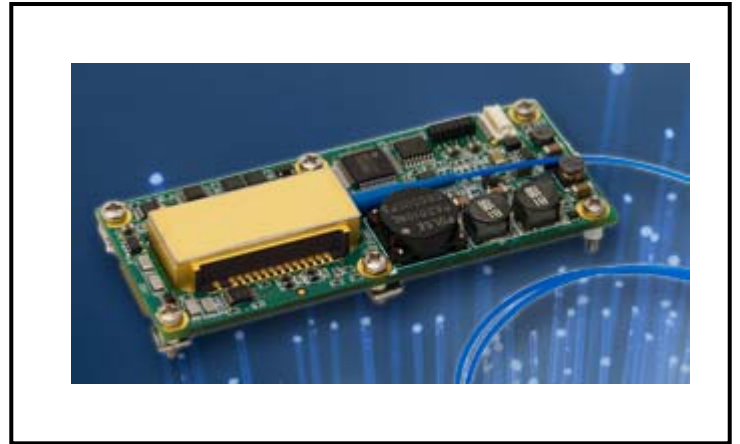


NLTLS-XXXX-XX-PS Extra Narrow Linewidth ECL Laser Module

Overview

The NLTLS-XXXX-XX-PS High Power Extra Narrow Linewidth ECL Laser Module series are high performance and industry-proven single frequency External Cavity Lasers (ECL) based on our novel technology. The NLTLS-XXXX-XX-PS laser consists of a gain chip and a set external cavity laser and control circuit. The coupling of these components forms a cavity with significant benefits, with up to 40, 50, 63 mW output power, very low RIN, ultra low phase noise and narrow linewidth(10 KHz), and very low wavelength sensitivity to bias current and temperature. The NLTLS-XXXX-XX-PS's industry-standard footprint, mounting pattern and electrical connections make it an easy drop-in replacement for existing systems, or upgrading in performance grades within the NLTLS-XXXX-XX-PS family. NLTLS-XXXX-XX-PS lasers are the next generation of optical solutions – combining the high performance of long cavity fiber lasers, with the low cost, simplicity and Telcordia GR-468-qualified reliability of semiconductor lasers.



The NLTLS-XXXX-XX-PS's higher output power, low noise and ultra narrow linewidth ideally position this semiconductor optical solution for multiple applications where absolute accuracy, lifetime reliability over demanding field conditions, and high resolution are vital, such as remote sensing, distributed temperature, strain, or acoustic fiber optic monitoring, high resolution spectroscopy, LIDAR and other precision metrology application.

Application Samples



Oilfield & Gas Sensing Service



Wind Energy



Security



Construction

Applications

- Acoustic and seismic sensing
- Defense and security
- Oil & Gas – exploration and production
- LIDAR and remote sensing
- Interferometric fiber optic sensing
- Metrology
- RF and microwave photonics
- Coherent communication

Key Features

- Single longitudinal mode
- Ultra low phase noise & RIN
- Low sensitivity to vibration & acoustic noise
- Narrow linewidth (< 10 kHz), long coherence length
- 1519 nm-1610 nm, ITU-T DWDM wavelength or custom
- Guaranteed mode hop free operation over life & temperature
- Wavelength tunability
- Unrivaled wavelength stability over life & temperature
- SMF or PMF pigtail options
- CW, modulated and pulsed operations
- 0-70°C operating case temperature
- Telcordia GR-468 Qualified
- RoHS Compliant

Specification

Absolute Maximum Ratings

In Table 1 the absolute maximum ratings for the product are listed. These settings are never to be exceeded and may result in critical damage to the product if applied.

Parameter	Unit	Min	Max
Operating temperature	°C	-5	75
Storage temperature	°C	-40	85
Humidity	%DH	5	85
Voltage +3.3V	V	0	3.6
Voltage -5.2V	V	-5.5	0.3
Fiber bend radius	Mm	20	
Current Source Slew rate	V/msec		20
Mounting surface flatness	micron		25
Installation torque	Inch-lb	0.9	1.1

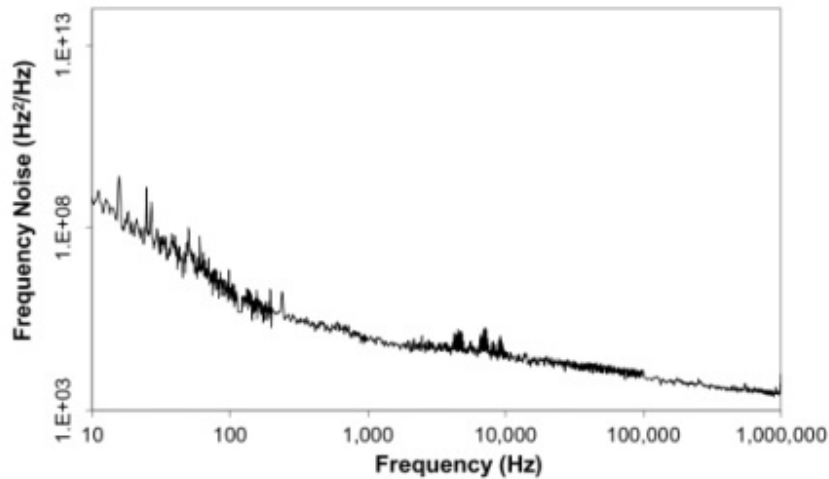
Table 1: Absolute maximum ratings

Performance Specifications

In Table 2 the more general performance specifications of the product are listed

Parameter	Unit	Min	Typ	Max
Operating Temperature	°C	0		50
Power				
Max set-power <i>Configuration dependent</i>	dBm	40 mW, 50 mW, 63 mW selectable		
Power accuracy	dB	-1		+1
Power resolution	dB			0.01
Short term power variation	dB	-0.05		0.05
Frequency				
Frequency range	C-band	THz	191.5	196.25
	L-band		186.35	190.95
<i>Custom configurations available</i>				
Frequency accuracy	GHz	-1.5		1.5
Optical characteristics				
SMSR		dB	40	55
OSNR		dB	40	60
Intrinsic linewidth		kHz		10

FM noise spectrum (low noise mode)



AM noise (RIN)	7dBm 13dBm	dB/Hz			-140 -145
Back-reflection		dB			-14
Polarization Extinction Ratio		dB	18		
Timing characteristics					
Warm-start time		sec			30
Cold-start time		sec			60
Electrical characteristics					
Supply voltage +3.3V		V	3.15	3.3	3.45
Supply current +3.3V		mA		400	1200
Supply voltage -5.2V		V	-5.45	-5.2	-4.95
Supply current -5.2V		mA			1500

Table 2: performance specifications

Digital Interface Specifications

The digital interface to the product is compliant to the ITLA MSA (<http://www.oiforum.com/public/documents/OIF-ITLA-MSA-01.2.pdf>). Most functions of this MSA are supported.

Technical Drawing

Parameter	Unit	Min	Typ	Max
Fibertype		Polarization Maintaining, PANDA		
Fiberlength (from edge of board)	cm	50		

Table 6: dimensional information

Topview

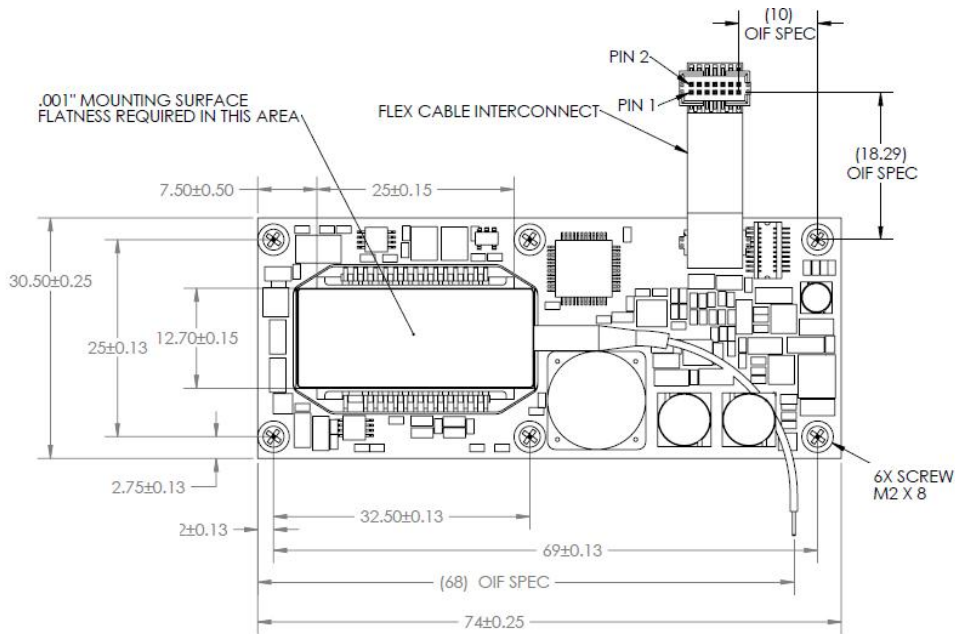


Figure 2: top view of the NLTLS-XXX-XX-PS

Sideviews

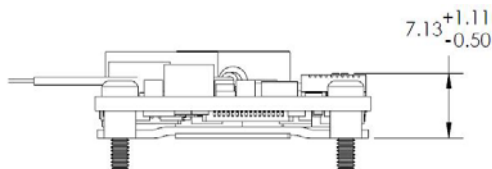


Figure 3: front-side-view of the NLTLS-XXX-XX-PS

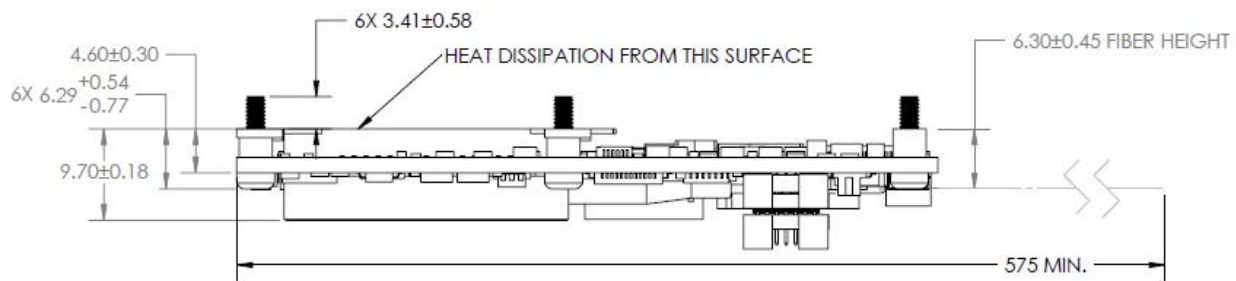
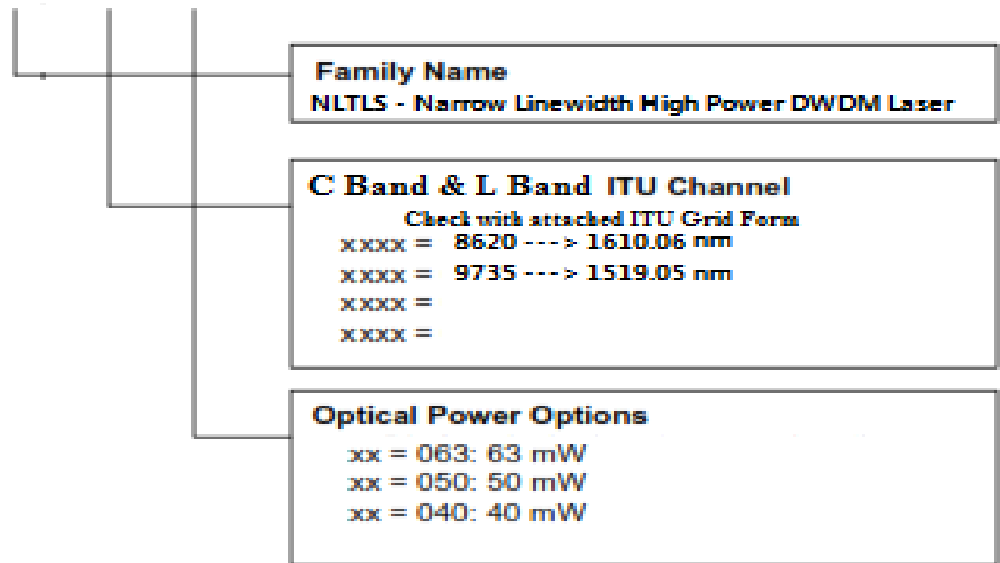


Figure 4: side view of the NLTLS-XXX-XX-PS

Ordering Code Definitions

NLTLS -XXXX- XX - PS



ITU Grid Channel Numbering

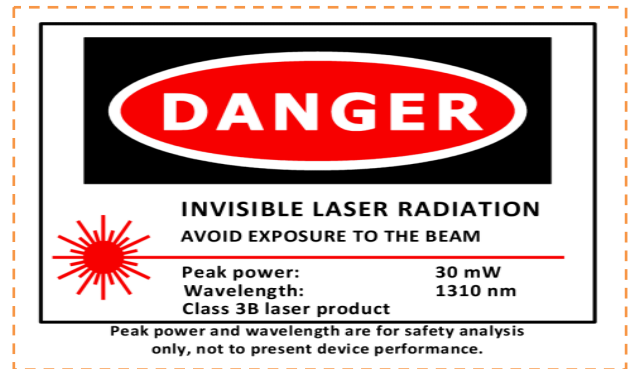
Please contact CA OPTRONICS GROUP, INC. Sales for ITU Wavelength Channel availability.

DWDM ITU Grid Specification

	S-Band				C-Band				L-Band			
	100 GHz Grid		50 GHz Offset		100 GHz Grid		50 GHz Offset		100 GHz Grid		50 GHz Offset	
	nm	THz	nm	THz	nm	THz	nm	THz	nm	THz	nm	THz
1	1490.76	201.10	1491.13	201.05	1528.77	196.10	1529.16	196.05	1568.77	191.10	1569.18	191.05
2	1491.50	201.00	1491.88	200.95	1529.55	196.00	1529.94	195.95	1569.59	191.00	1570.01	190.95
3	1492.25	200.90	1492.62	200.85	1530.33	195.90	1530.72	195.85	1570.42	190.90	1570.83	190.85
4	1492.99	200.80	1493.36	200.75	1531.12	195.80	1531.51	195.75	1571.24	190.80	1571.65	190.75
5	1493.73	200.70	1494.11	200.65	1531.90	195.70	1532.29	195.65	1572.06	190.70	1572.48	190.65
6	1494.48	200.60	1494.85	200.55	1532.68	195.60	1533.07	195.55	1572.89	190.60	1573.30	190.55
7	1495.22	200.50	1495.60	200.45	1533.47	195.50	1533.86	195.45	1573.71	190.50	1574.13	190.45
8	1495.97	200.40	1496.34	200.35	1534.25	195.40	1534.64	195.35	1574.54	190.40	1574.95	190.35
9	1496.72	200.30	1497.09	200.25	1535.04	195.30	1535.43	195.25	1575.37	190.30	1575.78	190.25
10	1497.46	200.20	1497.84	200.15	1535.82	195.20	1536.22	195.15	1576.20	190.20	1576.61	190.15
11	1498.21	200.10	1498.59	200.05	1536.61	195.10	1537.00	195.05	1577.03	190.10	1577.44	190.05
12	1498.96	200.00	1499.34	199.95	1537.40	195.00	1537.79	194.95	1577.86	190.00	1578.27	189.95
13	1499.71	199.90	1500.09	199.85	1538.19	194.90	1538.58	194.85	1578.69	189.90	1579.10	189.85
14	1500.46	199.80	1500.84	199.75	1538.98	194.80	1539.37	194.75	1579.52	189.80	1579.93	189.75
15	1501.21	199.70	1501.59	199.65	1539.77	194.70	1540.16	194.65	1580.35	189.70	1580.77	189.65
16	1501.97	199.60	1502.34	199.55	1540.56	194.60	1540.95	194.55	1581.18	189.60	1581.60	189.55
17	1502.72	199.50	1503.10	199.45	1541.35	194.50	1541.75	194.45	1582.02	189.50	1582.44	189.45
18	1503.47	199.40	1503.85	199.35	1542.14	194.40	1542.54	194.35	1582.85	189.40	1583.27	189.35
19	1504.23	199.30	1504.60	199.25	1542.94	194.30	1543.33	194.25	1583.69	189.30	1584.11	189.25
20	1504.98	199.20	1505.36	199.15	1543.73	194.20	1544.13	194.15	1584.53	189.20	1584.95	189.15
21	1505.74	199.10	1506.12	199.05	1544.53	194.10	1544.92	194.05	1585.36	189.10	1585.78	189.05
22	1506.49	199.00	1506.87	198.95	1545.32	194.00	1545.72	193.95	1586.20	189.00	1586.62	188.95
23	1507.25	198.90	1507.63	198.85	1546.12	193.90	1546.52	193.85	1587.04	188.90	1587.46	188.85
24	1508.01	198.80	1508.39	198.75	1546.92	193.80	1547.32	193.75	1587.88	188.80	1588.30	188.75
25	1508.77	198.70	1509.15	198.65	1547.72	193.70	1548.11	193.65	1588.73	188.70	1589.15	188.65
26	1509.53	198.60	1509.91	198.55	1548.51	193.60	1548.91	193.55	1589.57	188.60	1589.99	188.55
27	1510.29	198.50	1510.67	198.45	1549.32	193.50	1549.72	193.45	1590.41	188.50	1590.83	188.45
28	1511.05	198.40	1511.43	198.35	1550.12	193.40	1550.52	193.35	1591.26	188.40	1591.68	188.35
29	1511.81	198.30	1512.19	198.25	1550.92	193.30	1551.32	193.25	1592.10	188.30	1592.52	188.25
30	1512.58	198.20	1512.96	198.15	1551.72	193.20	1552.12	193.15	1592.95	188.20	1593.37	188.15
31	1513.34	198.10	1513.72	198.05	1552.52	193.10	1552.93	193.05	1593.79	188.10	1594.22	188.05
32	1514.10	198.00	1514.49	197.95	1553.33	193.00	1553.73	192.95	1594.64	188.00	1595.06	187.95
33	1514.87	197.90	1515.25	197.85	1554.13	192.90	1554.54	192.85	1595.49	187.90	1595.91	187.85
34	1515.63	197.80	1516.02	197.75	1554.94	192.80	1555.34	192.75	1596.34	187.80	1596.76	187.75
35	1516.40	197.70	1516.78	197.65	1555.75	192.70	1556.15	192.65	1597.19	187.70	1597.62	187.65
36	1517.17	197.60	1517.55	197.55	1556.55	192.60	1556.96	192.55	1598.04	187.60	1598.47	187.55
37	1517.94	197.50	1518.32	197.45	1557.36	192.50	1557.77	192.45	1598.89	187.50	1599.32	187.45
38	1518.71	197.40	1519.09	197.35	1558.17	192.40	1558.58	192.35	1599.75	187.40	1600.17	187.35
39	1519.48	197.30	1519.86	197.25	1558.98	192.30	1559.39	192.25	1600.60	187.30	1601.03	187.25
40	1520.25	197.20	1520.63	197.15	1559.79	192.20	1560.20	192.15	1601.46	187.20	1601.88	187.15
41	1521.02	197.10	1521.40	197.05	1560.61	192.10	1561.01	192.05	1602.31	187.10	1602.74	187.05
42	1521.79	197.00	1522.18	196.95	1561.42	192.00	1561.83	191.95	1603.17	187.00	1603.60	186.95
43	1522.56	196.90	1522.95	196.85	1562.23	191.90	1562.64	191.85	1604.03	186.90	1604.46	186.85
44	1523.34	196.80	1523.72	196.75	1563.05	191.80	1563.45	191.75	1604.88	186.80	1605.31	186.75
45	1524.11	196.70	1524.50	196.65	1563.86	191.70	1564.27	191.65	1605.74	186.70	1606.17	186.65
46	1524.89	196.60	1525.27	196.55	1564.68	191.60	1565.09	191.55	1606.60	186.60	1607.04	186.55
47	1525.66	196.50	1526.05	196.45	1565.50	191.50	1565.90	191.45	1607.47	186.50	1607.90	186.45
48	1526.44	196.40	1526.83	196.35	1566.31	191.40	1566.72	191.35	1608.33	186.40	1608.76	186.35
49	1527.22	196.30	1527.60	196.25	1567.13	191.30	1567.54	191.25	1609.19	186.30	1609.62	186.25
50	1527.99	196.20	1528.38	196.15	1567.95	191.20	1568.36	191.15	1610.06	186.20	1610.49	186.15

Safety Information

- The laser light emitted from this laser diode is invisible and potentially harmful to the human eye. Avoid eye and skin exposure to the beam, both direct and reflected.
 - Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload. Please ensure ESD protection prior to handling the products.
 - These CA OPTRONICS products are not intended for use in systems where product malfunction can reasonably be expected to result in personal injury.
- Package Dimensions (Unit: mm)



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