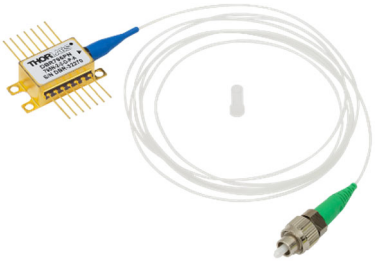
795 nm, 40 mW DBR Butterfly Laser with Isolator, PM Fiber

DBR795PN



Description

Thorlabs' DBR795PN Distributed Bragg Reflector (DBR) Laser is a single-frequency laser diode that is well-suited for low-noise pump applications, such as for the ^{87}Rb D_1 transition; second harmonic generation; and time-resolved fluorescence spectroscopy applications. The DBR795PN includes an integrated optical isolator, thermo-electric cooler (TEC), thermistor, and monitor photodiode. It is packaged in a 14-pin butterfly package with PM780-HP polarization-maintaining optical fiber and an FC/APC connector with the connector key aligned to the slow axis of the fiber.

Specifications

DBR795PN[a]				
	Symbol	**Min**	**Typical**	**Max**
Center Wavelength	λ_C	793 nm	795 nm	797 nm
Laser Linewidth	$\Delta\nu$	-	1 MHz	-
Output Power CW @ I_{OP}	P_{OP}	30 mW	40 mW	-
Operating Current	I_{OP}	-	230 mA	-
Mode-Hop-Free Range[b]	$\Delta I_{Mode\text{-}Hop\text{-}Free}$	20 mA	-	-
SMSR 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}	-	55 mA	-
Forward Voltage	V_F	-	2.0 V	2.5 V
Slope Efficiency	$\Delta P/\Delta I$	-	0.24 W/A	-
Current Tuning @ I_{OP}	$\Delta\lambda/\Delta I$	-	0.0014 nm/mA	-
Temperature Tuning @ I_{OP}	$\Delta\lambda/\Delta T$	-	0.06 nm/°C	-
Monitor Diode Responsivity @ I_{OP}	I_{MON}/P	-	20 µA/mW	-
Polarization Extinction Ratio[d]	r_{ex}	-	16 dB	-
Internal Isolation	ISO	-	28 dB	-
TEC Current	I_{TEC}	-	0.11 A	-
TEC Voltage	V_{TEC}	-	0.16 V	-
Thermistor Resistance @ 25 °C	R_{TH}	-	10 kΩ	-

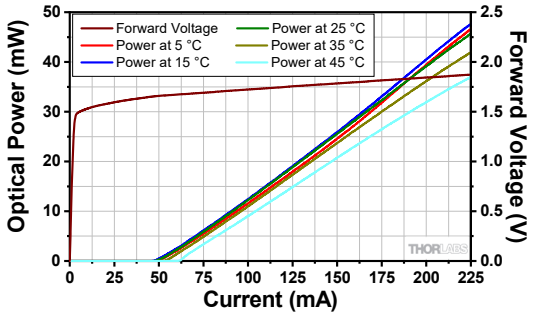
a. T_{CASE} = 25 °C; T_{CHIP} = 25 °C
b. Continuous Tuning Range between Mode Hops
c. Measured with an optical spectrum analyzer (OSA) with spectral resolution of 0.02 nm to empirically determine single frequency range. The laser's 30 dB bandwidth and SMSR are subject to monochromator settings and the OSA's internal algorithms, which 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)
TEC Voltage (Max)	3.6 V (T_{CASE} = 20 °C); 4.4 V (T_{CASE} = 70 °C)
PD Reverse Voltage (Max)	15 V
Operating Case Temperature	0 to 50 °C
Operating Chip Temperature	5 to 45 °C
Storage Temperature	-10 to 65 °C

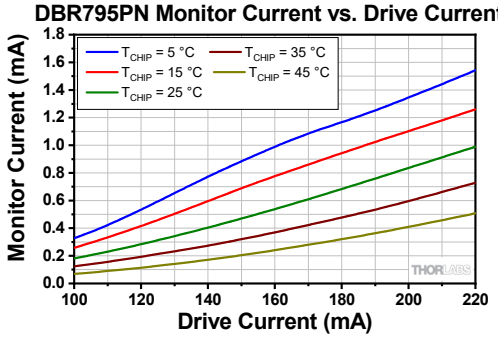
a. Some devices will produce the max laser power before exceeding the typical operating current. Do not drive the laser diode beyond the absolute max laser current or power. Operating in this regime can cause damage to the device.

Typical Performance Plots

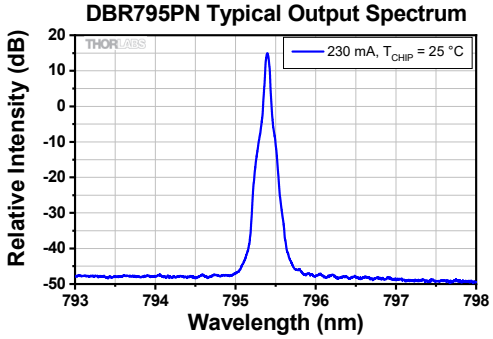
DBR795PN L-I-V



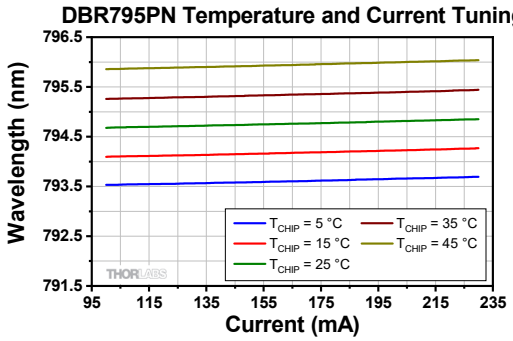
DBR795PN Monitor Current vs. Drive Current



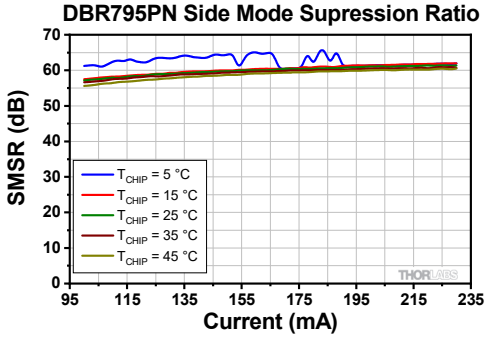
DBR795PN Typical Output Spectrum



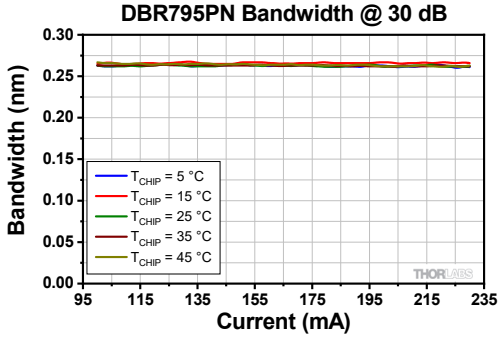
DBR795PN Temperature and Current Tuning



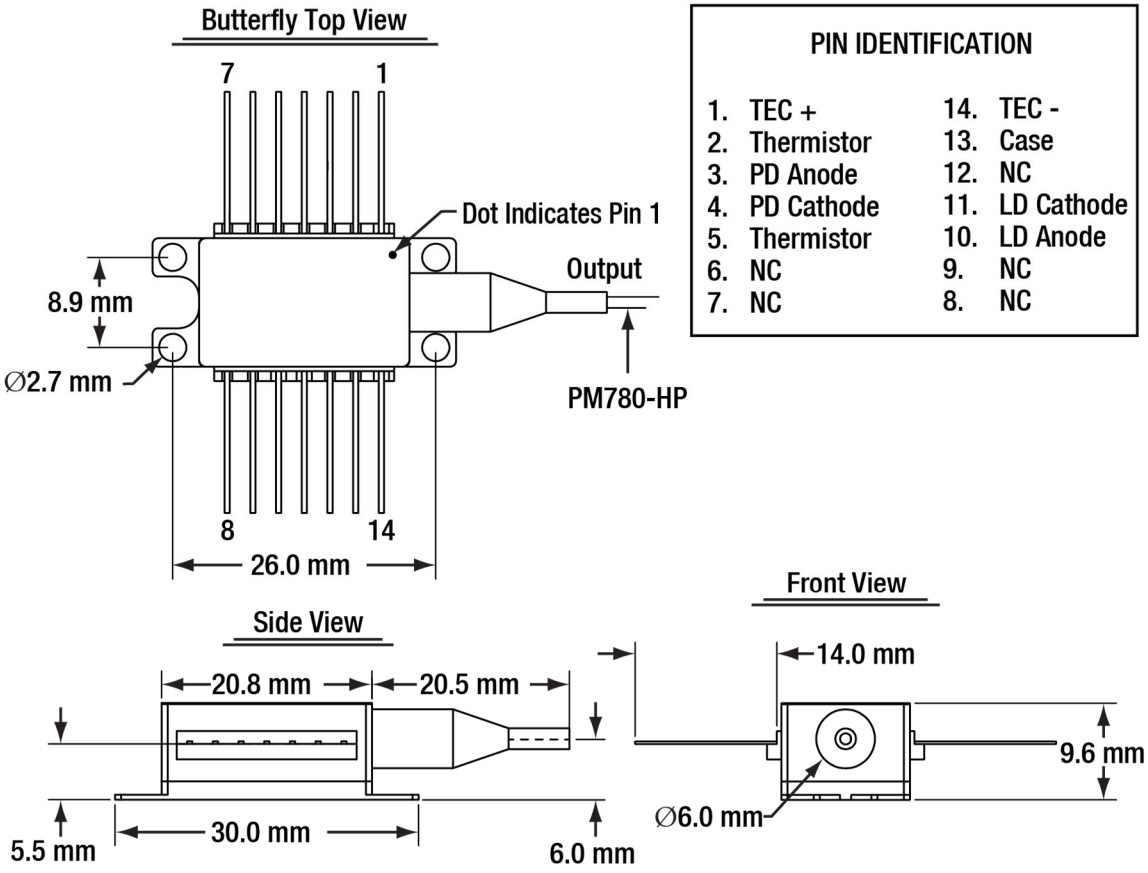
DBR795PN Side Mode Supression Ratio



DBR795PN Bandwidth @ 30 dB



Drawings



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