

PRODUCT SUMMARY

SKY77523: Tx/Rx Front-End Module with Integrated Coupler for Quad-Band GSM and EDGE Applications

Applications

- Quad-band, cellular handsets:
 - Class 4 GSM850, EGSM900
 - DCS1800
 - PCS1900
 - Class 12 EGPRS multi-slot operation
 - Class 34 EGPRS multi-slot operation
 - EDGE polar modulation

Features

- High efficiency:
 - GSM850, 45% (peak)
 - GSM900, 45% (peak)
 - DCS1800, 38% (peak)
 - PCS1900, 38% (peak)
- Integrated coupler
- Wideband envelope control path
- Input/output matching
- MCM (34-pin, 6 x 8 mm) Pb-free (MSL3, 250 °C per JEDEC J-STD-020) package

NEW

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



Description

The SKY77523 is a transmit/receive Front-End Module (FEM) designed for Skyworks Helios™ II-Plus EDGE 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) handsets and modules. This subsystem supports GSM850, EGSM900, DCS1800, and PCS1900 applications.

The SKY77523 provides a complete transmit Voltage-Controlled Oscillator (VCO)-to-antenna and antenna-to-receive Surface Acoustic Wave (SAW) filter solution.

The module consists of a single GSM850/EGSM900 and DCS1800/PCS1900 PA block, a PA Control (PAC) block,

impedance-matching circuitry for 50 Ω inputs and outputs, transmit harmonic filtering, an integrated coupler, high-linearity and low insertion-loss pHEMT RF switches, and a diplexer. A custom CMOS 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 pads to distribute current. Outputs from the PA blocks and the four receive pads connect to the antenna using pHEMT RF switches and the diplexer. 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 GSM, DCS, or PCS modes. The TR_EN pin signal selects 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 transmit VCO while the VCO is being tuned before the transmit burst.

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.

The SKY77523, together with the SKY74138 RF transceiver, form the Helios II-Plus EDGE RF Subsystem. Feedback signals from the SKY77523 to the SKY74138 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.

The SKY77523 is packaged in a small, 34-pin 6 x 8 mm Multi-Chip Module (MCM) package. A functional block diagram is shown in Figure 1.

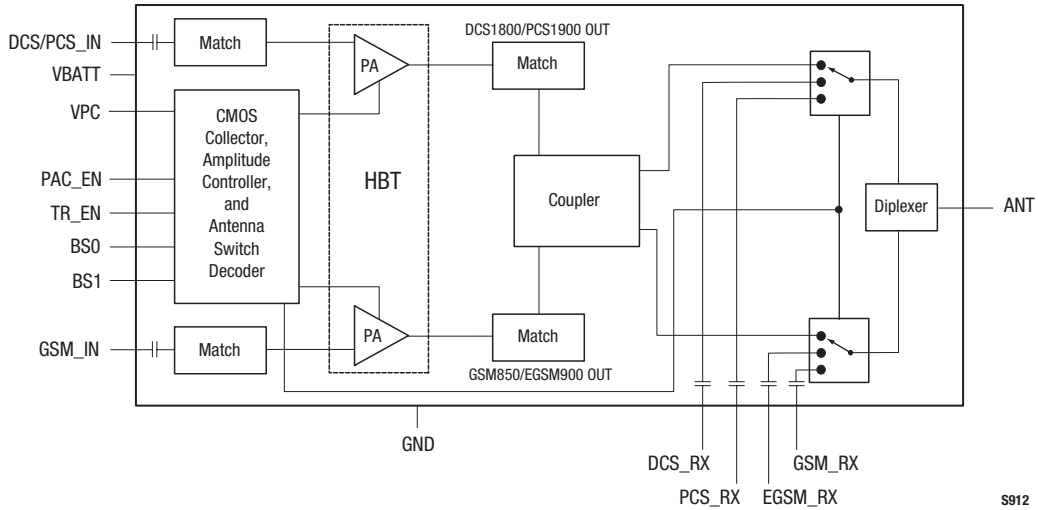


Figure 1. SKY77523 Functional Block Diagram

Ordering Information

Model Name	Manufacturing Part Number	Product Revision
SKY77523 Tx/Rx FEM	SKY77523-xx (Pb-free part)	

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