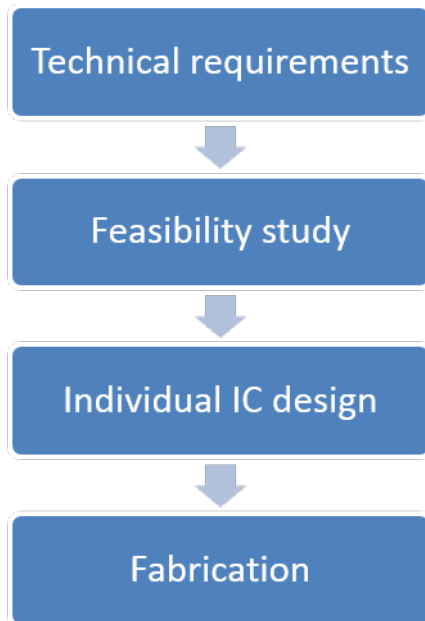


Design service

IHP offers full-custom circuit design service for high-speed fiber optics systems. According to your individual needs, we design electro-optical circuits or use available design IPs to fulfill your technical requirements. All designs are fabricated at IHP



- Hybrid-integrated design in IHPs 0.13 μm and 0.25 μm SiGe BiCMOS technologies
- Monolithic-integrated photonic transmitters and receivers in IHP's 0.25 μm photonic SiGe BiCMOS technology
- Transimpedance amplifiers and drivers for monolithic silicon photonics integration



Leibniz Institute
for high
performance
microelectronics



IHP GmbH

Innovations for High Performance Microelectronics
Leibniz-Institut für innovative Mikroelektronik

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15236 Frankfurt (Oder)
Germany

Contact

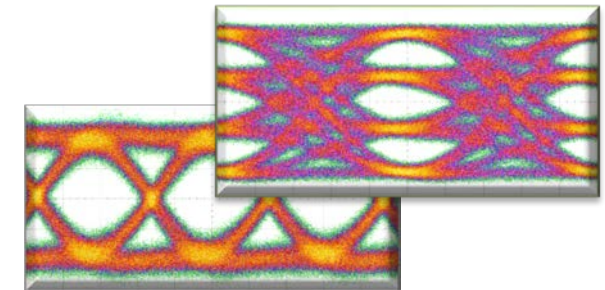
Name: Dr. René Scholz
Phone: +49 335 5625 647
Fax: +49 335 5625 327
Email: scholz@ihp-microelectronics.com
Website: www.ihp-microelectronics.com

03/2018



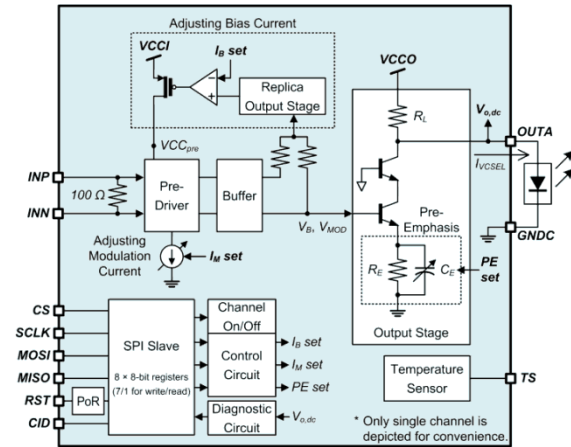
IHP High-Speed Fiber Optics

Transmitters and Receivers



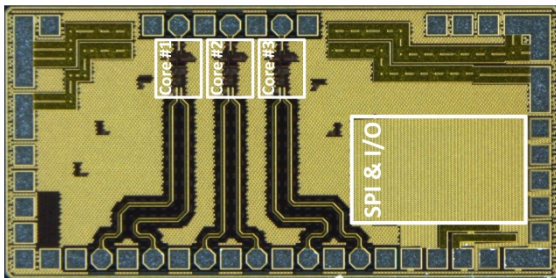
We design your circuits based on available IPs in IHP's technologies

Drivers for VCSEL modulators

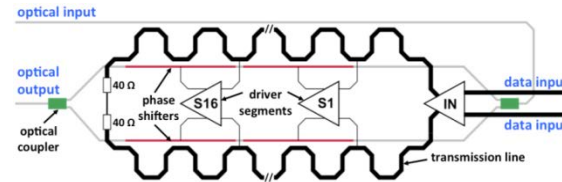


Features:

- Optimized for energy-efficient VCSEL operated at low driving currents
- Multi-channel common-cathode VCSEL driver with high-speed, low-power operation: >25 Gb/s/channel, <45 mW/channel
- Space-grade design: Temperature-independent VCSEL currents, rad-hard digital circuitry
- Channel-independent digital control via SPI: Channel on/off, VCSEL bias/modulation currents, pre-emphasis, VCSEL diagnosis

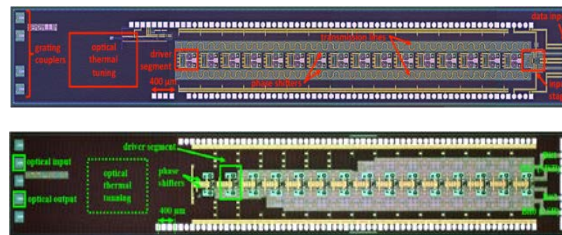


Drivers for integrated Mach-Zehnder modulators

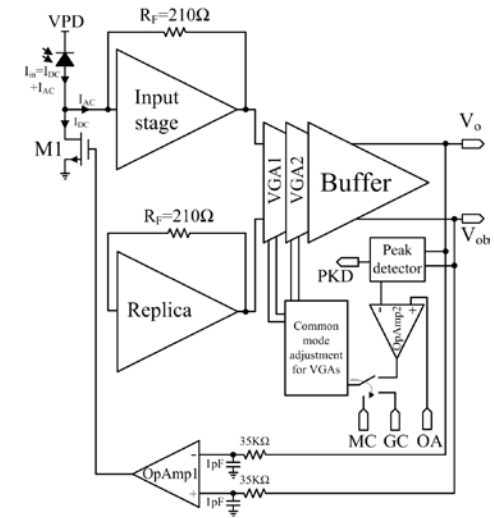


Features:

- All-in-one driver and modulator monolithically integrated in SiGe EPIC technology
- Segmented driver to keep the applied voltage constant for long modulators
- Segmented configuration permits electrical and optical waves to be matched
- Driver features linear amplifiers enabling compatibility with an external DAC to transmit signals with high-order modulation formats
- Availability of integrated optical DAC
- Electro-optical bandwidth of 18 GHz
- Data-rate up to 40 Gb/s with OOK and 70 Gb/s with PAM4
- Optical extinction ratio up to 13 dB



Linear transimpedance amplifiers for integrated photonic receivers



Features:

- All-in-one transimpedance amplifier and photodiode monolithically integrated in SiGe EPIC technology
- 56 Gb/s direct detection integrated photonic receiver
- Manual gain control and automatic gain control
- 36 GHz of optical-electrical 3-dB bandwidth over all gain settings of the transimpedance amplifier
- Transimpedance gain of 66 dB Ω and input overload current up to 1.5 mA_{pp}
- 50 dB of dynamic range

