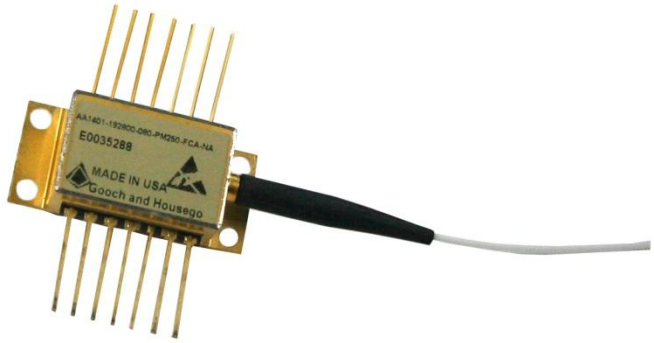
Gooch & Housego
ENABLING PHOTONIC TECHNOLOGIES

500-700mW Single Mode Pump Lasers

Features

- Tested to Telcordia GR-468-CORE
- Optional Bragg grating
- Internal cooler and thermistor



Applications

- Telecom
- CATV
- Defense
- Life Science

General Description

The Gooch & Housego line of single mode, cooled 980 nm pump lasers deliver up to 700mW of fiber-coupled power. The modules are packaged used the unique, patent pending technology Uniline™ for permanent fiber alignment. Uniline™ provides superior end-of-life optical and electrical performance, achieved by maintaining a highly stable, all-axis alignment lock between the laser chip and the tip of the single-mode fiber.
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 Uniline™ family of 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 these or conditions beyond these are 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			2.5	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°C, continuous wave and beginning of life unless otherwise specified.

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Operating Chip Temperature	T_{CHIP}		20		35	°C
KINK Power	P_{op}	$I=I_{KINK}$		See ordering information		mW
Center Wavelength	λc	$P=P_{op}$		See ordering information		nm
Wavelength Tolerance	Δλ	With Fiber Bragg Grating	-1		1	nm
		Without Fiber Bragg Grating	-5		5	
Spectral Shift With Temperature	Δν	With Fiber Bragg Grating			0.2	nm/°C
		Without Fiber Bragg Grating		0.35		
Power In Band		@λc ±1nm, P>50mW	90			%

Electrical Characteristics

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Threshold Current	I_{TH}				55	mA
Laser Drive Current	I_{op}			See ordering information		mA
Laser Forward Voltage	V_F	$I=I_{op,}$ MAX			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		ΔT=25°C, $P=P_{op}$			3.5	A
TEC Voltage		ΔT=25°C, $P=P_{op}$			3.5	V
Thermistor Resistance	R_{TH}	T=25°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			120			kpsi

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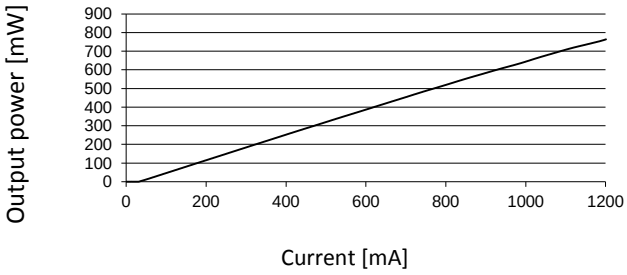
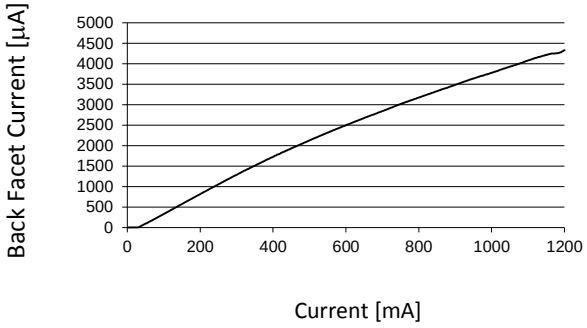
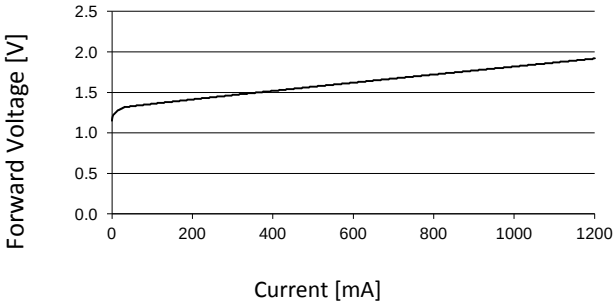
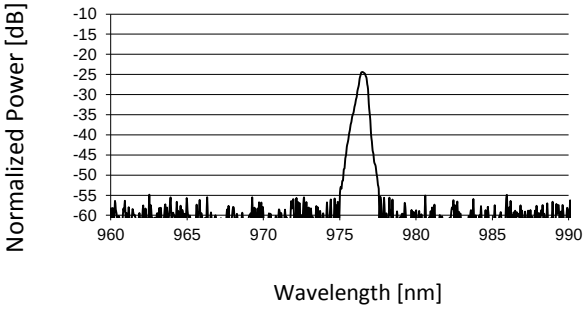
Typical Operating Characteristics

T_{OP}=25°C



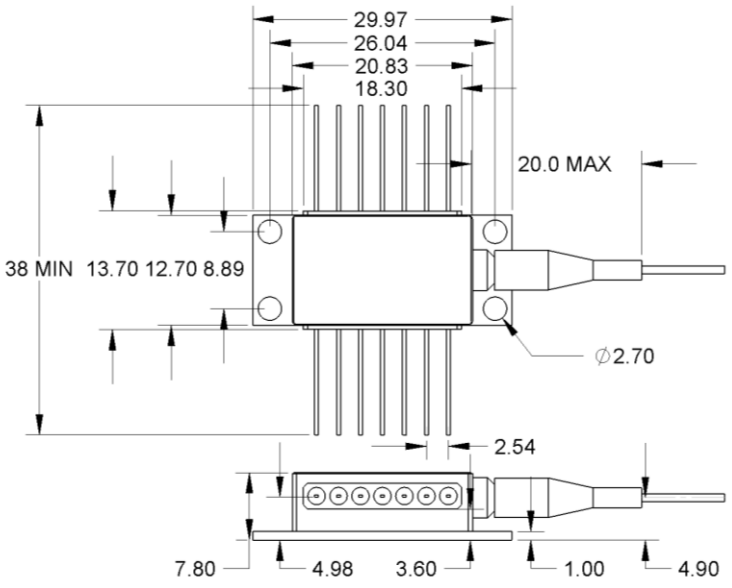






Pinout and Mechanical Drawing

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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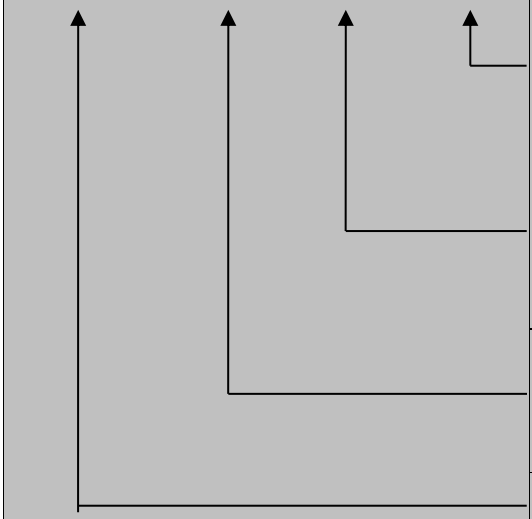
500-700mW Single Mode Pump Lasers

Ordering Information

AC1401 XXXX YYYY ZZ	Parameter	Option	Description
	Grating Type	SM	SM Grating
		PM	PM Grating
	Wavelength [nm]	00	No Grating (free running)
		0974	974nm
		0976	976nm
		0978	978nm
		0980	980nm
	Power [mW]	0500	500mW
		0600	600mW
		0700	700mW
	Product Family	AC1401	Single Mode Laser

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
AC1401-0500-YYYY-ZZ	500	800	450	720

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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