



# SERVICE MANUAL

VHF MARINE TRANSCEIVER

# IC-M126DSC

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## INTRODUCTION

This service manual describes the latest service information for the **IC-M126DSC** VHF MARINE TRANSCEIVER at the time of publication.

Three versions of the **IC-M126DSC** have been designed. This service manual covers the following versions.

VERSION NO.	VERSION	SYMBOL
#01	U.S.A.	USA
#02	U.S.A.-1	USA-1
#03	Italy	ITA

To upgrade quality, all electrical and mechanical parts and internal circuits are subject to change without notice or obligation.

## DANGER

**NEVER** connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. This will ruin the transceiver.

**DO NOT** expose the transceiver to rain, snow or any liquids.

**DO NOT** reverse the polarities of the DC power supply when connecting the transceiver.

**DO NOT** apply an RF signal of more than 20 dBm (100 mW) to the antenna connector. This could damage the transceiver's front end.



## ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit order numbers
2. Component part number and name
3. Equipment model name and unit name
4. Quantity required

### <SAMPLE ORDER>

1140004230 S.IC HD404812A44H IC-M126DSC DISP UNIT 1 pieces  
8810002950 Screw BiH M3×6 SUS IC-M126DSC Chassis 6 pieces

Addresses are provided on the inside back cover for your convenience.

## REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 40 dB to 50 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

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## SECTION 1 SPECIFICATIONS

### ■ GENERAL

- Frequency coverage : Transmit 156.025-157.425 MHz  
Receive 156.025-163.275 MHz
- Mode : 16K0G3E, 16K0G2B
- Number of memory channels : 24 + 1 call channel
- Power supply requirement : 13.8 V DC  $\pm$  15% (negative ground)
- Current drain (at 13.8 V DC) : Transmit, high power 6.3 A  
low power 1.7 A  
Receive, standby 400 mA  
max. audio output 1.5 A
- Usable temperature range :  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ ;  $-4^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$
- Frequency stability :  $\pm 0.0005\%$
- Dimensions : 228(W)  $\times$  78(H)  $\times$  192(D) mm; 9.0(W)  $\times$  3.1(H)  $\times$  7.6(D) in  
(projections not included)
- Weight : 2.4 kg; 5.3 lb

### ■ TRANSMITTER

- Output power : High 25 W Low 1 W
- Modulation system : Variable reactance phase modulation
- Max. frequency deviation :  $\pm 5.0$  kHz
- Spurious emissions :  $-70$  dB
- Adjacent channel power :  $-70$  dB
- Microphone impedance : 600  $\Omega$
- Audio frequency response :  $+1$  dB to  $-3$  dB of  $+6$  dB/octave with 300 Hz to 3000 Hz input
- FM noise and hum :  $-40$  dB

### ■ RECEIVER

- Receive system : Double-conversion superheterodyne
- Intermediate frequency : 1st 21.8 MHz  
2nd 455 kHz
- Sensitivity : 0.3  $\mu\text{V}$  for 12 dB SINAD
- Squelch sensitivity : 0.3  $\mu\text{V}$  at threshold
- Adjacent channel selectivity :  $-70$  dB
- Spurious response rejection :  $-70$  dB
- Intermodulation rejection :  $-70$  dB
- Blocking and desensitization : 90 dB $\mu$  e.m.f.
- FM noise and hum :  $-40$  dB
- Audio frequency response :  $+1$  dB to  $-3$  dB of  $+6$  dB/octave with 300 Hz to 3000 Hz deviation
- Audio output power : 5 W with a 4  $\Omega$  load (10 W for the hailer function)
- Audio output impedance : 4  $\Omega$

All stated specifications are subject to change without notice or obligation.

■ VHF MARINE CHANNEL LIST

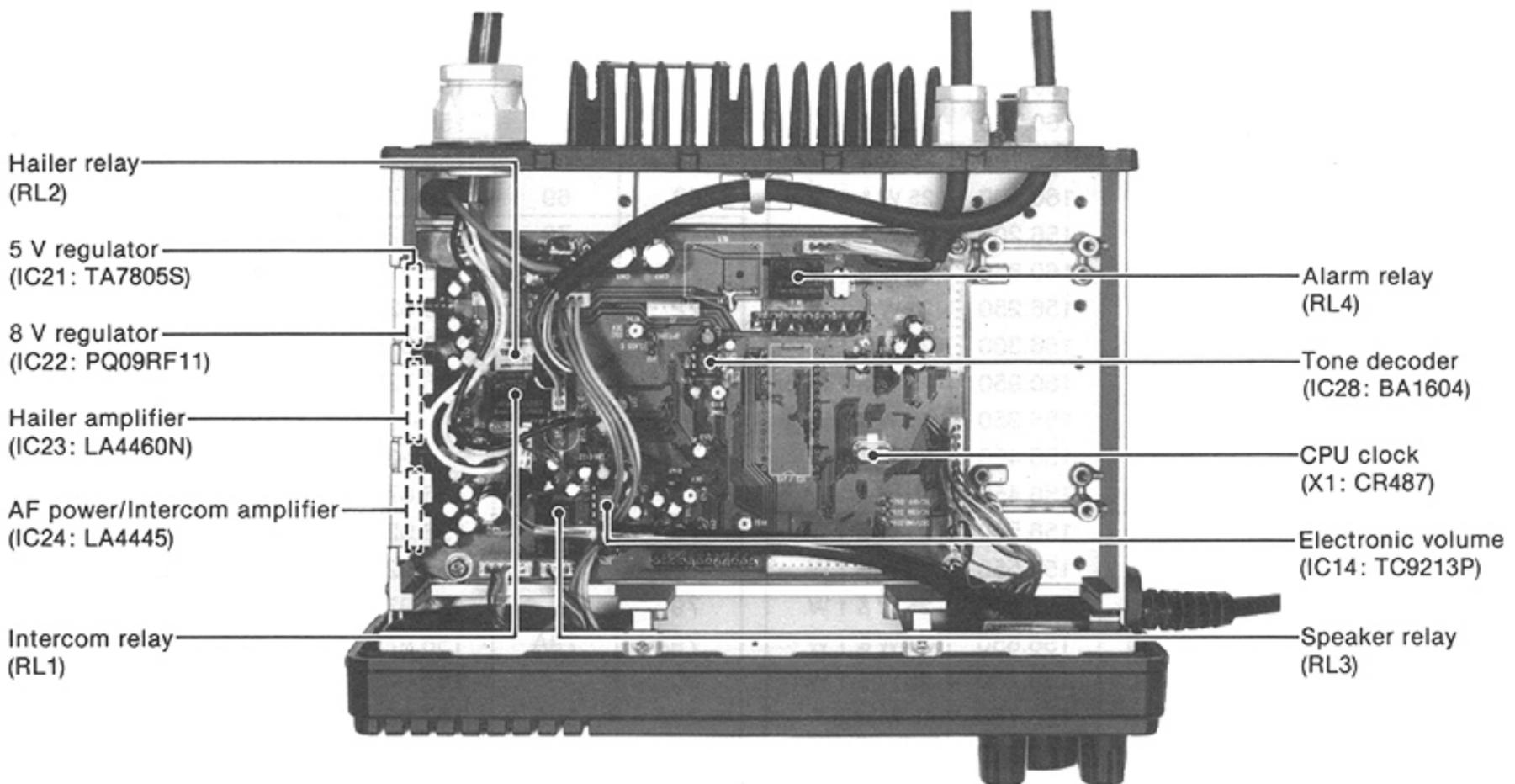
Inter national channel	U.S.A. channel	Frequency (MHz)		Transmit output power	Inter national channel	U.S.A. channel	Frequency (MHz)		Transmit output power	
		Transmit	Receive				Transmit	Receive		
01	—	156.050	160.650	25 W & 1 W	65	—	156.275	160.875	25 W & 1 W	
01A	01A	165.050	156.050	25 W & 1 W	65A	65A	156.275	156.275	25 W & 1 W	
02	—	156.100	160.700	25 W & 1 W	66	—	156.325	160.925	25 W & 1 W	
02A	02A	156.100	156.100	25 W & 1 W	66A	66A	156.325	156.325	25 W & 1 W	
03	—	156.150	160.750	25 W & 1 W	67	67	156.375	156.375	25 W & 1 W *1	
03A	03A	156.150	156.150	25 W & 1 W	68	68	156.425	156.425	25 W & 1 W	
04	—	156.200	160.800	25 W & 1 W	69	69	156.475	156.475	25 W & 1 W	
04A	04A	156.200	156.200	25 W & 1 W	70	70	156.525	156.525	1 W only	
05	—	156.250	160.850	25 W & 1 W	71	71	156.575	156.575	25 W & 1 W	
05A	05A	156.250	156.250	25 W & 1 W	72	72	156.625	156.625	25 W & 1 W	
06	06	156.300	156.300	25 W & 1 W	73	73	156.675	156.675	25 W & 1 W	
07	—	156.350	160.950	25 W & 1 W	74	74	156.725	156.725	25 W & 1 W	
07A	07A	156.350	156.350	25 W & 1 W	75	—	-----	-----	Guard	
08	08	156.400	156.400	25 W & 1 W	76	—	-----	-----	Guard	
09	09	156.450	156.450	25 W & 1 W	77	77	156.875	156.875	25 W & 1 W	
10	10	156.500	156.500	25 W & 1 W	78	—	156.925	161.525	25 W & 1 W	
11	11	156.550	156.550	25 W & 1 W	78A	78A	156.925	156.925	25 W & 1 W	
12	12	156.600	156.600	25 W & 1 W	79	—	156.975	161.575	25 W & 1 W	
13	13	156.650	156.650	25 W & 1 W *1	79A	79A	156.975	156.975	25 W & 1 W	
14	14	156.700	156.700	25 W & 1 W	80	—	157.025	161.625	25 W & 1 W	
15	15	156.750	156.750	1 W only *2	80A	80A	157.025	157.025	25 W & 1 W	
16	16	156.800	156.800	25 W & 1 W	81	81	157.075	161.675	25 W & 1 W	
17	17	156.850	156.850	1 W only	81A	81A	157.075	157.075	25 W & 1 W	
18	—	156.900	161.500	25 W & 1 W	82	—	157.125	161.725	25 W & 1 W	
18A	18A	156.900	156.900	25 W & 1 W	82A	82A	157.025	157.125	25 W & 1 W	
19	—	156.950	161.550	25 W & 1 W	83	—	157.175	161.775	25 W & 1 W	
19A	19A	156.950	156.950	25 W & 1 W	83A	83A	157.175	157.175	25 W & 1 W	
20	20	157.000	161.600	25 W & 1 W	84	84	157.225	161.825	25 W & 1 W	
20A	20A	157.000	157.000	25 W & 1 W	84A	—	157.225	157.225	25 W & 1 W	
21	—	157.050	161.650	25 W & 1 W	85	85	157.275	161.875	25 W & 1 W	
21A	21A	157.050	157.050	25 W & 1 W	85A	—	157.275	157.275	25 W & 1 W	
22	—	157.100	161.700	25 W & 1 W	86	86	157.325	161.925	25 W & 1 W	
22A	22A	157.100	157.100	25 W & 1 W	86A	86A	157.325	157.325	25 W & 1 W	
23	—	157.150	161.750	25 W & 1 W	87	87	157.375	161.975	25 W & 1 W	
23A	23A	157.150	157.150	25 W & 1 W	87A	—	157.375	157.375	25 W & 1 W	
24	24	157.200	161.800	25 W & 1 W	88	88	157.425	162.025	25 W & 1 W	
25	25	157.250	161.850	25 W & 1 W	88A	88A	157.425	157.425	25 W & 1 W	
26	26	157.300	161.900	25 W & 1 W						
27	27	157.350	161.950	25 W & 1 W						
28	28	157.400	162.000	25 W & 1 W						
60	—	156.025	160.625	25 W & 1 W						
60A	60A	156.025	156.025	25 W & 1 W						
61	—	156.075	160.675	25 W & 1 W						
61A	61A	156.075	156.075	25 W & 1 W						
62	—	156.125	160.725	25 W & 1 W						
62A	62A	156.125	156.125	25 W & 1 W						
63	—	156.175	160.775	25 W & 1 W						
63A	63A	156.175	156.175	25 W & 1 W						
64	—	156.225	160.825	25 W & 1 W						
64A	64A	156.225	156.225	25 W & 1 W						
					<b>Weather channel</b>		<b>Receive frequency (MHz)</b>		<b>Comment</b>	
					1		162.550		RX only	
					2		162.400		RX only	
					3		162.475		RX only	
					4		162.425		RX only	
					5		162.450		RX only	
					6		162.500		RX only	
					7		162.525		RX only	
					8		161.650		RX only	
					9		161.775		RX only	
					10		163.275		RX only	

\*1 Momentary high power on a U.S.A. channel

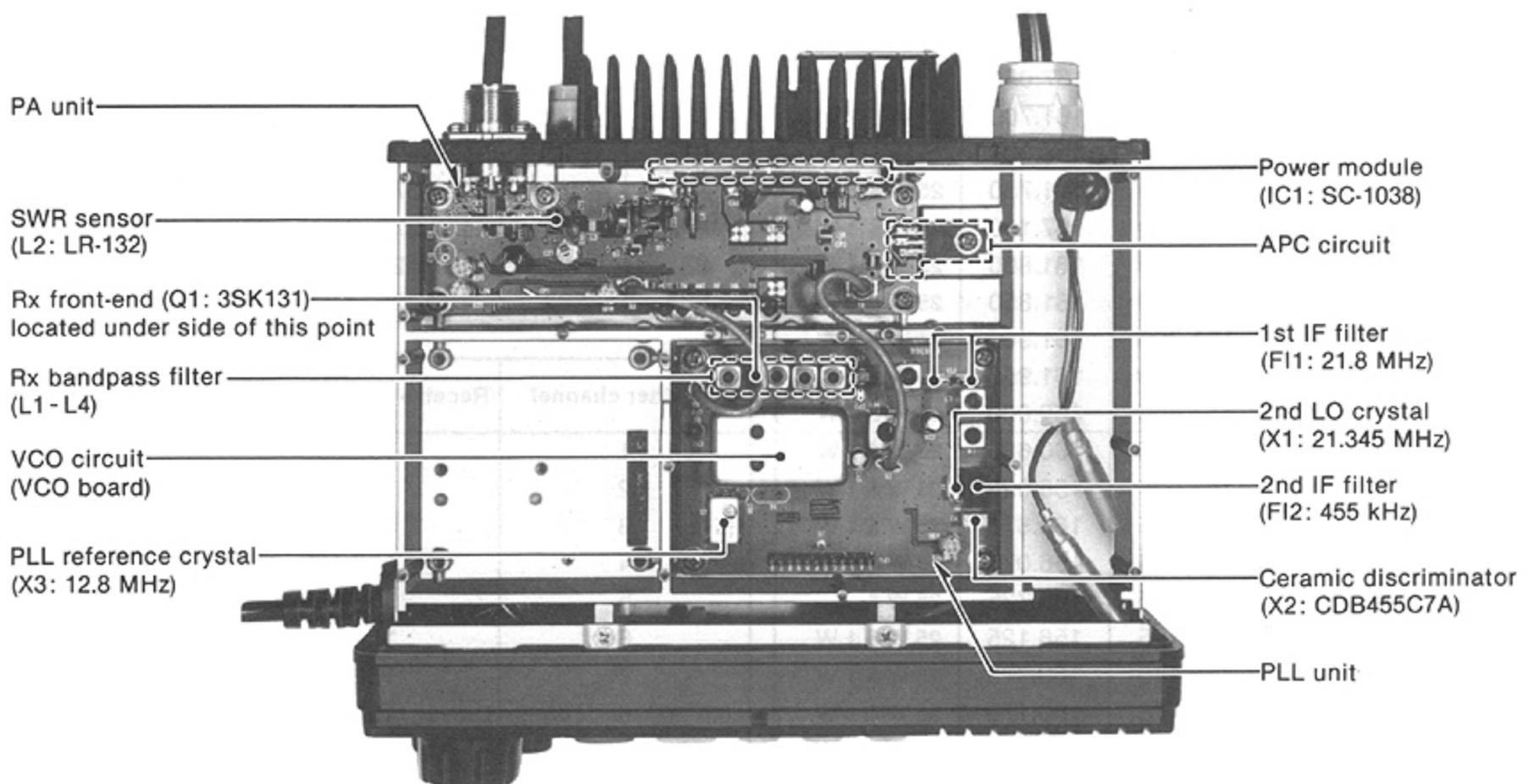
\*2 Receive only on a U.S.A. channel

## SECTION 2 INSIDE VIEWS

### • MAIN UNIT



### • PA AND PLL UNITS



## SECTION 3 CIRCUIT DESCRIPTION

### 3-1 RECEIVER CIRCUITS

#### 3-1-1 ANTENNA SWITCHING CIRCUIT (PA UNIT)

The antenna switching circuit functions as a low-pass filter while receiving, and as a resonator while transmitting. It switches the flow of the transmit and receive signals.

Received signals enter the PA unit from the antenna connector and pass through low-pass filters (L1, C15-C17) and (L3, L4, C19-C21). The signals are then applied to the RF circuit on the PLL unit through the antenna switching circuit (D1-D3). The antenna switching circuit is switched by the T8 line to apply received signals to the RF circuit.

#### 3-1-2 RF ATTENUATOR CIRCUIT (PA UNIT)

The antenna switching circuit (D2, D3) also functions as an RF attenuator that reduces excessively strong signals. Squelch attenuator current "SQL ATT" from the DC amplifier (MAIN unit IC8a) is applied to D2, D3.

#### 3-1-3 RF CIRCUIT (PLL UNIT)

The RF signals from the antenna switching circuit pass through a tuned bandpass filter (L1, C4, D1) where the object signals are applied to the RF amplifier (Q1). The RF signals from Q1 are applied to a 3-stage tuned bandpass filter (L2-L4, C10, C13, C18, D2-D4) to eliminate out-of-band signals and improve selectivity.

The PLL lock voltage is used as a control voltage for varactor diodes (D1-D4). The control voltage from the PLL circuit is buffer-amplified at Q13 and is then applied to D1-D4.

#### 3-1-4 1ST MIXER CIRCUIT (PLL UNIT)

The 1st mixer (Q2, Q3, L5) mixes the signal from the RF circuit and the 1st LO signal from the VCO board to produce a 21.8 MHz 1st IF signal.

#### 3-1-5 1ST IF CIRCUIT (PLL UNIT)

The 1st IF signal from the 1st mixer passes through the crystal filter (F11) and is then amplified at the 1st IF amplifier (Q4). F11 is a pair of monolithic crystal filters which suppress out-of-band signals and unwanted heterodyned frequency signals. The 1st IF signal from the 1st IF circuit is then applied to the 2nd mixer (Q5).

#### 3-1-6 2ND IF AND FM DETECTOR CIRCUITS (PLL UNIT)

At the 2nd mixer (Q5), the 1st IF signal from the 1st IF circuit is mixed with a 21.345 MHz 2nd LO signal to be converted to a 455 kHz 2nd IF signal. The 2nd IF signal from Q5 passes through a ceramic filter (F12), where unwanted signals are suppressed. The 2nd IF signal from F12 is then applied to the 2nd IF amplifier section in IC2 (pin 5).

IC2 contains the 2nd LO oscillator, limiter amplifier and quadrature detector. The local oscillator section and X1 generate a 21.345 MHz 2nd LO signal.

The applied 2nd IF signal to IC2 (pin 5) passes through the 2nd IF amplifier section, the limiter amplifier section and is then applied to the FM detector section. At the FM detector section, the 2nd IF signal is demodulated into AF signals using the ceramic discriminator (X2). The AF signal from IC1 (pin 9) is applied to the AF circuit.

#### • 2ND IF AND FM DETECTOR CIRCUITS

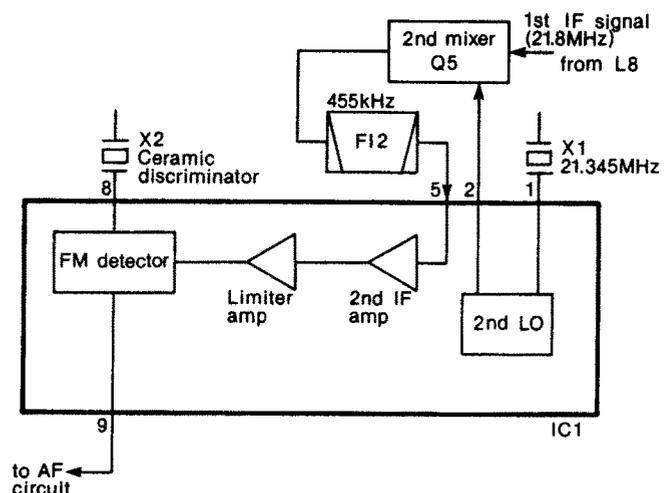


Fig. 1

### 3-1-7 AF CIRCUIT (MAIN UNIT)

AF signals from the FM IF IC (IC2 pin 9) are applied to the de-emphasis circuit (R17, C13). This de-emphasis circuit is an integrated circuit with frequency characteristics of  $-6$  dB/octave. The AF signals are then buffer-amplified at IC8b (pin 6). The AF signals are applied to the low-pass filter (IC9b pins 5, 6), then the high-pass filter (IC9a pins 2, 3) to suppress unwanted lower or higher noise components.

The AF signals pass through the audio selectors (IC11 pins 2, 15), (IC12 pins 5, 4), the [VOLUME] control (R1) in the VR unit, and is then amplified at the AF amplifier (IC24a pin 5). Output signals from IC24a (pin 8) drive the internal speaker (SP1) via the relay (RL3).

### 3-1-8 SQUELCH CIRCUIT (MAIN UNIT)

A squelch circuit cuts out AF signals when no RF signal is received. By detecting noise components in the AF signal, this circuit mutes AF signals.

When no RF signal is received, noise components of 20 kHz and higher increase. The noise components of AF signals "DET" from the PLL unit (IC2 pin 9) are amplified at the noise amplifier (IC10b). Output signal from IC10b is then detected at the noise detector (D3) and converted to DC voltage. The DC voltage is adjusted by the [SQUELCH] control (R2) in the VR unit. The converted voltage is applied to the CPU (IC1) as the squelch trigger signal "SQLM." The CPU outputs an RX mute signal to cut the AF signal line at IC11. The squelch control voltage is also applied to the RF attenuator circuit through DC amplifier (IC8a) as the squelch attenuator signal "SQL ATT." output power.

### • AF CIRCUIT DIAGRAM

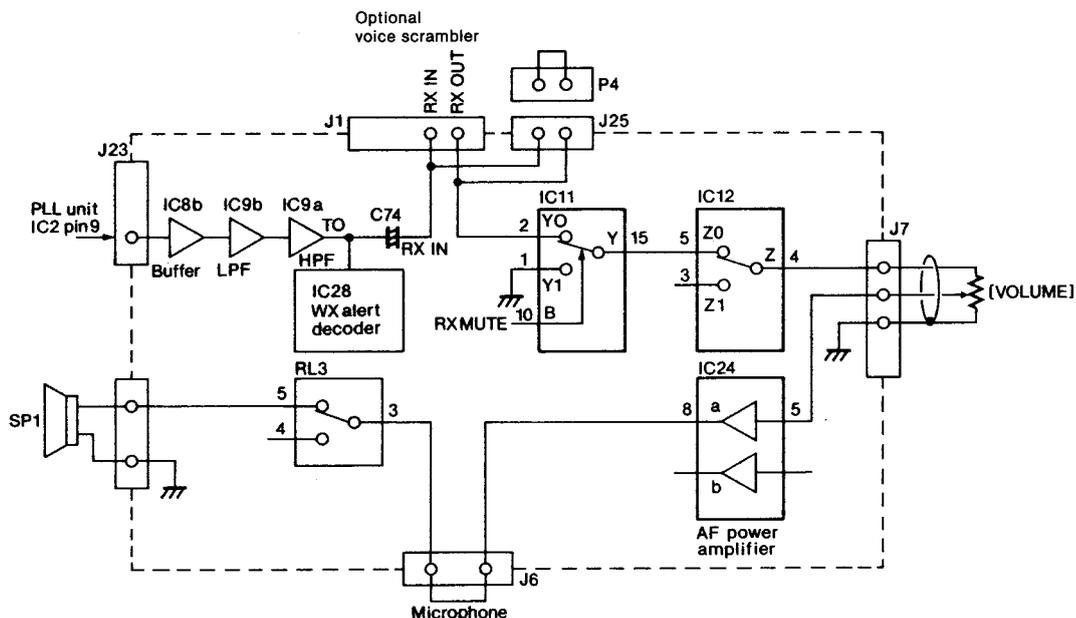


Fig. 2

### 3-1-9 WEATHER ALERT DECODER CIRCUIT (MAIN UNIT) [U.S.A. version only]

When the weather alert function is activated and a 1050 Hz warning tone from an NOAA weather radio broadcast is received, the IC-M126DSC emits beep tones.

AF signals from IC9a (pin 1) are applied to the tone decoder (IC28 pin 3). This tone decoder adopts PLL method, and response frequency is determined by R113 (variable), R114 and C76. When a 1050 Hz signal is detected, the "TONE" line (IC28 pin 8) becomes LOW. The signal is applied to the CPU (IC1 pin 49). Then, the CPU (IC1 pin 5) outputs the beep signal and the signal is then applied to the AF power amplifier (IC24 pin 5).

## 3-2 TRANSMITTER CIRCUITS

### 3-2-1 MICROPHONE AMPLIFIER CIRCUIT (MAIN UNIT)

The audio signals from the microphone pass through the MIC mute switch (IC18) and amplified at the AF amplifier (IC19b). Amplified signals from IC19b (pin 7) pass through the low-pass filter (IC19a) and applied to the pre-emphasis circuit (C123, C124, R129). This pre-emphasis circuit provides frequency characteristics of  $+6$  dB/octave.

Signals from the pre-emphasis circuit are applied to the limiter amplifier (IC20b) to be limited in frequency deviation. These signals pass through DSC/MIC switch (IC13 pins 6, 1) and are applied to the splatter filter (IC20a). Signals, whose components of 3 kHz and higher are eliminated at IC20a, pass through MAX deviation VR (R140) and applied to the modulation circuit.



### 3-3 PLL CIRCUITS

#### 3-3-1 GENERAL DESCRIPTION (PLL UNIT)

A PLL circuit provides stable oscillation of the transmit frequency and the receive LO frequency. The PLL circuit compares the phase of the divided VCO frequency to the reference frequency. The PLL output frequency is controlled by a reference oscillator and the divided ratio (N data) of a programmable divider. The PLL IC (IC3) contains two programmable dividers, a phase detector and a shift register.

The VCO output is amplified at Q9 and is then applied to IC3 (pin 8). IC3 divides this input with the serial data from the CPU (MAIN unit IC1) and phase-detects it with the 12.5 kHz divided reference frequency. The phase difference is then output as a pulse. The output signal from IC3 (pins 5, 12) is amplified by the charge pump (Q10-Q12) to expand the lock voltage.

The amplified signal is then converted to DC voltage by the lag-lead loop filter (R65, R66, C72, C73) and, as well, control the varactor diodes (D1-D5) in the VCO unit. The DC voltage is also applied to a bandpass filter in the receiver circuit to provide tuning voltage via Q13.

#### 3-3-2 VCO CIRCUIT (VCO BOARD)

The VCO generates receive local and transmit frequency, and produces FM modulation. Q2 (RX) and Q4 (TX) cause oscillation. They are switched by Q3, Q5 and Q6, using T8 voltage. D6 causes FM modulation. Q7 is a buffer amplifier that prevents affection for VCO oscillation frequency.

The VCO output signal is buffer-amplified at Q8 on the PLL unit, and is then sent to the transmit/receive switching circuit. A portion of the output signal from Q8 is buffer-amplified at Q9 on the PLL unit, and is then re-applied to the PLL IC (PLL unit IC3 pin 8).

#### 3-3-3 REFERENCE OSCILLATOR CIRCUIT (PLL UNIT)

The reference oscillator circuit oscillates the PLL reference frequency. The 12.8 MHz reference frequency is produced by the oscillator section of the PLL IC (IC3) and TCXO (X3).

#### 3-4 POWER SUPPLY CIRCUITS

LINE	DESCRIPTION
HV	The external DC power from the power connector.
HVS	13.6 V DC passed through the power switch.
5V	Common 5 V converted from the HVS line at IC21 on the MAIN unit.
8V	Common 8 V converted from the HVS line at IC22 on the MAIN unit.
T8	Transmit 8 V converted from the 8 V line at Q4 on the MAIN unit.
R8	Receive 8 V converted from the 8 V line at Q5 on the MAIN unit.
-3V	Common -3 V converted from the CPU oscillation output through a voltage doubler rectifier (D27) and smoothing circuit (C34-C36, R58-R60) on the MAIN unit.

#### • PLL CIRCUIT BLOCK DIAGRAM

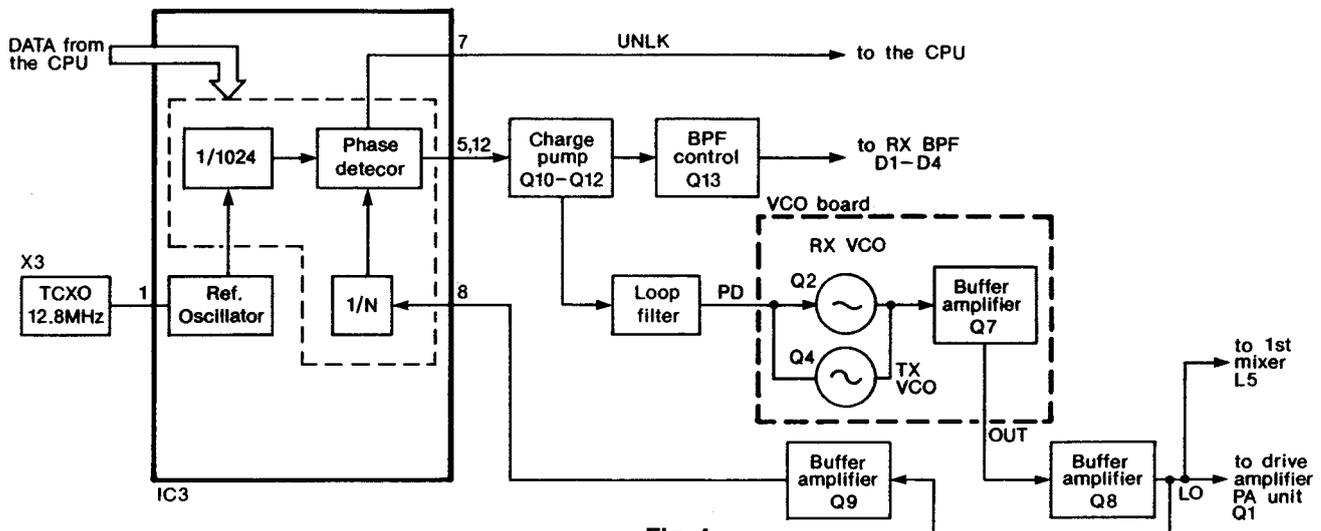


Fig. 4

### 3-5 INTERCOM AND HAILER CIRCUITS

#### 3-5-1 INTERCOM SIGNAL LINES (MAIN UNIT)

When the intercom function is activated, microphone signals from the audio selector (IC11 pins 4, 5) are attenuated at the electronic volume control (IC14 pins 14, 15), and amplified at the AF buffer amplifier (IC15a pins 3, 1). The signals are then attenuated again at the electronic volume control (IC14 pins 11, 12), and amplified at the AF buffer amplifier (IC16a pins 3, 1), AF power amplifier (IC24a pins 5, 8) to drive the internal speaker via the relay (RL3).

When the external intercom-1 switch is turned ON, the intercom speaker functions as a microphone. The audio signals from the intercom speaker pass through the relay (RL1) and audio selector (IC11 pins 13, 14), and are then amplified at the AF amplifier (IC26a pins 2, 1). The amplified signals pass through the audio selector (IC12 pins 3, 4) and [VOLUME] control, and are then amplified at the AF power amplifier (IC24b pins 5, 8) to drive the internal speaker via the relay (RL3).

#### 3-5-2 HAILER SIGNAL LINES (MAIN UNIT)

When the hailer function is activated, microphone signals from the audio selector (IC11 pins 4, 3) are attenuated at the electronic volume control (IC14 pins 3, 2), and amplified at the AF buffer amplifier (IC15b pins 5, 7). The signals are then attenuated again at the electronic volume control (IC14 pins 6, 5), and amplified at the AF buffer amplifier (IC16b pins 5, 7), AF power amplifier (IC23a pins 2, 9) to drive a hailer speaker via the relay (RL2).

When the external intercom-2 switch is turned ON, the hailer speaker functions as a microphone. The audio signals from the hailer speaker pass through the relay (RL2) and audio selector (IC11 pins 12, 14), and are then amplified at the AF amplifier (IC26a pins 2, 1). The amplified signals pass through the audio selector (IC12 pins 3, 4) and [VOLUME] control, and are then amplified at the AF power amplifier (IC24b pins 5, 8) to drive the internal speaker via the relay (RL3).

#### 3-5-3 AUTOMATIC FOG HORN CIRCUIT (MAIN UNIT)

When the automatic fog horn function is activated, the square wave signal (preset frequency 200-850 Hz) from the CPU is applied to the audio selector (IC11 pin 4).

The signal from the audio selector (IC11 pin 3) is attenuated at the electronic volume control (IC14 pins 3, 2), and amplified at the AF buffer amplifier (IC15b pins 5, 7). The signal is then attenuated again at the electronic volume control (IC14 pins 6, 5), and amplified at the AF buffer amplifier (IC16b pins 5, 7), AF power amplifier (IC23a pins 2, 9) to drive the hailer speaker via the relay (RL2).

### 3-6 DSC CIRCUITS

#### 3-6-1 DSC CIRCUIT (MAIN UNIT)

D/A output signals from the CPU (IC1 pin 67) are passed through the low-pass filter (IC25b) and applied to the limiter amplifier (IC25a) to be limited in frequency deviation. DSC deviation is adjusted by R154.

#### • INTERCOM AND HAILER CIRCUITS BLOCK DIAGRAM

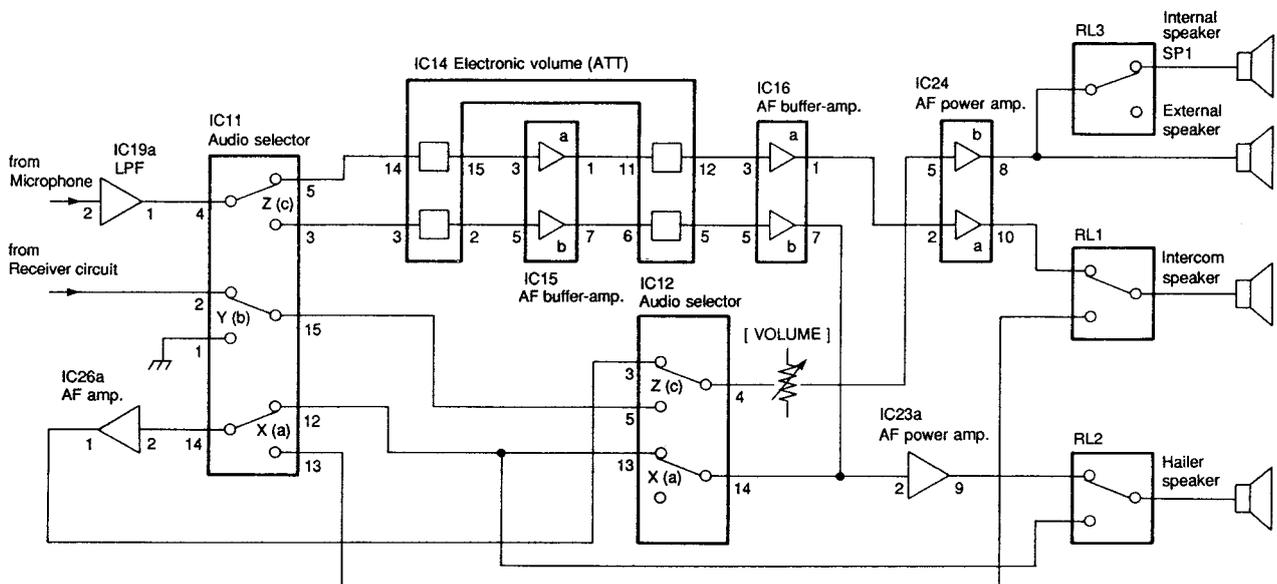


Fig. 5

### 3-6-2 DSC/MIC SELECTOR CIRCUIT (MAIN UNIT)

Signals from the limiter amplifier (IC25a pin 1) are passed through the jumper connector (J12 CLASS C side) and applied to DSC/MIC switch (IC13).

### 3-6-3 DSC SELECTOR CIRCUIT (MAIN UNIT)

When optional UX-112 DSC DECODER UNIT is installed, the audio selector (IC12) functions as a DSC selector.

Received DSC signals from IC9a (pin 1) are applied to IC12 (pin 1). A portion of transmit DSC signals from the jumper connector (J12 OPTION side) through an attenuator (R64, R65) is applied to IC12 (pin 2) as adjustment data. These signals are switched in IC12, and output from pin 15 to the optional UX-112.

## 3-7 PORT ALLOCATIONS

#### • CPU (MAIN UNIT IC1)

Pin No.	Port Name	Description
1	SCK	Outputs clock signals for serial data.
2	SD	Outputs serial data
3	UNLOCK	Input port for a PLL unlock signal. When PLL is unlocked: "LOW"
4	FOG	Outputs fog horn signal.
5	BEEP1	Outputs a beep 1 signal.
6	BEEP3	Outputs a beep 3 signal.
7	RESET	Input port for CPU start and stop signal.
13	RL1	Outputs an intercom speaker control signal.
14	RL2	Outputs a hailer speaker control signal.
17	SEND	Outputs T/R switching signal. "HIGH" for transmit
18	PLSTB	Outputs a strobe signal to the PLL IC (PLL unit IC3).
19	VLSTB	Outputs a strobe signal to the electronic volume IC (MAIN unit IC14).
20	CL R/W	Outputs a read/write signal for a clock function in the UX-112.
27	SCSTB	Outputs a strobe signal to an optional UT-74.
47	NPWCK	Outputs a clock signal for -3 V regulator circuit (Q6, Q7, D27).
48	UA 1	Input port for an optional UA-1 connection. When the UA-1 is connected: "LOW"
49	TONE	Input port for a tone decoder signal from the weather alert decoder circuit (MAIN unit IC28). When a WX alert is detected: "LOW"
50	HANG	Input port for a hang switch.
51	CALL 1	Input port for an external intercom switch.
52	CALL 2	Input port for an external hailer switch.

Pin No.	Port Name	Description
53	SCRM	I/O port for 16/128 selecting signal input and scramble data output.
54	SDA	I/O port for E <sup>2</sup> PROM (MAIN unit IC4).
56	S/RF	Input port for the S/RF meter signal.
57	LBAT	Input port for the low battery indicator.
58	SQLM	Input port for the squelch detector signal. When squelch closed: "HIGH"
59	ANT	Input port for the antenna problem indicator. When an SWR is high: "LOW"
60	PTT	Input port for the PTT switch.
61-63	P75-P77	Input port for the initial matrix.
72	DSCI	Input port for a DSC signal.
73	DSCD	Input port for the DSC data carrier detection signal.
76, 77	INTP3, INTP4	Input port for the channel selector up/down signal.
78	SI	Input port for serial data.

#### • I/O EXPANDER (MAIN UNIT IC5)

Pin No.	Port Name	Description
4	CTXSW	Initial matrix sense line 0.
5	CRXSW	Initial matrix sense line 1.
6	ALM	Outputs DSC alarm signal.
7	TINH	Outputs an inhibit signal for a modulation line. "HIGH": Inhibits a modulation
12	LOW	Outputs a transmit low power signal. "LOW": Low power
13	TMUT	Outputs a transmit mute signal. "LOW": Transmit mute

#### • I/O EXPANDER (MAIN UNIT IC6)

Pin No.	Port Name	Description
4	IC12 (X)	Outputs hailer I/O signal.
5	IC12 (Y)	Outputs DSC receive source selector signal.
6	IC12 (Z)	Outputs intercom I/O signal.
7	DSC/MIC	Outputs DSC microphone selector signal.
11	IC11 (I)	Outputs an inhibit signal for IC11 while beep tones are output.
12	IC11 (Z)	Outputs a microphone selector signal for a hailer or intercom use.
13	IC11 (Y)	Outputs a receive mute signal for squelch closed.
14	IC11 (X)	Outputs a speaker selection signal for a hailer or intercom. This selection is used for microphone use of a speaker.

## SECTION 4 ADJUSTMENT PROCEDURES

### 4-1 REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 10 A or more	Oscilloscope	Frequency range : DC – 20 MHz Measuring range : 0.01-10 V
RF power meter (terminated type)	Measuring range : 1-50 W Frequency range : 120-180 MHz Impedance : 50 Ω SWR : Less than 1.2:1	AC millivoltmeter	Measuring range : 2-200 mV
Frequency counter	Frequency range : 0.1-180 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	Distortion meter	Frequency range : 1 kHz ±10% Measuring range : 1-100%
Attenuator	Power attenuation : 40 or 50 dB Capacity : 50 W or more	Digital multimeter	Input impedance : 1 MΩ/DC or better
FM deviation meter	Frequency minimum : 180 MHz Measuring range : 0 to ±10 kHz	Audio generator (AG)	Frequency range : 300-3000 Hz Output level : 1-500 mV
Standard signal generator (SSG)	Frequency range : 100-180 MHz Output level : 0.1 μV to 32 mV (-127 to -17 dBm)	External speaker (or dummy load)	Impedance : 4 Ω Max. input power : 5 W

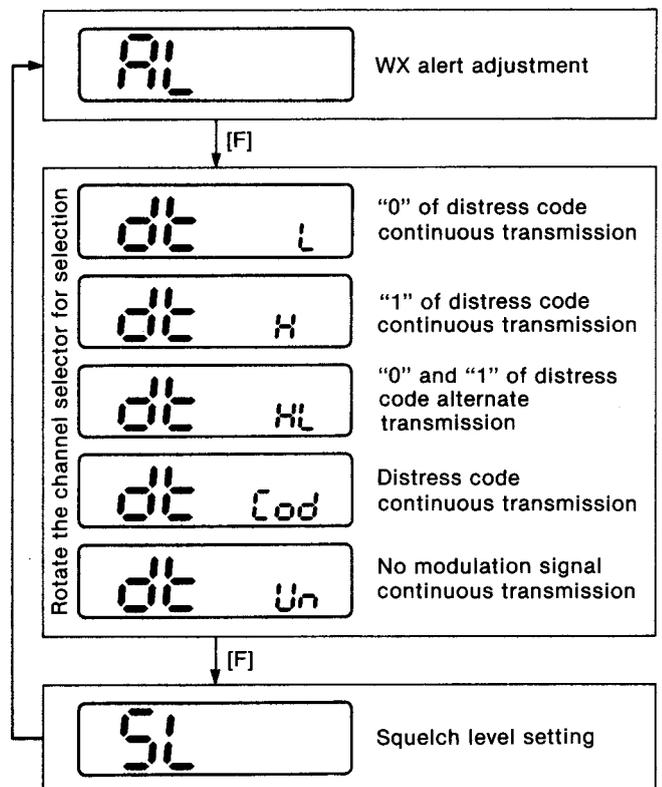
### 4-2 ADJUSTMENT MODE

The transceiver has an adjustment mode for the following 3 settings.

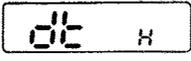
#### • TO ENTER ADJUSTMENT MODE

- 1) Set S11 to the "ON" position on the DISP unit.
- 2) While pushing [F], turn power ON.
  - Keep pushing [F] until the initial adjust mode display appears.
- 3) Push [F] to select the desired item.
- 4) To exit the adjustment mode, turn power OFF.
- 5) Set S11 to the "OFF" position on the DISP unit.

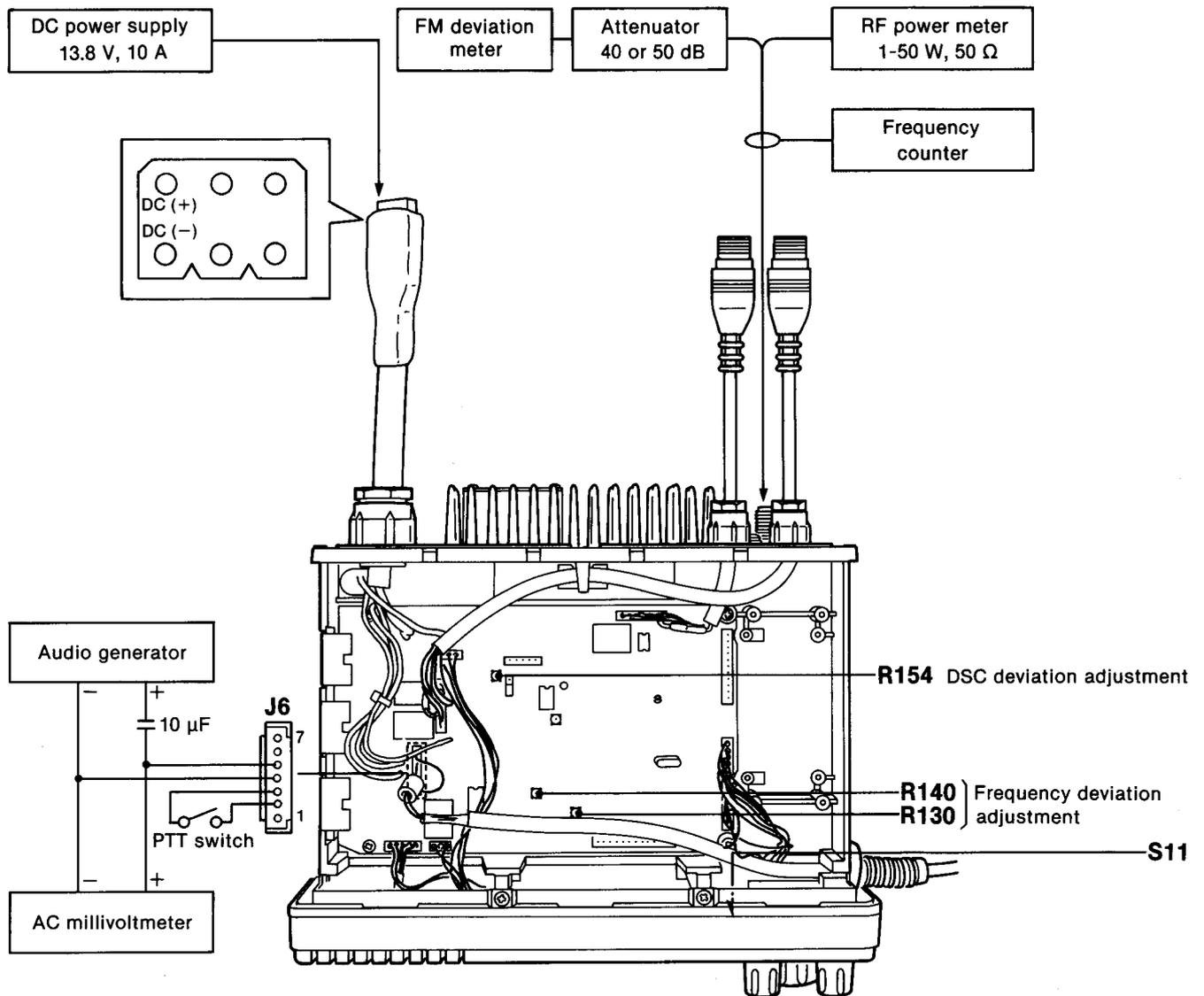
#### • CONTENTS OF ADJUSTMENT MODE



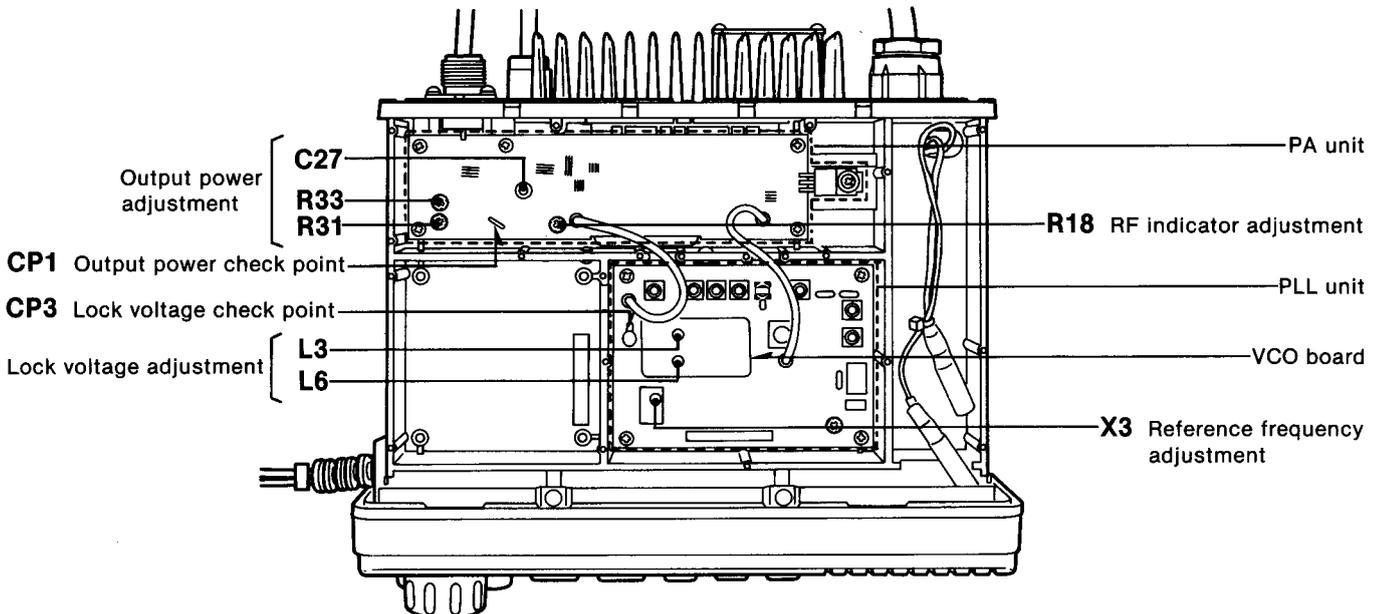
### 4-3 PLL AND TRANSMITTER ADJUSTMENTS

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1 <ul style="list-style-type: none"> <li>• Operating channel : 16</li> <li>• Connect the RF power meter or a 50 Ω dummy load to the antenna connector.</li> <li>• Receiving</li> </ul>	PLL	Connect the digital multimeter or oscilloscope to CP3.	3.0 V	VCO	L3
	2 <ul style="list-style-type: none"> <li>• Transmitting</li> </ul>					3.0 V
REFERENCE FREQUENCY	1 <ul style="list-style-type: none"> <li>• Operating channel : 16</li> <li>• Connect the RF power meter or a 50 Ω dummy load to the antenna connector.</li> <li>• Transmitting</li> </ul>	Rear panel	Loosely couple the frequency counter to the antenna connector.	156.8000 MHz	PLL	X3
OUTPUT POWER	1 <ul style="list-style-type: none"> <li>• Operating channel : 16</li> <li>• R31, R33 (PA unit) : Max. CW</li> <li>• [HI/LO] switch : High</li> <li>• Transmitting</li> </ul>	PA	Connect the digital multimeter or oscilloscope to CP1.	Minimum voltage	PA	C27
	2	Rear panel	Connect the RF power meter to the antenna connector.	25 W		R33
	3 <ul style="list-style-type: none"> <li>• [HI/LO] switch : Low</li> </ul>			1 W		R31
RF INDICATOR	1 <ul style="list-style-type: none"> <li>• Operating channel : 16</li> <li>• [HI/LO] switch : Low</li> <li>• Transmitting</li> </ul>	Function display	S/RF indicator	3 dots 	PA	R18
FREQUENCY DEVIATION	1 <ul style="list-style-type: none"> <li>• Operating channel : 16</li> <li>• R130 (MAIN unit) : Center</li> <li>• Connect the audio generator to J6 (pin 5) on the MAIN unit with an AC millivoltmeter and set as: 40 mV/1.0 kHz</li> <li>• Set the FM deviation meter as:                             <ul style="list-style-type: none"> <li>HPF : OFF</li> <li>LPF : 20 kHz</li> <li>De-emphasis : OFF</li> <li>Detector : (P-P)/2</li> </ul> </li> <li>• Transmitting</li> </ul>	Rear panel	Connect the FM deviation meter to the antenna connector via the attenuator.	± 4.5 kHz	MAIN	R140
	2 <ul style="list-style-type: none"> <li>• Set the FM deviation meter as:                             <ul style="list-style-type: none"> <li>Detector : P and -P</li> </ul> </li> </ul>			Symmetrical deviation level		R130
DSC DEVIATION	1 <ul style="list-style-type: none"> <li>• Select "distress transmission code 1" in the adjustment mode. (Refer to p. 4-1)</li> </ul>  <ul style="list-style-type: none"> <li>• Set the FM deviation meter as:                             <ul style="list-style-type: none"> <li>Frequency : 156.525 MHz (CH70)</li> <li>HPF : OFF</li> <li>LPF : 20 kHz</li> <li>De-emphasis : OFF</li> <li>Detector : (P-P)/2</li> </ul> </li> <li>• Transmitting</li> </ul>	Rear panel	Connect the FM deviation meter to the antenna connector via the attenuator.	± 2.6 kHz	MAIN	R154

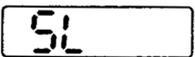
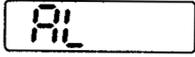
• MAIN UNIT



• PLL AND PA UNITS



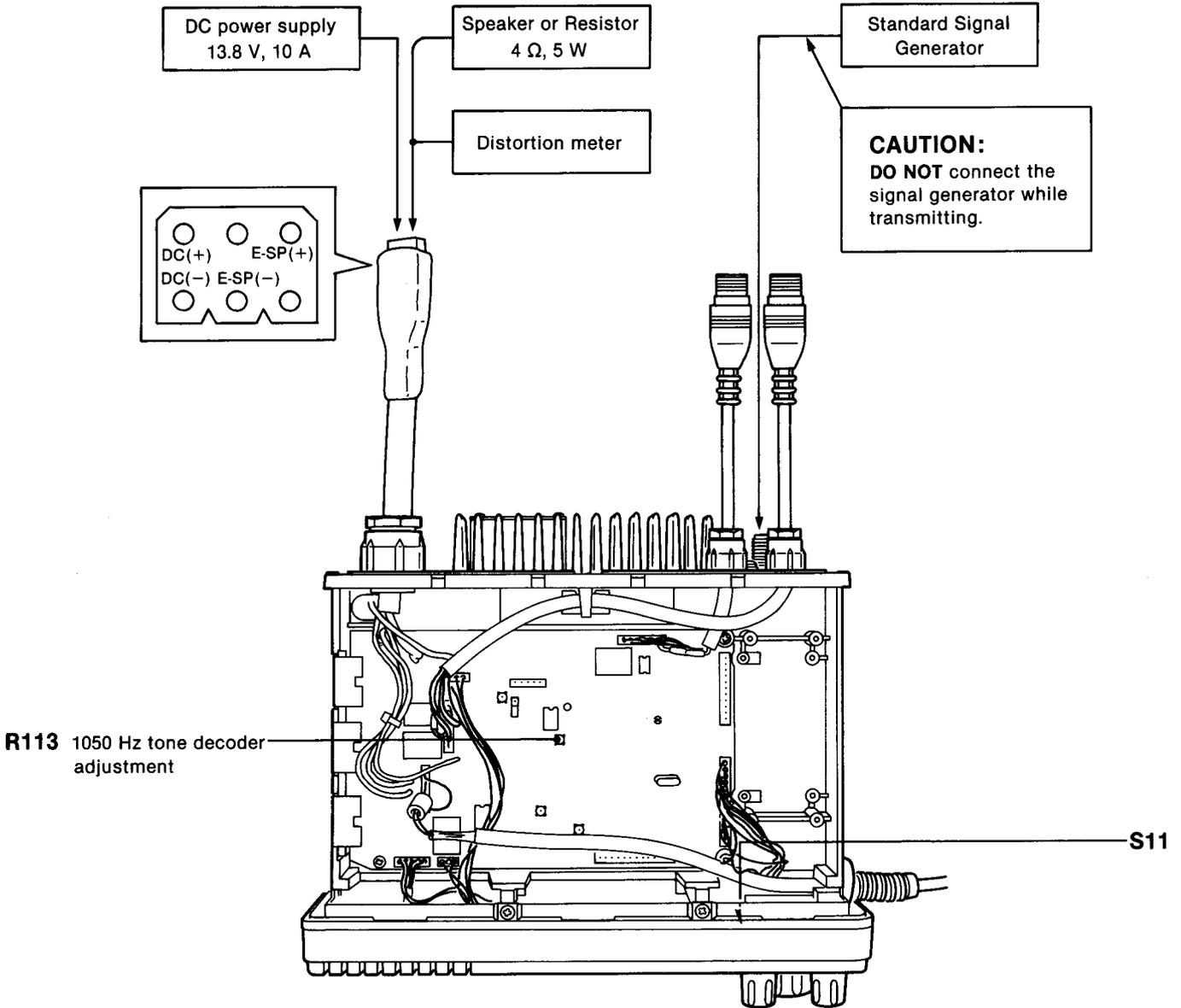
## 4-4 RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY	1	<ul style="list-style-type: none"> <li>Operating Channel : 16</li> <li>[SQUELCH] control: Max. CCW</li> <li>Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Frequency : 156.800 MHz</li> <li>Level : 32 <math>\mu</math>V* (-77 dBm)</li> <li>Modulation: 1 kHz</li> <li>Deviation : <math>\pm</math>3.5 kHz</li> </ul> </li> <li>Set AF output level: 1.3 V (by [VOLUME] control)</li> <li>Receiving</li> </ul>	Rear panel	Connect the distortion meter to the Ext. speaker terminal with a 4 $\Omega$ resistor.	Minimum distortion level	PLL	Adjust in sequence L1, L2, L3, L4, L6, L7, L8
S-INDICATOR	1	<ul style="list-style-type: none"> <li>Operating Channel : 16</li> <li>Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Frequency : 156.800 MHz</li> <li>Level : 1.0 <math>\mu</math>V* (-107 dBm)</li> <li>Deviation : <math>\pm</math>3.5 kHz</li> <li>Modulation: 1 kHz</li> </ul> </li> <li>Receiving</li> </ul>	Function display	S/R/F indicator	3 dots 	PLL	R36
SQUELCH LEVEL	1	<ul style="list-style-type: none"> <li>Select "Squelch level setting" in the adjustment mode. (Refer to p. 4-1)</li> <li>Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Frequency : 156.800 MHz</li> <li>Level : 710 <math>\mu</math>V* (-50 dBm)</li> <li>No modulation</li> </ul> </li> <li>[SQUELCH] control: Max. CW</li> </ul>	Function display			Front panel	Push [M R]
1050 Hz TONE DECODER	1	<ul style="list-style-type: none"> <li>Operating channel: WX10</li> <li>Select "WX alert adjustment" in the adjustment mode. (Refer to p. 4-1)</li> <li></li> <li>Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Frequency : 163.275 MHz</li> <li>Level : 32 <math>\mu</math>V* (-77 dBm)</li> <li>Modulation: 1050 Hz</li> <li>Deviation : <math>\pm</math>3.5 kHz</li> </ul> </li> <li>Receiving</li> </ul>	Front panel	Internal speaker	The center position of the range where the beep emits.	MAIN	R113

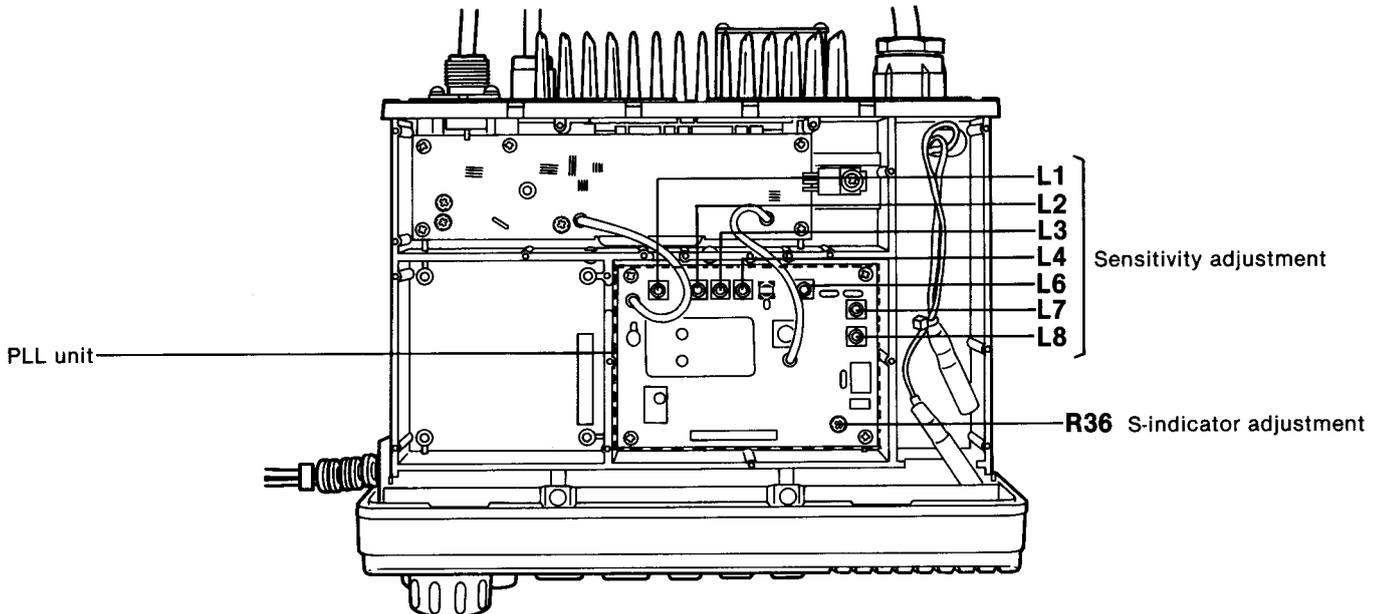
\* This output level of the standard signal generator (SSG) is indicated as SSG's open circuit.

CW: clockwise CCW: Counterclockwise

• MAIN UNIT



• PLL AND PA UNITS



## SECTION 5 PARTS LIST

[DISP UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140004230	S.IC	HD404812A44H
Q1	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q2	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q3	1540000250	S.TRANSISTOR	2SD999-T2 CK
Q4	1540000250	S.TRANSISTOR	2SD999-T2 CK
Q5	1590000410	S.TRANSISTOR	RN2404 (TE85R)
Q6	1590000410	S.TRANSISTOR	RN2404 (TE85R)
Q7	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q8	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
D1	1730000870	S.ZENER	RD11M-T2B1
D2	1750000010	S.DIODE	1SS181 (TE85R)
D3	1750000070	S.DIODE	1SS226 (TE85R)
D4	1750000060	S.DIODE	1SS196 (TE85R)
X1	6060000150	S.CERAMIC	CSAC3.58MGC300CD
R1	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R2	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R5	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R6	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R7	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R8	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R9	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R10	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R13	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R14	7030001070	S.RESISTOR	MCR50JZHJ 33 Ω (330)
R15	7030001070	S.RESISTOR	MCR50JZHJ 33 Ω (330)
R16	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R17	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R18	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R19	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R20	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R21	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R22	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R23	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R24	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R25	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R26	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R27	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R28	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R29	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R30	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R31	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R32	7030001070	S.RESISTOR	MCR50JZHJ 33 Ω (330)
C1	4510004640	S.ELECTROLITIC	ECEV1CA470P
C2	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C3	4030007170	S.CERAMIC	C1608 CH 1H 221J-T-A
C4	4030007170	S.CERAMIC	C1608 CH 1H 221J-T-A
C5	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C6	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C7	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
S1	2260001820	SWITCH	SW-143 (SKHQFH)
S2	2260001820	SWITCH	SW-143 (SKHQFH)
S3	2260001820	SWITCH	SW-143 (SKHQFH)
S4	2260001820	SWITCH	SW-143 (SKHQFH)
S5	2260001820	SWITCH	SW-143 (SKHQFH)

[DISP UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
S6	2260001810	SWITCH	SW-142 (SKHQFF)
S7	2260001820	SWITCH	SW-143 (SKHQFH)
S8	2260001820	SWITCH	SW-143 (SKHQFH)
S9	2260001820	SWITCH	SW-143 (SKHQFH)
S10	2260001820	SWITCH	SW-143 (SKHQFH)
S11	2220000390	SWITCH	SW-107 (SSSS91679A)
S12	2260001960	S.SWITCH	EVQ-PJU 05K
S13	2260001960	S.SWITCH	EVQ-PJU 05K
S14	2260001960	S.SWITCH	EVQ-PJU 05K
EP1	0910041382	PCB	B 4038B
DS1	5030001080	LCD	FTD-12724AAPH
DS2	5080000150	LAMP	HRS-7219A
DS3	5080000150	LAMP	HRS-7219A
DS4	5080000150	LAMP	HRS-7219A

[VR BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7210001190	VARIABLE	RK0971112001A (10KA) [VOLUME]
R2	7210001360	VARIABLE	RK097111004NA (10KB) [SQUELCH]
EP1	0910041891	PCB	B 4173A

[SENSOR BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
S1	2250000020	ENCODER	SRB18100 25KC [CHANNEL SELECTOR]
EP1	0910041900	PCB	B 4174

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140003090	S.IC	$\mu$ PD78P238GC-3B9
IC4	1140003610	S.IC	X24C04S8-2.7
IC5	1130005810	S.IC	BU4094BF-T1
IC6	1130005810	S.IC	BU4094BF-T1
IC7	1110001550	S.IC	S-8054ALB-LM-T1
IC8	1110002210	S.IC	TA75358CF(TP1)
IC9	1110000960	S.IC	NJM4558M(T1)
IC10	1110002560	S.IC	NJM4560M-T1
IC11	1130002420	S.IC	$\mu$ PD4053BG
IC12	1130002420	S.IC	$\mu$ PD4053BG
IC13	1130005640	S.IC	TC4W53F (TE12L)
IC14	1130007460	IC	TC9213P
IC15	1110000960	S.IC	NJM4558M(T1)
IC16	1110000960	S.IC	NJM4558M(T1)
IC17	1130003920	S.IC	TC4S69F (TE85R)
IC18	1130004200	S.IC	TC4S66F (TE85R)
IC19	1110000960	S.IC	NJM4558M(T1)
IC20	1110000960	S.IC	NJM4558M(T1)
IC21	1110002020	IC	TA7805S
IC22	1180001180	IC	PQ09RF11
IC23	1110003510	IC	LA4460N
IC24	1110002540	IC	LA4445
IC25	1110000960	S.IC	NJM4558M(T1)
IC26	1110000960	S.IC	NJM4558M(T1)
IC27	1130001230	S.IC	$\mu$ PD4001BG-T1
IC28	1110000500	IC	BA1604
IC29	1170000170	IC	TLP521-1(Y)
IC30	1130006800	S.IC	TC7W08F (TE12L)
Q1	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q4	1520000200	S.TRANSISTOR	2SB798-T2 DK
Q5	1520000200	S.TRANSISTOR	2SB798-T2 DK
Q6	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q7	1510000500	S.TRANSISTOR	2SA1162-GR (TE85R)
Q8	1590001510	S.TRANSISTOR	RN1424 (TE85R)
Q9	1590001510	S.TRANSISTOR	RN1424 (TE85R)
Q13	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q14	1590001510	S.TRANSISTOR	RN1424 (TE85R)
Q15	1590000410	S.TRANSISTOR	RN2404 (TE85R)
Q16	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q17	1590001510	S.TRANSISTOR	RN1424 (TE85R)
Q18	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q19	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q20	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q24	1590000460	S.TRANSISTOR	RN1402 (TE85R)
Q25	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q26	1510000500	S.TRANSISTOR	2SA1162-GR (TE85R)
D1	1750000260	S.DIODE	1SS352 (TPH3)
D2	1750000050	S.DIODE	1SS193 (TE85R)
D3	1790000490	S.DIODE	HSM88AS-TR
D4	1750000060	S.DIODE	1SS196 (TE85R)
D5	1750000260	S.DIODE	1SS352 (TPH3)
D6	1750000400	S.DIODE	1SS349(TE85R)
D7	1750000060	S.DIODE	1SS196 (TE85R)
D8	1750000060	S.DIODE	1SS196 (TE85R)
D9	1750000070	S.DIODE	1SS228 (TE85R)
D10	1750000070	S.DIODE	1SS228 (TE85R)
D11	1750000070	S.DIODE	1SS228 (TE85R)
D12	1750000070	S.DIODE	1SS228 (TE85R)
D13	1750000070	S.DIODE	1SS228 (TE85R)
D14	1730000730	S.ZENER	RD6.2M-T2B2
D15	1730000730	S.ZENER	RD6.2M-T2B2
D16	1730000730	S.ZENER	RD6.2M-T2B2
D17	1730000730	S.ZENER	RD6.2M-T2B2
D19	1750000020	S.DIODE	1SS184 (TE85R)
D20	1790000700	DIODE	DSA3A1
D21	1750000040	S.DIODE	1SS190 (TE85R)
D22	1750000260	S.DIODE	1SS352 (TPH3)
D23	1750000060	S.DIODE	1SS196 (TE85R)
D24	1750000060	S.DIODE	1SS196 (TE85R)
D25	1750000060	S.DIODE	1SS196 (TE85R)
D27	1750000070	S.DIODE	1SS228 (TE85R)
D28	1710000050	DIODE	1SS53

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D29	1710000050	DIODE	1SS53
D30	1710000050	DIODE	1SS53
D31	1750000060	S.DIODE	1SS196 (TE85R)
D33	1750000060	S.DIODE	1SS196 (TE85R) (ITA only)
D34	1750000060	S.DIODE	1SS196 (TE85R) (ITA only)
X1	6050009030	XTAL	CR-487 HC-49/U
R1	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R2	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R3	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R4	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R13	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R14	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R15	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R16	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R17	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 k $\Omega$ )
R18	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R19	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R20	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R21	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 k $\Omega$ )
R22	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R23	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R24	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R25	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 k $\Omega$ )
R26	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R27	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 k $\Omega$ )
R28	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 k $\Omega$ )
R29	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R33	7030003580	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R36	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R37	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R38	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R39	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R40	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R41	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R42	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 k $\Omega$ )
R43	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R44	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R45	7510000390	S.THERMISTOR	TN20-3N153LT
R48	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R49	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 k $\Omega$ )
R50	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 k $\Omega$ )
R51	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 M $\Omega$ )
R52	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 M $\Omega$ )
R53	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R54	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R55	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R56	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R57	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R58	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R59	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 k $\Omega$ )
R60	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R61	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R62	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R63	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R64	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 k $\Omega$ )
R65	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R66	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R67	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R68	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R69	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R70	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R71	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R72	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 k $\Omega$ )
R73	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R74	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R75	7030004040	S.RESISTOR	ERJ3GEYJ 4R7 V (4.7 $\Omega$ )
R76	7030004040	S.RESISTOR	ERJ3GEYJ 4R7 V (4.7 $\Omega$ )
R77	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R78	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R79	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R80	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R81	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R82	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R84	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R85	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R86	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R87	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R88	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R89	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R90	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R91	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R92	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R93	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R97	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R98	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R99	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R100	7030003520	S.RESISTOR	ERJ3GEYJ 474 V (4.7 kΩ)
R101	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R102	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R103	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R104	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R105	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R106	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R107	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R108	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R109	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R110	7030004040	S.RESISTOR	ERJ3GEYJ 4R7 V (4.7 Ω)
R111	7030004040	S.RESISTOR	ERJ3GEYJ 4R7 V (4.7 Ω)
R112	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R113	7310001760	TRIMMER	RH0421CJ4J09A (223)
R114	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R115	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R116	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R117	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R118	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R119	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R120	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R121	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R122	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R123	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R124	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R125	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R126	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R127	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R128	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R129	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R130	7310001720	TRIMMER	RH0421C15J06A (104)
R131	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R132	7030003730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R133	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R134	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R135	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R136	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R137	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R138	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R139	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R140	7310001710	TRIMMER	RH0421C14J0KA (103)
R141	7510000090	THERMISTOR	ERT-D2FGL 202S
R142	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R143	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R144	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R145	7030000300	S.RESISTOR	MCR10EZJH 220 Ω (221)
R146	7030000490	S.RESISTOR	MCR10EZJH 8.2 kΩ (822)
R147	7030000620	S.RESISTOR	MCR10EZJH 100 kΩ (104)
R148	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R149	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R151	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R152	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R153	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R154	7310001760	TRIMMER	RH0421CJ4J09A (223)
R155	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R156	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R157	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R158	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R159	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R160	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R162	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R163	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R164	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R165	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R166	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R167	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R168	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R169	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R171	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R172	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R173	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R174	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R175	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R178	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R177	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R178	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R179	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R180	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R181	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R183	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R184	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R185	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R186	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R187	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R188	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R189	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R190	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R191	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R192	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R193	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R194	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R195	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R196	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R197	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R198	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R199	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R200	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R201	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R202	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R203	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R204	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R205	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R206	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R207	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R208	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R209	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R210	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R211	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
C1	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C2	4030007100	S.CERAMIC	C1608 CH 1H 560J-T-A
C3	4030007100	S.CERAMIC	C1608 CH 1H 560J-T-A
C4	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C5	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C6	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C9	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C10	4030006750	S.CERAMIC	C1608 SL 1H 101J-T-A
C11	4030006750	S.CERAMIC	C1608 SL 1H 101J-T-A
C12	4030006750	S.CERAMIC	C1608 SL 1H 101J-T-A
C13	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C14	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C15	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C16	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C17	4510003960	ELECTROLITIC	50 MV 1 HW
C18	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C19	4030006690	S.CERAMIC	C1608 SL 1H 330J-T-A
C20	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C21	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C22	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C23	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C24	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C25	4550000460	S.TANTALUM	TESVA 1C 105M1-8L
C26	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C27	4030008900	S.CERAMIC	C1608 JB 1C 333K-T-A
C28	4030009490	S.CERAMIC	C1608 JB 1H 821K-T-A

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C29	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C30	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C31	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C32	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C33	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C34	4510004150	ELECTROLITIC	50 MV 4R7 HW
C35	4510004150	ELECTROLITIC	50 MV 4R7 HW
C36	4510003880	ELECTROLITIC	10 MV 47 HW
C37	4510003880	ELECTROLITIC	10 MV 47 HW
C38	4510003910	ELECTROLITIC	16 MV 47 HW
C39	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C41	4510004990	ELECTROLITIC	16 MV 100 HC
C42	4510003890	ELECTROLITIC	16 MV 10 HW
C43	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C44	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C45	4510003890	ELECTROLITIC	16 MV 10 HW
C46	4030008960	S.CERAMIC	C2012 JB 1C 104K-T-A
C47	4030008660	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C49	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C50	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C51	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C52	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C53	4510004150	ELECTROLITIC	50 MV 4R7 HW
C54	4510004150	ELECTROLITIC	50 MV 4R7 HW
C55	4510004990	ELECTROLITIC	16 MV 100 HC
C56	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C57	4510003880	ELECTROLITIC	10 MV 47 HW
C58	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C59	4510003880	ELECTROLITIC	10 MV 47 HW
C60	4310000420	MYLAR	50 F2D 333J
C61	4310000420	MYLAR	50 F2D 333J
C64	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C65	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C66	4030008880	S.CERAMIC	C1608 JB 1C 223K-T-A
C67	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C69	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C70	4030008880	S.CERAMIC	C1608 JB 1C 223K-T-A
C71	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C72	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C73	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C74	4510001970	ELECTROLITIC	50 MS7 0R1UF
C75	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C76	4310000400	MYLAR	50 F2D 223J
C77	4550000460	S.TANTALUM	TESVA 1C 105M1-8L
C78	4550002890	S.TANTALUM	TESVA 1A 225M1-8L
C79	4510003900	ELECTROLITIC	16 MV 22 HW
C80	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C81	4510004150	ELECTROLITIC	50 MV 4R7 HW
C82	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C83	4510003890	ELECTROLITIC	16 MV 10 HW
C84	4510003910	ELECTROLITIC	16 MV 47 HW
C85	4510004150	ELECTROLITIC	50 MV 4R7 HW
C86	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C87	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C88	4510003910	ELECTROLITIC	16 MV 47 HW
C89	4510001970	ELECTROLITIC	50 MS7 0R1UF
C90	4510003910	ELECTROLITIC	16 MV 47 HW
C91	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C92	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C93	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C94	4510003910	ELECTROLITIC	16 MV 47 HW
C95	4510005000	ELECTROLITIC	16 MV 220 HC
C96	4510004990	ELECTROLITIC	16 MV 100 HC
C97	4510004600	ELECTROLITIC	16 MV 1000 HC
C98	4510004600	ELECTROLITIC	16 MV 1000 HC
C99	4510004990	ELECTROLITIC	16 MV 100 HC
C100	4310000480	MYLAR	50 F2D 104J
C101	4310000480	MYLAR	50 F2D 104J
C102	4510004600	ELECTROLITIC	16 MV 1000 HC
C103	4510004600	ELECTROLITIC	16 MV 1000 HC
C104	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C105	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C106	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C107	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C108	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C109	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C110	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C111	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C112	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C113	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C114	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C115	4510003940	ELECTROLITIC	25 MV 4R7 HW
C116	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C117	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C119	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C120	4030008650	S.CERAMIC	C1608 JB 1H 471K-T-A
C121	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C122	4510004150	ELECTROLITIC	50 MV 4R7 HW
C123	4310000360	MYLAR	50 F2D 103J
C124	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C125	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C128	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C127	4030008880	S.CERAMIC	C1608 JB 1C 223K-T-A
C128	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C129	4510004140	ELECTROLITIC	50 MV 10 HW
C130	4310000360	MYLAR	50 F2D 103J
C131	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C132	4030008880	S.CERAMIC	C1608 JB 1H 472K-T-A
C134	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C135	4510004150	ELECTROLITIC	50 MV 4R7 HW
C136	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C138	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C139	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C140	4510003880	ELECTROLITIC	10 MV 47 HW
C141	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C142	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C143	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C144	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C145	4510004150	ELECTROLITIC	50 MV 4R7 HW
C146	4510004150	ELECTROLITIC	50 MV 4R7 HW
C147	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C148	4030004760	S.CERAMIC	C2012 JF 1E 104Z-T-A
C149	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C150	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C151	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C153	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C154	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C155	4510004490	ELECTROLITIC	25 MV 22 HW
C156	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C159	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C178	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
C179	4030008680	S.CERAMIC	C1608 JB 1H 102K-T-A
RL1	6330000180	RELAY	MZ-12HG
RL2	6330001170	RELAY	A-12W-K
RL3	6330000180	RELAY	MZ-12HG
RL4	6330000180	RELAY	MZ-12HG
W7	7030003860	S.JUMPER	ERJ3GE JPW V
J1	6510003480	CONNECTOR	B12B-EH-S
J2	6510003410	CONNECTOR	B05B-EH-S
J3	6510003430	CONNECTOR	B07B-EH-S
J4	6510003440	CONNECTOR	B08B-EH-S
J5	6510003450	CONNECTOR	B09B-EH-S
J6	6510002290	CONNECTOR	TL25P07V1
J7	6510003410	CONNECTOR	B05B-EH-S
J8	6510003400	CONNECTOR	B04B-EH-S
J9	6510003390	CONNECTOR	B03B-EH-S
J10	6510003390	CONNECTOR	B03B-EH-S
J11	6510003390	CONNECTOR	B03B-EH-S
J12	6910004740	CONNECTOR	IMSA-9202B-1-03T
J14	6510003470	CONNECTOR	B11B-EH-S
J15	6510003100	CONNECTOR	RT01T-1.3B
J16	6510003100	CONNECTOR	RT01T-1.3B
J17	6510003100	CONNECTOR	RT01T-1.3B
J18	6510003100	CONNECTOR	RT01T-1.3B

S.=Surface mount

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
J19	6510003100	CONNECTOR	RT01T-1.3B
J20	6510003100	CONNECTOR	RT01T-1.3B
J21	6510003100	CONNECTOR	RT01T-1.3B
J23	6510016760	CONNECTOR	FFC-12T10AMEP1
J24	6910003140	CONNECTOR	IMSA-9202B-1-02T
J25	6910003140	CONNECTOR	IMSA-9202B-1-02T
J26	6910003140	CONNECTOR	IMSA-9202B-1-02T
P1	6910003120	CONNECTOR	IMSA-9206H-T
P3	6910003120	CONNECTOR	IMSA-9206H-T
P4	6910003120	CONNECTOR	IMSA-9206H-T
P5	6910003120	CONNECTOR	IMSA-9206H-T
EP1	0910041364	PCB	B 4032D

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L10	6110001540	COIL	LA-234
L11	6200000300	S.COIL	MLF3216D R10M-T
L12	6200000300	S.COIL	MLF3216D R10M-T
R1	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R2	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R3	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R4	7030003260	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)
R5	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R7	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R8	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R9	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R10	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R11	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R12	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R13	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R14	7030003800	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R15	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R16	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R17	7030003290	S.RESISTOR	ERJ3GEYJ 560 V (56 Ω)
R18	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R19	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R20	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R21	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R22	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R23	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R24	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R25	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R26	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R27	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R28	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R29	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R30	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R31	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R32	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R33	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R34	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R35	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R36	7310000740	TRIMMER	RH0651CS3J2KA (472)
R37	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R38	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R39	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R40	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R41	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R42	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R43	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R44	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R45	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R46	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R47	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R48	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R49	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R50	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R51	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R52	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R53	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R54	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R55	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R56	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R57	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R58	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R59	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R60	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R61	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R62	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R63	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R64	7030003600	S.RESISTOR	ERJ3GEYJ 222 V (22 kΩ)
R65	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R66	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R67	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R69	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R71	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R72	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R73	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R74	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC2	1110001020	S.IC	MC3357DR
IC3	1130003650	S.IC	PLL2001S-ET
Q1	1580000540	S.FET	3SK131-T2-LA
Q2	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q3	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q4	1560000430	S.FET	2SK302-GR (TE85R)
Q5	1530002370	S.TRANSISTOR	2SC2714-O (TE85R)
Q6	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q7	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q8	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q9	1530002030	S.TRANSISTOR	2SC3772-3-TA
Q10	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q11	1510000500	S.TRANSISTOR	2SA1162-GR (TE85R)
Q12	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q13	1560000360	S.FET	2SK209-Y (TE85R)
D1	1790000640	S.VARICAP	MA363B(TX)
D2	1790000640	S.VARICAP	MA363B(TX)
D3	1790000640	S.VARICAP	MA363B(TX)
D4	1790000640	S.VARICAP	MA363B(TX)
D5	1750000070	S.DIODE	1SS226 (TE85R)
D6	1730000730	S.ZENER	RD6.2M-T2B2
D7	1790000490	S.DIODE	HSM88AS-TR
D8	1750000050	S.DIODE	1SS193 (TE85R)
D9	1790000450	S.DIODE	MA862(TX)
D10	1750000050	S.DIODE	1SS193 (TE85R)
D11	1750000050	S.DIODE	1SS193 (TE85R)
FI1	2010001710	XTAL	FL-210 UM-1 21.800MHZ
FI2	2020000120	CERAMIC	CFW455E
X1	6050009060	XTAL	CR-488 UM-1 21.345MHZ
X2	6070000010	DISCRI	CDB455C7A
X3	6050008640	XTAL	CR-448 12.800MHZ
L1	6150003820	COIL	LS-440
L2	6150003820	COIL	LS-440
L3	6150003820	COIL	LS-440
L4	6150003820	COIL	LS-440
L5	6140000930	COIL	LR-116
L6	6150002950	COIL	LS-304
L7	6150002730	COIL	LS-298
L8	6150002720	COIL	LS-297
L9	6110001540	COIL	LA-234

S.=Surface mount

## [PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R75	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R76	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R77	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R78	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R79	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R80	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R88	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R89	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R90	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R91	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R94	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 $\Omega$ )
R95	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 $\Omega$ )
C1	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C4	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C5	4030006560	S.CERAMIC	C1608 SL 1H 050C-T-A
C6	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C7	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C9	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C10	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C11	4030006540	S.CERAMIC	C1608 SL 1H 030C-T-A
C12	4030006540	S.CERAMIC	C1608 SL 1H 030C-T-A
C13	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C14	4030006540	S.CERAMIC	C1608 SL 1H 030C-T-A
C15	4030006510	S.CERAMIC	C1608 SL 1H 0R5C-T-A
C16	4030006530	S.CERAMIC	C1608 SL 1H 020C-T-A
C17	4030006540	S.CERAMIC	C1608 SL 1H 030C-T-A
C18	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C19	4030006570	S.CERAMIC	C1608 SL 1H 060D-T-A
C20	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C22	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C23	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C24	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C25	4030006590	S.CERAMIC	C1608 SL 1H 080D-T-A
C26	4030006710	S.CERAMIC	C1608 SL 1H 470J-T-A
C28	4510004990	ELECTROLITIC	16 MV 100 HC
C29	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C30	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C31	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C32	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C33	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C34	4030006560	S.CERAMIC	C1608 SL 1H 050C-T-A
C35	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A
C36	4030007110	S.CERAMIC	C1608 CH 1H 680J-T-A
C37	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C38	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C39	4030007120	S.CERAMIC	C1608 CH 1H 820J-T-A
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C41	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C42	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C43	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C44	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C45	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C46	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C47	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C48	4510004990	ELECTROLITIC	16 MV 100 HC
C49	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C51	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C52	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C53	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C54	4030006640	S.CERAMIC	C1608 SL 1H 180J-T-A
C55	4030006700	S.CERAMIC	C1608 SL 1H 390J-T-A
C56	4030006640	S.CERAMIC	C1608 SL 1H 180J-T-A
C57	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C58	4030006610	S.CERAMIC	C1608 SL 1H 100D-T-A
C59	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C60	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C61	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C62	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C63	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C64	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C65	4030006640	S.CERAMIC	C1608 SL 1H 180J-T-A

## [PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C66	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C68	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C69	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C70	4550003080	S.TANTALUM	TEMSVA 1A 335M-8L
C71	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C72	4550002120	TANTALUM	DN 1C 220M
C73	4550000270	S.TANTALUM	TESVA 1E 474M1-8L
C74	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C75	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C77	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C78	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C79	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C80	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C81	4030006860	S.CERAMIC	C1608 JF 1C 104Z-T-A
C85	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C86	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C87	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C88	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C89	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C90	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C91	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C92	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C93	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C94	4030006830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C95	4030006830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C96	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C97	4030006830	S.CERAMIC	C1608 JF 1C 104Z-T-A
C102	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
W1	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W2	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W3	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W4	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W5	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W6	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W7	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W8	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
J1	6510007020	CONNECTOR	TMP-J01X-V6
J2	6510007020	CONNECTOR	TMP-J01X-V6
J3	6510011770	CONNECTOR	HKP-12FD52
J5	6510003100	CONNECTOR	RT01T-1.3B
EP1	0910041743	PCB	B 4036C

## [VCO BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530000160	S.TRANSISTOR	2SC2712-Y (TE85RTEM)
Q2	1560000650	S.FET	2SK1577-2-T7
Q3	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q4	1560000650	S.FET	2SK1577-2-T7
Q5	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q6	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q7	1530002030	S.TRANSISTOR	2SC3772-3-TA
D1	1790000640	S.VARICAP	MA363B(TX)
D2	1790000640	S.VARICAP	MA363B(TX)
D3	1790000640	S.VARICAP	MA363B(TX)
D4	1790000640	S.VARICAP	MA363B(TX)
D5	1790000640	S.VARICAP	MA363B(TX)
D6	1790000640	S.VARICAP	MA363B(TX)
L1	6200000490	S.COIL	MLF3216A 3R9M-T
L2	6200000490	S.COIL	MLF3216A 3R9M-T
L3	6130002490	COIL	LB-275

S.=Surface mount

## [VCO BOARD]

REF. NO.	ORDER NO.	DESCRIPTION	
L4	6200000490	S.COIL	MLF3216A 3R9M-T
L5	6200000490	S.COIL	MLF3216A 3R9M-T
L6	6130002490	COIL	LB-275
L7	6200000490	S.COIL	MLF3216A 3R9M-T
L8	6200000380	S.COIL	MLF3216D R47M-T
R1	7030003850	S.RESISTOR	ERJ3GEYJ 563 V (56 k $\Omega$ )
R2	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R3	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 k $\Omega$ )
R4	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R5	7030002280	S.RESISTOR	MCR03EZJH 10 k $\Omega$ (103)
R6	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 k $\Omega$ )
R7	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 k $\Omega$ )
R8	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 k $\Omega$ )
R9	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R10	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 $\Omega$ )
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R12	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 k $\Omega$ )
R13	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
C1	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C2	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C3	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C4	4550006250	S.TANTALUM	TEMSVA 1A 106M-8L
C5	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C6	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C7	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C8	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C9	4030006850	S.CERAMIC	C1608 CH 1H 240J-T-A
C10	4030006950	S.CERAMIC	C1608 CH 1H 040C-T-A
C11	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C12	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C13	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C14	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C15	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C16	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C17	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C18	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C19	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C20	4030007040	S.CERAMIC	C1608 CH 1H 180J-T-A
C22	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C23	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C24	4030009520	S.CERAMIC	C1608 CH 1H 020B-T-A
C25	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C26	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C27	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T-A
C28	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C29	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C30	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C31	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C32	4030006890	S.CERAMIC	C1608 SL 1H 330J-T-A
C33	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C34	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
J1	6510008360	CONNECTOR	3022-03B
J2	6510007040	CONNECTOR	3022-04B
EP1	0910041732	PCB	B 4131B

## [PA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1150000460	IC	SC1038
IC2	1110002210	S.IC	TA75358CF(TP1)
IC3	1110002210	S.IC	TA75358CF(TP1)
Q1	1530002240	S.TRANSISTOR	2SC3775-3-TA
Q2	1530002340	S.TRANSISTOR	2SC2954-T2B
Q3	1520000290	TRANSISTOR	2SB1015-Y
Q4	1590000420	S.TRANSISTOR	RN1404 (TE85R)
Q5	1510000500	S.TRANSISTOR	2SA1162-GR (TE85R)
Q6	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
Q7	1530001950	S.TRANSISTOR	2SC2712-GR (TE85R)
D1	1710000290	DIODE	MI308
D2	1710000290	DIODE	MI308
D3	1710000290	DIODE	MI308
D4	1790000490	S.DIODE	HSM88AS-TR
D5	1790000690	S.DIODE	HSM88ASR-TR
D6	1720000360	S.DIODE	HSU88TRF
D7	1750000050	S.DIODE	1SS193 (TE85R)
D8	1750000060	S.DIODE	1SS196 (TE85R)
L1	6110001680	COIL	LA-254
L2	6140001070	COIL	LR-132
L3	6110001680	COIL	LA-254
L4	6110001740	COIL	LA-263
L5	6110001550	COIL	LA-235
L6	6110001540	COIL	LA-234
L8	6170000180	COIL	LW-19
L9	6110001580	COIL	LA-236
L10	6110001580	COIL	LA-236
R1	7030001130	S.RESISTOR	MCR50JZHJ 100 $\Omega$ (101)
R3	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R4	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R5	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R6	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 k $\Omega$ )
R7	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 k $\Omega$ )
R8	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 k $\Omega$ )
R9	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R10	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R11	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R12	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R13	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R14	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 k $\Omega$ )
R15	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 k $\Omega$ )
R16	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R17	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R18	7310000750	TRIMMER	RH0651C14J2WA (103)
R20	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R21	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 k $\Omega$ )
R22	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R23	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 $\Omega$ )
R24	7030001130	S.RESISTOR	MCR50JZHJ 100 $\Omega$ (101)
R26	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R27	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 $\Omega$ )
R28	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 k $\Omega$ )
R29	7030001010	S.RESISTOR	MCR50JZHJ 10 $\Omega$ (100)
R30	7030001010	S.RESISTOR	MCR50JZHJ 10 $\Omega$ (100)
R31	7310000710	TRIMMER	RH0651C13J1YA (102)
R32	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 $\Omega$ )
R33	7310000780	TRIMMER	RH0651CS4J25A (473)
R34	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R35	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R36	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R37	7030003580	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R38	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 k $\Omega$ )
R39	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 k $\Omega$ )
R40	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 k $\Omega$ )
R41	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 k $\Omega$ )
R42	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 k $\Omega$ )
R43	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 k $\Omega$ )
R44	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 k $\Omega$ )

S.=Surface mount

## [PA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C15	4010003840	CERAMIC	DD06 SL 070D 500V
C16	4010003850	CERAMIC	DD06 SL 080D 500V
C17	4010003880	CERAMIC	DD06 SL 150K 500V
C18	4010003770	CERAMIC	DD06 SL 0R5C 500V
C19	4010003880	CERAMIC	DD06 SL 150K 500V
C20	4010003940	CERAMIC	DD06 SL 300K 500V
C21	4010003880	CERAMIC	DD06 SL 150K 500V
C22	4010004120	CERAMIC	DD07 B 102K 500V
C23	4010003910	CERAMIC	DD06 SL 220K 500V
C24	4030006660	S.CERAMIC	C1608 SL 1H 220J-T-A
C25	4030006590	S.CERAMIC	C1608 SL 1H 080D-T-A
C26	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C27	4610000140	TRIMMER	CV05E5001
C28	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C29	4030006870	S.CERAMIC	C1608 JB 1H 222K-T-A
C30	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C31	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C32	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C33	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C34	4030006710	S.CERAMIC	C1608 SL 1H 470J-T-A
C35	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C36	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C37	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C38	4030006660	S.CERAMIC	C1608 SL 1H 220J-T-A
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C41	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C42	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C43	4030006630	S.CERAMIC	C1608 SL 1H 150J-T-A
C44	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C45	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C46	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C47	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C48	4510003900	ELECTROLITIC	16 MV 22 HW
C49	4030006850	S.CERAMIC	C1608 JB 1H 471K-T-A
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C51	4510003900	ELECTROLITIC	16 MV 22 HW
C52	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C53	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C54	4030006890	S.CERAMIC	C1608 JF 1H 103Z-T-A
C55	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C56	4510004830	ELECTROLITIC	50 MV 1 NPDW
C57	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C58	4510004020	ELECTROLITIC	50 MV 3R3 HW
W1	8900004720	CABLE	OPC-458
W2	8900004720	CABLE	OPC-458
W7	7120000380	JUMPER	JPW 01 R-01
J1	6510003100	CONNECTOR	RT01T-1.3B
EP1	0910041373	PCB	B 4033C

## [FRONT PART]

REF. NO.	ORDER NO.	DESCRIPTION	
SP1	2510000190	SPEAKER	66F09N-4 8 Ω

S.=Surface mount

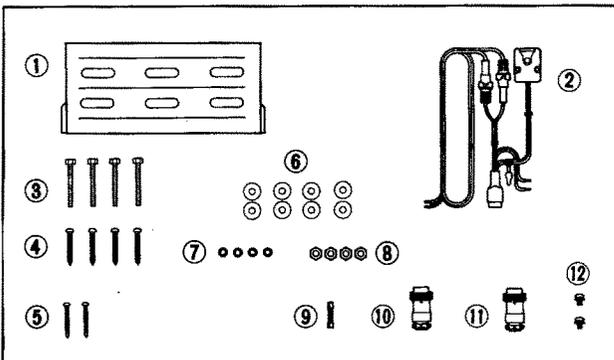
**SECTION 6 MECHANICAL PARTS AND DISASSEMBLY**

**• CHASSIS PARTS**

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8610007960	Knob N189 (black)	2	⑱	8810002950	Screw BiH M3×6 SUS	6
	8610007980	Knob N189 (A) (white)		⑲	8930024350	1209 LCD cover	1
②	8610007970	Knob N190 (black)	1	⑳	8310026880	1209 mask film	1
	8610007990	Knob N190 (A) (white)		㉑	5030001080	LCD FTD-12724AAPH	1
③	8210010790	1209 front panel (D) (incl. window plate) (U.S.A. black)	1	㉒	8010012380	1209 reflector	1
	8210010800	1209 front panel (E) (incl. window plate) (U.S.A. white)		㉓	8930024770	1209 LCD filter	1
	8210010960	1209 front panel (F) (incl. window plate) (Italy version)		㉔	8810003360	Setscrew C M3×6	18
④	2510000190	Speaker 66F09N-4 8 ohm	1	㉕	8930015610	Front seal	1
⑤	8930030900	1209 front rubber (D) (U.S.A. version)	1	㉖	8930030770	1428 clip	3
	8930033140	1209 front rubber (G) (Italy version)		㉗	8410001920	1428 MAIN heatsink	1
⑥	8930024360	1209 rubber seal	1	㉘	8810000210	Screw PH M3×4	6
⑦	8010012390	1209 sub reflector	1	㉙	8930031110	Feed through AS-314	1
⑧	8810001680	Screw M3×6	9	㉚	8900004740	Cable OPC-460 [DC POWER]	1
⑨	8010012440	1209 sub chassis	1	㉛	8930003000	Rear seal	1
⑩	8810000230	Screw PH M3×6	4	㉜	8810004560	Setscrew C M3×16 SUS	2
⑪	8810002170	Screw FH M3×6	4	㉝	8900004710	Cable OPC-457 [DSC]	1
⑫	8930025110	1209 SP sponge	1	㉞	8900004700	Cable OPC-456 [HAILER/INTERCOM]	1
⑬	7210001360	Variable resistor RK097111004NA (10KB) [SQUELCH] (incl. nut, washer)	1	㉟	8810006300	Setscrew C M3×8 SUS	4
⑭	7210001190	Variable resistor RK0971112001A (10KA) [VOLUME/PWR] (incl. nut, washer)	1	㊱	6510016640	Connector M-Rectangle 4 [ANTENNA]	1
⑮	2250000020	Encoder SRB18100 25KC [CHANNEL] (incl. nut, washer)	1	㊲	8930030760	1428 ANT rubber	1
⑯	7700001420	Microphone EM-82 (M204D40I0823) (black)	1	㊳	8410001910	1428 heatsink	1
	7700001430	Microphone EM-83 (M204D40I0824) (white)		㊴	8930030780	1428 module holder	1
⑰	8010013011	Case (A)-1 (black)	1	㊵	8510008800	1428 VCO case	1
	8010002501	Case-1 (white)		㊶	8810003370	Setscrew C M3×8	1
				㊷	8510008780	1428 C-shield plate (Italy version only)	1
				㊸	8810001280	Screw PH B1 M2.6×6 (Italy version only)	12
				㊹	8510008760	1428 A-shield plate (Italy version only)	1

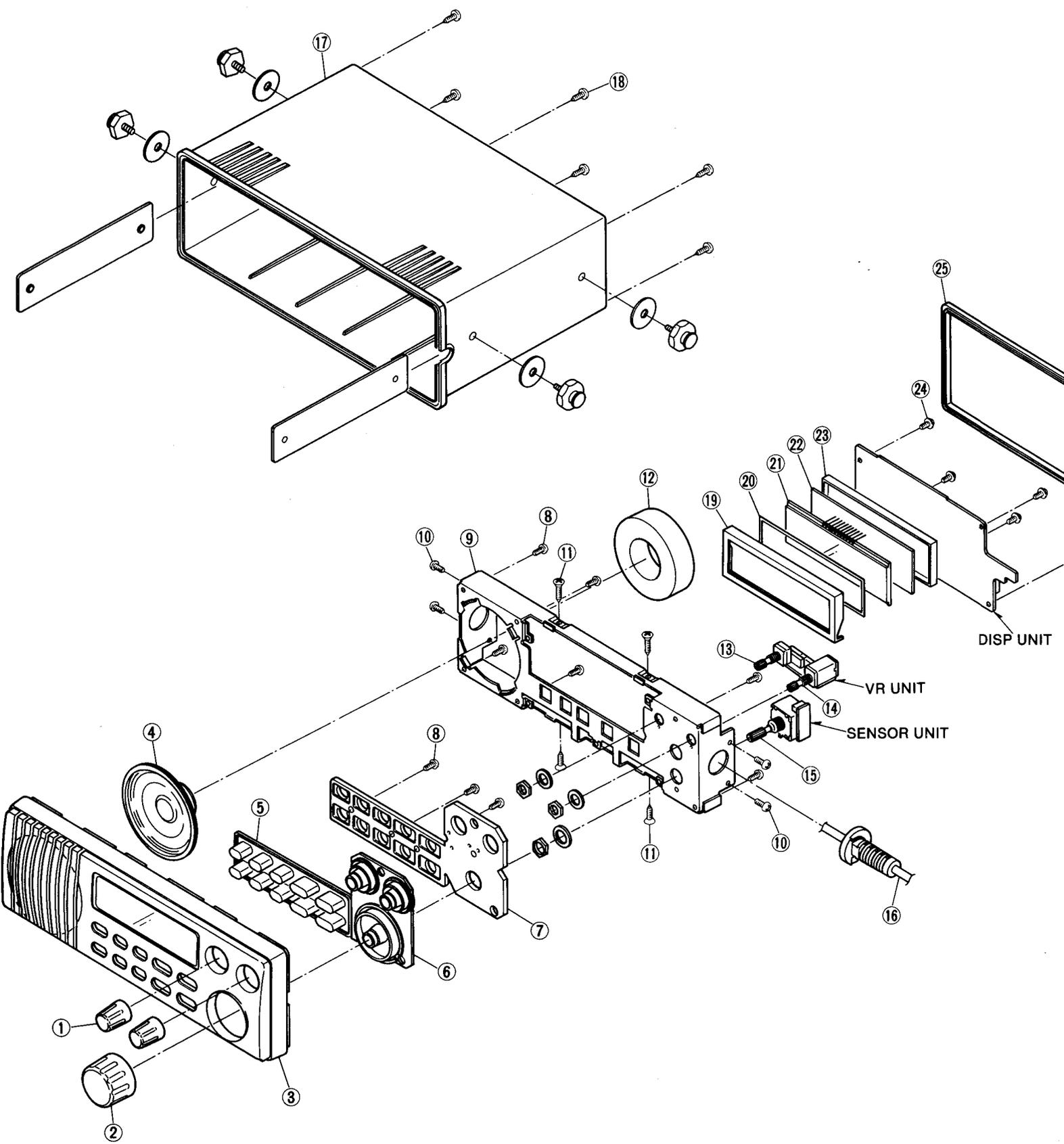
**Screw abbreviations** B1: Self-tapping PH: Pan head FH: Flat head BiH: Binding head SUS: Stainless

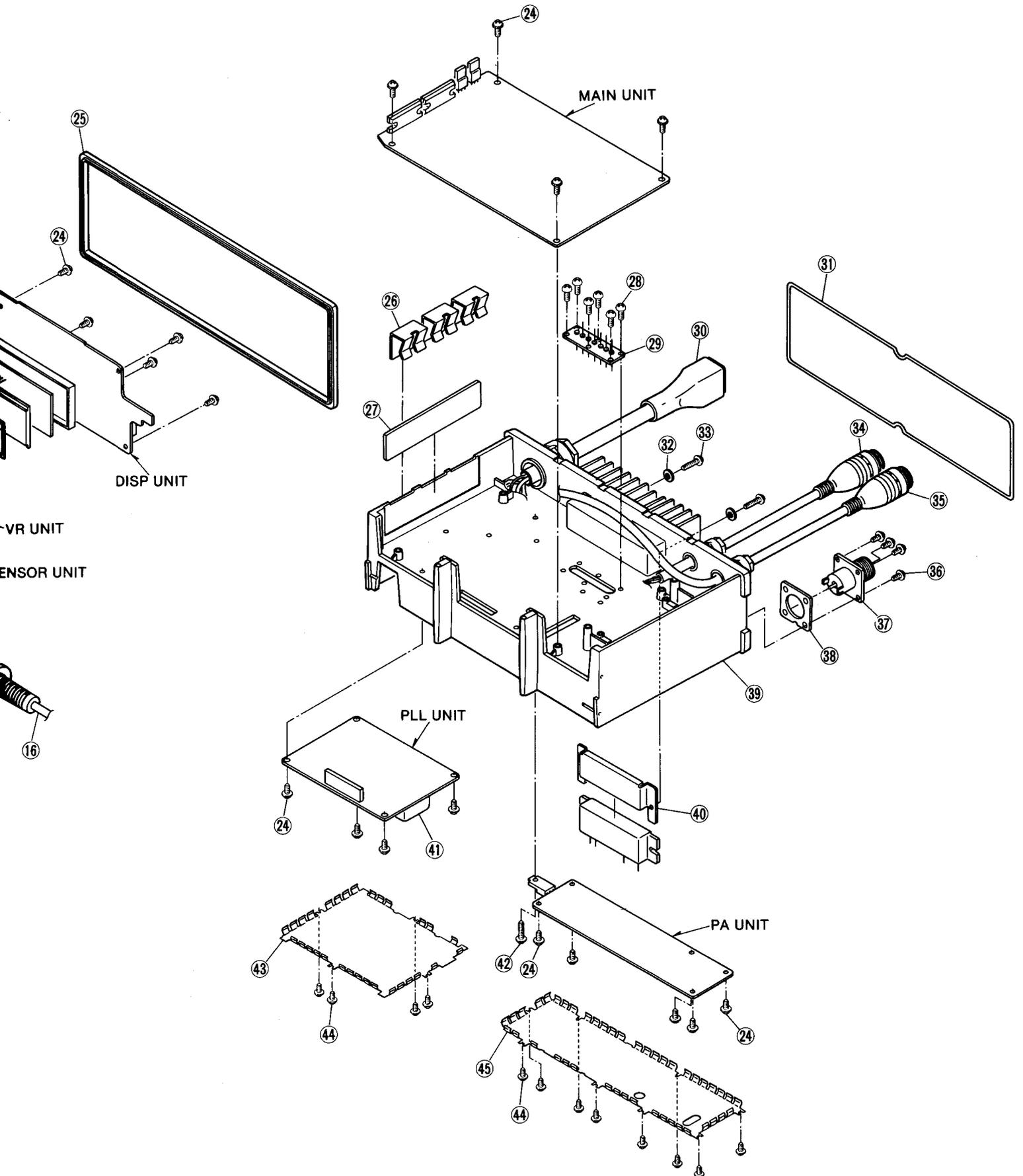
**• ACCESSORIES**



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8010003671	Mounting bracket-1 (black)	1
	8010003641	Mounting bracket -1 (white)	
②	8900002950	DC power cable OPC-291 (with microphone hanger) (black)	1
	8900002960	DC power cable OPC-291A (with microphone hanger) (white)	
③	8810003500	Mounting bolt M6×50 SUS	4
④	8810001500	Mounting screw PH A M6×30 SUS	4
⑤	8810001470	Microphone hanger screw PH A M3.5×30 SUS	2
⑥	8850000200	Flat washer M6 (6×20×1.5) SUS	8
⑦	8850000510	Spring washer M6 SUS	4
⑧	8830000260	Nut M6 SUS	4
⑨	5210000070	Fuse FGB 10A	1
⑩	6510007740	ACC connector NS1008 8P	1
⑪	6510016650	ACC connector NS1007 7P	1
⑫	8810003360	Setscrew C M3×6 (for scrambler unit installation)	2

**Screw abbreviations** PH: Pan head SUS: Stainless

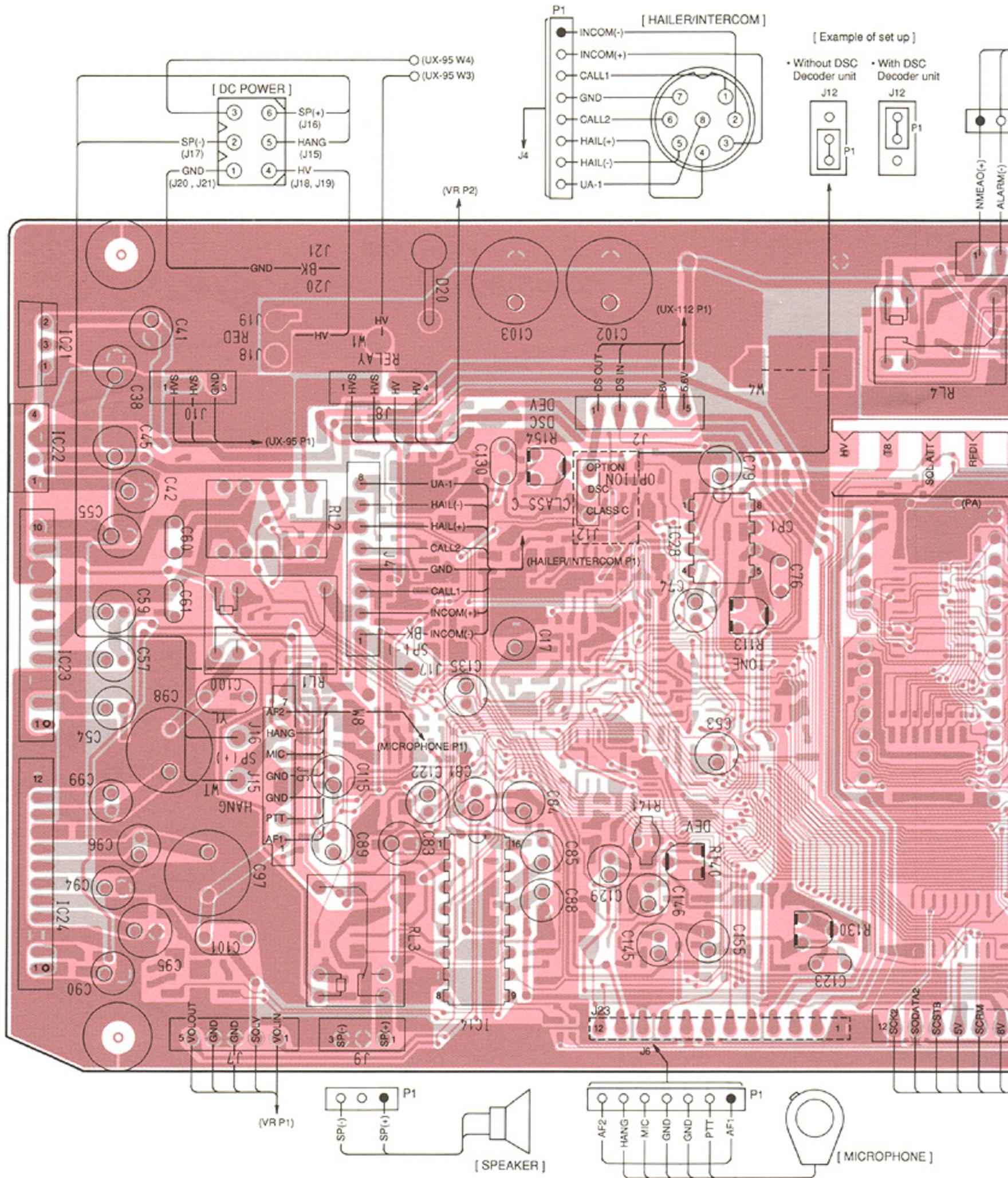




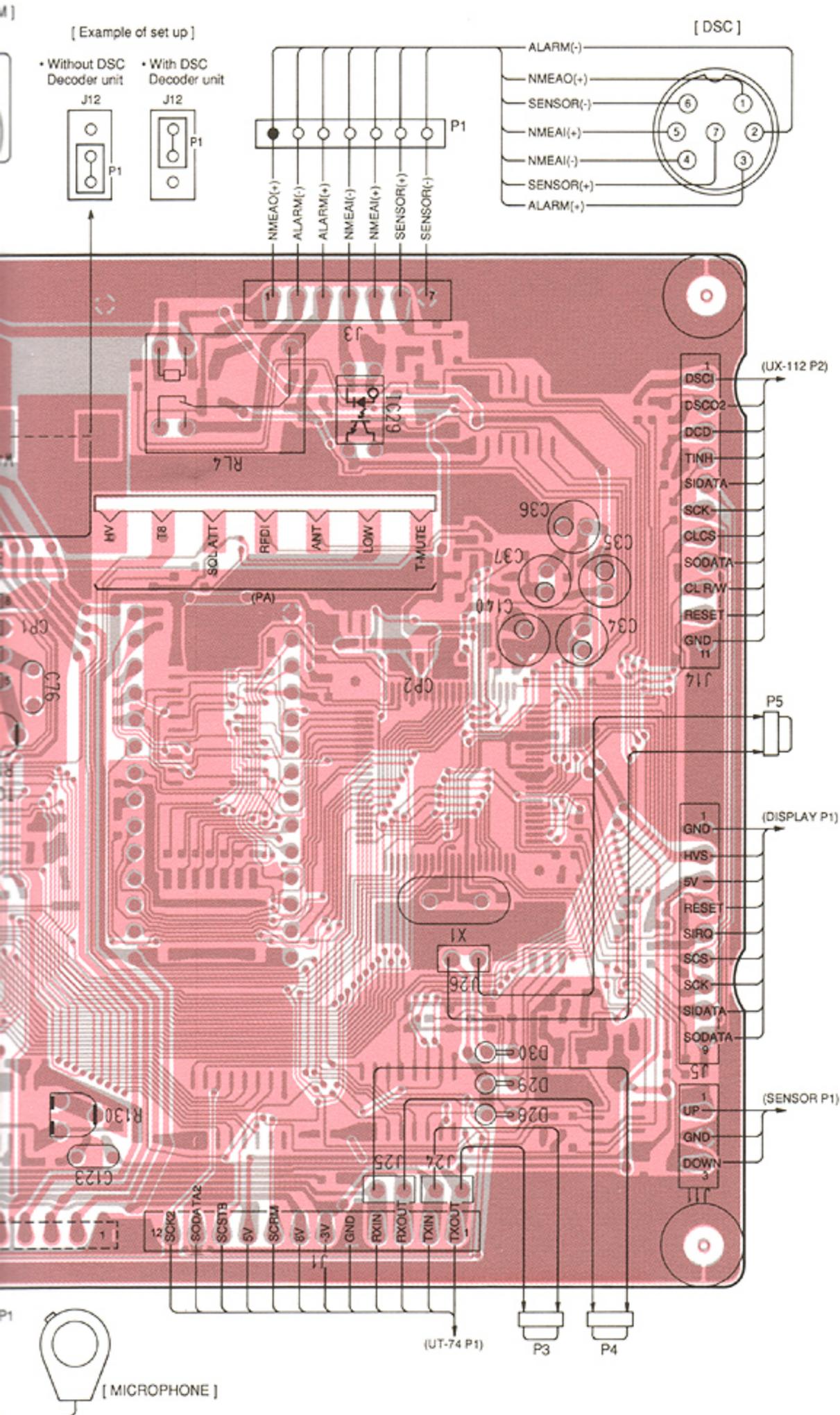
# SECTION 7 BOARD LAYOUTS

## 7-1 MAIN UNIT

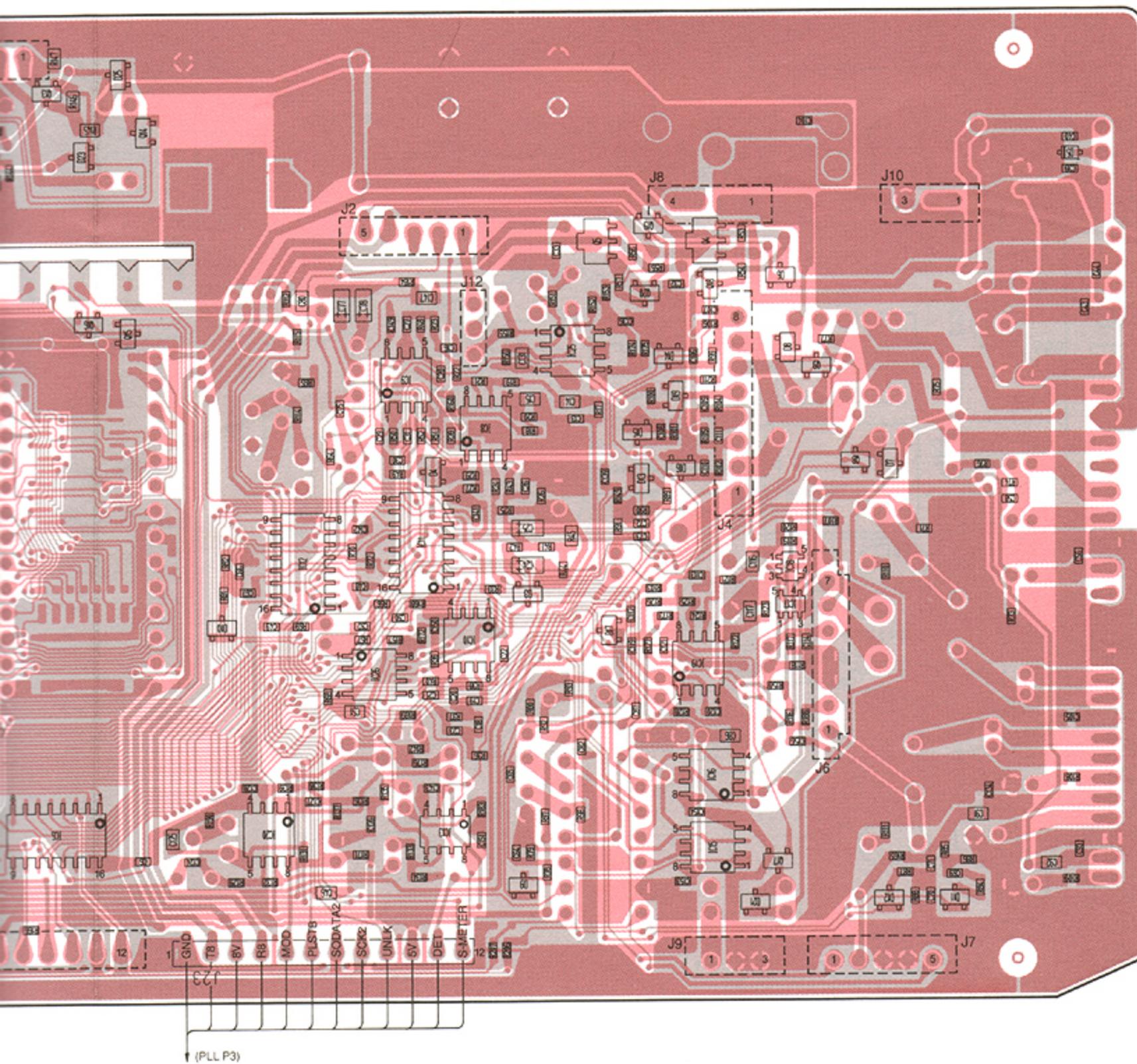
### • MAIN UNIT



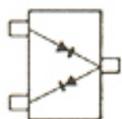
The combination of this page and the next page show the unit layout in the same configuration as the actual P.C. Board.





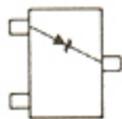


**1SS226**  
(Symbol: C3)



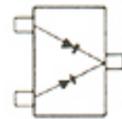
D9, D10, D11, D12,  
D13, D27

**RD6.2M B2**  
(Symbol: 622)



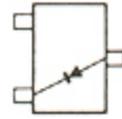
D14, D15, D16, D17

**1SS184**  
(Symbol: B3)



D19

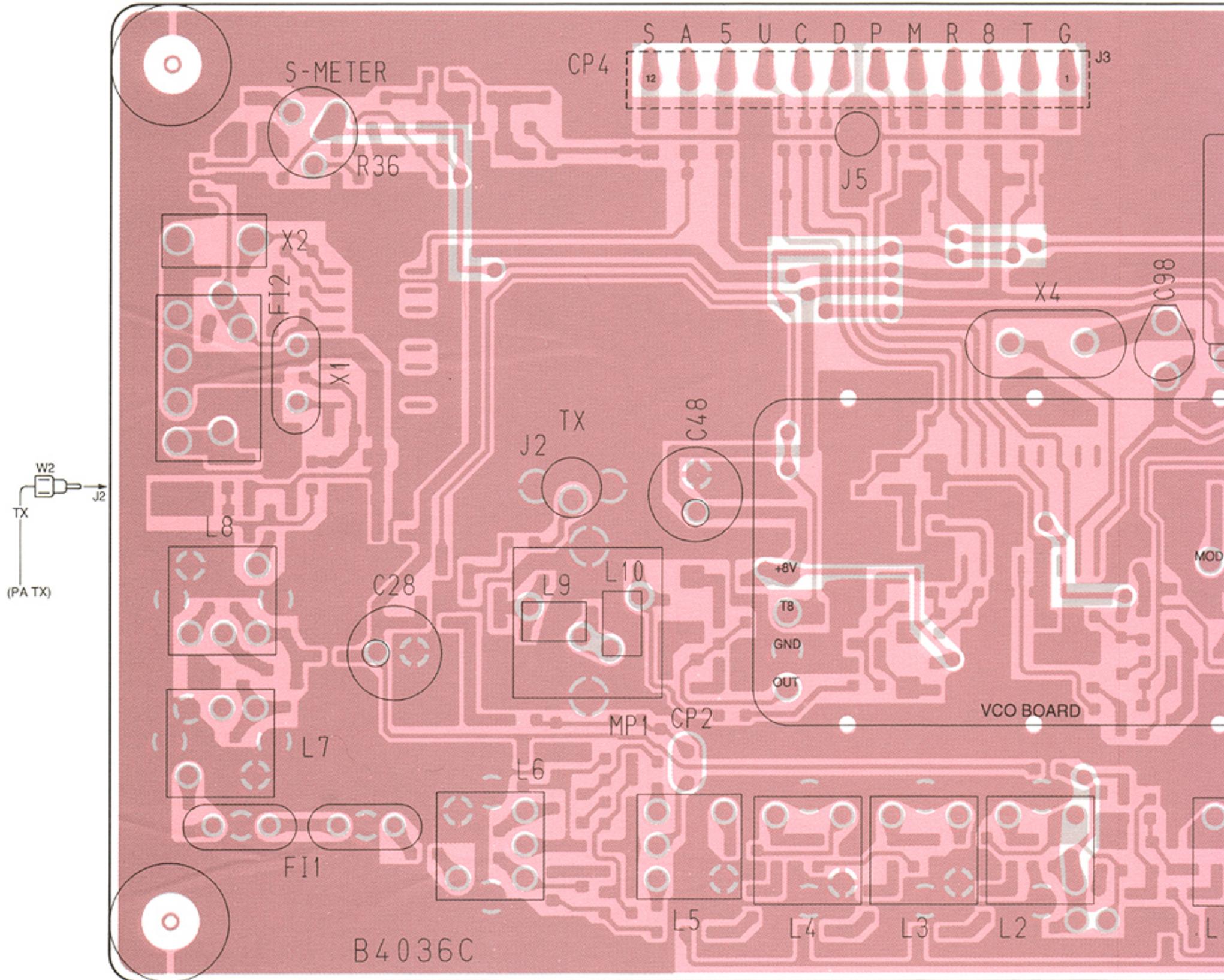
**1SS190**  
(Symbol: E3)



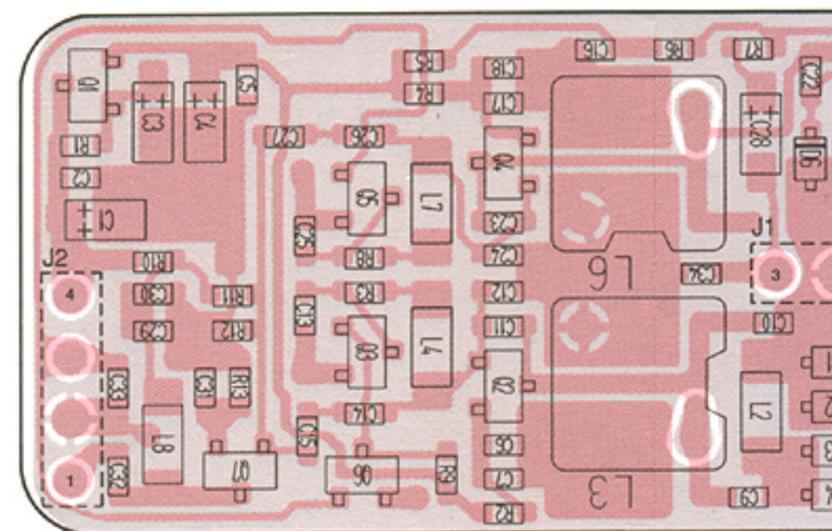
D21

## 7-2 PLL UNIT

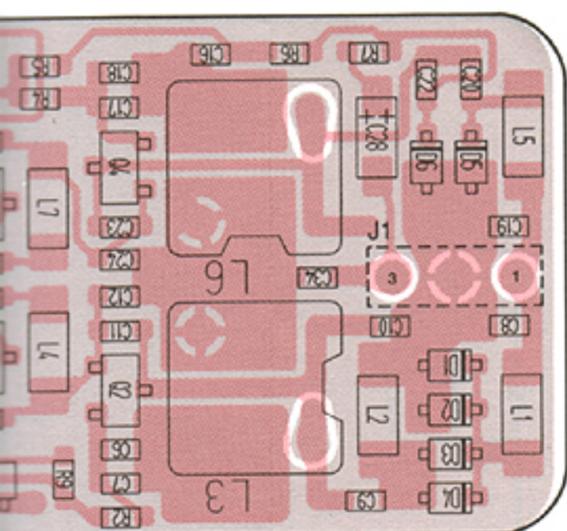
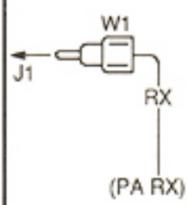
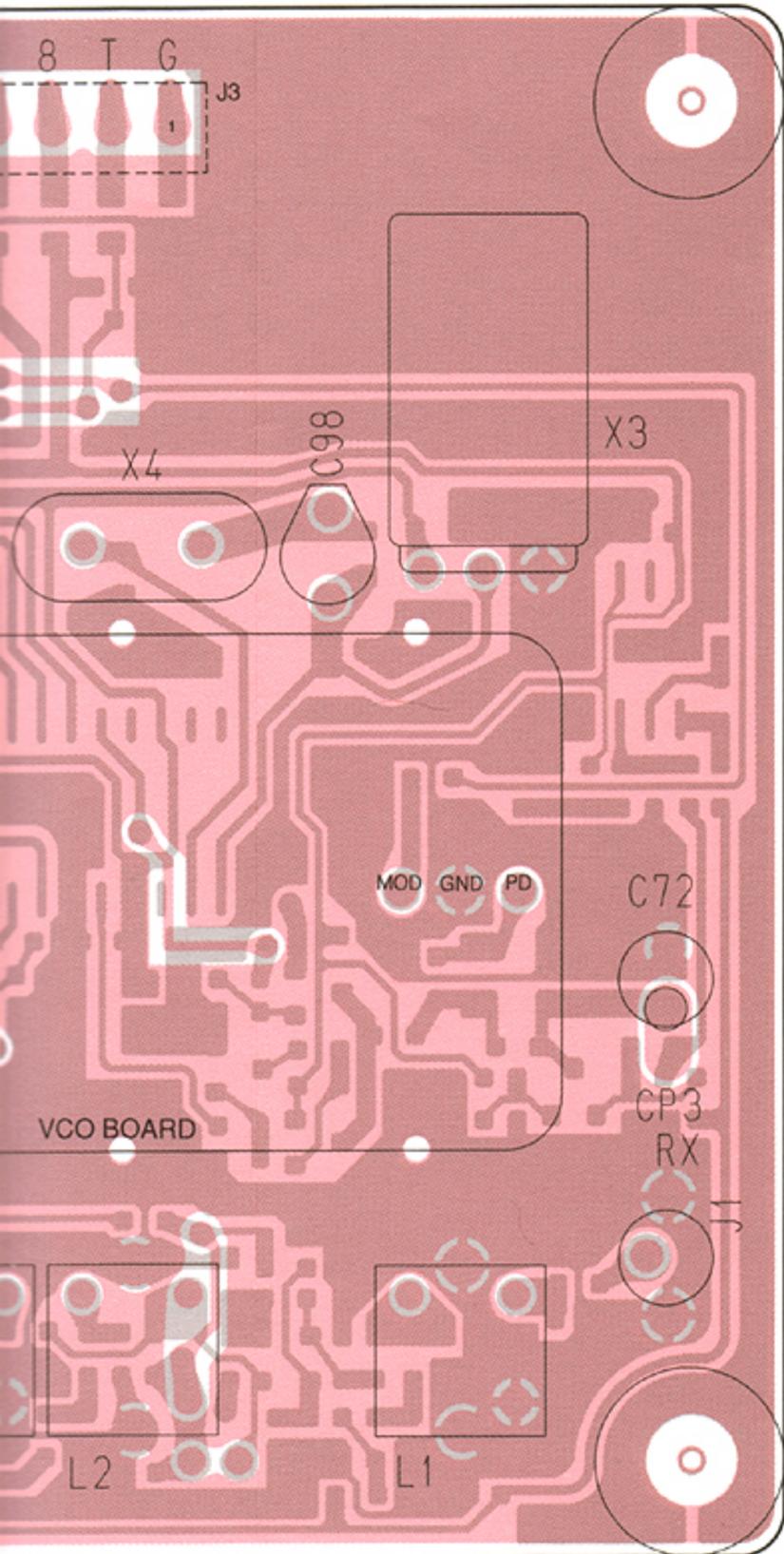
### • PLL UNIT



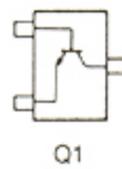
### • VCO BOARD



The combination of this page and the next page show the unit layout in the same configuration as the actual P.C. Board.

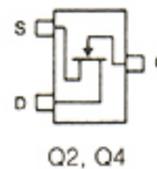


**2SC2712 Y**  
(Symbol: LY)



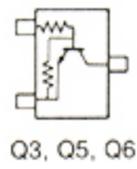
Q1

**2SK1577 2**  
(Symbol: P2)



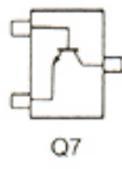
Q2, Q4

**RN1404**  
(Symbol: XD)



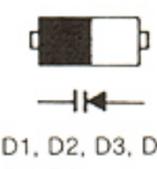
Q3, Q5, Q6

**2SC3772 3**  
(Symbol: LY3)



Q7

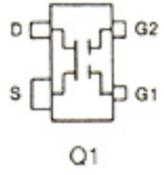
**MA363B**  
(Symbol: 6D)



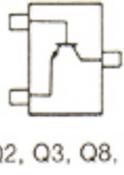
D1, D2, D3, D4, D5, D6

• PLL UNIT

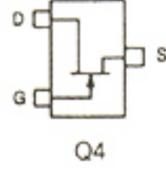
**3SK131 LA**  
(Symbol: V12)



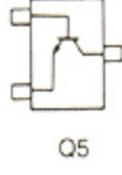
**2SC3772 3**  
(Symbol: LY3)



**2SK302 GR**  
(Symbol: TG)



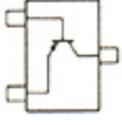
**2SC2714 O**  
(Symbol: QO)



**2SC2712 GR**  
(Symbol: LG)



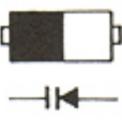
**2SA1162 GR**  
(Symbol: SG)



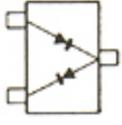
**2SK209 Y**  
(Symbol: XY)



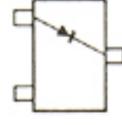
**MA363B**  
(Symbol: 6D)



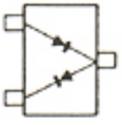
**1SS226**  
(Symbol: C3)



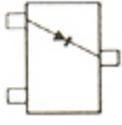
**RD6.2M B2**  
(Symbol: 622)



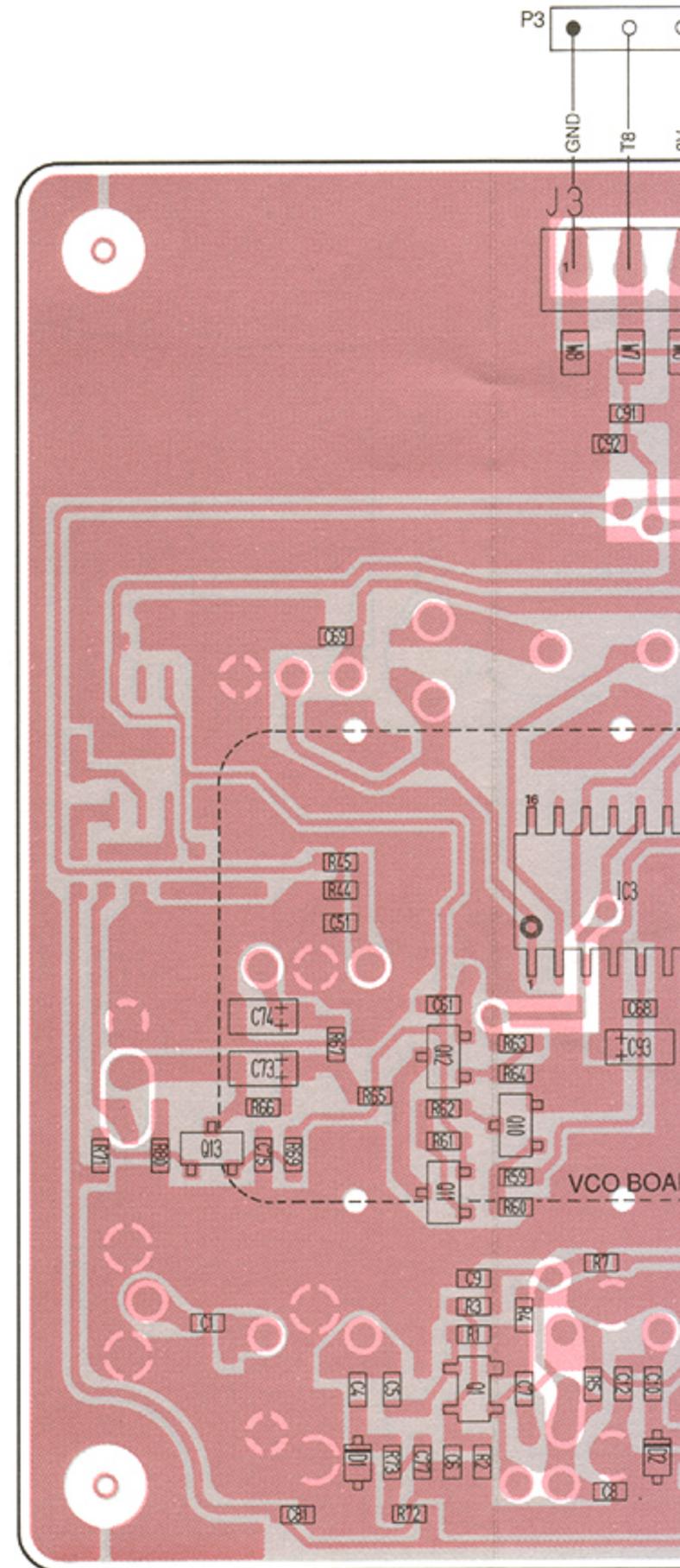
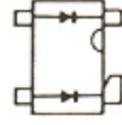
**HSM88AS**  
(Symbol: C1)



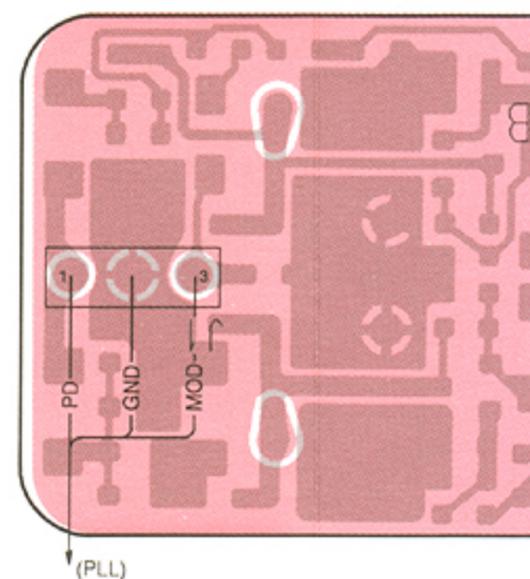
**1SS193**  
(Symbol: F3)

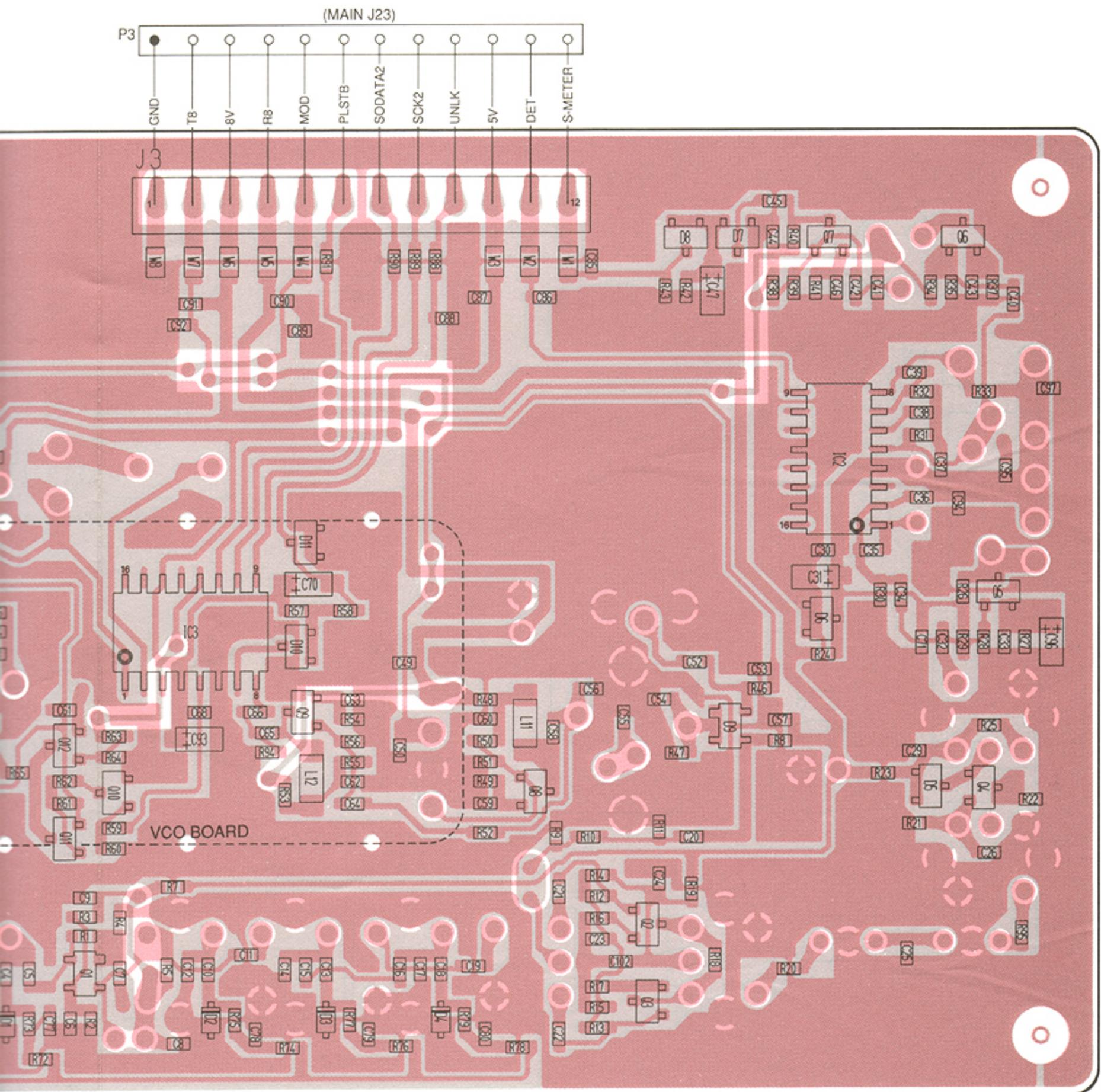


**MA862**  
(Symbol: M11)

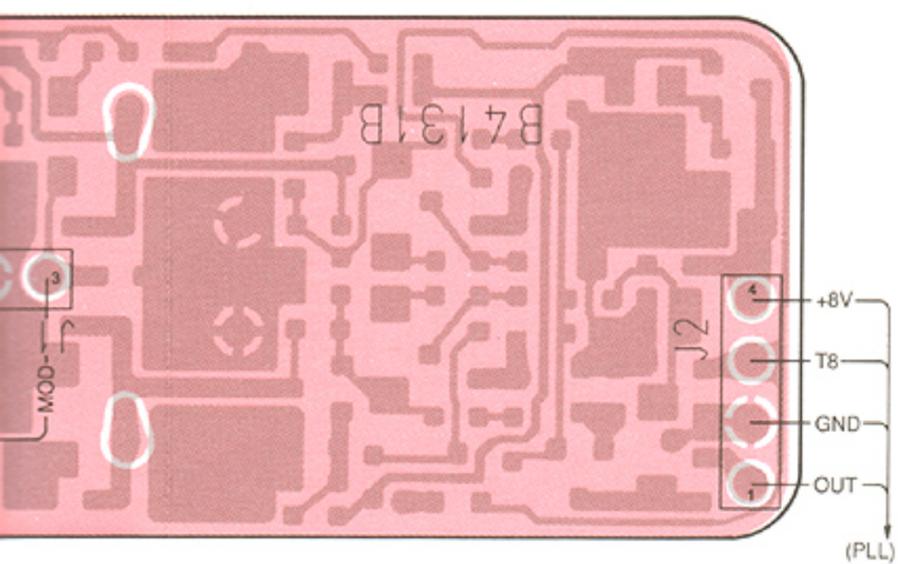


• VCO BOARD





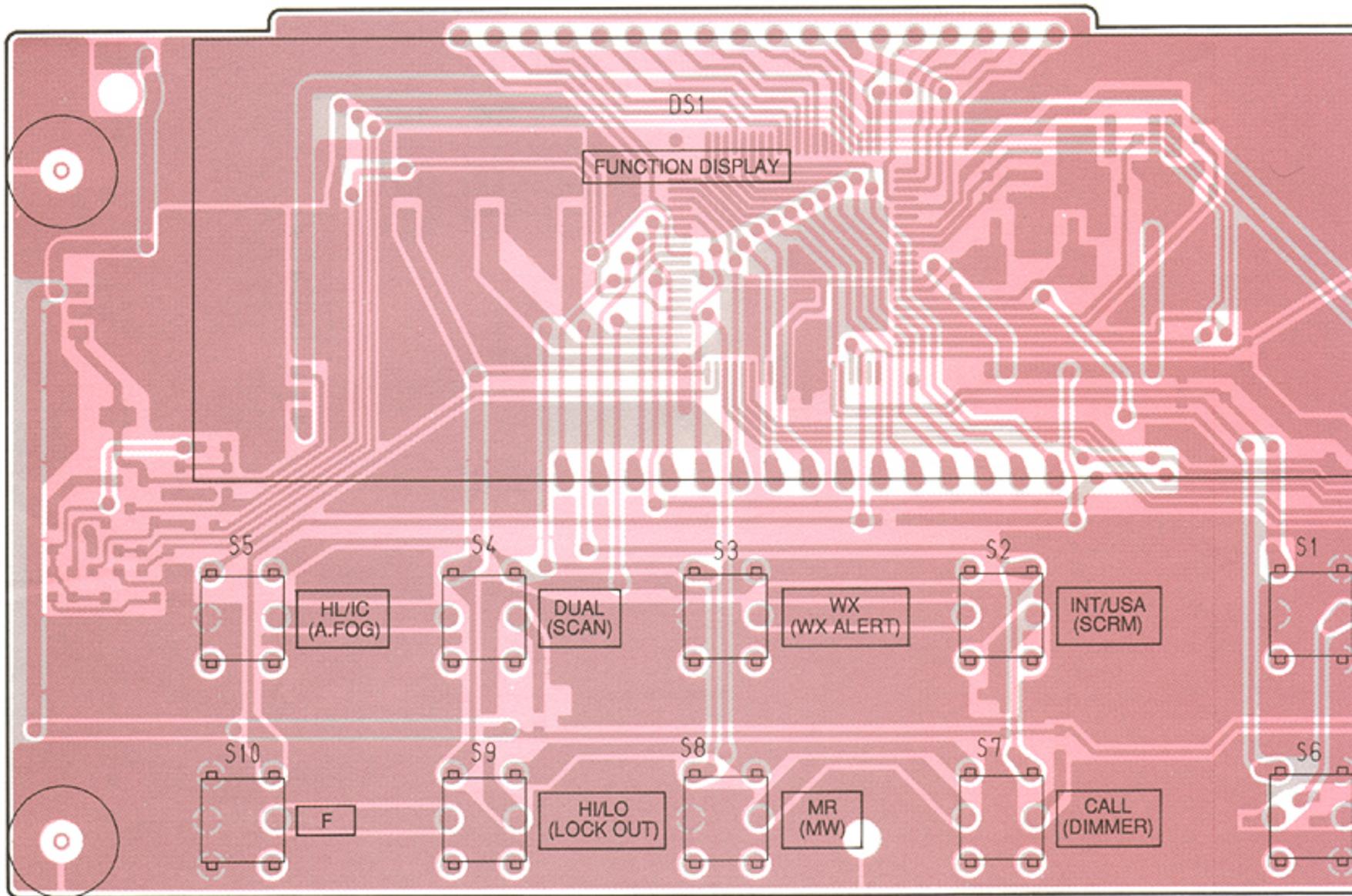
BOARD



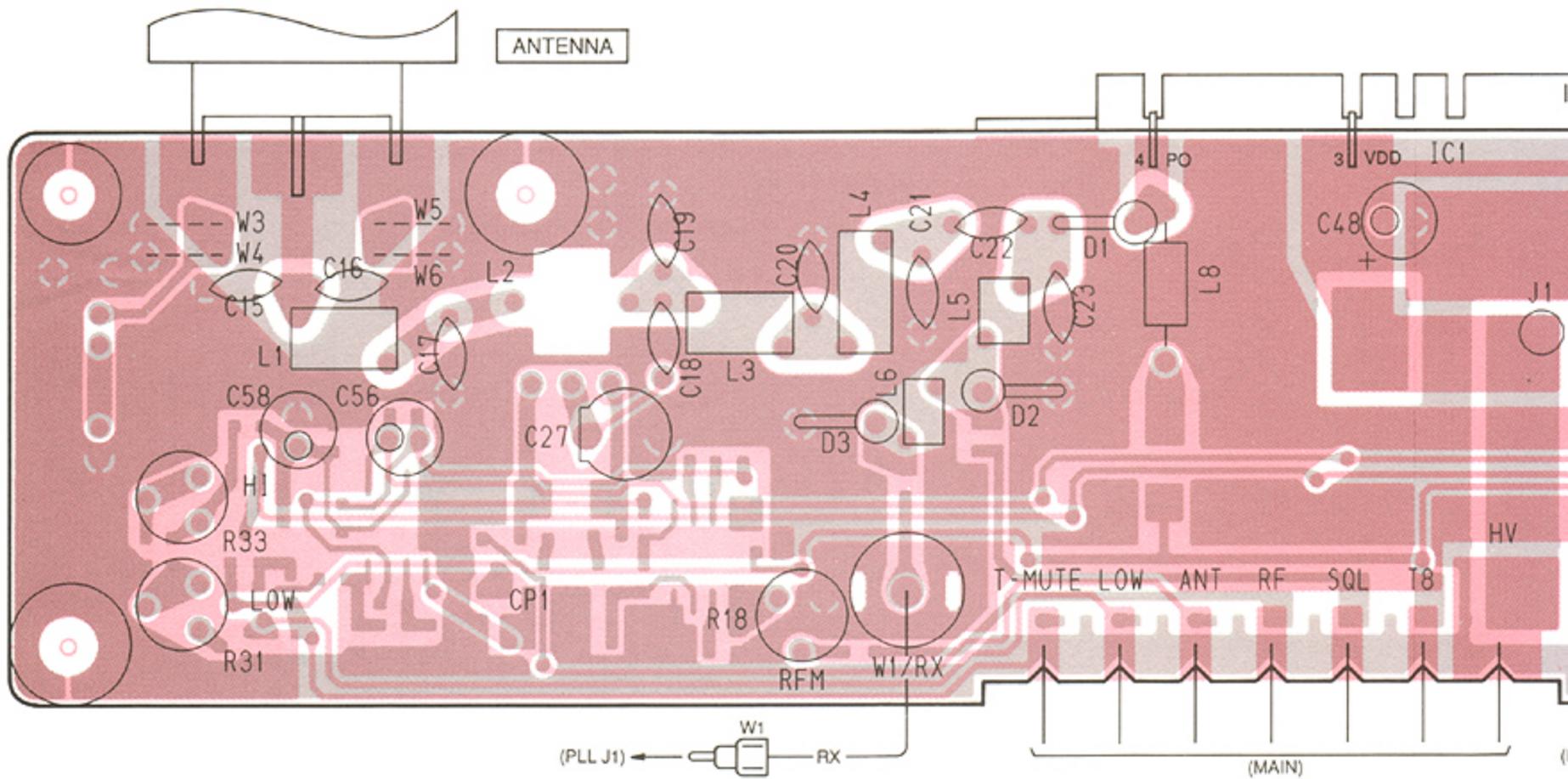
The  
the  
P.O.

### 7-3 DISP AND PA UNITS

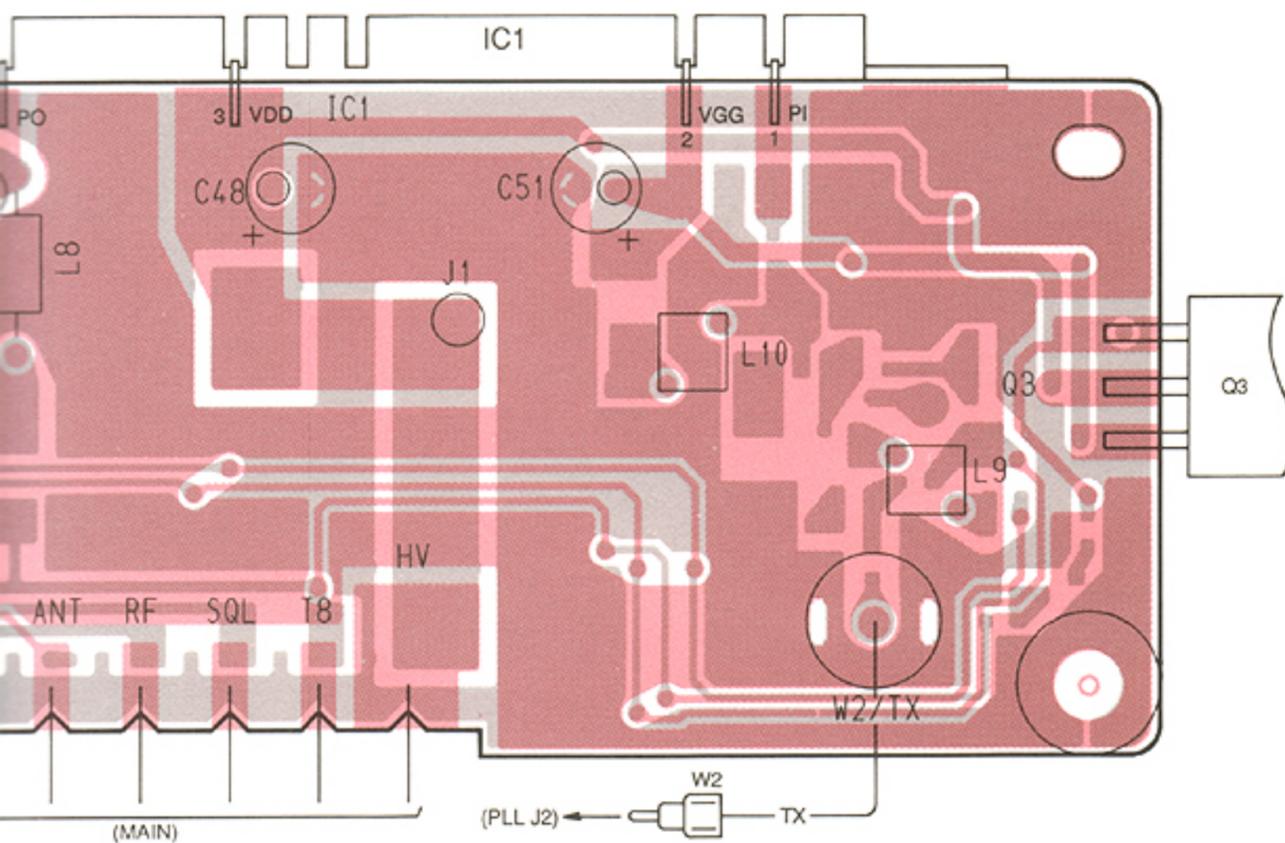
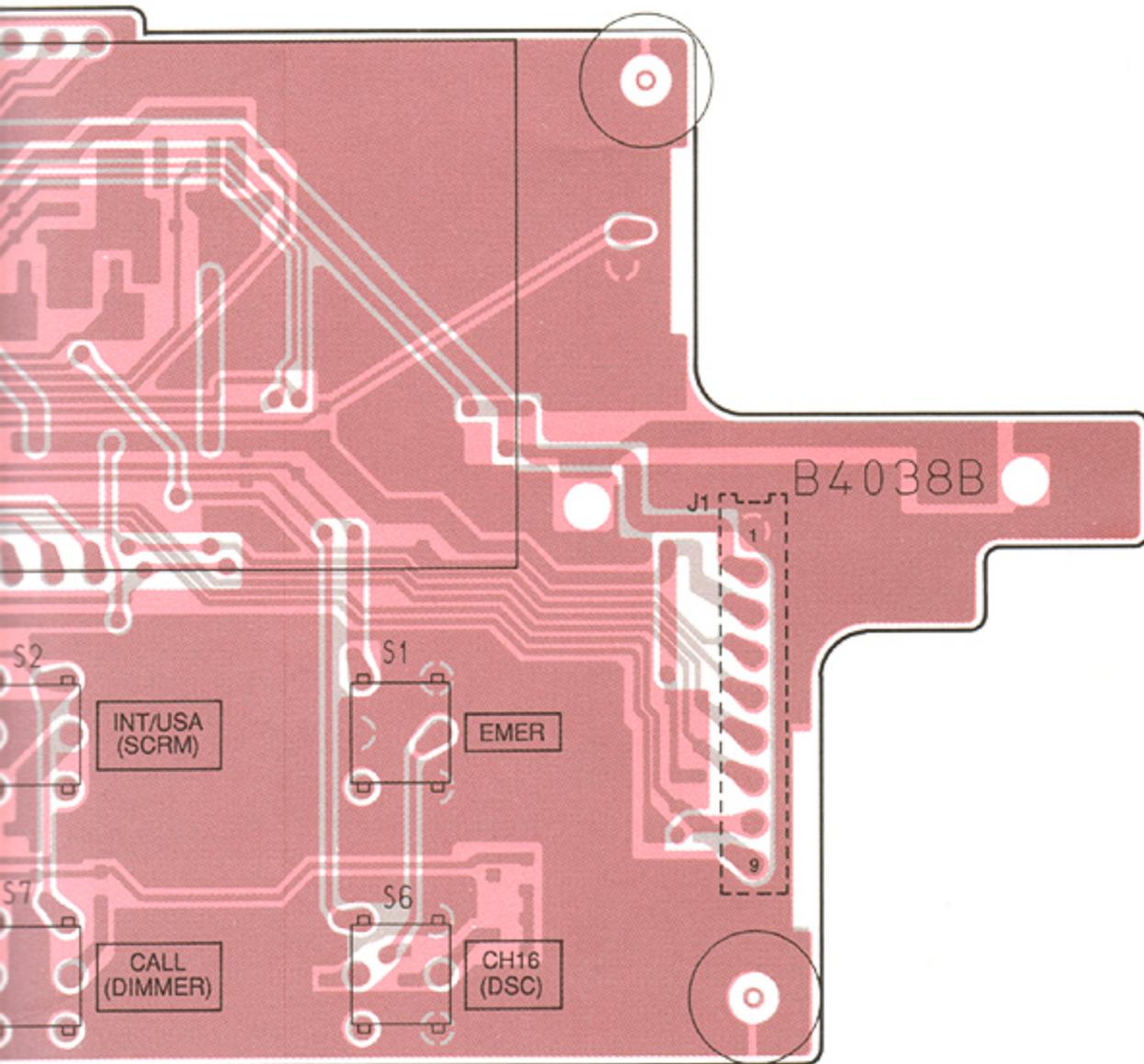
#### • DISP UNIT



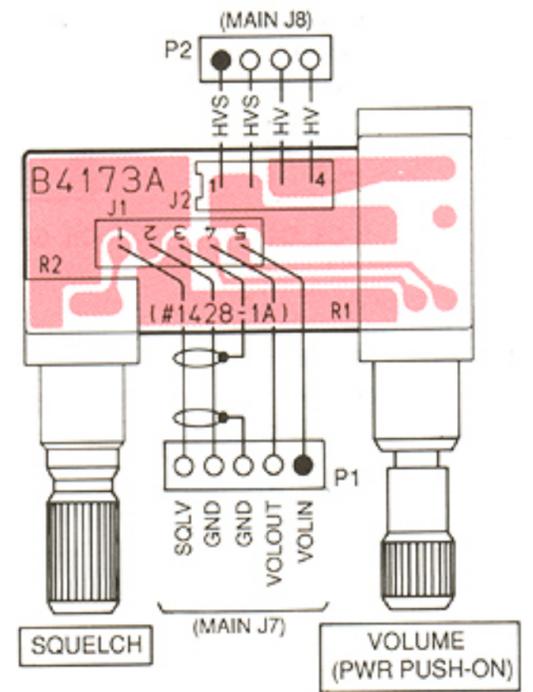
#### • PA UNIT



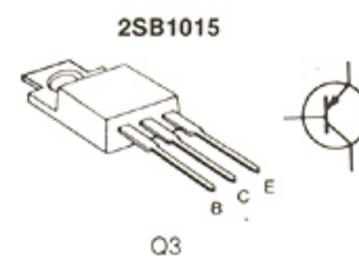
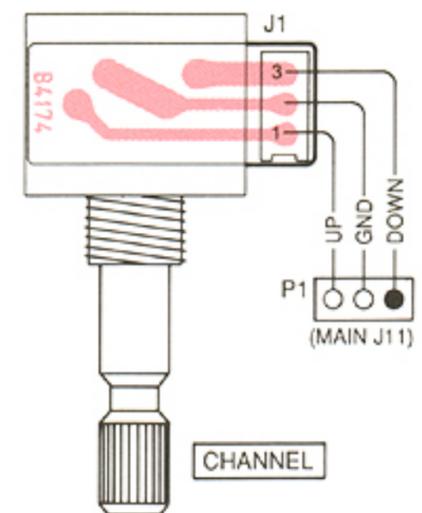
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• VR UNIT

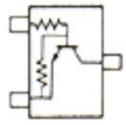


• SENSOR UNIT



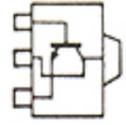
• DISP UNIT

**RN1404**  
(Symbol: XD)



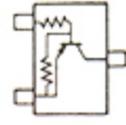
Q1, Q2, Q7

**2SD999 CK**  
(Symbol: CK)



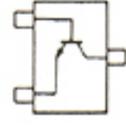
Q3, Q4

**RN2404**  
(Symbol: YD)



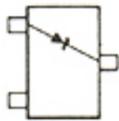
Q5, Q6

**2SC2712 Y**  
(Symbol: LY)



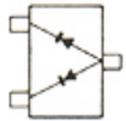
Q8

**RD11M B1**  
(Symbol: 111)



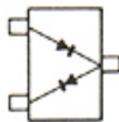
D1

**1SS181**  
(Symbol: A3)



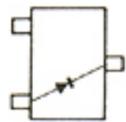
D2

**1SS226**  
(Symbol: C3)

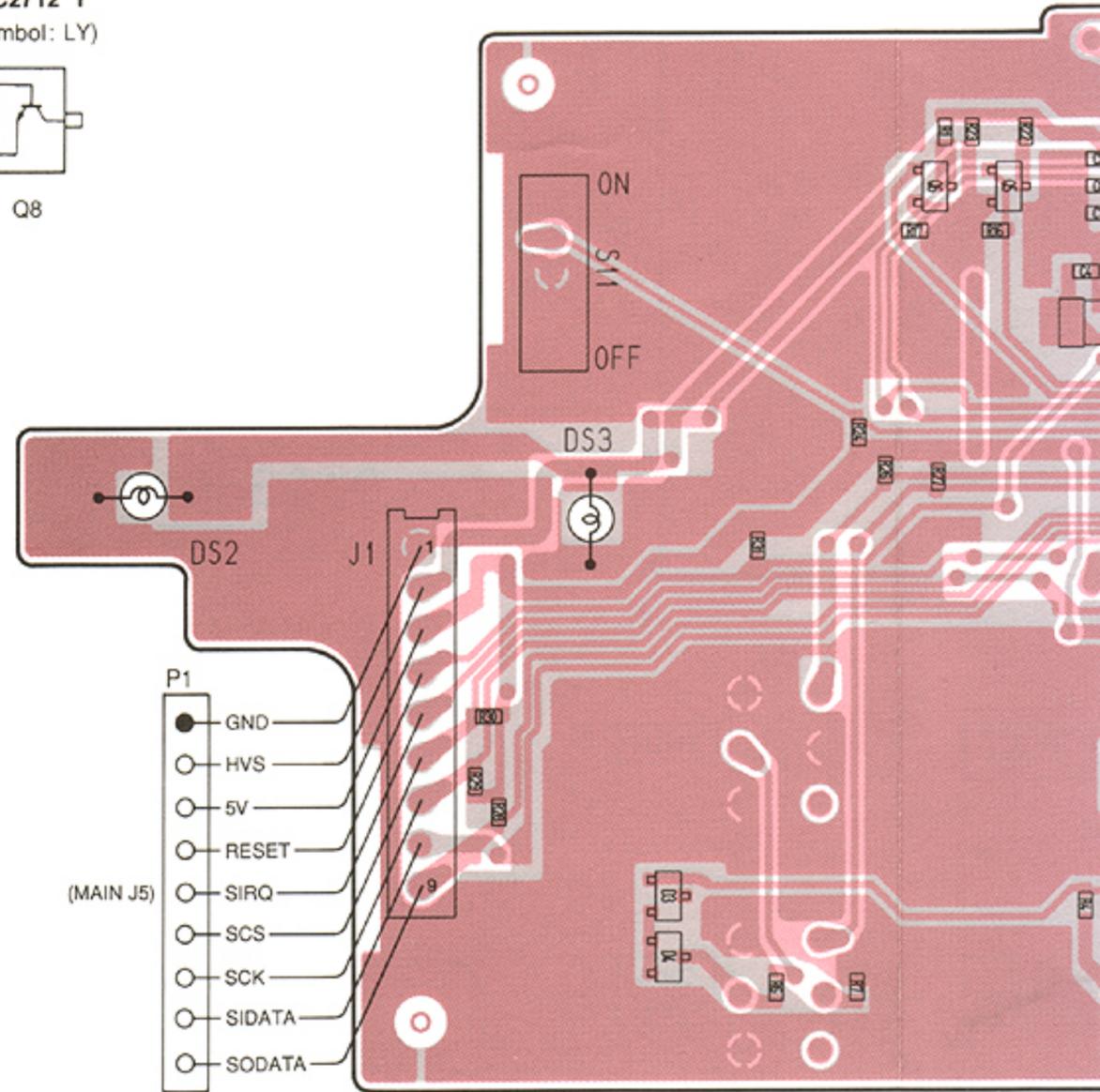


D3

**1SS196**  
(Symbol: G3)

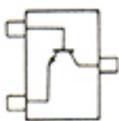


D4



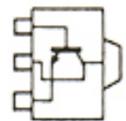
• PA UNIT

**2SC3775 3**  
(Symbol: OY3)



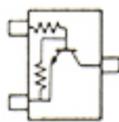
Q1

**2SC2954**  
(Symbol: QK)



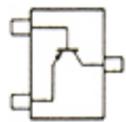
Q2

**RN1404**  
(Symbol: XD)

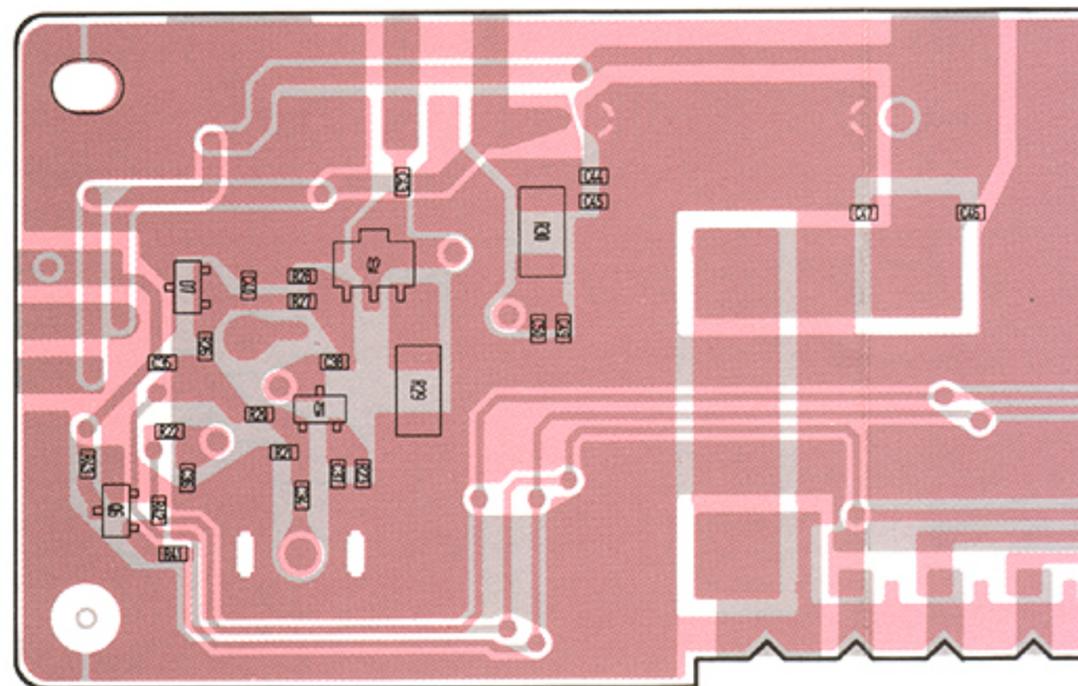


Q4

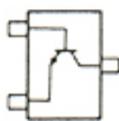
**2SA1162 GR**  
(Symbol: SG)



Q5

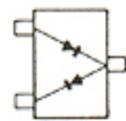


**2SC2712 GR**  
(Symbol: LG)



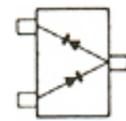
Q6, Q7

**HSM88AS**  
(Symbol: C1)



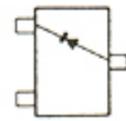
D4

**HSM88ASR**  
(Symbol: C3)



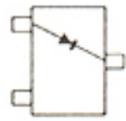
D5

**HSU88TRF**  
(Symbol: 9)



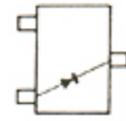
D6

**1SS193**  
(Symbol: F3)

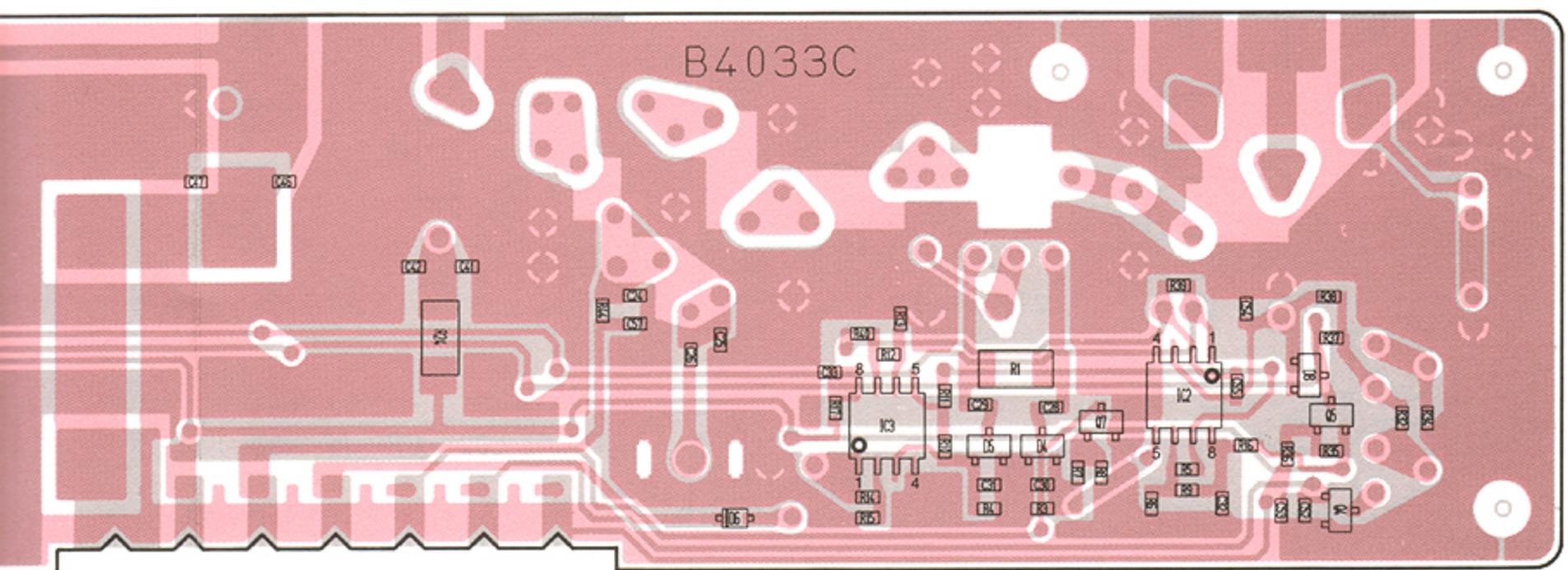
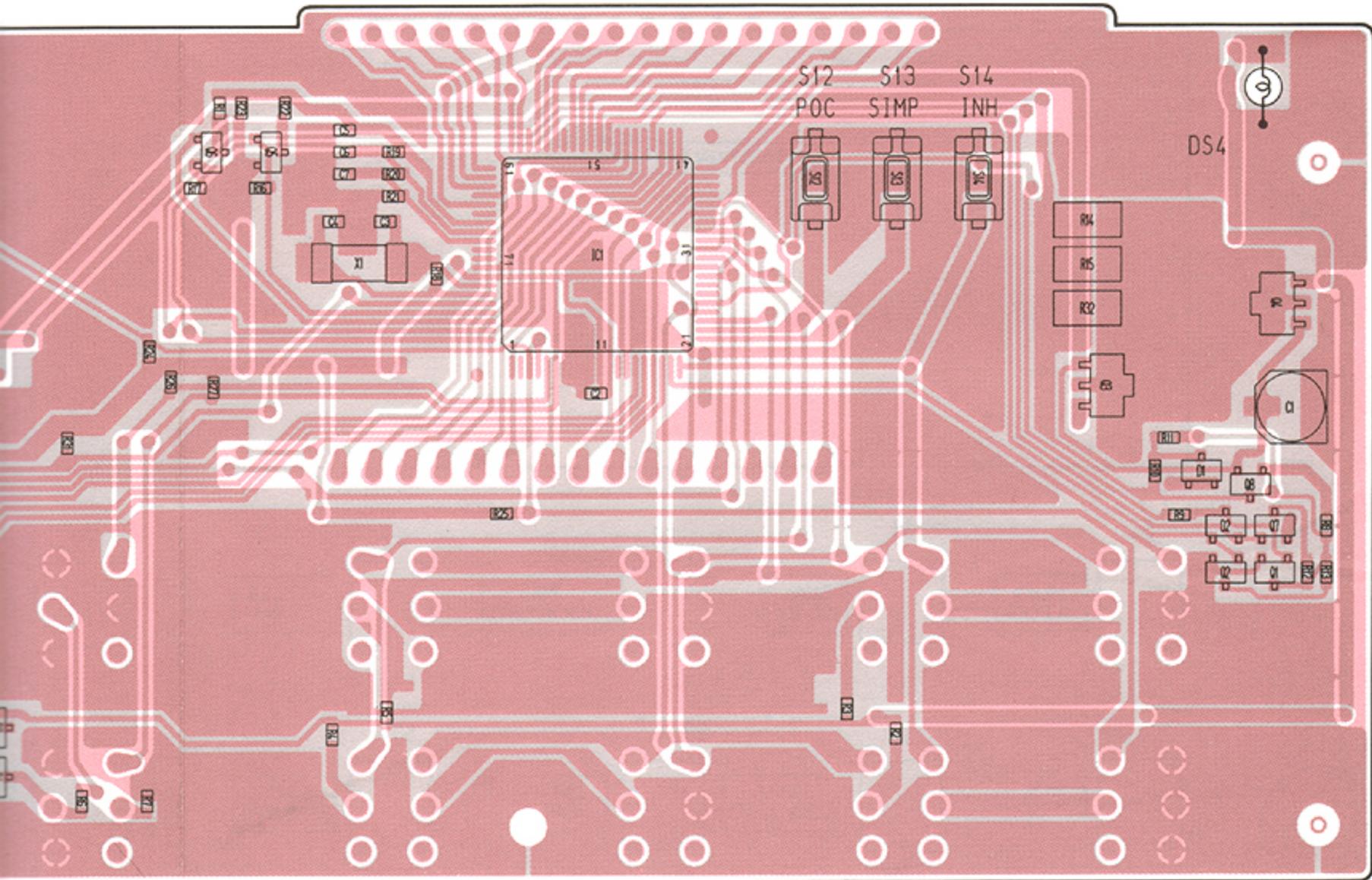


D7

**1SS196**  
(Symbol: G3)

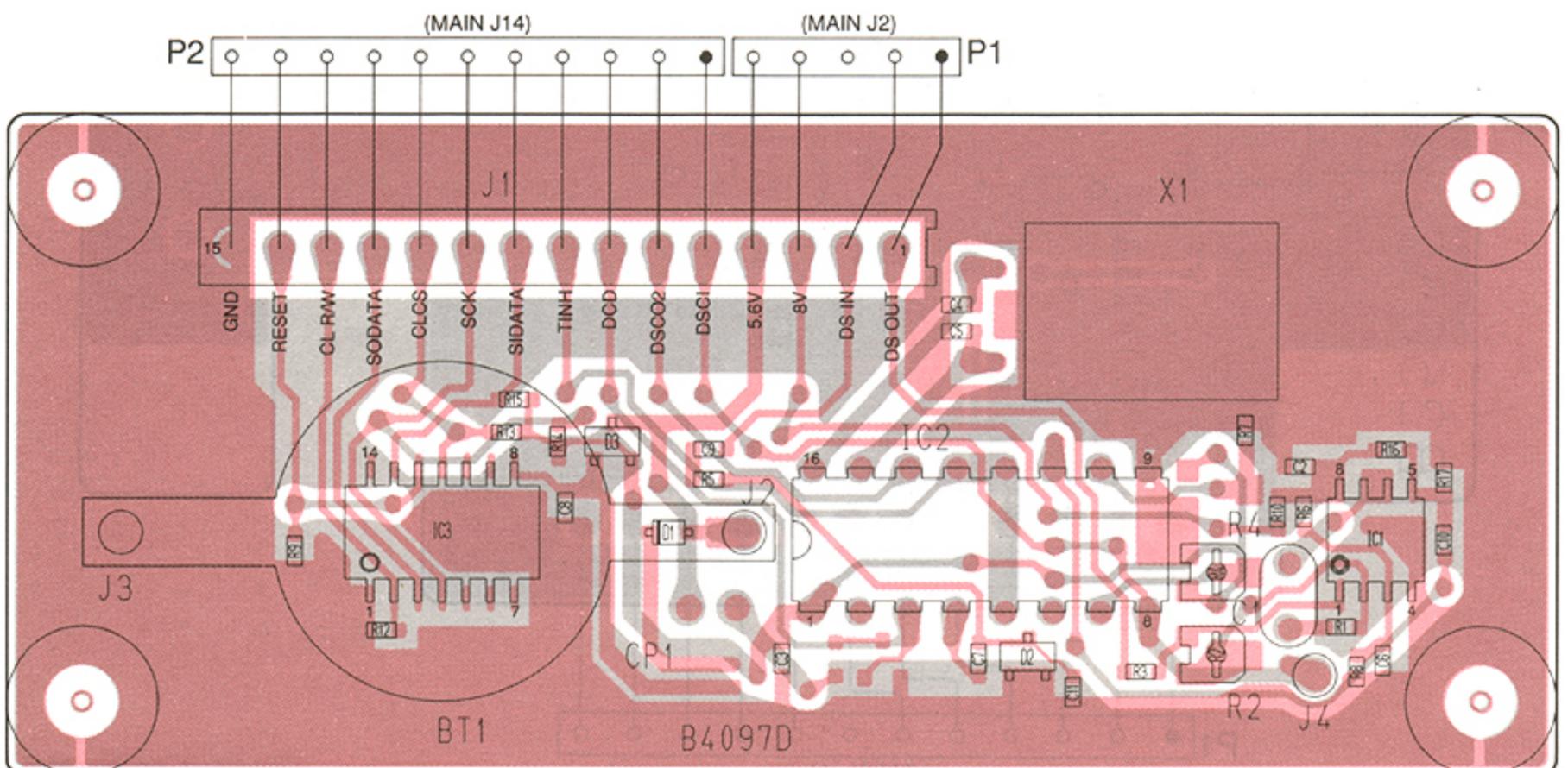
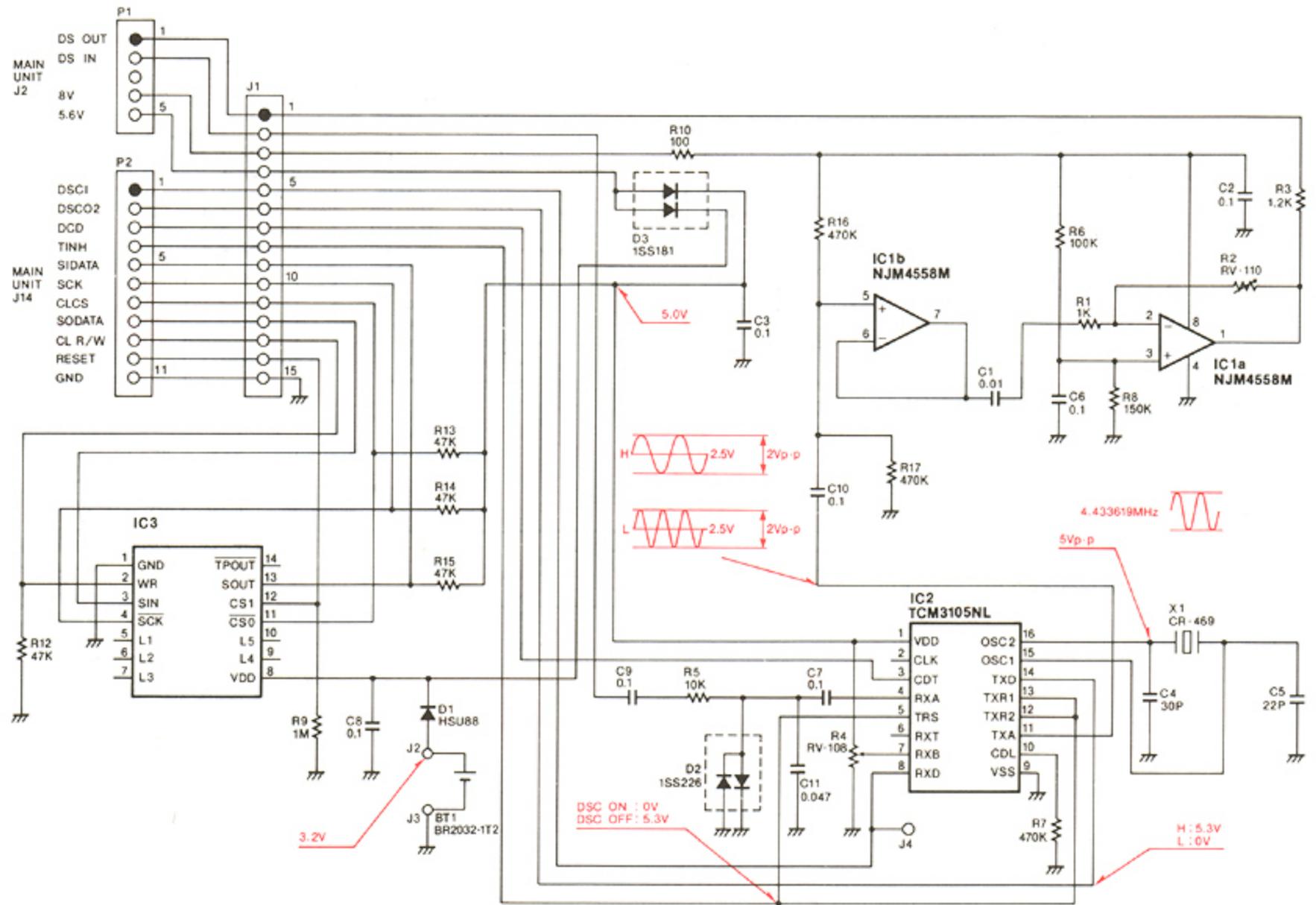


D8

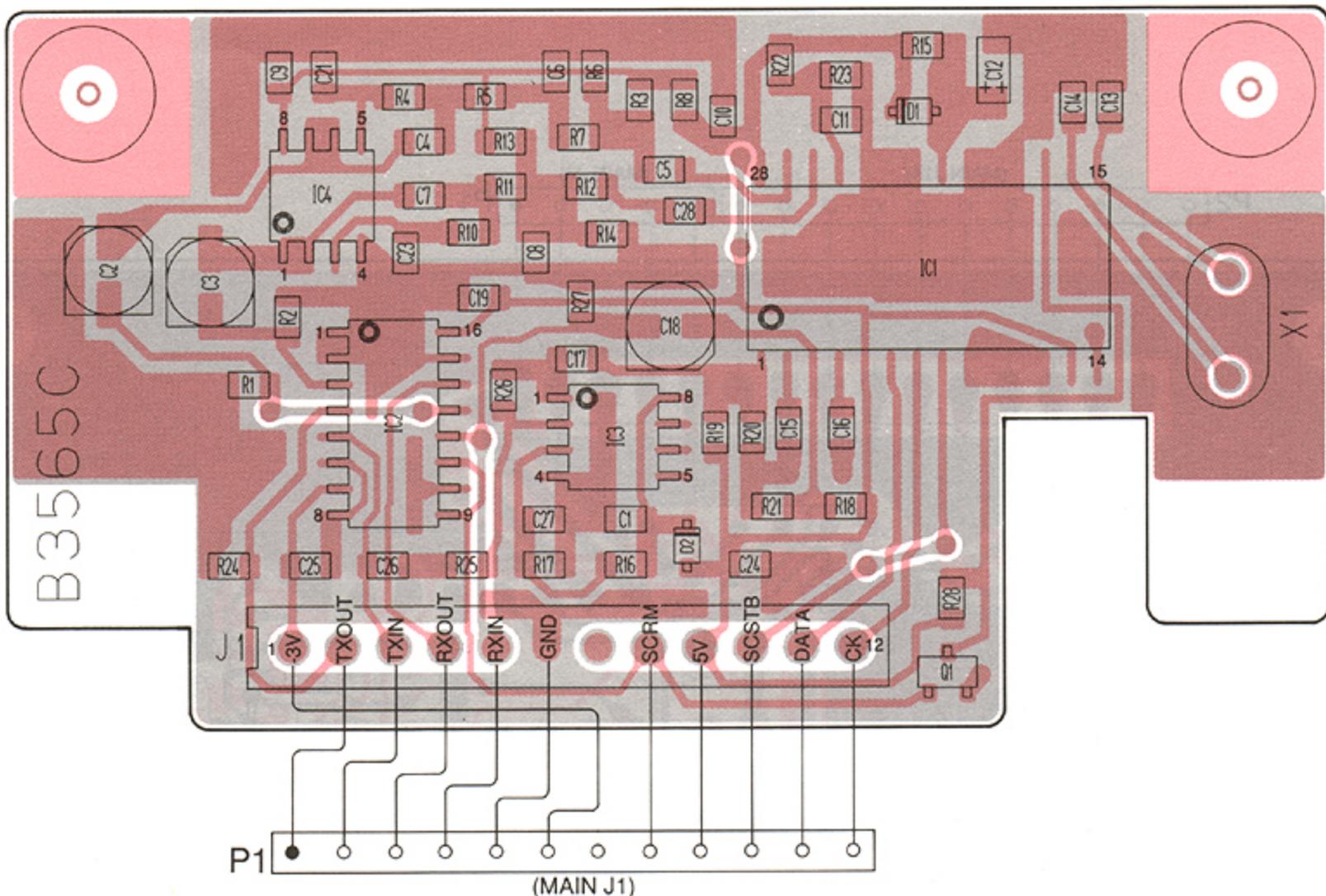
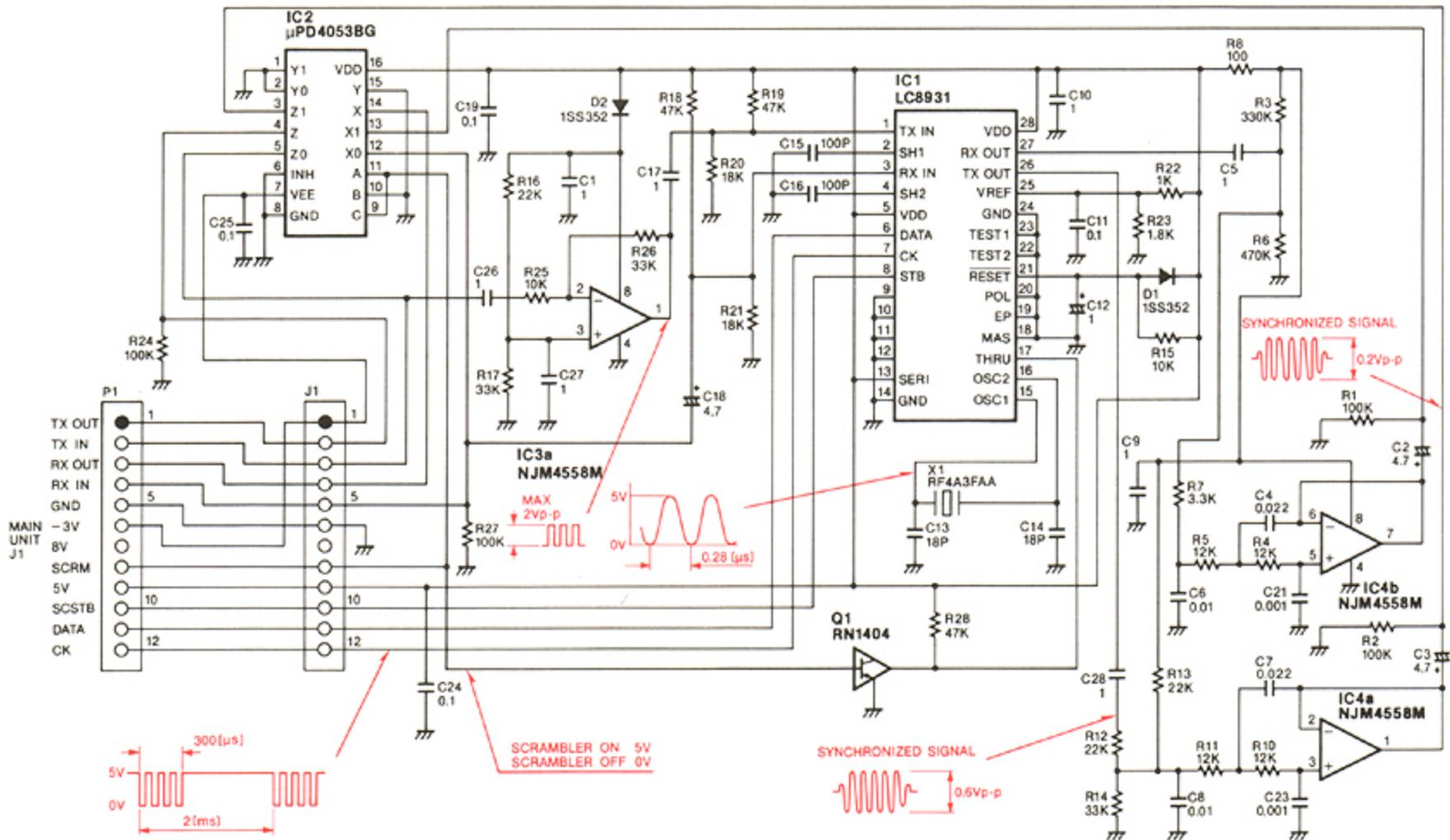


# SECTION 8 OPTIONAL UNIT

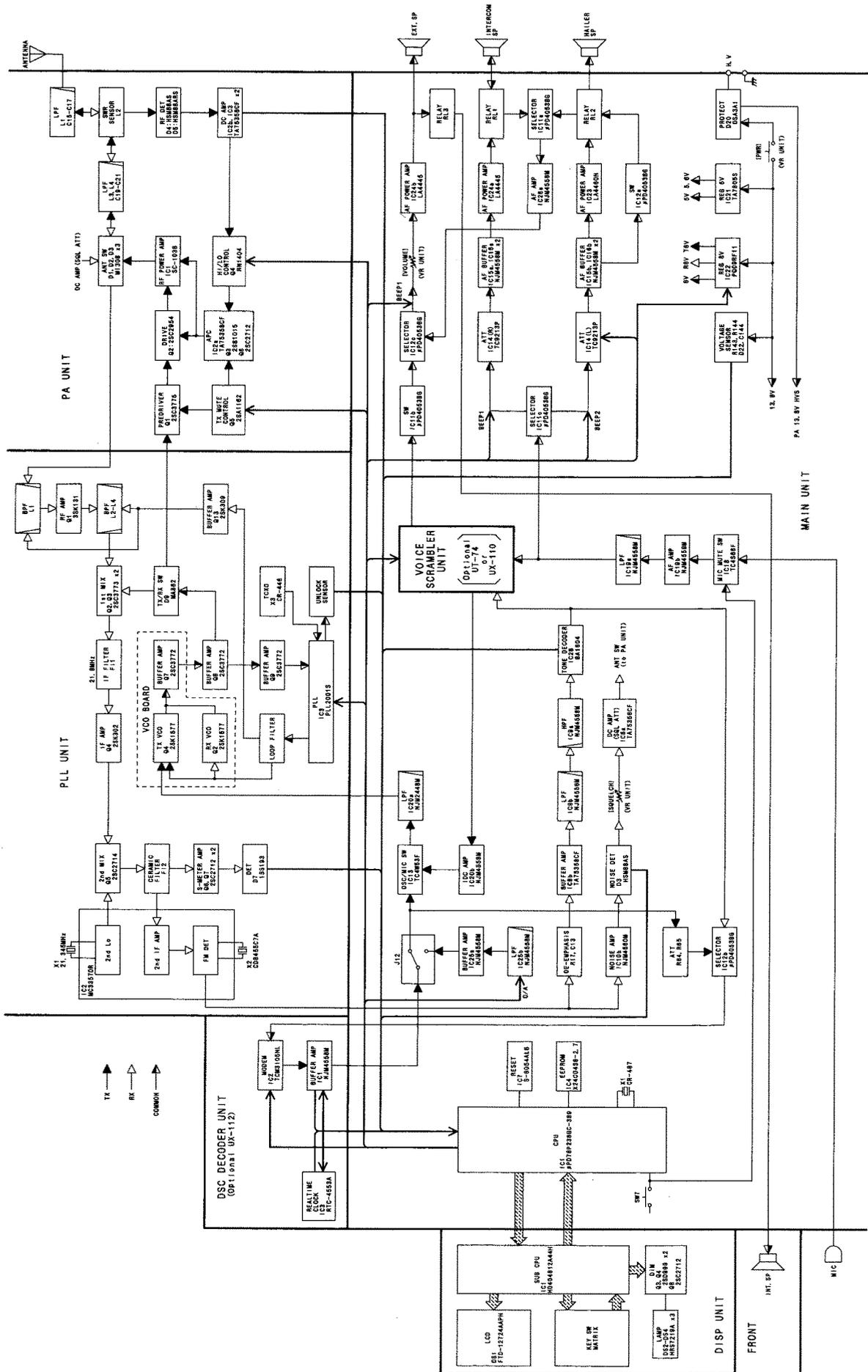
## • UX-112 DSC DECODER UNIT



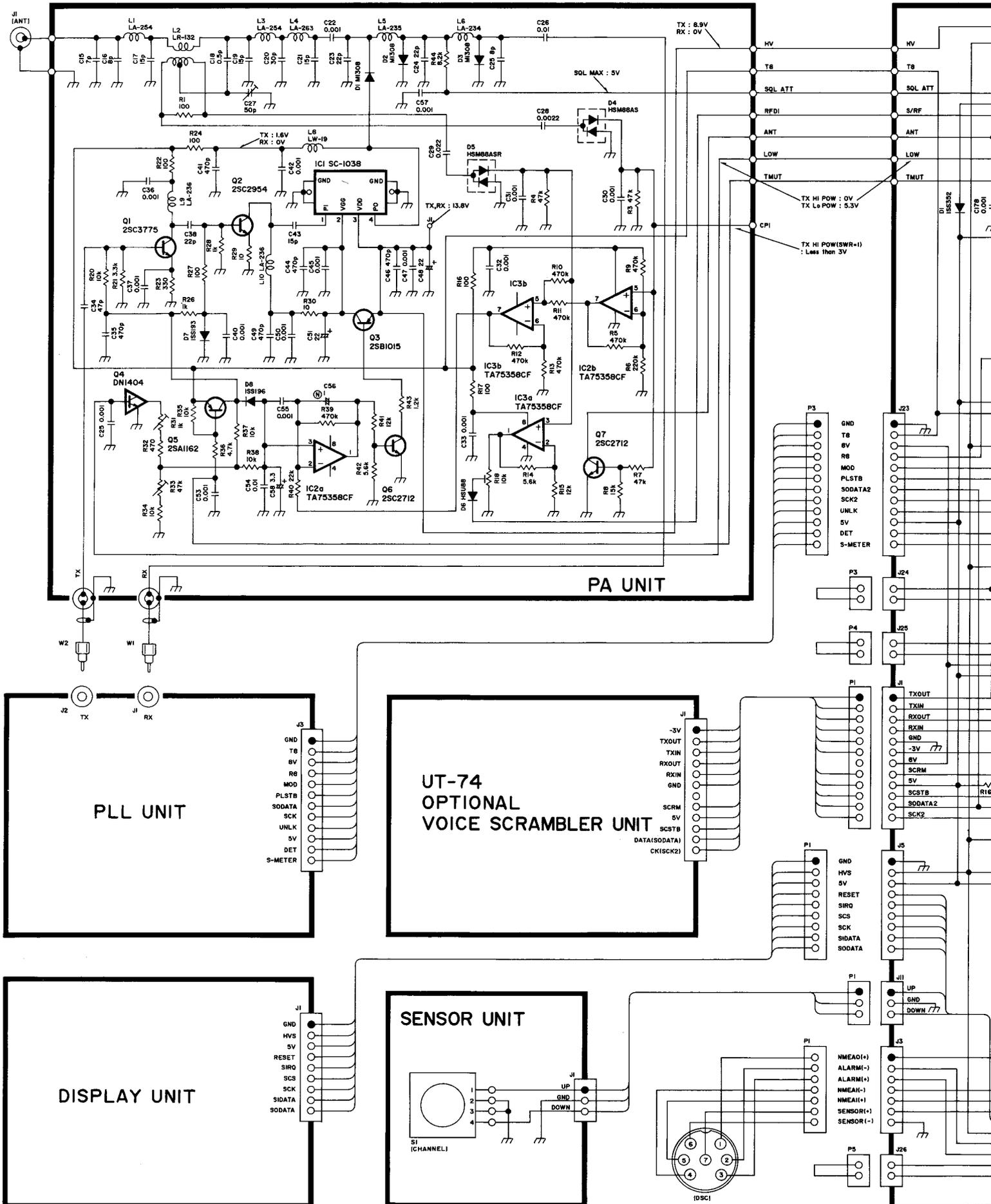
• UT-74 VOICE SCRAMBLER UNIT

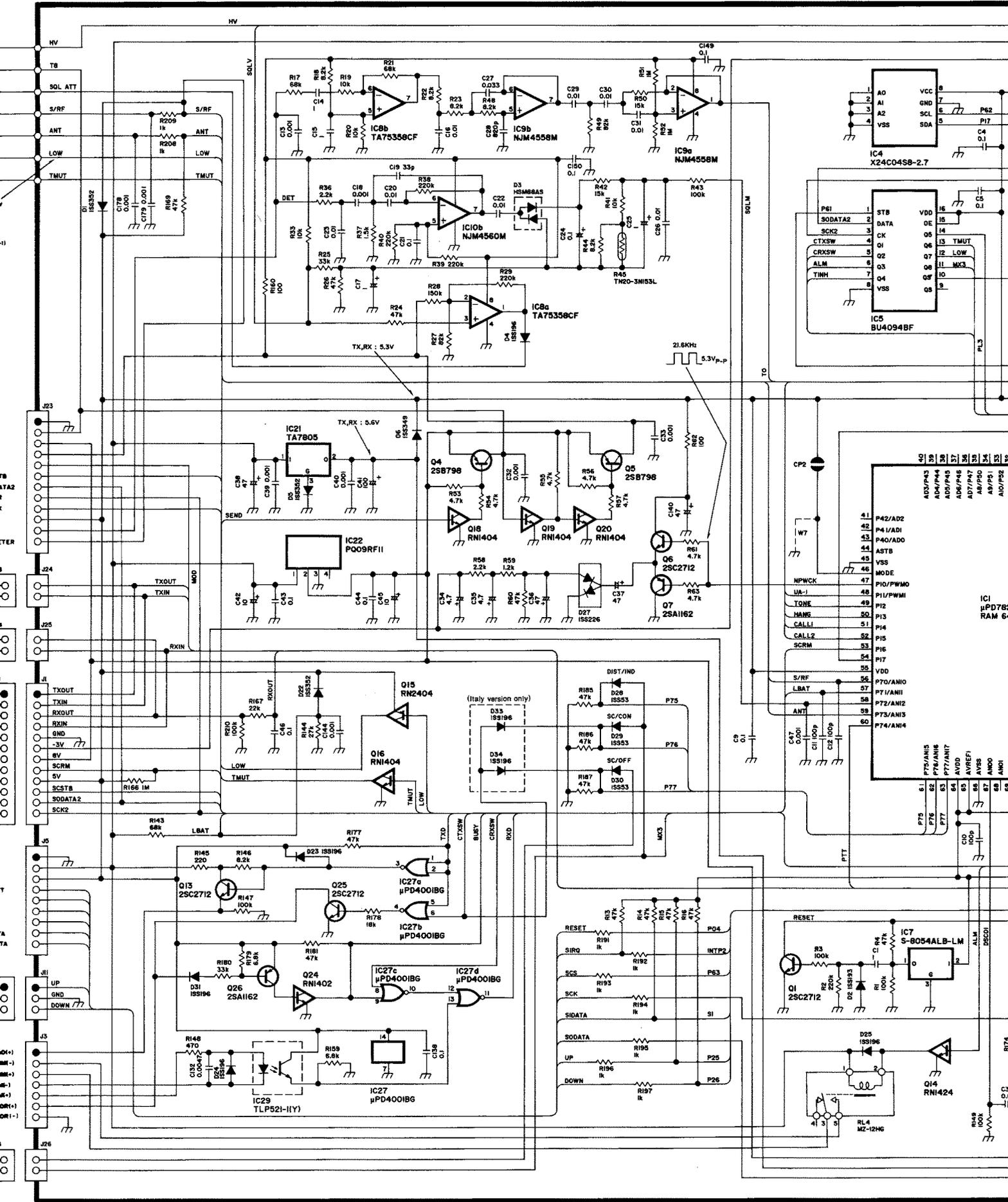


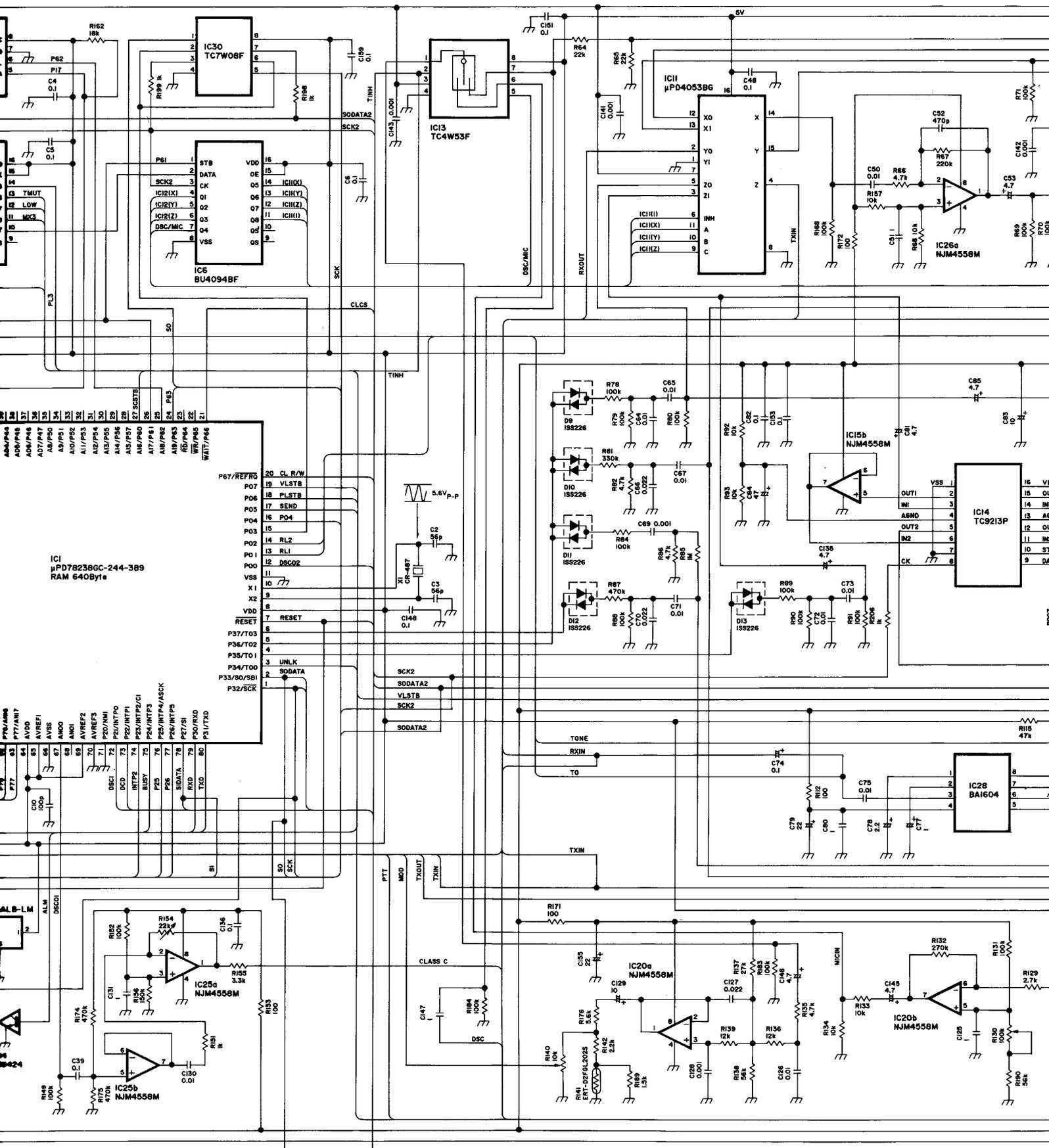
SECTION 9 BLOCK DIAGRAM



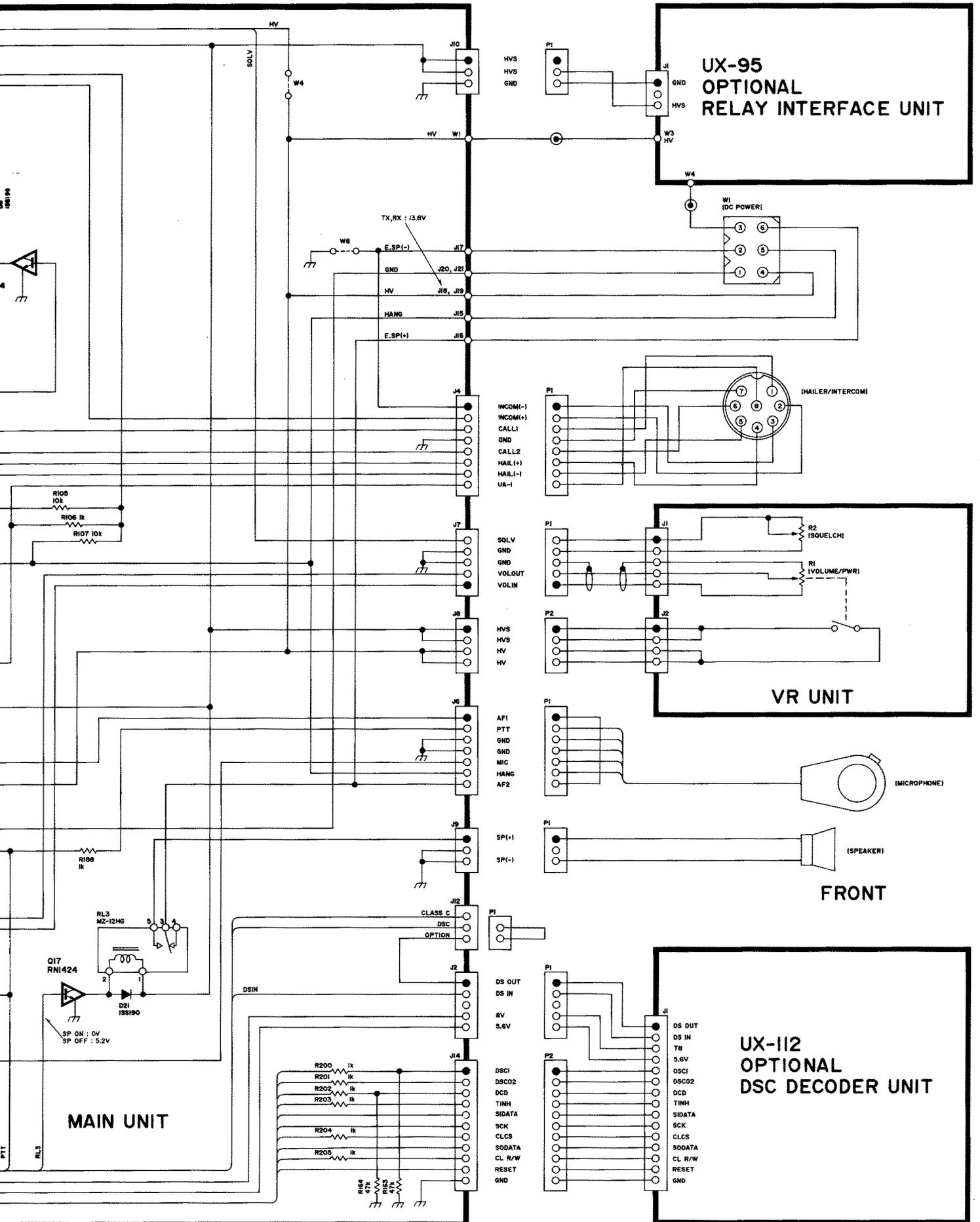
SECTION 10 VOLTAGE DIAGRAM



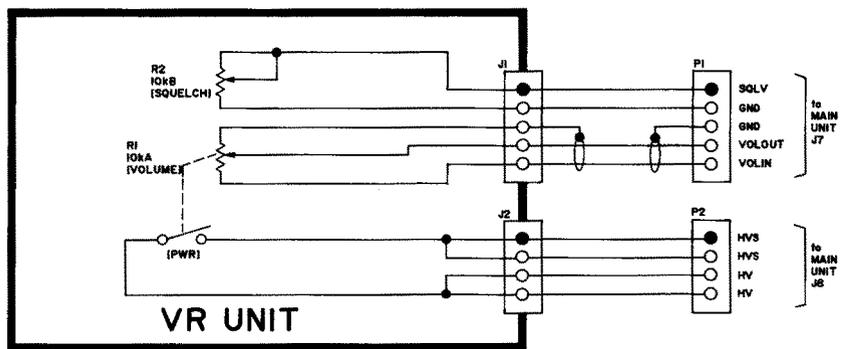
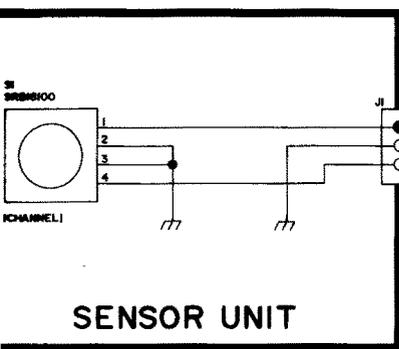
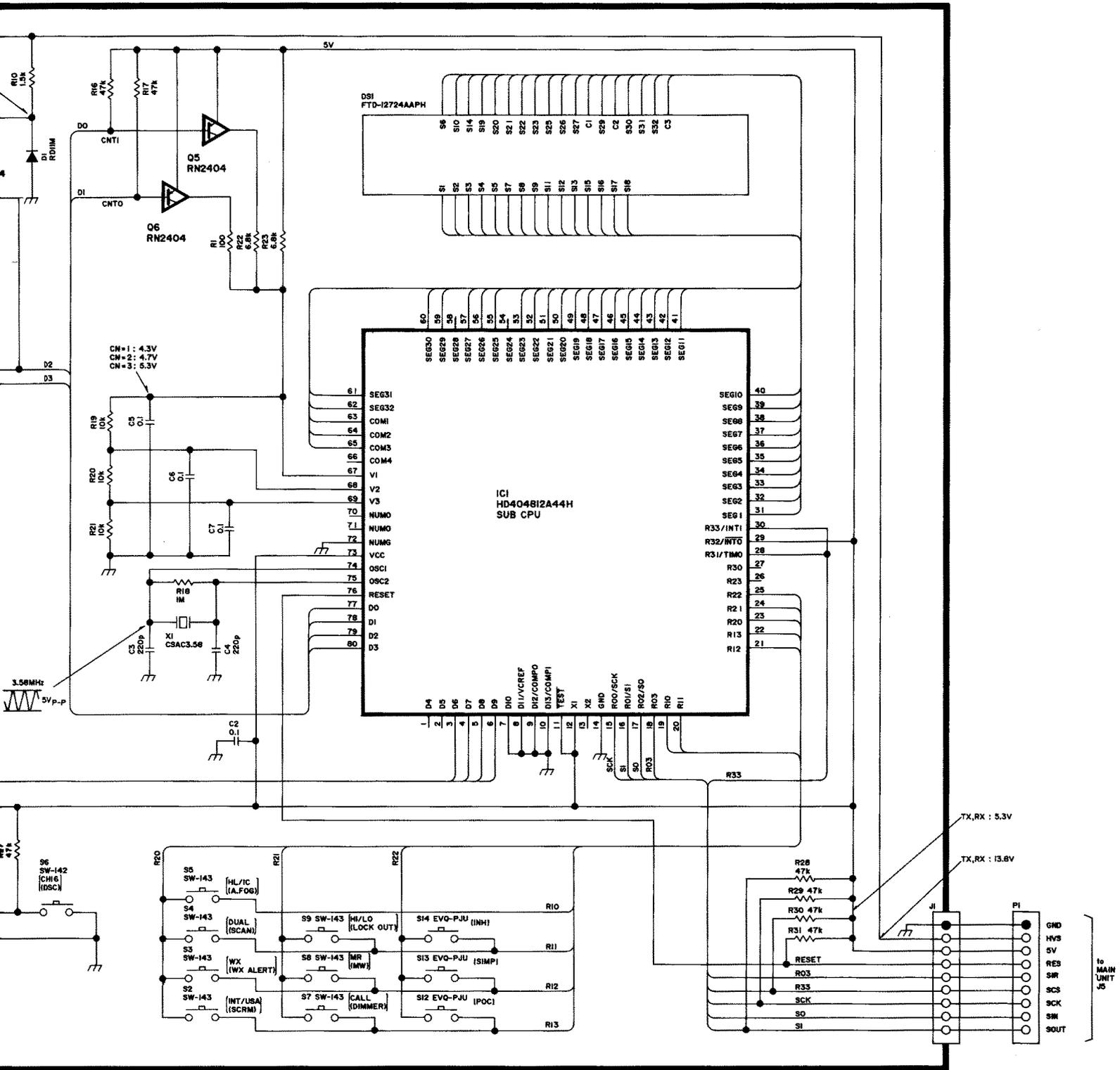


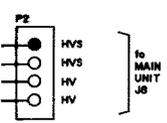
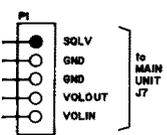
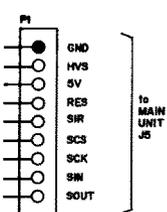
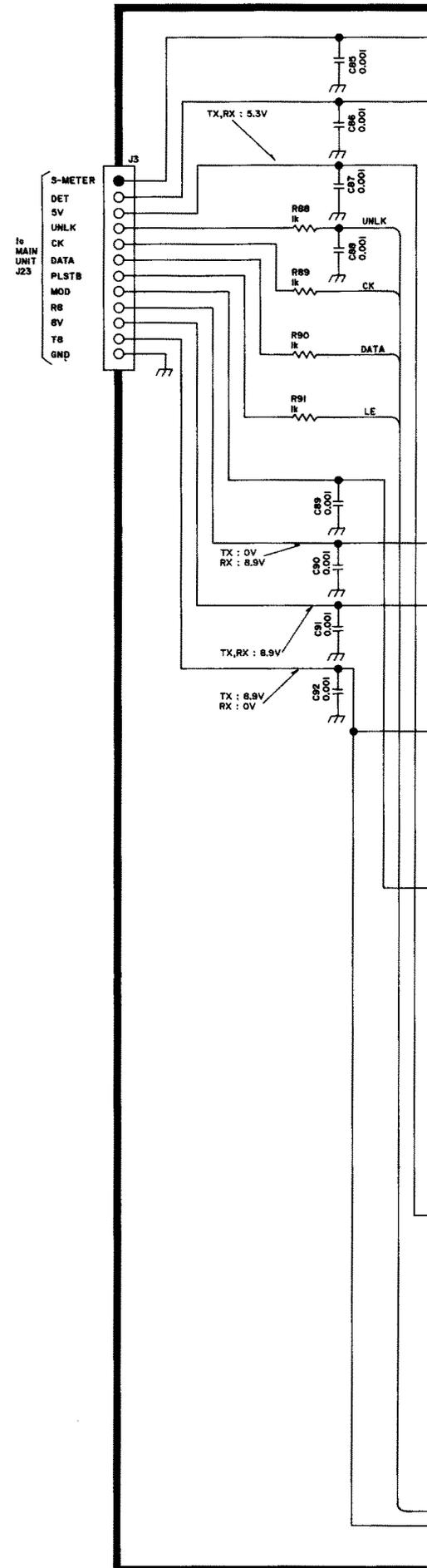




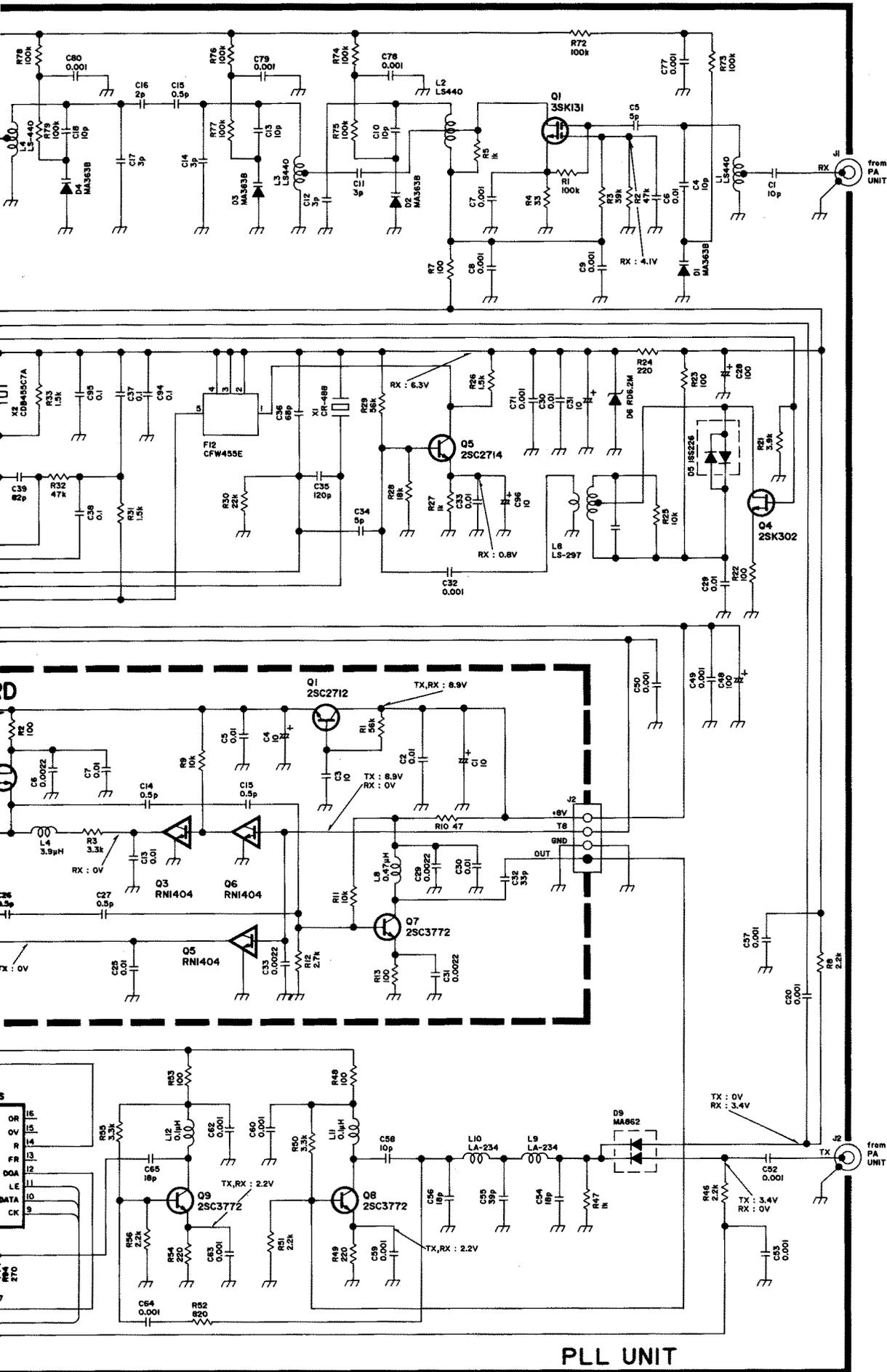












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