



UNCOOLED MULTI-MODE LASERS

High Reliability Fiber-Coupled Designs in 14-pin Butterfly Package

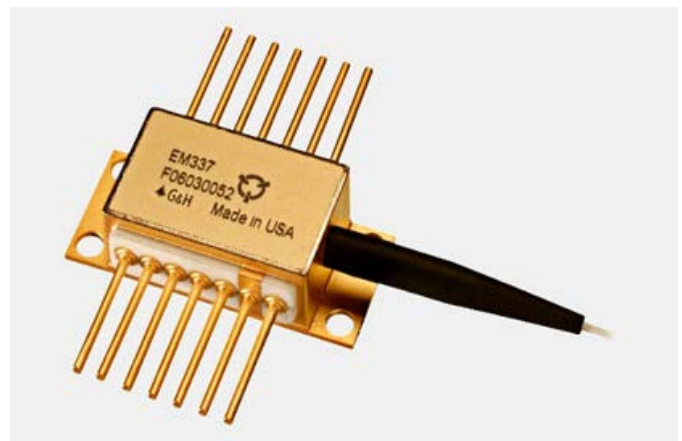
PRODUCT DATASHEET

The uncooled lasers are a member of EM4's cooled and uncooled lasers in a variety of packages to meet customer requirements.

The EM4 high power laser has a fiber-coupled output power of typical 6 W. The module is ideal for use in a variety of applications where brightness is essential with a reliable and robust packaging.

The module is a hermetically sealed 14-pin butterfly metal ceramic package and contains a thermistor and monitor detector.

The module is pigtailed using a step index fiber with a 0.15 or 0.22 numerical aperture, 105 micron core diameter.



Options available

- 6, 7 W output power
- 915, 940, 960 or 975 nm wavelengths
- 0.15 and 0.22 numerical aperture options

Features

- 915, 940, 960, or 975 nm center wavelength
- 0.15 or 0.22 NA, 105 μm core multimode fiber
- Uncooled
- Laser welded and epoxy free
- Hermetically sealed
- Built-in thermistor
- Tested to Telcordia GR-468 Core/MIL-Std 883

Applications

- Fiber lasers
- Yb laser pumping
- Marking
- Material processing
- Defense

Optical and Electrical Characteristics

$T_c=25^\circ\text{C}$, unless otherwise specified

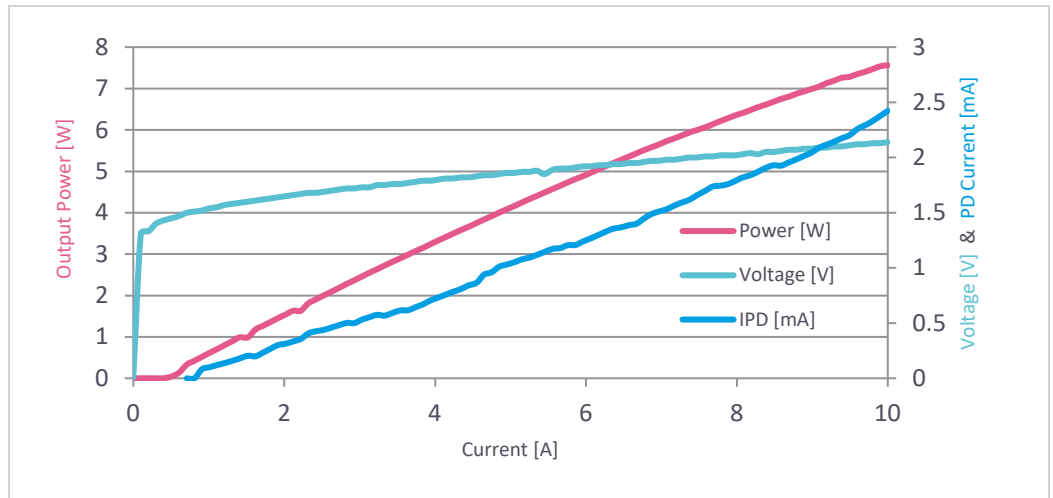
Parameter	Sym	Condition	Min	Typ	Max	Unit
Center wavelength	λ_c	$I = I_{op}$	-10		+10	nm
Output power	P_{OP}	975nm model	6			W
		915, 940, and 960nm models	7			W
Operating voltage	V_{OP}	$I = I_{OP}$			2.2	V
Operating current	I_{OP}	$P=P_{op}$; 975nm model			8	A
		915, 940, and 960nm models			9	A
Threshold current	I_{TH}			0.4	0.6	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}				20	V
PD current	I_{PD}	@ max I_{op}	0.1		25	mA
Operating case temperature	T_c		0		45	$^\circ\text{C}$
Thermistor resistance	R_{TH}	$T = 25^\circ\text{C}$	9500	10000	10500	Ω
Thermistor β coefficient	β	0 / 50°C		3892		

Fiber Specification

Parameter		Min	Typ	Max	Unit
Fiber type, jacket material	Step index, PVDF				
Numerical aperture tolerance	See ordering info			+0.02	
Core diameter		102	105	108	μm
Cladding diameter		123	125	128	μm
Buffer diameter		235	250	265	μm
Jacket diameter			900		μm
Jacket length from end of boot		75		95	mm
Pigtail length		1			m

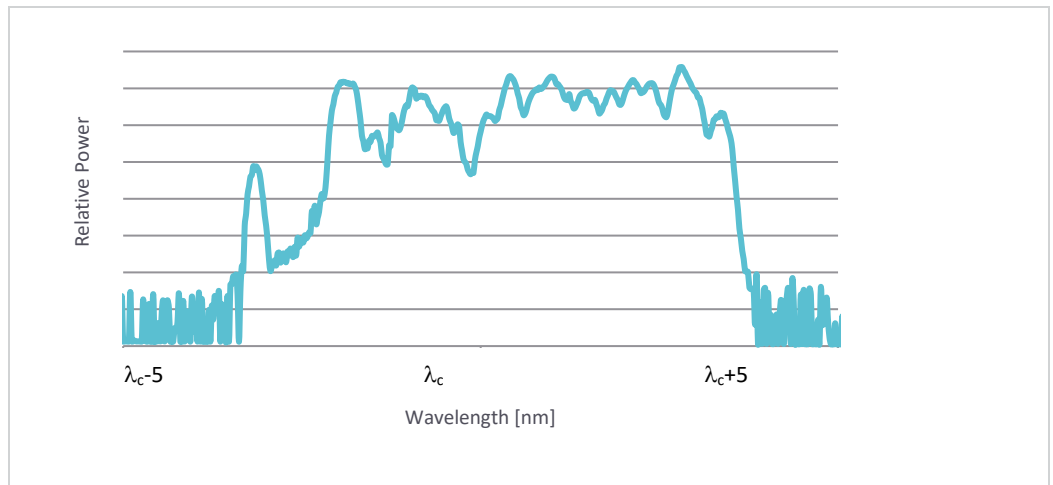
Data Tables

Typical output power and voltage vs current



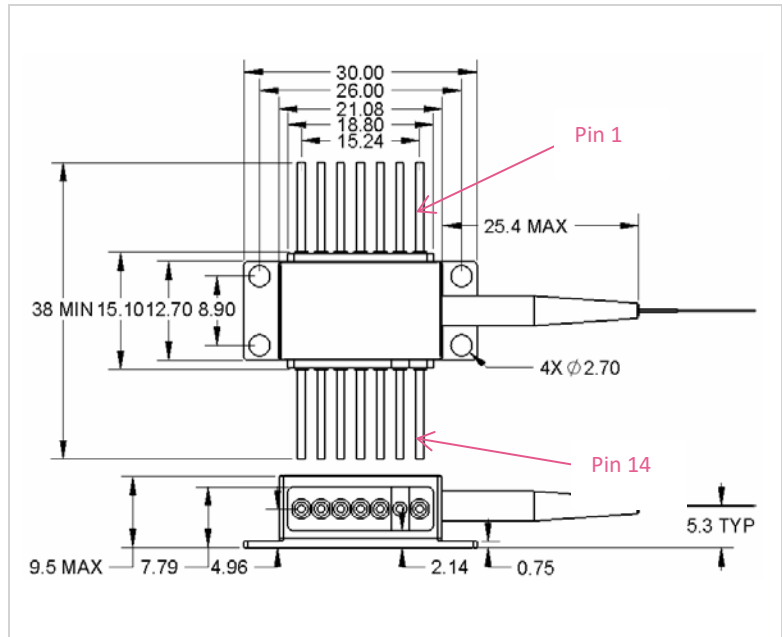
Typical Spectrum

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



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		11	A
Laser reverse voltage	V_R		2	V
Photo diode photo current	I_{PD}		20	mA
Photo diode reverse voltage	V_{PD}		20	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.

Models available

Models	EM322	EM323	EM324	EM325	EM326	EM327	EM328	EM329
Wavelength	915 nm	915 nm	940 nm	940 nm	960 nm	960 nm	975 nm	975 nm
Power	7 W	7 W	7 W	7 W	7 W	7 W	6 W	6 W
Numerical aperture	0.15	0.22	0.15	0.22	0.15	0.22	0.15	0.22

For further information

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