

PRODUCT SUMMARY

SKY68011-31: LTE Multi-Band Front-End Module for IoT

Applications

- Cellular IoT modem devices targeting low-power wide area network (LPWAN):
 - 4G LTE technology capability
 - Dedicated LTE half-duplex operation (HD-FDD) for LTE-M/NB-IoT
 - Designed to meet 3GPP Rel-12 and Rel-13 specifications (with compatible cellular transceiver)
- LTE multi-band modem products (low-band and mid-band):
 - Low-band B12/B13/B17
 - Mid-band B2/B25/B4/B1/B66
- PAE optimized for Class 3 LTE output power (+23 dBm)

Features

- Cost-optimized front end for low-data-rate applications
- Low-loss post-PA transmit front end for enhanced transmitter efficiency (compared to LTE-FDD radio front ends)
- Multi-band PA supporting APT mode of operation or Vcc fixed supply (≥ 2.85 V)
- Integrated low-pass filters for harmonic rejection to comply with spurious emission requirements
- Integrated SP6T antenna Tx/Rx switch
- Integrated Rx SAW filters for out of band rejection for low-band (B12/B13/B17) and mid-band (B2/B25/B4/B1/B66)
- Optimized to support LTE for 1 to 6 RB
- MIPI® RFFE control interface, 2.0 compliant
- Pin-to-pin compatible with the SKY68000-31 and SKY68001-31
- Additional Aux port offers greater flexibility for more bands on the Tx or Rx path
- Adaptive biasing scheme for maximum PA efficiencies
- Small, low-profile package (4 mm x 5 mm x 0.9 mm) (MSL3 @ 260 °C per JEDEC J-STD-020)
- Lead (Pb)-free and RoHS-compliant



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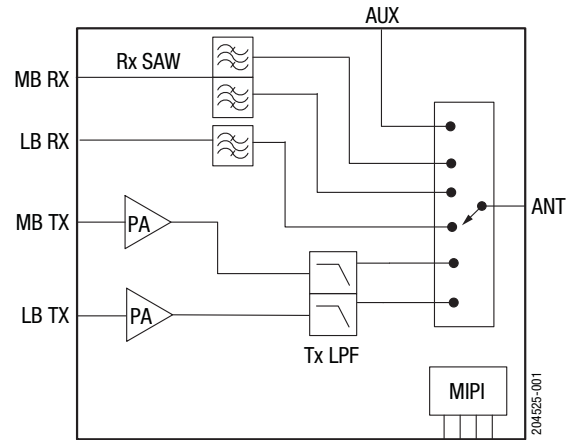


Figure 1. SKY68011-31 Functional Block Diagram

Description

The SKY68011-31 is a hybrid, multi-band multi-chip RF front-end (RFFE) module supporting cellular LTE-M/NB-IoT (half-duplex system) transceiver platforms. The module integrates the entire RF front end necessary for an LTE multi-band radio operating in low-band B12/B13/B17 and mid-band B2/B25/B4/B1/B66 including Rx SAW filters, broadband PA with bias controller, Tx low-pass harmonic filter, antenna switch and MIPI RFFE controller.

Tx Section

The PA load-line is optimized for high efficiency while simultaneously meeting 3GPP ACLR and emissions mask specifications with LTE up to 6 RB. An integrated LPF is implemented to reject the PA and transceiver harmonics while at the same time minimizing any post PA loss for an optimized transmit current consumption. Out-of-band emissions performance is emphasized by the design to be compliant for B12/B13/B17 and B2/B25/B4/B1/B66.

Rx Section

Receive SAW filters are integrated in to the module along with the necessary matching yielding a 50 Ω single-ended impedance for the antenna and Rx ports. The SAW filters provide a high level of rejection to out-of-band interferers protecting the transceiver from high blocking signal levels and to support 3GPP LTE blocking test conformance. The Rx SAW filters cascaded with the low throw count switch establishes a lower insertion loss and noise figure than conventional LTE receivers.

Auxiliary Path

The Aux pin is an additional broadband port that can be used for either the Tx or Rx path (including high-band).

MIPI RFFE Controller Interface

The SKY68011-31 functional operation is fully controllable by a single MIPI interface which is used to drive the PA in various optimized bias modes as well as providing band selection and controlling the antenna switch Tx, Rx, and band selection.

Figure 1 shows the block diagram for the SKY68011-31.

Ordering Information

Part Number	Product Description	Evaluation Board Part Number
SKY68011-31	LTE Multi-Band Front-End Module for IoT	SKY68011-31-EVB

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