

## MTX310D Series

10Gb/s 1310nm Directly Modulated Laser (DML)

7 Pin Package with GPO™ RF Input

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The MTX310D (DML) is a cost-effective solution for 10 Gb/s digital optical signal transmission. The MTX310D series modules are optimized to operate at a bit-rate of 10Gb/s for OC-192 and metro transmission with an excellent pedigree of reliability. The very low dispersion penalty at 1310nm wavelength find wide applications over most installed intra-city optical fiber networks.

The 7 pin package with a GPO connector contains a high-speed laser diode, optical isolator, back facet monitor diode, thermistor and thermoelectric cooler. The incorporated thermoelectric cooler keeps the laser chip at a well-controlled temperature. This allows the device to operate over a case temperature range of 0°C to +70°C.

The MTX310D series comes with a standard 1.0 meter single-mode fiber pigtail and an FC/PC connector. Other pigtails fiber types and terminations may be specified as options.

### Applications:

- MTX series is designed for high-speed telecom and datacom transmissions over spans up to 40km in length in compliance with Telcordia GR-253-CORE (issue 3) LR-1 specifications.

### Features:

- Industry standard precision GPO package
- High-speed design optimized for modulation at 9.95328Gb/s.
- 50 Ohm input impedance match.
- Integrated optical isolator.

### Compliance:

- Conforms to the requirements of the European Union Directive 2002/95/EC for the Restriction of Hazardous Substance (RoHS)

# Optical and Electrical Characteristics

All modules are tested to pass the SONENT OC-192 eye-mask criteria.

PARAMETER	SYMBOL	CONDITION	MIN	MAX	UNIT
<b>DFB Laser:</b>					
Set temperature for laser operation	$T_{SET}$	Temperature set for TEC	20	35	$^{\circ}\text{C}$
Threshold Current	$I_{TH}$	At $T_{SET}$ , CW operation, BOL		20	mA
Operating Current	$I_{OP}$	At $T_{SET}$ , BOL	40	100	mA
		At $T_{SET}$ , EOL	60	150	
Operating Wavelength	$\lambda$		1290	1330	nm
Side-Mode Suppression Ratio	SMSR	At $T_{SET}$ , $I_{OP}$	35		dB
<b>Module:</b>					
Extinction Ratio	$E_R$		6		dB
Monitor Photodiode Current	$I_{MOD}$		10	1500	$\mu\text{A}$
Modulated Output Power (EOL)	$P_{MOD}$	$I_{OP} = I_{TH} + 50\text{mA}$ 2km 15km 40km	-6 -4 0	-1 1 4	dBm
Optical Isolation		From output fiber to device, module at $T_{SET}$	25		dB
Operating Case Temperature	$T_{CASE}$		0	70	$^{\circ}\text{C}$
Chromatic Dispersion Penalty	DP			1.0	dB
High Frequency Cut-Off	$F_{3db}$		10		GHz
Low Frequency Cut-Off	$F_{LC}$			100	kHz
RF Return Loss, 50 $\Omega$	$S_{11}$	0.1 to 8GHz		-10	dB
Rise / Fall Time, 10% - 90%	$T_R$ - $T_F$			40	ps
TEC current	$I_{TEC}$		-	1.2	A
Thermistor Resistance	$R_{TH}$	At 25 $^{\circ}\text{C}$	9.5	10.5	k $\Omega$
Lead Soldering time	t	Soldering temperature 260 $^{\circ}\text{C}$ ,		10	s

## Absolute Maximum Operating Ratings

Optimal thermal contact between the GPO housing and the application heat-sink is required.

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device.

Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

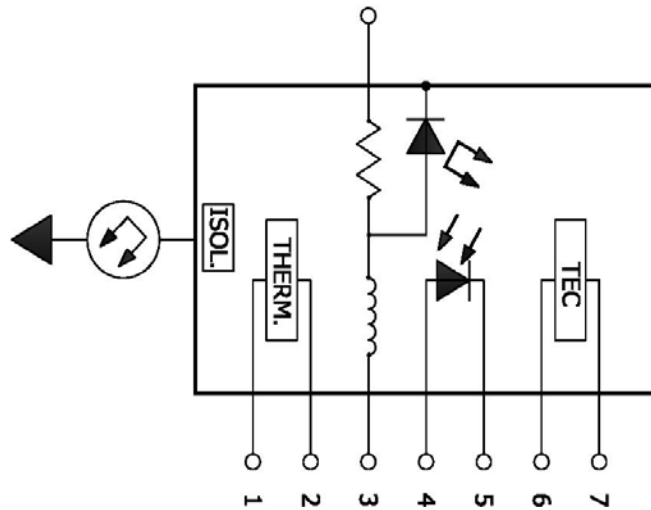
PARAMETER	SYMBOL	CONDITION	MIN	MAX	UNIT
Operating Case Temperature Range	$T_{CASE}$		-5	75	°C
Storage Case Temperature Range	$T_{STG}$		-40	85	°C
Laser Forward Bias Current	$I_{FL}$	CW	-	150	mA
Laser Reverse Voltage	$V_{RL}$	CW	-	2	V
Optical Output Power	P	CW	-	10	mW
Laser Chip Temperature	$T_{LD}$		15	40	°C
Modulator Reverse Voltage	$V_{MR}$		-	5	V
Modulator Forward Voltage	$V_{MF}$		-	1	V
Photodiode Reverse Voltage	$V_{PD}$		-	10	V
Photodiode Forward Current	$I_{FPD}$		-	1	mA
Thermistor Voltage	$V_{TH}$		-	5	V
Thermistor Current	$I_{TH}$		-	2	mA
TEC Current	$I_{TEC}$		-1.5	1.5	A
TEC Voltage	$V_{TH}$		-	5	V

## Ordering information:

MTX	X	XX	X	W	B01	XX	XX	-XX	-CXXX
	Wavelength:	Data Rate:	Laser Type:		Package Style:	Fiber Pigtail Type:	Pigtail Connector:	Reach:	Customized Information:
	3=1310nm	10= 9.9538Gb/s	D= DFB		B01=GPO	F5= SMF-900 F6= SMF-250 F7= PMF	SC= SC-UPC FC= FC-UPC LA= LC-APC MC= MC-UPC  Other connectors are available upon request.	S1=2km I1=15km L1=40km	Customized for specific customer requirements

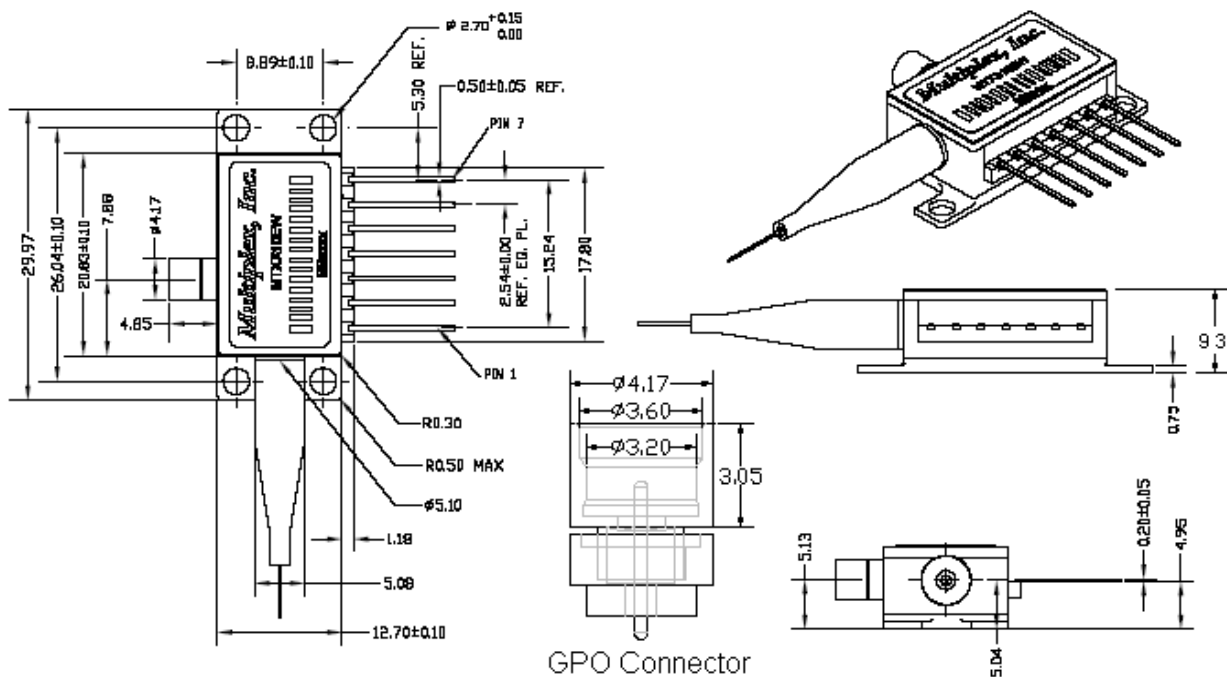
E.g. MTX310DWB01F5SC-I1 has a wavelength 1310 nm, Data Rate 9.95328 Gb/s, DFB Laser, GPO Package, SMF-900 Fiber Pigtail with SC-UPC Connector fitted for a 15 Km application.

## Internal Circuit:



Pin Number	Description
1	Thermistor (Resistance=10 kΩ)
2	Thermistor
3	Laser Anode
4	Detector Monitor Anode
5	Detector Monitor Cathode
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
GPO	RF and Case Ground

## Mechanical



### WARRANTY

Multiplex warrants all standard laser products, when used within the operating limits, against defects in material and workmanship for a period of one year from date of shipment.

### QUALITY

Multiplex is qualified to International Standard ISO 9001:2008.

