PRODUCT SUMMARY

SKY5A3049: Sky5® Low-Band TX-RX Front-End Module for 3G/4G/5G Applications with Low-Band/High-Band 2G

Applications

- Automotive telematics enabled by 4G/5G Network Access Devices (NADs)

Features

- Mobile Industry Processor Interface (MIPI®) RFFE 3.0 control: 1.8 V nominal supply
- VCC switch for versatile power supply connections
- Integrated duplexer 71, 12, 13, and RX filter Band 29
- Integrated Low Noise Amplifiers (LNAs):
  - Auxiliary RX supporting 617 MHz to 960 MHz
- Four auxiliary 3G/4G/5G TX/TRX for additional bands:
  - Auxiliary TX supporting 663 MHz to 915 MHz
- TX filtering for harmonically-related LB-MB downlink Carrier Aggregation (CA)
- Integrated low-band and high-band 2G PAs
- HB 2G includes companion MB/HB modules
- Integrated bi-directional RF coupler with cascade support
- Automotive support:
  - AEC-Q104 Grade 2
  - Production Part Approval Process (PPAP)
  - IMDS material declaration
- Small, low profile package:
  - 7.6 mm x 6.0 mm x 0.80 mm (Max)
  - 56-pad configuration
- MSL3, 260 °C per JEDEC J-STD-020
- For RoHS and other product compliance information, see the Skyworks Certificate of Conformance

3G/4G/5G Features

- WCDMA, HSPA+
- CDMA2000 1x RC1, RC3, EVDO (Rev A)
- FDD LTE: Uplink QPSK, 16QAM, 64QAM
- Integrated Bands n71, n12, n13, n29

Description

The SKY5A3049 supports 2G/3G/4G/5G for automotive, telematics, and NAD and operates efficiently in 3G/4G/5G modes. The device consists of a low-band 3G/4G/5G PA block, low band and high-band 2G PA blocks, a silicon controller containing the MIPI RFFE interface, RF band switches, antenna switches, a bi-directional coupler, integrated filters for Bands B8, B26, and B28a, and LNAs. Extremely low leakage current maximizes device standby time. The IC die and passive components are mounted on a multi-layer laminate substrate.

The SKY5A3049 is optimized for LTE Advanced which utilizes CA 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 in a compact and low-cost solution. The device contains the 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.

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-sense.

The SKY5A3049 is part of our Sky5® product portfolio.

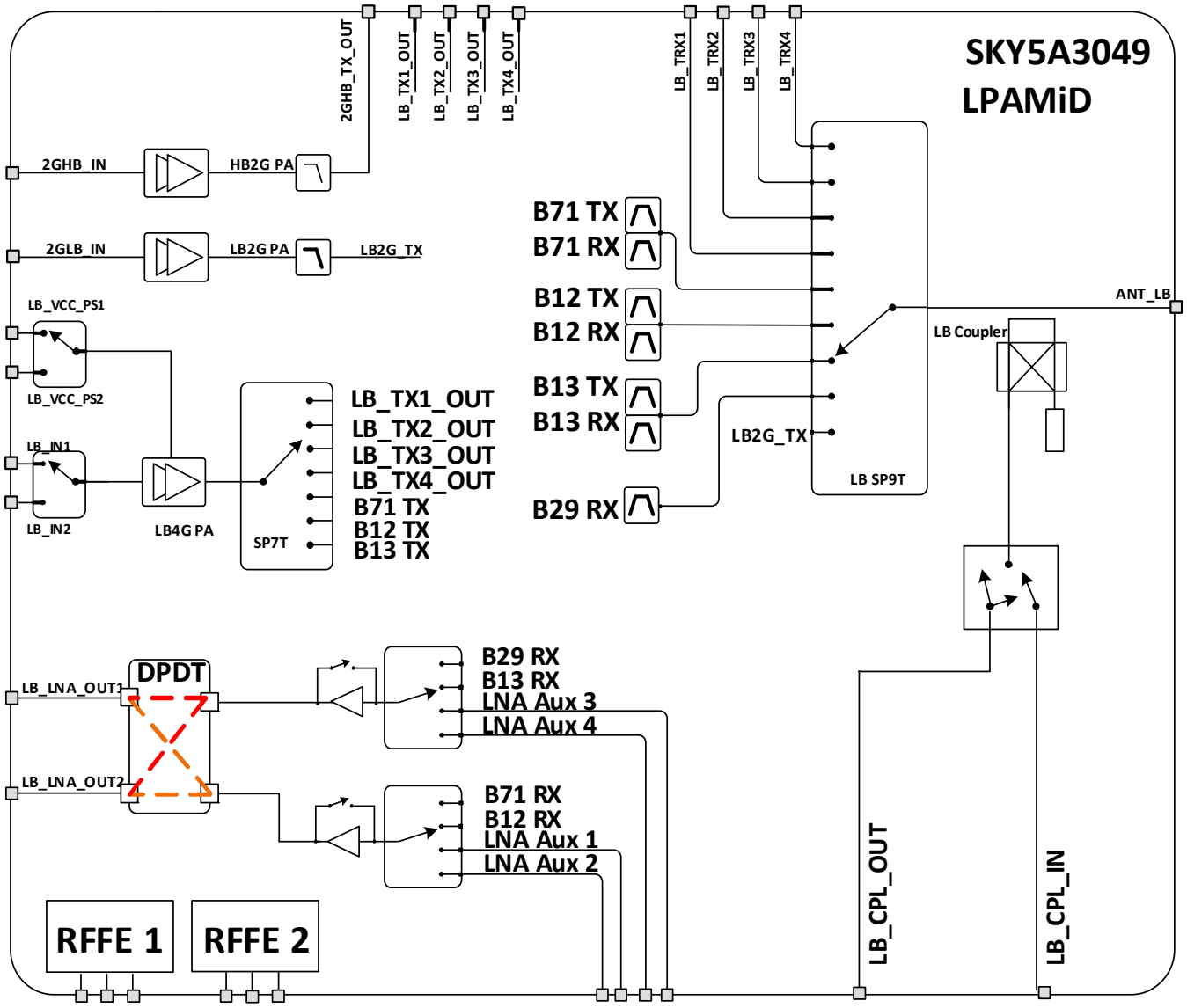

Figure 1. Functional Block Diagram

Ordering Information

Part Number	Description	Evaluation Board Part Number
SKY5A3049	Sky5® Low-Band TX-RX Front-End Module for 3G/4G/5G Applications with Low-Band/High-Band 2G	SKY5A3049EK1