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A Dual-Channel Low-Power VCSEL Driver ASIC for High-energy Physics Experiments

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- The VCSEL driver ASIC is named LOClD65 and designed in a commercial 65-nm CMOS technology
- It contains two separate channels. The two channels share an I²C.
- We use several techniques to push the driver speed up to 14 Gbps.
- Power dissipation is 67 mW/channel at the VCSEL voltage of 3.3 V.
- The chip passed eye diagram test and survived 4.9 kGy(SiO₂) in the irradiation test.
- LOClD65 is a perfect match with the serializer-deserializer ASIC IpGBT in single- or dual-channel optical transmitters in HL-LHC upgrade applications.