

ANALOG LOW-VOLTAGE CURRENT-MODE IMPLEMENTATION OF DIGITAL LOGIC GATES

Author: TAHER ABUELMA'ATTI M.¹

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Abstract:

In this letter a new technique is introduced for implementing the basic logic functions using analog current-mode techniques. By expanding the logic functions in power series expressions, and using summers and multipliers, realization of the basic logic functions is simplified. Since no transistors are working in saturation, the problem of fan-out is alleviated. To illustrate the proposed technique, a circuit for simultaneous realization of the logic functions NOT, OR, NAND and XOR is considered. SPICE simulation results, obtained with 3 V supply, are included.