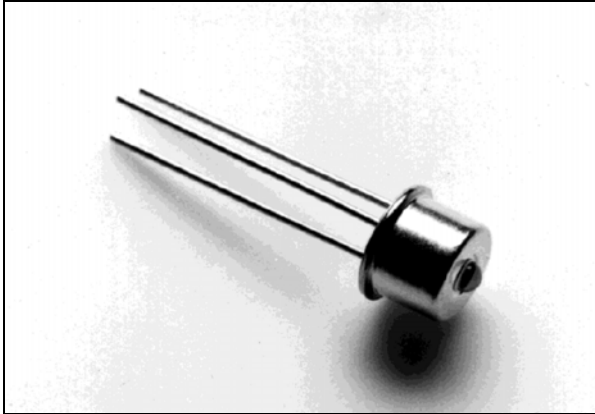


October 2004



### Ordering Information

MF272	TO-46 Package
MF272 ST	ST Housing
MF272 SMA	SMA Housing
MF272 FC	FC Housing

**-55°C to +125°C**

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

### Features

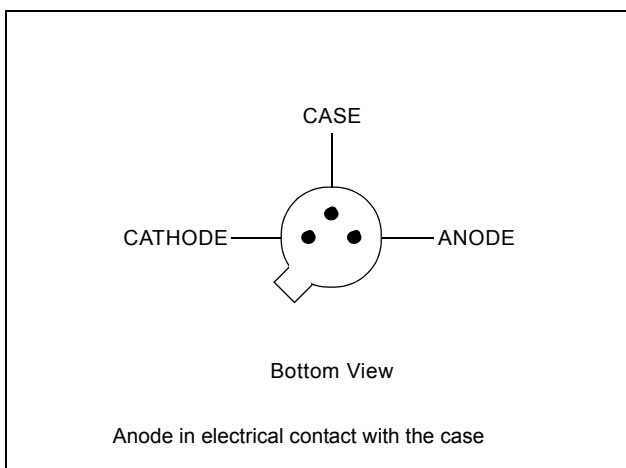
- 810 nm Surface-Emitting LED
- 70 MHz Bandwidth
- Designed for 200/280 μm fiber

### Applications

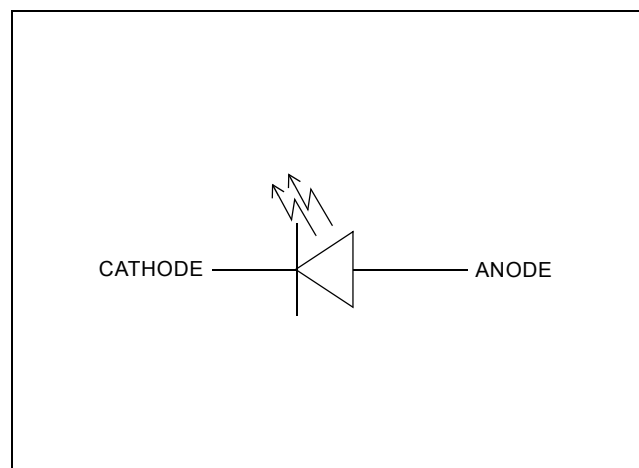
- Avionics
- Sensors
- Military LANs

### Description

This high speed device is optimized at 810 nm wavelength which is of particular interest for use in radiation-hardened fiber. It operates in a wide temperature range and delivers very high power to 200 μm core fiber, making it ideal in avionics and military datacom applications.



**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)	$P_{\text{fiber}}$	1300	1600		$\mu\text{W}$	$I_F = 100 \text{ mA}$ (Note 1)	Fiber: 200/280 $\mu\text{m}$ Step Index
Rise and Fall Time (10-90%)	$t_r, t_f$		7	10	ns	$I_F = 100 \text{ mA}$ (no bias)	
Bandwidth (3 dB <sub>el</sub> )	$f_c$		70		MHz	$I_F = 100 \text{ mA}$	
Peak Wavelength	$\lambda_p$	790	810	830	nm	$I_F = 100 \text{ mA}$	
Spectral Width (FWHM)	$\Delta\lambda$		50		nm	$I_F = 100 \text{ mA}$	
Forward Voltage (Figure 7)	$V_F$		2.2	2.4	V	$I_F = 100 \text{ mA}$	
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)	$T_{\text{op}}$	-55 to +125°C
Electrical Power Dissipation (derating: Figure 6)	$P_{\text{tot}}$	250 mW
Continuous Forward Current (f<10 kHz)	$I_F$	110 mA
Peak Forward Current (duty cycle<50%, f>1 MHz)	$I_{\text{FRM}}$	180 mA
Reverse Voltage	$V_R$	1.5 V
Soldering Temperature (2 mm from the case for 10 sec.)	$T_{\text{sld}}$	260°C

**Thermal Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance - Infinite Heat Sink	$R_{\text{thjc}}$			100	°C/W
Thermal Resistance - No Heat Sink	$R_{\text{thja}}$			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 $\mu\text{m}$ 0.20	62.5/125 $\mu\text{m}$ 0.275	100/140 $\mu\text{m}$ 0.29	200/230 $\mu\text{m}$ 0.37	200/280 $\mu\text{m}$ 0.24
60 $\mu\text{W}$	150 $\mu\text{W}$	600 $\mu\text{W}$	2000 $\mu\text{W}$	1600 $\mu\text{W}$

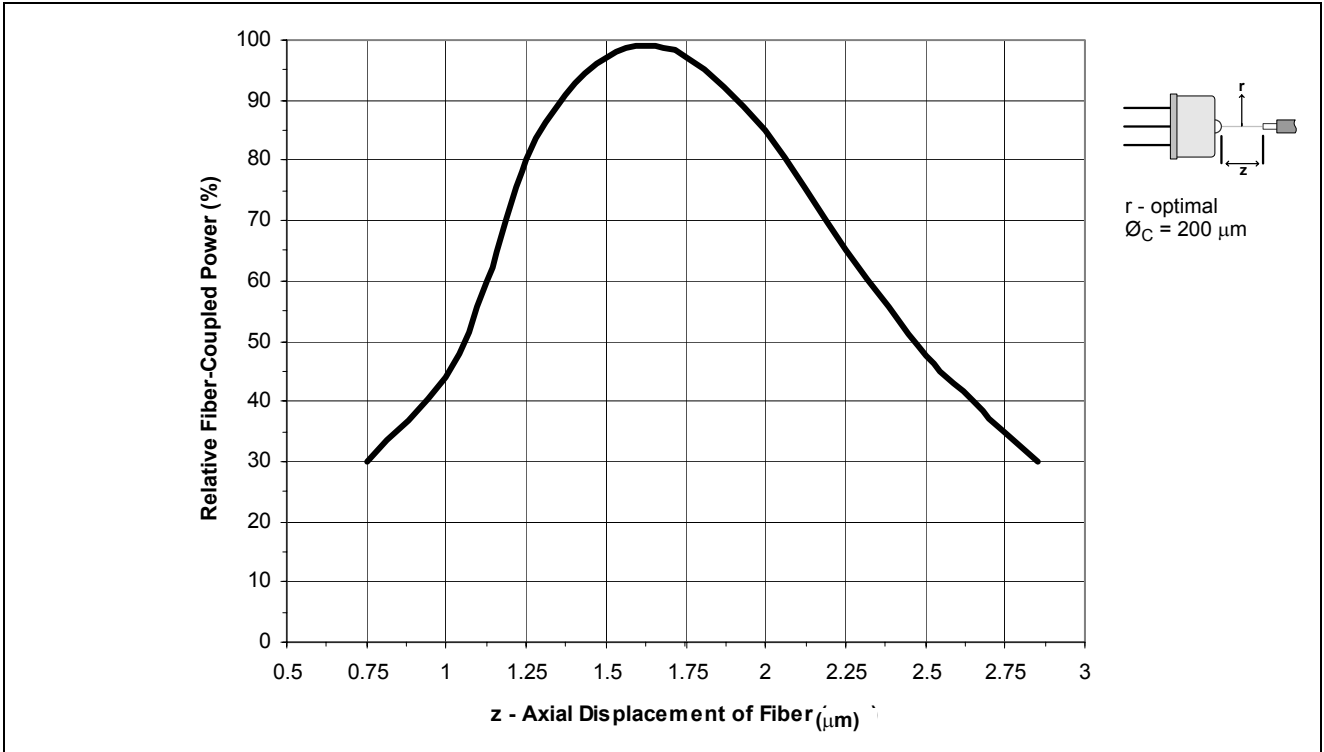


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber



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

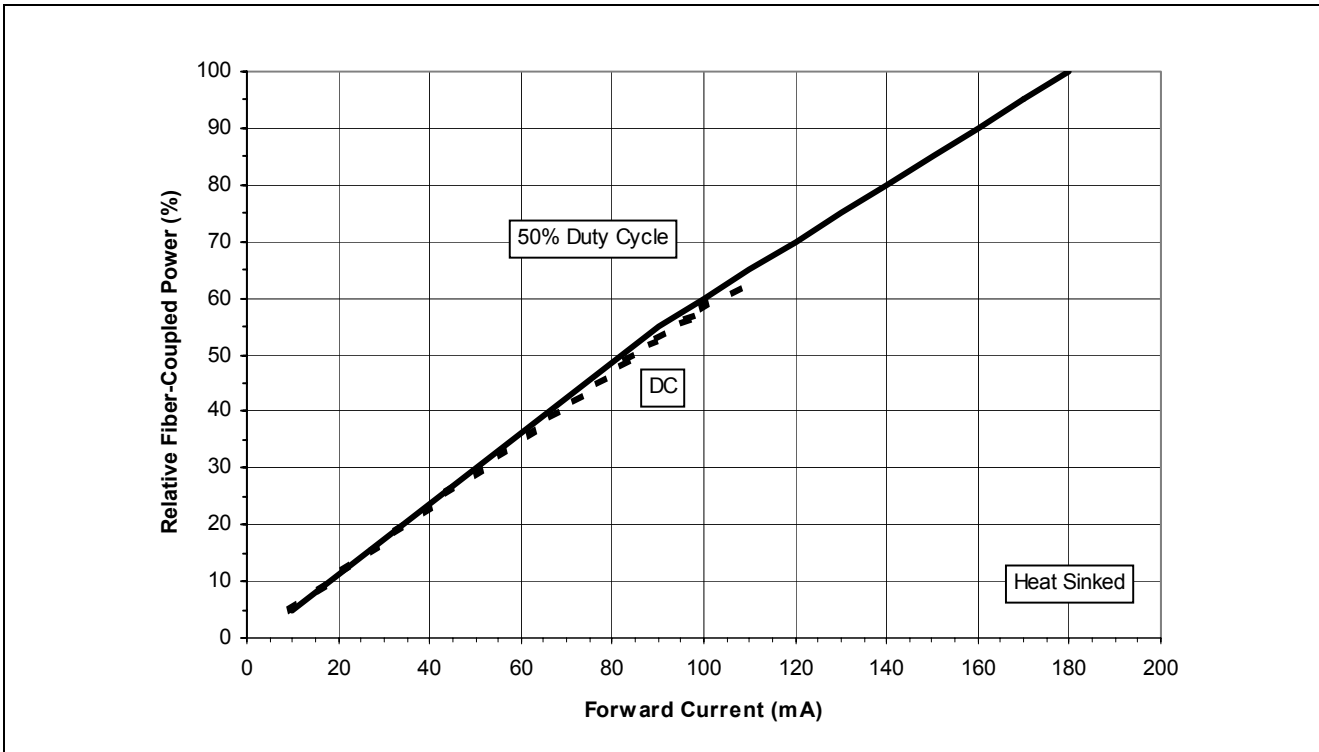


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

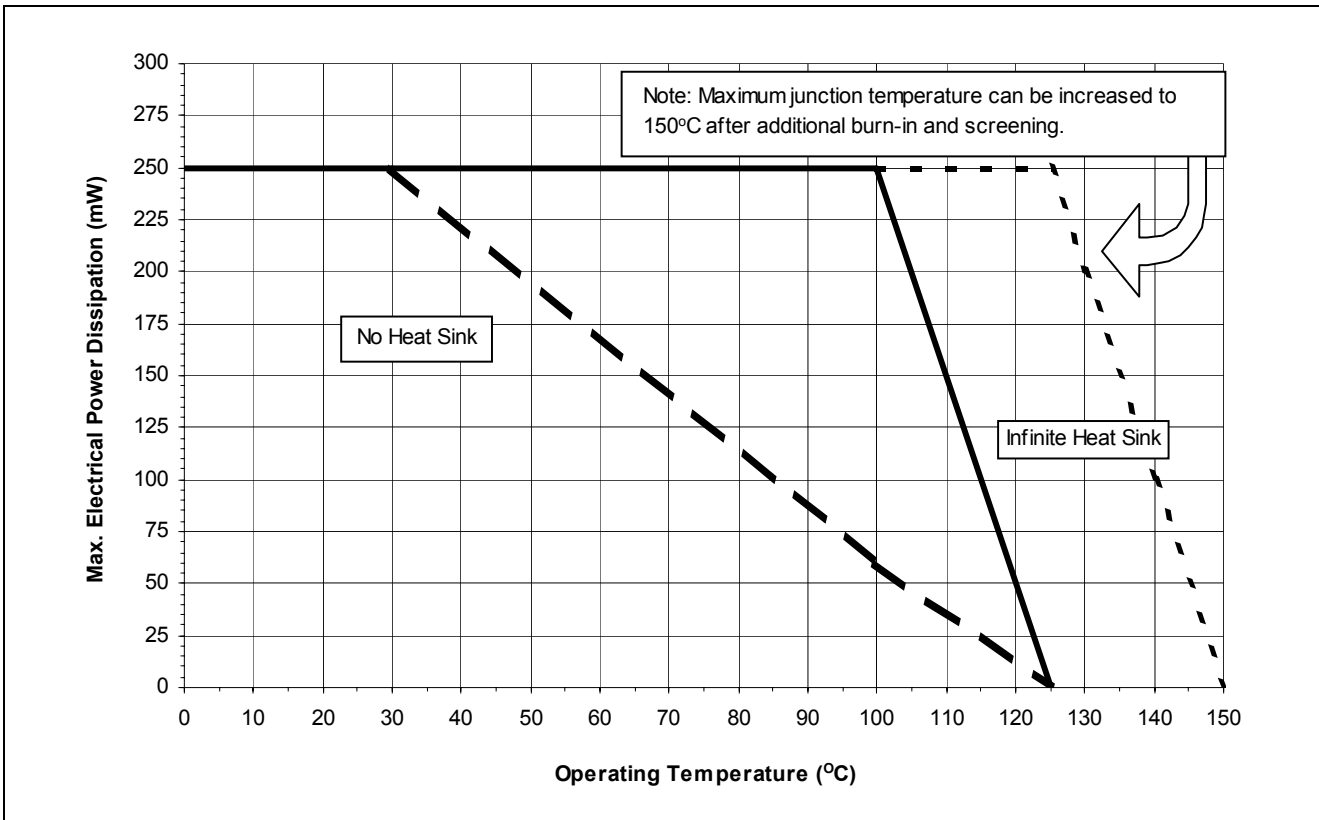


Figure 6 - Max. Electrical Power Dissipation vs. Operating Temperature

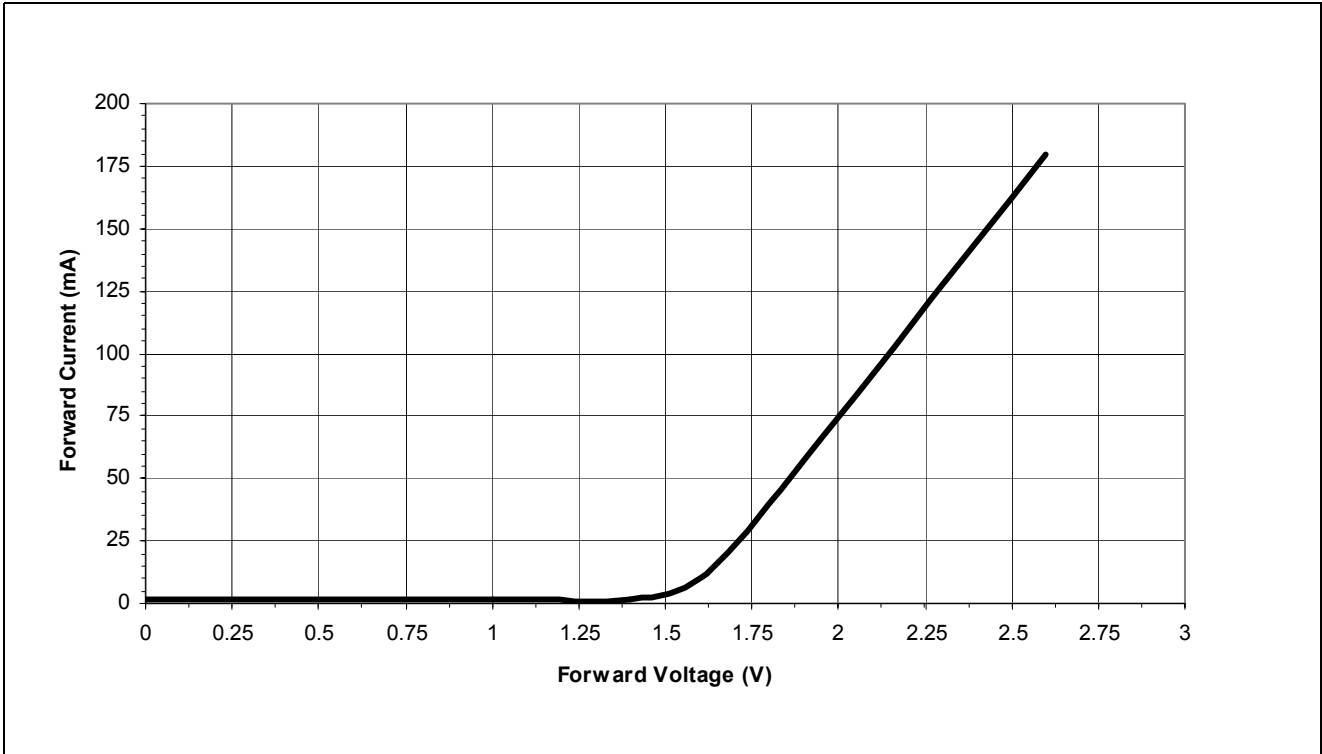


Figure 7 - Forward Current vs. Forward Voltage

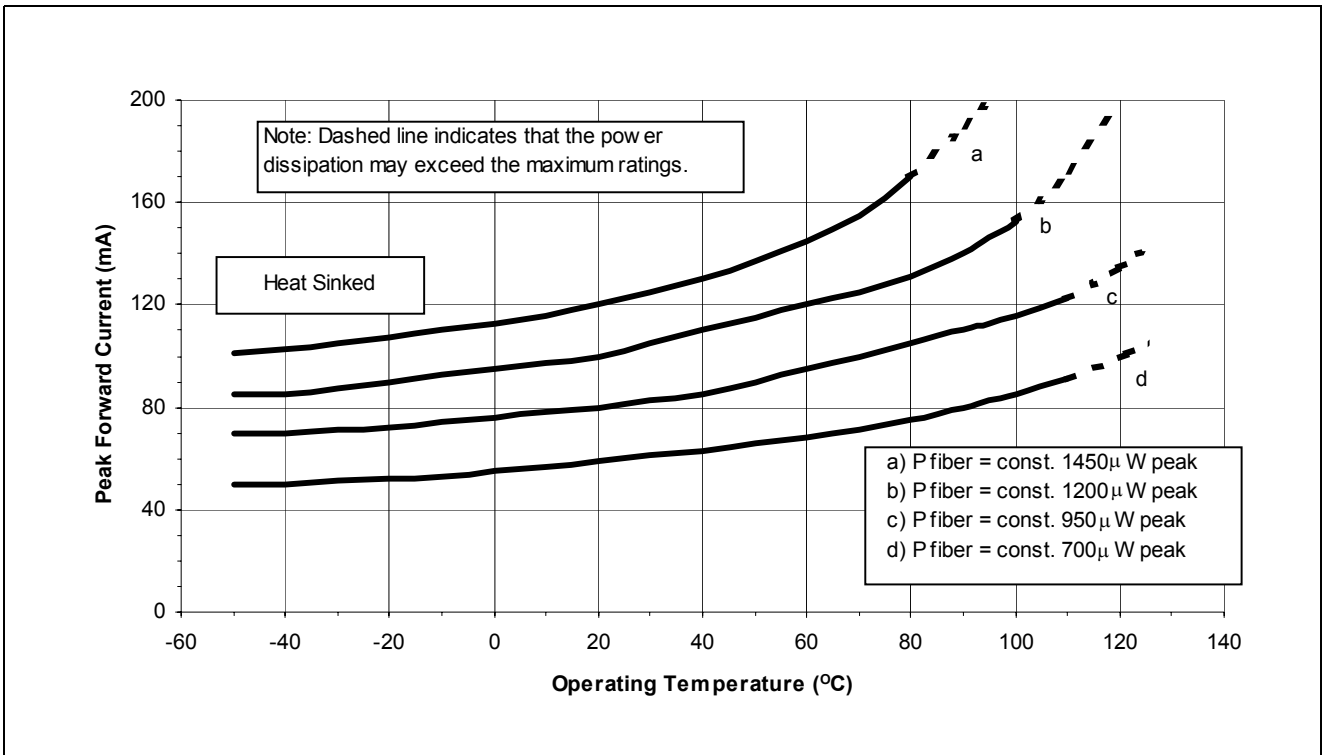


Figure 8 - Peak Forward Current vs. Operating Temperature



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