

VHF FM TRANSCEIVER

TK-752/759

SERVICE MANUAL

KENWOOD

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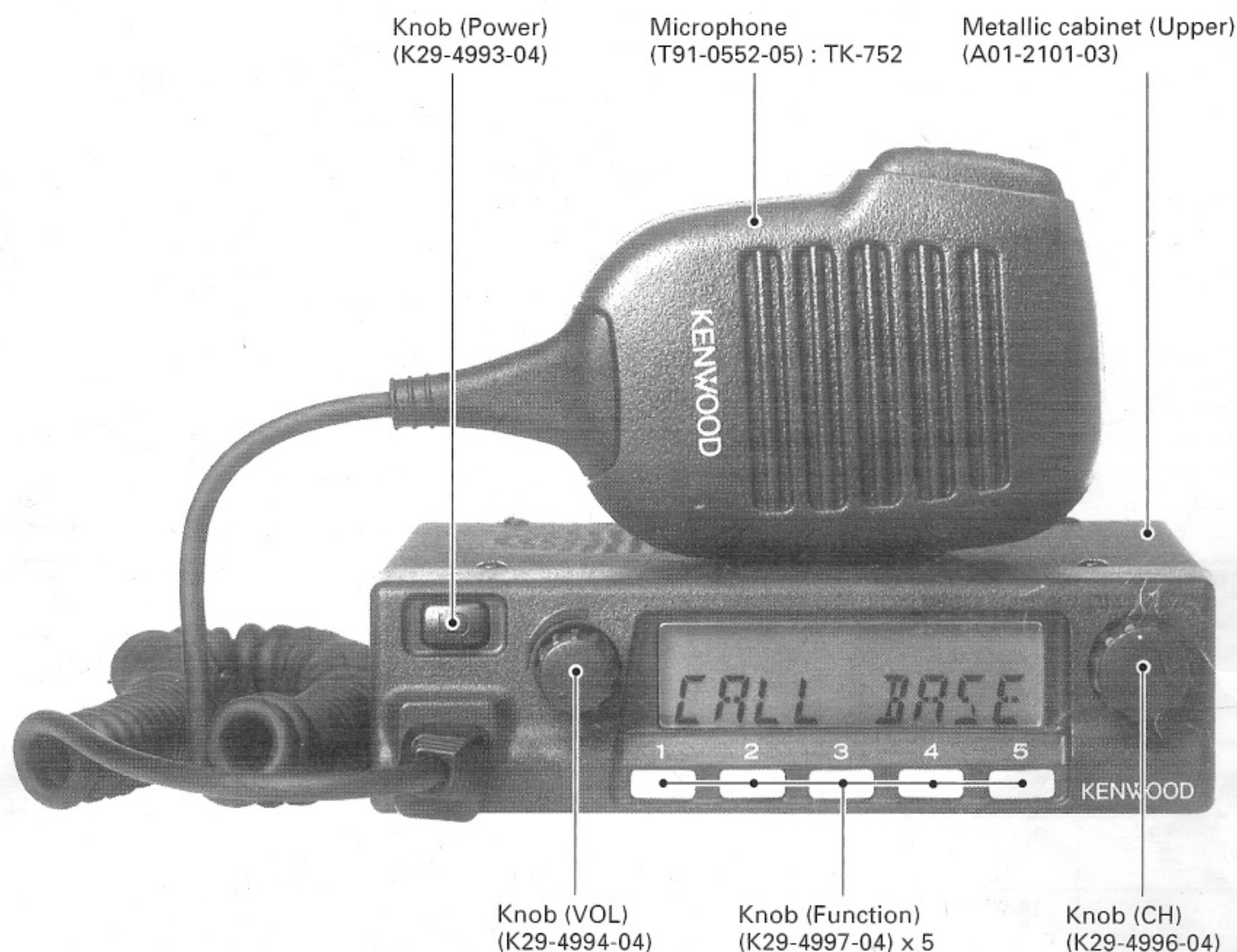


Photo is TK-759.

CONTENTS

GENERAL	2	PACKING	41
REALIGNMENT	4	ADJUSTMENT	42
INSTALLATION	7	TERMINAL FUNCTION	50
MODIFICATION	8	PC BOARD VIEWS / CIRCUIT DIAGRAMS	
DISASSEMBLY FOR REPAIR	9	CONTROL UNIT (X53-3592-70) (A/2)	51
BLOCK DIAGRAM	10	CONTROL UNIT (X53-3602-70) (A/2)	51
LEVEL DIAGRAM	13	TX-RX UNIT (X57-4692-XX)	53
CIRCUIT DESCRIPTION	14	CONTROL UNIT (X53-3592-70) (B/2)	63
SEMICONDUCTOR DATA	22	CONTROL UNIT (X53-3602-70) (B/2)	64
DESCRIPTION OF COMPONENTS	29	PLL/VCO (X58-4322-XX)	65
PARTS LIST	32	SPECIFICATIONS	67
EXPLODED VIEW	40		

GENERAL

INTRODUCTION

SCOPE OF THIS MANUAL

This manual is intended for use by experienced technicians familiar with similar types of commercial grade communications equipment. It contains all required service information for the equipment and is current as of the publication data. Changes which may occur after publication are covered by either Service Bulletins or Manual Revisions. These are issued as required.

ORDERING REPLACEMENT PARTS

When ordering replacement parts or equipment information, the full part identification number should be included. This applies to all parts : components, kits, or chassis. If the part number is not known, include the chassis or kit number of which it is a part, and a sufficient description of the required component for proper identification.

PERSONNEL SAFETY

The following precautions are recommended for personnel safety :

- DO NOT transmit if someone is within two feet (0.6 meter) of the antenna.
- DO NOT transmit until all RF connectors are verified secure and any open connectors are properly terminated.
- SHUT OFF and DO NOT operate this equipment near electrical blasting caps or in an explosive atmosphere.
- All equipment should be properly grounded before power-up for safe operation.
- This equipment should be serviced by a qualified technician only.

	Destination	Frequency range	Remarks	QT/DQT	5-TONE	DTMF (Encode)	Transmit power
TK-752	E	146~174MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	25W
	E2	136~150MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	25W
TK-759	E	146~174MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	25W
	E2	136~150MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	25W
	E3	146~174MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	10W
	E4	146~174MHz	IF1 45.05MHz LOC 44.595MHz	○	○	○	6W

PRE-INSTALLATION CONSIDERATIONS

1. UNPACKING

Unpack the radio from its shipping container and check for accessory items. If any item is missing, please contact KENWOOD immediately.

2. LICENSING REQUIREMENTS

Federal regulations require a station license for each radio installation (mobile or base) be obtained by the equipment owner. The licensee is responsible for ensuring transmitter power, frequency, and deviation are within the limits permitted by the station license.

Transmitter adjustments may be performed only by a licensed technician holding an FCC first, second or general class commercial radiotelephone operator's license. There is no license required to install or operate the radio.

3. PRE-INSTALLATION CHECKOUT

3-1. Introduction

Each radio is adjusted and tested before shipment. However, it is recommended that receiver and transmitter operation be checked for proper operation before installation.

3-2. Testing

The radio should be tested complete with all cabling and accessories as they will be connected in the final installation. Transmitter frequency, deviation, and power output should be checked, as should receiver sensitivity, squelch operation, and audio output. QT equipment operation should be verified.

GENERAL

4. PLANNING THE INSTALLATION

4-1. General

Inspect the vehicle and determine how and where the radio antenna and accessories will be mounted.

Plan cable runs for protection against pinching or crushing wiring, and radio installation to prevent overheating.

4-2. Antenna

The favored location for an antenna is in the center of a large, flat conductive area, usually at the roof center. The trunk lid is preferred, bond the trunk lid and vehicle chassis using ground straps to ensure the lid is at chassis ground.

4-3. Radio

The universal mount bracket allows the radio to be mounted in a variety of ways. Be sure the mounting surface is adequate to support the radio's weight. Allow sufficient space around the radio for air cooling. Position the radio close enough to the vehicle operator to permit easy access to the controls when driving.

4-4. DC Power and wiring

1. This radio may be installed in negative ground electrical systems only. Reverse polarity will cause the cable fuse to blow. Check the vehicle ground polarity before installation to prevent wasted time and effort.
2. Connect the positive power lead directly to the vehicle battery positive terminal. Connecting the Positive lead to any other positive voltage source in the vehicle is not recommended.

CAUTION

If DC power is to be controlled by the vehicle ignition switch, a switching relay should be used to switch the positive power lead. The vehicle ignition switch then controls DC to the relay coil.

3. Connect the ground lead directly to the battery negative terminal.
4. The cable provided with the radio is sufficient to handle the maximum radio current demand. If the cable must be extended, be sure the additional wire is sufficient for the current to be carried and length of the added lead.

5. INSTALLATION PLANNING - CONTROL STATIONS

5-1. Antenna system

Control station. The antenna system selection depends on many factors and is beyond the scope of this manual. Your KENWOOD dealer can help you select an antenna system that will best serve your particular needs.

5-2. Radio location

Select a convenient location for your control station radio which is as close as practical to the antenna cable entry point. Secondly, use your system's power supply (which supplies the voltage and current required for your system). Make sure sufficient air can flow around the radio and power supply to allow adequate cooling.

SERVICE

This radio is designed for easy servicing. Refer to the schematic diagrams, printed circuit board views, and alignment procedures contained in this manual.

REALIGNMENT

1. Modes

1. User mode
2. PC mode

2. Description of Modes

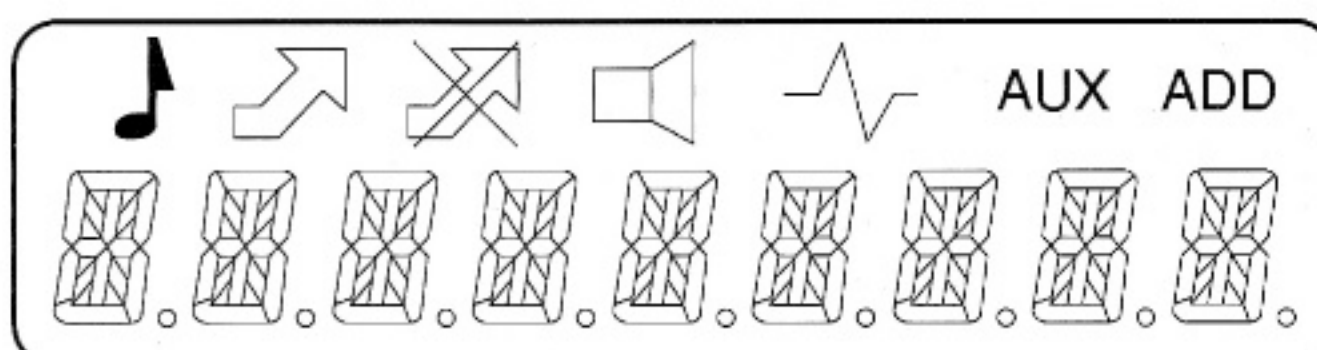
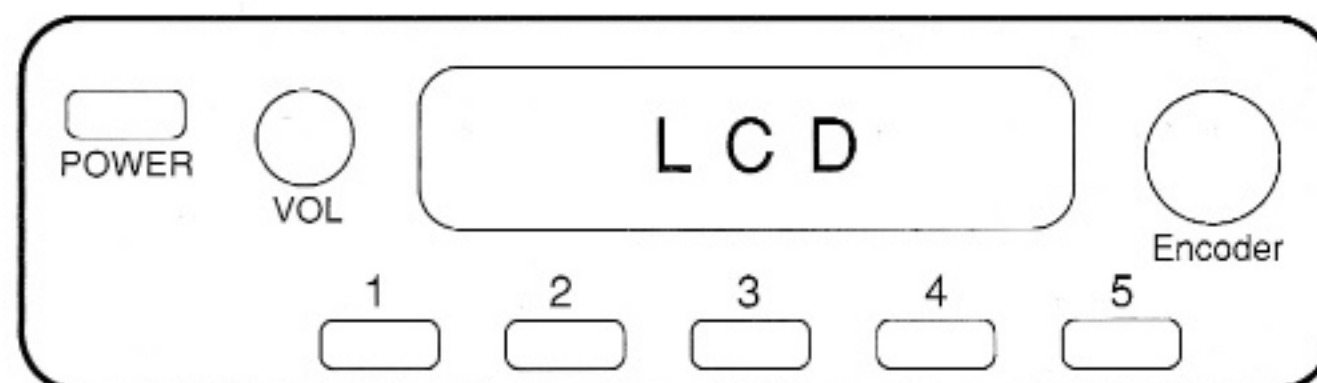
Mode	Function
User mode	Mode used by the user
PC mode	Write or read data or functions to or from the transceiver using a personal computer (IBM-PC or compatible).

3. Entering Each Mode

Mode	Operation
User mode	Turn the power switch on
PC mode	Set the transceiver to the receive mode in the user mode.

4. Display Figures and Names

4-1. Multi-channel version (TK-759)



Display	Name	Operation	Name in specifications
	Call	External : Blinking Transfer : On	Call indicator
	TX	Lights during transmission, self-written transmit frequency setting.	Tx indicator
	Busy	Lights when busy.	Busy indicator
	Moni	Lights when the monitor is on.	Moni indicator
	Sq	Lights when the squelch is on.	Sq indicator
AUX	Aux	Lights when the Aux function is on.	Aux indicator
ADD	Add	Lights when the scan channel is Add (Scan programming mode only)	Add indicator

4-2. Double-channel version (TK-752)



Name	Operation	Name in specifications
AUX LED	Lights when the Aux function is on.	AUX LED
CH1 LED	Orange: 1CH is selected; Red: Transmission; Green: Busy	1CH LED
CH2 LED	Orange: 2CH is selected; Red: Transmission; Green: Busy	2CH LED

REALIGNMENT

8. Initial Values for Backup

Backup name	Power on	All reset	Data storage device
User mode			
Key Assignment	Backup	Disable	Flash ROM
Last Selected Channel	Backup	Lowest channel	EEPROM
Monitor (On/Off)	Off	Off	RAM
SQ Off (On/Off)	Off	Off	RAM
Scan	By setting	Off	EEPROM
Priority Scan	By setting	Off	EEPROM
Scan group	Backup	1	EEPROM
Preference Channel	Backup	1	EEPROM
Clock Frequency Shift	Backup	Off	Flash ROM
Busy Channel Lockout	Backup	Off	Flash ROM
Channel Name (On/Off)	On	On	EEPROM
Channel Name Temporal	Off	Off	RAM
Scrambler (On/Off)	Setting value	Off	Flash ROM
Talk Around (On/Off)	Off	Off	RAM
Public Address (On/Off)	Off	Off	RAM
Public Address volume	Backup	0	EEPROM
Time Out Timer	Clear (*1)	—	RAM
TOT Pre-alert	Clear (*1)	—	RAM
TOT Rekey time	Clear (*1)	—	RAM
TOT Reset time	Clear (*1)	—	RAM
Dropout Delay time	Clear (*1)	—	RAM
TX Dwell time	Clear (*1)	—	RAM
Hold Delay	Clear (*1)	—	RAM
Lock Code (Status)	Backup	Off	EEPROM
Lock Code	Backup	Blank	Flash ROM
Queue buffer	Clear	Clear	RAM
Status	Clear	Clear	RAM
Remote Stun	Backup		
Remote Revive	Backup		
Remote Kill	Backup	Inhibit self-writing	
Emergency (Status)	Backup	Off	EEPROM
DEL/ADD (Scan list)	Backup	ADD	Flash ROM
Priority Channel	Backup	None	Flash ROM
AUX (On/Off)	Backup	Off	EEPROM
Shift	Off	Off	RAM
Clear	Off	Off	RAM

— : Not related *1: The settings are backed up.

REALIGNMENT

9. Transceiver Programming

9-1. Introduction

The TK-752/759 transceiver is programmed using an IBM PC or compatible machine, a programming interface (KPG-4), and a programming disc (KPG-28D). Figure 1 shows the setup for an IBM PC.

9-2. KPG-4 description

(P.C. programming interface cable : Option)

The KPG-4 is required to interface the TK-752/759 to the computer. It has a circuit in its D-subconnector (25-pin) case that converts the RS-232C logic level to the TTL level.

The KPG-4 connects the front panel modular microphone connector of the TK-752/759 to the computer's RS-232C serial port.

9-3. Programming software description

The software on this disc allows a user to program TK-752/759 radios via programming interface cable (KPG-4).

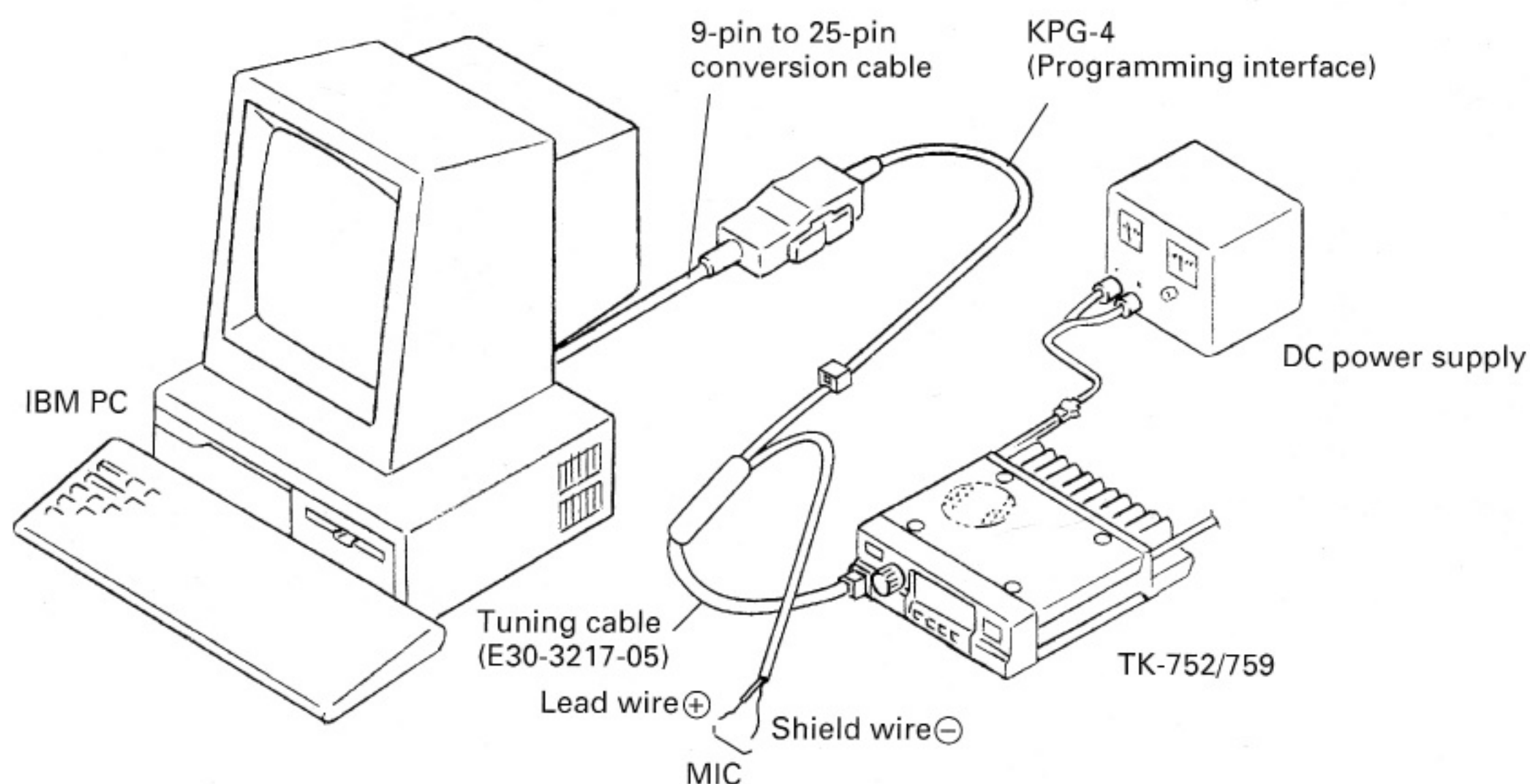


Fig. 1

9-4. KPG-28D description

• Installing the program Onto a hard disk

This procedure assumes that the hard disk is installed as drive C.

1. Insert the original programming software floppy disk (source disk) into drive A.
2. Type "A:" then press [Enter].
"A:\>" appears on the computer display.
3. Type "INSTALL C:" then press [Enter].
The installation program copies the necessary files from the source disk in drive A to the hard disk.

On to a floppy disk

1. Insert the original programming software floppy disk (source disk) into drive A.
2. Insert the floppy disk that will receive software (destination disk) into drive B.
3. Type "A:" then press [Enter].
"A:\>" appears on the computer display.

4. Type "INSTALL B:" then press [Enter].

The installation program copies the necessary files from the source disk in drive A to the destination disk in drive B.

• Starting the program

With the software correctly installed, you can now proceed to running the program and learning the necessary techniques for programming transceivers.

1. Make the directory containing the installed programming software the current directory.
If the software was installed onto a floppy disk, first insert the floppy disk into a drive, then make that drive the current drive.
2. Type "KPG28D" then press [Enter].
The program starts and the introductory screen appears.

INSTALLATION

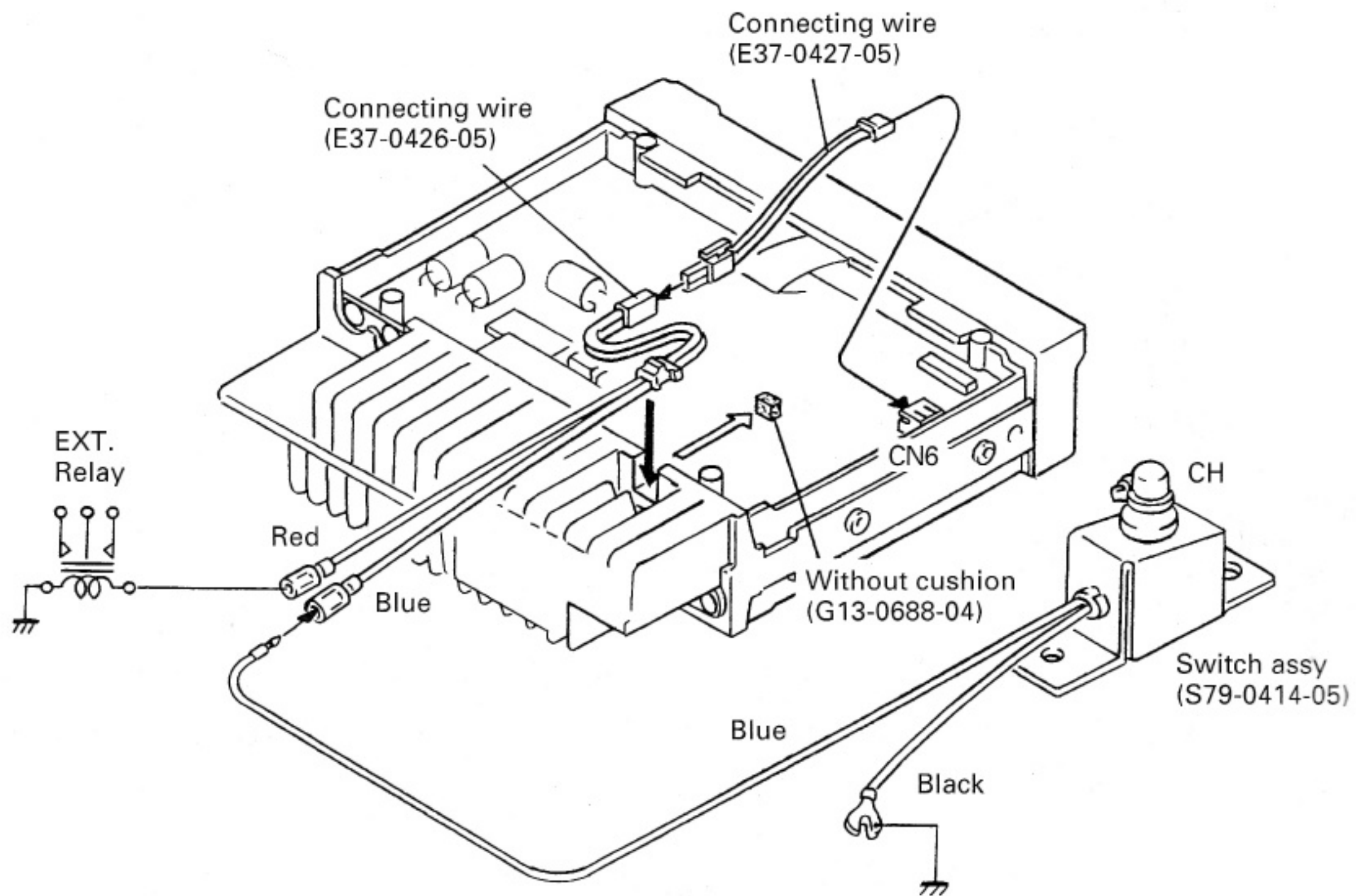
INSTALLATION

- **External horn alert function**

This function is available for a transceiver to which the E37-0427-05 (Connecting wire), E37-0426-05 (Connecting wire) and S79-0414-05 (Switch assy) have been added.

- **Emergency function**

The external horn alert function controls external equipment by energizing the external relay for a certain time after the 5-TONE decoder detects matching of call signal.



MODIFICATION

• Description of option connector pins

CN No.	Pin No.	Name (Color)	Description
CN3	1	E (Brown)	Earth (GND)
	2	SPO (Red)	SP output
CN4	1	SB (Brown)	Switched battery
	2	NC (Red)	Blank (Unused)
	3	E (Orange)	Earth (GND)
	4	DTC (Yellow)	Data control (PTT)
	5	MCM (Green)	MIC mute
	6	NC (Blue)	Blank (Unused)
	7	SQ (Violet)	Squelch
	8	PTT (Grey)	PTT input
	9	MI (White)	MIC input
	10	ME (Black)	MIC earth
	11	DI (Brown)	TX data input
	12	IGN (Red)	Ignition sense
	13	HK (Orange)	Hook
	14	DEO (Yellow)	Detector output
CN5	1	PTT OUT (Brown)	PTT output
	2	PTT IN (Red)	PTT input
CN6	1	EXT	External switch input
	2	HOR	Horn alert control output

• Hand set

Hand set pins	Connecting point (J501)
1 : MIC	5 : MIC
2 : NC	—
3 : PTT	3 : PTT
4 : SP	6 : HOOK
5 : GND	2 : GND

[Modification]

Remove R162 (X53- A/2) and R502 (X53- B/2).
Connect the HKO TH pin and C30 (X53- A/2) negative pin with a jumper.

• SC-450/460 (Transcrypt international inc.)

SC pin name	Connecting point
Power (Red)	8C (TH)
Ground (Black)	CN4 ME (Black)
PTT (Gray)	CN6 PTT OUT (Brown)
Clear/Code switch (Violet)	SON (TH)
TX audio in (Orange)	MCO (TH)
TX audio out (Yellow)	MCI (TH)
RX audio in (Green)	DEO (TH)
RX audio out (Blue)	DEI (TH)
Scramble on/off indicator	SCH (TH)
Binary doce 1	SC1 (TH)
Binary code 2	SC2 (TH)
Binary code 4	SC4 (TH)
Binary code 8	SC8 (TH)

[Modification]

Remove R98 (X53- A/2) and R438 (X53- A/2).

Set options and keys with the FPU.

1. Set the personality scrambler unit item to "Scramble B".
2. Set scrambler code by CH Edit.
3. Set scramble to a panel key. (S ON is switched between H and L by the key.)

• MASC III (GEC-Marconi Ltd.)

Pin No. & Name	Connecting point (X53- A/2)
1 PTT OUT (Brown)	CN5 PTT IN (Red)
2 TX Audio In (Red)	MCO (TH)
3 RX Audio In (Orange)	AFO (TH)
4 GND (Yellow)	CN4 E (Orange)
5 RX Audio Out (Green)	AFI (TH)
6 TX Audio Out (Blue)	MCI (TH)
7 FILL EN (Pink)	5SA (TH)
8 VSR (Violet)	CN4 SB (Brown)
9 EXT PTT/FILL DATA (Grey)	CN5 PTT OUT (Brown)
10 ALARM (Black)	—
11 SQUELCH (Brown)	CN4 SQ (Violet)
12 Audio EN (Red)	AMO (TH)
13 FUNCTION (Orange)	S ON (TH)

[Modification]

Remove R98 (X53- A/2) and R121 (X53- A/2).

Set options and keys with the FPU.

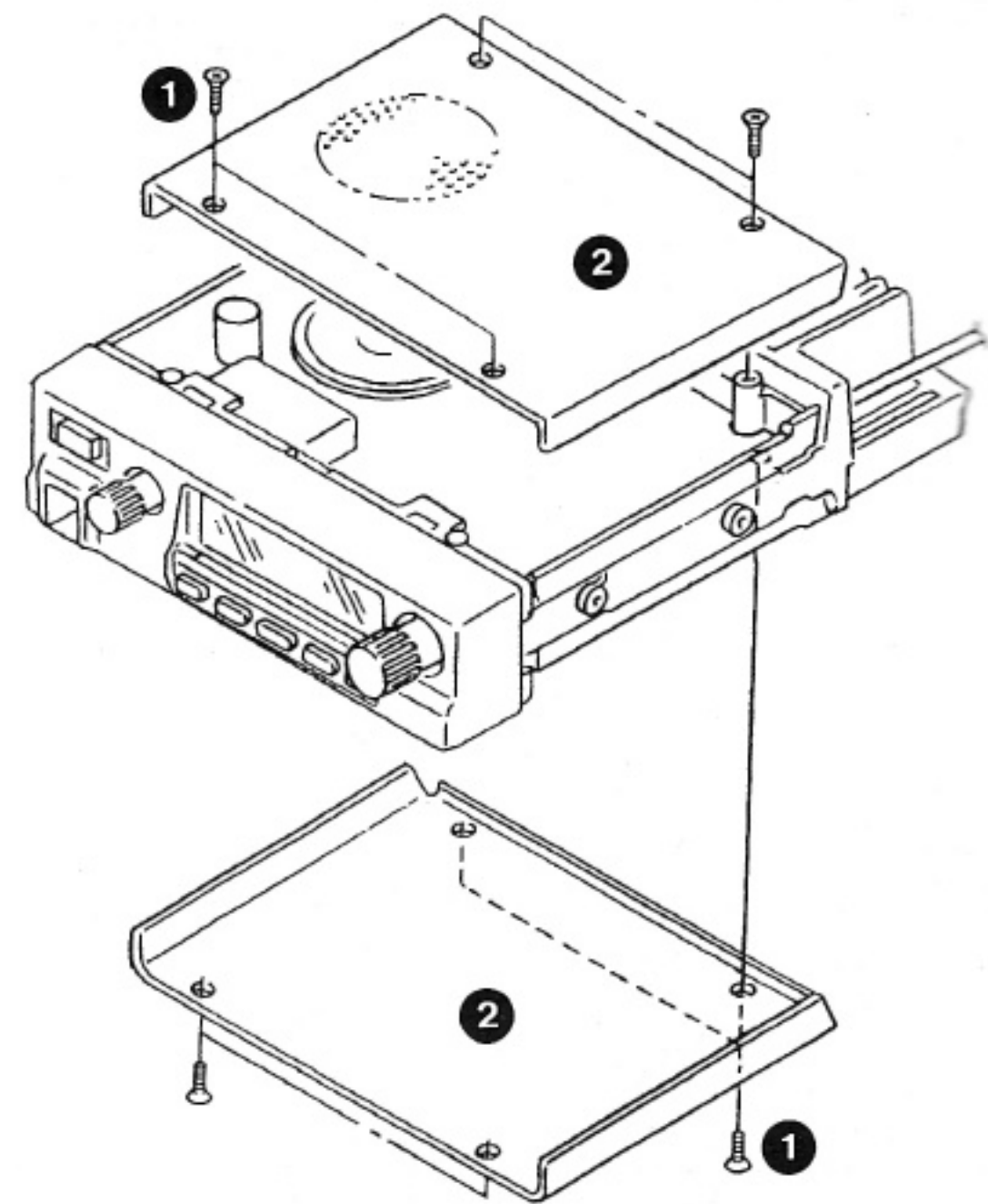
1. Set the personality scrambler unit item to "Scramble A".
2. Set scramble to a panel key. (S ON is switched between H and L by the key.)

DISASSEMBLY FOR REPAIR

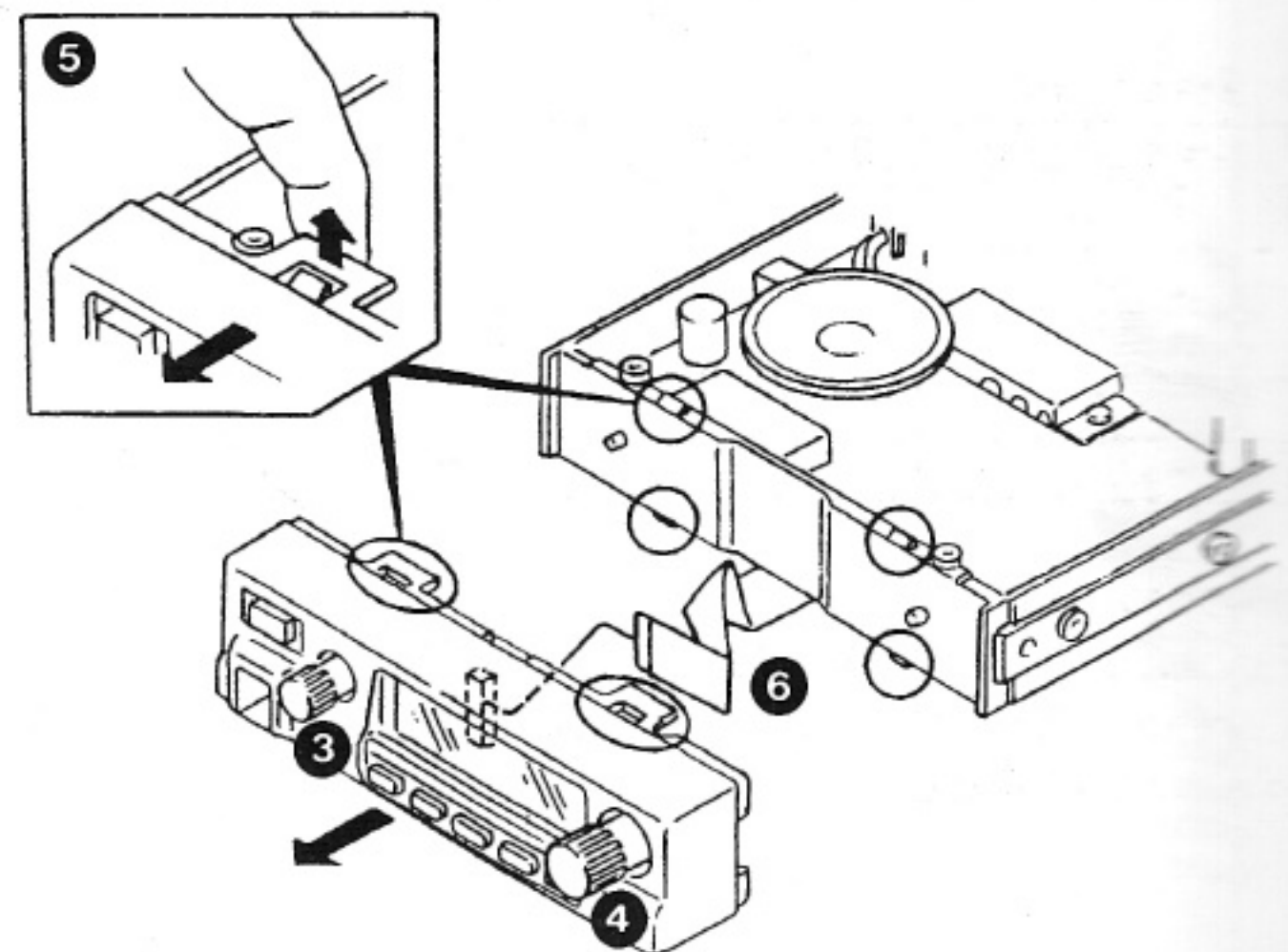
Disassembling the Front Panel

Disassemble the TK-752 in the same way as for the TK-759.

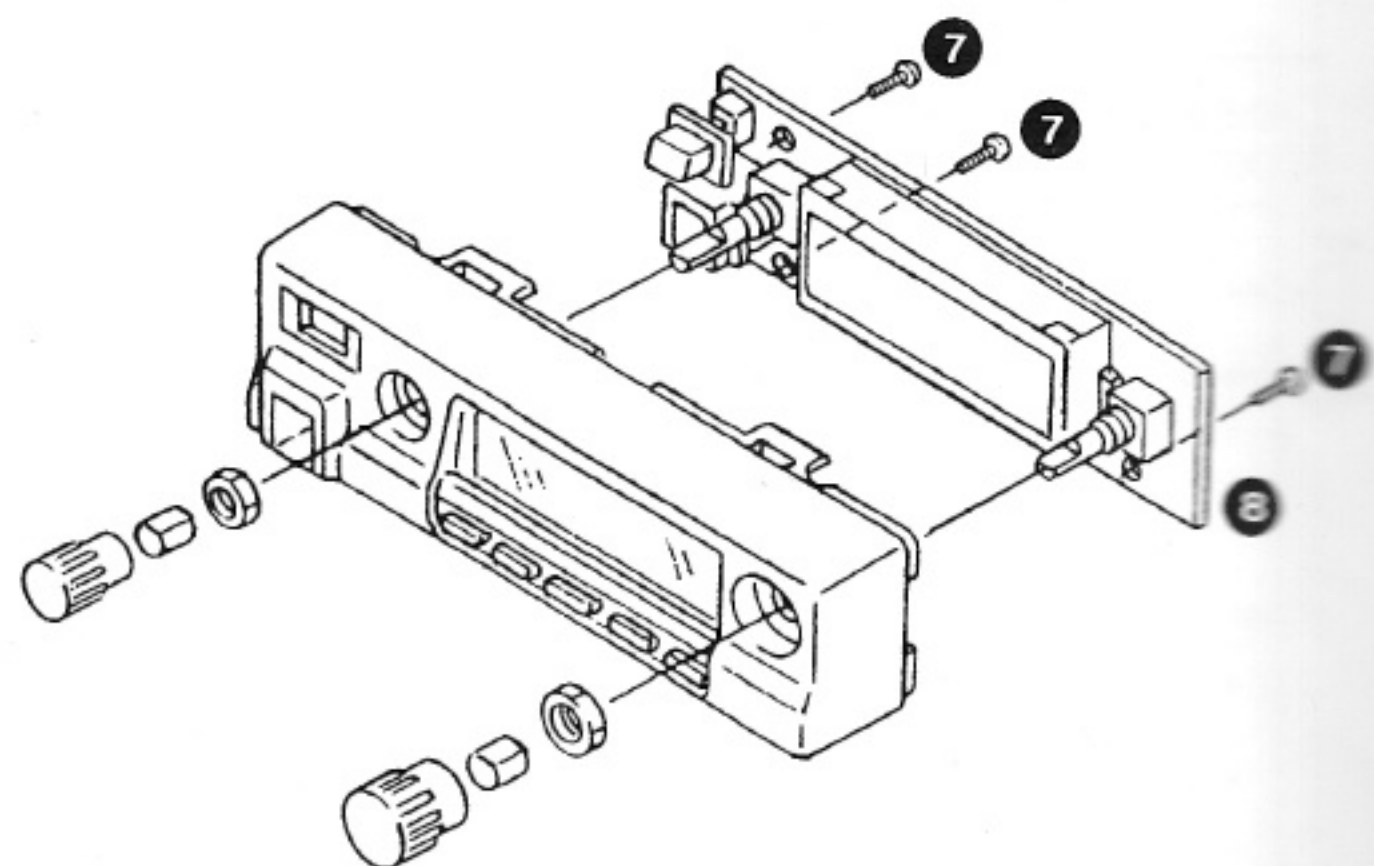
1. Remove the eight screws (❶) holding the upper and lower cases.
Remove the upper and lower cases (❷).



2. Remove the volume control knob (❸) channel selector knob (❹).
3. Lift the four upper and lower hooks on the front panel from the chassis with fingers, and pull the front panel out forward. (❺)
4. Remove the flat cable (❻) from the front panel.



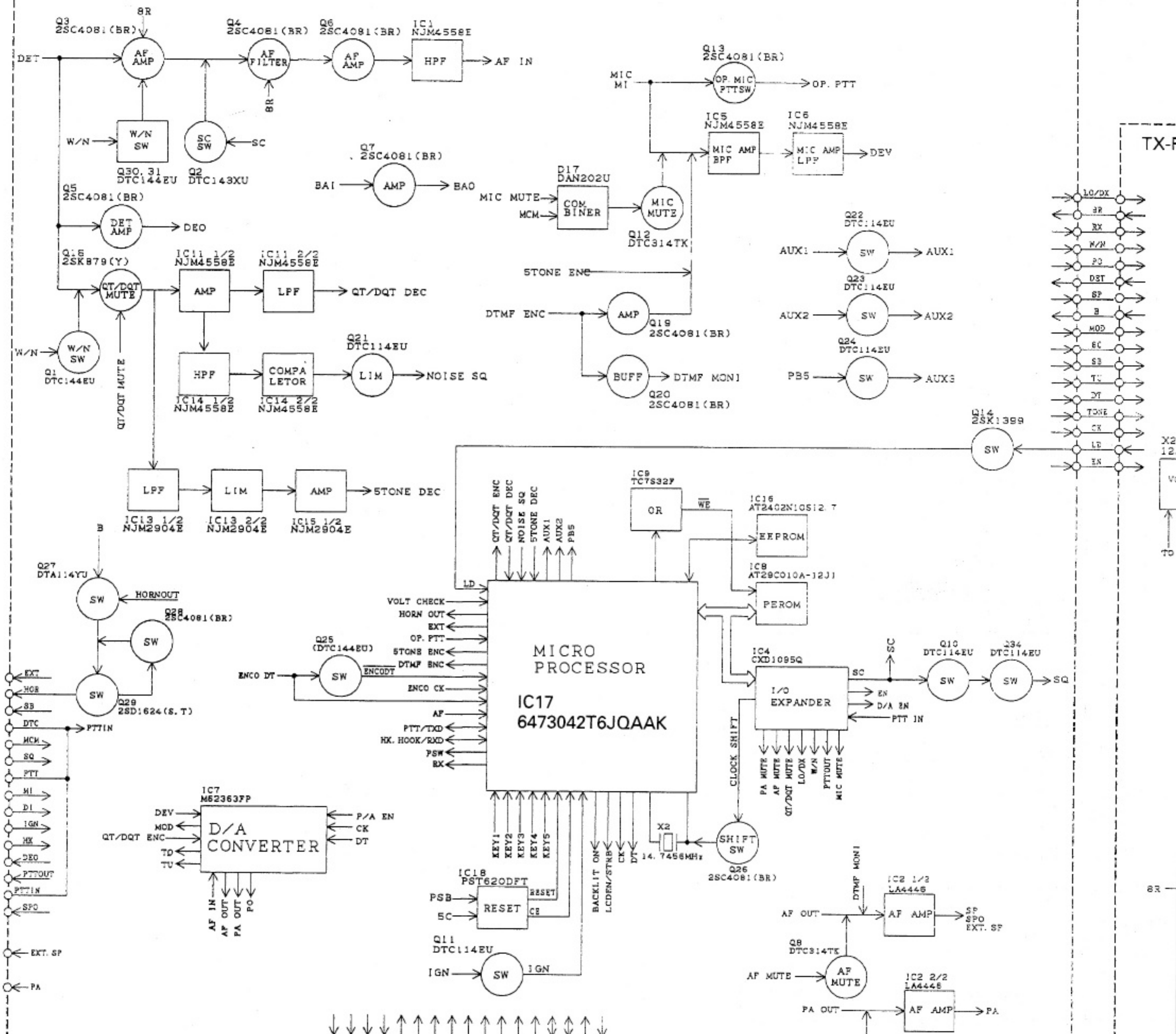
5. Remove the three screws (❼) in the front panel.
6. Remove the LCD unit (❽) from the front panel.



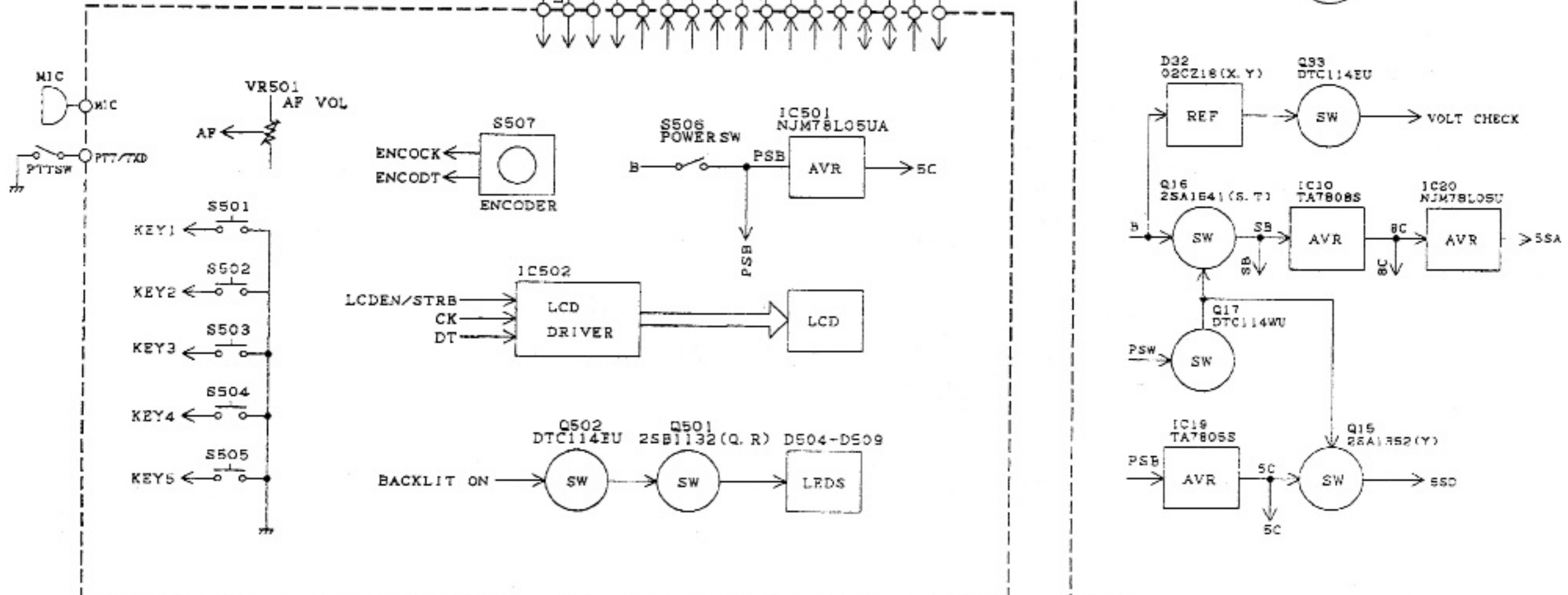
BLOCK DIAGRAM



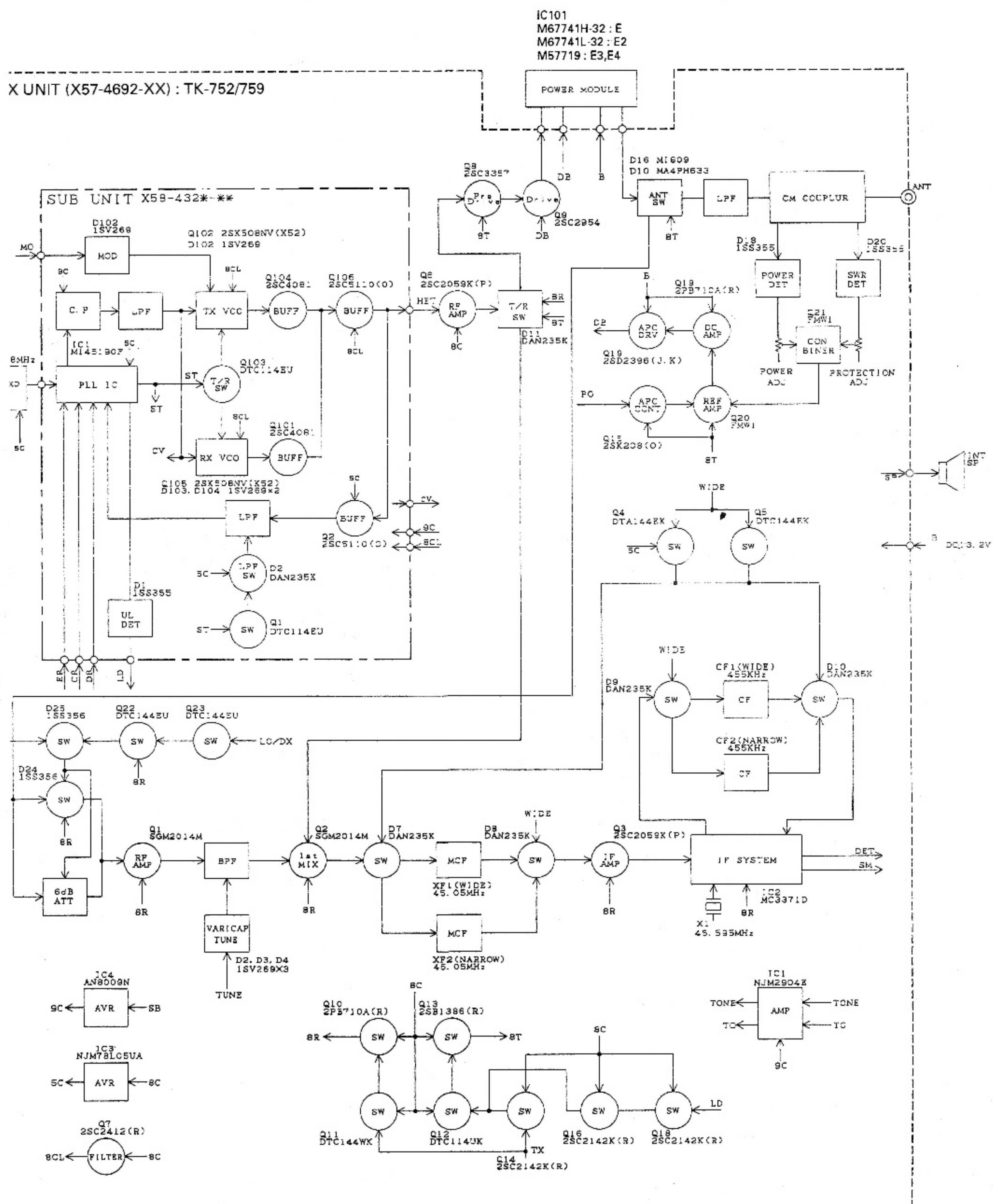
CONTROL UNIT (X53-3592-70) (A/2) : TK-759



DISPLAY UNIT (X53-3592-70) (B/2) : TK-759

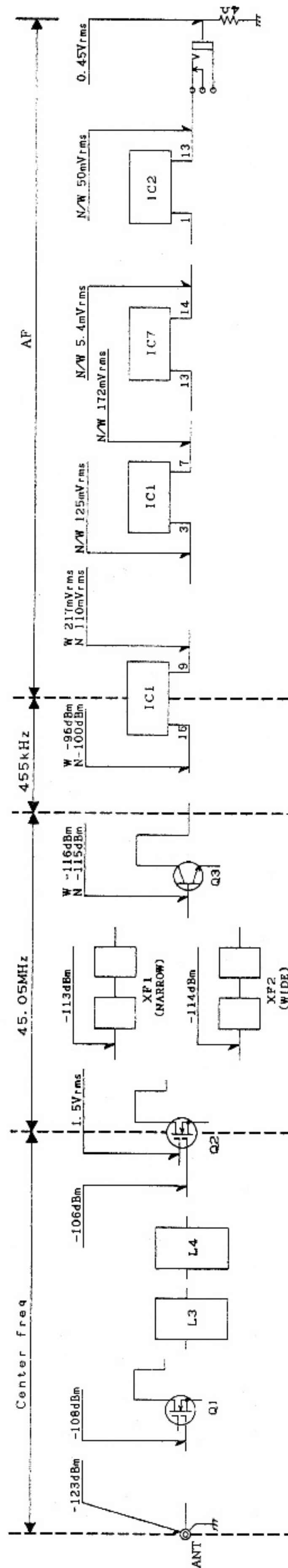


IAGRAM



LEVEL DIAGRAM

Receiver Section

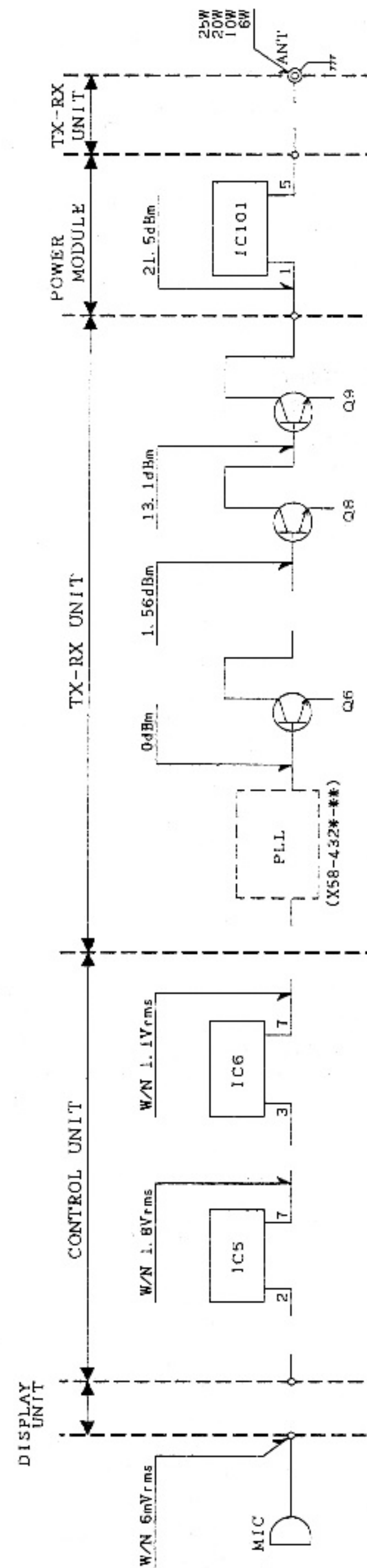


SG input level for 120B SINAD are obtained Measured by connecting SG to each point Via a 0.01uF capacitor.

AF VTVM

AF level obtained when the AF output level is adjusted for 0.45V/4Ω with the front panel AF VOL control. Measured with AF voltmeter connected to the external speaker Jack, receiving a 53dBm EMP SSG signal modulated at 1kHz, DEV. WIDE 3kHz (NARROW 1.5kHz).

Transmitter Section



1. AG is set so that MIC input becomes WIDE 3kHz (NARROW 1.5kHz) DEV. at 1kHz mod.
2. Transmitting frequency: Center frequency

CIRCUIT DESCRIPTION

Frequency Configuration

The TX-RX unit incorporates a variable frequency oscillator (VFO), based on a phase locked loop (PLL) synthesizer system, that allows a channel step of 5 and 6.25kHz to be selected. The signal is mixed with a first local oscillation frequency to produce a first intermediate frequency of 45.05MHz. The signal is then mixed with a second local oscillation frequency of 44.595 MHz to produce a second intermediate frequency of 455kHz.

This is called a double conversion system. The TX-RX unit contains wide and narrow MCFs and CFs, one of which can be selected freely. The transmission signal is produced by the PLL circuit for direction oscillation and division, and amplified by a straight amplifier and transmitted.

Name	Description
Signal form	5kHz Dev. 16K0F3E
	4kHz Dev. 14K0F3E
	2.5kHz Dev. 8K50F3E
Reception method	Double super heterodyne
IF frequency	1st IF 45.050MHz (Upper)
	2nd IF 455kHz (Lower)
	2nd OSC frequency 44.595MHz
Transmission method	VCO direct amplification
Modulation	Reactance

Table 1

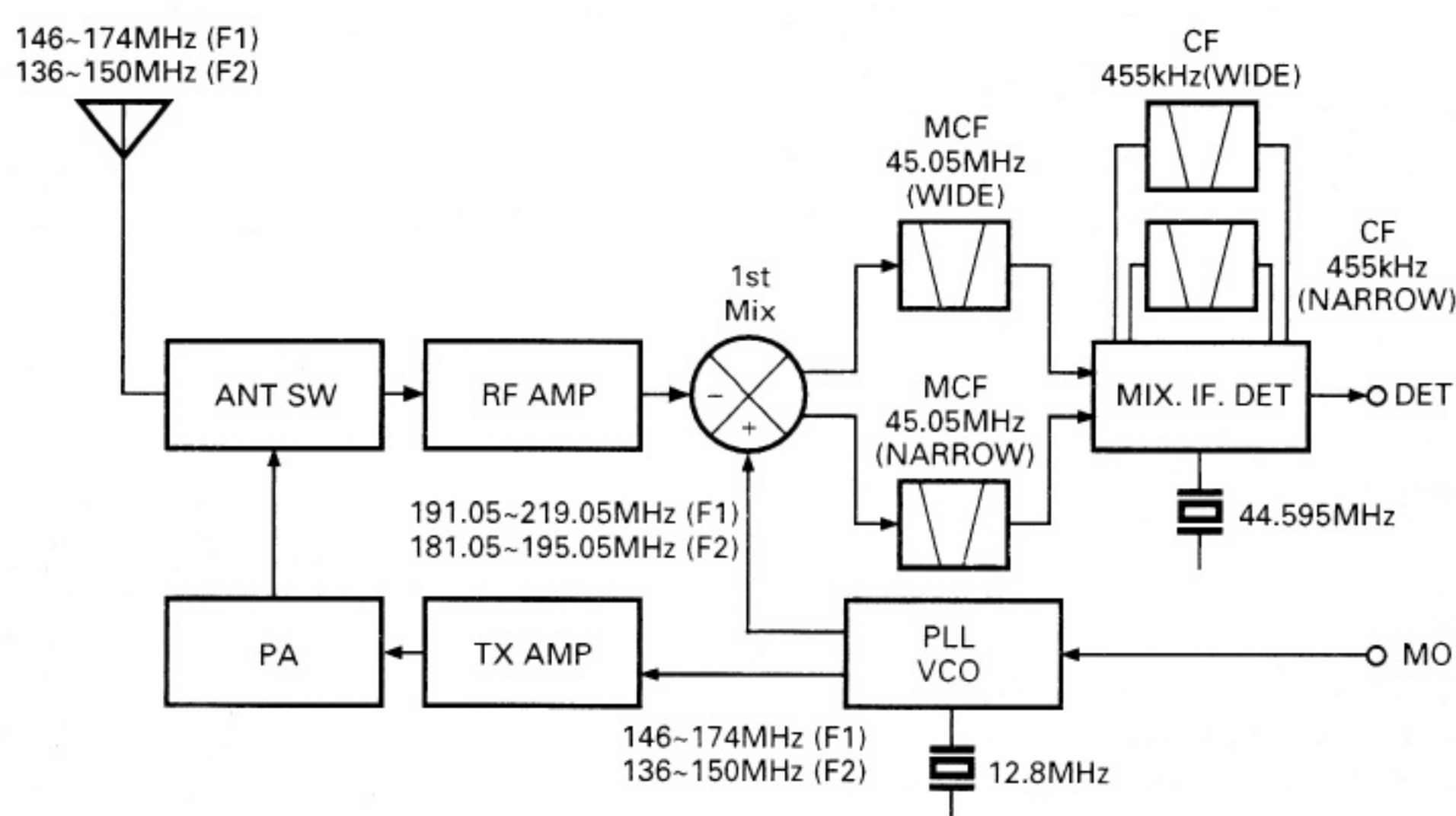


Fig. 1 Frequency configuration

Receiver System

• Outline

The incoming signal from the antenna passes through a low pass filter in the final transmission unit and then through a transmission/reception selection diode switch (D15) and goes to the RF amplifier (Q1) at the front end of the receiver. The signal passes through the varicap tuning (D1) BPF and goes to the first mixer (Q2). The signal is mixed with the first local signal from the VCO, then converted to the first IF signal of 45.05 MHz. The signal passes through the BPF consisting of two MCFs (wide (XF2) and narrow (XF1)) and three tuning coils (wide L7, L9, L11) (narrow L8, L10, L12) to maintain adjacent channel sensitivity.

The first IF signal is amplified and input to the FM IF IC (IC2). This signal is then mixed with the second local signal of 44.595 MHz to produce the second IF signal of 455 kHz. The unwanted near-by signal components are then eliminated by an FM wide ceramic filter (CF1) or an FM narrow ceramic filter (CF2) and the resulting signal goes back to the FM IF IC. The signal is amplified to the second IF signal and detected to produce an audio signal, which is output to the control unit through CN3 (DET).

CIRCUIT DESCRIPTION

Item	Rating
Nominal center frequency	45.05MHz
Pass bandwidth	$\pm 3.75\text{kHz}$ or more at 3dB
Attenuation bandwidth	$\pm 15\text{kHz}$ or less at 40dB
Ripple	1.5dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within $\pm 1\text{MHz}$ Spurious : 40dB or more
Terminating impedance	$3\text{k}\Omega / -0.5\text{pF}$

MCF (L71-0465-05) : TX-RX unit XF1

Item	Rating
Nominal center frequency	45.05MHz
Pass bandwidth	$\pm 7.5\text{kHz}$ or more at 3dB
Attenuation bandwidth	$\pm 28\text{kHz}$ or less at 40dB
Ripple	1.5dB or less
Insertion loss	3dB or less
Guaranteed attenuation	60dB or more within $\pm 1\text{MHz}$ Spurious : 40dB or more
Terminating impedance	$3\text{k}\Omega / -0.7\text{pF}$

MCF (L71-0464-05) : TX-RX unit XF2

Item	Rating
Nominal center frequency	$455\text{kHz} \pm 1\text{kHz}$
6dB bandwidth	$\pm 6\text{kHz}$ or more (from 455kHz)
50dB bandwidth	$\pm 12.5\text{kHz}$ or less (from 455kHz)
Ripple (Within $\pm 4\text{kHz}$ of 455kHz)	3dB or less
Insertion loss	6dB or less
Guaranteed attenuation (Within $\pm 100\text{kHz}$ of 455kHz)	35dB or more
I/O matching impedance	$2.0\text{k}\Omega$

**Ceramic filter CFWM455F (L72-0372-05)
: TX-RX unit CF1**

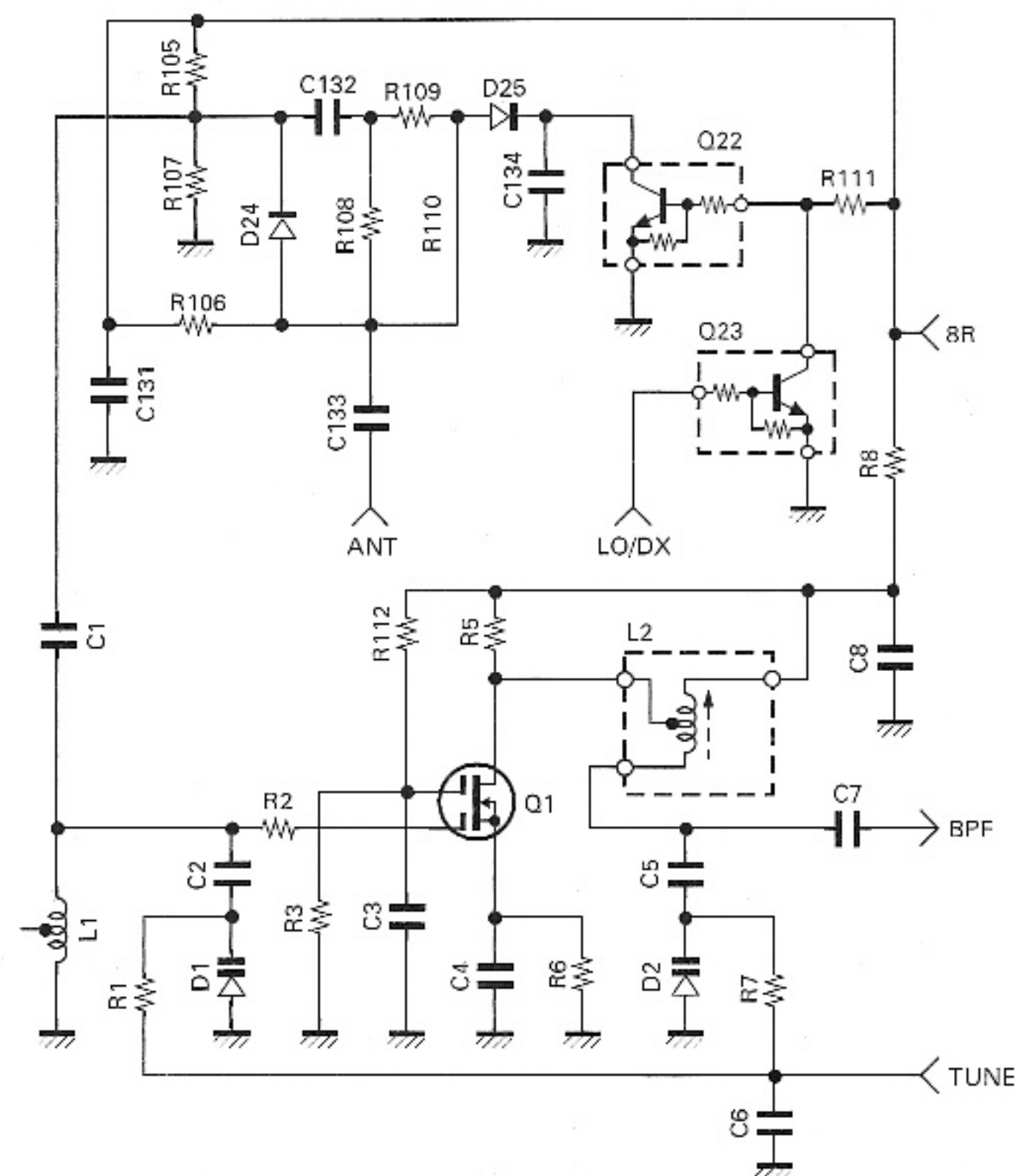
Item	Rating
Nominal center frequency	455kHz
6dB bandwidth	$\pm 4.5\text{kHz}$ or more (from 455kHz)
50dB bandwidth	$\pm 10\text{kHz}$ or less (from 455kHz)
Ripple (Within $\pm 3\text{kHz}$ of 455kHz)	2dB or less
Insertion loss	6dB or less
Guaranteed attenuation (Within $\pm 100\text{kHz}$ of 455kHz)	35dB or more
I/O matching impedance	$2.0\text{k}\Omega$

**Ceramic filter CFWM455G (L72-0376-05)
: TX-RX unit CF2**• **LO/DX circuit**

If the CN3 22 pin (LO/DX) is high, the LO/DX changeover switch (Q22) turns off, the received signal passes through D24 and goes to the front RF amplifier (Q1) (distance function).

If the LO/DX port is low, the LO/DX changeover switch turns on, the received signal passes through the π type ATT (R108, R109, and R110) and goes to the front RF amplifier. This reduces the input level of the front RF amplifier and produces the first IF signal with little distortion (local function).

You can give priority to sensitivity or mutual modulation characteristics by turning the LO/DX changeover switch on or off.

**Fig. 2 LO/DX circuit**

CIRCUIT DESCRIPTION

- **Wide/Narrow changeover circuit**

If the CN3 19 pin (WIDE) is high, the wide/narrow switch (Q5), the wide/narrow ceramic filter switch (D9, D10), and the WIDE side of the wide/narrow MCF switch (D7, D8) turn on and wide reception is possible.

If the port is low, the wide/narrow switch (Q4), the wide/narrow ceramic filter switch, and the NARROW side of the wide/narrow MCF switch turn on and narrow reception is possible.

You can easily select between wide and narrow reception.

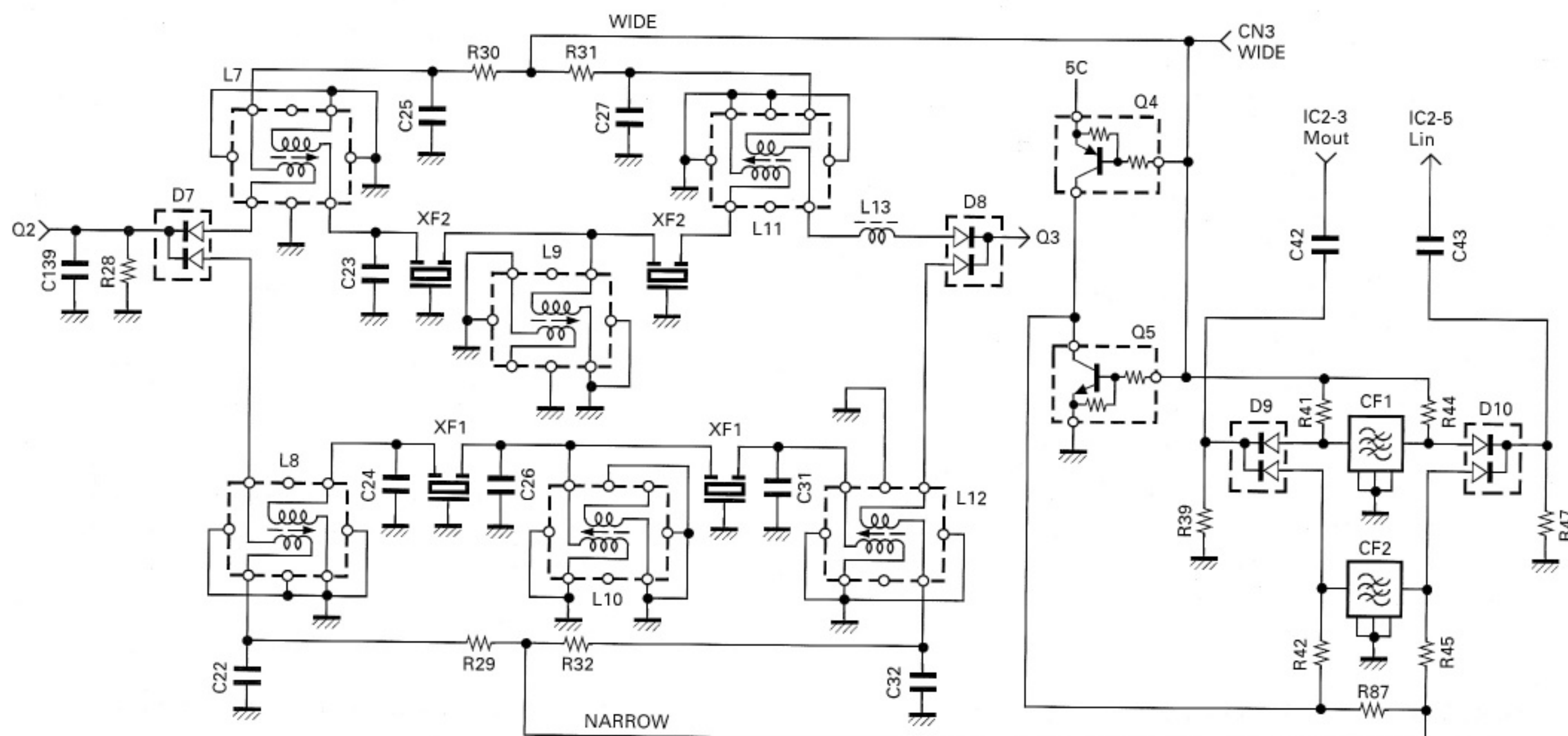


Fig. 3 Wide/Narrow changeover circuit

AF Signal System

- **Overview**

The detection signal DET from the TX-RX unit passes through a group of filters and goes to the D/A converter. The signal output from the D/A converter is mixed with the BEEP and DTMF signals, and the resulting signal goes to the power amplifier and speaker. The AF signal can be directed to the internal speaker or the speaker jack output.

- **PA circuit**

The AF signal from the microphone passes through the microphone amplifier and goes to the D/A converter. The signal passes through the AF amplifier and output to the speaker jack for the PA.

- **Volume circuit**

The angle of the volume on the panel unit is converted to 8 bit digital data by the microprocessor on the control unit. The data is output from the microprocessor to the D/A converter as serial data. The D/A converter has the following relationship and has a resolution of 256.

$$\text{D/A output} = (V_i - V_{D\text{aref}}) \div 256 \times n + V_{D\text{aref}}$$

Where

V_i : Analog input

$V_{D\text{aref}}$: D/A reference voltage

n : Serial data value from the microprocessor

CIRCUIT DESCRIPTION

• Squelch circuit

The DET output from the TX-RX unit passes through the noise detector, noise amplifier, and Q21 and goes to pin 93 of the microprocessor. The microprocessor counts the number of times of turning Q21 on and off and converts it to 8 bit data, compares it with the value set by the FPU to control squelch.

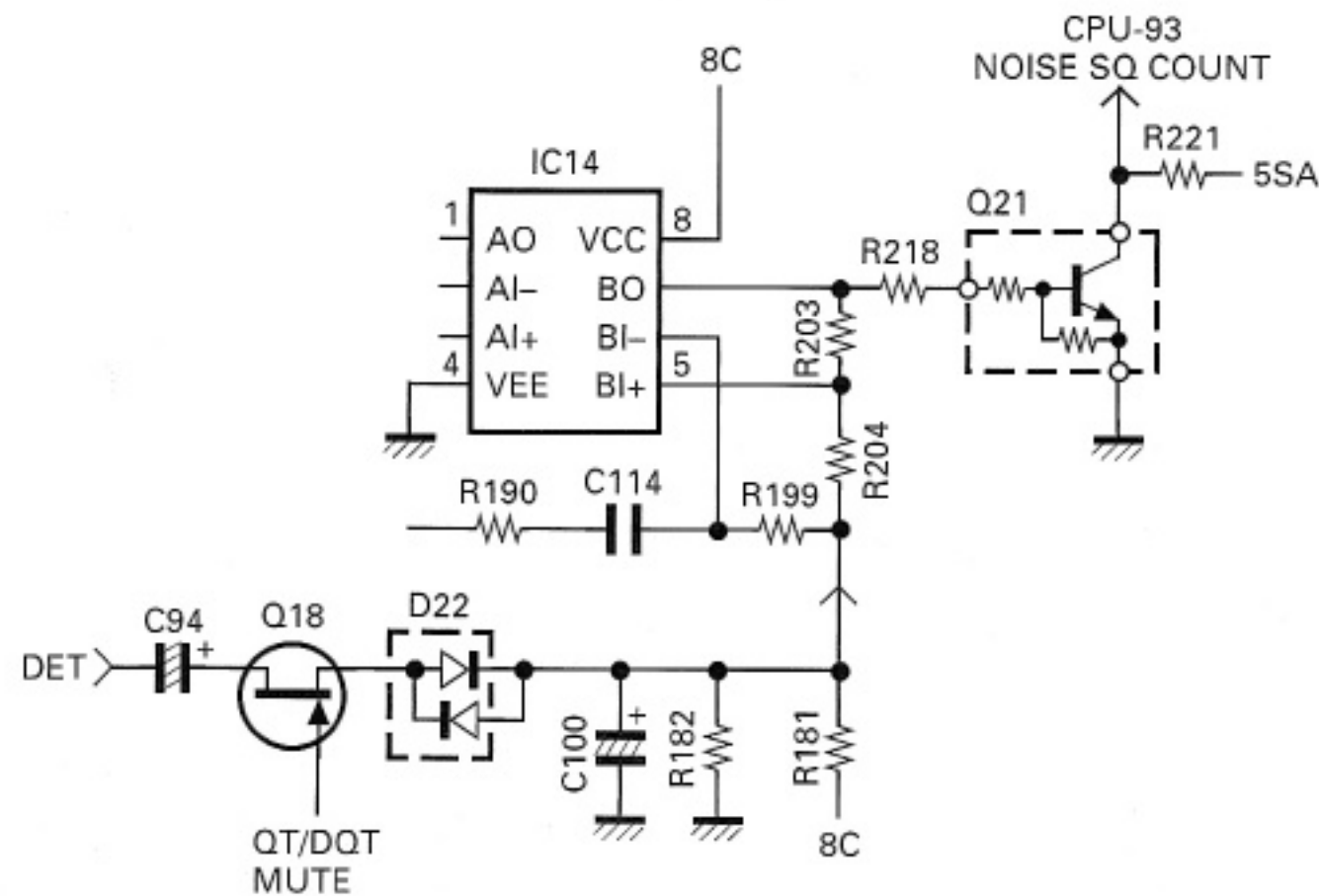


Fig. 4 Squelch circuit

• Reset and backup circuits

When the power switch on the panel is turned on, IC18 outputs an about 90ms low-level pulse. This pulse resets the CPU (IC17).

When the power switch is turned off, IC18 detects the power supply voltage drop and sends it to the microprocessor. The microprocessor starts a backup operation. It writes data, including the last channel, into the EEPROM. If the transceiver is not operated for five seconds, the microprocessor saves data, including the last channel, in the EEPROM.

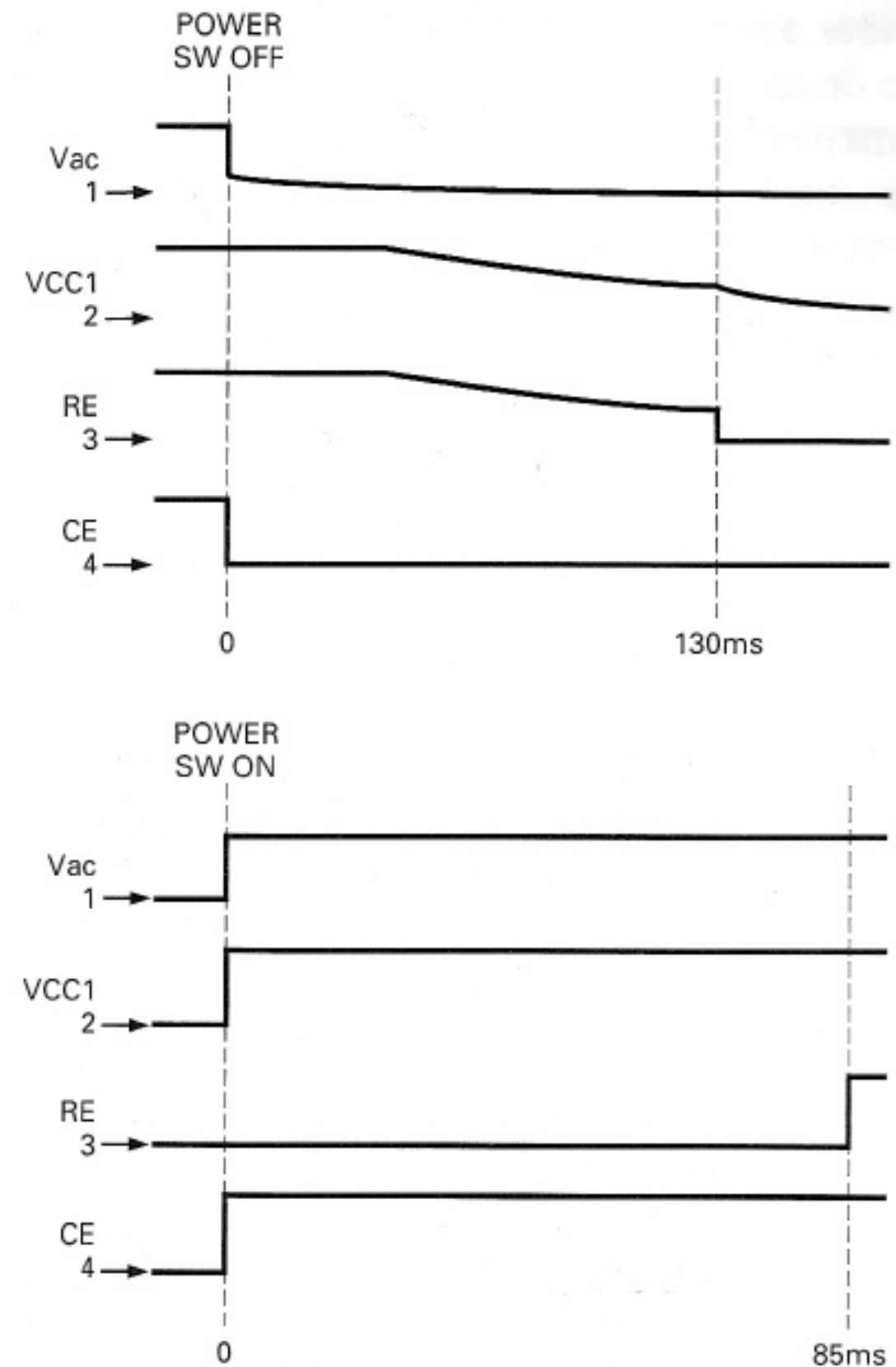


Fig. 5 Reset and backup timing chart

Transmitter System

• Outline

The transmitter circuit directly produces and FM modulates the desired frequency by means of a varicap diode.

• Younger stage circuit

The signal output from the VCO passes through buffer amplifier Q6 and goes to the drive block. The amplifier provides a stable drive output without adjustment because of its wide bandwidth design. The APC circuit controls the collector voltage in the Younger final stage.

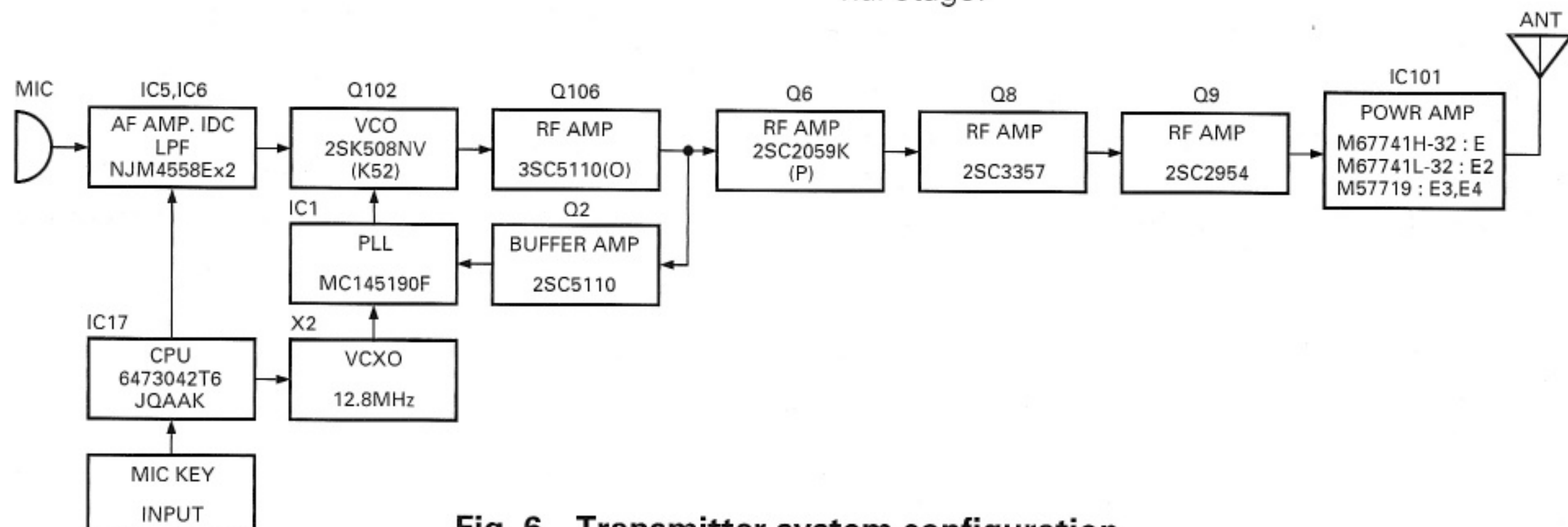


Fig. 6 Transmitter system configuration

CIRCUIT DESCRIPTION

- **Power amplifier and final circuits**

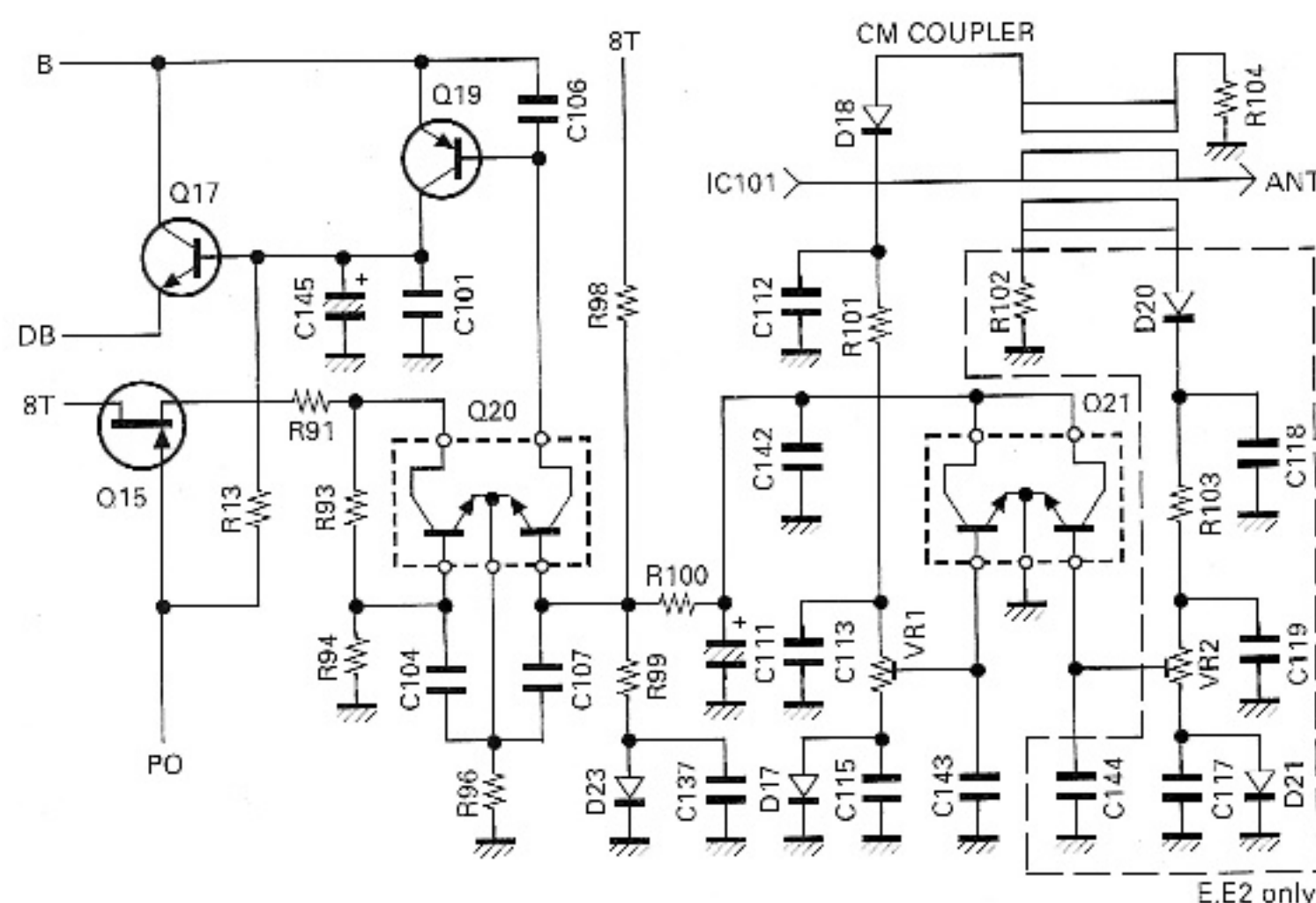
The drive signal is input to the power module IC101 and amplified to the specified level. The amplified signal passes through the transmission/reception selection diode (D15, D16) and goes to the low pass filter. The low pass filter removes unwanted high frequency components, and the resulting signal is output to the antenna.

- **APC circuit**

The automatic transmission power control (APC) circuit detects part of power module output with the diode (D18) and CM coupler, amplifies it (Q21) and sends the signal to Q20.

The APC control voltage PO from the control unit passes through Q15 and goes to Q20. Q20 compares the detection voltage from Q21 with the set voltage from the microprocessor. It controls Q17 and Q19 and produces the DB voltage from the B voltage to control the power.

The reflection signal is also diode detected (D20) by the CM coupler and the DB voltage can be controlled in the same way. This circuit is configured to protect overcurrent of the power module due to fluctuations of the load at the ANT end.



CIRCUIT DESCRIPTION

PLL Synthesizer Section

The VCO and PLL circuits are housed in a solid shielding case. Comparison frequencies of 5 and 6.25kHz are produced by dividing the 12.8MHz reference oscillator frequency by 2048 and 2560 to correspond to the 5, 10, 12.5, and 25kHz channel steps.

For 150MHz, the relationship between f_{vco} (RX) and each frequency divide ratio is given by the following equation:

$$f_{vco} = (150 + 45.05) = \{(n \times 64) + A\} \times f_{osc} \div R$$

Where:

f_{vco} : VCO output frequency

n : Binary 12 bit programmable counter setting value

A : Binary 8 bit programmable counter setting value

f_{osc} : Reference frequency 12.8MHz

R : Binary 13 bit programmable counter setting value

2560 (5.0kHz step)

2048 (6.25kHz step)

For a 5.0kHz step, n is 609 and A is 34.

$$\begin{aligned} f_{vco} &= \{(609 \times 64) + 34\} \times 12800 \div 2560 \\ &= 195050 \\ &= 195.05\text{MHz} \end{aligned}$$

• VCO/PLL pin names

The VCO/PLL pin functions are listed in Table 2.

Pin name	Function
5C	5V
LD	Unlock signal (Low: unlocked)
X1	12.8MHz crystal
LS	Inused
DP	Data input
CP	Clock input
EP	Enable input
MO	Modulation signal input
9C	9V
8CL	8 V (Ripple filter)
ST	Transmit/receive signal (High during transmission; Low during reception)
CV	Lock voltage output
E	Ground
HT	VCO output

Table 2

• 2VCO

The transmitter has a VCO and the receiver have another. This improves signal purity, reduces lockup time, and improves the performance of the signal source.

• TCXO

The TCXO with a modulation pin performs modulation directly.

• Low pass filter switching

The low pass filter with the cut off frequency corresponding to transmission or reception functions during transmission or reception. During transmission, the transmit/receive changeover switch (Q1) turns on and the low-pass filter transmit/receive changeover switch (D2) turns on, and the low pass filter consisting of L1, C4, C5, C9, and C11 functions. During reception, the transmit/receive changeover switch turns off, the low pass filter transmit/receive changeover switch (D2) turns off, and the low pass filter consisting of L1, C5, and C9 functions.

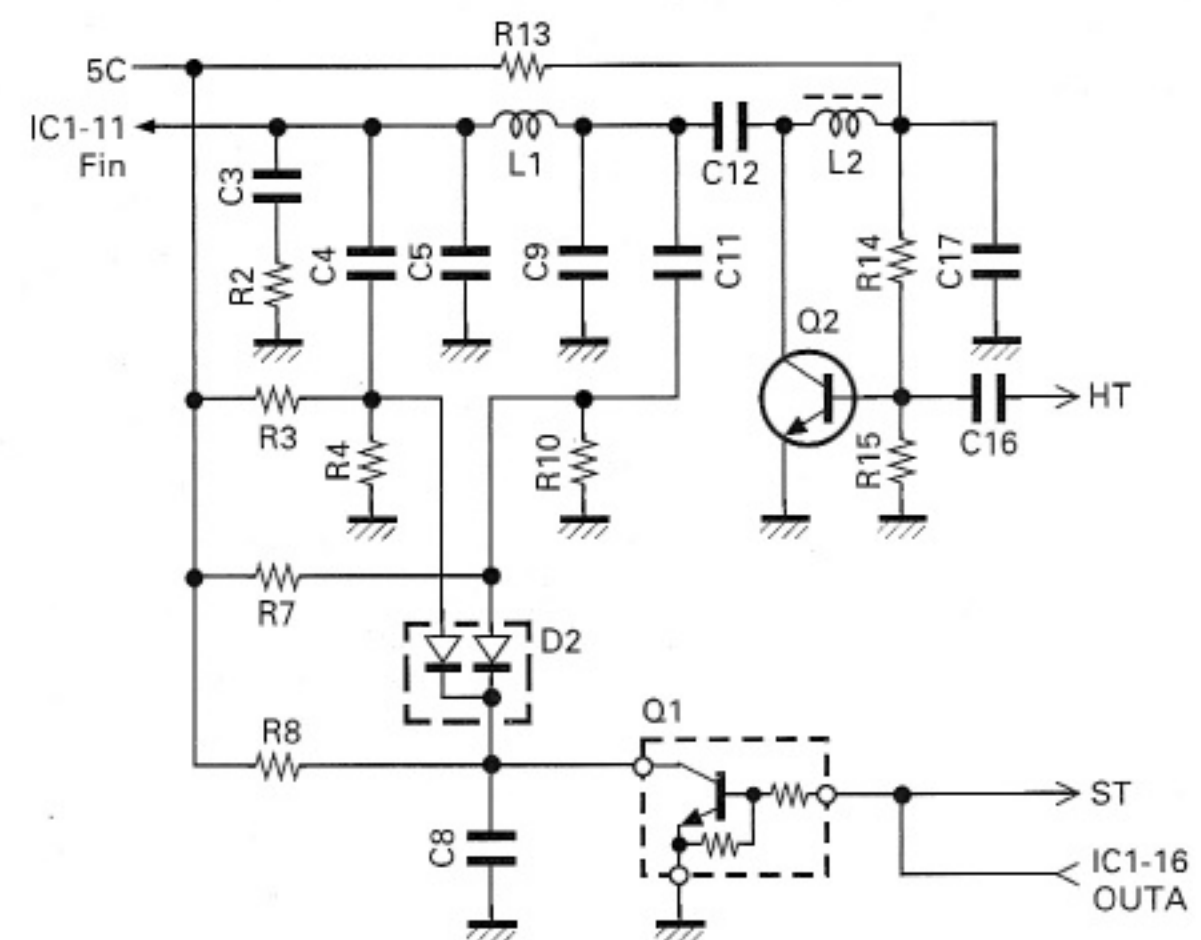


Fig. 9 LPF switching circuit

• Unlock circuit

During reception, the TX LINE is high, and Q11 turns on and Q12 turns off. Q10 turns on and a voltage is applied to the collector (8R), but since Q13 is off, no voltage is applied to the collector (8T). During transmission, the TX LINE is low, Q11 turns off, Q12 turns on, Q10 turns off, and Q13 turns on. 8V is applied to 8T. The unlock circuit works during transmission only. The LD pin signal output from the PLL goes low during unlocking, no voltage is applied to 8T, and no signal is transmitted.

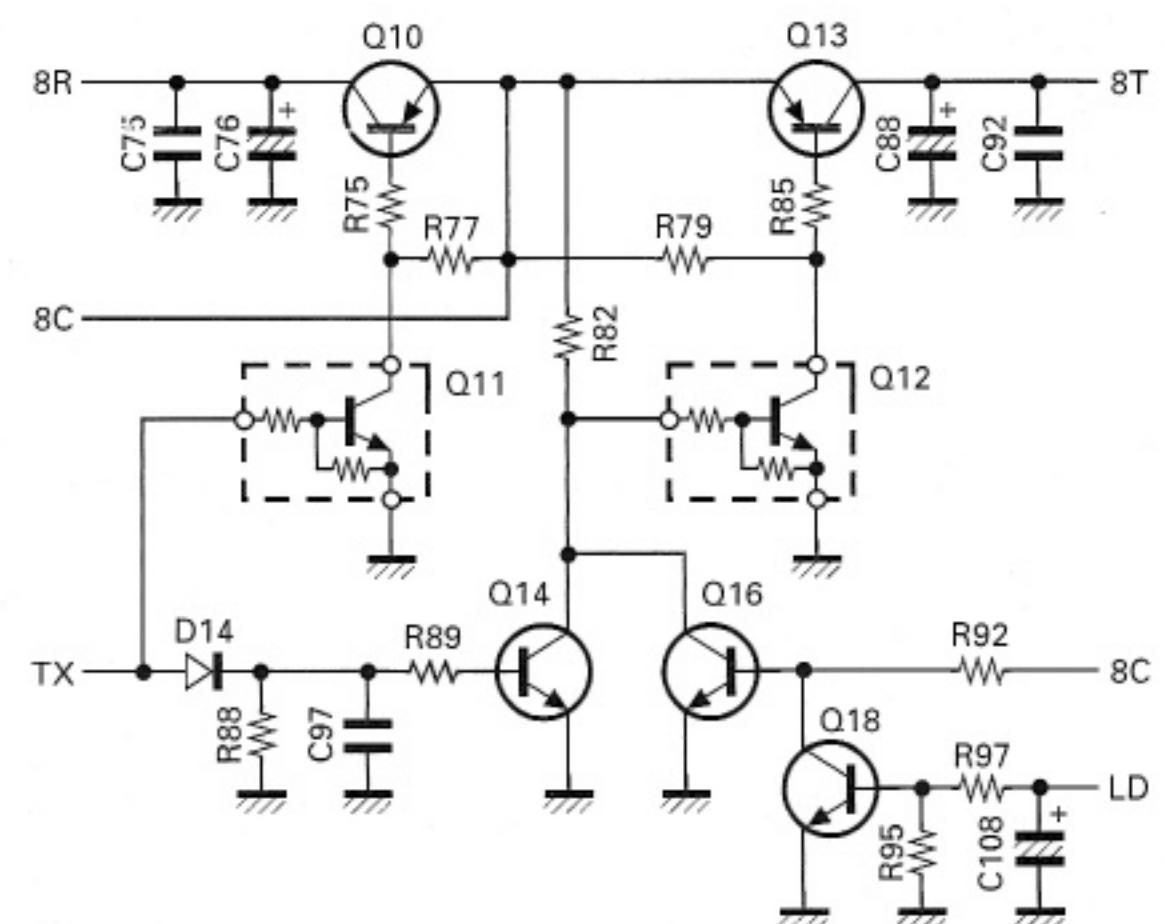


Fig. 10 Unlock circuit

CIRCUIT DESCRIPTION

Digital Control Section

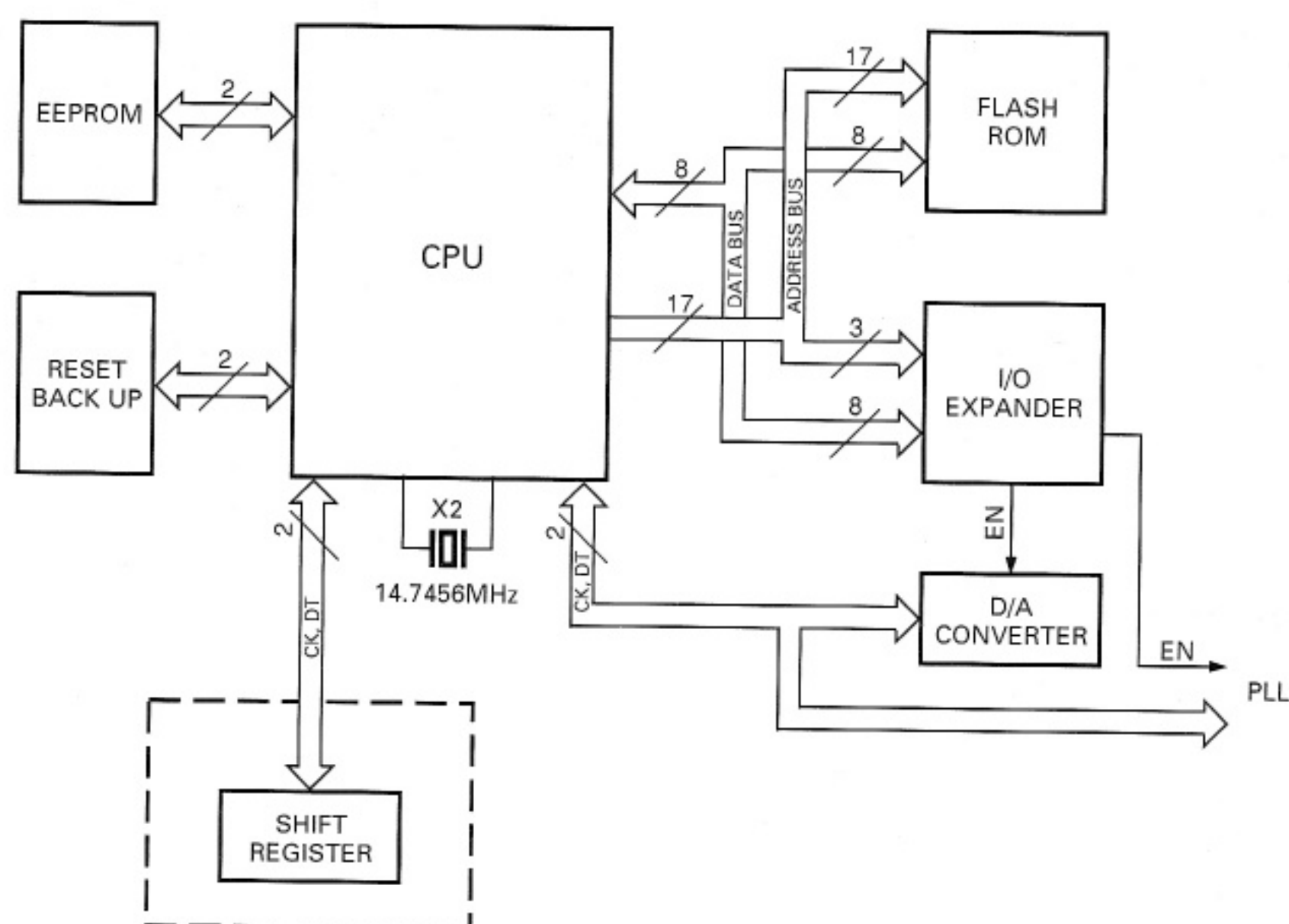
• Outline

The digital control unit comprises the key rotary encoder input circuit (multiple channels only), display circuit, reset and backup circuits. The CPU, flash ROM, and I/O expander are controlled through the data bus and address bus.

• Data transmission between the FPU and control unit

Adjustment data and setting data are sent to the control unit using the FPU (KPG-28D). Microphone pins PTT (TXD) and HOOK (RXD) are used for transmission. The data transmission is asynchronous and the transmission rate is 9600 bps.

TK-752



TK-759

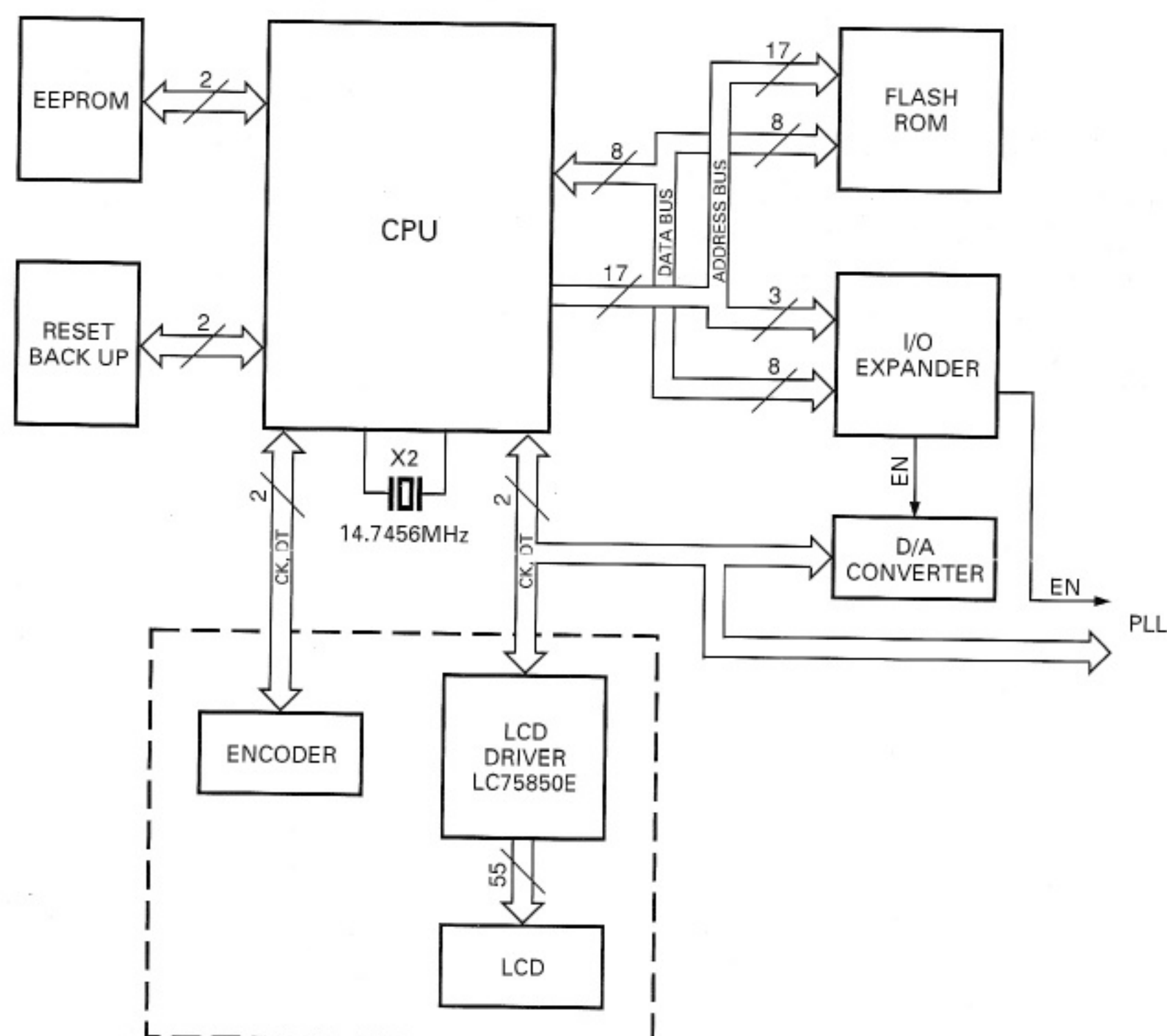


Fig. 11 Digital control section block diagram

CIRCUIT DESCRIPTION

• Key input circuit (TK-752)

The signals from function keys 1, 2, 3 and the CH key on the panel are input to the 19, 20, 21, and 23 pins of the CPU, respectively.

Each of the ports is pulled up internally and goes low when the corresponding key is pressed.

• LED lighting circuit (TK-752)

Serial data from the microprocessor enters the IC502 shift register and controls the LEDs as listed in the table below.

	Shift register port					Switching digital transistor					LED		
	Q1	Q2	Q3	Q4	Q5	Q501	Q502	Q503	Q504	Q505	D503	D504	D505
CH1 is selected	L	L	H	H	H	ON	ON	OFF	OFF	OFF	Orange	–	–
CH1 transmission	L	H	H	H	H	ON	OFF	OFF	OFF	OFF	Red	–	–
CH1 is busy	H	L	H	H	H	OFF	ON	OFF	OFF	OFF	Green	–	–
CH2 is selected	H	H	L	L	H	OFF	OFF	ON	ON	OFF	–	Orange	–
CH2 transmission	H	H	L	H	H	OFF	OFF	ON	OFF	OFF	–	Red	–
CH2 is busy	H	H	H	L	H	OFF	OFF	OFF	ON	OFF	–	Green	–
AUX function is on	H	H	H	H	L	OFF	OFF	OFF	OFF	ON	–	–	Red

Table 3

Panel Section (TK-759)

• Key and rotary encoder input circuit

A port is assigned to each key on the panel. The signals are input to microprocessor pins 18, 19, 20, 21, and 23, and pulled up by the CPU.

The rotary encoder unit controls microprocessor pins 17, 83, and 88. Since the CPU detects only the falling pulses of the rotary encoder, Q23 inverts the rising pulses of the rotary encoder and inputs them to the microcomputer.

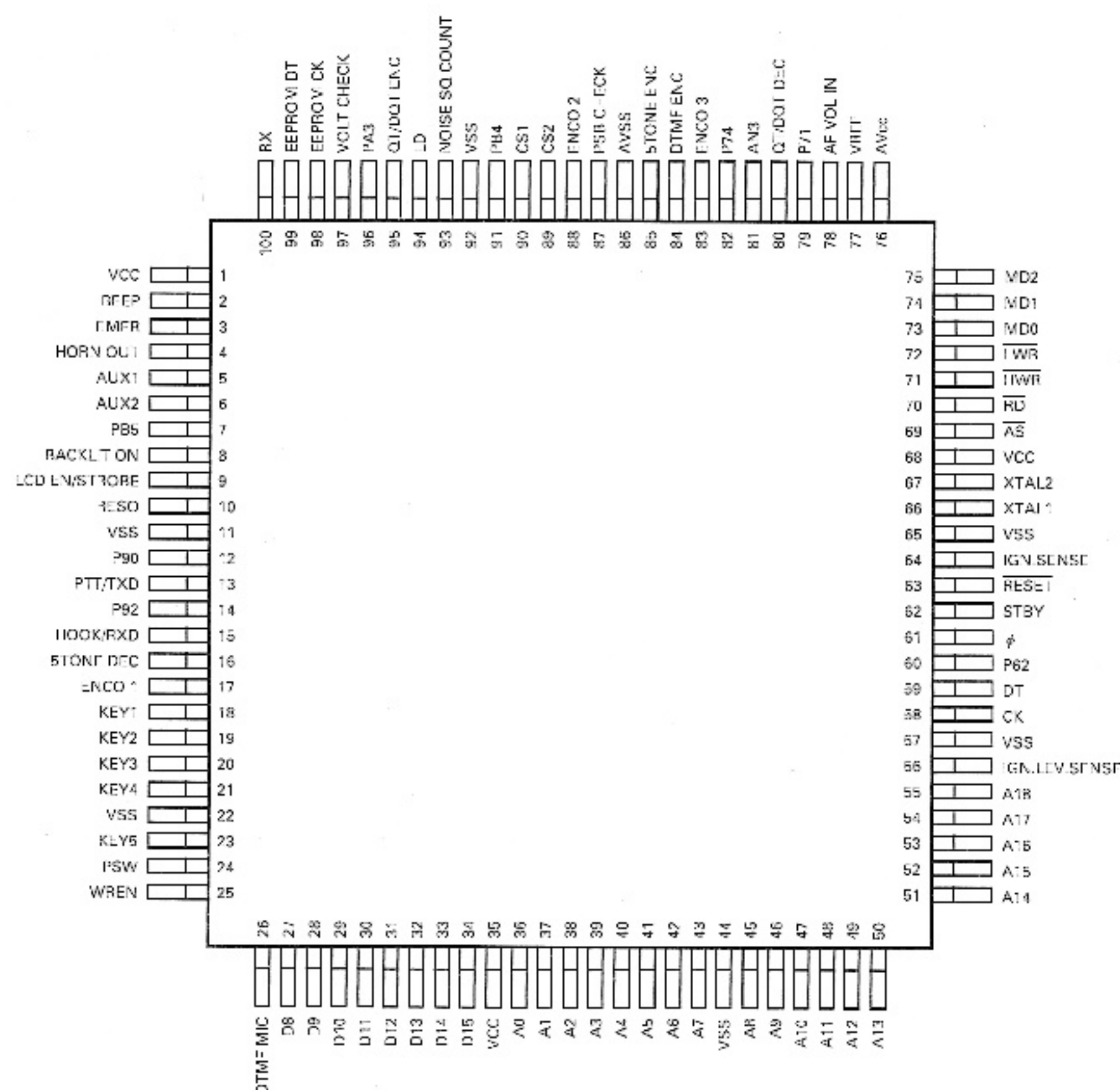
• Display Circuit

The display circuit consists of an LCD driver and its peripheral circuits. The CPU controls the display and the LCD driver displays data. The LCD is lighted with 1/3 a duty. Serial data is transferred from pins 9, 58, and 59 of the CPU (IC17: 6473042T6JQAAK) to the LCD driver. 133 segments are used for display.

SEMICONDUCTOR DATA

CPU : 6473042T6JQAAK (Control unit IC17)

• Pin assignment



• Pin function

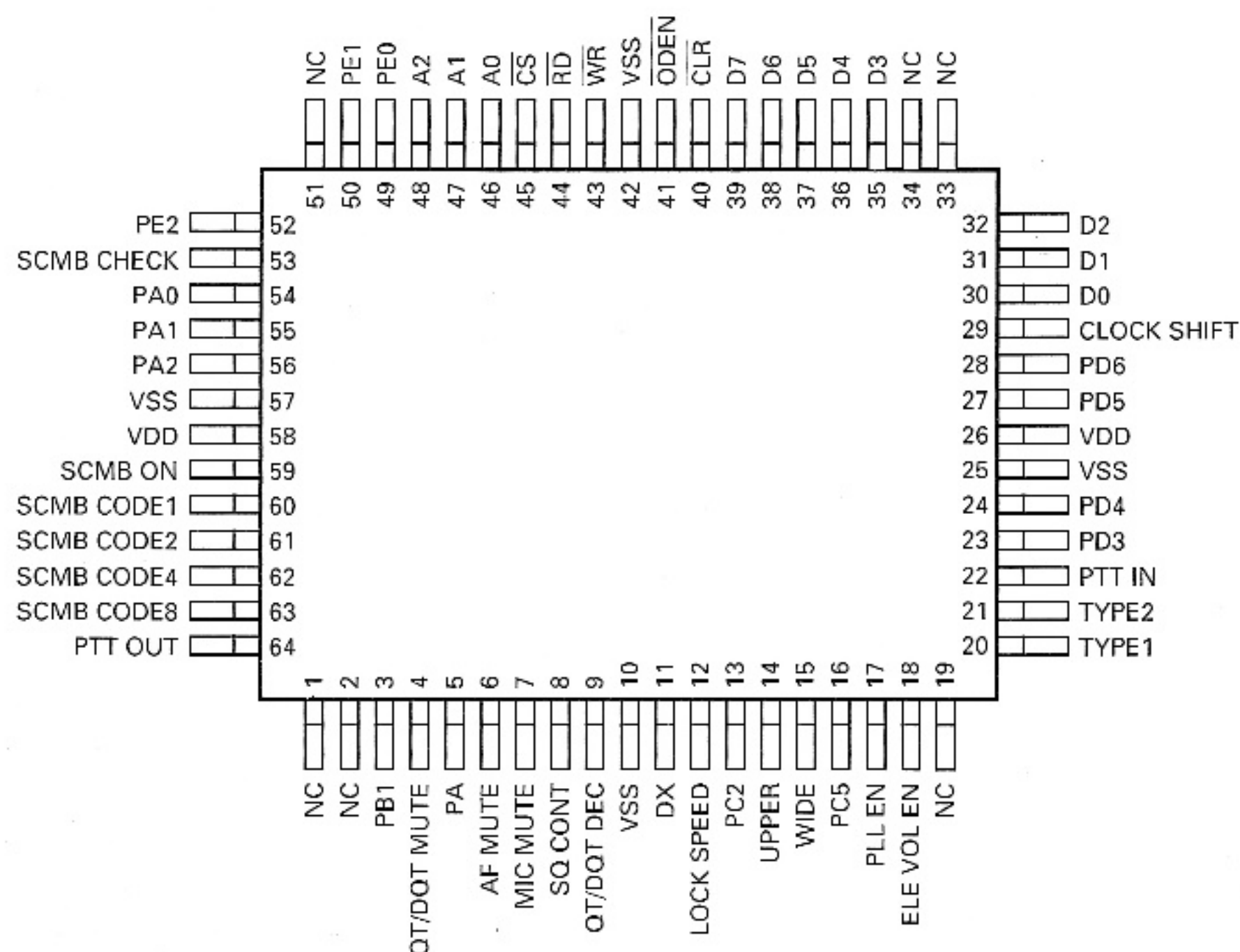
Pin No.	Port name	I/O	P/U	Pin name	Active level	Initial state	Function
1	Vcc	-	-		-	-	+5V
2	TIOCA3	I/O	-	BEEP	-	-	Beep output (Initially input. Changed to output only when outputting.)
3	PB1	I	Ext	EMER	↓	H	Emergency input. Detect : L
4	PB2	O	-	HORN OUT	↑↓	H	Horn output (Toggle operation). For external equipment connection.
5	PB3	O	-	AUX1	↑	L	AUX1 (Interlocked with AUX key operation). For external equipment connection.
6	PB4	O	-	AUX2	↑	L	AUX2 (Interlocked with CH data/AUX2 key operation. AUX on : H). For external equipment connection.
7	PB5	O	-		↑	L	NC
8	PB6	O	-	BACKLIT ON	↑	L	LCD light control. On : H
9	PB7	O	-	LCD EN/STROBE	↓ ↑	H L	TK-752 : Shift register strobe. Strobe : L TK-759 : LCD driver enable. Enable : H
10	RESO	O	-		-	-	NC
11	Vss	-	-		-	-	GND
12	TxD0	I	-		-	-	NC
13	TxD1/P91	I/O	Ext	PTT/TXD	↓	H	PTT/External control output. PTT on : L
14	RxD0	I	-		-	-	NC
15	RxD1/P93	I	Ext	HOOK/RXD	↓	H	MIC hook/External control input. On hook : L
16	IRQ4	I	-	5TONE DEC	↓	-	5-TONE decode (IRQ4)
17	IRQ5	I	Ext	ENCO 1	↓	-	Encoder 1.
18	P40	I	Int	KEY1	↓	H	1 key. Push : L (TK-759 only)
19	P41	I	Int	KEY2	↓	H	2 key. Push : L
20	P42	I	Int	KEY3	↓	H	3 key. Push : L
21	P43	I	Int	KEY4	↓	H	4 key. Push : L
22	Vss	-	-		-	-	GND
23	P44	I	Int	KEY5	↓	H	5 key. Push : L (TK-759) CH UP key (TK-752)
24	P45	O	-	PSW	↑	L	5C/8C control. Power on : H
25	P46	O	Ext	WREN	↓	H	Flash-ROM write enable. Enable : L

SEMICONDUCTOR DATA

Pin No.	Port name	I/O	P/U	Pin name	Active level	Initial state	Function
26	P47	I	Ext	DTMF MIC	↓	H	MIC PTT with key pad. PTT on : H
27~34	D8~D15	I/O	—		—	—	D8~D15 (Flash-ROM, I/O expander)
35	Vcc	—	—		—	—	+5V
36~38	A0~A2	O	—		—	—	A0~A2 (Flash-ROM, I/O expander)
39~43	A3~A7	O	—		—	—	A3~A7 (Flash-ROM)
44	Vss	—	—		—	—	GND
45~53	A8~A16	O	—		—	—	A8~A16 (Flash-ROM)
54, 55	P51, P52	I	Ext		—	L	NC
56	P53	I	Ext	IGN. LEV. SENSE	↓	—	Ignition level sense. ACC on : L (Used for checking when the horn alert functions)
57	Vss	—	—		—	—	GND
58	P60	I/O	—	CK	—	L	Clock (D/A converter, LCD driver, PLL, Shift register). (Initially input. Changed to output only when outputting.)
59	P61	I/O	—	DT	—	L	Data (D/A converter, LCD driver, PLL, Shift register). (Initially input. Changed to output only when outputting.)
60	P62	I	—		↑	—	NC
61	ø	O	—		—	—	NC
62	STBY	I	Ext		↓	H	+5V
63	RES	I	—		↓	H	Reset (Connected to reset IC RE pin.)
64	NMI	I	Ext	IGN. SENSE	↓	H	Ignition sense. ACC on : L
65	Vss	—	—		—	—	GND
66	EXTAL	I	—	XTAL1	—	—	Crystal (14.7456MHz)
67	XTAL	I	—	XTAL2	—	—	Crystal (14.7456MHz)
68	Vcc	—	—		—	—	+5V
69	AS	O	—		—	—	NC
70	RD	O	—		↓	—	RD (Flash-ROM, I/O expander)
71	HWR	O	Ext		↓	H	HWR (Flash-ROM, I/O expander)
72	LWR	O	—		—	—	NC
73	MD0	I	—		—	—	+5V (Select microprocessor operation mode 5.)
74	MD1	I	—		—	—	GND (Select microprocessor operation mode 5.)
75	MD2	I	—		—	—	+5V (Select microprocessor operation mode 5.)
76	AVcc	—	—		—	—	+5V
77	Vref	—	—		—	—	+5V
78	AN0	I	—	AF VOL IN	—	—	AF volume input.
79	P71	I	Ext		—	L	GND
80	AN2	I	—	QT/DQT DEC	—	—	QT/DQT decode
81	AN3	I	—		—	—	NC
82	P74	I	Ext		—	—	NC
83	P75	I	Ext	ENCO 3	—	—	Encoder 3 (Initially input. Changed to output only when outputting.)
84	DA0	O	—	DTMF ENC	—	—	DTMF encode (Initially input. Changed to output only when outputting.)
85	DA1	O	—	5TONE ENC	—	—	5-TONE encode
86	Avss	—	—		—	—	GND
87	IRQ0	I	Ext	PSB CHECK	↓	H	Power supply voltage drop detection (Connected to reset IC CE pin). 4.2V or less : L
88	IRQ1	I	Ext	ENCO 2	↓	—	Encoder 2 (Invert)
89	CS2	O	—		↓	—	Chip select 2 (For I/O expander)
90	CS1	O	—		↓	—	Chip select 1 (For flash-ROM)
91	P84	I	—		—	—	NC
92	Vss	—	—		—	—	GND
93	TCLKA	I	—	NOISE SQ COUNT	—	—	Noise squelch count.
94	PA1	I	Ext	LD	↑	—	Unlock detection. Unlock : H
95	TIOCA0	I/O	—	QT/DQT ENC	—	—	QT/DQT encode (Initially input. Changed to output only when outputting.)
96	PA3	I	—		—	L	NC
97	PA4	I	—	VOLT CHECK	↓	—	Overvoltage connection check. 18V or more : L
98	PA5	I/O	Ext	EEPROM CK	—	H	EEPROM clock (Initially input. Changed to output only when outputting.)
99	PA6	I/O	Ext	EEPROM DT	—	H	EEPROM data (Initially input. Changed to output only when outputting.)
100	PA7	I/O	Ext	RX	↑	H	8R control. TX : L, RX : H

I/O expander : CXD1095Q (Control unit IC4)

• Pin assignment



• Pin function

Pin No.	Port name	I/O	P/U	Pin name	Active level	Initial state	Function
1, 2	NC	-	-		-	-	NC
3	PB1	O	-		-	-	NC
4	PB2	O	-	QT/DQT MUTE	↓	H	QT/DQT mute. Mute : L
5	PB3	O	-	PA	↓	H	PA. PA : L
6	PB4	O	-	AF MUTE	↓	H	AF mute. Mute : H
7	PB5	O	-	MIC MUTE	↑	H	MIC mute. Mute : H
8	PB6	O	-	SQ CONT	↑	H	SQ control. SQ close : H
9	PB7	O	-	QT/DQT DEC	↓	H	QT/DQT decode output. Decode : L
10	Vss	-	-		-	-	GND
11	PC0	O	-	DX	↑	H	Local/DX. DX : H
12	PC1	O	-	LOCK SPEED	↓	H	NC
13	PC2	O	-		-	-	NC
14	PC3	O	-	UPPER	↑	L	NC
15	PC4	O	-	WIDE	↑	L	Wide/narrow. Wide : H
16	PC5	O	-		-	-	NC
17	PC6	O	-	PLL EN	↓	H	PLL enable (MC145190F). Enable : L
18	PC7	O	-	ELE VOL EN	↑	H	D/A converter (M62363FP). Enable : L
19	NC	-	-		-	-	NC
20	PD0	I	Ext	TYPE1	-	-	2CH/32CH. 2CH : H
21	PD1	I	Ext	TYPE2	-	-	Self write. Permitted : L
22	PD2	I	Ext	PTT IN	↓	H	PTT input. PTT on : L (On when the optional unit is on.)
23	PD3	I	Ext		↓	H	NC
24	PD4	O	Ext		↓	H	NC
25	Vss	-	-		-	-	GND
26	Vdd	-	-		-	-	+5V
27, 28	PD5, PD6	O	-		-	-	NC
29	PD7	O	-	CLOCK SHIFT	↓	H	Clock shift. Shift : L
30~32	D0~D2	I/O	-		-	-	D0~D2 (To microprocessor D0~D2 pin)

SEMICONDUCTOR DATA

Pin No.	Port name	I/O	P/U	Pin name	Active level	Initial state	Function
33, 34	NC	—	—		—	—	NC
35~39	D3~D7	I/O	—		—	—	D3~D7 (To microprocessor D3~D7 pin)
40	CLR	I	Ext		↓	H	CLR (NC)
41	ODEN	I	Int		↓	H	Output enable (NC)
42	Vss	—	—		—	—	GND
43	WR	I	—		↓	—	Write strobe (To microprocessor HWR pin)
44	RD	I	—		↓	—	Read strobe (To microprocessor RD pin)
45	CS	I	—		↓	—	Chip select (To microprocessor CS2 pin)
46~48	A0~A2	I	—		—	—	A0~A2 (To microprocessor A0~A2 pin)
49, 50	PE0, PE1	I/O	—		—	—	NC
51	NC	—	—		—	—	NC
52	PE2	I	—		—	L	NC
53	PE3	I	Ext	SCMB CHECK	↑	L	SCMB unit check. SCMB unit is found : H
54~56	PA0~PA2	O	—		—	—	NC
57	Vss	—	—		—	—	GND
58	Vdd	—	—		—	—	+5V
59	PA3	O	Ext	SCMB ON	↑	L	SCMB on. On : H
60	PA4	O	—	SCMB CODE1	↑	L	SCMB code 1. On : H
61	PA5	O	—	SCMB CODE2	↑	L	SCMB code 2. On : H
62	PA6	O	—	SCMB CODE4	↑	L	SCMB code 4. On : H
63	PA7	O	—	SCMB CODE8	↑	L	SCMB code 8. On : H
64	PB0	O	—	PTT OUT	—	H	PTT on : L (On when the optional unit is on.)

D/A converter : M62363FP (Control unit IC7)

• Pin assignment

Vin1	1	24	Vin8
Vout1	2	23	Vout8V
Vout2	3	22	Vout7V
Vin2	4	21	Vin7
VDD	5	20	GND
LD	6	19	RESET
CLK	7	18	Vdaref
Di	8	17	Do
Vin3	9	16	Vin6
Vout3	10	15	Vout6V
Vout4	11	14	Vout5V
Vin4	12	13	Vin5

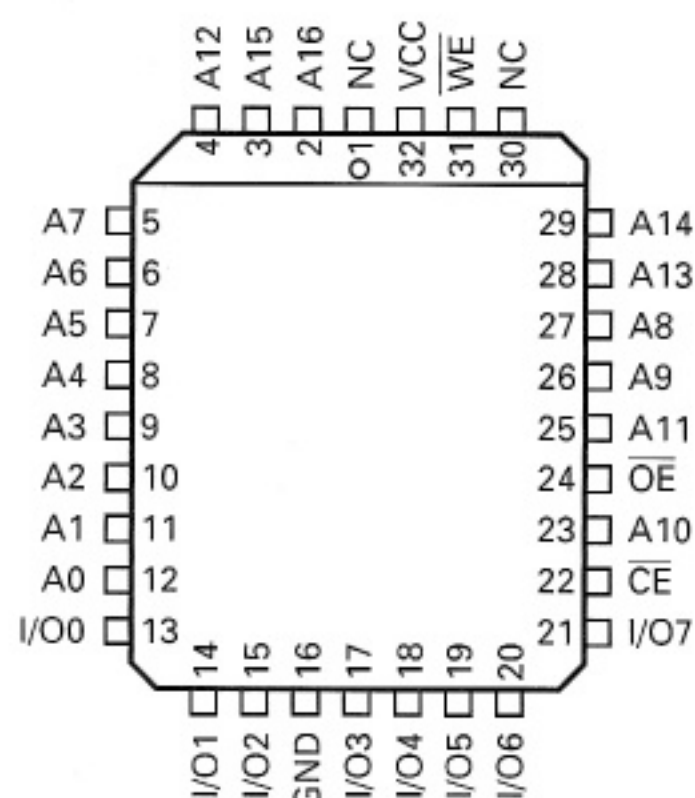
• Pin function

Pin No.	Pin name	Function
1	Vin1	DC balance data input.
2	Vout1	DC balance data after adjustment (Voltage range : 2.5~5.0V)
3	Vin2	Tone deviation data input.
4	Vout2	Tone deviation data after adjustment (Voltage range : 2.5~5.0V)
5	Vdd	Power supply (5V)
6	LD	0 : Clock acceptance
7	CLK	Serial clock input.
8	DI	Serial data input.
9	Vin3	Maximum deviation data input.
10	Vout3	Maximum deviation data after adjustment (Voltage range : 2.5~5.0V)
11	Vout4	APC data after adjustment (Voltage range : 0~2.5V)
12	Vin4	APC data input (GND)
13	Vin5	AF level data input
14	Vout5	AF level data after adjustment (Voltage range : 2.5~5.0V)
15	Vout6	PA volume data after adjustment (Voltage range : 2.5~5.0V)
16	Vin6	PA volume data input.
17	Do	NC
18	Vdaref	D/A conversion reference level (Voltage value output when the D/A output register value is zero.)
19	RESET	When a low signal is input, the D/A output register values become all zeros. (Normally high)
20	GND	GND
21	Vin7	Vari-cap tune data input (GND)
22	Vout7	Vari-cap tune data after adjustment (Voltage range : 0~2.5V)
23	Vout8	Unused
24	Vin8	Unused

SEMICONDUCTOR DATA

CMOS Flash PEROM : AT29C010A-12JI (Control Unit IC8)

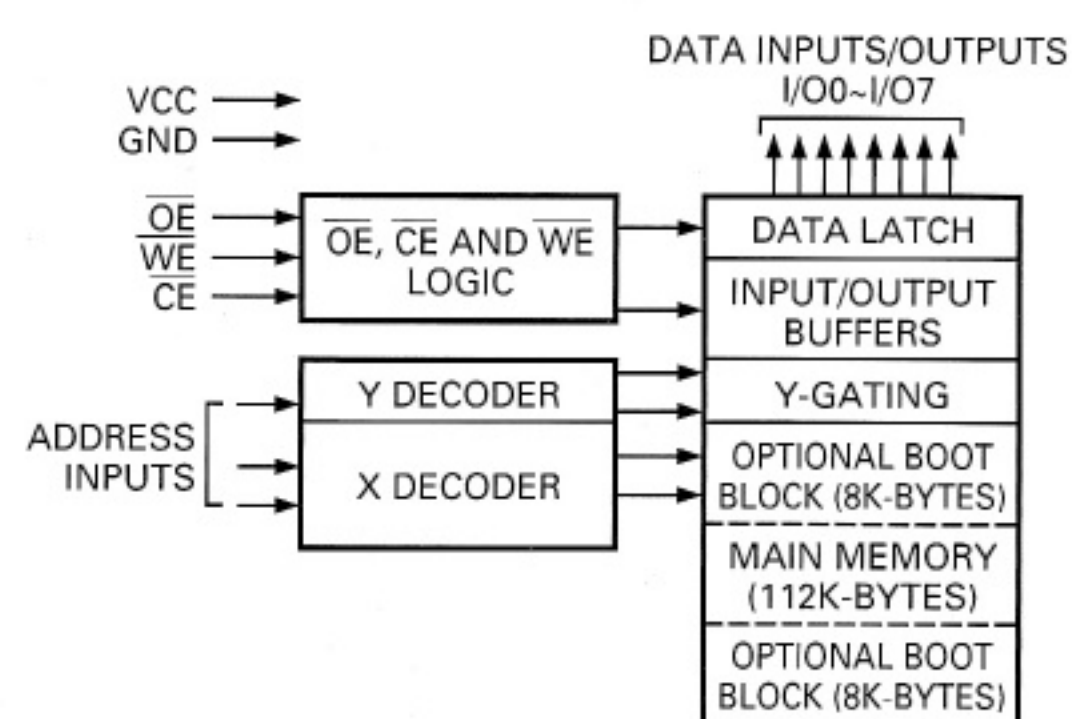
- **Pin assignment**



- **Pin function**

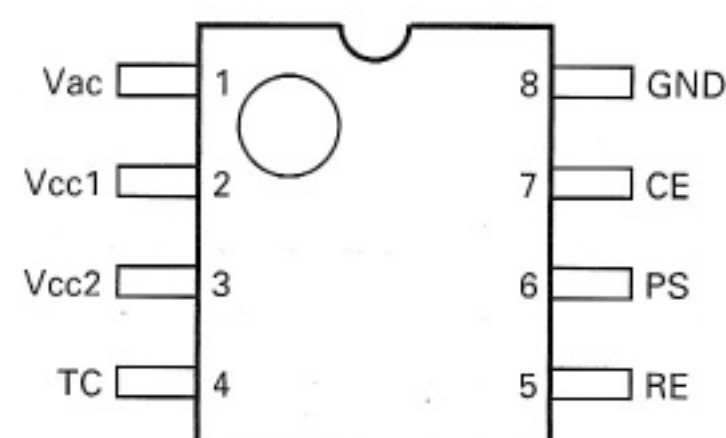
Pin name	Function
A0~A16	Addresses
$\overline{\text{CE}}$	Chip enable
$\overline{\text{OE}}$	Output enable
$\overline{\text{WE}}$	Write enable
I/O0~I/O7	Data inputs/outputs
NC	No connect

- **Block diagram**



System Reset : PST620DFT (Control Unit IC18)

- **Pin assignment**



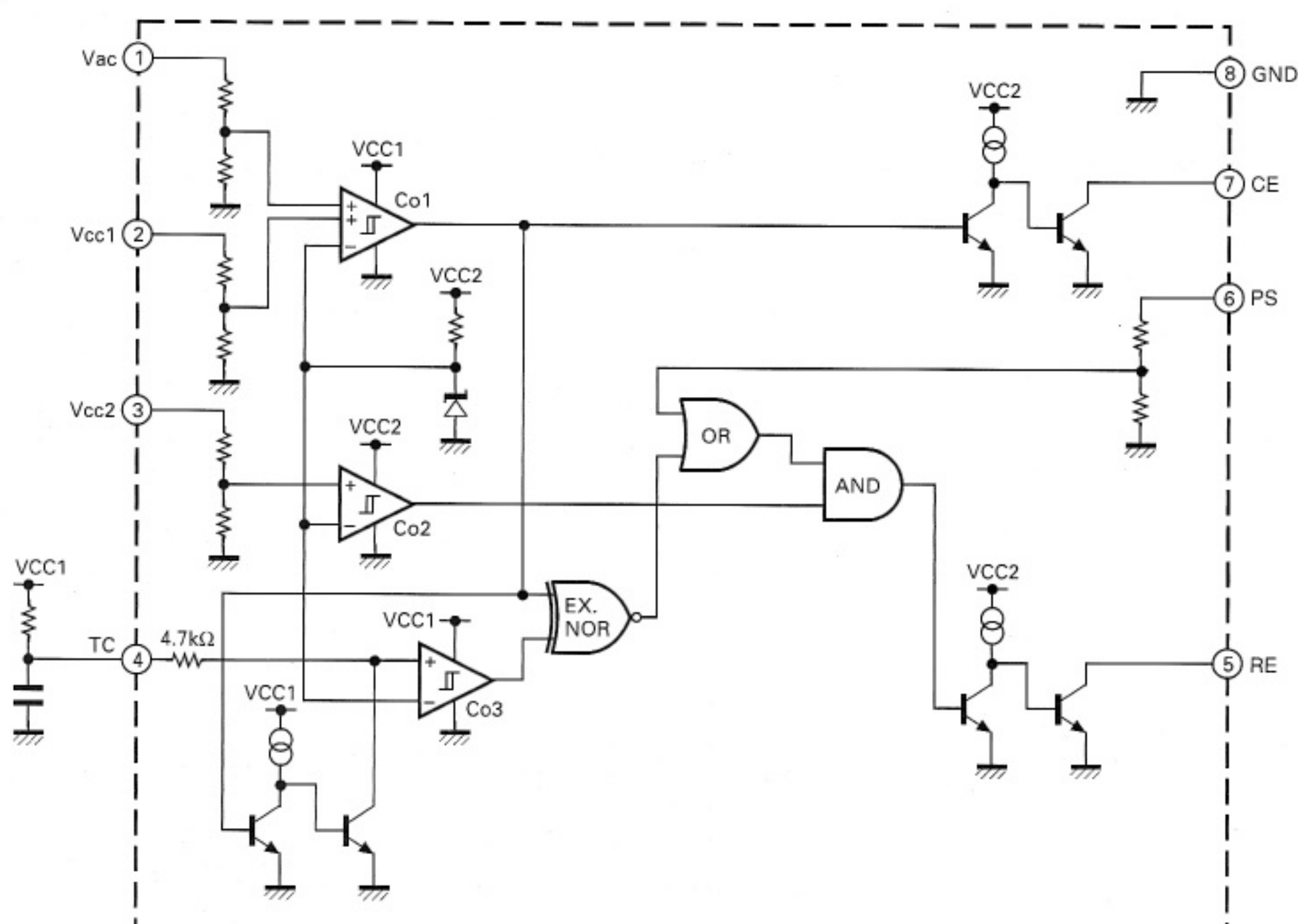
- **Pin function**

Pin No.	Pin name	Function
1	Vac	
2	Vcc1	Power supply (5V)
3	Vcc2	Backup power supply
4	Tc	
5	RE	Reset output (Connected to the microprocessor reset pin.)
6	PScont	
7	CE	Chip enable signal output (Used to start microprocessor sleep)
8	GND	GND

- **Electrical characteristics (Ta=25°C)**

Item	Symbol	Condition	MIN	TYP	MAX	Unit
Detection voltage 1	Vs1	RL1=47kΩ, CE output, Vcc1=H→L	4.40	4.20	4.00	V
Detection voltage 2	Vs2	RL2=47kΩ, RE output, Vcc2=H→L	2.30	2.15	2.00	V
Detection voltage 3	Vs3	RL1=47kΩ, CE output, Vac=H→L	2.15	2.00	1.85	V

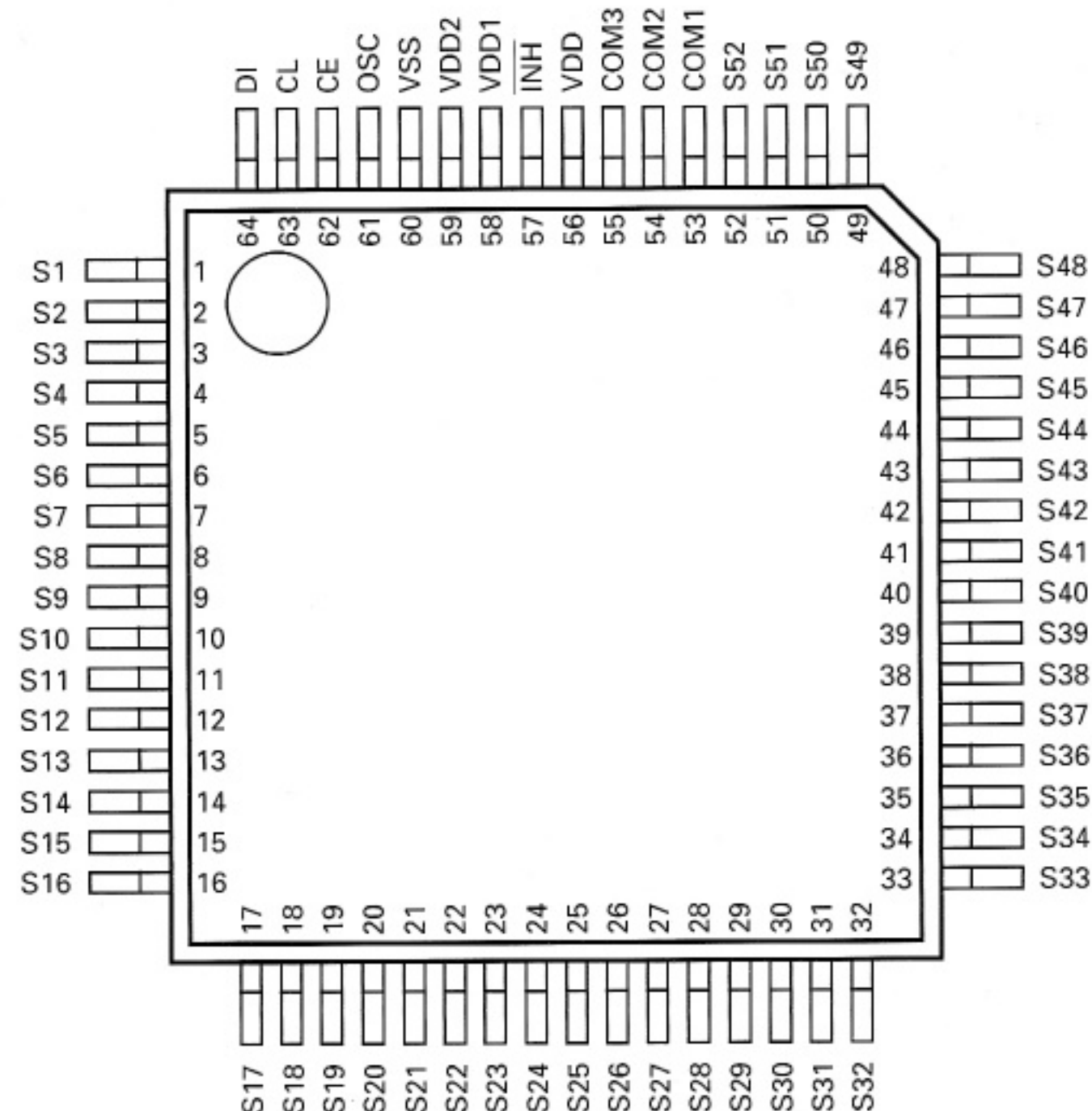
- **Block diagram**



SEMICONDUCTOR DATA

LCD Driver : LC75850E (Control Unit IC502) TK-759 only

• Pin assignment

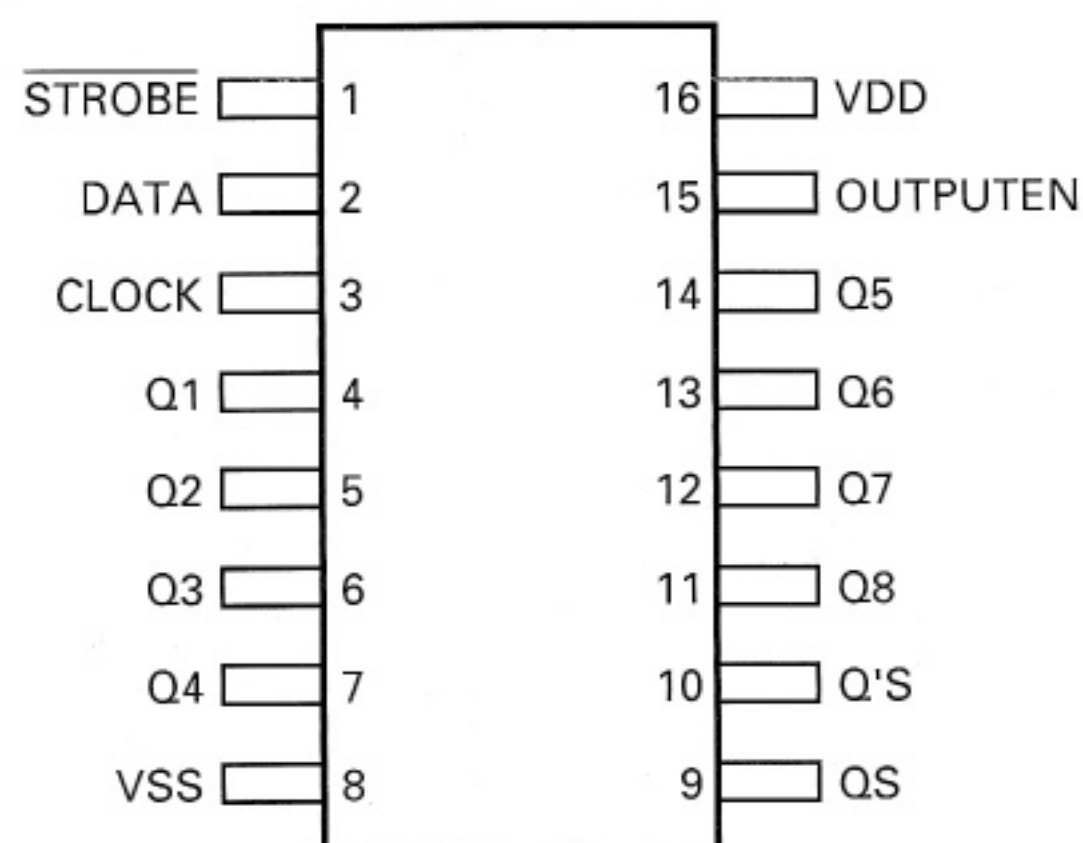


• Pin description

Pin No.	Pin name	I/O	Active	Description
1~52	S1~S52	O	—	Segment output for displaying data transferred from serial data
53~55	COM1~COM3	O	—	Common driver output. Frame frequency $f_o = (f_{osc}/384)\text{Hz}$
56	VDD			
57	INH	I	L	Force the display to turn off regardless of internal data. Serial data can be input regardless of whether it is "H" or "L".
58	VDD1	I	—	Apply 2/3 the LCD drive bias voltage from outside. If 1/2 the bias is applied, connect to VDD2.
59	VDD2	I	—	Apply 1/3 the LCD drive bias voltage from outside. If 1/2 the bias is applied, connect to VDD1.
60	Vss			
61	OSC	I	—	Oscillation terminal (Common segment alternating waveform)
62	CE	I	H	Chip enable
63	CL	I	↑	Synchronizing clock
64	DI	I	—	Transfer data

Shift register : XRU4094BCF (Control unit IC502) : TK-752 only

• Pin assignment



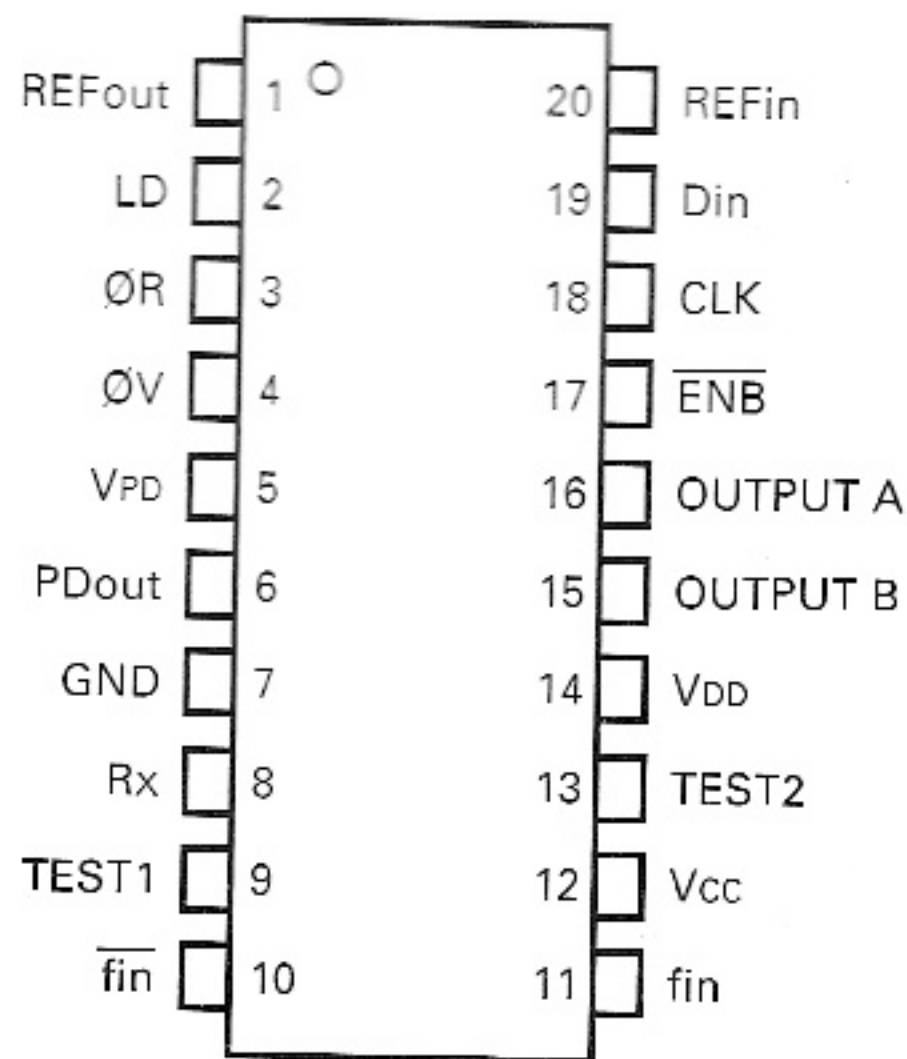
• Pin function

Pin No.	Pin name	Function
1	STROBE	Strobe input. 1 : Clock acceptance
2	DATA	Serial data input.
3	CLOCK	Serial clock input.
4	Q1	1 : CH1 LED "Red" on, 0 : Off
5	Q2	1 : CH1 LED "Green" on, 0 : Off
6	Q3	1 : CH2 LED "Red" on, 0 : Off
7	Q4	1 : CH2 LED "Green" on, 0 : Off
8	Vss	GND
9	Qs	NC
10	Q's	NC
11~13	Q8~Q6	NC
14	Q5	1 : AUX LED "Red" on, 0 : Off
15	OUTPUT ENABLE	5V
16	Vdd	Power supply (5V)

SEMICONDUCTOR DATA

PLL Frequency Synthesizers : MC145190F (PLL/VCO IC1)

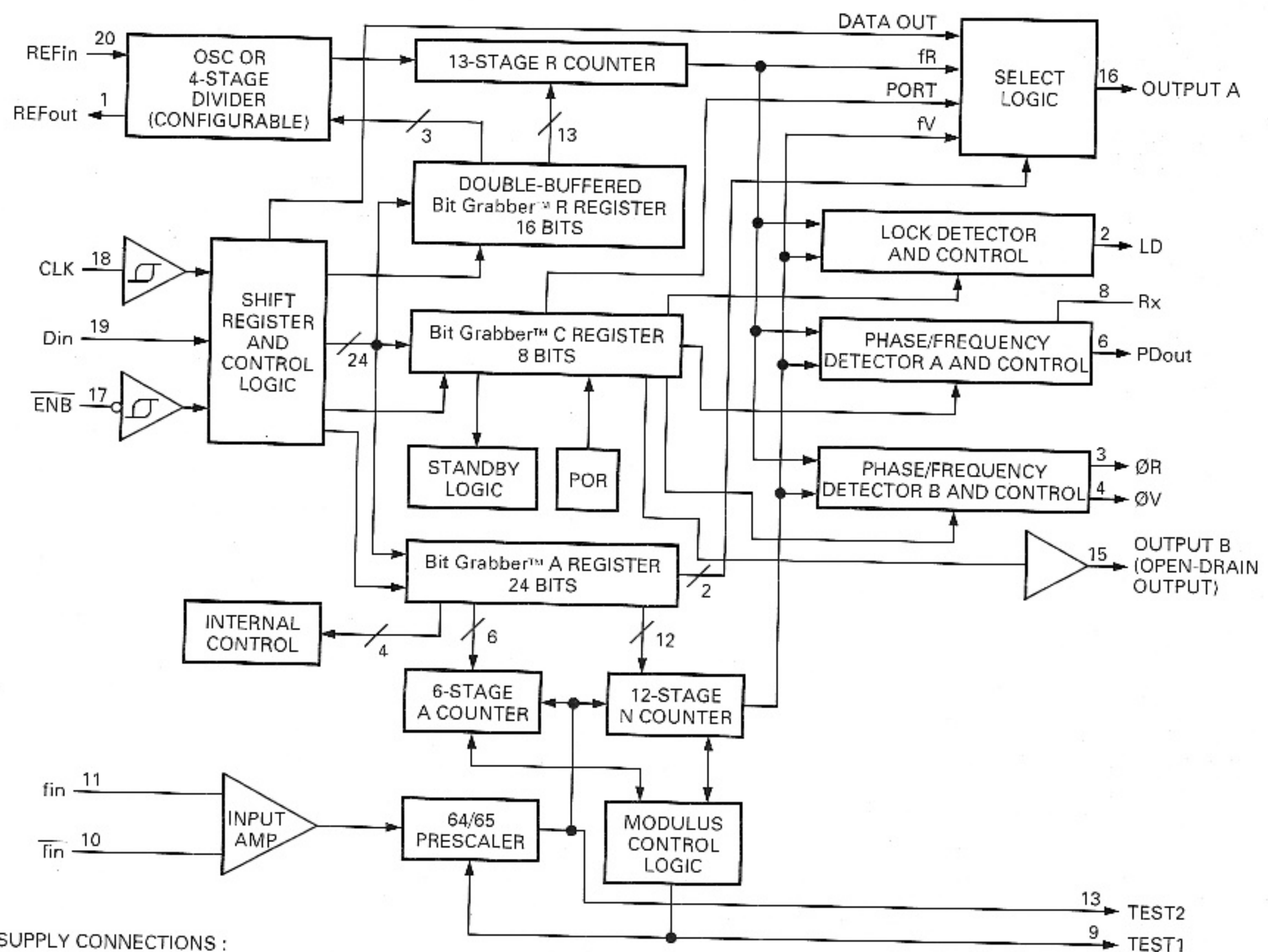
• Pin assignment



• Pin descriptions

Pin No.	Pin name	Description
1	REFout	Reference output
2	LD	Lock detector output
3	ØR	Double-ended phase/frequency detector output
4	ØV	Double-ended phase/frequency detector output
5	VPD	Positive power supply
6	PDout	Single-ended phase/frequency detector output
7	GND	Common ground
8	Rx	External resistor
9	TEST 1	Modulus control signal
10	$\overline{\text{fin}}$	Frequency input
11	fin	Frequency input
12	Vcc	Positive power supply
13	TEST 2	Prescaler output
14	VDD	Positive power supply
15	OUTPUT B	Open-drain digital output
16	OUTPUT A	Configurable digital output
17	$\overline{\text{ENB}}$	Active low enable input
18	CLK	Serial data clock input
19	Din	Serial data input
20	REFin	Reference input

• Block diagram



SUPPLY CONNECTIONS :
 PIN12 = Vcc (V+ TO INPUT AMP AND 64/65 PRESCALER)
 PIN5 = VPD (V+ TO PHASE/FREQUENCY DETECTORS A AND B)
 PIN14 = VDD (V+ TO BALANCE OF CIRCUIT)
 PIN7 = GND (COMMON GROUND)

DESCRIPTION OF COMPONENTS

Control Unit (X53-3602-70) : TK-752

(X53-3592-70) : TK-759

Ref. No.	Use / Function	Operation / Condition / Compatibility	Model
IC1	HPF		
IC2	AF PA		
IC4	I/O expander		
IC5	Microphone amplifier BPF		
IC6	Microphone amplifier LPF		
IC7	D/A converter		
IC8	PEROM		
IC9	OR gate	Data write switch	
IC10	8V AVR	8C	
IC11	Amplifier LPF	QT/DQT decode	
IC13	LPF	5-TONE decode	
IC14	Comparator	Noise squelch	
IC15	Amplifier	5-TONE decode	
IC16	EEPROM		
IC17	CPU		
IC18	Reset		
IC19	5V AVR	5SD	
IC20	5V AVR	5SA	
IC501	5V AVR	DISP 5C	
IC502	Shift register	LED lighting	TK-752
IC502	LCD driver		TK-759
Q1	Wide/narrow changeover switch		
Q2	Squelch control switch	On when closed	
Q3	AF amplifier		
Q4	AF filter		
Q5	Detection amplifier		
Q6	AF amplifier		
Q7	Optional amplifier		
Q8	AF mute	On during muting	
Q9	PA mute	On during muting	
Q10	Squelch control inversion switch	On when closed	
Q11	Microprocessor protection		
Q12	Microphone mute	On during muting	
Q13	PTT switch when optional microphone is used	On when PTT is off	
Q14	Unlock detection	On when locked	
Q15	PEROM power off switch		
Q16	SB switch		
Q17	SB & 5SD switch	On when the power turns on	
Q18	QT/DQT mute	On when unlocked	
Q19	Amplifier	DTMF encode	
Q20	Amplifier	DTMF monitor	
Q21	Limiter	Noise squelch	
Q22~24	Microprocessor protection		
Q25	ENCO DT inversion switch		
Q26	Clock frequency shift switch	Off when the frequency shifts	
Q27~29	Horn alert switch		
Q30	Wide/narrow switch	On for wide	
Q31	Wide/narrow switch	On for narrow	
Q33	Overvoltage connection check	On when the voltage is 18V or higher	
Q34	Squelch control output buffer		
Q501,502	LED light switch	CH1	TK-752
Q501,502	LCD backlight switch	On when the backlight lights	TK-759

TK-752/759

DESCRIPTION OF COMPONENTS

Ref. No.	Use / Function	Operation / Condition / Compatibility	Model
Q503,504	LED light switch	CH2	TK-752
Q505	LED light switch	AUX	TK-752
D1	SC delay		
D2	Reverse flow prevention	Squelch control	
D3	Reverse flow prevention	AF mute	
D4	I/O expander protection	SCMB check	
D5	I/O expander protection	SCMB on	
D6	I/O expander protection	SCMB code 1	
D7	I/O expander protection	SCMB code 2	
D8	I/O expander protection	SCMB code 4	
D9	I/O expander protection	SCMB code 8	
D10	I/O expander protection	QT/DQT DEC	
D11	I/O expander protection	PD3	
D12	I/O expander protection	PD4	
D13	I/O expander protection	PTT output	
D15	I/O expander protection	PTT input	
D16	CPU protection	HOOK	
D17	Reverse flow prevention	Microphone mute	
D19	CPU protection	Encoder clock	
D20	CPU protection	Encoder data	
D21	CPU protection	PTT	
D22	Limiter	QT/DQT decode	
D23	Limiter	5-TONE decode	
D25	CPU protection	P90	
D26	CPU protection	P92	
D27	CPU protection	5-TONE decode	
D28	CPU protection	EMER	
D29	Reverse flow prevention	5C	
D30	Reverse flow prevention	5SD	
D31	Discharge	Reset	
D32	Overvoltage connection check	On when the voltage is 18V or higher	
D501	CPU protection	HOOK	
D502	CPU protection	PTT	
D503	CH1 display	Orange : Selected, Red : During transmission, Green : Busy	TK-752
D503	Current control	LED	TK-759
D504	CH2 display	Orange : Selected, Red : During transmission, Green : Busy	TK-752
D505	AUX display	Red when the function is on	TK-752
D506	Key backlight	On : Lit	TK-752
D504~509	LCD back light		TK-759

TX-RX Unit (X57-4692-XX) -70 : E -71 : E2 -72 : E3,E4

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	Amplifier	Tune, Tone
IC2	2nd loca OSC, IF amplifier, Detection, Low frequency amplifier, Noise amplifier Squelch switch	1, 2 : 2nd local oscillator signal 44.595MHz 9 : AF output (DET) 13 : S-meter output 16 : IF input On during reception
IC3	5V AVR	5C
IC4	9V AVR	9C
Q1	RF amplifier	On during reception
Q2	1st mixer	On during reception
Q3	IF amplifier	On during reception
Q4	Wide/narrow switch	Wide when the WIDE pin is high

DESCRIPTION OF COMPONENTS

Ref. No.	Use / Function	Operation / Condition / Compatibility
Q5	Wide/narrow switch	Narrow when the WIDE pin is low
Q6	HET output amplification	During transmission F1 : 146~174MHz, F2 : 136~150MHz During reception F1 : 191.05~219.05MHz, F2 : 181.05~195.05MHz
Q7	VCO 8V ripple filter	8CL
Q8	Pre-drive	On during transmission
Q9	Drive	On during transmission
Q10	Receiver power supply switch	On during reception (8R)
Q11	Transmitter/receiver power supply select switch	On during reception
Q12	Transmitter/receiver power supply select switch	On during transmission
Q13	Transmitter power supply switch	On during transmission (8T)
Q14	Transmitter/receiver power supply select switch	Off during transmission
Q15	APC control	On during transmission
Q16	Transmitter/receiver power supply select switch	Off when PLL is locked
Q17	DB voltage control	
Q18	Transmitter/receiver power supply select switch	On when PLL is locked
Q19	APC control	B voltage control
Q20	Reference amplifier	On during transmission
Q21	Combiner	
Q22,23	LO/DX switch	
D1~4,6	Vari-cap tuning	
D7,8	Wide/narrow MCF switch	
D9,10	Wide/narrow ceramic filter switch	
D11	HET TX/RX switching	TX when 8T is high, RX when 8R is high
D12,13	Temperature compensation	RF amplifier
D14	Reverse flow prevention	
D15	TX/RX ANT switch	Off during reception, On during transmission
D16	TX/RX ANT switch	
D17	Temperature compensation	APC
D18	Power detection	
D19	Reverse power protection	
D20	SWR detection	E,E2 only
D21	Temperature compensation	E,E2 only
D23	Temperature compensation	APC
D24,25	LO/DX switch	

VCO/PLL (X58-4322-XX) -70 : E,E3,E4 -71 : E2

Ref. No.	Use / Function	Operation / Condition / Compatibility
IC1	PLL	
Q1	LPF transmit/receive select switch	On during transmission
Q2	Buffer	
Q101	Transmit/receive select switch	On during transmission
Q102	VCO for the transmitter	
Q103	Transmit/receive select switch	On during transmission
Q104	Transmit/receive select switch	On during reception
Q105	VCO for the receiver	
Q106	Buffer	
D1	Unlock detection	On when unlocked
D2	LPF transmit/receive select switch	On during transmission
D101	Modulation	
D102	VCO for the transmitter	
D103,104	VCO for the receiver	

TK-752/759

PARTS LIST

* New Parts. Δ indicates safety critical components.

Parts without **Parts No.** are not supplied.

Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.

Teile ohne **Parts No.** werden nicht geliefert.

L : Scandinavia

Y : PX (Far East, Hawaii)

Y : AAFES (Europe)

K : USA

T : England

X : Australia

P : Canada

E : Europe

M : Other Areas

TK-752/759

CONTROL UNIT (X53-3602-70)/(X53-3592-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks
TK-752/759						
1	1B	*	A01-2101-03	METALLIC CABINET (UPPER)		
2	3B	*	A01-2102-03	METALLIC CABINET (LOWER)		
3	2B	*	A10-1347-01	CHASSIS		
4	3A	*	A62-0395-03	PANEL ASSY		759
5	2A	*	A62-0396-02	PANEL		752
-		*	B03-0582-04	DRESSING PLATE		752
8	23		B09-0235-05	CAP (PHONE JACK)		
10	2B		B42-2455-04	STICKER (MAX 8 MAX)		
13	1D	*	B62-0572-00	INSTRUCTION MANUAL (ENGLISH)	E	
13	1D	*	B62-0573-00	INSTRUCTION MANUAL (SPANISH)	E,E2	
13	1D	*	B62-0574-00	INSTRUCTION MANUAL (ITALIAN)	E3	759
13	1D	*	B62-0575-00	INSTRUCTION MANUAL (FRENCH)	E,E3	
13	1D	*	B62-0576-00	INSTRUCTION MANUAL (DUTCH)	E3	759
13	1D	*	B62-0577-00	INSTRUCTION MANUAL (GERMAN)	E3,E4	759
14	2B	*	B72-0966-04	MODEL NAME PLATE (UK)	E	759
14	23	*	B72-0967-04	MODEL NAME PLATE (SPAIN)	E2	759
14	2B	*	B72-0968-04	MODEL NAME PLATE (HOLLAND)	E3	759
14	2B	*	B72-0969-04	MODEL NAME PLATE (GERMAN)	E4	759
14	2B	*	B72-0970-04	MODEL NAME PLATE (UK)	E	752
14	2B	*	B72-0971-04	MODEL NAME PLATE (SPAIN)	E2	752
14	23	*	B72-0972-04	MODEL NAME PLATE (HOLLAND)	E3	752
16	2D		E30-2075-15	DC CORD ACC.		
17	2B		E30-2172-15	DC CORD (RADIO)		
18	2B	*	E30-3244-05	ANTENNA CABLE (BNC TYPE)		
19	1B		E31-3197-15	LEAD WIRE WITH CONNECTOR (SP)		
20	3B	*	E37-0577-05	FLAT CABLE (CONT-DISP)		
22	1B	*	F10-2200-04	SHIELDING PLATE (FINAL)		
24	2D		F51-0016-05	FUSE (10A) DC CORD		
27	2B		G02-0592-04	FLAT SPRING BNX SIDE		
-			G02-0729-14	FLAT SPRING DISP		
30	2A,3A		G09-0405-05	KNOB SPRING VOL. ENC		
31	2A		G10-0708-04	FIBROUS SHEET PANEL		
32	2B		G10-0743-04	FIBROUS SHEET CHASSIS		
36	3A		G10-0788-04	FIBROUS SHEET FFC		
-			G11-0777-04	SHEET TX-RX PCB		
38	2A	*	G13-1488-24	CUSHION POWER KNOB		752
-		*	G13-1489-04	CUSHION PANEL		759
-		*	G13-1490-04	CUSHION PANEL		
41	23	*	G13-1506-04	CUSHION OPTION		
42	3B	*	G13-1558-14	CUSHION CONT UNIT		
43	1B		G13-1593-04	CUSHION CABINET		
44	3B	*	G53-0783-04	PACKING PHONE JACK		
45	3C	*	H10-6605-02	POLYSTYRENE FOAMED FIXTURE		
46	1D	*	H11-0886-04	POLYSTYRENE FOAMED BOARD		
47	2C	*	H13-0982-04	CARTON BOARD BRACKET		
48	2C,2D		H25-0096-04	PROTECTION BAG HARDWARE		
49	2D		H25-0103-04	PROTECTION BAG DC CORD		
50	1C		H25-0720-04	PROTECTION BAG RADIO		
51	3D	*	H52-0640-02	ITEM CARTON CASE		
53	1A	*	J19-1578-04	HOLDER SP		752
54	3C	*	J19-1584-05	HOLDER ACC. MIC		
55	2C,2D	*	J21-4498-04	HARDWARE FIXTURE BRACKET		

Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks
56	2C	*	J29-0626-03	ANGLE		
58	2A	*	K29-4993-04	KNOB (POWER)		
59	2A,3A	*	K29-4994-04	KNOB (VOL)		752
60	2A	*	K29-4995-04	KNOB (CH : PUSH)		759
61	3A	*	K29-4996-04	KNOB (CH : ENC)		
62	2A,3A	*	K29-4997-04	KNOB (FUNCTION)		
A	3A		N10-2070-46	HEXAGON NUT ENC		759
B	1B,3B		N33-2606-45	OVAL HEAD MACHIN SCREW		
C	1B		N67-3008-46	PAN HEAD SEMS SCREW		
D	2A,2B		N87-2606-46	BRAZER HEAD TAPTITE SCREW		
E	2C,2D		N88-3008-46	FLAT HEAD TAPTITE SCREW		
F	1B		N89-2608-46	BINDING HEAD TAPTITE SCREW		
63	2C,2D	*	N99-0393-05	SCREW SET		
64	1A	*	T07-0331-05	LOUDSPEAKER (FULL RANGE)		752
65	2D	*	T91-0552-05	MICROPHONE		

CONTROL UNIT (X53-3592-70) : TK-759 (X53-3602-70) : TK-752

-		*	B11-1128-04	FILTER LCD		759
-		*	B11-1147-04	REFLECTOR LCD		759
D503-505			B30-2039-05	LED		752
D506		*	B30-2140-05	LED		752
D504-509		*	B30-2140-05	LED		759
-		*	B38-0740-05	LCD		759
C2			CK73FB1H183K	CHIP C 0.018UF K		
C3			C92-0001-05	CHIP C 0.1UF 35WV		
C4			CK73FB1H333K	CHIP C 0.033UF K		
C5			CK73FB1H393K	CHIP C 0.039UF K		
C6			CK73GB1H102K	CHIP C 1000PF K		
C7			CK73GB1H562K	CHIP C 5600PF K		
C8			CK73GB1E104K	CHIP C 0.10UF K		
C9			CK73H1C105Z	CHIP C 1.0UF Z		
C10			CK73GB1H562K	CHIP C 5600PF K		
C11-13			CK73FB1E104K	CHIP C 0.10UF K		
C14			CK73FB1H223K	CHIP C 0.022UF K		
C15,16			CK73GB1H472K	CHIP C 4700PF K		
C17			CK73FB1E104K	CHIP C 0.10UF K		
C18,19			CK73GB1H272K	CHIP C 2700PF K		
C20			CK73FB1E104K	CHIP C 0.10UF K		
C21,22			CK73GB1H272K	CHIP C 2700PF K		
C24			CK73FB1E104K	CHIP C 0.10UF K		
C25			CK73FF1C105Z	CHIP C 1.0UF Z		
C26			CK73GB1H272K	CHIP C 2700PF K		
C27			CE04FW1E221M	ELECTRO 220UF 25WV		
C28			C92-0550-05	CHIP-ELF 100UF 10WV		
C29			CE04NW1E470M	ELECTRO 47UF 25WV		
C30			CE04EW1C471M	ELECTRO 470UF 16WV		
C31			CK73FB1E104K	CHIP C 0.10UF K		
C32			CE04NW1E470M	ELECTRO 47UF 25WV		
C34			CE04EW1C471M	ELECTRO 470UF 16WV		
C35			CE04NW1E470M	ELECTRO 47UF 25WV		
C36			CK73FB1E104K	CHIP C 0.10UF K		
C38			C92-0550-05	CHIP-ELE 100UF 10WV		

752 : TK-752 (E,E2)

759 : TK-759 (E,E2,E3,E4)

PARTS LIST

CONTROL UNIT (X53-3602-70)/(X53-3592-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks
C39			CK73FB1H123K	CHIP C 0.012UF K			C130			CC73GCH1H101J	CHIP C 100PF J		
C40			CK73FB1E104K	CHIP C 0.10UF K			C131-133			CK73FB1E104K	CHIP C 0.10UF K		
C41-53			CC73GCH1H101J	CHIP C 100PF J			C134			C92-0004-05	CHIP-TAN 1.0UF 16WV		
C54			CK73FB1E104K	CHIP C 0.10UF K			C135,136			CC73GCH1H150J	CHIP C 15PF J		
C55,56			CK73GB1H102K	CHIP C 1000PF K			C137			C92-0041-05	CHIP-ELE 10UF 10WV		
C58			CK73FF1C4/4Z	CHIP C 0.47UF Z			C138			CC73GCH1H100D	CHIP C 10PF D		
C59			CC73GCH1H330J	CHIP C 33PF J			C139			CK73FB1E104K	CHIP C 0.10UF K		
C60			CK73FB1E104K	CHIP C 0.10UF K			C140			CK73GB1H221K	CHIP C 220PF K		
C61			CK73FF1C105Z	CHIP C 1.0UF Z			C141			CK73FB1E104K	CHIP C 0.10UF K		
C62			CC73GCH1H330J	CHIP C 33PF J			C142			CK73GB1H102K	CHIP C 1000PF K		
C63			CK73GB1H1472K	CHIP C 4700PF K			C143			CK73FB1E104K	CHIP C 0.10UF K		
C64			CK73FF1C105Z	CHIP C 1.0UF Z			C144			CK73GB1H102K	CHIP C 1000PF K		
C65			CK73GB1H561K	CHIP C 560PF K			C145			CK73FB1H103K	CHIP C 0.010UF K		
C66			CK73GB1H331K	CHIP C 330PF K			C146			CK73GB1H102K	CHIP C 1000PF K		
C67			CC73GCH1H390J	CHIP C 39PF J			C200-203			CC73GCH1H101J	CHIP C 100PF J		
C68			CK73GB1H152K	CHIP C 1500PF K			C204			CK73FF1C105Z	CHIP C 1.0UF Z		
C69			CK73GB1H102K	CHIP C 1000PF K			C205,206			CK73FB1E104K	CHIP C 0.10UF K		
C71,72			CK73FB1E104K	CHIP C 0.10UF K			C207			CK73GB1H1472K	CHIP C 4700PF K		
C74			CK73FB1E104K	CHIP C 0.10UF K			C208			CF04NW1E470M	ELECTRO 47UF 25WV		
C75			C92-0048-05	ELECTRO 100UF 6.3WV			C209,210			CK73FB1E104K	CHIP C 0.10UF K		
C78			CK73GB1H102K	CHIP C 1000PF K			C211			C92-0010-05	CHIP-TAN 6.8UF 6.3WV		
C79-81			CK73FB1E104K	CHIP C 0.10UF K			C212			CK73FB1H104K	CHIP C 0.10UF K		
C82			C92-0543-05	CHIP-TAN 3.3UF 10WV			C213-216			CK73GB1H102K	CHIP C 1000PF K		
C83			CK73FB1E104K	CHIP C 0.10UF K			C218			CK73GB1H102K	CHIP C 1000PF K		
C84-86			CC73GCH1H101J	CHIP C 100PF J			C219			C92-0507-05	CHIP-TAN 4.7UF 6.3WV		
C87			CK73GB1H102K	CHIP C 1000PF K			C220			CK73GB1H182K	CHIP C 1800PF K		
C88			C92-0041-05	CHIP-ELE 10UF 10WV			C221			C92-0004-05	CHIP-TAN 1.0UF 16WV		
C89,90			CK73FB1H104K	CHIP C 0.10UF K			C222-224			CK73GB1H102K	CHIP C 1000PF K		
C91			CK73GB1H102K	CHIP C 1000PF K			C225,226			CC73GCH1H101J	CHIP C 100PF J		
C92			CK73FB1H103K	CHIP C 0.010UF K			C501			CK73FB1H103K	CHIP C 0.010UF K		
C94			C92-0513-05	CHIP-TAN 3.3UF 6.3WV			C502			CK73FB1E104K	CHIP C 0.10UF K		
C95			CK73FB1H273K	CHIP C 0.02UF K			C503			CK73GB1H102K	CHIP C 1000PF K		
C96			CK73FB1E104K	CHIP C 0.10UF K			C504			C92-0010-05	CHIP-TAN 6.8UF 6.3WV		
C97			CK73GB1H821K	CHIP C 820PF K			C506			CK73FB1E104K	CHIP C 0.10UF K		
C98			CC73GCH1H101J	CHIP C 100PF J			C507,508			CK73GB1H102K	CHIP C 1000PF K		
C99			CK73FB1H273K	CHIP C 0.02UF K			C509,510			CC73GCH1H221J	CHIP C 220PF K		752
C100			C92-0507-05	CHIP-TAN 4.7UF 6.3WV			C509,510			CK73GB1H471K	CHIP C 470PF K		759
C101			CK73FB1H273K	CHIP C 0.02UF K			C511-513			CK73GB1H102K	CHIP C 1000PF K		759
C102			CC73GCH1H101J	CHIP C 100PF J			C514,515			CK73FB1E473K	CHIP C 0.04UF K		759
C103			CK73GB1H472K	CHIP C 4700PF K			C516			CK73GB1H102K	CHIP C 1000PF K		759
C104			CC73GCH1H180J	CHIP C 18PF J			C517			CC73GCH1H221J	CHIP C 220PF J		759
C105			CK73FB1E104K	CHIP C 0.10UF K			C518			CC73GCH1H221J	CHIP C 220PF J		759
C106,107			CC73GCH1H101J	CHIP C 100PF J			CN1	*	E40-5806-05	PIN ASSY (22P)			
C108			CK73GB1H332K	CHIP C 3300PF K			CN2	*	E40-5309-05	FLAT CABLE CONNECTOR (20P)			
C109,110			CK73FB1H103K	CHIP C 0.010UF K			CN3		E40-3299-05	PIN ASSY (2P)			
C111			CK73FB1E104K	CHIP C 0.10UF K			CN4	*	E40-9370-05	PIN ASSY (14P)			
C112			CK73GB1H102K	CHIP C 1000PF K			CN5		E40-5662-05	PIN ASSY SOCKET (2P)			
C114			CK73GB1H472K	CHIP C 4700PF K			CN6		E40-3260-05	PIN ASSY (2P)			
C115			CC73GCH1H101J	CHIP C 100PF J			CN501	*	E40-5309-05	FLAT CABLE CONNECTOR (20P)			
C117			CK73FB1H223K	CHIP C 0.022UF K			-		E29-1139-04	INTER CONNECTOR LCD			759
C118			CK73GB1H102K	CHIP C 1000PF K			J1,2		E11-0442-05	PHONE JACK			
C119			CK73GB1H332K	CHIP C 3300PF K			J501		EC8-C673-05	MODULAR JACK			
C121			CK73FB1E104K	CHIP C 0.10UF K			F1		F53-0108-05	FUSE (1.8A/50V)			
C122,123			CK73FB1H103K	CHIP C 0.010UF K			F2		-53-0096-05	FUSE (2A)			
C124			CC73GCH1H101J	CHIP C 100PF J			F3		F53-0056-05	FUSE (1A)			
C125			CK73GB1H822K	CHIP C 8200PF K			-	*	J21-44/9-04	HARDWARE FIXTURE LCD			759
C126			CC73GCH1H101J	CHIP C 100PF J			L1,2	*	L92-0148-05	FERRITE CHIP			
C127			CK73FB1E104K	CHIP C 0.10UF K			L501	*	L92-0155-05	FERRITE CHIP			
C128			CC73GCH1H101J	CHIP C 100PF J									
C129			CK73FB1E104K	CHIP C 0.10UF K									

752 : TK-752 (E,E2)

759 : TK-759 (E,E2,E3,E4)

PARTS LIST

CONTROL UNIT (X53-3602-70)/(X53-3592-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks
X2			I77-551-05	CRYSTAL RESONATOR (14.7453MHZ)			R93,94			RK73GB1J473J	CHIP R 47K J 1/16W		
R1,2			RK73GB1J103J	CHIP R 10K J 1/16W			R95-97			R92-1252-05	CHIP R 0 OHM		
R4			RK73GB1J472J	CHIP R 4.7K J 1/16W			R98			R92-0670-05	CHIP R 0 OHM		
R5			RK73GB1J223J	CHIP R 22K J 1/16W			R99			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R6			RK73GB1J393J	CHIP R 39K J 1/16W			R100			R92-1252-05	CHIP R 0 OHM		
R7			RK73GB1J104J	CHIP R 100K J 1/16W			R102			RK73GB1J104J	CHIP R 100K J 1/16W		
R8			RK73GB1J394J	CHIP R 390K J 1/16W			R103,104			RK73GB1J103J	CHIP R 10K J 1/16W		
R9			RK73GB1J104J	CHIP R 100K J 1/16W			R105			RK73GB1J564J	CHIP R 560K J 1/16W		
R10,11			RK73GB1J222J	CHIP R 2.2K J 1/16W			R106			RK73GB1J224J	CHIP R 220K J 1/16W		
R12			RK73GB1J223J	CHIP R 22K J 1/16W			R107			RK73GB1J184J	CHIP R 180K J 1/16W		
R13			RK73GB1J273J	CHIP R 27K J 1/16W			R109			RK73GB1J474J	CHIP R 470K J 1/16W		
R14			RK73GB1J473J	CHIP R 47K J 1/16W			R112			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R15			RK73GB1J564J	CHIP R 560K J 1/16W			R113			RK73GB1J103J	CHIP R 10K J 1/16W		
R16			RK73GB1J684J	CHIP R 680K J 1/16W			R114			RK73GB1J183J	CHIP R 18K J 1/16W		
R17			RK73GB1J222J	CHIP R 2.2K J 1/16W			R115,116			RK73GB1J474J	CHIP R 470K J 1/16W		
R18			RK73GB1J102J	CHIP R 1.0K J 1/16W			R117			RK73GB1J184J	CHIP R 180K J 1/16W		
R19			RK73GB1J122J	CHIP R 1.2K J 1/16W			R118-120			RK73GB1J224J	CHIP R 220K J 1/16W		
R20			RK73GB1J102J	CHIP R 1.0K J 1/16W			R121			R92-0670-05	CHIP R 0 OHM		
R21			RK73GB1J394J	CHIP R 390K J 1/16W			R123			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R22			RK73GB1J681J	CHIP R 680 J 1/16W			R124			RK73GB1J122J	CHIP R 1.2K J 1/16W		
R23			RK73GB1J122J	CHIP R 1.2K J 1/16W			R125,127			RK73GB1J274J	CHIP R 270K J 1/16W		
R24			RK73GB1J684J	CHIP R 680K J 1/16W			R128			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R25			R92-0670-05	CHIP R 0 OHM			R129,130			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R26			RK73GB1J823J	CHIP R 82K J 1/16W			R131-146			RK73GB1J471J	CHIP R 470 J 1/16W		
R27			RK73GB1J102J	CHIP R 1.0K J 1/16W			R147			RK73GB1J100J	CHIP R 10 J 1/16W		
R28			RK73GB1J332J	CHIP R 3.3K J 1/16W			R148-153			RK73GB1J471J	CHIP R 470 J 1/16W		
R29			RK73GB1J333J	CHIP R 33K J 1/16W			R154,155			RK73GB1J473J	CHIP R 47K J 1/16W		
R30,31			RK73GB1J824J	CHIP R 820K J 1/16W			R156,157			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R32			RK73GB1J184J	CHIP R 180K J 1/16W			R158			R92-1252-05	CHIP R 0 OHM		
R33			RK73GB1J564J	CHIP R 560K J 1/16W			R159-162			R92-0670-05	CHIP R 0 OHM		
R34			RK73GB1J154J	CHIP R 150K J 1/16W			R163			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R36			R92-1252-05	CHIP R 0 OHM			R164			RK73GB1J103J	CHIP R 10K J 1/16W		
R37			RK73GB1J822J	CHIP R 8.2K J 1/16W			R165			RK73GB1J821J	CHIP R 820 J 1/16W		
R38			RK73GB1J473J	CHIP R 47K J 1/16W			R166			R92-1215-05	CHIP R 470 J 1/2W		
R39			RK73GB1J333J	CHIP R 33K J 1/16W			R167			RK73GB1J103J	CHIP R 10K J 1/16W		
R40			RK73GB1J822J	CHIP R 8.2K J 1/16W			R168			RK73GB1J223J	CHIP R 22K J 1/16W		
R41			RK73GB1J101J	CHIP R 100 J 1/16W			R169			RK73GB1J474J	CHIP R 470K J 1/16W		
R43			RK73GB1J477J	CHIP R 4.7 J 1/16W			R171			RK73GB1J393J	CHIP R 39K J 1/16W		
R45			RK73GB1J477J	CHIP R 4.7 J 1/16W			R172			RK73GB1J563J	CHIP R 56K J 1/16W		
R46			R92-1252-05	CHIP R 0 OHM			R173			RK73GB1J104J	CHIP R 100K J 1/16W		
R47			RK73GB1J101J	CHIP R 100 J 1/16W			R174			RK73GB1J823J	CHIP R 82K J 1/16W		
R48			RK73GB1J473J	CHIP R 47K J 1/16W			R175			RK73GB1J103J	CHIP R 10K J 1/16W		
R49-54			R92-1252-05	CHIP R 0 OHM			R176			RK73GB1J224J	CHIP R 220K J 1/16W		
R55,56			RK73GB1J474J	CHIP R 470K J 1/16W			R177			RK73GB1J473J	CHIP R 47K J 1/16W		
R58			RK73GB1J102J	CHIP R 1.0K J 1/16W			R178			RK73GB1J224J	CHIP R 220K J 1/16W		
R60-67			RK73GB1J102J	CHIP R 1.0K J 1/16W			R179			RK73GB1J823J	CHIP R 82K J 1/16W		
R68			RK73GB1J183J	CHIP R 18K J 1/16W			R180			RK73GB1J224J	CHIP R 220K J 1/16W		
R69-71			RK73GB1J102J	CHIP R 1.0K J 1/16W			R181			RK73GB1J103J	CHIP R 10K J 1/16W		
R72			R92-1252-05	CHIP R 0 OHM			R182			RK73GB1J123J	CHIP R 12K J 1/16W		
R73			RK73GB1J102J	CHIP R 1.0K J 1/16W			R183			RK73GB1J823J	CHIP R 82K J 1/16W		
R76			R92-1252-05	CHIP R 0 OHM			R184			RK73GB1J183J	CHIP R 18K J 1/16W		
R77-83			RK73GB1J102J	CHIP R 1.0K J 1/16W			R187			RK73GB1J223J	CHIP R 22K J 1/16W		
R84,85			R92-1252-05	CHIP R 0 OHM			R188			RK73GB1J824J	CHIP R 820K J 1/16W		
R86			RK73GB1J472J	CHIP R 4.7K J 1/16W			R189			RK73GB1J273J	CHIP R 27K J 1/16W		
R87			RK73GB2A473J	CHIP R 47K J 1/10W		752	R190			RK73GB1J103J	CHIP R 10K J 1/16W		
R88			RK73GB2A473J	CHIP R 47K J 1/10W		759	R192,193			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R90			RK73GB2A473J	CHIP R 47K J 1/10W			R195			RK73GB1J103J	CHIP R 10K J 1/16W		
R91			RK73GB1J473J	CHIP R 47K J 1/16W			R196			RK73GB1J821J	CHIP R 820 J 1/16W		
R92			R92-1252-05	CHIP R 0 OHM			R199			RK73GB1J103J	CHIP R 10K J 1/16W		
							R200			RK73GB1J473J	CHIP R 47K J 1/16W		

PARTS LIST

CONTROL UNIT (X53-3602-70)/(X53-3592-70)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Re-marks
R202			RK73GB1J473J	CHIP R 47K J 1/16W			R301			RK73GB1J104J	CHIP R 100K J 1/16W		
R203			RK73GB1J105J	CHIP R 1.0M J 1/16W			R302			RK73GB1J333J	CHIP R 33K J 1/16W		
R204			RK73GB1J103J	CHIP R 10K J 1/16W			R303			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R205			RK73GB1J102J	CHIP R 1.0K J 1/16W			R304			RK73EB2B2R2J	CHIP R 2.2 J 1/8W		
R207			RK73GB1J474J	CHIP R 470K J 1/16W			R305			RK73GB1J473J	CHIP R 47K J 1/16W		
R208			RK73GB1J824J	CHIP R 820K J 1/16W			R306			R92-0670-05	CHIP R 0 OHM		
R211			RK73GB1J682J	CHIP R 6.8K J 1/16W			R400			RK73GB1J103J	CHIP R 10K J 1/16W		
R212			RK73GB1J334J	CHIP R 330K J 1/16W			R403			RK73GB1J473J	CHIP R 47K J 1/16W		
R213			RK73GB1J102J	CHIP R 1.0K J 1/16W			R404			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R214			RK73GB1J473J	CHIP R 47K J 1/16W			R405			RK73GB1J473J	CHIP R 47K J 1/16W		
R217			RK73GB1J682J	CHIP R 6.8K J 1/16W			R406			R92-1252-05	CHIP R 0 OHM		
R218			RK73GB1J473J	CHIP R 47K J 1/16W			R408			RK73GB1J100J	CHIP R 10 J 1/16W		
R219			RK73GB1J153J	CHIP R 15K J 1/16W			R409,410			RK73GB1J473J	CHIP R 47K J 1/16W		
R220			RK73GB1J123J	CHIP R 12K J 1/16W			R411			RK73GB1J222J	CHIP R 2.2K J 1/16W		
R221			RK73GB1J223J	CHIP R 22K J 1/16W			R412			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R222-224			RK73GB1J473J	CHIP R 47K J 1/16W			R413			RK73GB1J681J	CHIP R 680 J 1/16W		
R225-227			R92-1252-05	CHIP R 0 OHM			R415			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R228			RK73GB1J472J	CHIP R 4.7K J 1/16W			R416			RK73GB1J272J	CHIP R 2.7K J 1/16W		
R229-231			R92-1252-05	CHIP R 0 OHM			R417-420			RK73GB1J100J	CHIP R 10 J 1/16W		
R232			RK73GB1J474J	CHIP R 470K J 1/16W			R424			RK73GB1J2R2J	CHIP R 2.2 J 1/16W		
R233			RK73GB1J392J	CHIP R 3.9K J 1/16W			R425			RK73GB1J471J	CHIP R 470 J 1/16W		
R234			RK73GB1J474J	CHIP R 470K J 1/16W			R426			RK73GB1J100J	CHIP R 10 J 1/16W		
R235-240			RK73GB1J102J	CHIP R 1.0K J 1/16W			R427			R92-1252-05	CHIP R 0 OHM		
R241			R92-1252-05	CHIP R 0 OHM			R428			R92-0670-05	CHIP R 0 OHM		
R242,243			RK73GB1J102J	CHIP R 1.0K J 1/16W			R429-436			RK73GB1J471J	CHIP R 470 J 1/16W		
R244			RK73GB1J101J	CHIP R 100 J 1/16W			R437			RK73GB1J473J	CHIP R 47K J 1/16W		
R245-248			RK73GB1J102J	CHIP R 1.0K J 1/16W			R438			R92-0670-05	CHIP R 0 OHM		
R249-251			RK73GB1J102J	CHIP R 1.0K J 1/16W			R439,440			RK73GB1J184J	CHIP R 180K J 1/16W		
R252			RK73GB1J473J	CHIP R 47K J 1/16W			R442			RK73GB1J153J	CHIP R 15K J 1/16W		
R253,254			RK73GB1J100J	CHIP R 10 J 1/16W			R443			R92-1252-05	CHIP R 0 OHM		
R255-257			RK73GB1J102J	CHIP R 1.0K J 1/16W			R444			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R258			R92-1252-05	CHIP R 0 OHM			R445			RK73GB1J472J	CHIP R 4.7K J 1/16W		
R259			RK73GB1J101J	CHIP R 100 J 1/16W			R502			RK73GB1J103J	CHIP R 10K J 1/16W		
R260,261			RK73GB1J102J	CHIP R 1.0K J 1/16W			R504			RK73GB1J103J	CHIP R 10K J 1/16W		
R262			RK73GB1J100J	CHIP R 10 J 1/16W			R505			RK73GB1J102J	CHIP R 1.0K J 1/16W		
R263-266			RK73GB1J102J	CHIP R 1.0K J 1/16W			R506			RK73GB1J391J	CHIP R 390 J 1/16W		
R267			RK73GB1J100J	CHIP R 10 J 1/16W			R508			RK73GB1J100J	CHIP R 10 J 1/16W		759
R268,269			RK73GB1J101J	CHIP R 100 J 1/16W			R508-512			RK73GB1J151J	CHIP R 150 J 1/16W		752
R270			RK73GB1J102J	CHIP R 1.0K J 1/16W			R509			RK73GB1J473J	CHIP R 47K J 1/16W		759
R271			RK73GB1J473J	CHIP R 47K J 1/16W			R510			RK73GB1J392J	CHIP R 3.9K J 1/16W		759
R272			RK73GB1J101J	CHIP R 100 J 1/16W			R511			RK73GB1J472J	CHIP R 4.7K J 1/16W		759
R273			RK73GB1J474J	CHIP R 470K J 1/16W			R512			RK73GB1J103J	CHIP R 10K J 1/16W		759
R274			RK73GB1J102J	CHIP R 1.0K J 1/16W			R513			RK73GB1J181J	CHIP R 180 J 1/16W		752
R275			RK73GB1J104J	CHIP R 100K J 1/16W			R513			RK73GB1J473J	CHIP R 47K J 1/16W		759
R276-279			RK73GB1J474J	CHIP R 470K J 1/16W			VR1,2	*		R32-0657-05	SEMI FIXED VARIABLE RESISTOR 10K		
R280-282			RK73GB1J471J	CHIP R 470 J 1/16W			VR501			R05-3452-05	POTENTIOMETER 10K		
R283			RK73GB1J100J	CHIP R 10 J 1/16W			S501			S70-0452-05	TACT SWITCH		759
R284-286			RK73GB1J102J	CHIP R 1.0K J 1/16W			S502-505			S70-0452-05	TACT SWITCH		
R287			RK73GB1J472J	CHIP R 4.7K J 1/16W			S506	*		S68-0410-05	PUSH SWITCH		
R288-290			RK73GB1J102J	CHIP R 1.0K J 1/16W			D1-3			DAN202U	DIODE		
R291			RK73GB1J473J	CHIP R 47K J 1/16W			D4-13			DA204U	DIODE		
R292			RK73GB1J184J	CHIP R 180K J 1/16W			D15,16			DA204U	DIODE		
R293			RK73GB1J182J	CHIP R 1.8K J 1/16W			D17			DAN202U	DIODE		
R294			R92-1252-05	CHIP R 0 OHM			D19-21			DA204U	DIODE		
R295			R92-0670-05	CHIP R 0 OHM			D22			MA742	DIODE		
R296			RK73GB1J473J	CHIP R 47K J 1/16W			D23			DA204U	DIODE		
R297			RK73GB1J104J	CHIP R 100K J 1/16W			D25-28			DA204U	DIODE		
R298			RK73GB1J153J	CHIP R 15K J 1/16W			D29			RLS73	DIODE		
R299			RK73GB1J103J	CHIP R 10K J 1/16W			D30,31			1SS355	DIODE		
R300			RK73GB1J101J	CHIP R 100 J 1/16W									

752 : TK-752 (E,E2)

759 : TK-759 (E,E2,E3,E4)

TK-752/759

PARTS LIST

CONTROL UNIT (X53-3602-70)/(X53-3592-70)
TX-RX UNIT (X57-4692-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks
D32			C2CZ18(X,Y)	ZENER DIODE			C6			CK73GB1H102K	CHIP C	100PF	K
D501,502			DA204U	DIODE		759	C7			CC73GCH1H010C	CHIP C	1.0PF	C
D503			DA204U	DIODE			C8			CK73GB1H102K	CHIP C	100PF	K
D510			1SS355	DIODE		759	C9			CC73GCH1H150J	CHIP C	15PF	J
IC1			NJM4558E	IC (OP AMP X2)			C10			CC73GCH1H010C	CHIP C	1.0PF	C
IC2			LA4448	IC (AF POWER AMP)			C11			CC73GCH1H180J	CHIP C	18PF	J
IC4			CXD1C95Q	IC (OP AMP X2)			C12			CK73GB1H103K	CHIP C	0.010UF	K
IC5,6			NJM4558E	IC (OP AMP X2)			C13			CC73GCH1H150J	CHIP C	15PF	J
IC7			M62363FP	IC (8bit D/A CONVERTER)			C14			CK73GB1H103K	CHIP C	0.010UF	K
IC8		*	AT29C01CA-12JI	IC (CMOS FLASH PEROM)			C15			CC73GCH1H030C	CHIP C	3.0PF	C
IC9			TC7S32F	IC (2CH NAND GATE)			C16			CC73GCH1H050C	CHIP C	5.0PF	C
IC10		*	TA7808S	IC (VOLTAGE REGULATOR/ -8V)			C16			CC73GCH1H080D	CHIP C	8.0PF	D
IC11			NJM4558E	IC (OP AMP X2)			C17			CK73GB1H102K	CHIP C	100PF	K
IC13			NJM2904E	IC (OP AMP X2)			C18			CK73GB1H103K	CHIP C	0.010UF	K
IC14			NJM4558E	IC (OP AMP X2)			C19			CK73F1C105Z	CHIP C	1.0UF	Z
IC15			NJM2904F	IC (OP AMP X2)			C20			CC73GCH1H180J	CHIP C	18PF	J
IC16			AT2402N10SI2.7	IC (2kbit SERIAL EEPROM)			C21			CK73GB1H1471K	CHIP C	470PF	K
IC17		*	6473042T6JQAAK	IC (CPU)			C22			CK73GB1H103K	CHIP C	0.010UF	K
IC18		*	PST620DFT	IC (RESET)			C23			CC73GCH1H030C	CHIP C	3.0PF	C
IC19			TA7805S	IC (VOLTAGE REGULATOR/ +5V)			C24			CC73GCH1H010C	CHIP C	1.0PF	C
IC20			NJM78L05UA	IC (VOLTAGE REGULATOR/ +5V)			C25			CK73GB1H103K	CHIP C	0.010UF	K
IC501			NJM78L05UA	IC (VOLTAGE REGULATOR/ +5V)		752	C26			CC73GCH1H030C	CHIP C	3.0PF	C
IC502			3U4094BCF	IC (8-STAGE SHIFT/STORE REGISTER)		752	C27			CK73GB1H103K	CHIP C	0.010UF	K
IC502			XRU4C94BCF	IC (8-STAGE SHIFT/STORE REGISTER)		759	C29			CK73GB1H102K	CHIP C	100PF	K
IC502			LC75850E	IC (LCD DRIVER)			C31			CC73GCH1H030C	CHIP C	3.0PF	C
Q1			DTC144EU	DIGITAL TRANSISTOR			C32			CK73GB1H103K	CHIP C	0.010UF	K
Q2			DTC143XU	DIGITAL TRANSISTOR			C34-38			CK73GB1H103K	CHIP C	0.010UF	K
Q3-7			2SC4081(BR)	TRANSISTOR			C39			CC73GCH1H330J	CHIP C	33PF	J
Q8,9			DTC314TK	DIGITAL TRANSISTOR			C40			CK73GB1H102K	CHIP C	100PF	K
Q10,11			DTC114EU	DIGITAL TRANSISTOR			C41			CC73GCH1H270J	CHIP C	27PF	J
Q12			DTC314TK	DIGITAL TRANSISTOR			C42,43			CK73FB1E104K	CHIP C	0.10UF	K
Q13			2SC4081(BR)	TRANSISTOR			C44,45			CK73GB1C104K	CHIP C	0.10UF	K
Q14			2SK1398	FET			C46			C92-0037-05	CHIP-ELE	10UF	16WV
Q15			2SA1362(Y)	TRANSISTOR			C47			CK73GB1H103K	CHIP C	0.010UF	K
Q16			2SA1641(S,T)	TRANSISTOR			C48			C92-0507-05	CHIP-TAN	4.7UF	6.3WV
Q17			DTC114WU	DIGITAL TRANSISTOR			C49			CK73GB1H103K	CHIP C	0.010UF	K
Q18			2SK879(Y)	FET			C50		*	C93-0564-05	CHIP C	22PF	J
Q19,20			2SC4081(BR)	TRANSISTOR			C51-53			CK73GB1H102K	CHIP C	100PF	K
Q21-24			DTC114EU	DIGITAL TRANSISTOR			C54			C92-0044-05	CHIP-ELE	47UF	10WV
Q25			DTC144EU	DIGITAL TRANSISTOR			C55,56			CK73GB1H103K	CHIP C	0.010UF	K
Q26			2SC4081(BR)	TRANSISTOR			C57-59			CK73GB1H102K	CHIP C	100PF	K
Q27			DTA114YU	DIGITAL TRANSISTOR			C60		*	C92-0658-05	CHIP-ELE	220UF	10WV
Q28			2SC4081(BR)	TRANSISTOR			C61		*	CK73GB1H103K	CHIP C	0.010UF	K
Q29			2SD1624(S,T)	TRANSISTOR			C62		*	C93-0564-05	CHIP C	22PF	J
Q30,31			DTC144FU	DIGITAL TRANSISTOR			C63		*	C92-0658-05	CHIP-ELE	220UF	10WV
Q33			DTC114EU	DIGITAL TRANSISTOR			C64			CK73FB1E104K	CHIP C	0.10UF	K
Q34			DTC144EU	DIGITAL TRANSISTOR			C65			CC73GCH1H101J	CHIP C	100PF	J
Q501			2SB1132(D,R)	TRANSISTOR		759	C66			CE04EW1E331M	ELECTRO	330UF	25WV
Q501-505			DTA114LU	DIGITAL TRANSISTOR		752	C67,68			CK73GB1H102K	CHIP C	100PF	K
Q502			DTC114EU	DIGITAL TRANSISTOR		759	C69			CC73GCH1H101J	CHIP C	100PF	J
S507		*	W02-1906-05	ENCODER		759	C70			CK73GB1H102K	CHIP C	100PF	K
TX-RX UNIT (X57-4692-XX) -70 : E -71 : E2 -72 : E3,E4							C71			CK73FB1E104K	CHIP C	0.10UF	K
C1			CC73GCH1H030C	CHIP C	3.0PF	C	C72			CK73GB1H102K	CHIP C	100PF	K
C2			CC73GCH1H180J	CHIP C	18PF	J	C73			CC73GCH1H390J	CHIP C	39PF	J
C2			CC73GCH1H220J	CHIP C	22PF	J	C74			CK73GB1H102K	CHIP C	100PF	K
C3,4			CK73GB1H102K	CHIP C	100PF	K	C75			CK73GB1H103K	CHIP C	0.010UF	K
C5			CC73GCH1H150J	CHIP C	15PF	J	C76			C92-0044-05	CHIP-ELE	47UF	10WV
C5			CC73GCH1H180J	CHIP C	18PF	J	C77,78			CK73GB1H102K	CHIP C	100PF	K
							C79			CC73GCH1H220J	CHIP C	22PF	J
							C80			CC73GCH1H101J	CHIP C	100PF	J

752 : TK-752 (E,E2)
759 : TK-759 (E,E2,E3,E4)

PARTS LIST

TX-RX UNIT (X57-4692-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks
C81			CC73GCH1H100D	CHIP C 10PF D			L13			L40-8271-34	SMALL FIXED INDUCTOR (82NH)		
C82			CK73GB1H102K	CHIP C 1000PF K			L14			L40-6885-34	SMALL FIXED INDUCTOR (680NH)		
C83			CC73GCH1H101J	CHIP C 100PF J			L15	*		L34-4459-05	COIL		
C84			CK73GB1H102K	CHIP C 1000PF K			L16			L40-1005-34	SMALL FIXED INDUCTOR (10UH)		
C85			C93-0557-05	CHIP C 7.0PF D			L17	*		L40-3375-34	SMALL FIXED INDUCTOR (33NH)		
C86			CK73GB1H102K	CHIP C 1000PF K			L18			L40-5675-48	SMALL FIXED INDUCTOR (56NH)		
C87			CK73FB1E104K	CHIP C 0.10UF K			L19			L34-1239-05	AIR-CORE COIL		
C88			C92-0044-05	CHIP-ELE 47UF 10WV			L20			L34-0894-05	AIR-CORE COIL		
C89			CC73GCH1H101J	CHIP C 100PF J			L21			L34-0742-05	AIR-CORE COIL		
C90			CK73GB1H102K	CHIP C 1000PF K			L22			L34-4477-05	AIR-CORE COIL		
C91			C92-0038-05	CHIP-ELE 22UF 16WV			L23			L34-0742-05	AIR-CORE COIL		
C92			CK73GB1H103K	CHIP C 0.010UF K			L24			L40-1085-34	SMALL FIXED INDUCTOR (100NH)		
C93			CK73FB1E104K	CHIP C 0.10UF K			L25			L34-0908-05	AIR-CORE COIL		
C94,95			CK73GB1H103K	CHIP C 0.010UF K			L26			L79-0558-05	FILTER		
C96			CC73GCH1H101J	CHIP C 100PF J			L29			L34-0742-05	AIR-CORE COIL		
C97			CK73FB1E273K	CHIP C 0.027UF K			L30			L40-6871-35	SMALL FIXED INDUCTOR (68NH)		
C98			C93-0603-05	CHIP C 1000PF K			X1	*		L77-1611-05	CRYSTAL RESONATOR (44.595MHZ)		
C99	*		C93-0562-05	CHIP C 15PF J			X2			L77-1666-05	CRYSTAL RESONATOR (12.8MHZ)		
C100			C93-0603-05	CHIP C 1000PF K			X2	*		L77-1669-05	CRYSTAL RESONATOR (12.8MHZ)		
C101			CK73GB1H102K	CHIP C 1000PF K			XF1	*		L71-0465-05	CRYSTAL FILTER (45.05MHZ/3.75KHZ)		
C102			CC73GCH1H180J	CHIP C 18PF J			XF1			L71-0480-05	CRYSTAL FILTER (45.05MHZ/3.75KHZ)		
C103	*		C93-0565-05	CHIP C 27PF J			XF2	*		L71-0464-05	CRYSTAL FILTER (45.05MHZ/7.5KHZ)		
C104			CK73GB1H102K	CHIP C 1000PF K			XF2			L71-0479-05	CRYSTAL FILTER (45.05MHZ/7.5KHZ)		
C105			C93-0568-05	CHIP C 47PF J			R1			RK73GB1J104J	CHIP R 100K J 1/16W		
C106,107			CK73GB1H102K	CHIP C 1000PF K			R2			RK73GB1J470J	CHIP R 47 J 1/16W		
C108			C92-0502-05	CHIP-TAN 0.33UF 35WV			R3			RK73GB1J272J	CHIP R 2.7K J 1/16W		
C109			C93-0568-05	CHIP C 47PF J			R4			RK73GB1J223J	CHIP R 22K J 1/16W		
C110	*		C93-0565-05	CHIP C 27PF J			R5			RK73GB1J103J	CHIP R 10K J 1/16W		
C111			C92-0501-05	CHIP-TAN 1.5UF 10WV			R6			RK73GB1J220J	CHIP R 22 J 1/16W		
C112,113			CK73GB1H102K	CHIP C 1000PF K			R7			RK73GB1J104J	CHIP R 100K J 1/16W		
C114			CK73GB1H103K	CHIP C 0.010UF K			R8			RK73GB1J101J	CHIP R 100 J 1/16W		
C115,116			CK73GB1H102K	CHIP C 1000PF K			R9,10			RK73GB1J104J	CHIP R 100K J 1/16W		
C117-119			CK73GB1H102K	CHIP C 1000PF K	E,E2		R12			RK73GB1J473J	CHIP R 47K J 1/16W		
C120			C93-0557-05	CHIP C 7.0PF D			R13			RK73GB1J104J	CHIP R 100K J 1/16W		
C121			CK73GB1H102K	CHIP C 1000PF K			R14-16			RK73GB1J470J	CHIP R 47 J 1/16W		
C122			CE04EW1E471M	ELECTRO 470UF 25WV			R17			RK73GB1J473J	CHIP R 47K J 1/16W		
C123			C92-0507-05	CHIP-TAN 4.7UF 6.3WV			R18			RK73GB1J333J	CHIP R 33K J 1/16W		
C124			C92-0004-05	CHIP-TAN 1.0UF 16WV			R19			RK73GB1J103J	CHIP R 10K J 1/16W		
C126-135			CK73GB1H102K	CHIP C 1000PF K			R20			RK73GB1J104J	CHIP R 100K J 1/16W		
C136			CC73GCH1H470J	CHIP C 47PF J			R21			RK73GB1J222J	CHIP R 2.2K J 1/16W		
C137			CK73GB1H102K	CHIP C 1000PF K			R22			RK73GB1J224J	CHIP R 220K J 1/16W		
C138			C92-0037-05	CHIP-ELE 10UF 16WV			R23			RK73GB1J101J	CHIP R 100 J 1/16W		
C139			CC73GCH1H151J	CHIP C 150PF J			R24			RK73GB1J184J	CHIP R 180K J 1/16W		
C140,141			CK73GB1H102K	CHIP C 1000PF K			R25			RK73GB1J224J	CHIP R 220K J 1/16W		
C142			CK73FB1H102K	CHIP C 1000PF K			R26			RK73GB1J102J	CHIP R 1.0K J 1/16W		
C143			CK73GB1H102K	CHIP C 1000PF K			R27			RK73GB1J104J	CHIP R 100K J 1/16W		
C144			CK73GB1H102K	CHIP C 1000PF K	E,E2		R28-33			RK73GB1J222J	CHIP R 2.2K J 1/16W		
C145			C92-0038-05	CHIP-ELE 22UF 16WV			R34			RK73GB1J823J	CHIP R 82K J 1/16W		
C146			CC73GCH1H150J	CHIP C 15PF J	E,E3,E4		R35			RK73GB1J223J	CHIP R 22K J 1/16W		
CN1,2			E40-0211-05	PIN ASSY (2P)			R36			RK73GB1J470J	CHIP R 47 J 1/16W		
CN3	*		E40-5786-05	PIN ASSY SOCKET (22P)			R37			RK73GB1J471J	CHIP R 470 J 1/16W		
CN4			E40-3237-05	PIN ASSY (2P)			R38			RK73GB1J101J	CHIP R 100 J 1/16W		
CF1			L72-0372-05	CERAMIC FILTER (455KHZ WIDE)			R39			RK73GB1J153J	CHIP R 15K J 1/16W		
CF2			L72-0376-05	CERAMIC FILTER (455KHZ NARROW)			R40			RK73GB1J102J	CHIP R 1.0K J 1/16W		
L1			L34-4324-05	COIL			R41,42			RK73GB1J223J	CHIP R 22K J 1/16W		
L2-4			L34-4080-05	COIL			R43			RK73GB1J153J	CHIP R 15K J 1/16W		
L5	*		L34-4461-05	COIL HET			R44-46			RK73GB1J223J	CHIP R 22K J 1/16W		
L6	*		L34-4460-05	COIL IFT			R47			RK73GB1J153J	CHIP R 15K J 1/16W		
L7-12	*		L34-4462-05	COIL MCF			R48			RK73GB1J221J	CHIP R 220 J 1/16W		

752 : TK-752 (E,E2)

759 : TK-759 (E,E2,E3,E4)

PARTS LIST

TX-RX UNIT (X57-4692-XX)

PLL/VCO (X58-4322-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks
R49,50			RK73GB1J224J	CHIP R 220K J 1/16W			D6			1SV269	VARIABLE CAPACITANCE DIODE		
R51			RK73GB1J331J	CHIP R 330 J 1/16W			D7-11			DAN235K	DIODE		
R52-55			RK73GB1J102J	CHIP R 1.0K J 1/16W			D12			1SS355	DIODE		
R56			RK73GB1J103J	CHIP R 10K J 1/16W			D13			DA204K	DIODE		
R57			RK73GB1J223J	CHIP R 22K J 1/16W			D14			1SS355	DIODE		
R58,59			RK73GB1J101J	CHIP R 100 J 1/16W			D15			MA4PH633	DIODE		
R60			RK73GB1J222J	CHIP R 2.2K J 1/16W			D16			MI809	DIODE		
R61			RK73GB1J122J	CHIP R 1.2K J 1/16W			D17,18			1SS355	DIODE		
R62			RK73GB1J102J	CHIP R 1.0K J 1/16W			D19		*	DSM3MA1	DIODE		
R63			RK73GB1J272J	CHIP R 2.7K J 1/16W			D20,21			1SS355	DIODE	E,E2	
R65			RK73GB1J100J	CHIP R 10 J 1/16W			D23			1SS355	DIODE		
R66			RK73GB1J222J	CHIP R 2.2K J 1/16W			D24,25			1SS356	DIODE		
R67			R92-1282-05	CHIP R 10 J 1W			IC1			NJM2904E	IC (OP AMP X2)		
R68			RK73GB1J103J	CHIP R 10K J 1/16W			IC2			MC3371D	IC (FM IF)		
R69			RK73GB1J100J	CHIP R 10 J 1/16W			IC3			NJM78L05UA	IC (VOLTAGE REGULATOR/ +5V)		
R70			RK73GB1J560J	CHIP R 56 J 1/16W			IC4		*	AN8009M	IC (VOLTAGE REGULATOR/ +9V)		
R71			RK73GB1J222J	CHIP R 2.2K J 1/16W			IC101	1B		M57719	IC (POWER MODULE/145-175MHZ 14W)	E3,E4	759
R72			RK73GB1J470J	CHIP R 47 J 1/16W			IC101	1B		M67741H-32	IC (POWER MODULE/	E	
R73			RK73GB1J152J	CHIP R 1.5K J 1/16W			IC101	1B		M67741L-32	IC (POWER MODULE/	E2	
R74			RK73GB1J100J	CHIP R 10 J 1/16W			Q1,2			SGM2014M	FET		
R75			RK73GB1J182J	CHIP R 1.8K J 1/16W			Q3		*	2SC2059K(P)	TRANSISTOR		
R76			R92-0699-05	CHIP R 10 J 1/2W			Q4			DTA144EK	DIGITAL TRANSISTOR		
R77			RK73GB1J103J	CHIP R 10K J 1/16W			Q5			DTC144EK	DIGITAL TRANSISTOR		
R79			RK73GB1J103J	CHIP R 10K J 1/16W			Q6		*	2SC2059K(P)	TRANSISTOR		
R80			RK73GB1J180J	CHIP R 18 J 1/16W	E3,E4	759	Q7			2SC2412K(R)	TRANSISTOR		
R80			R92-1252-05	CHIP R 0 OHM	E,E2		Q8			2SC3357	TRANSISTOR		
R81			RK73GB1J331J	CHIP R 330 J 1/16W	E3,E4	759	Q9			2SC2954	TRANSISTOR		
R82			RK73GB1J103J	CHIP R 10K J 1/16W			Q10		*	2PB710A(R)	TRANSISTOR		
R83			RK73GB1J331J	CHIP R 330 J 1/16W	E3,E4	759	Q11			DTC144WK	DIGITAL TRANSISTOR		
R85			RK73GB1J182J	CHIP R 1.8K J 1/16W			Q12			DTC114WK	DIGITAL TRANSISTOR		
R87			R92-1252-05	CHIP R 0 OHM			Q13		*	2SB1386(R)	TRANSISTOR		
R88			RK73GB1J334J	CHIP R 330K J 1/16W			Q14			2SC2412K(R)	TRANSISTOR		
R89			RK73GB1J223J	CHIP R 22K J 1/16W			Q15			2SK208(O)	FET		
R90			R92-1318-05	CHIP R 100 J 1W			Q16			2SC2412K(R)	TRANSISTOR		
R91			RK73GB1J272J	CHIP R 2.7K J 1/16W			Q17		*	2SD2396(J,K)	TRANSISTOR		
R92			RK73GB1J103J	CHIP R 10K J 1/16W			Q18			2SC2412K(R)	TRANSISTOR		
R93			RK73GB1J102J	CHIP R 1.0K J 1/16W			Q19		*	2PB710A(R)	TRANSISTOR		
R94			RK73GB1J473J	CHIP R 47K J 1/16W			Q20,21			FMW1	TRANSISTOR		
R95			RK73GB1J474J	CHIP R 470K J 1/16W			Q22,23			DTC144EU	DIGITAL TRANSISTOR		
R96			RK73GB1J102J	CHIP R 1.0K J 1/16W			A1		*	X58-4322-70	SUB UNIT (PLL/VCO)	E,E3,E4	
R97			RK73GB1J223J	CHIP R 22K J 1/16W			A1		*	X58-4322-71	SUB UNIT (PLL/VCO)	E2	
R98			RK73GB1J103J	CHIP R 10K J 1/16W			PLL/VCO (X58-4322-XX) -70 : E,E3,E4 -71 : E2						
R99			RK73GB1J681J	CHIP R 680 J 1/16W			C1			CK73GB1H102K	CHIP C 1000PF K		
R100			RK73GB1J182J	CHIP R 1.8K J 1/16W			C2			CK73FB1E104K	CHIP C 0.10UF K		
R101			RK73GB1J104J	CHIP R 100K J 1/16W			C3			CK73GB1H102K	CHIP C 1000PF K		
R102			RK73FB2A101J	CHIP R 100 J 1/10W	E,E2		C4			CC73GCH1H100D	CHIP C 10PF D		
R103			R92-1252-05	CHIP R 0 OHM	E,E2		C5			CC73GCH1H220J	CHIP C 22PF J		
R104			RK73FB2A331J	CHIP R 330 J 1/10W			C6			CK73GB1H102K	CHIP C 1000PF K		
R105			RK73GB1J103J	CHIP R 10K J 1/16W			C7			C92-0003-05	CHIP-TAN 0.47UF 25WV		
R106,107			RK73GB1J472J	CHIP R 4.7K J 1/16W			C8			CK73GB1H102K	CHIP C 1000PF K		
R108			RK73GB1J390J	CHIP R 39 J 1/16W			C9			CC73GCH1H220J	CHIP C 22PF J		
R109,110			RK73GB1J151J	CHIP R 150 J 1/16W			C10			C92-0516-05	CHIP-TAN 4.7UF 16WV		
R111			RK73GB1J103J	CHIP R 10K J 1/16W			C11			CC73GCH1H100D	CHIP C 10PF D		
R112			RK73GB1J274J	CHIP R 270K J 1/16W			C12			CC73GCH1H150J	CHIP C 15PF J		
R113			RK73GB1J392J	CHIP R 3.9K J 1/16W			C13			C92-0001-05	CHIP C 0.1UF 35WV		
R114			RK73GB1J102J	CHIP R 1.0K J 1/16W			C14,15			CK73GB1H102K	CHIP C 1000PF K		
VR1		*	R32-0658-05	SEMI FIXED VARIABLE RESISTOR 100K			C16			CC73GCH1H050C	CHIP C 5.0PF C		
VR2		*	R32-0658-05	SEMI FIXED VARIABLE RESISTOR 100K	E,E2		C17			CK73GB1H102K	CHIP C 1000PF K		
D1-4			1SV269	VARIABLE CAPACITANCE DIODE									

PARTS LIST

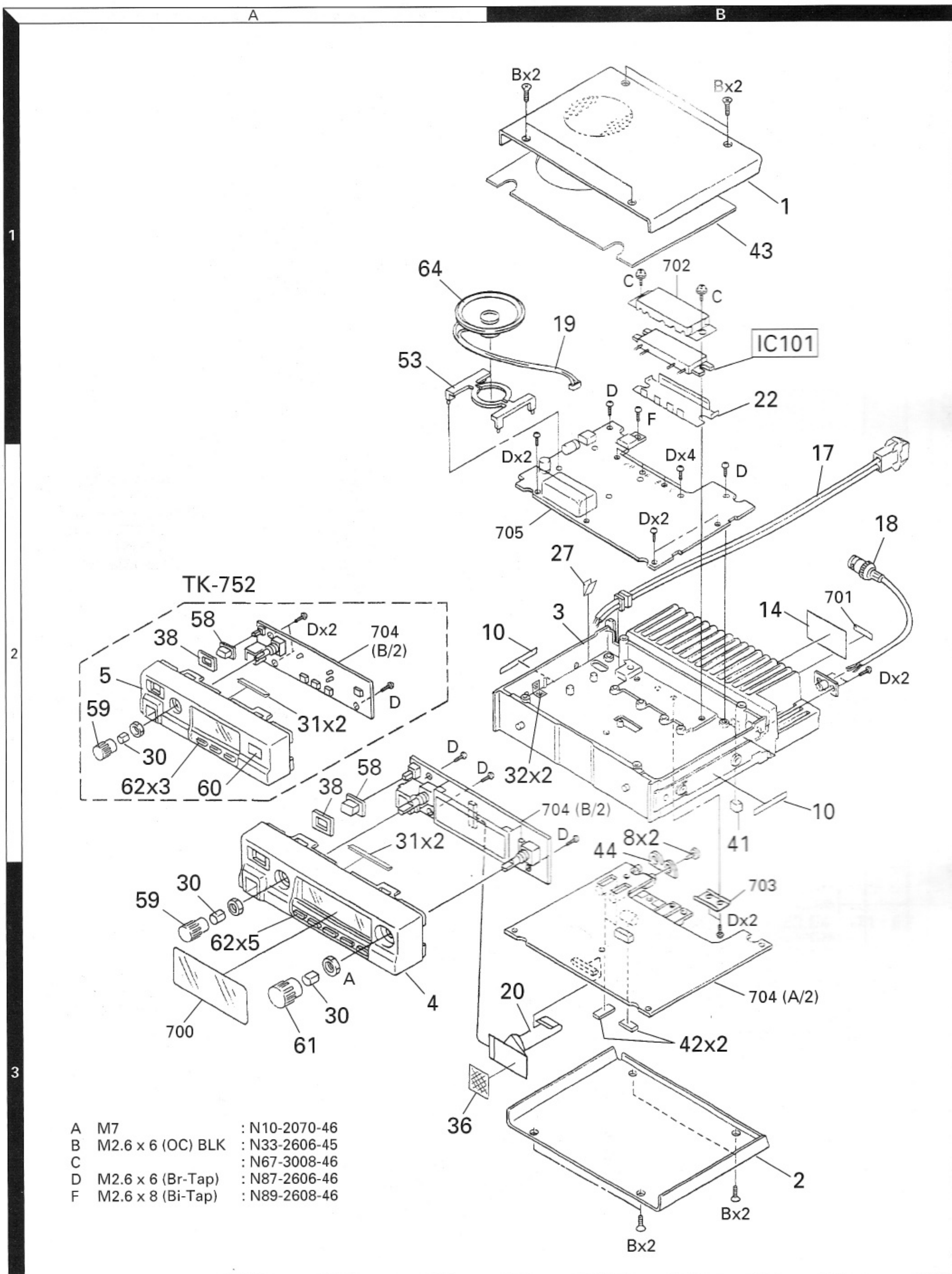
PLL/VCO (X58-4322-XX)

Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks	Ref. No.	Address	New parts	Parts No.	Description	Destination	Remarks
C18			C92-0009-05	CHIP-TAN 4.7UF 10VV			R109			RK73GB1J470J	CHIP R 47 J 1/16W		
C19			C92-0560-05	CHIP-TAN 10UF 6.3VV			R110			RK73GB1J103J	CHIP R 10K J 1/16W		
C20			CK73FB1E223K	CHIP C 0.022UF K			R111			RK73GB1J221J	CHIP R 220 J 1/16W	E,E3,E4	
C101,102			CK73GB1H102K	CHIP C 1000PF K			R111			RK73GB1J271J	CHIP R 270 J 1/16W	E2	
C103			CK73GB1E103K	CHIP C 0.010UF K			R112			R92-1252-05	CHIP R 0 OHM	E2	
C104			CC73GCH1H680J	CHIP C 68PF J	E2		R112			RK73GB1J470J	CHIP R 47 J 1/16W	E,E3,E4	
C104			CC73GCH1H820J	CHIP C 82PF J	E,E3,E4		R113,114			RK73GB1J470J	CHIP R 47 J 1/16W		
C105			CC73GCH1H040C	CHIP C 4.0PF C	E,E3,E4		R115			RK73GB1J333J	CHIP R 33K J 1/16W		
C105			CC73GCH1H080D	CHIP C 8.0PF D	E2		R116			RK73GB1J103J	CHIP R 10K J 1/16W		
C106,107			CK73GB1E103K	CHIP C 0.010UF K			R117			RK73GB1J101J	CHIP R 100 J 1/16W		
C108			CC73GCH1H020C	CHIP C 2.0PF C			D1			1SS355	DIODE		
C109-112			CK73GB1H102K	CHIP C 1000PF K			D2			DAN235K	DIODE		
C113			CC73GCH1H101J	CHIP C 100PF J			D101-104			1SV269	VARIABLE CAPACITANCE DIODE		
C114			CC73GCH1H040C	CHIP C 4.0PF C	E2		IC1		*	MC145190F	IC (PLL SYSTEM)		
C114			CC73GCH1H060D	CHIP C 6.0PF D	E,E3,E4		Q1			DTC114EU	DIGITAL TRANSISTOR		
C115			CK73GB1H102K	CHIP C 1000PF K			Q2		*	2SC5110(O)	TRANSISTOR		
C116			CC73GCH1H020C	CHIP C 2.0PF C			Q101			2SC4081	TRANSISTOR		
C117			CC73GCH1H150J	CHIP C 15PF J			Q102			2SK508NV(K52)	FET		
C118			CK73GB1H102K	CHIP C 1000PF K			Q103			DTC114EU	DIGITAL TRANSISTOR		
C119,120			CC73GCH1H060D	CHIP C 6.0PF D			Q104			2SC4081	TRANSISTOR		
C121			CC73GCH1H080D	CHIP C 8.0PF D			Q105			2SK508NV(K52)	FET		
C122			CC73GCH1H100D	CHIP C 10PF D	E2		Q106		*	2SC5110(O)	TRANSISTOR		
C122			CC73GCH1H120J	CHIP C 12PF J	E,E3,E4		TH101,102			157-302-65801	THERMISTOR		
CN1			E40-5201-05	PIN ASSY (7P)									
CN101			E40-0311-05	PIN ASSY (3P)									
CN102			E40-0411-05	PIN ASSY (4P)									
-		*	F10-2168-04	SHIELDING CASE									
L1			L40-4772-80	SMALL FIXED INDUCTOR (47NH)									
L2			L40-6871-34	SMALL FIXED INDUCTOR (68NH)									
L101,102			L33-1268-05	SMALL FIXED INDUCTOR (10UH)									
L103		*	L34-4429-05	COIL (2.5T0.5T)									
L104-107			L33-1268-05	SMALL FIXED INDUCTOR (10UH)									
L108		*	L34-4432-05	COIL (2T2T)	E,E3,E4								
L108		*	L34-4449-05	COIL (3T2T)	E2								
L109			L40-6871-34	SMALL FIXED INDUCTOR (68NH)									
L110			L33-1268-05	SMALL FIXED INDUCTOR (10UH)									
R1			RK73GB1J223J	CHIP R 22K J 1/16W									
R2			RK73GB1J560J	CHIP R 56 J 1/16W									
R3,4			RK73GB1J103J	CHIP R 10K J 1/16W									
R5			RK73GB1J473J	CHIP R 47K J 1/16W									
R6			RK73GB1J101J	CHIP R 100 J 1/16W									
R7,8			RK73GB1J103J	CHIP R 10K J 1/16W									
R9			RK73GB1J102J	CHIP R 1.0K J 1/16W									
R10			RK73GB1J103J	CHIP R 10K J 1/16W									
R11			RK73GB1J122J	CHIP R 1.2K J 1/16W									
R12,13			RK73GB1J101J	CHIP R 100 J 1/16W									
R14			RK73GB1J333J	CHIP R 33K J 1/16W									
R15			RK73GB1J103J	CHIP R 10K J 1/16W									
R16,17			RK73GB1J101J	CHIP R 100 J 1/16W									
R101			RK73GB1J151J	CHIP R 150 J 1/16W									
R102			RK73GB1J123J	CHIP R 12K J 1/16W	E,E3,E4								
R102			RK73GB1J183J	CHIP R 18K J 1/16W	E2								
R103			RK73GB1J101J	CHIP R 100 J 1/16W	E,E3,E4								
R103			RK73GB1J121J	CHIP R 120 J 1/16W	E2								
R104,105			RK73GB1J103J	CHIP R 10K J 1/16W									
R106			RK73GB1J181J	CHIP R 180 J 1/16W									
R107			RK73GB1J470J	CHIP R 47 J 1/16W									
R108			RK73GB1J103J	CHIP R 10K J 1/16W									

752 : TK-752 (E,E2)

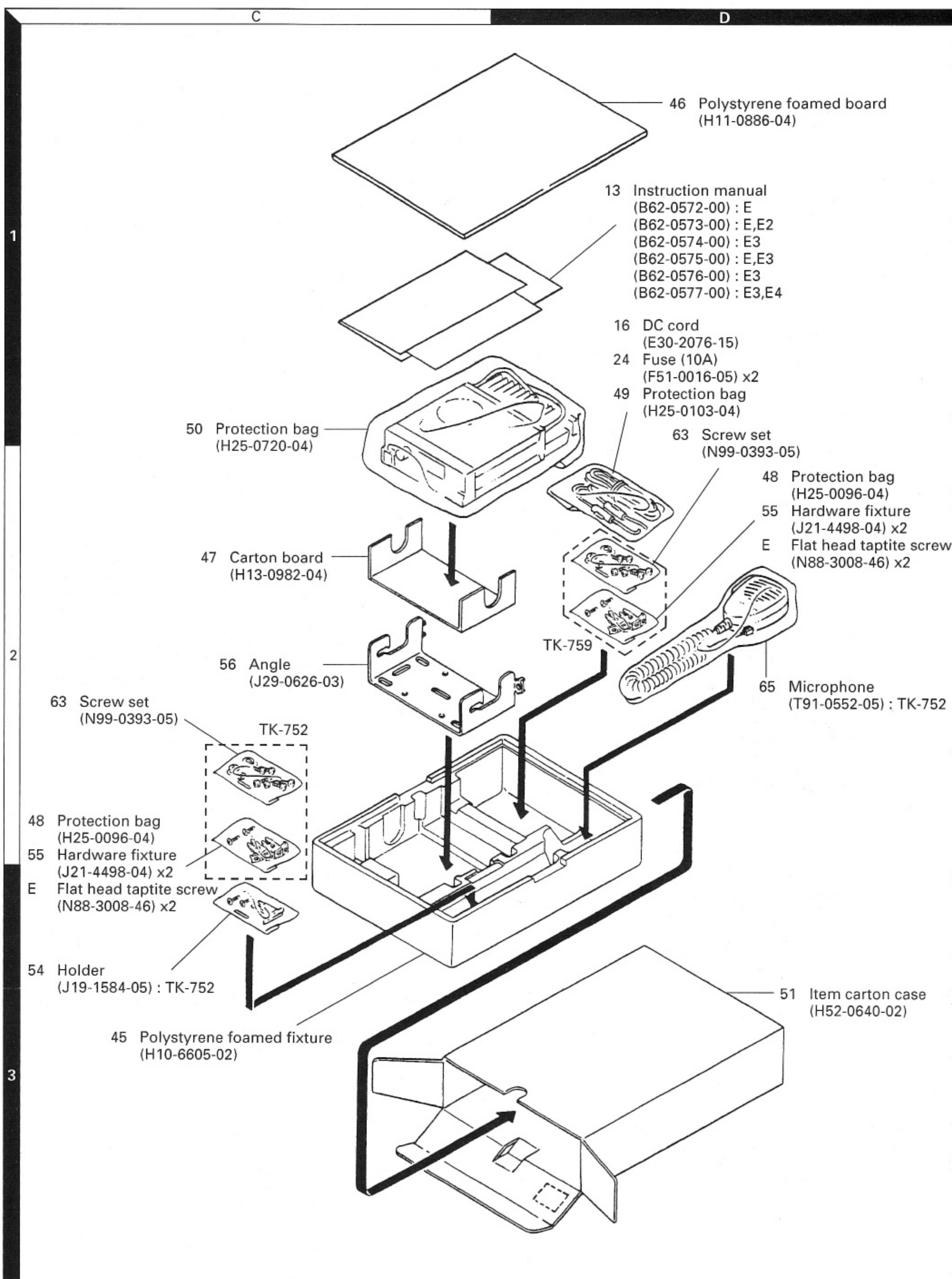
759 : TK-759 (E,E2,E3,E4)

EXPLODED VIEW



Parts with the exploded numbers larger than 700 are not supplied.

PACKING



ADJUSTMENT

Adjustment Mode

• Overview

The transmission output, deviation, QT, DQT, and squelch can be adjusted by using the KPG-28D. There are three-point adjustment and one-point adjustment.

1. Three-point adjustment

(Three-point adjustment is carried out for each destination in the factory. After a desired frequency is written, each rating is checked.)

In the three-point adjustment, the inclination of adjustment is obtained based on the center (1CH), low (2CH), and high (3CH) frequencies in the frequency range in which the performance of the transceiver is guaranteed. The microprocessor calculates the adjustment value of the frequency in the band automatically according to the inclination.

Note: Three-point tuning for the KPG-28D**(Adjustment of the center, lower limit, and upper limit frequencies (Three-point tuning))**

The electronic volume can be tuned at the center, lower limit, and upper limit frequencies. (Three-point tuning)

1. Hold down [Alt] + [Shift] and press [F5] on the Main screen. The Password Window shown below will open.

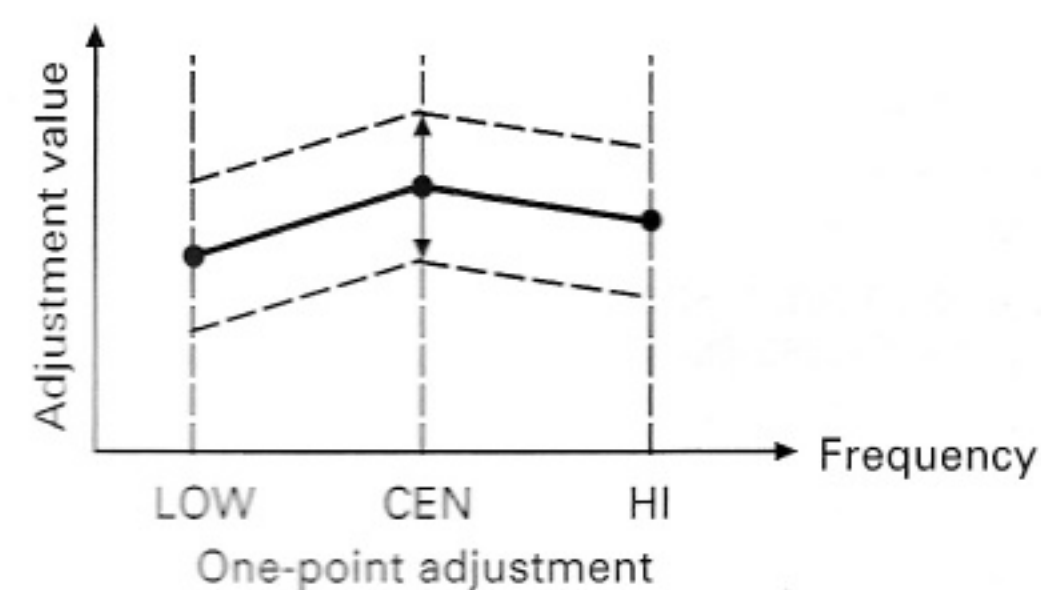
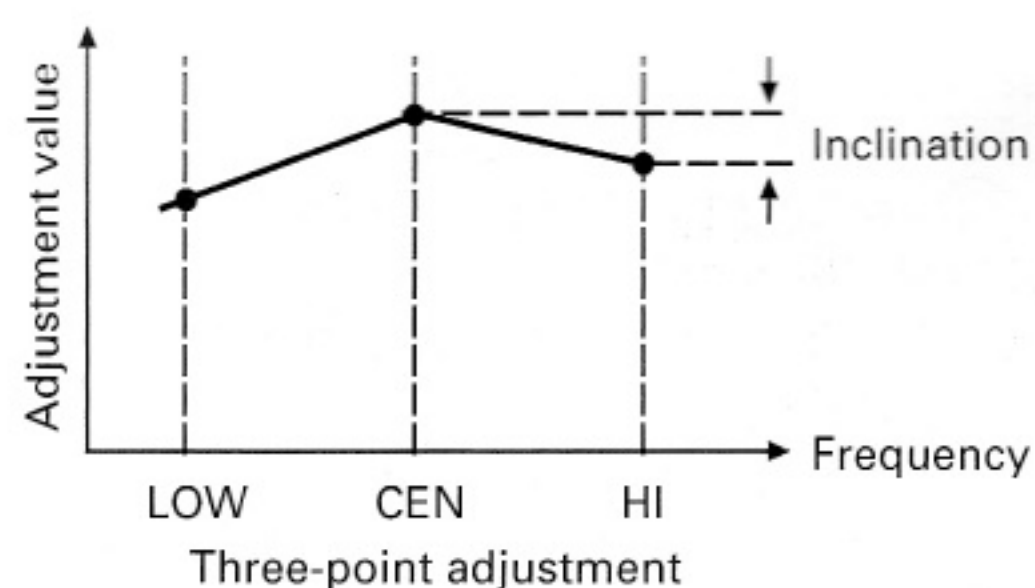
Password	
Password :	

2. Enter the password. (3TUNING)
3. Press [Enter]. If the password is correct, the Test Mode Window opens.

2. One-point adjustment

When the three-point adjustment is carried out, the center (1CH) value is automatically set to magnification rate 1. Therefore, it is not required to perform one-point adjustment. (However, one-point adjustment is performed for squelch only.)

In the one-point adjustment, all frequencies in the band can be re-adjusted using the center (CH1) value as magnification rate 1. If a frequency is fine-adjusted, a desired frequency is set for 4CH or subsequent channel (4CH to 8CH), and the frequency is re-adjusted. In this case, all frequencies in the band are also re-adjusted.



Note: One-point adjustment is used by dealers for fine adjustment. All the values are shifted automatically by moving one point (adjustment value).

Notes:

- 1) When the microprocessor is replaced, the main mode item of optional feature should be enabled using the KPG-28D. The main program appropriate for the version of the microprocessor should be written into the flash memory. In this case, re-adjustment is not required. (If the main item is not enabled, the main program is not written into the flash memory.)
- 2) If the flash memory is replaced, the main program should be written into the new flash memory. Then, re-adjustment should be carried out using the KPG-28D.
In this case, set the frequency, then perform three-point adjustment. Perform one-point adjustment if necessary.

ADJUSTMENT

Required Test Equipment

1. Stabilized power supply

- 1) The supply voltage can be changed between 5V and 18V, and the current is 15A or more.
- 2) The standard voltage is 13.2V

2. DC ammeter

- 1) Class 1 ammeter (17 ranges and other features).
- 2) The full scale can be set to either 300mA or 10A.
- 3) A cable of less internal loss must be used.

3. Frequency counter (f. counter)

- 1) Frequency of up to 1GHz or so can be measured.
- 2) The sensitivity can be changed to 500MHz or below, and measurements are highly stable and accurate (0.2ppm or so).

4. Power meter

- 1) Measurable frequency : Up to 500MHz
- 2) Impedance : 50Ω , unbalanced
- 3) Measuring range : Full scale of 30W or so
- 4) A standard cable (5D2W 1m) must be used.

5. RF VTVM (RF V.M)

- 1) Measurable frequency : Up to 500MHz or so

6. Linear detector

- 1) Measurable frequency : Up to 500MHz
- 2) Characteristics are flat, and CN is 60dB or more.

7. Digital voltmeter

- 1) Voltage range : FS=18V or so
- 2) Input resistance : $1M\Omega$ or more

8. Oscilloscope

- 1) Measuring range : DC to 30MHz
- 2) Provides highly accurate measurements for 5 to 25MHz.

9. AF voltmeter (AF VTVM)

- 1) Measurable frequency : 50Hz to 1MHz
- 2) Maximum sensitivity : 1mV or more

10. Spectrum analyzer

- 1) Measurable range : DC to 1GHz or more

11. Standard signal generator (SSG)

- 1) Maximum frequency : 500MHz or more
- 2) Output : -20dB/0.1 μ V to 120dB/1V
- 3) Output impedance : 50Ω

12. Tracking generator

- 1) Center frequency : 50kHz to 500MHz
- 2) Frequency deviation : ± 35 MHz
- 3) Output voltage : 100mV or more

13. Dummy load

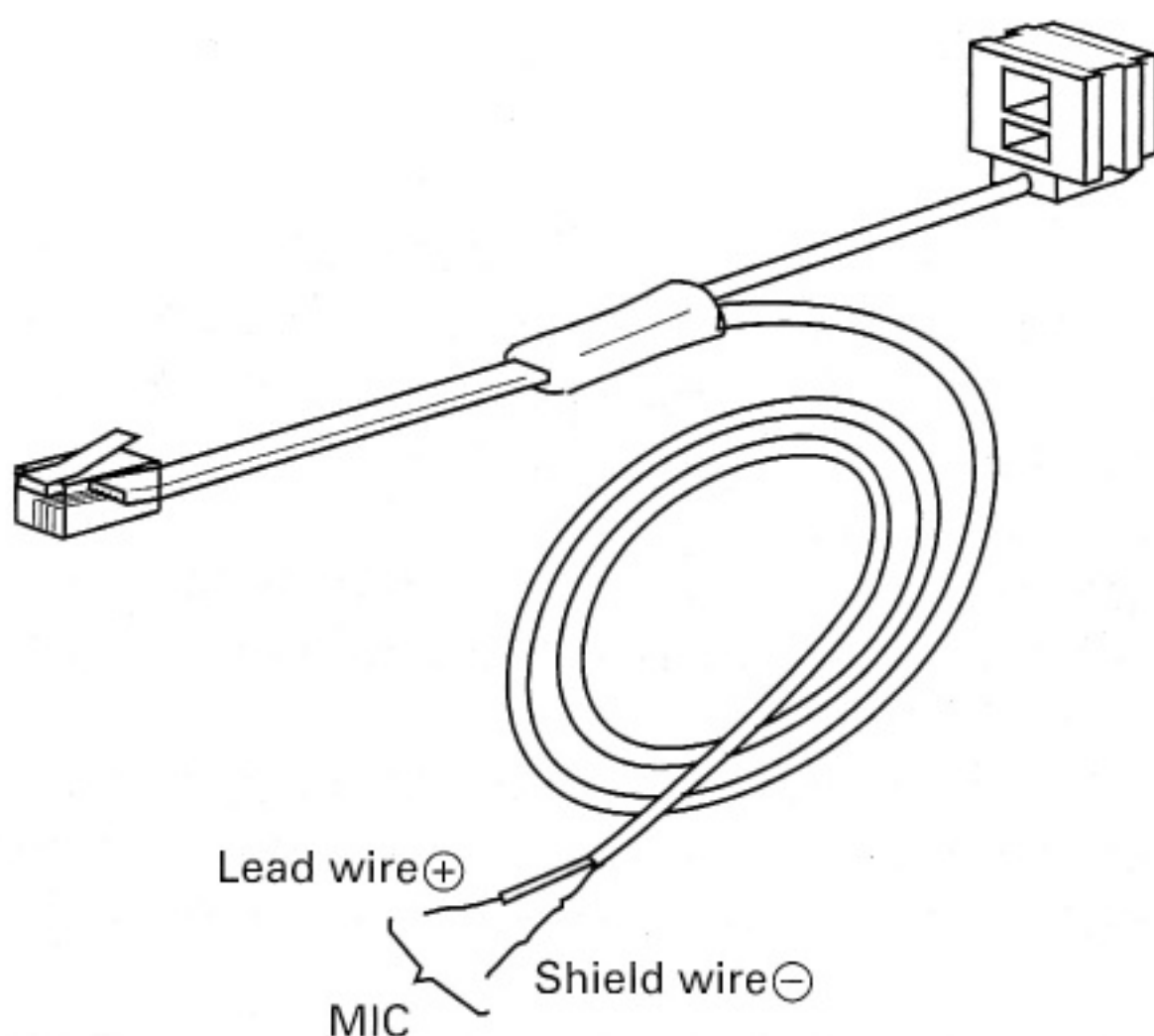
- 1) 4Ω , 3W or more

- Use a non-conductive rod such as a Bakelite rod for adjustment (Especially of trimmers and coils).
- To protect the SSG, do not send out signals while adjusting the receiving unit.
- The indicated SSG output levels are for maximum output.

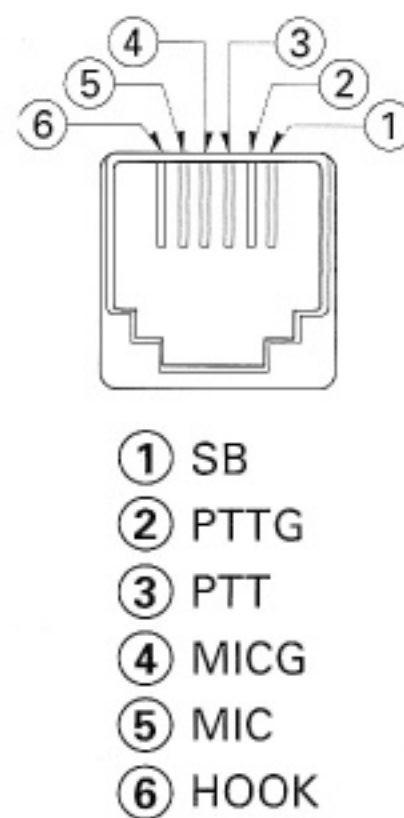
The set has been adjusted for the frequencies shown in the following table. When required, re-adjust them following the adjustment procedure to obtain the frequencies you want in actual operation.

	E,E3,E4		E2	
	TX (MHz)	RX (MHz)	TX (MHz)	RX (MHz)
CH1 (Center)	160.000	160.050	143.000	143.050
CH2 (Low)	146.000	146.050	136.000	136.050
CH3 (High)	174.000	173.950	150.000	149.950

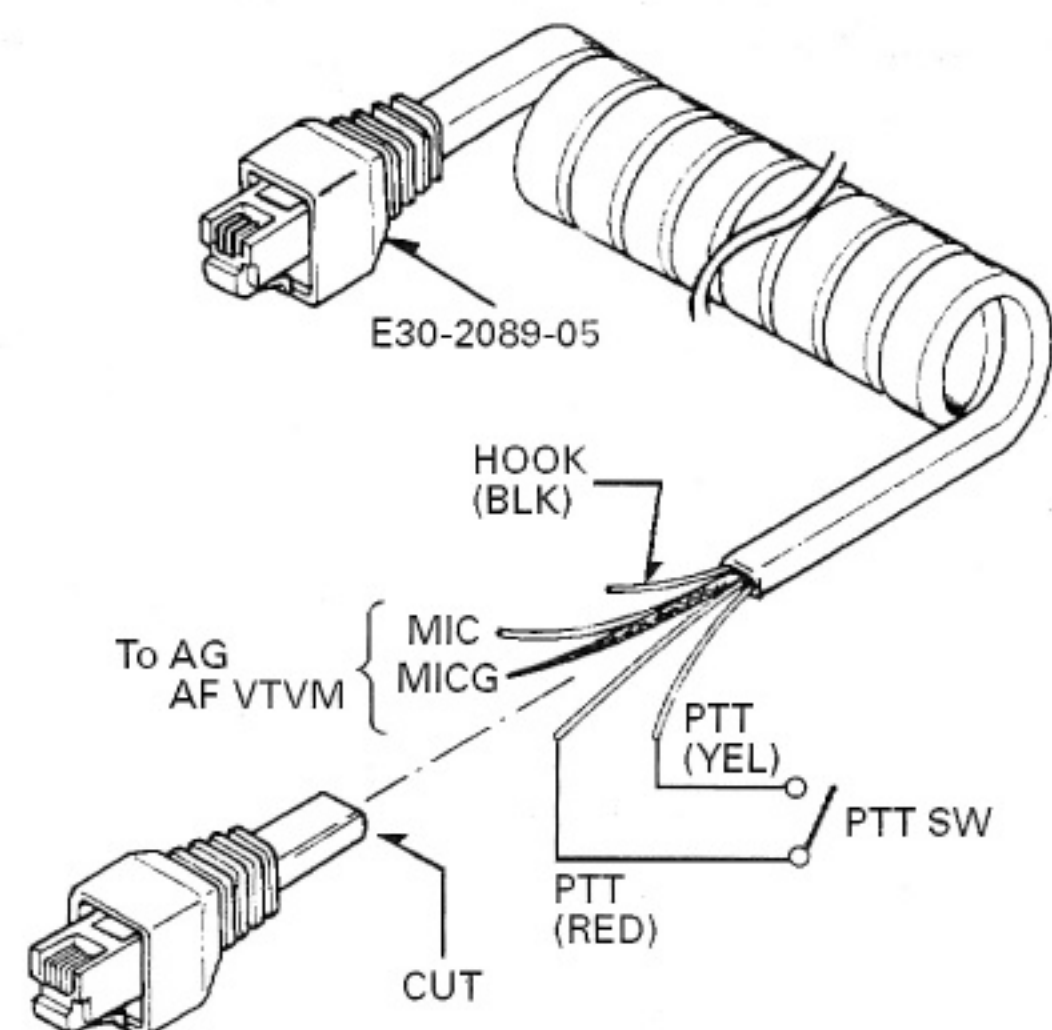
- The following test cable is recommended.



Tuning cable (E30-3217-05)



MIC connector
(Front view)

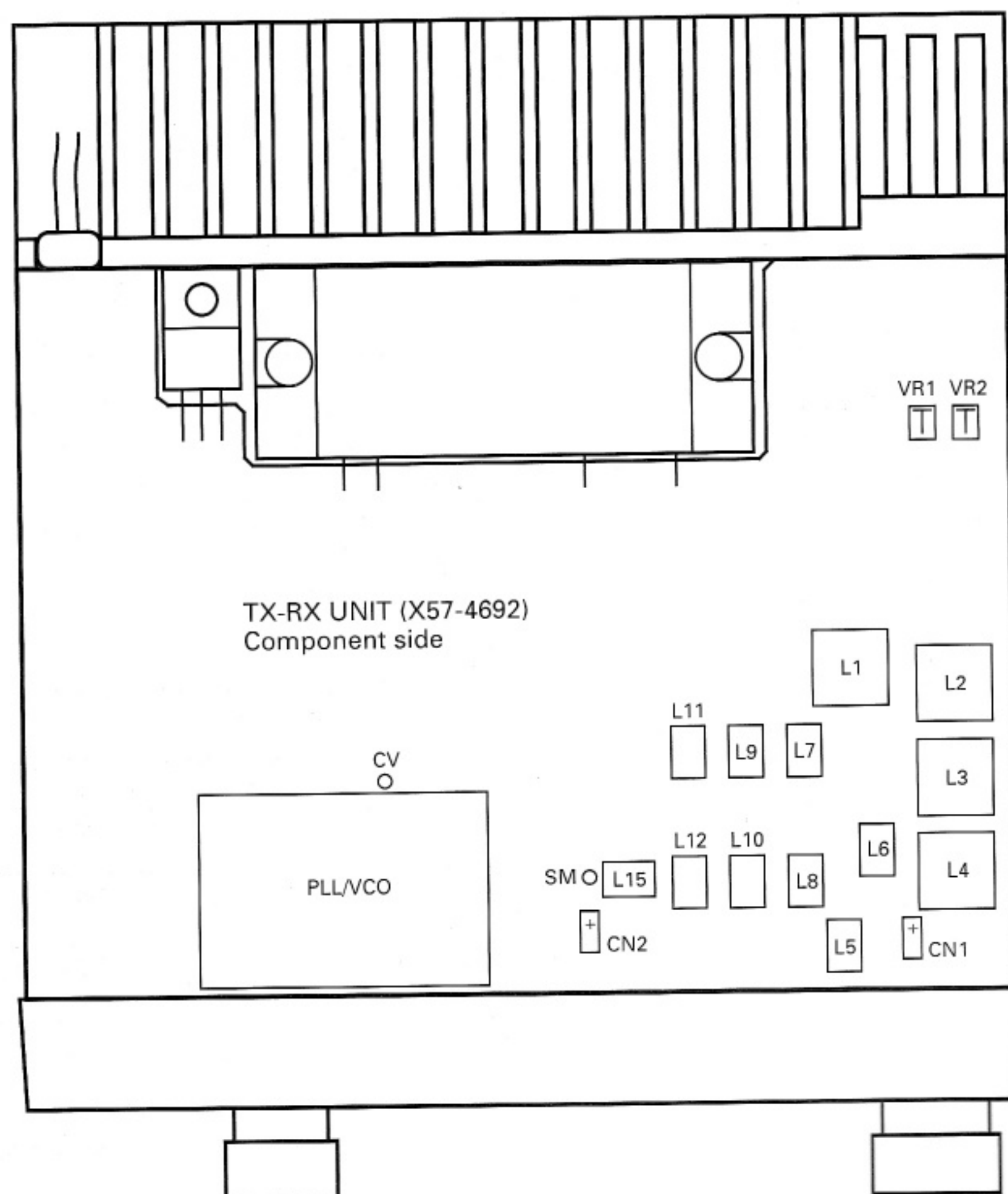


Test cable for microphone input

TK-752/759

ADJUSTMENT

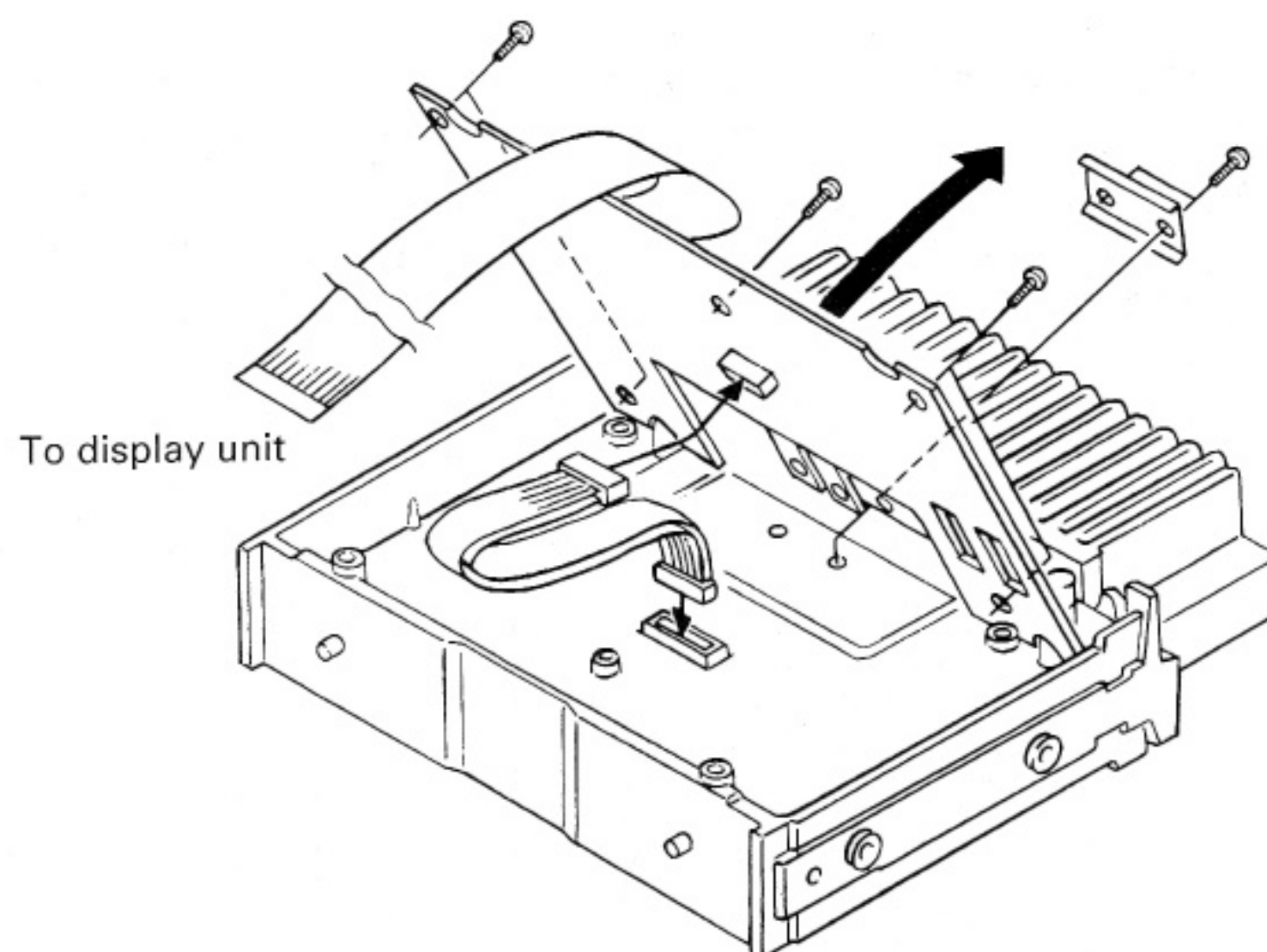
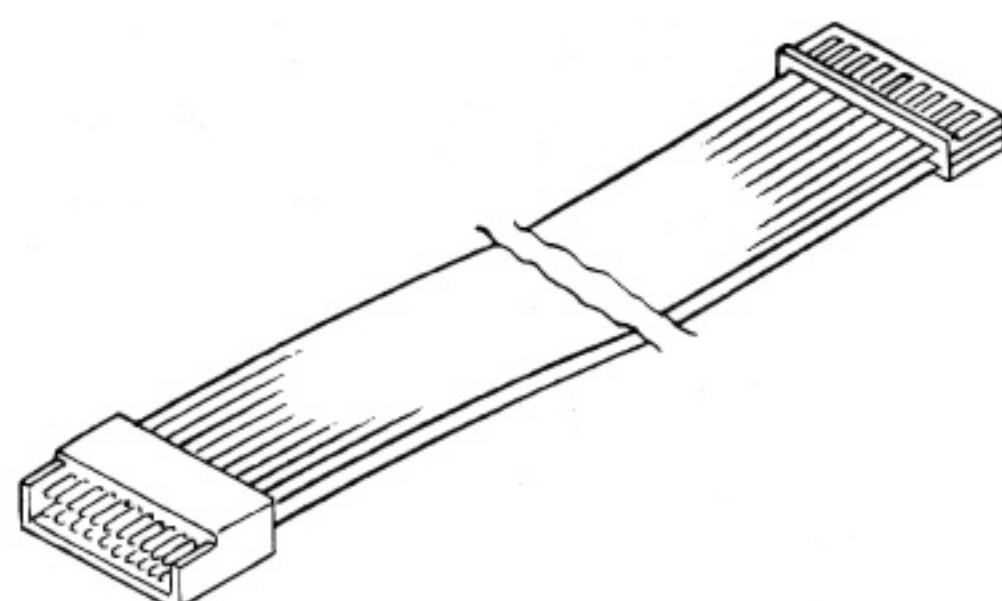
Adjustment Point



- L1~5 : BPF & HET
- L6,7,9,11 : IFT & MCF (Wide)
- L8,10,12 : IFT & MCF (Narrow)
- L15 : Discriminator
- VR1 : Maximum power
- VR2 : Protection

How to Use the Jig

Parts No. : E37-0660-05



ADJUSTMENT

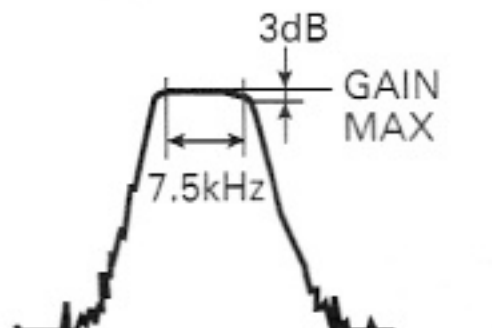
Common Section Adjustment

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Setting	• Receiver section The indicated SSG output level are for maximum output. Whenever there is no modulation designation, standard modulation (MOD : 1kHz, (Wide) DEV : ±3.0kHz E,E2, ±2.4kHz E3,E4, (Narrow) DEV : ±1.5kHz) is indicated.	• Transmitter section Description of function keys PC : IBM-PC ←/→ : Move the cursor with the keys. Spacebar : Switch between TX and RX. Enter key : Set a value and go to the next step.						
2. PLL lock voltage	1) CH : Channel with lowest RX FREQ' (f _{RL})	DVM Power meter	TX-RX	CV			Check	1.5V or more
	2) CH : Channel with highest RX FREQ' (f _{RH})							7.5V or less
	3) CH : Channel with lowest TX FREQ' (f _{TL}) PTT : ON							1.5V or more
	4) CH : Channel with highest TX FREQ' (f _{TH}) PTT : ON							7.5V or less
3. Transmit frequency	1) CH : Channel with TX center FREQ' (f _{TM}) PTT : ON	Power meter f.counter	Rear panel	ANT			Check	f ± 0.24kHz E,E3,E4 f ± 0.21kHz E2

Receiver Section Adjustment

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. BPF & HET	1) CH : Channel with lowest RX FREQ' (f _{RL}) Set the sensitivity lower limit of the Three-point adjustment method to "50". SSG output : -100dBm	SSG	Rear panel	ANT	TX-RX	L1~4	Repeat for MAX. (SM)	
	2) SSG output : -118dBm	Volt meter	TX-RX	SM		L5		
	3) CH : Channel with RX center FREQ' (f _{RM}) SSG output : -118dBm				PC	←/→	MAX voltage. (SM)	
	4) CH : Channel with highest RX FREQ' (f _{RH}) SSG output : -118dBm							

ADJUSTMENT

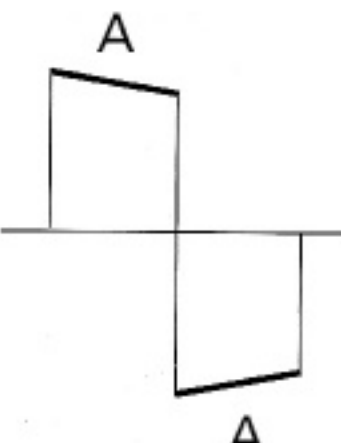
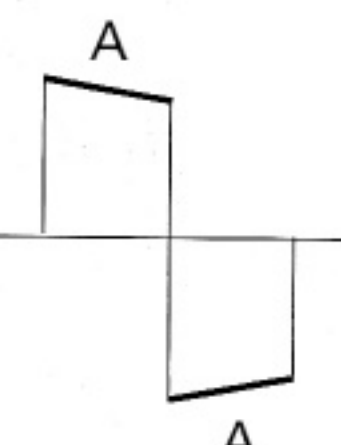
Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
2. IFT & MCF	1) CH : Channel with RX center FREQ' (f _{RM}) (Wide) Tracking generator output : -20dBm	Tracking generator	TX-RX	CN1	TX-RX	L6	Gain MAX.	 3dB 15kHz GAIN MAX
	2) CH : Channel with RX center FREQ' (f _{RM}) (Narrow) Tracking generator output : -20dBm	Spectrum analyzer		CN2		L7, L9	Align to set the waveform of spectrum analyzer as right. Note : When replacing L11 or L12, turn the core two turns mechanically.	
						L8, L10		 3dB 7.5kHz GAIN MAX
3. Discriminator	1) Channel with RX center FREQ' (f _{RM}) (Wide) SSG output : -53dBm AF : 1.4V/4Ω	SSG AF VTVM Oscilloscope	Rear panel	ANT EXT.SP	TX-RX	L15	AF output MAX.	
4. Distortion	1) CH : Channel with RX center FREQ' (f _{RM}) (Wide) SSG output : -53dBm AF : 1.4V/4Ω	SSG Distortion meter AF VTVM Oscilloscope	Rear panel	ANT EXT.SP			Check	3% or less
	2) CH : Channel with RX center FREQ' (f _{RM}) (Narrow)							
5. Sensitivity	1) CH : Channel with lowest RX FREQ' (f _{RL}) (Wide) SSG output : -118dBm AF : 0.45V/4Ω						Check	SINAD 12dB or more.
	2) CH : Channel with highest RX FREQ' (f _{RH}) (Wide)							
	3) CH : Channel with lowest RX FREQ' (f _{RL}) (Narrow)							
	4) CH : Channel with highest RX FREQ' (f _{RH}) (Narrow)							
6. Squelch	1) CH : Channel with RX center FREQ' (f _{RM}) (Wide) SSG output : Value when 3dB is subtracted from the sensitivity value of 12dB SINAD. AF : 0.45V/4Ω	SSG Distortion meter AF VTVM Oscilloscope Ammeter	Rear panel	ANT EXT.SP	PC	←/→	Set to the point at which squelch just close.	
	2) SSG output : 12dB SINAD						Check	Squelch should open.
	3) SSG output : OFF							Squelch should close.
	4) CH : Channel with RX center FREQ' (f _{RM}) (Narrow) SSG output : Value when 3dB is subtracted from the sensitivity value of 12dB SINAD.				PC	←/→	Set to the point at which squelch just close.	
	5) SSG output : 12dB SINAD						Check	Squelch should open.
	6) SSG output : OFF							Squelch should close.

ADJUSTMENT

Transmitter Section Adjustment

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
1. Power output	1) Maximum power CH : Channel with highest TX FREQ' (fTH) PTT : ON	Power meter	Rear panel	ANT	TX-RX	VR1	26.5W E,E2,E3 11.0W E4	±0.5W
	2) CH : Channel with TX center FREQ' (fTM) PTT : ON	Ammeter			PC	←/→	25.0W E,E2,E3 10.0W E4	±0.5W 7.0A or less E,E2,E3 3.5A or less E4
	3) CH : Channel with lowest TX FREQ' (fTL) PTT : ON						25.0W E,E2,E3 10.0W E4	±0.5W
	4) CH : Channel with TX center FREQ' (fTM) PTT : ON				TX-RX	VR1	10.0W E3 6.0W E4	±0.5W 5.0A or less E3 3.0A or less E4
	5) Low power CH : Channel with highest TX FREQ' (fTH) PTT : ON				PC	←/→	5.0W E,E2,E3 1.0W E4	±0.5W E,E2,E3 ±0.3W E4
	6) CH : Channel with TX center FREQ' (fTM) PTT : ON							
	7) CH : Channel with lowest TX FREQ' (fTL) PTT : ON							
- To adjust the power, adjust VR1 in 1-4). (E,E2,E3 : 5 to 25W, E4 : 1 to 10W) - Adjust the power in the same way if the low power is mainly used.								
2. Maximum deviation (Wide)	1) CH : Channel with highest TX FREQ' (fTH) AG : 1kHz/50mV Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF PTT : ON	Power meter Deviation meter Oscilloscope	Rear panel	ANT	PC	←/→	±4.1kHz E,E2 ±3.3kHz E3,E4 (According to the larger +, -)	±0.1kHz Oscilloscope waveform is not abnormal.
	2) CH : Channel with TX center FREQ' (fTM) PTT : ON							
	3) CH : Channel with lowest TX FREQ' (fTL)							
3. Maximum deviation (Narrow)	1) CH : Channel with highest TX FREQ' (fTH) AG : 1kHz/50mV Deviation meter filter HPF : OFF LPF : 15kHz De-emphasis : OFF PTT : ON	AF VTVM AG	Front panel	MIC			±2.05kHz (According to the larger +, -)	±0.05kHz Oscilloscope waveform is not abnormal.
	2) CH : Channel with TX center FREQ' (fTM) PTT : ON							
	3) CH : Channel with lowest TX FREQ' (fTL)							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
4. MIC sensitivity	1) CH : Channel with TX center FREQ' (f _{TM}) (Wide) AG : 1kHz/5mV PTT : ON	Power meter Deviation meter Oscilloscope	Rear panel	ANT			Check	±2.2~3.6kHz E,E2 ±1.7~2.8kHz E3,E4
	2) CH : Channel with TX center FREQ' (f _{TM}) (Narrow) AG : 1kHz/5mV PTT : ON	AF VTVM AG	Front panel	MIC				±1.1~1.8kHz
5. DTMF deviation	1) CH : Channel with TX center FREQ' (f _{TM}) / D (Wide) PTT : ON				PC	←/→	±3.0kHz E,E2 ±2.4kHz E3,E4 (According to the larger +, -)	±0.1kHz
6. 5-TONE deviation	1) CH : Channel with TX center FREQ' (f _{TM}) / 1kHz (Wide) Deviation meter filter HPF : 300Hz LPF : 3kHz De-emphasis : OFF PTT : ON						±3.0kHz E,E2 ±2.4kHz E3,E4 (According to the larger +, -)	±0.1kHz
7. DQT balance (Wide)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 023N Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF PTT : ON							Flat the A parts. 
	2) CH : Channel with TX center FREQ' (f _{TM}) / 023N PTT : ON							
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 023N PTT : ON							
8. DQT balance (Narrow)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 023N Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF PTT : ON							Flat the A parts. 
	2) CH : Channel with TX center FREQ' (f _{TM}) / 023N PTT : ON							
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 023N PTT : ON							
9. DQT deviation (Wide)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 023N Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF PTT : ON						0.75kHz E,E2 0.60kHz E3,E4	±0.05kHz
	2) CH : Channel with TX center FREQ' (f _{TM}) / 023N PTT : ON							
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 023N PTT : ON							

ADJUSTMENT

Item	Condition	Measurement			Adjustment			Specifications/Remarks
		Test-equipment	Unit	Terminal	Unit	Parts	Method	
10. DQT deviation (Narrow)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 023N Deviation meter filter HPF : OFF LPF : 3kHz De-emphasis : OFF PTT : ON	Power meter Deviation meter Oscilloscope	Rear panel	ANT	PC	←/→	0.35kHz	±0.05kHz
	2) CH : Channel with TX center FREQ' (f _{TM}) / 023N PTT : ON	AF VTVM AG	Front panel	MIC				
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 023N PTT : ON							
11. QT deviation (Wide)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 151.4Hz Deviation meter filter HPF : 50Hz LPF : 3kHz De-emphasis : OFF PTT : ON						0.75kHz E,E2 0.60kHz E3,E4	±0.05kHz
	2) CH : Channel with TX center FREQ' (f _{TM}) / 151.4Hz PTT : ON							
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 151.4Hz PTT : ON							
12. QT deviation (Narrow)	1) CH : Channel with highest TX FREQ' (f _{TH}) / 151.4Hz Deviation meter filter HPF : 50Hz LPF : 3kHz De-emphasis : OFF PTT : ON						0.35kHz	±0.05kHz
	2) CH : Channel with TX center FREQ' (f _{TM}) / 151.4Hz PTT : ON							
	3) CH : Channel with lowest TX FREQ' (f _{TL}) / 151.4Hz PTT : ON							
13. Protection	1) CH : Channel with highest TX FREQ' (f _{TH}) ANT : Open Space key 1 push : TX	Ammeter	Front panel	MIC	TX-RX	VR2	MIN current	7.0A or less E,E2
							Check	3.5A or less E3 3.0A or less E4

TERMINAL FUNCTION

CN1 (Control unit) $\longleftrightarrow$ CN3 (TX-RX unit)

Pin No.	Pin name	Function
1	EN	PLL enable output
2	LD	PLL unlock detection input. L : Unlocked
3	CK	PLL clock output
4	TO	Sub-tone output
5	DT	PLL data output
6	TUNE	Tune voltage output
7	NC	Unused
8	SB	13.2V at power on
9	8C	8V at power on
10	B	13.2V
11	MO	Modulation signal output
12	B	13.2V
13	NC	Unused
14	E	Ground
15	SM	S-meter voltage input
16	SP	AF signal output
17	DET	Detection signal input
18	PO	Power control voltage output
19	WIDE	Wide/narrow switch. H : Wide
20	TX	TX/RX switch. H : TX
21	8R	8V during reception
22	LO/DX	LO/DX switch. H : LO

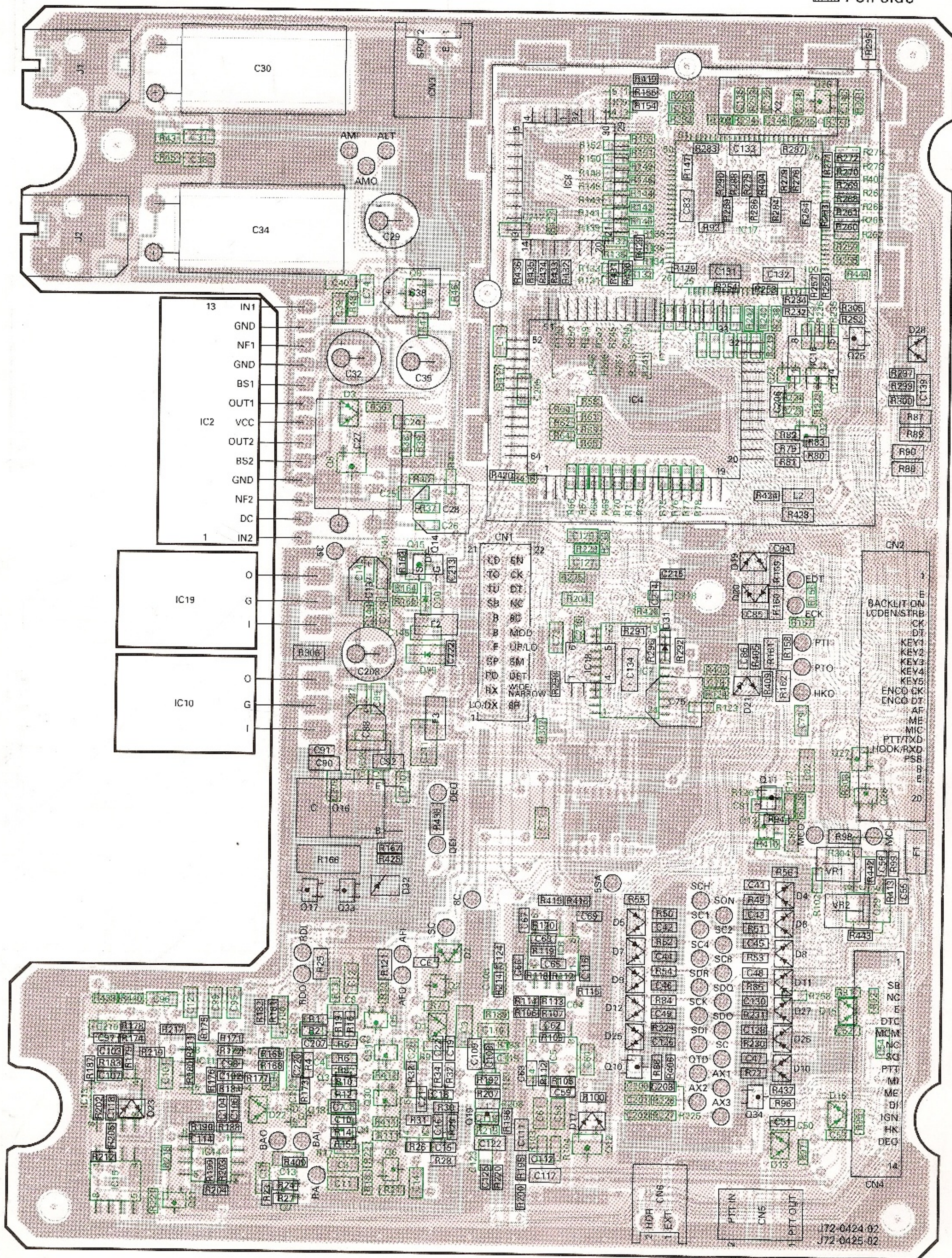
CN2 (Control unit) $\longleftrightarrow$ CN501 (Display unit)

Pin No.	Pin name	Function (TK-752)	Function (TK-759)
1	E	Ground	Ground
2	B	13.2V	13.2V
3	PSB	13.2V at power on	13.2V at power on
4	HOOK/RXD	Hook function output/External communication line	Hook function output/External communication line
5	PTT/TXD	PTT function input or output/External communication line	PTT function input or output/External communication line
6	MIC	Microphone output	Microphone output
7	ME	Microphone ground	Microphone ground
8	AF	AF volume voltage output	AF volume voltage output
9	ENCODT	NC	Encoder data output
10	ENCOCK	NC	Encoder clock input
11	KEY5	Key 5 output	Key 5 output
12	KEY4	Key 4 output	Key 4 output
13	KEY3	Key 3 output	Key 3 output
14	KEY2	Key 2 output	Key 2 output
15	KEY1	NC	Key 1 output
16	DT	Shift register data input	LCD driver data input
17	CK	Shift register clock input	LCD driver clock input
18	LCDEN/STRB	Shift register strobe input	LCD driver enable input
19	BACKLIT ON	NC	LCD (D504~D509) switch. H : On
20	E	Ground	Ground

CONTROL UNIT (X53-3592-70) (A/2) : TK-759 / (X53-3602-70) (A/2) : TK-752

Component side view

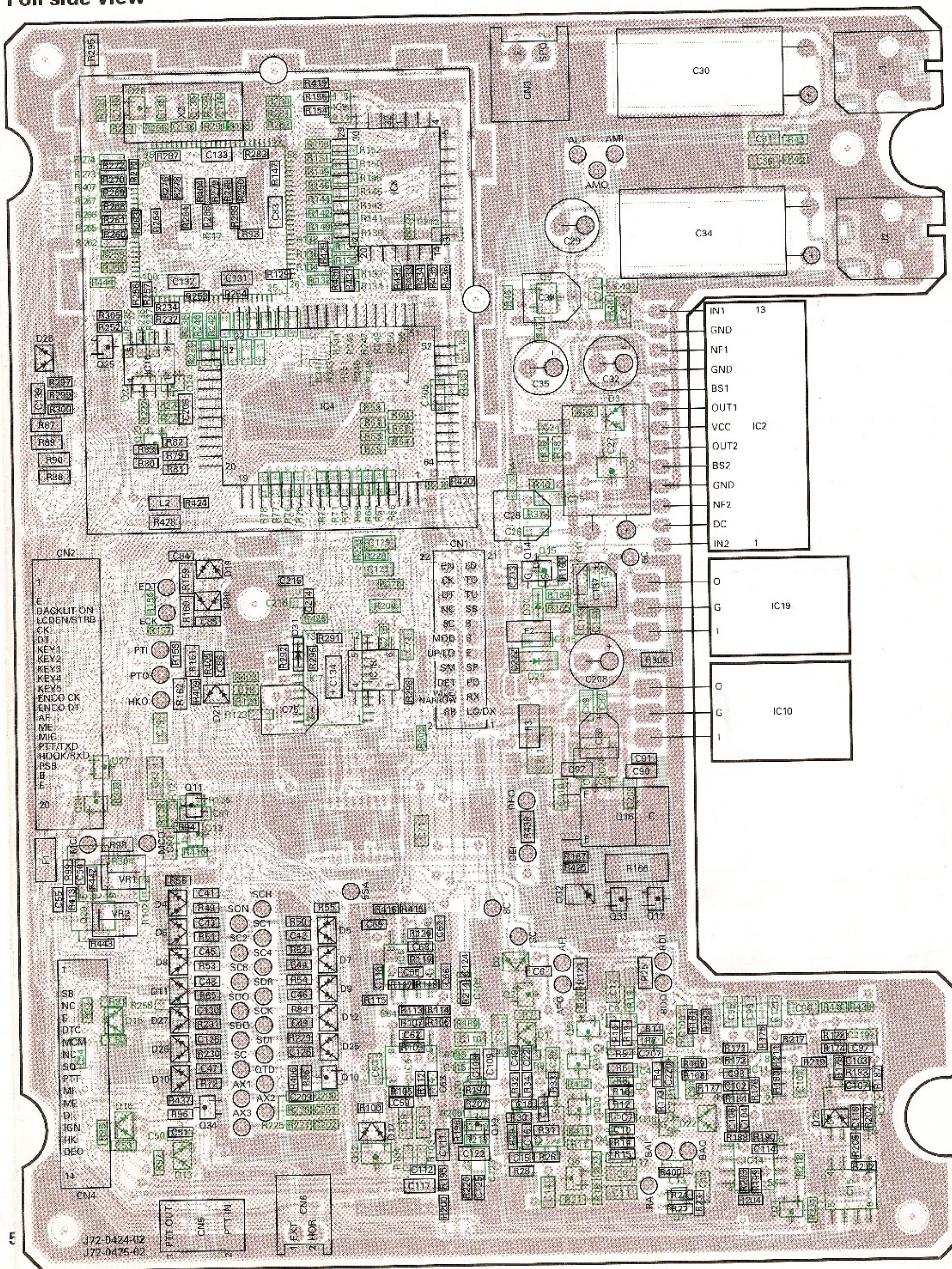
Component side
Foil side



TK-752/759

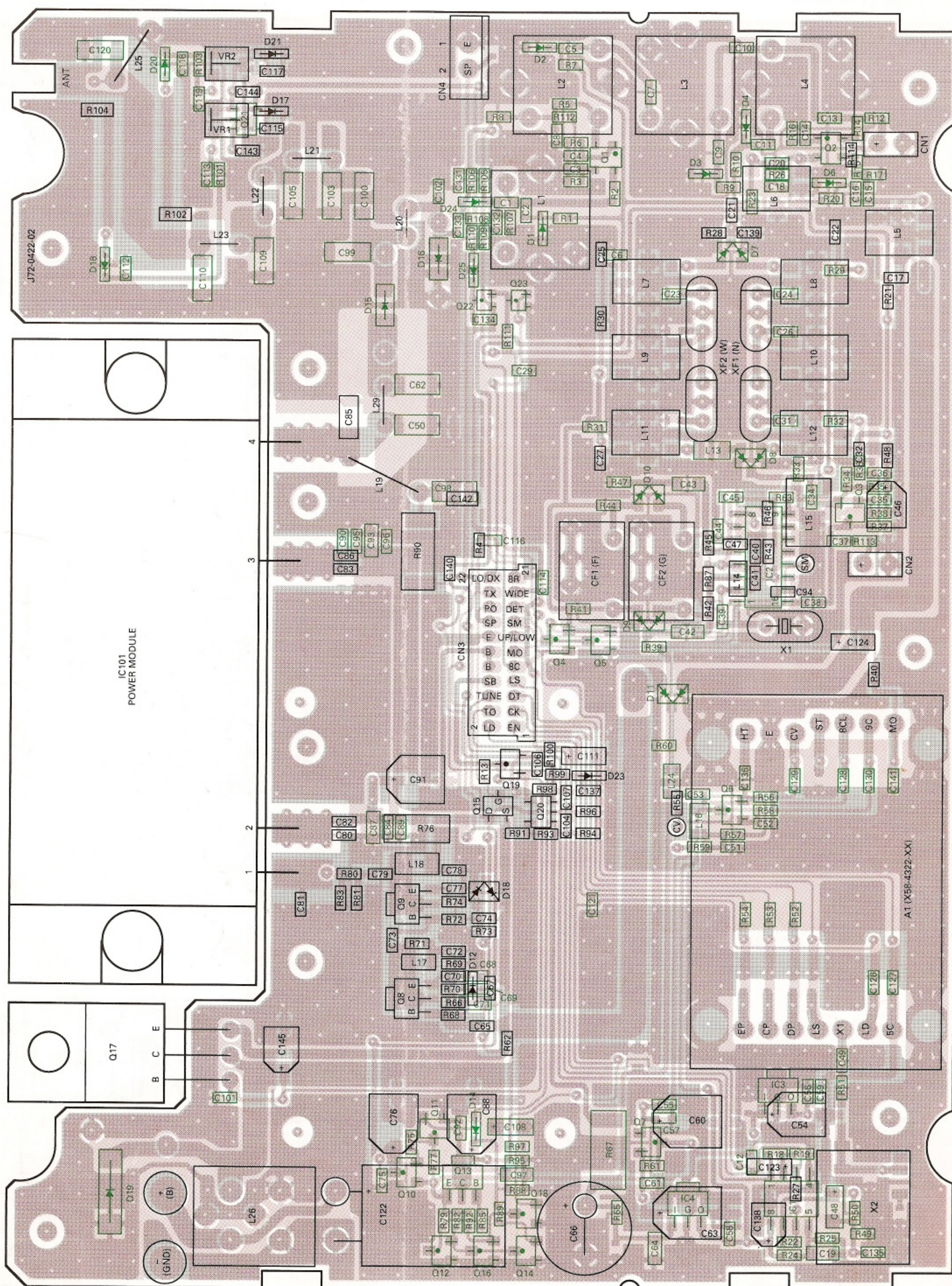
CONTROL UNIT (X53-3592-70) (A/2) : TK-759 / (X53-3602-70) (A/2) : TK-752

Foil side view



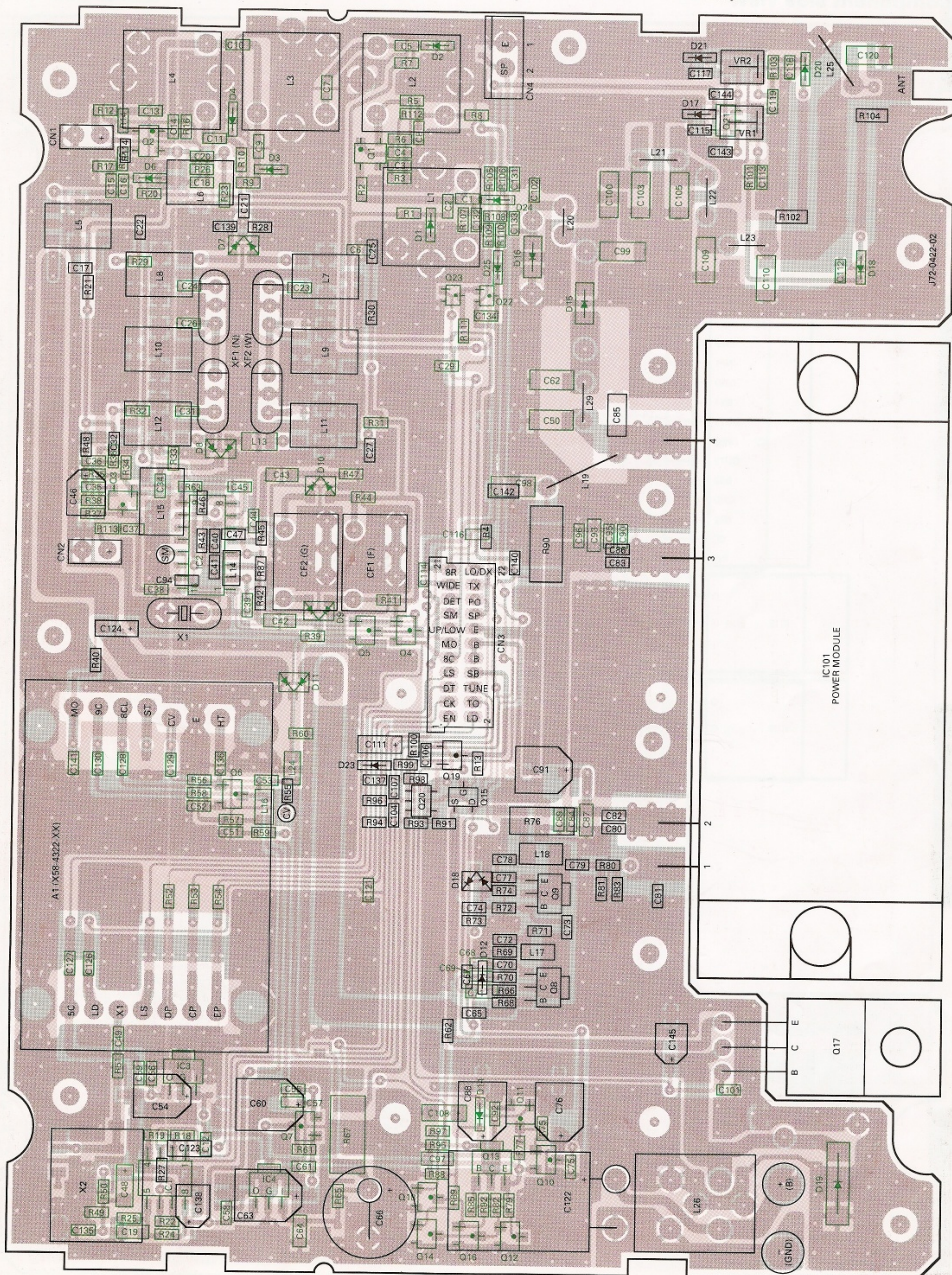
TK-752/759 PC BOARD VIEWS

TX-RX UNIT (X57-4692-XX) Component side view -70 : E -71 : E2 -72 : E3,E4



Component side
Foil side

TX-RX UNIT (X57-4692-XX) Foil side view -70 : E -71 : E2 -72 : E3,E4



X57-4692-XX
TX-RX UNIT

D1_4.6 : 1SV269
D7_11 : DAN235K
D12.14.17.18 : 1SS355
D20.21.23 : 1SS355
D13 : DA204K

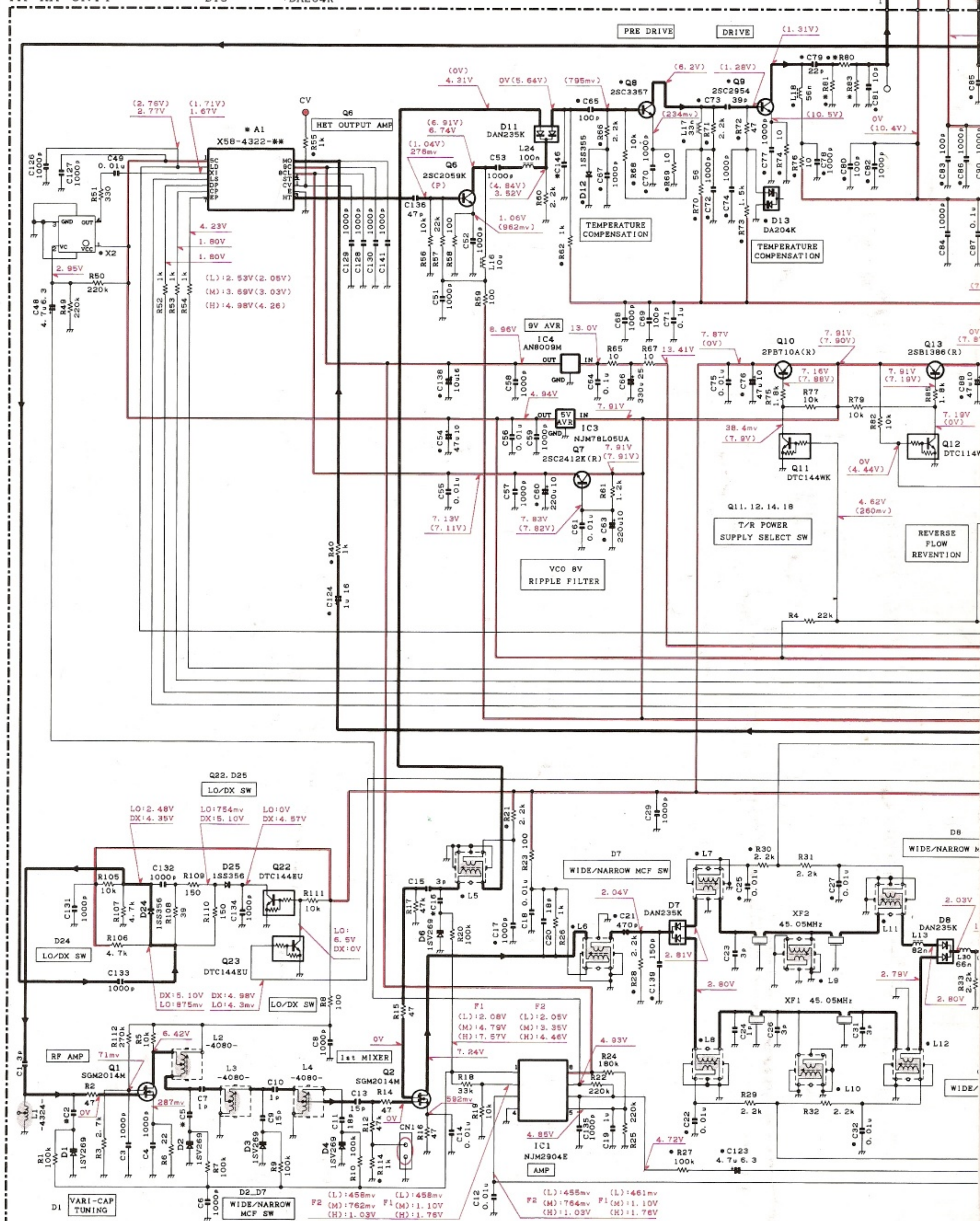
D15 : MA4PH633
D16 : MI809
D19 : DSM3MA1
D24.25 : 1SS356

Q1.2 : SGM2014M
Q3.6 : 2SC2059K(P)
Q4 : DTA144EK
Q5 : DTC144EK

Q17 : 2SD2396(J.K)
Q20.21 : FMW1
Q22.23 : DTC144EU

*IC101

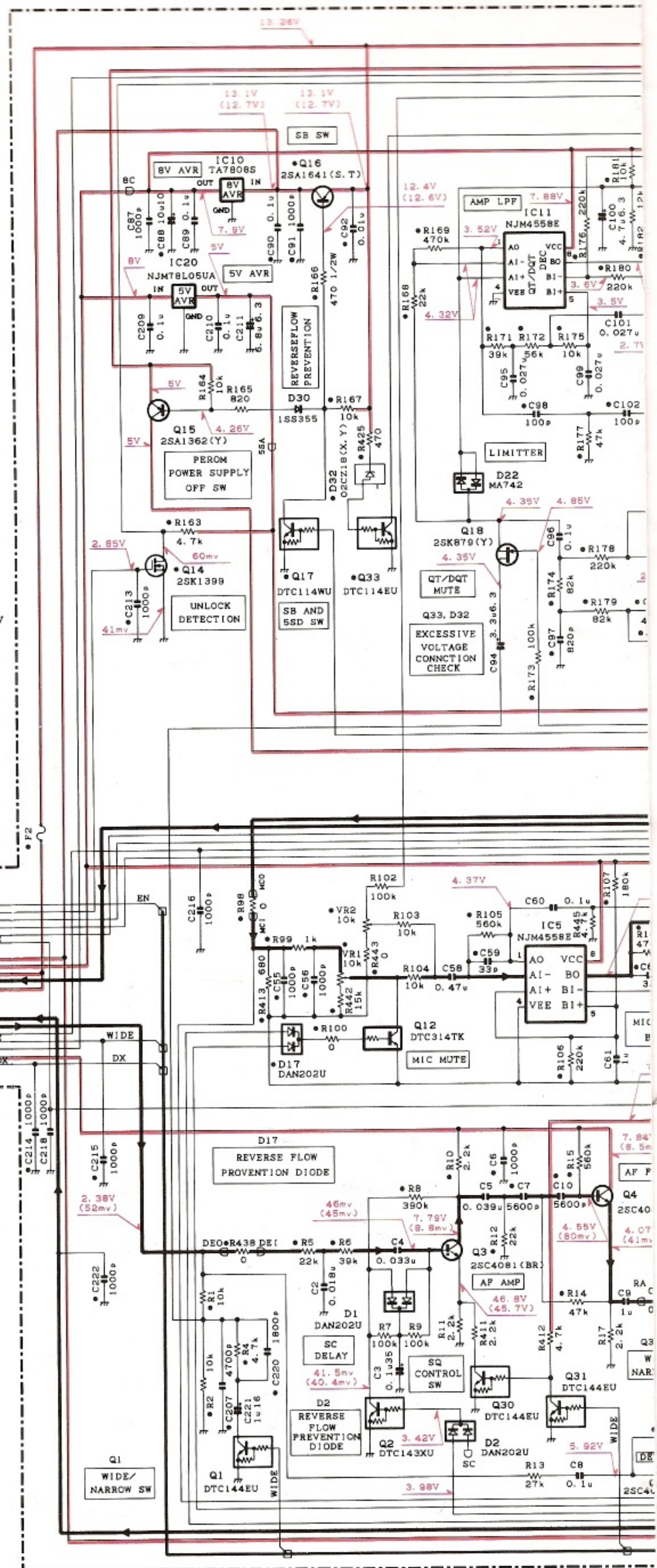
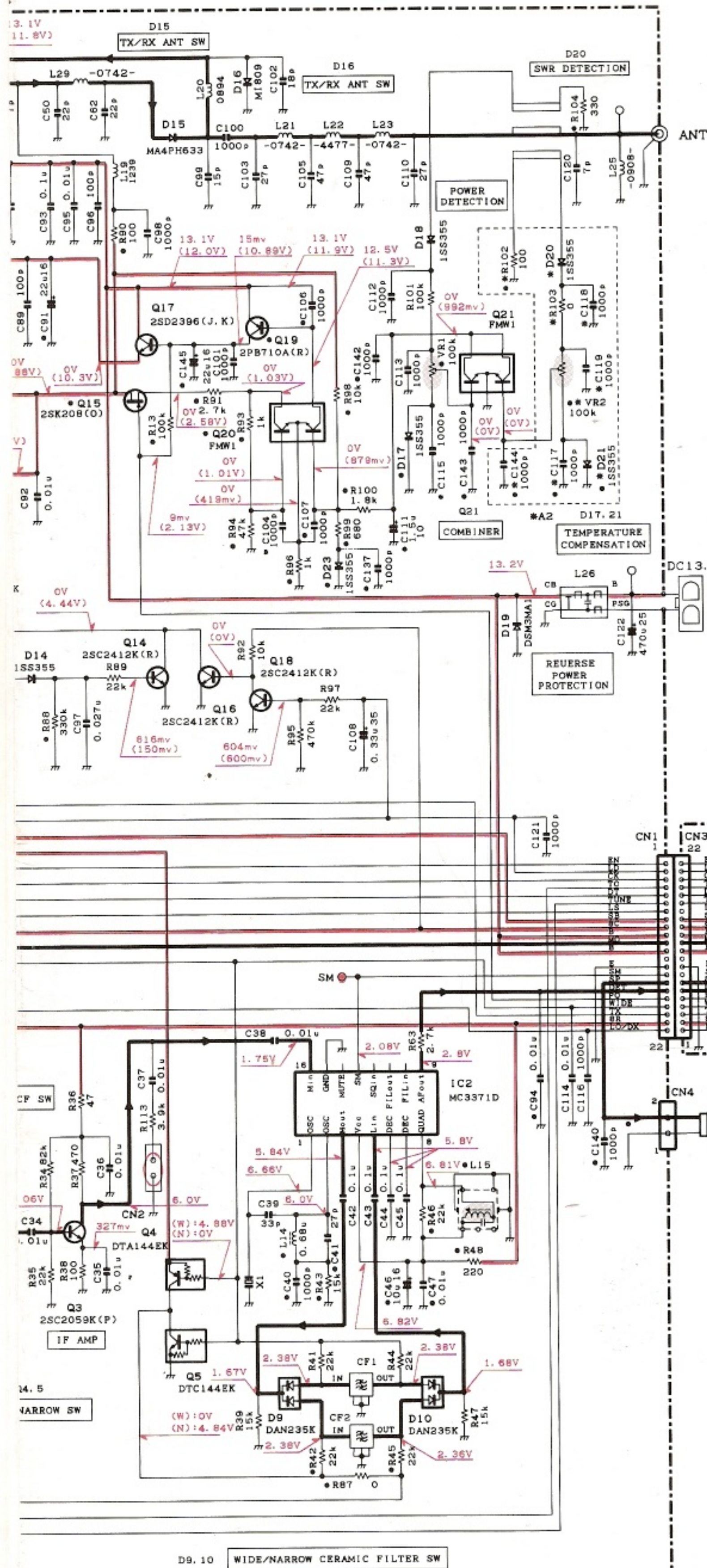
POWER MODULE



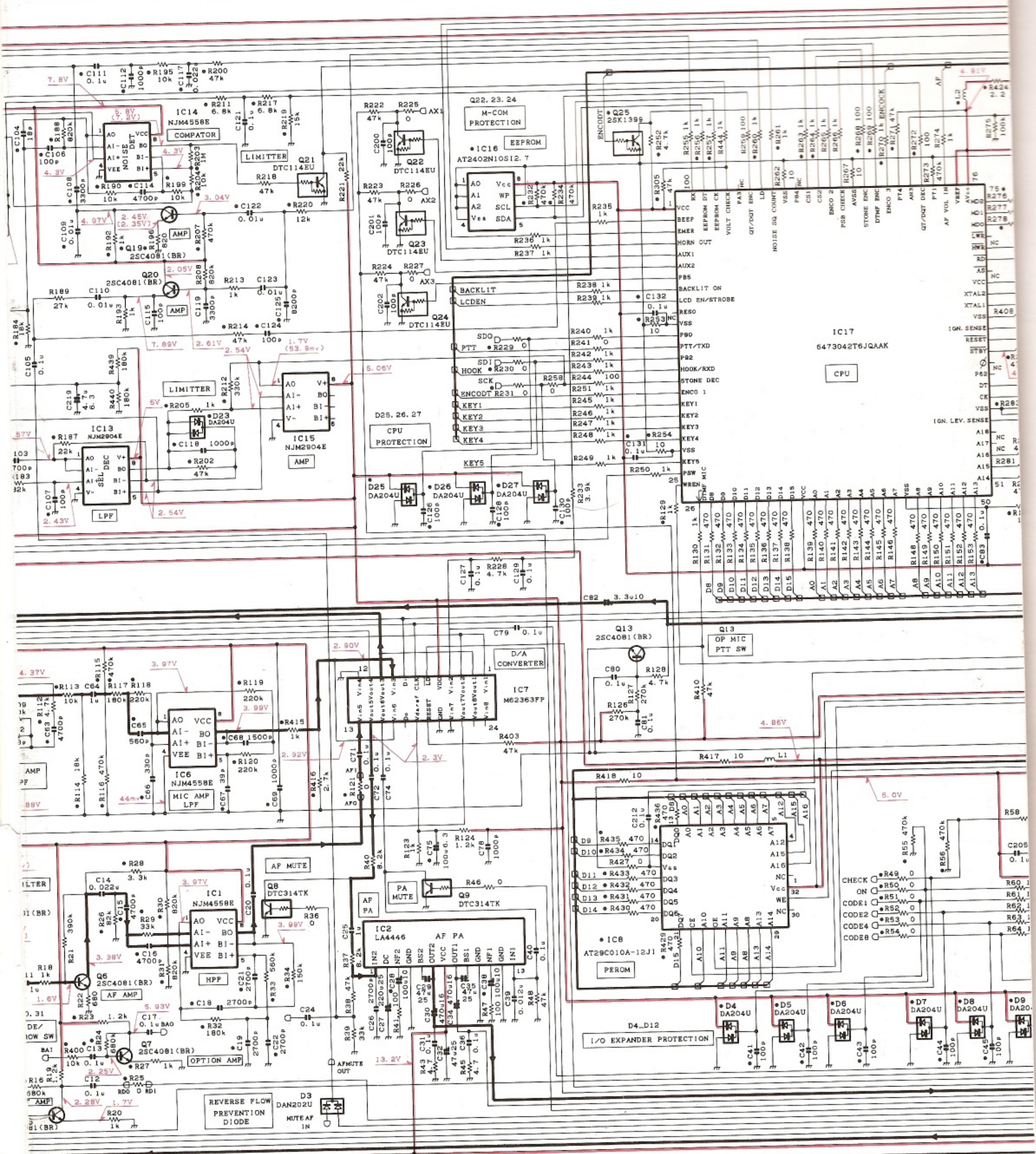
X57-4692-XX	F RANGE	A1 (X58-4322-XX)	A2	IC101	C2	C5	C16	C146	R80	R81	R83
2-70	F1.25W	E	146-174MHz	2-70	○	M67741H-32	18p	15p	8p	15p	0
2-71	F2.25W	E2	136-150MHz	2-71	○	M67741L-32	22p	18p	5p	0	0
2-72	F1.10W/6W	E3, E4	146-174MHz	2-70	—	M57719	18p	15p	8p	15p	18 330 330

— : NO USED
○ : USED

Q7, 14, 16, 18	:2SC2412K(R)	Q11	:DTC144WK	IC1	:NJM2904E
Q8	:2SC3357	Q12	:DTC114WK	IC2	:MC3371D
Q9	:2SC2954	Q13	:2SB1386(R)	IC3	:NJM78L05UA
Q10, 19	:2PB710A(R)	Q15	:2SK208(O)	IC4	:AN8009M

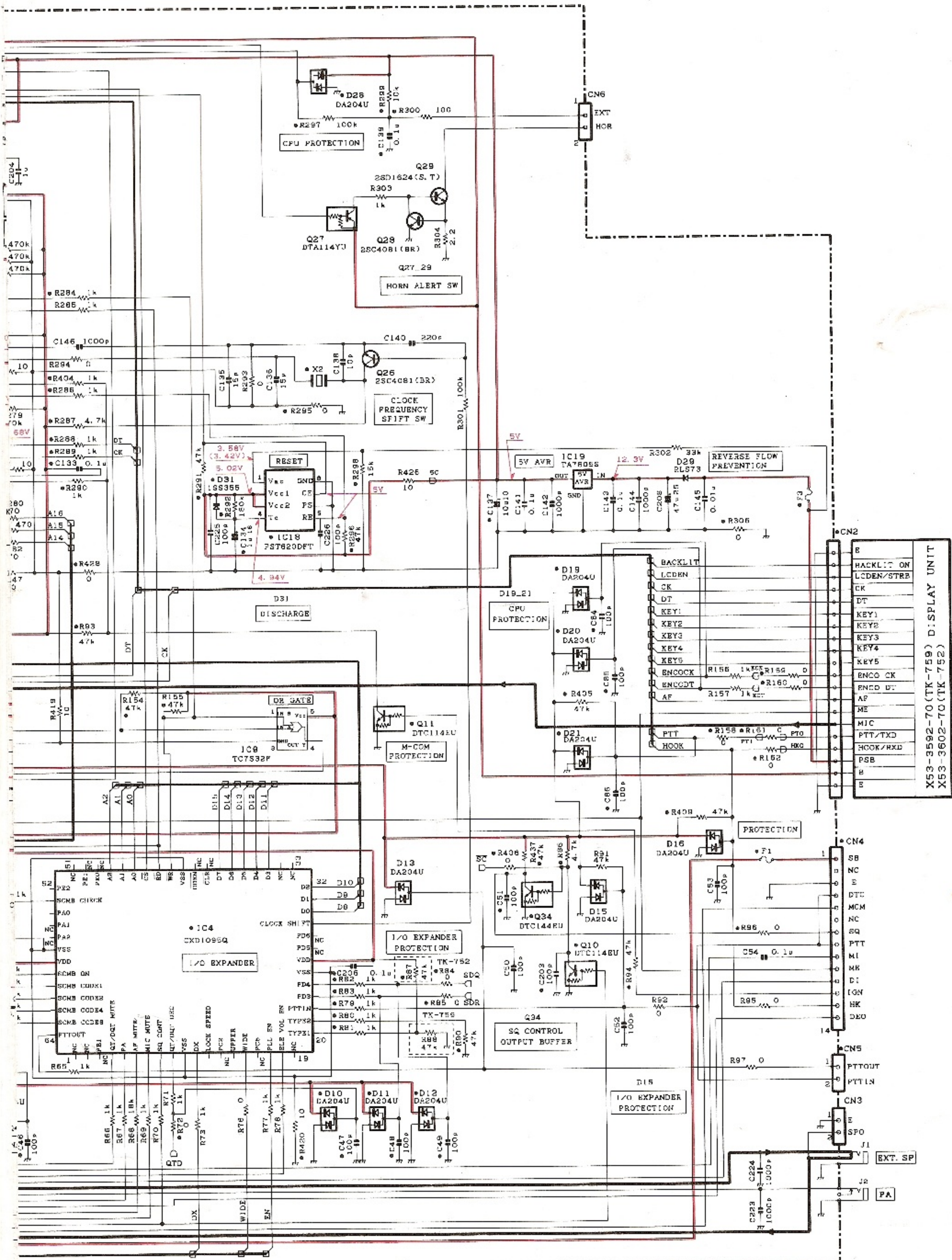


D1_3, 17	:DAN202U	D30. 31	:1SS355	Q15
D4_13, 15, 16.		D32	:02CZ18(X, Y)	Q16
19_21, 23, 26_28:	DA204U			Q3_7, 13, 19, 2
D22	:MA742			26, 28
D29	:RLS73			



2SA1362(Y)	Q29	2SD1624(S.T)	Q17	DTC114WU	Q8, 9, 12	DTC314TK	IC1, 5, 6, 11, 14	NJM4558E	IC7	M62363FF
2SA1641(S.T)	Q27	DTA114YU	Q2	DTC149XU	Q14, 25	2SK1399	IC2	LA44446	IC8	AT29C010A-12J
2SC4081(BR)	Q10, 11, 21, 24, 33, 34	DTC114EU	Q1, 30, 31	DTC144EU	Q18	2SK879(Y)	IC4	CXD1095Q	IC9	TC75

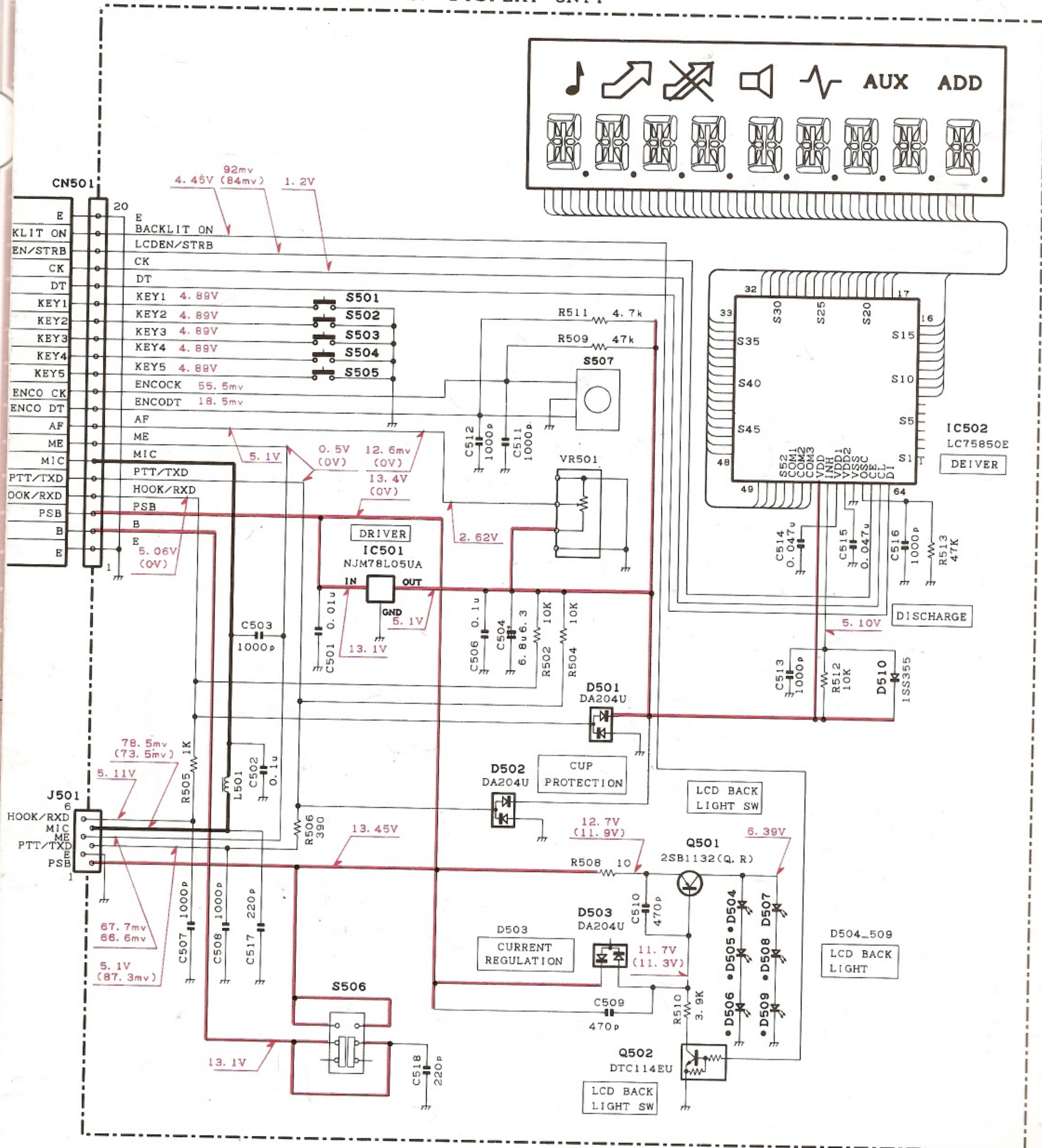
SCHEMATIC DIAGRAMS TK-752/759



*63FP IC10 :TA7808S IC17 :6473042T6JQAAK
 C010A-12JI IC13.15 :NJM2904E IC18 :PST620DFT
 327 IC16 :AT2402N1OS12.7 IC19 :TA7805S
 IC20 :NJM78L05UA

[illegible]

TK-759 X53-3592-70 (B/2) DISPLAY UNIT



3-4322-XX
 1 :MC145190F
 103 :DTC114EU
 106 :2SC5110(O)
 01.104 :2SC4081
 02.105 :2SK508NV(K52)
 O:USE -:NOT USE

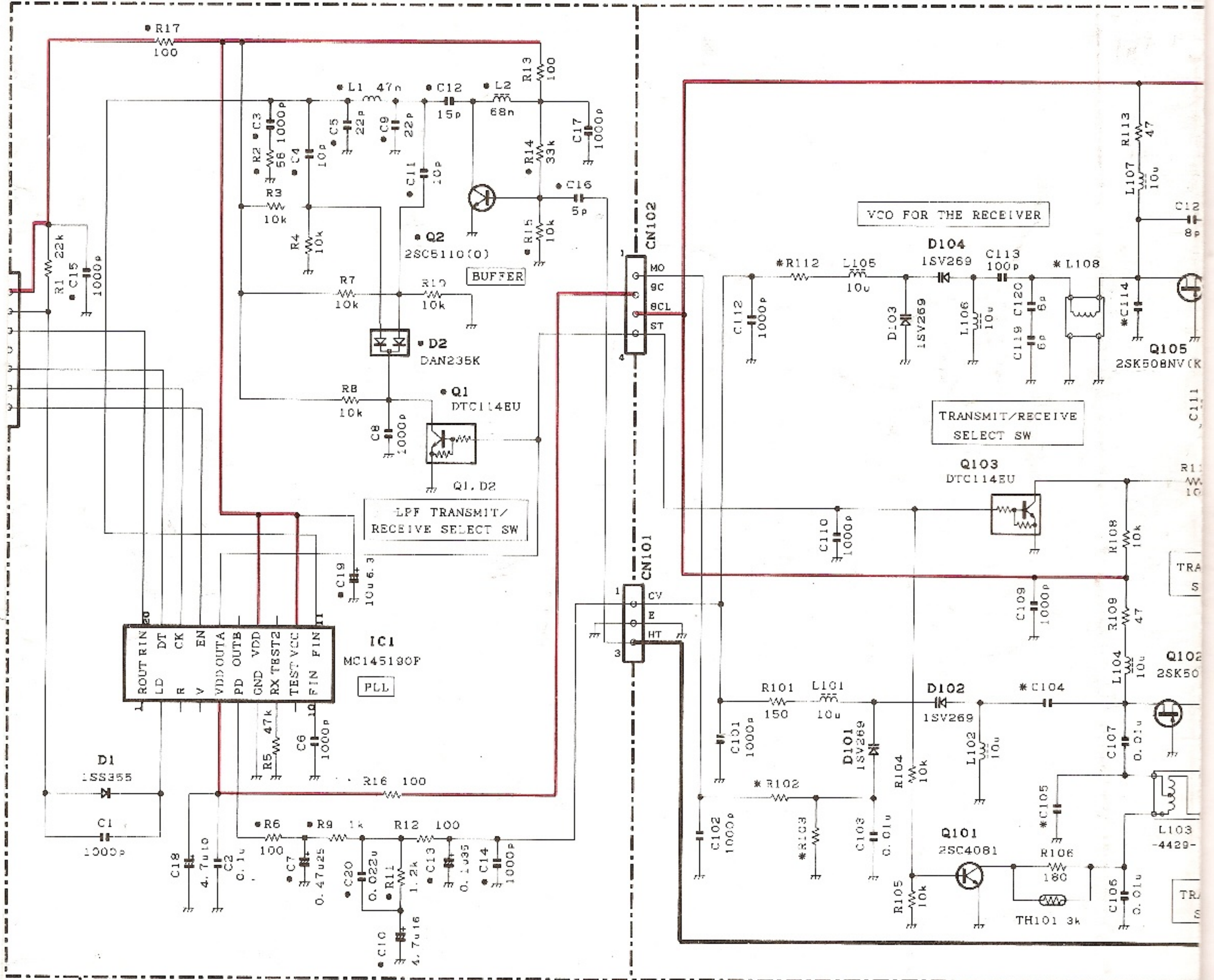
D1 :1SS355
 D2 :DAN235K
 D101_104 :1SV269

X53-3602-70
 IC502 :BU4094BCF or XRU4094BCF
 Q501_505 :DTA114EU
 D503_505 :B30-2039-05
 D506 :B30-2140-05

X53-3592-70
 IC501 :NJM78L
 IC502 :LC7585
 Q502 :DTC114
 D501_503 :DA204U
 D504_509 :B30-21
 D510 :1SS355

	R102	R103	R111	R112	C104	C105	C114	C122	L108
2-71	18k	120	270	0	68p	8p	4p	10p	4449
2-70	12k	100	270	47	82p	4p	6p	12p	4432

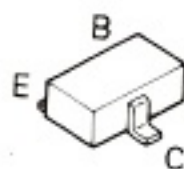
PK-752/759 X58-4322-XX VCO UNIT



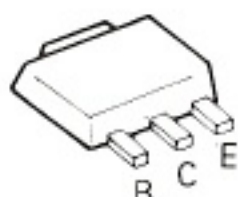
05UA
0E
EU

40-05

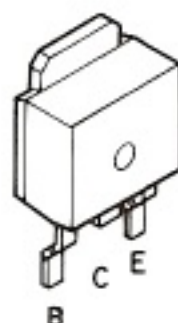
DTA114EU 2SA1362
DTA114YU 2SC2059K
DTA144EK 2SC2412K
DTC114EU 2SC4081
DTC114WK 2SC5110
DTC114WU 2PB710A
DTC143XU
DTC144EK
DTC144EU
DTC144WK
DTC314TK



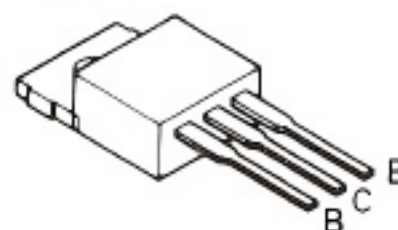
2SB1132
2SB1386
2SC2954
2SC3357
2SD1624



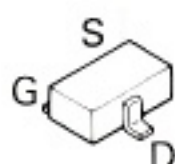
2SA1641



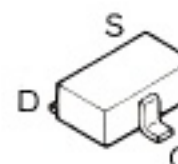
2SD2396



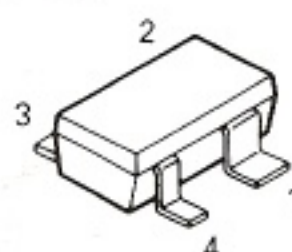
2SK1399



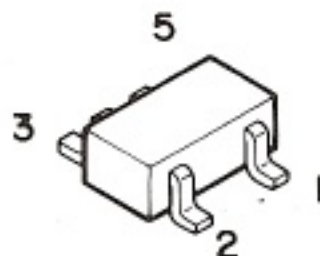
2SK208
2SK508NV
2SK879



SGM2014M



FMW1



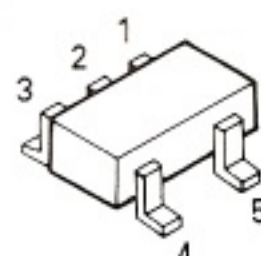
NJM78L05UA



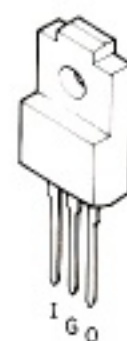
AN8009M



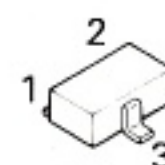
TC7S32F



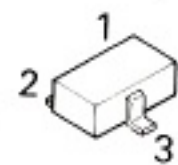
TA7805S
TA7808S



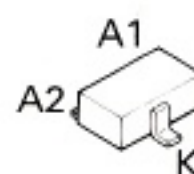
DA204K
DA204U



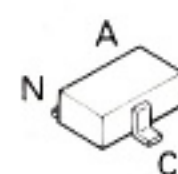
MA742



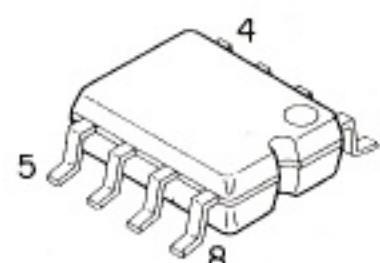
DAN202U
DAN235K



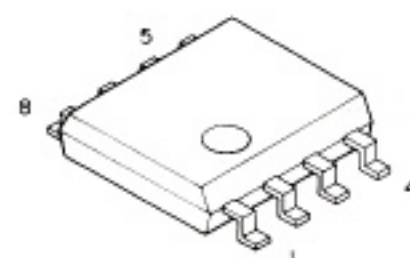
02CZ18



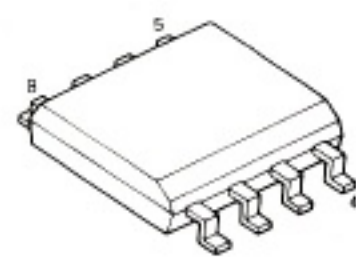
PST620DFT



NJM2904E
NJM4558E



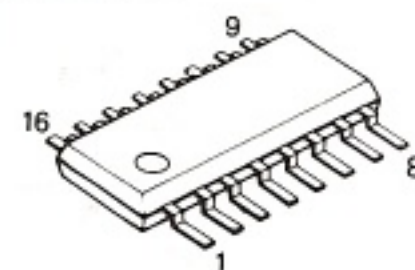
AT2402N10SI2.7



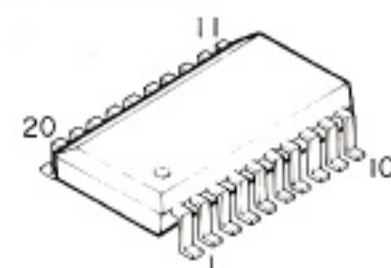
LA4446



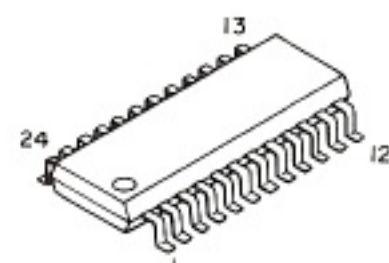
BU4094BCF
MC3371D



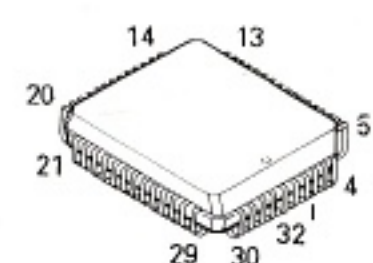
MC145190F



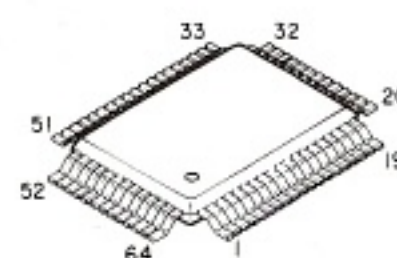
M62363FP



AT29C010A-12JI



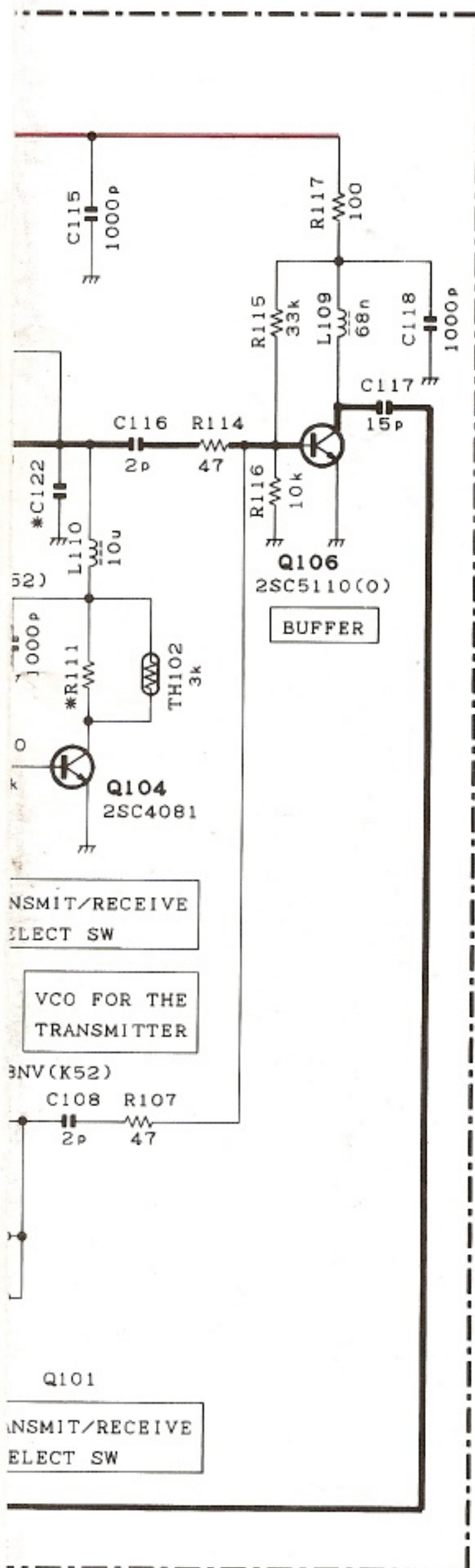
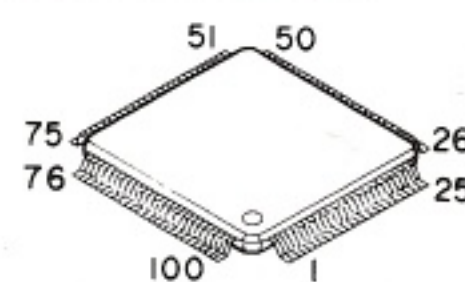
CXD1095Q



LC75850E



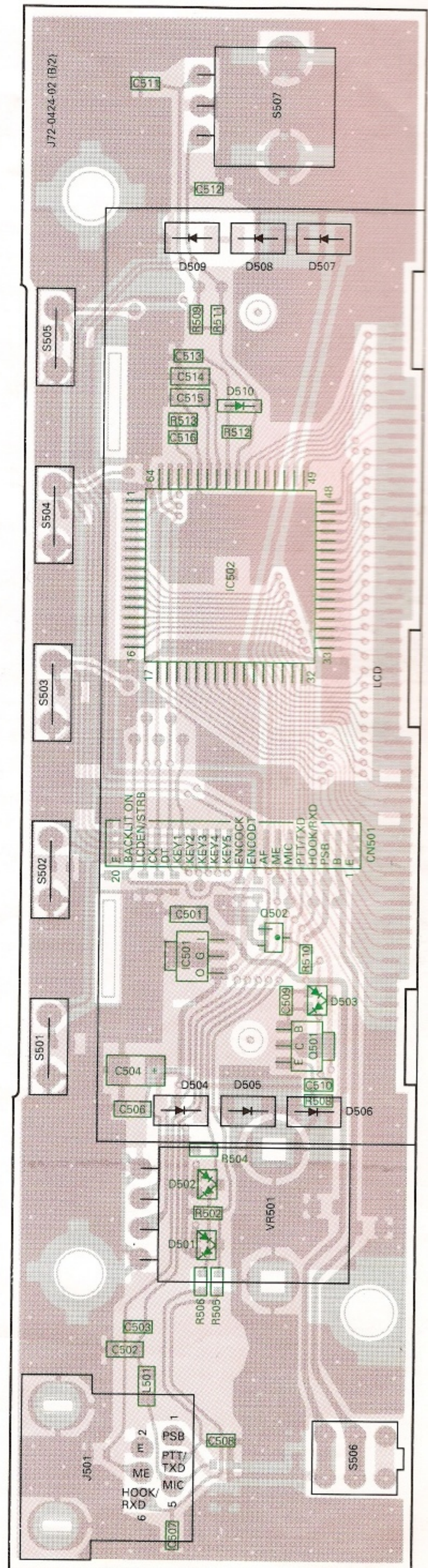
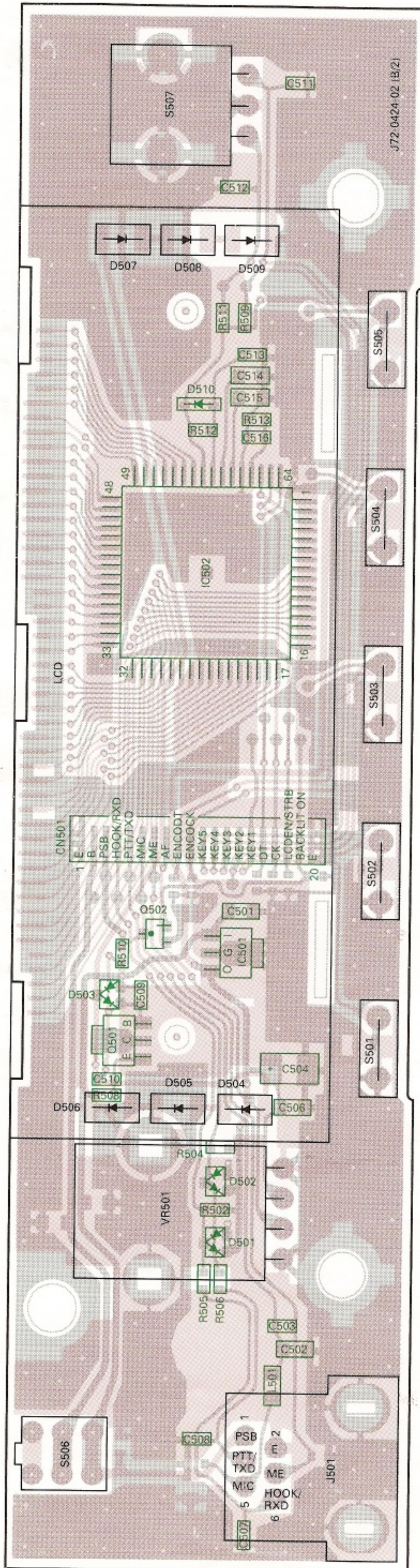
6473042T6JQAAK



PC BOARD VIEWS TK-752/759

CONTROL UNIT (X53-3592-70) (B/2) : TK-759
Component side view

CONTROL UNIT (X53-3592-70) (B/2) : TK-759
Foil side view

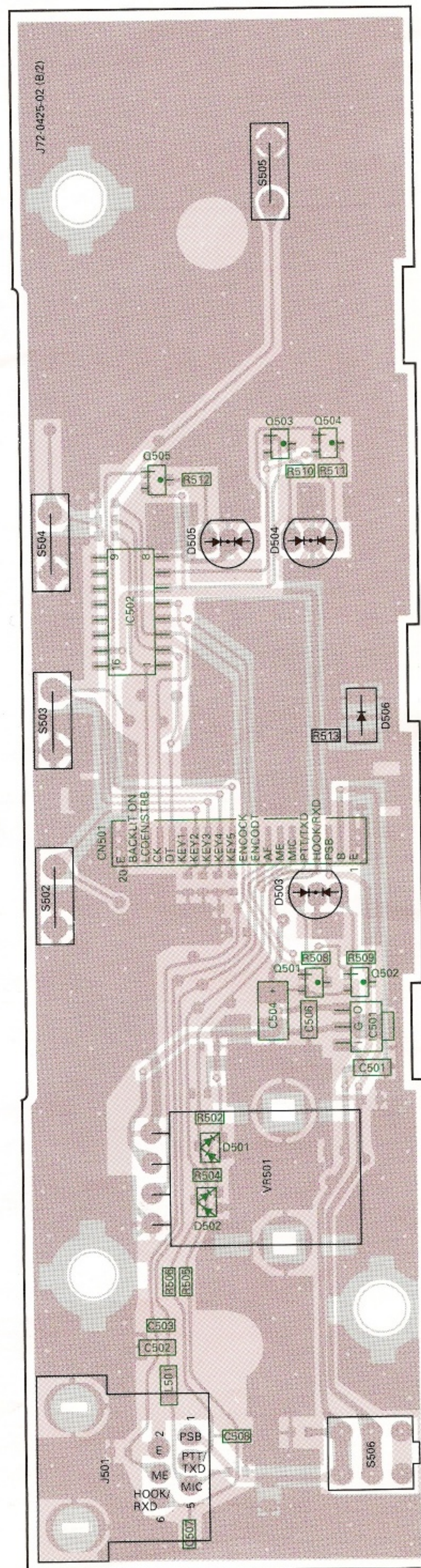
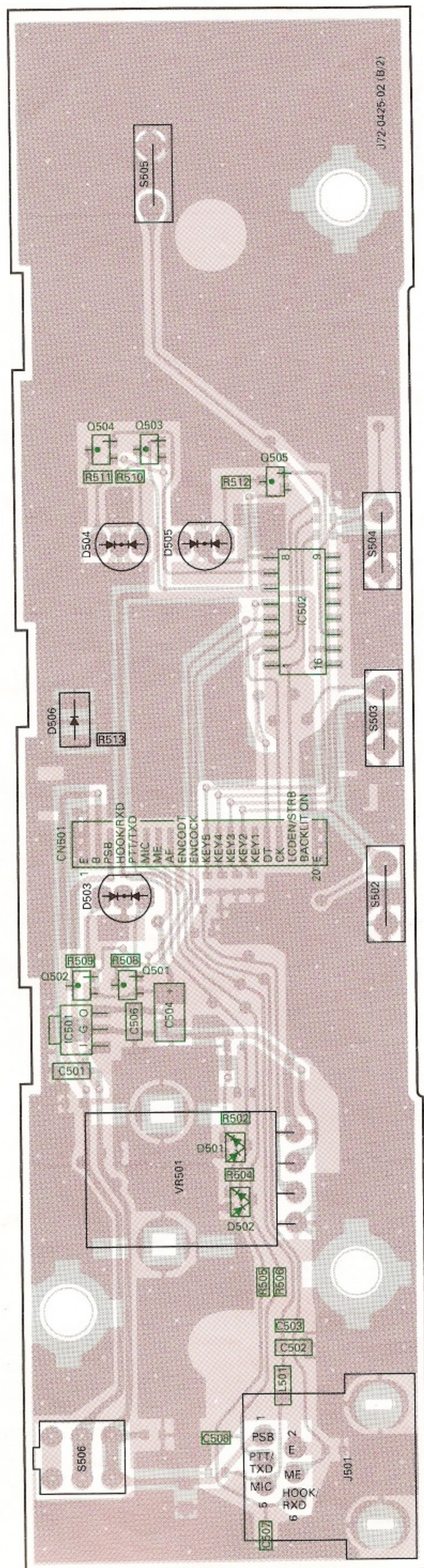


Component side
Foil side

TK-752/759 PC BOARD VIEWS

CONTROL UNIT (X53-3602-70) (B/2) : TK-752
Component side view

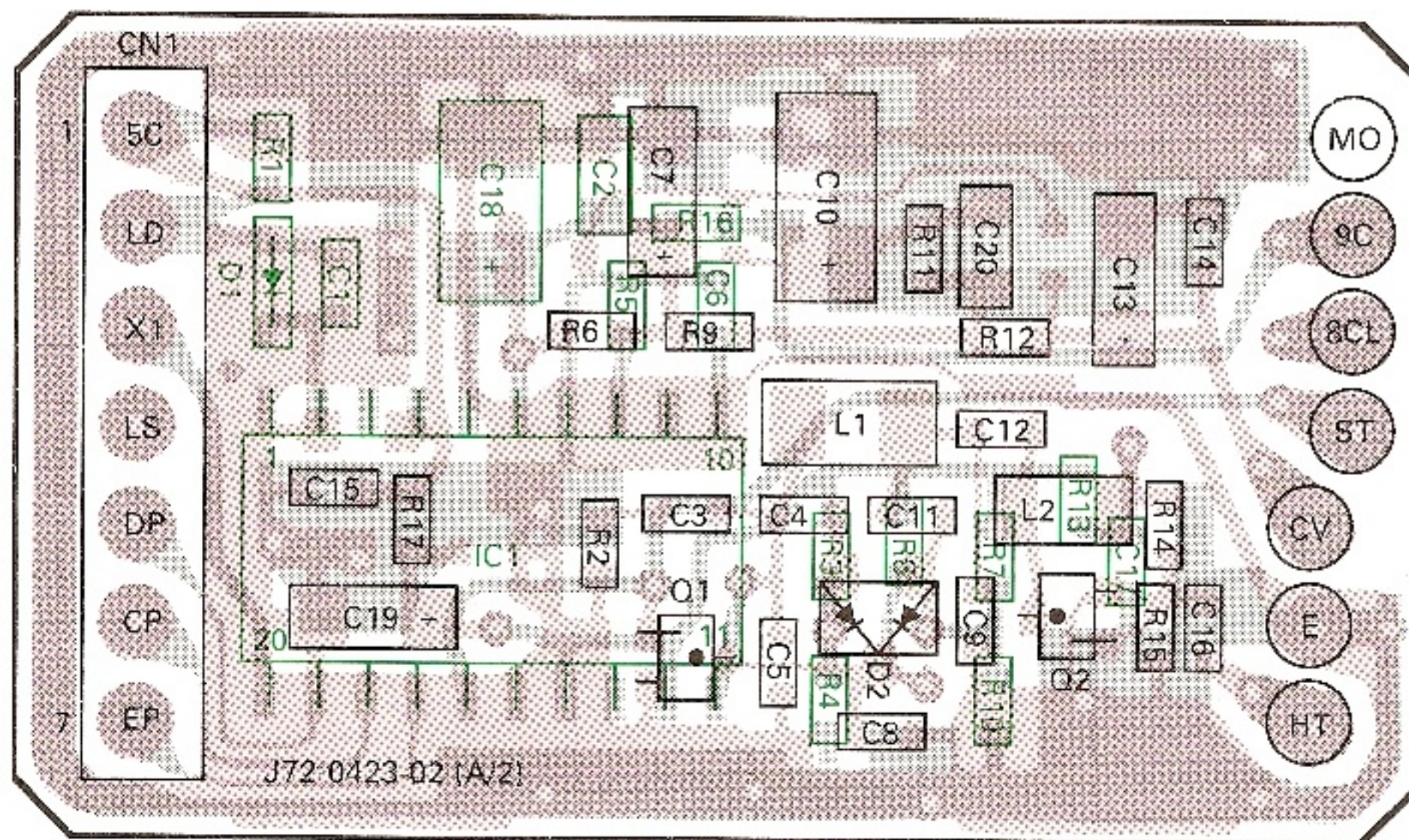
CONTROL UNIT (X53-3602-70) (B/2) : TK-752
Foil side view



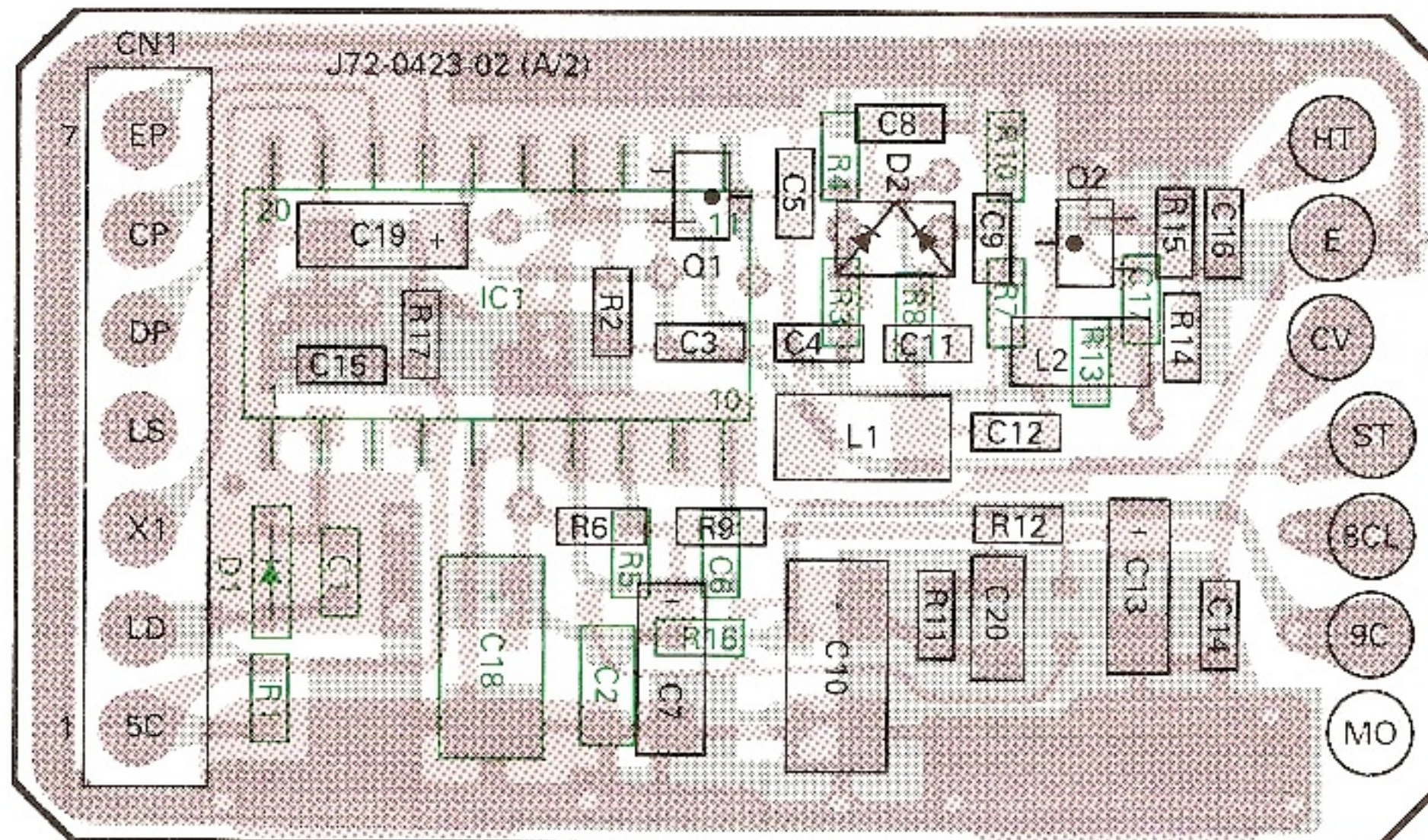
Component side
Foil side

PC BOARD VIEWS TK-752/759

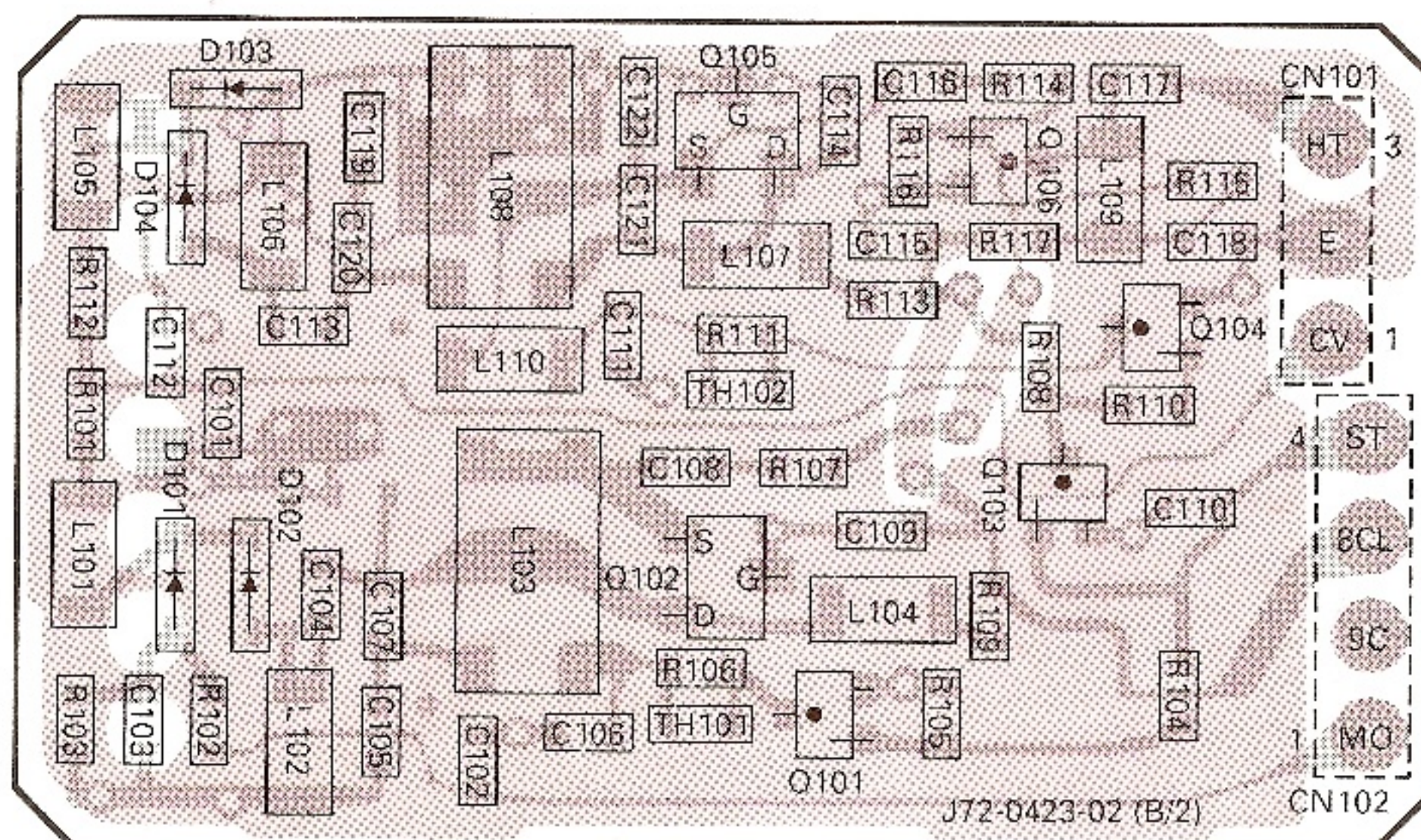
PLL/VCO (X58-4322-XX) (A/2) Component side view -70 : E,E3,E4 -71 : E2



PLL/VCO (X58-4322-XX) (A/2) Foil side view -70 : E,E3,E4 -71 : E2



PLL/VCO (X58-4322-XX) (B/2) Foil side view -70 : E,E3,E4 -71 : E2



Component side
Foil side

SPECIFICATIONS

GENERAL

Frequency Range	146 to 174MHz (E,E3,E4), 136 to 150MHz (E2)
Number of Channels	Up to 250 (TK-759), 2 (TK-752)
Channel Spacing	12.5/20/25kHz
Input Voltage	13.2V DC negative ground
Current Drain	On standby : 0.5A On receive : 1.0A On transmit : 7.5A (25W), 5.0A (10W), 3.5A (6W)
Duty Cycle	Receiver 100%, Transmitter 20%
Temperature Range	-30 to +60°C
Dimensions and Weight	140 (5.51) W x 40 (1.58) H x 169 (6.68) D mm (inches)

Receiver (Measurements made per EIA standard EIA-204-C)

RF Input Impedance	50 Ω
Sensitivity (EIA 12dB SINAD)	0.25 μ V
Modulation Acceptance	$\pm$ 7kHz, $\pm$ 3.5kHz
Selectivity	80dB/75dB EIA W/N (5kHz, 4kHz, 2.5kHz) 75dB/70dB ETS W/N (5kHz, 4kHz, 2.5kHz)
Intermodulation	75dB/70dB EIA W/N 70dB ETS
Spurious and Image	85dB EIA
Rejection	80dB ETS
Audio Power Output	4W at 4 Ω less than 10% distortion
Frequency Stability	$\pm$ 0.0003% from -30 to +60°C

Transmitter (Measurements made per EIA standard EIA-152-B)

RF Power Output	25W (E,E2), 10W (E3), 6W (E4)
RF output Impedance	50 Ω
Spurious and Harmonics	-70dB
Modulation	F3E $\pm$ 4kHz, $\pm$ 5kHz, $\pm$ 2.5kHz for 100% at 1000kHz
FM Noise	50dB wide (5kHz), 44dB Narrow (2.5kHz)
Microphone Impedance	Low impedance (600 Ω)
Audio Distortion	3%
Frequency Stability	$\pm$ 0.0003% from -30 to +60°C

TK-752/759

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