PRODUCT SUMMARY

SKY77534 Tx–Rx iPAC™ FEM — Dual–Band GSM/GPRS

Applications

- Dual-band cellular handsets encompassing
  - Class 4 GSM850/900
  - DCS1800/PCS1900
  - Class 12 GPRS multi-slot operation

Features

- High efficiency
  - 44% (GSM850/900)
  - 42% (DCS1800/PCS1900)
- Low transmit supply current
  - 1.30 A (GSM850/900)
  - 0.86 A (DCS1800/PCS1900)
- Internal ICC sense resistor for iPAC
- Closed loop iPAC
- 50 Ω matched Input/Output
- Tx–VCO-to-antenna and antenna-to-Rx-SAW filter RF interface
- Tx harmonics below –33 dBm
- PHEMT RF switch affords high linearity, low insertion loss, and less than 20 µA supply current in receive modes
- Small outline: 6 mm x 8 mm
- Low profile: 1.05 mm
- Compatible with multiple logic families
- Low APC current: 25 µA

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.

Description

SKY77534 is a transmit and receive front-end module (FEM) with Integrated Power Amplifier Control (iPAC™) for Dual-band cellular handsets comprising GSM850/900 and DCS1800/PCS1900 operation. Designed in a low profile, compact form factor, the SKY77534 offers a complete Transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation.

The module consists of a GSM850/900 PA block and a DCS1800/PCS1900 PA block, impedance-matching circuitry for 50 ohm input and output impedances, Tx harmonics filtering, high linearity and a low insertion loss PHEMT RF switch, and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die. One PA block supports the GSM850/900 bands and the other PA block supports the DCS1800/PCS1900 bands. Both PA blocks share common power supply pads to distribute current. The output of each PA block and the outputs to the four receive pads are connected to the antenna pad through a PHEMT RF switch. The GaAs die, PHEMT die, Silicon (Si) die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band selection and control of transmit and receive are performed using four external control pads. Refer to the block diagram in Figure 1 below. The band select pads, BS1 and BS2, select GSM850, GSM900, DCS, and PCS modes of operation. Transmit enable Tx_EN controls receive or transmit mode of the RF switch (Tx = logic 1). Proper timing between transmit enable Tx_EN and Analog Power Control VRAMP allows for high isolation between the antenna and Tx–VCO while the VCO is being tuned prior to the transmit burst.

The SKY77534 is compatible with logic levels from 1.2 V to VCC for BS1, BS2, and Tx_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

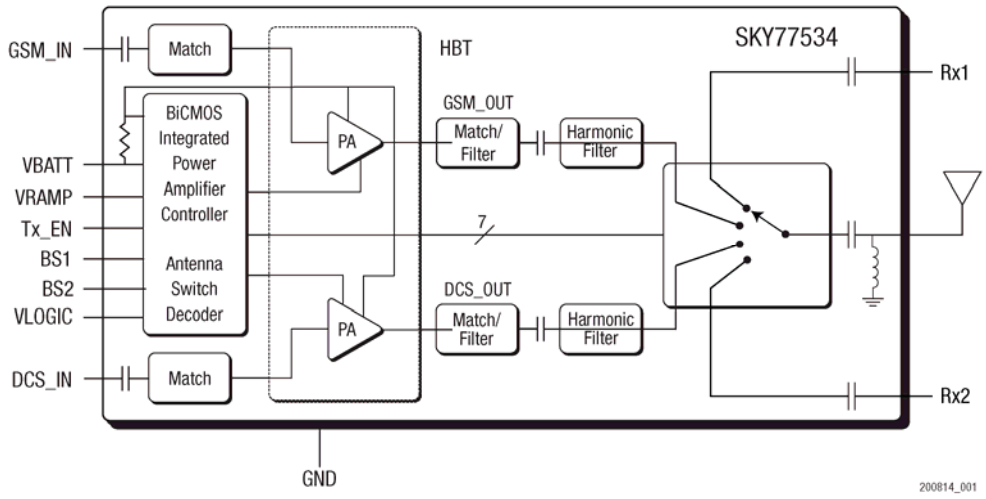


Figure 1. SKY77534 Functional Block Diagram

Ordering Information

Model Number	Manufacturing Part Number	Product Revision	Package	Operating Temperature
SKY77534	SKY77534		6x8 MCM–20	–20 °C to +85 °C

Revision History

Revision	Level	Date	Description
A		May 12, 2008	Initial Issue

References

Skyworks Application Note: PCB Design and SMT Assembly/Rework, Document Number 101752

Skyworks Application Note: Tape and Reel Information – RF Modules, Document Number 101568

Skyworks Application Note: BiCMOS iPAC™ Front-End Modules, Document Number 200742

Standard SMT Reflow Profiles: JEDEC Standard J-STD-020

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

Electrostatic Discharge Sensitivity (ESD) Testing: JEDEC Standard, JESD22-A115 Machine Model (MM) Testing & Measurement Techniques – Electrostatic Discharge Immunity Test, IEC 61000-4-2

©2008, Skyworks Solutions, Inc. All Rights Reserved

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

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as may be provided in Skyworks' Terms and Conditions of Sale for such products, Skyworks assumes no liability whatsoever.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF SKYWORKS® PRODUCTS INCLUDING WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, PERFORMANCE, QUALITY OR NON-INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. SKYWORKS FURTHER 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 SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS THAT MAY RESULT FROM THE USE OF THESE MATERIALS.

Skyworks® products are not intended for use in medical, lifesaving or life-sustaining applications. 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.

The following are trademarks of Skyworks Solutions, Inc.: Skyworks®, the Skyworks symbol, and "Breakthrough Simplicity"®. Product names or services listed in this publication are for identification purposes only, and may be trademarks of third parties. Third-party brands and names are the property of their respective owners.

Additional information, posted at www.skyworksinc.com, is incorporated by reference.