Alcatel 1905 LMI
Up to 20 mW WDM L-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 20 mW output power
- Wavelength selection according to ITU-T G.692 (L-band)
- 50 GHz spacing available
- Optimized for use with LiNbO3 external modulator
- Polarization maintaining fiber pigtail
- InGaAsP Distributed FeedBack SLMQW (DFB) laser
- Integral optical isolator
- Internal TEC and monitor photodiode
- Industry-standard hermetic 14-pin butterfly package

Applications

- Ultra long haul DWDM 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 = 15 to 30 °C	10			mW
		Twave = 15 to 25 °C	20			mW
Forward voltage	V_F	Pf, pin 3 & 11			2.5	V
Laser forward current	I_F	10 mW, pin 3 & 11			120	mA
		20 mW, pin 3 & 11			210	mA
Emission wavelength	λm			See table 1		
Δ(Emitted-Target) Wavelength	Δλe	@Tchip[2]	- 0.1		+0.1	nm
Laser chip temperature range for tunability	Tλ	@10mW [2]	15		30	°C
		@20mW [2]	15		25	°C
Spectral width	Δλ	CW, Pf, FWHM			5	MHz
Side mode suppression ratio	SMSR	Pf	35			dB
Relative Intensity Noise	RIN	10MHz to 10 GHz @ Pf			-140	dB/Hz
Photodiode dark current	Id	V = -5 V			100	nA
Wavelength drift vs Tcase	Δλ/ΔTc				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]			1.3	A
TEC voltage	V_t	[1]			2.5	V
TE/TM fiber extinction ratio of pigtail	Er		20			dB

Note : All limits start of life (except It, Vt), Tsubmount = 25 °C, Tcase = 25 °C, Pf = 20 mW, monitor bias – 5 V, unless otherwise stated
[1] Tcase = 70° C, Tsubmount = 20 °C, P = 20 mW
[2] Tchip = Tλ .Tλ is chip temperature required to meet target wavelength (see table 1)

Absolute maximum ratings

Parameters	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

[1] Human body model.
Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only.

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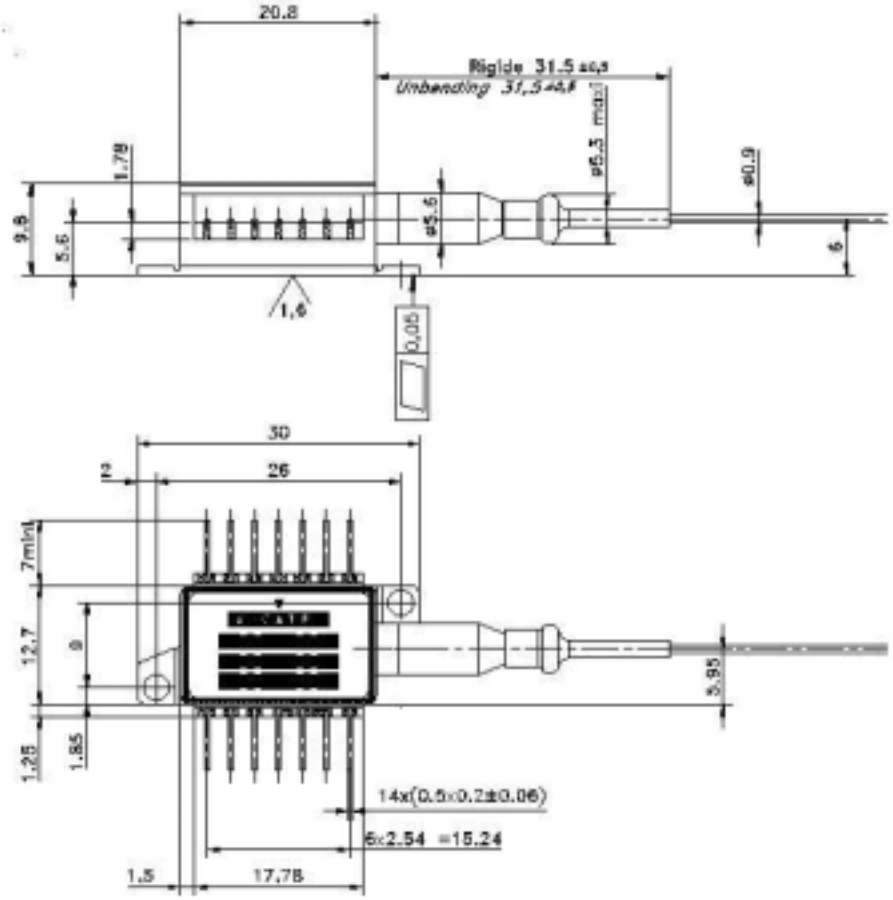
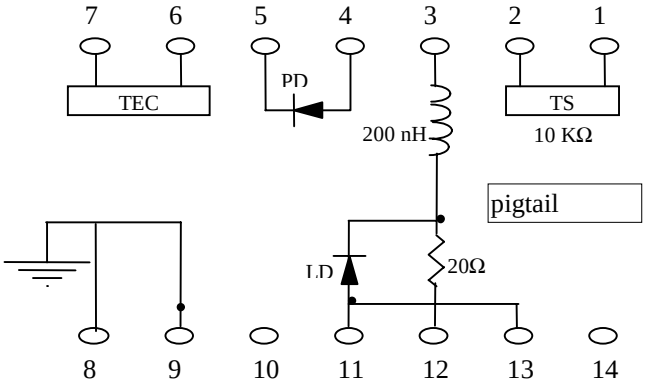
Mechanical details



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	RF input (-)
6	TEC (+)	13	Not Connected
7	TEC (-)		



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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 ##

defines the wavelength and the connector according to table 1.

λ	THz	Connector	
		FC/PC SC/PC	FC/APC
1570,00	190,95	FV	RV
1570,41	190,90	FW	RW
1570,82	190,85	FX	RX
1571,24	190,80	FY	RY
1571,65	190,75	FZ	RZ
1572,06	190,70	GA	SA
1572,47	190,65	GB	SB
1572,88	190,60	GC	SC
1573,30	190,55	GD	SD
1573,71	190,50	GE	SE
1574,12	190,45	GF	SF
1574,54	190,40	GG	SG
1574,95	190,35	GH	SH
1575,36	190,30	GJ	SJ
1575,78	190,25	GK	SK
1576,19	190,20	GL	SL
1576,61	190,15	GM	SM
1577,02	190,10	GN	SN
1577,44	190,05	GP	SP
1577,85	190,00	GR	SR
1578,27	189,95	GS	SS
1578,68	189,90	GT	ST
1579,10	189,85	GU	SU
1579,51	189,80	GV	SV
1579,93	189,75	GW	SW
1580,35	189,70	GX	SX
1580,76	189,65	GY	SY
1581,18	189,60	GZ	SZ
1581,60	189,55	HA	TA
1582,01	189,50	HB	TB
1582,43	189,45	HC	TC
1582,85	189,40	HD	TD
1583,27	189,35	HE	TE

λ	THz	Connector	
		FC/PC SC/PC	FC/APC
1583,69	189,30	HF	TF
1584,10	189,25	HG	TG
1584,52	189,20	HH	TH
1584,94	189,15	HJ	TJ
1585,36	189,10	HK	TK
1585,78	189,05	HL	TL
1586,20	189,00	HM	TM
1586,62	188,95	HN	TN
1587,04	188,90	HP	TP
1587,46	188,85	HR	TR
1587,88	188,80	HS	TS
1588,30	188,75	HT	TT
1588,72	188,70	HU	TU
1589,14	188,65	HV	TV
1589,56	188,60	HW	TW
1589,98	188,55	HX	TX
1590,41	188,50	HY	TY
1590,83	188,45	HZ	TZ
1591,25	188,40	JA	UA
1591,67	188,35	JB	UB
1592,10	188,30	JC	UC
1592,52	188,25	JD	UD
1592,94	188,20	JE	UE
1593,37	188,15	JF	UF
1593,79	188,10	JG	UG
1594,21	188,05	JH	UH
1594,64	188,00	JJ	UJ
1595,06	187,95	JK	UK
1595,49	187,90	JL	UL
1595,91	187,85	JM	UM
1596,33	187,80	JN	UN
1596,76	187,75	JP	UP
1597,19	187,70	JR	UR

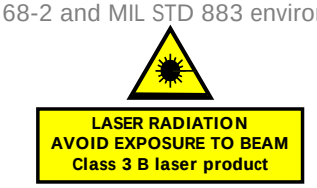
λ	THz	Connector FC/PC SC/PC	FC/APC
1597,61	187,65	JS	US
1598,04	187,60	JT	UT
1598,46	187,55	JU	UU
1598,89	187,50	JV	UV
1599,32	187,45	JW	UW
1599,74	187,40	JX	UX
1600,17	187,35	JY	UY
1600,60	187,30	JZ	UZ
1601,02	187,25	KA	VA
1601,45	187,20	KB	VB
1601,88	187,15	KC	VC
1602,31	187,10	KD	VD
1602,74	187,05	KE	VE
1603,16	187,00	KF	VF
1603,59	186,95	KG	VG
1604,02	186,90	KH	VH
1604,45	186,85	KJ	VJ
1604,88	186,80	KK	VK
1605,31	186,75	KL	VL
1605,74	186,70	KM	VM
1606,17	186,65	KN	VN
1606,60	186,60	KP	VP
1607,03	186,55	KR	VR
1607,46	186,50	KS	VS
1607,89	186,45	KT	VT
1608,32	186,40	KU	VU
1608,76	186,35	KV	VV
1609,19	186,30	KW	VW
1609,62	186,25	KX	VX
1610,05	186,20	KY	VY

Table 1, All wavelengths referenced to vaccum @ Tsubmount

Standards

ITU-T G.652 optical fiber

IEC 68-2 and MIL STD 883 environment



Customized versions are available for large quantities.

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