HIGH-SPEED LASER DIODE DRIVER CIRCUIT DESIGN

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ABSTRACT

ABSTRACT TWO LASER DIODE DRIVERS ARE PRESENTED IN THIS THESIS. ONE IS OPERATED AT 1.25GBPS WHILE THE OTHER AT 4.0GBPS. EACH OF THEM CONTAINS A PECL TO CMOS LOGIC CIRCUIT, A BUFFER CIRCUIT, A MODULATION CIRCUIT, AND AN AUTOMATIC POWER CONTROL BIAS CIRCUIT. NEVERTHELESS, A PULSE SHAPING STAGE IS INCLUDED IN THE 4.0GBPS LASER DIODE DRIVER FOR IMPROVEMENT. THE SIMULATED RESULTS ARE PRESENTED AND DISCUSSED. WE USE THE TSMC 0.35 μ M 1P4M TECHNOLOGY PARAMETERS FOR THE DESIGNS AND FABRICATE THESE TWO CHIPS WITH THE HELP OF CIC. WE ALSO DISCUSS THE INTERFACE PROBLEMS OF LASER DIODES AND BUILD A LASER DIODE MODEL FOR CIRCUIT SIMULATION.

Keywords : LASER DIODE DRIVER, LASER DIODE MODEL, OPTICAL COMMUNICATION, HIGH SPEED

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