# **TINI<sup>®</sup> Power SoCs**

# Analog Integration Gives You Space for New Functions in Mobile Platforms



# **Technology Benefits**

- Combine power and system functions into a single chip to save board space, reduce the bill of materials, and improve performance
- Integrate a microcontroller and memory to offload the applications processor and allow one design to be ported across multiple platforms
- Extend battery life and reduce heat with highly efficient power-management functions
- Leverage a broad portfolio of high-performance building blocks, including advanced IP cores like ModelGauge<sup>™</sup>, FlexSound<sup>®</sup>, and TacTouch<sup>®</sup>



# **TINI Power SoCs Enable Thinner, Lighter Smartphones**

#### **The Integration Barrier**

Each year smartphones get smarter, thanks to constant advances in CMOS process technology. With the reduction of process geometries to 40nm and below, the baseband and applications processors have absorbed more and more digital functional blocks, enabling smartphones to support an everwidening array of applications and faster speeds.

Today, consumer demand for additional capabilities in thinner and lighter form factors is driving the need for even more integration. However, the deep-submicron CMOS processes used to integrate digital gates are not suitable for analog/ mixed-signal (AMS) functions due to high leakage and noise.

#### **Breaking Through with TINI Power SoCs**

Multifunction AMS solutions are needed to break through the integration barrier in portable platforms. Today, power, analog, mixed-signal audio, and passives occupy roughly half the PCB space in smartphones and tablet PCs. Combining these blocks into a single system-on-chip (SoC) solution can free up significant real estate for new differentiating features and higher-capacity batteries. Maxim's TINI Power SoCs leverage our broad portfolio of AMS building blocks to deliver the best performance in the smallest footprint. They integrate all necessary DC-DCs and linear regulators to power the applications and baseband processors, along with functional blocks such as audio codecs, touch-screen controllers, battery management, and more. A microcontroller and memory may be included to offload the applications processor by managing housekeeping functions. The built-in microcontroller also provides the flexibility (via firmware updates) to reuse a design across multiple platforms and device generations.

Any number of AMS blocks can be integrated together on Maxim's proprietary BCD process technology to achieve the best performance and optimum integration. Power SoCs thus enable customers to break through the integration barrier with a smaller, lower cost solution that provides a richer feature set.



System diagram of a TINI Power SoC that supports both the applications and baseband processors. An audio subsystem, battery charging and protection, and touch-screen control are integrated to reduce external component count.

# **Inside the TINI Power SoC**



### **Customer Success Story: Powering the Applications and Baseband Processors**



# Choose from a Complete Portfolio of High-Performance Building Blocks



Functions	Building Blocks
Power Management	DC-DC converters, LED drivers, LDOs, charge pumps
Battery Management	Chargers, fuel gauges, battery security/safety
Amplifiers and Comparators	Filters, comparators, op amps, video amps
Data Conversion	ADCs, switches/muxes, DACs, digital potentiometers
Interface	I <sup>2</sup> C, SPI, SPMI, 1-Wire <sup>®</sup> , LVDS, USB, level translators, RS-232
Timing	XO, DCXO, TCXO, RTC
Audio	Codec, noise cancellation, jack sense, mics, amplifiers
Memory	EEPROM, EPROM, NV SRAM, OTP, ROM
Microcontrollers	MAXQ <sup>®</sup> , 8051, ARM <sup>®</sup> , DSP
Sensors	Capacitive multitouch, proximity, ambient light, RGB
Application-Specific Blocks	Smartphones, tablets, e-readers, media players



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