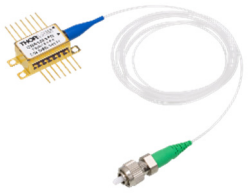
1083 nm, 100 mW DBR Butterfly Laser with Isolator, PM Fiber

DBR1083PN



Description

Thorlabs' DBR1083PN Distributed Bragg Reflector (DBR) laser is a single-frequency laser diode that is well-suited for low-noise pump applications, second harmonic generation, time-resolved fluorescence spectroscopy, metastable helium absorption spectroscopy, and medical imaging. The DBR1083PN includes an integrated optical isolator, thermoelectric cooler (TEC), thermistor, and monitor photodiode. It is packaged in a 14-pin butterfly package with PM980-XP single mode optical fiber and an FC/APC connector aligned to the slow axis of the fiber.

Specifications

DBR1083PN[a]				
	Symbol	**Min**	**Typical**	**Max**
Center Wavelength	λ_C	1081 nm	1083 nm	1085 nm
Laser Linewidth	$\Delta\nu$	-	8 MHz	-
Output Power CW @ I_{OP}	P_{OP}	80 mW	100 mW	-
Operating Current	I_{OP}	-	500 mA	-
Mode-Hop-Free Range[b]	$\Delta I_{Mode\text{-}Hop\text{-}Free}$	20 mA	-	-
Side Mode Suppression Ratio in Mode-Hop-Free Range[c]	SMSR	30 dB	50 dB	-
30 dB BW in Mode-Hop-Free Range[c]	30 dB BW	-	-	0.3 nm
Threshold Current	I_{TH}	-	62 mA	-
Forward Voltage	V_F	-	1.75 V	2.5 V
Slope Efficiency	$\Delta P/\Delta I$	-	0.25 W/A	-
Current Tuning @ I_{OP}	$\Delta\lambda/\Delta I$	-	0.002 nm/mA	-
Temperature Tuning @ I_{OP}	$\Delta\lambda/\Delta T$	-	0.08 nm/°C	-
Monitor Diode Responsivity @ I_{OP}	I_{MON}/P	-	34 µA/mW	-
Polarization Extinction Ratio[d]	r_{ex}	-	16 dB	-
Internal Isolation	ISO	-	30 dB	-
TEC Current	I_{TEC}	-	0.2 A	-
TEC Voltage	V_{TEC}	-	0.27 V	-
Thermistor Resistance @ 25 °C	R_{TH}	-	10 kΩ	-

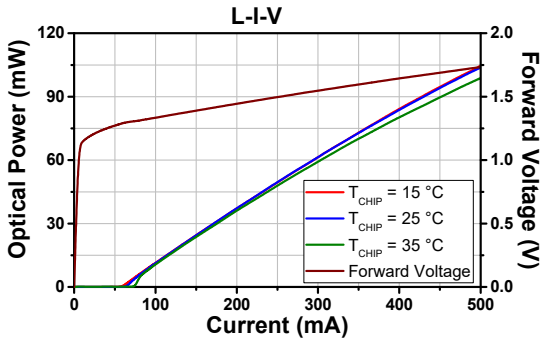
a. T_{CASE} = 25 °C; T_{CHIP} = 25 °C
b. Continuous Tuning Range Between Mode Hops
c. As measured with an Optical Spectrum Analyzer (OSA) to empirically determine single frequency range. Laser 30 dB bandwidth and SMSR are subject to monochromator settings and OSA internal algorithms, and will differ from instrument to instrument.
d. Ratio of transmitted light polarized along the fiber's slow axis to transmitted light polarized along the fast axis.

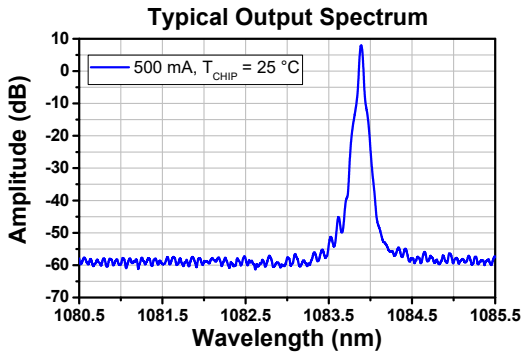
Absolute Max Ratings	
LD Reverse Voltage (Max)	2 V
Laser Current (Max)[a]	See Serialized Datasheet
Laser Power (Max)[a]	See Serialized Datasheet
TEC Current (Max)	3.0 A (T_{CASE} = 20 °C); 2.9 A (T_{CASE} = 70 °C)[b]
TEC Voltage (Max)	3.6 V (T_{CASE} = 20 °C); 4.4 V (T_{CASE} = 70 °C)[b]
PD Reverse Voltage (Max)	15 V
Operating Case Temperature	0 to 50 °C
Operating Chip Temperature	10 to 40 °C
Storage Temperature	-10 to 65 °C

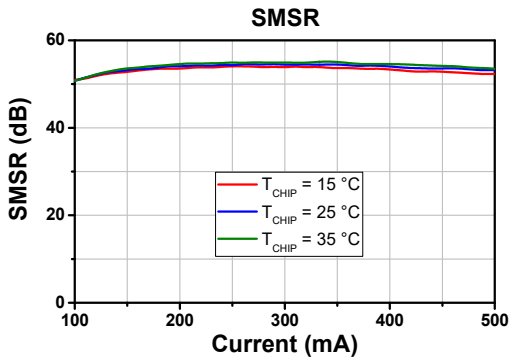
a. Some devices will produce the max laser power before exceeding the typical operating current. Do not drive the laser diode beyond the absolute max laser current or power. Operating in this regime can cause damage to the device.

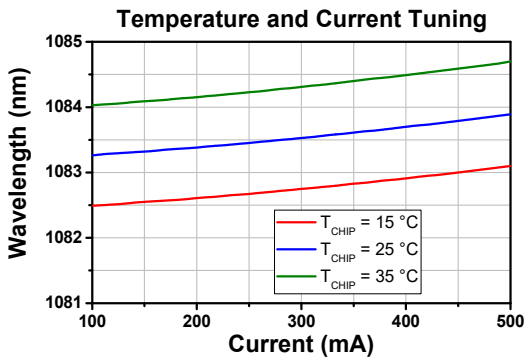
b. Do not operate above maximum operating temperature. Given for references purposes only.

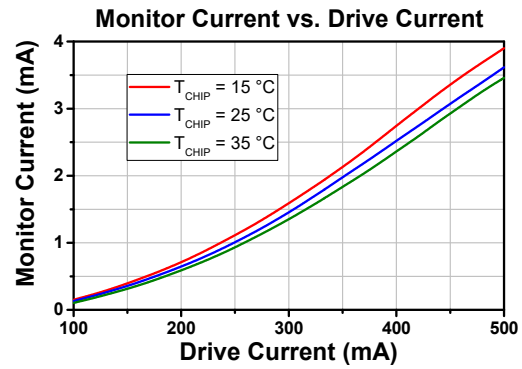
Typical Performance Plots

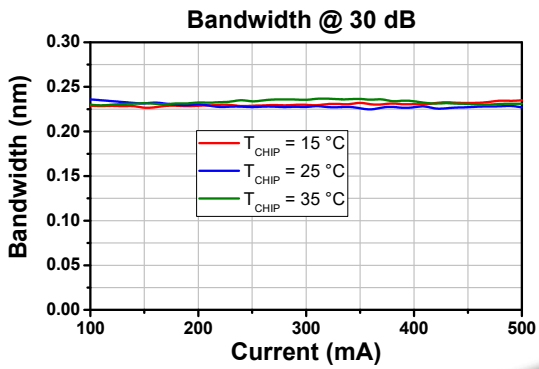




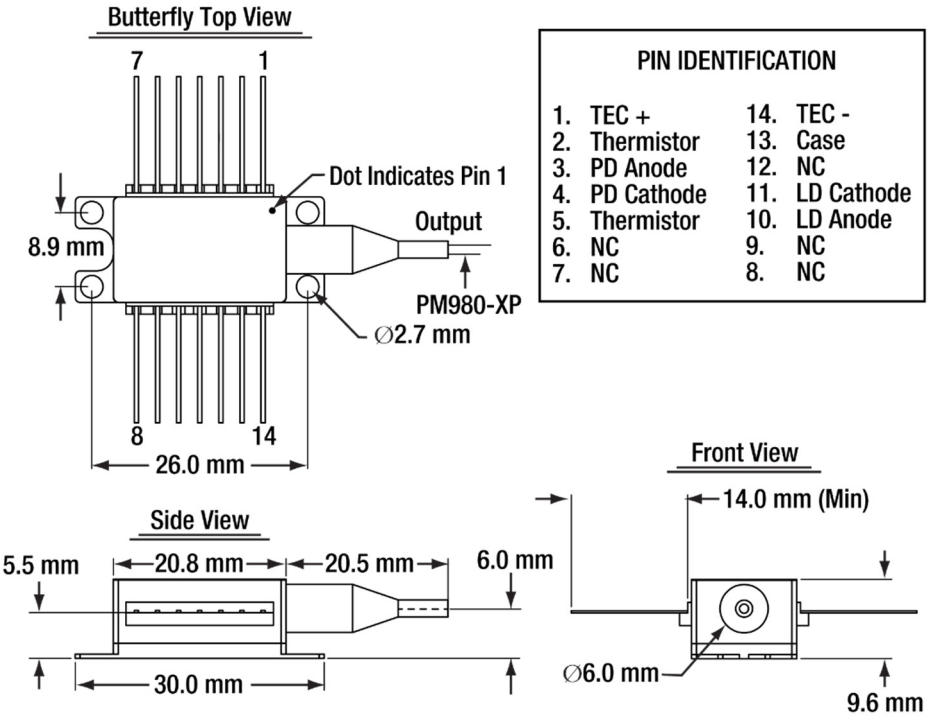








Drawing



PIN IDENTIFICATION

1.	TEC +	14.	TEC -
2.	Thermistor	13.	Case
3.	PD Anode	12.	NC
4.	PD Cathode	11.	LD Cathode
5.	Thermistor	10.	LD Anode
6.	NC	9.	NC
7.	NC	8.	NC