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1083 nm Laser Diode

Description

The IDP1083DBR Series of high-power edge-emitting lasers are based on Idealphotonics'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.

Feathure

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

Technology

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

Specification

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°C, PW=300 ns, DC=10%	I_F	A	-	1.0
Laser Reverse Voltage	V_R	V	-	2.0
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	-2.5	2.5

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
ESD (HBM)	-	V	-	500
External Back Reflection	-	dB	-	-14
Lead SolderingTemperature, 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 TC = 25°C unless otherwise specified

Parameter	Symbol	Unit	Min	Typ	Max
Center Wavelength	λc	nm	1081	1083	1085
Optical Output Power @ LIV current	Po	mW	40-120		
Slope Efficiency, 1/	ηd	W/A	0.3	0.36	
Slope Efficiency	ηd	W/A	0.6	0.72	-
Threshold Current	Ith	mA	-	30	40
Laser Series Resistance	R_S	Ω	-	2.0	2.5
Laser Forward Voltage	V_F	V	-	2.0	2.5
Thermistor Resistance @25°C, 2/	R_T	KΩ	-	10	-
Photodiode Dark Current, V_R=10V, LD I_F=0, 2/	I_D	nA	-	-	50
Beam Divergence @ FWHM	θ X $\theta_\perp$	o	-	6 X 32	8 X 34
Laser Line Width	Δv	MHz	-	8	10
Side Mode Suppression Ratio	SMSR	dB	-30	-	-
Polarization Extinction Ratio, 1/	PER	dB	-16	-19	-
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.

Package

TO8	Butterfly