Press Release

Fujitsu Microelectronics Limited

Fujitsu Launches Multimode, Multiband RF Transceiver IC

- Eliminates external SAW filters, LNA, for compact solution -

Tokyo, September 14, 2009 - Fujitsu Microelectronics Limited today announced the first product in its entry into the mobile phone RF transceiver market, in launching a RF transceiver IC for mobile phones supporting 2G GSM/GPS/EDGE and 3G UMTS/HSPA protocols, that includes a 3G DigRF(1) interface on a single chip. The compact new transceiver IC also eliminates the need for external SAW filters(2) and low-noise amplifiers (LNA)(3), and enables mobile phone manufacturers to reduce component count, board space and bill of materials. Additionally, a new simplified programming model helps to significantly reduce development time and simplify integration of the RF into a radio platform. Samples of the MB86L01A transceiver IC are available from today.

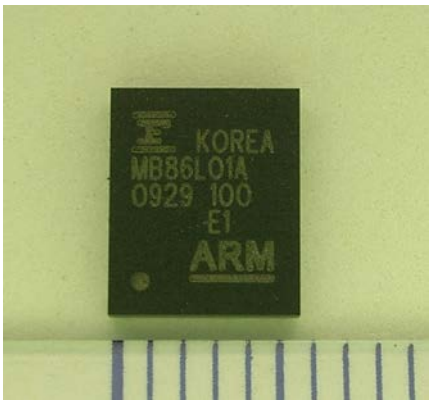

Figure 1. MB86L01A RF transceiver IC (7.1mm x 5.9mm)

In today's global mobile phone markets there are increasing needs for multimode support for the various 2G and 3G communications protocols in use, as well as multiband support for the various frequency bands used in different regions, and allotted to different carriers. Mobile phone manufacturers are faced with trying to supply not only the multitude of combinations of these modes and frequencies, but also have to deal with the demands of ever-shortening product lifecycles and smaller form-factors. This new MB86L01A RF transceiver IC is designed to help mobile phone manufacturers meet these demands.

The new RF transceiver IC supports all frequency bands for 2G protocols of GSM/GPRS/EDGE, as well as supporting a maximum of 4 bands simultaneously within the 10 frequency bands of the 3G protocols. UMTS/HSPA.

The MB86L01A transceiver also embeds LNAs on-chip, so external LNAs are not required, as they were previously. Also, an architecture is employed that eliminates the need for external SAW filters, thus reducing total component count. Enclosed in a small form-factor 142-pin LGA package of 7.1mm x 5.9mm, the reduced space of the RF system helps realize smaller form-factor mobile phones.

Previously, RF design was focused on hardware with analog circuits. This transceiver IC includes digital circuit technology so that it can output digital signals to allow control of external components - such as antenna switch and power amplifier - thus simplifying the system. In addition, an embedded CPU allows simple programming to control functionality of the RF system and ease of making filtering adjustments. This simplified programming model significantly reduces development, testing and verification time.

Also integrated into the transceiver is a 3G DigRF interface, a standard for connecting a transceiver IC and baseband IC, thus making it compatible with DigRF baseband ICs.

The development of the MB86L01A transceiver IC was enabled in part by the recent acquisition by Fujitsu Microelectronics of licenses and rights to the technology and intellectual property related to Freescale Semiconductor, Inc.'s RF transceiver products for mobile phones, and by Fujitsu's acquisition of a RF team from Freescale in Tempe, Arizona, U.S. More than 130 of those design engineers are working on RF transceiver IC design, architecture, validation, verification,

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and reference designs. The group is also working on next-generation high bit-rate transceiver ICs.

Fujitsu Microelectronics is dedicated to increasing the competitiveness of its customers' end products, and thus going forward will continue to provide advanced RF transceiver solutions and other semiconductor products, such as power management ICs.

Sample Availability

MB86L01A: From early September, 2009

Sales Target

1 million units per month during the present fiscal year ending March 2010.

Key Features

1. **Reduces component count, board space with elimination of SAW filters and LNAs**
   Previously, it was necessary to use external SAW filters to reduce noise from the transmitter circuits of the RF IC to the power amplifier. However, with the proprietary design of the transmitter circuits in this new RF transceiver, low noise output is achieved, thus eliminating the need for UMTS transmit SAW filters. Similarly for the UMTS/GSM receiver circuits, previously an external SAW filter was necessary in front of the receiver circuits to reduce degradation of signal-receiving sensitivity. Again, the proprietary design of this transceiver has eliminated the need for receive SAW filters. Also, a LNA was integrated into the receiver circuits of the IC.

   This can reduce the number of components needed by a maximum of 20 components compared to previous configurations, thereby simplifying the design of the RF portion of the system. Thus, board space can be reduced by over 10% as well as reduction in the bill of materials.

2. **New programming model reduces development burden**
   By programming the embedded CPU, it becomes possible to control various internal functionality. Thus, for a change in the internal configuration of a mobile phone, a change in IC hardware is not necessary, but is handled through programming of the CPU to control internal sequencing or tuning of digital filters. This simplified programming model helps significantly reduce development and verification time and simplifies integration of the RF system into mobile phone platforms.

3. **Supports UMTS/HSPA and GSM/GPRS/EDGE protocols in 1-chip**
   This RF Transceiver supports 4 bands for GSM/GPRS/EDGE: GSM850, EGSM900, DCS1800, PCS1900. As well as supporting a maximum of 4 bands simultaneously within the UMTS/HSPA bands: I, II, III, IV, V, VI, VIII, IX, X, and XI. This transceiver also supports HSDPA(4) with maximum downlink transmissions speeds of 14.4Mbps, as well as HSUPA(5) with maximum uplink transmissions speeds of 5.7Mbps.

4. **Supports DigRF standard interface**
   This RF transceiver IC includes the DigRF interface, version 3.09, a standard interface

between RF ICs and baseband ICs defined by the MIPI Alliance. Thus is compatible with DigRF baseband ICs.

For More Information

http://jp.fujitsu.com/group/fml/en/（Fujitsu Microelectronics）

Glossary and Notes

1 **DigRF:**
An interface standard for connection between the RF IC and baseband IC in wireless mobile devices.

2 **SAW filter:**
A filter designed to reduce noise by using a Surface Acoustic Wave in a piezoelectric material.

3 **LNA:**
Low Noise Amplifier. Located at the front-end of the receiver, it amplifies the signal while adding as little noise as possible.

4 **HSDPA:**
High Speed Downlink Packet Access. A specification within W-CDMA for downlink data transmissions.

5 **HSUPA:**
High Speed Uplink Packet Access. A specification within W-CDMA for uplink data transmissions.

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About Fujitsu Microelectronics Limited (FML)

Fujitsu Microelectronics Limited designs and manufactures semiconductors, providing highly reliable, optimal solutions and support to meet the varying needs of its customers. Products and services include ASICs/COT, ASSPs, power management ICs, and flash microcontrollers, with wide-ranging expertise focusing on imaging, wireless, automotive and security applications. Fujitsu Microelectronics also drives power efficiency and environmental initiatives. Headquartered in Yokohama, Fujitsu Microelectronics Limited was established as a subsidiary of Fujitsu Limited on March 21, 2008. Through its global sales and development network, with sites in Japan and throughout Asia, Europe, and the Americas, Fujitsu Microelectronics offers semiconductor solutions to the global marketplace.
For more information: http://jp.fujitsu.com/fml/en/

Attachment

Overview of the RF Transceiver IC, MB86L01A

- Supports all the 4 GSM bands: GSM850, EGSM900, DCS1800, PCS1900.
- Support for EGPRS Class 34 operation.
- Supports a maximum of 4 bands simultaneously within the WCDMA bands: I, II, III, IV, V, VI, VIII, IX, X, and XI.
- Supports WCDMA HSDPA Category 10 with maximum downlink transmissions speeds of 14.4Mbps.
- Supports WCDMA HSUPA with 4 E‑DPDCH category 6 with maximum uplink transmissions speeds of 5.7Mbps.
- Seven differential RF inputs for the receiver.
- Six RF outputs on transmitter.
- 6 pin 3G DigRF interface for connecting to baseband IC.
- Contains SPI interface to control power amps, switching regulators and antenna switch.
- UMTS transmit SAW filters, UMTS/GSM receive SAW filters not needed. Contains integrated LNA.
- Embedded CPU core allows simplified programming for internal timing as well as control of external antenna switch and power amp.
- Receive and transmit auto calibration routines.
- Small form-factor 7.1 mm × 5.9 mm × 1.0 mm, 142 pin LGA package.