TP851 PCB Circuit Description Guide

The main board is consists of two major sections, Sush as SoC and Analog section.

SOC:

MT6225 is highly integrated single chip solution for GSM/GPRS phone. Based on 32 bit ARM7EJ-STM RISC processor, it features not only high performance GPRS Class12 Modem but is also designed with support for the wireless multi-media applications,such as advanced display engine,synthesis audio with 64-tone polyphony,digital audio playback,Java acceleration,MMS and etc.Additionally,it provides varieties of advanced interfaces for functionality extensions,like 3-port external memory interface,3-port 8/16-bit parallel interface,Nand flash,IrDA,USB and MMC/SD/MS/MS Pro.

Cpu

It is capable of running the ARM7EJ-STM RISC processor at up to 104 MHz, thus providing fast data processing capabilities.In addition to the high clock frequency,a separate CODE cache is also added to further improve the overall system efficiency.

Memory

It supports up to 3 external state-of-the-art devices through its 8/16-bit host interface. High performance devices such as Mobile RAM and Cellular RAM are supported for maximum bandwidth.Traditional devices such as burst/page mode flash,page mode SRAM,and Pseudo SRAM are also supported.For greatest compatibility,the memory interface can also be used to connect to legacy devices such as Color/Parallel LCD,and multi-media companion chips are all supported through this interface.Tominimize power consumption and ensure low noise,this interface is designed for flexible I/O voltage and allows lowering of supply voltage down to 1.8V. The driving strength is configurable for signal integrity adjustment. The data bus also employs retention technology to prevent the bus from floating during turn over.

Multi-media

In order to provide more flexibility and bandwidth for multimedia products, an additional 8/16 bit parallel interface is incorporated. This interface is designed specially for support with Camera companion chip as well as LCD panel. In addition, It has camera YUV interface that can connect to CMOS sensor of resolution up to VGA. Moreover, it can connect NAND flash device to provide a solution for multi-media data storage. For running multi-media application faster, It integrates also several hardware-based engines. With hardware based Resizer and advanced display engine, it can display and combine arbitrary size of images with up to 4 blending layers.

Connectivity and Storage

it supports UART as well as Bluetooth interface. Also, necessary peripheral blocks are

embedded for a voice centric phone: Keypad Scanner with the capability to detect multiple key presses, dual SIM Controller, Alerter, Real Time Clock, PWM, Serial LCD Controller, USB 2.0 HS/FS/LS, MMC/SD/MS/MS Pro/SDIO, IrDA and general purpose programmable I/Os.

Audio

Using a highly integrated mixed-signal Audio Front-End.The MT6225 architecture allows for easy audio interfacing with direct connection to the audio transducers. The audio interface integrates D/A and A/D Converters for Voice band, as well as high resolution Stereo D/A Converters for Audio band. In addition, MT6225 also provides Stereo Input and Analog Mux.

Radio

MT6225 integrates a mixed-signal Baseband front-end in order to provide a well-organized radio interface with flexibility for efficient customization. It contains gain and offset calibration mechanisms, and filters with programmable coefficients for comprehensive compatibility control on RF modules. MT6225 achieves great MODEM performance by utilizing 14-bit high resolution A/D Converter in the RF downlink path. Furthermore, to reduce the need for extra external current-driving component, the driving strength of some BPI outputs is designed to be configurable.

Power Management

MT6225 offers various low-power features to help reduce system power consumption.These features include pause Mode of 32KHz clocking at standby state,Power Down Mode for individual peripherals,and Processor Sleep Mode.In addition,MT6225 is also fabricated in advanced low leakage CMOS process,hence providing an overall ultra low leakage solution.

ANALONG SECTION

RF FEM

The RF3196MS is a high-power,high-efficiency power amplifier module with integrated power control that provides over 50dB of control range.The device is a selfcontaned 6mm*6mm module with 50Ω input and output terminals.The device is designed for use as the final RF amplifier in GSM850,EGSM900,DCS and PCS handheld digital cellular equipment and oter applications in the 824MHz to 849MHz,880MHz to915MHz,1710MHz to1785MHz and 1850MHz to 1910MHz bands.The RF3196MS incorporates RFMD’s latest VBATT tracking circuit,which monitors battery voltage and prevents the power control loop from reaching saturation.The RF3196MS also has a power flattening circuit that reduces power variation and max current draw into mismatch.The RF3196MS requires no external routing or external components,simplifying layout and reducing board space.

FM

The RDA5802E is a single-chip broadcast FM stereo radio tuner with fully integrated synthesizer, IF Selectivity and MPX decoder.

BT

MT6601 is a highly integrated Bluetooth platform IC, It includes powerful baseband processing capabilities with rich features and a high performance transceiver,all in a compact single package.It fully compliant with Bluetooth specification1.2.

Walkie Talkie

The RDA1845/1845D is a single-chip transceiver for Walkie Talkie with fully integrated synthesizer, IF selectivity and base-band signal processing. The transceiver uses the CMOS process, support digital volume control and require the least external component. The package size is 6*6mm and is completely adjustment-free. It has a powerful low-IF digital audio processor, this make it have optimum sound quality with varying reception conditions. It can be tuned to the FRS frequency band for Walkie Talkie, (FRS Frequency band: 462.5625-462.7125MHz, 467.5625-467.7125MHz, 14 CH.)

GPS

GP3SF1513F1-S module features high sensitivity, low power, fast capturing satellite, ultra small form factor and ultra small size. The GPS module is powered by SiRF Star III,it can provide you with superior sensitivity and performance. Especially, the module will show out standing advantages in receiving GPS signals in atrocious environment such as urban canyon, dense forest. The miniature size makes the module easy and the best choice to integrate into portable device like mobile phone,PDAs,camera and vehicle locators.