

PRODUCT SUMMARY

SKY65330: Tx/Rx Front-End Module with Integrated Coupler for Quad-Band GSM and EDGE Applications

Applications

- Quad-band femto base stations and cellular repeaters for GSM850, EGSM900, DCS1800, and PCS1900 bands

Features

- High efficiency
- Integrated coupler
- Integrated antenna switch
- Wideband envelope control path
- Input/output matching
- Saturation detection and prevention circuit
- MCM (40-pin, 6 x 6 x 0.9 mm) Pb-free (MSL3, 260 °C per JEDEC J-STD-020) package



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

Description

The SKY65330 is a transmit/receive Front-End Module (FEM) designed for Skyworks Femto Base Station RF Subsystem. This subsystem is intended for multi-band Global System for Mobile Communications (GSM), General Packet Radio Service (GPRS), and Enhanced Data Rate for GSM Evolution (EDGE) femto base stations and cellular repeaters. The subsystem supports the GSM850, EGSM900, DCS1800, and PCS1900 bands.

The SKY65330 provides a complete transmit path from transceiver output to antenna. The module has impedance-matching circuitry for 50 Ω inputs and outputs, and integrates transmit harmonic filtering, an integrated coupler, and high-

linearity and low insertion-loss pHEMT RF switches. A custom BiCMOS integrated circuit provides the internal PAC function, interface circuitry, and decoder circuitry to control the RF switches.

Two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto an Indium Gallium Phosphide (InGaP) die; one block supports the GSM850 and EGSM900 bands, the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. Outputs from the PA blocks and four receive pins connect to the antenna using pHEMT RF switches. The InGaP die, the Silicon (Si) die, the pHEMT die, and the passive components are mounted on a multi-layer laminate substrate, and the entire assembly encapsulated with plastic overmold.

Three external control pins facilitate band selection, and control of the transmit and receive RF signal flows. Pin signals BS0 and BS1 select GSM850, EGSM900, DCS1800, or PCS1900 modes. The TR_EN pin signal selects the transmit or receive mode of the respective RF switch. Proper timing of the pin signal logic and power control (the VPC pin) allows high isolation between the antenna and the radio transceiver output.

The PAC_EN signal enables the PAC circuitry to minimize battery drain. The low leakage current (6.5 μA, typical) of the dual PA module maximizes handset standby time.

Feedback signals from the SKY65330 to the transceiver form an integral portion of the Skyworks Polar Loop™ architecture. This architecture autonomously splits amplitude and phase using the traditional analog In-Phase and Quadrature (I/Q) signals. The filter-saving advantage of the translation-loop approach is embedded in the architecture. Also included is an AM loop that provides both signal AM and power level control.

A functional block diagram for the SKY65330 is shown in Figure 1.

PRODUCT SUMMARY • SKY65330 QUAD-BAND TX/RX FEM

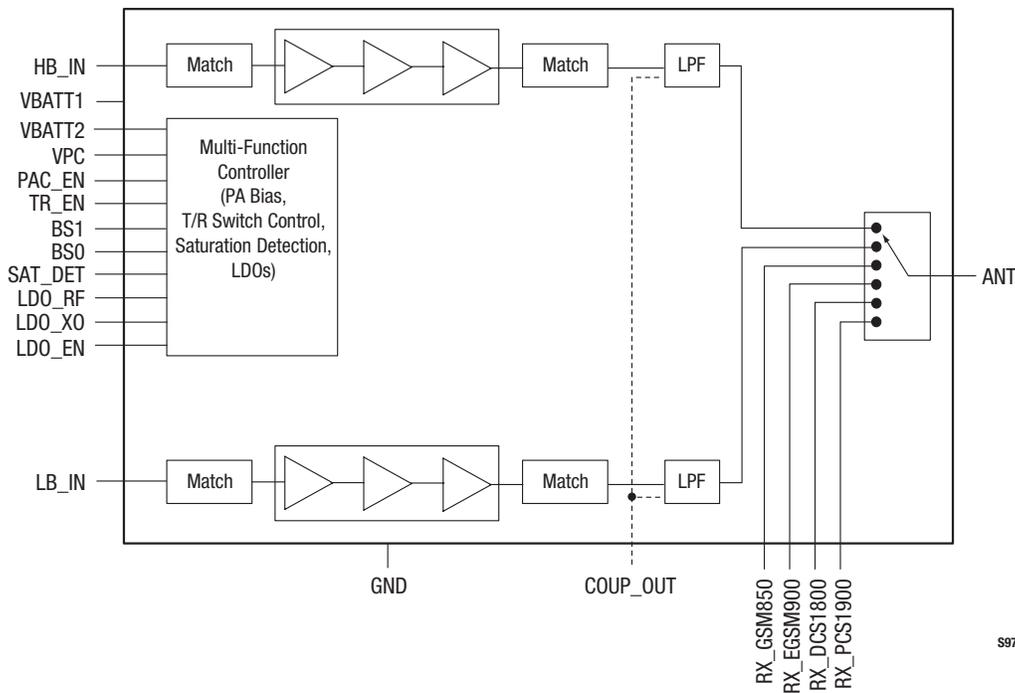


Figure 1. SKY65330 Functional Block Diagram

Ordering Information

Model Name	Manufacturing Part Number	Product Revision
SKY65330 Tx/Rx FEM	SKY65330-xx (Pb-free part)	*** TBD ***

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