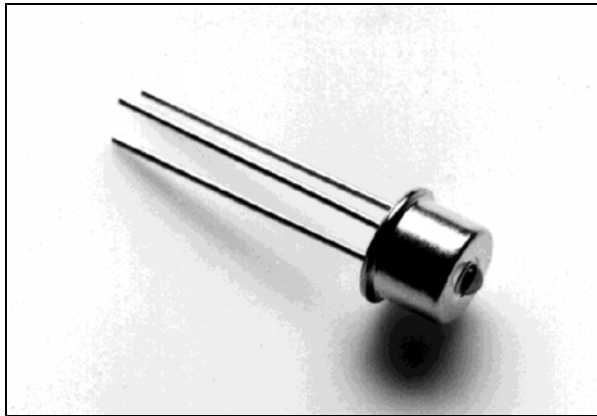


October 2004



### 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.

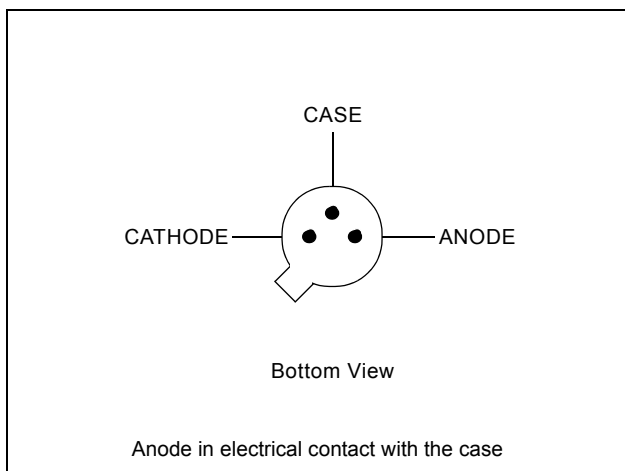


Figure 1 - Pin Diagram

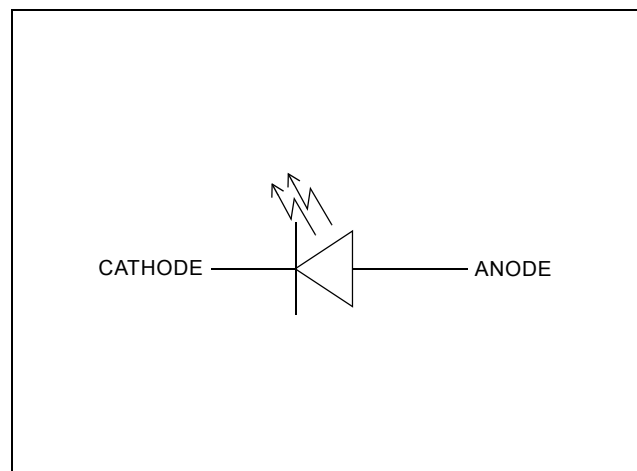


Figure 2 - Functional Schematic

[查询"MF228"供应商](#)**Optical and Electrical Characteristics - Case Temperature 25°C**

| Parameter  | Symbol             | Min. | Typ. | Max. | Unit          | Test Condition                         |   |
|--|--------------------|------|------|------|---------------|--|---|
| Fiber-Coupled Power<br>(Figures 3, 4, and 5) (Table 1) | $P_{\text{fiber}}$ | 1000 | 1200 |      | $\mu\text{W}$ | $I_F = 100 \text{ mA}$<br>(Note 1)     | Fiber:<br>200/280 $\mu\text{m}$<br>Step<br>Index<br>NA = 0.24 |
| Rise and Fall Time (10-90%)                            | $t_r, t_f$         |      | 7    | 10   | ns            | $I_F = 100 \text{ mA}$<br>(no bias)    |   |
| Bandwidth (3dB <sub>e</sub> )                          | $f_c$              |      | 50   |      | MHz           | $I_F = 100 \text{ mA}$                 |   |
| Peak Wavelength  | $\lambda_p$        | 830  | 850  | 870  | nm            | $I_F = 100 \text{ mA}$                 |   |
| Spectral Width (FWHM)                                  | $\Delta\lambda$    |      | 50   |      | nm            | $I_F = 100 \text{ mA}$                 |   |
| Forward Voltage (Figure 7)                             | $V_F$              |      | 1.8  | 2.2  | 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)            | $T_{\text{op}}$   | -40 to +85°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 (2mm from the case for 10 sec.) | $T_{\text{slid}}$ | 260°C         |

**Thermal Characteristics**

| Parameter                               | Symbol            | Min. | Typ. | Max. | Unit  |
|---|-------------------|------|------|------|-------|
| Thermal Resistance - Infinite Heat Sink | $R_{\text{thjc}}$ |      |      | 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 $\mu\text{m}$<br>0.20                       | 62.5/125 $\mu\text{m}$<br>0.275 | 100/140 $\mu\text{m}$<br>0.29 | 200/230 $\mu\text{m}$<br>0.37 | 200/280 $\mu\text{m}$<br>0.24 |
| 60 $\mu\text{W}$                                   | 150 $\mu\text{W}$               | 450 $\mu\text{W}$             | 1300 $\mu\text{W}$            | 1200 $\mu\text{W}$            |

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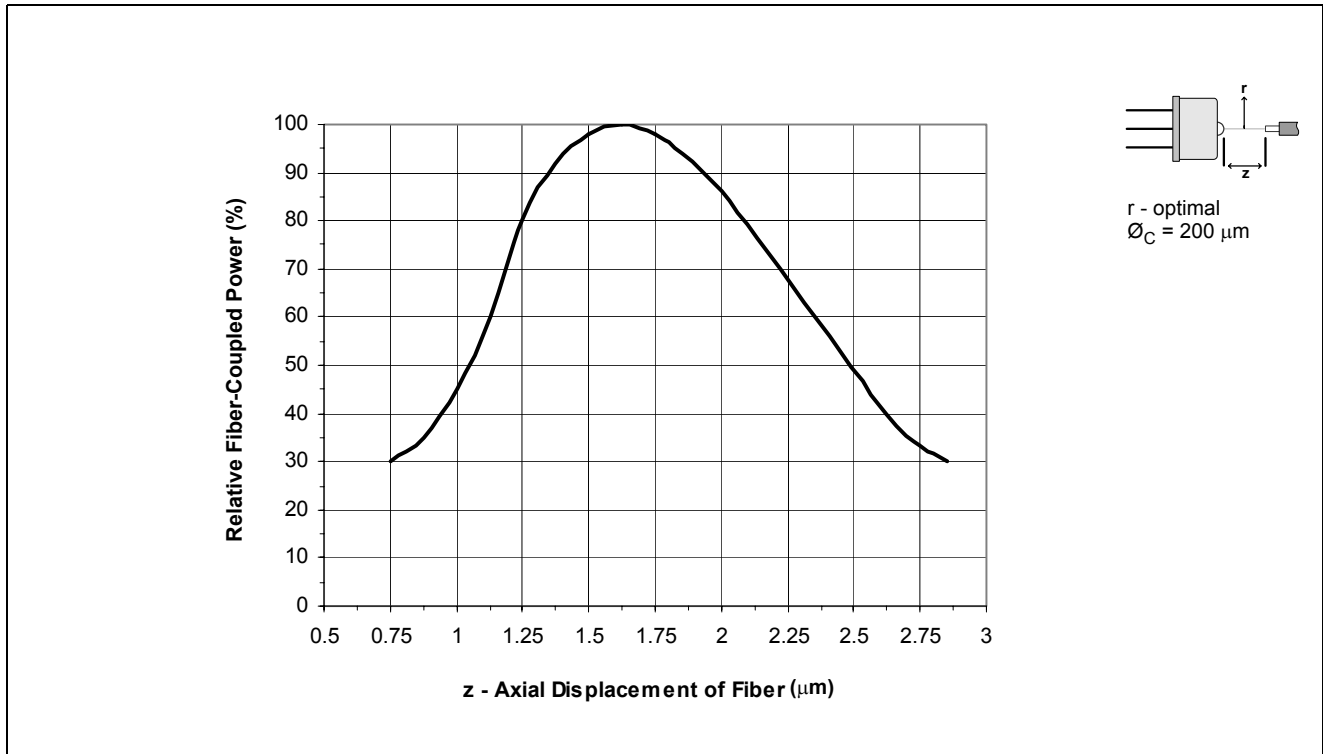


Figure 3 - Relative Fiber-coupled Power vs. z - Axial Displacement of Fiber



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

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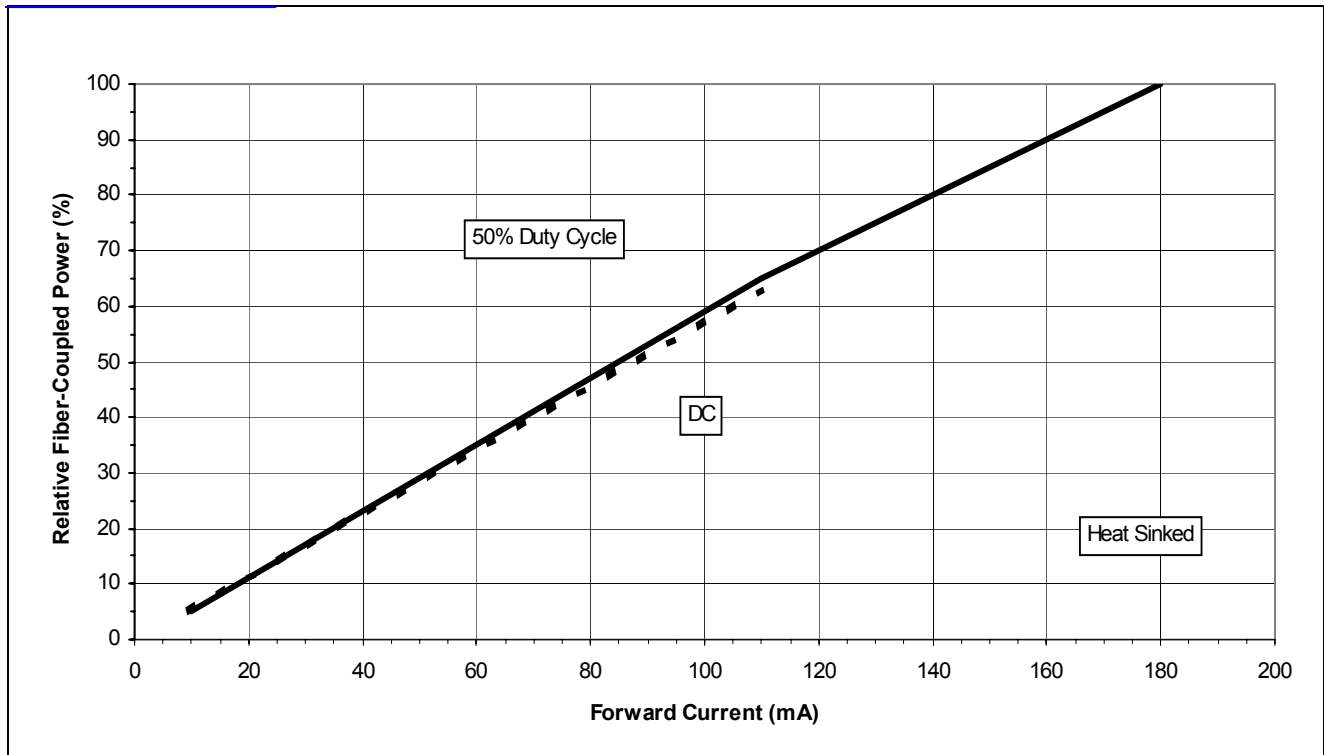


Figure 5 - Relative Fiber-coupled Power vs. Forward Current

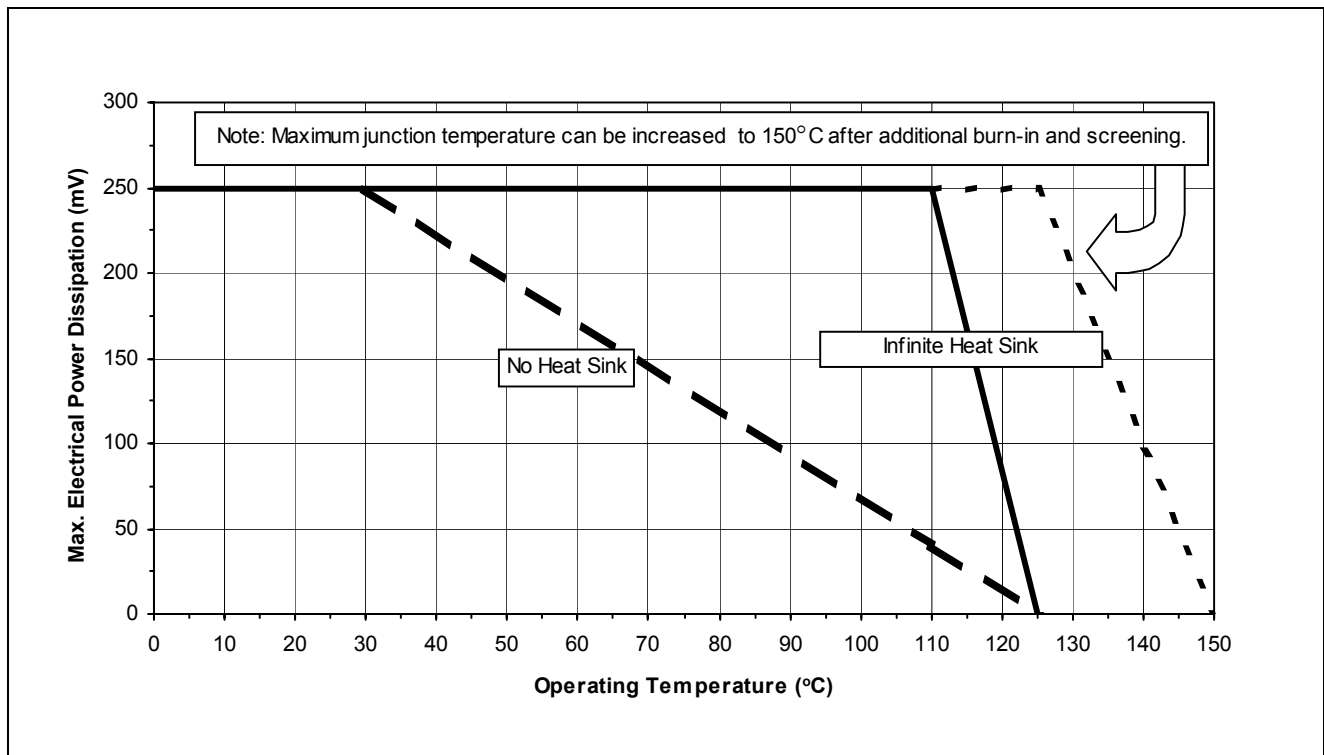


Figure 6 - Max. Electrical Power Disapation vs. Operating Temperature

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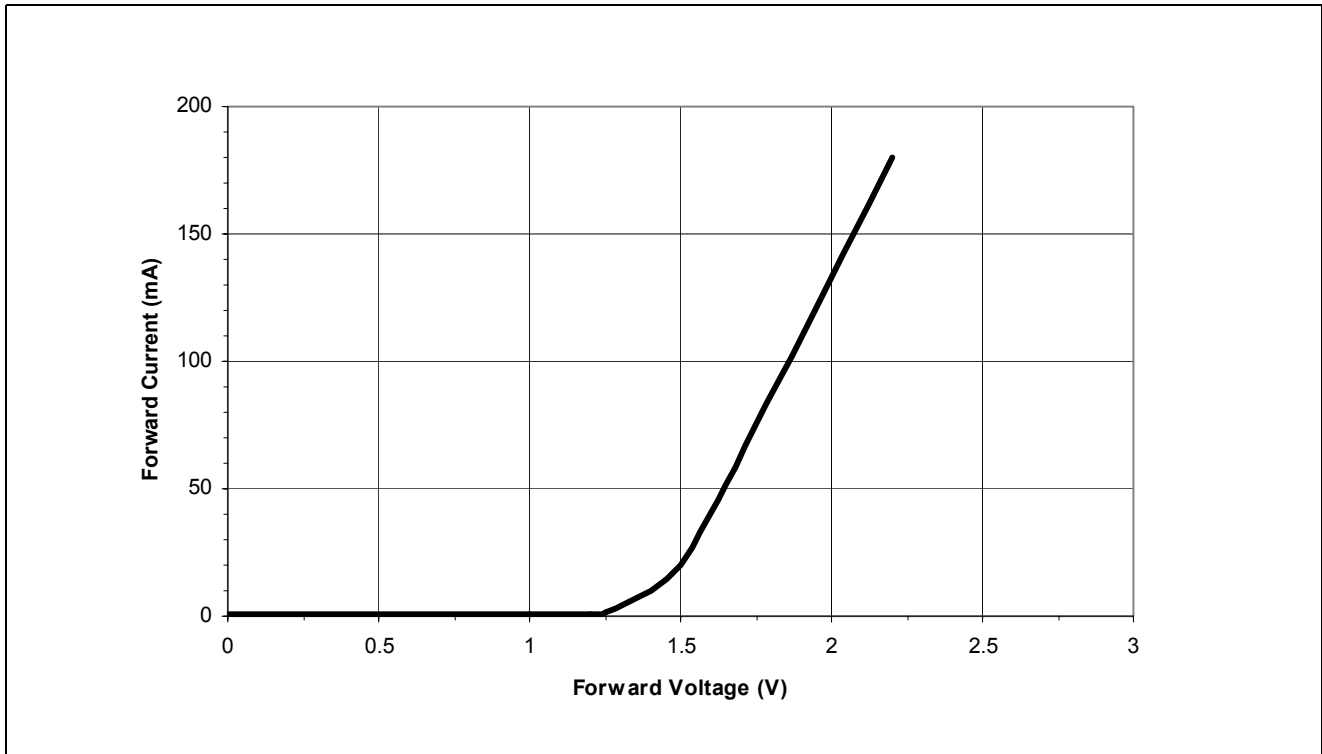


Figure 7 - Forward Current vs. Forward Voltage

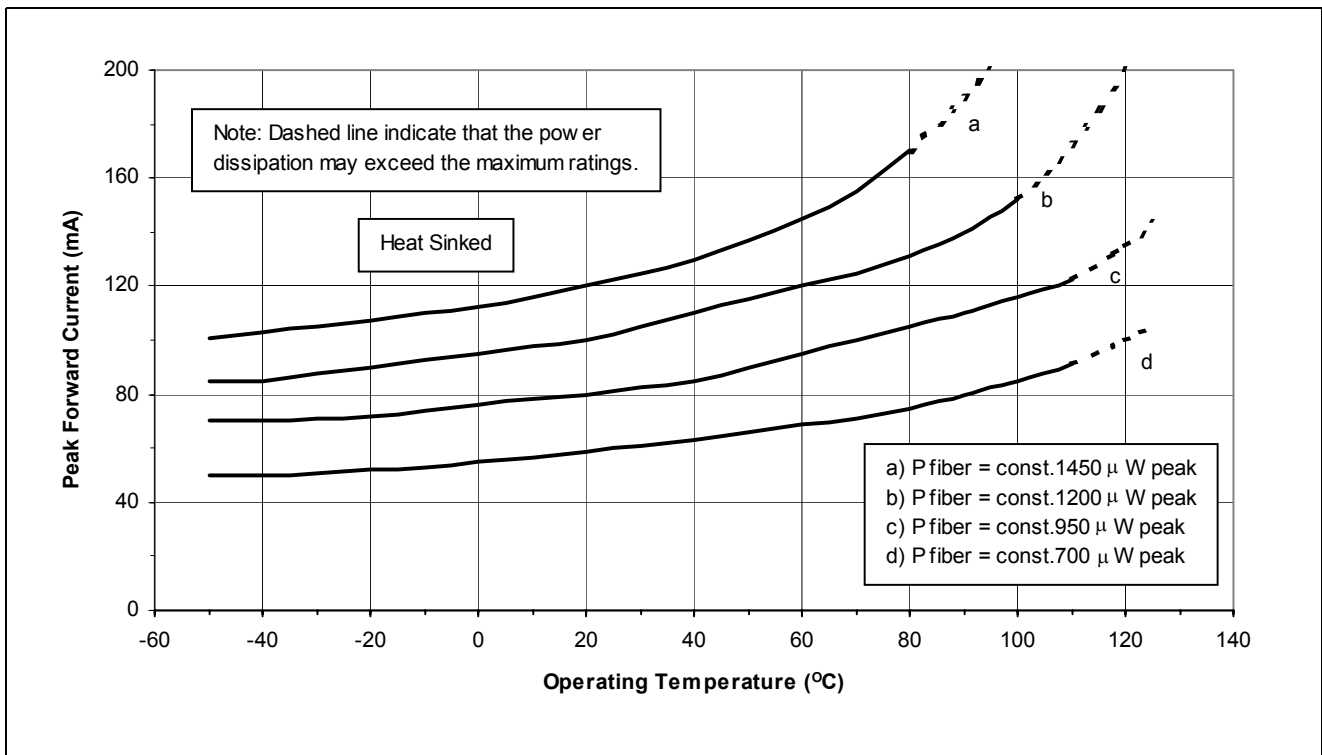


Figure 8 - Peak Forward Current vs. Operating Temperature



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