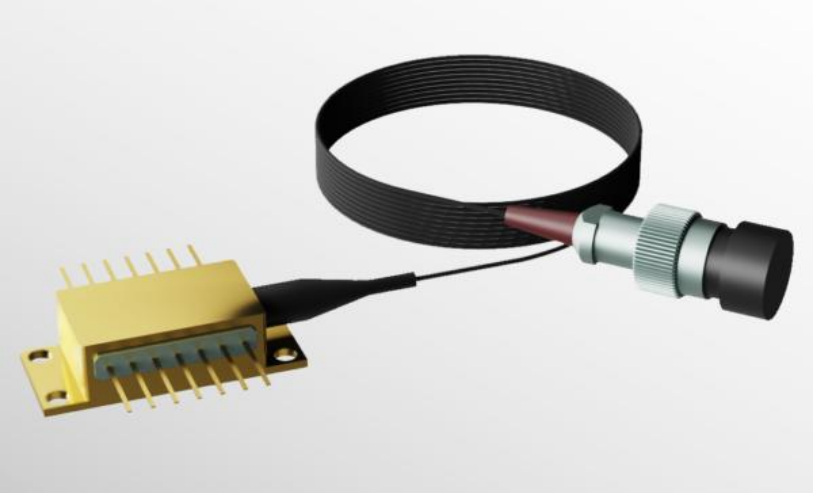
894.592nm DBR Laser Diode



Product Description

The 894.592nm DBR series high-performance edge-emitting laser diodes are fabricated based on advanced monolithic single-frequency gallium arsenide (GaAs) laser technology. This series of lasers delivers a single transverse mode beam output and adopts facet passivation technology to ensure reliability. The 894.592nm DBR devices are dedicated to cesium (Cs)-based atomic spectroscopy applications. The series is spectrally certified to guarantee accurate tuning to the cesium D1 transition line within an ambient temperature range of ±10°C around room temperature.

Product features

Monolithically integrated DBR structure；diffraction-limited beam output

Part Number

MP-DBR-894.592-240-14BF-PA

Application area

Atomic Sensing and Quantum Technology | Pump Source for Fiber Lasers and Amplifiers | Laser Spectroscopy and Sensing

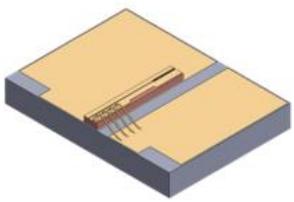
Core parameters

Central Wavelength
894.592nm

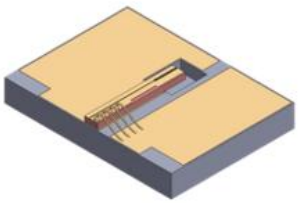
General Parameters

Model Parameters

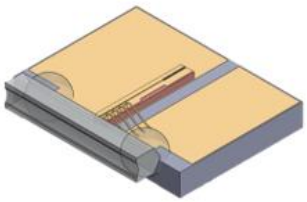
Detailed parameters



Chip on Submount (CoS)



CoS + Mode-Hop Free (MHF)



CoS + Virtual Point Source (VPS) Lens

894.592nm (COS) package characteristics

	Chip architecture	
Parameter [1]	Low power	High power
Nominal wavelength (nm)[2]	894.592 ± 0.6	
Power range (mW)	40–120	80–240
Maximum Operating Current (CW & Pulsed) (mA)	160	350
Optical power at maximum operating current (mW)	120	240
Nominal Slope Efficiency (W/A)	0.85	0.9
Nominal threshold current (mA)	40	50

1. Characteristics at TC = 25 °C unless otherwise specified. Operating outside of these parameters voids warranty.

2. Hermetically sealed packages may contain CoS that are ± 1.2 nm from nominal

Available free-space package add-ons

9MM

TO-8

C-Mount

Transmitter Optical Subassembly (TOSA)

Laser specifications

Parameters	unit	Minimum	Typical values	Maximum
Storage temperature	°C	0	-	70
Shell operating temperature	°C	5	-	70
Laser chip operating temperature [1]	°C	5	-	45
Laser series resistance	Ω	-	2	-
Forward voltage of the laser at LIV current	V	-	2	-
Nominal laser line width at LIV current	kHz	-	500	-
Beam divergence angle at half-height and full width (θ∥ × θ⊥)	°	-	6 x 28	8 x 32
Edge-mode rejection ratio (SMSR)	dB	-	-40	-
Polarization extinction ratio	dB	-17	-20	-
Polarized state of the laser	TE			
Pattern structure	Fundamental mode			
Temperature tuning rate	nm/°C	-	0.06	-
Current tuning rate	nm/mA	-	0.002	-
Laser reverse voltage	V	-	-	0

If not sealed, it is not recommended to use below the dew point

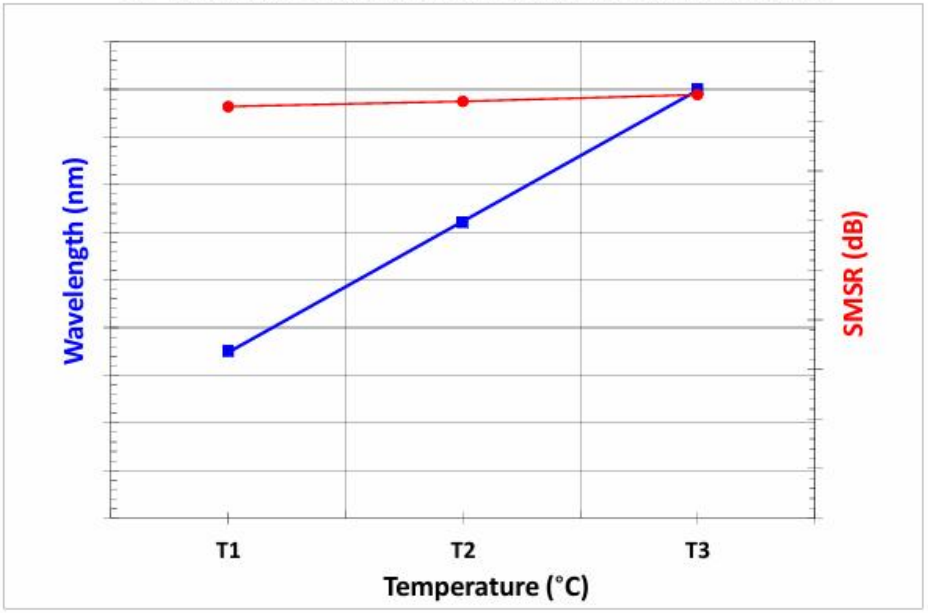
Freespace Encapsulation add-on specifications

Parameters	unit	Minimum	Typical values	Maximum
Photodiode forward current	mA	-	-	10
Photodiode reverse voltage	V	-	-	50
TEC Current (TOSA)	A	-1.1	-	1.1
TEC Voltage (TOSA)	V	-3.0	-	3.0
TEC current TO-8	A	-1.8	-	1.8
TEC voltage TO-8	V	-2.2	-	2.2
Thermistors	kΩ	-	10	-

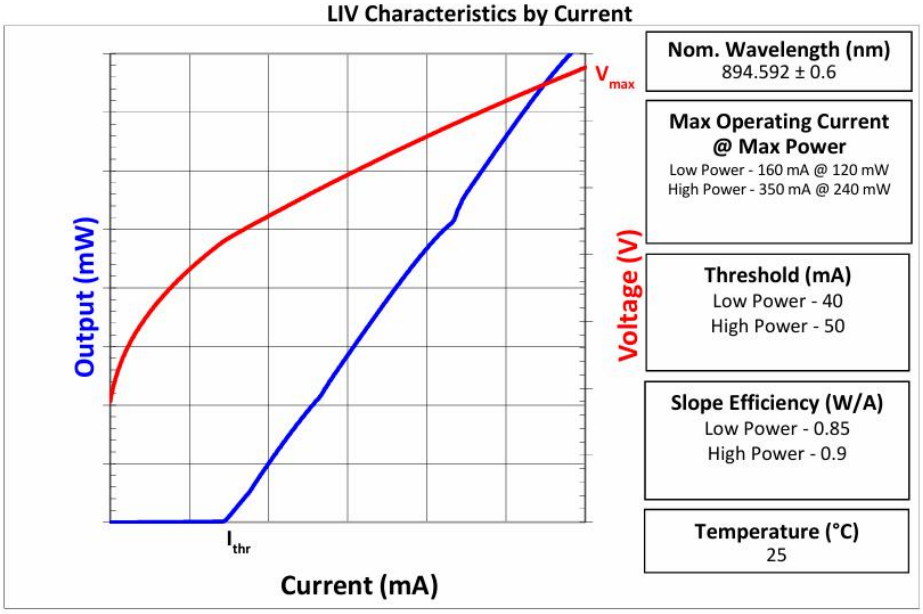
Handling Precautions

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.

Air Wavelength Characteristics at Constant Current by Temperature



LIV Characteristics by Current



Nom. Wavelength (nm)
894.592 ± 0.6

Max Operating Current @ Max Power
Low Power - 160 mA @ 120 mW
High Power - 350 mA @ 240 mW

Threshold (mA)
Low Power - 40
High Power - 50

Slope Efficiency (W/A)
Low Power - 0.85
High Power - 0.9

Temperature (°C)
25