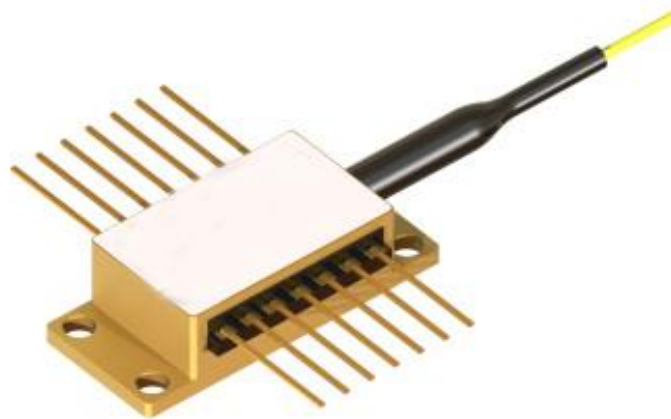


1280nm 50mW SM DFB Laser Diode



● Product Description

Distributed feedback (DFB) and distributed Bragg reflector (DBR) laser diodes are light sources emitting an extremely narrow spectral line with a bandwidth below 5 MHz and typical side mode suppression ratio (SMSR) > 40 dB. GaAs-based DFB and DBR lasers utilize InGaAs quantum well (QW) or InAs/GaAs quantum dot (QD) active regions and proprietary chip designs, covering the spectral range from 970 nm to 1330 nm. To date, DFB and DBR lasers are common laser variants, especially for use in scientific research and operations. Both laser types operate in a single longitudinal mode and are highly reliable in terms of efficiency, spectral purity, and long-term performance across various applications.

● Product features

High stable output; single longitudinal mode narrow linewidth; wavelength stability; low noise performance; compact modular design

● Part Number

MP-DFB-1280-50-A81-14BF-SA

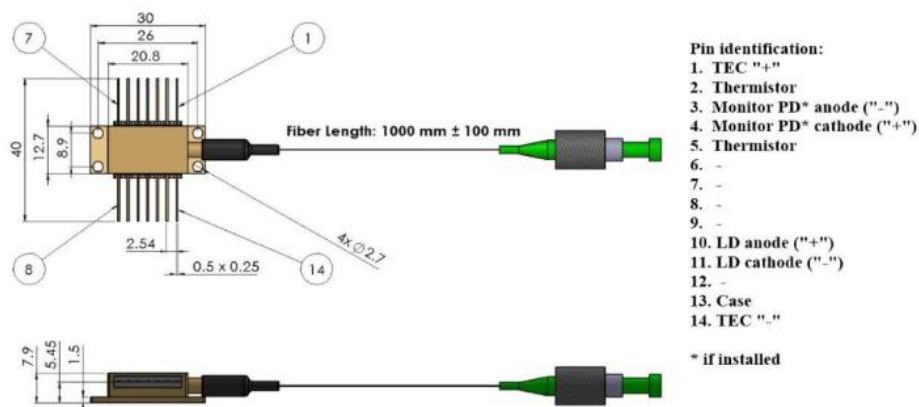
● Application area

Coherent Optical Communication | Fiber Optic Sensing | Precision Measurement | Quantum Optics | Scientific Research Instruments

● Core parameters

Central Wavelength	Output Power
1280nm	50mW

● Dimension Drawing





● General Parameters

Specifications

Recommended Operating Conditions

@ CW, Module mounted on heat sink at room temperature

Parameter	Min.	Typ.	Max.	Unit
Chip Temperature	20	25*	40	°C
Forward Current	—	350	400	mA
Output Power**	10	—	50	mW

*May vary depending on selected wavelength in some cases

**No kinking over full operating range

Characteristics

@ CW, 25°C*, 350 mA

Parameter	Min.	Typ.	Max.	Unit
Output Power @ 1800 mA	50	—	—	mW
Forward Voltage	—	1.7	3.5	V
Threshold Current	—	50	90	mA
Peak Wavelength** (customer selectable)	1280	—	1330	nm
Peak Wavelength Tolerance	—	—	±1	nm
Wavelength Tuning vs. Temperature	—	120	—	pm/°C

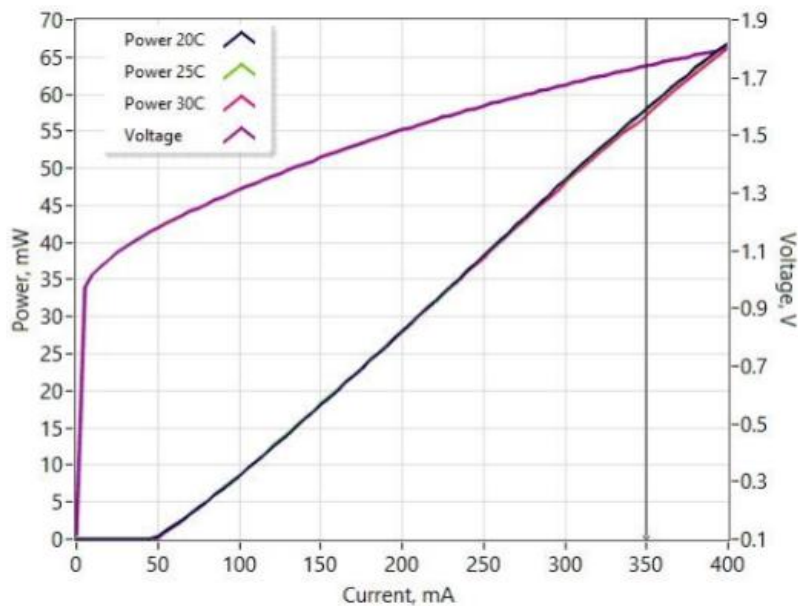


Parameter	Min.	Typ.	Max.	Unit
Wavelength Tuning vs. Current	—	2.5	—	pm/mA
Side Mode Suppression Ratio (SMSR)	40	50	—	dB
Linewidth(@80MHz)		1	5	MHz
PER	15	18		dB
Mode		TE		

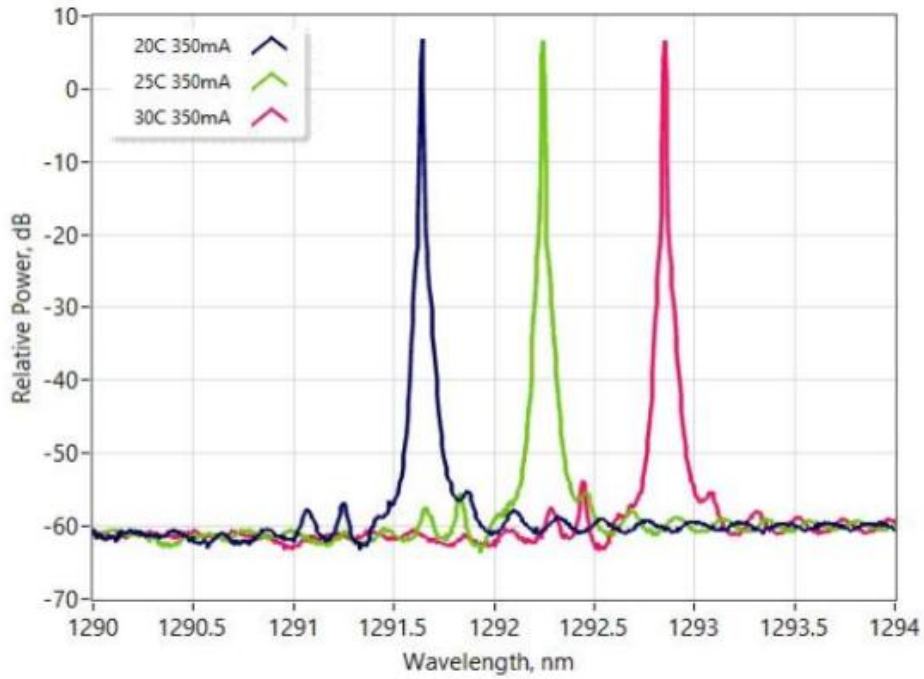
*Temperature may vary from 20 to 40°C depending on selected wavelength in some cases**Achievable within wavelength tolerance at power > 50 mW

Typical Performance (For Reference Only)

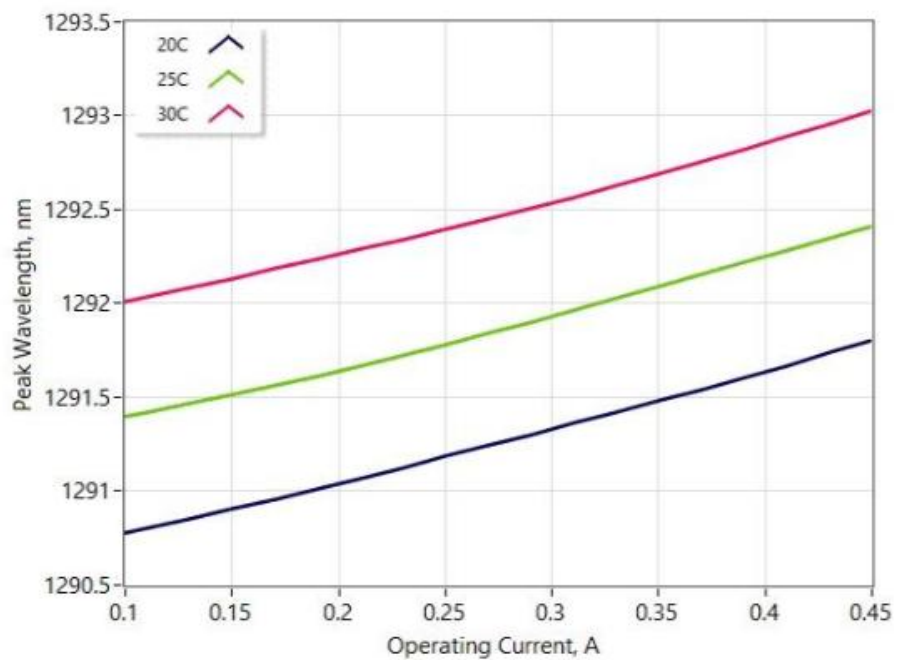
Light Current Voltage Characteristics



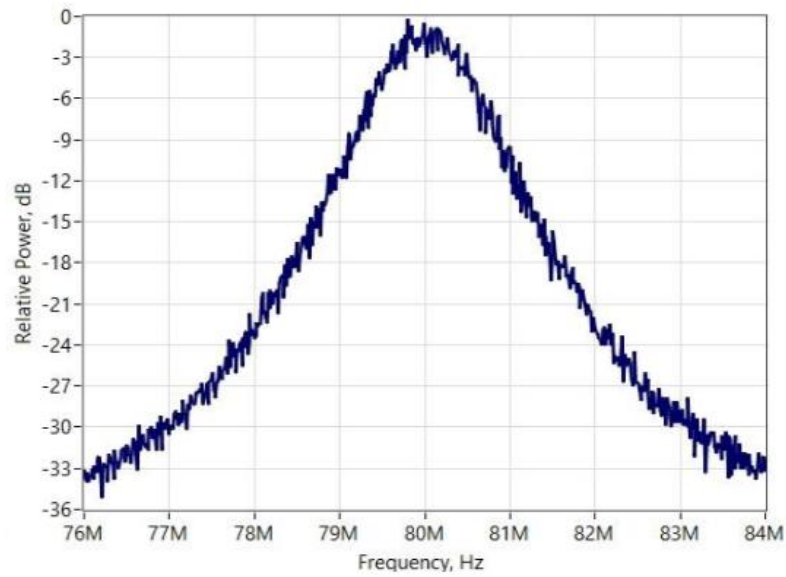
Optical Spectra vs Temperature (resolution: 10 pm)



Peak Wavelength Tuning by Current



RF line Spectrum

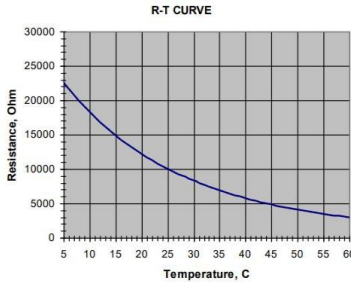


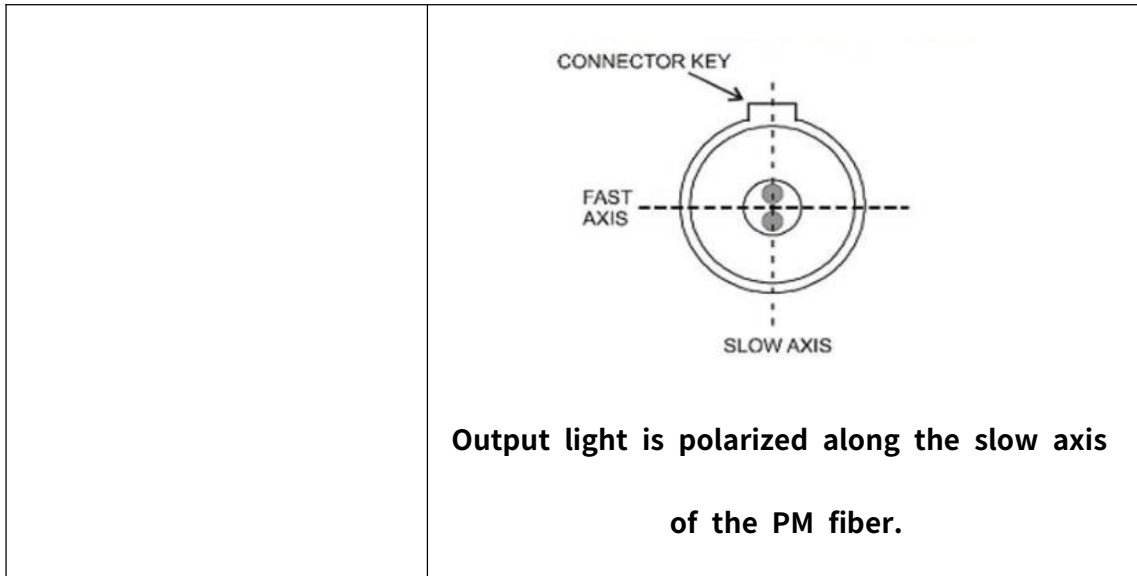
The above experimental data are tested and provided by the Advanced Optics Laboratory.

Parameter	Min	Max	Unit
Forward Current	—	450	mA
Reverse Voltage	—	2	V
TEC Current	—	3	A
TEC Voltage	—	4	V
Chip Operating Temperature	5	50	°C
Case Operating Temperature	0	70	°C
Storage Temperature	-40	85	°C
Fiber Bend Radius	3	—	cm



General Parameters

Thermistor Specifications			Fiber Specifications			
Parameter	Value	Unit	Parameter	PM1300	HI1060	Unit
Thermistor Type	NTC	—	Numerical Aperture, typical	0.12	0.14	—
Resistance @ 25 °C	10 ± 0.1	kΩ	Cutoff Wavelength	1200 ± 70	920 ± 50	Nm
Beta (25–85 °C)	3375 ± 1%	K	Mode Field Diameter	9.3 ± 0.5@1300nm	6.2 ± 0.3@1060nm	μm
			Cladding Diameter	125 ± 1	125 ± 1	μm
			Coating Diameter	245 ± 15	245 ± 15	μm
			Loose Tube Diameter (Optional)	900	900	μm
			Connector	FC/APC (narrow key)		
			Connector Alignment aligned with PANDA fiber			



Typical Parameters of Fiber-Coupled DFB Laser Modules

Part Number	Integrated Optical Isolator ¹	Peak Wavelength Range ²	Output Power	Operating Current	Threshold Current	SM SR	Wavelength Tuning vs. Temp	Wavelength Tuning vs. Current	Power Budget
		nm	mW	mA	mA	dB	pm/K	pm/mA	dB
MP-DFB-9XX-YY-30	No	968 – 986	30	100	20	55	90	1.5	18



MP-DFB-10X X-YY-50	No	1020 - 1120	50	200	30	55	100	2	1 8
MP-DFB-10X X-YY-30-VO (New)	Yes	1020 - 1120	30	200	30	55	100	2	1 8
MP-DFB-11X X-YY-50	No	1120 - 1200	50	300	30	50	110	2	1 8
MP-DFB-11X X-YY-30-VO (New)	Yes	1120 - 1200	30	300	30	50	110	2	1 8
MP-DFB-12X X-YY-50	No	1200 - 1280	50	350	50	50	120	2	1 8
MP-DFB-12X X-YY-60-VO (New)	Yes	1200 - 1280	60	350	50	50	120	2	1 8
MP-DFB-13X	No	1280	50	350	50	50	120	2.5	1



X-YY-50		-							8
		1330							
MP-DFB-13X		1280							1
X-YY-60-VO	Yes	-	60	350	50	50	120	2.5	8
(New)		1330							
MP-DFB-13X		1280							1
X-YY-100-VO	Yes	-	100	800	60	50	120	4	8
(New)		1330							

Notes

1 Free-space optical design

2 Any wavelength within this range is available with ± 1 nm tolerance

Safety and Operating Instructions

The device emits invisible light that may be harmful to human eyes. Avoid direct eye exposure to the fiber connector during operation. When operating with the connector open, appropriate laser safety goggles must be worn.

Absolute maximum ratings shall be applied to the device only for short periods.

Prolonged exposure to maximum ratings or exposure to more than one maximum rating may damage the device or degrade its reliability. Operation



beyond the absolute maximum ratings may result in device failure or safety hazards.

A suitable power supply must be used to ensure the maximum forward current is not exceeded.

The device requires a proper heat sink. It must be mounted using 4 screws (cross-tightened with an initial torque of 0.075 Nm and final torque of 0.15 Nm) or a clamp. Flatness deviation of the heat sink surface must be less than 0.05 mm. Indium foil or soft thermally conductive material is recommended as the thermal interface between the package base and heat sink. Thermal grease is not recommended.