

IC Technology Innovation:

Fundamental Device and Multifunction Integration

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Abstract

Si-based IC has opened the era of information, evolving from the agrarian society, to the industrial society, and to the information society. Since the first big event of the invention of transistor—basic element of IC, a lot of different function device, such as CMOS, DRAM, Flash, CCD and CPU etc., have made IC diverse applications, and tremendous improvement in performance and power saving have been achieved. After 60 years aggressive development, 7nm IC technology was already in mass-production. There is very limited room for CMOS device to further scale. What is future of IC development? IC has strong driving force to further development—diverse technology. The most important innovation will be on fundamental device and integration method. In this talk, the state of arts of current development in new devices and 3D integration will be introduced, including fundamental logic device, memory device, and 2.5D/3D integration.