

General Technical Description

Model: G7220

Date:

Band:

1. Scope

This document shows and provides the more detail information about the platform we used. The basic description for the Baseband and RF section are also included.

G7220 product is brand new handset designed by HUAWEI. The baseband circuit is based on MTK and RF circuit is based on Skyworks. It works at four bands, GSM850, GSM900, DCS1800, PCS1900 band.

2. Baseband

MT6250 is a highly integrated baseband platform incorporating both modem and application processing subsystems to enable 2G feature phone applications. MT6250 is capable of running the ARM7EJ-S RISC processor at up to 260MHz. In addition, an extensive set of interface and connectivity peripherals are included to interface to camera , touch-screen displays, micro SD cards and external WLAN and ATV modules.

MT6250 is a feature-rich and extremely powerful single-chip solution for high-end GSM/GPRS and EDGE-Rx capability. Based on the 32-bit ARM7EJ-S RISC processor, MT6250's superb processing power, along with high bandwidth architecture and dedicated hardware support, provides a platform for high-performance GPRS/EDGE-Rx Class 12 MODEM application and leading-edge multimedia applications.

Platform

MT6250 is capable of running the ARM7EJ-S RISC processor at up to 260MHz, which provides the best trade-off between system performance and power consumption.

For large amounts of data transfer, high-performance DMA with hardware flow control is implemented, which greatly enhances the data movement speed while reducing the MCU processing load.

MT6250 also provides hardware security digital rights management for copyright protection. For further safeguard and to protect the manufacturer's development investment, hardware flash content protection is provided to prevent unauthorized porting of the software load.

Memory

MT6250 supports serial flash interface with various operating frequencies.

Multimedia

The MT6250 multimedia subsystem provides conventional parallel interface and 2-bit serial interface for CMOS sensors. The camera resolution is up to 2M pixels. The built-in Hybrid Motion JPEG Encoder hardware enables real-time capture of high-resolution images and recorder of video format such as MPEG-4 or Motion JPEG with smooth quality. The software-based codec can also be used to process various video types. Besides, MT6250 provides fancy UI capabilities through its hardware 2D accelerator. The 2D accelerator performs high-speed linear transformations with filtering. To take advantage of the high MCU performance, GIF and PNG decoders are implemented by the software.

In addition, MT6250 is implemented with a high-performance audio synthesis technology, as well as a high-quality audio amplifier to provide superior audio experiences.

Connectivity and storage

MT6250 support UART, USB1.1 FS/LS, SDIO, HIF interface and MMC/SD storage systems. These interfaces provide MT6250 users with the highest level of flexibility in implementing high-end solutions.

To achieve a complete user interface, MT6250 also brings together all the necessary peripheral blocks for a multimedia GSM/GPRS/EDGE-Rx phone. The peripheral blocks include the keypad scanner with the capability to detect multiple key presses, SIM controller, real-time clock, PWM, serial/parallel LCD controller and general-purpose programmable I/Os.

Audio

Using a highly integrated mixed-signal audio front-end, the MT6250 architecture provides easy audio interfacing with direct connection to the audio transducers. The audio interface integrates A/D converters for voice band, as well as high-resolution stereo D/A converters for both audio and voice band.

MT6250 support AMR codec to adaptively optimize the QUALITY of speech and audio .Moreover, HE-AAC codec is implemented to deliver CD-quality audio at low bit rates.

In addition, a 850mW class also embedded to save the BOM cost of adopting external amplifiers.

GSM/GPRS/EDGE-Rx radio

MT6250 integrates a mixed-signal baseband front-end in order to provide a well-organized radio interface with flexibility for efficient customization. The front-end contains gain and offset calibration mechanisms and filters with programmable coefficients for comprehensive compatibility control on RF modules. MT6250 achieves outstanding MODEM performance by utilizing a highly dynamic range ADC in the RF downlink path.

MT6250 embeds a high-performance and completely integrated SAW-less RF transceiver, a quad-band receiving feature with high sensitivity is supported utilizing two RF differential receivers and a fully integrated channel filter. With ultra-high dynamic range, the SAW filters on the receiving path can be removed for BOM cost reduction. In addition, the minimum component count is guaranteed by realizing a highly integrated transmitter, low-spur frequency synthesizer and a Digitally-Controlled Crystal Oscillator(DCXO).

Bluetooth radio

MT6250 offers a highly integrated Bluetooth radio and baseband processor. Only a minimum of external components are required. MT6250 provides superior sensitivity and quality of the connection with a wide range of Bluetooth devices.

MT6250 is fully compliant with **Bluetooth V2.1** and offers enhanced data rates of up to 3Mbps.

Bluetooth Specification:

- **Fully compliant with Bluetooth specification V2.1+ EDR**

- Low-IF architecture with high degree of linearity and high order channel filter
- Fully integrated power amplifier provides 9dBm output power
- -96 dBm sensitivity with excellent interference rejection performance
- Support up to 7 simultaneous active ACL links
- Support up to 3 simultaneous SCO and eSCO links with CVSD coding
- Scatternet support: Up to 4 piconets simultaneously with background inquiry/page scan
- AFH and PTA collaborative support for WLAN/BT coexistence
- Integrated LDO enables direct connection to battery
- Wide ranges of crystal and external reference clock support
- Built-in RAM and ROM with patch system
- High speed UART supports up to 3.2Mbps baud rate
- USB full speed support with USB 2.0 compliance
- Serial flash and EEPROM support for customization
- Work frequency range: 2402~2480MHz,
 - Operation temperature: 0~40°C

It also provides the coexistence protocol with 802.11 system.

MT6250 supports rich Bluetooth profiles, enabling diversified applications that are widely used on the handset with excellent interoperability.

FM radio

The FM radio subsystem provides a completely integrated FM Rx receiver supporting 87.5~108MHz FM bands with 50KHz tuning step. It also performs fast channel

seek/scan algorithm to validate 200 carrier frequencies in 6 seconds.

PA

GSM

SKY77568 is a transmit and receive Front End Module (FEM) designed in a very low profile (0.9 mm) and compact form factor for quad-band cellular handsets comprising GSM850, 900, DCS1800 and PCS1900 operation—a complete transmit VCO-to-Antenna and Antenna-to-receive SAW filter solution. The FEM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation and linear EDGE operation.

Operating condition

Table 2. Recommended Operating Conditions

| Parameter | Minimum | Nominal | Maximum | Unit |
|---|---------|---------|---------|------|
| Supply Voltage (Vcc) | 3.1 | 3.5 | 4.8 | V |
| Supply Current (Icc) | 0 | | 1.8 | A |
| Operating Case Temperature (Tcase) – Package Bottom Surface | | | | |
| 1-Slot (12.5% duty cycle) | -20 | — | +85 | °C |
| 2-Slot (25.0% duty cycle) | -20 | — | +85 | |
| 3-Slot (37.5% duty cycle) | -20 | — | +85 | |
| 4-Slot (50.0% duty cycle) | -20 | — | +85 | |