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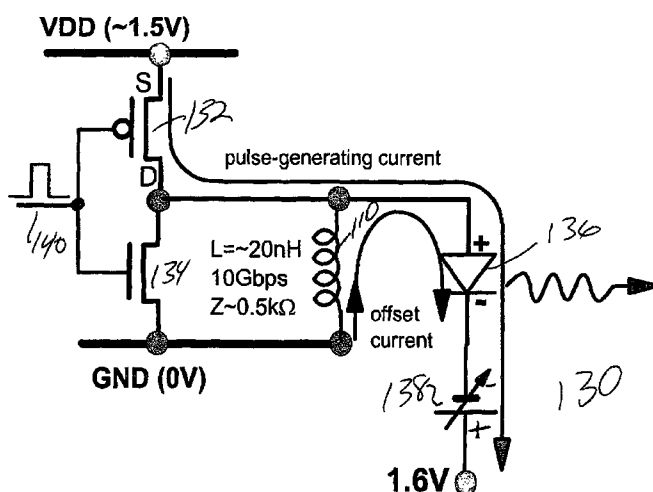
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(54) Title: HIGH SPEED DATA CHANNEL INCLUDING A CMOS VCSEL DRIVER, HIGH PERFORMANCE PHOTODETECTOR AND CMOS PHOTORECEIVER



(57) Abstract: A high speed optical channel including an optical driver (334) and a photodetector (338) in a CMOS photoreceiver (338). The optical channel driver includes a FET driver circuit (334) driving a passive element (110) (e.g., an integrated loop inductor) and a vertical cavity surface emitting laser (VCSEL) diode (312). The VCSEL diode is biased by a bias supply. The integrated loop inductor (110) 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 (338) is in a semiconductor (silicon) layer that may be on an insulator layer, i.e., SOI. One or more ultrathin metal electrodes (M) «2000Å) on the silicon layer (SI 230) forms a Schottky barrier diode junction which in turn forms a quantum well containing a two dimensional electron gas between the ultrathin metal electrode (M) and the Schottky barrier diode junction.

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