

PRODUCT SUMMARY

SKYA21049 SkyOne® Automotive Multimode Multiband Front-End Module for 4G LTE and 4G LTE-A (Downlink Carrier Aggregation (CA) Applications)

Applications

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

Features

- Integrated duplexers for Bands 2, 4, 5
- Supports Band 2 and Band 4 Downlink Carrier Aggregation
- Automotive PPAP report available
- Characterized -40 °C to +85 °C ambient operating temperatures
- Extended production life, automotive PCN management and IMDS material declaration
- Enhanced biased HAST/THB reliability performance
- PA core optimized to meet or exceed best-in-class performance
- 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
- Six Tx post-PA outputs (2 MB, 1 LB, 3 VLB) to support external duplexers from internal PA engine

Features

- 10 TRx Aux ports (5 MB/HB, 5 LB/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

2.5G Features:

- EGPRS Class 12 multi-slot operation
- Two RF P_{OUT} 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 2, 4, 5 through an integrated select switch
- TD-SCDMA mode supports output power, bandwidth for Bands 34 and 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 2, 3, 4, 5, 8, 12/17, 13, 20, 27, 28
- Bands 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
- Bands 2 and 4 downlink Carrier Aggregation



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Description

The SKYA21049 SkyOne® is an automotive hybrid, multimode, multiband (MMMB) Front-End Module (FEM) that supports 2.5G and 3G/4G 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 2, 4, and 5, 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 for minimum need of external components.

Filter Integration: Duplexers for bands 2, 4, and 5 are designed into the SKYA21049 to produce a highly integrated front-end solution. Matching circuits, pre- and post- duplexer, accomplish PA matching and eliminate any tuning requirement outside the module. This highly integrated solution also reduces time-to-market significantly, and the smallest RF footprint makes more space available to form-factor designers.

GSM / EDGE: The SKYA21049, 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 SKYA21049 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 2, 4, 5, and operates at different power modes.

LTE – The SKYA21049 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.

LTE-A – The SKYA21049 supports Band 2 and Band 4 downlink Carrier Aggregation without need of external quadplexers.

TD-SCDMA – The SKYA21049 meets spectral linearity requirements of TD-SCDMA modulation with good power-added efficiency.

Receiver Section – The SKYA21049 integrated Duplexers, RX SAWs and SP9T SOI switches provide 2G/3G/4G Rx paths from antenna to LNA port of RFIC. GPS and WiFi coexistence is 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 mitigates de-sense problems and enhances sensitivity performance.

MIPI RFFE Control Interface – The SKYA21049 is fully controllable via two separate MIPI serial interfaces, one for the PA engine and one for the ASM.

Ordering Information

Product Name	Order Number	Evaluation Board Part Number
SKYA21049 SkyOne® Automotive MMB Front-End Module	SKYA21049	EN21-D636-001-EVB

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