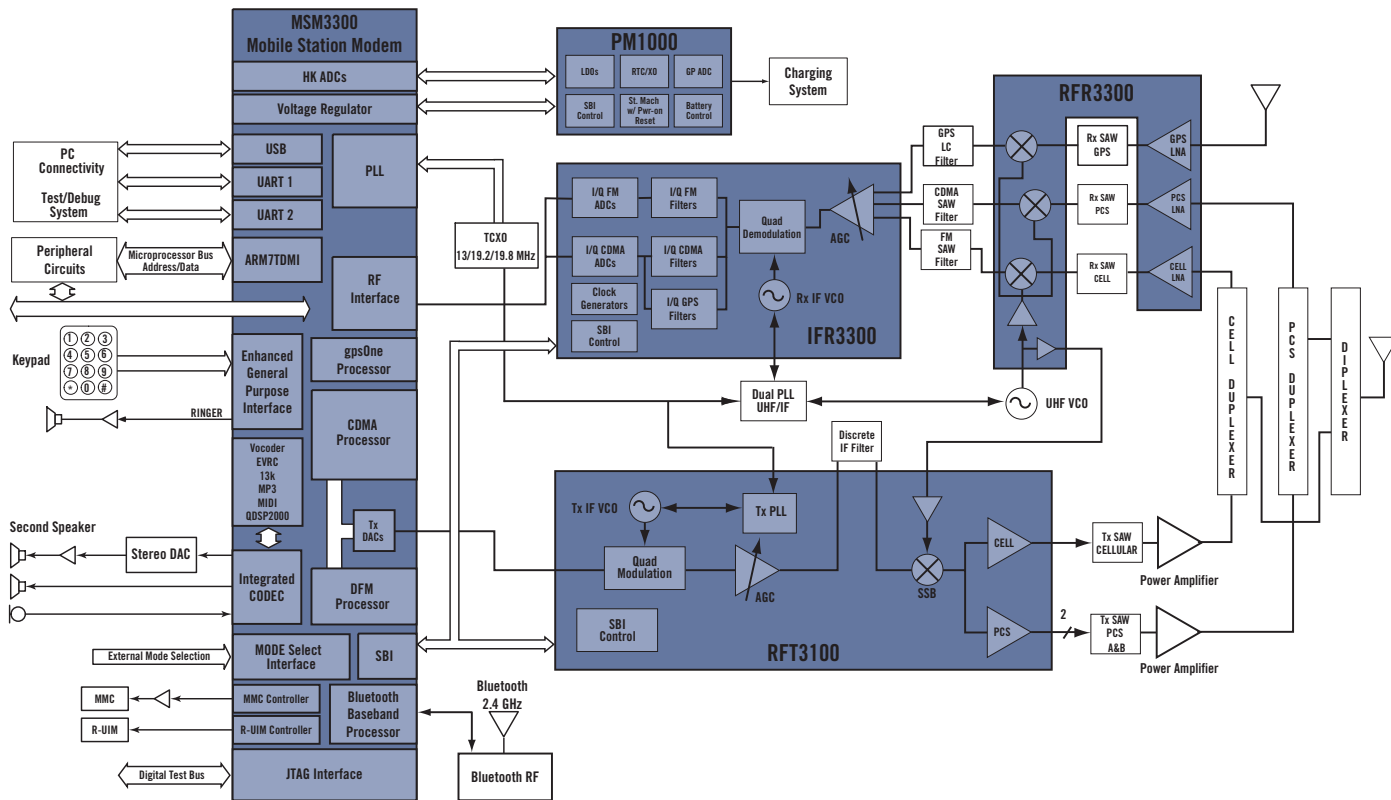


MSM3300™ CHIPSET SOLUTION



QUALCOMM's MSM3300 Chipset Solution (Tri-Mode Plus GPS Configuration shown)

Overview

Telephones are rapidly being transformed into portable, wireless networked computers with ever-expanding feature sets. To reduce complexity and save cost and space, QUALCOMM has developed its seventh generation CDMA chipset and system solution for wireless devices, which provides increased feature integration. The heart of the solution is QUALCOMM's MSM3300™ Mobile Station Modem™ (MSM™) single-chip baseband processor modem that interfaces directly with the IFR3300™, RFR3100™/RFR3300™, RFT3100™, and PM1000™ devices. Feature- and pin-compatible with the MSM3100™ device, this complete CDMA chipset is the optimal solution for an IS-95 A/B 64 kbps High Speed Packet Data (HSPD) handset. It offers highly integrated solutions for position location and Bluetooth™, audio enhancement technologies including support for MP3 and MIDI, MMC/SD and R-UIM interfaces, and other technologies based around QUALCOMM's Launchpad™ initiative, including the first fully integrated wireless position location solution.

MSM3300 Device Description



The MSM3300 device integrates both digital and analog functions on a single chip. The low-power, low-cost MSM3300 device includes proprietary CDMA building blocks, an ARM7TDMI@ Thumb RISC microprocessor, and QUALCOMM's powerful QDSP2000™ digital signal processor core, which enables a host of advanced features. The MSM3300 device also integrates various functions and features such as a position location processor based on gpsOne™ technology, embedded Bluetooth baseband processor, audio enhancement technology support (Qtunes™ and CMX™ software) and an integrated mass-storage device (MMC) controller. In addition, the MSM3300 device incorporates other functions, including an audio voice codec, PLL, Transmit DACs, ADCs, memories, USB device controller, R-UIM interface, voltage regulators, increased number of GPIOs, peripheral interfaces, and an enhanced clock and power management architecture.

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IFR3300 Device Description



Designed for use in dual-mode CDMA/FM gpsOne-enabled phones, the IFR3300 Rx-to-baseband processor offers significant advantages in size, cost and power over previous generations. It integrates the Automatic Gain Controls (AGCs), I/Q demodulators, low-pass

filters and Analog-to-Digital Converters (ADCs) into a single Application-Specific Integrated Circuit (ASIC). Pin-compatible with the IFR3000™ processor, the IFR3300 processor adds Global Positioning System (GPS) capability. The integrated GPS functionality provides a highly cost-effective GPS and IS-95B IF receiver solution, supporting IS-98 (CDMA), IS-19 (AMPS) and gpsOne position location capabilities.

RFT3100 Device Description



The RFT3100 baseband-to-RF transmit processor performs all transmit (Tx) signal processing functions required between digital baseband and the Power Amplifier (PA). The RFT3100 operates in IS-95 CDMA cellular and PCS single-band and dual-band applications.

The RFT3100 incorporates the previous generation functionality of the IFT3000™ Baseband-to-IF Processor together with the functionality of an upconverter/driver amplifier, all in an ultra-small 32-pin BCC++ plastic package. The RFT3100 device offers the most advanced and integrated CDMA Tx solution, providing a board area savings of more than 65 percent over previous generation chipsets, along with minimized power consumption for extended talk-time performance.

The RFT3100 device connects directly to and is controlled by QUALCOMM's MSM3300 device via the three line Serial Bus Interface (SBI). It utilizes an analog baseband interface that is upconverted to the cellular or PCS frequency bands with the needed signal drive capability to the PA. The RFT3100 device includes an IF mixer for upconverting analog baseband to IF, a programmable PLL for generating Tx IF frequency, single sideband upconversion from IF to RF, two cellular and two PCS driver amplifiers (dual-band

version), and Tx power control through 85dB dynamic range AGC. As an added benefit, the single sideband upconversion eliminates the need for a bandpass filter normally required between the upconverter and driver amplifier, providing overall board area and cost savings.

RFR3300 Device Description



The RFR3300 device, successor to the RFR3100 device, integrates dual-band Low Noise Amplifiers (LNAs) and mixers for downconverting from RF to CDMA and FM IF, and contains a dedicated LNA and mixer designed for downconverting Global Positioning

System (GPS) signals from RF to IF. The RFR3300 receiver operates in the 832 MHz-894 MHz cellular band, 1840 MHz-1990 MHz PCS band and 1575 MHz GPS band. The RFR3300 device meets cascaded Noise Figure (NF) and Third-Order Intercept Point (IIP3) requirements of IS-98 and JSTD-018 for sensitivity, and two-tone intermodulation. Together with QUALCOMM's MSM3300 chipset and IFR3300 baseband receiver, the RFR3300 device offers the most cost-effective and high-performance solution for CDMA dual-band or tri-mode phones with gpsOne capability.

DMSS Software Description

QUALCOMM provides a complete software suite for building multimode wireless products and applications based on the MSM family of chipsets. Dual-Mode Subscriber Software™ (DMSS™) software is released in source format targeted to on a Subscriber Unit Reference (SURF™) phone platform based on the MSM3000®, MSM3100, MSM3300 or MSM5000™ chipsets. The SURF platform is an optional development platform available to assist in evaluating, testing and debugging DMSS software. Complete documentation and intensive training is provided with each software release. QUALCOMM's software provides working, tested code that enables fast time-to-market for handset vendors. Continued software development, testing and support will be provided for future chipsets from QUALCOMM, including implementation of evolving 3G CDMA and other CDMA standards.

PM1000 Device Description



The PM1000 chip is a complete power management system device for CDMA handset applications whose primary functions provide battery management and charger control, and linear voltage regulation with programmable voltages for digital and RF/analog circuits. All

PM1000 device operating modes and functionality can be controlled by the MSM3300 device's microprocessor through its three-wire Serial Bus Interface (SBI). The battery management supports the use of either regulated or unregulated external charger packs and includes an accurate battery gas gauge. The charger control includes charge modes for Lithium-Ion (Li-Ion) and Nickel Metal Hydride (NiMH) batteries, and offers two charging modes within the charging subsystem, a trickle charging system and a fast charging system. The voltage regulation includes power-on reset control. The PM1000 device supports the use of either a single- or a dual-battery system with automatic battery switchover sensing and a low-battery-voltage alarm for both batteries. The PM1000 device contains eight Low Dropout (LDO) voltage regulators, each independently controlled from the MSM3300 microprocessor to provide regulation to both the RF and digital sections of a CDMA phone. The PM1000 device also contains a variety of collateral support functionality, including a general-purpose Analog-to-Digital Converter (ADC), a Real-Time Clock (RTC), keyboard backlight driver, Liquid Crystal Display (LCD) backlight driver, ringer/buzzer driver and a vibrator driver.

SURF (Subscriber Unit Reference) Development System Description

The SURF platform is an essential element in QUALCOMM's CDMA Designer toolkit, which provides a complete development solution for creating applications using QUALCOMM's CDMA chipsets and system software. The SURF platform is a completely tested working example of the interfaces between a specific chipset and other functional parts of the subscriber unit. The SURF platform combines semiconductor and systems expertise with an experienced view of handset development requirements.

The SURF platform is intended to assist manufacturers designing CDMA phones using QUALCOMM's MSM3300 chipset, including the IFR3300, RFR3100/RFR3300, RFT3100, and PM1000 devices. It includes an RS-232 and USB interface to a PC for software control and download, and allows in-circuit emulation with Lauterbach and Yokogawa digital computer equipment as well as through the JTAG port. SURF systems are shipped with QUALCOMM's CDMA software and a complete user manual, including board schematics and the bill of materials.



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Printed in USA 10/2003 MSM3300-FB X7