

## PRODUCT SUMMARY

# SKY78070 SkyOne® Multimode Multiband Front-End Module for Quad-Band GSM / GPRS / EDGE / WCDMA / HSPA / HSPA+ / FDD LTE (Bands 1, 2, 3, 4, 5, 8, 12/17, 13, 20, 27, 28) / TD-SCDMA / TDD LTE (Bands 34, 39)

## Applications

- Quad-band cellular handsets:
  - Class 4 GSM850 / EGSM900
  - Class 1 DCS1800 / PCS1900
  - Class E2 GSM850 / EGSM900 / DCS1800 / PCS1900
  - Class 12 multi-slot EGPRS
- Multiband 3G handsets
- WCDMA / HSPA / HSPA+ / FDD LTE-modulated handsets for bands 1, 2, 3, 4, 5, 8, 13, 12/17, 20, 27, 28
- TD-SCDMA / TDD LTE-modulated handsets for bands 34, 39

## Features

- PA core optimized to meet or exceed best-in-class performance
- Optimized for envelope tracking system
- Full power supported for average power tracking system
- Hybrid architecture: separate GSM, TDSCDMA, WCDMA Tx paths
- 50 ohms I/O impedances, integrated DC blocking on all ports
- Integrated duplexers for bands 1, 2, 5, 8
- Seven Tx post-PA outputs (3MB, 1LB, 3VLB) to support external duplexers from internal PA engine
- Ten TRx Aux ports (4HB, 4MB, 2LB/VLB) to support external RF paths and satellite PAs / duplexers / coexistence filters
- MIPI® RFFE Control Interface w/1.8 V nominal supply, fully operable for VIO high / VBATT low
- Small, low profile package
  - 7 mm x 7.8 mm x 0.8 mm
  - 56-pad configuration
- For RoHS and other product compliance information, see the [Skyworks Certificate of Conformance](#)

### • 2.5G Features:

- EGPRS Class 12 multi-slot operation
- Two RF P<sub>OUT</sub> control levels using digital logic interface
- Linear PA with bias optimization for efficiency/linearity trade-off in 8PSK mode

### • 3G Features:

- WCDMA mode supports output power, bandwidth for bands 1, 2, 4, 5, 8 through an integrated select switch
- TD-SCDMA mode supports output power, bandwidth for B34, 39 via integrated select switch
- Linear amplifiers with bias optimization and low/high mode gain switch for best efficiency/linearity tradeoff

### • 4G Features:

- LTE supports output power, bandwidth bands 1, 2, 3, 4, 5, 8, 12/17, 13, 20, 27, 28, 39
- Bands 1, 2, 3, 4, 20, 28, 39 up to 20 MHz bandwidth
- Band 27 up to 15 MHz bandwidth
- Bands 5, 8, 12/17, 13 up to 10 MHz bandwidth

## Description

The SKY78070, SkyOne® is a hybrid, multimode multiband (MMMB) Front-End Module (FEM) that supports 2.5G and 3G/4G handsets and operates efficiently in GSM, GPRS, EDGE, TD-SCDMA, WCDMA, HSPA, and LTE modes. The FEM consists of a GSM800/EGSM900 PA block, a DCS1800/PCS1900 PA block, separate WCDMA blocks operating in the low and mid- bands, duplexers for bands 1, 2, 5 and 8, a logic control block for multiple power control levels, and band enable functions in both cellular and UMTS. RF I/O ports are internally matched to 50 ohms to minimize the need for external components. Extremely low leakage current maximizes handset standby time.

**Filter Integration:** Duplexers for bands 1, 2, 5, and 8 are designed into the SKY78070. This produces a highly integrated front-end solution wherein PA matching is accomplished with pre- and post- duplexer matching circuits which eliminates any required tuning outside the module. This highly integrated solution significantly reduces time-to-market and also provides the smallest RF footprint which yields more space for form factor designers.

**GSM / EDGE:** The SKY78070, with new compact architecture, supports the GSM850, EGSM900, DCS1800 and PCS1900 bands, as well as 2.5G Class 12 Enhanced General Packet Radio Service (EGPRS) multi-slot operation and EDGE linear modulation.

**WCDMA:** The SKY78070 enhanced architecture supports WCDMA/High-Speed Downlink Packet Access (HSDPA) and High-Speed Uplink Packet Access (HSUPA) modulations, covers multiple bands for 3GPP including bands 1, 2, 3, 4, 5, and 8, and operates at different power modes.

**LTE:** The SKY78070 meets spectral linearity requirements of LTE modulation with QPSK/16QAM up to 20 MHz bandwidth, including various resource block allocations, with good power-added efficiency.

**TD-SCDMA:** The SKY78070 meets spectral linearity requirements of TD-SCDMA modulation with good power-added efficiency.

**Receiver Section:** The SKY78070 integrated Duplexers, RX SAWs, and 1P16T SOI switch provides 2G/3G/4G Rx paths from antenna to LNA port of RFIC. GPS and WiFi coexistence are designed-in for exceptional support to maintain all radio performance, even in scenarios of simultaneous use. Optimized low insertion-loss Rx paths, matching circuits, and well-grounded guard traces (high Tx–Rx isolation) inside the module mitigate de-sense problems and enhance sensitivity performance.

**MIPI RFFE Control Interface:** The SKY78070 is fully controllable via 2 separate MIPI serial interfaces, one for the PA engine and one for the ASM .

Ordering Information

| Product Name                                          | Order Number | Evaluation Board Part Number |
|-------------------------------------------------------|--------------|------------------------------|
| SKY78070 SkyOne® Multimode Multiband Front-End Module | SKY78070     | —                            |



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