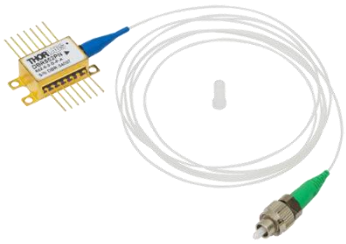
852 nm, 24 mW DBR Butterfly Laser with Isolator, PM Fiber

DBR852PN



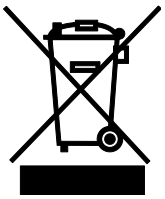
Description

Thorlabs' DBR852PN Distributed Bragg Reflector (DBR) Laser is a single-frequency laser diode that is well-suited for applications requiring a low-noise pump, such as optical inertial guidance systems utilizing the cesium transition at 852 nm; second harmonic generation; and time-resolved fluorescence spectroscopy. The DBR852PN 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

DBR852PN[a]				
	Symbol	**Min**	**Typical**	**Max**
Center Wavelength	λ_C	850 nm	852 nm	854 nm
Laser Linewidth	$\Delta\nu$	-	1 MHz	-
Output Power CW @ I_{OP}	P_{OP}	20 mW	24 mW	-
Operating Current	I_{OP}	-	300 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}	-	50 mA	-
Forward Voltage	V_F	-	2.0 V	2.5 V
Slope Efficiency	$\Delta P/\Delta I$	0.07 W/A	0.09 W/A	-
Current Tuning @ I_{OP}	$\Delta\lambda/\Delta I$	-	0.002 nm/mA	-
Temperature Tuning @ I_{OP}	$\Delta\lambda/\Delta T$	-	0.06 nm/°C	-
Monitor Diode Responsivity @ I_{OP}	I_{MON}/P	-	50 µA/mW	-
Polarization Extinction Ratio[d]	r_{ex}	-	16 dB	-
Internal Isolation	ISO	-	30 dB	-
TEC Current	I_{TEC}	-	0.23 A	-
TEC Voltage	V_{TEC}	-	0.30 V	-
Thermistor Resistance @ 25 °C	R_{TH}	-	10 kΩ	-

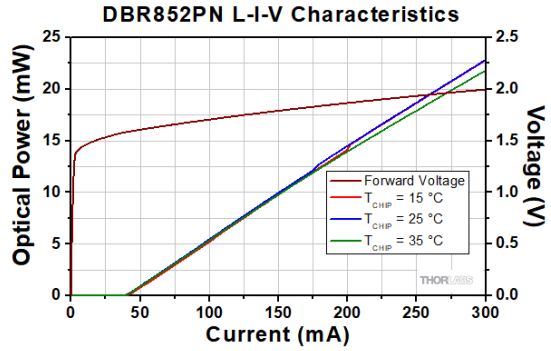
a. T_{CASE} = 25 °C; T_{CHIP} = 25 °C.
b. Continuous tuning range between mode hops.
c. As measured with an Optical Spectrum Analyzer (OSA) to empirically determine single frequency range. Laser 30 dB bandwidth and SMSR are subject to monochromator settings and the OSA's internal algorithms, and will 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.

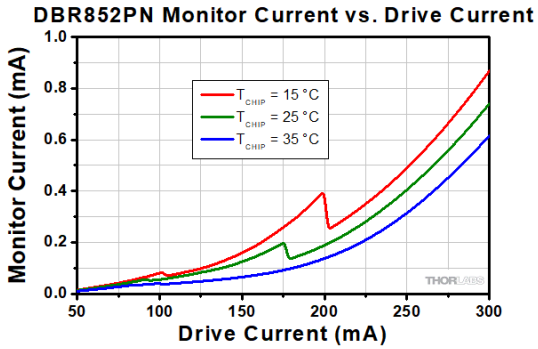


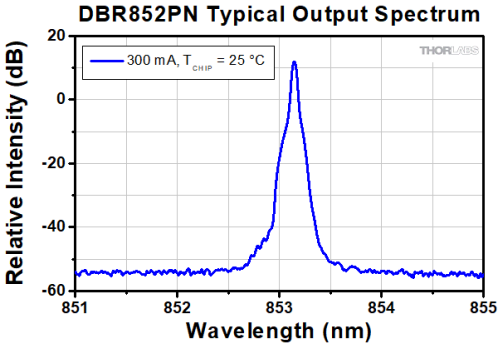
Absolute Max Ratings	
LD Reverse Voltage (Max)	2 V
Laser Current (Max)[a]	See Serialized Datasheet
Laser Power (Max)[a]	See Serialized Datasheet
TEC Current (Max)	3.0 A (T_{CASE} = 20 °C); 2.9 A (T_{CASE} = 70 °C)
TEC Voltage (Max)	3.6 V (T_{CASE} = 20 °C); 4.4 V (T_{CASE} = 70 °C)
PD Reverse Voltage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

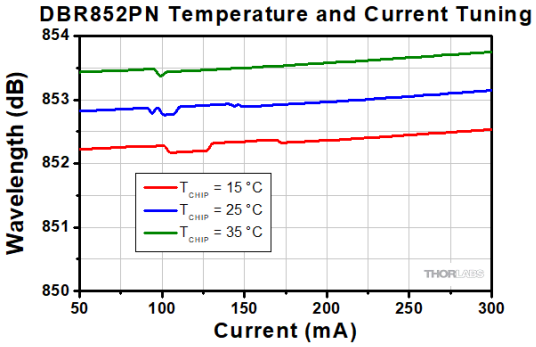
a. Some devices will produce the max laser power before exceeding the typical operating current. Do not drive the laser diode beyond the absolute max laser current or power. Operating in this regime can cause damage to the device.

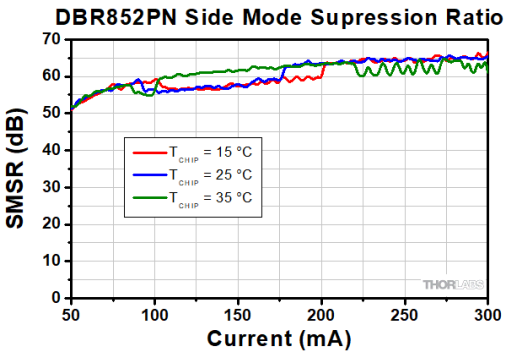
Typical Performance Plots

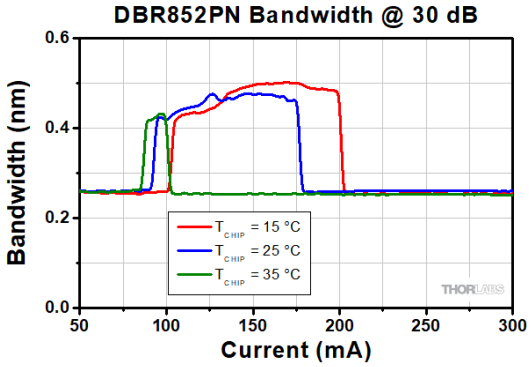




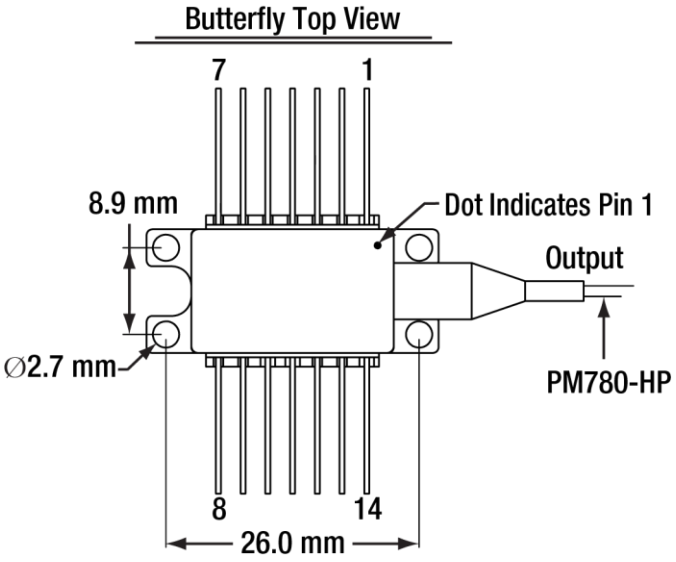








Drawings



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