BULETINUL INSTITUTULUI POLITEHNIC DIN IAŞI
Publicat de
Universitatea Tehnică „Gheorghe Asachi” din Iaşi
Tomul LV (LIX), Fasc. 4, 2009
Secția
ELECTROTEHNICĂ. ENERGETICĂ. ELECTRONICĂ

A CMOS BANDGAP REFERENCES WITH TRANSCONDUCTOR CELLS

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Abstract. New bandgap and sub-bandgap voltage references for low voltage and low power circuits, with transconductor cells, are presented. The limitations of classic bandgap references are first illustrated. The proposed bandgap and sub-bandgap voltage references are implemented without resistors, but using only transconductor cells. In the paper is shown that the bandgap and sub-bandgap voltages provided by the proposed circuits do not depend on the temperature coefficients of the transconductor cells, having a good behavior with temperature and supply voltage variations. The simulations performed in 0.13 μm CMOS technology confirm the theoretical results.

Key words: Bandgap; sub-bandgap; transconductor; temperature coefficient; PTAT, CMOS.