

# Main board working principle description

1. Circuit description: The main board including the Power supply circuit, microprocessor circuit, shock sensor circuit; Under-Control parts including the following: GSM module, GPS module, memory, LED.
2. Principle description: The power of the main unit is supplied by the build in Li-BATTERY, also it can connect the power of 5V though the charger IC for the Li-BATTERY. It use 3.3V Regulator to drive the microprocessor, GPS power is supplied by Under-Control 3.3V Regulator. GSM module power is supplied by Li battery directly. the microprocessor receive call and SMS by GSM module then operate the circuit, control GPS module by Under-Control 3.3V Regulator to position. then process the position and send it to mobile telephone by SMS. if it is in record tracking ,The microprocessor will storage the position to the memory first then read it back and send to the website by GPRS when receiving the command. the microprocessor detect the shock sensor logic to judge if the tracker is moving,if it isn't moving soon time. it will turn to standby mode. it also detect the key to operate and output logic high and low to control the LED.

## General Technical Description

### 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.

SIM900 designed by SIMCOM is a quad band module which support GSM/GPRS. The baseband circuit is based on STE and RF circuit is based on RFMD. It works at quad bands, GSM850, EGSM900, DCS1800, and PCS1900 band.

CPU clock is based on 26MHz crystal. The main IC include PNX4851, RF7161 and Combo Flash, etc.

### 2. Detail Block Diagram

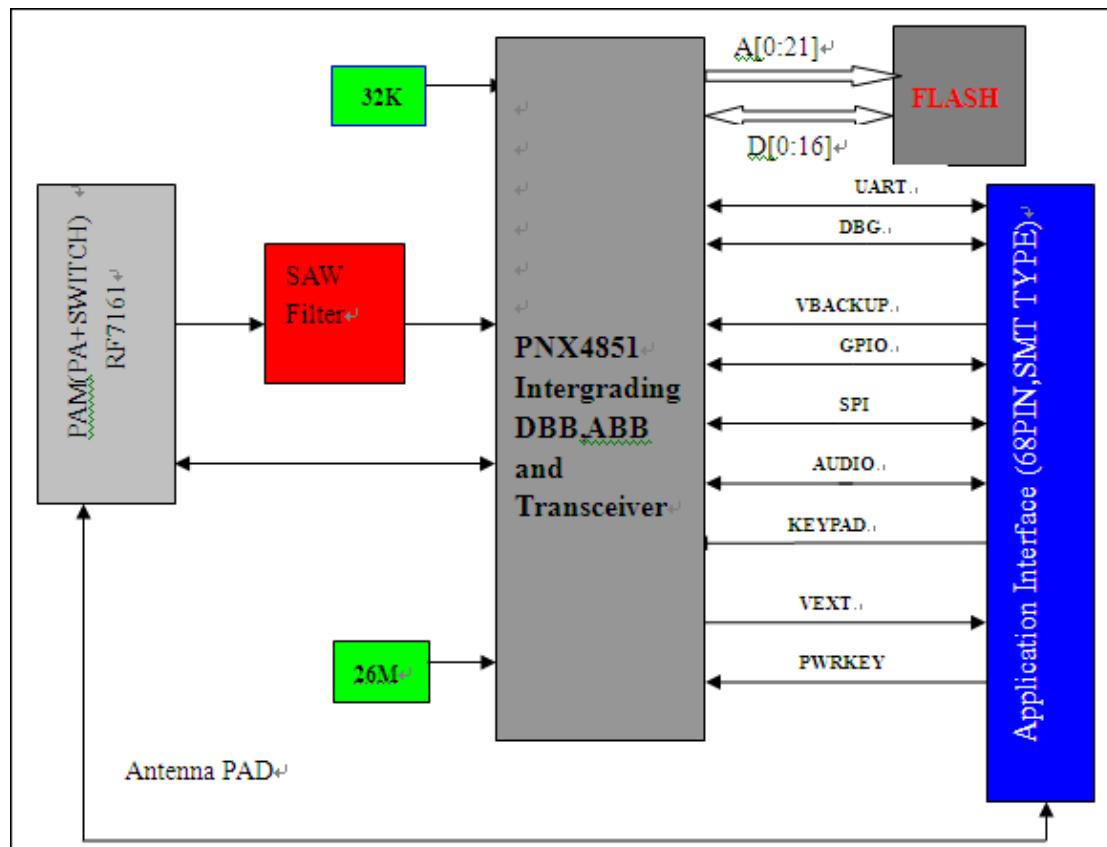


Figure 1 Block Diagram of SIM900

Detailed information, please refer to the following.

### 3. RF

We use the PAM RF7161 supports the GSM/GPRS system, which include RF power amplifier and antenna switch for quad-band GSM/GPRS applications.

The RF7161 is a quad-band (GSM850/EGSM900/DCS1800/PCS1900) GSM/GPRS, Class 12 compliant transmit module with four interchangeable receive ports. This transmit module builds upon RFMD's leading power amplifier with PowerStar® integrated power control technology, pHEMT switch technology, and integrated transmit filtering for best-in-class harmonic performance. The results are high performance, reduced solution size, and ease of implementation. The device is designed for use as the final portion of the transmitter section in a GSM850/EGSM900/DCS1800/PCS1900 handset and eliminates the need for a PA-to-antenna switch module matching network. The device provides  $50\Omega$  matched input and output ports requiring no external matching components.

The RF7161 features RFMD's latest integrated power-flattening circuit which significantly reduces current and power variation into load mismatch. Additionally, a  $V_{BATT}$  tracking feature is incorporated to maintain switching performance as supply voltage decreases. The RF7161 also integrates an ESD filter to provide excellent ESD protection at the antenna port. The RF7161 is designed to provide maximum efficiency at rated  $P_{OUT}$ .

The functional block diagram is as following.

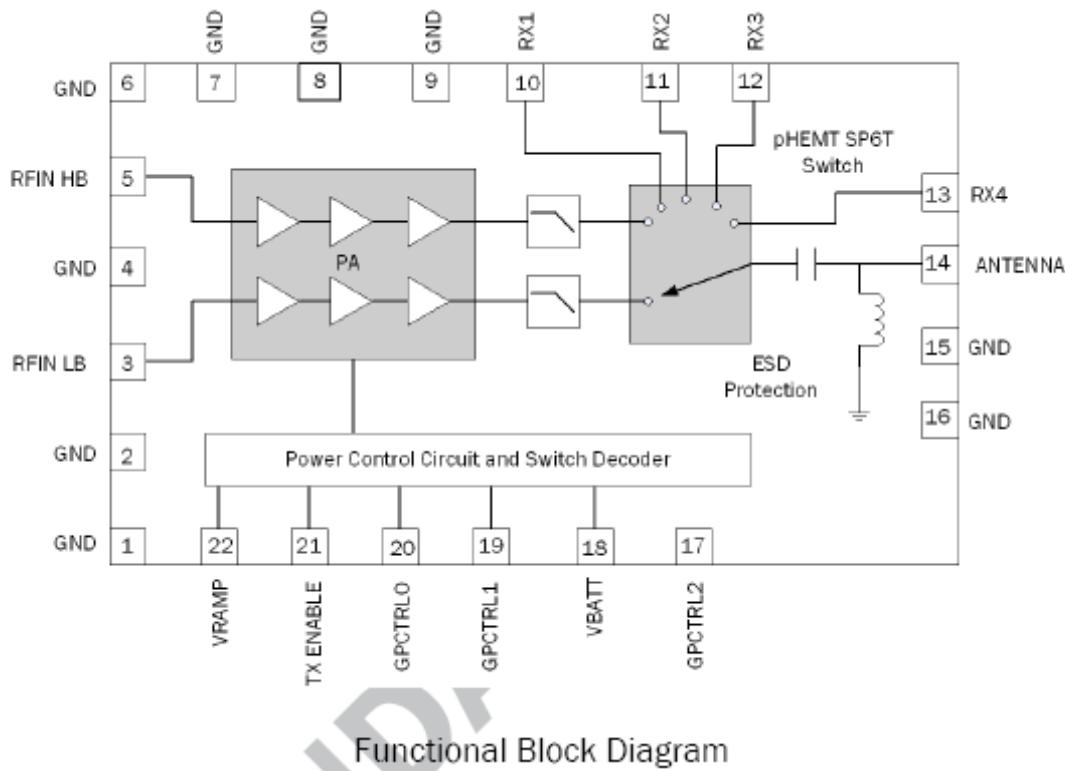


Figure 2

This design also has other RF device, such as saw filter and 26M crystal etc.

### 4. Baseband

Baseband architecture comprises mainly 2 chips: Include PNX4851 and

## Combo Flash.

PNX4851 is a single-chip GSM/GPRS terminal optimized for ultra-low cost voice-centric mobile handsets.

As part of the PNX485x family of single-chip products, PNX4851 continues to provide industry-leading integration: it is a single monolithic IC comprising analog and digital basebands, RF transceiver, power management, and audio codec (including high-performance 8-ohm driver for handsfree operation).

PNX4851 also offers best-in-class RF performance and power consumption, and an R99-compliant and certified communications protocol stack that is field-tested worldwide.

PNX4851 thus enables reliable, high-quality handsets at ultra low cost.

The functional block diagram is as following.

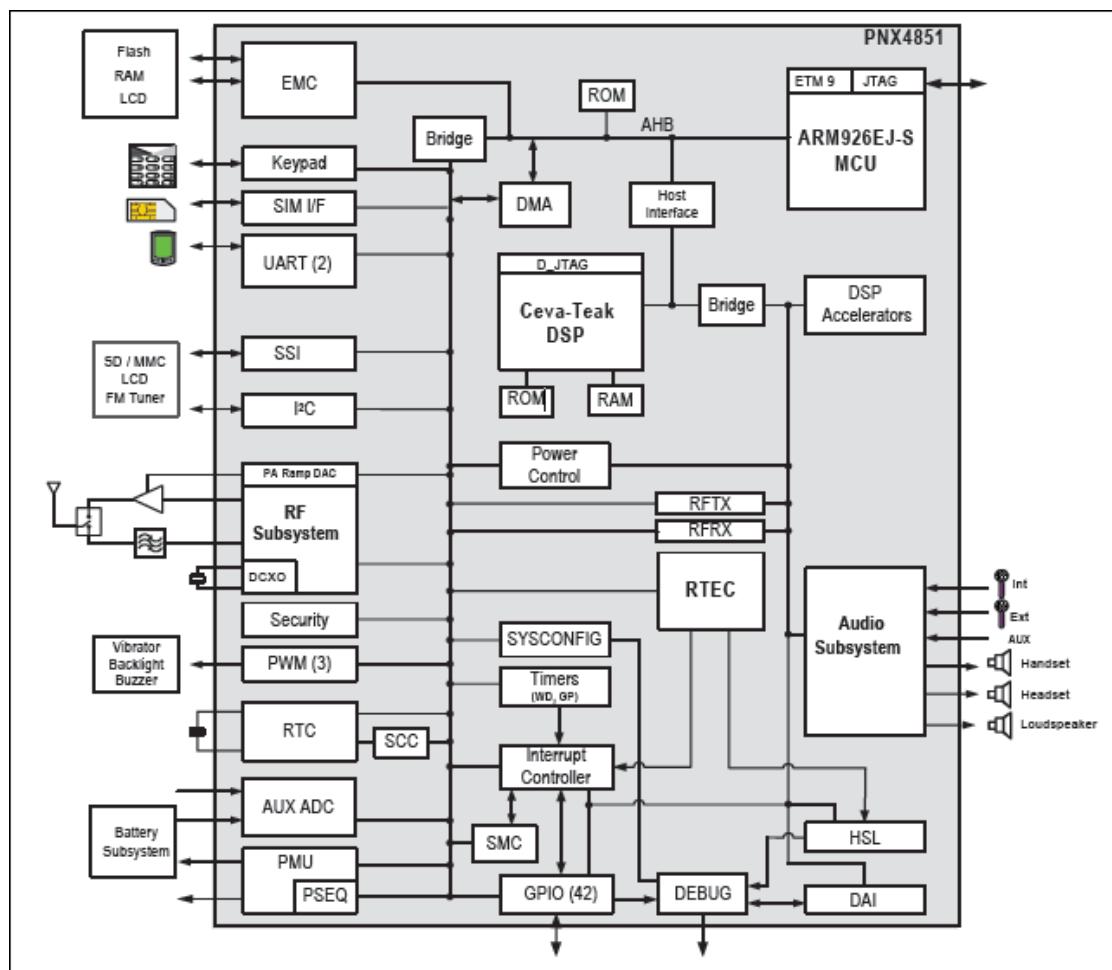


Figure 3

The **Combo Flash** is a Multi Chip Package Memory which combines 64M or 32M bit Nor Flash Memory and 32M or 16M bit pSRAM.