

## GMB1220130YY140MXXXX

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)		130		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

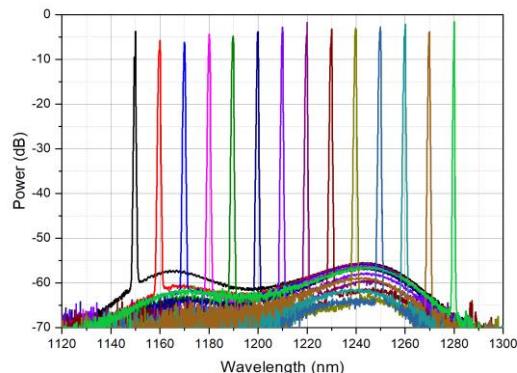
## Chip Parameters

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

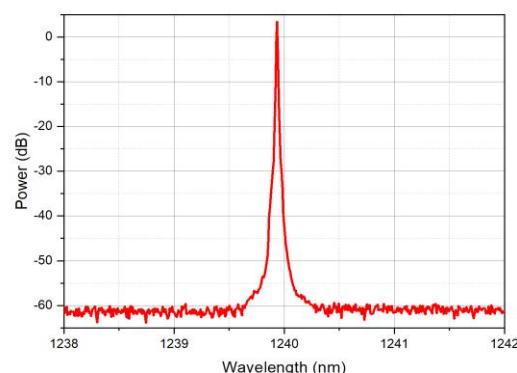
### Typical Performance in External Cavity (for reference only)

@ CW, recommended operating conditions, Littrow configuration

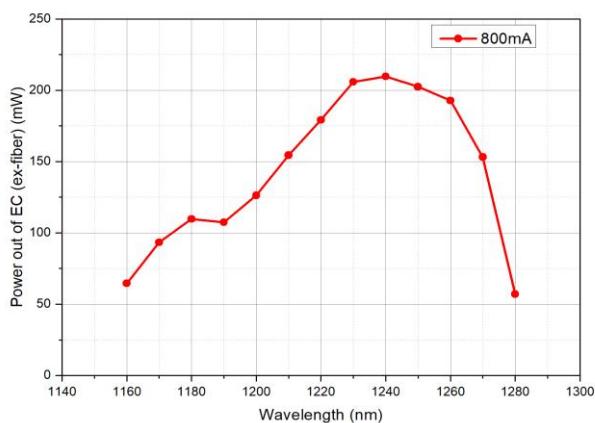
#### Optical spectra @ 800mA (res. 100pm)



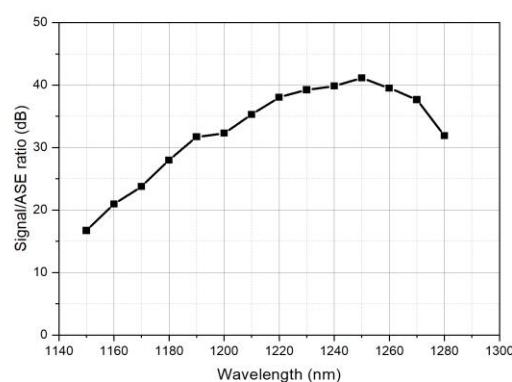
#### Optical spectrum @ 800mA (res. 20pm)



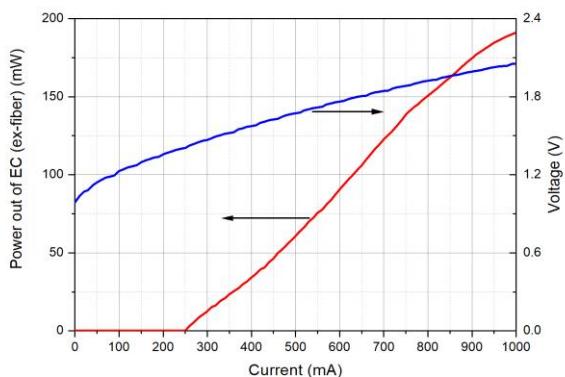
#### Output power spectra



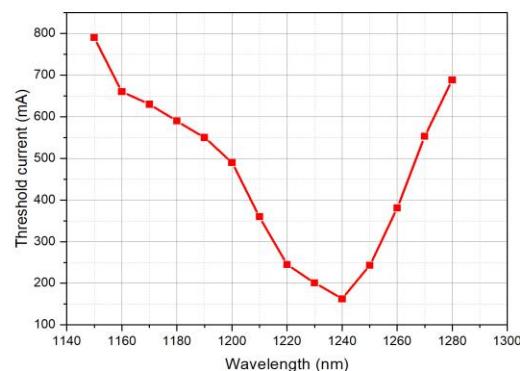
#### Integrated Signal/ASE ratio @ 800mA



#### Output power @ 1240nm

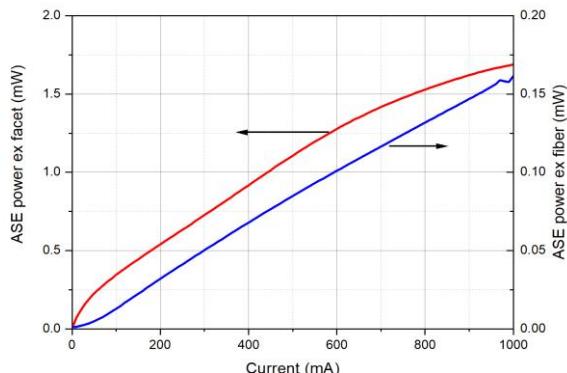


#### Threshold current

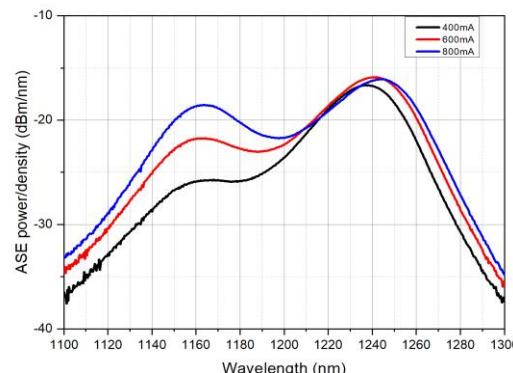


## Typical Performance without feedback (for reference only)

## ASE power



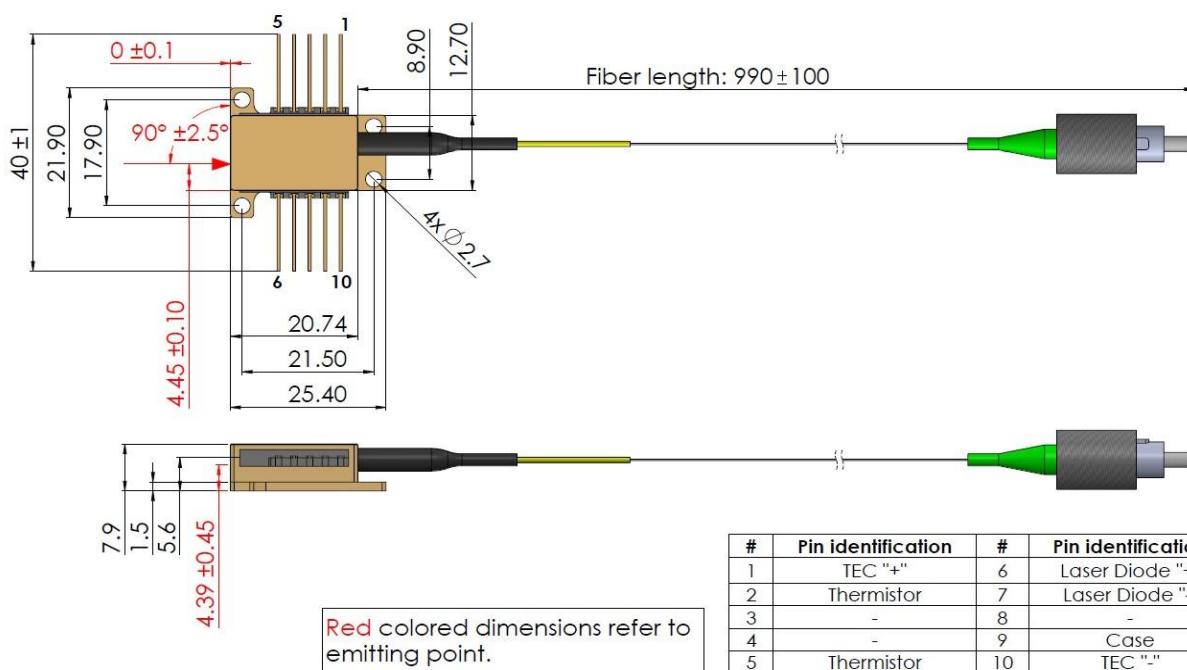
## ASE spectra (res. 1nm)



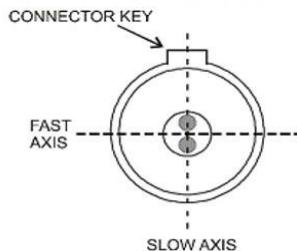
## Absolute Maximum Ratings

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 @1060nm	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

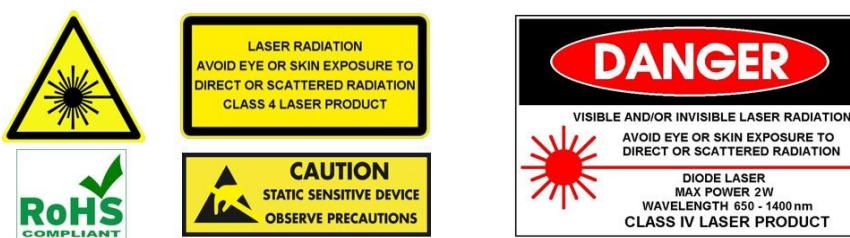
The laser light emitted from this device is invisible and can be dangerous to the human eye. Avoid looking directly into the fiber output or into the collimated beam along its optical axis when the device is in operation. Proper laser safety eyewear must be worn during operation.

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

GMB1220130PM140MXXXX -> gain module with PM980 output fiber

GMB1220130HI140MLXXX -> gain module with HI1060 output fiber and loose tube on fiber

**NOTE:** Innolume product specifications are subject to change without notice