LC148-20 10 Mb/s Single-Mode OSC Laser, 1480 nm

Features

Wavelength 1480 nm

Designed to operate at 10 Mb/s - 155 Mb/s

Low cost, high reliability PGC SLMQW DFB GaInAsP low threshold laser chip

Hermetically sealed 14 pin high speed butterfly package

High output power 2 mW minimum CW

Internal InGaAs monitor photodiode

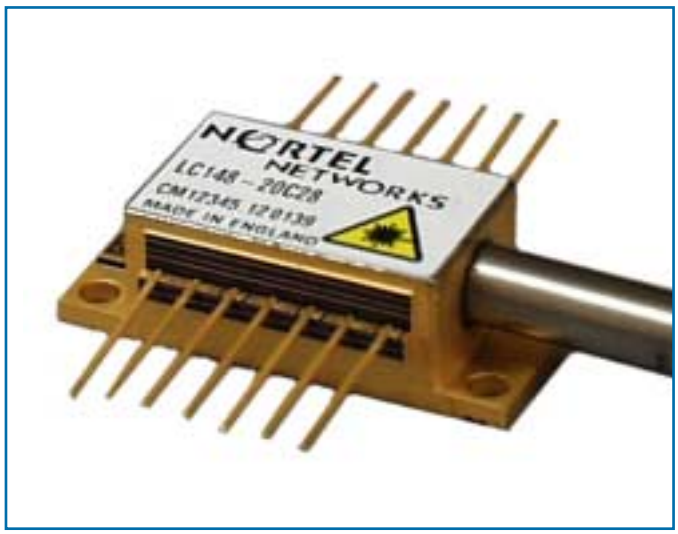
3 mm ruggedized 9/125 µm single-mode fiber pigtail with cladding mode stripper

Applications

Optical Service Channel (OSC) applications in DWDM transmission systems using optical amplifiers.

Description

Specifically designed for use as a low speed out of band optical service channel for optical amplifiers. The laser is available in a low-inductance 14-pin butterfly package with single-mode connectorized fiber-optic pigtail with a rated peak output power of 2 mW. At 1480 nm, the LC148-20 does not interfere with WDM traffic and operates in a low-loss region of the EDFA spectrum. The ultra-long-life ridge waveguide DFB laser chip ensures the reliability of the LC148-20 over the entire range of recommended operating conditions.



NORTEL NETWORKS™

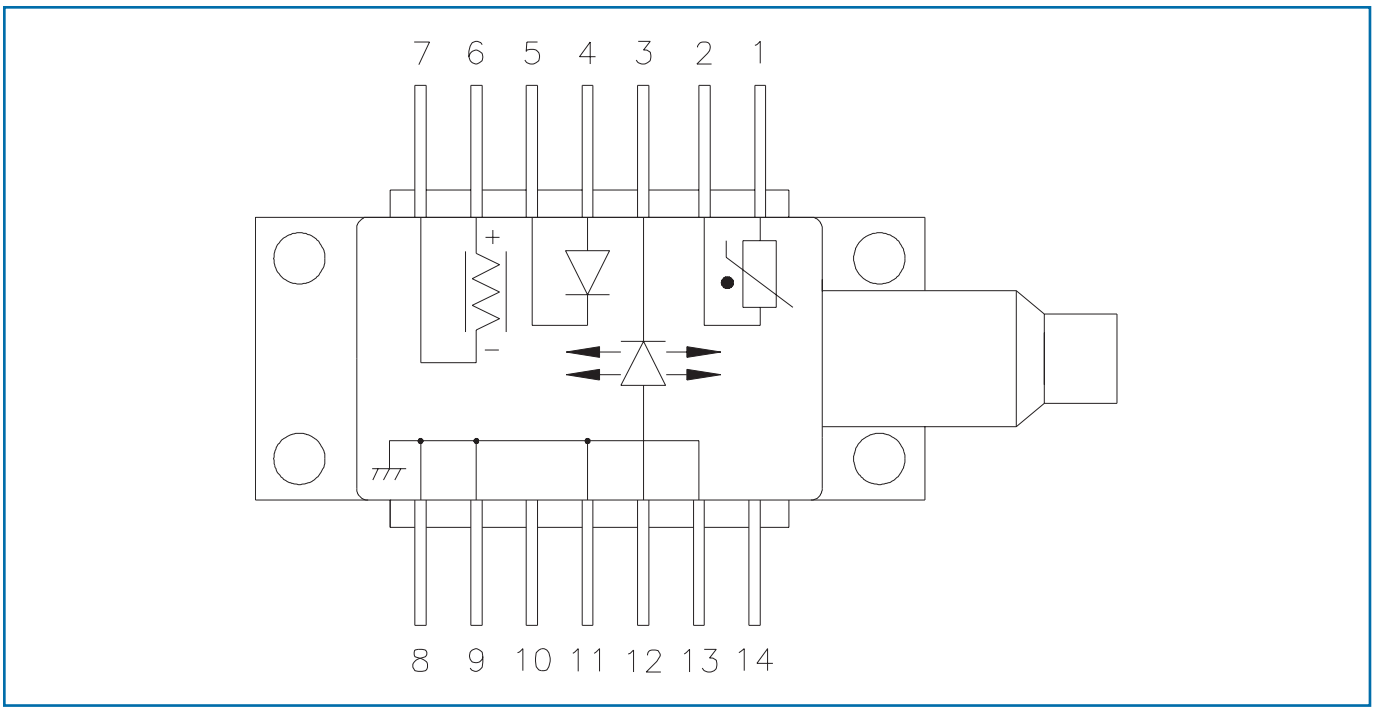


Figure 1: Schematic Diagram

Absolute maximum ratings

Parameter	Description	Min	Max	Unit
Operating temperature		-40	+70	°C
Storage temperature		-40	+75	°C
Laser forward current above I_{th}			100	mA
Laser reverse voltage			2	V
Monitor diode bias			-18	V
Fiber bend radius		30		mm

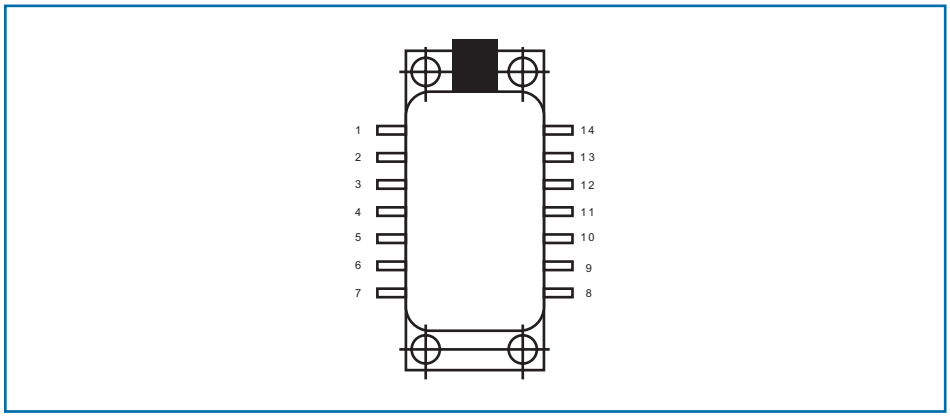
Tcase = 25°C unless otherwise stated

Required Parameters

Parameter	Condition	Min	Typ	Max	Unit
Submount temperature		25		35	°C
Threshold current (I_{th})	SOL	10		30	mA
Rated mean output power	50% duty	1.0			mW
Forward voltage	2 mW peak			2	V
Modulation current	2 mW peak	22		67	mA
Mean wavelength	10 Mb/s	1470		1485	nm
Monitor current	1 mW output	65		695	µA
Monitor dark current			5	50	nA
Heatpump current	70°C case/25°C submount			800	mA
Heatpump voltage	70°C case/25°C submount		1.3	2	V
Bandwidth		200			MHz
Sidemode Suppression ratio				-35	dB
Spectral width	@ -20 dB			0.4	nm
Kink	To 120% peak power	-20		20	%
Slope SAT	To 120% peak power	-35		35	%

Conditions: Monitor bias -5V

Package Pin Configuration

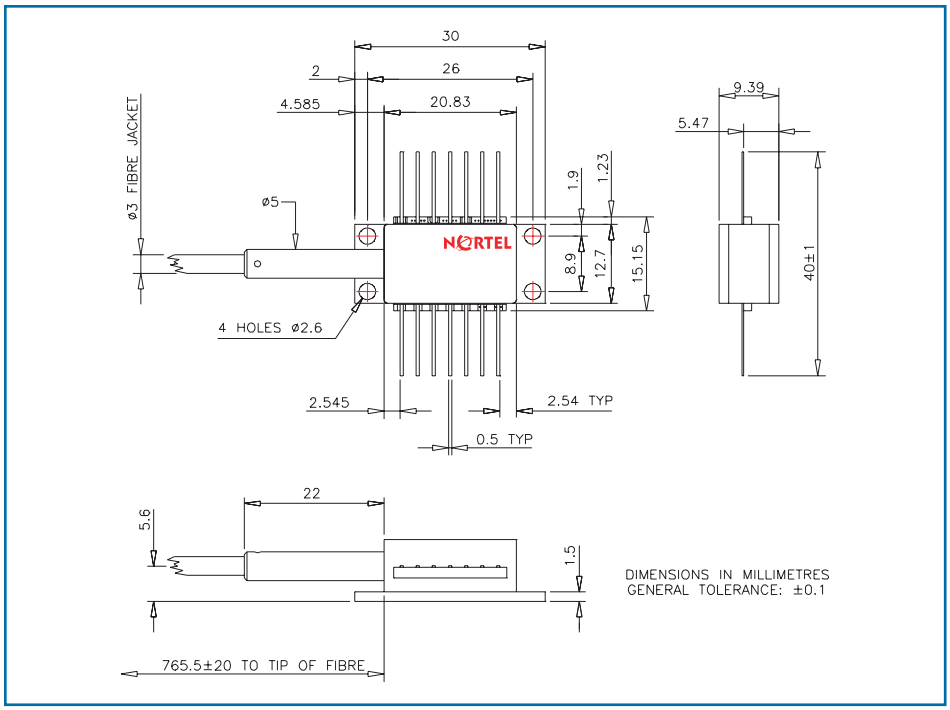


Connections

PIN #	Name	PIN #	Name
1	Thermistor	14	No connection
2	Thermistor/Ground	13	Ground
3	LD cathode	12	LD anode
4	Monitor anode	11	Ground
5	Monitor cathode	10	No connection
6	TEC (+)	9	Ground
7	TEC (-)	8	Ground

Package Outline Drawing and Dimensions

Tolerances ± 0.25 mm
Finish: Gold plate
Fiber: Ruggedized 290 mm ± 5 mm



Instructions for Use

Pin 1 and Pin 2 Thermistor

The thermistor is used in a control loop in conjunction with the thermo-electric cooler to maintain the laser submount temperature at the required value. Operating current should be less than 100 µA to prevent self-heating errors.

Pin 3 Laser modulation (-) and bias

The data input (modulation) and bias are both applied via this pin which has a nominal 25 Ohm load impedance.

Pin 4 Monitor anode, Pin 5 Monitor cathode

The back facet monitor diode provides a mean power reference for the laser and is normally operated with a 5 V reverse bias.

Pin 6 TEC (+), Pin 7 TEC (-)

Applying a positive voltage on pin 6 with respect to pin 7 will cause the internal submount to be cooled relative to the case temperature.

Reversing the polarity will raise the sub-mount temperature relative to the case. Care should be taken to avoid overheating the submount when driving the TEC in this manner.

The TEC supply should be capable of delivering up to 1.2 A at 2.5 V.

Pin 8, 9, 11, 13 Case ground.

These pins must be grounded in all applications.

Pin 10, 14 N/C

These pins are not connected. They should be grounded if possible.

Pin 12 Laser (+)

This pin provides the return path for the laser modulation and bias circuits.

Environmental Conditions

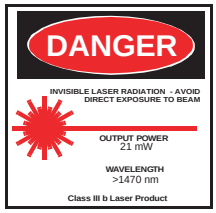
Parameter	Min	Nom	Max	Unit
Operating Air Temperature	-40		70	°C
Operating Case Temperature	-40		70	°C
Typical Environment	0		60	°C

Ordering Information

Please quote the Product Code from below when ordering as this is the identification that appears on the part when shipped.

Product Code	Product Name
LC148-20C28	10 Mb/s Single-Mode OSC Laser, 1480 nm with SC/PC connector

REFERENCE IEC 60825–1: 1993
including amendments 1 and 2
This product is classified as 3A
without amendment 2.



THIS PRODUCT COMPLIES WITH 21CFR 1040.10

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Publication # 84116.02/10-01 Dated 10/15/01