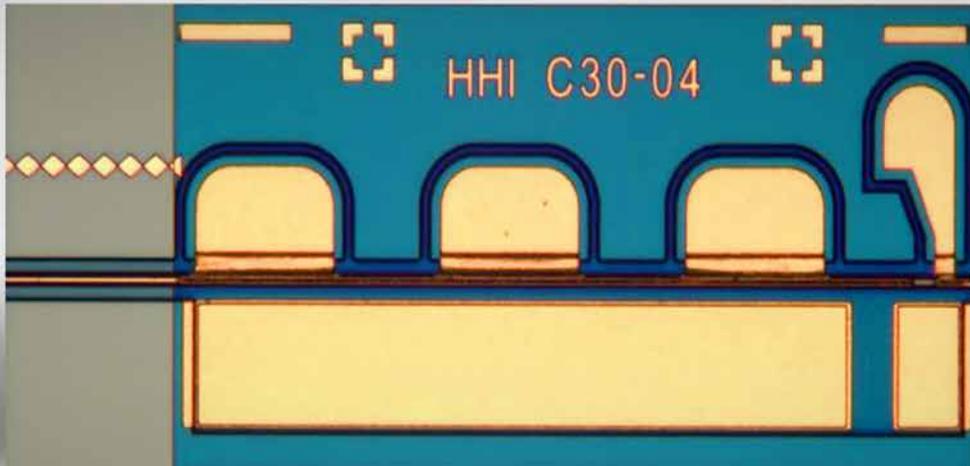


QD AND QW MODE-LOCKED LASERS AS COMB AND PULSE SOURCES



AT A GLANCE

High performance buried heterostructure InAs/InP QD and InGaAsP/InP QW mode-locked lasers as comb and pulse sources

Features

- Wavelengths in C-, L-Band
- > 33 channels > -3dBm in the DWDM 50GHz grid
- Combined laser modes RIN values of < -145 dB/Hz
- Individual mode RIN values of \approx -130 dB/Hz
- < 500 fs pulses by using a simple SMF

Applications

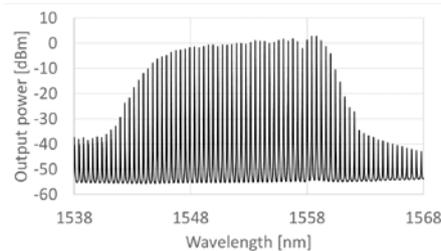
- Multiwavelength modulators in short reach transmission
- Phase controlled OFDM channels in long reach
- Pulse source with < 500 fs pulses

Device variants

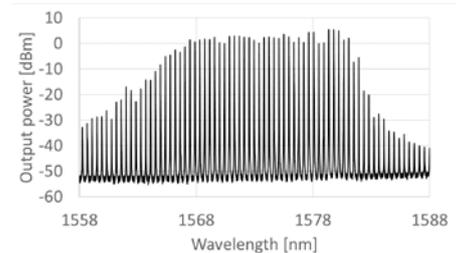
- Standard chip size $425\ \mu\text{m} \times 840\ \mu\text{m}$ (for 50 GHz mode spacing)
- InAs/InP QDs or InGaAsP/InP QWs as active layers
- Optional:
 - Etched facets
 - Integrated heater stripe parallel for wavelength fine tuning of comb modes

Typical Performance

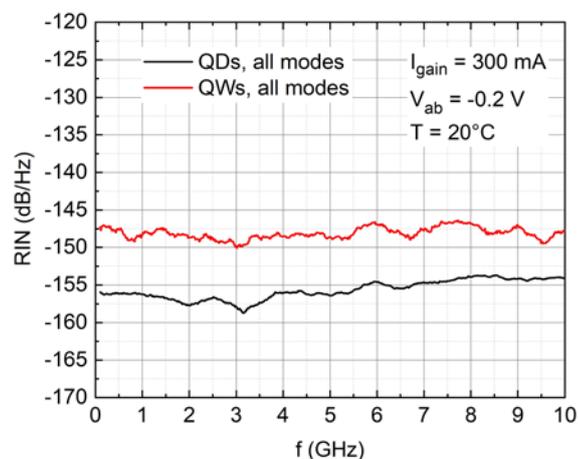
- Comb spectra with > 33 lines > -3 dBm
- Slope efficiency of ≈ 0.33 W/A
- Repetition frequency - 3 dB line-widths down to 60 and 140 kHz for QW and QD devices, respectively
- Individual mode optical linewidth of ≈ 0.6 and 14 MHz for QW and QD devices, respectively



Optical spectrum of the QD device with $I_{\text{gain}} = 300$ mA and $V_{\text{ab}} = -0.2$ V



Optical spectrum of the QW device with $I_{\text{gain}} = 300$ mA and $V_{\text{ab}} = -0.2$ V



RIN of all combined modes for the QD and QW devices, respectively

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