

PRODUCT SUMMARY

SKY77661-11 Multimode Multiband Power Amplifier Module for Dual Mode Quad-Band GSM/EDGE – WCDMA / HSDPA / HSUPA / HSPA+ / LTE (Bands 1, 3, 4, 7, 8, 12, 13, 20, 25, 26, 28, 30, 38, 34/39, 40, 41)

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/ LTE-modulated handsets for Bands 1, 3, 4, 7, 8, 12, 13, 20, 25, 26, 28, 30, 38, 40, 41, 34/39
- CDMA modulated handsets for Bands BC0, BC1, BC6, BC10

Features

- Hybrid architecture: separate GSM, WCDMA paths
- 50 ohm input and output impedances, integrated DC blocking on all ports
- Separate single-ended GSM and WCDMA inputs and outputs
- CMOS-compatible, two-wire MIPI logic inputs (SCLK, SDATA)
- VCC stages for 2.5G can attach to battery or buck DC/DC
- Small, low profile package:
 - 7 mm x 4 mm x 0.8 mm
 - 44-pad configuration

Description

The SKY77661-11 is a hybrid, multimode multiband (MMMB) Power Amplifier Module (PAM) that supports 2.5G and 3G/4G handsets and operates efficiently in GSM, EGPRS, EDGE, WCDMA, and LTE modes. The PAM consists of a GSM 800/EGSM 900 PA block, a DCS1800/PCS1900 PA block, separate WCDMA blocks operating in low and high bands, a logic control block for multiple power control levels, and band enable functions in both cellular and UMTS. RF I/O ports are internally matched to 50 Ω to minimize the number of external components. Extremely low leakage current maximizes handset standby time. The InGaP/GaAs die and passive components are mounted on a multi-layer laminate substrate and the assembly encapsulated in plastic overmold.

2.5G FEATURES:

- EGPRS Class 12 multi-slot operation
- Four RF POUT control levels using RFFE interface
- Linear PA with bias optimization for efficiency/linearity trade-off in 8-PSK mode
- Dual mode GSM PA with VRAMP for efficiency/linearity trade off in 8-PSK mode

3G FEATURES:

- WCDMA mode supports output power, bandwidth for bands 1, 25, 3, 4, 34/39, 26, 8 (and sub-bands 2, 5) through an integrated band-select switch
- Digital bias optimization through RFFE interface for best efficiency/linearity tradeoff

4G FEATURES:

- Optimized for Average Power Tracking system
- LTE supports output power bandwidth bands 1, 3, 4, 7, 8, 12, 13, 20, 25, 26, 28, 30, 38, 39, 40, 41 (and sub-bands 2, 9, 5, 10, 17, 18, 19,)



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to Skyworks *Definition of Green™*, document number SQ04-0074.



GSM/ EDGE (Dual Mode): The SKY77661-11 uses a new compact architecture supporting 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.

VRAMP MODE: In GMSK modes, the PA controller provides envelope amplitude control as a function of VRAMP and reduces sensitivity to input drive, temperature, power supply, and process variation. Skyworks' Finger-based Integrated Power Amplifier Control (FB-iPAQ) minimizes output power variation into mismatch.

In EDGE modes, VRAMP voltage and MIPI-based bias settings optimize PA linearity and efficiency.

WCDMA: The SKY77661-11 uses enhanced architecture to support WCDMA, High-Speed Downlink Packet Access (HSDPA), High-Speed Uplink Packet Access (HSUPA) and LTE modulations; cover multiple bands for 3GPP, including bands 1, 2, 4, 5 and 8 and operate at different power modes. The module is fully controlled through MIPI interface.

TD-SCDMA/TDD LTE: The SKY77661-11 uses an enhanced architecture that supports TD-SCDMA bands 34/39 and TDD LTE band 39.

LTE: The SKY77661-11 meets spectral linearity requirements of LTE modulation with QPSK/16QAM up to 20 MHz bandwidth, including various resource block allocations, with good power-added efficiency.

Figure 1 is a functional block diagram of the SKY77661-11 module.

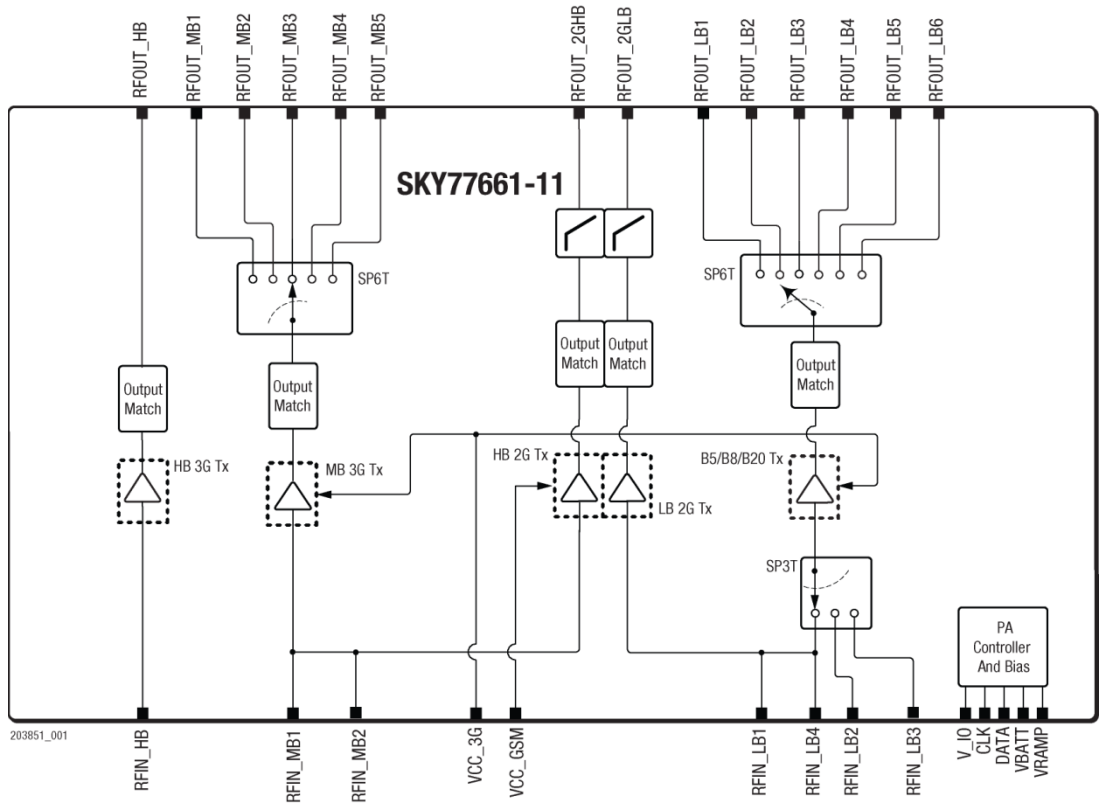


Figure 1. SKY77661-11 Block Diagram

Ordering Information

Product Name	Order Number	Evaluation Board Part Number
SKY77661-11 Multimode Multiband Power Amplifier Module	SKY77661-11	EN41-D175-001

Revision History

Revision	Date	Description
A	February 5, 2016	Initial Release

References

Skyworks Application Note: *PCB Design and SMT Assembly/Rework Guidelines for MCM-L Packages*; Document Number 101752

Electrostatic Discharge Sensitivity (ESD) Testing: *JEDEC Standard, JESD22-A114 Human Body Model (HBM)*

Copyright © 2016, 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 and the Skyworks symbol 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.skyworksinc.com are incorporated by reference.