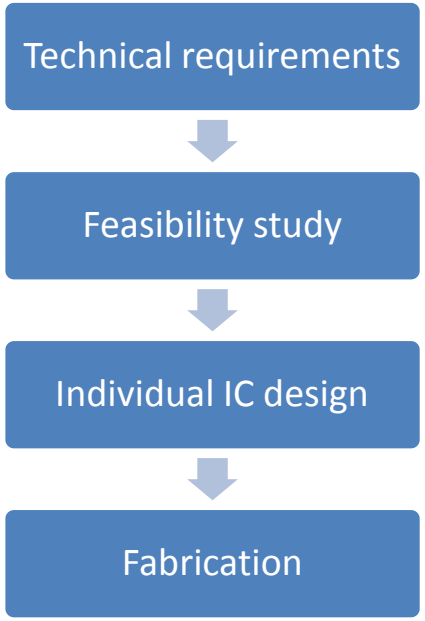
Design Service

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

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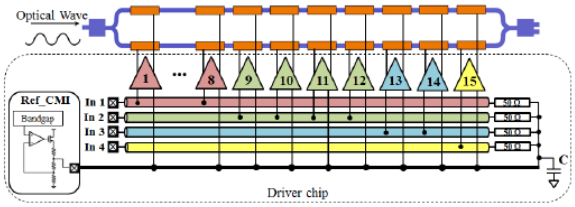
09/2016

Mitglied der Leibniz-Gemeinschaft

innovations for high performance microelectronics

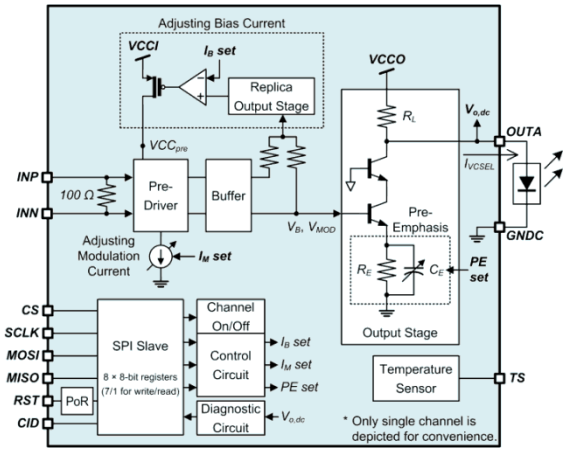
IHP High-Speed Fiber Optics

Transmitters and Receivers



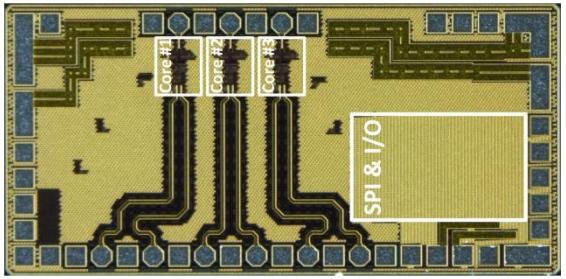
We design your product ideas based on available design IPs in IHP's technologies

Drivers for VCSEL-Modulators

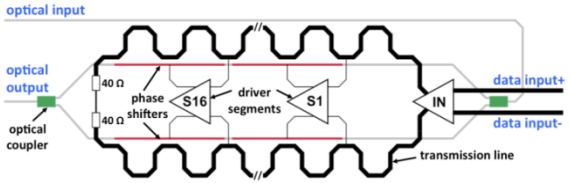


Features:

- Optimized for energy-efficient VCSEL operated at low driving currents
- Multichannel 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

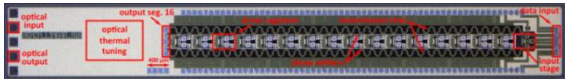


Linear drivers for integrated Mach-Zehnder Modulators

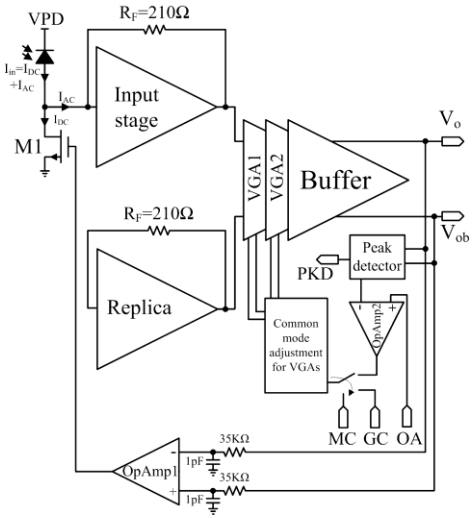


Features:

- 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
- Electro-optical bandwidth of 18 GHz
- Data-rate up to 28 Gbps with OOK and 50 Gbps with PAM4
- Optical extintiction 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 dBΩ and input overload current up to 1.5mA_{pp}
- 50 dB of dynamic range