

Transmission Laser Modules

KeyFeatures

InGaAsP monolithically integrated DFB laser and modulator in-house chip

Low drive voltage (≤ 2 Vpp)

Very low dispersion penalty up to 750 km for 2.7 Gbit/s operation (up to 12800 ps/nm)

Based on XMD MSA package product platform (size & pinout)

Leads for electrical connections

High output power [0;+4] dBm configuration

Wavelength selection according to ITU-T G.692

RoHs Compliant

Applications

Regional Metro D-WDM line card size and cost optimization

STM-16 and OC-48 size optimized Transmitter and Transceiver modules

Replacement of 14 pin-butterfly EML module

For moreInfo

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1926 LMM

TOSA – 2.5 Gb/s Electro-Absorption Laser Module WDM – 12800 and 7200 ps/nm application – Pigtail

This 1926 LMM contains a 3SPGroup DFB laser with monolithically integrated electro-absorption modulator.

The modulation voltage is applied to the modulator section while the DFB laser operates CW. Without the complexity of LiNbO3 external modulators, the 1926 LMM is dedicated to STM16 / OC-48 bit rate with reduced size and cost. This device allows 2.5Gbit/s data transmission with an extinction ratio higher than 10.5dB and less than 2V modulation voltage.

The 1926 LMM is optimized for up to 2.7Gbit/s WDM transmission systems supporting dispersion up to 12800ps/nm.



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Parameters	Symb	Test conditions	Min	Max	Units
Operating case temperature	T _c		0	+70	°C
Laser Threshold current	I _{th}	VBM= 0V	5	35	mA
Laser operating current	I _{op}	VBM= 0V (BOL) 3CN01304##, 3CN01305##, 3CN01306##	60	85	mA
		VBM= 0V (BOL) 3CN01307##	80	100	
Laser chip temperature range for tunability	T _{wave}		25	35	°C
Modulator bias voltage	VBM		-2	0	V
Modulator drive voltage	V _{pp}	Note 1		2	V _{pp}
Average optical output power	P _{AVG}	3CN01304##, T _{wave} , I _{op} , DER, λ _c , notes 1 & 2	-4	+1	dBm
		3CN01305##, T _{wave} , I _{op} , DER, λ _c , notes 1 & 3	-2	+1	
		3CN01306##, T _{wave} , I _{op} , DER, λ _c , notes 1 & 3	-4	-1	
		3CN01307##, T _{wave} , I _{op} , DER, λ _c , notes 1 & 3	0	+4	
Center wavelength range	λ _c	T _{wave} , ITU grid	1529.55	1569.55	nm
Dynamic Extinction Ratio	DER	I _{op} , Note 1, 2, 3	10.5		dB
Dispersion Penalty	ΔS	DER, Note 1, 2, 3		2	dB
Side Mode Suppression Ratio	SMSR	Note 1	35		dB
Monitor Diode Current	I _m	I _{op} , V= -5V	20	1500	μA
Dark Current	I _d	V= -5V		0.1	μA
TEC current	I _{tec}	VBM= -1V @7200ps/nm VBM= -2V @12800ps/nm ΔT=45°C, 1.2*I _{op}		1	A
TEC voltage	V _{tec}	@VBM= -1V, ΔT= 45°C, 1.2*I _{op}		2	V
TEC power	W _p	P _{AVG} , VBM op, I _{op} (EOL)= 1.2*I _{op} ΔT=45°C		1.6	W
Total power	W _{tot}	VBM=-2V		1.8	W
Thermistor Resistance	R _{TH}	T _s =25°C	9.5	10.5	KΩ
Thermistor β Coefficient	β	T _s =25°C	3800	4000	K

Note 1 : BER= 10-10, 2488Gb/s, modulation, 231-1 PRBS, NRZ line code

Note 2 : 7200 ps/nm minimum dispersion assuming fiber with an average dispersion of 17ps/nm/km @ 1550nm

Note 3 : 12800 ps/nm minimum dispersion assuming fiber with an average dispersion of 17ps/nm/km @ 1550nm

Absolute Maximum Ratings

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

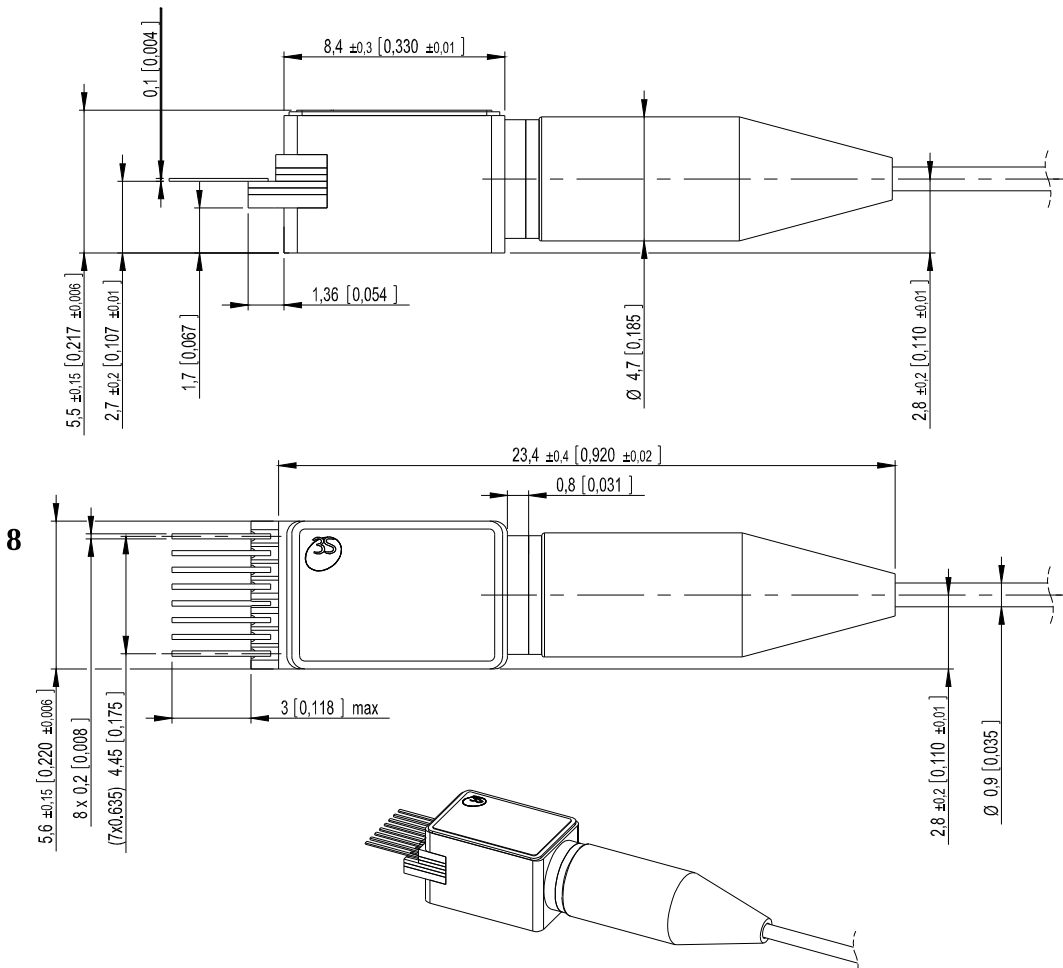
Parameters	Min	Max	Unit
Storage case temperature	-40	+85	°C
Laser Forward Current		150	mA
Laser Reverse Voltage		2	V
Laser Reverse Current		10	μA
Modulator Forward Voltage		1	V
Modulator Forward Current		100	mA
Modulator Reverse Voltage		5	V
Modulator Reverse Current		10	μA
Photodiode Forward Current		1	mA
Photodiode Reverse Voltage		20	V
TEC Voltage		2.6	V
TEC Current		1.4	A
Lead Soldering Temperature (at 260°C)		10	s

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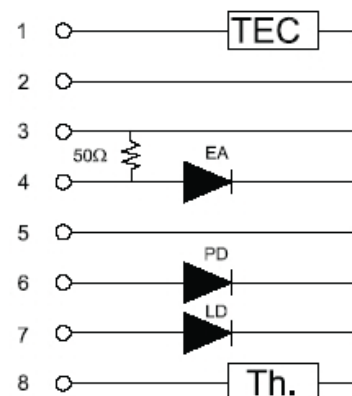
Mechanical Details



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

Pin Out

N°	Description
1	TE Cooler Cathode
2	TE Cooler Anode
3	Floating signal ground
4	Modulator Anode (bias-)
5	Floating signal ground
6	PD Anode (bias -)
7	LD Anode (bias -)
8	Thermistor



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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 : 1926 LMM
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.

Deliverable **data**

The following data shall be supplied with each device:

L(I) / V(I) / Im(I) curves

Values for Vmod, Von (On-state voltage [0 data]), Vbias (bias voltage), DER, S0 (received optical power without fiber), DS and Pave for If

DER and dispersion penalty (DS)

Plot of SER vs Vmod over the range 0 V to -3 V @ If, Twave and Tc= 25 °C

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	Optical Connector	Output Power
7200 ps/nm	3CN01304##	SC/PC	[-4; +1dBm]
12800 ps/nm	3CN01305##	LC/PC	[-2; +1dBm]
12800 ps/nm	3CN01306##	FC/PC	[-4; -1dBm]
12800 ps/nm	3CN01307##	LC/PC	[0; +4dBm]

defines the wavelength according to the Table 3.

Table 3

λ (nm)	THz	Code ##	λ (nm)	THz	Code ##
1529,55	196,00	BP	1545,32	194,00	DF
1530,33	195,90	BR	1546,12	193,90	DH
1531,12	195,80	BT	1546,92	193,80	DK
1531,90	195,70	BV	1547,72	193,70	DM
1532,68	195,60	BX	1548,5	193,60	DP
1533,47	195,50	BZ	1549,32	193,50	DR
1534,25	195,40	CB	1550,12	193,40	DT
1535,04	195,30	CD	1550,92	193,30	DV
1535,82	195,20	CF	1551,72	193,20	DX
1536,61	195,10	CH	1552,52	193,10	DZ
1537,40	195,00	CK	1553,33	193,00	EB
1538,19	194,90	CM	1554,12	192,90	ED
1538,98	194,80	CP	1554,94	192,80	EF
1539,77	194,70	CR	1555,75	192,70	EH
1540,56	194,60	CT	1556,55	192,60	EK
1541,35	194,50	CV	1557,36	192,50	EM
1542,14	194,40	CX	1558,17	192,40	EP
1542,94	194,30	CZ	1558,98	192,30	ER
1543,73	194,20	DB	1559,79	192,20	ET
1544,53	194,10	DD	1560,61	192,10	EV

All wavelengths referenced to vacuum, Twave for WDM applications.

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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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