

# Power Management Unit (PMU) IP Platform



## General description

CSEM's platform is particularly suitable for battery powered applications. It can support a wide range of operating conditions, as well as an ultra-low-power (ULP) deep-sleep / "retention" operating mode with extremely low quiescent current consumption ( $< 0.2\mu\text{A}$ ). In existing silicon-proven versions, the PMU platform has been adapted to support energy harvesting features (from a PV cell or via Wireless Power Transfer) in combination with a rechargeable battery; the dedicated interface for battery charging and monitoring is included. The platform has also been adapted to support ULP high-precision timing applications or Bluetooth IPs. The number of external components can be efficiently adjusted depending on supply noise sensitivity and load current driving requirements. For the deep-sleep mode, an integrated RC-oscillator or an ULP XTAL oscillator is implemented, while in the active mode the system can be clocked either by an integrated high-frequency (HF) RC-oscillator or by a high-precision XTAL oscillator. Voltage supplies for the analog and digital domains are regulated by dedicated LDOs (capless or externally compensated).

## Features

- Available in 180nm (Standard or BCD), 130nm (Standard or BCD), 90nm, 65nm, 55nm, and 22nm nodes
- Compact die area
- Battery voltage operating range:
  - 1.7 V to 4.8 V
- Temperature operating range:
  - $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Supported load current range:
  - Up to 250 mA
- Quiescent current in deep-sleep mode
  - Down to  $0.2\mu\text{A}$
- Low-noise and high precision bandgap reference for active mode
- ULP voltage/current reference for deep-sleep mode
- Inductive Buck / Boost / Dual-mode DC-DC Converter over 85% conversion efficiency

