Integrated differential high-voltage transmitting circuit for CMUTs

In this paper an integrated differential high-voltage transmitting circuit for capacitive micromachined ultrasonic transducers (CMUTs) used in portable ultrasound scanners is designed and implemented in a 0.35 μm high-voltage process. Measurements are performed on the integrated circuit in order to assess its performance. The circuit generates pulses at differential voltage levels of 60V, 80V and 100 V, a frequency up to 5MHz and a measured driving strength of 1.75 V/ns with the CMUT connected. The total on-chip area occupied by the transmitting circuit is 0.18 mm² and the power consumption at the scanner operation conditions is 0.754mW without the transducer load and 0.936mW with it.

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