GH3000 Circuit Description

1. Introduction

The model GH3000 is a 40 channel (2.40255-2.47595GHz) 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 MCU and MCU interface
2.3 Antenna and RF module
2.4 Compander
2.5 Data shaper
2.6 Charge detector
2.7 Low battery detector
2.8 Buzzer amplifier

3. Circuit Block Description

3.1 Keyboard matrix and function LED

Pin 4 to pin7, pin 10 to pin 11 and pin 25 of the U2 MCU form a keyboard, and the talk LED is controlled by the pin 12 of the MCU.

3.2 MCU and MCU interface

The handset and the base is link up by the pins(9,24 in HS and 21,24 in Base). Besides, the PLL of the RF Module is controlled by the pins 15,17 and 18 of the MCU.

3.3 Antenna and RF module

ANT is the common point for transmitting and receiving through antenna.
MD1 is a RF module which consists of Duplexer, Power amplifier, Mixer & IF, RXVCO, TXVCO, VCC & TXVCC control, Synthesizer and DEMO Audio

Output circuits.

3.4 Compander

A compander U3 is used for improving the S/N of the transmit and receive audio signal.

3.5 Data shaper

The information which sending from base unit, is recovered by the amplifier Q1 and Q2.

3.6 Charge detector

ZD1, D4, D5, D6, D7, D8, R53, C29 form a charge detector to direct the charging signal to the MCU pin 26.

3.7 Low battery detector

A battery low detector is built-in by Q3 which detects the battery dropping and sends a signal to pin 19 of MCU.

3.8 Buzzer amplifier

Q11 is a buzzer amplifier driven directly by the MCU pin 21,22 and 23.

4. Functional Blocks of the Base unit

4.1 Power supply
4.2 MCU and MCU interface
4.3 Antenna and RF module
4.4 Compander
4.5 Data shaper
4.6 Charge detector
4.7 Line audio interface
4.8 Ring detector
4.9 Led function board
4.10 Noise detector and carrier detector

5. Circuit Block Description

5.1 Power supply

BQ4 8050 regulateS 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 BU5 MCU that communicates with the PLL of BMD1 through pins 5,6 and 7. Transmitter is controlled by the signal TX_DC which output from MCU via pin 20. MCU pins 6 to 11 consist of a resistor ladder for generating DTMF signal. The communication between Handset and Base is via the pin 24 and pin 26 through the RF link.

5.3 Antenna and RF modulator

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

5.4 Compander

A compander BU1 is used for improving the S/N of the transmit and receive audio signal.

5.5 Data shaper

The information which sending from handset unit, is recovered by the amplifier BQ1 and BQ2.

5.6 Charge detector

BQ7 is a charge detector to direct the charging signal to the MCU pin 25.

5.7 Line audio interface

BR20, BD9, BD10, BD11, BD12, BC40, BU5, BD13 and BTR1 line transformer

are the audio interface to the telephone line. The transformer is also used for telephone isolation.

5.8 Ring detector

BC41, BR11, BZD3, BZD2, BD8, BU4(K817P or LTV817) and BR44 form a ring detector which feed the signal through pin 26 of MCU.

5.9 LED function board

BLED1 is used for indicating “IN USE” OR “CHARGING” when handset is on cradle.

5.10 Carrier detector

The RF Module BMD1 pin 10 is an output pin of the carrier detector signal , it is sent to BU3 pin 23.When there is carrier, it is Low; when there is noise, it is High. BU5 finds the clear channel by this pin 23.

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2.4GHz Cordless Phone Frequency Table

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

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