PRODUCT SUMMARY

SKY87006: High-Frequency Step-Down Converter with MIPI® RF Front-End Control for 2G/3G/4G RF Power Amplifiers

Applications

- 2G/3G/4G modules
- Smartphones
- Wireless data cards
- Tablets/netbooks and e-readers

Features

- Dynamic output voltage: 0.4 V to 3.6 V:
  - Register 0, fast write 7-bit resolution control (30 mV steps)
  - Register 3, 8-bit resolution control (15 mV steps)
- Modes:
  - Low power mode
  - Standby mode
  - Light-load power saving mode
  - Forced PWM mode
  - Bypass mode
- High switching frequency: 2.5 MHz
- MIPI RF front-end control interface
- Efficiency up to 96%
- Integrated bypass regulator
- Over-temperature and short-circuit protection
- Small footprint, 9-bump WLCSP package (MSL1, 260 ºC per JEDEC J-STD-020)
- For RoHS and other product compliance information, see the Skyworks Certificate of Conformance

Description

The SKY87006 is a dynamic output controlled DC-DC step-down converter for multimode 2G GSM/EDGE, 3G WCDMA, and 4G LTE RF Power Amplifier (RFPA) applications. The SKY87006 has a programmable output voltage range between 0.4 V and 3.6 V with optimized efficiency for all operating states where load currents are 850 mA or less, but can support typical peak load currents up to 1.5 A.

The SKY87006 output voltage is set by using a Mobile Industry Processor Interface (MIPI) RF Front-End (RFFE) control with a fast-write 7-bit resolution (30 mV steps) data register or an 8-bit high resolution (15 mV steps) data register.

To cover peak load current demands and low input voltage drop-out conditions, the DC-DC regulation control has an automatic linear regulator bypass switch to connect from the the source battery supply to the output. This minimizes voltage drop and provides a 1.5 A (typical) current limit for circuit protection. The output current capability of the DC-DC switching regulator and regulated LDO bypass can support typical load currents up to 3.0 A.

High switching frequency operation permits the use of a small inductor and reduces output capacitance requirements. Reduced external component values aid ultrafast transient response needs of cellular RF power amplifier applications. The SKY87006 has a light load power saving mode. Locked PWM operation is made possible by a MIPI RFFE control register bit. Locking PWM operation can improve load transient response, which can improve performance for 2G operating modes.

The SKY87006 is available in a small Wafer Level Chip Scale Package (WLCSP), and is rated over a range of –40 to +85 °C.

Figure 1 shows the SKY87006 System Diagram.

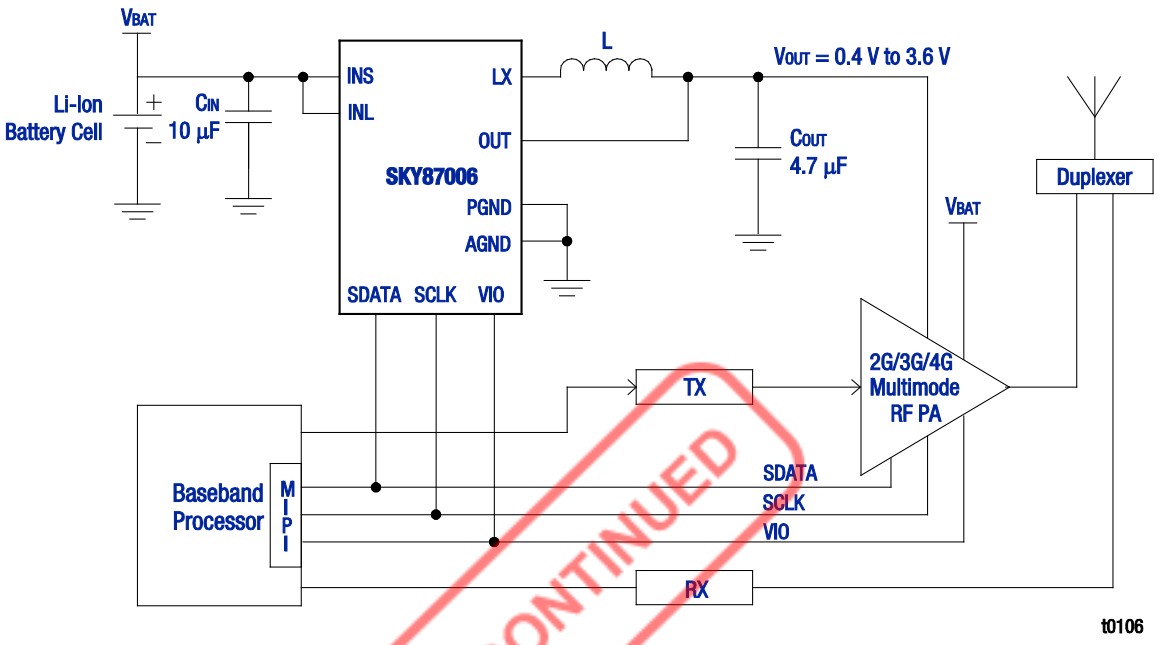

Figure 1. SKY87006 System Diagram

Ordering Information

Model Name	Manufacturing Part Number	Evaluation Board Part Number
SKY87006: High-Frequency Step-Down Converter for 2G/3G/4G RF Power Amplifiers	SKY87006-11-001	SKY87006-11-001-EVB