

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

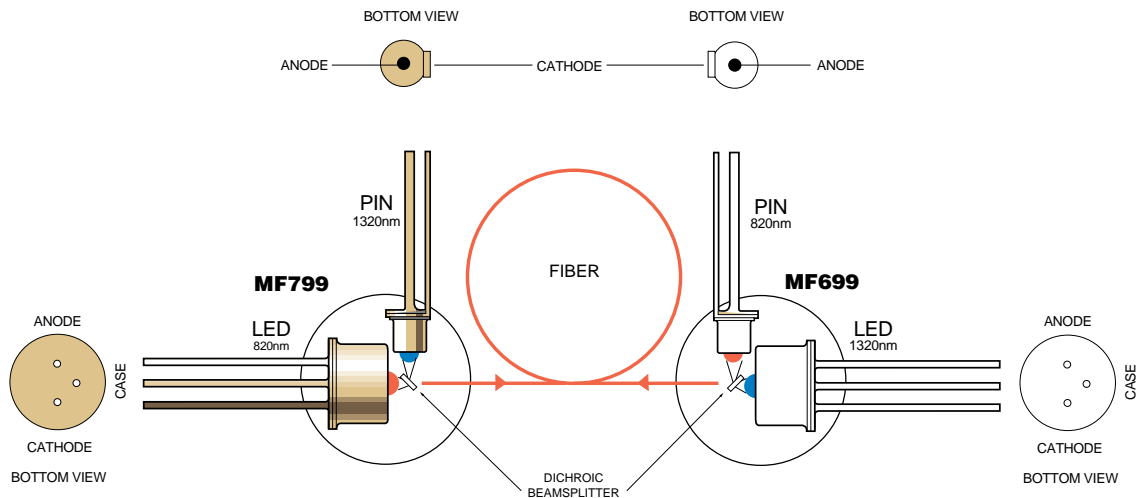
Used in combination with the MF699, the MF-799 Duplex Device is designed for WDM

(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 _{el})	f_c		250		MHz	$I_F=60\text{mA}$ (Note 2)
Peak Wavelength	λ_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	μA	$V_R=1\text{V}$
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: 62.5/125μm 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: 62.5/125μm 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

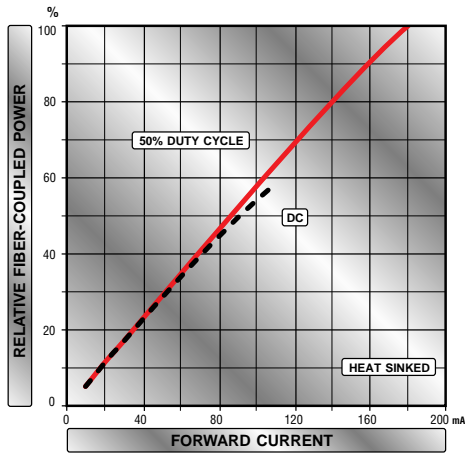


Figure 1

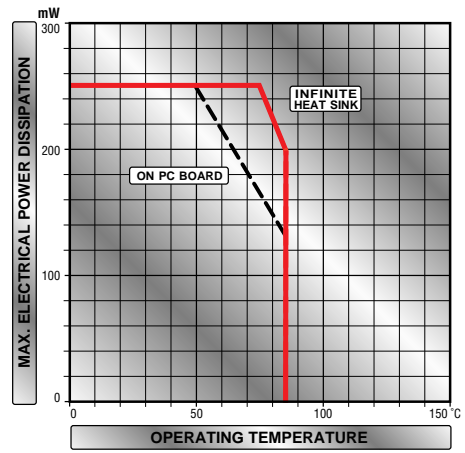


Figure 2

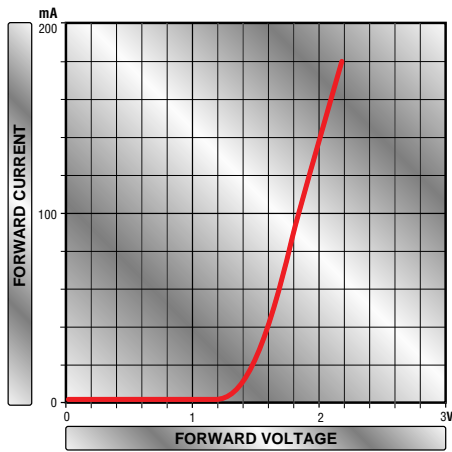


Figure 3

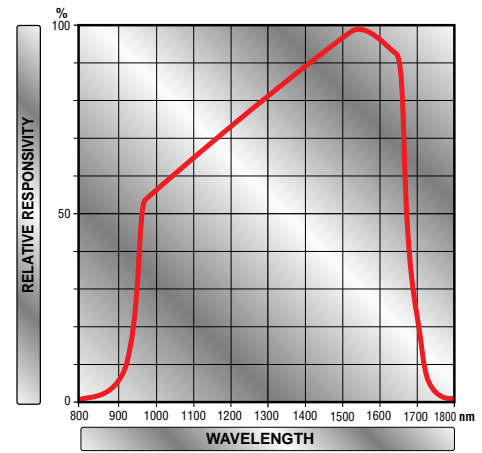


Figure 4

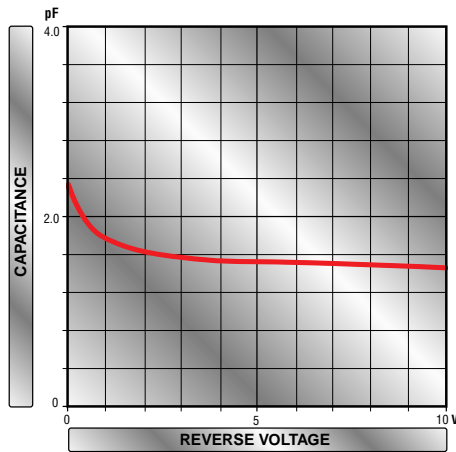
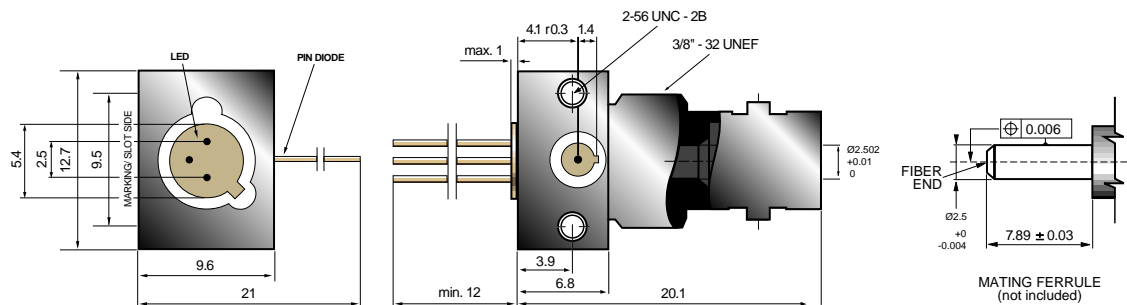


Figure 5

MF799 Mechanical Data



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

MF799 Packaging Hardware

