

General Technical Description

Model:

Date: 2017/06/06

Band: GSM: 850/900/1800/1900MHz

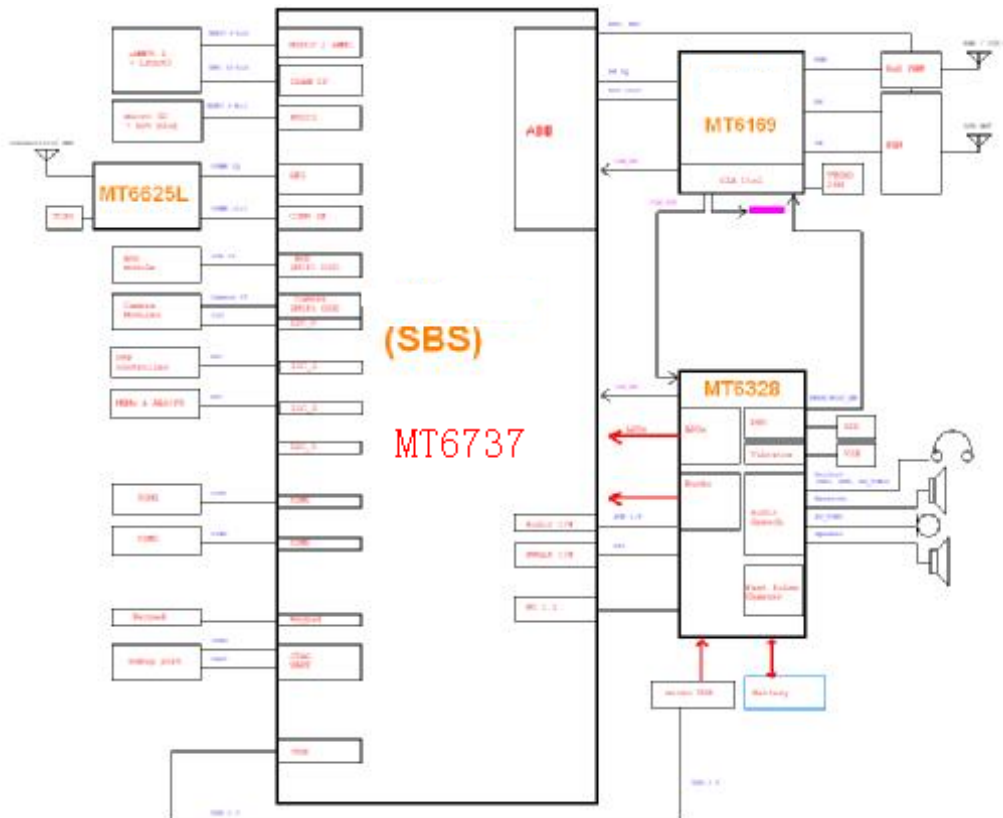
WCDMA: 850/1900/2100MHz

FDD:B2/B4/B12/B17

1. Scope

This document is shown and provided the more detail information about the platform used in. The basic description for the Baseband and RF section are also included.

2. Detail Block Diagram



3. RF Front End

3.1 Transceiver

The MT6169 is a RF transceiver targeted at high speed 2G/3G-FDD/TDD/4G-FDD/TDD multi-mode smart phone and tablet computers implanted in 40nm CMOS. The RF transceiver function is fully integrated.

3.2 Power Amplifier

Description

The design of the Transmit / Receive Front End Module (FEM) offers a complete transmit VCO-to-Antenna and Antenna-to-receive SAW filter solution for advanced cellular handsets comprising quad-band GSM, and linear 2.5G operation. Developed in a very low profile (0.8 mm Max) and compact form factor, the FEM supports Class 12 General Packet Radio Service (GPRS), EDGE multi-slot operation, and

TD-SCDMA and TDD LTE linear transmission. 14 transmit / receive (TRx) ports and an integrated directional coupler enables broadband 3G/4G RF switch-through.

The module consists of a CMOS Power Amplifier (PA) Controller, a low band (LB) PA block supporting GSM850/900 bands, a high band (HB) PA block supporting DCS1800/PCS1900, TD-SCDMA bands 34/39, and TDD LTE band 39, input and output ports internally matched to 50 ohm impedance loads, Tx harmonic filtering, RF switching, and a directional coupler at the antenna output. The custom low-current PA controller includes the Mobile Industry Processor Interface (MIPI) and decoder circuitry to control the RF switch.

Internal matching of all RF ports to a 50 ohm load reduces the number of external components on the phone board. The Heterojunction Bipolar Transistor (HBT) PA blocks, fabricated in GaAs, share common power supply pads to distribute current. Extremely low leakage current of the PA maximizes handset standby time. The PA outputs and the 14 TRx pads connect to the antenna pad through a high-linearity, low-loss switch. The TRx ports feature a 0 volts DC offset level that eliminates external blocking capacitors. An integrated directional coupler precludes any external coupler requirement. The GaAs die, the switch die, the CMOS controller, and the passive components mount onto a multi-layer laminate substrate and the entire assembly is encapsulated with plastic overmold. MIPI controls the RF signal flows including mode control and selection of LB or HB PA or TRx port.

In GMSK modes, the PA controller provides envelope amplitude control as a function of VRAMP and reduces sensitivity to input drive, temperature, power supply, and process variations. Skyworks' Finger-Based Integrated Power Amplifier Control (FB-iPAQ) minimizes output power variation into mismatch. Proper timing of MIPI commands and VRAMP input ensures high isolation between the antenna and Tx-VCO while the VCO is being tuned prior to the transmit burst.

In EDGE and TD-SCDMA / TDD LTE linear modes, VRAMP voltage and MIPI-based bias settings optimize PA linearity and efficiency.

4. Baseband

4.1 Digital Baseband Processor

MT6737 is a high integrated baseband platform incorporating both modem and application processing subsystems to enable 4G smart phone applications, with integrated Bluetooth, WiLAN and GPS modules. The chip integrates a Dual-core ARM Cortex-A7 MPCore operating up to 1.3GHz, an ARM Cortex-R4 MCU and a powerful multi-standard video accelerator. MT6737 supports various interface, including parallel/serial NAND flash memory and 32-bit LPDDR3 for optimal performance, and supports booting from SLC NAND or eMMC to minimize the overall BOM cost. In addition, an extensive set of interfaces and connectivity peripherals are included to interface to cameras, touch-screen displays, MMC/SD cards.

The application processor, a dual-core ARM Cortex-A7 MPCore which includes a NEON multimedia processing engine, offers processing power necessary to support the latest OpenOS along with its demanding applications such as web browsing, email, GPS navigation and games. All are viewed on a high resolution touch screen display with graphics enhanced by the 2D and 3D graphics acceleration. The multi-standard video accelerator and an advanced audio subsystem are also included to provide advanced multimedia applications and services such as streaming audio and video, a multitude of decoders and encoders such as H.264 and MPEG-4. Audio supported includes FR, HR, EFR, AMR FR, AMR HR and Wide-Band AMR vocoders, polyphonic ringtones and advanced audio functions such as echo cancellation, hands-free speakerphone operation and noise cancellation.

5. Bluetooth, FM radio, GPS, WIFI:

MT6625 is a 4-in-1 connectivity chip which contains a WiFi/Bluetooth transceiver front-end, a GPS receiver front-end and a complete FM receiver, along with integrated passive device (IPD) in a QFN40 package. An always-on low-dropout regulator (ALDO) provides supply voltage to top control logics in MT6625. The top control logics controls each subsystem independently. Each subsystem also has dedicated LDOs. A thermal sensor and a low-speed ADC (Analog-to-digital Converter) is provided to monitor MT6625's temperature variation. MT6625 does not have its dedicated crystal oscillator. It uses either an external (maybe temperature compensated) oscillator or clock source from companion chips in the platform such as MT6166.

For Wi-Fi and Bluetooth, MT6625 provides an advanced switching mechanism which allows fast switching between WiFi and BT modes. Hardware sharing and reuse is maximized. The transceiver front-ends are on MT6625 while the ADC/DAC are in the companion modem chip. The interface driver/receiver buffer is designed to drive PCB trace loading. The GPS IP in MT6625 is similar to WiFi/Bluetooth such that the ADC/DAC is in the companion modem chip. In contrast, the FM system integrates the modem and ADC in MT6625, and no interface driver/buffers are required.

<p>Operation Frequency range:</p>	<p>GSM850: 824.2 ~ 848.8 MHz PCS 1900: 1850.2 ~ 1909.8 MHz WCDMA Band V: 826.4 ~ 846.6 MHz WCDMA Band II: 1852.4 ~ 1907.6 MHz FDD LTE Band 2 : 1850MHz ~ 1910MHz FDD LTE Band 4 : 1710MHz ~ 1755MHz FDD LTE Band 12: 698MHz ~ 716MHz FDD LTE Band 17: 704MHz ~ 716MHz Bluetooth: 2402 MHz ~ 2480 MHz Wi-Fi: 802.11b/g/n-HT20: 2412MHz ~ 2462 MHz</p>
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	802.11n-HT40 :2422MHz~2452MHz
Antenna type:	Internal Antenna
Antenna gain:	GSM 850: 0 dBi, PCS 1900: 0 dBi WCDMA Band V: 0 dBi, WCDMA Band II: 0 dBi LTE Band 2: 0 dBi, LTE Band 4: 0 dBi LTE Band 12: 0 dBi, LTE Band 17: 0 dBi WIFI/BT: 0dBi
Modulation technology:	GSM/GPRS:GMSK, EGPRS: 8PSK WCDMA/HSDPA/HSUPA: BPSK LTE:QPSK/16QAM Bluetooth: GFSK/ π /4DQPSK/8DPSK Wi-Fi: 802.11b: DSSS, 802.11g/n: OFDM
Antenna Type:	Internal Antenna