850nm Single Mode VCSEL Laser diode



Description

The PL -VCSEL-0850-1-A81-TO46 850nm VCSEL is a vertical emitting MOVPE grown GaAsP/AlGaAs Single Mode diode laser. The chips are mounted in TO5 can. Wavelength tuning can be achieved via laser current and temperature tuning. package with TEC and PD Built in. It is special designed for TDLAS Application. Good Narrow linewidth and wide tunability with TEC made it a great low cost choice for Rubidium Spectroscopy D1 transition.

Features

- Vertical Cavity Surface-Emitting Laser
- Internal TEC and Thermistor, ESD protection
- Narrow linewidth
- 2 nm tunability with TEC
- Selection for Rubidium D1 transition

Application

- Tunable diode laser absorption spectroscopy
- Rubidium Spectroscopy
- Optical Clock (Rubidium)

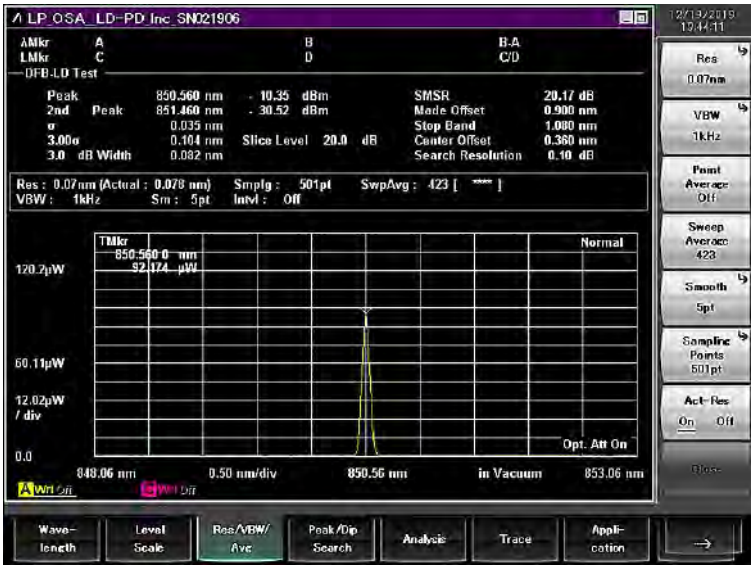
E/O Characteristics

Condition:TO P = 20°C, IO P = 2.0 mA unless otherwise stated (TO P = chip backside temperature, controlled by the TEC)

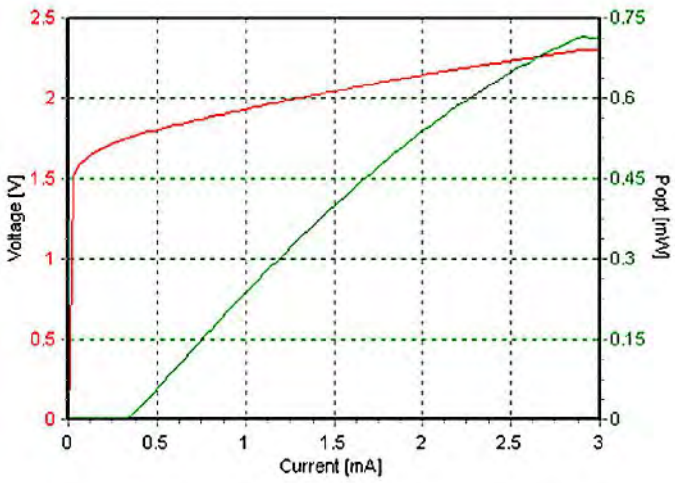
Parameter	Symbol	Min	Typ	Max	Unit	Remark
Emission Wavelength	λ_R		850nm			
Threshold current	I_{TH}		0.5		mA	
Output Power	P_{opt}	0.25			mW	
Threshold Voltage	U_{TH}		1.8		V	
Driving Current	IOP			2	mA	Popt = 0.3 mW
Laser voltage	UOP		2	30	V	Popt = 0.3 mW
Electro optic conversion rate	ηWP		12		%	Popt = 0.3 mW
Slope efficiency	ηS		0.3		W/A	
Differential series resistance	RS		250		Ω	Popt = 0.3 mW
3dB bandwidth	v3dB	0.10			GHz	Popt = 0.3 mW Due to ESD protection diode
Relative intensity noise	RIN		-130	-120	dB/Hz	Popt = 0.3 mW @ 1 GHz
Wavelength tuning over current			0.6		nm/mA	
Wavelength tuning over temperature			0.06		nm/K	
Thermal resistance (VCSEL chip)	$R_{thermal}$	3		5	K/mW	
Side mode supression	θ	25			dB	I = 2 mA
Beam divergence		10		25	°	Popt = 0.3 mW, full width 1/e2
Spectral Width			100		MHz	Popt = 0.3 mW

Tec Characteristics	Unit	Min	Typ	Max	Remark
Tec Current	mA	-150 (Heating)		+300(Cooling)	Proper Heart Sink Required
NTC Thermistor Resistance	KΩ	9.5	10.0	10.5	T=25°C@10 KΩ
NTC Thermistor Resistance	KΩ	10/exp{3892-(1/289K-I/TOP)}			

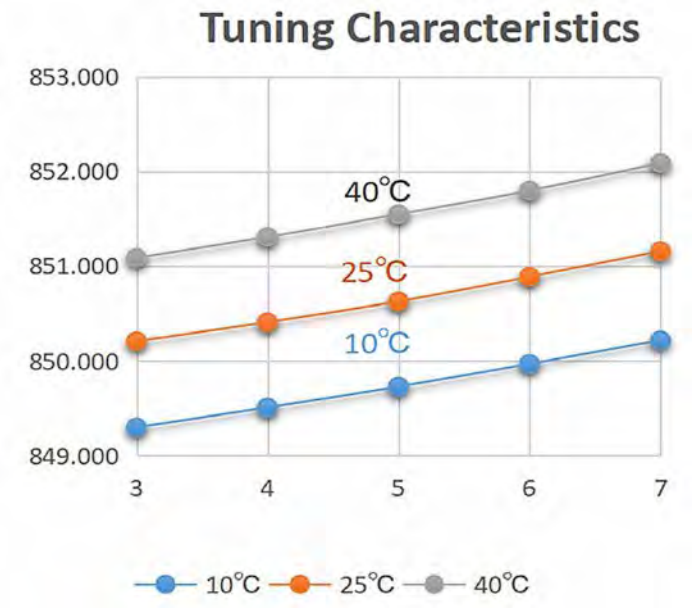
Spectrum



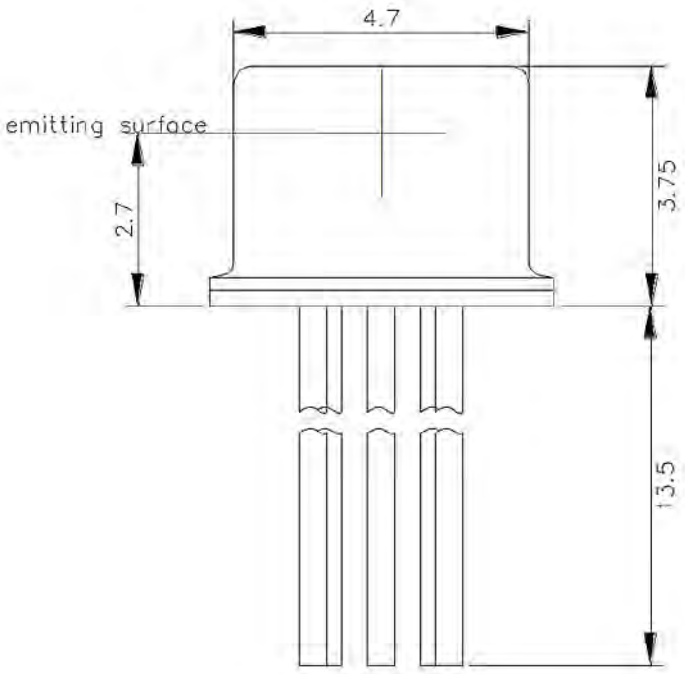
L-I Curve(T@25°C)



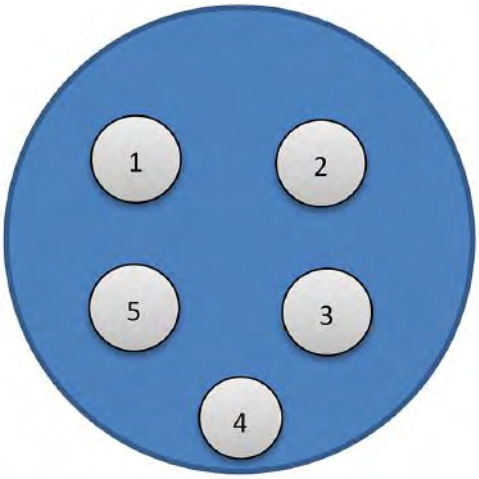
Tuning characteristics



Dimensions and Pin definitions



(Dimensions Unit in: mm)



Bottom View

1	Thermistor-	4	NTC Thermistor -, Laser Cathode (-)
2	Thermistor+	5	Laser Anode (+)
3	NTC Thermistor +10kΩ at 25°C		

Absolute Maximum Ratings

Item	Symbol	Unit	Min	Typ	Max	Testing Condition
Chip Temperature	T_{OP}	°C	+10	25	40	
Forward Voltage	V_R	V	0.8	1.2	1.8	
Electrical Power Dissipation	P_c	mw		-	5	
TEC Forward Current	I_{PF}	mA	-150	-	+300	
Lead Soldering time		S		-	10s	260°C
Store Temperature	T_{STG}	°C	-40	-	+85	2000hr
Operating Temperature	T_{OP}	°C	-55	-	+125	

(*TEC temperature must be below 150°C)

Ordering Info

□□□□:Wavelength
0760:760nm
0795:794.7nm
0850:850nm
*****
1653.7:1653.7nm
☆ :TEC
0:Without TEC
1:With TEC
▽:Wavelength Tolerance
1:±0.5nm
2:±1.5nm
XX: Package
TO46

User Safety

Safety and Operating Considerations
This device operates under reverse bias voltage, and the polarity of the device can' t be reversed. Operating the Photodiode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with this component cannot exceed maximum peak optical power. ESD PROTECTION—Electrostatic discharge (ESD) is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces, and rigorous antistatic techniques when handling Photodiodes.