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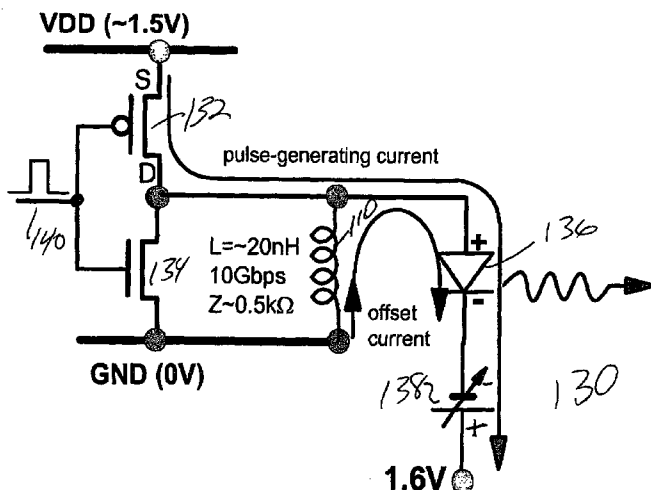
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(54) Title: HIGH SPEED DATA CHANNEL INCLUDING A CMOS VCSEL DRIVER AND A HIGH PERFORMANCE PHOTODETECTOR AND CMOS PHOTORECEIVER



(57) Abstract: A high speed optical channel including an optical driver and a photodetector in a CMOS photoreceiver. The optical channel driver includes a FET driver circuit driving a passive element (e.g., an integrated loop inductor) and a vertical cavity surface emitting laser (VCSEL) diode. The VCSEL diode is biased by a bias supply. The integrated loop inductor may be integrated in CMOS technology and on the same IC chip as either/both of the FET driver and the VCSEL diode. The photodetector is in a semiconductor (silicon) layer that may be on an insulator layer, i.e., SOI. One or more ultrathin metal electrodes (<2000Å) on the silicon layer forms a Schottky barrier diode junction which in turn forms a quantum well containing a two dimensional electron gas between the ultrathin metal electrode and the Schottky barrier diode junction.