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| **Abstract:** |  |
| Abstract— For around five decades, the size of the transistors has been shrinking, and thus the number of transistors in a single microelectronic chip has become possible to increase exponentially. That is, the packing density is increasing. The main building block of chip in the semiconductor industry is the Metal Oxide Semiconductor Field Effect Transistor (MOSFET). But due to the shrinking of the transistor dimensions, the electrical characteristics of MOSFET are being degraded, which may halt the continuous downscaling of the transistor size. However, various generations of MOSFET have emerged for which we may expect to continue this downscaling for a few more years to enhance the computing and communication performance further. Therefore, this article reviews the history and evolution of Complementary Metal Oxide Semiconductor Field Effect Transistor (CMOS) technology and its application in semiconductor industry and also reviews the recent advances and status of mainstream CMOS as the dominating technology in Very Large Scale Integration (VLSI), current and future trends of RF MOSFETs and applications of MOSFETs in high power RF electronics for telecommunication sectors. Current research on advanced MOS and other devices in nanoscale regime are discussed also with their structures and various applications. It is hoped that the CMOS will continue to dominate in the semiconductor electronics industry in the few more years to come. | |