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# 1083 nm Laser Diode | PH1083DBR Series

## Technology

- DBR Single-Frequency Laser Chip
- AlGaAs QW Active Layer
- Epi designed for high reliability

## Features

- Available in several package styles
- Pulsed operation for spectral stability at short pulse lengths
- High power for CW applications
- High Slope Efficiency

## Description

The PH1083DBR Series of high-power edge-emitting lasers are based on Photodigm's advanced single-frequency laser technology. It provides a diffraction limited, single lateral and longitudinal mode beam. Facets are passivated for high-power

reliability. Applications for the **1083 nm laser diode** include fiber amplifier seeding, spectroscopy, difference frequency generation, and low power DPSS replacement. The Spectroscopy Series 1083 nm laser diode is certified to be resonant with the **metastable helium** line.

### Absolute Maximum Rating

Parameter	Symbol	Unit	Min	Max
Storage Temperature	$T_{STG}$	°C	0	80
Operating Temperature	$T_{OP}$	°C	5.0	70
CW Laser Forward Current, $T=T_{op}$	$I_F$	mA	-	300**
Pulsed Laser Forward Current, $T=25^{\circ}\text{C}$ ,	$I_F$	A	-	1.0
PW=300 ns, DC=10%				
Laser Reverse Voltage	$V_R$	V	-	2.0
Photodiode Forward Current <u>1/</u> <u>2/</u>	$I_P$	mA	-	5.0
		V	-	20.0

Photodiode Reverse Voltage <u>1/</u> <u>2/</u>	$V_R$			
Photodiode Dark Current, $V_R=10V$ , LD $I_F=0$ , <u>1/</u> <u>2/</u>	$I_D$	nA	-	50
TEC Current <u>1/</u> <u>2/</u>	$I_{TEC}$	A	-2.5	2.5
TEC Voltage <u>1/</u> <u>2/</u>	$V_{TEC}$	V	-6.0	6.0
Thermistor Current <u>1/</u> <u>2/</u>	$I_{THRM}$	mA	-	1.0
Thermistor Voltage <u>1/</u> <u>2/</u>	$V_{THRM}$	V	-	10
ESD (HBM)	-	V	-	500
External Back Reflection	-	dB	-	-14
Lead Soldering Temperature, 10 sec. Max., <u>1/</u> <u>2/</u>	-	°C	-	260
Fiber Pull Force <u>1/</u>	-	N	-	5.0
Fiber Bend Radius <u>1/</u>	-	mm	-	35

\*\*Do not exceed drive current or operating power of supplied LIV

**CW Characteristics at  $T_C = 25^\circ\text{C}$  unless otherwise specified**

Parameter	Symbol	Unit	Min	Typ	Max
Center Wavelength	$\lambda_c$	nm	1081	1083	1085
Optical Output Power @ LIV current	$P_o$	mW	See Power Options Call-out		
Slope Efficiency, <u>1</u> /	$\eta_d$	W/A	0.3	0.36	
Slope Efficiency	$\eta_d$	W/A	0.6	0.72	-
Threshold Current	$I_{th}$	mA	-	30	40
Laser Series Resistance	$R_S$	$\Omega$	-	2.0	2.5
Laser Forward Voltage	$V_F$	V	-	2.0	2.5
Thermistor Resistance @25°C, <u>2</u> /	$R_T$	K $\Omega$	-	10	-
Photodiode Dark Current, $V_R=10\text{V}$ , LD $I_F=0$ , <u>2</u> /	$I_D$	nA	-	-	50

Beam Divergence @ FWHM	$\theta_{\parallel} \times \theta_{\perp}$	°	-	6 X 32	8 X 34
Laser Line Width	$\Delta\nu$	MHz	-	8	10
Side Mode Suppression Ratio	SMSR	dB	-30	-	-
Polarization Extinction Ratio, $\frac{1}{\dots}$	PER	dB	-16	-19	-
Laser Polarization				TE	
Mode Structure			Fundamental Mode		

## Handling Precautions

These devices are sensitive to ESD. When handling the module, grounded work area and wrist strap must be used. Always store in an antistatic container with all leads shorted together.

## How To Order

Part number example: PH1083DBR040BF. Assign optical power from those shown below. Use a three-digit format for all power entries. Call factory for special frequency selection and certification to certain atomic absorption lines. Butterfly package offered at 50% of output powers shown, and is not recommended for spectroscopy

applications. See Photodigm's application note titled "Optical Feedback"

# Package Type

(CS) Chip on Submount

(CM) 'C' Mount

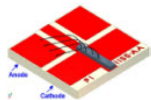
(T8) TO-8

(BF) Butterfly

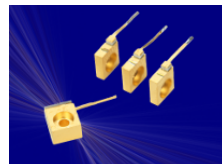
## Minimum Power (mW)

080

120



Chip on Submount (CS)



C-Mount



TO-8



BF



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