

## MF799 ST



ST Assembly

Ordering Information	
PART #	RECEPTACLE
MF799	ST
-40°C to +85°C	

### Applications

- Ethernet 10 or 100Mbps
- Token Ring
- Fibre Channel 266Mbps
- FDDI
- ATM-SDH/SONET 155Mbps
- Intra-Office Telecom
- WDM Applications

### Features

- Full Duplex Communication Over One Fiber
- Dual Wavelengths 820/1300nm
- Very Small Size
- Very Low Internal Crosstalk
- Packaged in Industry-Standard ST® Receptacle
- Designed for 62.5/125µm Fiber

### Description

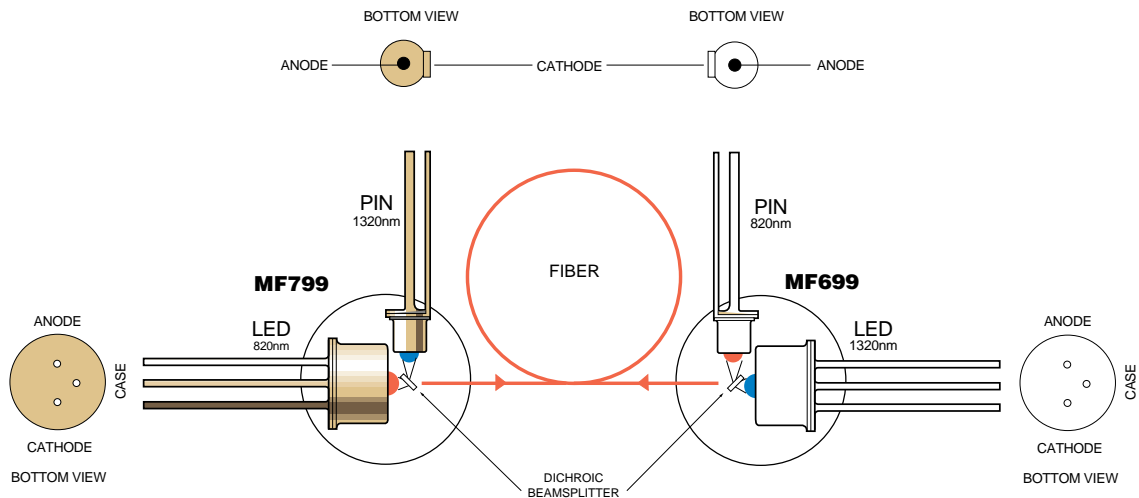
Used in combination with the MF699, the MF-799 Duplex Device is designed for WDM

(Wavelength Division Multiplex), Datacom, Video Links, or Intra-Office Telecom Applications. It emits optical power at 820nm and detects incoming optical power at 1320nm, allowing full Duplex Communication over one single fiber.

The MF799 uses dichroic (wavelength-selective) beamsplitters for maximum power budget and minimum crosstalk. Minimum internal crosstalk is achieved by the use of wavelength-selective Detectors. The long wavelength path meets requirements for FDDI (ANSI X3T9.5 and ATM 155Mbps).

The MF799 is designed for multi-mode fiber and optimized for 62.5/125µm fiber.

## MF799 Functional Diagram



**Absolute Maximum Ratings\***

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	$T_{stg}$	-40	+85	°C
Operating Temperature (Fig 2)	$T_{op}$	-40	+85	°C
LED Power Dissipation (Fig 2)	$P_{tot}$		250	mW
LED Continuous Forward Current ( $f \leq 10\text{kHz}$ )	$I_F$		110	mA
LED Peak Forward Current (Duty cycle $\leq 50\%$ , $f \geq 1\text{MHz}$ )	$I_{FRM}$		180	mA
LED Reverse Voltage	$V_{RL}$		1.5	V
PIN Reverse Voltage	$V_{RP}$		20	V
Solder Temperature (Note 1)	$T_{sld}$		260	°C

\*Exceeding these values may cause permanent damage. Functional operation under these conditions is not implied. Note 1: 2mm from the case for 10s.

**LED Optical & Electrical Characteristics** (Case Temperature -25 to +70°C)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Fiber-Coupled-Power (Fig 1)	$P_{fiber}$	-19			dBm	$I_{Peak}=60\text{mA}$ (Note 1, 2)
Rise & Fall Time (10-90% no bias)	$t_r, t_f$		1.5	2	ns	$I_F=60\text{mA}$ (Note 2)
Bandwidth (3dB <sub>el</sub> )	$f_c$		250		MHz	$I_F=60\text{mA}$ (Note 2)
Peak Wavelength	$\lambda_p$	800	820	840	nm	$I_F=60\text{mA}$
Spectral Width (FWHM)	$\Delta\lambda$		50	60	nm	$I_F=60\text{mA}$
Forward Voltage (Fig 3)	$V_F$			2.1	V	$I_F=60\text{mA}$
Reverse Current	$I_R$			20	$\mu\text{A}$	$V_R=1\text{V}$
Capacitance	$C$		20		pF	$V_R=0\text{V}$ , $f=1\text{MHz}$

Note 1: Average power at 10MHz/50% duty cycle. Measured at the exit of 100m of fiber. Note 2: 62.5/125 $\mu\text{m}$  graded index fiber (NA=0.275).

**PIN Optical & Electrical Characteristics** (Case Temperature -25 to +70°C)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Responsivity (Fig 4)	$R$	0.5			A/W	$V_R=5\text{V}$ $\lambda=1320\text{nm}$ (note 1)
Bandwidth	$f_c$	500			MHz	$V_R=5\text{V}$ $R_L=50\Omega$ (note 1)
Capacitance (Fig 5)	$C$		1.6		pF	$V_R=5\text{V}$ $f=1\text{MHz}$
Dark Current	$I_d$			5 100	nA	$T_{Case}=25^\circ\text{C}$ $T_{Case}=70^\circ\text{C}$ $V_R=5\text{V}$ $I_{LED}=0\text{mA}$
Crosstalk Current	$I_{Cr}$		75		nA	$V_R=5\text{V}$ $I_{LED}=60\text{mA}$ (note 2)

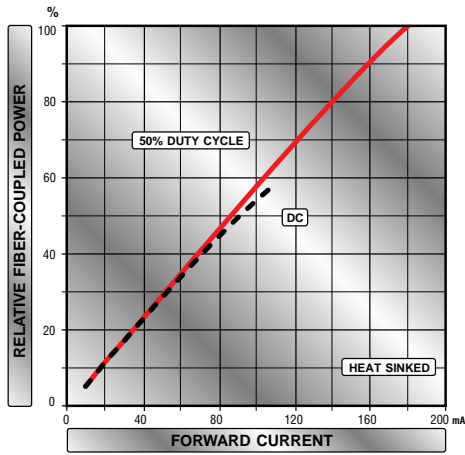
Note 1: 62.5/125 $\mu\text{m}$  graded index fiber (NA=0.275) Note 2: Internal crosstalk with ceramic ferrule inserted but no power from the fiber. Total Current = Dark Current + Crosstalk Current.

**LED Thermal Characteristics**

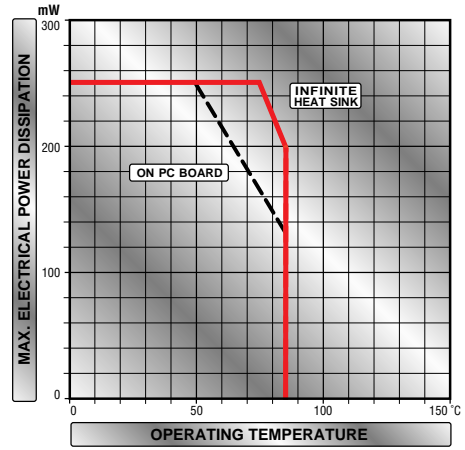
Parameter	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance - Infinite Heat Sink	$R_{thjc}$			200	°C/W
Thermal Resistance - On PC Board	$R_{thjb}$			300	°C/W
Temperature Coefficient - Optical Power	$dP/dT_j$		-0.6		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		nm/°C

**PIN Thermal Characteristics**

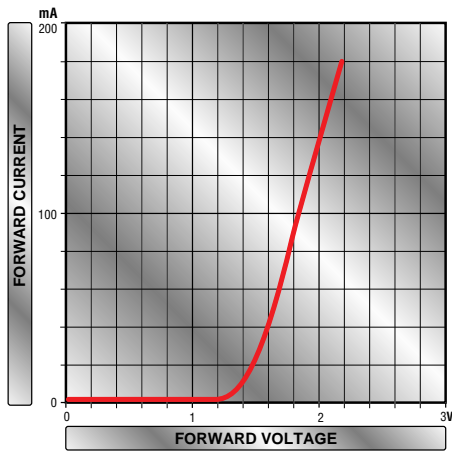
Parameter	Symbol	Min.	Typ.	Max.	Units
Temperature Coefficient - Dark Current	$dI_d/dT_j$		5		%/°C
Temperature Coefficient - Crosstalk Current	$dI_{Cr}/dT_j$		-0.6		%/°C



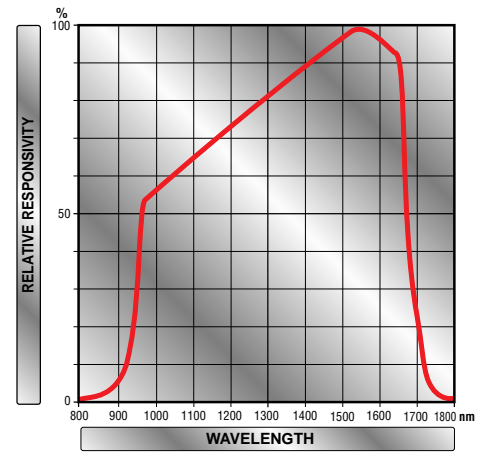
**Figure 1**



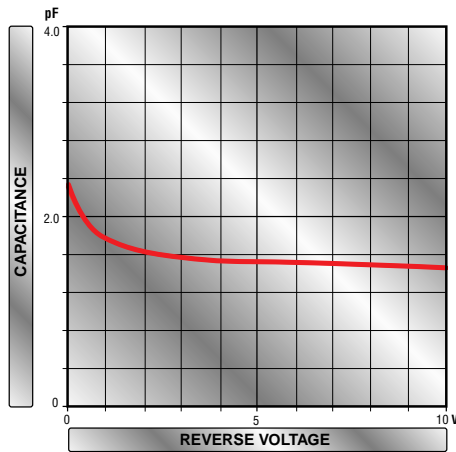
**Figure 2**



**Figure 3**

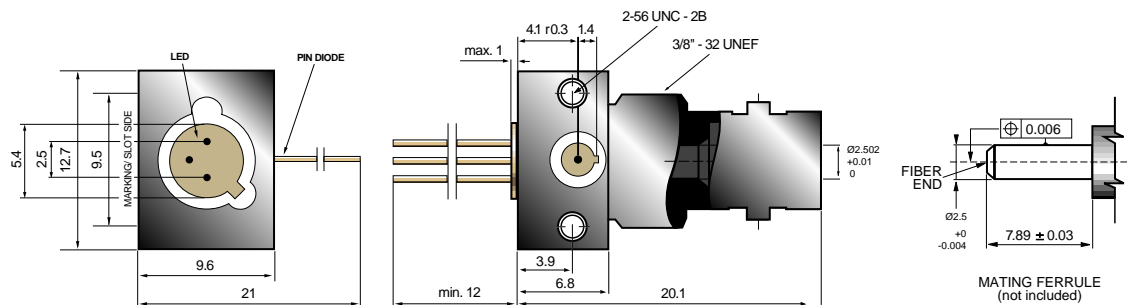


**Figure 4**



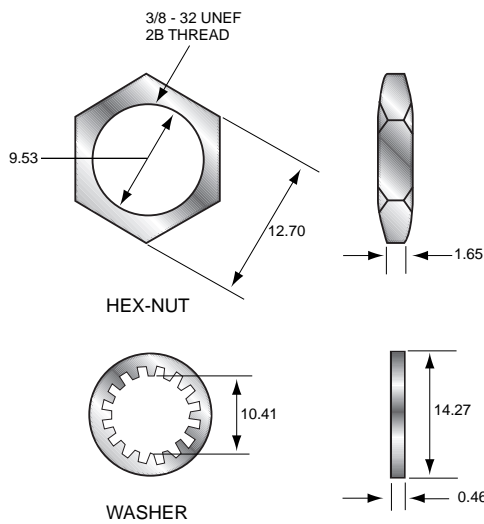
**Figure 5**

**MF799 Mechanical Data**



Note: The LED chip is isolated from the case. All dimensions in mm.

**MF799 Packaging Hardware**





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