



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		

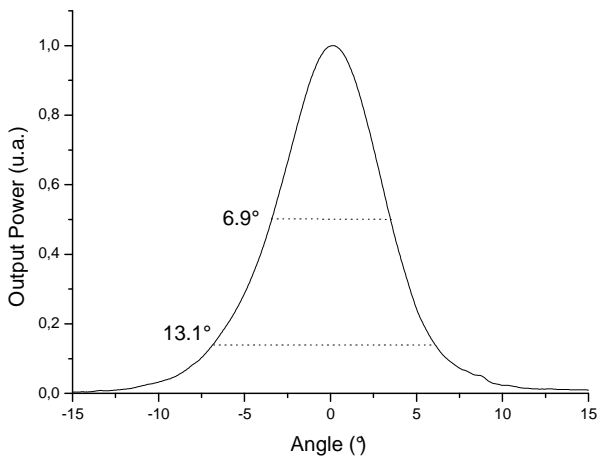
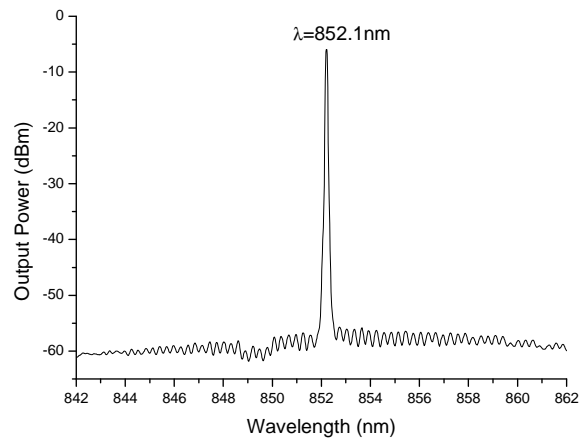
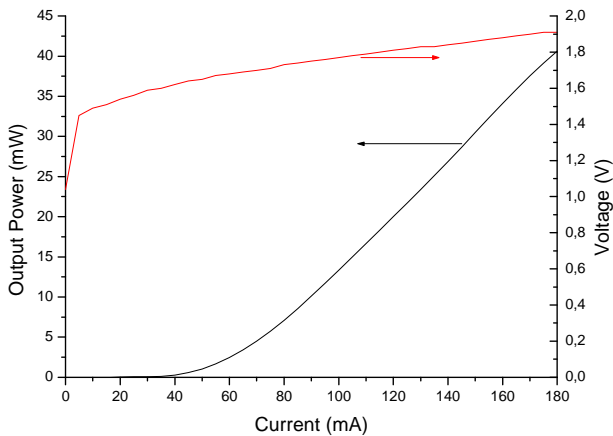
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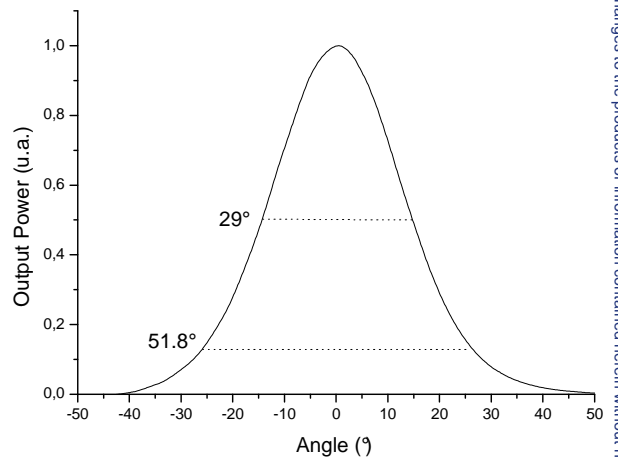
Absolute maximum ratings

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 $I=120mA$,
 $P=20mW$, $T=37°C$



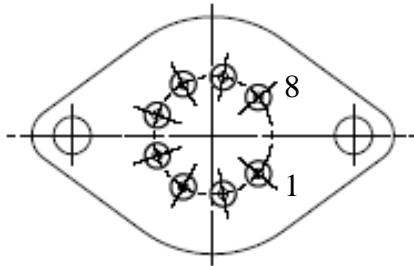
Vertical far field for $I=120mA$,
 $P=20mW$, $T=37°C$

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Block diagram

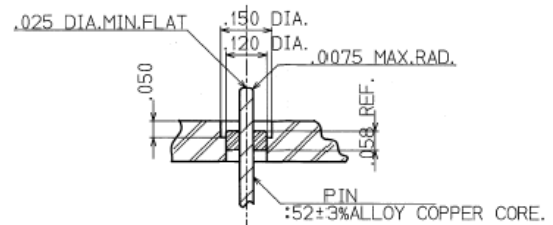
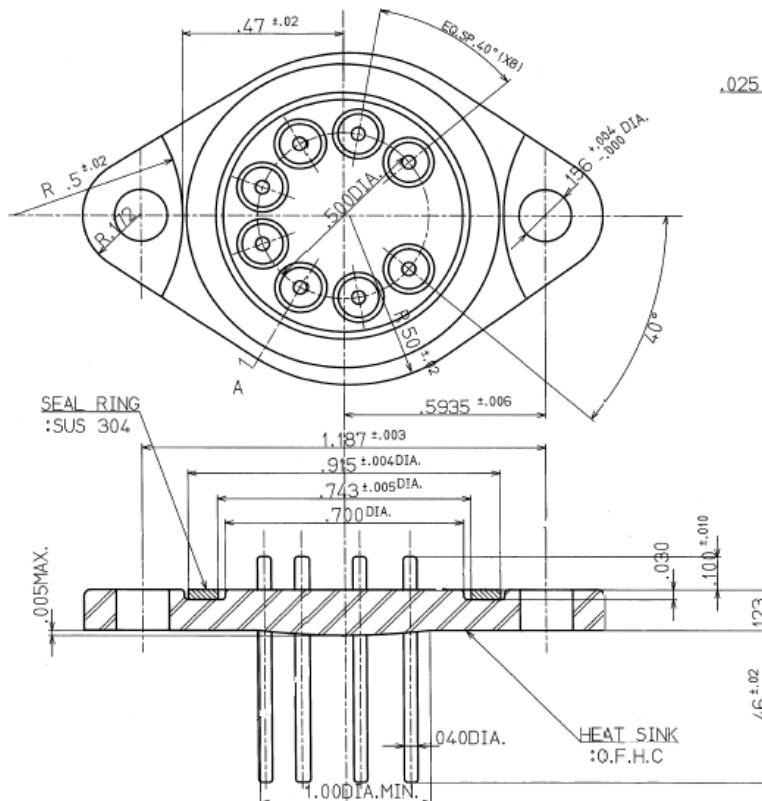
Bottom view



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

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