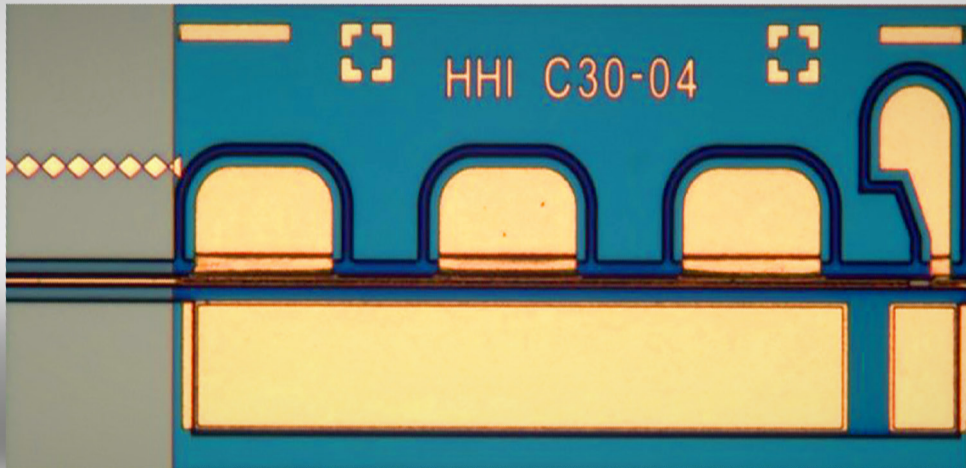


# QD AND QW MODE-LOCKED LASERS AS COMB AND PULSE SOURCES



## 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 O-, C-, L-Band
- > 33 channels > -3 dBm in the DWDM 50 GHz 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
- fully customizable

### Applications

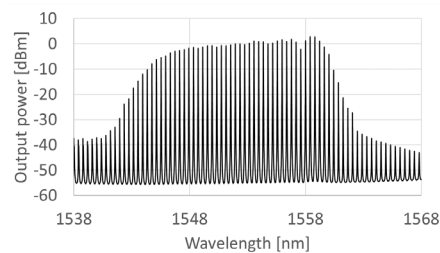
- Multiwavelength modulators in short reach transmission
- Phase controlled OFDM channels in long reach
- Pulse source with < 500 fs pulses

### Device variants

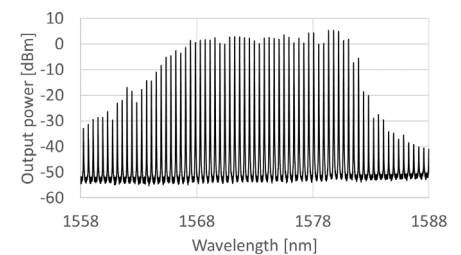
- Standard chip size  $425\ \mu\text{m} \times 840\ \mu\text{m}$  (for 50 GHz mode spacing)
- InAs/InP QDs or InGaAsP/InP QWs as active layers
- Optional:
  - Etched facets
  - Integrated heater stripe parallel for wavelength fine tuning of comb modes

### Typical Performance

- Comb spectra with  $> 33$  lines  $> -3$  dBm
- Slope efficiency of  $\approx 0.33$  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  $\approx 0.6$  and 14 MHz for QW and QD devices, respectively



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



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

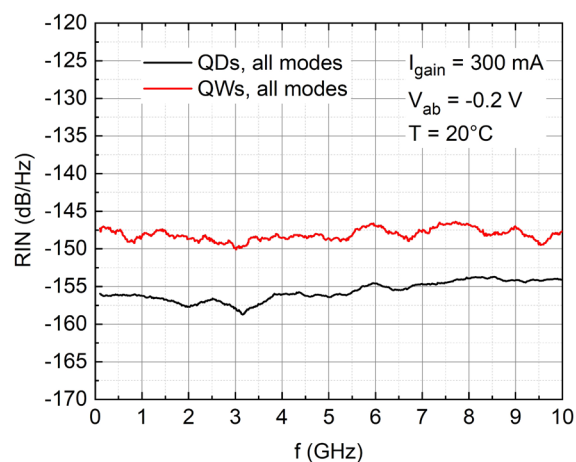


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RIN of all combined modes for the QD and QW devices, respectively