

Transmission Laser Modules

Key Features

40mW output power

Optimized for use with LiNbO₃ external modulator

Polarization Maintaining Fiber pigtail

RIN -155 dB/Hz

Industry Standard Hermetic 14-pin Butterfly package

InGaAsP Distributed FeedBack (DFB) SLMQW in-house laser

Applications

Ultra Long Haul 10 & 40 Gbit/s synchronous digital transmission systems

CATV Head end

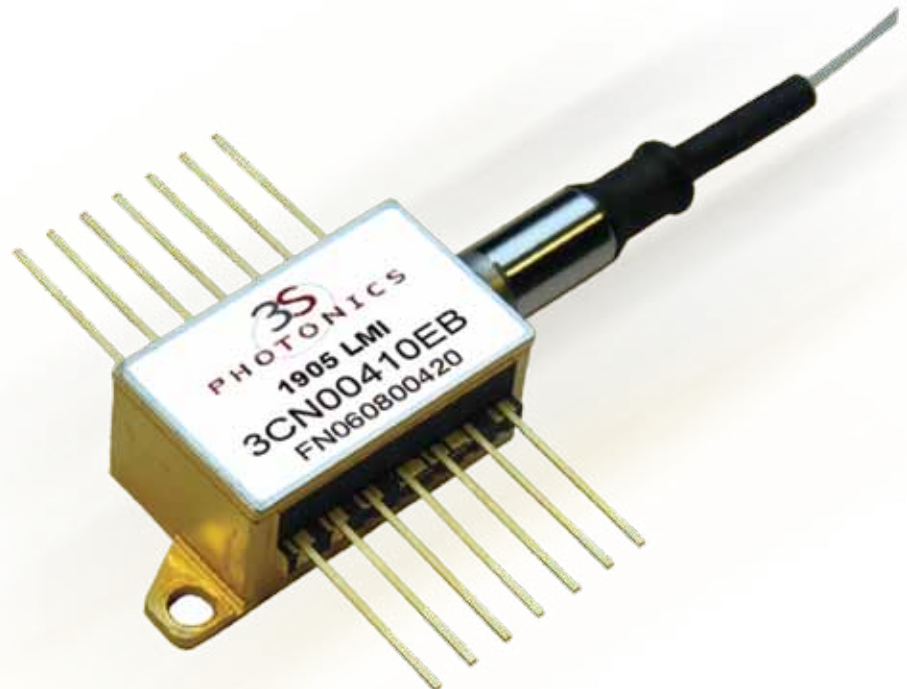
Instrumentation

1905 LMI

CW Laser Module with Optical Isolator, 40mW, 1550 nm \pm 5 nm

This laser module contains a 3SPGroup SLMQW DFB laser and can be used for sensing applications, for high power TDM telecommunication, CATV and military systems with external modulation.

The module incorporates a polarization maintaining fiber pigtail, thermoelectric cooler, precision thermistor, and optical isolator for stable operation under all conditions.



For more info

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or via e-mail at sales@3spgroup.com

1905 LMI

CW Laser Module with Optical Isolator, 40mW, 1550 nm ± 5 nm



OPTICAL CHARACTERISTICS

All limits start of life (except I_t , V_t), $T_{submount}=25^\circ\text{C}$, $T_c=25^\circ\text{C}$, $P_f, V=-5\text{V}$, unless otherwise stated.

Parameters	Symb	Conditions	Min	Typ.	Max	Units
Operating case temperature	T_c	P_f	-5		65	$^\circ\text{C}$
Output power	P_f	$T_{submount}=25^\circ\text{C}$	40			mW
Threshold current	I_{th}				40	mA
Forward voltage	V_f	P_f , pin 3 & 11			2.5	V
Laser forward current (BOL)	I_f	P_f , pin 3 & 11			400	mA
Emission wavelength in vacuum	λ	@ $T_{wave}=25^\circ\text{C}$, I_f & P_f	1545	1550	1555	nm
Δ (Emitted-Target) wavelength	$\Delta\lambda$	@ $T_{submount}$	-0.1		+0.1	nm
Wavelength drift vs Tcase	$\Delta\lambda/\Delta T_c$			0.2	0.5	pm/ $^\circ\text{C}$
Spectral width	$\Delta\lambda$	CW, P_f , -3 dB			5	MHz
TE/TM extinction ratio	ER		17			dB
Side mode suppression ratio	SMSR	P_f	35			dB
Relative intensity noise	RIN	50MHz to 1GHz @ P_f			-155	dB/Hz
Photodiode current	I_m	$V=-5\text{V}$, @ P_f	0.1		2	mA
Photodiode dark current	I_d	$V=-5\text{V}$	0.1			μA
TEC current	I_t	$T_{case}=65^\circ\text{C}$ $T_{submount}=25^\circ\text{C}$ I_{fop}			1.2	A
TEC voltage	V_t	$T_{case}=65^\circ\text{C}$ $T_{submount}=25^\circ\text{C}$ I_{fop}			2.6	V
Thermistor resistance	R_{th}		9.7		10.3	k Ω
Thermistor β constant	β		3800	3900	4000	K

Absolute Maximum Ratings

Parameters	Min	Max	Unit
Storage temperature	-40	85	$^\circ\text{C}$
Laser forward current		450	mA
Laser reverse voltage		2	V
Photodiode forward current		1	mA
Photodiode reverse voltage		20	V
TEC voltage		2.8	V
TEC current		1.4	A
Lead soldering time (at 260 $^\circ\text{C}$)		10	s
Fiber bend radius	30		mm
Packing mounting screw torque		0.2	N.m

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only.

Fiber Pigtail Characteristics

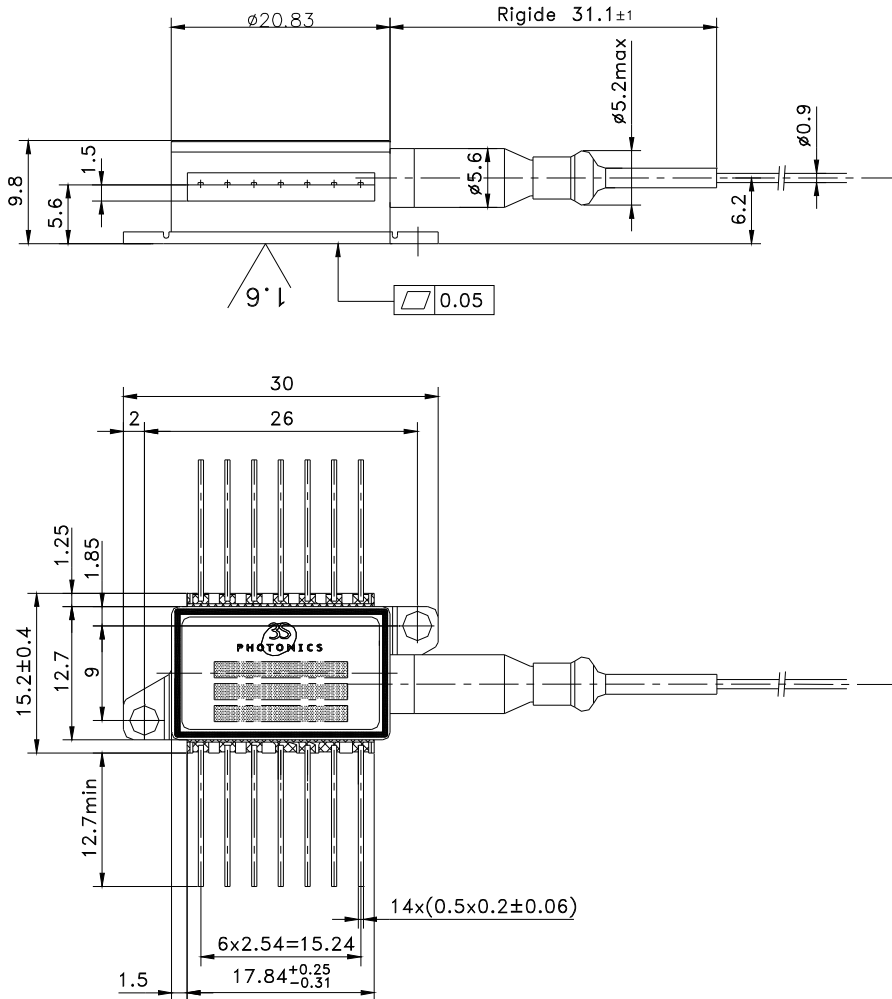
Parameters	Specifications	Unit
Fiber Type	Fujikura Panda	-
Fiber Coating Diameter	400 ± 20	μm
Launch Polarization Axis	Slow Axis	-
Loose Tube Buffer Outside Diameter	900	μm
Pigtail Length	1000 ± 90	mm

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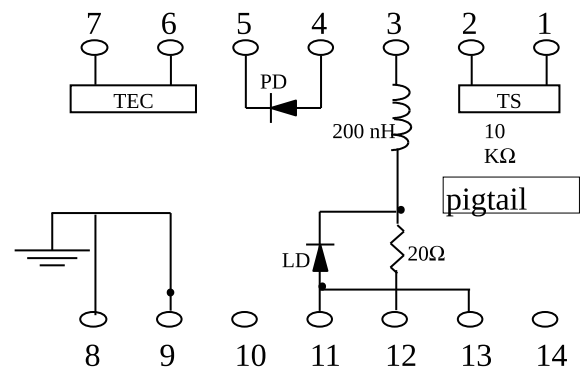
Mechanical Details



Dimensions are in mm
Fiber length 1000 ± 90 mm
(including optical connector)

Pin Out

N°	Description	N°	Description
1	Thermistor	8	Case Ground
2	Thermistor	9	Case Ground
3	Laser DC bias (+)	10	Not Connected
4	Photodetector Anode (-)	11	RF common (+)
5	Photodetector Cathode (+)	12	Laser RF input (-)
6	TEC (+)	13	RF common (+)
7	TEC (-)	14	Not Connected



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Shipment **packing**

Each device is individually packed in an anti-static container and in such a manner as to prevent damage in transit.

The packing shall include the following information:

3S Photonics logo
Product family name : 1905 LMI
Product code: 3CN number (see Ordering Information section)
Serial number
Hazard warning label (ESD)
Laser Safety Class Label

Laser Safety **Information**

Take appropriate precautions to prevent undue exposure to naked eye.

This product is classified Class 1M Laser Product according to IEC-60825-1: edition2.

All versions are Class IIIB laser products per 21 CFR 1040-10 Laser. Safety requirements under accession number 0120546-00.



Device **marking**

The device shall be legibly and permanently marked with the following information:

3S Photonics logo
Product family name
Product code: 3CN number (see Ordering Information section)
Serial number

Deliverable **data**

3SP Group handling policy for all products is to carry out a complete qualification program.

This qualification is based on manufacturers qualification in agreement with Telcordia GR-468-Core (generic reliability assurance requirements for optoelectronic devices used in Telecommunications equipment - central office level), MIL STD 883E (Test method and procedures for microelectronics) and following the standards ITU-T G652 and G-691. All products pass strict tests before shipping.

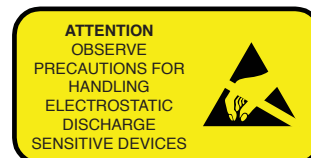
Failure criteria are defined during the product qualification process.

Handling

This product is sensitive to electrostatic discharge and should not be handled except at a static free workstation. Take precautions to prevent ESD; use wrist straps, grounded work surfaces and recognized anti-static techniques when handling the product.

Handle the laser module by its package only. Care should be taken to avoid supply transient and over voltage.

Over voltage above the maximum specified in absolute maximum rating section may cause permanent damage to the device.



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ORDERING INFORMATION

Product Family	Part number	Connector	λ (nm)
1905LMI	3CN01342DT	FC/PC	1550 \pm 5

Revised March 2012

Please note: information in this document is typical and must be specifically confirmed in writing by your supplier before it becomes applicable to any order or contract. Information is subject to change without notice.
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ORDERING INFO

Please contact your Sales Manager. 3SPGroup can also develop custom products to meet a wide range of technical requirements.

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