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BT3051 Baseband circuit(231-251161) :

1. CPU , U1 , BIC2102 have a 32-bit RISC processor integrated , operation frequency is 48MHz. It needs an external 32MHz crystal for reference frequency , This crystal is also used for RF module. This chip is responsible to control RF module, Flash IC and LED. This chip also have USB Host interface integrated to communicate with USB printer.
2. FLASH , U2 , MX28LV800ABXBC-70 , 8Mbits Flash , bottom sector , 70ns. It is used to store the normal and test firmware for printer adapter.
3. RF module which is used to do signal modulation and have frequency up-converter integrated. The main chip is SilconWave's chip.
4. Power distribution switch , U3 , MIC2025-2BMM. This chip is used to provide 5V voltage for USB client.
5. Power part: there are two regulators are used on the base board , one is U4, RT9163-1.8 and another is U5, 1117-3.3. U5 is used to transfer 4.5V to 3.3V voltage to provide the all IC which operate at 3.3V. U4 is use to transfer 3.3V to 1.8V voltage. The core of CPU is operate at 1.8V.
6. Reset part: a level reset circuit is used on the base board , it is used to prevent brownout issue.
7. LED part: there is a bi-color LED on the base board. Red means only connect with adapter. If orange light , the BT3051 is at standby mode. If only red light, it means BT3051 is at initial mode. If orange light and flash , it means there is one USB printer connected
8. Switch button , SW1 , it is used to reset the BT3051.

BT3051- RF Module circuit design(231-251162) :

(1)Power part :

It operate at 3.3V and the voltage is provide from base board Switch button. The Silcon wave's chip、PA2423MB and transistor(DTC124EUA) use it. The Silcon wave's chip have two regulators integrated , one is 1.8V output and another is 2.97V output.

(2)SiliconWave Transforming Radio (Siw1701 Radio Modem)

This chip included 2.4GHz radio transceiver and Digital Control 的 GFSK modem。 This chip is Bluetooth V1.1 compliant and have better power consumption。 This chip have an interface to control external PA。 It also have two regulators integrated。 The maximum output power is up to -4dBm , and the average sensitivity is -85dBm。

(3)Digital Transistors (U2,ROHM DTC124EUA)

The Siw1701 IC have only one TX_RX_Switch control pin for RF Switch using。 The transistor is used to inverse the control signal to control the TX and RX transmission。 This transistors have bias resistors integrated。

Transition Frequency : 250 MHz

Output Current : $I_c(\text{max}) = 100\text{mA}$

Power dissipation : 200mW

(4)2.4GHz Band Pass Filter : (U10,ACX BF3216)

Band Pass Filter is used to decrease the out band spurious。

F_c : 2450MHz

Pass Band : 2400~2500MHz

Insertion Loss : 2.5dB Max.

VSWR : 2.0 Max.

(5)TX/RX Switch : (U9,Sanyo SPM3204)

When the TX/RX switching, it is provide the fast switch ability。

TX Mode :

TX_PU_TDD = High , CTL2 = High , In Out2 = Connected.

RX Mode :

TX_PU_TDD_N = High , CTL1 = High , In Out1 = Connected.

Insertion Loss = 0.6 ~ 0.65 dB

Isolation = 18~20 dB

(6)Power Amplifier : (U8,Sige PA2423MB)

This PA is +22.7 dBm/2.4GHz Bluetooth Power Amplifier RFIC , it is used to increase the output power. It operates at 3.3V.

Supply Voltage : 3.3V

Supply Current : 125mA

Gain : 22dBm

Output Power : 23.5dBm Max.

2f,3f Harmonics : -30dBc