

## PH780DBR 780nm Series

### High-Power Single-Frequency Laser Diode

#### Technology

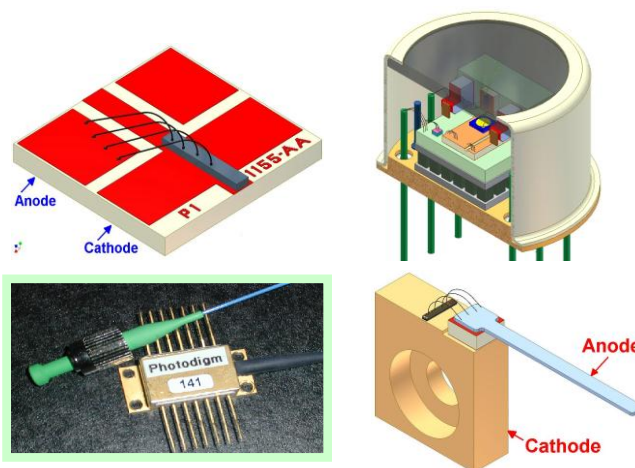
- DBR Single-Frequency Laser Chip
- AlGaAs QW Active Layer
- Epi designed for high reliability

#### 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 PH780DBR 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. Devices used in atomic spectroscopy for rubidium-based applications.



#### Absolute Maximum Ratings

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	-	150**
Pulsed Laser Forward Current, $T=25^{\circ}\text{C}$ , PW=300 ns, DC=10%	$I_F$	A	-	0.3
Laser Reverse Voltage	$V_R$	V	-	0.0
Photodiode Forward Current <u>1/2/</u>	$I_P$	mA	-	5.0
Photodiode Reverse Voltage <u>1/2/</u>	$V_R$	V	-	20.0
Photodiode Dark Current, $V_R=10\text{V}$ , LD $I_F=0$ , <u>1/2/</u>	$I_D$	nA	-	50
TEC Current <u>1/2/</u>	$I_{TEC}$	A	-2.0	2.0
TEC Voltage <u>1/2/</u>	$V_{TEC}$	V	-6.0	6.0
Thermistor Current <u>1/2/</u>	$I_{THRM}$	mA	-	1.0
Thermistor Voltage <u>1/2/</u>	$V_{THRM}$	V	-	10
External Back Reflection	-	dB	-	-14
Lead Soldering Temperature, 10 sec. Max. <u>1/2/</u>	-	°C	-	260
Fiber Pull Force <u>1/</u>	-	N	-	5.0
Fiber Bend Radius <u>1/</u>	-	mm	-	35

1/ Butterfly package 2/ TO8 package \*\*Do not exceed drive current or operating power of supplied LIV





**CW Characteristics at T<sub>c</sub> = 25°C unless otherwise specified**

Parameter	Symbol	Unit	Min	Typ	Max
Center Wavelength	$\lambda_c$	nm	778	780	782
Optical Output Power @ LIV current	P <sub>o</sub>	mW	See Power Options Call-out		
Slope Efficiency, 1/	$\eta_d$	W/A	0.25	0.36	
Slope Efficiency	$\eta_d$	W/A	0.60	0.75	-
Threshold Current	I <sub>th</sub>	mA	-	50	70
Laser Series Resistance	R <sub>S</sub>	$\Omega$	-	2.0	2.5
Laser Forward Voltage	V <sub>F</sub>	V	-	2.0	2.5
Thermistor Resistance @ 25°C, 1/2/	R <sub>T</sub>	K $\Omega$	-	10	-
Photodiode Dark Current, V <sub>R</sub> =10V, LD I <sub>F</sub> =0, 1/2/	I <sub>D</sub>	nA	-	-	50
Laser Line Width	$\Delta\nu$	MHz	-	0.7	1.0
Polarization Extinction Ratio, 1/	PER	dB	-16	-19	-
Beam Divergence @ FWHM	$\theta_{  } \times \theta_{\perp}$	°	-	6 X 26	8 X 28
Side Mode Suppression Ratio	SMSR	dB	-30	-	-
Laser Polarization				TE	
Mode Structure			Fundamental Mode		

1/ Butterfly package 2/ TO-8 package

**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: PH780DBR080CM. Assign optical power from those available shown below. Use a three-digit format for all power entries. Call factory for special performance selection and certification to certain atomic absorption lines. Butterfly package offered with 20mW power only and is not recommended for spectroscopy applications. See Photodigm's application note titled "Optical Feedback"

PH780DBR

**Operating Power (mW)**

**020**

**040    120**

**080    180**

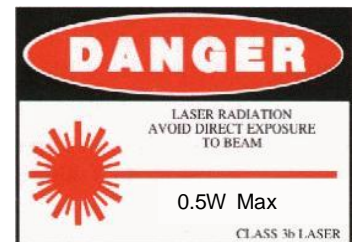
**Package Type**

**CS** Chip on Submount

**CM** 'C' Mount

**BF** Butterfly

**T8** TO-8



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