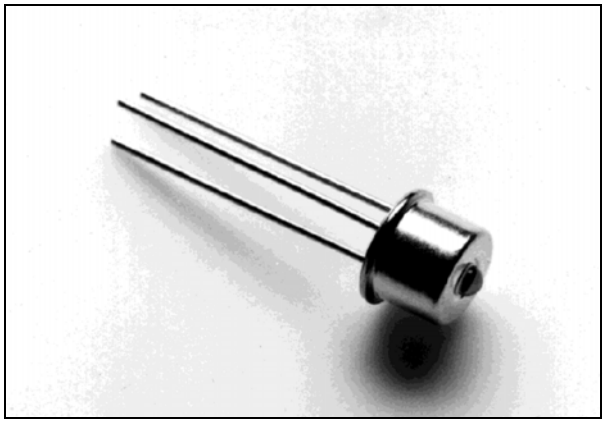
MF228

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.

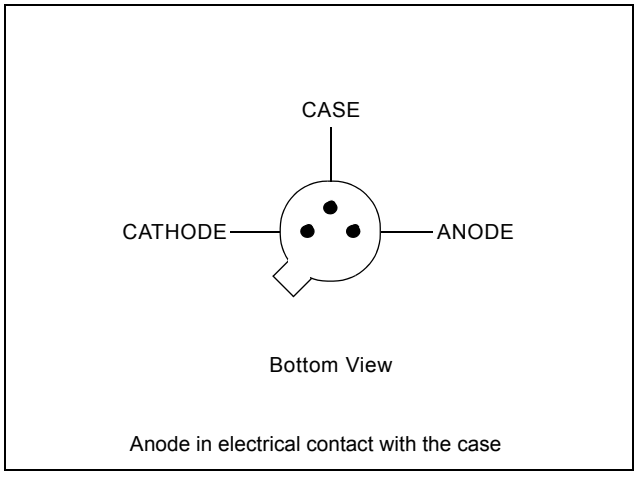


Figure 1 - Pin Diagram

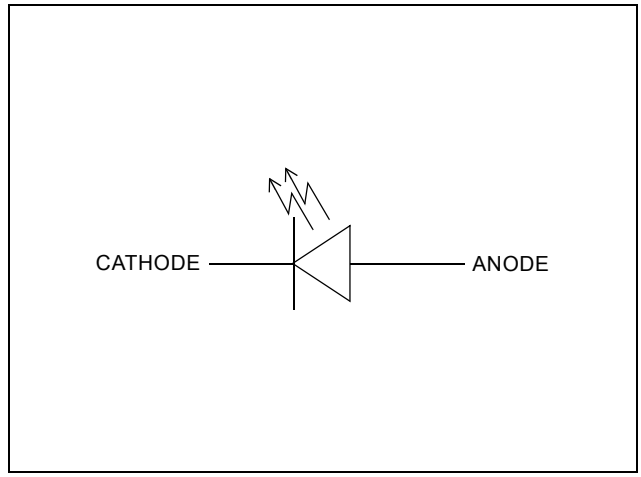


Figure 2 - Functional Schematic

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

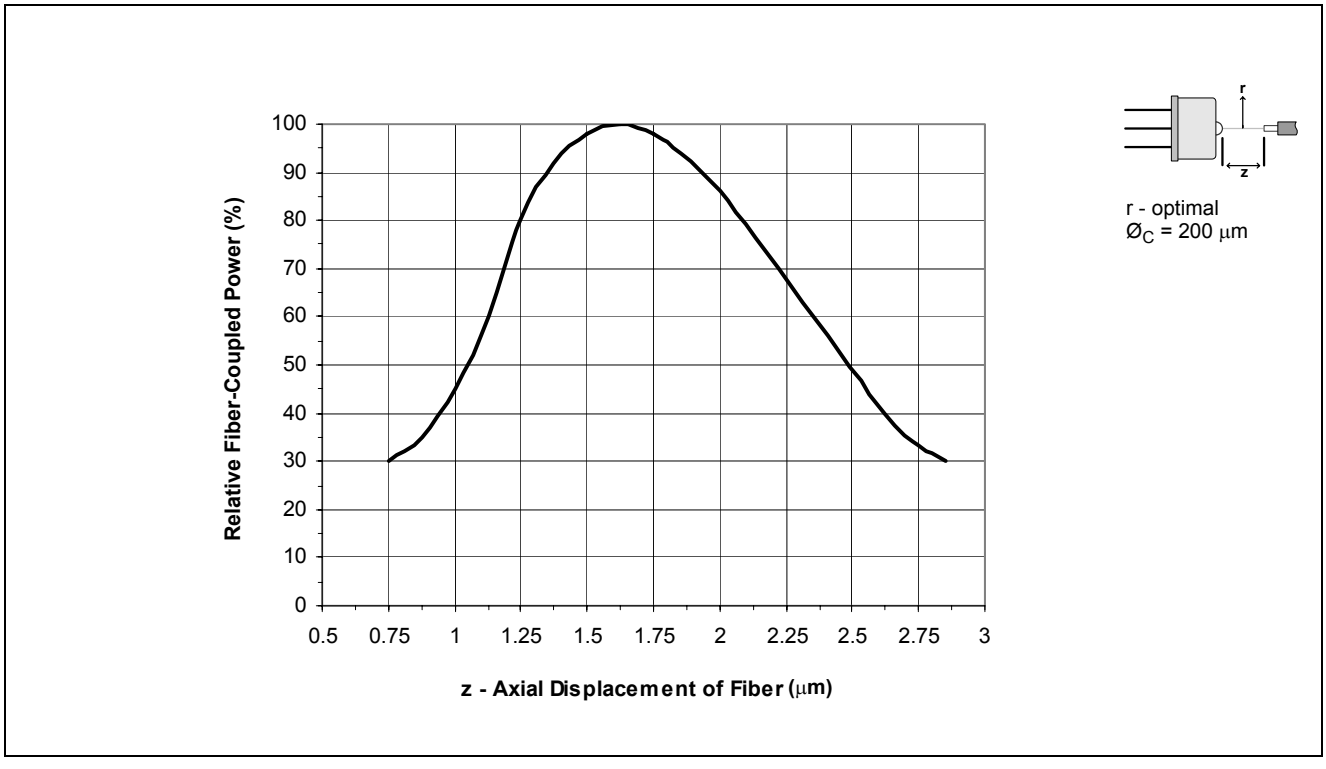


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber

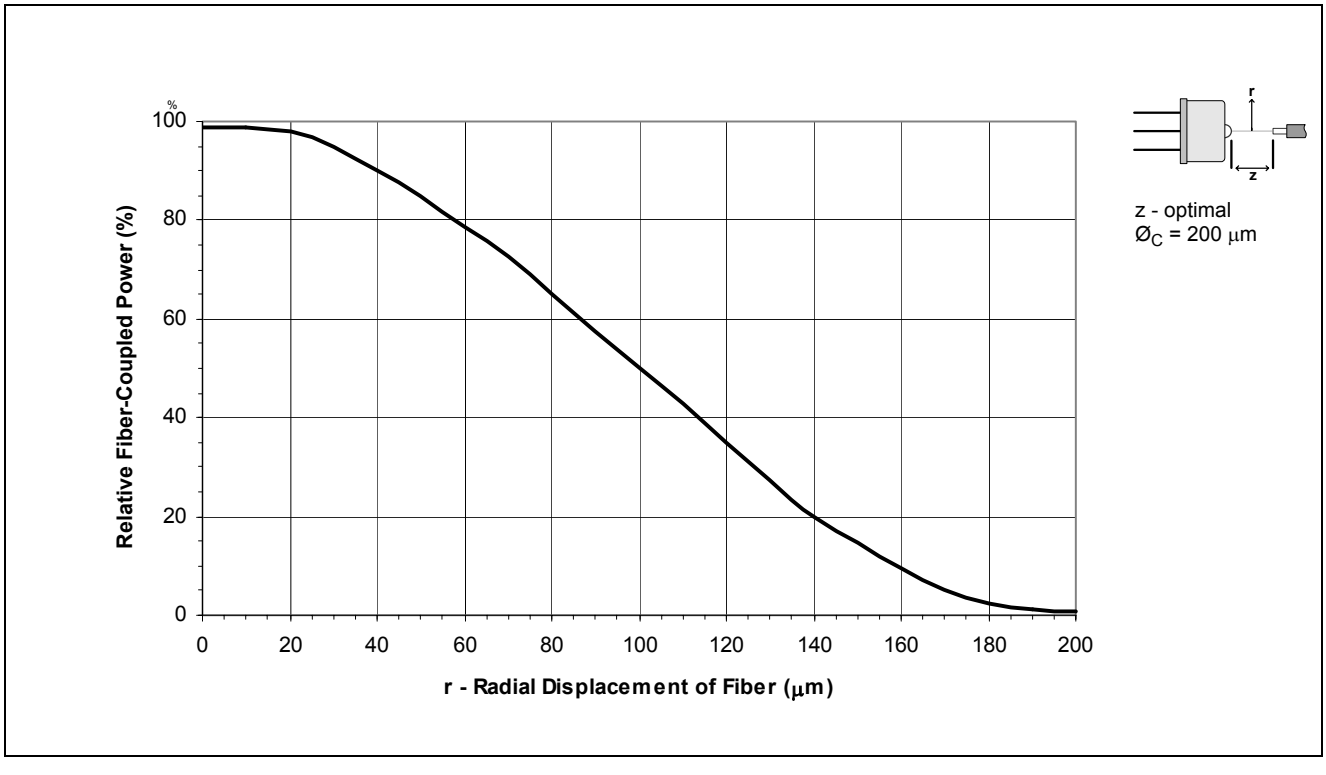


Figure 4 - Felative Fiber-coupled Power vs. r - Radial Displacement of Fiber

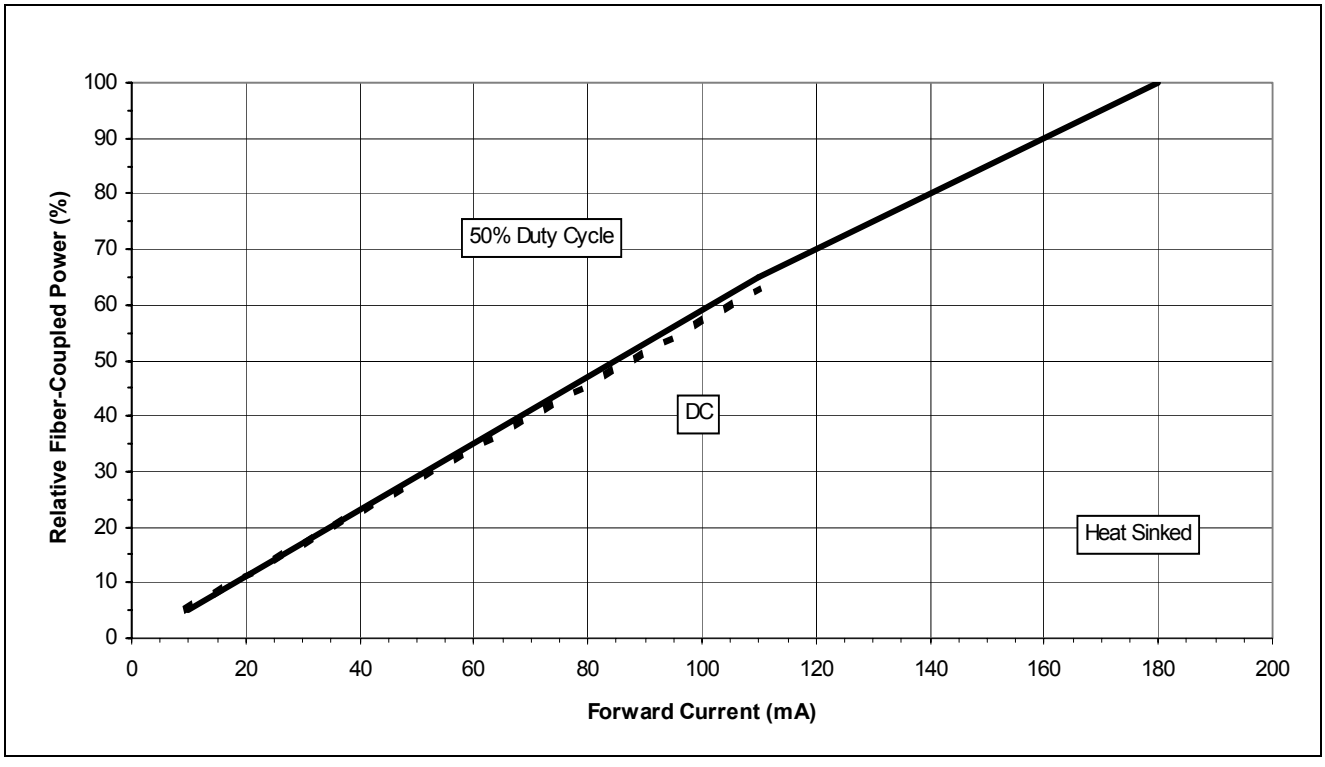


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

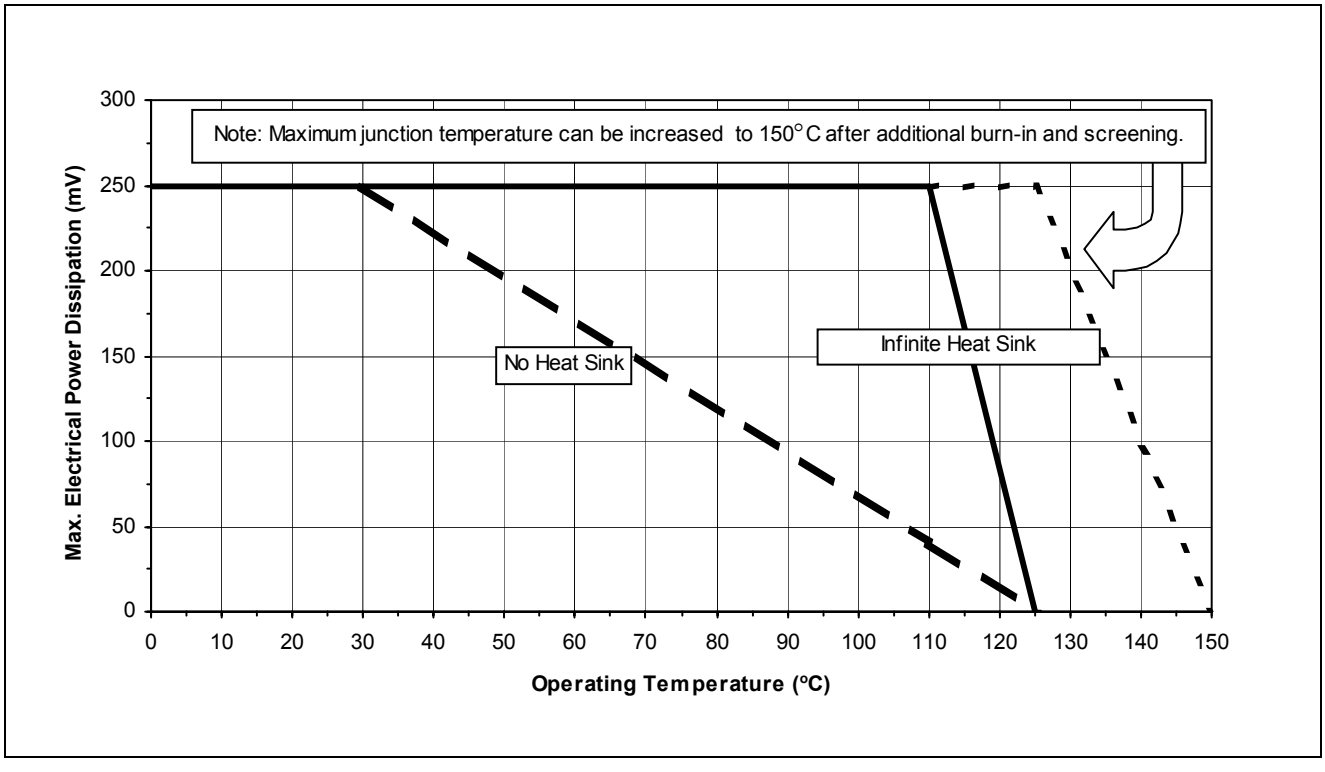


Figure 6 - Max. Electrical Power Disapation vs. Operating Temperature

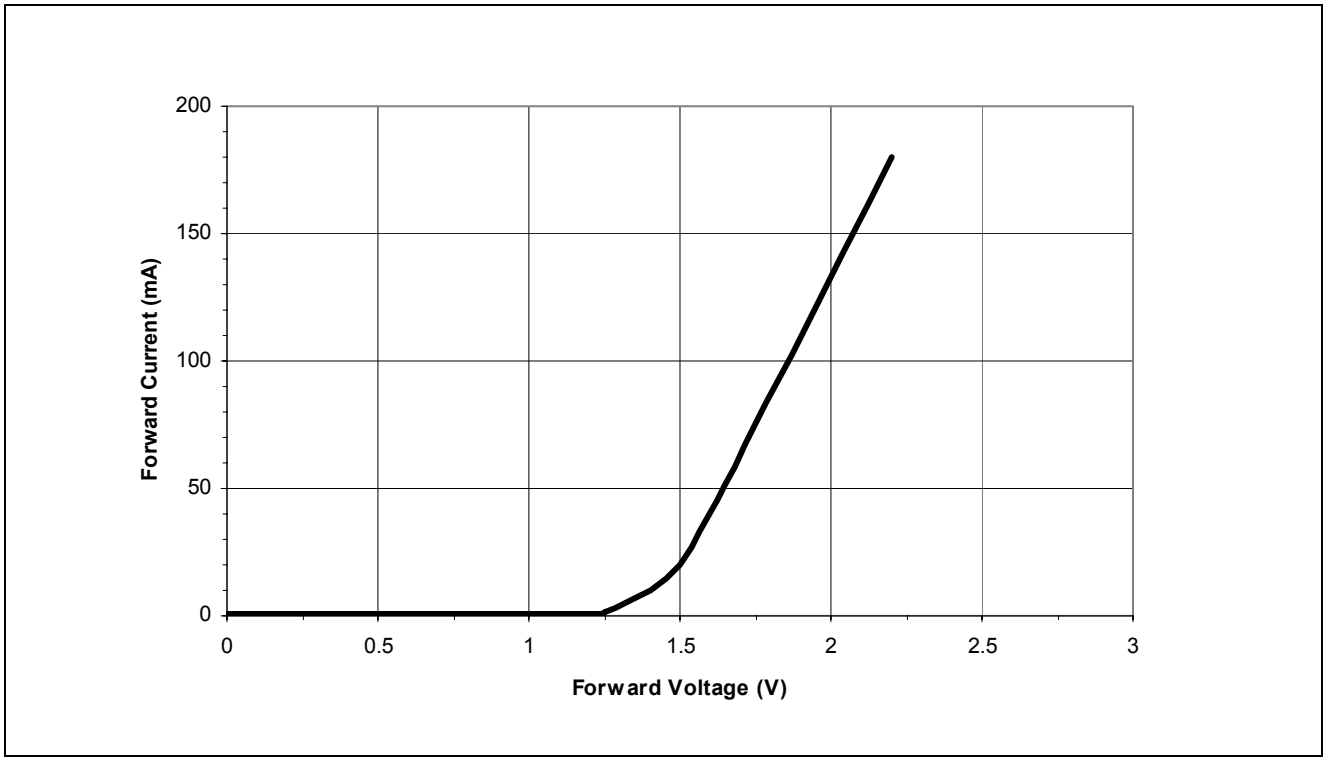


Figure 7 - Forward Current vs. Forward Voltage

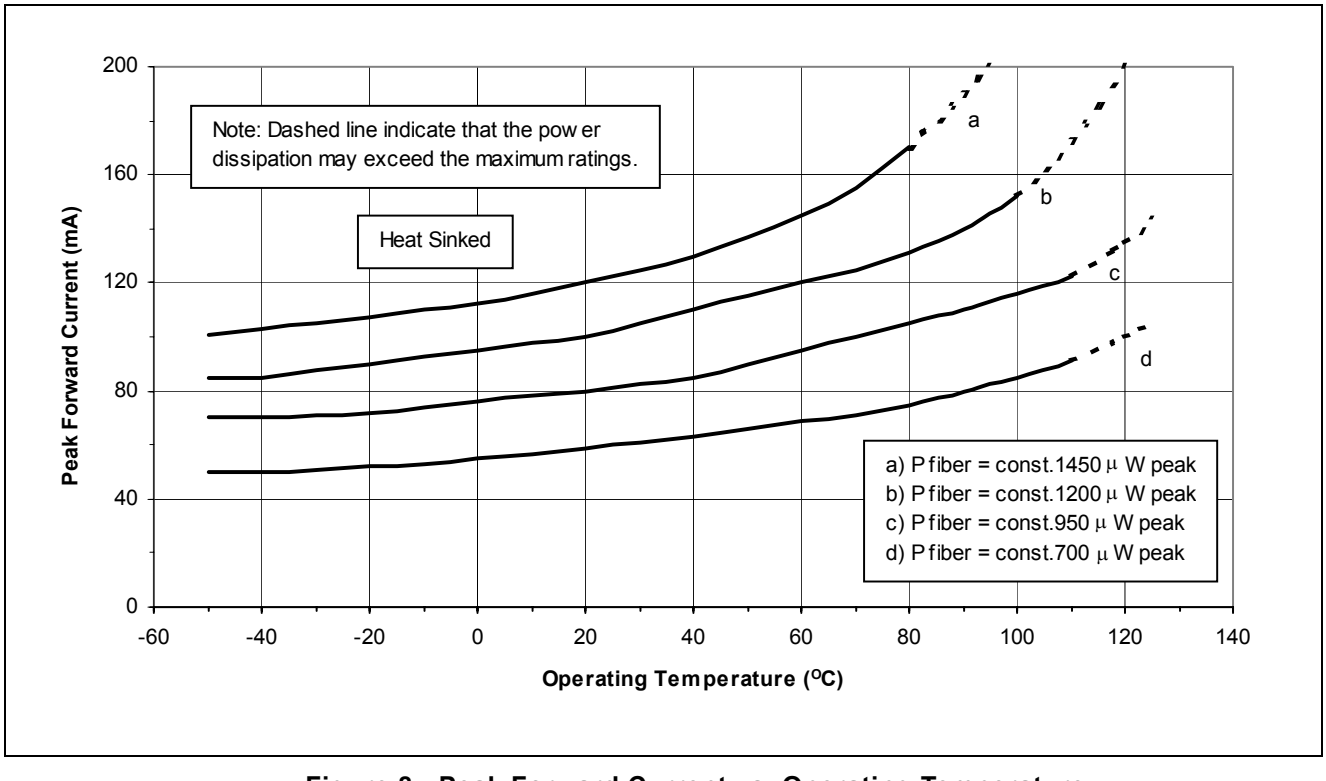


Figure 8 - Peak Forward Current vs. Operating Temperature

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