High-Speed Laser Diode Driver for Optical Communication

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ABSTRACT

The requirement for high-speed bandwidth of optical communication increases day by day. This thesis indicates a high-speed laser diode driver which is applied to the STS-18 (OC-18) of the SONET. We use AC coupling interface technique to connect driver circuit and laser diode. The laser diode driver is implemented in TSMC 0.35 μ m 1P4M process, and the data rate is about 1.25Gbps. It includes three blocks: PECL (Positive-Referenced Emitter-Coupled Logic) to CMOS logic circuit、 modulation current generation circuit and bias current generation circuit. We adopt the AC Coupling interface circuit to solve Headroom ’ problem and use the Return-to-Zero coding in optical communication.

Keywords : optical communication ; laser diode driver ; AC Coupling

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