

ADVANCE PRODUCT SUMMARY

SKY77519 TX-RX FEM for Quad-Band GSM / GPRS / EDGE – Single-Band WCDMA Antenna Switch Support

Applications

- Quad-band cellular handsets encompassing
 - Class 4 GSM850/900
 - Class 1 DCS1800 PCS1900
 - Class 12 GPRS multi-slot operation
 - EDGE polar modulation
 - Single-band WCDMA antenna switch support

Features

- Small outline: 6 mm x 6 mm
- Very low profile: 1.1 mm max.
- 28-pin package
- Low input power range
 - 0 to 6 dBm
- High efficiency
 - GSM850 40%
 - GSM900 40%
 - DCS 35%
 - PCS 35%
- TX-VCO-to-antenna and antenna-to-RX-SAW filter RF interface
- TX harmonics below -35dBm
- Wideband envelop control path
- Input/Output matching 50 Ω internal
- Low APC current: 20 μ A
- High impedance control inputs 15 μ A, typical
- Gold plated, lead-free contacts

Description

SKY77519 is a transmit and receive Front End Module (FEM) designed in a very low profile (1.1 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation — 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 and EDGE Polar Modulation. WCDMA switch-through support is provided by a dedicated high-linearity port.

The module consists of a GSM850/900 PA and DCS1800/PCS1900 PA block, impedance-matching circuitry for 50 Ω input and output impedances, TX harmonic filtering, high linearity-low insertion loss switches, and a CMOS Power Amplifier Control (PAC) block. A custom silicon integrated circuit contains decoder circuitry to control the RF switch while providing a low current external control interface.

Fabricated in InGaP/GaAs, the Heterojunction Bipolar Transistor (HBT) PA blocks support the GSM850/900 bands and DCS1800/PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The output of the PA block and the outputs to the five receive pins connect to the antenna pin through a highly linear antenna switch. The InGaP/GaAs die, switch die, Silicon (Si) controller die, and passive components are mounted on a multi-layer laminate substrate and the entire assembly is encapsulated with plastic overmold.

RF input and output ports of the SKY77519 are internally matched to a 50 Ω load to reduce the number of external components for a quad-band design. Extremely low leakage current (10 μ A, typical) of the FEM module maximizes handset standby time. Band selection and control of transmit and receive RF signal flows are performed by use of four external control pins. See [Figure 1](#) shown below. Mode of operation Tx, Rx, Band (GSM850, GSM900, DCS, PCS, and WCDMA) is controlled with 4 logic inputs: BS1, BS2, Mode, and Enable. Proper timing of the Enable input and the Amplitude control input (Vamp) ensures high isolation high isolation between the antenna and TX-VCO while the VCO is being tuned prior to the transmit burst. The Enable input controls the initial turn-on of the PAC circuitry to minimize battery drain.

The integrated power amplifier control (PAC) function provides envelope amplitude control by reducing sensitivity to input drive, temperature, power supply, and process variation.

NEW

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



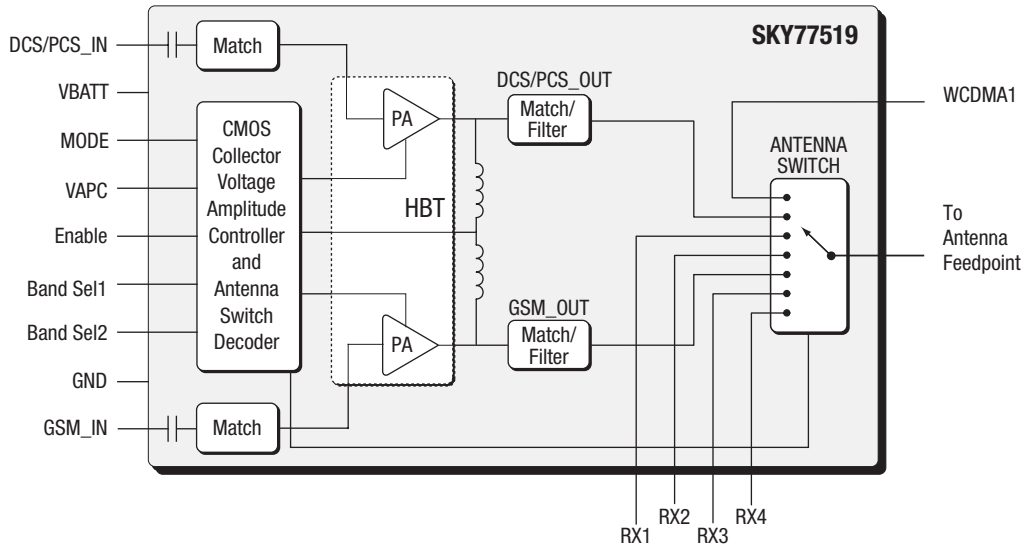


Figure 1. SKY77519 Functional Block Diagram

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