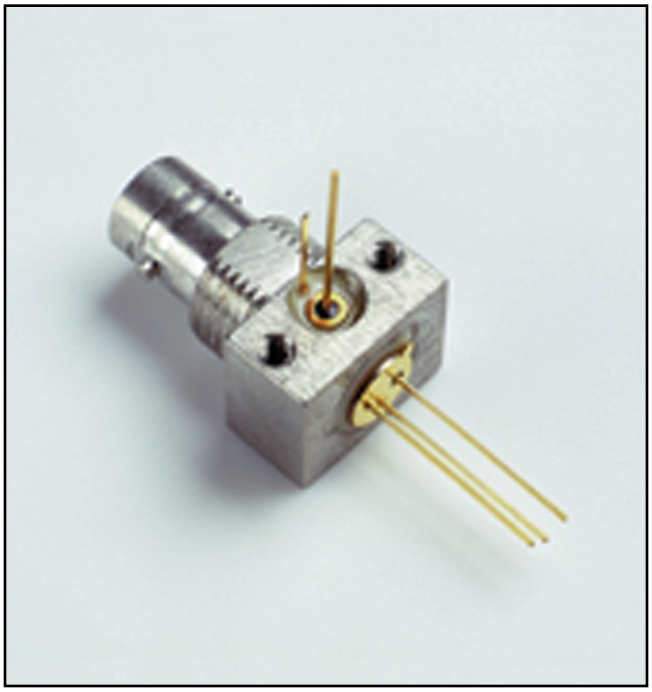
MF799

Datacom, Video Link, Intra-Office Telecom, WDM Duplex Device

DS5483 ISSUE 1 June 2001



ST Assembly

Ordering Information

MF799	13329.11, duplex package

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.

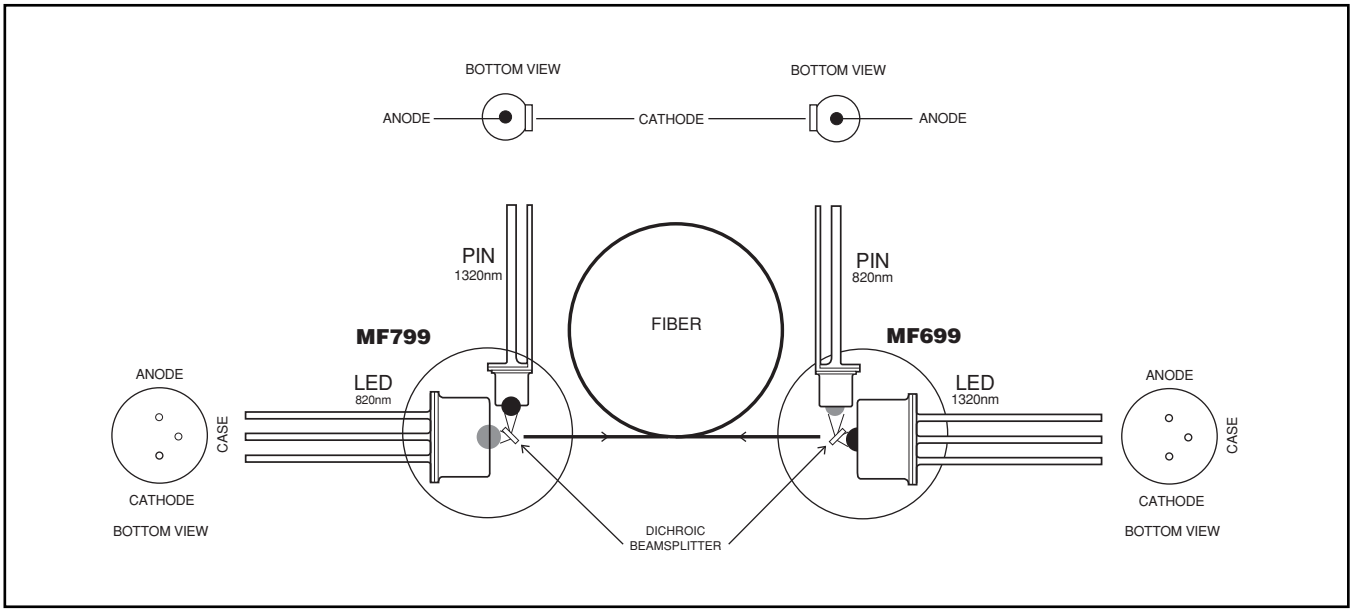
The MF799 is designed for multi-mode fiber and optimized for 62.5/125µm fiber.

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



MF799 Functional Diagram

Absolute Maximum Ratings*

Parameter	Symbol	Min.	Max.	Units
Storage Temperature	T_{stg}	-55	+125	˚C
Operating Temperature (Fig 2)	T_{op}	-40	+85	˚C
LED Power Dissipation (Fig 2)	P_{tot}		250	mW
LED Continuous Forward Current (f≤10kHz)	I_F		110	mA
LED Peak Forward Current (Duty cycle ≤50%, f≥1MHz)	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.	Unit	Test Conditions
Fiber-coupled-Power (Fig 1)	P_{fiber}	-19			dBm	I_{Peak}=60mA (Note 1,2)
Rise & Fall TIme (10-90% no bias)	$t_r t_f$		1.5	2	ns	I_F=60mA (Note 2)
Bandwidth (3dBel)	f_c		250		MHz	I_F=60mA (Note 2)
Peak Wavelength	λ_p	800	820	840	nm	I_F=60mA
Spectral Width (FWHM)	$\Delta\lambda$		50	60	nm	I_F=60mA
Forward Voltage (Fig 3)	V_F			2.1	V	I_F=60mA
Reverse Current	I_R			20	µA	V_R=1V
Capacitance	C		20		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)

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Responsivity (Fig 4)	R	0.5			A/W	V_R=5V λ=1320nm (note 1)
Bandwidth	f_c	500			MHz	V_R=5V R_L=50Ω (note 1)
Capacitance (Fig 5)	C		1.6		pF	V_R=5V f=1MHz
Dark Current	I_d			5 100	nA	T_{Case}=25˚C T_{Case}=70˚C V_R=5V I_{LED}=0mA
Crosstalk Current	I_{Cr}		75		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		-0.6		%/˚C
Temperature Coefficient - Wavelength	$d\lambda d/dT_j$		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 - Wavelength	dI_{Cr}/dT_j		-0.6		%/˚C

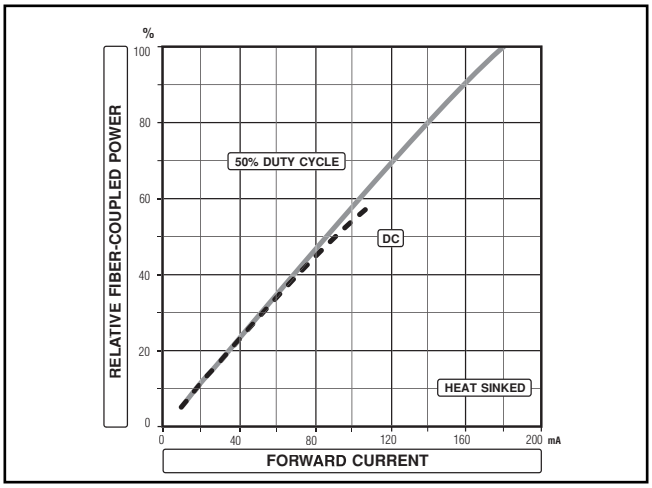


Figure 1

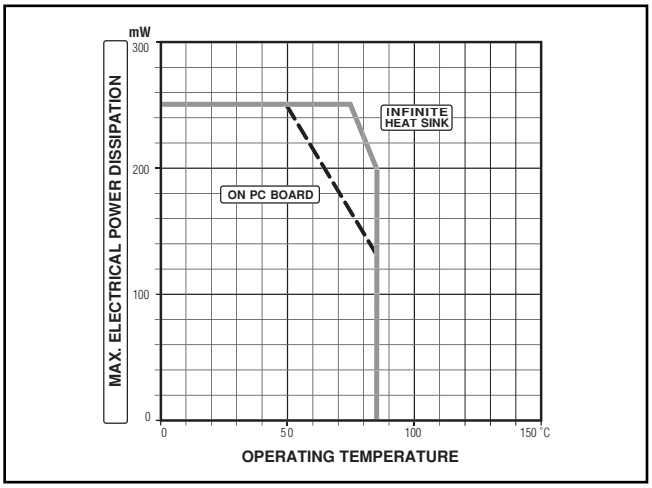


Figure 2

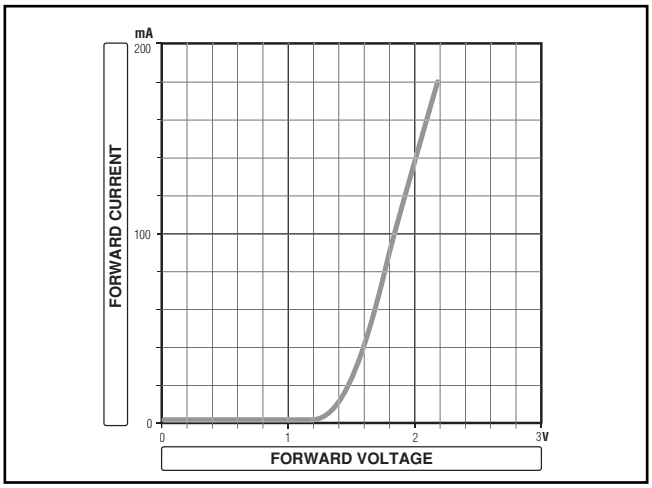


Figure 3

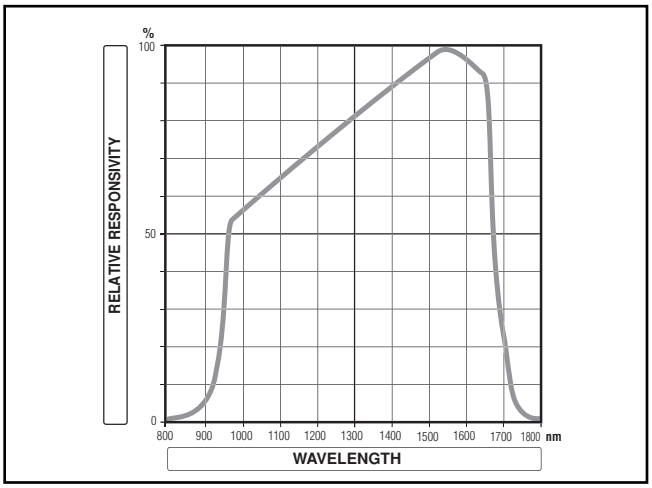


Figure 4

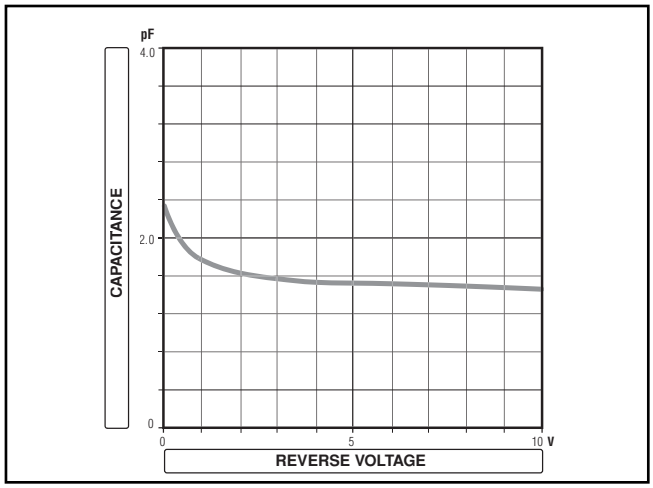
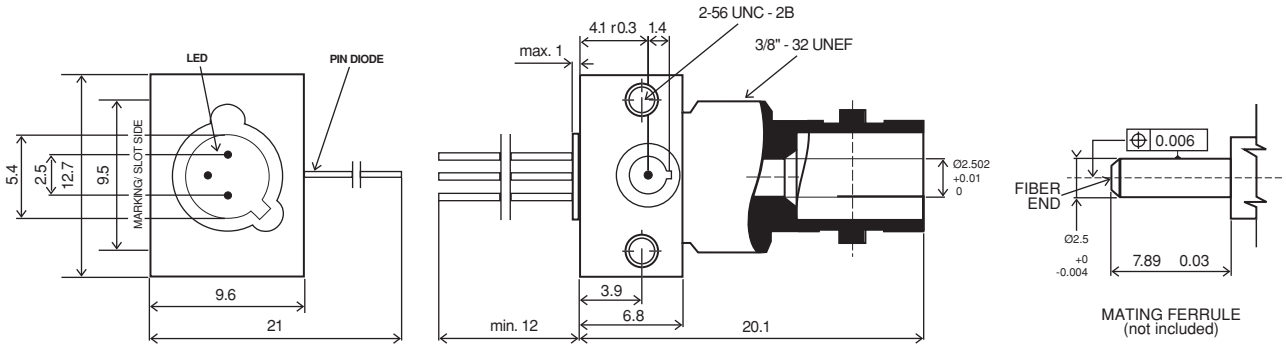
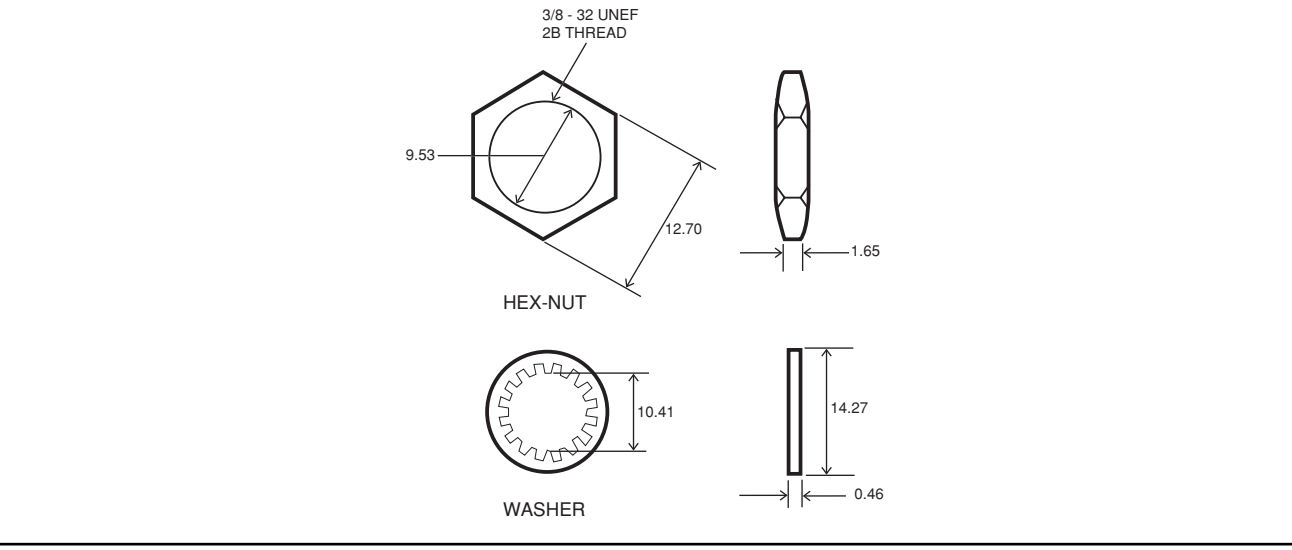


Figure 5



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

MF799 Mechanical Data



MF799 Packaging Hardware



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