SINGLE-MODE PUMP LASERS

400 mW Kink-Free Output Power Options

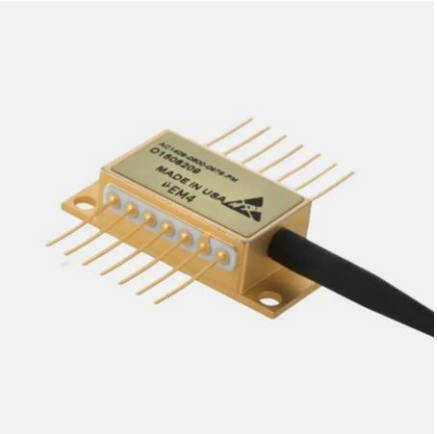
PRODUCT DATASHEET

The EM4 line of single-mode, cooled 974 and 976 nm pump lasers deliver 400 mW of kink-free fiber-coupled power. The modules are packaged using unique laser-weld packaging technology for high reliability over harsh operating conditions. Improved PER is achieved using advanced fiber pigtail construction techniques.

The hermetically sealed 14-pin butterfly package is available with a fiber Bragg grating and includes thermoelectric cooler, thermistor, monitor photodiode and UniDry™ getter. The fiber Bragg grating precisely locks the center wavelength over extended power and temperature range.

Center wavelengths in the range of 974 nm and 976 nm available with tight wavelength control.

EM4's pump lasers are designed to meet the requirements outlined in Telcordia GR-468-CORE.



Wavelengths Available

- 974 nm, 976 nm

Features

- Internal cooler and thermistor
- Fiber Bragg grating (FBG)
- Designed to meet the requirements of Telcordia GR-468-CORE

Applications

- Defense
- Industrial
- Life sciences

Data tables

T_{OP}=25°C, continuous wave, and beginning of life unless otherwise specified.

Optical Characteristics	Sym	Condition	Min	Typ	Max	Unit
Operating chip temperature	T_{CHIP}		20	25	35	°C
Operating power	P_{op}	Kink free power = 400 mW			400	mW
Center wavelength	λ_c	$P=P_{op}$		974, 976		nm
Wavelength tolerance	$\Delta\lambda$	With FBG	-1		+1	nm
Spectral shift with temperature	$\Delta\nu$	With FBG		0.01		nm/°C
PER		@ room temperature		17		dB
Power in band		@λ_c±1nm, P>50mW	90			%

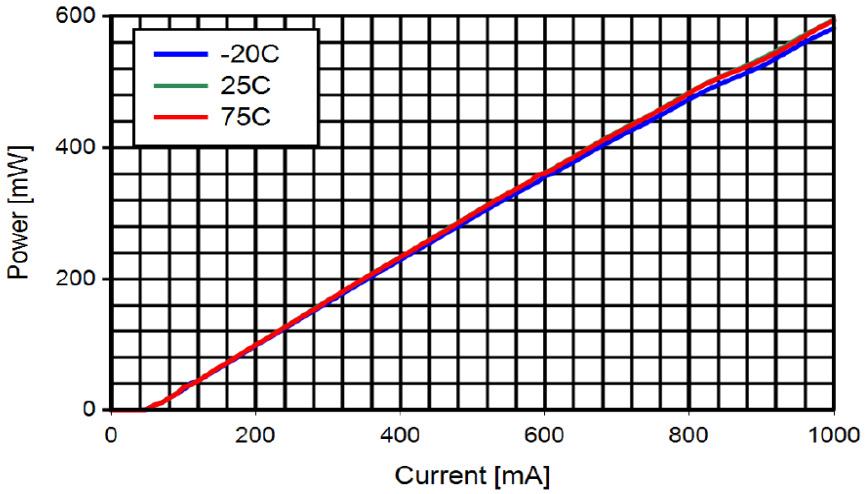
Electrical Characteristics	Sym	Condition	Min	Typ	Max	Unit
Threshold current	I_{TH}				60	mA
Laser drive current	I_{OP}	Kink free power = 400 mW		750	850	mA
Laser forward voltage	V_F	$P=P_{op}$		2.2	2.5	V
Monitor photo diode current	I_{PD}		0.1		5.0	mA
Monitor photo diode dark current	I_D				100	nA
TEC current		T_{amb}=25°C for typ		0.8	4.2	A
TEC voltage		T_{amb}=75°C for max		0.6	3.8	V
Thermistor resistance	R_{TH}	T=25°C	9500	10000	10500	Ω
Thermistor β coefficient	β	0 / 50°C		3892		

Fiber Characteristics	Min	Typ	Max	Unit
Fiber type, jacket material		PM, Hytrel Acrylate		
Core diameter	5.6	6.6	7.6	µm
Cladding diameter	123	125	127	µm
Buffer diameter	230	245	260	µm
Pigtail length with grating	1.5	3		m
Pigtail length without grating	1.0	1.3		m
Minimum bend radius	35			mm
Proof strength	100			kpsi

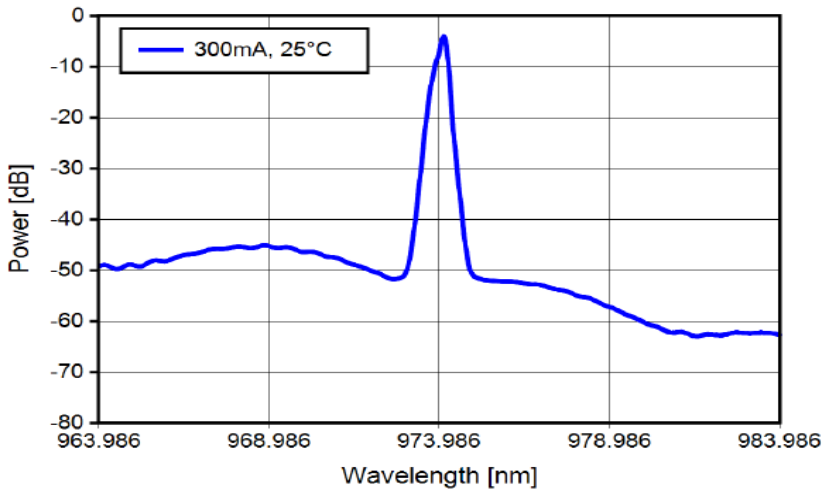
Typical Operating Characteristics

T_{OP} = -20°C, 25°C, 75°C

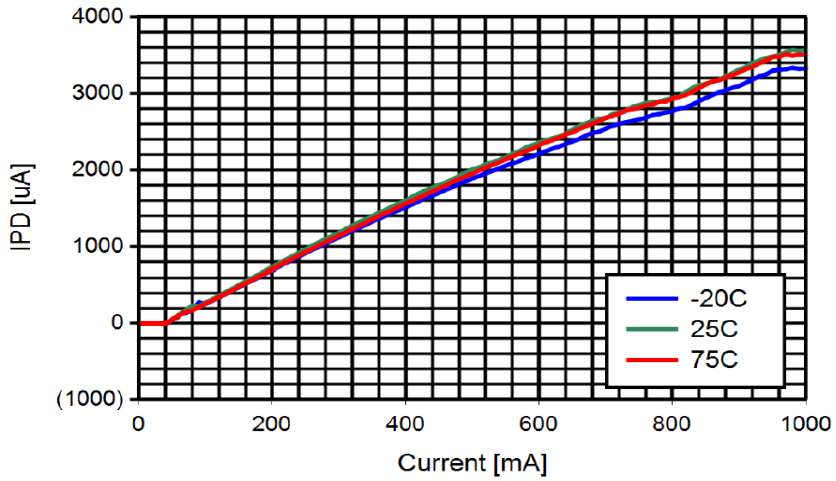
Output power vs laser diode input current.



Typical spectrum (974nm shown)

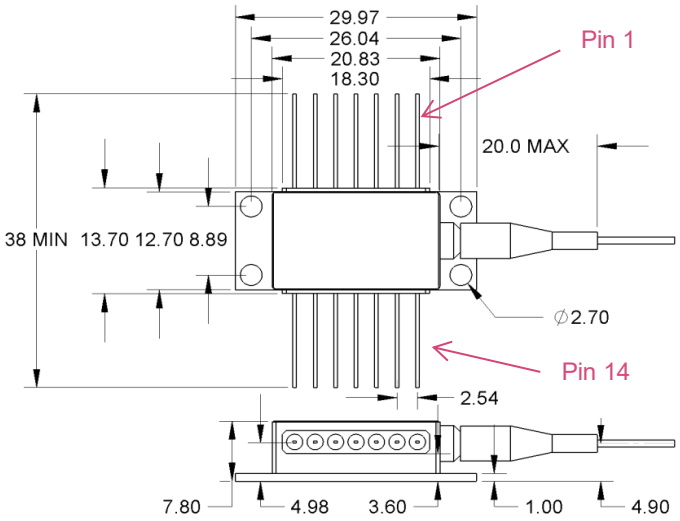


Typical back facet photodiode monitor current vs input current



Pinout and Mechanical Drawing

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



Absolute Maximum Ratings*	Sym	Min	Max	Unit
Storage temperature	T_{STG}	-40	+85	°C
Operating case temperature	T_{OP}	-20	+75	°C
Laser forward current	I_F		1.0	A
Laser reverse voltage	V_R		2.0	V
Photo diode photo current	I_{PD}		10	mA
Photo diode reverse voltage	V_{PD}		20	V
TEC current	I_{TEC}		6.0	A
TEC voltage	V_{TEC}		4.0	V
Thermistor current			2	mA
Thermistor voltage			5	V
Lead soldering time			10	s
Lead soldering temperature			250	°C
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.

Ordering Information

Example part number: AC1405-0976-0400-PM

Order code				①			②					③					④	
A	C	1	4	0	5	-					-					-		

①	Model	Standard	
	Code	AC1405	

②	Kink free power	400 mW	
	Code	0400	

③	Wavelength[1]	974 nm	976 nm
	Code	0974	0976

④	Fiber type	Polarization-maintaining	
	Code	PM	

Contact sales if connector required.

For further information

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