CA92001 50 GHz ITU Tunable Laser Source Module

Product Specification

Revision:1.0

Description

The CA92001 is a tunable laser module compatible with the OIF “Integrabl Tunable Laser Assembly” MSA, based on novel monolithic InP chip that integrates a tunable MG-Y laser with a semiconductor optical amplifier (SOA).
The MG-Y(Modulated Grating Y-branch) laser is an electronically tuned device that can address any wavelength in the C-band. Since no mechanical or thermal adjustments are necessary, channel switching is fast with straight for ward control circuitry. The SOA facilitates flexible control of the output power and acts as a shutter when reverse biased, enabling dark tuning between channels. The integrated chip has been optimized to improve the power efficiency. The chip is Based on advanced InP technology platform, with proven reliability. The devices are Packaged into a compact, low- profile hermetically sealed package, with an internal Optical isolator and a wavelength locker. The locker monitors both output power
And frequency of the light emitted from the front facet of the chip, enabling a Closed loop control that guarantees stability of the frequency and output power Over life, to within the requirements of 50GHz ITU grid spacing applications.
The assembly contains all electronics necessary to control the laser, offering users a simple and well-defined digital command interface. The CA92001 is provided with polarization maintaining fiber for use with an external modulator.

Features

- OIF ”Integrable Tunable Laser Assembly” MSA compatible laser and control electronics assembly
- Full C-band tuning(89channelsat50GHz spacing) High, flexibly adjustable output power, from 9 to 13 dBm Low power dissipation, typically< 3.7W at 75℃
- High side-mode suppression ratio>40dB
- Integral wavelength locker, allowing stabilization to within ±2.5GHz over life
  Compatible with 50GHz ITU grid spacing
- Up to±5GHz detuning from ITU grid
- Channel to channel tuning time<0.1s
- Dark tuning by reverse biasing the integrated amplifier(>40dBsuppression)
- FM dither for SBS suppression
- Transmitter trace tone(TxTRACE)
- Polarization maintaining fiber pigtail

Applications

- Tunable DWDM transponders and transceivers
- Dynamic provisioning and wavelength routing in metro DWDM systems
  Reconfigurable optical add/drop multiplexers(ROADM)
- Optical packet or burst-mode switching Test and measurement
- DWDM Transmission system

Specifications

Optical Performance

Parameter	*Sym*	*Conditions*	*Min*	*Typ*	*Max*	*Unit*
Output power	Pmax	All channels, TC = -5℃...75℃, BOL	13			dBm
Output power variation over life	AP	Locked operation	-0.5		0.5	dB
Output power adjustment range[1]			4			dB
Output power when disabled[2]					-35	dBm
Lowest emission frequency	vmin		191.15	191.70		THz
Highest emission frequency	vmax			196.10	196.25	THz
Lowest emission wavelength	Amin		1527.6	1528.8		nm
Highest emission wavelength	Amax			1563.9	1568.4	nm
Channel spacing		ITU grid		50		GHz
Number of channels[3]		Consecutive channels at 50 GHz spacing within the [vmin … vmax] range	89			
Frequency accuracy	Av	Locked operation, EOL	-2.5		2.5	GHz
Frequency detuning		Relative to 50 GHz ITU grid	-5		5	GHz
Frequency tuning time	tT			0.03	0.10	s
Side-mode suppression ratio	SMSR		40			dB
Optical signal-to-noise ratio	OSNR	0.1 nm bandwidth	50	55		dB
Linewidth	LW	Phase noise density meas.			5	MHz
Relative intensity noise	RIN	Average over 0.1 – 10 GHz			-140	dB/Hz
Back reflection tolerance					-14	dB
Optical isolation			40			dB
Polarization extinction ratio	PER		20			dB

1. Range over which the output power can be adjusted down from the output power P_{max}, while maintaining all other optical specifications.
2. Output power when the optical output is disabled, e.g. while tuning to another channel.
3. Start frequency of the 89 channel range to be specified when ordering.

Electrical and Thermal Performance

Parameter	Sym	Conditions	Min	Typ	Max	Unit
Operating case temperature	T_C		-5		75	°C
Positive supply voltage	V_{CC}		3.15	3.30	3.45	V
Positive supply current	I_{CC}			0.3	0.4	A
Negative supply voltage	V_{EE}		-5.45	-5.20	-4.95	V
		Peak	-1.2			A
Negative supply current	I_{EE}					
		Steady state, TC = 75°C	-0.7			A
Total power consumption	P_{tot}	Steady state, TC = 75°C		<3.7	4.8	W
Input signal pin voltage, low	V_{IL}		0.0		0.8	V
Input signal pin voltage, high	$\mathbf{V}_{IH}$		2.0		3.45	V
Output signal pin voltage, low	V_{OL}	I_{OL} = 4 mA	0.0		0.6	V
Output signal pin voltage, high	V_{OH}	I_{OH} = -4 mA	2.4		V_{CC}	V
Power supply noise		100 Hz to 20 MHz			1.0	% rms