

## MF699 ST



ST Assembly

Ordering Information	
PART #	RECEPTACLE
MF699	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

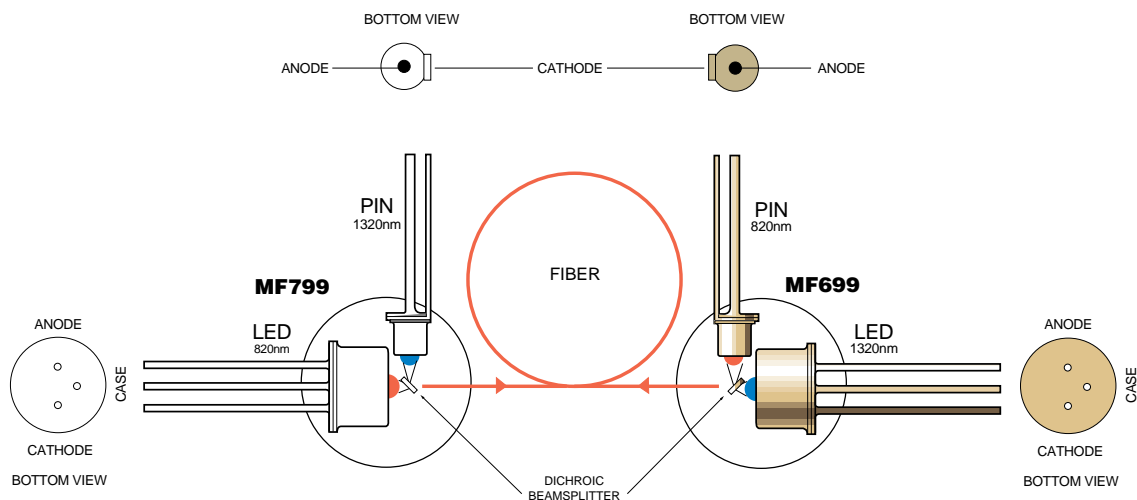
Used in combination with the MF799, the MF699 Duplex Device is designed for WDM

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

The MF699 uses dichroic (wavelength-selective) beamsplitters for maximum power budget and minimum crosstalk. Minimum internal crosstalk is achieved with wavelength-selective detectors. The long wavelength path meets requirements for FDDI (ANSI X3T9.5) and ATM 155Mbps.

The MF699 is designed for multi-mode fiber and optimized for 62.5/125µm fiber.

## MF699 Functional Diagram



**Absolute Maximum Ratings\***

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	T <sub>stg</sub>	-40	+85	°C
Operating Temperature (Fig 2)	T <sub>op</sub>	-40	+85	°C
LED Power Dissipation (Fig 2)	P <sub>tot</sub>		160	mW
LED Continuous Forward Current (f≤10kHz)	I <sub>F</sub>		80	mA
LED Peak Forward Current (duty cycle ≤50%, f≥1MHz)	I <sub>FRM</sub>		130	mA
LED Reverse Voltage	V <sub>RL</sub>		0.5	V
PIN Reverse Voltage	V <sub>RP</sub>		20	V
Soldering Temperature (Note 1)	T <sub>sld</sub>		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 <sub>fiber</sub>	-20.5			dBm	I <sub>Peak</sub> =60mA (Note 1, 2)
Rise & Fall Time (10-90% no bias)	t <sub>r</sub> t <sub>f</sub>		2.5		ns	I <sub>F</sub> =60mA (Note 2, 3)
Bandwidth (3dB <sub>e</sub> )	f <sub>c</sub>		125		MHz	I <sub>F</sub> =60mA (Note 2)
Peak Wavelength	λ <sub>p</sub>		1320		nm	I <sub>F</sub> =60mA (Note 3)
Spectral Width (FWHM)	Δλ		135		nm	I <sub>F</sub> =60mA (Note 3)
Forward Voltage (Fig 3)	V <sub>F</sub>		1.3	1.65	V	I <sub>F</sub> =60mA
Reverse Current	I <sub>R</sub>			100	μA	V <sub>R</sub> =1V
Capacitance	C		200		pF	V <sub>R</sub> =0V, f=1MHz

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). Note 3: Meets the FDDI ANSI X3T9.5 specification.

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

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Responsivity (Fig 4)	R	0.25			A/W	V <sub>R</sub> =5V λ=820nm (Note 1)
Bandwidth	f <sub>c</sub>	500			MHz	V <sub>R</sub> =5V R <sub>L</sub> =50Ω (Note 1)
Capacitance (Fig 5)	C		1		pF	V <sub>R</sub> =5V f=1MHz
Dark Current	I <sub>d</sub>			3 50	nA	T <sub>Case</sub> =25°C T <sub>Case</sub> =70°C V <sub>R</sub> =5V I <sub>LED</sub> =0mA
Crosstalk Current	I <sub>Cr</sub>		3		nA	V <sub>R</sub> =5V I <sub>LED</sub> =60mA (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 <sub>thjc</sub>			200	°C/W
Thermal Resistance - On PC Board	R <sub>thjb</sub>			300	°C/W
Temperature Coefficient - Optical Power	dP/dT <sub>j</sub>		-0.75		%/°C
Temperature Coefficient - Wavelength	dλ/dT <sub>j</sub>		0.45		nm/°C

**PIN Thermal Characteristics**

Parameter	Symbol	Min.	Typ.	Max.	Units
Temperature Coefficient - Dark Current	dI <sub>d</sub> /dT <sub>j</sub>		5		%/°C
Temperature Coefficient - Crosstalk Current	dI <sub>Cr</sub> /dT <sub>j</sub>		-0.75		%/°C

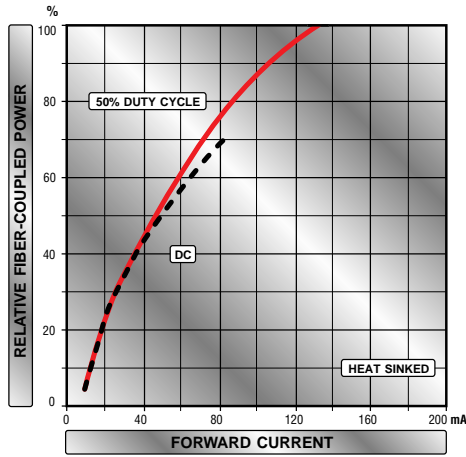


Figure 1

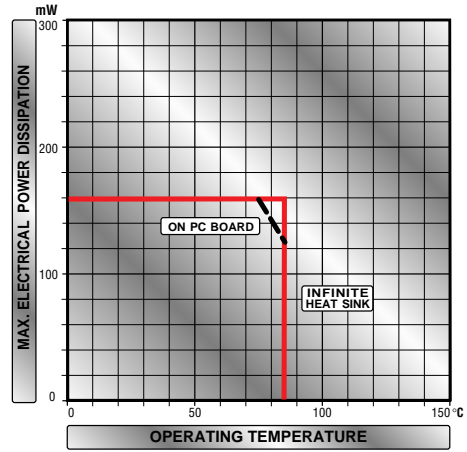


Figure 2

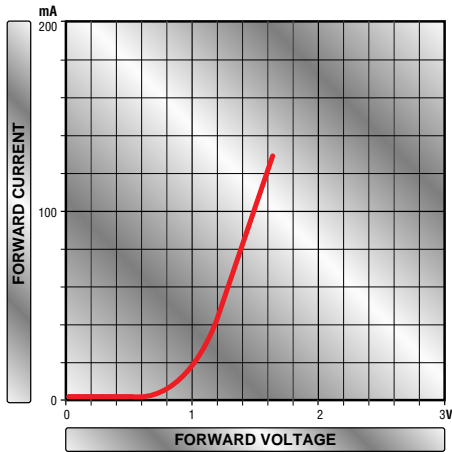


Figure 3

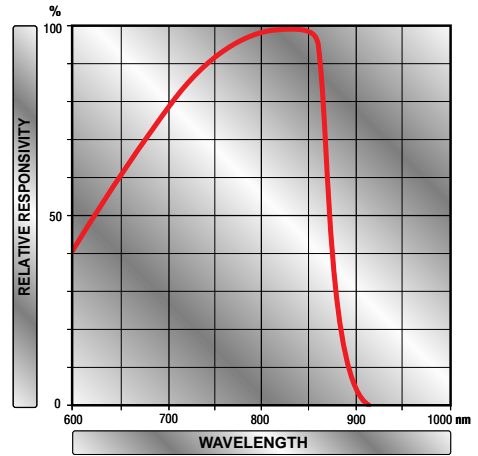


Figure 4

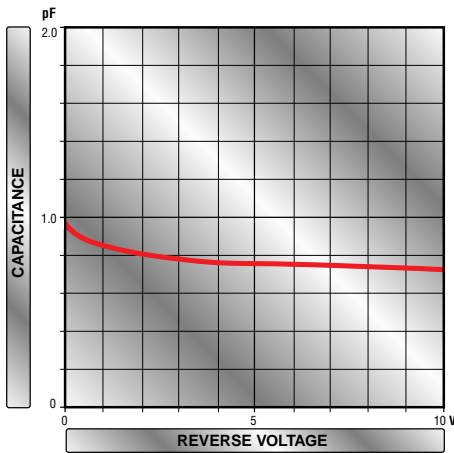
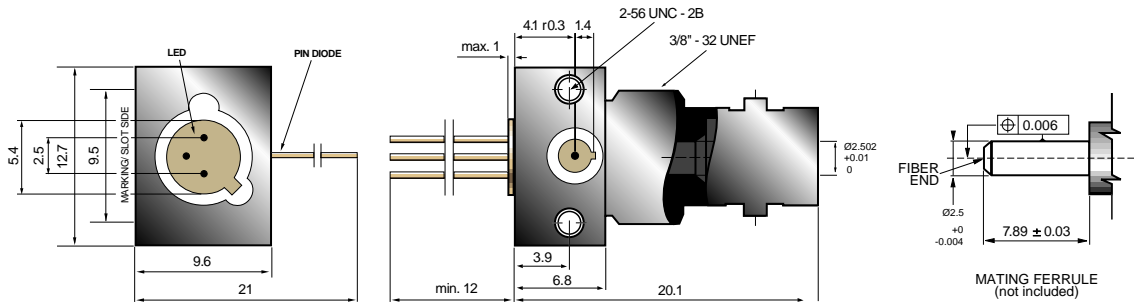


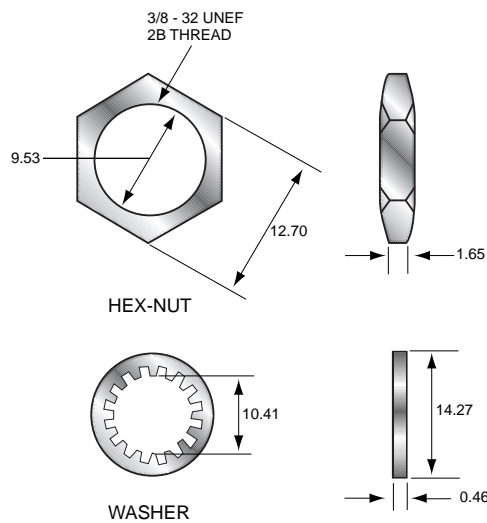
Figure 5

**MF699 Mechanical Data**



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

**Packaging Hardware**





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