## Innovative Convergence™ Platforms

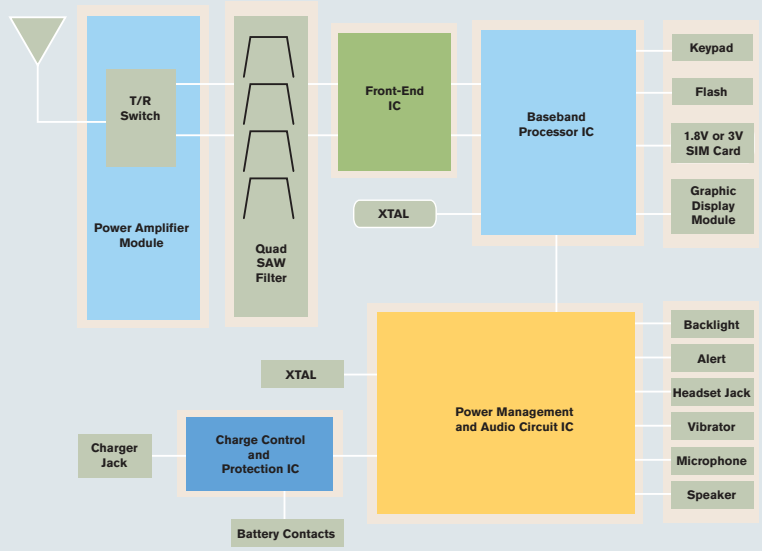
# i.250-21

### *Overview*

Building on the success of the industry-leading i.250 Innovative Convergence™ (2.5G) platform, a silicon-to-software solution for wireless handsets, Freescale Semiconductor* offers an enhanced platform that provides advanced features and applications in the Global System for Mobile Communications (GSM)/General Packet Radio Service (GPRS) arena. The i.250-21 Innovative Convergence platform is designed to support 850 MHz and 900 MHz GSM, 1800 MHz digital communication services (DCS), and 1900 MHz personal communication services (PCS) wireless networks. This quad-band operation allows handsets based on the i.250 platform to work in virtually any 2.5G GSM/GPRS wireless network in North America, Europe and Asia.

The i.250-21 platform is flexible and scalable: It is designed to support the high-volume production of entry-level voice and data phones as well as the use of higher-tier feature sets; and it provides a seamless migration path to next-generation technology. The i.250-21 platform offers manufacturers a solution to build products that are compact, cost-effective, secure, and can be delivered to market quickly.

**i.250-21 Chipset**




### *Platform Chipset Features*

**DSP56631 Dual-Core Baseband Processor**

> Integrates DSP56600 digital signal processor and ARM7TDMI-S™ microcontroller cores

> Includes on-chip memory, receiver analog-to-digital converters (ADCs), a receive (RX) and transmit (TX) synthesizer, TX power amplifier control, and a voice codec

**MMM6022 Power Amplifier Module**

> 50-ohm TX power amplifier module with antenna switch for quad- and tri-band GSM handset applications, functioning over the GSM850, EGSM, DCS, and PCS frequency bands

**MC13777 Quad-Band GPRS Front-End IC (RF Circuit)**

> Designed for use in GSM/DCS and GSM850/PCS quad-band GPRS Class 10 cellular radios

> Receiver portion designed for use in very low intermediate frequency (VLIF) receivers or direct conversion receivers (DCRs)

> Transmit portion designed for use in direct launch transmitters and integrates TX voltage control ocillators (VCOs) and buffer amplifiers

SiRF

ARM POWERED

*Launched by Motorola*

freescale™ semiconductor

**MC13717 Integrated Power Management and Audio Circuit**

> Contains voltage regulators, voltage multiplier, microphone amplifiers, audio filtering and amplification, a 32 KHz oscillator and a multiplexer that drives the general-purpose ADC on the baseband processor

> Includes advanced features such as coin-cell backup battery charger and switch, and additional ADC multiplexer inputs

**The MC13718 Li-Ion Charge Control and Protection IC**

> Designed to protect and control the charging of single-cell batteries employing lithium-ion cell chemistry

> Designed to provide multimode charging circuitry, battery cell protection circuitry, and thermal and power dissipation protection for charging electronics

## *Platform Benefits*

**Comprehensive Hardware and Software Solution**

> Comprehensive reference designs and development tools speed time-to-market

> GSM/GPRS software package eases system integration and interface design

**Technological Expertise**

> System design and software minimize design risks and shorten development cycle

**High Level of System Integration**

> Low part-count is cost-effective and helps minimize platform development time

> Reduced de-sense effect is designed to improve radio manufacturing cycle time and quality

> Easily integrated with i.MX family of applications processors via the i.Smart smartphone reference design

**Flexible, Scalable Architecture**

> Allows high level of software and hardware reuse

> Integrates third-party, value-added technologies that enable different tiers of products, speeding time-to-market for derivatives

> Designed to provide smooth migration path to next-generation applications such as smartphones and wireless PDAs

> GPRS Class 10 protocol stack that has been field-proven running on cellular handsets around the globe

> Designed to scale from voice-only wireless clients to rich multimedia platforms including multimedia messaging service (MMS) and WAP 2.0 Internet browsing

> Optimized interface for Bluetooth™ connectivity

> Optimized Java 2 Micro Edition (J2ME™) 2x performance over previous versions via optimized byte code interpreter (OBCI)

> Supports advanced imaging features including video graphics array (VGA) to mega-pixel resolution, high-preview frame rates, fast click-to-click times and upgrade support for MPEG-4 movie functions

> LCD supports full 262K true color thin-film transistor (TFT) panel

**Enhanced Security**

> Includes secure ROM designed to provide restricted access and interrupt-free execution for sensitive code

> Offers phone security enhancement that helps protect the phone code and data as well as the crypto key, used for exchanging sensitive data through WAP, from being read by unauthorized users

**GPS**

Assisted global positioning system (AGPS) capability is offered as an option to the i.250-21 platform. By attaching Freescale's MCM29500 GPS processor and MC13240 GPS RF front-end IC to the i.250-21, and licensing the SiRFLoc client software directly from SiRF Technology, Inc., the i.250-21 customer has a complete AGPS solution that is capable of supporting the E-911 U.S. government mandate as well as a broad suite of location-enabled applications where size, cost and performance are critical. In addition, Freescale will offer a GPS hardware reference design and interface software to simplify the integration of this optional GPS functionality.

## *Platform Development Environments*

The i.250-21 platform is designed to simplify the development process for a GSM/GPRS product by organizing the tools and different pieces of the solution into the following three major development environments:

> Integrated development environment (IDE) for software and man-machine interface (MMI) development

- Application Development System (ADS)
- Software—GSM engine with GPRS and MMI toolkit
- Supporting tools for handset development

> Radio Test Environment (RTE) for radio development and performance optimization

- Flash loader tool
- Radio tuning tool

> Manufacturing Test Environment (MTE) for meeting type approval and production line test requirements

- Test planning

## *Innovative Convergence*

For more information about Freescale's Innovative Convergence products and wireless solutions, visit **www.freescale.com/i250**.

*The Semiconductor Products Sector of Motorola, Inc. became Freescale Semiconductor, Inc. in 2004.

***Learn More:*** For more information about Freescale products, please visit **www.freescale.com**.

Freescale™ and the Freescale logo are trademarks of Freescale Semiconductor, Inc. All other product or service names are the property of their respective owners. The ARM Powered logo is the registered trademark of ARM Ltd. ARM7TDMI-S™ is the trademark of ARM Limited. Java and all other Java-based marks are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries. This product contains SiRFstar® Global Positioning System location technology that is licensed by SiRF Technology, Inc. to Freescale Semiconductor, Inc. and is protected under one or more United States patents. SiRF, SiRF with orbit design in purple and gold, SiRFLoc, and SiRFstar are registered trademarks of SiRF Technology, Inc.
© Freescale Semiconductor, Inc. 2004
I25021INNCONFS
REV 1

Launched by Motorola
freescale™ semiconductor