



SIM900 Hardware Design

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SIM900 Hardware Overview



(Top View)

- Application:
- M2M
 - Smart phone
 - Tracker

The GPRS/GSM engine for the global market.
Quad-band : GSM850, EGSM900, DCS1800, PCS1900
GPRS multi-slot : Class 10 / Class 8
GPRS class : Class B
GPRS coding schemes : CS-1, CS-2, CS-3, CS-4
Voice coders : HR, FR, EFR, AMR
Noise Suppression
Echo Cancellation
Encryption : A5/1, A5/2, A5/3
RF : SAIC (Single antenna interference cancellation)
Input voltage: 3.4~4.5V
Sleep mode current consumption: 1.5mA
Operation temperature: -30°C~+80 °C

SIM900 Hardware Feature

- ✓ Tiny Configuration

Size: 24 X 24X 3 mm (SMT), Weight: 3.4g,

Packing : Auto-tray, Tape & Reel

- ✓ Low Power Consumption

Sleep Mode : 1.5 mA

- ✓ High-Speed Processing

ARM926EJ-S (156MHz), Ceva-Teak(DSP)

- ✓ Multiple Periphery Interface

68Pins(UART, SPI, I2C, PWM, GPIO, ADC)

Platform Solution

■ Chipset Solution

PNX4851 :

A single-chip integrated baseband processor and transceiver IC

RF7161 :

RF Power Amplifier supporting quad-band

Memory Chipset (ST/SA) :

NOR Flash + RAM Memory

■ Software Solution

RTOS :

RTK-E

Protocol Stack:

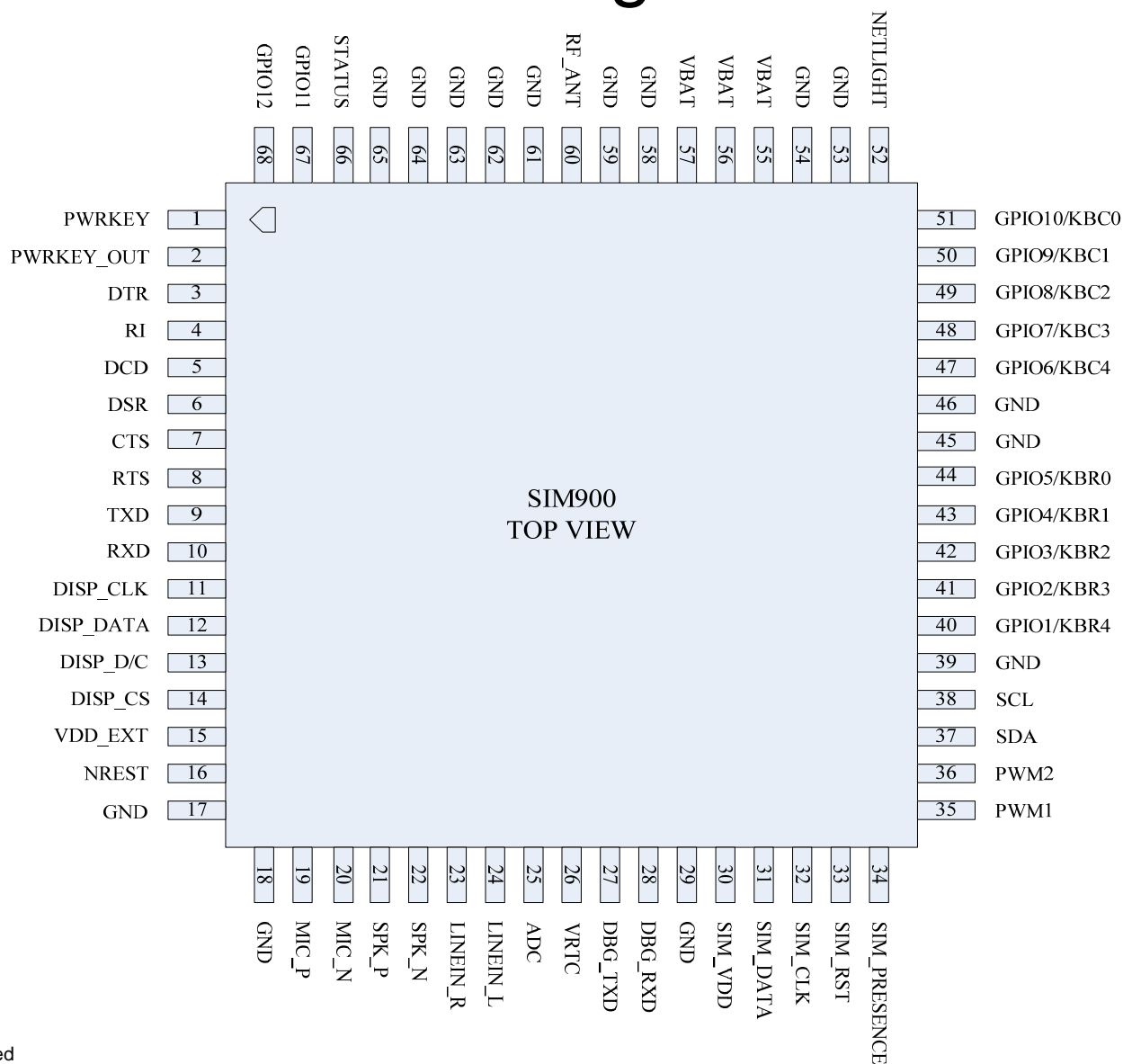
3GPP GSM/GPRS R99

Certification

SIM900 Certification Schedule :

Certification	
CE: 25 th Jan, 2010	PTCRB: 25 th Feb, 2010
FCC: 5 th Feb, 2010	ICASA: 30 th April, 2010
GCF: 25 th Feb, 2010	AT&T: 30 th May, 2010
ROHS: 25 th Feb, 2010	IC: 5 th Feb, 2010

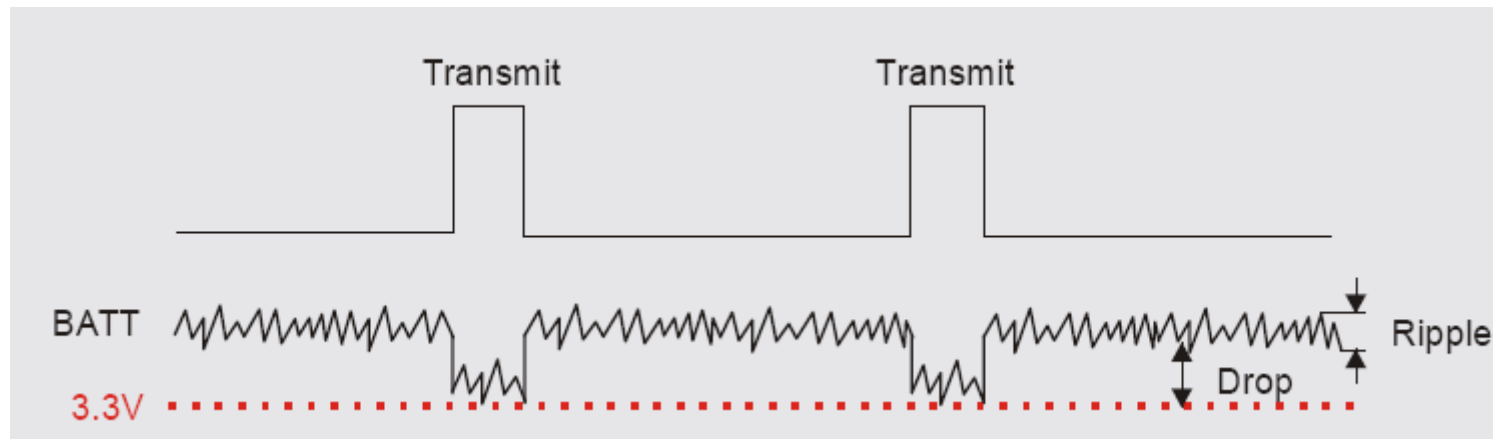
Pins Diagram



Power Supply

■ VBAT --- Input Pin

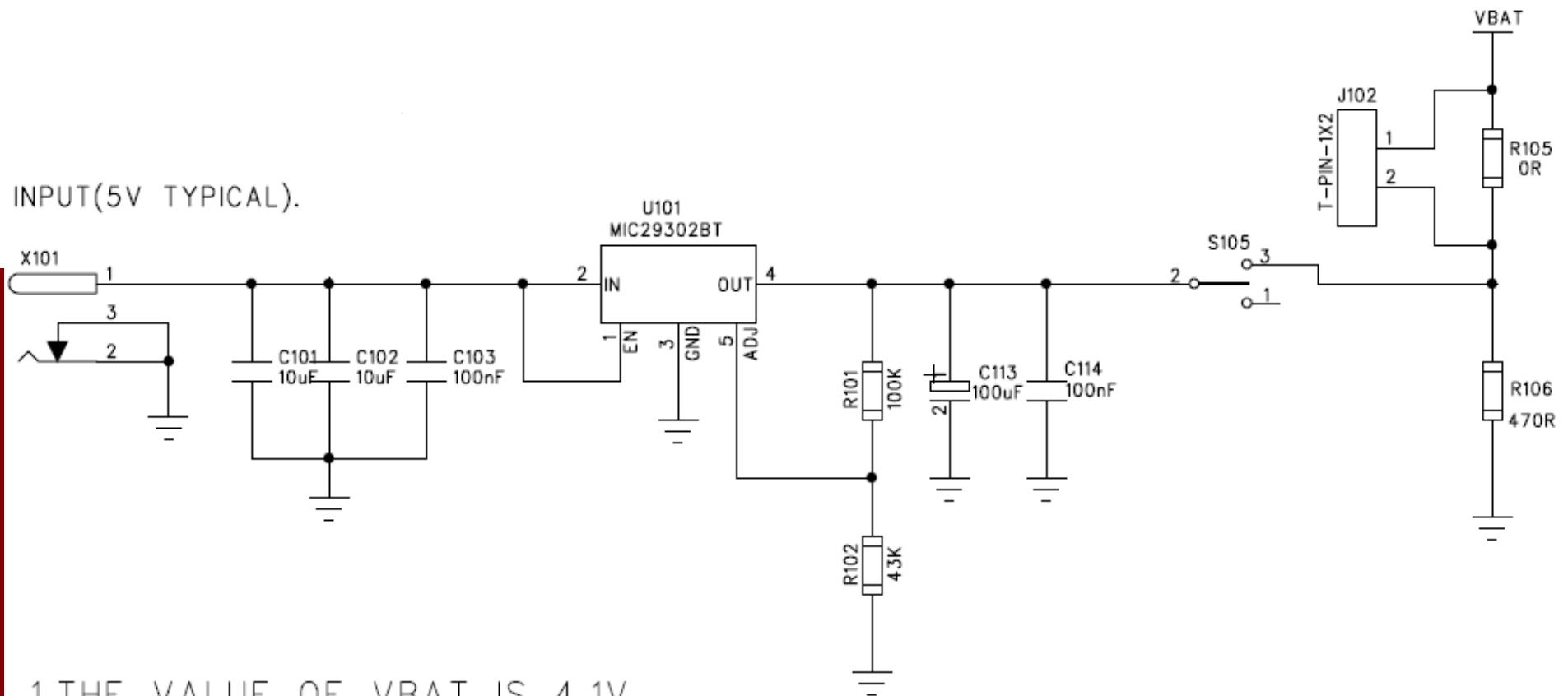
Design Rule : $V_{max} = 4.5V$, $V_{min} = 3.4V$, $V_{norm} = 4.0V$,
Peak Current : 2 A



Any voltage drops that may occur in a transmit burst should not exceed 400mV.

Power Supply

The Power Supply Circuit of the evaluation board



1.THE VALUE OF VBAT IS 4.1V

Power Supply

■ VDD_EXT --- Output Pin

Voltage Reference for the Digital Interface.

Output Voltage : $V_{max} = 2.95\text{ V}$, $V_{min} = 2.6\text{ V}$, $V_{norm} = 2.80\text{ V}$,

Design Rule : $I_{out(max)} = 10\text{mA}$

Logic Voltage Level :

$V_{ILmax} = 0.15 * VDD_EXT$, $V_{IHmin} = 0.85 * VDD_EXT$,

$V_{ILmin} = 0\text{V}$, $V_{IHmax} = VDD_EXT$,

$V_{OHmin} = VDD_EXT - 0.1\text{V}$, $V_{OLmax} = 0.1\text{V}$

$V_{OHmax} = VDD_EXT$, $V_{OLmin} = 0\text{V}$

■ VRTC --- Input or Output Pin

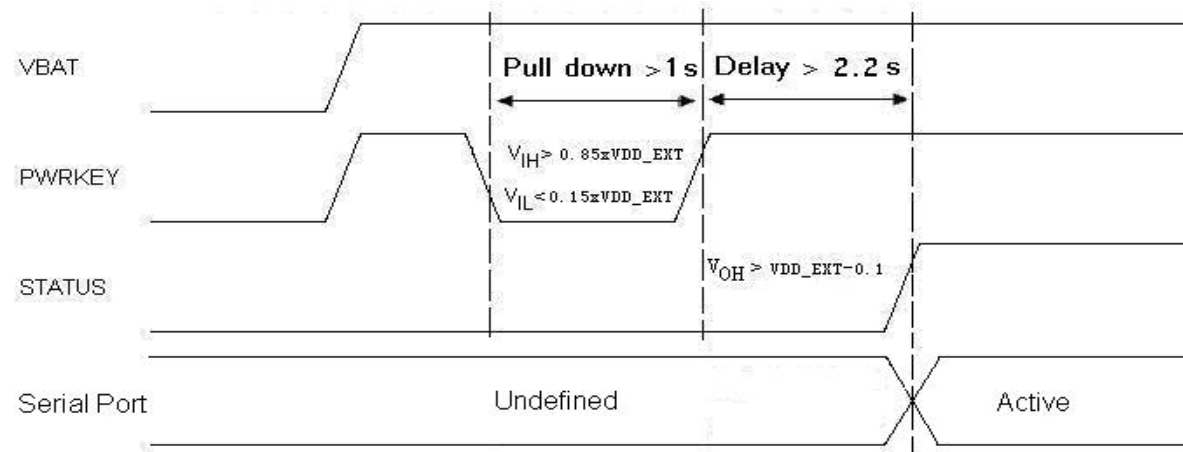
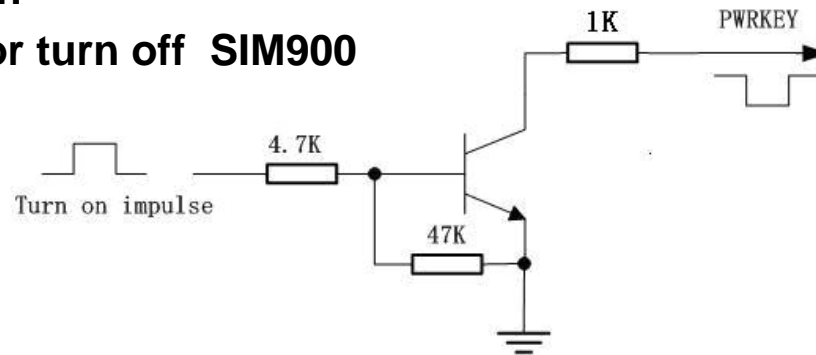
- Power input pin,
- Design Rule : $V_{max} = 3.15\text{V}$, $V_{min} = 2.0\text{V}$, $V_{norm} = 3.0\text{V}$

$I_{out(max)} = 300\mu\text{A}$, $I_{in} = 2\mu\text{A}$

■ GND --- Ground

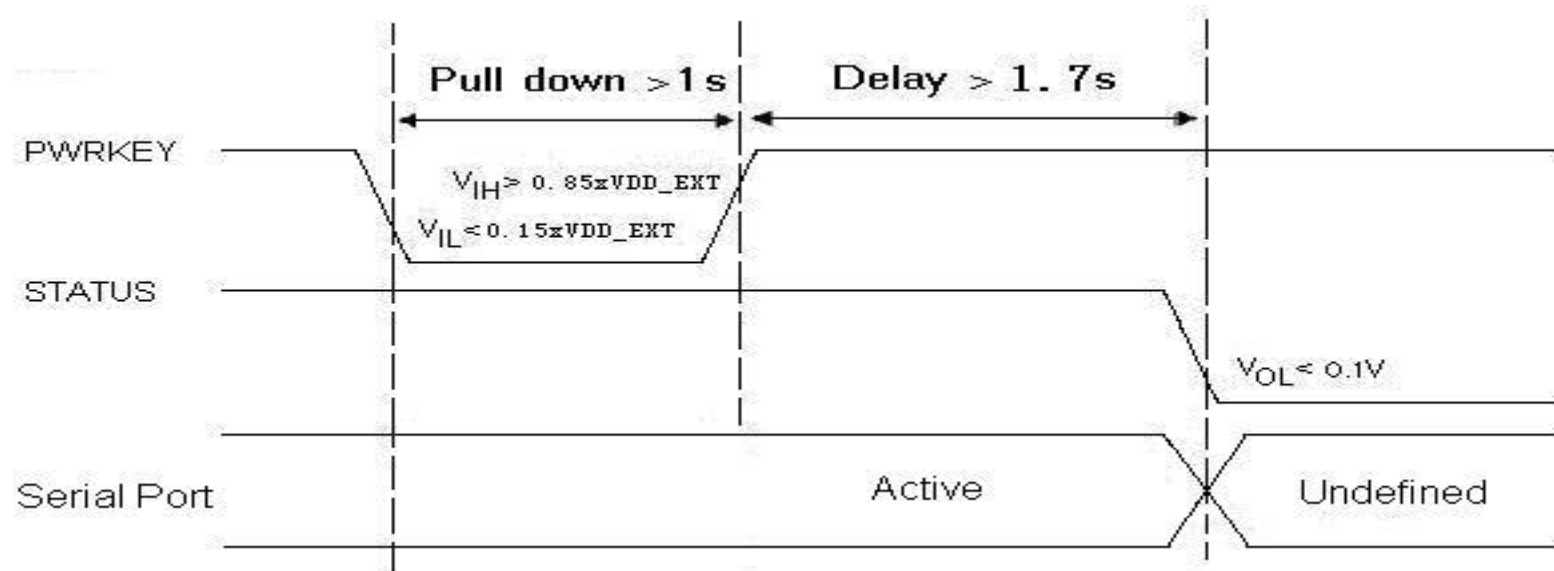
Turn on, Turn off, Reset

- **PWRKEY --- Input Pin**
be used to turn on or turn off SIM900



Timing of turning on

Turn on, Turn off, Reset



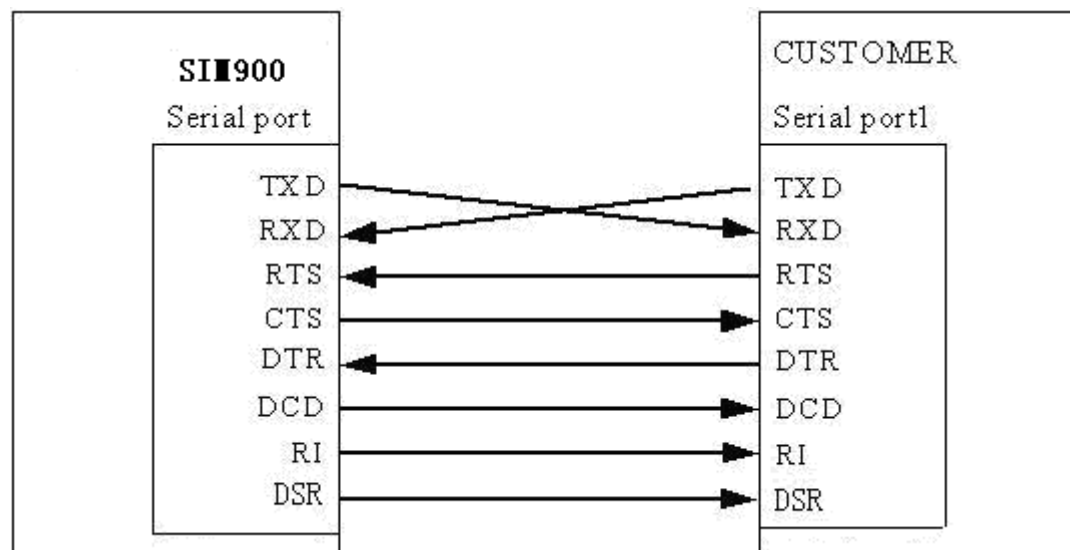
Timing of turning off

■ NRESET --- Input Pin

Reset SIM900 : Driving the pin low for at least 50uS.

Serial Port

■ TXD, RXD, CTS, RTS, DSR, DTR, DCD, RI



TXD, RXD

--- Data Line

CTS, RTS

--- Hardware Flow Control Line

DTR

--- Sleep Mode Control Line

DCD

--- Data Mode

RI

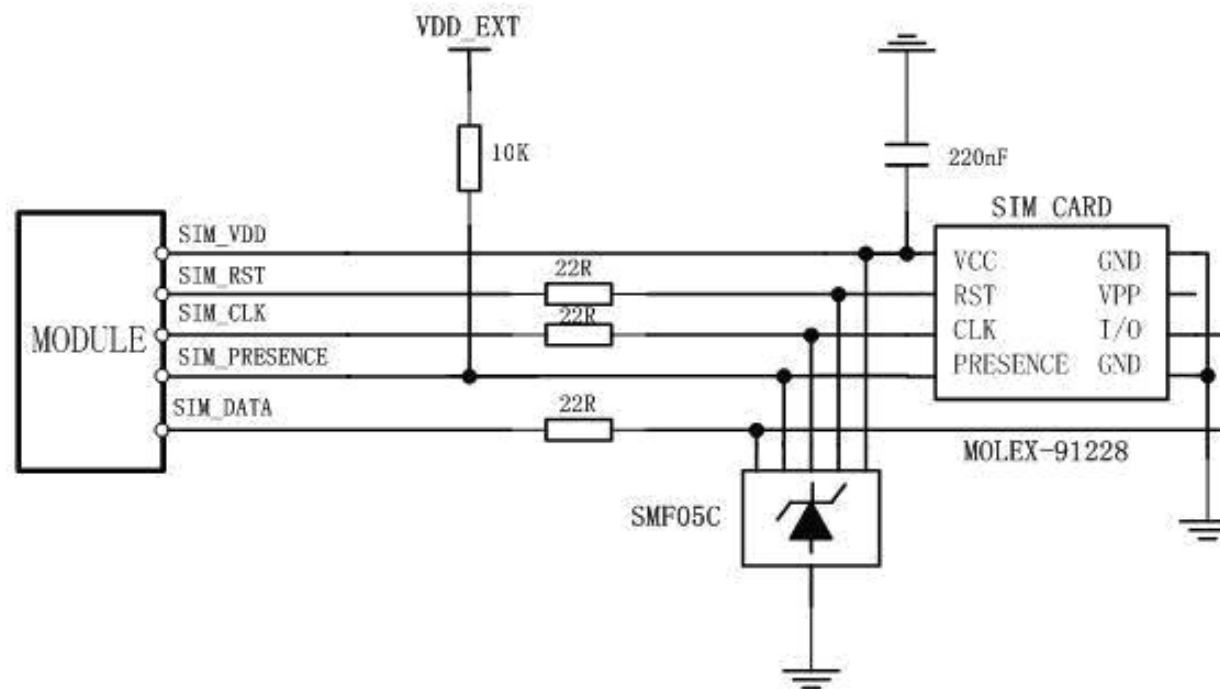
--- Incoming Call, SMS, Arouse host.

DSR

--- Reserve

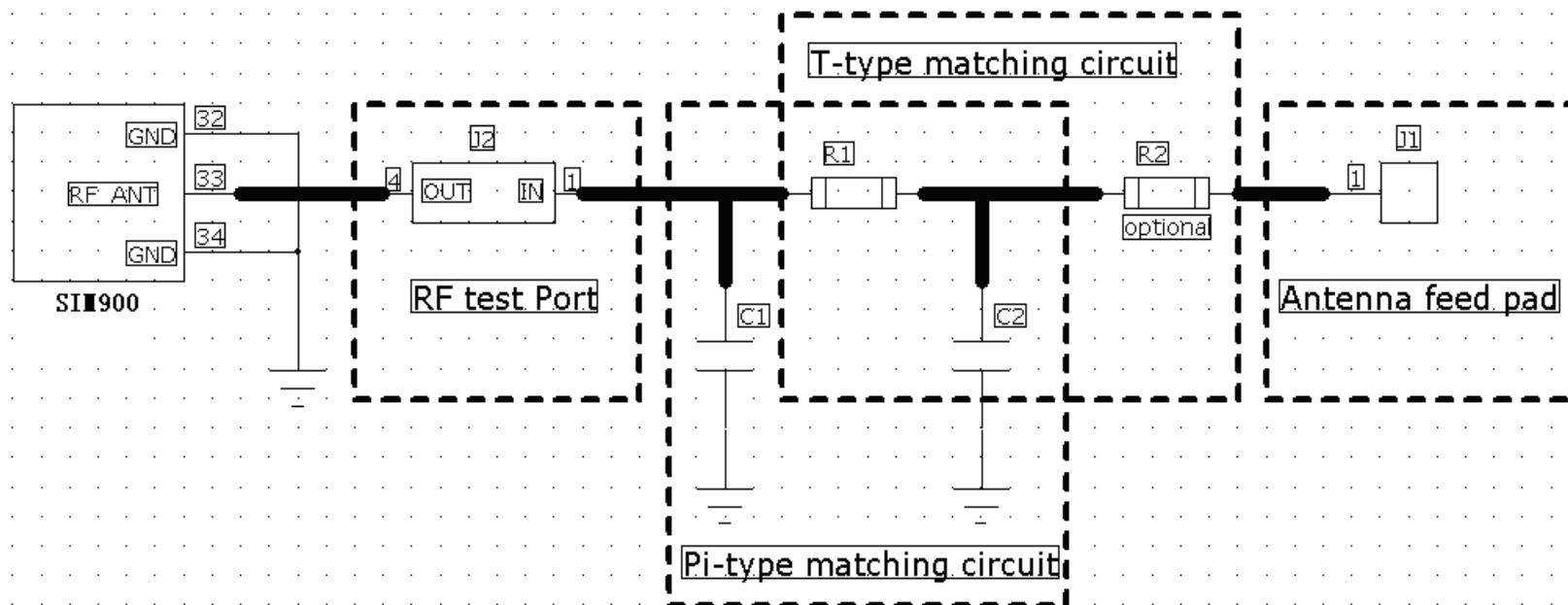
SIM Interface

- SIM_VDD, SIM_DATA, SIM_CLK, SIM_RST, SIM_PRESENCE



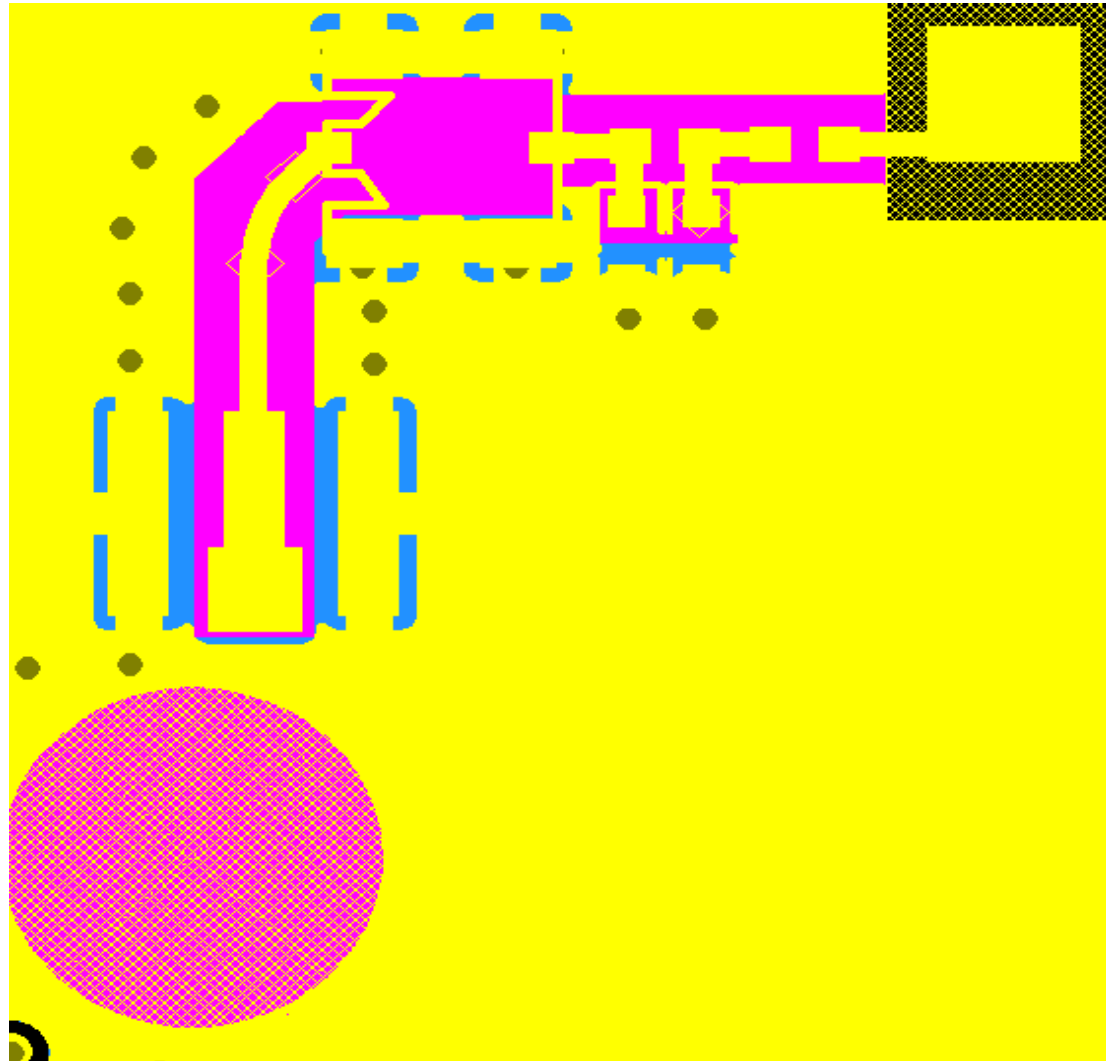
RF interface

■ RF_ANT



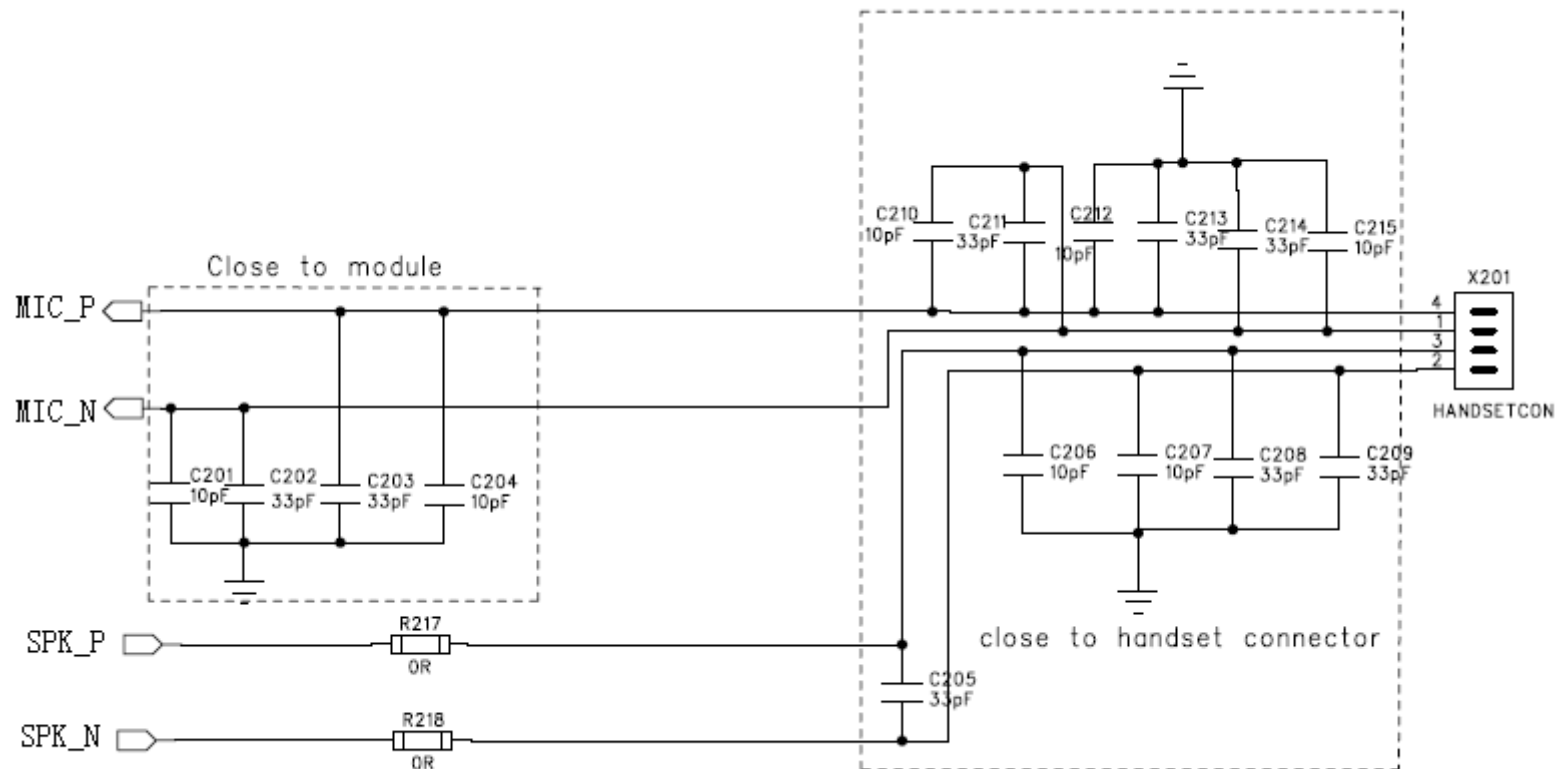
Note: Traces in BOLD type must be 50ohm impedance controlled

RF Interface



Audio Interface

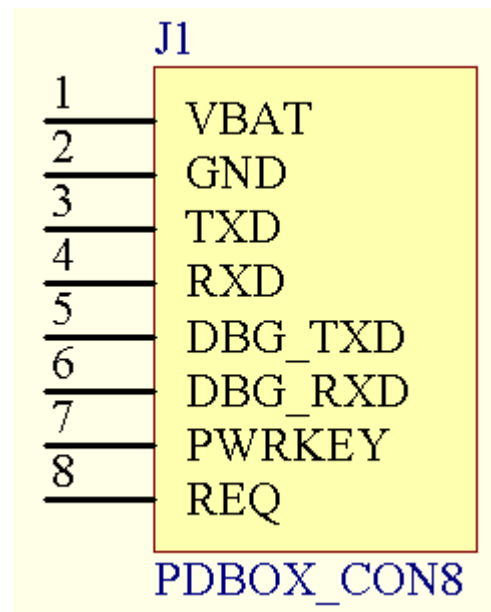
■ MIC_P, MIC_N, SPK_P, SPK_N



Debug Port

■ **DBG_TXD, DBG_RXD**

- Updating Firmware & Capturing Debugging Trace.
- It's recommended the interface is lead to a connector.



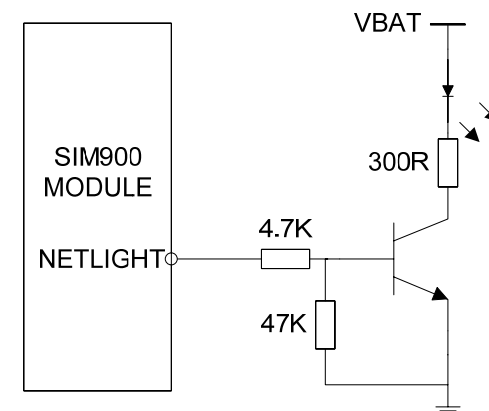
Others

■ ADC

- Input Voltage Range : 0 ~ 3 V
- AT+CADC?
- +CADC: 1,50

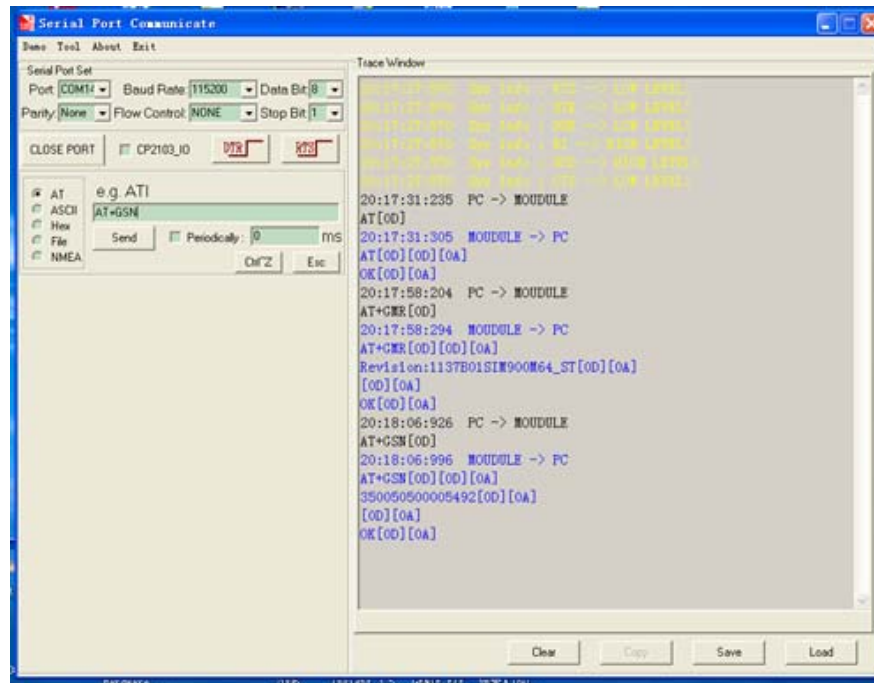
■ NETLIGHT

State	SIM900 function
Off	SIM900 is not running
64ms On/ 800ms Off	SIM900 does not find the network
64ms On/ 3000ms Off	SIM900 find the network
64ms On/ 300ms Off	GPRS communication



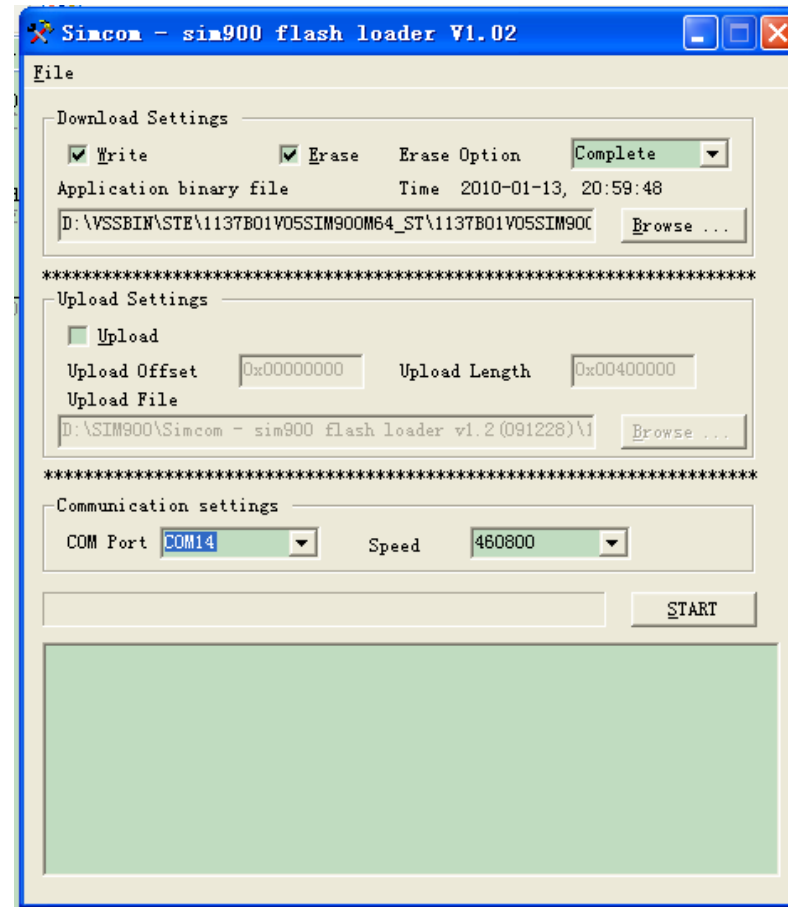
- **PWRKEYOUT, DISP_DATA, DISP_CLK, DISP_C/D, DISP_CS, LINEIN_R, LINEIN_L, PWM1, PWM2, KBR0~KBR4, KBC0~KBC4, GPIO11, GPIO12**
---these pins are available in the customized firmware!

Evaluation Board Kit



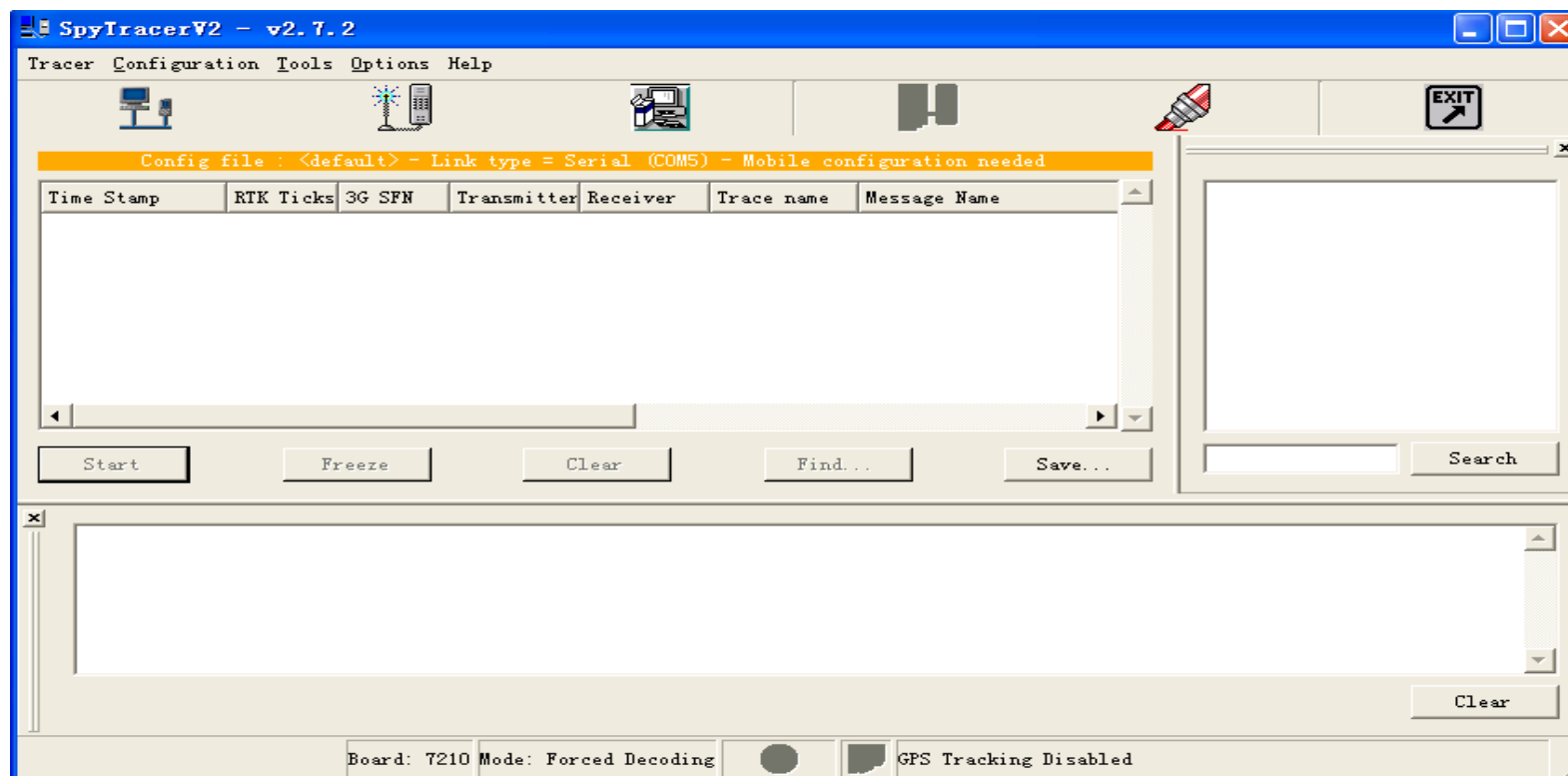
Update Firmware

■ SIM900 Flash Loader



Capture Debug Log

■ SpyTracer



Q&A

THANK YOU