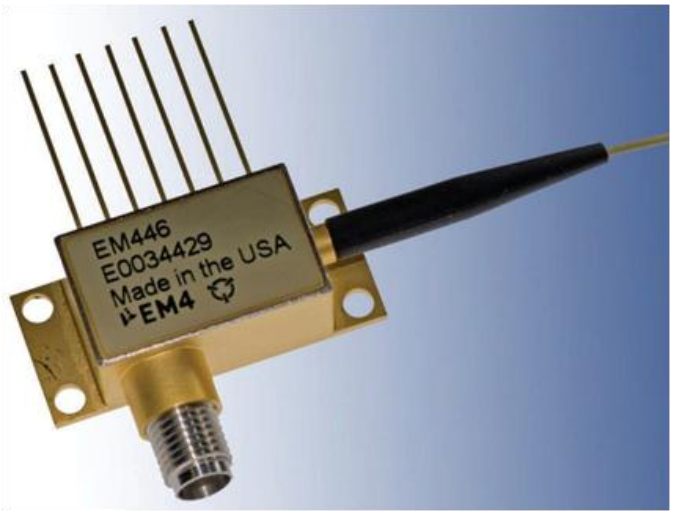
1310nm/1550nm CWDM High-Bandwidth Laser

Features

- 10-18mW output power
- High bandwidth
- Built in isolator
- Ultrafast pulsing capability
- Laser welded, hermetically sealed
- Built in TEC, thermistor, and monitor detector
- Rugged to shock and vibration



Applications

- Analog RF links
- High speed pulsing

General Description

The AA0701 distributed feedback laser (DFB) is an InGaAsP/InP multi-quantum well laser diode. The module is ideal in applications where high bandwidth, mode stability, low RIN and stable output power are needed. AA0701 contains a thermo-electric cooler, thermistor, back facet monitor detector, and bias tee. The module is designed and built using G & H's high-reliability platform for defense components.

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 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	+70	°C
Laser Forward Current	I_F			120	mA
Laser Reverse Voltage	V_R			2	V
Photo Diode Photo Current	I_{PD}			10	mA
Photo Diode Reverse Voltage	V_{PD}			20	V
TEC Current	I_{TEC}			3.0	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
RF Input Power	P_{IN}			20	dBm

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}		15		35	°C
Center Wavelength	λ	$P=P_{OP}$	-10 -1	1310 1550[1]	+10 +1	nm
Output Power (except 1310nm SMF)	P_{OP}	$I=I_{OP}$	10			mW
Linewidth	Δ υ	CW		1		MHz
Relative Intensity Noise	RIN	$P=P_{OP}$, 0.2GHz→3GHz		-150		dB/Hz
Side Mode Suppression	SMSR	$P=P_{OP}$	30			dB
Optical Isolation	ISO		30	35		dB
Polarization Extinction Ratio	PER	PM fiber option	17	19		dB
Tracking Error		$P=P_{OP}$	-0.5		0.5	dB

Note[1]: 1550nm standard, other center wavelengths available from 1528-1570nm. Contact factory for more information.

Optical Fiber Specification

Parameter	Type	Unit
Fiber Type	PM/SM dependent on option	-
Connector Type	FC/APC, SC/APC, LCA, None, dependent on option	-
Buffer Diameter PM Option	250	µm
Buffer Diameter SM Option	900	µm
Buffer Material PM Option	Acrylate	-
Buffer Material SM Option	Hytrel	-
Minimum Pigtail Length	1	m
Minimum Bend Radius	35	mm

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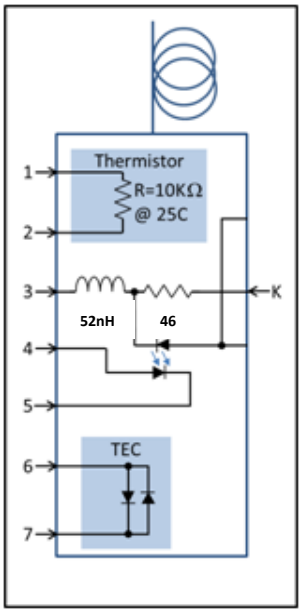
Electrical Characteristics

Parameter	Sym.	Condition	Min	Typ	Max	Unit
Threshold Current	I_{TH}		8		20	mA
Laser Drive Current	I_{op}			75	100	mA
Laser Forward Voltage	V_F	$I=I_{MAX}$		1.6	2	V
Monitor Photo Diode Current	I_{PD}	$P=P_{OP}$	50			µA
Monitor Photo Diode Dark Current	I_D				100	nA
Modulation Bandwidth	F	-3dB from low frequency average	10			GHz
Electrical Back Reflection	S_{11}				-10	dB
Modulation Input Matching	Z_{IN}			50		Ω
TEC Current		T_{OP}=70°C, $P=P_{OP}$, T_{CHIP}=25°C			2.0	A
TEC Voltage		T_{OP}=70°C, $P=P_{OP}$, T_{CHIP}=25°C			2.5	V
Thermistor Resistance	R_{TH}	T=25°C	9500	10000	10500	Ω
Thermistor β Coefficient	β	0 / 50°C		3892		
Thermistor Steinhart-Hart Coeff.	A B C			1.1291e-3 2.3413e-4 8.7674e-8		

Device Pinout

Pin	Description
1	Thermistor
2	Thermistor
3	Laser Cathode (Bias)
4	Monitor PD Anode
5	Monitor PD Cathode
6	TEC +
7	TEC -
Pkg/Shield	Laser Anode
K	RF Input



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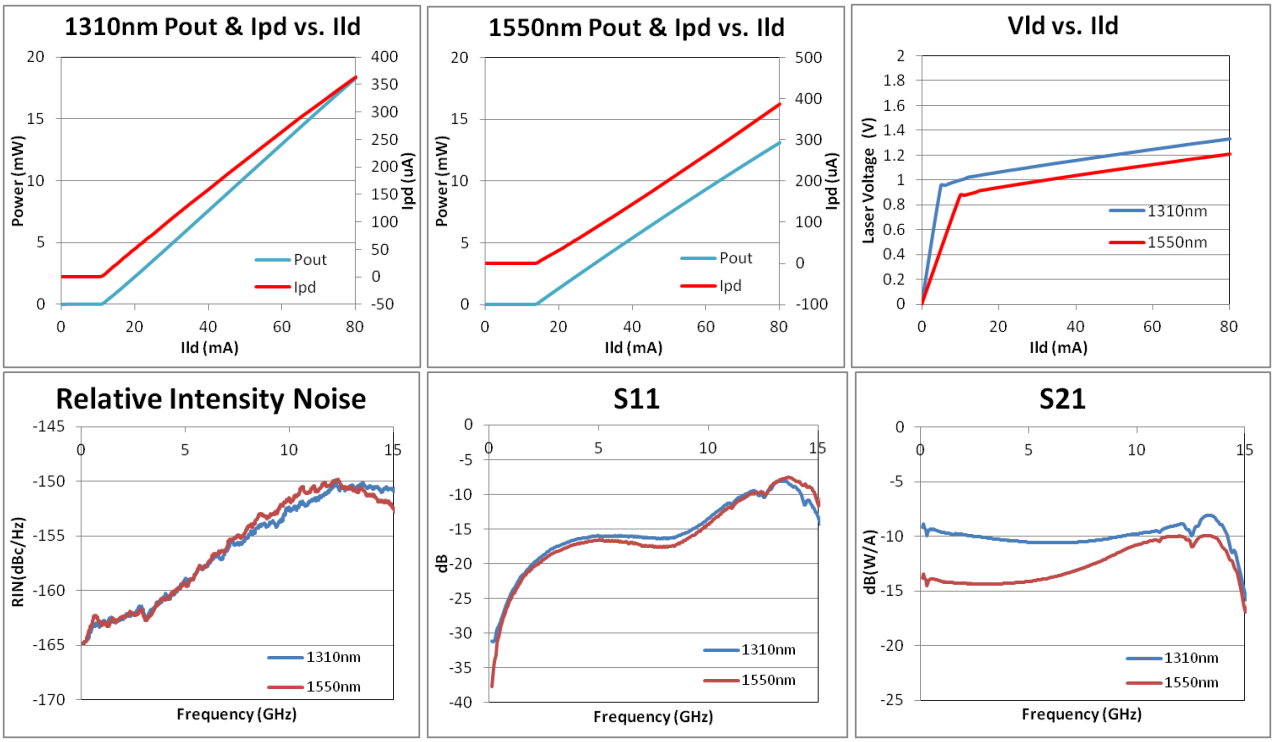
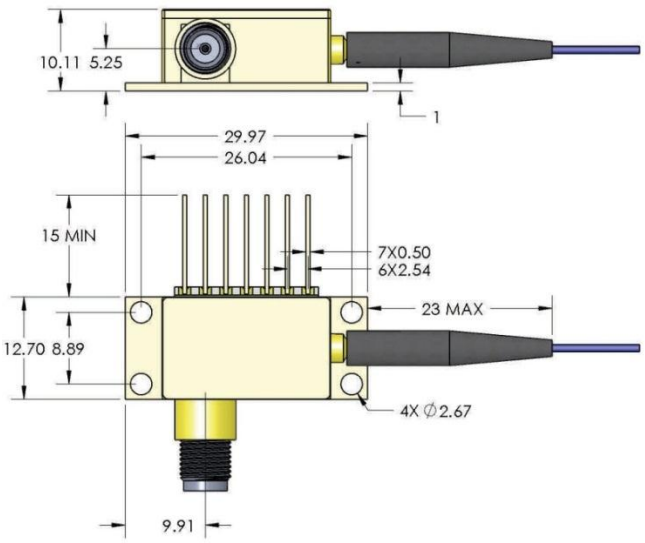
Typical Operating Characteristics



Mechanical Drawing

All units in mm



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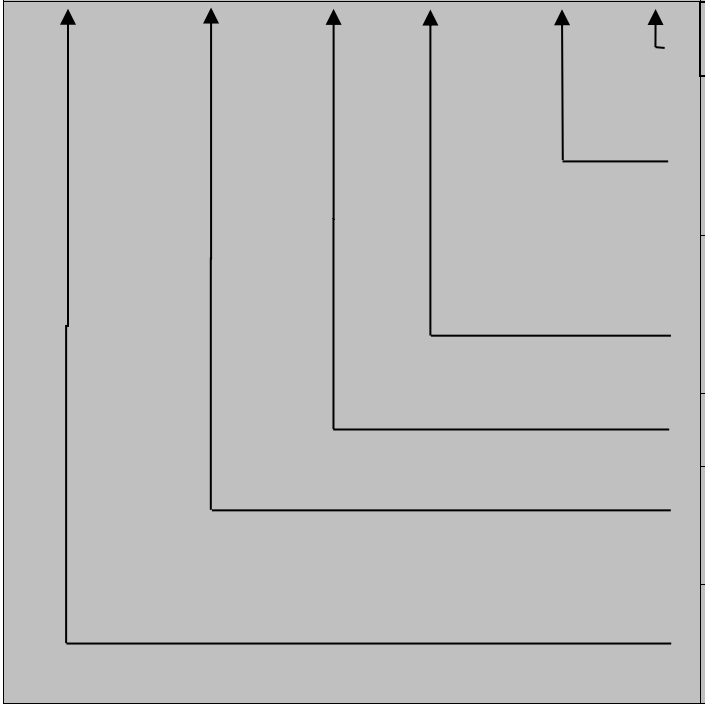
Ordering Information



Parameter	Option	Description
Bias-T	50	50Ω Matched Bias-T
Connector	NOC	No Connector
	FCA	FC/APC
	SCA	SC/APC
	LCA[1]	LC/APC, See Note 1 below
Fiber & Buffer	SM250	Single Mode Fiber, 250um Buffer
	SM900	Single Mode Fiber, 900um Buffer
	PM250	PM Fiber, 250um Buffer
	PM900	PM Fiber, 900um Buffer
Output Power	10	1530-1570nm
	18	1310nm
Wave-length	FREQUE	For 1310nm: 228849
		For 1550nm: 193414
		For 1528-1570nm: Contact Factory
Product Family	AA0701	High-Bandwidth DFB Laser

1. LCA connector only offered with SM900 fiber. Fiber length 530±20mm as measured from outside wall of package (snout end) to tip of ferrule on LCA connector.

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.

For pricing and delivery information, please contact G & H direct at +1 781 275 75 01, sales@em4inc.com .

The information published in this datasheet is believed to be accurate and reliable. G & H reserves the right to change without notice including but not limited to the design, specification, form, fit or function relating to the product herein.