

## PRODUCT SUMMARY

# SKY77604 Multi-Mode / Multi-Band 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
- Multi-band 3G handsets
- WCDMA/HSDPA/HSUPA-modulated handsets – Bands I, II, V, VIII

## Features

- Hybrid architecture: separate GSM and WCDMA paths
- 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
- Final VCC stage for 2.5G/3G can attach to battery or buck DC/DC
- Driver stage for 3G can attach to battery or buck DC/DC
- 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, V, VIII
  - Coupler output
  - Linear balanced with bias optimization and low/high mode gain switch for best efficiency/linearity trade-off
- Small, low profile package:
  - 6 mm x 8 mm x 0.9 mm
  - 34-pin configuration

## Description

Skyworks SKY77604 is a hybrid multi-mode, multi-band 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  $\Omega$  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 supports the GSM850, EGSM900, DCS1800, and PCS1900 bands. The PAM also supports 2.5G Class 12 Enhanced General Packet Radio Service (EGPRS) multi-slot operation and EDGE linear modulation.

**3G:** The SKY77604 uses Load Insensitive Power Amplifier (LIPA®) circuitry to support WCDMA, High-Speed Downlink Packet Access (HSDPA), and High-Speed Uplink Packet Access (HSUPA) modulation at a high antenna Voltage Standing-Wave Ratio (VSWR). This functionality covers multiple bands for 3GPP including bands I, II, V, VIII.

The module is fully programmable through a Serial Peripheral Interface (SPI).

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 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. A functional block diagram is shown in Figure 1.



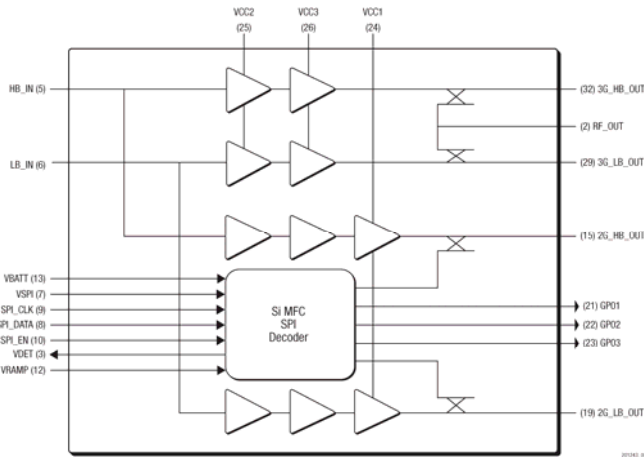
Skyworks Green™ products are RoHS (Restriction of Hazardous Substances)-compliant, conform to the EIA/EICTA/JEITA Joint Industry Guide (JIG) Level A guidelines, are halogen free according to IEC-61249-2-21, and contain < 1,000 ppm antimony trioxide in polymeric materials.



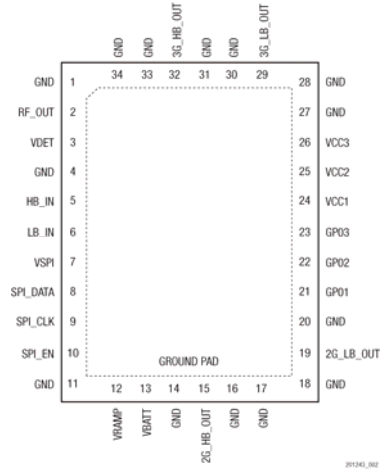
**PRODUCT SUMMARY**

**SKY77604 MULTI-MODE / MULTI-BAND POWER AMPLIFIER MODULE  
for NEXT GENERATION GGE AND HSPA HANDSETS**

www.DataSheet4U.com



**Figure 1. SKY77604 Functional Block Diagram**



**Figure 2. SKY77604 Pad Configuration**

Copyright © 2010 Skyworks Solutions Inc. All Rights Reserved.

Information in this document is provided in connection with Skyworks Solutions Inc. ("Skyworks") products or services. These materials including the information contained herein are provided by Skyworks as a service to its customers and may be used for informational purposes only by the customer. Skyworks assumes no responsibility for errors or omissions in these materials or the information contained herein. Skyworks may change its documentation products services specifications or product descriptions at any time without notice. Skyworks makes no commitment to update the materials or information and shall have no responsibility whatsoever for conflicts incompatibilities or other difficulties arising from any future changes.

No license whether express implied by estoppel or otherwise is granted to any intellectual property rights by this document. Skyworks assumes no liability for any materials products or information provided hereunder including the sale distribution reproduction or use of Skyworks products information or materials except as may be provided in Skyworks Terms and Conditions of Sale.

THE MATERIALS PRODUCTS AND INFORMATION ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND WHETHER EXPRESS IMPLIED STATUTORY OR OTHERWISE INCLUDING FITNESS FOR A PARTICULAR PURPOSE OR USE MERCHANTABILITY PERFORMANCE QUALITY OR NON-INFRINGEMENT OF ANY INTELLECTUAL PROPERTY RIGHT; ALL SUCH WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED. SKYWORKS DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION TEXT GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. SKYWORKS SHALL NOT BE LIABLE FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO ANY SPECIAL INDIRECT INCIDENTAL STATUTORY OR CONSEQUENTIAL DAMAGES INCLUDING WITHOUT LIMITATION LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THE MATERIALS OR INFORMATION WHETHER OR NOT THE RECIPIENT OF MATERIALS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Skyworks products are not intended for use in medical lifesaving or life-sustaining applications or other equipment in which the failure of the Skyworks products could lead to personal injury death physical or environmental damage. Skyworks customers using or selling Skyworks products for use in such applications do so at their own risk and agree to fully indemnify Skyworks for any damages resulting from such improper use or sale.

Customers are responsible for their products and applications using Skyworks products which may deviate from published specifications as a result of design defects errors or operation of products outside of published parameters or design specifications. Customers should include design and operating safeguards to minimize these and other risks. Skyworks assumes no liability for applications assistance customer product design or damage to any equipment resulting from the use of Skyworks products outside of stated published specifications or parameters.

Skyworks the Skyworks symbol "Breakthrough Simplicity" DCR Helios HIP3 Innovation to Go Intera iPAC LIPA Polar Loop and System Smart are trademarks or registered trademarks of Skyworks Solutions Inc. in the United States and other countries. Third-party brands and names are for identification purposes only and are the property of their respective owners. Additional information including relevant terms and conditions posted at www.skyworksin.com are incorporated by reference.