ALPES LASERS

The Source for Unipolar Quantum Cascade Lasers for Mid and Far Infrared

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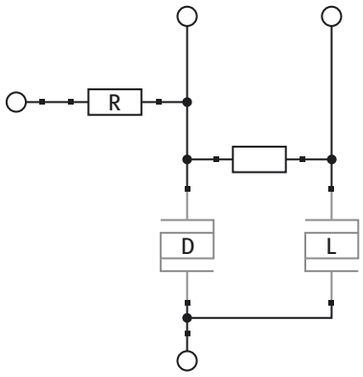

Extended tuning DFB-QCL AM/FM modulator

Alpes Lasers introduces a new class of extended tuning DFB quantum cascade lasers (QC-ET) with AM/FM modulator. Contrarily to standard DFB lasers, these lasers use independent inputs to control the wavelength and amplitude of the emitted light, enabling true AM and FM modulation with minimal cross-talk.

Electro-optical Characteristics

QUANTITY	ACRONYM	MIN	TYP.	MAX	UNIT	NOTE
Average power	P	1	10	–	mW	1
Min power tuning range	MPTR	5	6.5	10	cm^{-1}	2
Duty cycle	DC	0	–	100	%	3
Central wavelength	CWL	900	1275	2500	cm^{-1}	4
FM modulation BW	FMB	1	2	5	kHz	5
AM crosstalk	AMC	–	-13	-10	dB	6
AM modulation BW	AMB	8	10	–	MHz	7
FM crosstalk	FMC	–	–	0.05	cm^{-1}	8
	Packaging	*HHL*	–	–	–	9
Operation temperature	T_{op}	-55	15	30	°C	10
[Laser] Operation temperature	T_{opL}	0	10	50	°C	11
TEC current	TECI	0	1	2.5	A	12
TEC Voltage	TECV	0	5	11	V	12
Heatsink cooling capacity		25	35	65	W	
Package size LxWxH		33x45x19			mm^3	13
Lead time	–	6	8	26	weeks	14

Key features

- Wavelength and power independent control
- Standard DFB tuning
- Extended tuning at constant heat-sink temperature
- Additional separate power control
- Cross-talk compensation

Key benefits

- Increased wavelength scanning span fully electrically (Increased electrical tuning)
- Wavelength dither and ramps as in conventional DFB
- DFB wavelength reproducibility
- DFB linewidth and noise
- Pure AM & FM modulation

CLASS 3B LASER PRODUCT

Data presented are valid across the spectral range where QC lasers can be manufactured and the typical values are given for a 1275 cm^{-1} laser. These specifications may be changed without further notice.

1. Measured in CW operation
2. Within the MPTR the max power may not be achieved but only a min power of 1mW.
3. Operation is typically CW but pulsed operation is possible however single mode operation may not be guaranteed for short pulses or at the beginning of the pulse i.e. the first 100 ns.
4. Off the shelf wavelength is 1270 cm^{-1}, up to 6 month lead time may required for other wavelength.
5. 3 dB cut off frequency.
6. dB ratio of the residual amplitude modulation with 1 cm^{-1} Peak to Peak FM modulation amplitude.
7. 3 dB cut off frequency
8. Wavelength change when the amplifier current is modified and the seed current stable (i.e. cross-talk).
9. Other configuration may be developed, please enquire.
10. Higher temperatures may be possible however the performances will be reduced.
11. May not be attainable if the heat-sink performances are not sufficient i.e. a dissipation capability of less than 10W/K.
12. The typical values are obtained in nominal conditions, deviations to these conditions towards cooler environment will reduce the cooling requirement and increase them for higher temperature conditions. A heat dissipation capacity of 10 W/K is recommended to ensure the heatsink temperature does not degrade significantly the cooling capacity.
13. Overall dinensions, excluding 20 mm pins. Other configurations may be adapted, please inquire.
14. Off the shelf wavelength is 1270 cm^{-1}, up to 6 month lead time may required for other wavelength.

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