

### Ordering Information

MF194	TO-46 Package
MF194 ST	ST Housing
MF194 SC	SC Housing
MF194 SMA	SMA Housing
MF194 FC	FC Housing

**-40°C to +85°C**

Note: Rated Fiber coupled power apply only on the TO-46 package, for housing options fiber coupled power is typically 10% less.

### Features

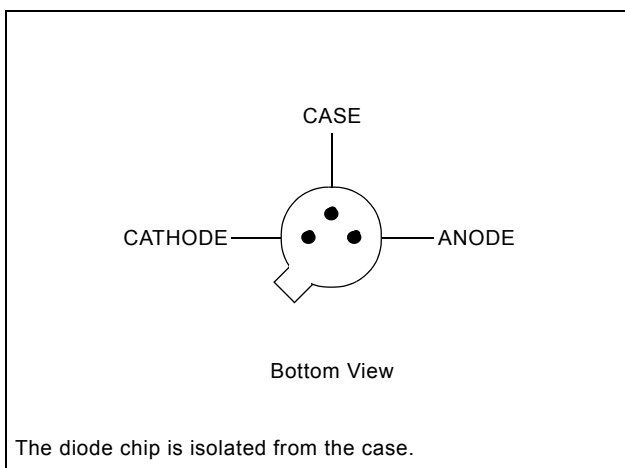
- 860 nm Surface-Emitting LED
- 70 MHz Bandwidth
- Designed for 50/125  $\mu\text{m}$  fiber

### Applications

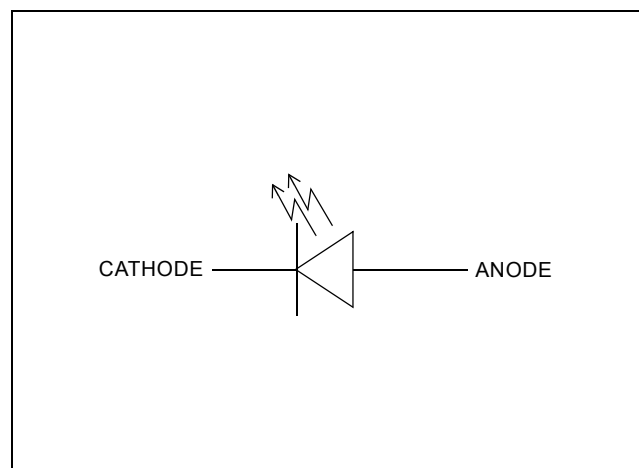
- LANs
- Test Equipment
- General Purpose

### Description

This device is designed for Ethernet and general applications and offers an excellent price/performance ratio for cost-effective solutions. Its double-lens optical system results in optimum coupling of power into the fiber.



**Figure 1 - Pin Diagram**



**Figure 2 - Functional Schematic**

**Optical and Electrical Characteristics - Case Temperature 25°C**

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition	
Fiber-Coupled Power (Figures 3, 4, and 5) (Table 1)	$P_{\text{fiber}}$	25	45		$\mu\text{W}$	$I_F=60\text{ mA}$ (Note 1)	Fiber: 50/125 $\mu\text{m}$ Graded Index NA=0.20
Rise and Fall Time (10-90%)	$t_r, t_f$		5	7	ns	$I_F=60\text{ mA}$ (no bias)	
Bandwidth (3dB <sub>e1</sub> )	$f_c$		70		MHz	$I_F=60\text{ mA}$	
Peak Wavelength	$\lambda_p$	840	860	880	nm	$I_F=60\text{ mA}$	
Spectral Width (FWHM)	$\Delta\lambda$		50		nm	$I_F=60\text{ mA}$	
Forward Voltage (Figure 7)	$V_F$		1.7	1.9	V	$I_F=60\text{ mA}$	
Reverse Current	$I_R$			20	$\mu\text{A}$	$V_R=1\text{ V}$	
Capacitance	C		250		pF	$V_R=0\text{ V}, f=1\text{ MHz}$	

Note 1: Measured at the exit of 100 meters of fiber.

**Absolute Maximum Ratings**

Parameter	Symbol	Limit
Storage Temperature	$T_{\text{stg}}$	-55 to +125°C
Operating Temperature (derating: Figure 6)	$T_{\text{op}}$	-40 to +85°C
Electrical Power Dissipation (derating: Figure 6)	$P_{\text{tot}}$	160 mW
Continuous Forward Current (f<10 kHz)	$I_F$	80 mA
Peak Forward Current (duty cycle<50%, f>1 MHz)	$I_{\text{FRM}}$	130 mA
Reverse Voltage	$V_R$	1.5 V
Soldering Temperature (2 mm from the case for 10 sec.)	$T_{\text{slid}}$	260°C

**Thermal Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Infinite Heat Sink	$R_{thjc}$			200	$^{\circ}\text{C/W}$
Thermal Resistance - No Heat Sink	$R_{thja}$			500	$^{\circ}\text{C/W}$
Temperature Coefficient - Optical Power	$dP/dT_j$		-0.5		$\%/^{\circ}\text{C}$
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		$\text{nm}/^{\circ}\text{C}$

**Typical Fiber-Coupled Power**

Core Diameter/Cladding Diameter Numerical Aperture			
50/125 $\mu\text{m}$ 0.20	62.5/125 $\mu\text{m}$ 0.275	100/140 $\mu\text{m}$ 0.29	200/230 $\mu\text{m}$ 0.37
45 $\mu\text{W}$	95 $\mu\text{W}$	210 $\mu\text{W}$	440 $\mu\text{W}$

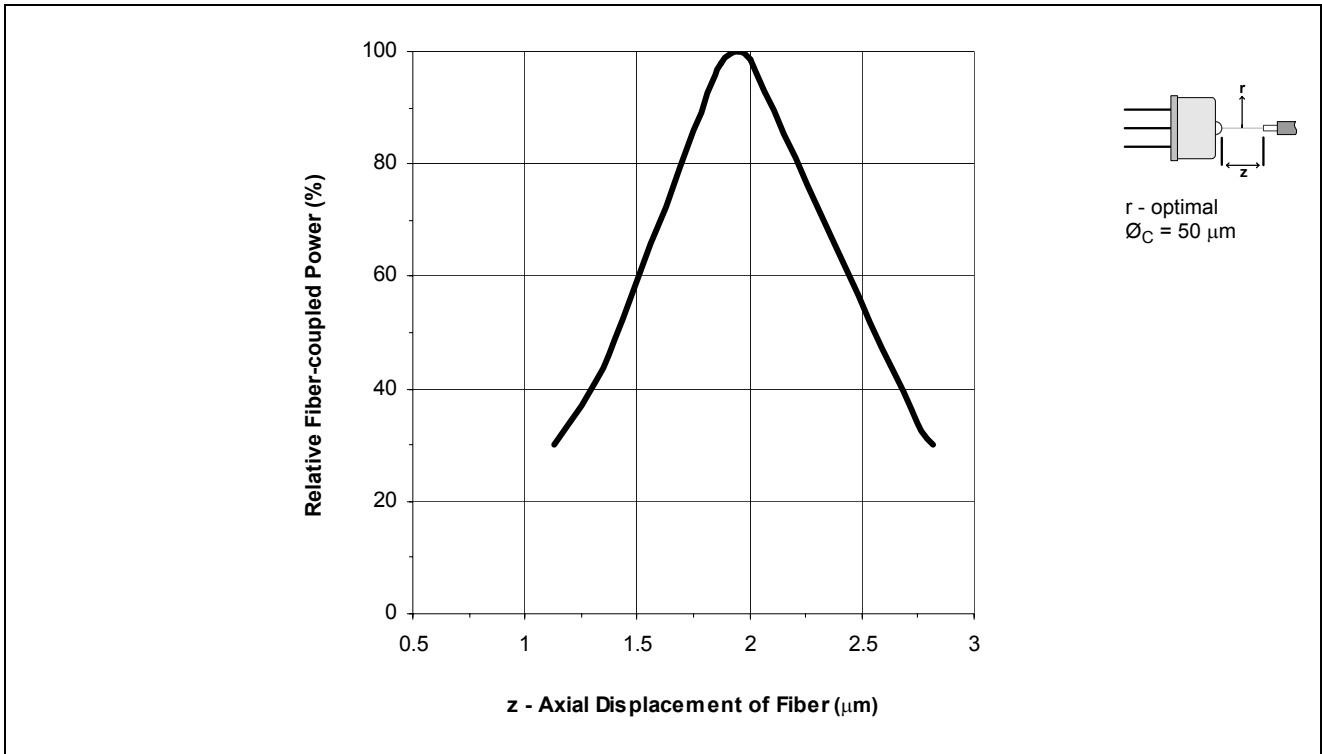


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber

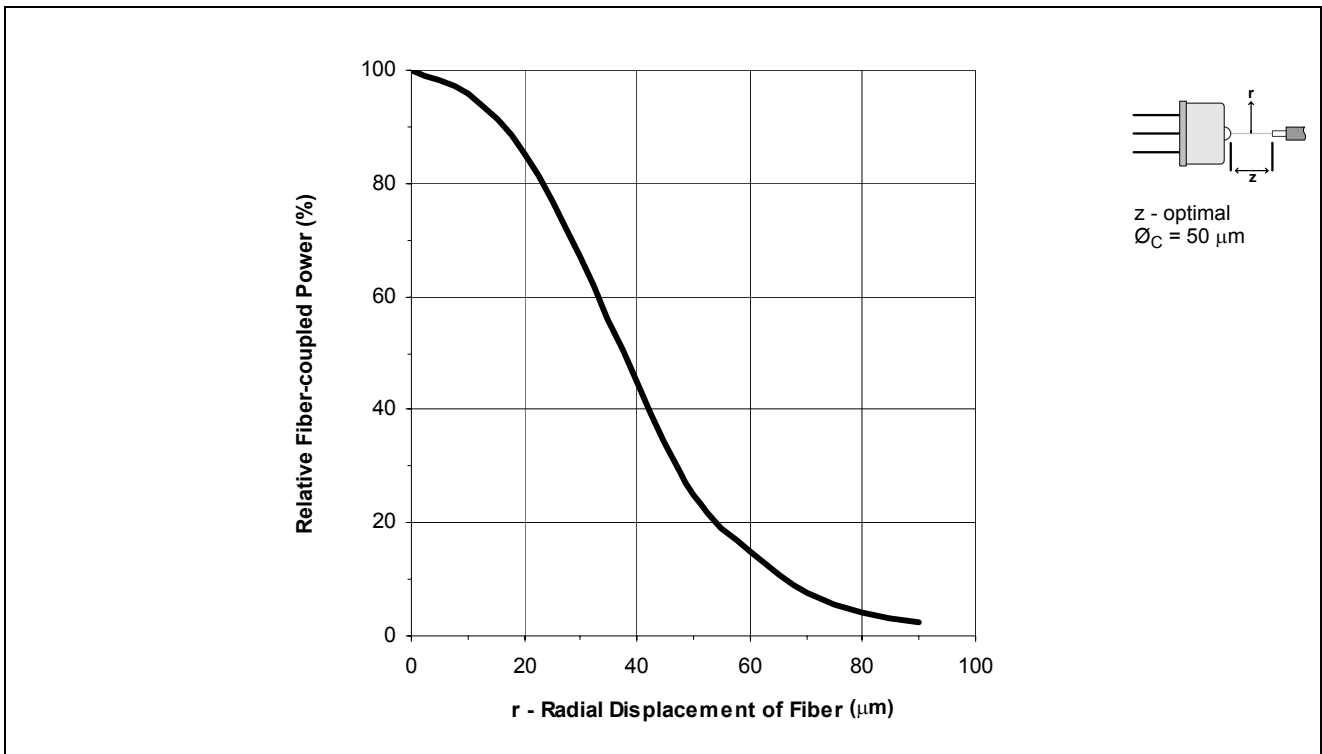


Figure 4 - Relative Fiber-coupled Power vs. r - Radial Displacement of Fiber

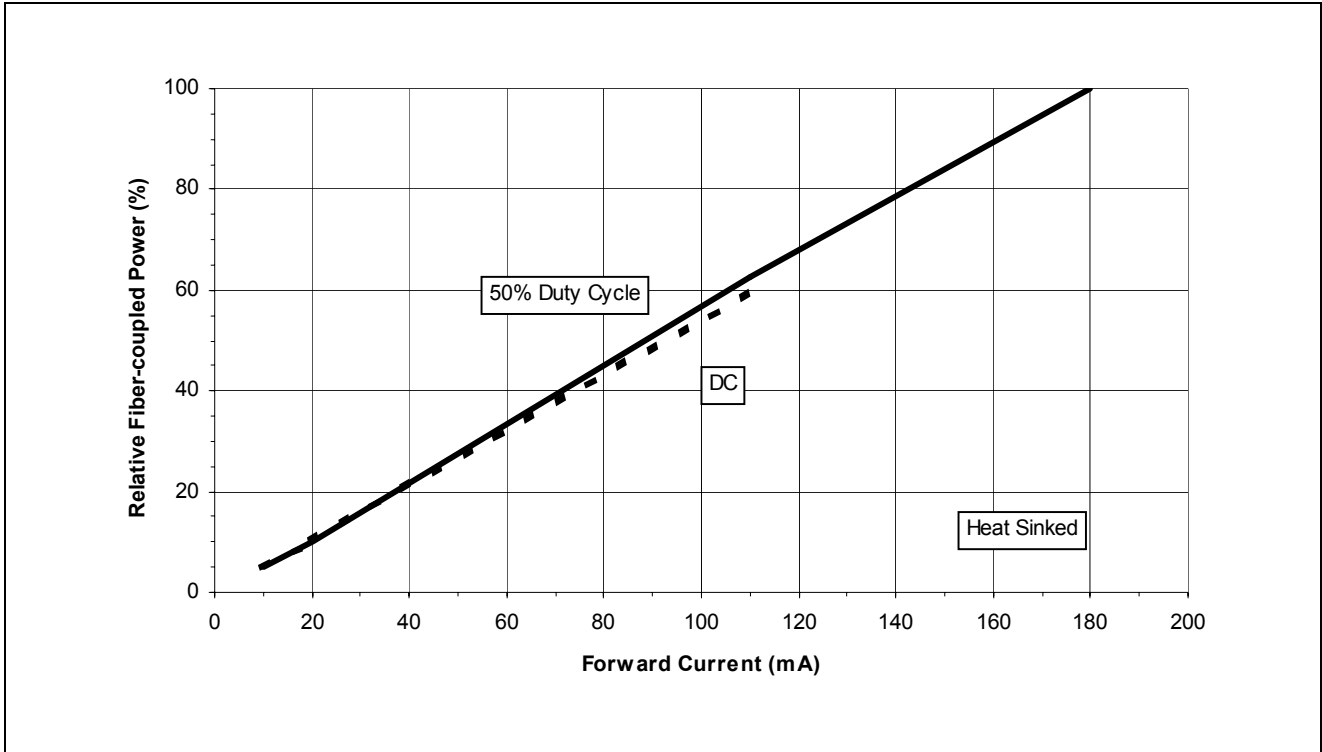


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

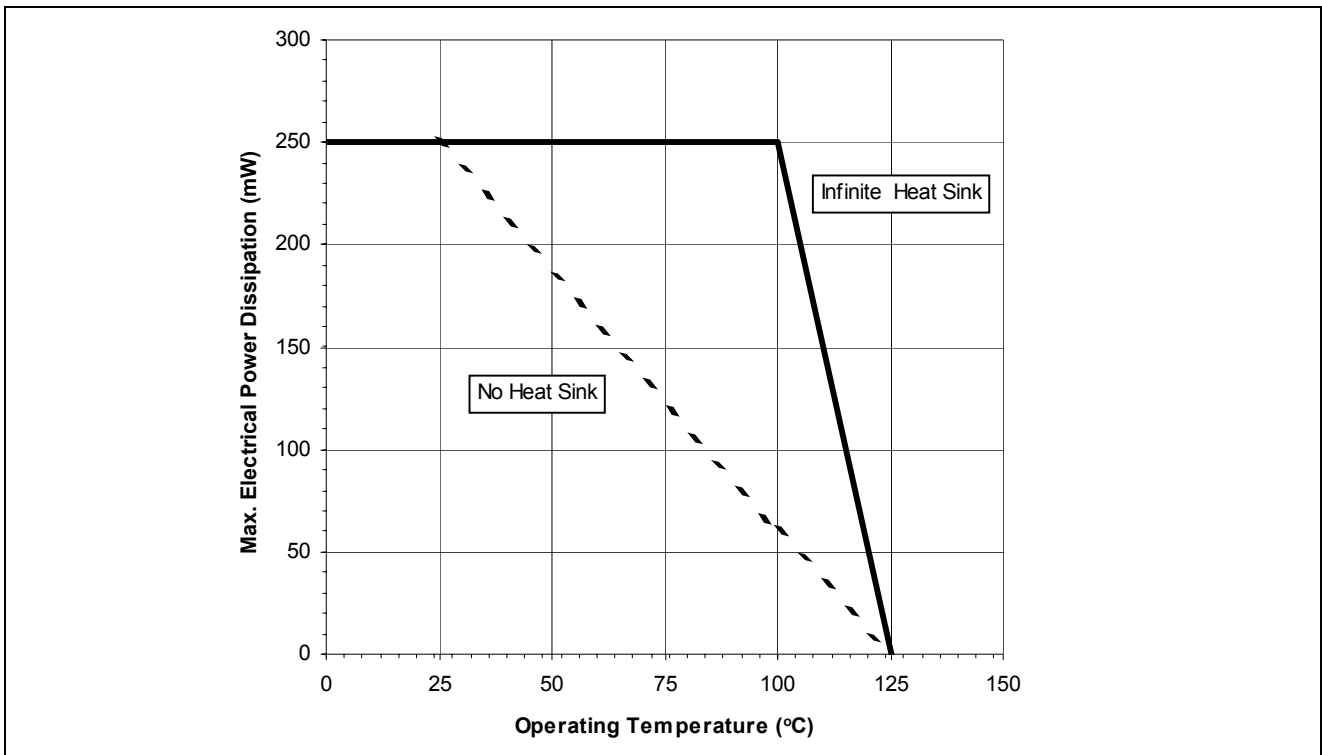


Figure 6 - Max. Electrical Power Dissipation vs. Operating Temperature

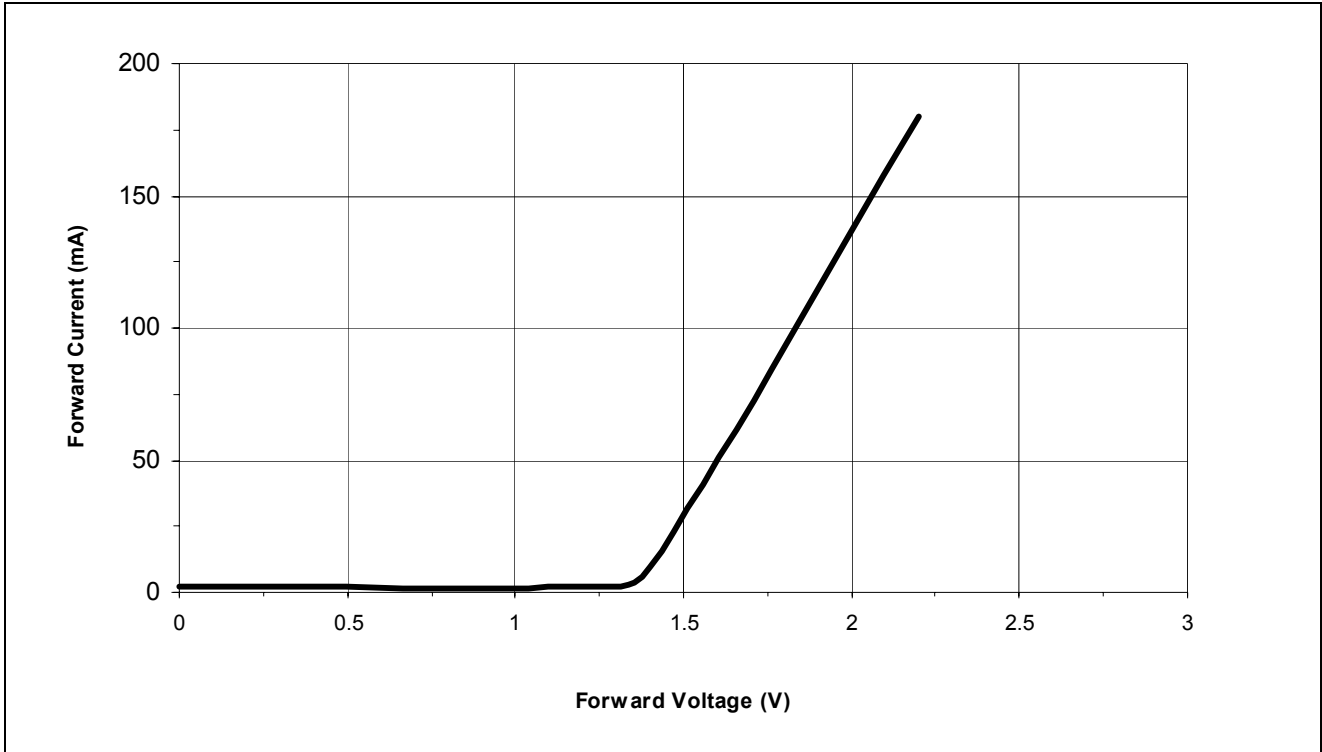
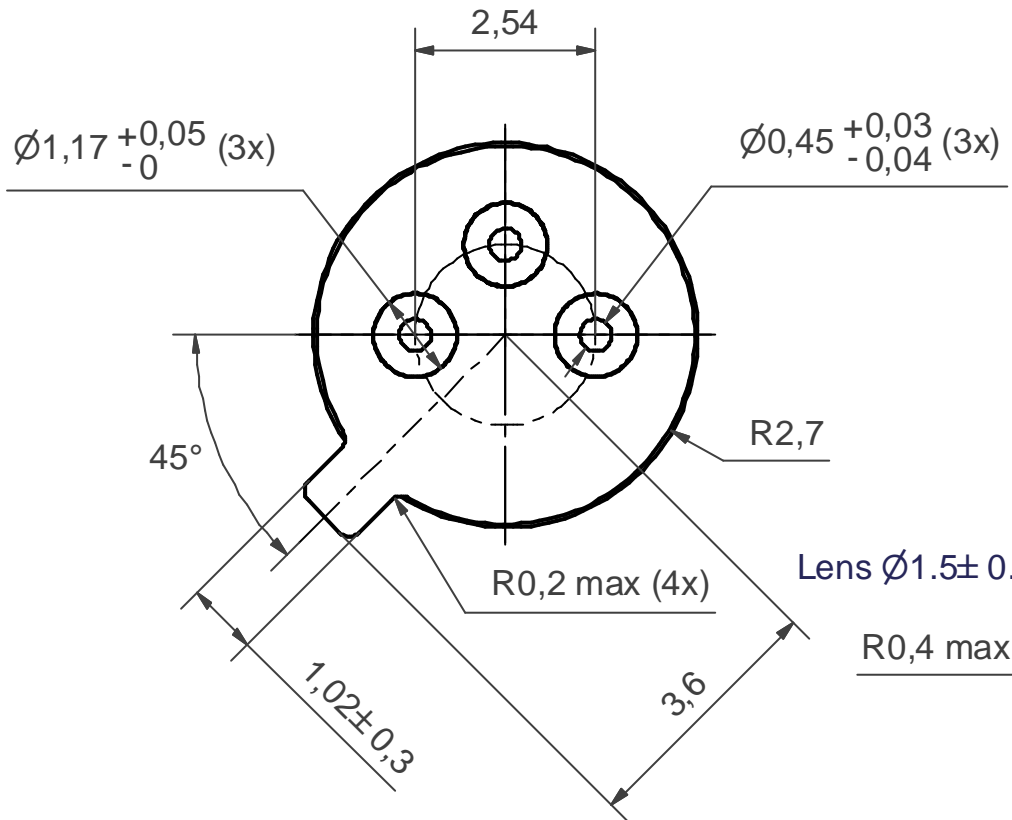
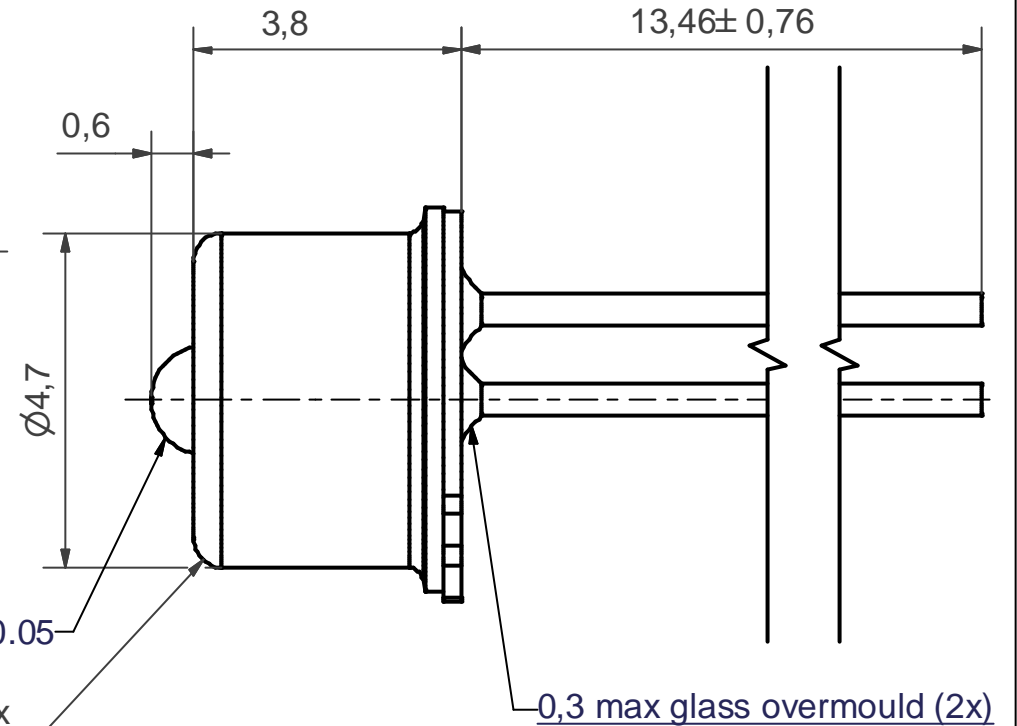


Figure 7 - Forward Current vs. Forward Voltage

# 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 µm.  
Header: Ni 2-3 µm / Au min 1,32 µm.

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	Title <b>JS004076</b>



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