

A REVIEW ON STATE- OF -ART CMOS CIRCUITS AND NANO ACCELERATOR

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1. Introduction

In order to deal with high connectivity of wireless devices Internet-of-Things (IoT) techniques are widely employed to link wireless electronics device viz. biomedical implanted gadgets, sensors etc with aid of internet. This class of devices desires large number of functionalities occupying lower die area as well energy efficient. The niche characteristics of being energy efficient enhances the battery life thereby increasing the standby time of the devices. This lowers the requirement of frequent charging of the gadgets

[1,2]. This concludes that developing gadgets borrowing the principle of low power VLSI would serve our requirement for IoT applications. It can be achieved by making the circuit work in sub-threshold region [2]. Recently the real bottleneck for analog circuits is to make it operate at reduced supply voltage at, the same time it is desired that there should not be any depletion in its performance. It is evident that the modern-day mixed signal chip is very unfriendly environment for analog circuits such as operational amplifiers, where the power supply is very often corrupted. This directly results in the performance degradation of the circuit which results in the failure of the chip. Hence, it is high time to develop low voltage analog circuits to obtain sufficient gain, bandwidth and linearity. In this chapter recent advances in the development in the field of data converters, CMOS amplifiers, LDOs, operational transconductance amplifiers and Nano accelerators for security applications is discussed in detail.

2. Low-dropout Regulator

In order to provide power supply to the subcircuits in a SoC LDO is used, which provides a smooth voltage. It is found useful for load circuits which are sensitive to noise but loop