High-voltage integrated linear regulator with current sinking capabilities for portable ultrasound scanners - DTU Orbit (20/01/2019)

This paper presents a high-voltage integrated regulator capable of sinking current for driving pulse-triggered level shifters in drivers for ultrasound applications. The regulator utilizes a new topology with a feedback loop and a current sinking circuit to satisfy the requirements of the portable ultrasound scanner: a great driving strength in the scanner's transducer and a low undershoot voltage in the output node. The design regulates an output voltage of 45 V from an input voltage of 50 V, and it can sink currents up to 100 mA using no external components with only 340 mV of undershoot voltage. The proposed design has been implemented in high-voltage 0.18 μm process within an area of 0.11 mm² and it is suitable for system-on-chip integration due to its low component count and the fully integrated design.

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