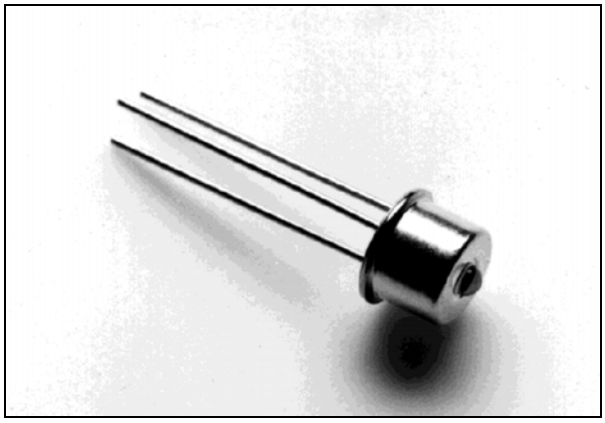
MF228

850 nm, 50 MHz High Performance LED

Data Sheet



October 2004

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

Features

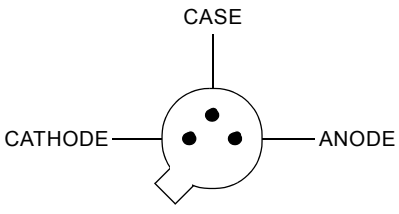
- 850 nm Surface-Emitting LED
- 70 MHz Bandwidth
- Uniform phase distribution
- Designed for 200/280 µm fiber

Applications

- Electronic Distance Measurement (EDM)
- Sensors
- Avionics

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.



Bottom View

Anode in electrical contact with the case

Figure 1 - Pin Diagram

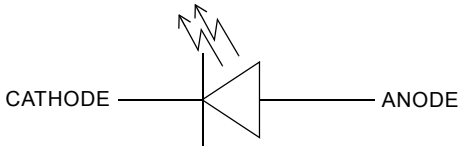


Figure 2 - Functional Schematic

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_{fiber}	1000	1200		µW	I_F = 100 mA (Note 1)	Fiber: 200/280 µm Step Index NA = 0.24
Rise and Fall Time (10-90%)	t_r,t_f		7	10	ns	I_F = 100 mA (no bias)	
Bandwidth (3dB$_{el}$)	f_c		50		MHz	I_F = 100 mA	
Peak Wavelength	λ_p	830	850	870	nm	I_F = 100 mA	
Spectral Width (FWHM)	$\Delta\lambda$		50		nm	I_F = 100 mA	
Forward Voltage (Figure 7)	V_F		1.8	2.2	V	I_F = 100 mA	
Reverse Current	I_R			20	µA	V_R = 1 V	
Capacitance	C		250		pF	V_R-0 V, f = 1 MHz	

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

Absolute Maximum Ratings

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

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Infinite Heat Sink	R_{thjc}			100	°C/W
Thermal Resistance - No Heat Sink	R_{thja}			400	°C/W
Temperature Coefficient - Optical Power	dP/dT_j		-0.4		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		nm/°C

Typical Fiber-Coupled Power

Core Diameter/Cladding Diameter Numerical Aperture				
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

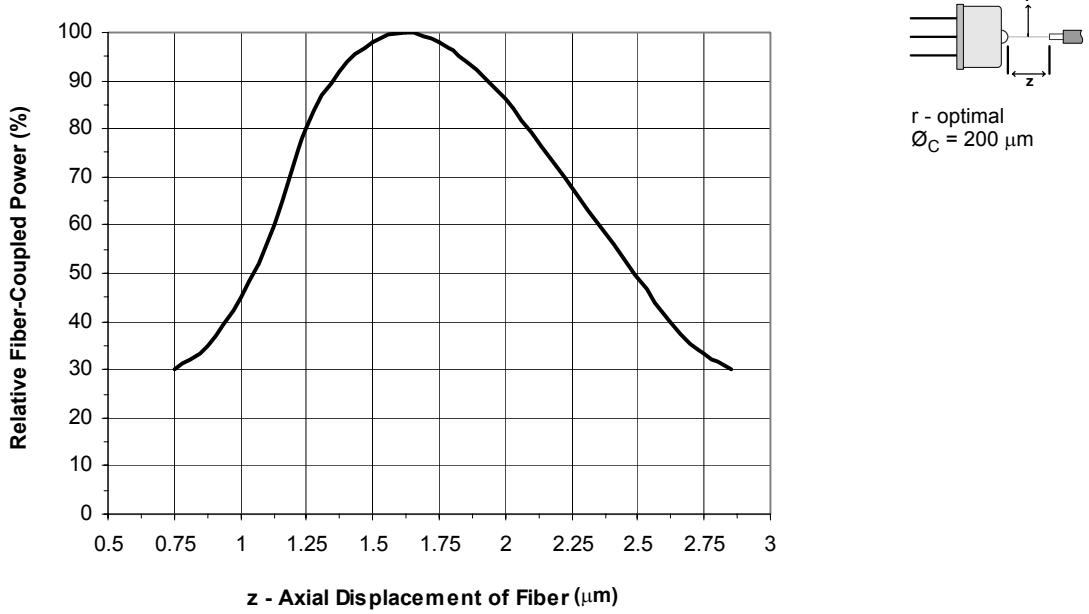


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber

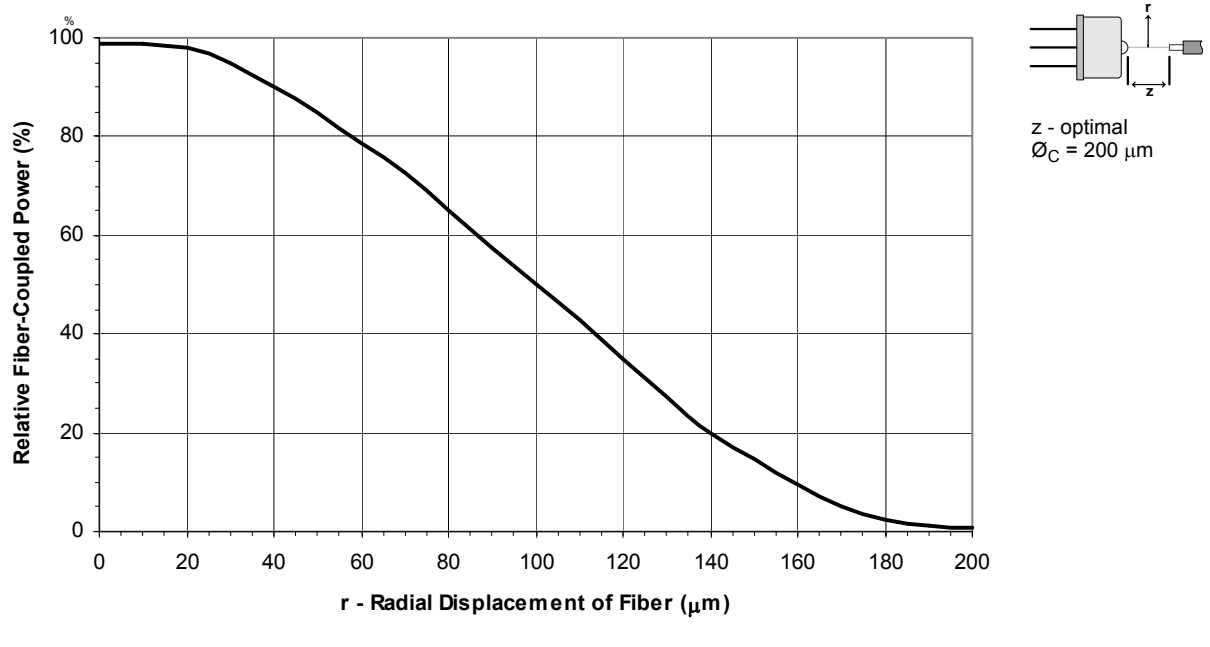


Figure 4 - Felative Fiber-coupled Power vs. r - Radial Displacement of Fiber

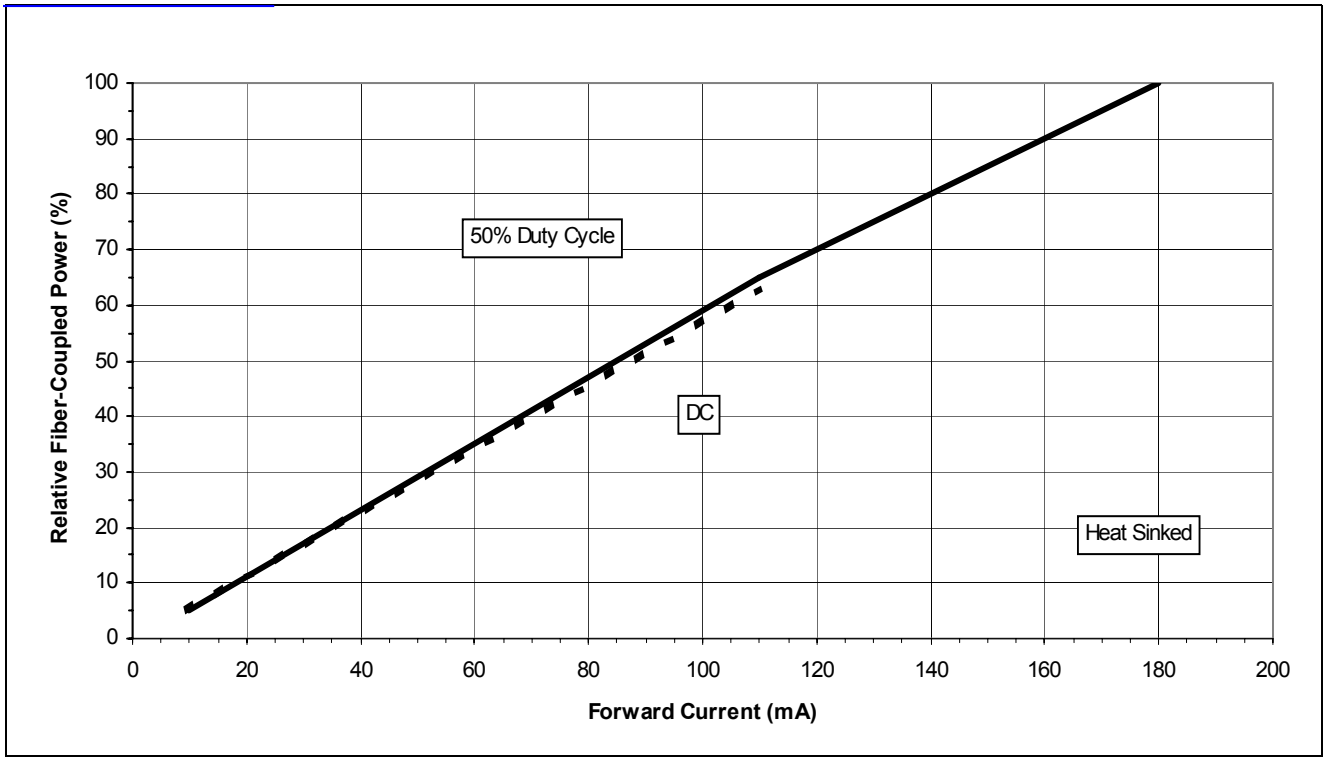


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

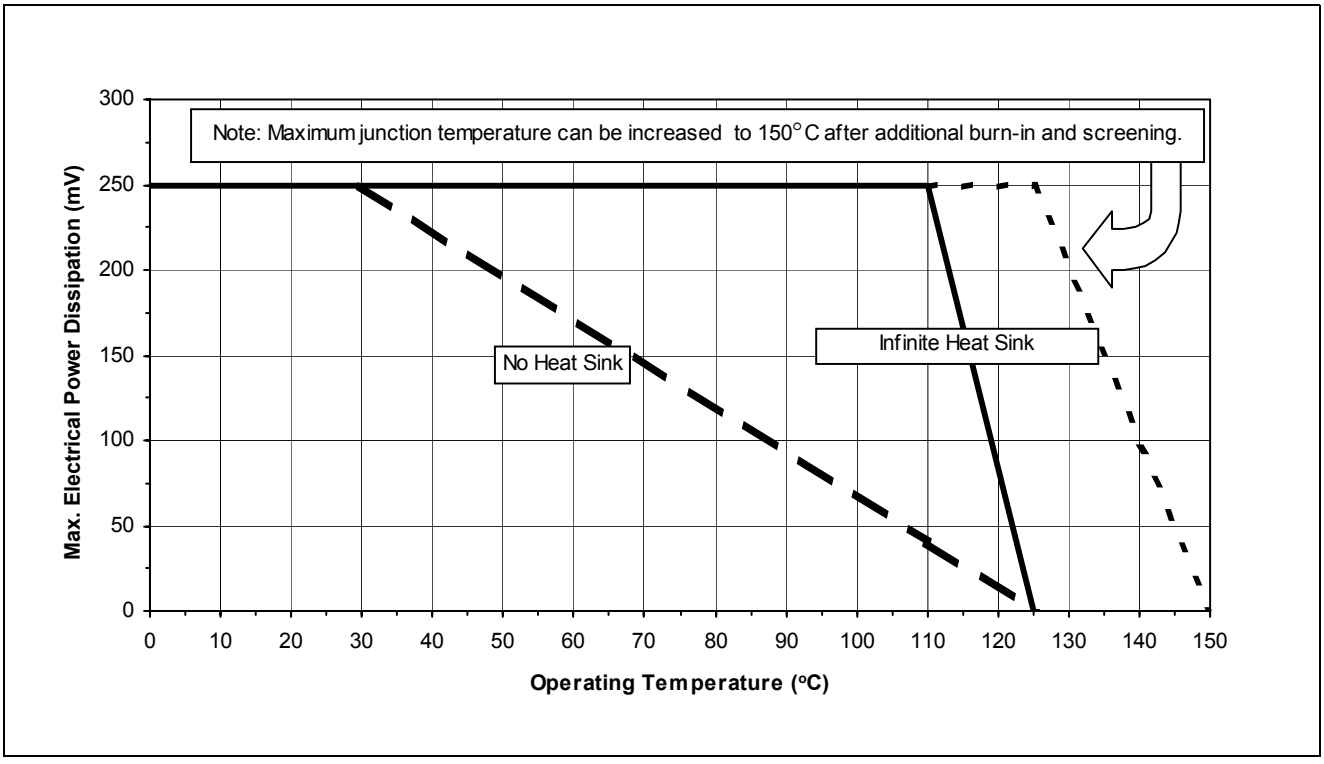


Figure 6 - Max. Electrical Power Disapation vs. Operating Temperature

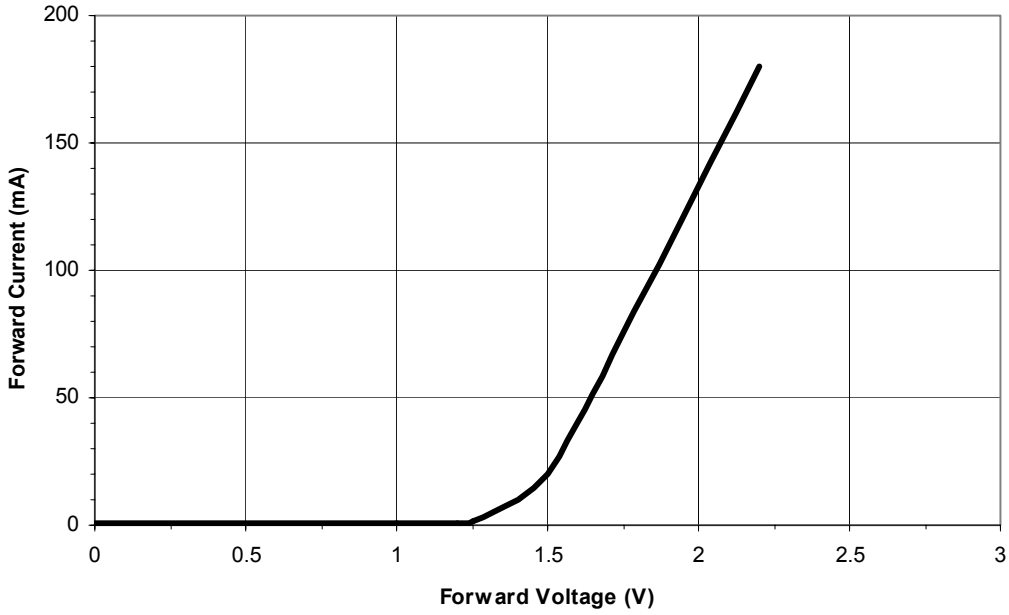


Figure 7 - Forward Current vs. Forward Voltage

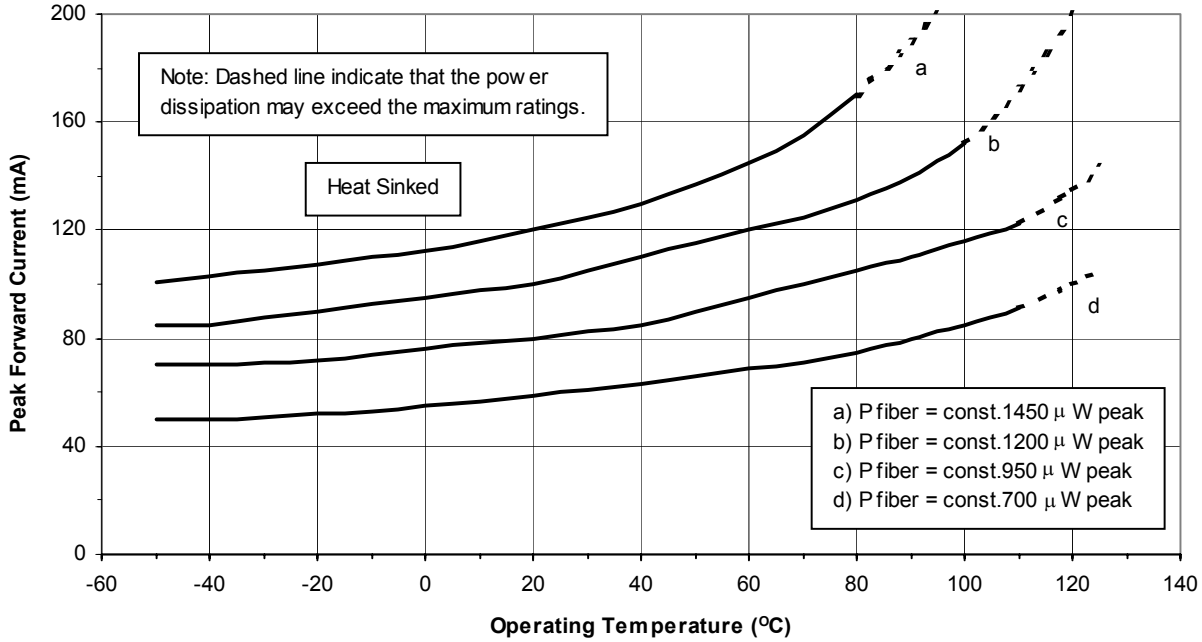


Figure 8 - Peak Forward Current vs. Operating Temperature

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