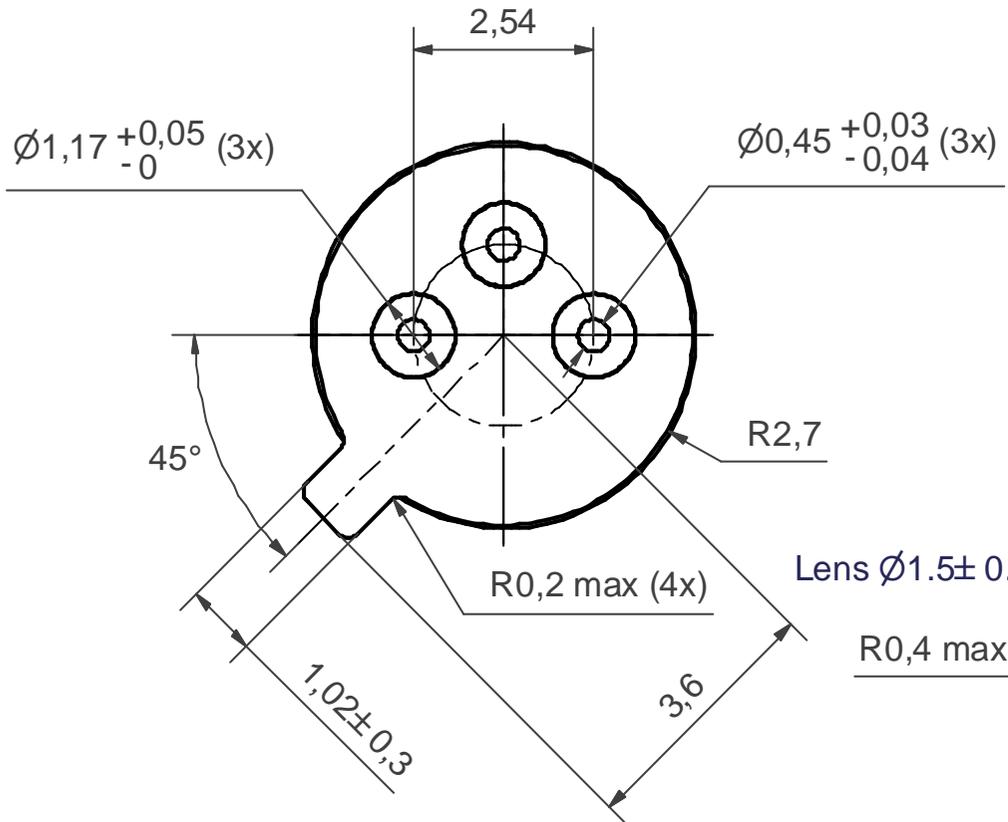
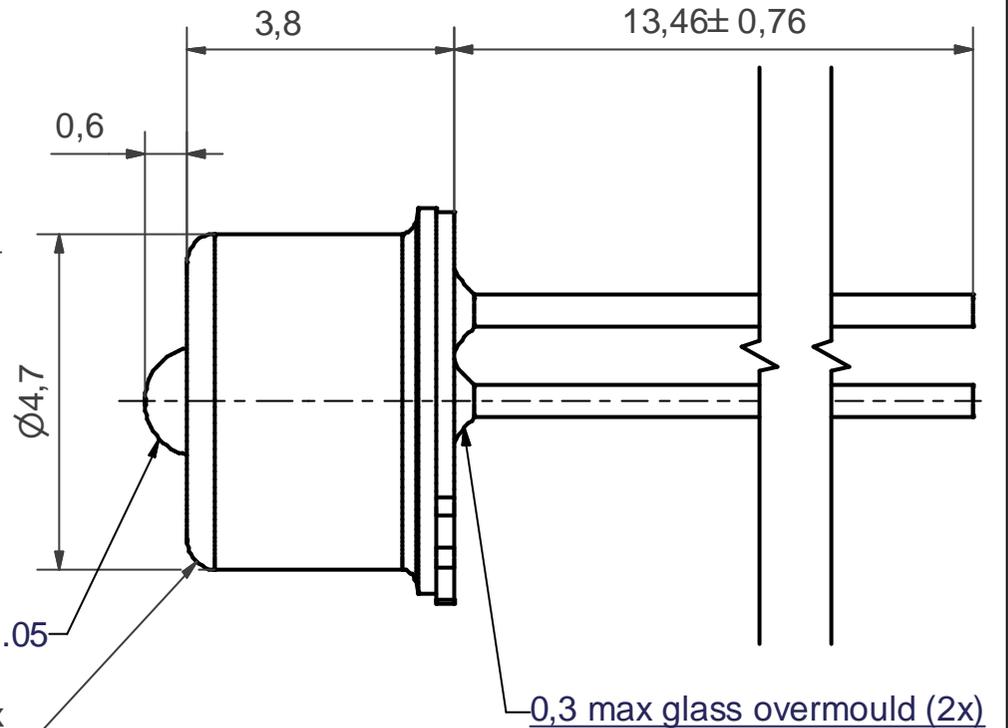


Figure 6 - Capacitance vs. Reverse Voltage

# 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  $\mu\text{m}$ .  
Header: Ni 2-3  $\mu\text{m}$  / Au min 1,32  $\mu\text{m}$ .

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Package code **TB**

Previous package codes

Drawing type  
Package drawing, TO-46 with lens

Title **JS004076**



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