

# COOLED MULTI-MODE LASERS

High reliability fiber-coupled designs in 14-pin butterfly package

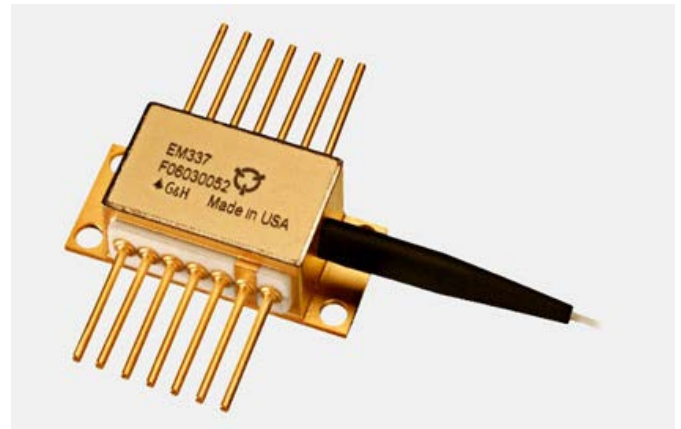
## PRODUCT DATASHEET

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The EM4 high brightness laser (HPL) has high brightness with a fiber-coupled output power.

The HPL is ideal for use in a variety of applications where brightness is essential alongside with reliability and robust packaging.

The high power laser device is hermetically sealed into an industry standard 14-pin butterfly metal ceramic package. The butterfly package has a Peltier cooler for chip temperature control and thermistor for temperature monitoring. The higher power laser is pigtailed using a step index fiber with a 0.22 numerical aperture, 105 micron core fiber.



### Specification

- Output power: 3 W
- Wavelength: 808 nm
- Numerical aperture: 0.22

### Features

- 808  $\pm$ 10 nm center wavelength
- 0.22 NA, 105  $\mu$ m core multi-mode fiber
- Cooled
- Laser welded and epoxy free
- Hermetically sealed
- Built in thermistor
- Tested to Telcordia GR-468 Core / MIL-Std 883

### Applications

- Fiber lasers
- Laser pumping
- Marking
- Material processing
- Defense

## Optical and Electrical Characteristics

$T_C=25^\circ\text{C}$ , continuous wave and beginning of life unless otherwise specified

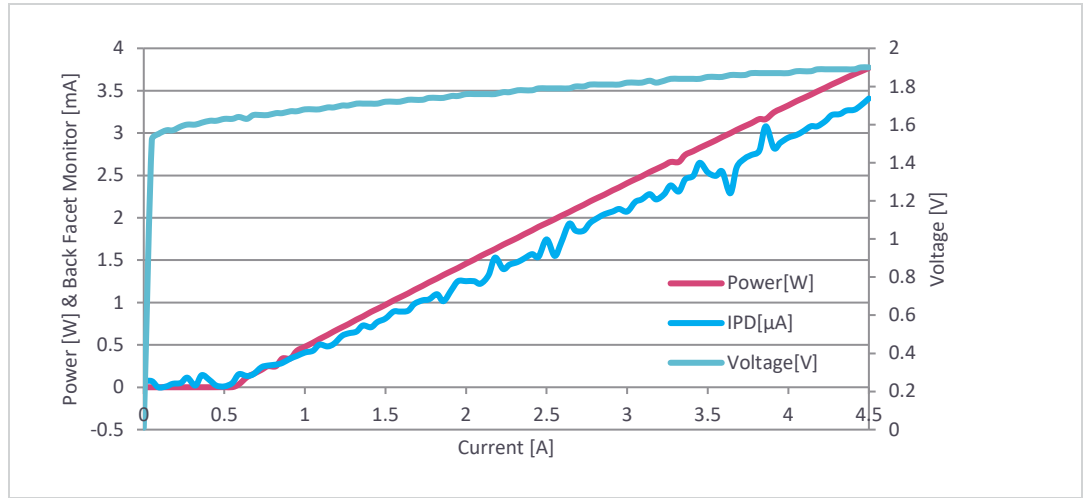
Parameter	Sym	Condition	Min	Typ	Max	Unit
Center wavelength	$\lambda_C$	$I = I_{OP}$	798	808	818	nm
Output power	$P_{OP}$		3			W
Operating voltage	$V_{OP}$	$I = I_{OP}$			2.3	V
Operating current	$I_{OP}$	$P=P_{OP}$			4.5	A
Threshold current	$I_{TH}$			0.6	0.8	A
Wavelength drift vs $T_C$	$\Delta\lambda / \Delta T_C$			0.3		nm/ $^\circ\text{C}$
Spectral width	$\Delta\lambda$	17dB down from peak		6		nm
PD reverse voltage	$V_{PD}$				16	V
TEC current	$I_{TEC}$	Max at $\Delta T=35^\circ\text{C}$ , $P=P_{OP}$			4	A
TEC voltage	$V_{TEC}$	Max at $\Delta T=35^\circ\text{C}$ , $P=P_{OP}$			5.5	V
PD current	$I_{PD}$		0.1			mA
Operating case temperature	$T_C$		0		60	$^\circ\text{C}$
Thermistor resistance	$R_{TH}$	$T = 25^\circ\text{C}$	9500	10000	10500	$\Omega$
Thermistor $\beta$ coefficient	$\beta$	0 / $50^\circ\text{C}$		3892		

## Fiber Specification

Parameter		Min	Typ	Max	Unit
Fiber type, jacket material	Step index, PVDF				
Numerical aperture	See ordering info		0.22	.024	
Core diameter		102	105	108	$\mu\text{m}$
Cladding diameter		123	125	128	$\mu\text{m}$
Buffer diameter		235	250	265	$\mu\text{m}$
Jacket diameter			900		$\mu\text{m}$
Jacket length from end of boot		75		95	nm
Pigtail length		1			m

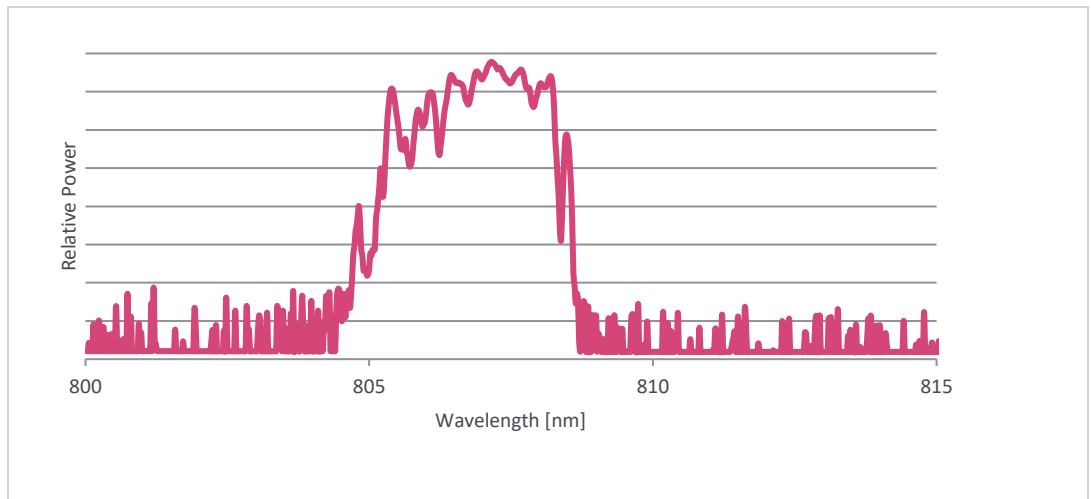
## Data Tables

Typical output power and voltage vs current



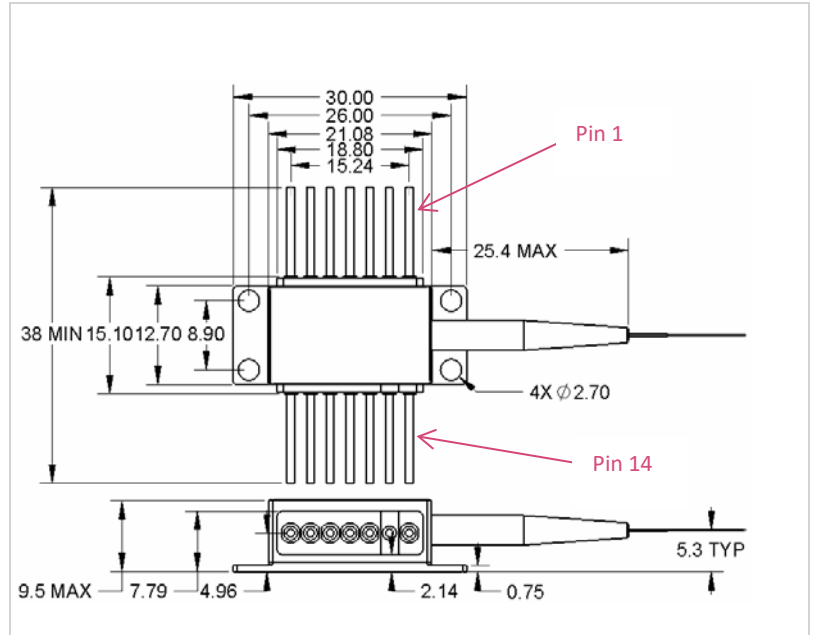
Typical Spectrum

$T_c=25^\circ\text{C}$



## Pinout and Mechanical drawing

Pin	Description	Pin	Description
1	NC	14	NC
2	Thermistor	13	Case GND
3	Monitor PD anode	12	NC
4	Monitor PD cathode	11	Laser cathode
5	Thermistor	10	Laser anode
6	Monitor PD cathode	9	Laser cathode
7	Monitor PD anode	8	NC



## Absolute Maximum Ratings

Parameter	Sym	Min	Max	Unit
Storage temperature	$T_{STG}$	-40	+85	°C
Operating case temperature	$T_{OP}$	-20	+70	°C
Laser forward current	$I_F$		4.5	A
Laser reverse voltage	$V_R$		2	V
Photo diode photo current	$I_{PD}$		10	mA
Photo diode reverse voltage	$V_{PD}$		16	V
TEC current	$I_{TEC}$		5	A
TEC voltage	$V_{TEC}$		6	V
Thermistor current			2	mA
Thermistor voltage			5	V
Lead soldering time			10	s
Lead soldering temperature			250	°C
Fiber pull force			5	N
Fiber bend radius		35		mm
ESD (human body model)			500	V

\* Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only and operation of the device at or beyond these conditions is not implied. Exposure to absolute maximum ratings for extended periods of time may affect device reliability.

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## Ordering information

Model	EM339		
	Wavelength	Power	Numerical aperture
Specification	808 nm	3 W	0.22

### For further information

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