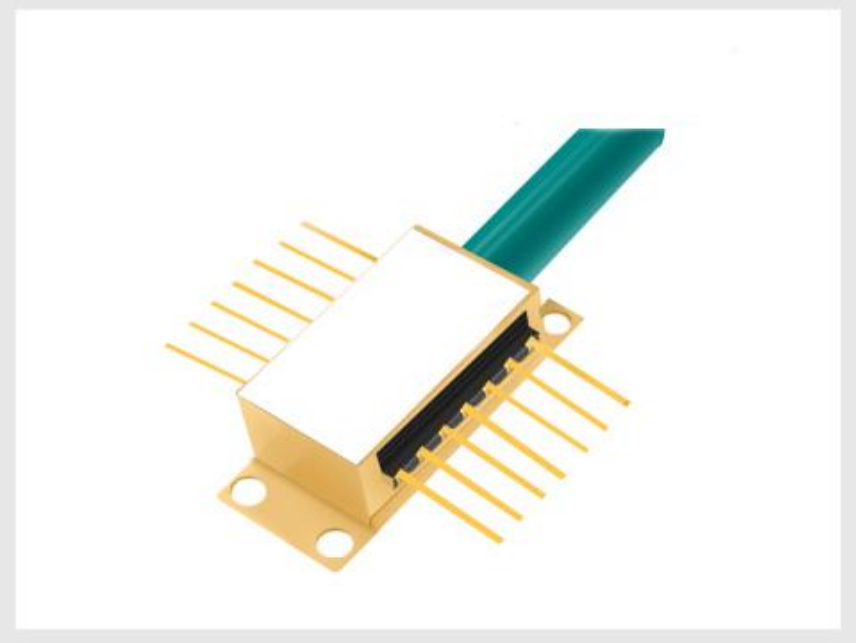
685nm 15mW SM Narrow Linewidth Laser Diodes



Product Description

Single frequency FBG-stabilized laser diode module designed for optical measurement and communication. The laser is packaged in Butterfly package with monitor photodiode and thermo-electric cooler (TEC). Module is pigtailed with 0.5-0.9 m of single mode or polarization maintaining (optional) fiber and connectorized by FC/APC connector.

Product features

Optical output: 15mW；Narrow linewidth (Δv ＜1MHz)；Wavelength: 685nm @ 25 ℃； SMor PMFiber (ø0.9mm)； FC-APC connector； 14-pin butterfly package；Internal monitor PD and TEC；Low power consumption

Part Number

MP-NL-685-A-A81-SA

Application area

Coherent Optical Communication | High-Precision Fiber Optic Sensing | LiDAR | Optical Metrology & Spectroscopy | Microwave Photonics

Core parameters

Wavelength	Output Power	Fiber Type
685nm	15mW	SM

General Parameters

Optical Characteristics

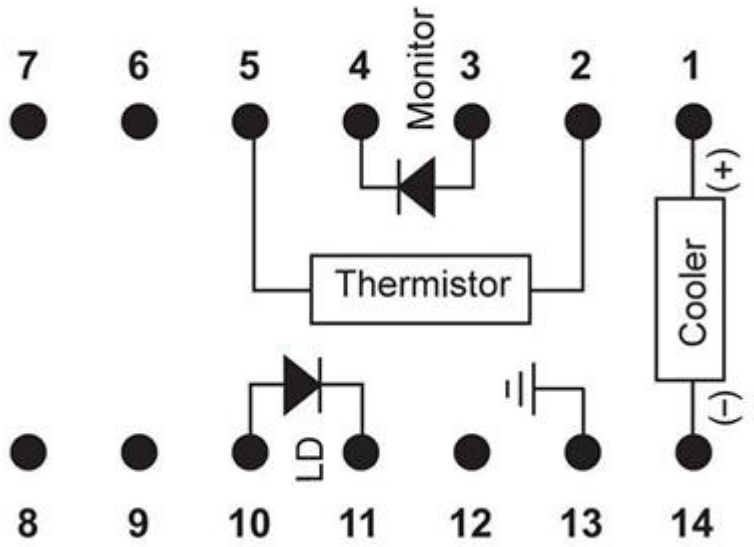
Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Optical Power	P_f	CW	10	15		mW
Pulsed Optical Power	P_{fp}	Pulse, τ=10μs, D=1%		20		mW
Treshold Current	I_{th}			35	50	мA
Forward Current	I_f	P_f		100	130	mA
Pulsed Forward Current	I_{fp}	P_{fp}, τ=10μs, D=1%		150		mA
Forward Voltage	V_f	P_f		2.5	3	V
Center Wavelength	λ_c	P_f	684	685	686	nm
Spectral Width	$\Delta\lambda_c$	P_f			1	MHz
Side Mode Suppression Ratio		SMSR	30			dB
Single-Frequency Continuous Tuning Range	Δf		1			GHz
Current Tuning	Δλ/ΔI			0.001		nm/mA
Temperature Tuning	Δλ/ΔT			0.08		nm/°C
Monitor Current	I_m	P_f	20		500	μA

PD Dark Current	I_d	V_{rd}=5V			0.1	μA
TEC Current	I_t	I_t			1.4	A
TEC Voltage	V_t	TC=70°C			2.7	V
Thermal Resistance	R_0	T=25°C, B=3900 ±100K	9.5	10	10.5	kΩ
Extinction Ratio (PM fiber)	X_p	P_f	20			dB

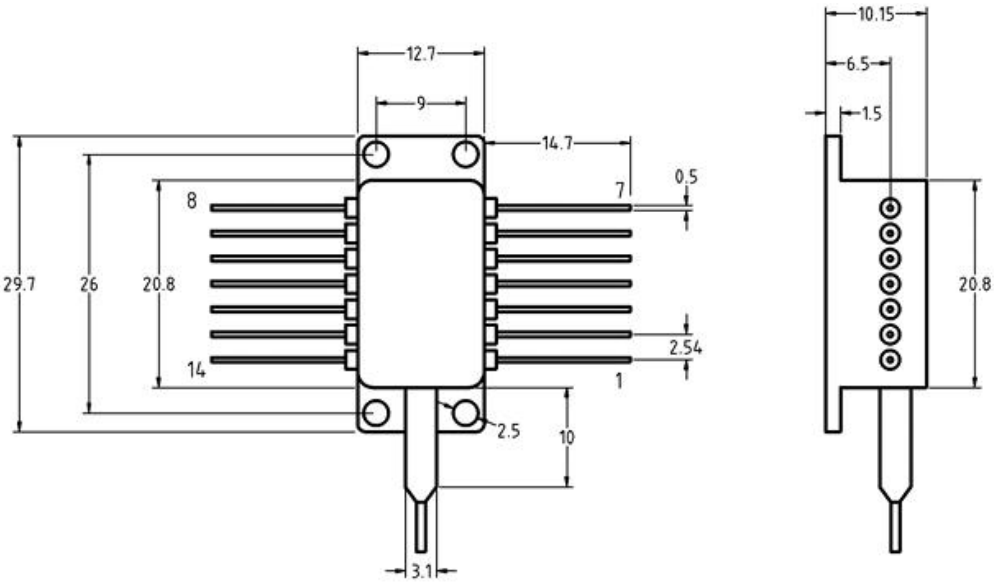
Absolute maximum ratings:

Parameter	Symbol	Rating	Unit
Forward Current	I_f	150	mA
Reverse Voltage	V_r	1.8	V
PD Reserve Voltage	V_{rd}	7	V
Minimum Operation Case Temperature	T_{ol}	-40	°C
Maximum Operation Case Temperature	T_{oh}	70	°C
Minimum Storage Temperature	T_{sl}	-40	°C
Maximum Storage Temperature	T_{sh}	70	°C
TEC Current	I_t	1.5	A

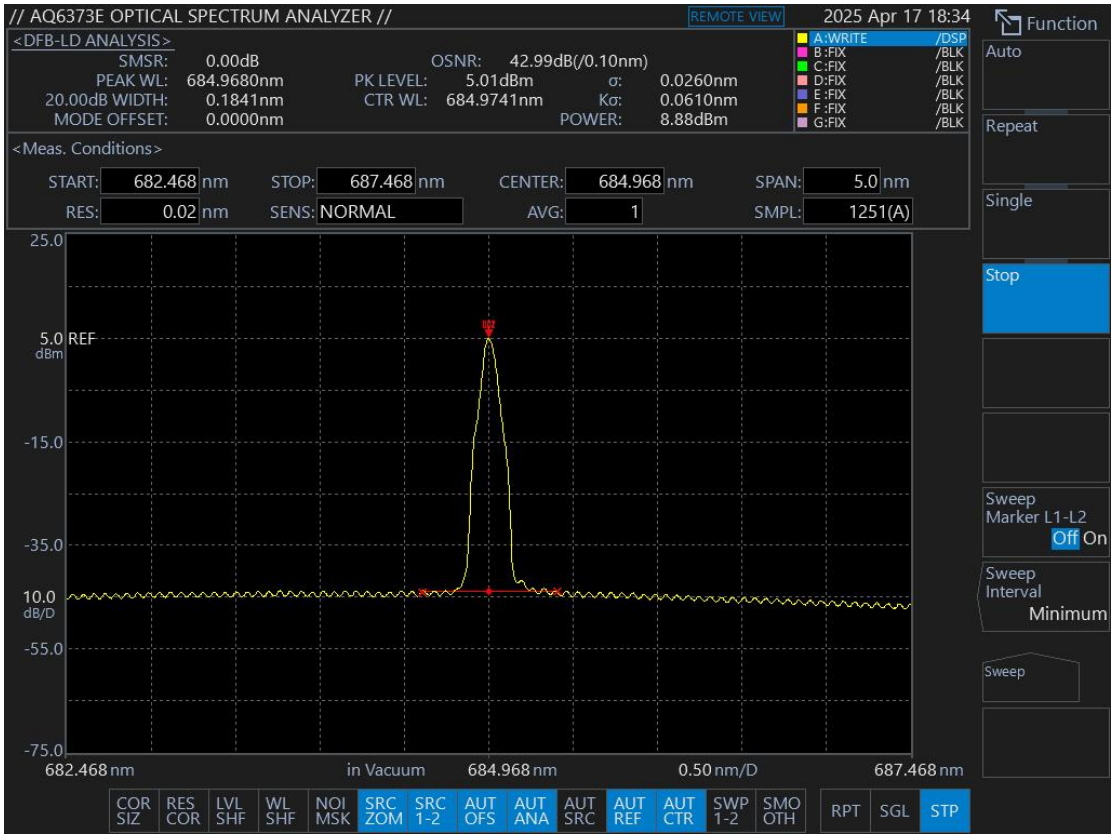
Pin definition



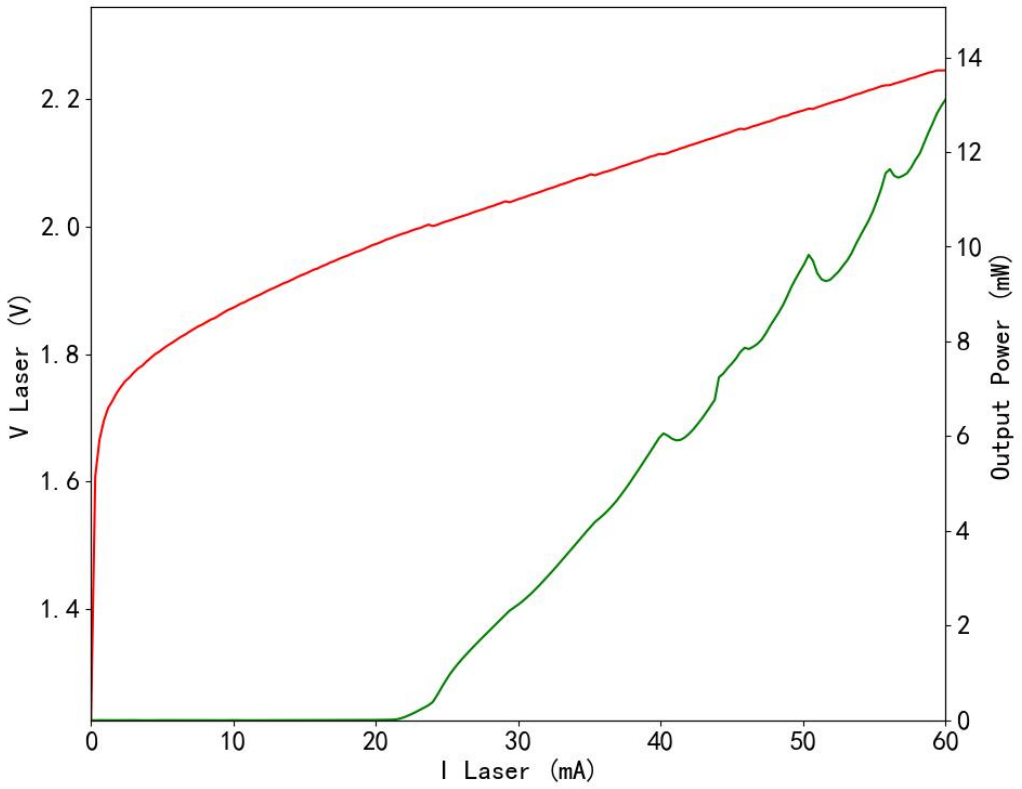
None PZT Bulit inside			
NO	Parameter	NO	Parameter
1	Cooler anode+	8	NC
2	Thermistor	9	NC
3	PD anode-	10	LD anode+
4	PD cathode+	11	LD cathode-
5	Thermistor	12	NC
6	NC	13	Case
7	NC	14	Cooler cathode-


12.7
9
14.7
7
0.5
8
29.7
26
20.8
14
2.54
1
2.5
10
3.1
10.15
6.5
1.5
20.8

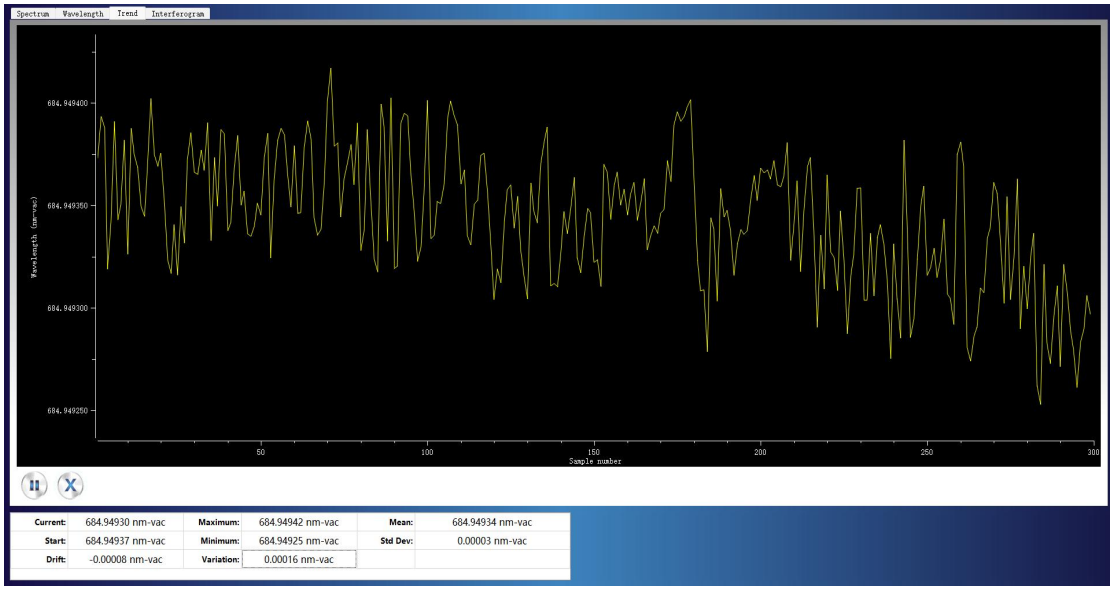
Spectrum


// AQ6373E OPTICAL SPECTRUM ANALYZER //
REMOTE VIEW
2025 Apr 17 18:34
<DFB-LD ANALYSIS>
SMSR: 0.00dB
OSNR: 42.99dB(/0.10nm)
PEAK WL: 684.9680nm
PK LEVEL: 5.01dBm
σ: 0.0260nm
20.00dB WIDTH: 0.1841nm
CTR WL: 684.9741nm
Kσ: 0.0610nm
MODE OFFSET: 0.0000nm
POWER: 8.88dBm
A:WRITE /DSP
B :FIX /BLK
C :FIX /BLK
D :FIX /BLK
E :FIX /BLK
F :FIX /BLK
G:FIX /BLK
<Meas. Conditions>
START: 682.468 nm
STOP: 687.468 nm
CENTER: 684.968 nm
SPAN: 5.0 nm
RES: 0.02 nm
SENS: NORMAL
AVG: 1
SMPL: 1251(A)
25.0
5.0 REF
dBm
-15.0
-35.0
10.0
dB/D
-55.0
-75.0
682.468 nm
in Vacuum
684.968 nm
0.50 nm/D
687.468 nm
Function
Auto
Repeat
Single
Stop
Sweep
Marker L1-L2
Off On
Sweep
Interval
Minimum
Sweep
COR SIZ
RES COR
LVL SHF
WL SHF
NOI MSK
SRC ZOM
SRC 1-2
AUT OFS
AUT ANA
AUT SRC
AUT REF
AUT CTR
SWP 1-2
SMO OTH
RPT
SGL
STP

L-I-V Curve

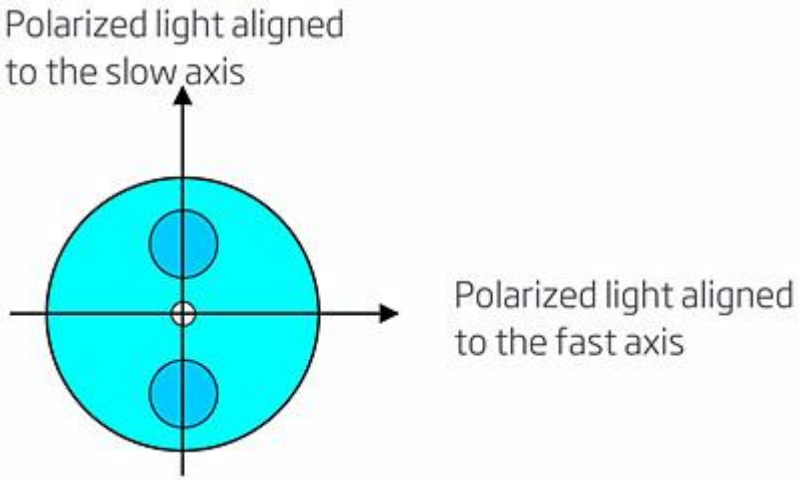


Wavelength Stability



Fiber Pigtail Specifications

Parameters	Description
Fiber Type	SM fiber
Jacket Type	900μm loose tube
Pigtail Length	1.0±0.1m
Connector Type	FC/APC
PM fiber Connector Orientation	Please see the right figure



Note: The PM fiber and the connector key are aligned to the slow axis,fast axis is blocked