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)

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.
Ordering Information

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Order Number</th>
<th>Evaluation Board Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKY77661-11 Multimode Multiband Power Amplifier Module</td>
<td>SKY77661-11</td>
<td>EN41–D175–001</td>
</tr>
</tbody>
</table>

Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>February 5, 2016</td>
<td>Initial Release</td>
</tr>
</tbody>
</table>

References

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