600mA Ultra-Low Quiescent Current Buck Converter

1 Description

The SY5112 is a high efficiency step down converter with ultra low quiescent current of typical 200nA. The device is typically paired with a 2.2μH inductor and two 10μF output capacitors, providing a typical output current of 600mA. The device uses COT technology with a typical switching frequency of 1.2MHz. In power save mode, the light load efficiency can be extended down to 100μA load current, and the efficiency can reach 90%. After start-up, the device operates at an input voltage as low as 2.15V, so it can be powered directly by a single Li-MnO2 button battery.

The SY5112 default provides eight programmable output voltages, which can be selected in the 1.2V to 3.3V range with three selection pins. You can also choose different voltage versions, and the output voltage can be controlled from 1.3V to 3.1V. The SY5112 uses only a small output capacitor for low ripple and low noise output voltage. Once the input voltage approaches the output voltage, the device goes into no ripple 100% mode to prevent the output ripple voltage from increasing. In this mode, the device stops switching and keeps the high-side P-MOSFET on.

SY5112 adopts 8-ball WLCSP and DFN2x2-8L package.

2 Applications

Wearable portable devices

Fitness tracker

Smart watches

Health monitor

Low power Bluetooth , RF4CE, Zigbee

High efficiency, ultra-low power consumption applications

Energy harvesting

3 Features

- Input voltage range: 2.15V to 6V
- Output current 600mA
- Ultra low quiescent current 200nA
- 100μA output current efficiency up to 90%
- Power Save Mode Operation
- Selectable output voltage
  - 8 voltage options （1.2V to 3.3V）or （1.3V to 3.1V）
- Output Voltage Discharge
- Low output voltage ripple
- Automatic Transition Into no Ripple 100% Mode
- Full solution size ＜10mm^2
- WLCSP-8 and DFN2x2-8L package

4 Typical Application Circuit

V_{IN} = 3.6V, V_{OUT}=1.8V, C_{IN}=4.7μF, C_{OUT}=10μF*2, L=2.2μH, Ta=25℃ (unless otherwise noted)

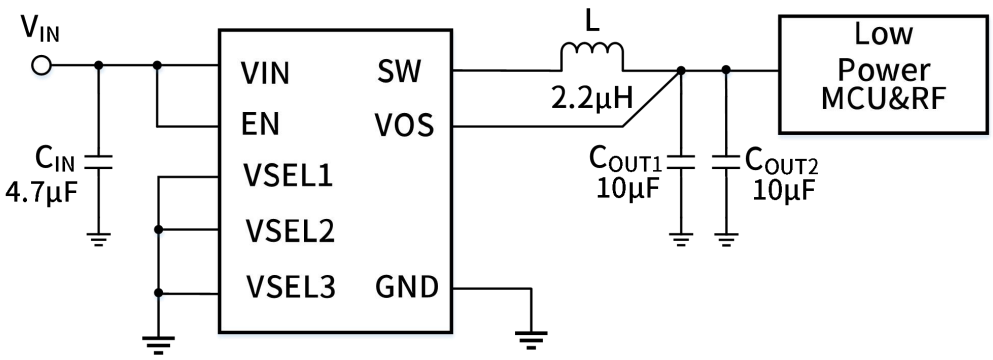

Figure 4- 1. Typical Application Circuit