

## Transmission Laser Modules

### Key Features

7-pin package with GPO connector  
RF input

50 $\Omega$  RF impedance

InGaAsP monolithically integrated  
DFB laser chip

Low RIN

### Applications

Radio Fiber System

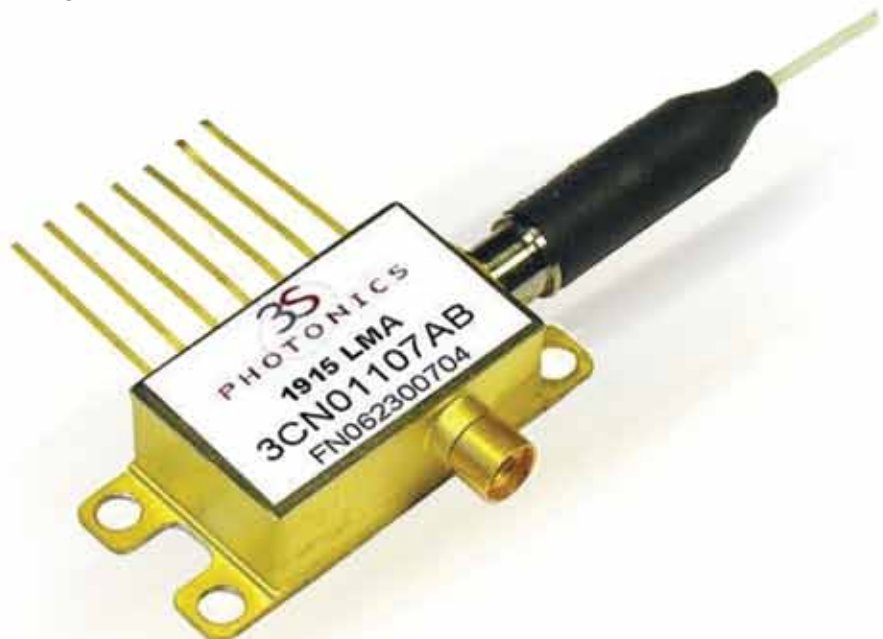
Fiber to the Antenna

## 1915 LMA ANALOG 6GHz Prototype Target Specification 10mW 1.55 $\mu$ m Direct Modulated Analog Laser Module >6GHz bandwidth

The 1915 LMA contains a 3SPGroup DFB laser specifically developed for analog direct modulated applications.

The product is offered into a high frequency package with RF connector for the prototyping stage.

The 1915 LMA is optimized for high frequency analog signal transmission suitable for Mobile analog transmission from Base Station (BTS) to remote antenna and High Frequency Radio on Fiber applications.



### For more info

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or via e-mail at [sales@3spgroup.com](mailto:sales@3spgroup.com)

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10mW 1.55µm Direct  
Modulated Analog Laser  
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## OPTICAL CHARACTERISTICS

Parameters	Symb	Conditions	Min	Typ.	Max	Units
Operating case temperature	Tc		0		40	°C
Threshold current	I <sub>th</sub>	CW,			30	mA
Operating Laser Bias current	I <sub>op</sub>	CW, @P <sub>opt</sub>	50		80	mA
Average Optical output power	P <sub>opt</sub>	CW, @I <sub>op</sub>	10			mW
Laser forward voltage	V <sub>f</sub>	CW, @P <sub>opt</sub> with 45Ω matching resistor			5	V
Slope Efficiency	η	CW, @P <sub>opt</sub> =0 to 10mW	0.14	0.2		mW/mA
Input Impedance	Z <sub>in</sub>	CW, @P <sub>opt</sub>		50		Ω
Emission wavelength	λ <sub>m</sub>	CW, @P <sub>opt</sub>	1530		1560	nm
Side mode suppression	SMSR	CW, @P <sub>opt</sub> , RL<=-24dB	35			dB
Modulation Bandwidth	BW	@- 3 dB electrical, P <sub>opt</sub> , under 50Ω	6	9		GHz
Input return loss	S11	@P <sub>opt</sub> , 0.1 to 6 GHz, , under 50Ω	10			dB
Relative Intensity Noise	RIN	@P <sub>opt</sub> , 0.1 to 6 GHz, under 50Ω, ORL<-35dB		-160	-150	dB/Hz
IMD2	IMD2	@P <sub>opt</sub> ; @f1+f2; m=20%; f1= 900MHz; f2= 910MHz			-50	dBc
IMD3	IMD3	@P <sub>opt</sub> ; @2f2-f1; m=20%; f1=2145MHz; f2=2155MHz			-70	dBc
IMD3	IMD3	@P <sub>opt</sub> ; @2f2-f1; m=20%; f1=3795MHz; f2=3805MHz			-65	dBc
Monitor dark current	I <sub>d</sub>	V <sub>d</sub> = - 5 V			10	nA
Monitor diode current	I <sub>ph</sub>	@P <sub>opt</sub> , V <sub>d</sub> = - 5 V	30			µA
TEC current	I <sub>t</sub>	@P <sub>opt</sub> , I <sub>op</sub> max=80mA, T <sub>c</sub> = 40 °C			1	A
TEC voltage	V <sub>t</sub>	@P <sub>opt</sub> , I <sub>op</sub> max=80mA , T <sub>c</sub> = 40 °C			2	V
Thermistor resistance	R <sub>TH</sub>	T <sub>submount</sub> = 25°C	9.5		10.5	kΩ
Coefficient of RTH	r <sub>T</sub>	T <sub>submount</sub> = 25°C	-3		-5	K <sup>-1</sup>

Unless otherwise specified: T<sub>laser</sub>= 25°C, all parameters are BOL

## Absolute Maximum Ratings

Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

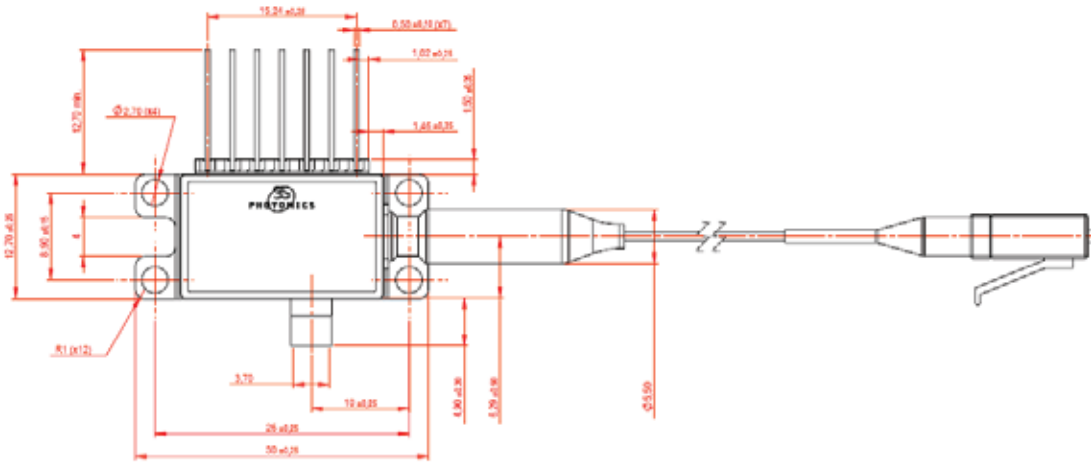
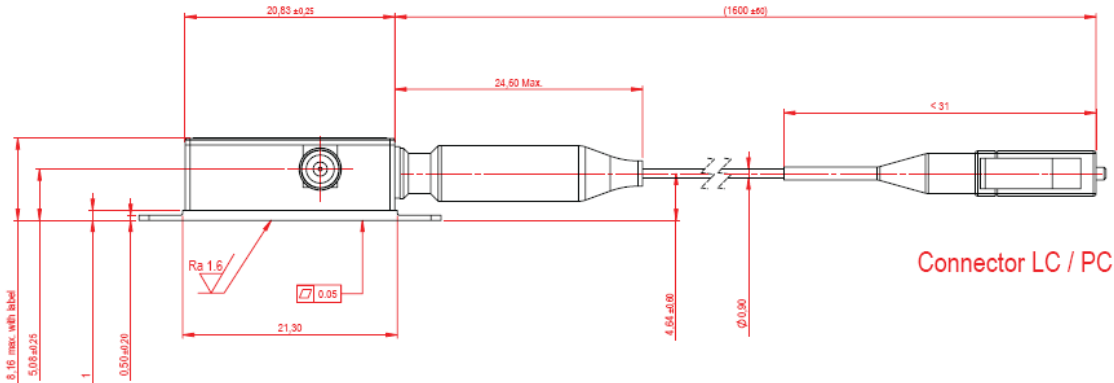
Parameters	Min	Max	Unit
Operating case temperature	0	40	°C
Storage temperature	0	40	°C
Laser forward current		150	mA
Laser forward voltage		7.5	V
Photodiode forward current		5	mA
Photodiode reverse voltage		20	V
TEC voltage		2.5	V
TEC current		1.4	V
Laser ESD (Human Body Model)		2000	V
Lead soldering time (at 260°C)		10	s
Fiber bend radius	25		mm
Packing mounting screw torque		0.2	N.m

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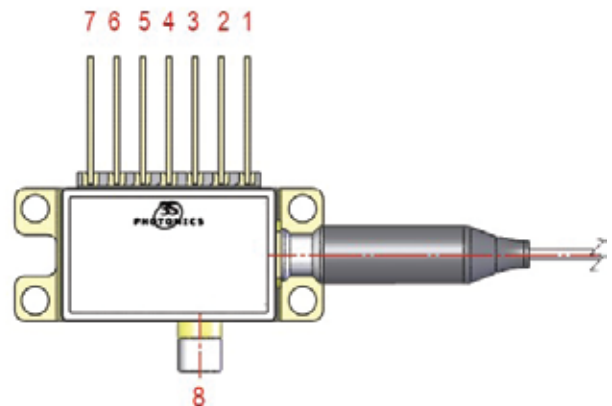
### Mechanical Details



Dimensions are in mm  
Fiber length 1600 ± 100 mm  
(including optical connector)

### Pin Out

N°	Description
1	Thermistor
2	Thermistor
3	Not Connected
4	Photodetector Anode (-)
5	Photodetector Cathode (+)
6	TEC (+)
7	TEC (-)
8	Laser LD Anode (50Ω)
Case	Ground, laser cathode



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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 : 1915 LMA  
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: 1915 LMA  
Product code : 3CN number (see Ordering information section)  
Serial number

### Deliverable **data**

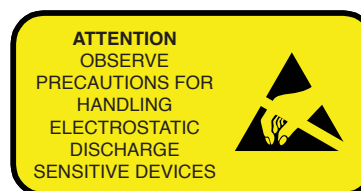
The following data shall be supplied with each device:

L(I) / Im(I) curves  
Rated output power, Threshold current, Laser current at rated power (Iop),  
Monitor photodiode current at rated power, TEC voltage, TEC current, SMSR

### 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, never hold it by its pigtail. 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

Application	Part number	Output Power	Bandwidth	Optical Connector
Analog 10mW DML	3CN01366AA	10mW	>6Ghz	LC/PC

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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