PRODUCT SUMMARY

# SKY77604-11 Multimode Multiband Power Amplifier Module for Next Generation GGE and HSPA Handsets

## Applications

- Quad-band cellular handsets:
  - Class 4 GSM850 / EGSM900
  - Class 1 DCS1800 / PCS1900
  - Class E2 GSM850 / EGSM900 / DCS1800 / PCS1900
  - Class 12 multi-slot EGPRS
- Multiband 3G handsets
- WCDMA / HSDPA / HSUPA / HSPA+ modulated handsets:
  - Bands I, II, IV, IX, X, V, VIII

## Features

- Hybrid architecture: separate GSM and WCDMA paths for optimal performance
- Separate single-ended GSM and WCDMA outputs; combined single-ended GSM and WCDMA inputs, all AC-coupled
- Multiplexed voltage detector for GMSK, EDGE modes; coupler output for 3G bands provided to transceiver for power control
- Fully programmable serial bus interface
- Design optimized for 3G operation using DC/DC converter
  - 2G operation w/ DC/DC converter optional
- Three General Purpose Outputs (GPO) controlled through serial bus interface
- Small, low profile package:
  - 6 mm x 8 mm x 0.9 mm
  - 34-pad configuration
- 2.5G features:
  - EGPRS Class 12 multi-slot operation
  - Linear power detector
  - Linear PA with bias optimization for efficiency/linearity trade-off in 8-PSK mode
- 3G features:
  - WCDMA mode supports output power and bandwidth for bands I, II, IV, IX, X, V, VIII
  - Coupler output provided for power control
  - Linear balanced with bias optimization and low/high mode gain switch for best efficiency/linearity trade-off

NEW Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain < 1,000 ppm antimony trioxide in polymeric materials.

## Description

Skyworks SKY77604-11 is a hybrid multimode, multiband Power Amplifier Module (PAM) that supports 2.5G and 3G handsets, and operates efficiently in GSM, EGPRS, EDGE WCDMA modes.

The PAM consists of a GSM800 / EGSM900 PA block, a DCS1800 / PCS1900 PA block, separate WCDMA blocks for low and high bands, RF input / output ports internally matched to 50 Ω to reduce the number of external components, and a Multi-Function Control (MFC) block. A custom BiCMOS integrated circuit provides the internal MFC interface and operation. Extremely low leakage current maximizes handset standby time.

**2.5G:** The SKY77604-11 supports the GSM850, EGSM900, DCS1800, and PCS1900 bands. The PAM also supports 2.5G Class12 Enhanced General Packet Radio Service (EGPRS) multi-slot operation and EDGE linear modulation.

**3G:** The SKY77604-11 uses Load Insensitive Power Amplifier (LIPA®) circuitry to support WCDMA, High-Speed Downlink Packet Access (HSDPA), High-Speed Uplink Packet Access (HSUPA), and Evolved High Speed Packet Access (HSPA+) modulation at non-ideal antenna load conditions. This functionality covers multiple bands for 3GPP including bands I, II, IV, IX, X, V, VIII.

The module is fully programmable through a Serial Peripheral Interface (SPI). Besides controlling the amplifier mode and band states, the SPI is also used to control the state and logic levels of the three GPOs – typically used to control an external 3G band switch such as the SKY14155 or SKY13397.

The InGaP die, the silicon die, and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

The SKY77604-11 is encapsulated in a 6 mm x 8 mm, 34-pad MCM, Surface-Mounted Technology (SMT) package which allows for a highly manufacturable, low-cost solution. Figure 1 is a functional block diagram for the SKY77604-11.

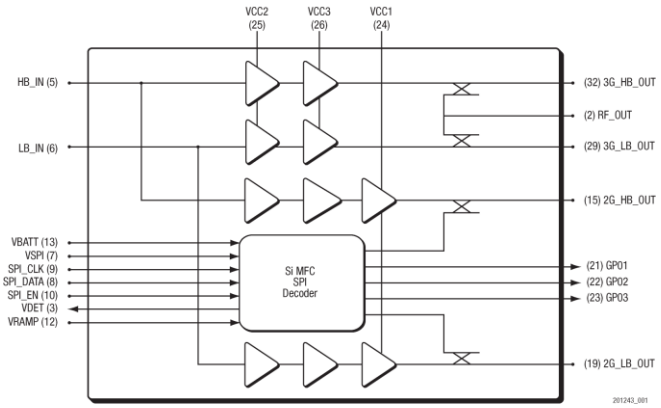


**Figure 1. SKY77604 Functional Block Diagram**

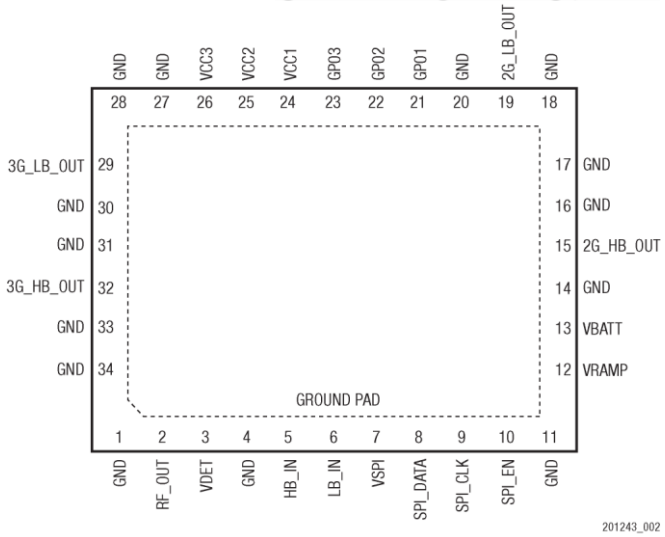


**Figure 2.SKY77604 Pad Configuration**