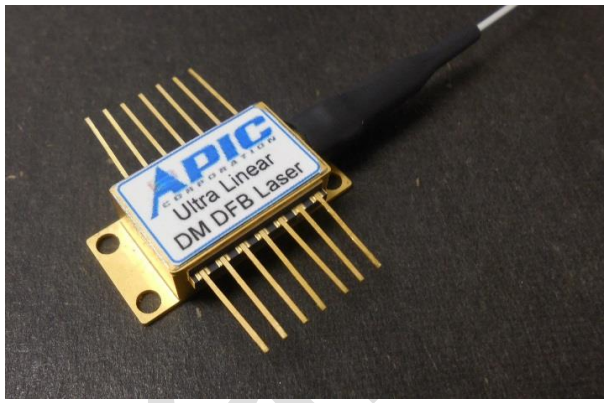
Product Specification

5800 Uplander Way
Culver City, CA 90230
Tel: (310) 642-7975
sales@apichip.com
www.apichip.com

Highly Linear, Direct Modulated DFB Laser Module

PRODUCT FEATURES

- Direct modulated DFB laser
- 14 pin, standard butterfly package and OC-48 pin compatibility
- Low RIN
- Ultra high linearity of the laser P-I and V-I
- Low threshold current
- Narrow linewidth
- High side mode suppression ratio (SMSR)



APPLICATIONS

- RF over fiber links at frequency up to 6 GHz
- Wireless networking and network backbone
- OEM applications in optical communications, networking, and sensors
- Cable TV networks, passive optical networks (PON), DOCSIS 3.1
- DWDM communication networks including digital, analog
- Applications requiring very good linearity; such as QAM

DESCRIPTION

This laser is a dense wavelength division multiplexing (DWDM) laser for analog modulation applications. It uses a distributed feedback (DFB) design based on a proprietary epitaxy and structure to eliminate relaxation oscillations for high performance analog applications. The laser's excellent linearity and operating characteristics minimizes degradation of the transmitted RF signals. It is hermetically sealed in a standard 14 pin butterfly package with an internal thermo-electric cooler (TEC), and photodiode for power monitoring. The laser is available at customer-selected ITU wavelengths for DWDM.

ABSOLUTE MAXIMUM RATINGS

Parameter	Minimum	Maximum	Units	Condition/Comments
Operating Case Temperature	-40	75	°C	With TEC, at operating current
Storage Temperature	-40	85	°C	
Laser Forward Current		200	mA	
PD Reverse Voltage		5.5	V	
Laser forward Voltage		2	V	
TEC Current	-1.0	+1.0	A	
ESD	-500	500	V	

OPTICAL AND ELECTRICAL SPECIFICATIONS

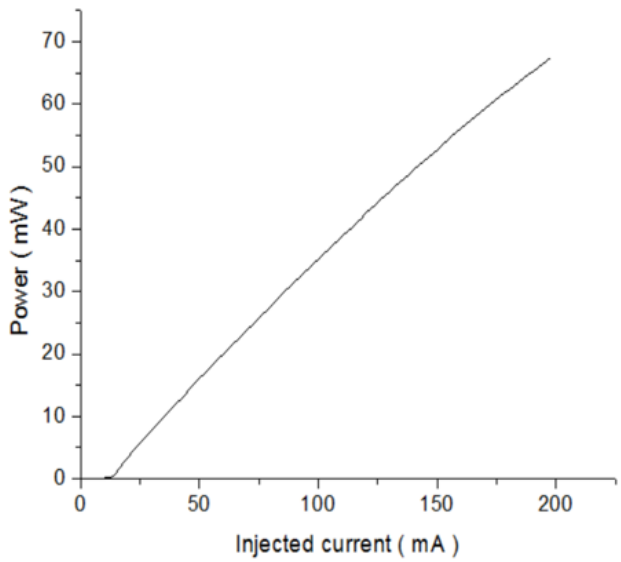
Parameter	Symbol	Min.	Typ.	Max.	Units	Condition/Comments
3-dB band width	f	6	6.5	10	GHz	
Operational Wavelength	λ	1530		1565	nm	On standard 100 GHz ITU channel grid
Optical Output Power	P_O	10		40	mW	Application-dependent
Optical Return Loss	ORL	40	45		dB	
Side mode Suppression Ratio	SMSR	35	45		dB	At operating current
Relative Intensity Noise	RIN		-162	-155	dB/Hz	At operating current
Laser Threshold Current	I_{th}	9	10	12	mA	
Operating Current	I_{op}		150	200	mA	
Forward voltage	V_f			2.0	V	At operating bias
Polarization Extinction Ratio	PER		19		dB	
Third Order Intercept Point	IIP3	35	40		dBm	At operating bias
Spurious-free dynamic range	SFDR		119		dB•$Hz^{2/3}$	At operating bias

MECHANICAL SPECIFICATIONS

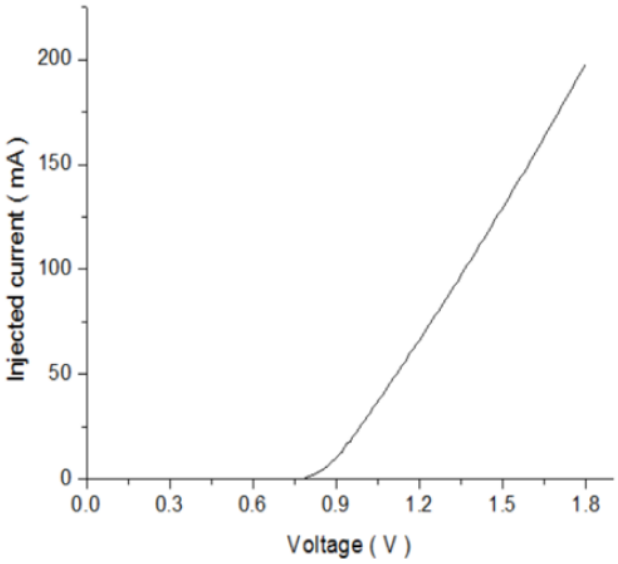
Parameter	Symbol	Minimum	Maximum	Units	Condition/Comments
Dimensions	L x W x H	20.83 x 12.7 x 7		mm	
Fiber Pigtail Length	FL	0.95	1.05	m	Standard is 1 m; other lengths available subject to lead time and order minimums
Pigtail Termination					FC/APC, with PM single mode fiber (FC/PC not recommended)

LASER CHARACTERISTICS

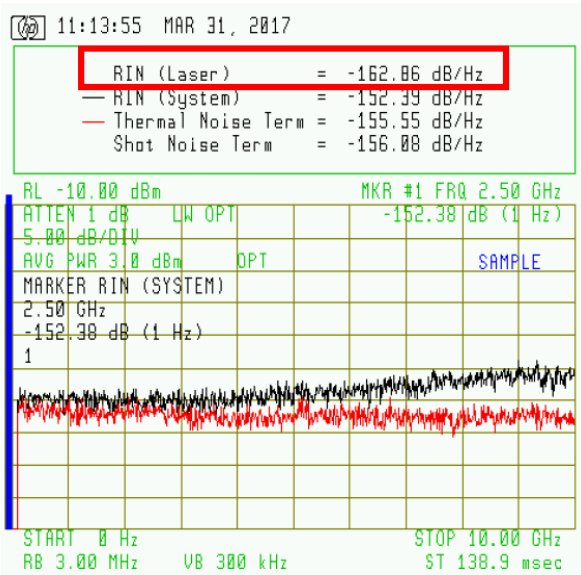
The typical test data for laser module power as a function of injected current (P-I), forward voltage as a function of injected current (I-V), relative intensity noise (RIN), and laser spectrum are shown below.



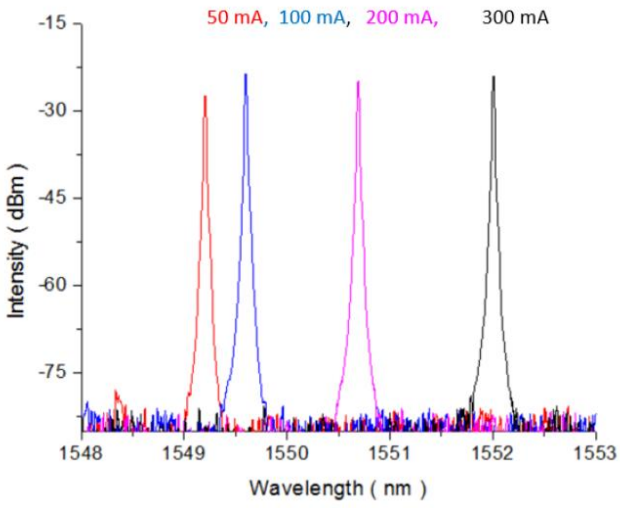
Laser P-I



Laser I-V

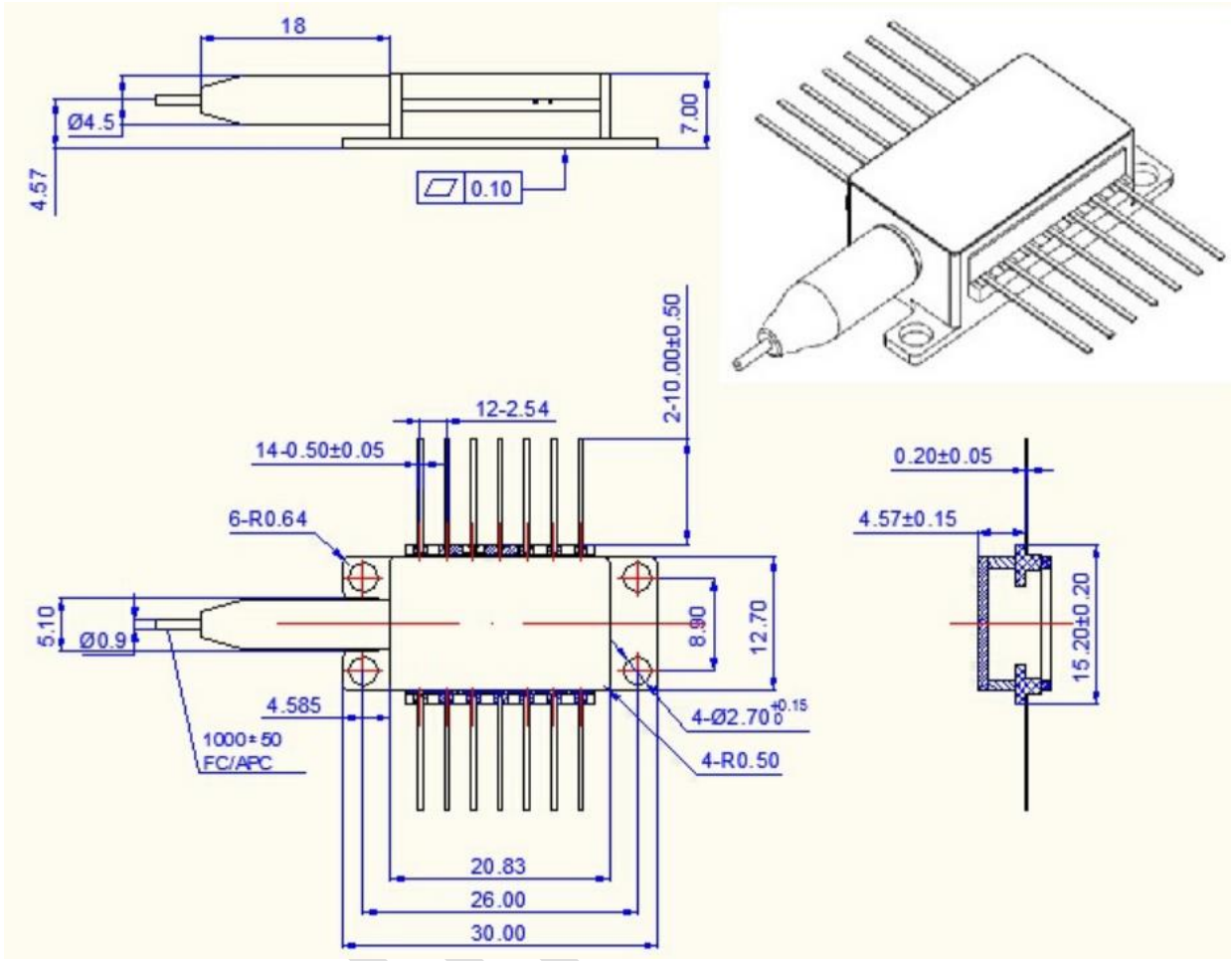


Laser RIN

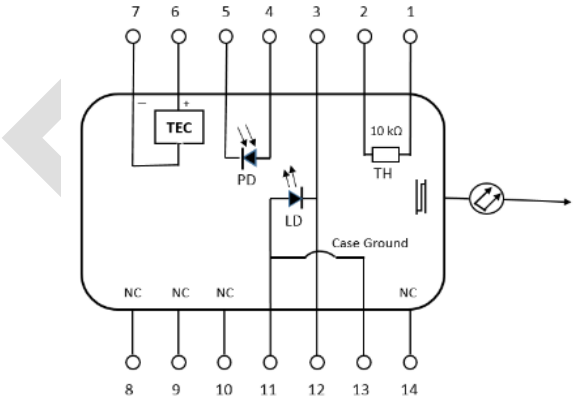


Laser Optical Spectrum

PACKAGE DRAWING



PIN ASSIGNMENTS



PIN Connections

Pin number	Function
1	Thermistor
2	Thermistor
3	Laser Cathode
4	PD Anode
5	PD Cathode
6	TEC (+)
7	TEC (-)
8	NC
9	NC
10	NC
11	Laser anode case GND
12	Laser cathode
13	GND
14	NC

ORDERING INFORMATION