PRODUCT SUMMARY

SKY74963: RF Transceiver With Power Ramping Controller and Integrated Crystal Oscillator for Multi-Band GSM, GPRS, and EDGE Applications

Applications

- GSM850, EGSM900, DCS1800, and PCS1900 handsets
- GPRS handsets and modules
- EDGE downlink support

Features

- Direct down-conversion receiver eliminates the external image reject/IF filters
- Three separate LNAs with single-ended inputs
- RF gain range: GSM = 20 dB, DCS = 22 dB, PCS = 20 dB. Baseband gain range = 100 dB
- Gain selectable in 2 dB steps
- Integrated receive baseband filters with tunable bandwidth
- Integrated DCOC sequencer
- Reduced filtering requirements with translational loop transmit architecture
- Integrated transmit VCOs
- Wide RF range for multi-band operation
- Integrated PAC loop
- Single integrated, fully programmable fractional-N synthesizer suitable for multi-slot GPRS operation
- Fully integrated wideband UHF VCO
- 26 MHz integrated crystal oscillator with 26 MHz output (SKY74963-23) or 13 MHz output (SKY74963-32) options
- Separate enable lines for power management transmit, receive, and synthesizer modes
- Supply voltage down to 2.6 V
- Band select and front-end enable states may be exercised on output pins to control external circuitry
- Low external component count
- Optional bypass of baseband filtering for use with high dynamic range ADCs for current savings
- Interfaces to low dynamic range ADC
- Meets AM suppression requirements without baseband interaction
- Low power standby mode
- RFLGA™ (56-pin, 8 x 8 mm) Pb-free package (MSL3, 260 °C per JEDEC J-STD-020)

Description

The SKY74963 RF transceiver is a highly integrated device for multi-band Global System for Mobile Communications (GSM) or General Packet Radio Service (GPRS) applications. The device requires a minimal number of external components to complete a GSM radio subsystem. The SKY74963 supports GSM850, EGSM900, DCS1800, and PCS1900 applications. The receiver also supports Enhanced Data for GSM Evolution (EDGE) downlink applications.

The receive path implements a direct down-conversion architecture that eliminates the need for Intermediate Frequency (IF) components. The SKY74963 consists of three integrated Low Noise Amplifiers (LNAs), a quadrature demodulator, tunable receiver baseband filters, and a DC Offset Correction (DCOC) sequencer.
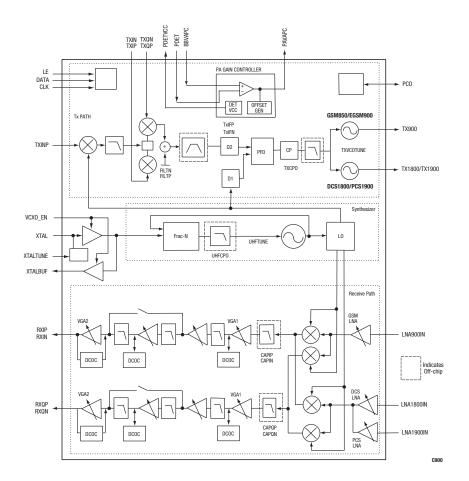
In the transmit path, the device consists of an In-phase and Quadrature (I/Q) modulator within a frequency translation loop designed to perform frequency up-conversion with high output spectral purity. This loop also contains a phase-frequency detector, charge pump, mixer, programmable dividers, and high power transmit Voltage Controlled Oscillators (VCOs) with no external tank required. With the integrated gain controller (and an integrator), the device realizes the Power Amplifier Control (PAC) functionality when combined with a coupler, a Radio Frequency (RF) detector, and a Power Amplifier (PA).

The SKY74963 also features an integrated, fully programmable, sigma-delta fractional-N synthesizer suitable for GPRS multi-slot operation. Except for the loop filter, the frequency synthesizer function, including a wideband VCO, is completely on-chip. The reference frequency for the synthesizer is supplied by the integrated crystal oscillator circuitry.

A functional block diagram is provided in Figure 1.

NEW

Skyworks offers lead (Pb)-free "environmentally friendly" packaging that is RoHS compliant (European Parliament for the Restriction of Hazardous Substances).

Figure 1. SKY74963 RF Transceiver Block Diagram

Ordering Information

Model Name	Manufacturing Part Number	Product Revision
SKY74963 RF Transceiver	SKY74963-23 (26 MHz output, Pb-free package) SKY74963-32 (13 MHz output, Pb-free package)	

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