

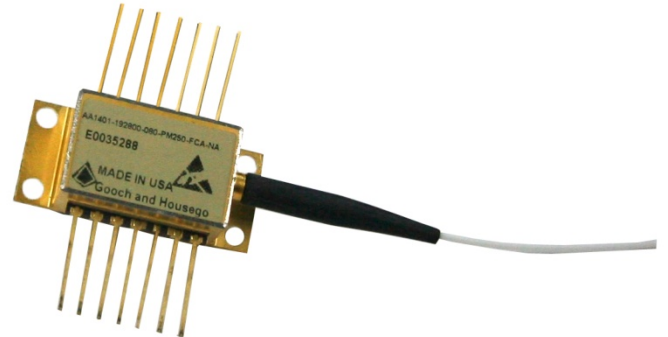
AC1409 Series Single Mode Pump Lasers, 600-700mW

Features

- Tested to Telcordia GR-468-CORE
- Optional Fiber Bragg Grating (FBG)
- Internal cooler and thermistor

Applications

- Defense
- Industrial
- Life Science



General Description

The Gooch & Housego line of single mode, cooled 980 nm pump lasers deliver >700mW 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 976 nm to 980 nm are available with tight wavelength control. G&H's pump lasers are tested to meet the requirements outlined in Telcordia GR-468-CORE.

Absolute Maximum Ratings

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.

Parameter	Sym.	Condition	Min	Max	Unit
Storage Temperature	T _{STG}		-40	+85	°C
Operating Case Temperature	T _{OP}		-20	+65	°C
Laser Forward Current	I _F			1.2	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		HBM		500	V

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Optical Characteristics

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

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Operating Chip Temperature	T_{CHIP}		20		35	$^{\circ}\text{C}$
KINK Power	P_{OP}	$I=I_{KINK}$	See ordering information			mW
Center Wavelength	λ_C	$P=P_{OP}$	See ordering information			nm
Wavelength Tolerance	$\Delta\lambda$	With Fiber Bragg Grating	-1		1	nm
		Without Fiber Bragg Grating	-5		5	
Spectral Shift With Temperature	$\Delta\nu$	With Fiber Bragg Grating	0.01			nm/ $^{\circ}\text{C}$
		Without Fiber Bragg Grating	0.30			
PER			17			dB
Power In Band		@ $\lambda_C \pm 1\text{nm}$, $P>50\text{mW}$	90			%

Electrical Characteristics

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Threshold Current	I_{TH}				80	mA
Laser Drive Current	I_{OP}		See ordering information			mA
Laser Forward Voltage	V_F	$I=I_{OP}$, MAX		2.0	2.7	V
Monitor Photo Diode Current	I_{PD}	$P=P_{OP}$	0.1		6.0	mA
Monitor Photo Diode Dark Current	I_D				100	nA
TEC Current		$T_{amb}=25^{\circ}\text{C}$ for typ		0.4	3.5	A
TEC Voltage		$T_{amb}=75^{\circ}\text{C}$ for max		0.3	3.5	V
Thermistor Resistance	R_{TH}	$T=25^{\circ}\text{C}$	9500	10000	10500	Ω
Thermistor β Coefficient	β	0 / 50°C	3892			

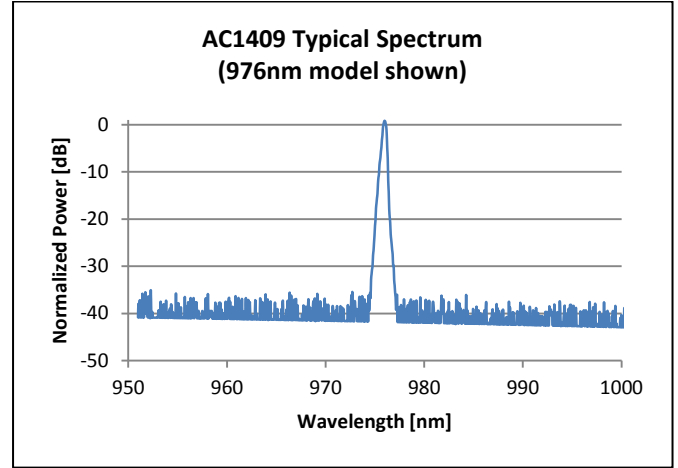
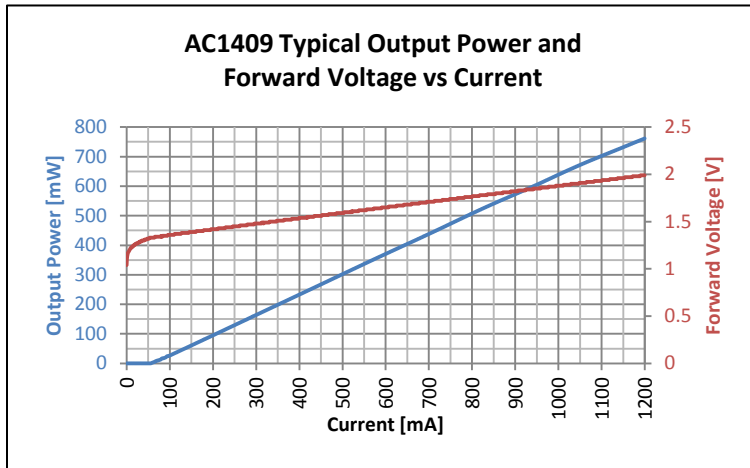
Fiber Specification

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Fiber Type			PM			
Jacket Material			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
Proof Strength			100			kpsi

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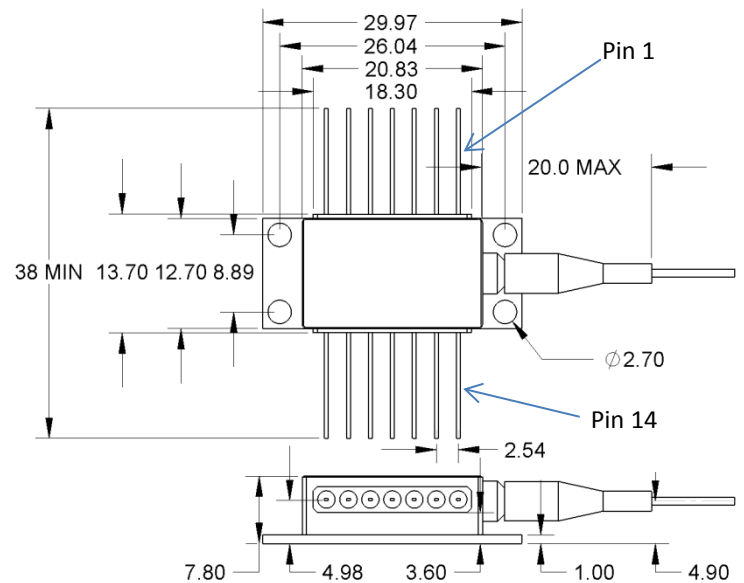
Typical Operating Characteristics

T_{OP}=25°C



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



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Ordering Information

AC1409	XXXX	YYYY	ZZ	Parameter	Option	Description
↑	↑	↑	↑	Grating Type	SM	SM Grating
					PM	PM Grating
					00	No Grating (free running)
				Wavelength* [nm]	0974	974nm
					0976	976nm
					0980	980nm
				Power [mW]	0600	600mW
					0700	700mW
				Product Family	AC1409	Single Mode Laser

*Other wavelengths available upon request.

Typical Characteristics

Device	Max Kink Free Power [mW]	Typical Kink Current [mA]	Typical Operating Power [mW]	Typical Operating Current [mA]
AC1401-0700-YYYY-ZZ	700	1150	650	1000
AC1401-0600-YYYY-ZZ	600	1000	540	900

The component complies with all applicable portions of 21 CFR 1040.10, 21 CFR 1010.2 and 21 CFR 1010.3. Since this is a component, it does not comply with all of the requirements contained in 21 CFR 1040.10 and 21 CFR 1040.11 for complete laser products.

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