

New MVL-PLA Structures Based On Current-Mode CMOS Technology

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Summary

Programmable logic arrays (PLAs) are being used to implement complex multi-valued logic (MVL) circuits. In this paper we introduce three new current-mode CMOS MVL-PLA structures for the implementation of MVL functions. These PLA structures use four current-mode CMOS building blocks namely, cycle, min, tsum and constants. Comparison between the introduced architectures is made based on their respective ability to realize all possible r-valued one-variable functions. Simulation results are provided to show that the third type of PLA, called type-C PLA, is superior to the other two types, called type-A PLA and type-B PLA respectively, in terms of the total number of functions realized using a given number of columns. However, this comes at the expense of an increased hardware overhead in the form of extra cyclic generator blocks added at the input of the PLA

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