



Laser Diode Discrete Mode EP1654-DM-B Series



The EP1654-DM-B laser diode module is a cost effective, highly coherent laser source. The patented discrete mode (DFB-like) ridge waveguide technology and epistructure design is used to deliver an InP-based strained quantum-well laser diode source emitting at a wavelength of 1.654µm with high SMSR. The Discrete Mode laser diode chip is packaged in an industry standard, hermetically sealed 14 pin butterfly package with integrated optical isolator, thermo-electric cooler (TEC), monitor photodiode and thermistor.

Key Features

- Excellent reliability
- Mode-Hop free tuning >2nm
- Integrated optical isolator
- Narrow linewidth <2MHz

Applications

- High performance gas sensing
- Methane (CH₄) Detection**

Optical and electrical characteristics: (T = 25°C)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
LASER DIODE					
Output Power in Fibre	P_f	5	8	10	mW
Centre Wavelength	λ_{cen}	1640	1653.7	1670	nm
Threshold Current	I_{th}	-	20	25	mA
Operating Current	I_{op}	-	80	120	mA
Forward Voltage	V_f	-	1.3	1.6	V
Side Mode Suppression Ratio	SMSR	30	40	-	dB
Temperature Tuning Coefficient		0.07	0.1	0.14	nm/K
Current Tuning Coefficient		0.008	0.01	0.03	nm/mA
Quantum Efficiency	η	0.08	0.12	0.15	mW/mA
MONITOR DIODE					
Monitor Photo Current	I_m	0.2	0.4	0.8	mA
Monitor Operating Voltage	V_m	-	-	5.5	V
Monitor Dark Current (at 5V V_{DR})	I_{md}	-	-	< 0.2	µA

THERMISTOR					
Thermistor Resistance	R_T	9.5	10	10.5	kW
Thermistor Temp. Coefficient		-	-4.4	-	%/°C
Thermoelectric Cooler					
TEC Forward Current	I_C	-	-	1.2	A
TEC Forward Voltage	V_C	-	-	2.5	V
FIBER					
Type	-	single mode / polarisation mainaining			
Core/Cladding Diamter	D_c/D_{cl}	-	9/125	-	μm
Length	L	0.5	-	-	m
Optical Connector	-	FC/APC, FC/PC others available on request			

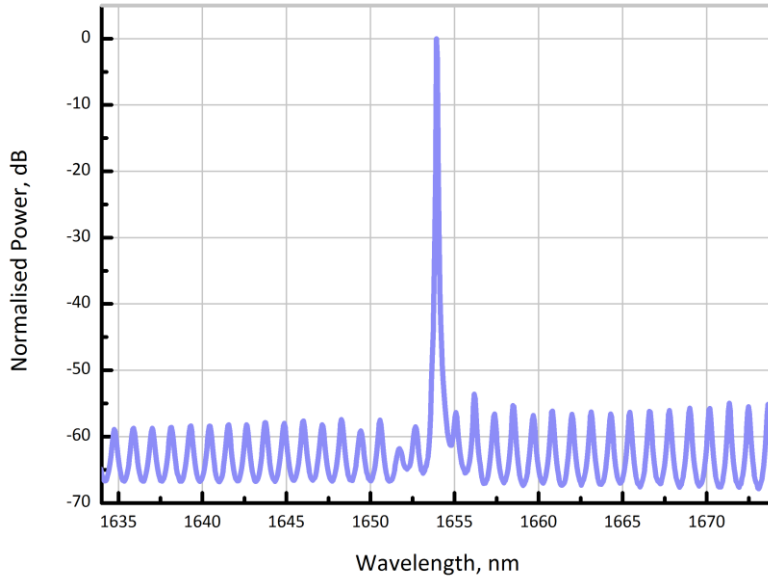
Absolute Maximum Ratings ($T_{\text{sub}}= 25^\circ\text{C}$)

Parameter	Symbol	Ratings	Units
Laser diode reverse voltage	V_R	2	V
Laser diode forward current	I_F	120	mA
Photodiode reverse voltage	V_{DR}	20	V
Peltier current	I_P	1.2	A
Operating case temperature	T_{case}	-20 to 65	°C
Storage temperature	T_{stg}	-40 to 85	°C

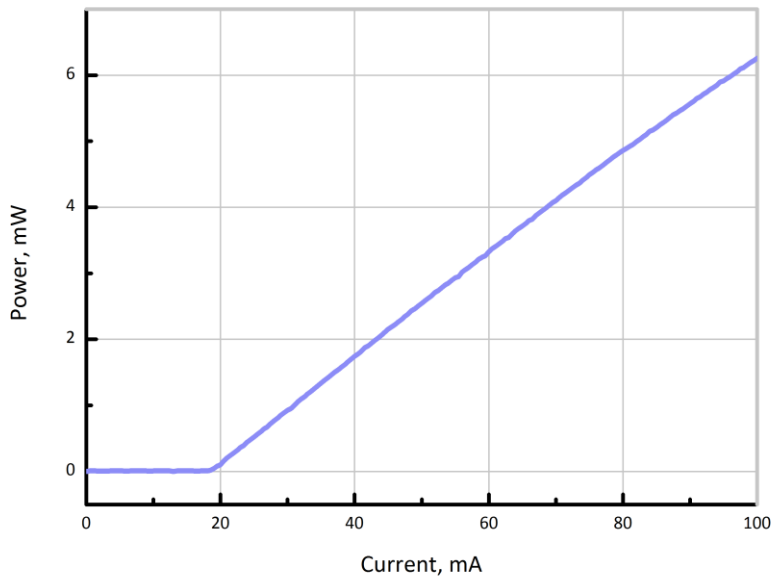


TYPICAL PERFORMANCE

Typical CW Spectrum

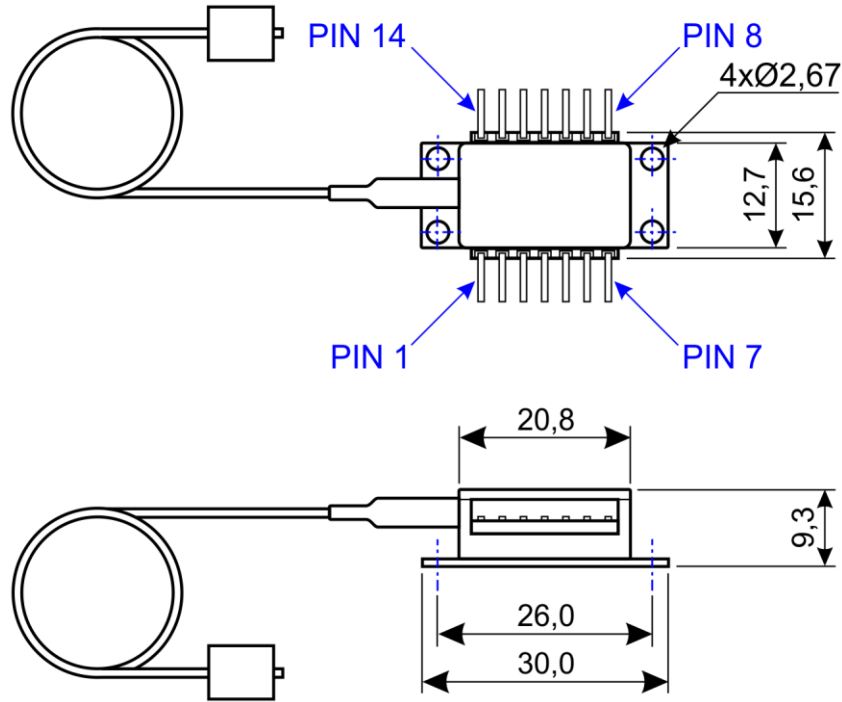


Power vs. Operating Current



Package Specification

Housing drawing



Pin No.	Pin Information
1	Thermistor
2	Thermistor
3	Laser cathode
4	Photodiode Anode
5	Photodiode Cathode
6	Thermoelectric cooler +
7	Thermoelectric cooler -
8	Case ground
9	Case ground
10	NC
11	Laser anode
12	Laser cathode
13	Laser anode
14	NC