PRODUCT SUMMARY

SKY78185-21: SkyOne® LiTE Low Band Front-End Module with 2G/3G/4G Power Amplifiers for LTE Applications

Applications

- Multiband 2G / 3G / 4G Mobile Devices
- Handsets, Data Cards, M2M
- LTE Advanced Carrier Aggregation (CA)

Features

- MIPI® RFFE 2.0 control interfaces w/ 1.8 V nominal supply
- Integrated switched duplexer filters for Bands 8, 12, 20 and 26
- Four auxiliary 3G/4G Tx outputs for external filters
- Four auxiliary 3G/4G TRx ports to support additional bands
- Tx filtering for harmonically-related LB-MB downlink CA
- Integrated low band and high band 2G PAs
- High band 2G works with companion MB/HB modules
- Integrated bi-directional RF coupler with cascade support
- 50 ohm I/O impedance on all RF pads
- ESD compliant 8 kV on antenna port
- Small, low profile package:
  - 7.6 mm x 6.0 mm x 0.75 mm
  - 56-pad configuration
- **3G Features:**
  - WCDMA, HSPA+
  - CDMA2000 1x RC1, RC3, EVDO (Rev A)
- **4G Features:**
  - FDD/TDD LTE
  - Uplink QPSK, 16QAM, 64QAM
  - Inter-band Downlink/Uplink CA support

Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to Skyworks *Definition of Green*™, document number SQ04-0074.

Description

The SKY78185-21 Multimode Multiband Tx-Rx Front-End Module (FEM) supports 2G / 3G / 4G mobile devices and operates efficiently in 3G/4G modes. The FEM consists of a low-band 3G/4G PA block, low- and high-band 2G PA blocks, a silicon controller containing the MIPI RFFE interface, RF band switches, antenna switches, a bi-directional coupler, and integrated filters for Bands 8, 12, 20 and 26. RF I/O ports are internally matched to 50 ohms to minimize the need for external components. Extremely low leakage current maximizes device standby time.

The IC die and passive components are mounted on a multi-layer laminate substrate. The assembly encapsulated in a 7.6 mm x 6.0 mm x 0.75 mm, 56-pad LGA, SMT plastic package allows a highly manufacturable, low cost solution.

The SKY78185-21 FEM is optimized for LTE Advanced which utilizes Carrier Aggregation for higher data rates. The combined filtering, RF matching, and TRx switching internal to the FEM optimizes performance for popular Downlink (DL) CA band combinations, all in a compact and low cost solution. The FEM contains all necessary components between the antenna and RFIC transceiver and is optimized to provide superior Rx sensitivity and Tx efficiency.

Selecting the linear-GMSK operation standard disables VRAMP input, so all PA biasing depends only on MIPI mode selection. The transmitted envelope is then a linear function of RF input.

Selecting VRAMP-enabled operation, the PA controller provides VRAMP control of the GMSK envelope and reduces sensitivity to input drive, temperature, power supply, and process variations. Skyworks' Finger-Based Integrated Power Amplifier Control (FB-iPAC) minimizes output power variation into mismatch.

In EDGE linear mode, VRAMP voltage and MIPI-based bias settings jointly optimize PA linearity and efficiency.

Exceptional RF coexistence planning and system techniques are employed to minimize Rx de-sensitizing ("de-sense").

Ordering Information

Product Description	Product Part Number	Evaluation Board Part Number
SKY78185-21 SkyOne® LiTE Low Band Front-End Module with 2G/3G/4G Power Amplifiers for LTE Applications	SKY78185-21	SKY78185-21EK1