A study on the tradeoffs in digital circuit technology

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Abstract: The present work is devoted to the general study of digital circuits and their trade off on the basis of the performances observed in the world of real time systems and industrialization. The present work has been greatly devoted to the minimization techniques and also the results that are observed for the improvement of high frequency circuits. The concept of power dissipation and speed improvement has been a great motive in the discussed work.

Keywords: Digital circuits, performance parameters, tradeoffs.

I.INTRODUCTION

In the modern world of digital electronics and real time systems, there is a need for the betterment of the computations that are an integral part of the modern human life. The compact and micro based systems that are becoming of the nano size in the advancing decade are of great importance. The basic units that are discussed in this paper are some important digital integrated circuits like TTL particularly with totem poles, and emerging tradeoffs in the compatibility. The domino logic and its comparison with the new emerging trends are also discussed.

The objective behind the work is tp present a specific study of the challenges and the compromises that manufacturer has to take into considerations before going for a better realization in terms an power dissipation ,speed improvement ,compactness, better stability.

II. A COMPARATIVE STUDY OF AUTOMATED LOGIC

Fig 2. Proposed Domino XOR Cell
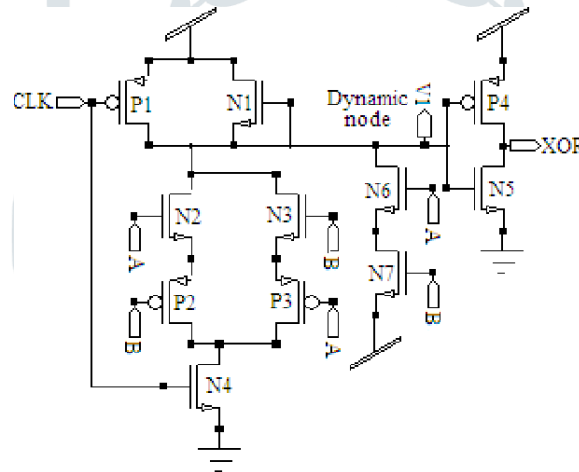
The basic circuit of the standard TTL NAND gate is as shown in the given figure1. The circuit shows that when there is a low to high transition at the output there is a the reduction of the path resistance suffered in the collector of the Q3 leading to the excessive power dissipation in the circuit. That may be very much hazardous to some real time systems and integrated circuits demanding more constraint operation. The latest use in the biomedical application can be seen from the sampling of TTL pulses shown in the given figure2.
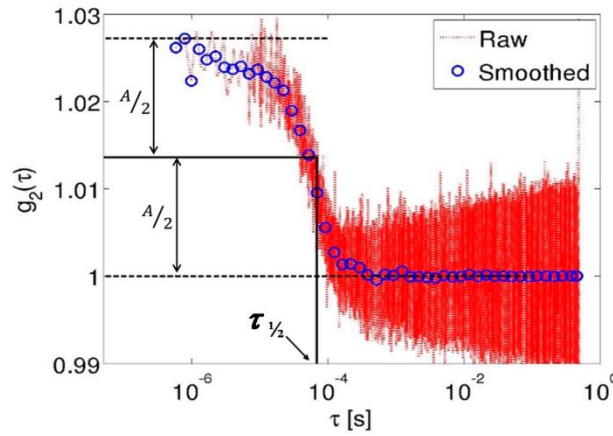
Figure1.

Figure2. The sampled version of the TTL pulses with improved probing

The improved probing analysis observation that can be recorded with the improved TTL parameters can be keenly observed under constrained environment and real time technologies. Sampling rate is found to be smoother under the increasing time constants proved more stable operational derivative. the gradient of the sampling phenomenon is very much converging to the to the ideal when time constants approach the more real powers. The enigmatic behavior of the psi of the circuits has been seen with tremendous improvement under unbiased condition that proved a boon to the computability of the real time systems.
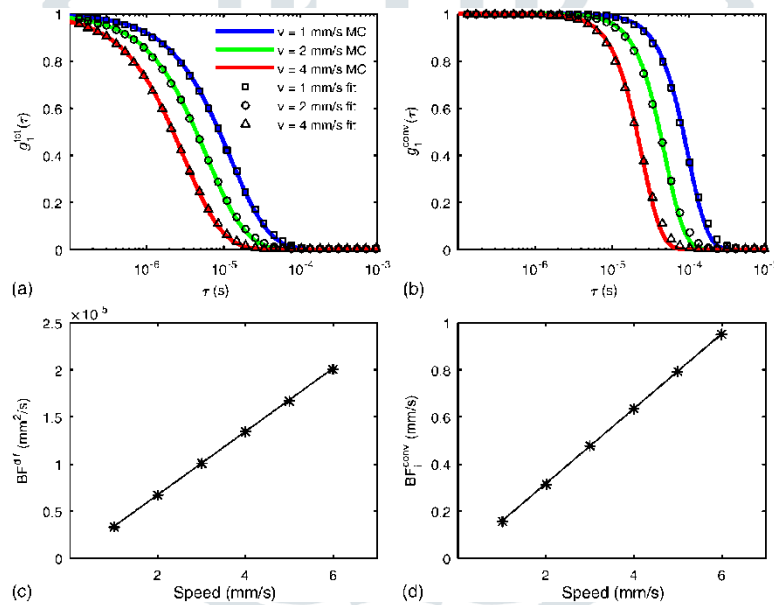

Figure 3. computabity curves and performance merits

The above graph shows the most rigid nature of the sampling curves that is showing an improved specialized phenomenon that has been proved nearly a partial stagnant realization in the minimization for the circuits having breeds of TTL with domino logic as the virtual outputs. The dominance of the logic established by the domino has been proved more critical and self realizing in tbe field if complementation and pre charge logic established in previous decades.
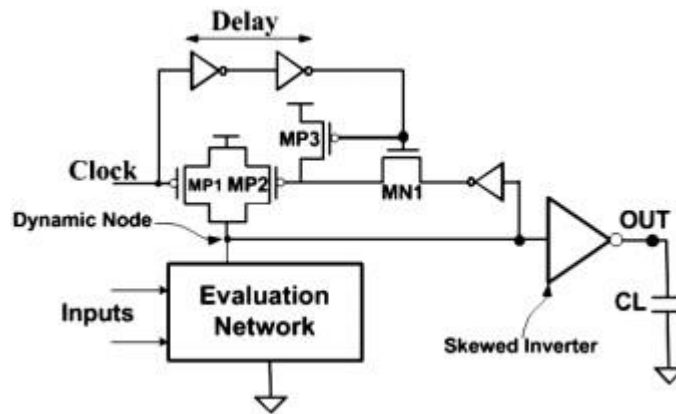
Figure 4. domino logic for high performance and leakage tolerant mechanism in biomedical applications

The realization of the stimulating systems that are vital human cloning has been proved a boon with the ememging trends in te domino powered systems and also the minimization is a great challenge for the new trends.

CONCLUSIONS

The conclusion of the advanced automated digitized logic synthesis has some tradeoffs; in terms of power and compatibility in the sense that one has to overcome the issues in the globalization by make a compromise in the speed power product and also its demands better stability control over rigid devices like CNC and automated PLC and SCADA. The concept that lie behind the betterment of the industrialization lies in better computability and compactness.

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