SERVICE MANUAL

BENEFON DRAGON
TDP70WN

CONTENTS

1.0 GENERAL

General

1.1 TECHNICAL INFORMATION

1.1.1 Operational System

NMT-450i

1.1.2 Dimensions

Size: 56 x 125 x 25 mm

Weight: 178 g

Volume: 139 cm³

1.1.3 Power Consumption

- Batteries: 3x 1.2 V NiMH
- Sleep current: 600 µA
- Standby current: 43 mA
- Conversation mode, high power: app. 1.1 A
- Conversation mode, low power: app. 0.45 A

Charger:

- automatic 1 h rapid charging for NiMH batteries
- automatic 6 h standard charging for NiMH batteries

1.1.4 Accessories

- light holder
- portable hands free
- mains charger
- cigarette lighter charger
- belt clip

1.1.5 Alert Functions

Adjustable ringing tones

- type

- volume
- progressive or fixed

Silent alert

- short tone and ‘call is coming’ text in the display

1.1.6 Memory

Alphanumeric

- 300 memory locations, 23 characters, 16 alphanumeric / memory location
- memory scroll and recall in alphabetical or numerical order
- writing in memory during a call

Repeat: last dialled number or one of 15numbers from the quick-memory locations

1.1.7 Clock

- time and date display
- real time alarm setting
- real time power on setting
- real time power off setting
- elapsed conversation time counter (both incoming and outgoing)
- received call counter and time display

1.1.8 Auto Answer; Pager/Hands Free

- pre-set number of ring tones before answering (0...6)

Pager

- answers incoming calls and receives numeric messages
- 15memory locations (23 characters / location)

Hands Free

- answers incoming calls when connected to portable HF

1.1.9 Other Functions

DTMF - receiver / transmitter

DTMF - key tones

Display and key illumination

Volume control

- 5 levels
- level indicator

Battery charge level indicator

- battery empty alarm tone and display
- used battery capacity display

Field strength indicator

Battery-saving function

Prefix editor

Keys lockable to prevent accidental operation

Phone code to prevent unauthorised use

SIS protection function

CLIP, calling line identity presentation

‘+’ international prefix

1.1.10 Additional Exchange-Based Features

Call management

- New call
- Pick incoming call
- Select call

MFT-function (DTMF signal transmission)

Voice privacy (also manual voice privacy)

SMS

1.1.11 Manufacturer

Benefon Oyj
P.O. Box 84
24101 Salo
Finland
Tel. +358 2 77400 Fax. +358 2 7332633

1.2 PRODUCT FAMILY

- **BENEFON DRAGON HANDPORTABLE TDP70WN**
- **STANDARD MAINS CHARGER CSA-70-230**
- **QUICK MAINS CHARGER CMA-70-230**
- **CIGARETTE LIGHTER CHARGER CCS-70-12**
- **LIGHT HOLDER KDC-70**
- **PORTABLE HANDS FREE EHS-60**
- **BELT CLIP**

2.0 OWNER’S MANUAL

3.0 INSTALLATION INSTRUCTIONS

Installation Instructions

3.1 Phone Programming

You can program Benefon Dragon by using either the keys on your phone, or the BeneLoc computer program and maintenance adapter. In either case, you will need a localbox.

Programming Menu Commands:

- SALES DATE
- RADIO PATH ID
- OWN NUMBER
- PHONE CODE
- Y1 Y3 ID (additional operator indicator)
- SW VERSION
- SAK
- PRODUCT CODE
- UPDATE LOCALBOX
- INTERLEAVING
- AUTOMATIC ROAMING
- RESET RAM

3.1.1 Programming Subscriber ID in Dragon

3.1.1.1 How to program the ID in Dragon:

1. Turn on the Dragon normally with its own battery.

2. Hook up the rapid charger until it the phone indicates that it has started charging.

3. Remove the battery and watch that the display shows an empty battery frame.

4. Hook the localbox adapter up to the localbox via the Spica cable, and then attach it to the phone where the battery would normally go.

5. Restart the Dragon.

6. You can get to the *****BENEFON***** menu with the arrow key. Select it, and from there you will find "Radio Path ID", where you can program the ID of the phone.

3.1.2 To program Using the Phone Keys

1. Connect the QPS50 localbox via maintenance adapter to your phone, and turn the phone on. will be flashing in the display in stand-by mode.

2. Press and the following text will appear in the display: *****BENEFON*****.

3.1.2.1 Sales Date

1. Choose **SELECT**. The following text will appear in the display: **SALES DATE [XXXXXX]**.

2. Choose **CHANGE**. **[XXXXXX]** will be replaced by the date **[daydaymonthmonthyearyear]**. Remember to check that the date is correct. If the date is correct, choose **SAVE**. If the date is incorrect, delete it by choosing and enter the correct date (six digits in the following form: daydaymonthmonthyearyear). To save the date, choose **SAVE**.

It is possible to program the sales date ONLY ONCE, which means that you will not be able to change it again afterwards. If the sales date has not been programmed, your phone will not enter the normal stand-by mode.

3.1.2.2 Radio Path Identification

1. Press , and the following text will appear in the display: **RADIO PATH ID [XXXXXXXXXX]**.

2. Choose **CHANGE**. Enter the radio path identification (ten digits), and save the identification by choosing **SAVE**. Remember to check that the radio path identification is correct.

3.1.2.3 Own number

1. Press : own number **[+ XXXX...X]**

2. Choose **CHANGE**. Enter the own number (follow the instruction of the operator), and save it by choosing **SAVE**. Remember to check that the own number is correct.

Note! SMS doesn't work if the own number has not been programmed.

3.1.2.4 Phone Code

1. Press , and the following text will appear in the display: **PHONE CODE [XXXX]**.

2. Choose **CHANGE**. Enter the phone code (four digits), and save the code by choosing **SAVE**.

3.1.2.5 Y1 Y3 ID (Additional operator indicator)

It is possible to change old/add new operator indicator which operates in automatic roaming mode. (network selection mode: Automatic)

1. Press ▼ ▼ ▼ ▼: Y1:X Y3:XX ID: ABC

2. Choose ● **SELECT**. Enter Y1 (Country code: one digit) and choose ● **SAVE.**

Enter Y3 (Operator code: two digits) and choose ● **SAVE.**

Enter ID (Operator indicator, 3 characters) and choose ● **SAVE.**

3.1.2.6 Automatic roaming and Interleaving

The Dealer activates or deactives them according to the operator's or the customer's likings.

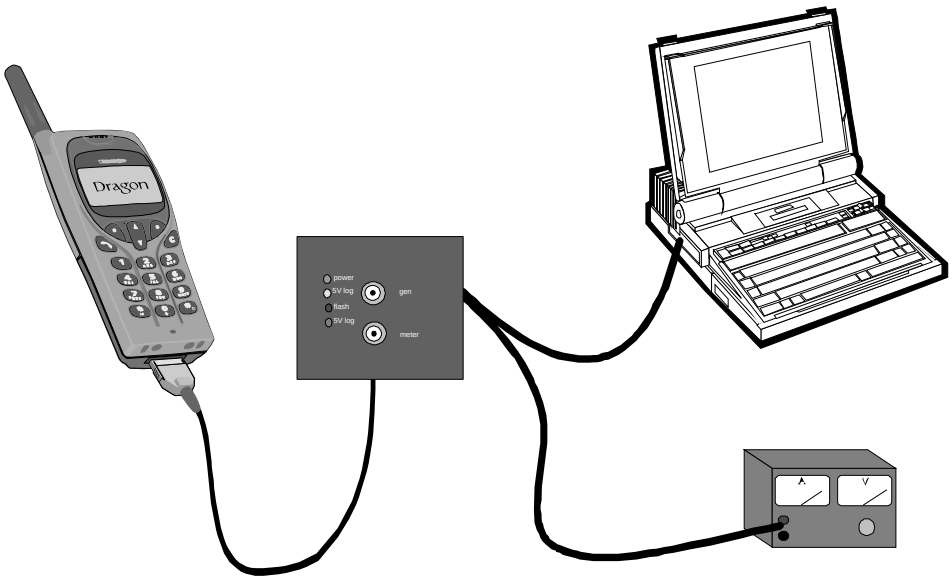
3.1.2.7 Closing Instructions

1. Having programmed the necessary information choose ● **QUIT**, and the following text will appear in the display: ***BENEFON***.

2. Turn off your phone, and disconnect the localbox.

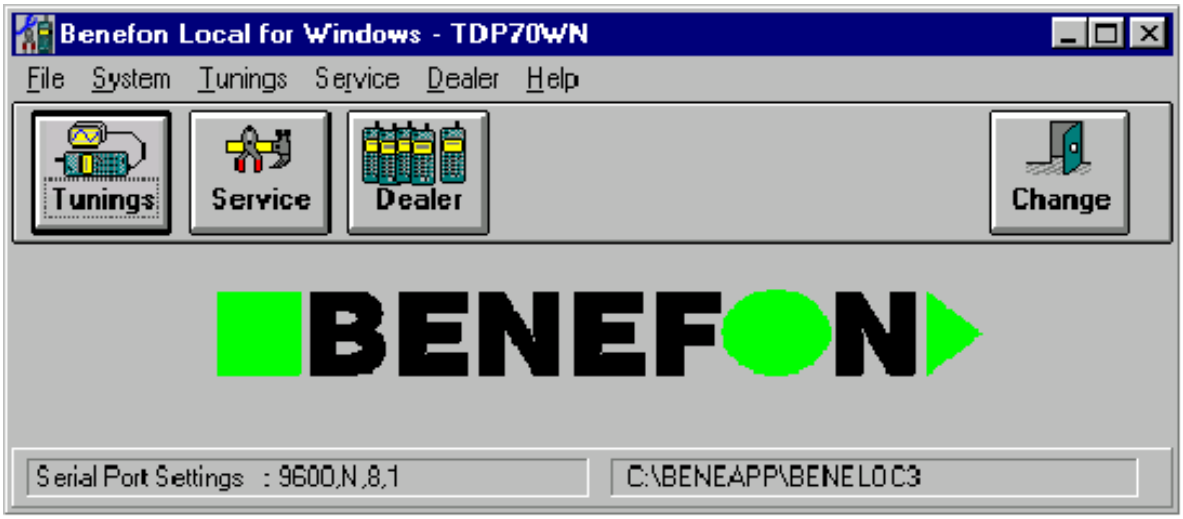
3. Turn the phone on once more, and make a test call.

3.1.3 To program Using the BeneLoc Program

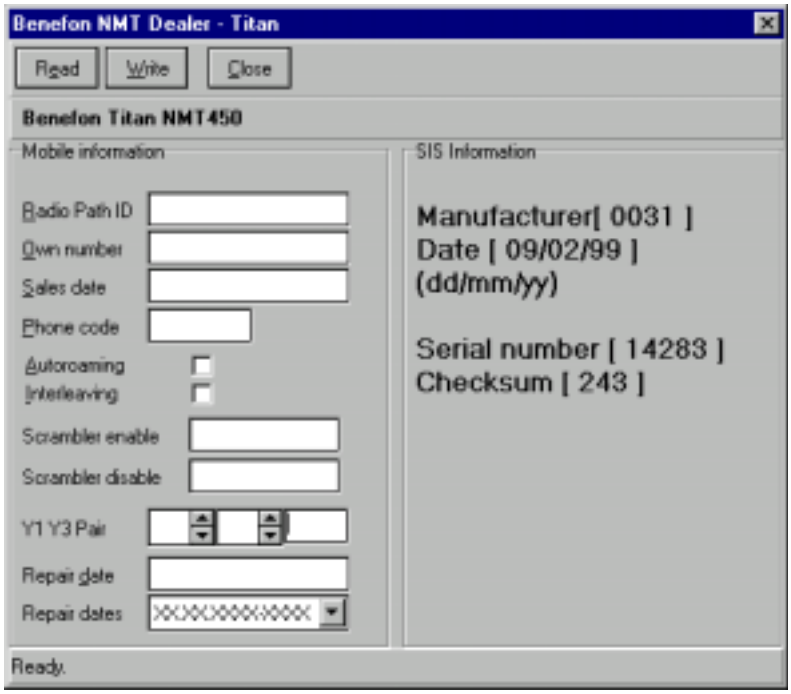


Start the installed program by clicking the icon. The phone must be connected to the system as discribed above.

Main window



Press Dealer-key to enter the programming window.

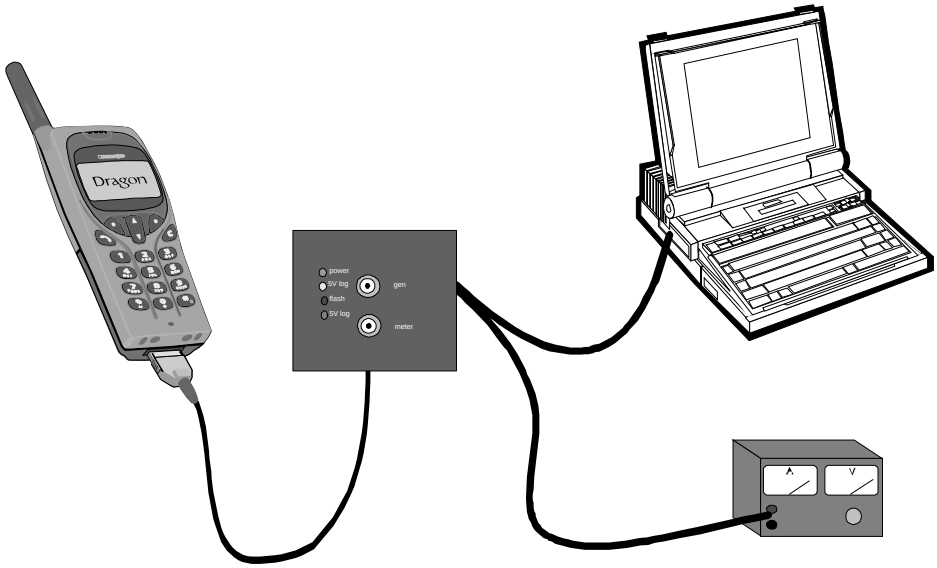


You can read the phone data by pressing the **Read phone** -key. You can change the miscellanous settings with the computer and transfer them to phone by pressing the **Program phone** -key.

BeneLoc includes **Help**-program for further information.

4.0 BeneLoc

BeneLoc



BeneLoc program is designed to help service person on tuning and service purpose. With Flasher Program you can change the software to Benefon phones.

Both, BeneLoc and Flasher program will need Service Adapter, Power Supply and Localbox with service rights to work.

4.0.1 Installation of BeneLoc program

Start Windows. Close all other programs except **Program Manager**.

Insert BeneLoc Installation Disc 1 in the floppy disk drive of your computer. In the **Program Manager** window, choose **Run** from **File** menu.

Type the letter **A:** or **B:** to indicate your floppy disc drive, and then type **SETUP.EXE**. For example, **A:\SETUP.EXE**.

Click the **OK** button, and follow the instructions displayed on your screen.

The Setup Program will ask you to specify the drive and directory in which you want

to install the BeneLoc Program. The Program suggests the following: **C:\Bene-App\BeneLoc**. Accept the drive and directory by clicking **Next** button. You can also type your own directory for BeneLoc Program.

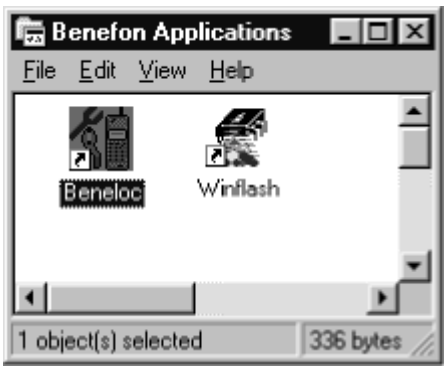
The Setup Program creates all necessary directories and subdirectories to your computer. Setup Program also creates its own group window in Program Manager.

4.0.2 To start the BeneLoc program

Connect the Service Localbox to serial port of your computer, which is called COM1 or COM2. The serial ports are usually located in the back of your computer, and more precise instructions can be found in the manual accompanying the computer. Adjust the Power Supply voltage to 4.0 Vdc. Connect the Service Localbox to the Power Supply.

Connect the Service Adapter to the phone. Plug the cable with flat connector into the connector at the bottom of the phone. When the cable has been connected and the phone is switched on, the phone should be in LOCAL mode. You can test this by pressing arrow button. There should be ***BENEFON*** on the display, if not, clean connectors and try again. When phone is in LOCAL mode you can start the Bene-Loc Program.

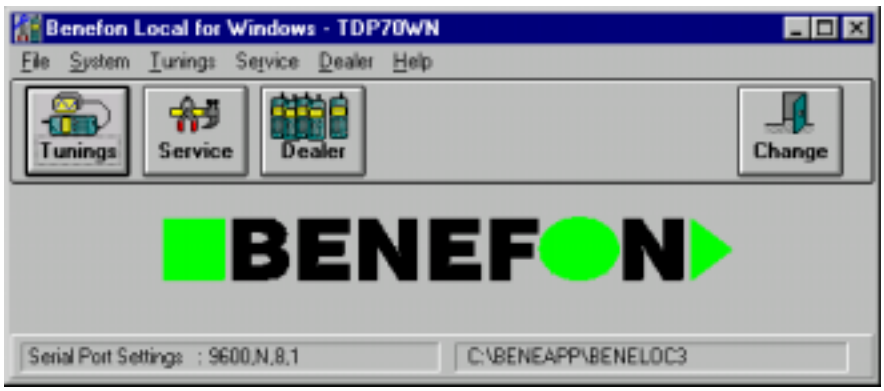
To start the BeneLoc Program, double click the **BeneLoc** icon.



In the BeneLoc Startup window, first select the correct serial port. Then, you have to select type of the phone. You can also use the **Autodetect** option. After selection click OK to start BeneLoc Program. When operating without external power supply the phone may be on sleep mode and registration fails. You can wake up the phone by pressing some buttons on the phone.

4.0.3 Using the BeneLoc program

In the main window of the BeneLoc, you will find submenus and buttons. Clicking the buttons you can go to the submenus.



Change

For changing phone to another similar you do not need to do more than enter into main menu. It means that this button is not needed. If you are going to change the tested phone to one having different software in, clicking Change will start the registration protocol again.

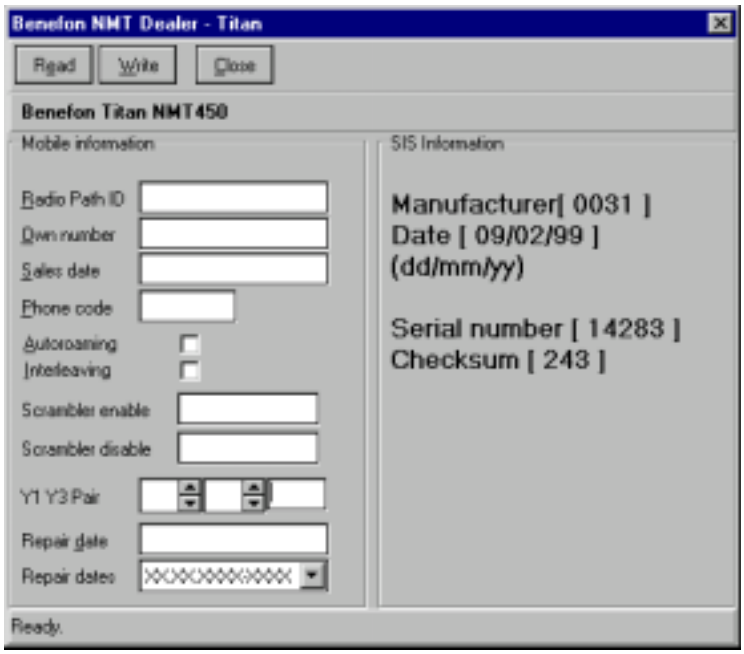
Help

About BeneLoc submenu will tell you version of the BeneLoc Program and also the state of memory.

About Cellular submenu will show you information of the phone. Type of phones software, sales date, date of the software, serial number and present tuning values of the phone. You can not change the tuning values from Help menu.

Dealer

From Dealer submenu you can make or check programming of the phone. You will also find the SIS information from Dealer submenu.



Service

You can control the audio lines (for example, switch Rx audio and compander on/off) in the Service main menu. It is also possible to control the phone to desired channel. There is also possible to change the power of transmitter.

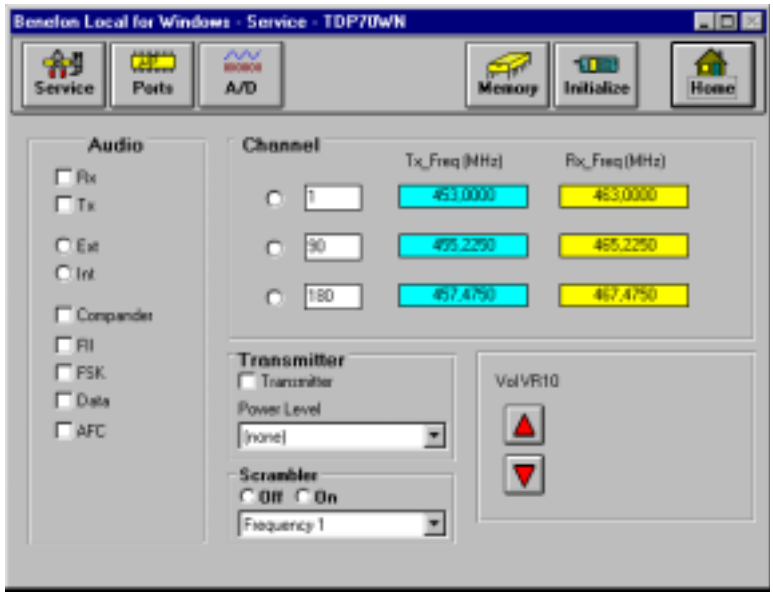
In the **Ports** submenu is you can see the status of different digital ports. There is also possible to control some of the output ports.

You can read the status of the A/D converters from the **A/D** submenu. Select 8 different topics to view. By clicking **SCAN AD** button The Beneloc will scan A/D the state of converters continuously. Scanning can stopped by clicking **STOP AD**.

Memory submenu allows you to make **Ram** reset.

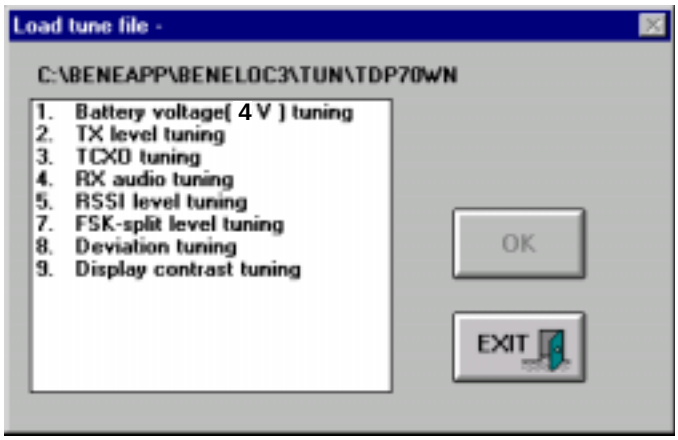
By clicking **Initialize** You can clear all LOCAL settings in service menu.

Home button will return you back to main menu.



Tunings

From Tunings main menu you can select different tunings to do. Every tuning have they own instruction window. Follow given instructions to do tunings. Clicking **START** will start tuning. The value will be stored only by clicking **SAVE**. Some of the tunings are chained and you can enter to next phase by clicking **NEXT**.



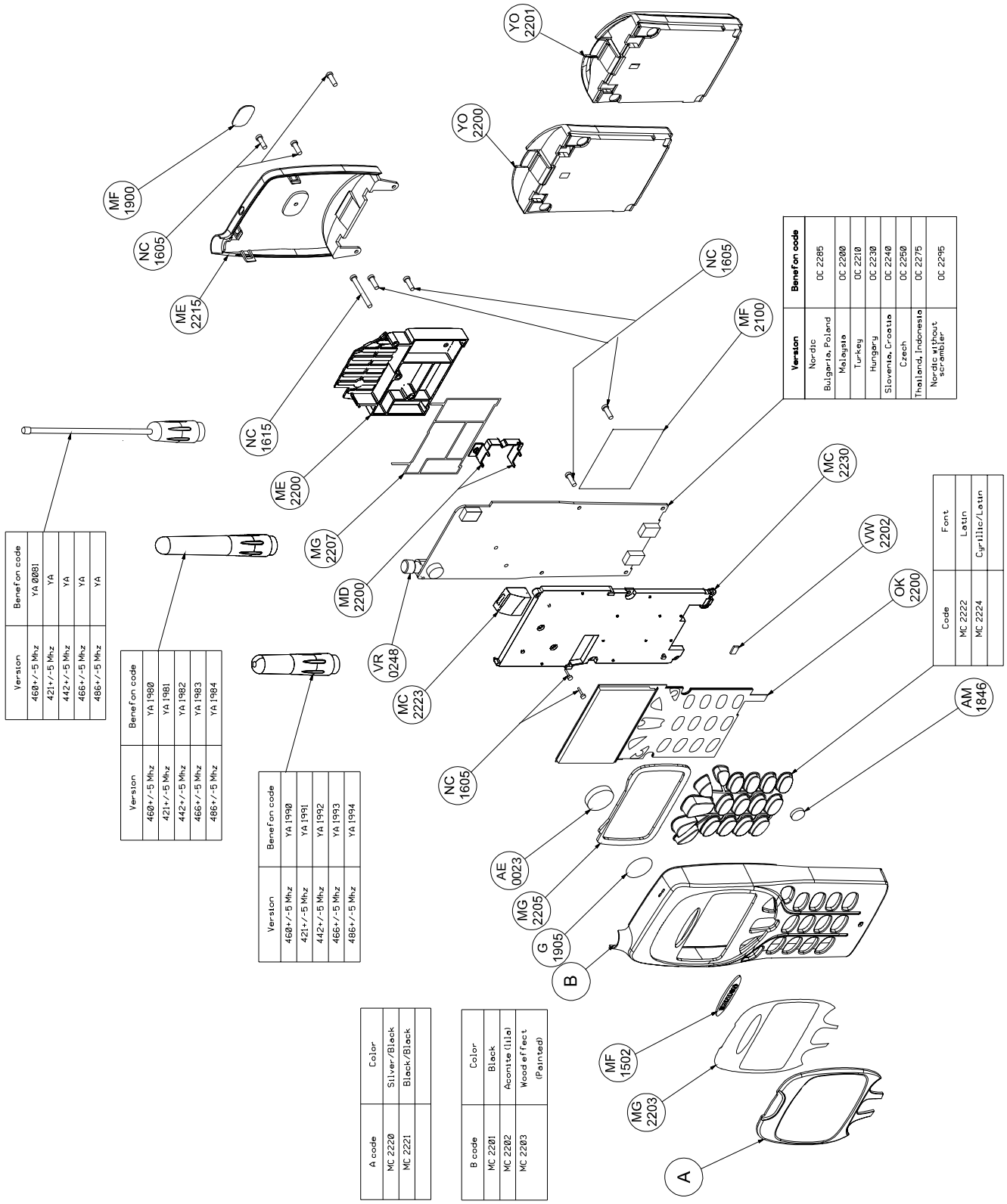
System

You select used mobile phone system from this submenu.

File

From **settings** submenu you can manually change settings of the communication port.

5.0 PHONE'S CONSTRUCTION



Version	Benefon code
Nordic	OC 2285
Bulgaria, Poland	OC 2285
Malaysia	OC 2200
Turkey	OC 2210
Hungary	OC 2230
Slovenia, Croatia	OC 2240
Czech	OC 2250
Thailand, Indonesia	OC 2275
Nordic without scrambler	OC 2295

Code	Font
MC 2222	Latin
MC 2224	Cyrillic/Latin

Version	Benefon code
460+/-5 Mhz	YA 0081
421+/-5 Mhz	YA
442+/-5 Mhz	YA
466+/-5 Mhz	YA
486+/-5 Mhz	YA

Version	Benefon code
460+/-5 Mhz	YA 1980
421+/-5 Mhz	YA 1981
442+/-5 Mhz	YA 1982
466+/-5 Mhz	YA 1983
486+/-5 Mhz	YA 1984

Version	Benefon code
460+/-5 Mhz	YA 1990
421+/-5 Mhz	YA 1991
442+/-5 Mhz	YA 1992
466+/-5 Mhz	YA 1993
486+/-5 Mhz	YA 1994

A code	Color
MC 2220	Silver/Black
MC 2221	Black/Black

B code	Color
MC 2201	Black
MC 2202	Aconite (lila)
MC 2203	Wood effect (Painted)

LOGIC / AUDIO

OC2285 Processor/Audio/RF

5.1 PROCESSOR

5.1.1 General

The entire radio: The audio, processor and RF functions are found within a single OC2200 board, along with the display and keyboard.

The processor controls the audio and radio (RF) parts, internal devices and external accessories.

The µCBIC (processor-asic) includes:

µCBIC	IG3010	H8/300H-cpu, 10k*8 CMOS RAM, 8 A/D, 4 D/A, 48 pcs I/O lines,3 series-interfaces, 2 modem-interfaces, i2c-interface, frequency counter, realtime clock
PROM	29DL800BT	Flash program memory
SIS	IG2048	Asic for SIS-function, 256k*8 EEPROM + Universal EEPROM for tuning values

5.1.2 Connectors:

5.1.2.1 Connector for service purposes only

1	V-PROG	flash programming voltage	0.5/12 -14 Vdc
2	GEN_OUTPUT	rx audio signal output	100 mVrms
3	CHGDET	charger detector	0/VCC digital
4	SCL	i2c clock	0/VCC digital
5	SDA	i2c clock	0/VCC digital
6	TXDO	RS232 output	0/VCC digital
7	GEN_INPUT	tx audio signal output	200 mVrms
8	RXDO	RS232 input	0/VCC digital

5.1.2.2 Headset connector, V2

1	HFMIC	microphone signal input	10 mVrms
2	HEADSET	headset detector	0/VCC digital
3	HFERP	earphone signal output	100 mVrms
4	GND	ground	

5.1.2.3 Charger connector, V6

1	Charger voltage	6 ...10 V DC
2	Ground	

5.1.2.4 Battery connector, V5

1	Ground	
2	VB_unfiltered	3.6 V

5.1.2.5 Battery identification connector, V4

1	Bat_type_1	0/VB digital
2	Bat_type_2	0/VB digital

5.1.2.6 Display and keyboard connector, V3

1	GND		
2	KEYIN0	key matrix input	0/VCC
3	KEYIN1	key matrix input	0/VCC
4	KEYIN2	key matrix input	0/VCC
5	KEYIN3	key matrix input	0/VCC
6	KEYIN4	key matrix input	0/VCC
7	KEYOUT0	key matrix output	0/VCC
8	KEYOUT1	key matrix output	0/VCC
9	KEYOUT2	key matrix output	0/VCC
10	KEYOUT3	key matrix output	0/VCC
11	PWRSW	key matrix input	0/VCC
12	PWRKEYIN	powerkey	0/VCC
13	GND	ground	
14	VCC	LCD power supply	VCC
15	RESET	reset signal	0/VCC
16	DCS1	display chip select	0/VCC
17	DAO	L:control data H:display data	0/VCC
18	DSCL	serial clock line for data	0/VCC
19	DSI	serial data input	0/VCC
20..31		connected to the voltage components	
32	GND	ground	

5.1.2.7 Circuit Diagram

The processor, audio and RF circuits diagram is split into seven parts. Signals in the circuit diagrams have been given names, and signals with the same name are connected between diagrams (<x> = page).

Page	1 of 7	module connector pins
	2 of 7	power supply + display
	3 of 7	µCBIC, EPROM, SIS-function
	4 of 7	audio parts
	5 of 7	synthesizer
	6 of 7	receiver
	7 of 7	transmitter

5.1.3 Functions

5.1.3.1 µCBIC

I3 is itself a processor-asic circuit. It is comprised H8/300H-cpu, 10k*8 CMOS RAM, 8 A/D, 4 D/A, 48 pcs I/O lines, 3 series-interfaces, 2 modem-interfaces, i2c-interface, frequency counter, realtime clock, timers and 4,8 MHz clock oscillator. The µCBIC divides this by 4 to get timing signal E.

When the processor is operating, RESET = VCC, VCC = 2.8 V, E = 1.2 MHz.

5.1.3.2 Memories

Memory and external I/O-circuit address coding is done with the µCBIC circuit I3. The circuit options CE, OE and WE are 0-active.

The program memory is in 8 Mbit Flash memory 29DL800.

RAM-memory is 10k*8 CMOS RAM and included in the µCBIC. µCBIC uses its own power supply voltage which is VRAM and is always operating, even when the radio is in the OFF state.

5.1.3.3 The Modem

The FFSK modem is located in the audio circuit. The modem is connected to the µCBIC by a series line, input to synchronised port, and transmission is controlled by an µCBIC series output. The modem gives a 1200 Hz signal RXCLK and TXCLK to the µCBIC. There is a data detector within the modem, the speed of which is controlled by C57. The µCBIC A/D converter measures the level of acceptance from ERPDET line. The same detector also serves to control HF function.

5.1.3.4 AFC

The AFC function is performed by an internal µCBIC frequency counter. A 450 kHz intermediate frequency is amplified to a square-wave form by Q5. The

frequency is adjusted by µCBIC D/A 1 signal. This approx. 1.5 Vdc voltage is fed to the synthesiser AFC pin.

5.1.3.5 Sleep Timer

The phone puts the central functions to sleep for a time. Although everything seems normal to the user, but most of the functions are closed down. The radio and audio units are closed down completely. The processor still has a power supply, but the processor is halted and has minimal power consumption. Only the µCBIC circuit sleep timer and its 32 kHz crystal oscillator remain in active mode. The phone is "woken up" by interrupting the sleep timer or by changing the keyboard state. The sleep timer 32 kHz clock frequency is produced by the oscillator made by crystal X1.

5.1.3.6 Warm start

C32 and R38 measure the length of a voltage break. The voltage drops during a break, after which it is measured by the A/D (AN2) converter. The time constant is approx. 10 s. Thus a "warm start" is detected.

5.1.3.7 Reset

The output (VCC) of the main voltage regulator I11 is connected to the power supply reset monitor I1. The output of I1 resets (stops) the processor and zeroes the controls when the battery voltage drops below 2.6 V. When the voltage rises again, the processor restarts.

5.1.3.8 Power Switch

When the power switch is pressed, the PWRSW line goes to high state and drives the regulator to operate. The program commences and checks the PWRSW line to ensure that the switch is being pressed, and sets hold on the regulator for the PWRON line. When the switch is depressed for a longer time, the program directs power to the PWROFF line. During a short voltage break, C1 remembers the previous control, i.e. C1 keeps the control voltage high when the battery voltage is restored within 10 seconds. C1 also serves as a watch-dog should the voltage drop or processor error-state continue; after 10 seconds, the radio will shut down completely.

Note1! When the phone is operative, the same power power switch acts also the # key.

Note2! The µCBIC circuits have their own power supply voltage connected to the battery to ensure an uninterrupted power supply. The µCBIC power supply is ensured during a battery-back change by the battery B1.

5.1.3.9 Battery Voltage Measurement

The battery voltage is measured by an A/D converter (AN7). The reference voltage for the measurement is provided by the main regulator 2.8 V supply. Calibration is done by the program against a precisely known battery voltage.

5.1.3.10 I/O ports

The µCBIC I/O ports PA PF are 8-bit hold circuits. Data is fed to the addresed output. When the RESET line is down (0V) all the µCBIC ports are zeroed (0V). As RESET rises again, all of the two-way I/O ports are inputs until the program sets them to the desired state. With the radio in OFF state, RESET is down so all of the controls are also down although µCBIC is still provided with operational voltage VRAM.

5.1.3.11 SIS

SIM is performed by a BENEFON ASIC IG2048 manufactured by Atmel. Integrated circuit IG2048 is E2 logic array. This type of array incorporates both an electrically erasable and programmable read only memory (EEPROM) and a gate array for SIM function.

SIM has 256 bytes internal EEPROM divided to two parts: 224 bytes EEPROM for universal use and 32 bytes EEPROM for SIS calculations are secured by programmable fuse function.

User specific information is stored in EEPROM which CANNOT be read from outside the chip. All external attemps to read the information clear both. EEPROM and RAM (fill with FF).

5.1.3.12 Power Adjustment

The transmitter control logic switches TX power and also adjusts it to the correct level. The TXS_REG signal sets the transmitter to ready mode. Power is controlled by the µCBIC analog output A/D 0 through the TXPWR line. 0 V corresponds to "no power" and 2.8 V to maximum transmitter power. The power levels are calibrated by the program at the source of measurement.

5.1.3.13 Charging Control

The charger is controlled by the program. The charger is detected by a voltage at the CHGDET pin. The charging current is controlled with Q10 which acts as a switch. The switch Q10 is controlled by Q4 through the charge_on -line.

5.1.3.14 Temperature Measurement

The radio has one temperature sensor R72, situated just under the battery pack. Inside the radio the NTC resistor R72 voltage is measured by the µCBIC A/D converter (AN6). This value is converted by a programmed table to a temperature reading.

5.1.3.15 Real-time Clock

A real-time clock is provided within µCBIC to give the time and date. The alarm function can also be programmed to the ALARM pin. This will initiate the main regulator and thus also the radio although it is in OFF state.

The µCBIC circuit has a continuous power supply and the 32 kHz clock crystal runs constantly. Not even the RESET line stops the clock. If the power supply has dropped too low, the clock will need to be reset with the radio buttons (from the menu).

5.2 AUDIO

5.2.1 Function Description

The audio module is comprised of the following functions:

1. TX-audio signal handling
2. RX-audio signal handling
3. Fii signal handling
4. FFSK modem
5. DTMF generator/receiver
6. Signal level detectors
7. Compander
8. Expander
9. Buzzer

The audio functions are mainly located in a single circuit AK2339. This chip from AKM is controlled by a serialbus. It is possible to shut down parts of the circuit, one block at a time to minimise power consumption.

5.2.2 TX-audio

The input from the microphone is fed to the audio circuit I7 pin 61, which is an operational amplifier (AMP1) inverting input. The operational amplifier gain is set by resistors R87 and R89. The amplifier is connected as a low pass filter. After the amplifier is the microphone switch and then summing junction of MIC input signal, EXTMIC input signal and transmit DTMF signal. VR1 is a programmable amplifier, which sets the microphone signal (sensitivity) to the correct level. After VR1 comes band-pass filter for transmitting the voice signal. A special scrambler circuit I9 can be mounted between the pins 57/58 and 59 of I7. This device is optional and it is controlled also by the serial interface circuit. TXDET is the transmit voice signal detection circuit which works as a full wave rectifier. Next comes ATT1 which is an attenuate circuit to set the transmit signal level in the HF-mode. COMP is the compressor circuit. Compress the transmitting signal amplitude with square root law. It can be bypassed. The linearity is adjustable by the control register CVR. Next is VR2,

normal deviation gain control circuit to set the signal level. The P/E & LIMIT pre-emphasis circuit and limiting circuit, emphasize the higher frequency component of the signal in order to improve the signal-to-noise ratio of modulated signal. This block includes a limiting circuit for signal amplitude in order to confine the maximum deviation of the transmit modulated signal. Before TXLPF is the FFSKTX switch. TXLPF is the low pass filter to reject the higher frequency component on the transmit signal. VR3 is a maximum deviation gain control circuit to set the transmit signal level. After the VR3 comes switch TXAUDON, which mutes the tx-audio signal using the TXMUTE control. From the switch, the signal is fed to the summing junction (ADD3) of the tx-audio signal and Fii-signal. Next comes VR4 gain control circuit to set. SMF1 is smoothing filter for tx-audio signal. The tx-audio signal is then fed to the RF-stages.

5.2.3 RX-Audio

The rx-audio signal coming from the receiver through the V103 pin 8 is fed to the audio circuit I7 pin 23. Inside the circuit, the signal is fed to the operational amplifier (AMP2) inverting input. The amplifier gain is set by resistors R85 and R95. The signal is next passed through an anti-aliasign filter. VR5 is a gain control circuit to set the rx-audio signal to the correct level. Next comes de-emphasis (D/E) circuit. Equalize the pre-empassized rx-audio signal. The signal passes from the D/E through the switch RXAUDON. RXBPF is the band-pass filter for the rx-audio signal. RXDET is the rx-audio signal detection circuit. This circuit works as a full wave rectifier. After the RXBPF comes I8 which is the split-switch of audiosignal and then expander circuit (EXP). Expand the rx-audio signal amplitude. It can be bypassed. The linearity is adjustable by the control register EVR. VR6 is a gain control circuit to set the rx-audio signal to the correct level. After VR6 comes the RXMUTE switch, which is operated by the RXMUTE control. ADD4 is the summing junction of the rx-audio signal, external signal (not used), DTMF signal and transmit signal. VR10 is the volume control circuit to set the level of earphone and external earphones. The scrambler circuit I9 is optional and it is controlled by the serial interface circuit. The signal is then fed via R91 to the audio amplifier I10. The amplifier drives the earphone A4 and by controlling the I10 SE/BTL pin, the signal can be routed to the HF-connector.

5.2.4 FII Signal

The NMT system uses the FII signal to check the radio path quality. This approx. 4 kHz signal is split from the rx-audio signal after the VR5 and is filtered through the band-pass filter (FBPF). VR7 sets the FII signal to the correct level. Switch FILOOPON can be operated by the FIION control, to be summed with the tx-audio signal before the VR4.

5.2.5 FFSK Modem

The FFSK data signal from FFSK modulator to be transmitted is passed through the FFSK low-pass filter and pre-emphasis (FFSKP-EM) to the VR9, which adjusts its level. The data signal is switched using switch FFSKTXON.

The received data signal is split from the rx-audio signal after the de-emphasis circuit. The data signal is fed through the FFSK band-pass filter to the FFSK demodulator and FFSK data detector.

FFSK DET block. The block works to judge the FFSK signal existence by comparing the amplitude of the noise reduced FFSK signal and the provided detection level standard. Once the detector judges a valid FFSK signal, 'H' signal is put out on the FFSKDET pin (pin43). The data detector speed is determined by the external condensator C57.

FFSK DEMOD. To recover 1200 bps receive data and clock from the FFSK signal.

The modem is connected to the CPU by series lines, the receiver to a synchronised gate, and transmission is directed to an ASIC series output. The modem provides a 1200 Hz clock signal RXCLK to the processor and TXCLK to ASIC.

5.2.6 The DTMF Generator/Receiver

The DTMF generator provides all sixteen standard DTMF tones, and each individual frequency separately. The generator is used to produce both key and alarm tones and enable numeric message transmission during a call.

Key and alarm tones are taken from the generator to switch DTMFRXON and is summed with the rx-audio signal. Key tones are connected to earphone and external earphones.

When transmitting a numeric message, the DTMF tones produced by the generator are fed through the VR8, which set the DTMF signal level to the switch DTMFTXON, and then the signal is summed with the tx-audio signal.

The DTMF receiver takes in numeric messages sent to the phone. The route to the DTMF receiver splits from the rx-audio signal after the summing junction ADD4.

5.2.7 Signal level detectors

Audio signal level detectors are required for the HF-function to measure the transmitted and received audio signal level, and to study the data signal level. Measurement is done by rectifying the signal, and the resultant DC voltage is read by a phone's prosessor A/D converter. TXDET is at the transmission side detector and RXDET is at the receiver side detector.

5.2.8 Compander/Expander

Compander and expander units are included in audio asic I7 and can be controlled by registers.

5.2.9 Alarm buzzer

Tones for the internal alarm tones are provided by the DTMF generator. The internal alarm tones path way is DTMF generator, VR8, switch DTMFRXON, summing junction ADD4, VR11, AMP5 and buzzer. The buzzer volume is controlled by the DA3.

5.2.10 The other in audio asic (I7)

OSC is the main oscillator and clock divider for the prosessor.

CLKBUF is clock buffer generate clock out from main clock.

INTERFACE & DATA REGISTER is a 16 bit address/data serial interface circuit.

BIAS is bias current generator for amplifiers.

TIMER is an 8 bit timer (not used).

DA1, DA2, DA3 are 8 bit linear DA converters.

5.2.11 Scrambler (optional)

The CD264 I9 is a frequency domain scrambler compatible with NMT cellular phone system. It contains separate TX and RX paths for full duplex operation and operates under µProcessor control via a serial interface. The circuit is optional.

RF

5.3 RX SYNTHESIZER

5.3.1 General

The RX synthesizer generates an upper side injection frequency for the receiver. The injection frequency is fed to the receiver's first mixer.

Operating voltage	3.0 VDC
Current consumption	14 mA
Output level to the receiver	+1 dBm
Frequency range	541.450...545.925 MHz

5.3.2 Functional Description

The RX injection frequency is generated with a phase locked loop. The VCO produces the injection frequency determined by the control voltage. After the VCO stage comes the amplifier stage Q430. After the amplifier stage, part of the signal is fed to the synthesizer circuits I400 divider. The synthesizer circuit contains a prescaler, programmable divider, reference frequency divider, and a phase detector.

The synthesizer circuit produces current pulses at output DO1 as controlled by the phase detector. The current pulses either charge or discharge the loop filter. The VCO control voltage is derived from the loop filter output.

The synthesizer 12.5kHz reference frequency is made by dividing the 13.00 MHz signal from the temperature compensated oscillator (TCXO). The series-form signal which controls the channel frequency comes from the processor. SDATA, SCLK and SLE signals are common to both TX- and RX-synthesizers. A positive pulse in the SLE line loads the division ratio (corresponding to the frequency of the channel) fed to the SDATA line, to the synthesizer circuit I400.

5.3.3 Control- and Output-Signals

VRX	RX synthesizer operating voltage	3.0 V
SCLK	Clock signal for the synthesizer control data	
SDATA	Synthesizer control data	
SLE	ENABLE pulse to the synthesizer	
RXINJ	RX synthesizer output to the receiver	+1 dBm
RX_REG	Control line for VRX-regulator	

5.4 TX-SYNTHESIZER

5.4.1 General

The TX synthesizer generates the final modulated transmission frequency, which is fed to the transmitter.

Operating voltage	3.0 VDC
Current consumption	<30 mA
Output level to the transmitter	+6 dBm
Frequency range	453.000...457.475 MHz

5.4.2 Function Description

The TX frequency is generated with a phase locked loop (PLL). The VCO produces the injection frequency determined by the control voltage, and the VCO also has a modulation input. After the VCO stage come two amplifier stages Q470 and Q480. These ensure separation between the VCO and transmitter, and also boost the injection level sufficiently. Part of the signal is fed from between the amplifier stages to the synthesizer circuit I400 pre-scaler input Fin2. The synthesizer circuit contains a pre-scaler, programmable divider, reference frequency divider, and a phase detector.

The synthesizer circuit produces current pulses at output DO2 as a result of the phase detection. The current pulses either charge or discharge the loop filter condensators. The VCO control voltage is derived from the loop filter output.

The synthesizer 12.5kHz reference frequency is made by dividing the 13.00 MHz signal from the temperature compensated oscillator (TCXO). The series-form signal which controls the channel frequency comes from the processor. SDATA and SCLK signals are common to both TX- and RX-synthesizers. A positive pulse in the SLE-line loads the division ratio (corresponding to the TX frequency of the channel) fed to the SDATA line, to the synthesizer circuit I400.

Modulation is fed to the TX synthesizer TX-AUDIO line. The frequency response is corrected by the components R455 - R458, C454 and C455. Modulation sensitivity is set by the resistor R459.

5.4.3 Control- and Output-Signals

VTXS	TX synthesizer operating voltage (3.0 V)
TXAUDIO	Transmitter audio signal
13MHz	13.00 MHz signal to the receiver circuit.
SCLK	Clock signal for synthesizer control data
SDATA	Synthesizer control data
SLE	ENABLE pulse to the synthesizer
TXINJ	TX synthesizer output to the transmitter (+6 dBm)
AFC	AFC control voltage from AF/LOGIC-board
TXS_REG	Control line for VTXS-regulator

5.5 RECEIVER

5.5.1 General

The module contains all FM-receiver functional blocks.

RF-amplifier	3SK284
1. mixer	balanced mixer
1. IF-amplifier	3SK284
FM IF system	SA 607 includes the following blocks: 2. mixer IF limiter quadrature detector RSSI (received signal strength indicator)

When the RF signal is received it is brought through the duplex filter to the amplifier stage Q500. The amplified signal is passed through the attenuator to the balanced mixer.The balanced mixer is made by using discrete components, diode D510 and RF-transformer M510.

The upper side injection frequency is brought from the synthesizer through a small resistive attenuator to the mixer. The 78.45 MHz intermediate frequency from the mixer output is fed through the IF- filter X520 to the FM IF-circuit I550.

RX injection frequency 541.450...545.925MHz

Injection-level/impedance +1 dBm / 50 ohm

The second intermediate-freqency local-oscillator-frequency required by the FM IF-circuit is generated by multiplying the 13.00 MHz reference-oscillator frequency by six. The multiplier circuit is made with transistor Q530.

The second intermediate frequency is 450 kHz. The phase-shift required by the quadrature detector is made with the L550. The detected AF-signal temperature correction is done in the buffer amplifier stage.

5.5.2 Input- and Output-Signals

RF input from the duplex filter	463.000...467.475 MHz
RXINJ	RX injection signal to the balanced mixer
13MHz	13.00 MHz signal to the multiplier for the 2.mixer
VRX	RX operating voltage 3.0V from the regulator
450 kHz	Output from 2. IF to the AFC detector
RXAUDIO	Receiver audio output 175mVrms
RSSI	Received signal strength indicator output 0,5...2V

SENSITIVITY CHECK

channel	RF input	SINAD psof.
001	-113 dBm	>20 dB
180	-113 dBm	>20 dB

5.6 TRANSMITTER

5.6.1 General

Operating voltage	3.5 ... 4.5 v
Current consumption	mid power max. 1.1 A
	low power max. 0.45 A
Input level from the synthesizer	+6 dBm
Output level to the duplex filter	mid power 33 dBm (2.0W)
	low power 24.7 dBm (0.3W)
Frequency range	453.000...457.475 MHz

5.6.2 Function Description

The transmitter unit is comprised of three amplifier stages and two attenuator stages. The pre-amplifier Q620/Q621 and power module I650 form the transmitter amplifier chain. The attenuators surrounding the pre-amplifier are included to enhance the electric separation between the TX synthesizer and the transmitter.

The operational amplifier I640 and transistors Q641 and Q642 serve as a power regulator circuit, which adjusts the power level so that the voltage from the transmitter power detector (D660) and the control voltage TXPWR from the audio/processor unit are equal.

The negative bias voltage for the power amplifier is generated from the 13 MHz TCXO signal.

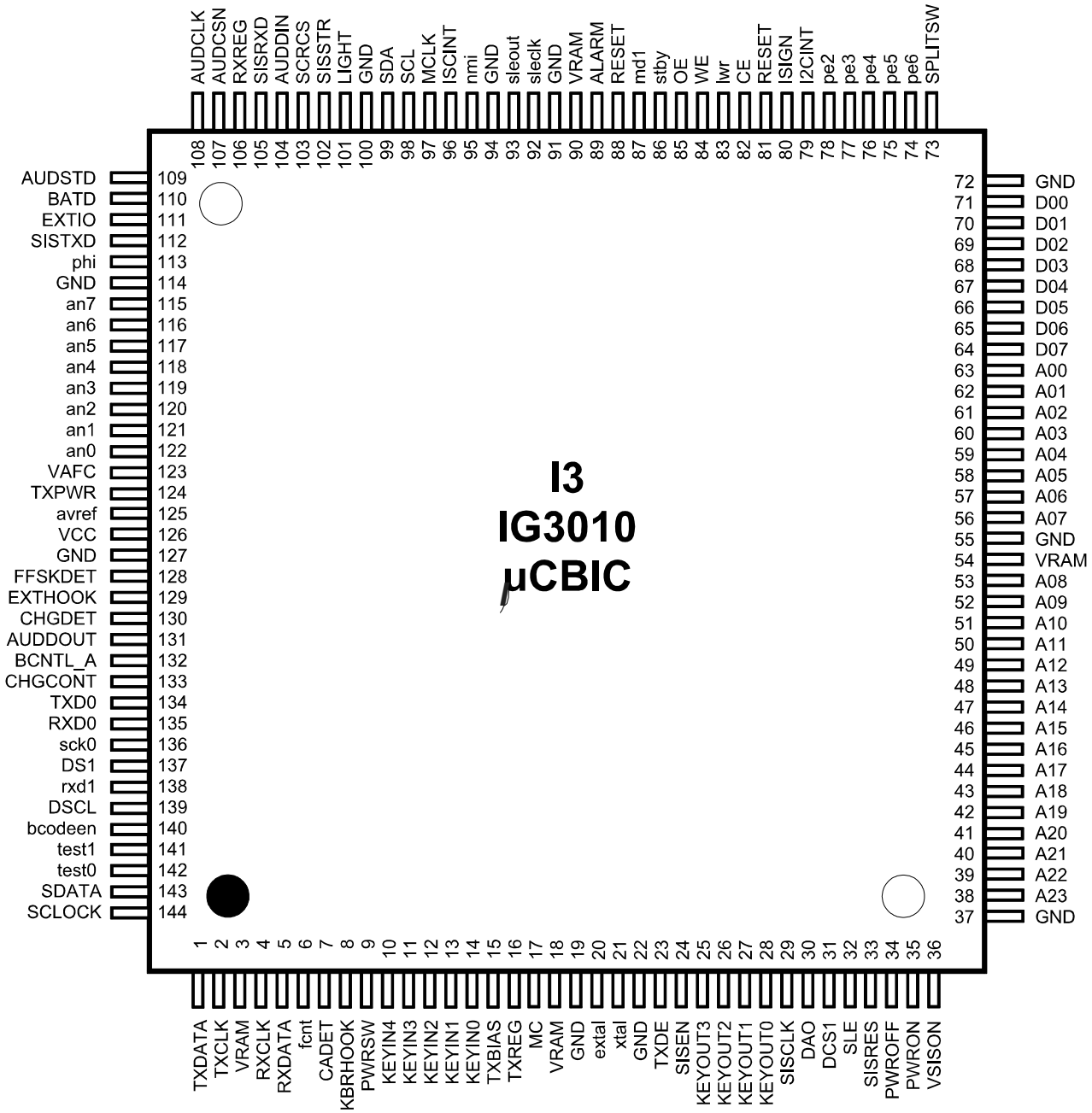
I610 amplifies the signal for the switched power supply Q610/D610 and is then regulated by the zenerdiode D611.

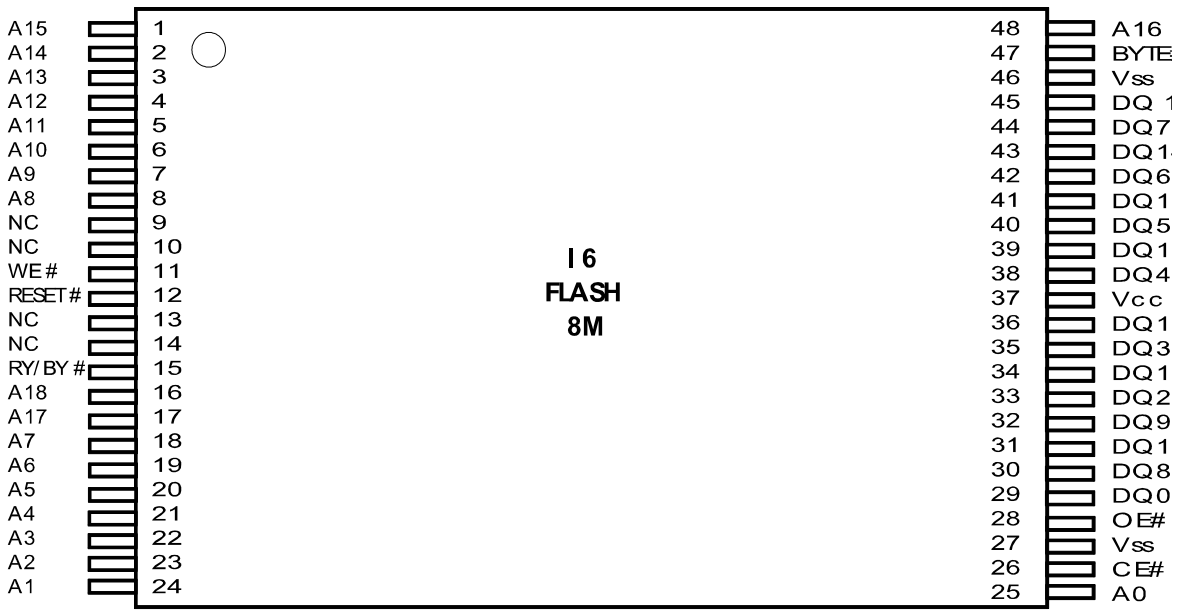
I600 serves as voltage regulator for pre-amplifier and for the negative voltage generetor.

Q631 serves as the ON/OFF switch for the output power.

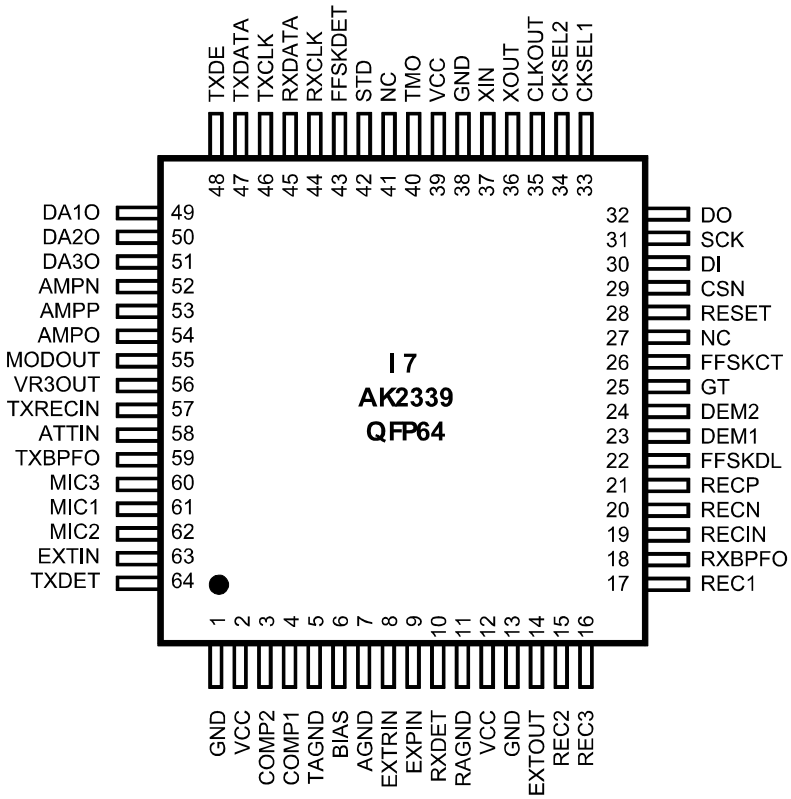
5.6.3 Control- and Output-Signals

VBAT	Transmitter operating voltage from the battery-pack (fused)	
TXBIAS	Power ON/OFF control	
TXPWR	Power level control signal from the D/A converter	0...3V
TXINJ	RF signal from the TX synthesizer	+6dBm
TXDUPLEX	Transmitter output to the duplex filter	


I3
IG3010
µCBIC
1 TXDATA
2 TXCLK
3 VRAM
4 RXCLK
5 RXDATA
6 fcnt
7 CADET
8 KBRHOOK
9 PWRSW
10 KEYIN4
11 KEYIN3
12 KEYIN2
13 KEYIN1
14 KEYIN0
15 TXBIAS
16 TXREG
17 MC
18 VRAM
19 GND
20 extal
21 xtal
22 GND
23 TXDE
24 SISEN
25 KEYOUT3
26 KEYOUT2
27 KEYOUT1
28 KEYOUT0
29 SISCLK
30 DAO
31 DCS1
32 SLE
33 SISRES
34 PWROFF
35 PWRON
36 VSISON
37 GND
38 A23
39 A22
40 A21
41 A20
42 A19
43 A18
44 A17
45 A16
46 A15
47 A14
48 A13
49 A12
50 A11
51 A10
52 A09
53 A08
54 VRAM
55 GND
56 A07
57 A06
58 A05
59 A04
60 A03
61 A02
62 A01
63 A00
64 D07
65 D06
66 D05
67 D04
68 D03
69 D02
70 D01
71 D00
72 GND
73 SPLITSW
74 pe6
75 pe5
76 pe4
77 pe3
78 pe2
79 I2CINT
80 ISIGN
81 RESET
82 CE
83 lwr
84 WE
85 OE
86 stby
87 md1
88 RESET
89 ALARM
90 VRAM
91 GND
92 sleclk
93 sleout
94 GND
95 nmi
96 ISCINT
97 MCLK
98 SCL
99 SDA
100 GND
101 LIGHT
102 SISSTR
103 SCRCS
104 AUDDIN
105 SISRXD
106 RXREG
107 AUDCSN
108 AUDCLK
109 AUDSTD
110 BATD
111 EXTIO
112 SISTXD
113 phi
114 GND
115 an7
116 an6
117 an5
118 an4
119 an3
120 an2
121 an1
122 an0
123 VAFC
124 TXPWR
125 avref
126 VCC
127 GND
128 FFSKDET
129 EXTHOOK
130 CHGDET
131 AUDDOUT
132 BCNTL_A
133 CHGCONT
134 TXD0
135 RXD0
136 sck0
137 DS1
138 rxd1
139 DSCL
140 bcodeen
141 test1
142 test0
143 SDATA
144 SCLOCK



Standard 48 pin TSOP



5.7 Module OC2285 (The Layout PC2200 A5)

OC2285_A5

5.7.1 Parts list

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
AE0024	A2	Buzzer	10x10x3mm 1,5V/70mA	Citizen	CHB-03E
AM1840	A3	Electret Condenser micr.	with rubber holder	?????????	OBG-18S40-C33CEC
AE0023	A4	Dynamic transducer	13,3x2,6 low Z	Philips	WD00518/32U
AB0039	B1	Lithium battery	3V/50mAh	Rayovac	BR 1225SM2
CU3106	C1	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CF0105	C10	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0104	C100	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C101	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CU3106	C102	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CH0105	C104	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0101	C105	SMD capasitor X7R	100pF Ò5%	Murata	
CG0104	C11	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C12	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C13	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C14	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C15	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CF0105	C16	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0101	C17	SMD capasitor X7R	100pF Ò5%	Murata	
CG0220	C18	SMD capasitor NPO	22pF Ò5%	Murata	
CG0220	C19	SMD capasitor NPO	22pF Ò5%	Murata	
CG0101	C2	SMD capasitor X7R	100pF Ò5%	Murata	
CG0223	C20	SMD capasitor X7R	22nF 20%	Murata	
CG0471	C21	SMD capasitor X7R	470pF Ò10%	Murata	
CG0223	C22	SMD capasitor X7R	22nF 20%	Murata	
CD0105	C23	SMD capasitor	1uF/16V%10% X5R	TaiyoYuden	EMK212BJ105KG-T
CG0102	C24	SMD capasitor X7R	1nF Ò10%	Murata	
CF0105	C25	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CH0105	C26	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CU3106	C27	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0103	C28	SMD capasitor X7R	10nF Ò10%	Murata	
CG0472	C29	SMD capasitor X7R	4,7nF/Ò10%/25V	AVX	
CG0101	C3	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C30	SMD capasitor X7R	100pF Ò5%	Murata	
CG0223	C31	SMD capasitor X7R	22nF 20%	Murata	
CU3106	C32	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0104	C34	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C35	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C36	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0472	C37	SMD capasitor X7R	4,7nF/Ò10%/25V	AVX	
CG0103	C39	SMD capasitor X7R	10nF Ò10%	Murata	
CU3106	C4	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0103	C40	SMD capasitor X7R	10nF Ò10%	Murata	
CF0223	C400	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CH0105	C401	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CH0105	C402	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CF0223	C403	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0220	C41	SMD capasitor NPO	22pF Ò5%	Murata	
CD0223	C410	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CU0334	C411	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CD0103	C412	SMD capasitor	10 nF 10% 50 V X7R	Philips	
CF0223	C413	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0220	C42	SMD capasitor NPO	22pF Ò5%	Murata	
CG0101	C420	SMD capasitor X7R	100pF Ò5%	Murata	
CG0150	C421	SMD capasitor NPO	15pF Ò5%	Murata	
CG0479	C423	SMD capasitor NPO	4.7pF Ò0,25pF	Murata	
CG0150	C424	SMD capasitor NPO	15pF Ò5%	Murata	
CG0120	C425	SMD capasitor NPO	12pF Ò5%	Murata	
CG0180	C426	SMD capasitor NPO	18pF Ò5%	Murata	
CG0472	C43	SMD capasitor X7R	4,7nF/Ò10%/25V	AVX	
CG0101	C430	SMD capasitor X7R	100pF Ò5%	Murata	
CG0223	C431	SMD capasitor X7R	22nF 20%	Murata	
CG0109	C432	SMD capasitor NPO	1.0pF Ò0,25pF	Murata	
CG0479	C433	SMD capasitor NPO	4.7pF Ò0,25pF	Murata	
CG0101	C434	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C435	SMD capasitor X7R	100pF Ò5%	Murata	
CU3106	C436	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0472	C44	SMD capasitor X7R	4,7nF/Ò10%/25V	AVX	
CG0103	C440	SMD capasitor X7R	10nF Ò10%	Murata	
CH0105	C441	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0330	C442	SMD capasitor NPO	33pF Ò5%	Murata	
CG0101	C443	SMD capasitor X7R	100pF Ò5%	Murata	
CG0103	C444	SMD capasitor X7R	10nF Ò10%	Murata	
CG0223	C45	SMD capasitor X7R	22nF 20%	Murata	
CD0473	C450	SMD capasitor	47 nF 10% 50 V X7R	Philips	
CU2105	C451	SMD tantal	1uF/10V	AVX	TAJR105M010R
CD0103	C452	SMD capasitor	10 nF 10% 50 V X7R	Philips	
CD0223	C453	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CU0334	C454	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R
CU0334	C455	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R
CG0101	C456	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C46	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C460	SMD capasitor X7R	100pF Ò5%	Murata	
CG0220	C461	SMD capasitor NPO	22pF Ò5%	Murata	
CG0109	C462	SMD capasitor NPO	1.0pF Ò0,25pF	Murata	
CG0479	C463	SMD capasitor NPO	4.7pF Ò0,25pF	Murata	
CG0150	C464	SMD capasitor NPO	15pF Ò5%	Murata	
CG0120	C465	SMD capasitor NPO	12pF Ò5%	Murata	
CG0390	C466	SMD capasitor NPO	39pF Ò5%	Murata	
CH0105	C47	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0101	C470	SMD capasitor X7R	100pF Ò5%	Murata	
CG0223	C471	SMD capasitor X7R	22nF 20%	Murata	
CG0109	C472	SMD capasitor NPO	1.0pF Ò0,25pF	Murata	
CG0390	C473	SMD capasitor NPO	39pF Ò5%	Murata	
CG0101	C474	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C475	SMD capasitor X7R	100pF Ò5%	Murata	
CU3106	C476	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0104	C48	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C480	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C481	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C482	SMD capasitor X7R	100pF Ò5%	Murata	
CG0109	C483	SMD capasitor NPO	1.0pF Ò0,25pF	Murata	
CG0229	C484	SMD capasitor NPO	2.2pF Ò0,25pF	Murata	
CF0105	C49	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CH0105	C490	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CD0104	C491	SMD capasitor	100 nF 10% 50 V X7R	Philips	
CU3106	C492	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0102	C493	SMD capasitor X7R	1nF Ò10%	Murata	

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CU2105	C494	SMD tantal	1uF/10V	AVX	TAJR105M010R
CD0104	C495	SMD capasitor	100 nF 10% 50 V X7R	Philips	
CU3106	C496	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0102	C497	SMD capasitor X7R	1nF Ò10%	Murata	
CU0224	C498	SMD tanlat	0.22uF/20V/10%	AVX/KYO-CER	TAJR224K020R
CG0104	C5	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C50	SMD capasitor X7R	22nF 20%	Murata	
CG0150	C500	SMD capasitor NPO	15pF Ò5%	Murata	
CG0180	C501	SMD capasitor NPO	18pF Ò5%	Murata	
CG0109	C502	SMD capasitor NPO	1.0pF Ò0,25pF	Murata	
CG0399	C503	SMD capasitor NPO	3.9pF Ò0,25pF	Murata	
CG0101	C504	SMD capasitor X7R	100pF Ò5%	Murata	
CG0180	C505	SMD capasitor NPO	18pF Ò5%	Murata	
CG0399	C506	SMD capasitor NPO	3.9pF Ò0,25pF	Murata	
CG0101	C507	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C508	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C509	SMD capasitor X7R	100pF Ò5%	Murata	
CG0104	C51	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0569	C510	SMD capasitor NPO	5.6pF Ò0,25pF	Murata	
CG0339	C512	SMD capasitor NPO	3.3pF Ò0,25pF	Murata	
CG0473	C52	SMD capasitor Y5V	47nF/Ò10%/25V	AVX	
CG0390	C520	SMD capasitor NPO	39pF Ò5%	Murata	
CG0150	C521	SMD capasitor NPO	15pF Ò5%	Murata	
CG0102	C522	SMD capasitor X7R	1nF Ò10%	Murata	
CG0102	C523	SMD capasitor X7R	1nF Ò10%	Murata	
CG0689	C524	SMD capasitor NPO	6.8pF Ò0,25pF	Murata	
CG0399	C525	SMD capasitor NPO	3.9pF Ò0,25pF	Murata	
CG0101	C526	SMD capasitor X7R	100pF Ò5%	Murata	
CG0103	C527	SMD capasitor X7R	10nF Ò10%	Murata	
CG0104	C53	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C530	SMD capasitor X7R	100pF Ò5%	Murata	
CG0150	C531	SMD capasitor NPO	15pF Ò5%	Murata	
CG0103	C532	SMD capasitor X7R	10nF Ò10%	Murata	
CG0103	C533	SMD capasitor X7R	10nF Ò10%	Murata	
CG0102	C534	SMD capasitor X7R	1nF Ò10%	Murata	
CG0103	C535	SMD capasitor X7R	10nF Ò10%	Murata	
CG0150	C536	SMD capasitor NPO	15pF Ò5%	Murata	
CG0399	C537	SMD capasitor NPO	3.9pF Ò0,25pF	Murata	
CG0330	C538	SMD capasitor NPO	33pF Ò5%	Murata	
CG0399	C539	SMD capasitor NPO	3.9pF Ò0,25pF	Murata	
CF0105	C54	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0339	C540	SMD capasitor NPO	3.3pF Ò0,25pF	Murata	
CG0479	C541	SMD capasitor NPO	4.7pF Ò0,25pF	Murata	
CF0223	C542	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CH0105	C55	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CF0223	C550	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C551	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C552	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C553	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C554	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0100	C555	SMD capasitor NPO	10pF-+0.25pF	Murata	
CF0223	C556	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0104	C56	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0103	C560	SMD capasitor X7R	10nF Ò10%	Murata	
CG0103	C561	SMD capasitor X7R	10nF Ò10%	Murata	
CU2105	C562	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0331	C563	SMD capasitor X7R	330pF Ò10%	Murata	
CG0473	C57	SMD capasitor Y5V	47nF/Ò10%/25V	AVX	
CU3106	C570	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CG0102	C571	SMD capasitor X7R	1nF Ò10%	Murata	
CF0223	C572	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0104	C58	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C59	SMD capasitor X7R	22nF 20%	Murata	
CD0105	C6	SMD capasitor	1uF/16V%10% X5R	TaiyoYuden	EMK212BJ105KG-T
CG0223	C60	SMD capasitor X7R	22nF 20%	Murata	
CF0180	C600	SMD capasitor	18 pF 5% 50 V NPO	Philips	
CG0102	C601	SMD capasitor X7R	1nF Ò10%	Murata	
CG0103	C602	SMD capasitor X7R	10nF Ò10%	Murata	
CD0104	C603	SMD capasitor	100 nF 10% 50 V X7R	Philips	
CU1105	C604	SMD tantal	1uF/16V	AVX	TAJR105M016R
CU3106	C605	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0222	C61	SMD capasitor X7R	2.2nF Ò10%	Murata	
CG0101	C610	SMD capasitor X7R	100pF Ò5%	Murata	
CG0103	C611	SMD capasitor X7R	10nF Ò10%	Murata	
CG0390	C612	SMD capasitor NPO	39pF Ò5%	Murata	
CU2105	C613	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0103	C614	SMD capasitor X7R	10nF Ò10%	Murata	
CG0331	C615	SMD capasitor X7R	330pF Ò10%	Murata	
CG0103	C616	SMD capasitor X7R	10nF Ò10%	Murata	
CU2105	C617	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0103	C618	SMD capasitor X7R	10nF Ò10%	Murata	
CU2105	C619	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0101	C62	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C620	SMD capasitor X7R	100pF Ò5%	Murata	
CG0103	C621	SMD capasitor X7R	10nF Ò10%	Murata	
CG0220	C622	SMD capasitor NPO	22pF Ò5%	Murata	
CG0101	C623	SMD capasitor X7R	100pF Ò5%	Murata	
CG0471	C63	SMD capasitor X7R	470pF Ò10%	Murata	
CG0471	C64	SMD capasitor X7R	470pF Ò10%	Murata	
CG0222	C640	SMD capasitor X7R	2.2nF Ò10%	Murata	
CG0332	C641	SMD capasitor X7R	3.3nF Ò10%	Murata	
CU2105	C642	SMD tantal	1uF/10V	AVX	TAJR105M010R
CF0105	C65	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0569	C650	SMD capasitor NPO	5.6pF Ò0,25pF	Murata	
CU1225	C651	SMD tantal	2.2uF/10V	AVX	TAJS225M010R
CG0102	C652	SMD capasitor X7R	1nF Ò10%	Murata	
CG0102	C653	SMD capasitor X7R	1nF Ò10%	Murata	
CU1225	C654	SMD tantal	2.2uF/10V	AVX	TAJS225M010R
CG0104	C66	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C660	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C661	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C663	SMD capasitor X7R	100pF Ò5%	Murata	
CG0104	C67	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C68	SMD capasitor X7R	22nF 20%	Murata	
CG0101	C69	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C7	SMD capasitor X7R	100pF Ò5%	Murata	
CG0104	C70	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C71	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C72	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C73	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C74	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C75	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C76	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C77	SMD capasitor X7R	100pF Ò5%	Murata	
CG0103	C78	SMD capasitor X7R	10nF Ò10%	Murata	
CU3106	C79	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CF0105	C8	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0104	C80	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0102	C81	SMD capasitor X7R	1nF Ò10%	Murata	

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CG0221	C82	SMD capasitor X7R	220pF Ò10%	Murata	
CG0103	C83	SMD capasitor X7R	10nF Ò10%	Murata	
CG0103	C84	SMD capasitor X7R	10nF Ò10%	Murata	
CG0101	C85	SMD capasitor X7R	100pF Ò5%	Murata	
CG0104	C86	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C87	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0470	C88	SMD capasitor NPO	47pF Ò5%	Murata	
CC2103	C89	SMD capasitor	10nF 10% 100V X7R	AVX	12061C103KAT2A
CF0105	C9	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0101	C90	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C91	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C915	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C916	SMD capasitor X7R	100pF Ò5%	Murata	
CG0102	C92	SMD capasitor X7R	1nF Ò10%	Murata	
CG0101	C93	SMD capasitor X7R	100pF Ò5%	Murata	
CG0472	C94	SMD capasitor X7R	4,7nF/Ò10%/25V	AVX	
CG0101	C95	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C96	SMD capasitor X7R	100pF Ò5%	Murata	
CU3106	C97	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0101	C98	SMD capasitor X7R	100pF Ò5%	Murata	
CG0101	C99	SMD capasitor X7R	100pF Ò5%	Murata	
DS1070	D1	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DS1070	D2	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DY0016	D3	SMD shottky diode	40V/1,33A VF=0.55V	Shindengen	M1FS4
DS1070	D32	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DS1070	D4	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DC0229	D420	SMD silicon tuning diode	1V/19pF...4V/11pF	Toshiba	1SV229
DC0229	D460	SMD silicon tuning diode	1V/19pF...4V/11pF	Toshiba	1SV229
DS0019	D5	SMD diode	100v / 200mA	Philips	BAS19
DY0071	D510	SMD shottky diode	70V 15mA	SGS-Thomso	BAS 70-04
DY0384	D610	SMD shottky barrier diod	15V/200mA/VF=0.35V	Toshiba	1SS384-TE85L
DZ3327	D611	SMD zenerdiode	2V7 5% 500mW	Temic	BZM55C2V7-TR
DY0062	D660	SMD shcottky diode	40V 20mA	Siemens	BAT 62
AF4300	F1	SMD fuse	3A	Littlefuse	0430003.WR
IX5061	I1	Power supply reset monit	or/ 2,6V	Impala	ILC5061M-26
IA0311	I10	Audio amplifier	2-5,5V / 250mW	Texas Inst	TPA311DGN
IR7080	I11	Regulator	2,85V 100mA/SOT23-5	Impala	ILC7081AIM5-28
IR7062	I12	Regulator LDO	3,0 V /150mA	Impala	ILC7062CM-30
IX0826	I13	EL-lamp driver	4,5V / 120V	Supertex	HV826MG
IG3010	I3	Digital-Asic		Hitachi	HG71C
IS2335	I400	Dual freg.synthesizer	PLL+prescaler 1.2GHz	NationalSe	LMX23352TMX
IR1230	I490	Regulator	3,0V	Toko	TK11230BM
IR1230	I495	Regulator	3,0V	Toko	TK11230BM
IG2048	I5	SIS ASIC		Atmel	
IV6070	I550	FM IF-system		Philips	SA607DK
IM8011	I6	Flash memory	8 Mb (512x16/1Mx8) 3V	Atmel	AT49BV8011-90TI
IR1230	I600	Regulator	3,0V	Toko	TK11230BM
IC7S00	I610	2-input NAND	SOT-23-5	NationalSe	NC7S00M5X
IA2211	I640	Single op. amp.	2,7 - 10V 150mW	Texas Inst	TLV2211CDBV
IW2391	I650	RF-power amplifier	450MHz-485MHz	Iwatsu	HAB239B
IX2339	I7	Audio processor	CMOS base band pros	AsahiKasei	AK2339
IC0454	I8	SMD 2x multip./demultip.		Toshiba	TC4W53FU-TE 12L
IX0264	I9	Scrambler	Compatible with NMT450/900	CML	CD264
LC0567	L1	SMD inductors	560uH 10% 3,2x2,5mm	Murata	LQH3C561K34
LC1224	L420	SMD inductor	220 nH/+-10%	Coilcraft	0805CS-221XKBC
LC1224	L460	SMD inductor	220 nH/+-10%	Coilcraft	0805CS-221XKBC
LC3183	L480	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2
LC3472	L500	SMD inductor	4n7 -+2%	Panasonic	ELJRE4N7ZF2

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
LC3682	L501	SMD inductor	6n8 -+2%	Panasonic	ELJRE6N8ZF2
LC3183	L502	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2
LC3183	L503	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2
LC3822	L504	SMD inductor	8n2 -+2%	Panasonic	ELJRE8N2ZF2
LC3273	L510	SMD inductor	27nH -+2%	Panasonic	ELJRE27NGF2
LC3153	L513	SMD inductor	15n -+2%	PANA-SONIC	ELJRE15NGF2
LC3334	L520	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LC3334	L521	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LC3224	L530	SMD inductor	220nH+-10% magnet.shielded	TDK	MLF1608DR22KT
LC3104	L531	SMD inductor	100nH+-10% magnet.shielded	TDK	MLF1608DR10KT
LC3334	L540	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LI1687	L550	SMD Quad. coil	680uH/180pF 455kHz	Toko	303LC-1150
LC3472	L600	SMD inductor	4n7 -+2%	Panasonic	ELJRE4N7ZF2
LC4106	L610	SMD inductor	10uH -+10%	TDK	MLF3216E100KT
LC3273	L620	SMD inductor	27nH -+2%	Panasonic	ELJRE27NGF2
AV2200	M1	Vibra motor		SanyoSeimi	BF-2175
LT1019	M510	RF-transformer SM-T4	1:1:1, 4,5->600MHz	Neosid	00 5532 05
QS1847	Q1	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF6702	Q10	P-channel MOSFET	Vdss 20V rds 0,2 ohm	I&R	IRLMS6702
QS0060	Q11	SMD transistor arrey	NPN/PNP 100mA/50V	Siemens	BCR 10PN
QS1847	Q2	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS1857	Q3	piensignaali yleistransi	PNP 100mA/45V hfe=220...470	Philips	BC857BW
QS1847	Q4	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QA4867	Q420	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q430	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QS1847	Q440	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QA4867	Q460	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q470	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q480	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QS1847	Q5	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF0320	Q500	SMD Dual FET	N-channel	Toshiba	3SK320
QF0320	Q520	SMD Dual FET	N-channel	Toshiba	3SK320
QA4867	Q530	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QAA193	Q610	SMD RF-transistor	6GHz/300mW F=1.9dB	Philips	BFR93AW
QA4867	Q620	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q621	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QF0138	Q630	N-channel fet	50V/0,2A	Motorola	BSS138LT1
QF9430	Q631	SMD p-channel MOSFET	20V/4,8A/Rds=0.06	Siliconix	Si9430DY
QS1847	Q640	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS1847	Q641	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS0031	Q642	SMD transistor	PNP 1A/25V	Sanyo	2SB1119S-TD
QS1857	Q7	piensignaali yleistransi	PNP 100mA/45V hfe=220...470	Philips	BC857BW
QS1847	Q8	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF0200	Q9	N-channel MOSFET	20V/0,73A	TEMIC	TN0200T
RG0104	R1	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R10	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R101	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R102	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0101	R103	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R104	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R105	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0222	R107	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0472	R108	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0224	R109	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R11	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0105	R110	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0105	R111	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0102	R12	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R13	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0105	R14	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0105	R15	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R16	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R17	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R18	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R19	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R2	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R20	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R21	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R22	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R23	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0564	R24	SMD resistor	560k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R25	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R26	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R27	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R28	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R29	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0105	R3	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0823	R30	SMD resistor	82k 5% 0.063W	Kamaya	RMC1/16S
RG0471	R31	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R32	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R33	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R34	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R35	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0223	R36	SMD resistor	22k 5% 0.063W	Kamaya	RMC1/16S
RF0106	R37	SMD resistor	10 M 5% 0.125 W	Kamaya	
RG0105	R38	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R39	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R4	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R40	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0470	R400	SMD resistor	47R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R401	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R402	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0470	R403	SMD resistor	47R 5% 0.063W	Kamaya	RMC1/16S
RG0472	R404	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R405	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R406	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0105	R41	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0272	R411	SMD resistor	2k7 5% 0.063W	Kamaya	RMC1/16S
RG0152	R412	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0152	R413	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0100	R414	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R42	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0682	R420	SMD resistor	6k8 5% 0.063W	Kamaya	RMC1/16S
RG0152	R421	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0680	R422	SMD resistor	68R 5% 0.063W	Kamaya	RMC1/16S
RG0224	R43	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0220	R430	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0392	R431	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0102	R432	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0151	R433	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0151	R434	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R435	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R44	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R440	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0100	R441	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0473	R442	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R443	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S

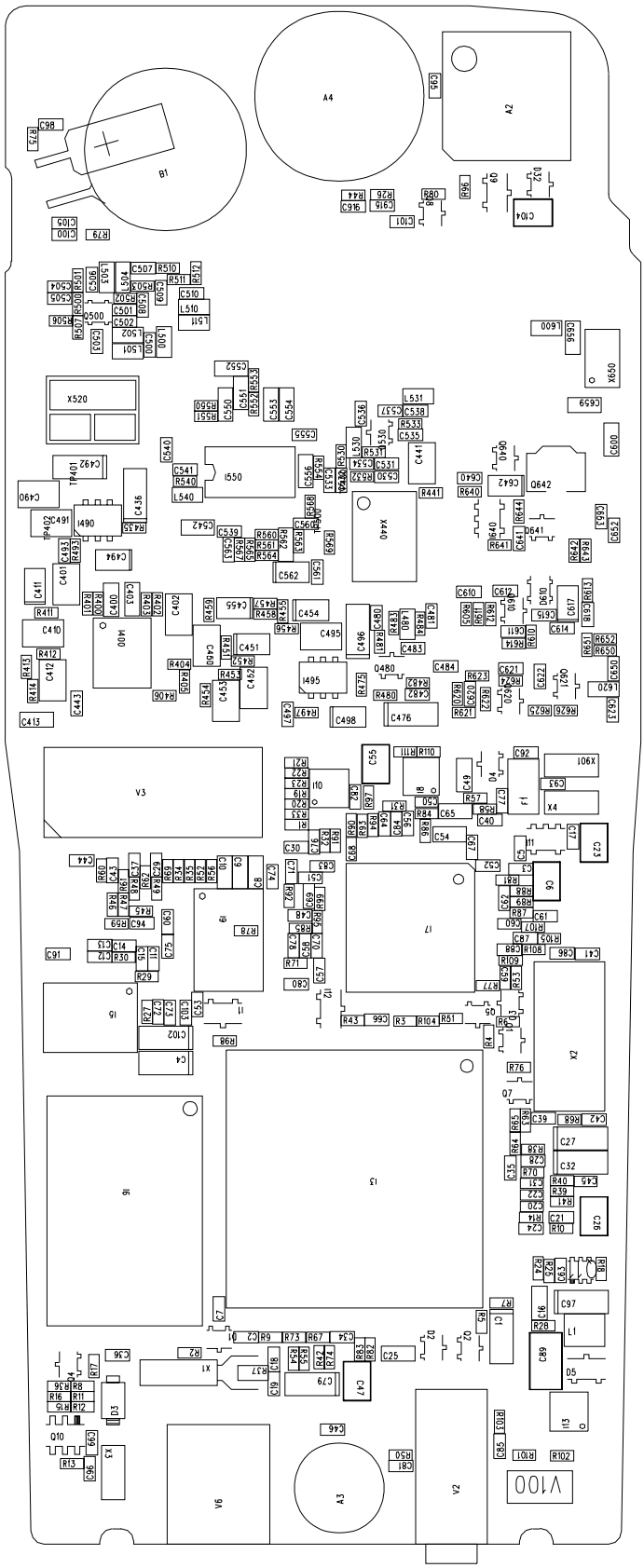
CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0103	R444	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R45	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0182	R451	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0472	R452	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R453	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0100	R454	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0183	R455	SMD resistor	18k 5% 0.063W	Kamaya	RMC1/16S
RG0823	R456	SMD resistor	82k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R457	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R458	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0151	R459	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R46	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0822	R460	SMD resistor	8k2 5% 0.063W	Kamaya	RMC1/16S
RG0182	R461	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0101	R462	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R47	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0220	R470	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0392	R471	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0102	R472	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R473	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R474	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R475	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R48	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0182	R480	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0392	R481	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0220	R482	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R483	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0221	R484	SMD resistor	220R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R49	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R493	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R497	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R5	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R50	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0680	R501	SMD resistor	68R 5% 0.063W	Kamaya	RMC1/16S
RG0561	R502	SMD resistor	560R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R503	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R506	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0333	R507	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R51	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0271	R510	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0180	R511	SMD resistor	18R 5% 0.063W	Kamaya	RMC1/16S
RG0271	R512	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R513	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R52	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R520	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0472	R521	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0102	R522	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0471	R523	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R53	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0100	R530	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0333	R531	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R532	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0471	R533	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R54	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R540	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0104	R55	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0272	R550	SMD resistor	2k7 5% 0.063W	Kamaya	RMC1/16S
RG0102	R551	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0222	R552	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0332	R553	SMD resistor	3k3 5% 0.063W	Kamaya	RMC1/16S

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0333	R554	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R56	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0393	R560	SMD resistor	39k 5% 0.063W	Kamaya	RMC1/16S
RG0683	R561	SMD resistor	68k 5% 0.063W	Kamaya	RMC1/16S
RTN157	R562	(RNT157)NTC resistor	22k 5% B=3750	Ohizumi	157-223-65001
RG0102	R563	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0682	R564	SMD resistor	6k8 5% 0.063W	Kamaya	RMC1/16S
RG0473	R565	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0683	R567	SMD resistor	68k 5% 0.063W	Kamaya	RMC1/16S
RG0333	R568	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0222	R569	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0105	R57	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0220	R570	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R58	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R59	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R6	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R60	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0473	R600	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R605	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R61	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R610	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R611	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R612	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0151	R613	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R614	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R62	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0220	R620	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R621	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0821	R622	SMD resistor	820R 5% 0.063W	Kamaya	RMC1/16S
RG0222	R623	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0222	R624	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0222	R625	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0100	R626	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R63	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R630	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R631	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R632	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R64	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R640	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0332	R641	SMD resistor	3k3 5% 0.063W	Kamaya	RMC1/16S
RG0102	R642	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0271	R643	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0271	R644	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R65	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0391	R650	SMD resistor	390R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R651	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0391	R652	SMD resistor	390R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R660	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0184	R661	SMD resistor	180k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R662	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R663	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R67	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R68	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R69	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0334	R7	SMD resistor	330k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R70	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R71	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RTN154	R72	SMD NTC-resistor	150k 5% B=4100	Hokuriku	157-154-45001TP
RG0104	R73	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R74	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S

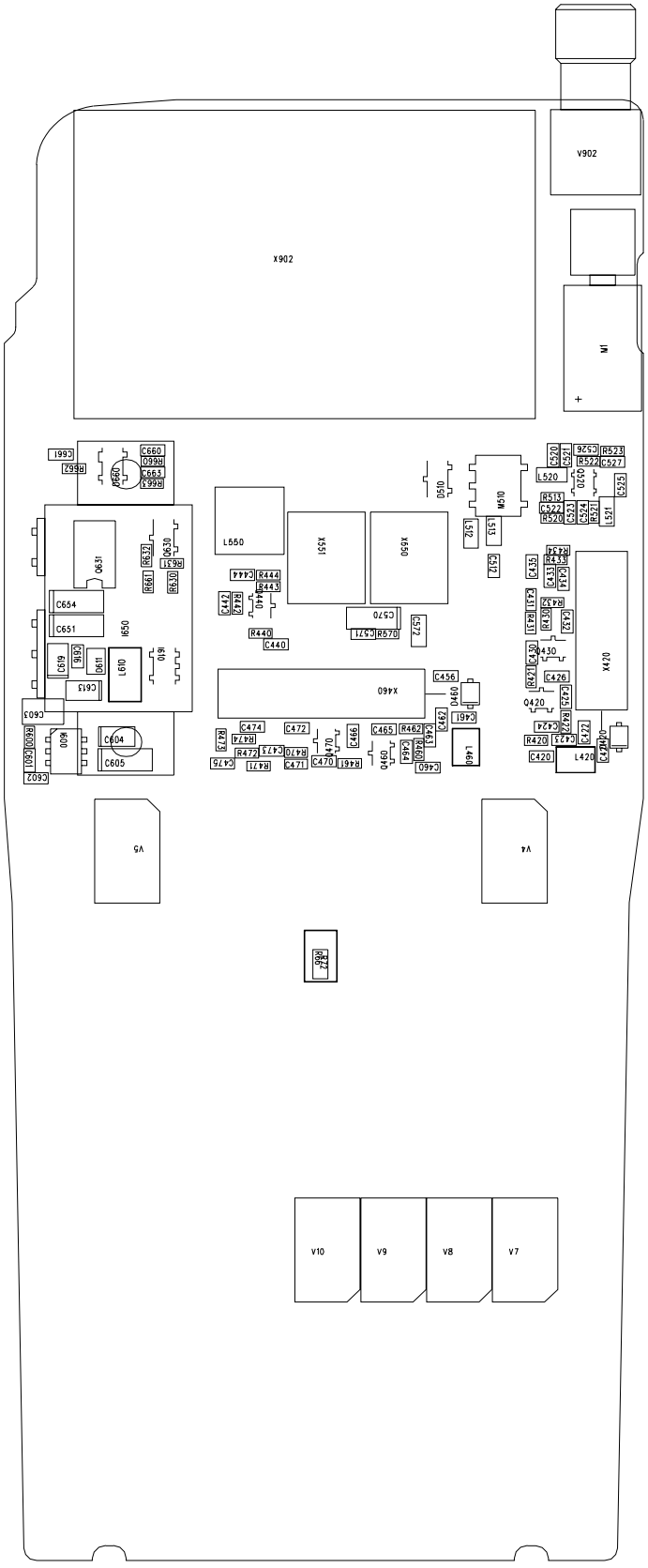
CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0101	R75	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R76	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R77	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0100	R79	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R8	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R80	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0563	R81	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0222	R82	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0102	R83	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0563	R84	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R85	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R86	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0153	R87	SMD resistor	15k 5% 0.063W	Kamaya	RMC1/16S
RG0153	R88	SMD resistor	15k 5% 0.063W	Kamaya	RMC1/16S
RG0274	R89	SMD resistor	270k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R9	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0223	R90	SMD resistor	22k 5% 0.063W	Kamaya	RMC1/16S
RG0393	R91	SMD resistor	39k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R92	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R93	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R94	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R95	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R96	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R97	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R98	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R99	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
VN0009	V2	Stereo jack	2,5mm miniature	Hosiden	HSJ1603-010020
VW0109	V3	Connector	32-pin 1mm pitch	Elco	589158032000011
VM0002	V4	Modulat cntact	2pin 2A/pin	Bours	70AAJ002M0
VM0002	V5	Modulat cntact	2pin 2A/pin	Bours	70AAJ002M0
VW0111	V6	DC-jack	3,5 x1,0mm	Elka Ltd	AJ232-SMT
VR0248	V902	SMA connector		?????????	982589
X32766	X1	SMD crystal	32.768kHz +-30ppm	MicroCryst	MS1V-TK
X48007	X2	SMD crystal	4,8MHz CL=16pF 30ppm	Citezen	CS 20
LF0062	X3	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
LF0062	X4	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
XR1650	X420	Ceramic coaxial resonato	650MHz 4x4x13mm Q>250	Siemens	B69614-G0655-B42
XO5130	X440	VCTCXO	13.0 MHz	TEW	TTS10V
XR1550	X460	Ceramic coaxial resonato	550MHz 4x4x14,5mm Q>250	Siemens	B69614-G0550-BA4
XF7845	X520	Crystal filter	78.45MHz 7x5x1.35mm	TEW	MF78R
XC3450	X550	Ceramic IF-filter	450Khz	Murata	CFUCG450E
XC4450	X551	Ceramic IF-filter	450kHz	Murata	CFUCG450F
XI0005	X650	Directional coupler	NMT450	MKT Taisei	DCS3120-09
LF0062	X901	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
OD1085	X902	Duplexer PL	Rx463/Tx453MHz	LK-Product	S2-A9/NP1.0
PC2200	Y254	PCB for OC2200		Elprintta	

Last update 14.08.00

5.7.2 Layouts

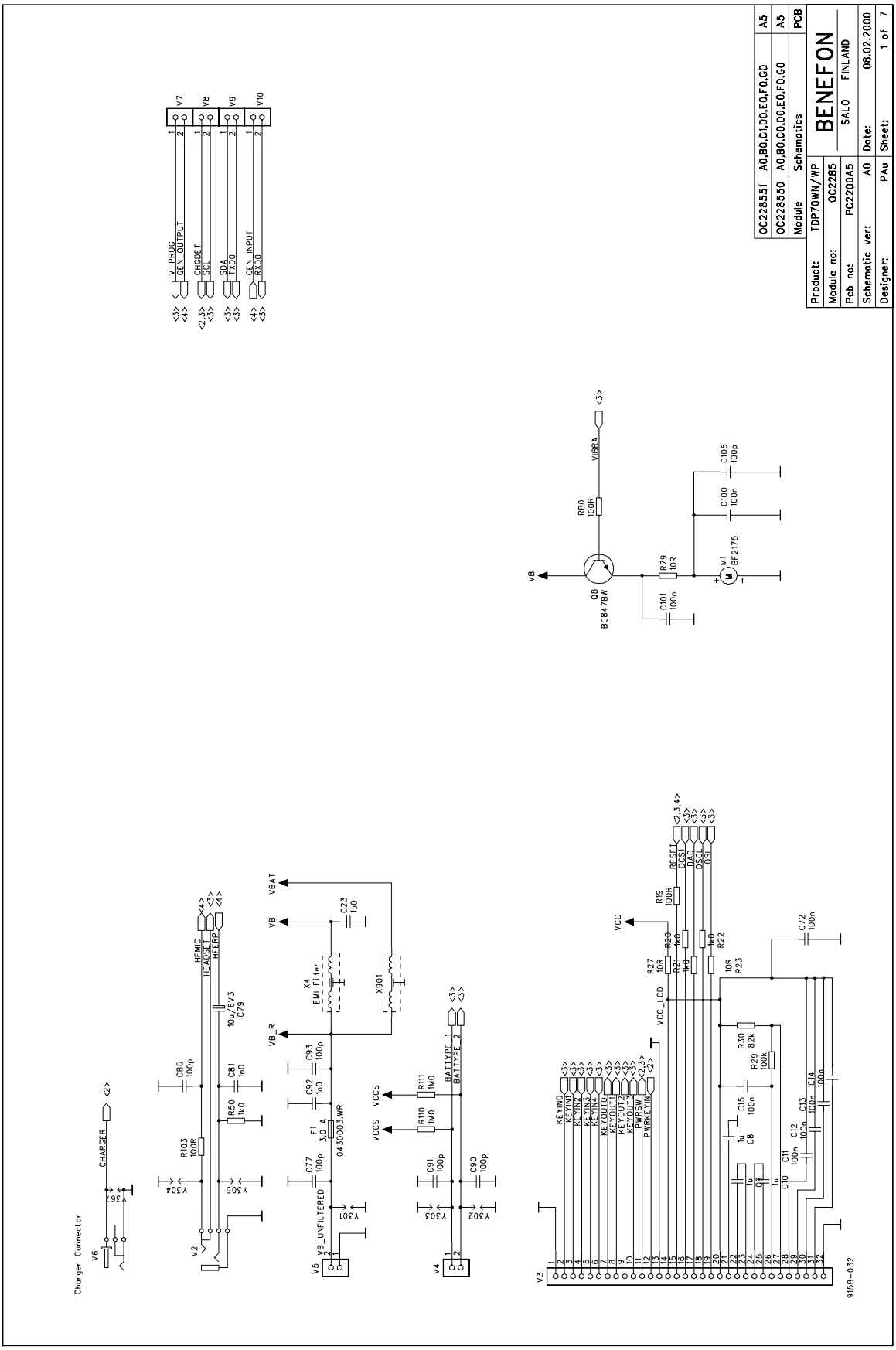


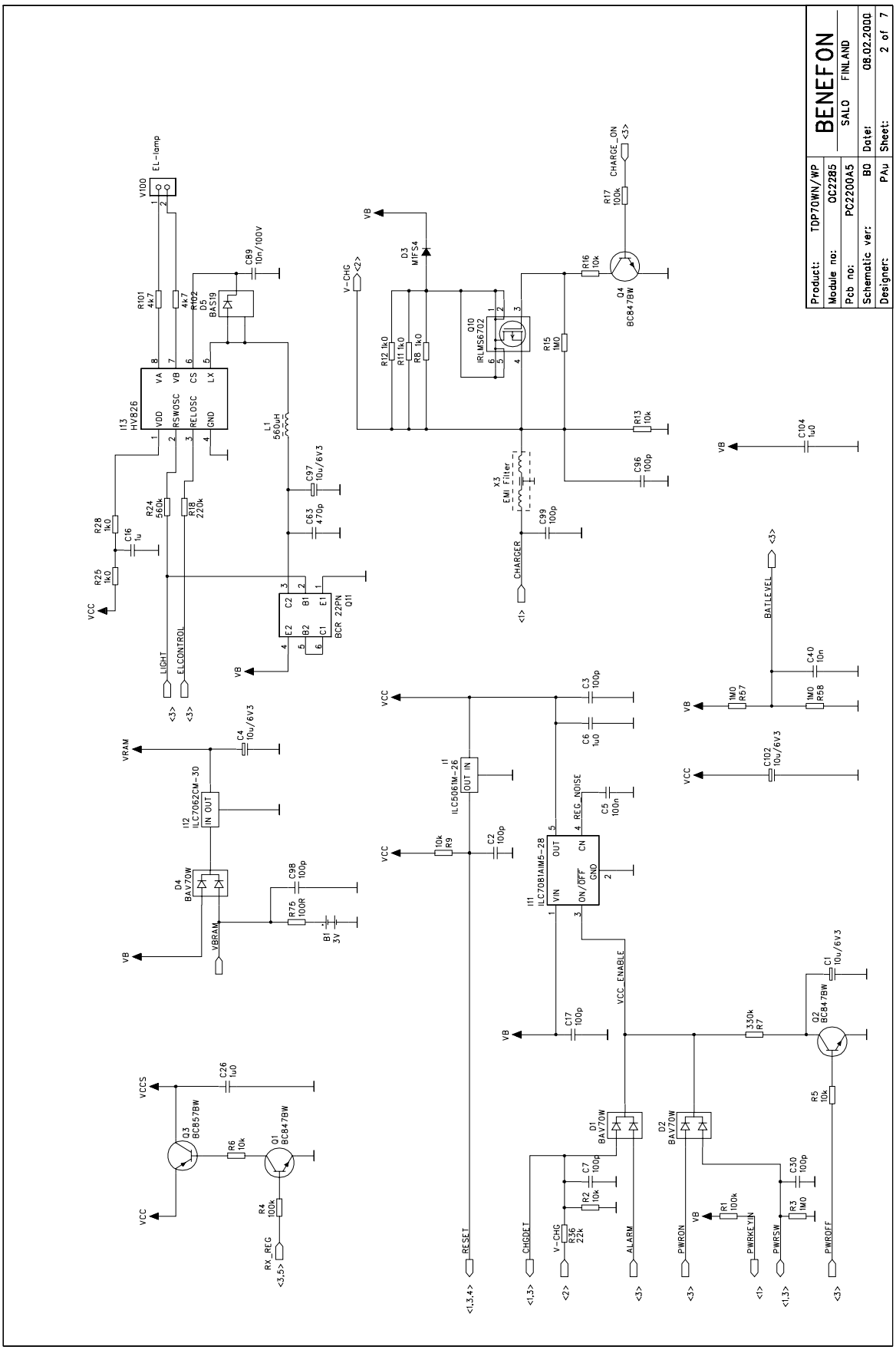
PC2200A5 021



PC2200A5 021

5.7.3 Circuit Diagrams

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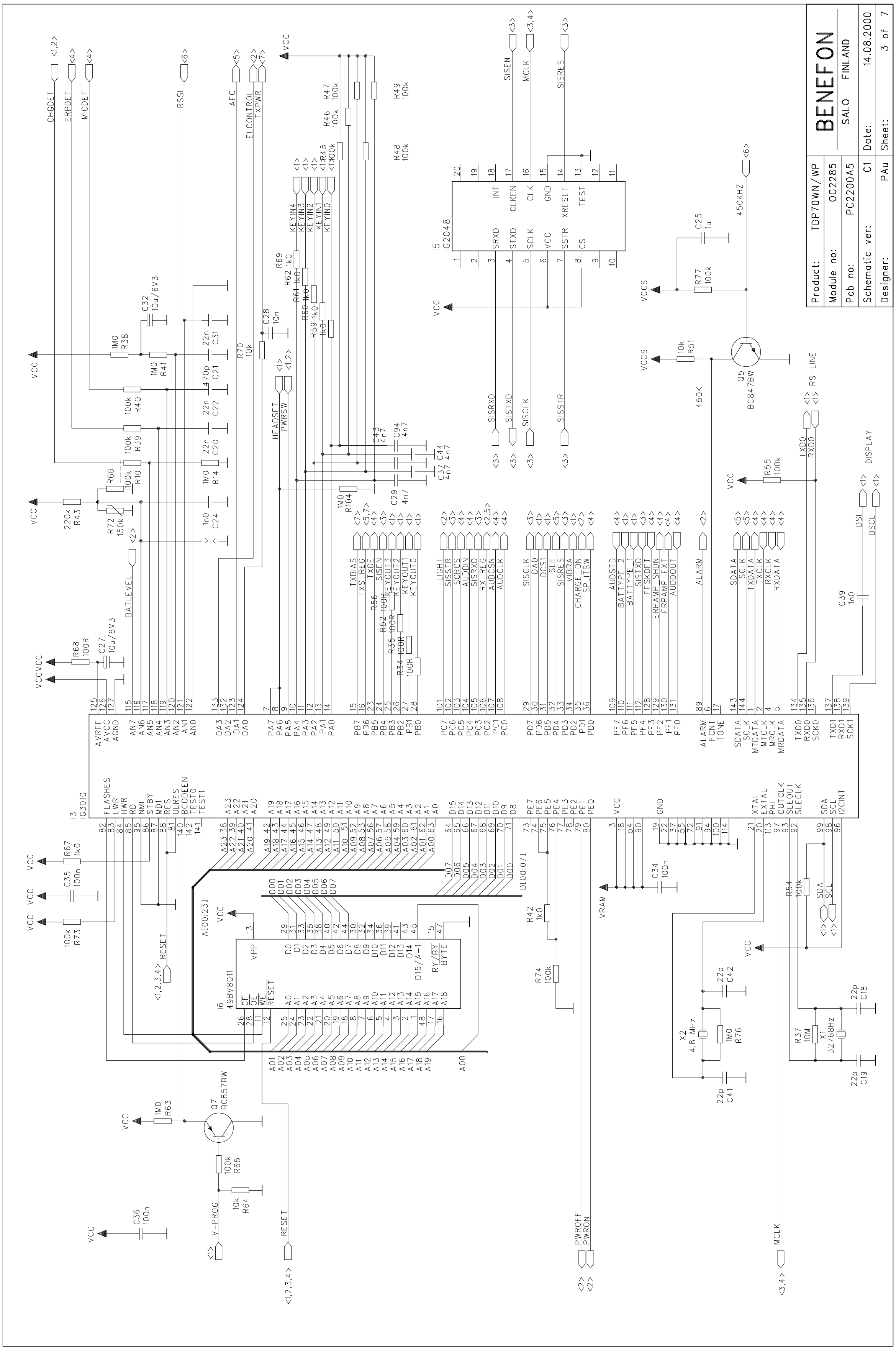
Module no: OC2285
Pcb no: PC2200A5
Schematic ver: B0
Designer: PAu
SALO FINLAND
Date: 08.02.2000
Sheet: 2 of 7
EL-lamp
HVB26
ILC7062CM-30
ILC5061M-26
ILC7081AIM5-28
BCR 22PN
IRLMS6702
WIFS4
BAS19
BAV70W
BC847BW
BC857BW
EMI Filter
LIGHT
ELCONTROL
CHARGER
CHARGE_ON
BATLEVEL
VCC_ENABLE
REG_NOISE
RESET
CHGDET
V-CHG
ALARM
PWRON
PWRKEYIN
PWRSW
PWROFF
RX_REG
VRAM
VBRAM
VCCS
VCC
VB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SALO FINLAND
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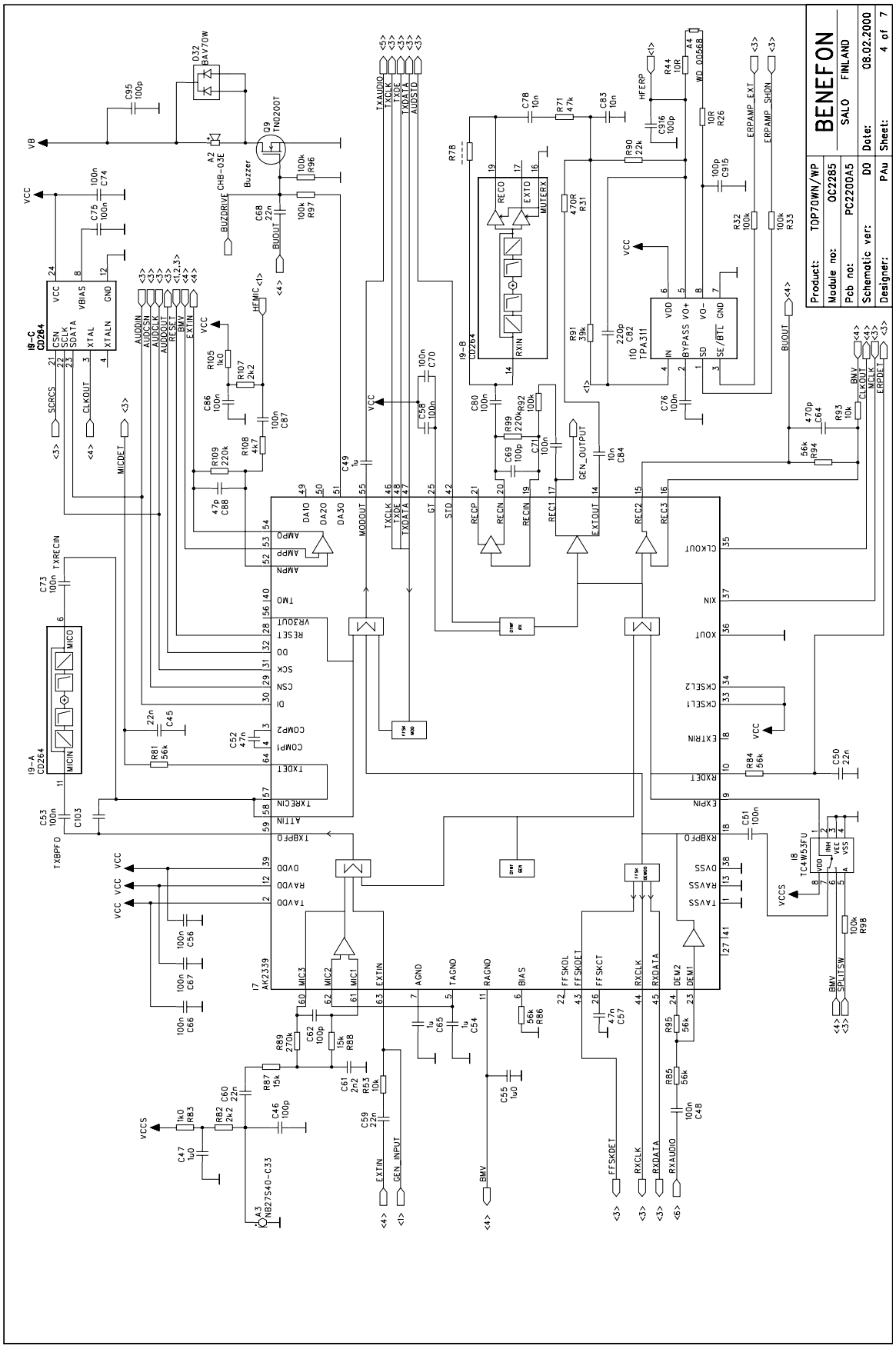
Module no: OC2285
Pcb no: PC2200A5
Schematic ver: C1
Designer: PAu
Date: 14.08.2000
Sheet: 3 of 7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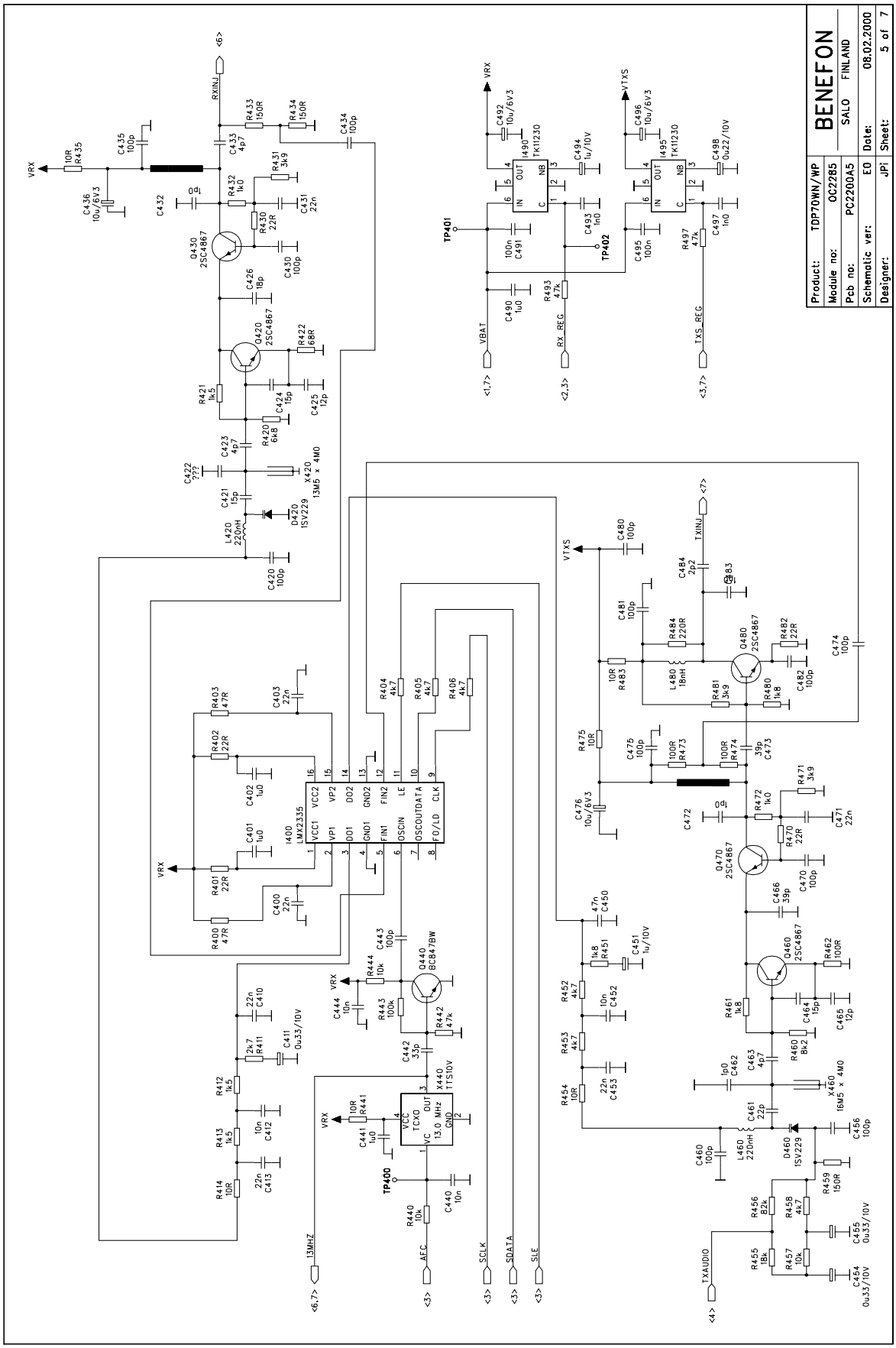
Pcb no: PC2200A5
Schematic ver: D0
Designer: PAu
SALO FINLAND
Date: 08.02.2000
Sheet: 4 of 7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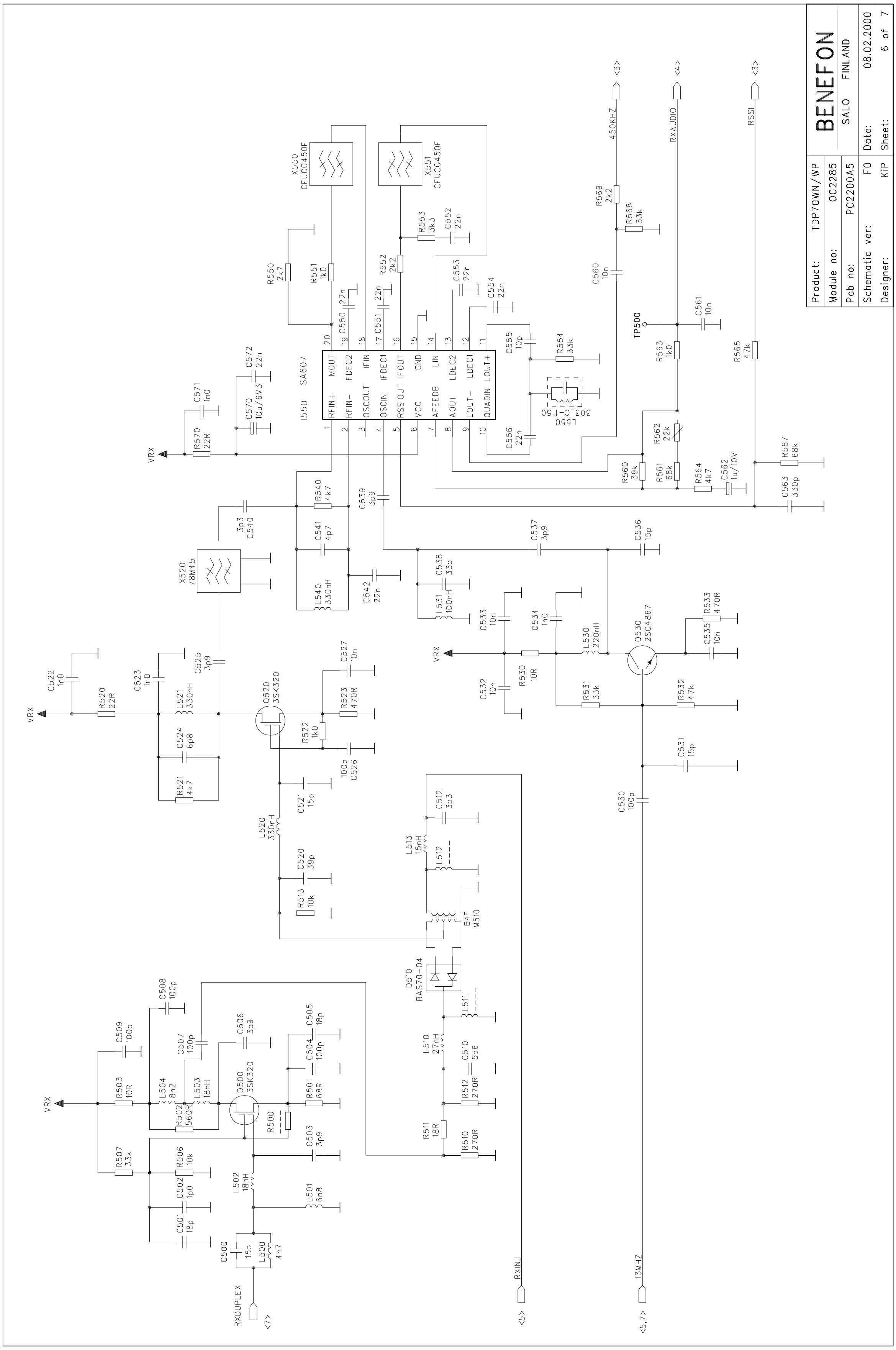
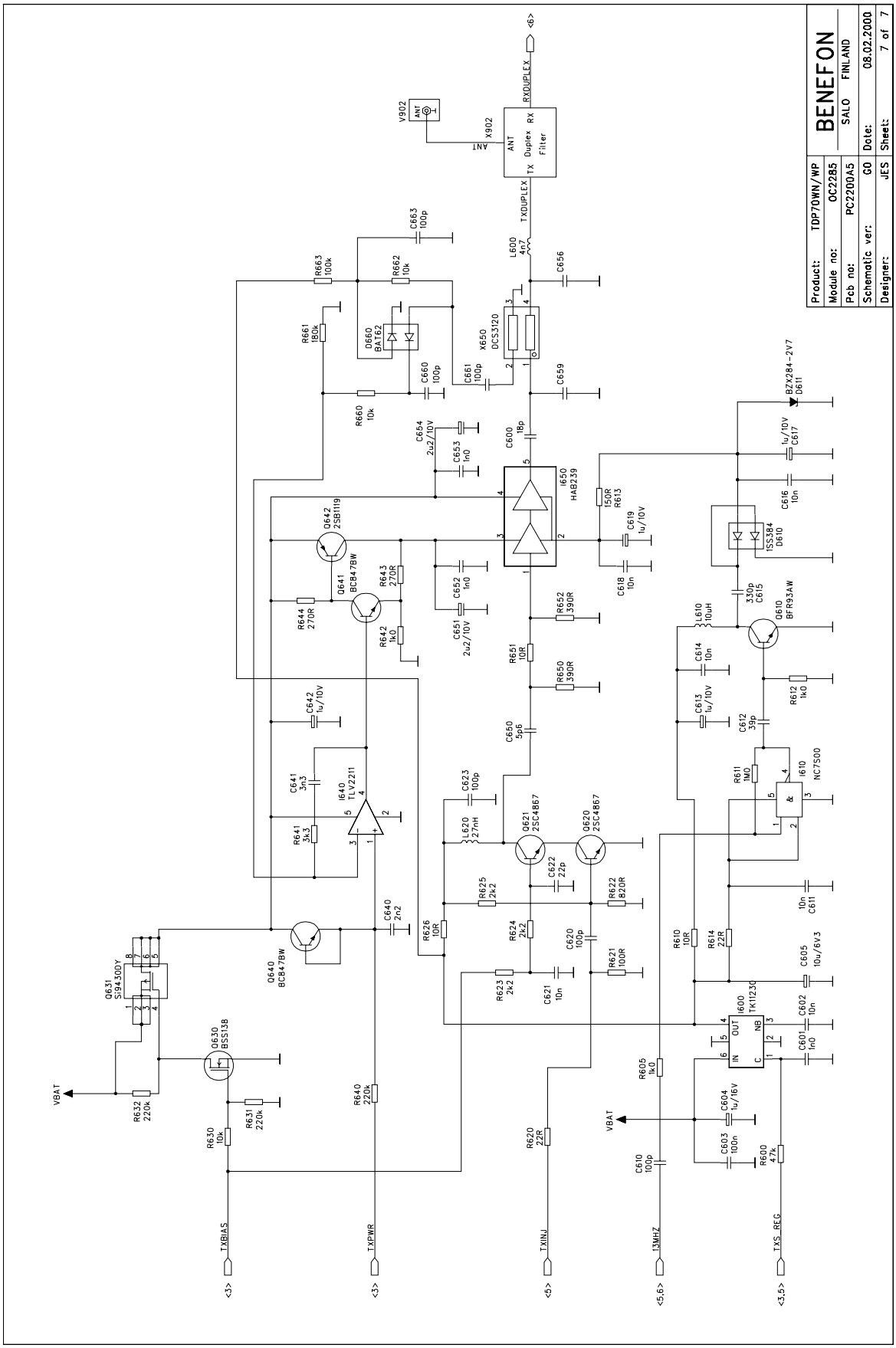
Module no: OC2285
Pcb no: PC2200A5
Schematic ver: E0
Designer: JPi
SALO FINLAND
Date: 08.02.2000
Sheet: 5 of 7


BENEFON
SALO FINLAND
Product: TDP70WN/WP
Module no: OC2285
Pcb no: PC2200A5
Schematic ver: F0
Date: 08.02.2000
Designer: KiP
Sheet: 6 of 7
SA607
450KHZ
RXAUDIO
RSSI
VRX
RXDUPLEX
RXINJ
13MHZ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Product: TDP70WN/WP
Module no: OC2285
Pcb no: PC2200A5
Schematic ver: G0
Designer: JES
SALO FINLAND
Date: 08.02.2000
Sheet: 7 of 7
RXDUPLEX
TXDUPLEX
ANT
Duplex Filter
RX
TX
V902
X902
X650 DCS3120
D660 BA162
I650 HAB239
I640 TLV2211
I610 NC7S00
I600 TK11230
Q642 2SB1119
Q641 BC847BW
Q640 BC847BW
Q631 SI9430DY
Q630 BSS138
Q621 2SC4867
Q620 2SC4867
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D611 BZX284-2V7
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VBAT
TXBIAS
TXPWR
TXINJ
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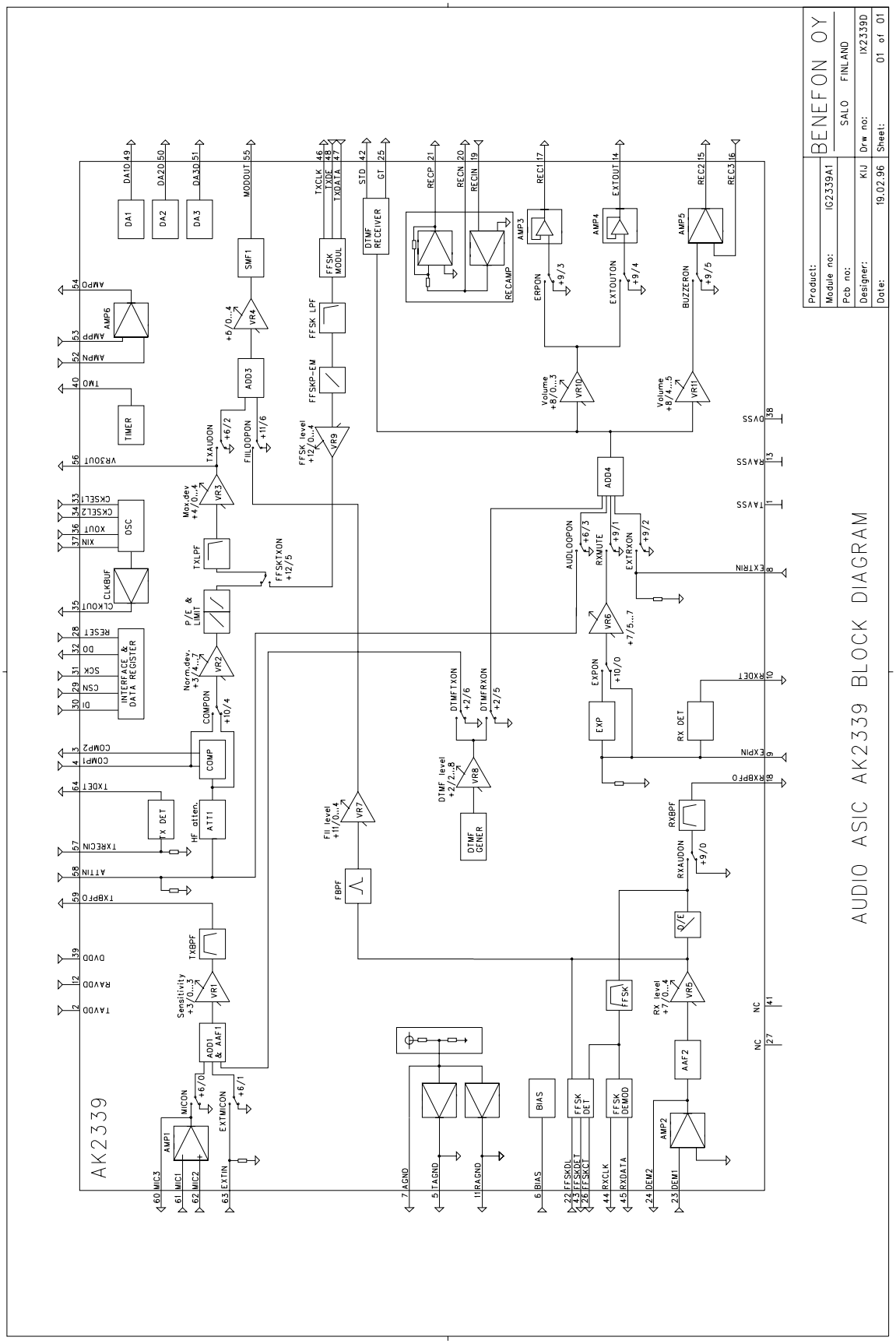
TXS_REG


AUDIO ASIC AK2339 BLOCK DIAGRAM
AK2339
BENEFON OY
SALO FINLAND
Product:
Module no: IC2339A1
Pcb no:
Designer: KiU
Date: 19.02.96
Drw no: IX2339D
Sheet: 01 of 01

5.8 Module OC2295 (The Layout PC2200 A5)

OC2295_A5

5.8.1 Parts list

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
AE0024	A2	Buzzer	10x10x3mm 1,5V/70mA	Citizen	CHB-03E
AM1840	A3	Electret Condenser micr.	with rubber holder	?????????	OBG-18S40-C33CEC
AE0023	A4	Dynamic transducer	13,3x2,6 low Z	Philips	WD00518/32U
AB0039	B1	Lithium battery	3V/50mAh	Rayovac	BR 1225SM2
CU3106	C1	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CF0105	C10	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0104	C100	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C101	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CU3106	C102	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0104	C103	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CH0105	C104	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0101	C105	SMD capasitor X7R	100pF 5%	Murata	
CG0104	C11	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C12	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C13	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C14	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C15	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CF0105	C16	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0101	C17	SMD capasitor X7R	100pF 5%	Murata	
CG0220	C18	SMD capasitor NPO	22pF 5%	Murata	
CG0220	C19	SMD capasitor NPO	22pF 5%	Murata	
CG0101	C2	SMD capasitor X7R	100pF 5%	Murata	
CG0223	C20	SMD capasitor X7R	22nF 20%	Murata	
CG0471	C21	SMD capasitor X7R	470pF 10%	Murata	
CG0223	C22	SMD capasitor X7R	22nF 20%	Murata	
CD0105	C23	SMD capasitor	1uF/16V%10% X5R	TaiyoYuden	EMK212BJ105KG-T
CG0102	C24	SMD capasitor X7R	1nF 10%	Murata	
CF0105	C25	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CH0105	C26	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CU3106	C27	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0103	C28	SMD capasitor X7R	10nF 10%	Murata	
CG0472	C29	SMD capasitor X7R	4,7nF/10%/25V	AVX	
CG0101	C3	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C30	SMD capasitor X7R	100pF 5%	Murata	
CG0223	C31	SMD capasitor X7R	22nF 20%	Murata	
CU3106	C32	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0104	C34	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C35	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C36	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0472	C37	SMD capasitor X7R	4,7nF/10%/25V	AVX	
CG0103	C39	SMD capasitor X7R	10nF 10%	Murata	
CU3106	C4	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0103	C40	SMD capasitor X7R	10nF 10%	Murata	
CF0223	C400	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CH0105	C401	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CH0105	C402	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CF0223	C403	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0220	C41	SMD capasitor NPO	22pF 5%	Murata	
CD0223	C410	SMD capasitor	22 nF 10% 50 V X7R	Philips	

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CU0334	C411	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R
CD0103	C412	SMD capasitor	10 nF 10% 50 V X7R	Philips	
CF0223	C413	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0220	C42	SMD capasitor NPO	22pF 5%	Murata	
CG0101	C420	SMD capasitor X7R	100pF 5%	Murata	
CG0150	C421	SMD capasitor NPO	15pF 5%	Murata	
CG0479	C423	SMD capasitor NPO	4.7pF 0,25pF	Murata	
CG0150	C424	SMD capasitor NPO	15pF 5%	Murata	
CG0120	C425	SMD capasitor NPO	12pF 5%	Murata	
CG0180	C426	SMD capasitor NPO	18pF 5%	Murata	
CG0472	C43	SMD capasitor X7R	4,7nF/10%/25V	AVX	
CG0101	C430	SMD capasitor X7R	100pF 5%	Murata	
CG0223	C431	SMD capasitor X7R	22nF 20%	Murata	
CG0109	C432	SMD capasitor NPO	1.0pF 0,25pF	Murata	
CG0479	C433	SMD capasitor NPO	4.7pF 0,25pF	Murata	
CG0101	C434	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C435	SMD capasitor X7R	100pF 5%	Murata	
CU3106	C436	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0472	C44	SMD capasitor X7R	4,7nF/10%/25V	AVX	
CG0103	C440	SMD capasitor X7R	10nF 10%	Murata	
CH0105	C441	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0330	C442	SMD capasitor NPO	33pF 5%	Murata	
CG0101	C443	SMD capasitor X7R	100pF 5%	Murata	
CG0103	C444	SMD capasitor X7R	10nF 10%	Murata	
CG0223	C45	SMD capasitor X7R	22nF 20%	Murata	
CD0473	C450	SMD capasitor	47 nF 10% 50 V X7R	Philips	
CU2105	C451	SMD tantal	1uF/10V	AVX	TAJR105M010R
CD0103	C452	SMD capasitor	10 nF 10% 50 V X7R	Philips	
CD0223	C453	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CU0334	C454	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R
CU0334	C455	SMD tantalium capasitor	0.33uF/20V/20%	AVX/KYO-CER	TAJR334M020R
CG0101	C456	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C46	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C460	SMD capasitor X7R	100pF 5%	Murata	
CG0220	C461	SMD capasitor NPO	22pF 5%	Murata	
CG0109	C462	SMD capasitor NPO	1.0pF 0,25pF	Murata	
CG0479	C463	SMD capasitor NPO	4.7pF 0,25pF	Murata	
CG0150	C464	SMD capasitor NPO	15pF 5%	Murata	
CG0120	C465	SMD capasitor NPO	12pF 5%	Murata	
CG0390	C466	SMD capasitor NPO	39pF 5%	Murata	
CH0105	C47	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CG0101	C470	SMD capasitor X7R	100pF 5%	Murata	
CG0223	C471	SMD capasitor X7R	22nF 20%	Murata	
CG0109	C472	SMD capasitor NPO	1.0pF 0,25pF	Murata	
CG0390	C473	SMD capasitor NPO	39pF 5%	Murata	
CG0101	C474	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C475	SMD capasitor X7R	100pF 5%	Murata	
CU3106	C476	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0104	C48	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C480	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C481	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C482	SMD capasitor X7R	100pF 5%	Murata	
CG0109	C483	SMD capasitor NPO	1.0pF 0,25pF	Murata	
CG0229	C484	SMD capasitor NPO	2.2pF 0,25pF	Murata	
CF0105	C49	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CH0105	C490	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CD0104	C491	SMD capasitor	100 nF 10% 50 V X7R	Philips	

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CU3106	C492	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0102	C493	SMD capasitor X7R	1nF 10%	Murata	
CU2105	C494	SMD tantal	1uF/10V	AVX	TAJR105M010R
CD0104	C495	SMD capasitor	100 nF 10% 50 V X7R	Philips	
CU3106	C496	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0102	C497	SMD capasitor X7R	1nF 10%	Murata	
CU0224	C498	SMD tanlat	0.22uF/20V/10%	AVX/KYO-CER	TAJR224K020R
CG0104	C5	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C50	SMD capasitor X7R	22nF 20%	Murata	
CG0150	C500	SMD capasitor NPO	15pF 5%	Murata	
CG0180	C501	SMD capasitor NPO	18pF 5%	Murata	
CG0109	C502	SMD capasitor NPO	1.0pF 0,25pF	Murata	
CG0399	C503	SMD capasitor NPO	3.9pF 0,25pF	Murata	
CG0101	C504	SMD capasitor X7R	100pF 5%	Murata	
CG0180	C505	SMD capasitor NPO	18pF 5%	Murata	
CG0399	C506	SMD capasitor NPO	3.9pF 0,25pF	Murata	
CG0101	C507	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C508	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C509	SMD capasitor X7R	100pF 5%	Murata	
CG0104	C51	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0569	C510	SMD capasitor NPO	5.6pF 0,25pF	Murata	
CG0339	C512	SMD capasitor NPO	3.3pF 0,25pF	Murata	
CG0473	C52	SMD capasitor Y5V	47nF/10%/25V	AVX	
CG0390	C520	SMD capasitor NPO	39pF 5%	Murata	
CG0150	C521	SMD capasitor NPO	15pF 5%	Murata	
CG0102	C522	SMD capasitor X7R	1nF 10%	Murata	
CG0102	C523	SMD capasitor X7R	1nF 10%	Murata	
CG0689	C524	SMD capasitor NPO	6.8pF 0,25pF	Murata	
CG0399	C525	SMD capasitor NPO	3.9pF 0,25pF	Murata	
CG0101	C526	SMD capasitor X7R	100pF 5%	Murata	
CG0103	C527	SMD capasitor X7R	10nF 10%	Murata	
CG0104	C53	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C530	SMD capasitor X7R	100pF 5%	Murata	
CG0150	C531	SMD capasitor NPO	15pF 5%	Murata	
CG0103	C532	SMD capasitor X7R	10nF 10%	Murata	
CG0103	C533	SMD capasitor X7R	10nF 10%	Murata	
CG0102	C534	SMD capasitor X7R	1nF 10%	Murata	
CG0103	C535	SMD capasitor X7R	10nF 10%	Murata	
CG0150	C536	SMD capasitor NPO	15pF 5%	Murata	
CG0399	C537	SMD capasitor NPO	3.9pF 0,25pF	Murata	
CG0330	C538	SMD capasitor NPO	33pF 5%	Murata	
CG0399	C539	SMD capasitor NPO	3.9pF 0,25pF	Murata	
CF0105	C54	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0339	C540	SMD capasitor NPO	3.3pF 0,25pF	Murata	
CG0479	C541	SMD capasitor NPO	4.7pF 0,25pF	Murata	
CF0223	C542	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CH0105	C55	SMD capasitor	1uF/-20/+80%/16V	TaiyoYuden	EMK212 F105Z00T
CF0223	C550	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C551	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C552	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C553	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CF0223	C554	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0100	C555	SMD capasitor NPO	10pF-+0.25pF	Murata	
CF0223	C556	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0104	C56	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0103	C560	SMD capasitor X7R	10nF 10%	Murata	
CG0103	C561	SMD capasitor X7R	10nF 10%	Murata	
CU2105	C562	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0331	C563	SMD capasitor X7R	330pF 10%	Murata	

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CG0473	C57	SMD capasitor Y5V	47nF/10%/25V	AVX	
CU3106	C570	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0102	C571	SMD capasitor X7R	1nF 10%	Murata	
CF0223	C572	SMD capasitor	22 nF 10% 50 V X7R	Philips	
CG0104	C58	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C59	SMD capasitor X7R	22nF 20%	Murata	
CD0105	C6	SMD capasitor	1uF/16V%10% X5R	TaiyoYuden	EMK212BJ105KG-T
CG0223	C60	SMD capasitor X7R	22nF 20%	Murata	
CF0180	C600	SMD capasitor	18 pF 5% 50 V NPO	Philips	
CG0102	C601	SMD capasitor X7R	1nF 10%	Murata	
CG0103	C602	SMD capasitor X7R	10nF 10%	Murata	
CD0104	C603	SMD capasitor	100 nF 10% 50 V X7R	Philips	
CU1105	C604	SMD tantal	1uF/16V	AVX	TAJR105M016R
CU3106	C605	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0222	C61	SMD capasitor X7R	2.2nF 10%	Murata	
CG0101	C610	SMD capasitor X7R	100pF 5%	Murata	
CG0103	C611	SMD capasitor X7R	10nF 10%	Murata	
CG0390	C612	SMD capasitor NPO	39pF 5%	Murata	
CU2105	C613	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0103	C614	SMD capasitor X7R	10nF 10%	Murata	
CG0331	C615	SMD capasitor X7R	330pF 10%	Murata	
CG0103	C616	SMD capasitor X7R	10nF 10%	Murata	
CU2105	C617	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0103	C618	SMD capasitor X7R	10nF 10%	Murata	
CU2105	C619	SMD tantal	1uF/10V	AVX	TAJR105M010R
CG0101	C62	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C620	SMD capasitor X7R	100pF 5%	Murata	
CG0103	C621	SMD capasitor X7R	10nF 10%	Murata	
CG0220	C622	SMD capasitor NPO	22pF 5%	Murata	
CG0101	C623	SMD capasitor X7R	100pF 5%	Murata	
CG0471	C63	SMD capasitor X7R	470pF 10%	Murata	
CG0471	C64	SMD capasitor X7R	470pF 10%	Murata	
CG0222	C640	SMD capasitor X7R	2.2nF 10%	Murata	
CG0332	C641	SMD capasitor X7R	3.3nF 10%	Murata	
CU2105	C642	SMD tantal	1uF/10V	AVX	TAJR105M010R
CF0105	C65	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0569	C650	SMD capasitor NPO	5.6pF 0,25pF	Murata	
CU1225	C651	SMD tantal	2.2uF/10V	AVX	TAJS225M010R
CG0102	C652	SMD capasitor X7R	1nF 10%	Murata	
CG0102	C653	SMD capasitor X7R	1nF 10%	Murata	
CU1225	C654	SMD tantal	2.2uF/10V	AVX	TAJS225M010R
CG0104	C66	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C660	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C661	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C663	SMD capasitor X7R	100pF 5%	Murata	
CG0104	C67	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0223	C68	SMD capasitor X7R	22nF 20%	Murata	
CG0101	C69	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C7	SMD capasitor X7R	100pF 5%	Murata	
CG0104	C70	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C71	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C72	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C73	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C74	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C75	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C76	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0101	C77	SMD capasitor X7R	100pF 5%	Murata	
CG0103	C78	SMD capasitor X7R	10nF 10%	Murata	
CU3106	C79	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CF0105	C8	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
CG0104	C80	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0102	C81	SMD capasitor X7R	1nF 10%	Murata	
CG0221	C82	SMD capasitor X7R	220pF 10%	Murata	
CG0103	C83	SMD capasitor X7R	10nF 10%	Murata	
CG0103	C84	SMD capasitor X7R	10nF 10%	Murata	
CG0101	C85	SMD capasitor X7R	100pF 5%	Murata	
CG0104	C86	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0104	C87	SMD capasitor	100nF/10% 6,3V X5R	AVX	CM05X5R104K06AH
CG0470	C88	SMD capasitor NPO	47pF 5%	Murata	
CC2103	C89	SMD capasitor	10nF 10% 100V X7R	AVX	12061C103KAT2A
CF0105	C9	SMD capasitor	1uF 10% 6,3V X5R	AVX	CM105X5R105K06AT
CG0101	C90	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C91	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C915	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C916	SMD capasitor X7R	100pF 5%	Murata	
CG0102	C92	SMD capasitor X7R	1nF 10%	Murata	
CG0101	C93	SMD capasitor X7R	100pF 5%	Murata	
CG0472	C94	SMD capasitor X7R	4,7nF/10%/25V	AVX	
CG0101	C95	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C96	SMD capasitor X7R	100pF 5%	Murata	
CU3106	C97	SMD tantal	10uF / 6V +-20%	AVX	TAJA106M006R
CG0101	C98	SMD capasitor X7R	100pF 5%	Murata	
CG0101	C99	SMD capasitor X7R	100pF 5%	Murata	
DS1070	D1	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DS1070	D2	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DY0016	D3	SMD shottky diode	40V/1,33A VF=0.55V	Shindengen	M1FS4
DS1070	D32	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DS1070	D4	SMD diode pair	70V/100mA common cathode	Philips	BAV 70W
DC0229	D420	SMD silicon tuning diode	1V/19pF...4V/11pF	Toshiba	1SV229
DC0229	D460	SMD silicon tuning diode	1V/19pF...4V/11pF	Toshiba	1SV229
DS0019	D5	SMD diode	100v / 200mA	Philips	BAS19
DY0071	D510	SMD shottky diode	70V 15mA	SGS-Thomso	BAS 70-04
DY0384	D610	SMD shottky barrier diod	15V/200mA/VF=0.35V	Toshiba	1SS384-TE85L
DZ3327	D611	SMD zenerdiode	2V7 5% 500mW	Temic	BZM55C2V7-TR
DY0062	D660	SMD shcottky diode	40V 20mA	Siemens	BAT 62
AF4300	F1	SMD fuse	3A	Littlefuse	0430003.WR
IX5061	I1	Power supply reset monit	or/ 2,6V	Impala	ILC5061M-26
IA0311	I10	Audio amplifier	2-5,5V / 250mW	Texas Inst	TPA311DGN
IR7080	I11	Regulator	2,85V 100mA/SOT23-5	Impala	ILC7081AIM5-28
IR7062	I12	Regulator LDO	3,0 V /150mA	Impala	ILC7062CM-30
IX0826	I13	EL-lamp driver	4,5V / 120V	Supertex	HV826MG
IG3010	I3	Digital-Asic		Hitachi	HG71C
IS2335	I400	Dual freg.synthesizer	PLL+prescaler 1.2GHz	NationalSe	LMX23352TMX
IR1230	I490	Regulator	3,0V	Toko	TK11230BM
IR1230	I495	Regulator	3,0V	Toko	TK11230BM
IG2048	I5	SIS ASIC		Atmel	
IV6070	I550	FM IF-system		Philips	SA607DK
IM8011	I6	Flash memory	8 Mb (512x16/1Mx8) 3V	Atmel	AT49BV8011-90TI
IR1230	I600	Regulator	3,0V	Toko	TK11230BM
IC7S00	I610	2-input NAND	SOT-23-5	NationalSe	NC7S00M5X
IA2211	I640	Single op. amp.	2,7 - 10V 150mW	Texas Inst	TLV2211CDBV
IW2391	I650	RF-power amplifier	450MHz-485MHz	Iwatsu	HAB239B
IX2339	I7	Audio processor	CMOS base band pros	AsahiKasei	AK2339
IC0454	I8	SMD 2x multip./demultip.		Toshiba	TC4W53FU-TE 12L
LC0567	L1	SMD inductors	560uH 10% 3,2x2,5mm	Murata	LQH3C561K34
LC1224	L420	SMD inductor	220 nH/+-10%	Coilcraft	0805CS-221XKBC
LC1224	L460	SMD inductor	220 nH/+-10%	Coilcraft	0805CS-221XKBC
LC3183	L480	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
LC3472	L500	SMD inductor	4n7 -+2%	Panasonic	ELJRE4N7ZF2
LC3682	L501	SMD inductor	6n8 -+2%	Panasonic	ELJRE6N8ZF2
LC3183	L502	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2
LC3183	L503	SMD inductor	18n -+2%	PANA-SONIC	ELJRE18NGF2
LC3822	L504	SMD inductor	8n2 -+2%	Panasonic	ELJRE8N2ZF2
LC3273	L510	SMD inductor	27nH -+2%	Panasonic	ELJRE27NGF2
LC3153	L513	SMD inductor	15n -+2%	PANA-SONIC	ELJRE15NGF2
LC3334	L520	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LC3334	L521	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LC3224	L530	SMD inductor	220nH+-10% magnet.shielded	TDK	MLF1608DR22KT
LC3104	L531	SMD inductor	100nH+-10% magnet.shielded	TDK	MLF1608DR10KT
LC3334	L540	SMD inductor	330nH +-10%	TDK	MLF1608DR33K
LI1687	L550	SMD Quad. coil	680uH/180pF 455kHz	Toko	303LC-1150
LC3472	L600	SMD inductor	4n7 -+2%	Panasonic	ELJRE4N7ZF2
LC4106	L610	SMD inductor	10uH -+10%	TDK	MLF3216E100KT
LC3273	L620	SMD inductor	27nH -+2%	Panasonic	ELJRE27NGF2
AV2200	M1	Vibra motor		SanyoSeimi	BF-2175
LT1019	M510	RF-transformer SM-T4	1:1:1, 4,5->600MHz	Neosid	00 5532 05
QS1847	Q1	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF6702	Q10	P-channel MOSFET	Vdss 20V rds 0,2 ohm	I&R	IRLMS6702
QS0060	Q11	SMD transistor arrey	NPN/PNP 100mA/50V	Siemens	BCR 10PN
QS1847	Q2	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS1857	Q3	piensignaali yleistransi	PNP 100mA/45V hfe=220...470	Philips	BC857BW
QS1847	Q4	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QA4867	Q420	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q430	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QS1847	Q440	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QA4867	Q460	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q470	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q480	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QS1847	Q5	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF0320	Q500	SMD Dual FET	N-channel	Toshiba	3SK320
QF0320	Q520	SMD Dual FET	N-channel	Toshiba	3SK320
QA4867	Q530	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QAA193	Q610	SMD RF-transistor	6GHz/300mW F=1.9dB	Philips	BFR93AW
QA4867	Q620	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QA4867	Q621	SMD RF-transistor	NPN G=13dB NF=1.2dB/1GHz	Sanyo	2SC4867-4
QF0138	Q630	N-channel fet	50V/0,2A	Motorola	BSS138LT1
QF9430	Q631	SMD p-channel MOSFET	20V/4,8A/Rds=0.06	Siliconix	Si9430DY
QS1847	Q640	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS1847	Q641	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QS0031	Q642	SMD transistor	PNP 1A/25V	Sanyo	2SB1119S-TD
QS1857	Q7	piensignaali yleistransi	PNP 100mA/45V hfe=220...470	Philips	BC857BW
QS1847	Q8	piensignaali yleistransi	NPN 100mA/45V hfe=200...450	Philips	BC847BW
QF0200	Q9	N-channel MOSFET	20V/0,73A	TEMIC	TN0200T
RG0104	R1	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R10	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R101	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R102	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0101	R103	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R104	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R105	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0222	R107	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0472	R108	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0224	R109	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R11	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0105	R110	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0105	R111	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R12	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R13	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0105	R14	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0105	R15	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R16	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R17	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R18	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R19	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R2	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R20	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R21	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R22	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R23	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0564	R24	SMD resistor	560k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R25	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R26	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R27	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R28	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R29	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0105	R3	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0823	R30	SMD resistor	82k 5% 0.063W	Kamaya	RMC1/16S
RG0471	R31	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R32	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R33	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R34	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R35	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0223	R36	SMD resistor	22k 5% 0.063W	Kamaya	RMC1/16S
RF0106	R37	SMD resistor	10 M 5% 0.125 W	Kamaya	
RG0105	R38	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R39	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R4	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R40	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0470	R400	SMD resistor	47R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R401	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R402	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0470	R403	SMD resistor	47R 5% 0.063W	Kamaya	RMC1/16S
RG0472	R404	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R405	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R406	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0105	R41	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0272	R411	SMD resistor	2k7 5% 0.063W	Kamaya	RMC1/16S
RG0152	R412	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0152	R413	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0100	R414	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0682	R420	SMD resistor	6k8 5% 0.063W	Kamaya	RMC1/16S
RG0152	R421	SMD resistor	1k5 5% 0.063W	Kamaya	RMC1/16S
RG0680	R422	SMD resistor	68R 5% 0.063W	Kamaya	RMC1/16S
RG0224	R43	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0220	R430	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0392	R431	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0102	R432	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0151	R433	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0151	R434	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R435	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R44	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R440	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0100	R441	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0473	R442	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R443	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S

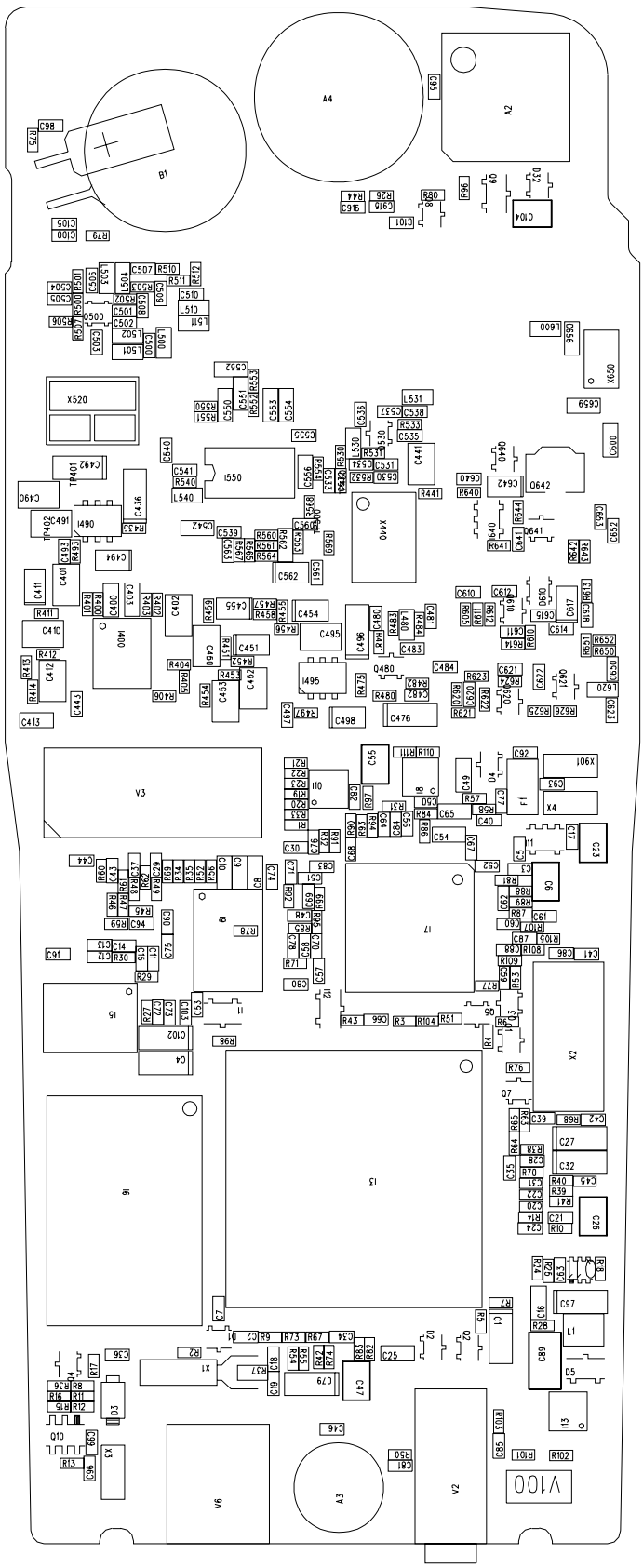
CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0103	R444	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R45	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0182	R451	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0472	R452	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0472	R453	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0100	R454	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0183	R455	SMD resistor	18k 5% 0.063W	Kamaya	RMC1/16S
RG0823	R456	SMD resistor	82k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R457	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R458	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0151	R459	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R46	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0822	R460	SMD resistor	8k2 5% 0.063W	Kamaya	RMC1/16S
RG0182	R461	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0101	R462	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R47	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0220	R470	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0392	R471	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0102	R472	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R473	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R474	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R475	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R48	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0182	R480	SMD resistor	1k8 5% 0.063W	Kamaya	RMC1/16S
RG0392	R481	SMD resistor	3k9 5% 0.063W	Kamaya	RMC1/16S
RG0220	R482	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R483	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0221	R484	SMD resistor	220R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R49	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R493	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R497	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R5	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R50	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0680	R501	SMD resistor	68R 5% 0.063W	Kamaya	RMC1/16S
RG0561	R502	SMD resistor	560R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R503	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R506	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0333	R507	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R51	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0271	R510	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0180	R511	SMD resistor	18R 5% 0.063W	Kamaya	RMC1/16S
RG0271	R512	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R513	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R52	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R520	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0472	R521	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0102	R522	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0471	R523	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R53	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0100	R530	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0333	R531	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R532	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0471	R533	SMD resistor	470R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R54	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0472	R540	SMD resistor	4k7 5% 0.063W	Kamaya	RMC1/16S
RG0104	R55	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0272	R550	SMD resistor	2k7 5% 0.063W	Kamaya	RMC1/16S
RG0102	R551	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0222	R552	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0332	R553	SMD resistor	3k3 5% 0.063W	Kamaya	RMC1/16S

CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0333	R554	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0101	R56	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0393	R560	SMD resistor	39k 5% 0.063W	Kamaya	RMC1/16S
RG0683	R561	SMD resistor	68k 5% 0.063W	Kamaya	RMC1/16S
RTN157	R562	(RNT157)NTC resistor	22k 5% B=3750	Ohizumi	157-223-65001
RG0102	R563	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0682	R564	SMD resistor	6k8 5% 0.063W	Kamaya	RMC1/16S
RG0473	R565	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0683	R567	SMD resistor	68k 5% 0.063W	Kamaya	RMC1/16S
RG0333	R568	SMD resistor	33k 5% 0.063W	Kamaya	RMC1/16S
RG0222	R569	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0105	R57	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0220	R570	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R58	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R59	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R6	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R60	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0473	R600	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R605	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R61	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0100	R610	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R611	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0102	R612	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0151	R613	SMD resistor	150R 5% 0.063W	Kamaya	RMC1/16S
RG0220	R614	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R62	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0220	R620	SMD resistor	22R 5% 0.063W	Kamaya	RMC1/16S
RG0101	R621	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0821	R622	SMD resistor	820R 5% 0.063W	Kamaya	RMC1/16S
RG0222	R623	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0222	R624	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0222	R625	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0100	R626	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R63	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0103	R630	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R631	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R632	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R64	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R640	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
RG0332	R641	SMD resistor	3k3 5% 0.063W	Kamaya	RMC1/16S
RG0102	R642	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0271	R643	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0271	R644	SMD resistor	270R 5% 0.063W	Kamaya	RMC1/16S
RG0104	R65	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0391	R650	SMD resistor	390R 5% 0.063W	Kamaya	RMC1/16S
RG0100	R651	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0391	R652	SMD resistor	390R 5% 0.063W	Kamaya	RMC1/16S
RG0103	R660	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0184	R661	SMD resistor	180k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R662	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R663	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0102	R67	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R68	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R69	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0334	R7	SMD resistor	330k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R70	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0473	R71	SMD resistor	47k 5% 0.063W	Kamaya	RMC1/16S
RTN154	R72	SMD NTC-resistor	150k 5% B=4100	Hokuriku	157-154-45001TP
RG0104	R73	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R74	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S

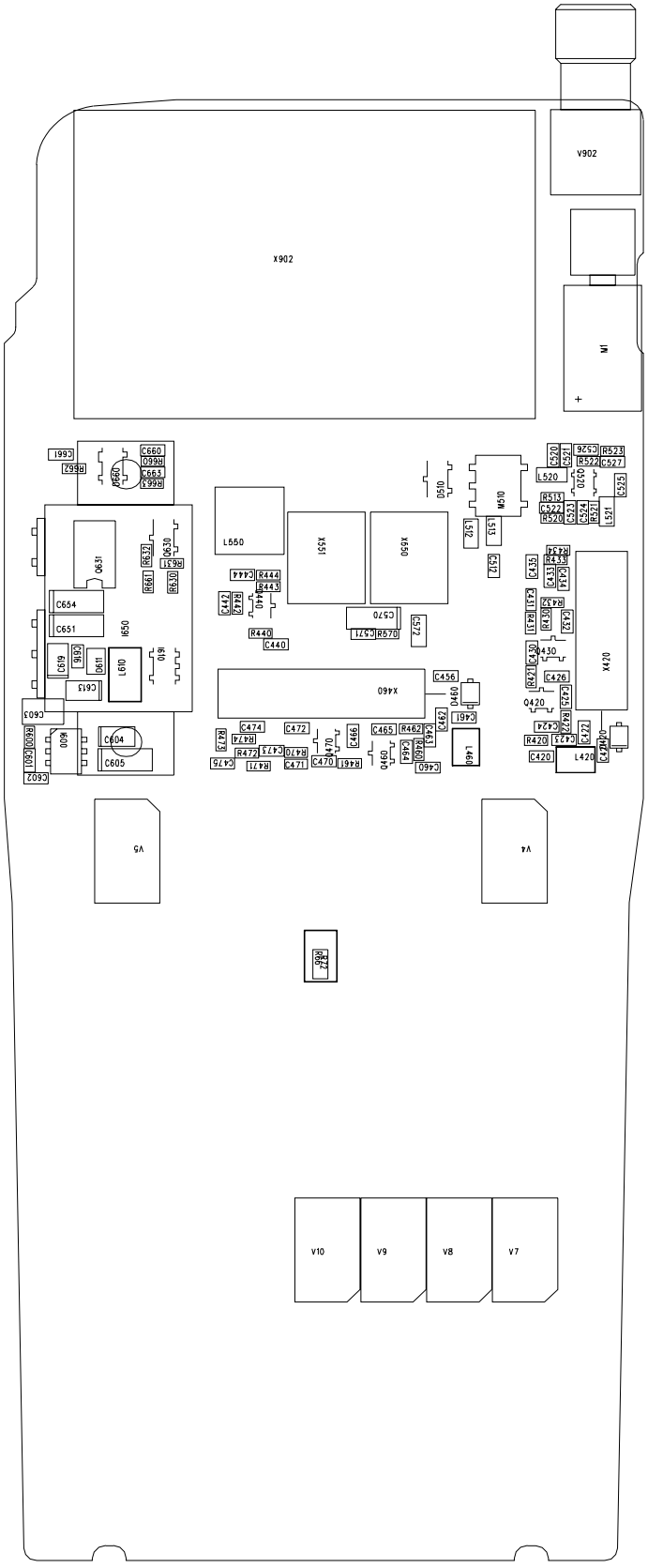
CODE	PART	DESCRIPT.	VALUE	MANUF.	TYPE
RG0101	R75	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0105	R76	SMD resistor	1M0 5% 0.063W	Kamaya	RMC1/16S
RG0104	R77	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0000	R78	SMD resistor	0 ohm		
RG0100	R79	SMD resistor	10 R 5% 0.063W	Kamaya	RMC1/16S
RG0102	R8	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0101	R80	SMD resistor	100R 5% 0.063W	Kamaya	RMC1/16S
RG0563	R81	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0222	R82	SMD resistor	2k2 5% 0.063W	Kamaya	RMC1/16S
RG0102	R83	SMD resistor	1k0 5% 0.063W	Kamaya	RMC1/16S
RG0563	R84	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R85	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R86	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0153	R87	SMD resistor	15k 5% 0.063W	Kamaya	RMC1/16S
RG0153	R88	SMD resistor	15k 5% 0.063W	Kamaya	RMC1/16S
RG0274	R89	SMD resistor	270k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R9	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0223	R90	SMD resistor	22k 5% 0.063W	Kamaya	RMC1/16S
RG0393	R91	SMD resistor	39k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R92	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0103	R93	SMD resistor	10k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R94	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0563	R95	SMD resistor	56k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R96	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R97	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0104	R98	SMD resistor	100k 5% 0.063W	Kamaya	RMC1/16S
RG0224	R99	SMD resistor	220k 5% 0.063W	Kamaya	RMC1/16S
VN0009	V2	Stereo jack	2,5mm miniature	Hosiden	HSJ1603-010020
VW0109	V3	Connector	32-pin 1mm pitch	Elco	589158032000011
VM0002	V4	Modulat cntact	2pin 2A/pin	Bours	70AAJ002M0
VM0002	V5	Modulat cntact	2pin 2A/pin	Bours	70AAJ002M0
VW0111	V6	DC-jack	3,5 x1,0mm	Elka Ltd	AJ232-SMT
VR0248	V902	SMA connector		?????????	982589
X32766	X1	SMD crystal	32.768kHz +-30ppm	MicroCryst	MS1V-TK
X48007	X2	SMD crystal	4,8MHz CL=16pF 30ppm	Citezen	CS 20
LF0062	X3	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
LF0062	X4	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
XR1650	X420	Ceramic coaxial resonato	650MHz 4x4x13mm Q>250	Siemens	B69614-G0655-B42
XO5130	X440	VCTCXO	13.0 MHz	TEW	TTS10V
XR1550	X460	Ceramic coaxial resonato	550MHz 4x4x14,5mm Q>250	Siemens	B69614-G0550-BA4
XF7845	X520	Crystal filter	78.45MHz 7x5x1.35mm	TEW	MF78R
XC3450	X550	Ceramic IF-filter	450Khz	Murata	CFUCG450E
XC4450	X551	Ceramic IF-filter	450kHz	Murata	CFUCG450F
XI0005	X650	Directional coupler	NMT450	MKT Taisei	DCS3120-09
LF0062	X901	SMD EMI filter	10nF/2A	Panasonic	ELKE103FA
OD1085	X902	Duplexer PL	Rx463/Tx453MHz	LK-Product	S2-A9/NP1.0
PC2200	Y254	PCB for OC2200		Elprintta	

Last update 04.09.00

5.8.2 Layouts

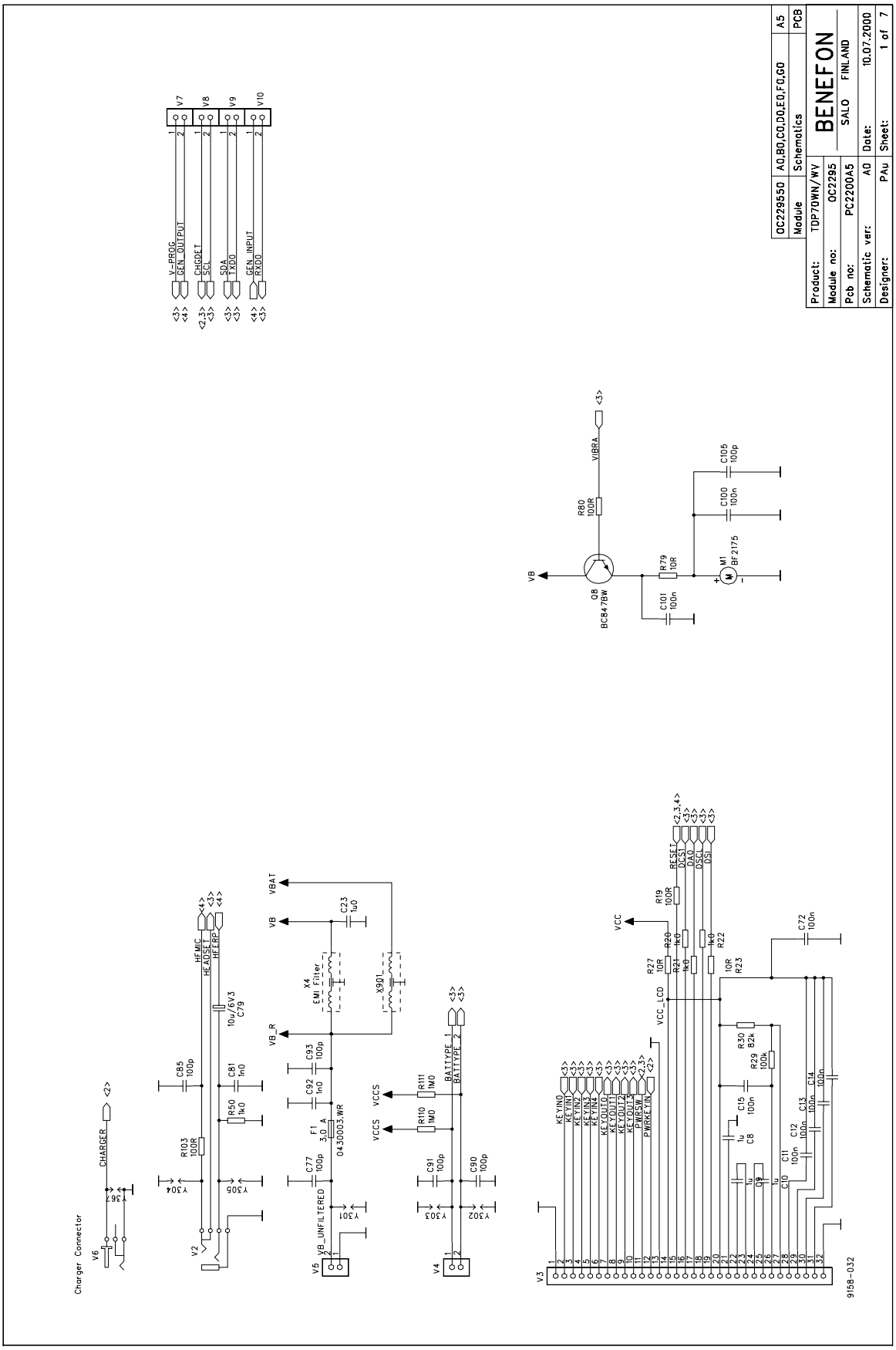


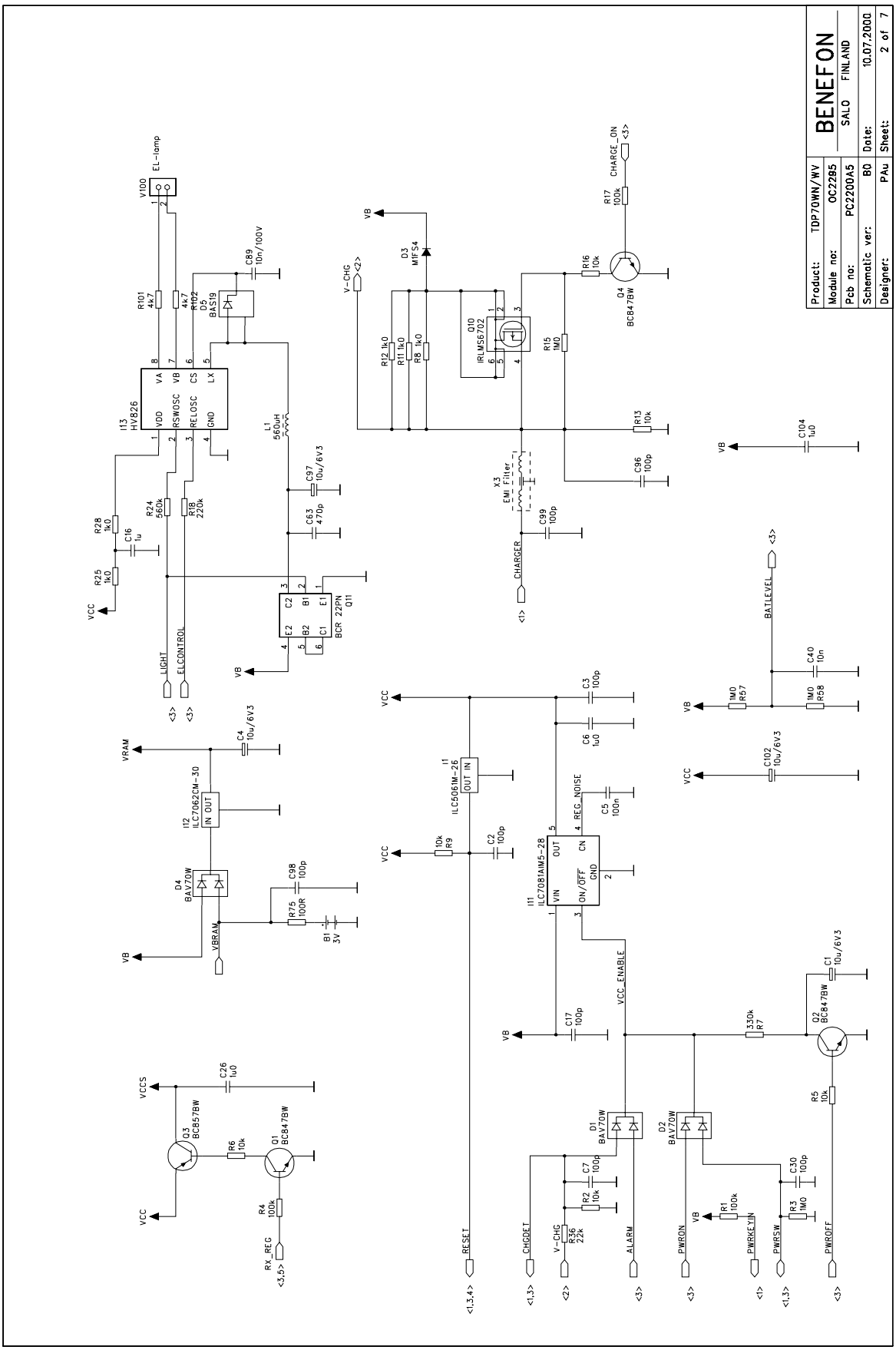
PC2200A5 021



PC2200A5 021

5.8.3 Circuit Diagrams

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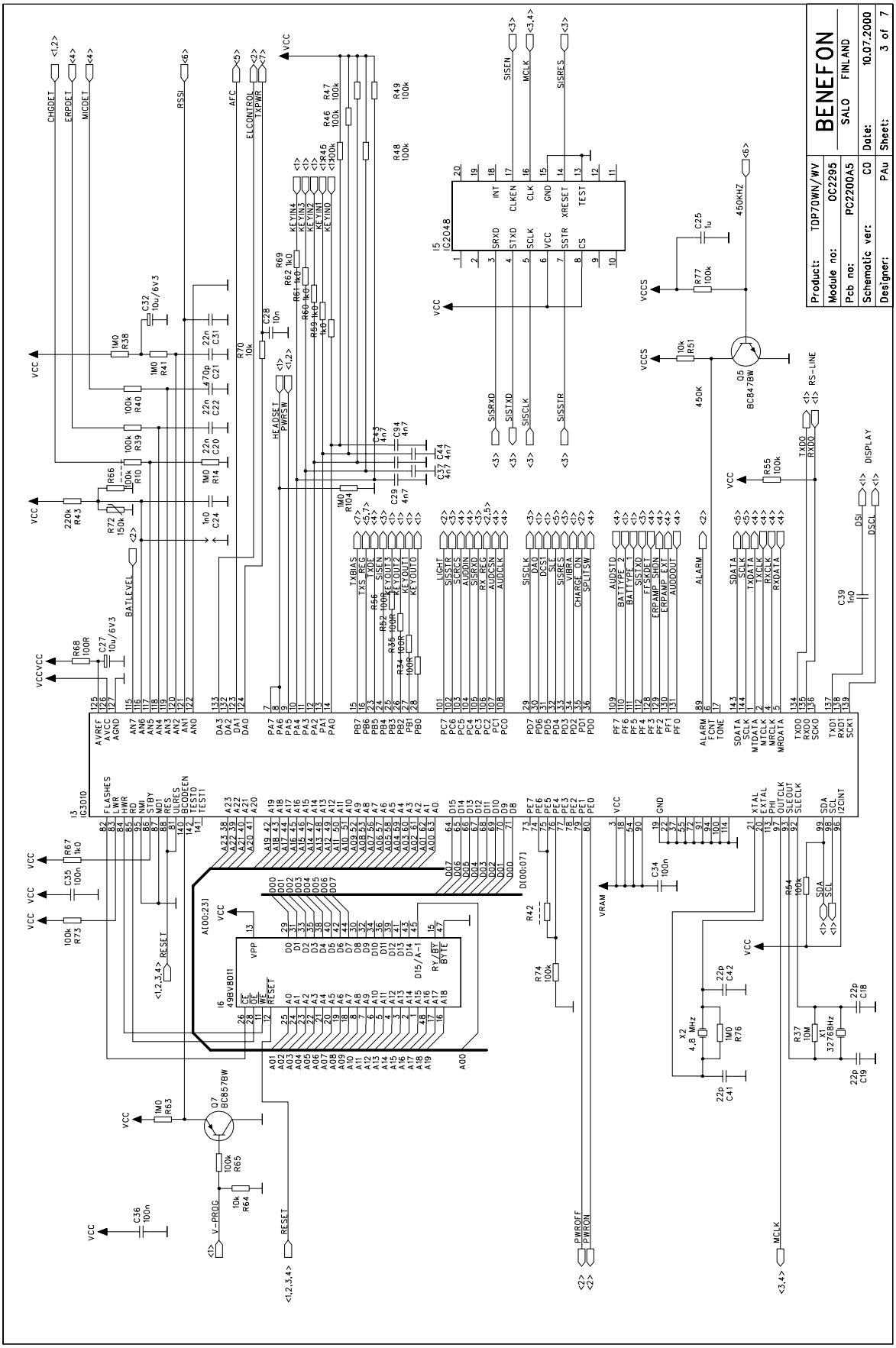
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: B0
Designer: PAu
SALO FINLAND
Date: 10.07.2000
Sheet: 2 of 7
EL-lamp
HVB26
ILC7062CM-30
ILC5061M-26
ILC7081AM5-28
IRLMS6702
BC847BW
BAV70W
BAS19
M1FS4
BCR 22PN
EMI Filter
LIGHT
ELCONTROL
CHARGER
CHARGE_ON
V-CHG
VCC_ENABLE
REG_NOISE
RESET
CHGDET
ALARM
PWRON
PWRKEYIN
PWRSW
PWROFF
RX_REG
BATLEVEL
VRAM
VBRAM
VCCS
VCC
VB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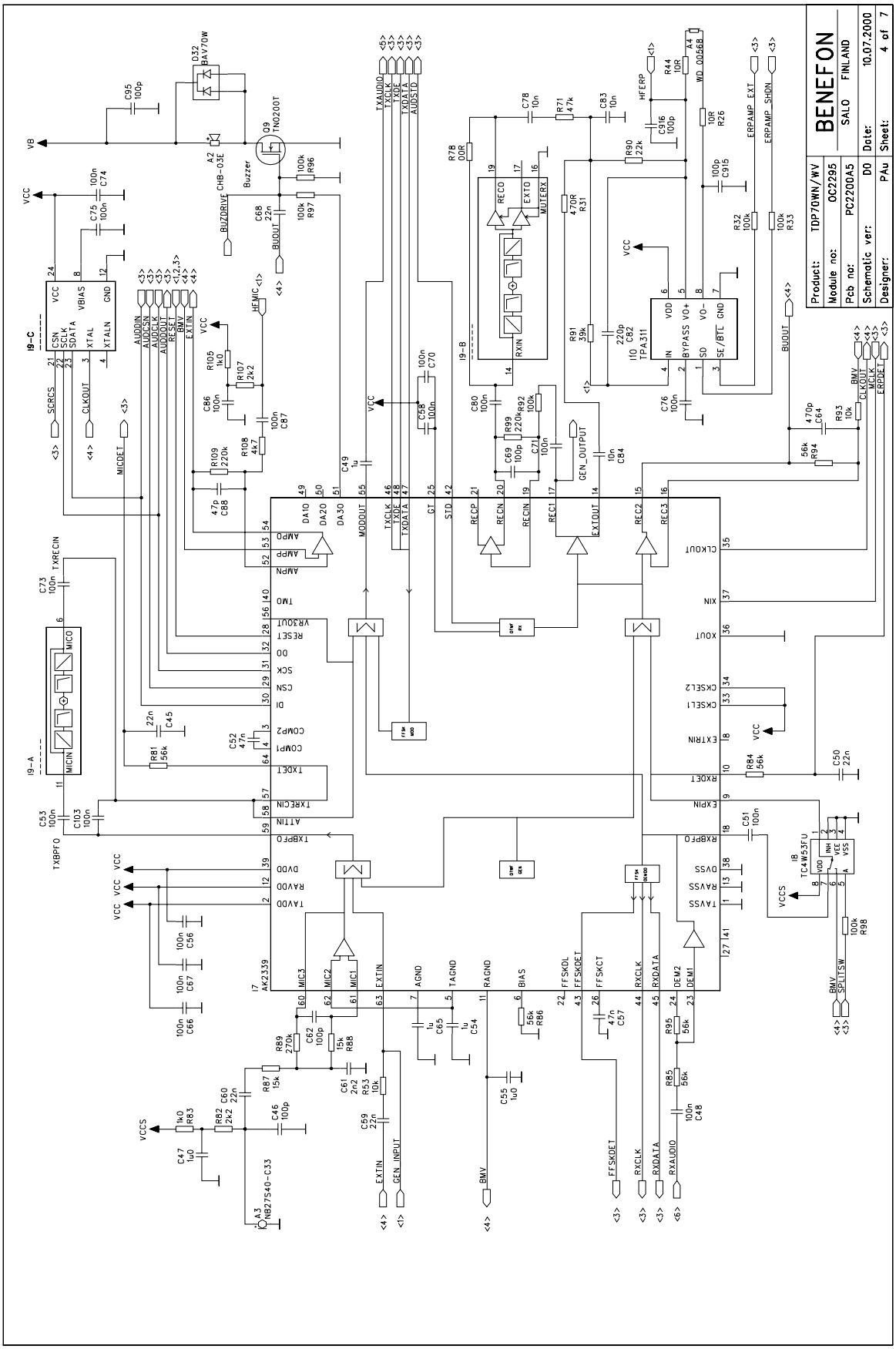
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: C0
Designer: PAu
SALO FINLAND
Date: 10.07.2000
Sheet: 3 of 7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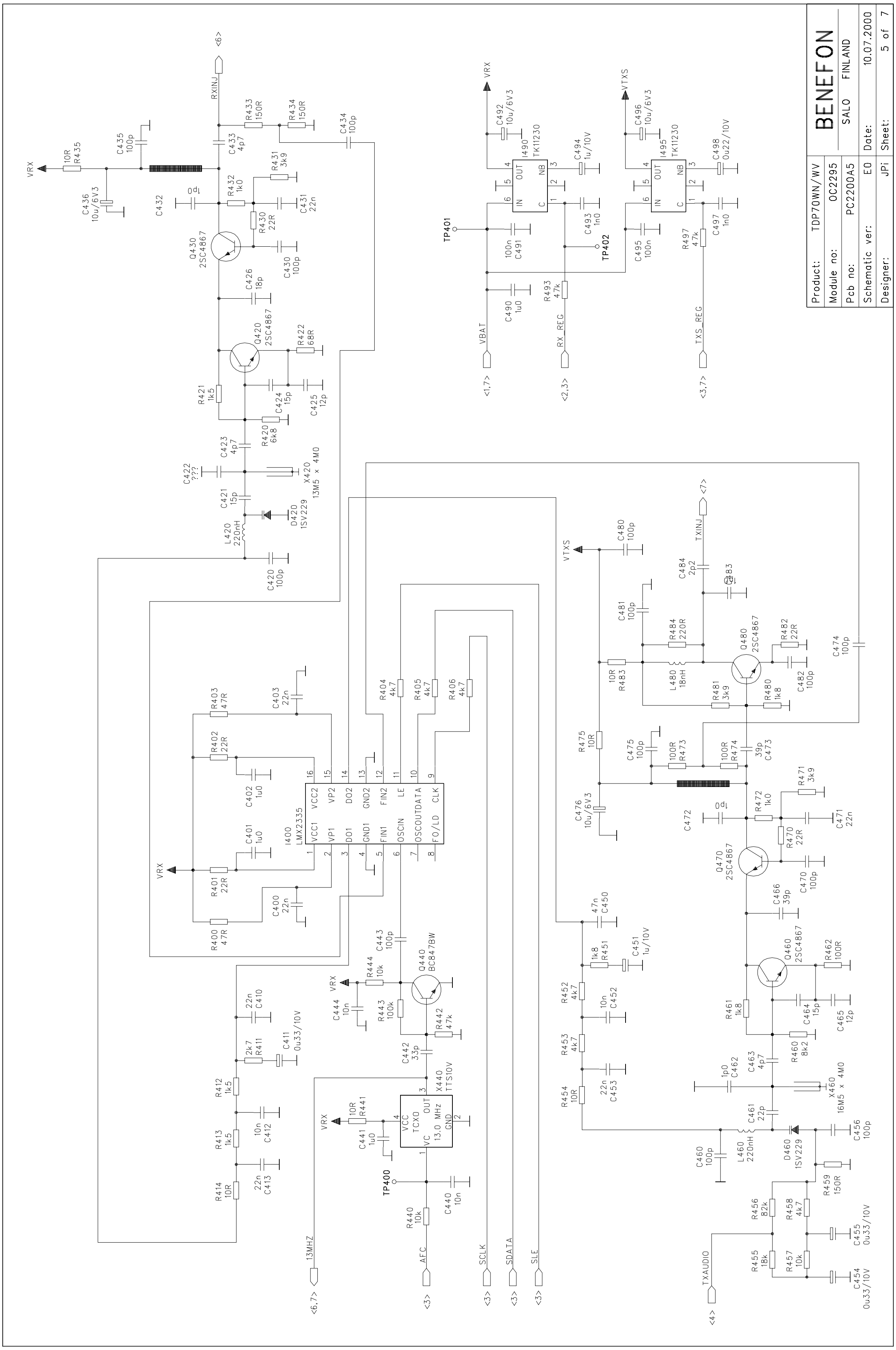
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: D0
Designer: PAu
SALO FINLAND
Date: 10.07.2000
Sheet: 4 of 7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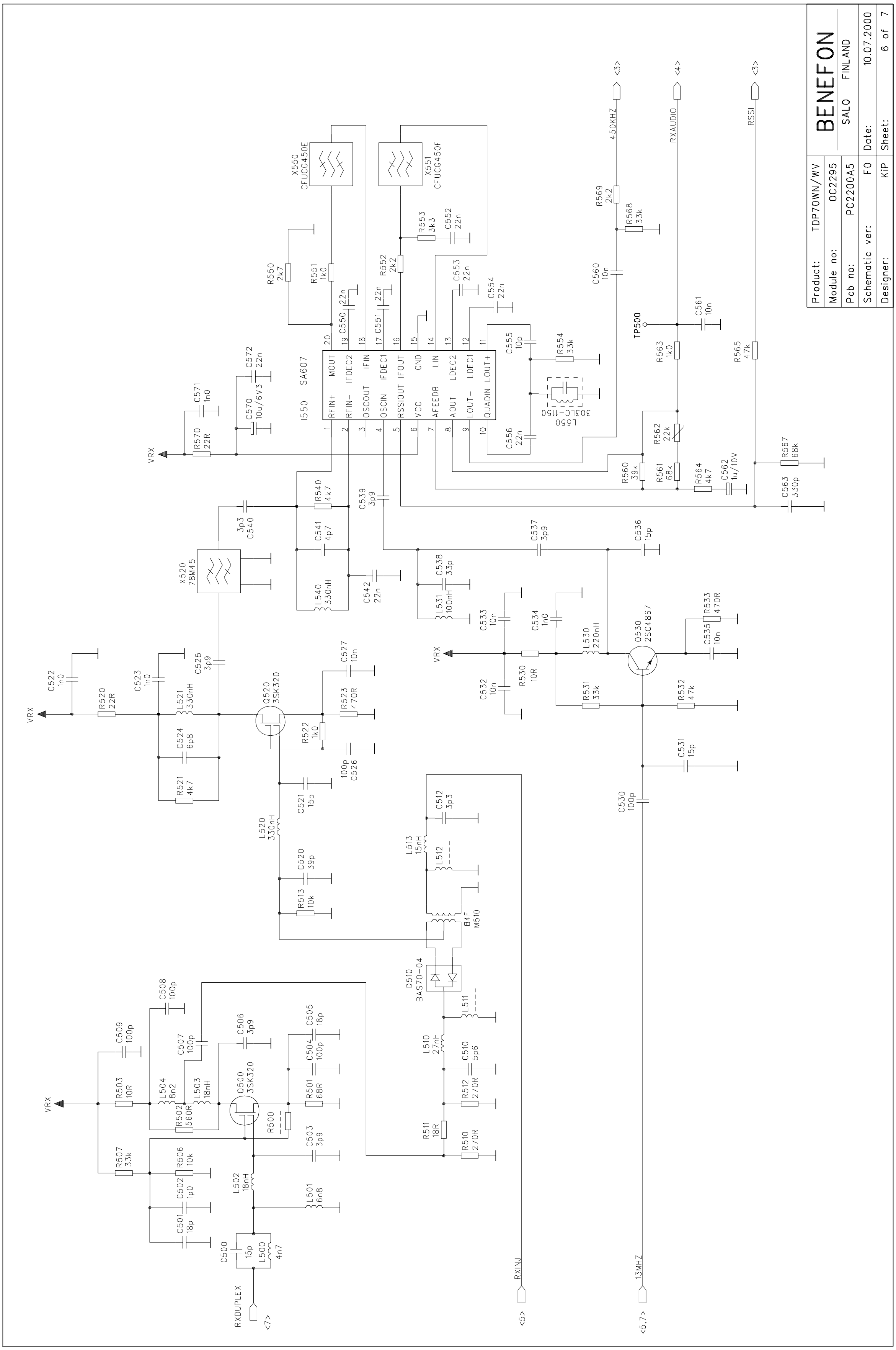
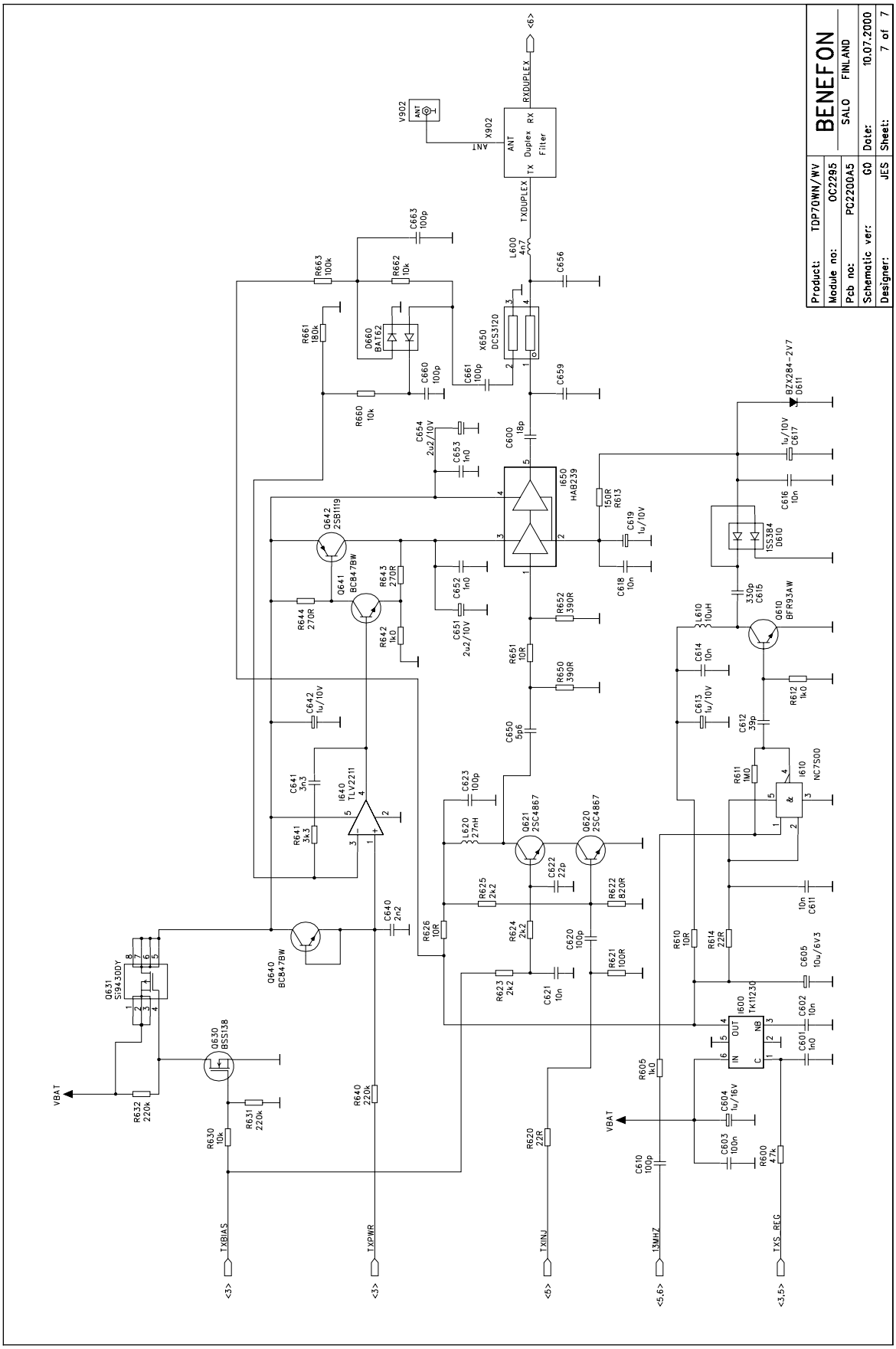
SALO FINLAND
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: E0
Designer: JPi
Date: 10.07.2000
Sheet: 5 of 7


BENEFON
SALO FINLAND
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: F0
Date: 10.07.2000
Designer: KiP
Sheet: 6 of 7


BENEFON
Product: TDP70WN/WV
Module no: OC2295
Pcb no: PC2200A5
Schematic ver: G0
Designer: JES
SALO FINLAND
Date: 10.07.2000
Sheet: 7 of 7
RXDUPLEX
TXDUPLEX
ANT
Duplex Filter
RX
TX
X902
V902
L600 4n7
X650 DCS3120
D660 BA162
I650 HAB239
Q642 2SB1119
Q641 BC847BW
Q640 BC847BW
Q631 SI9430DY
Q630 BSS138
Q621 2SC4867
Q620 2SC4867
Q610 BFR93AW
I640 TLV2211
I610 NC7S00
I600 TK11230
D611 BZX284-2V7
D610 1SS384
L620 27nH
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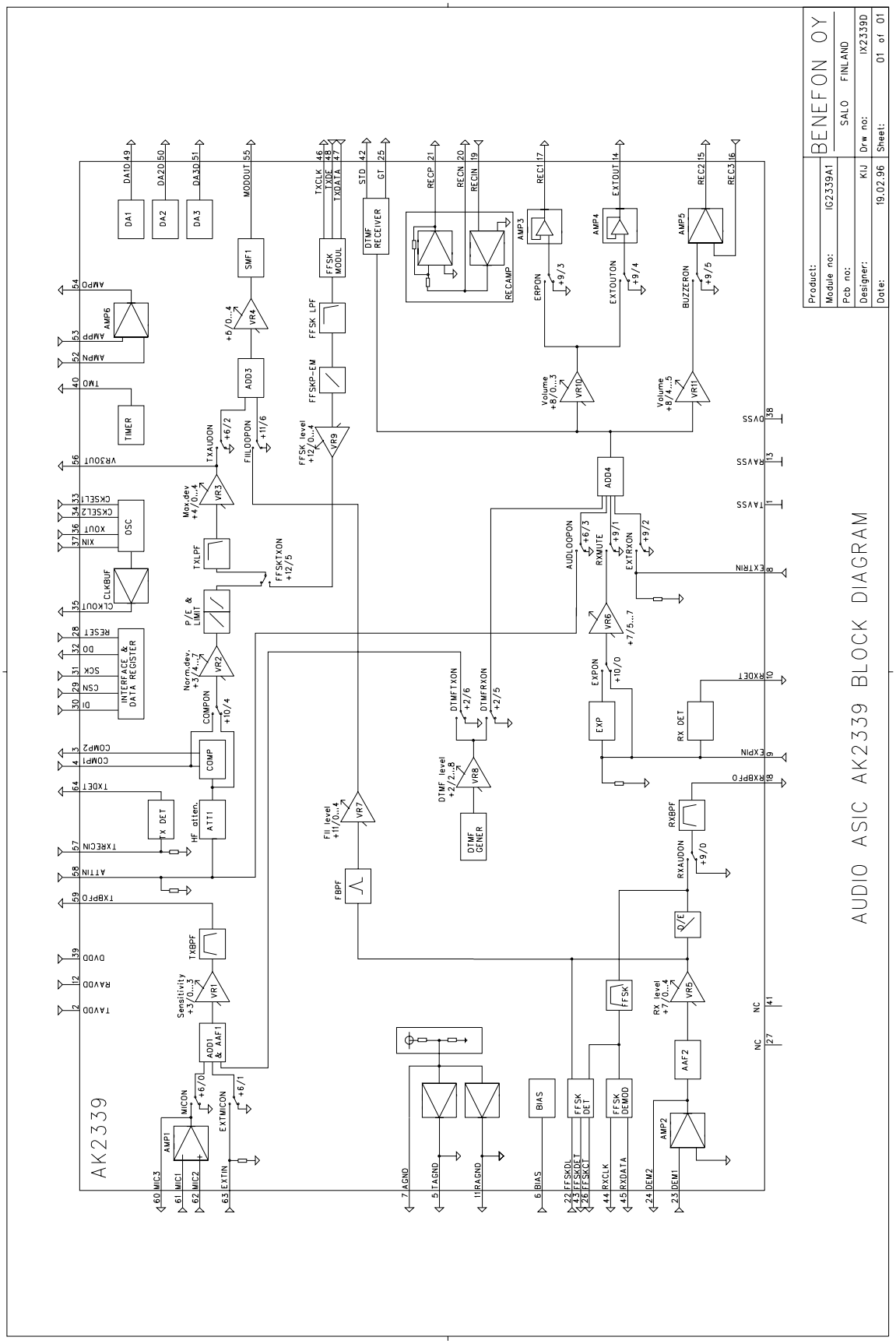
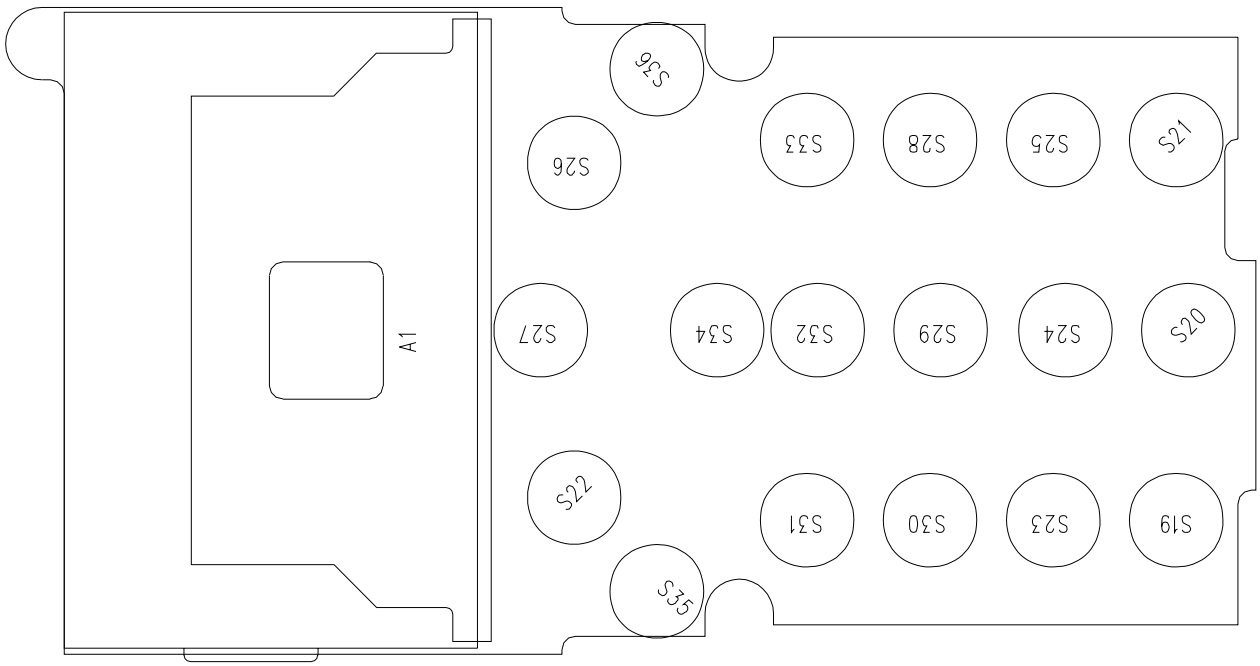
VBAT
TXBIAS
TXPWR
TXINJ
13MHZ
TXS_REG

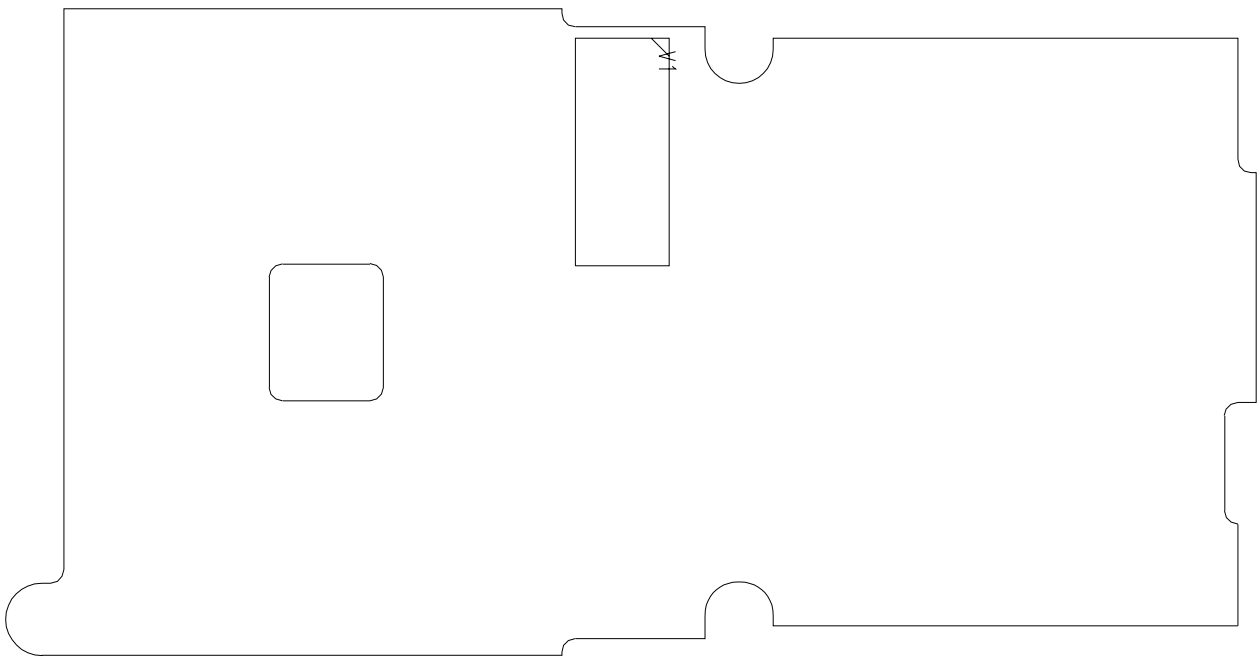

AUDIO ASIC AK2339 BLOCK DIAGRAM
AK2339
BENEFON OY
SALO FINLAND
Product:
Module no: IC2339A1
Pcb no:
Designer: KiU
Date: 19.02.96
Drw no: IX2339D
Sheet: 01 of 01

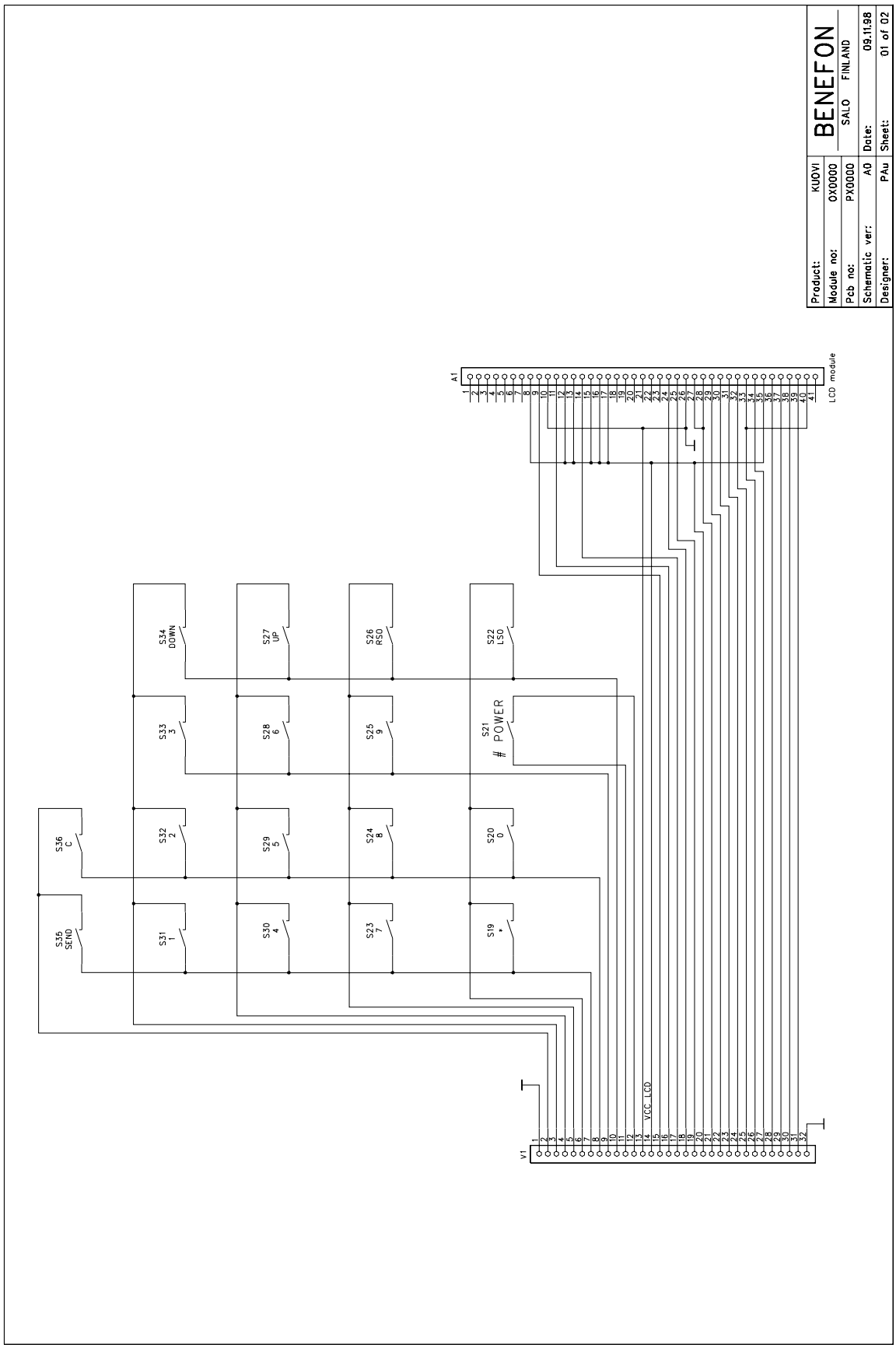
5.9 KEYBOARD OK2200

OK2200

The Top and Bottom Side Layouts PK2200_a3



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Product: KUOVI
Module no: 0X0000
Pcb no: PX0000
Schematic ver: A0
Designer: PAu
SALO FINLAND
Date: 09.11.98
Sheet: 01 of 02
A1
LCD module
V1
VCC_LCD
S34 DOWN
S27 UP
S26 RSD
S22 LSO
S33 3
S28 6
S25 9
S21 # POWER
S36 C
S32 2
S29 5
S24 8
S20 0
S35 SEND
S31 1
S30 4
S23 7
S19 *