Photodigm

PRODUCT BULLETIN

PH780DBR
780nm Series

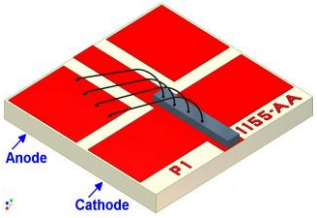
High-Power Single-Frequency Laser Diode

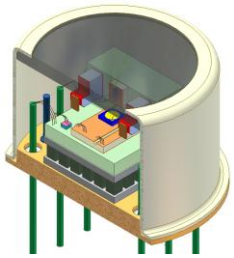
Technology

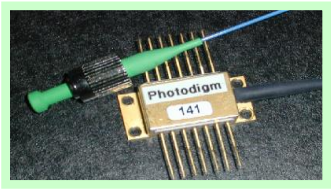
- DBR Single-Frequency Laser Chip
- AlGaAs QW Active Layer
- Epi designed for high reliability

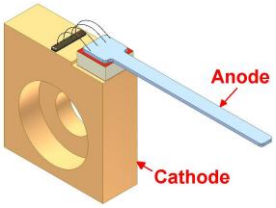
Features

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

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

CW Characteristics at T_C = 25°C unless otherwise specified

Parameter	Symbol	Unit	Min	Typ	Max
Center Wavelength	λ_c	nm	778	780	782
Optical Output Power @ LIV current	P_o	mW	See Power Options Call-out		
Slope Efficiency, 1/	η_d	W/A	0.25	0.36	
Slope Efficiency	η_d	W/A	0.60	0.75	-
Threshold Current	I_{th}	mA	-	50	70
Laser Series Resistance	R_S	Ω	-	2.0	2.5
Laser Forward Voltage	V_F	V	-	2.0	2.5
Thermistor Resistance @ 25°C, 1/2/	R_T	KΩ	-	10	-
Photodiode Dark Current, V_R=10V, LD I_F=0, 1/2/	I_D	nA	-	-	50
Laser Line Width	Δv	MHz	-	0.7	1.0
Polarization Extinction Ratio, 1/	PER	dB	-16	-19	-
Beam Divergence @ FWHM	$\theta_{II} \times \theta_{\perp}$	º	-	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