

3010S Circuit Description

1. Introduction

The model 3010S is a 40 channel (2.40255-2.47595GHz) Caller ID cordless telephone. The whole unit is divided into two main parts as follow :

- a. A remote Handset.
- b. A Base unit.

2. Functional Blocks of the Remote Handset

- 2.1 Keyboard matrix and function LED
- 2.2 LCD
- 2.3 MCU and MCU interface
- 2.4 Antenna and RF module
- 2.5 Compander
- 2.6 Data shaper
- 2.7 Charge detector
- 2.8 Low battery detector
- 2.9 Buzzer amplifier

3. Circuit Block Description

3.1 Keyboard matrix and function LED

Pin 46 to pin51, pin 54 to pin 58 of the MCU:U1 NT93423 form a keyboard, and the new call LED is controlled by the pin 73 of the MCU.

3.2 LCD

LCD1 is controlled by the MCU: U1 NT93423 pin 1 to pin 32, pin 103 to pin 128.

3.3 MCU and MCU interface

The handset and the base is link up by the pins(45,78 in HS and 43,78 in Base). Besides, the PLL of the RF Module is controlled by the pins 39 to pin 41 of the MCU.

3.4 Antenna and RF module

ANT is the common point for transmitting and receiving through antenna.

MD1 is a RF module which consists of Filter, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

3.5 Compander

A compander U1 is used for improving the S/N of the transmit and receive audio signal.

3.6 Data shaper

The information which sending from base unit, is recovered by the amplifier Q1 and MQ4, MQ5.

3.7 Charge detector

MD3 to MD6, MZD1, MR23, MC9 and MR22 form a charge detector to direct the charging signal to the MCU pin 34.

3.8 Low battery detector

A battery low detector is built-in by the Q2, R5 to R7 and D2 which detects the battery dropping and sends a signal to pin 36 of MCU.

3.9 Buzzer amplifier

Q4 is a buzzer amplifier driven directly by the MCU pin 61.

4. Functional Blocks of the Base unit

- 4.1 Power supply
- 4.2 MCU and MCU interface
- 4.3 Calling line identifier
- 4.4 Antenna and RF module
- 4.5 Compander
- 4.6 Data shaper
- 4.7 Charge detector
- 4.8 Line audio interface
- 4.9 Ring detector
- 4.10 Led function board
- 4.11 Carrier detector

5. Circuit Block Description

5.1 Power supply

BU1 7805 regulate the input DC 9V to 5V which provides power to every part of the circuit.

5.2 MCU and MCU interface

The heart of the base is MCU BMU1: NT93423A that communicates with the

PLL of BMD1 through pins 39,40 and 41. Transmitter is controlled by the signal TX_DC which output from MCU via pin 53. MCU pin 95 is for generating DTMF signal. The communication between Handset and Base is via the pin 43 and pin 76 through the RF link.

5.3 Calling line identifier

MCU pin 87 to pin 88, when receiving caller ID data, MCU controls the LCD to display the correct information.

5.4 Antenna and RF modulator

ANT is antenna transmit and receive signal. BMD1 is a RF modulator which consist of Filter, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio Output circuits.

5.5 Compander

A compander BU2 is used for improving the S/N of the transmit and receive audio signal.

5.6 Data shaper

The information which sending from handset unit, is recovered by the amplifier BQ2, BQ3.

5.7 Charge detector

BQ6 is a charge detector to direct the charging signal to the MCU pin 80.

5.8 Line audio interface

BR84, BC58, BD15 to BD18, BD20 and BT1 line transformer are the audio interface to the telephone line. The transformer is also used for telephone isolation.

5.9 Ring detector

BR83, BC57, BZD3, BZD4, BD13, BU3(LTV817) form a ring detector which feed the signal through pin 93 of MCU.

5.10 LED function board

BMLED1 is used for indicating “IN USE/CHARGE”.

5.11 Carrier detector

The RF Module BMD1 pin 10 is an output pin of the carrier detector signal to MCU pin79.

CH	HANDSET		BASE	
	TX	RX	TX	RX
1	2,474,000,000	2,391,850,000	2,402,550,000	2,484,700,000
2	2,474,050,000	2,391,900,000	2,402,600,000	2,484,750,000
3	2,474,100,000	2,391,950,000	2,402,650,000	2,484,800,000
4	2,474,150,000	2,392,000,000	2,402,700,000	2,484,850,000
5	2,474,200,000	2,392,050,000	2,402,750,000	2,484,900,000
6	2,474,250,000	2,392,100,000	2,402,800,000	2,484,950,000
7	2,474,300,000	2,392,150,000	2,402,850,000	2,485,000,000
8	2,474,350,000	2,392,200,000	2,402,900,000	2,485,050,000
9	2,474,400,000	2,392,250,000	2,402,950,000	2,485,100,000
10	2,474,450,000	2,392,300,000	2,403,000,000	2,485,150,000
11	2,474,500,000	2,392,350,000	2,403,050,000	2,485,200,000
12	2,474,550,000	2,392,400,000	2,403,100,000	2,485,250,000
13	2,474,600,000	2,392,450,000	2,403,150,000	2,485,300,000
14	2,474,650,000	2,392,500,000	2,403,200,000	2,485,350,000
15	2,474,700,000	2,392,550,000	2,403,250,000	2,485,400,000
16	2,474,750,000	2,392,600,000	2,403,300,000	2,485,450,000
17	2,474,800,000	2,392,650,000	2,403,350,000	2,485,500,000
18	2,474,850,000	2,392,700,000	2,403,400,000	2,485,550,000
19	2,474,900,000	2,392,750,000	2,403,450,000	2,485,600,000
20	2,474,950,000	2,392,800,000	2,403,500,000	2,485,650,000
21	2,475,000,000	2,392,850,000	2,403,550,000	2,485,700,000
22	2,475,050,000	2,392,900,000	2,403,600,000	2,485,750,000
23	2,475,100,000	2,392,950,000	2,403,650,000	2,485,800,000
24	2,475,150,000	2,393,000,000	2,403,700,000	2,485,850,000
25	2,475,200,000	2,393,050,000	2,403,750,000	2,485,900,000
26	2,475,250,000	2,393,100,000	2,403,800,000	2,485,950,000
27	2,475,300,000	2,393,150,000	2,403,850,000	2,486,000,000
28	2,475,350,000	2,393,200,000	2,403,900,000	2,486,050,000
29	2,475,400,000	2,393,250,000	2,403,950,000	2,486,100,000
30	2,475,450,000	2,393,300,000	2,404,000,000	2,486,150,000
31	2,475,500,000	2,393,350,000	2,404,050,000	2,486,200,000
32	2,475,550,000	2,393,400,000	2,404,100,000	2,486,250,000
33	2,475,600,000	2,393,450,000	2,404,150,000	2,486,300,000
34	2,475,650,000	2,393,500,000	2,404,200,000	2,486,350,000
35	2,475,700,000	2,393,550,000	2,404,250,000	2,486,400,000
36	2,475,750,000	2,393,600,000	2,404,300,000	2,486,450,000
37	2,475,800,000	2,393,650,000	2,404,350,000	2,486,500,000
38	2,475,850,000	2,393,700,000	2,404,400,000	2,486,550,000
39	2,475,900,000	2,393,750,000	2,404,450,000	2,486,600,000
40	2,475,950,000	2,393,800,000	2,404,500,000	2,486,650,000