

Alcatel 1905 LMI

Up to 30 mW WDM C-band version for external modulation CW 1.55 μm Laser Module with optical Isolator

Description

This laser module contains an Alcatel SLMQW DFB laser and is designed for use with external modulation optimized for high power Wavelength Division Multiplexed (WDM) systems. The module incorporates a polarization maintaining fiber pigtail, thermoelectric cooler, precision thermistor, and optical isolator for stable operation under all conditions.

Features

- Up to 30 mW output power
- Wavelength selection according to ITU-T G.692
- Narrow linewidth

- 50 GHz channel spacing available
- Optimized for use with LiNbO₃ external modulator
- Polarization Maintaining Fiber pigtail
- InGaAsP Distributed FeedBack (DFB) SLMQW laser
- Internal optical isolator
- Internal TEC and monitor photodiode
- Industry standard hermetic 14-pin butterfly package

Applications

- Ultra Long Haul 2.5, 10 Gbit/s synchronous digital transmission systems
- WDM submarine terminal digital transmission systems
- Instrumentation



Optical characteristics

Parameter	Symb.	Conditions	Min	Typical	Max	Units
Threshold current	I_{th}				40	mA
Output power	P_F	Twave= 20 to 35°C	10 20 25 30			mW mW mW mW
Forward voltage	V_F	Pf, pin 3 & 11			2.5	V
Laser forward current	I_F	10 mW, pin 3 & 11 20 mW, pin 3 & 11 25 mW, pin 3 & 11 30 mW, pin 3 & 11			100 190 230 260	mA mA mA mA
Emission wavelength	λ_m			See table 1		
Δ (Emitted-Target) wavelength	$\Delta\lambda_e$	[2]	-0.1		+0.1	nm
Laser chip temperature range for tunability	T_λ	[2]	20		35	°C
Spectral width	$\Delta\lambda$	CW, Pf, FWHM		2	5	MHz
Side mode suppression ratio	SMSR	Pf	35			dB
Relative Intensity Noise	RIN	10MHz to 10GHz @ Pf			-140	dB/Hz
Photodiode dark current	I_d	V = -5V			100	nA
Wavelength drift vs Tcase	$\Delta\lambda/\Delta T_c$			0.2	0.5	pm/°C
Thermistor resistance	R_{TH}		9.7		10.3	k Ω
Thermistor temperature coefficient	R_t		-3		-5	%/K
TEC current	I_t	[1]		0.85	1.3	A
TEC voltage	V_t	[1]		1.6	2.5	V
TE/TM fiber extinction ratio of pigtail	E_r		20			dB

Note : all limits start of life (except I_t , V_t), $T_{submount}=25^\circ\text{C}$, $T_{case}=25^\circ\text{C}$, Pf, V=-5V, unless otherwise stated.

[1] $T_{case}=70^\circ\text{C}$ (10 and 20 mW), $T_{case} = 65^\circ\text{C}$ (30 mW), $T_{submount}=20^\circ\text{C}$, @1.2 Pf

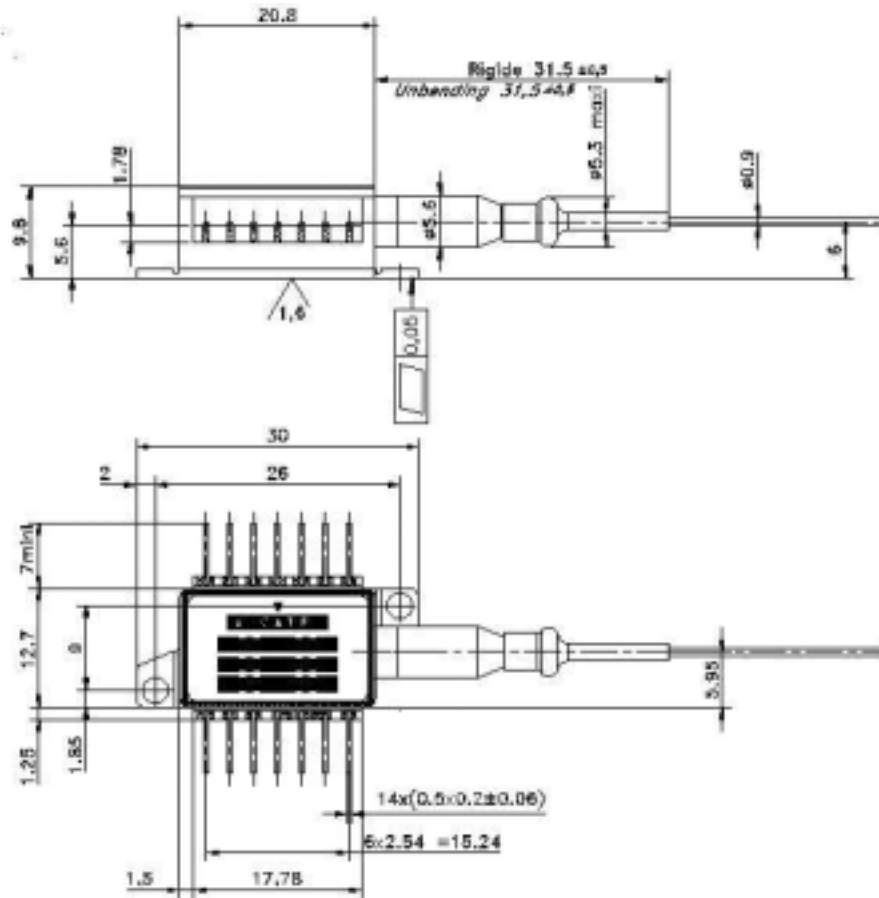
[2] $T_{chip}=T_\lambda$. T_λ is chip temperature required to meet target wavelength (see table 1)

Absolute maximum ratings

Parameters	Conditions	Min	Max	Unit
Operating case temperature		-10	70	°C
Storage temperature		-40	85	°C
Laser forward current			350	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°C)			10	s
Packing Mounting Screw Torque			0.2	Nm

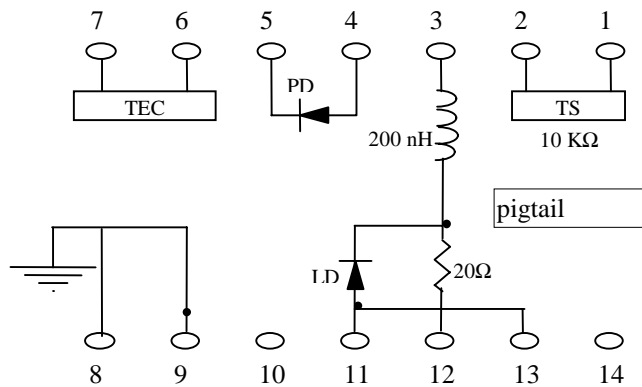
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only.

Mechanical details



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



Ordering information

Alcatel 1905 LMI

Nominal power	Connector type	Part number [1]
10 mW	FC/PC or FC/APC	3CN 00386 ##
10 mW	SC/PC	3CN 00461##
20 mW	FC/PC or FC/APC	3CN 00410 ##
20 mW	SC/PC	3CN 00462 ##
25 mW	FC/PC or FC/APC	3CN 00345 ##
30 mW	FC/PC or FC/APC	3CN 00302 ##

defines the wavelength and the connector according to table 1.

λ	THz	Connector	
		FC/PC SC/PC	FC/APC
1527,20	196,30	BH	MH
1527,59	196,25	BJ	MJ
1527,98	196,20	BK	MK
1528,37	196,15	BL	ML
1528,77	196,10	BM	MM
1529,16	196,05	BN	MN
1529,55	196,00	BP	MP
1529,94	195,95	BQ	MQ
1530,33	195,90	BR	MR
1530,72	195,85	BS	MS
1531,12	195,80	BT	MT
1531,51	195,75	BU	MU
1531,90	195,70	BV	MV
1532,29	195,65	BW	MW
1532,68	195,60	BX	MX
1533,07	195,55	BY	MY
1533,47	195,50	BZ	MZ
1533,86	195,45	CA	NA
1534,25	195,40	CB	NB
1534,64	195,35	CC	NC
1535,04	195,30	CD	ND
1535,43	195,25	CE	NE
1535,82	195,20	CF	NF
1536,22	195,15	CG	NG
1536,61	195,10	CH	NH
1537,00	195,05	CJ	NJ
1537,40	195,00	CK	NK
1537,79	194,95	CL	NL
1538,19	194,90	CM	NM
1538,58	194,85	CN	NN
1538,98	194,80	CP	NP
1539,37	194,75	CQ	NQ
1539,77	194,70	CR	NR
1540,16	194,65	CS	NS
1540,56	194,60	CT	NT
1540,95	194,55	CU	NU

λ	THz	Connector	
		FC/PC SC/PC	FC/APC
1541,35	194,50	CV	NV
1541,75	194,45	CW	NW
1542,14	194,40	CX	NX
1542,54	194,35	CY	NY
1542,94	194,30	CZ	NZ
1543,33	194,25	DA	PA
1543,73	194,20	DB	PB
1544,13	194,15	DC	PC
1544,53	194,10	DD	PD
1544,92	194,05	DE	PE
1545,32	194,00	DF	PF
1545,72	193,95	DG	PG
1546,12	193,90	DH	PH
1546,52	193,85	DJ	PJ
1546,92	193,80	DK	PK
1547,32	193,75	DL	PL
1547,72	193,70	DM	PM
1548,11	193,65	DN	PN
1548,51	193,60	DP	PP
1548,91	193,55	DQ	PQ
1549,32	193,50	DR	PR
1549,72	193,45	DS	PS
1550,12	193,40	DT	PT
1550,52	193,35	DU	PU
1550,92	193,30	DV	PV
1551,32	193,25	DW	PW
1551,72	193,20	DX	PX
1552,12	193,15	DY	PY
1552,52	193,10	DZ	PZ
1552,93	193,05	EA	QA
1553,33	193,00	EB	QB
1553,73	192,95	EC	QC
1554,12	192,90	ED	QD
1554,54	192,85	EE	QE
1554,94	192,80	EF	QF
1555,34	192,75	EG	QG



λ	THz	Connector	
		FC/PC SC/PC	FC/PC
1555,75	192,70	EH	QH
1556,15	192,65	EJ	QJ
1556,55	192,60	EK	QK
1556,96	192,55	EL	QL
1557,36	192,50	EM	QM
1557,77	192,45	EN	QN
1558,17	192,40	EP	QP
1558,58	192,35	EQ	QQ
1558,98	192,30	ER	QR
1559,39	192,25	ES	QS
1559,79	192,20	ET	QT
1560,20	192,15	EU	QU
1560,61	192,10	EV	QV
1561,01	192,05	EW	QW
1561,42	192,00	EX	QX
1561,83	191,95	EY	QY
1562,23	191,90	EZ	QZ
1562,64	191,85	FA	RA
1563,05	191,80	FB	RB
1563,45	191,75	FC	RC
1563,86	191,70	FD	RD
1564,27	191,65	FE	RE
1564,68	191,60	FF	RF
1565,08	191,55	FG	RG
1565,49	191,50	FH	RH
1565,90	191,45	FJ	RJ
1566,31	191,40	FK	RK
1566,72	191,35	FL	RL
1567,13	191,30	FM	RM
1567,54	191,25	FN	RN
1567,95	191,20	FP	RP
1568,36	191,15	FR	RR
1568,77	191,10	FS	RS
1569,18	191,05	FT	RT
1569,59	191,00	FU	RU

Table 1, All wavelengths referenced to vacuum @ Tsubmount

Standards

ITU-T G.652 optical fiber
IEC 68-2 and MIL STD 883 environment



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EUROPE

Route de Villejust
F-91625 NOZAY CEDEX
Tel : (+33) 1 64 49 49 10
Fax : (+33) 1 64 49 49 61

USA

12030 Sunrise Valley Drive
RESTON - VA 2 2091
Tel : (+1) 703 715 3921
Fax : (+1) 703 860 1183

CANADA

45, De Villebois, suite 200
Gatineau (PQ)
Canada, J8T 8J7
Tel : (+1) 819 243 3755
Fax : (+1) 819 243 3354

JAPAN

Yebisu Garden Place Tower
PO Box 5024



20-3, Ebisu 4 - Chome
Shibuya - ku TOKYO 150 - 6028
Tel : (+81) 3 5424 85 65
Fax : (+81) 3 5424 85 81

