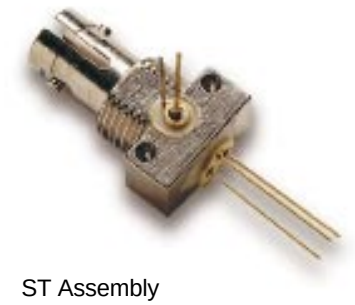
MF699 ST



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

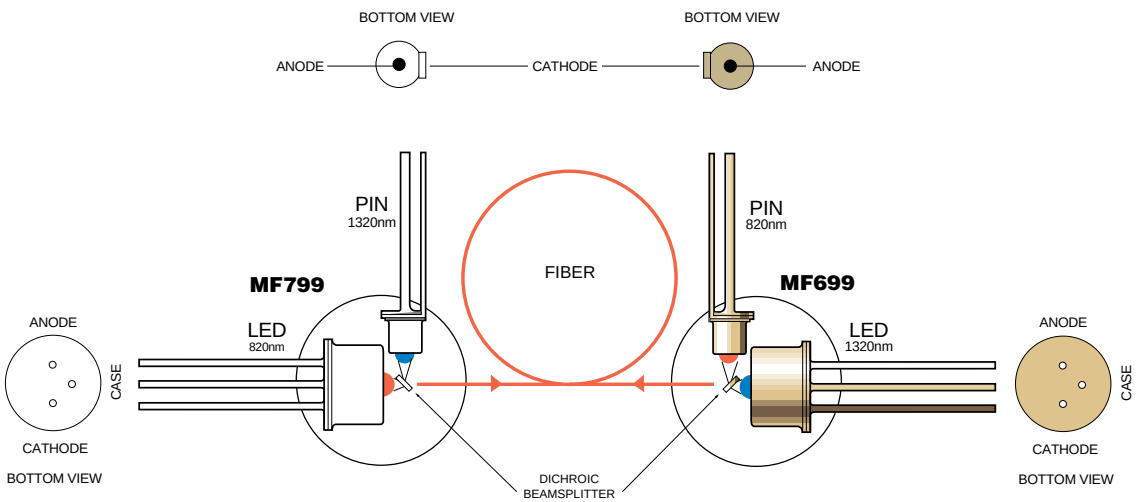
Description

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



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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}		160	mW
LED Continuous Forward Current (f≤10kHz)	I_F		80	mA
LED Peak Forward Current (duty cycle ≤50%, f≥1MHz)	I_{FRM}		130	mA
LED Reverse Voltage	V_{RL}		0.5	V
PIN Reverse Voltage	V_{RP}		20	V
Soldering 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}	-20.5			dBm	I_{Peak}=60mA (Note 1, 2)
Rise & Fall Time (10-90% no bias)	t_r t_f		2.5		ns	I_F=60mA (Note 2, 3)
Bandwidth (3dB_{el})	f_c		125		MHz	I_F=60mA (Note 2)
Peak Wavelength	λ_p		1320		nm	I_F=60mA (Note 3)
Spectral Width (FWHM)	$\Delta\lambda$		135		nm	I_F=60mA (Note 3)
Forward Voltage (Fig 3)	V_F		1.3	1.65	V	I_F=60mA
Reverse Current	I_R			100	µA	V_R=1V
Capacitance	C		200		pF	V_R=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_R=5V λ=820nm (Note 1)
Bandwidth	f_c	500			MHz	V_R=5V R_L=50Ω (Note 1)
Capacitance (Fig 5)	C		1		pF	V_R=5V f=1MHz
Dark Current	I_d			3 50	nA	T_{Case}=25˚C T_{Case}=70˚C V_R=5V I_{LED}=0mA
Crosstalk Current	I_{Cr}		3		nA	V_R=5V I_{LED}=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_{thjc}			200	˚C/W
Thermal Resistance - On PC Board	R_{thjb}			300	˚C/W
Temperature Coefficient - Optical Power	dP/dT_j		-0.75		%/˚C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.45		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		-0.75		%/˚C

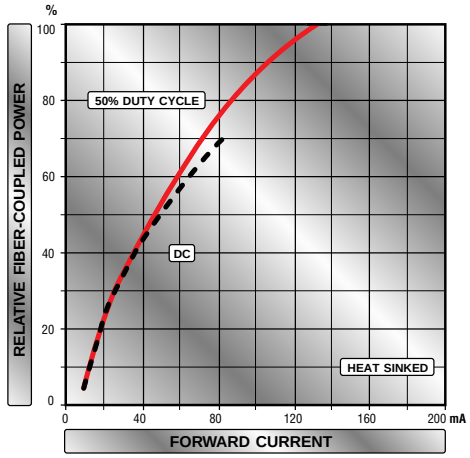


Figure 1

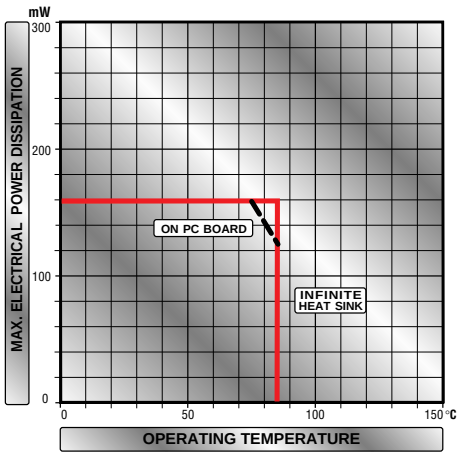


Figure 2

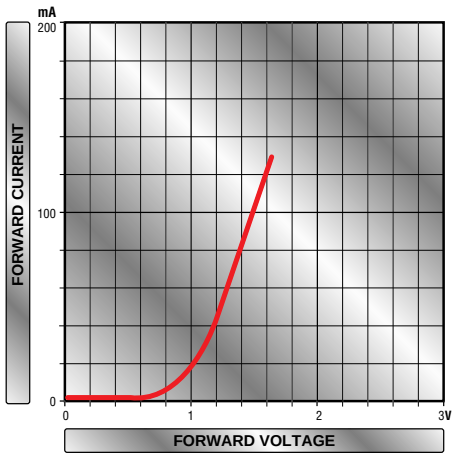


Figure 3

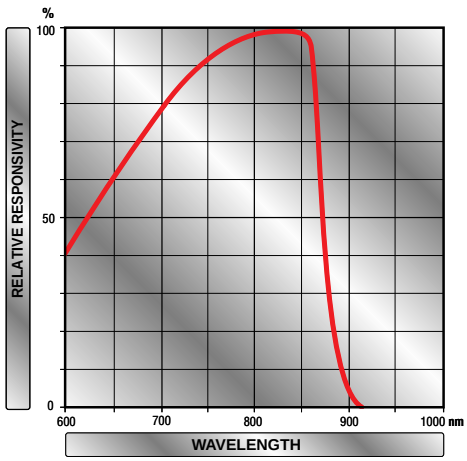


Figure 4

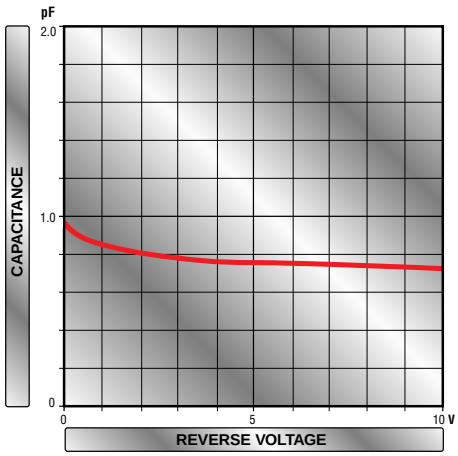
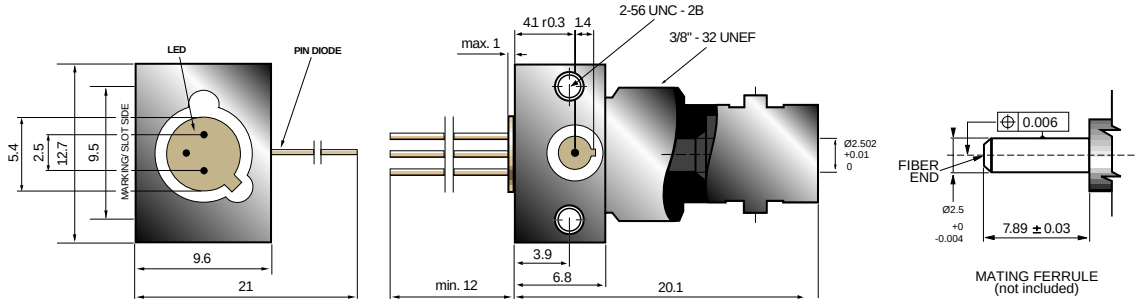


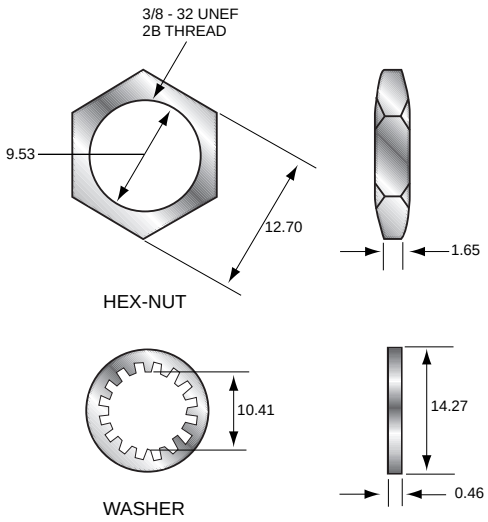
Figure 5

MF699 Mechanical Data



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

Packaging Hardware



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