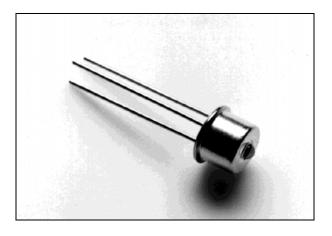




**Data Sheet** 

October 2004



#### **Features**

- · 850 nm Surface-Emitting LED
- · 70 MHz Bandwidth
- Uniform phase distribution
- Designed for 200/280 µm fiber

# **Applications**

- Electronic Distance Measurement (EDM)
- Sensors
- Avionics

## **Ordering Information**

MF228 TO-46 Package
MF228 ST ST Housing
MF228 SC SC Housing
MF228 SMA SMA Housing
MF228 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

## **Description**

This device is capable of providing high power into large-core fiber over a wide temperature range. Thanks to its very uniform phase distribution of the optical power, it is ideal for Electronic Distance Measurement equipment.

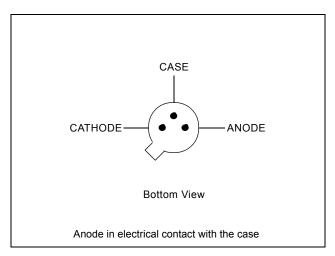


Figure 1 - Pin Diagram

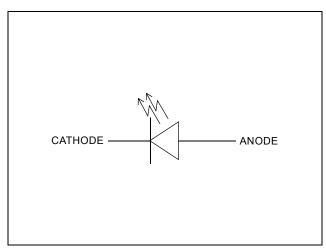


Figure 2 - Functional Schematic

# Optical and Electrical Characteristics - Case Temperature 25°C

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Condition	
Fiber-Coupled Power (Figures 3, 4, and 5) (Table 1)	P <sub>fiber</sub>	1000	1200		μW	I <sub>F</sub> = 100 mA (Note 1)	Fiber: 200/280 μm
Rise and Fall Time (10-90%)	t <sub>r</sub> ,t <sub>f</sub>		7	10	ns	I <sub>F</sub> = 100 mA (no bias)	Step Index
Bandwidth (3dB <sub>el</sub> )	f <sub>c</sub>		50		MHz	I <sub>F</sub> = 100 mA	NA = 0.24
Peak Wavelength	λ <sub>p</sub>	830	850	870	nm	I <sub>F</sub> = 100 mA	
Spectral Width (FWHM)	Δλ		50		nm	I <sub>F</sub> = 100 mA	
Forward Voltage (Figure 7)	$V_{F}$		1.8	2.2	V	I <sub>F</sub> = 100 mA	
Reverse Current	I <sub>R</sub>			20	μΑ	V <sub>R</sub> = 1 V	
Capacitance	С		250		pF	$V_{R}$ -0 V, f = 1 N	lHz

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

## **Absolute Maximum Ratings**

Parameter	Symbol	Limit
Storage Temperature	T <sub>stg</sub>	-55 to +125°C
Operating Temperature (derating: Figure 6)	T <sub>op</sub>	-40 to +85°C
Electrical Power Dissipation (derating: Figure 6)	P <sub>tot</sub>	250 mW
Continuous Forward Current (f<10 kHz)	I <sub>F</sub>	110 mA
Peak Forward Current (duty cycle<50%,f>1 MHz	I <sub>FRM</sub>	180 mA
Reverse Voltage	$V_{R}$	1.5 V
Soldering Temperature (2mm from the case for 10 sec.)	T <sub>sld</sub>	260°C

## **Thermal Characteristics**

Parameter	Symbol	Min.	Тур.	Max.	Unit
Thermal Resistance - Infinite Heat Sink	R <sub>thjc</sub>			100	°C/W
Thermal Resistance - No Heat Sink	R <sub>thja</sub>			400	°C/W
Temperature Coefficient - Optical Power	d <i>P</i> /d <i>T</i> <sub>j</sub>		-0.4		%/°C
Temperature Coefficient - Wavelength	$\mathrm{d}\lambda/\mathrm{d}T_{\mathrm{j}}$		0.3		nm/°C

# **Typical Fiber-Coupled Power**

Core				
50/125 μm 0.20	62.5/125 μm 0.275	100/140 μm 0.29	200/230 μm 0.37	200/280 μm 0.24
60 μW	150 μW	450μW	1300 μW	1200 μW

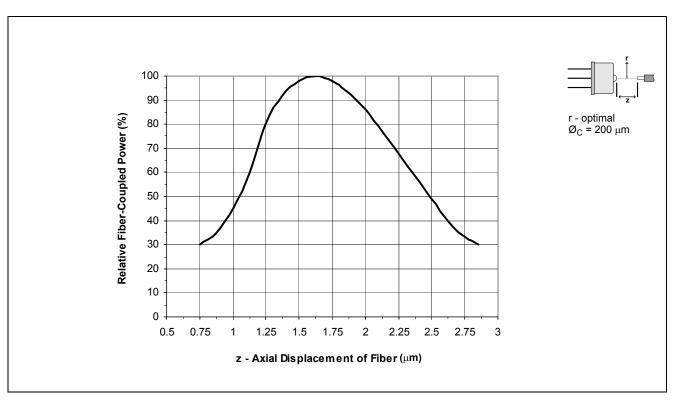


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber

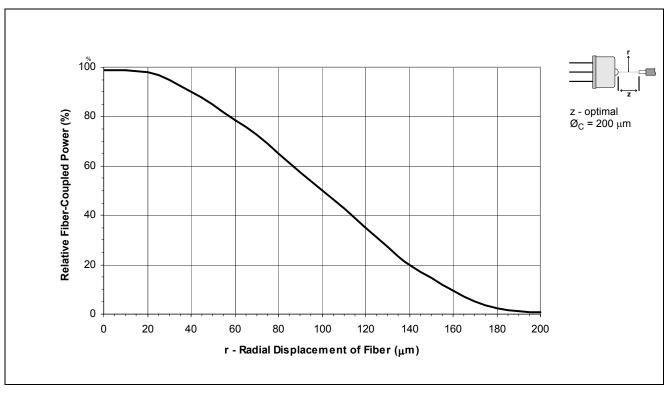


Figure 4 - Felative Fiber-coupled Power vs. r - Radial Displacement of Fiber

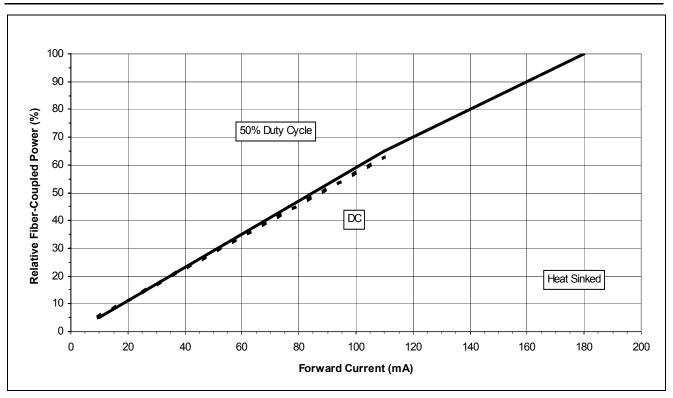


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

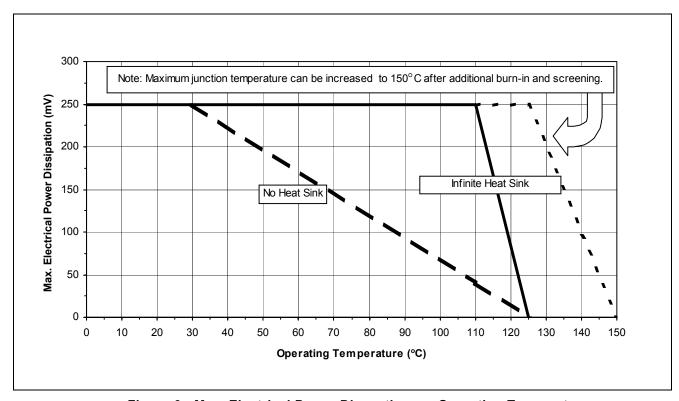


Figure 6 - Max. Electrical Power Disapation vs. Operating Temperature

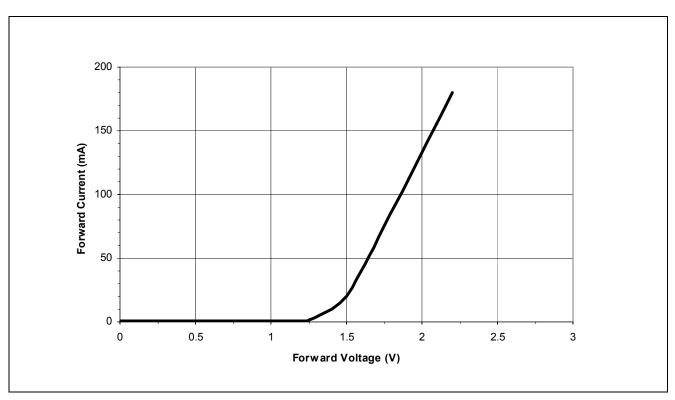


Figure 7 - Forward Current vs. Forward Voltage

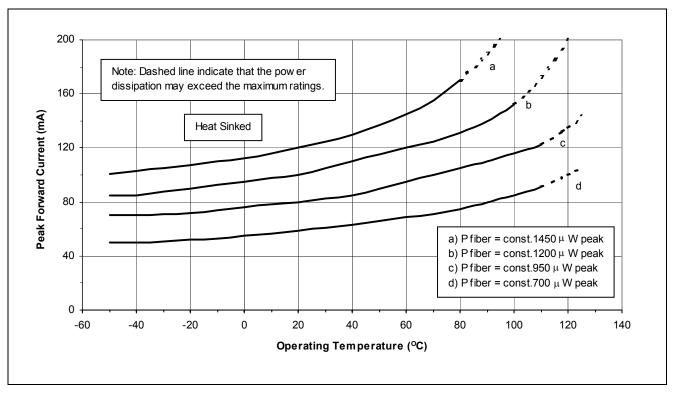


Figure 8 - Peak Forward Current vs. Operating Temperature



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