

# 14PIN CWDM DFB Laser

## Description

The ML1003 laser diode module is a cost effective, highly coherent laser source. The laser diode chip is packaged in an industry standard hermetically sealed 14 pin butterfly package. Specific wavelength lasers with built-in TEC, MPD, double stage, Rth. The central wavelength can be customized according to customer's requirements.

## FEATURES

- Multi Channel Emission
- Wavelengths (CWDM)
- Power (>10mW)
- Narrow Linewidth (<10MHz)
- Low RIN (-160dB)
- Multi-Quantum Well (MQW) active layer
- Built-in Isolator (double stage), TEC, Rth and PD
- FC/APC Connector
- Designed for Telcordia-GR468.



## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings will cause permanent damage and/or adversely affect device reliability.

Parameter	Conditions	Min	Max	Unit
Storage Temperature Range	—	-40	+85	°C
Storage and Operating Relative Humidity	—	0	95	%
TOSA Case Operating Temperature	—	-20	80	°C
Laser Reverse Voltage	—	—	2	V
Laser Forward Current	—	—	100	mA
Pin Soldering Temperature (*)	30s max	—	300	°C

(\*) Local heating only. Package body shall not exceed 85°C. Temperature excursion of 120°C for 60s is permissible.

## OPTICAL CHARACTERISTICS

All parameters are beginning of life (BOL) and over a TOSA case operating temperature range of -5 to +75°C, unless stated otherwise.

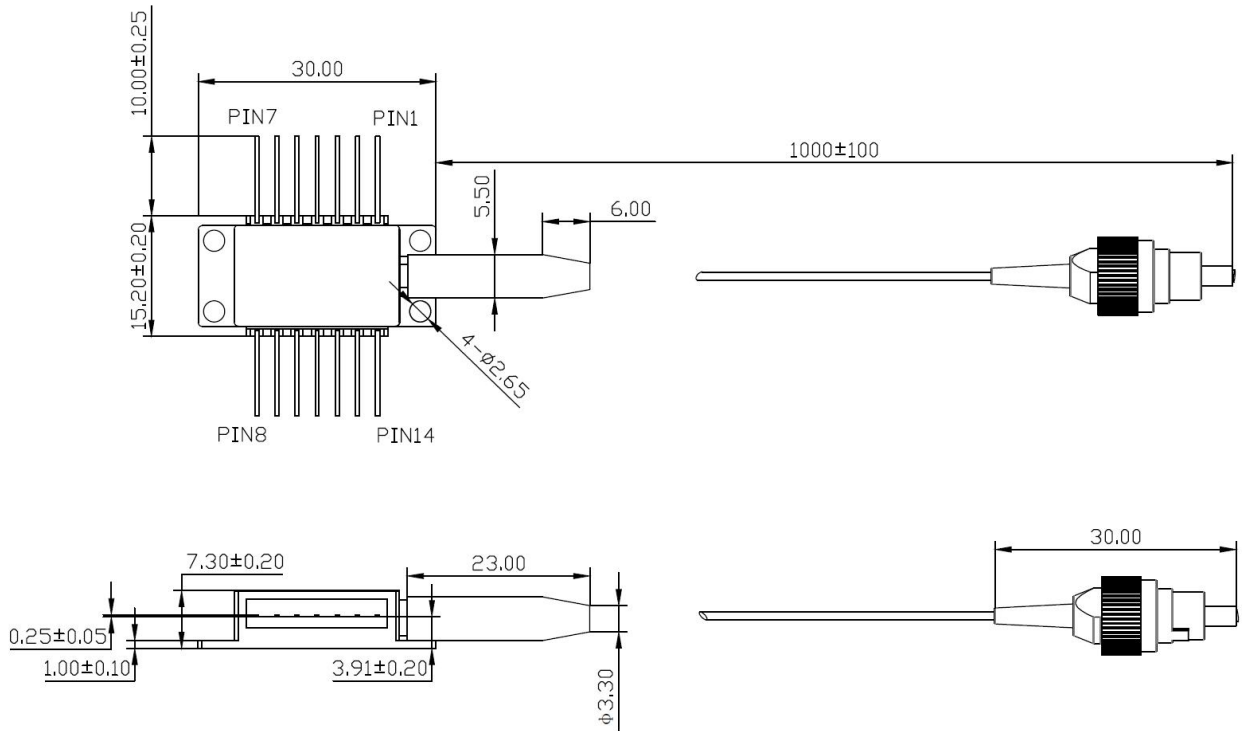
Parameter	Symbol	Unit	Min	Typical	Max
Center Wavelength	$\lambda_c$	nm	$\lambda-3$	$\lambda$	$\lambda+3$
Peak Optical Output Power	Po	mW	8	10	-
Spectral Linewidth	LW	MHz	1	3	10
Side-mode Suppression Ratio	SMSR	dB	35	45	-
Optical Isolation	-	dB	35	-	-
Relative Intensity Noise	RIN	dB	-	-155	-
Center wavelength stability	DID	ppm	-90	-	+90
Wavelength temperature tunability	$\Delta\lambda/\Delta T$	nm/mA	0.07	0.08	0.12

## ELECTRICAL CHARACTERISTICS

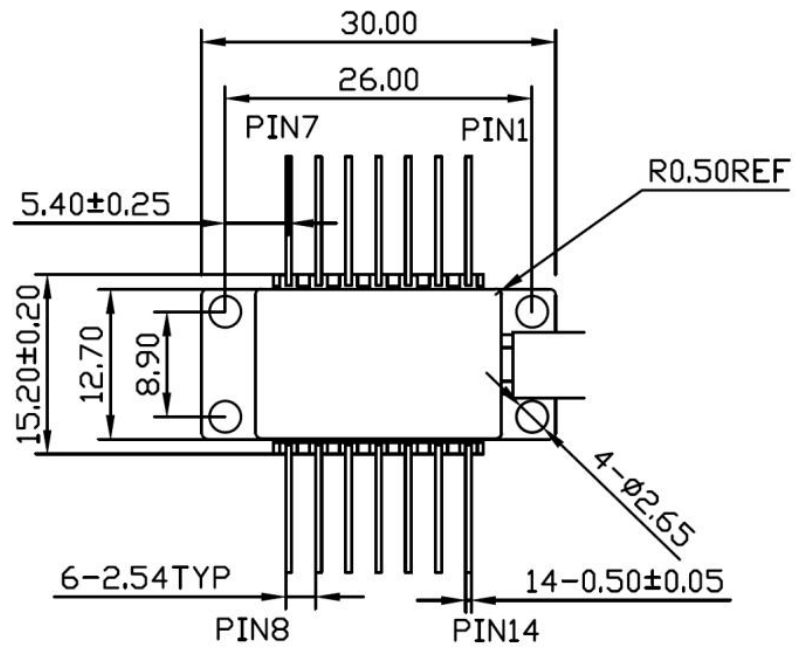
All parameters are beginning of life (BOL) and over a TOSA case operating temperature range of -5 to +75°C, unless stated otherwise.

Parameter	Symbol	Test Conditions	Min	Typ	Max.	Unit
Laser Setting Temperature	Tset		15	---	35	°C
Threshold Current	Ith	CW	-	10	25	mA
Slope Efficiency	$\eta$	CW output power	0.15	0.23	0.40	mW/mA
Operating Current	Iop	Po=10mW	--	55	100	mA
Cut-off Frequency	fc	-3dB	3	----	----	GHz
Monitor Output Current	Im	If=Ith+20mA	40	---	2000	uA
Monitor Dark Current	Id	VrP=5V, not in black box	---	---	100	nA
Thermistor						
Resistance (Standard 10k $\Omega$ @ 25 °C Thermistor)	Rth	Tc=TIId=25°C	9.5	10	10.5	K $\Omega$
B constant of Rth	B		3800	3930	4000	K
Thermistor current		Tc=TIId=25°C	10	---	200	uA
Thermoelectric(TEC)						
TEC Current	I <sub>TEC</sub>		---	---	2.5	A
TEC Voltage	V <sub>TEC</sub>	Tc=TIId=25°C	---	---	5.4	V
TEC Power	P <sub>TEC</sub>		---	---	7.2	W

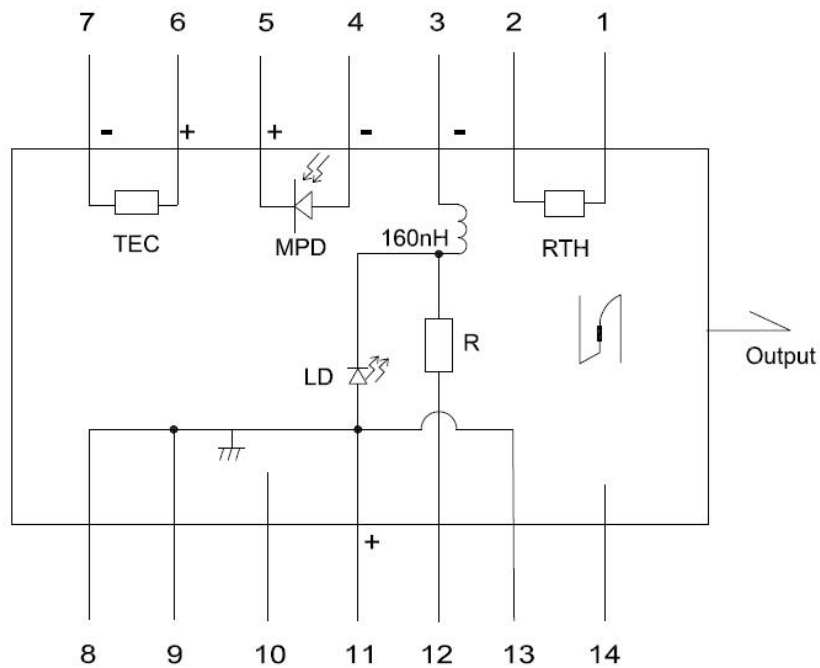
# MECHINAL DIMENSION



## DETAIL :



## ELECTRICAL SCHEMATIC



### Pin Description

Pin	Description	Pin	Description
1	Thermistor	8	GND
2	Thermistor	9	GND
3	LD-	10	NC
4	PD anode	11	LD+/GND
5	PD cathode	12	LD-,RF
6	TEC+	13	LD+/GND
7	TEC-	14	NC

### CWDM channel information

Channel code	Center Wavelength	Channel code	Center Wavelength	Channel code	Center Wavelength
27	1270	39	1390	51	1510
29	1290	41	1410	53	1530
31	1310	43	1430	55	1550
33	1330	45	1450	57	1570
35	1350	47	1470	59	1590
37	1370	49	1490	61	1610

**ORDERING INFORMATION**

Part Number	Description
ML1003A-31-FA	1310nm CWDM DFB laser module, FC/APC fiber connector, DML Laser,50ohm matched, 3GHz BW
ML1003A-XX-FA	CWDM DFB laser module, FC/APC fiber connector, DML Laser,50ohm matched, 3GHz BW
ML1003A-XX-SA	CWDM DFB laser module, SC/APC fiber connector, DML Laser,50ohm matched, 3GHz BW