



## Laser Diode Discrete Mode EP1580-DM-B Series



The EP1580-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 1.58 $\mu$ m 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
- H<sub>2</sub>S, CO and CO<sub>2</sub> detection**

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
<b>LASER DIODE</b>					
Output Power in Fibre	P <sub>f</sub>	4	6	-	mW
Centre Wavelength	$\lambda_{cen}$	1560	1580	1595	nm
Threshold Current	I <sub>th</sub>	-	15	20	mA
Operating Current	I <sub>op</sub>	-	80	120	mA
Forward Voltage	V <sub>f</sub>	-	1.5	2.0	V
Side Mode Suppression Ratio	SMSR	30	40	-	dB
Temperature Tuning Coefficient		-	0.1	-	nm/K
Current Tuning Coefficient		-	0.01	-	nm/mA
Quantum Efficiency	$\eta$	0.06	0.09	-	mW/mA
Optical Isolation	ISO	30	35	-	dB
<b>MONITOR DIODE</b>					
Monitor Photo Current	I <sub>m</sub>	0.2	0.4	0.8	mA
Monitor Operating Voltage	V <sub>m</sub>	-	-	5.5	V
Monitor Dark Current (at 5 V <sub>DR</sub> )	I <sub>md</sub>	-	-	< 0.2	$\mu$ A

<b>THERMISTOR</b>					
Thermistor Resistance	$R_T$	9.5	10	10.5	kW
Thermistor Temp. Coefficient		-	-4.4	-	%/°C
<b>Thermoelectric Cooler</b>					
TEC Forward Current	$I_C$	-	-	1.2	A
TEC Forward Voltage	$V_C$	-	-	2.5	V
<b>FIBER</b>					
Type	-	single mode / polarisation maintaining			
Core/Cladding Diamter	$D_c/D_{cl}$	-	6/125	-	$\mu\text{m}$
Length	L	0.5	-	-	m
Optical Connector	-	FC/APC, FC/PC others available on request			

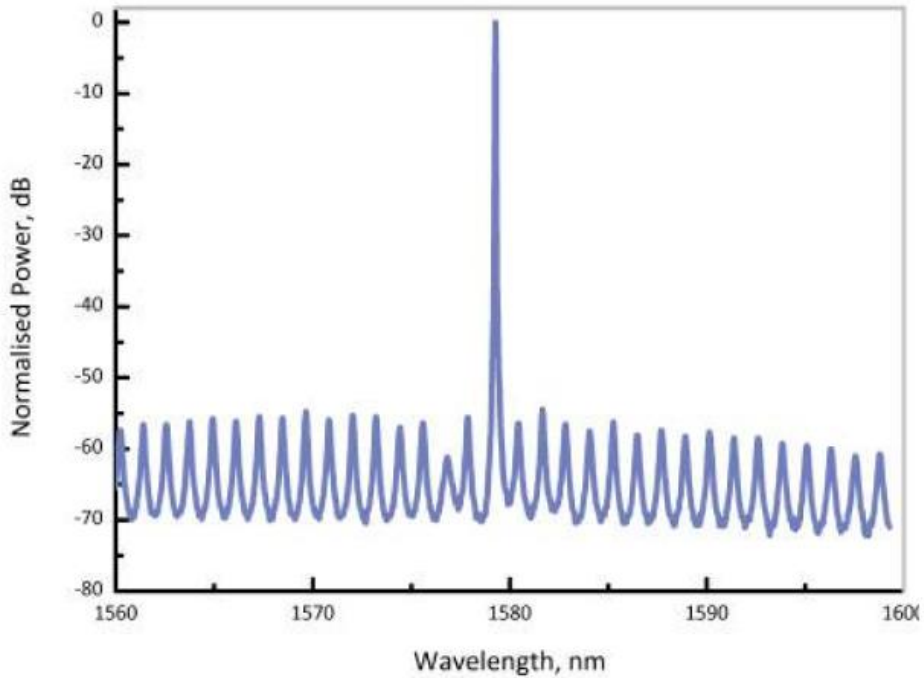
### Absolute Maximum Ratings ( $T_{\text{sub}} = 25^\circ\text{C}$ )

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	$T_{\text{case}}$	-20 to 65	°C
Chip submount temperature	$T_{\text{sub}}$	0 to 50	°C
Storage temperature	$T_{\text{stg}}$	-40 to 85	°C

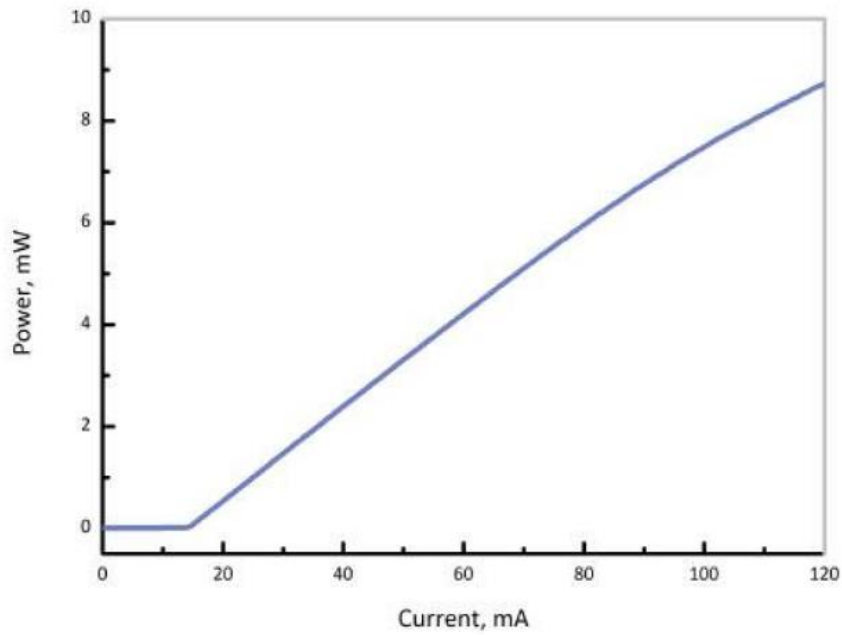


## TYPICAL PERFORMANCE

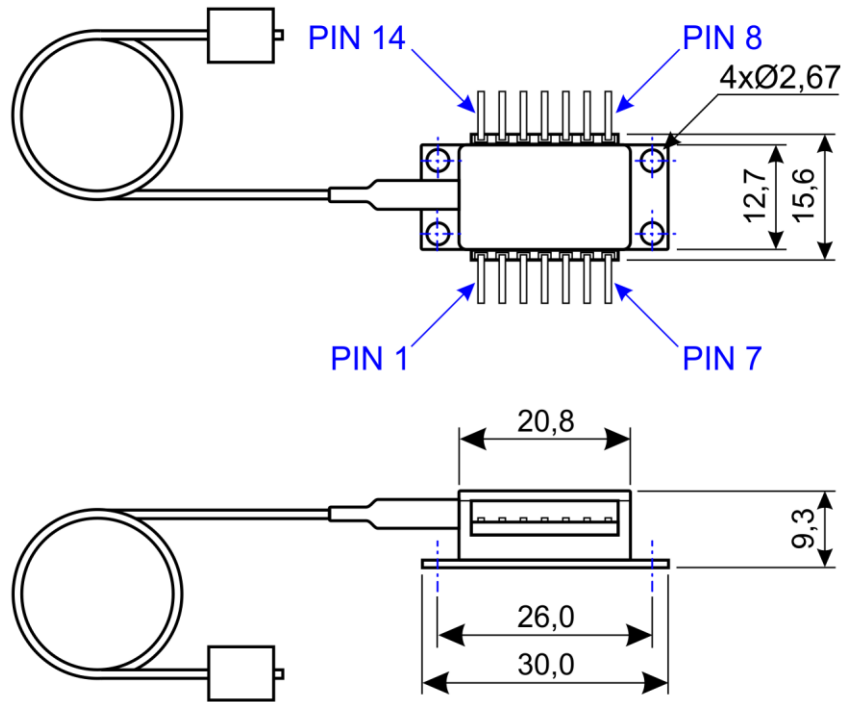
Typical CW Spectrum



Power vs. Operating Current



**Package Specification**



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