UTBB FDSOI TECHNOLOGY – FROM EQUATION TO IOT APPLICATIONS

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Electronics is more and more pervasive in everyday life: smartphones, connected cars, Internet of Things (IoT). All this is not only about mobile energy efficient technologies, but also about energy harvesting and storage, about power management, and also about sensors and MEMS devices that are key elements of IoT and of the CEZAMAT program. UTBB (ultra-thin body and BOX) FDSOI (Fully Depleted Silicon On Insulator) is a planar semiconductor technology that is particularly well suited for low power applications such as Internet of Things. We will demonstrate this on the example of the 28nm UTBB SOI technology that STMicroelectronics is offering for LP mobile applications. We will also describe briefly the energy harvesting technologies that help to reduce power required from the supply. Convergent use of the intrinsically low power consumption offered by the UTBB SOI and of the energy harvesting, further reducing the demand on the supplied power, will be shown as the key enabler for low power applications such as Internet of Things. The paper describes the development of the FD-SOI technology, the choice of devices centering and their main characteristics. We will explain how the intrinsic device characteristics enabled by their UTBB SOI structure contribute to promoting the technology for high speed energy efficient operation, even in ultra low voltage conditions.