



852nm DFB Laser Diode



Application

- Cs pumping for atomic clock
- Atomic clocks
- Atomic interferometers

Features

- Emission wavelength: 852 nm
- Technology: GaAs Al-free active region Semiconductor laser diode

Specifications at 20° C

Parameters	Symbol	Min	Typ.	Max	Unit
Center Wavelength @ 20°C	λ_c	850			nm
Spectral Width* (FWHM)	$\Delta\nu$	1	1.5	2	MHz
Side Mode Suppression Ratio (SMSR)	SMSR		30		dB
Temperature Coefficient of Wavelength	$d\lambda/dT$		0.05nm/K		nm/K
Current Coefficient of Wavelength	$d\lambda/dI$		UP : 0.003nm/mA DOWN : 0.002nm/mA		nm/mA
Output Power	P_{opt}	20	40	60	mW
Slope Efficiency	η_d	0.3	0.5	0.7	W/A
Threshold Current	I_{th}	40	50	80	mA
Operational Current @ 40mW	I_{op}	120	180	240	mA
Operational Voltage @ 40mW	U_{op}		1.9		V
Cavity Length	L		2000		μm
Divergence parallel ($1/e^2$)	$\theta_{//}$		13		°
Divergence perpendicular ($1/e^2$)	θ_{\perp}		52		°
Polarization			TE		
Spatial Mode (transversal)			TEM ₀₀		
Spatial Mode (Longitudinal)			Single Mode		

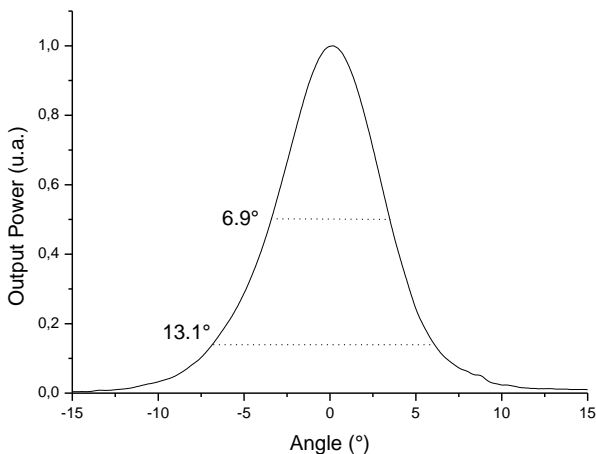
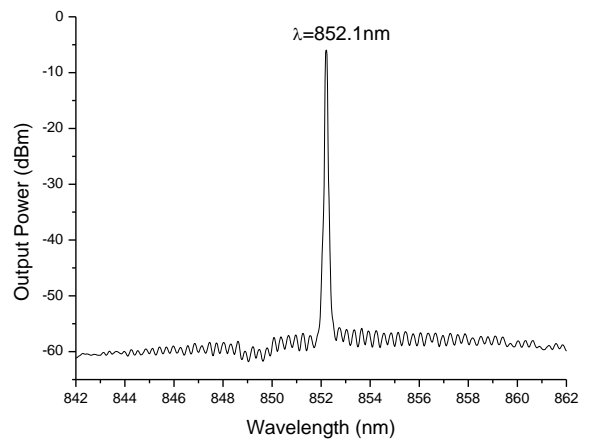
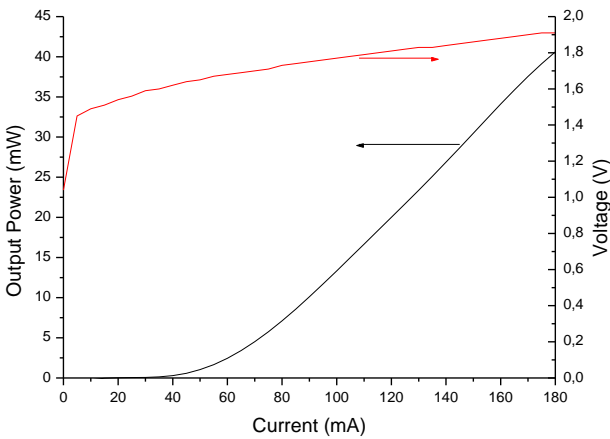
Figures are not contractual. III-V Lab reserves the right to make changes to the products or information contained herein without notice.

852nm DFB Laser Diode

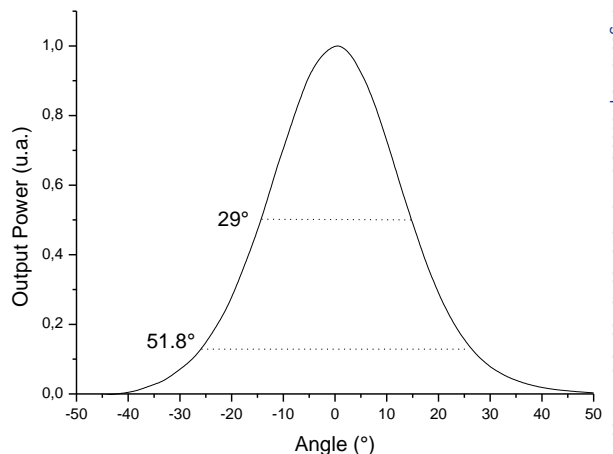
Absolute maximum ratings

Parameters	Symb.	Min	Typ.	Max	Unit
Operational Temperature at Cs D2 line 852.1nm	T_{case}	35	40	55	°C
Thermoelectric cooler current	I			1.9	A
Thermoelectric cooler voltage	U			2.6	V
Thermoelectric cooler thermal Load	Q_c			3.3	W
Thermoelectric cooler temperature difference	dT			68	K

Typical performance



Horizontal far field for $I=120\text{mA}$,
 $P=20\text{mW}$, $T=37^\circ\text{C}$

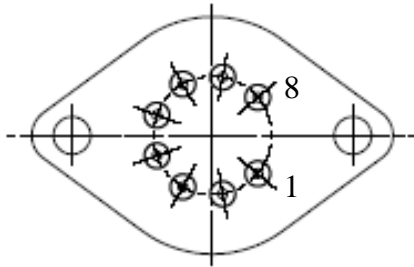


Vertical far field for $I=120\text{mA}$,
 $P=20\text{mW}$, $T=37^\circ\text{C}$

852nm DFB Laser Diode

Block diagram

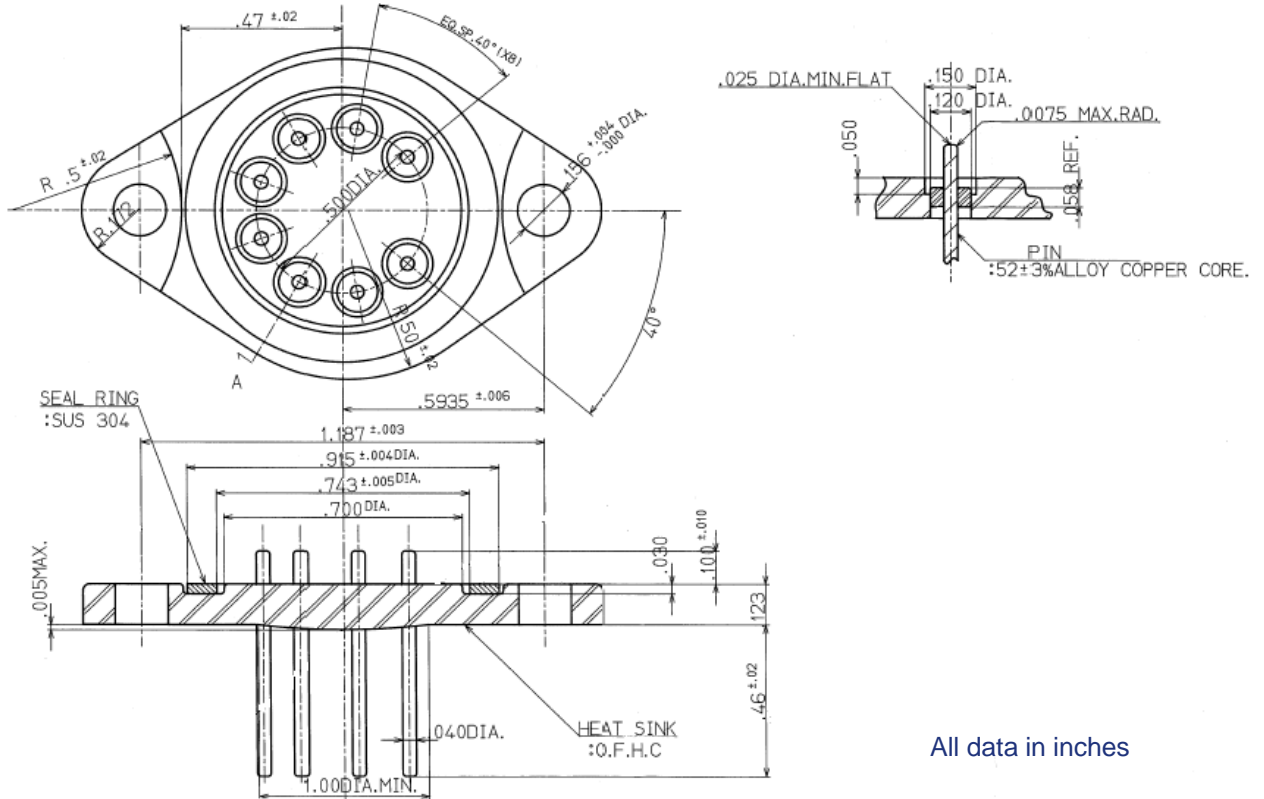
Bottom view



Pin allocation

Pin	Description
1	Thermoelectric Cooler (+)
2	Thermistor
3	Thermistor
4	Laser Diode (Cathode)
5	Laser Diode (Anode)
6	Not Connected
7	Not Connected
8	Thermoelectric Cooler (-)

Outline drawing



All data in inches