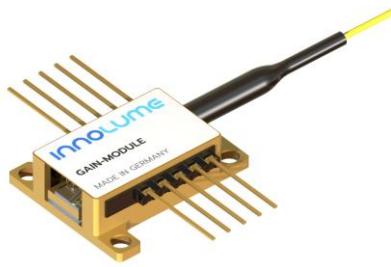


GMB1220080YY140MXXXX

Fiber coupled curved stripe gain chip (gain module)



Features:

- Optimized for wavelength locked operation in external cavity
- Broad hopping free tuning range
- Orthogonal beam output for easy optics alignment
- Fiber output
- 900um loose tube on fiber (optional)

Applications:

- External cavity diode lasers
- Tunable laser sources

Recommended Operating Conditions

| Parameter | Min. | Typ. | Max. | Unit |
|----------------------|------|------|------|------|
| Heatsink Temperature | 20 | 25 | 30 | °C |
| Forward Current* | | | 800 | mA |
| Forward Voltage | | 1.9 | 2.1 | V |
| Optical Feedback** | | 80 | | % |

*No self-lasing up to maximum current

** doesn't include coupling efficiency to chip

Tunability Characteristics

Batch qualified @ CW, 25C, 800mA, external cavity in Littrow configuration with 80% feedback

| Parameter | Min. | Typ. | Max. | Unit |
|------------------------------------|------|------|------|------|
| Wavelength of Maximum Power | 1225 | 1240 | 1255 | nm |
| Output Power @ 1240nm | | 140 | | mW |
| Central Wavelength of Tuning Range | 1205 | 1220 | 1235 | nm |
| Tuning Range Width (full) | | 80 | | nm |

Amplified Spontaneous Emission (ASE) Characteristics

Tested for each sample @ CW, 25C, 800mA, without feedback

| Parameter | Min. | Typ. | Max. | Unit |
|----------------------------------|------|------|------|------|
| Output Power (ex-fiber) | | 0.15 | | mW |
| Output Power (ex-facet) | | 1.5 | | mW |
| Mean Wavelength | | 1200 | | nm |
| Bandwidth (FWHM)* | | 100 | | nm |
| Fast Axis Beam Divergence (FWHM) | | 35 | 38 | deg |
| Slow Axis Beam Divergence (FWHM) | 4 | 7 | | deg |
| Ripples** (RMS) | | 0.2 | 0.4 | dB |

* resolution 1 nm

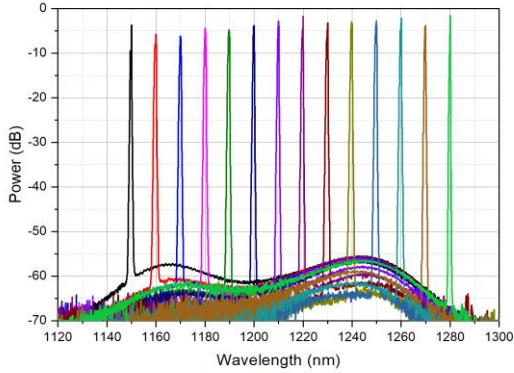
** central wavelength of tuning range, span 1nm, resolution 20pm

Chip Parameters

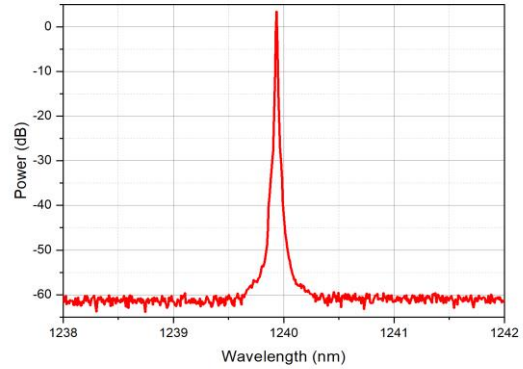
| Parameter | Min. | Typ. | Max. | Unit |
|--|------|------|------|------|
| Chip length | | 3 | | mm |
| Back Reflectivity of normal stripe facet | | 10 | | % |
| Back Reflectivity of curved stripe facet | | | 0.01 | % |

Typical Performance in External Cavity (for reference only)
 @ CW, recommended operating conditions, Littrow configuration

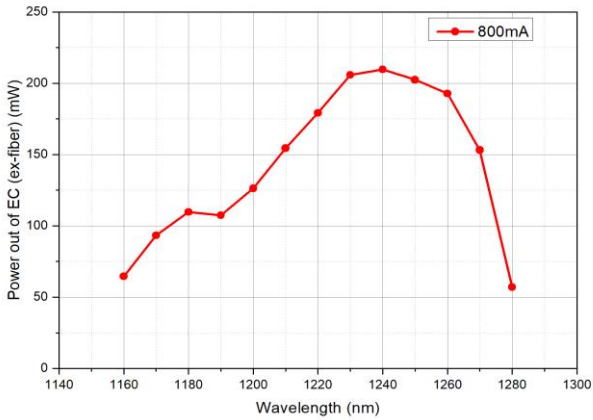
Optical spectra @ 800mA (res. 100pm)



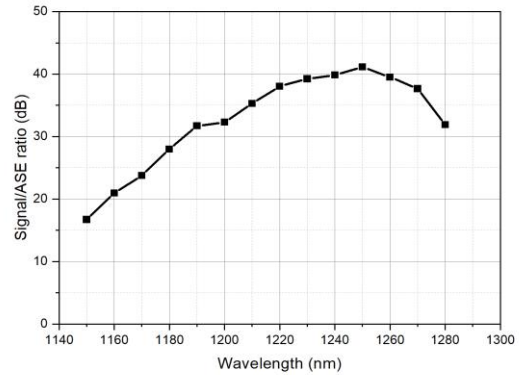
Optical spectrum @ 800mA (res. 20pm)



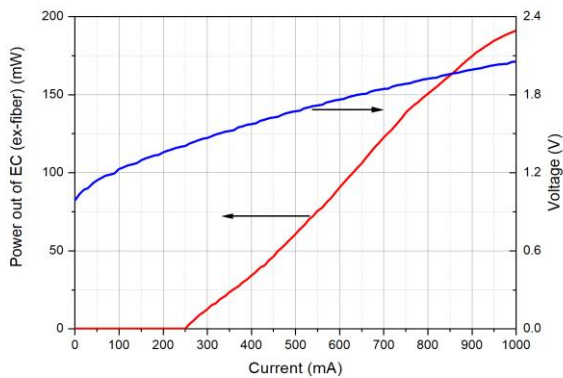
Output power spectra



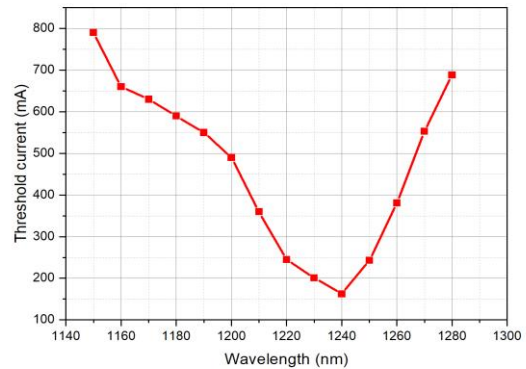
Integrated Signal/ASE ratio @ 800mA



Output power @ 1240nm

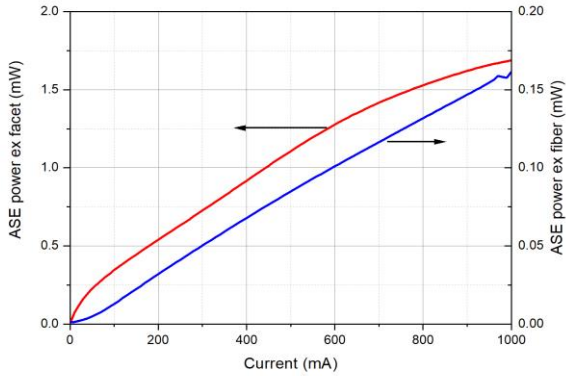


Threshold current

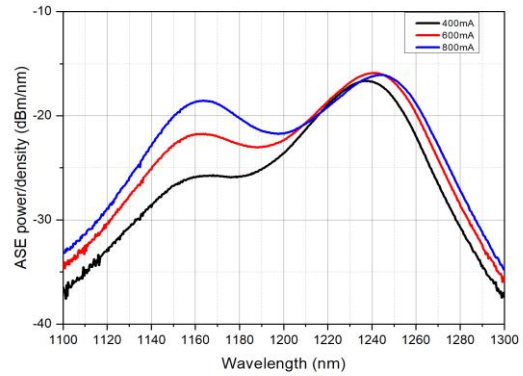


Typical Performance without feedback (for reference only)

ASE power



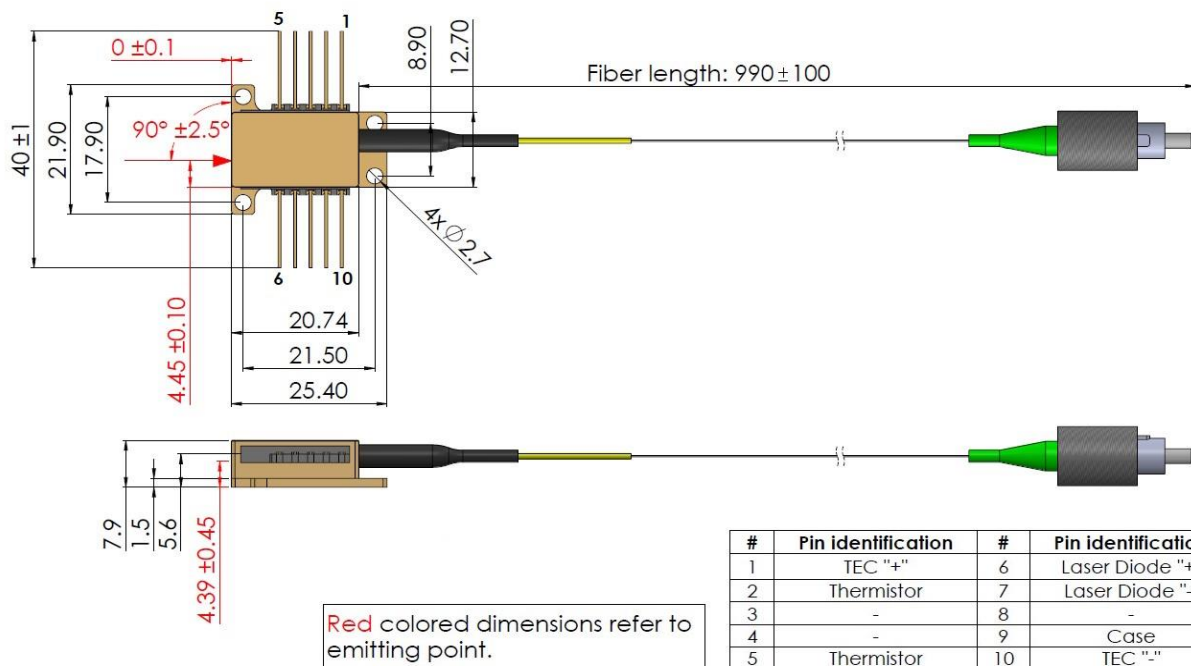
ASE spectra (res. 1nm)



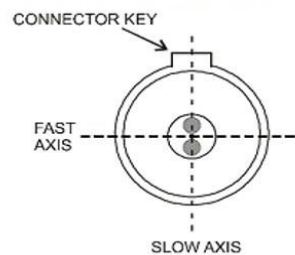
Absolute Maximum Ratings

| Parameter | Min | Max | Unit |
|--|-----|------|------|
| Forward Current | | 1000 | mA |
| Reverse Voltage | | 1 | V |
| TEC Current | | 3 | A |
| TEC Voltage | | 4 | V |
| Chip Operating Temperature (above dew point) | 0 | 50 | °C |
| Case Operating Temperature | 0 | 70 | °C |
| Storage Temperature (in original hermetically sealed package) | -40 | 85 | °C |
| Pin Soldering Temperature (max 10 sec, max case temperature 120°C) | | 300 | °C |
| Fiber Band Radius | 3 | | cm |

Drawing



| Thermistor specification | | | Fiber specification | | | |
|--------------------------|---------|------|--------------------------------|--------------------|--------------------|------|
| Parameters | Value | Unit | Parameters | Value | Value | Unit |
| Type | NTC | | Fiber Type | HI1060 | PM980 | |
| Resistance @ 25°C | 10±0.1 | kOhm | Numerical Aperture (Typical) | 0.14 | 0.12 | |
| Beta 25-85°C | 3435±1% | K | Cut-off Wavelength | 920±50 | 900±70 | nm |
| | | | Mode-Field (core) Diameter | 6.2±0.3 @1060nm | 6.6±0.3 @1060nm | µm |
| | | | Cladding Diameter | 125±1 | 125±1 | µm |
| | | | Coating (buffer) Diameter | 245±15 | 245±15 | µm |
| | | | Loose Tube Diameter (optional) | 900 | 900 | µm |
| | | | Connector | FC/APC | FC/APC | |
| | | | Key | narrow | narrow | |



The output light is polarized along the slow axis of PM fiber.

Safety and Operating Instructions

The laser light emitted from this device is invisible and can be dangerous to the human eye. Avoid looking directly into the fiber output or into the collimated beam along its optical axis when the device is in operation. Proper laser safety eyewear must be worn during operation.

Absolute Maximum Ratings may be applied to the device for short period of time only. Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device. Operating the product outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the device must be employed such that the maximum peak optical power cannot be exceeded.

A proper heatsink for the device on thermal radiator is required. The device must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's not allowed to use thermal grease for this. Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Fiber tip should always be protected from any contamination or damage during the process of installation. After removing the dust-preventing cap covered at fiber tip, carefully clean fiber tip by wiping through one direction using optical lens cleaning paper or cotton swab dabbed with Iso-Propanol or Ethyl alcohol. Operate the device with clean fiber connector only.

The device is an open-heatsink laser diode; it may be operated in clean atmosphere or dust-protected housing only. Operating temperature and relative humidity must be controlled to avoid water condensation on the laser facets. Any contamination or contact of the laser facet must be avoided.

ESD PROTECTION - Electrostatic discharge is the primary cause of unexpected product failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling the product.



Part-number Identification

GMB122080PM140MXXXX -> gain module with PM980 output fiber

GMB122080HI140MLXXX -> gain module with HI1060 output fiber and loose tube on fiber

NOTE: Innolume product specifications are subject to change without notice