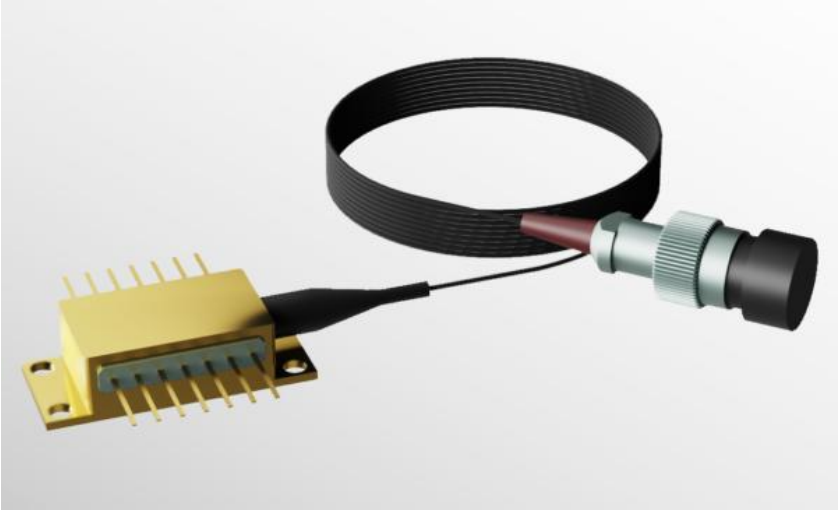
785nm DBR Laser Diode



Product Description

The 785 nm Distributed Bragg Reflector (DBR) high-performance edge-emitting laser diode adopts advanced monolithic integrated single-frequency Gallium Arsenide (GaAs) laser technology.This series of devices outputs single spatial mode laser beams, with passivated facet design for superior operational reliability. Specially designed for rubidium (Rb) atomic spectroscopy applications, the laser has passed spectral certification, which can stably and precisely cover the D2 transition spectral line of rubidium within a temperature range of room temperature ±10 °C.

Product features

Precise matching with atomic energy level transition； Ultimate spectral performance；Excellent output power and beam quality

Part Number

MP-DBR-785-60-14BF-PA

Application area

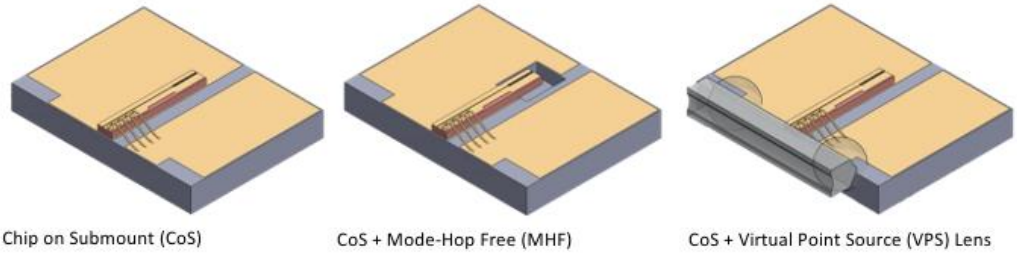
Atomic Physics & Quantum Technology | Precision Measurement & Sensing

Core parameters

Central Wavelength
785nm

General Parameters

Detailed parameters



Chip on Submount (CoS)　CoS + Mode-Hop Free (MHF)　CoS + Virtual Point Source (VPS) Lens

785nm (COS) package characteristics

	Chip architecture	
Parameter [1]	Low power	High power
Nominal wavelength (nm)[2]	785 ± 0.6	
Power range (mW)	40–80	80–180
Maximum Operating Current (CW & Pulsed) (mA)	140	250
Optical power at maximum operating current (mW)	80	180
Nominal Slope Efficiency (W/A)	0.9	0.85
Nominal threshold current (mA)	40	60

1. Unless otherwise noted, all parameters are measured at a junction temperature of 25°C. If used outside of these parameters, the warranty will be void

2. The sealed package may contain a chip-on-substrate (CoS) with a deviation of ±1.2 nm from the nominal value.

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

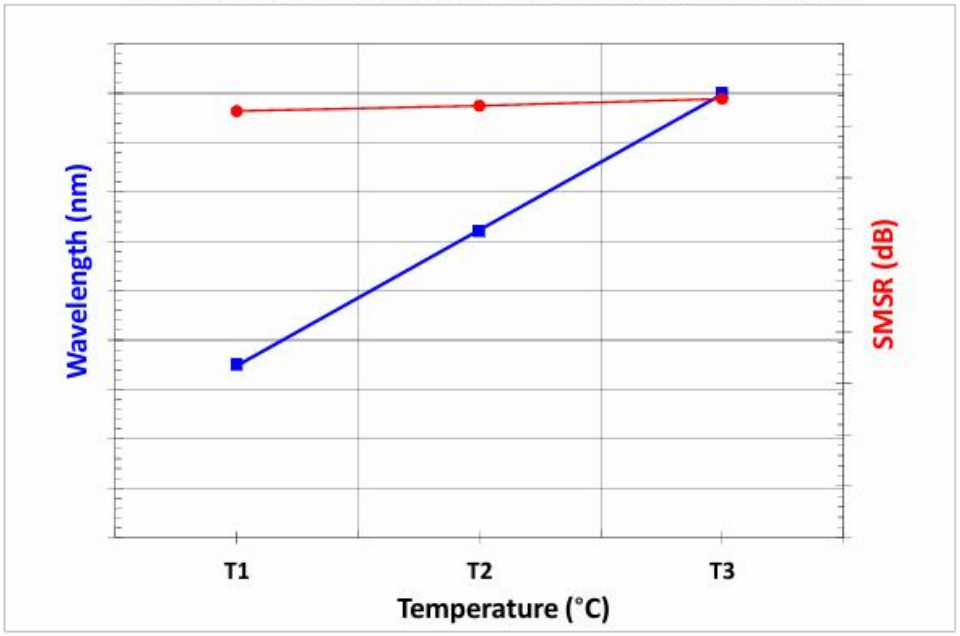
Freespace Encapsulation add-on specifications

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