Special Issue

Power Management of Energy-Autonomous Nodes and Systems

Message from the Guest Editors

The Internet of Things (IoT) paradigm is having a pervasive impact on modern society. The ubiquitous character of IoT nodes implies that they must be energy autonomous and untethered. In this regard, power autonomy is achieved by harvesting energy from the environment using transducers, such as photovoltaic (PV) cells, thermoelectric generators (TEG), and vibration transducers. Nevertheless, due to the heavy dependence of their output signal from operating conditions, these transducers are often unsuitable to feed directly to the circuit where they are applied. Therefore, IoT nodes employ a power management integrated circuit (PMIC) to adapt the generated power and maximize conversion efficiency. The main components of a PMIC are power converters, clock generators, and control circuitry (amplifiers, filters, references etc.) that must also enable self-startup in critical conditions, i.e., low voltage and low power levels provided by external energy harvesters.

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