



# SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

# IC-2350H

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## INTRODUCTION

This service manual describes the latest information for the IC-2350H at the time of publication.

MODEL	VERSION NO.	VERSION	SYMBOL
IC-2350H	#02	Europe	EUR
	#03	Italy	ITA
	#05	U.S.A.	USA
	#06	Koria	KOR
	#07	Australia	AUS
	#08	Asia	SEA

## DANGER

**NEVER** connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. Such a connection could cause a fire hazard and/or electric shock.

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

**DO NOT** reverse the polarities of the 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>

1110002750 S.IC TA75S01F IC-2350H MAIN UNIT 1 piece  
8810004430 Screw PH M3 x 6 ZK IC-2350H Bottom cover 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 analyser 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

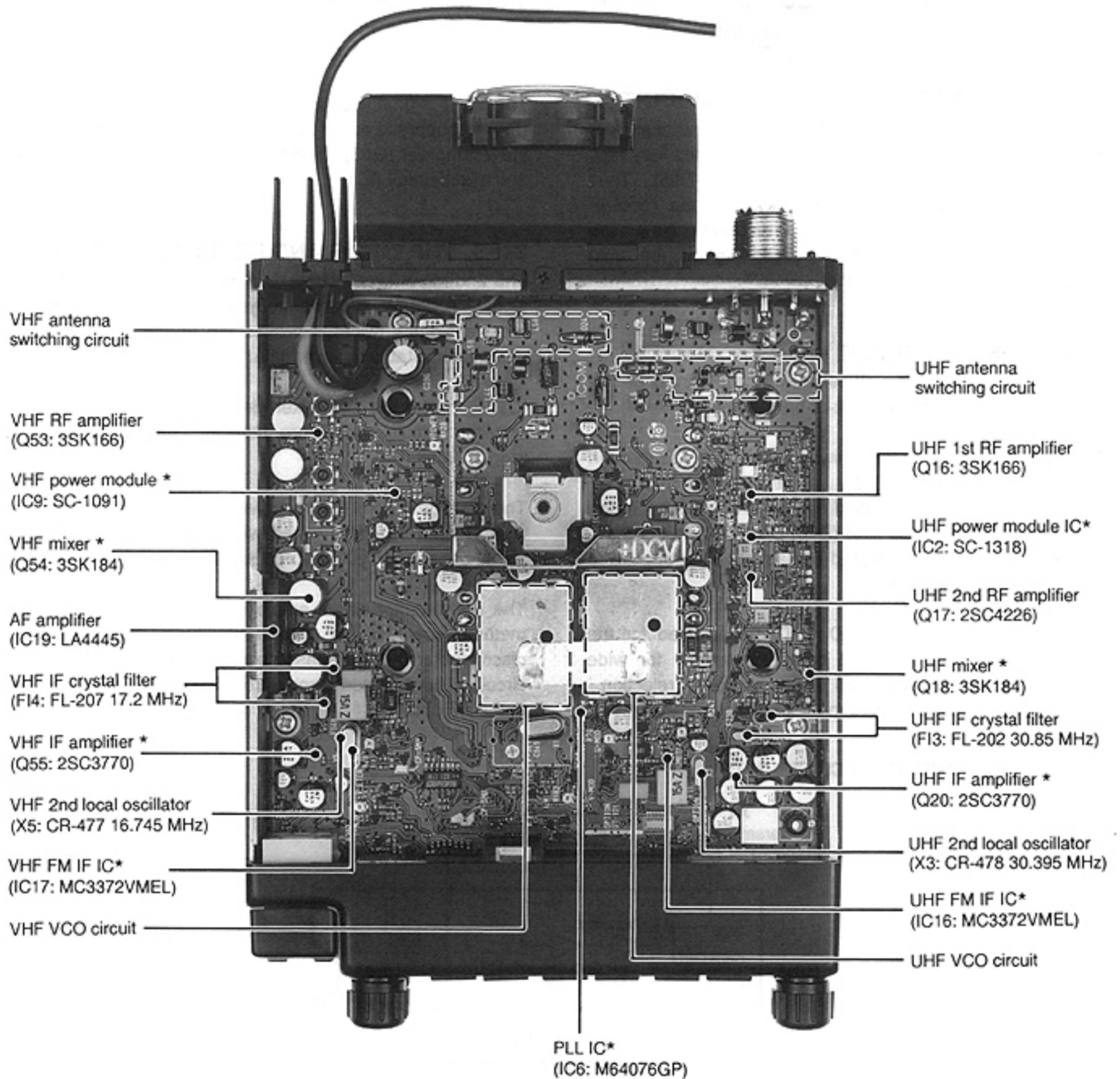
		144 MHz	430 (440) MHz	
Frequency coverage (MHz)	U.S.A.	Tx:144.0–148.0 MHz Rx:118.0–174.0 MHz <sup>*1</sup>	440.0–450.0 MHz	
	Europe	144.0–146.0 MHz	430.0–440.0 MHz	
	Asia	Tx:144.0–148.0 MHz Rx:136.0–174.0 MHz <sup>*1</sup>	430.0–440.0 MHz	
	Italy	Tx:144.0–148.0 MHz Rx:136.0–174.0 MHz <sup>*1</sup>	Tx:430.0–440.0 MHz Rx:400.0–479.0 MHz <sup>*2</sup>	
	Australia	144.0–148.0 MHz	430.0–440.0 MHz	
	Guaranteed frequency range: <sup>*1</sup> 144.0–148.0 MHz <sup>*2</sup> 430.0–440.0 MHz			
GENERAL	Mode		FM (F3E)	
	Frequency stability (–10 °C to +60 °C, +14 °F to +140 °F)		±10 ppm	
	Tuning steps		5, 10, 12.5, 15, 20, 25, 30 or 50 kHz	
	Antenna impedance		50 Ω (nominal)	
	External DC power		13.8 V DC ± 15 % (negative ground)	
	Current drain (at 13.5 V, typical)	Tx	High	11.5 A (at 50 W)
			Low 2	6.0 A (at 10 W)
			Low 1	4.5 A (at 5 W)
		Rx	Rated audio	1.8 A
			Squelch ON	1.2 A
	Usable temperature range		–10 °C to +60 °C (+14 °F to +140 °F)	
	Dimensions		140 (W) x 40 (H) x 204.5 (D) mm; 5 1/2 (W) x 1 9/16 (H) x 8 1/16 (D) in	
	Weight		1.2 kg; 2 lb 10 oz	
TRANSMITTER	Output power		50 W(HIGH), 10 W(LOW 2), 5 W(LOW 1)   35 W(HIGH), 10 W(LOW 2), 5 W(LOW 1)	
	Modulation system		Variable reactance frequency modulation	
	Max. frequency deviation		±5.0 kHz	
	Spurious emissions		Less than –60 dB	
	Microphone impedance		600 Ω	
RECEIVER	Receive system		Double-conversion superheterodyne	
	Intermediate frequencies		1st: 17.2 MHz ; 2nd: 455 kHz   1st: 30.85 MHz ; 2nd: 455 kHz	
	Sensitivity (12 dB SINAD)		Less than 0.16 μV (typical)	
	Squelch sensitivity		Less than 0.13 μV (at threshold)	
	Selectivity		More than 15 kHz/–6 dB, Less than 30 kHz/–60 dB	
	Spurious response rejection ratio		More than 60 dB (more than 45 dB at 1/2 IF)	
	Audio output power (at 13.5 V)		More than 2.4 W (at 10 % distortion with an 8 Ω load)	
	Audio output impedance		8 Ω	

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

# SECTION 2 INSIDE VIEWS

## ● MAIN UNIT

\*: Located under side of this point.



## SECTION 3 CIRCUIT DESCRIPTION

### 3-1 RECEIVER CIRCUITS

#### 3-1-1 DUPLEXER CIRCUIT

The transceiver has a duplexer (low-pass and high-pass filter) on the first stage from the antenna connector to separate the received signals into VHF and UHF signals. The low-pass filter (L39–L41, C160–C162) is for VHF signals and the high-pass filter (C1–C3, L1, L2) is for UHF signals. The separated signals are applied to each RF circuit.

#### 3-1-2 VHF ANTENNA SWITCHING CIRCUIT

The antenna switching circuit functions as a low-pass filter while receiving. However, its impedance becomes very high while transmitting by turning ON diodes (D34, D35). Thus transmit signals are blocked from entering the receiver circuits. The antenna switching circuit employs a  $1/4 \lambda$  type diode switching system. The passed signals are then applied to the RF amplifier circuit.

#### 3-1-3 VHF RF CIRCUIT

The RF circuit amplifies signals within the range of frequency coverage and filters out-of-band signals.

The signals from the antenna switching circuit pass through a bandpass filter (D38, L60), and are applied to the RF amplifier (Q53). The amplified signals are passed through the next stage bandpass filter (D40, D41, D44) to suppress unwanted signals. The filtered signals are then applied to the 1st mixer circuit (Q54).

Varactor diodes (D38, D40, D41, D44) are used for the bandpass filters to tune the center frequency for wide bandwidth receiving and good image response rejection. PLL lock voltages are applied to these diodes for tuning.

#### 3-1-4 VHF 1ST MIXER AND 1ST IF CIRCUITS

The 1st mixer circuit converts the received signals to a fixed frequency of the 1st IF signal with a PLL output frequency. By changing the PLL frequency, only the desired frequency will be passed through a pair of crystal filters at the next stage of the 1st mixer.

The signals are mixed with a 1st LO signal at the mixer circuit (Q54) to produce a 17.2 MHz 1st IF signal. The 1st LO signal is the PLL output frequency which comes from the VHF-VCO circuit (Q46).

The 1st IF signal is passed through a pair of crystal filters (FI4) to suppress out-of-band signals and then amplified at the IF amplifier (Q55). The amplified signal is applied to the 2nd mixer circuit (IC17).

#### 3-1-5 VHF 2ND IF AND DETECTOR CIRCUIT

The 2nd mixer circuit converts the 1st IF signal to a 2nd IF signal. A double superheterodyne system (which converts receive signals twice) improves the image rejection ratio and obtains stable receiver gain.

IC17 contains the 2nd mixer circuit, 2nd LO circuit, limiter amplifier circuit, quadrature detector circuit and squelch trigger circuit.

The 1st signal from FI4 is applied to the 2nd mixer section of IC17 (pin 16), and mixed with a 16.745 MHz 2nd LO signal generated by X5 to produce a 455 kHz 2nd IF signal.

The FM detector circuit employs the quadrature detection method (linear phase detection), which uses a ceramic discriminator (X4) for phase delay to obtain a non-adjusting circuit. The detected signals from IC17 (pin 9) are applied to the AF circuit.

### FM DETECTOR AND SQUELCH CIRCUITS

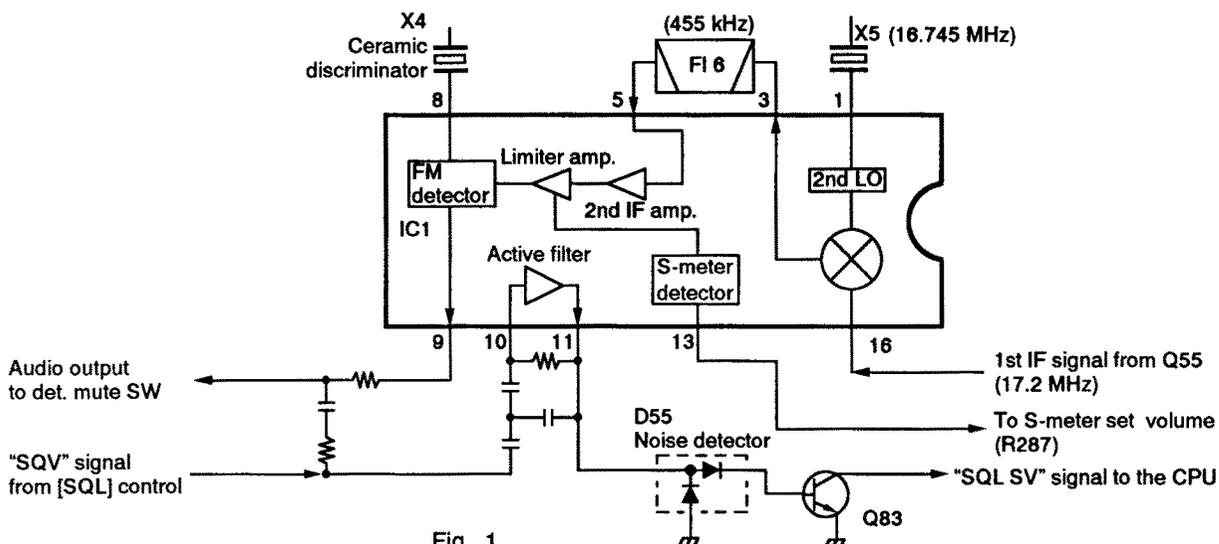


Fig. 1

### 3-1-6 AF AMPLIFIER CIRCUIT

The AF amplifier circuit amplifies the detected signals to drive a speaker. For the separate speaker function, a stereo power amplifier is used.

AF signals are passed through the detector switch (Q82), then the analog switch (IC18 pins 2, 1). AF signals from IC18 (pin 1) are applied to the active filter (Q85, Q86) which functions as a high-pass filter to suppress subaudible tone signals for tone squelch operation.

The filtered signals pass through the [VOL] control (R332) and are then applied to the AF power amplifier (IC19 pin 2). The output signals are applied to an external speaker jack. When no plug is connected to the jack the signals are fed back to the UHF audio input (IC19 pin 8) and combined with the UHF audio. The mixed audio is applied to the other external speaker jack and then to the internal speaker.

### 3-1-7 VHF NOISE SQUELCH

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

Some of the noise components in the AF signals from IC17 (pin 9) are passed through the active filter section (IC17 pins 10, 11), and then applied to the noise detector circuit (D55). The [SQL] control adjusts the input level of the active filter.

The rectified voltage triggers the squelch switch (Q83). The squelch switch sets the "SQL SV" line "LOW" to apply the signal to the CPU (IC2 pin 15). Then the CPU controls AF mute switches (IC18, Q89) via the "VA MUTE" line and the I/O expander (IC21).

### 3-1-8 VHF SQUELCH ATTENUATOR CIRCUIT

The current flow of the antenna switching circuit (D34, D35) is controlled by the [SQL] control and the DC amplifier (IC25). When the [SQL] control is set too deep, the current of D34 and D35 is increased. In this case, D34 and D35 act as attenuators.

### 3-1-9 UHF RF CIRCUIT

The UHF RF signals are passed through part of a duplexer (high-pass filter; C1–C3, L1, L2). The signals are again passed through the low-pass filter (C5, C6, L3, L4), antenna switching circuit (D1, D12, D13), and then amplified at the RF amplifiers (Q16, Q17). Bandpass filters (F11, F12) are used at the last stage of these amplifiers.

### 3-1-10 UHF 1ST MIXER AND 1ST IF CIRCUIT

The filtered signals from the bandpass filter (F12) are mixed with a 1st LO signal at the mixer circuit (Q18) to produce a 30.85 MHz 1st IF signal. The 1st LO signal is the PLL output frequency which comes from the UHF-VCO circuit (Q11). The 1st IF signal is passed through a pair of crystal filters (F13) to suppress out-of-band signals and then amplified at the IF amplifier (Q20).

### 3-1-11 UHF 2ND IF AND DETECTOR CIRCUIT

The IC16 incorporates the 2nd mixer, 2nd local oscillator, limiter amplifier, quadrature detector and S-meter detector circuit. The 2nd local oscillator section and X3 generate 30.395 MHz for the 2nd LO signal.

The amplified 1st IF signal is fed to the FM IF IC (IC16 pin 16) where the signal is converted into a 2nd IF signal, then AF signals.

The AF signals output from IC16 (pin 9) pass through the detector switch (Q72), analog switch (IC18 pins 10, 11) and then active filters (Q75, Q76).

### 3-1-12 UHF NOISE SQUELCH CIRCUIT

A portion of the AF signals from IC16 (pin 9) are passed through the noise amplifier (IC16 pins 10, 11), detected at D52, and then trigger the squelch switch (Q73). The trigger signal is applied to the CPU via the "SQL SU" line to control AF mute switches (IC18, Q87).

## 3-2 TRANSMITTER CIRCUIT

### 3-2-1 MICROPHONE AMPLIFIER CIRCUIT

The microphone amplifier circuit amplifies audio signals from the microphone to a level needed for the modulation circuit. The microphone amplifier circuit is commonly used for the both VHF and UHF bands.

The AF signals from the microphone are amplified at the IDC amplifier (IC23b pin 6) and then applied to the low-pass filter (IC23a pin 3). The output signals from IC23a (pin 1) are then separately applied to the VHF-VCO or UHF-VCO circuit as an "MOD" signal.

### 3-2-2 VHF MODULATION CIRCUIT

The modulation circuit modulates the VCO oscillating signal (RF signal) using the microphone audio signals.

The "MOD" signal changes the reactance of a diode (D32) to modulate the oscillated signal at the VHF-VCO circuit (Q46, D31). The VCO output is buffer-amplified at Q45 and is then applied to the transmit/receive switching circuit (D71).

### 3-2-3 VHF DRIVE AMPLIFIER CIRCUIT

The drive amplifier circuit amplifies the VCO oscillated signal to the needed level at the power amplifier.

The signal from the transmit/receive switching circuit (D71) is amplified at the buffer amplifier (Q65, Q39). The amplified signal is amplified again at drive amplifiers (Q35, Q38) to obtain approx. 26 dBm.

### 3-2-4 VHF POWER AMPLIFIER CIRCUIT

IC9 is a power module which provides more than 50 W of output power with a 13.8 V DC power source.

An RF signal from the drive amplifier (Q35) is applied to IC9. The amplified signal is then applied to the antenna connector via the transmit/receive switching circuit (D24) and low-pass filter.

### 3-2-5 VHF APC CIRCUIT

The APC circuit protects the power module (IC9) from a mismatched output load.

The APC detector circuit (D25, D26) detects forward signals and rectified signals at D26 and D25 respectively. The combined voltage is at a minimum level when the antenna is matched at 50  $\Omega$  and increases when it is mismatched. The combined voltage is applied to the inverting amplifier (IC8) to control the base of Q1 and input current of Q2. Thus the bias voltage of IC 9 is decreased via Q2.

### 3-2-6 UHF MODULATION CIRCUIT

The audio signals from the microphone amplifier circuit (described in Section 4-2-1) are applied to the UHF-VCO circuit.

The audio signals change the reactance of the oscillator (Q11) to modulate the oscillated signal directly. The oscillated signal is amplified at the buffer amplifiers (Q8-Q10) and is then applied to the drive amplifier circuit (Q106, Q3, Q4) through the LO switch circuit (D6, D79).

### 3-2-7 UHF POWER AMPLIFIER CIRCUIT

IC2 is a power module which provides a stable 35 W (at 13.8 V DC) of output power.

The drive amplifier (Q3, Q4) and power amplifier (IC2) amplify the VCO oscillating signal to an output level. The output signal passes through the APC detector circuit (D2, D3) and bandpass filter, and is applied to the antenna connector.

### 3-2-8 UHF APC CIRCUIT

The APC circuit detects the output signals from the power module. IC1 compares the voltages detected by the APC detector with the reference voltages. When the detected voltage exceeds a reference voltage, IC1 reduces the bias current of IC2 (pin 4) using Q1 and Q2 to decrease the RF output power.

## 3-3 PLL CIRCUIT

### 3-3-1 GENERAL

A PLL circuit provides stable oscillation of the transmit frequency and the receive local frequency. The PLL circuit compares the phase of the divided VCO frequency to the reference frequency. The PLL output frequency is controlled by a crystal oscillator and the divided ratio of the programmable divider. IC6 is a dual PLL IC which controls both VCO circuits for VHF and UHF.

The PLL circuit, using a one chip PLL IC (IC6), directly generates the transmit frequency and receive 1st IF frequency with VCOs. The PLL sets the divided ratio based on serial data from the CPU on the LOGIC unit and compares the phases of VCO signals with the reference oscillator frequency. The PLL IC detects the out-of-step phase and output from pins 8 and 13 for VHF and UHF, respectively. The reference frequency (12.8 MHz) is oscillated at X1.

APC CIRCUIT

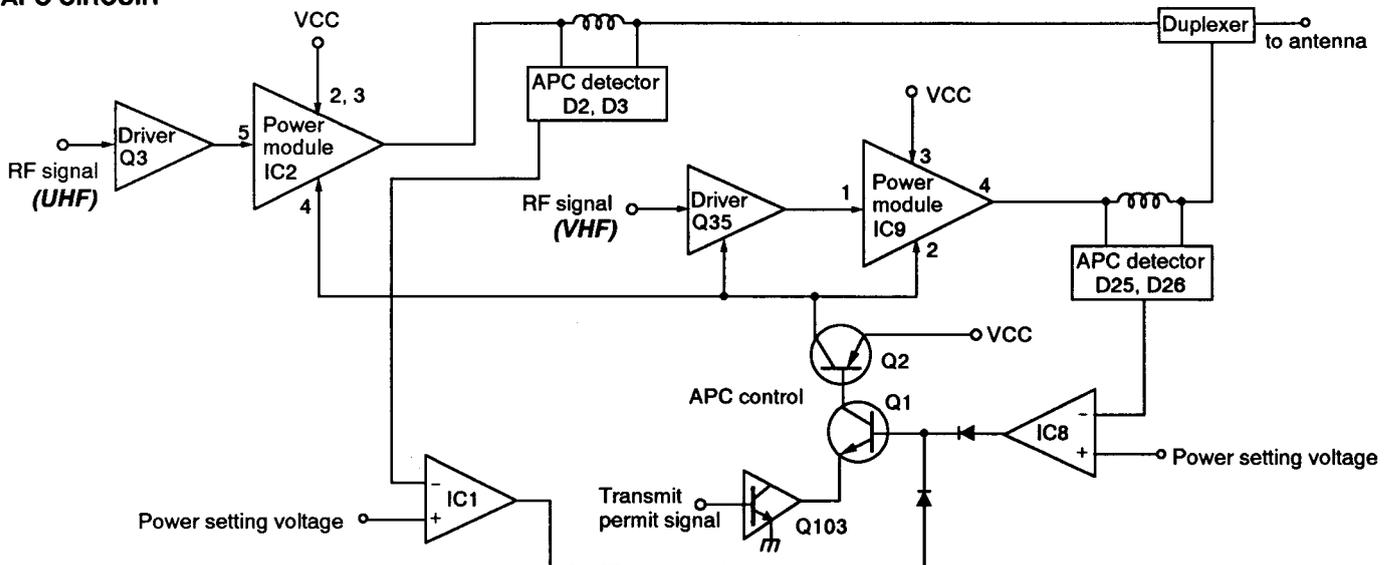


Fig. 2

### 3-3-2 VHF LOOP

The generated signal at the VHF-VCO (Q46, D31, D32) enters the PLL IC (IC6 pin 6) and is divided at the programmable divider section and is then applied to the phase detector section.

The phase detector compares the input signal with a reference frequency, and then outputs the out-of-phase signal (pulse-type signal) from pin 8.

The pulse-type signal is converted into DC voltage (lock voltage) at the active loop filter (Q43, Q44), and then applied to varactor diodes (D31, D32) of the VHF-VCO to stabilize the oscillated frequency.

The lock voltage is also used for the receiver circuit for the bandpass filter center frequency. The lock voltage from Q43 is amplified at buffer amplifiers (Q41, Q40) and then applied to the RF circuit.

### 3-3-3 UHF LOOP

The generated signal at the UHF-VCO (Q11, D9, D10) enters the PLL IC (IC6 pin 15) and is divided at the programmable divider section and is then applied to the phase detector section.

The phase detector compares the input signal and a reference frequency, and then outputs the out-of-phase signal (pulse-type signal) from pin 13.

The pulse-type signal is converted into DC voltage (lock voltage) at the active loop filter (Q12, Q13), and then applied to varactor diodes (D9, D10) of the UHF-VCO to stabilize the oscillated frequency.

## 3-4 POWER SUPPLY CIRCUIT

### 3-4-1 VOLTAGE LINES (MAIN UNIT)

LINE	DESCRIPTION
13 V	13 V controlled by the power switching circuit (Q56, Q57). When the [POWER] switch is pushed, the CPU outputs the control signal to the power switching circuit to turn the circuit ON.
8 V	Common 8 V is converted from 13 V line by the 8 V regulator (IC12).
+L5 V	Common 5 V for the CPU on the LOGIC unit. +L5 V is produced at IC11 of the MAIN unit from external DC input directly regardless of the power ON/OFF condition.
+S5 V	Common 5 V for the LCD driver IC (IC 2, LOGIC) and optional tone squelch unit (UT-89). +S5 V is converted from the 13 V line by the +S5 V regulator IC (IC14).
VR8 V	VR8 V is produced from 8 V at Q49 and Q50 using a control signal from the shift register (IC22 pin 4).
VT8 V	VT8 V is produced from 8 V at Q47, Q48 and D33. Shift register (IC22 pin 14) controls Q47 and Q48.
UR8 V	UR8 V is produced from 8 V at Q29 and Q30 using a control signal from the shift register (IC21 pin 4).
UT8 V	UT8 V is produced from 8 V at Q14, Q15 and D11. Shift register (IC21 pin 14) controls Q14 and Q15.

### 3-4-2 DC-DC CONVERTOR CIRCUIT

The DC-DC convertor circuit (IC13, Q58, Q59) has a variable output type switching regulator, which makes a wider frequency band coverage VCO. Approx. 30 V of output voltage is produced from 8 V.

## PLL CIRCUIT

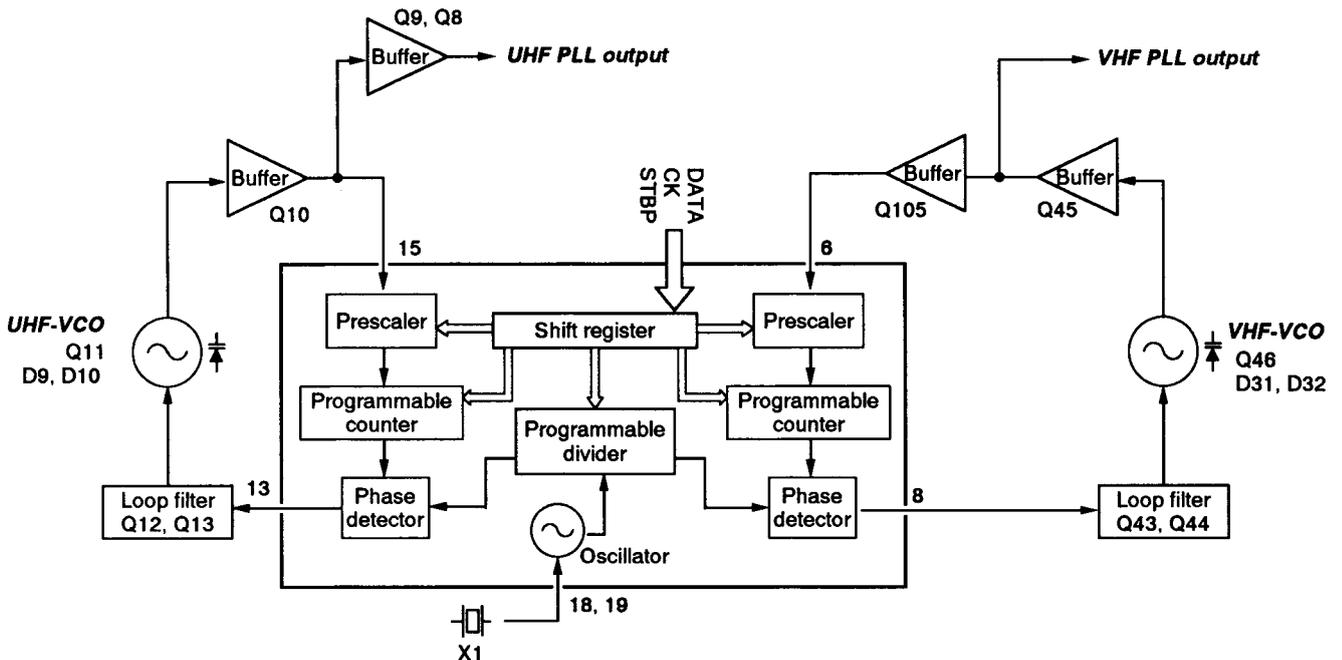


Fig. 3

## 3-5 OTHER CIRCUITS

### 3-5-1 TONE SQUELCH UNIT (OPTIONAL UNIT UT-89)

The receive signal from the DET V (DET U) signal line is applied to pin 1 of IC1 (IC2). The signal is compared with the programmed tone signal. Pin 14 of IC1 (IC2) becomes "LOW" when the matched tone is decoded.

### 3-5-2 DTMF ENCODER/DECODER UNIT (OPTIONAL UNIT UT-101)

#### ENCODER CIRCUIT

The programmed DTMF code signals are output from the pin 20 of IC2. DTMF code data is supplied from the CPU directly.

#### DECODER CIRCUIT

The received DTMF signals from the DET signal line are applied to pin 2 of IC1. The signals are compared with the programmed DTMF code signals, and un-muted data is applied to the CPU (IC2) directly when a matched DTMF code is received.

The IC3 is a data convertor IC for the DTMF encoder IC (IC2) and X1 is a reference oscillator for IC1 and IC2.

## 3-6 PORT ALLOCATIONS

### 3-6-1 CPU (LOGIC UNIT)

Pin number	Port name	Description
1	MU/D	Inputs a mic up/down signal.
7	RESET	Input port for a reset signal.
12	STB1	Outputs a strobe signal to I/O expander ICs (IC21, IC22).
13	STBP	Outputs a strobe signal to the PLL IC (IC6).
14	UNLKV	Input port for the VHF PLL unlocking signal from the PLL IC (IC6). "HIGH" : When PLL is unlocked.
15	SQLSV	Input port for the VHF noise squelch condition. "HIGH" : Squelch open "LOW" : Squelch close
16	VAMUTE	Outputs VHF AF mute signal to the mute control circuits (IC20, Q89). "HIGH" : AF mute "LOW" : AF un-mute
17	UAMUTE	Outputs UHF AF mute signal to the mute control circuits (IC20, Q88). "HIGH" : AF mute "LOW" : AF un-mute
18	UNLKU	Input port for the UHF PLL unlocking signal from the PLL IC (IC6). "HIGH" : When PLL is unlocked.
19	SQLSU	Input port for the UHF noise squelch condition. "HIGH" : Squelch open "LOW" : Squelch close
20	POWER	Outputs "HIGH" or "LOW" signal to the power switch control circuit (Q56, Q57). "HIGH" : Power ON
25	MREMO	Outputs "HIGH" or "LOW" signal to the DTMF selector circuit. "HIGH" : Select received signal. "LOW" : Select microphone signal.
27	MMUTE	Outputs microphone mute signal. "HIGH" : Mic mute
28	OPTD	Inputs "LOW" level signal when optional DTMF unit is installed.
33	VUP	Input port for the VHF dial up signal.
34	VDN	Input port for the VHF dial down signal.
35	VCK	Input port for the VHF dial clock signals.
36	PTT	Input port for the [PTT] switch. "HIGH" : [PTT] is pushed.
37	BEEP	Beep output port.
39	EECK	Outputs the clock signals for the EEPROM (LOGIC IC3).

## 3-6-2 I/O EXPANDERS

## • MAIN UNIT (IC21)

Pin number	Port name	Description
40	EEDATA	Outputs the serial data for the EEPROM (LOGIC IC3).
42	CK	Outputs the clock signals.
43	FANC	Cooling fan control signal output. "HIGH" : Cooling fan is active.
44	DATA	Outputs serial data.
45	UUP	Input port for the UHF dial up signal.
46	UDN	Input port for the UHF dial down signal
47	UCK	Input port for the UHF dial clock signals.
48	POWER	Input port for the [POWER] switch. "HIGH" : [POWER] is pushed.
49, 50	DIM0, DIM1	Output ports for LCD backlight dimmer control signals.
51-53	INIS0 -INIS2	Output ports for initial matrix strobe signal.
54-56	KEYS0 -KEYS2	Output ports for switch matrix strobe signal.
57-60	KEYI0 -KEYI3	Input ports for matrix signals.
61	SET	Input port for [SET/LOCK] switch. "LOW" : [SET/LOCK] switch is pushed.
62	TSQLV	Input port for the VHF tone squelch conditions. "LOW" : When matched tone is received.
63	TSQLU	Input port for the UHF tone squelch conditions. "LOW" : When matched tone is received.
64	UNIT T	Inputs "HIGH" level signal when the tone squelch unit is installed.
65-68	Q1-Q4	Input ports for the DTMF decode data signal.
69-72	TONE0 -TONE3	Output ports for the CTCSS tone signal data.
73	STD	Input port for the DTMF decoder, detects Q0-Q3 when "HIGH" level signal is applied.
74	STBOD	Outputs the strobe data to optional DTMF unit.
75	STBTV	Outputs the strobe signal to an optional tone squelch unit on VHF band.
76	STBTU	Outputs the strobe signal to an optional tone squelch unit on UHF band.
79	SMV	Input port for the VHF S-meter.
80	SMU	Input port for the UHF S-meter.

Pin number	Port name	Description
7	CONT.D	Output for UHF detected AF signal mute control. "HIGH" : AF signal go to AF amp.
12, 13	ULP2, ULP1	Outputs for UHF RF output power control.
14	UTX	Output for UHF transmitter control. "HIGH" : Transmit "LOW" : Receive (and transmit mute)

## • MAIN UNIT (IC22)

Pin number	Port name	Description
7	CONT.A	Output for VHF detected AF signal mute control. "HIGH" : AF signal go to AF amp.
12, 13	VPL2, VLP1	Outputs for VHF RF output power control.
14	VTX	Output for VHF transmitter control. "HIGH" : Transmit "LOW" : Receive (and transmit mute)

## SECTION 4 DISASSEMBLY INSTRUCTIONS

### ● Preparation for the disassembly

- ① Turn power OFF, then disconnect the DC cable.
- ② Unscrew 1 screw (A) as shown Fig 1, then remove the bottom cover.
- ③ Disconnect the speaker cable from "J4".
- ④ Lift up the clip part of the SP plate (at IC19) then remove the SP plate.
- ⑤ Remove the bush of DC cable from the chassis.
- ⑥ Unsolder jumper leads from the antenna connector (3 points).

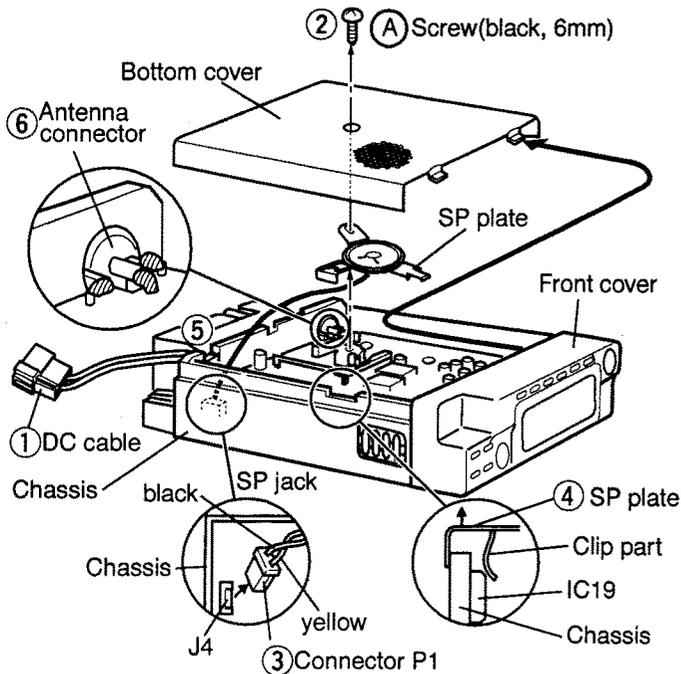


Fig 1

### ● Removing the front cover

- ⑦ Remove each the [DIAL], [VOL], [SQL] knobs and the 2 nuts (B), 2 hexagonal nuts (C) and 2 sheets (D) on the [SQL] knobs.
- ⑧ The front panel is hooked at 5 spots (↓) through the chassis. Push a part of the hook with tweezers to separate the front cover from the chassis.

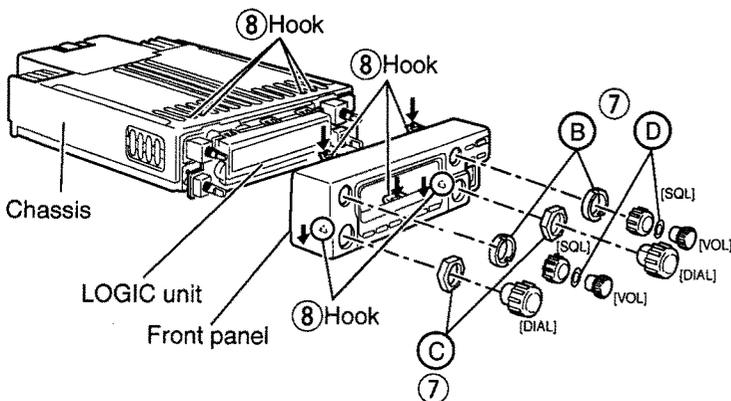


Fig 2

### ● Removing the LOGIC unit

- ⑨ Remove the LOGIC unit in the direction of the arrow.

NOTE: The connectors (J7, J8) disconnect from the chassis.

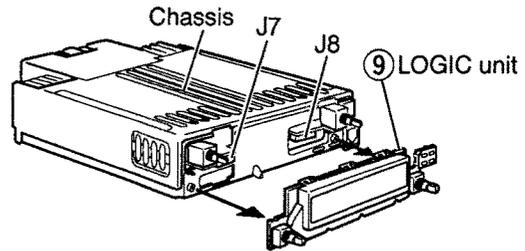


Fig 3

### ● Removing the MAIN unit

- ⑩ Remove the TR clip in the direction of the arrow, then unscrew 4 screws (E) and 6 screws (F).
- ⑪ Disconnect J5 on the MAIN unit, to separate the MAIN unit from the chassis.

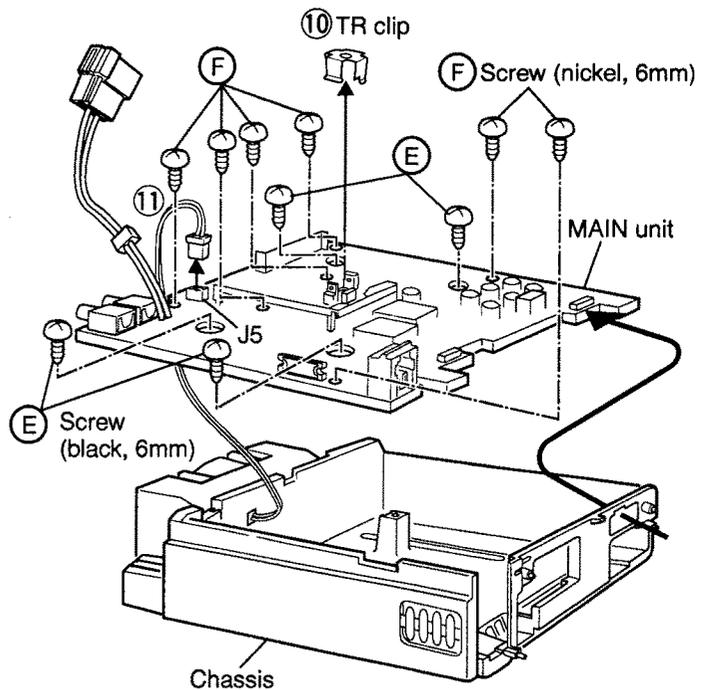
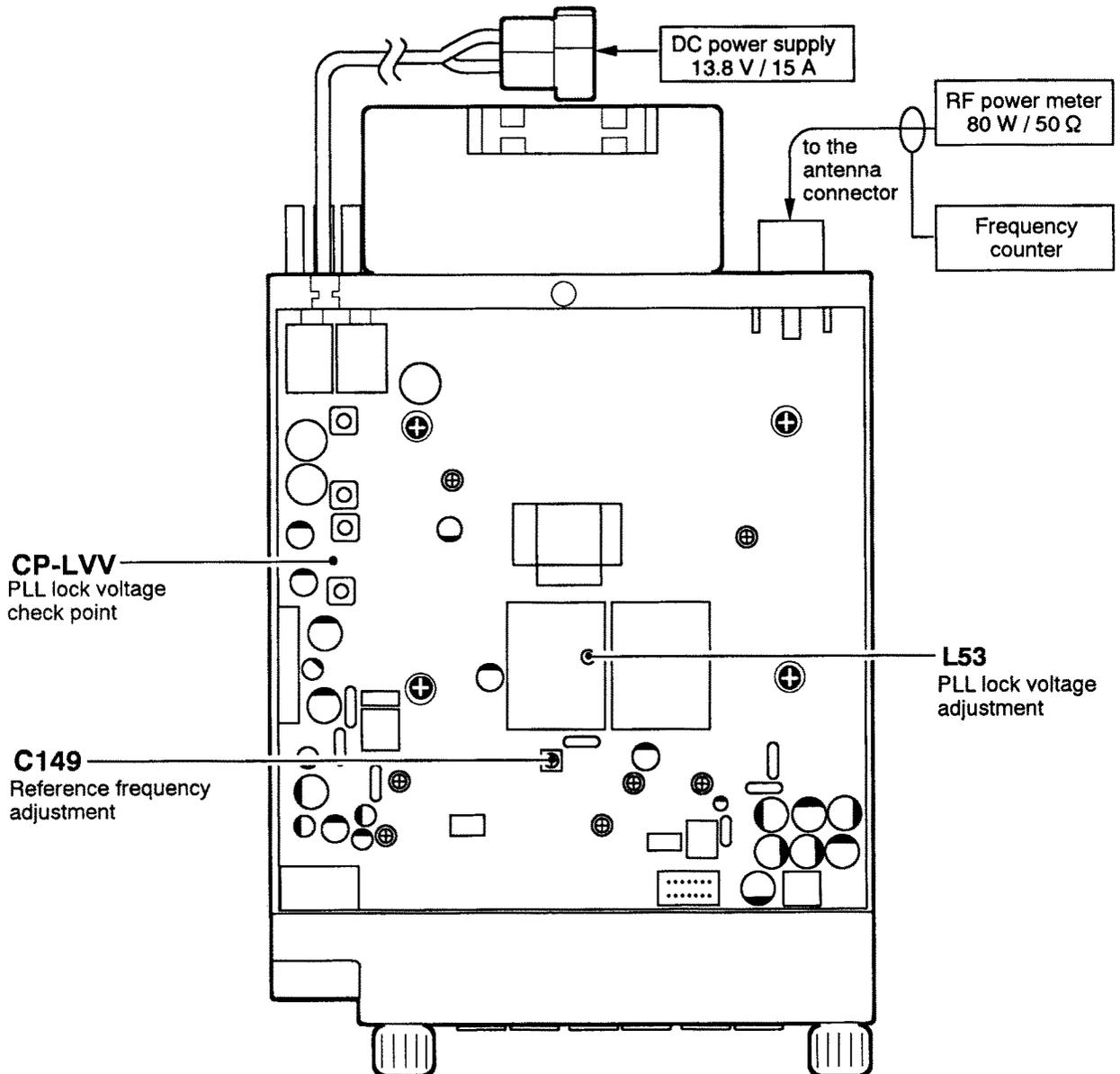


Fig 4

**SECTION 5 ADJUSTMENT PROCEDURES**

**5-1 PLL ADJUSTMENT**

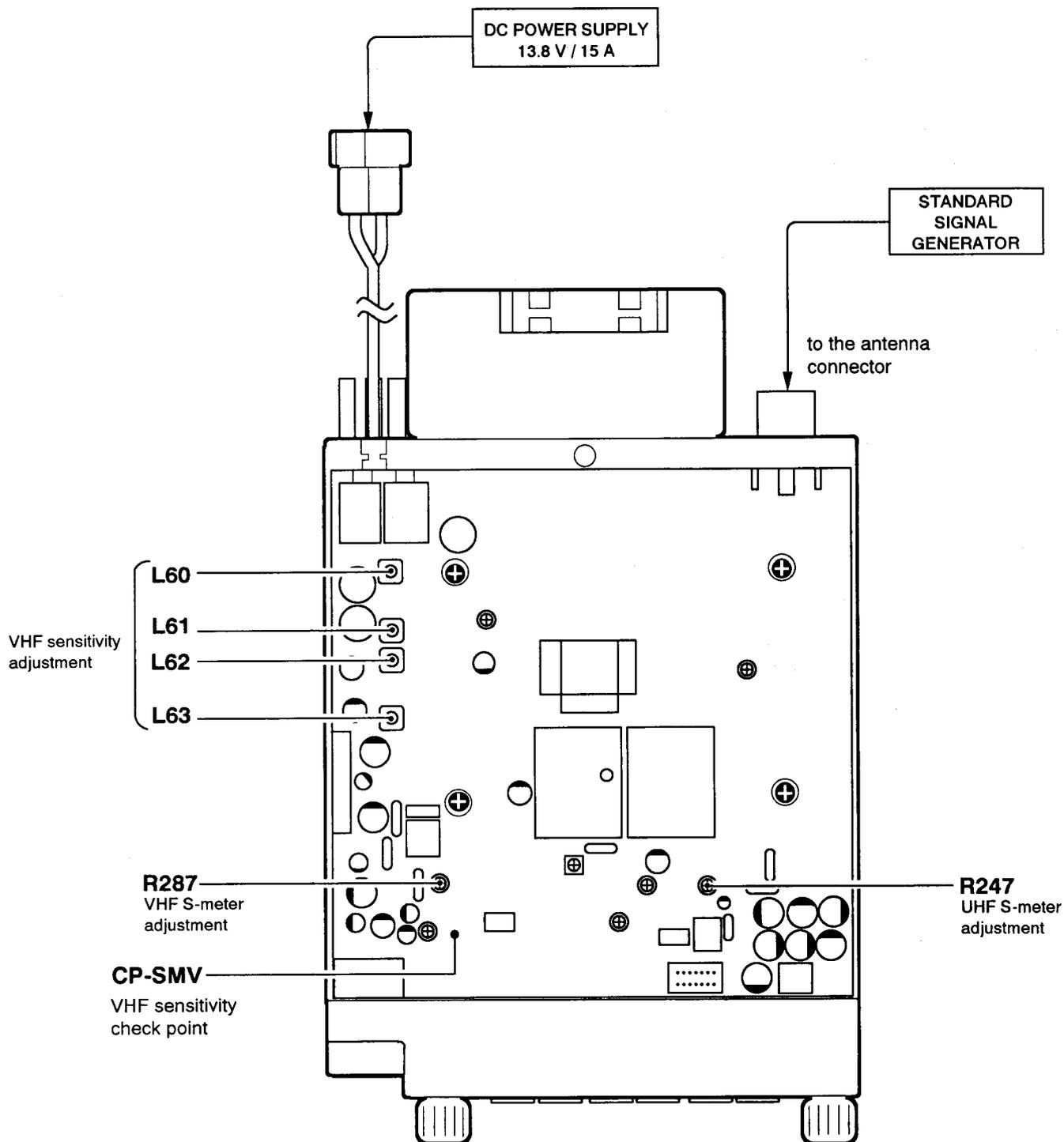
ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT	
		UNIT	LOCATION		UNIT	ADJUST
PLL REFERENCE FREQUENCY	<ul style="list-style-type: none"> <li>• UHF display: 440.000 MHz</li> <li>• Connect the RF power meter or a 50 Ω dummy load to the antenna connector.</li> <li>• Simplex</li> <li>• Transmitting</li> </ul>	Rear panel	Loosely couple the frequency counter to the antenna connector.	440.000 MHz	MAIN	C149
PLL LOCK VOLTAGE	<ul style="list-style-type: none"> <li>• VHF display: 145.000 MHz</li> <li>• Receiving</li> </ul>	MAIN	Connect the DC voltmeter to CP-LVV	9.5 V	MAIN	L53



## 5-2 RECEIVER ADJUSTMENT

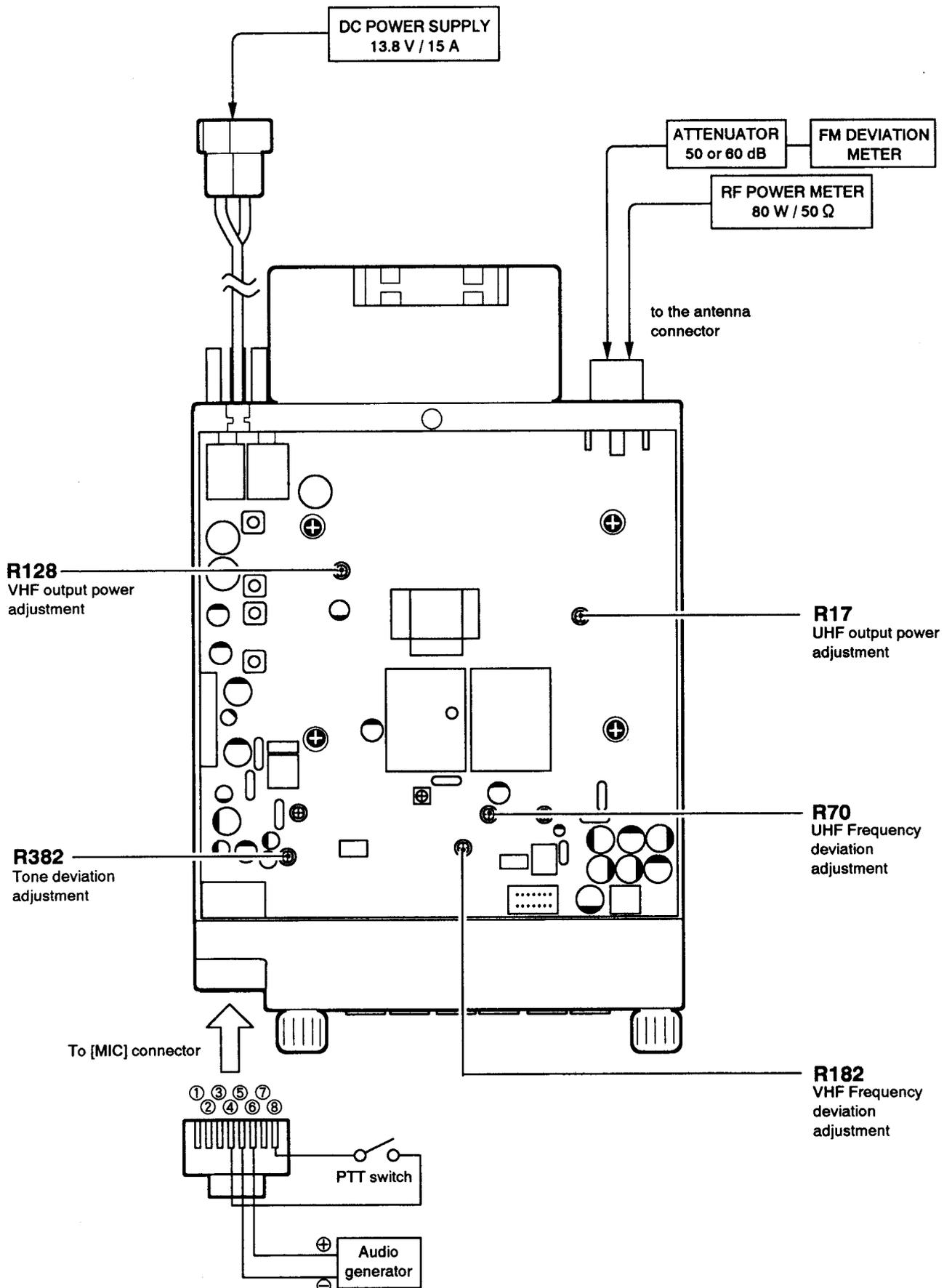
ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT		
		UNIT	LOCATION		UNIT	ADJUST	
VHF SENSITIVITY	1	<ul style="list-style-type: none"> <li>• VHF display: 146.000 MHz (USA, SEA versions) 145.000 MHz (All other versions)</li> <li>• Connect the SSG to the antenna connector and set as: Level : 1.0 <math>\mu</math>V* ( -107 dBm) Deviation : <math>\pm</math>3.5 kHz Modulation : 1 kHz</li> <li>• R287 (MAIN) : Max. CW</li> <li>• Receiving</li> </ul>	MAIN	Connect the DC voltmeter to CP-SMV	Maximum DC voltage	MAIN	Adjust in sequence L60, L61 L62, L63
	NOTE : Adjust standard signal generator output level so that the DC voltmeter needle remains at all times in the lowest 30 % of the full range.						
S-METER	1	<ul style="list-style-type: none"> <li>• VHF display: 146.000 MHz (USA, SEA versions) 145.000 MHz (All other versions)</li> <li>• Connect the SSG to the antenna connector and set as: Level : 1.0 <math>\mu</math>V* ( -107 dBm) Deviation : <math>\pm</math>3.5 kHz Modulation : 1 kHz</li> <li>• Receiving</li> </ul>	Front panel	LCD display [V DISPLAY]	S3 (4 dots)	MAIN	R287
	2	<ul style="list-style-type: none"> <li>• UHF display: 445.000 MHz (USA version) 435.000 MHz (All other versions)</li> <li>• Connect the SSG to the antenna connector and set as: Level : 1.0 <math>\mu</math>V* ( -107 dBm) Deviation : <math>\pm</math>3.5 kHz Modulation : 1 kHz</li> <li>• Receiving</li> </ul>		LCD display [U DISPLAY]	S3 (4 dots)	MAIN	R247

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



## 5-3 TRANSMITTER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT			
		UNIT	LOCATION		UNIT	ADJUST		
VHF OUTPUT POWER	1 <ul style="list-style-type: none"> <li>• VHF display: 146.000 MHz (USA, SEA versions) 145.000 MHz (All other versions)</li> <li>• [HI/LOW] switch: HI.</li> <li>• Simplex</li> <li>• Transmitting</li> </ul>	Rear panel	Connect the RF power meter to the antenna connector.	50 W	MAIN	R128		
	2 [HI/LOW] switch : LOW1						3.5-7.5 W	verify
	3 [HI/LOW] switch : LOW2						8-15 W	
UHF OUTPUT POWER	1 <ul style="list-style-type: none"> <li>• UHF display: 445.000 MHz (USA version) 435.000 MHz (All other versions)</li> <li>• [HI/LOW] switch: HI</li> <li>• Transmitting</li> </ul>	Rear panel	Connect the RF power meter to the antenna connector.	35 W	MAIN	R17		
	2 [HI/LOW] switch : LOW1						3.5-7.5 W	verify
	3 [HI/LOW] switch : LOW2						8-15 W	
FREQUENCY DEVIATION	1 <ul style="list-style-type: none"> <li>• VHF display: 146.000 MHz (USA, SEA versions) 145.000 MHz (All other versions)</li> <li>• [HI/LOW] switch : HI</li> <li>• [TONE] switch : OFF</li> <li>• Connect the audio generator to the microphone connector and set as: 20 mV/1.0 kHz</li> <li>• Set the FM deviation meter as: HPF : 50 Hz LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2</li> <li>• Transmitting</li> </ul>	Rear panel	Connect the FM deviation meter to the antenna connector through the attenuator.	$\pm 4.8$ kHz	MAIN	R182		
	2 <ul style="list-style-type: none"> <li>• UHF display: 445.000 MHz (USA version) 435.000 MHz (All other versions)</li> </ul>						$\pm 4.8$ kHz	MAIN
TONE DEVIATION	1 <ul style="list-style-type: none"> <li>• UHF display: 445.000 MHz (USA version) 435.000 MHz (All other versions)</li> <li>• [TONE] switch : ON</li> <li>• Apply no signal to the microphone connector.</li> <li>• Set the tone frequency : 88.5 Hz</li> <li>• Set the FM deviation meter as: HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P - P)/2</li> <li>• Transmitting</li> </ul>	Rear panel	Connect the FM deviation meter to the antenna connector through the attenuator.	$\pm 0.8$ kHz	MAIN	R382		



## SECTION 6 PARTS LIST

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130007850	S.IC	LC75823W
IC2	1140005450	S.IC	HD404449A50H
IC3	1190000280	S.IC	24LC08BT/1SN
IC4	1130005720	S.IC	TC7W04F (TE12L)
IC5	1130007340	S.IC	S-80745SL-A9-T1
IC6	1130006550	S.IC	TC7S08FU (TE85R)
IC7	1130006540	S.IC	TC7S02FU (TE85R)
IC8	1130006890	S.IC	TC7S04FU (TE85R)
Q1	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q2	1520000270	S.TRANSISTOR	2SB1182 TL Q
Q4	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q10	1530002060	S.TRANSISTOR	2SC4081 T107 R
D2	1180000050	S.DIODE	DAP202U T107
D3	1750000390	S.DIODE	1SS353 TE-17
D4	1750000390	S.DIODE	1SS353 TE-17
D5	1750000390	S.DIODE	1SS353 TE-17 [EUR], [ITA], [AUS], [SEA]
D6	1710000600	DIODE	1SS254 [EUR], [ITA], [AUS], [SEA]
D7	1710000600	DIODE	1SS254 [EUR], [AUS]
D8	1750000390	S.DIODE	1SS353 TE-17 [USA], [EUR], [AUS], [SEA]
D9	1750000390	S.DIODE	1SS353 TE-17 [USA], [EUR], [AUS], [SEA]
D10	1750000390	S.DIODE	1SS353 TE-17 [USA], [ITA], [SEA]
D11	1750000390	S.DIODE	1SS353 TE-17 [ITA], [SEA]
D12	1750000390	S.DIODE	1SS353 TE-17 [USA], [SEA]
D14	1750000220	S.DIODE	DA113W T107 [USA], [EUR], [ITA]
	1750000240	S.DIODE	DA112 T107 [AUS], [SEA]
D15	1750000220	S.DIODE	DA113W T107 [EUR], [ITA]
D16	1180000060	S.DIODE	DAN202U T107
D17	1180000060	S.DIODE	DAN202U T107
D18	1180000060	S.DIODE	DAN202U T107
D19	1180000060	S.DIODE	DAN202U T107
D20	1750000390	S.DIODE	1SS353 TE-17
D21	1790001200	S.DIODE	MA8S121(TX)
X1	8050009300	S.XTAL	CR-505 (4 MHz)
R1	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R3	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R4	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R5	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R6	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R7	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R8	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R10	7030001130	S.RESISTOR	MCR50JZHJ 100 Ω (101)
R12	7030000100	S.RESISTOR	MCR10EZHZ 4.7 Ω (4R7)
R13	7030000020	S.RESISTOR	MCR10EZHZ 1 Ω (010)
R14	7030000100	S.RESISTOR	MCR10EZHZ 4.7 Ω (4R7)
R15	7030000020	S.RESISTOR	MCR10EZHZ 1 Ω (010)
R16	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R17	7030003580	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R18	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R19	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R21	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R22	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R23	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R24	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R26	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R27	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R28	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R29	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R30	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R31	7030003640	S.RESISTOR	ERJ3GEYJ 225 V (2.2 MΩ)
R32	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R35	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R36	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R38	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R39	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R40	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R41	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R42	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R43	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R44	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R45	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R46	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R47	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R48	7030003680	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R49	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R50	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R51	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R52	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R53	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R54	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R55	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R56	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R57	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R58	7030003680	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R59	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R60	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R61	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R62	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R63	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R64	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R65	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R66	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R67	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R68	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R69	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R70	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R71	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R72	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R73	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R74	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R75	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R76	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R77	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R78	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R79	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R80	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R81	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R82	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R83	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R84	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R85	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
C1	4030006880	S.CERAMIC	C1808 JB 1H 102K-T-A
C2	4030006880	S.CERAMIC	C1808 JB 1H 102K-T-A
C4	4030006880	S.CERAMIC	C1808 JB 1H 102K-T-A
C5	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C6	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C7	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C8	4030008760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C9	4030009000	S.CERAMIC	C2012 JB 1C 224K-T-A
C10	4510005590	S.ELECTROLITIC	ECEV0JA331P

S.=Surface mount

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C11	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C12	4030008660	S.CERAMIC	C1608 JB 1H 102K-T-A
C13	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
C14	4030008630	S.CERAMIC	C1608 JF 1C 104Z-T-A
DS1	5030001260	LCD	LD-HU4348E (E-4213)
DS2	5080000330	LAMP	HRS-7219A-RE
DS3	5080000330	LAMP	HRS-7219A-RE
DS4	5080000330	LAMP	HRS-7219A-RE
DS5	5080000330	LAMP	HRS-7219A-RE
S1	2250000260	ENCODER	RH90N74AE20-15F-1647
S2	2250000260	ENCODER	RH90N74AE20-15F-1647
S3	2260001890	S.SWITCH	SKQDPA
S4	2260001890	S.SWITCH	SKQDPA
S5	2260001890	S.SWITCH	SKQDPA
S6	2260001890	S.SWITCH	SKQDPA
S7	2260001890	S.SWITCH	SKQDPA
S8	2260001890	S.SWITCH	SKQDPA
S9	2260001890	S.SWITCH	SKQDPA
S10	2260001890	S.SWITCH	SKQDPA
S11	2260001890	S.SWITCH	SKQDPA
S12	2260001890	S.SWITCH	SKQDPA
J1	6510018290	S.CONNECTOR	5-175843-0
J2	6510018290	S.CONNECTOR	5-175843-0
J3	6510018570	S.CONNECTOR	52465-1291
W1	7120000380	JUMPER	JPW 01 R-01 [USA], [ITA], [SEA]
W2	7030003860	S.JUMPER	ERJ3GE JPW V
EP1	0910044512	PCB	B 4472B
EP2	8930037490	LCD CONTACT	SRCN-1647-ZNN-L
EP3	8930037500	LCD CONTACT	SRCN-1647-ZNN-S

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110002750	S.IC	TA75S01F (TE85R)
IC2	1150001620	IC	SC-1318
IC3	1130004200	S.IC	TC4S66F (TE85R)
IC4	1110001971	S.IC	μPC1678G-T1
IC5	1110001971	S.IC	μPC1678G-T1
IC6	1130007760	S.IC	M64078GP-800C
IC8	1110002750	S.IC	TA75S01F (TE85R)
IC9	1150000760	IC	SC1091
IC10	1130004200	S.IC	TC4S66F (TE85R)
IC11	1180000420	S.IC	TA78L05F (TE12R)
IC12	1110002030	IC	TA7808S
IC13	1110001700	S.IC	TL499ACPS
IC14	1110002020	IC	TA7805S
IC16	1110003570	S.IC	MC3372VMEL
IC17	1110003570	S.IC	MC3372VMEL
IC18	1130007690	S.IC	BU4068BCF-T1
IC19	1110002540	IC	LA4445
IC20	1130003760	S.IC	TC4S81F (TE85R)
IC21	1130007700	S.IC	BU4094BCF-T1
IC22	1130007700	S.IC	BU4094BCF-T1
IC23	1110000960	S.IC	NJM4558M(T1)
IC24	1110002750	S.IC	TA75S01F (TE85R)
IC25	1110002750	S.IC	TA75S01F (TE85R)
IC26	1130006890	S.IC	TC7S04FU (TE85R)
IC27	1130007280	S.IC	TC7S32FU(TE85R)
Q1	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q2	1510000900	TRANSISTOR	2SA1824 S
Q3	1530002340	S.TRANSISTOR	2SC2954-T2B
Q4	1530002680	S.TRANSISTOR	2SC3357-T2
Q5	1590002270	S.TRANSISTOR	UMG9N TL
Q7	1530002050	S.TRANSISTOR	2SC3661-TA
Q8	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q9	1530002900	S.TRANSISTOR	2SC4226-T2
Q10	1530002900	S.TRANSISTOR	2SC4226-T2
Q11	1580000650	S.FET	2SK1577-2-T7
Q12	1530002490	S.TRANSISTOR	2SC3324-GR (TE85R)
Q13	1580000540	S.FET	2SK880-Y (TE85R)
Q14	1510000580	S.TRANSISTOR	2SA1362-GR (TE85R)
Q15	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q16	1580000490	S.FET	3SK166-2-T7
Q17	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q18	1580000480	S.FET	3SK184-S (TX)
Q19	1590000680	S.TRANSISTOR	DTC114EU T107
Q20	1530002020	S.TRANSISTOR	2SC3770-3-TA
Q21	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q22	1580000480	S.FET	3SK184-S (TX)
Q23	1590000680	S.TRANSISTOR	DTC114EU T107
Q24	1530002900	S.TRANSISTOR	2SC4226-T2
Q25	1590000980	S.TRANSISTOR	DTB123EK T147
Q26	1590002270	S.TRANSISTOR	UMG9N TL
Q27	1590000980	S.TRANSISTOR	DTB123EK T147
Q29	1590000980	S.TRANSISTOR	DTB123EK T147
Q30	1590000680	S.TRANSISTOR	DTC114EU T107
Q35	1530002340	S.TRANSISTOR	2SC2954-T2B
Q36	1590002270	S.TRANSISTOR	UMG9N TL
Q38	1530002680	S.TRANSISTOR	2SC3357-T2
Q39	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q40	1510000510	S.TRANSISTOR	2SA1576 T107 R
Q41	1580000540	S.FET	2SK880-Y (TE85R)
Q42	1530002050	S.TRANSISTOR	2SC3661-TA
Q43	1530002490	S.TRANSISTOR	2SC3324-GR (TE85R)
Q44	1580000540	S.FET	2SK880-Y (TE85R)
Q45	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q46	1580000640	S.FET	2SK1740-TA
Q47	1510000580	S.TRANSISTOR	2SA1362-GR (TE85R)
Q48	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q49	1590000980	S.TRANSISTOR	DTB123EK T147
Q50	1590000680	S.TRANSISTOR	DTC114EU T107
Q53	1580000490	S.FET	3SK166-2-T7
Q54	1580000480	S.FET	3SK184-S (TX)
Q55	1530002020	S.TRANSISTOR	2SC3770-3-TA
Q56	1520000270	S.TRANSISTOR	2SB1182 TL Q
Q57	1590002110	S.TRANSISTOR	DTC143XU T107
Q58	1540000250	S.TRANSISTOR	2SD999-T2 CK

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q59	1530001940	S.TRANSISTOR	2SC2712-BL (TE85R)
Q62	1520000200	S.TRANSISTOR	2SB798-T2 DK
Q63	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q64	1580000490	S.FET	3SK168-2-T7
Q65	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q68	1580000540	S.FET	2SK880-Y (TE85R)
Q69	1590002220	S.TRANSISTOR	DTA144VU T107
Q70	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q71	1590001800	S.TRANSISTOR	UMH2 TN
Q72	1590001450	S.FET	2SJ144-GR (TE85R)
Q73	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q74	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q75	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q76	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q77	1590000430	S.TRANSISTOR	DTC144EU T107
Q78	1580000540	S.FET	2SK880-Y (TE85R)
Q79	1590002220	S.TRANSISTOR	DTA144VU T107
Q80	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q81	1590001800	S.TRANSISTOR	UMH2 TN
Q82	1590001450	S.FET	2SJ144-GR (TE85R)
Q83	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q84	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q85	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q86	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q87	1530003090	S.TRANSISTOR	2SC4213-B (TE85R)
Q88	1530003090	S.TRANSISTOR	2SC4213-B (TE85R)
Q89	1530003090	S.TRANSISTOR	2SC4213-B (TE85R)
Q90	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q91	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q92	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q93	1590001450	S.FET	2SJ144-GR (TE85R)
Q94	1590001450	S.FET	2SJ144-GR (TE85R)
Q95	1590000430	S.TRANSISTOR	DTC144EU T107
Q96	1590001450	S.FET	2SJ144-GR (TE85R)
Q97	1590001450	S.FET	2SJ144-GR (TE85R)
Q98	1590000430	S.TRANSISTOR	DTC144EU T107
Q99	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q100	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q101	1530002060	S.TRANSISTOR	2SC4081 T107 R
Q102	1590001450	S.FET	2SJ144-GR (TE85R)
Q103	1590001320	S.TRANSISTOR	DTC143ZU T107
Q105	1530002560	S.TRANSISTOR	2SC4403-3-TR
Q106	1530002920	S.TRANSISTOR	2SC4226-T2 R25
Q107	1530002050	S.TRANSISTOR	2SC3881-TA
Q108	1590000430	S.TRANSISTOR	DTC144EU T107
Q109	1580000540	S.FET	2SK880-Y (TE85R)
Q110	1580000540	S.FET	2SK880-Y (TE85R)
Q111	1590000880	S.TRANSISTOR	DTC114EU T107
D1	1710000310	DIODE	MI407
D2	1790000980	S.DIODE	MA742(TX)
D3	1790000980	S.DIODE	MA742(TX)
D4	1750000070	S.DIODE	1SS228 (TE85R)
D5	1790000620	S.DIODE	MA77(TW)
D6	1790000620	S.DIODE	MA77(TW)
D7	1750000390	S.DIODE	1SS353 TE-17
D8	1730001120	S.ZENER	RD24M-T2B2
D9	1720000220	S.VARICAP	1SV166-T2B
D10	1720000220	S.VARICAP	1SV166-T2B
D11	1750000390	S.DIODE	1SS353 TE-17
D12	1710000730	S.DIODE	MI809-T11
D13	1710000730	S.DIODE	MI809-T11
D14	1750000070	S.DIODE	1SS228 (TE85R)
D15	1790000450	S.DIODE	MA862(TX)
D16	1790000450	S.DIODE	MA862(TX)
D17	1750000070	S.DIODE	1SS228 (TE85R)
D18	1790001010	S.ZENER	MA8043-L(TX)
D20	1790001010	S.ZENER	MA8043-L(TX)
D21	1180000060	S.DIODE	DAN202U T107
D22	1730000490	S.ZENER	RD6.8M-T2B2
D23	1750000390	S.DIODE	1SS353 TE-17
D24	1710000310	DIODE	MI407
D25	1790000980	S.DIODE	MA742(TX)
D26	1790000980	S.DIODE	MA742(TX)
D28	1750000390	S.DIODE	1SS353 TE-17

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D30	1750000390	S.DIODE	1SS353 TE-17
D31	1720000220	S.VARICAP	1SV166-T2B
D32	1720000220	S.VARICAP	1SV166-T2B
D33	1750000390	S.DIODE	1SS353 TE-17
D34	1710000730	S.DIODE	MI809-T11
D35	1710000730	S.DIODE	MI809-T11
D36	1750000070	S.DIODE	1SS228 (TE85R)
D37	1790000590	S.DIODE	MA110(TW)
D38	1720000460	S.VARICAP	1SV167-T1
D39	1790000590	S.DIODE	MA110(TW)
D40	1720000220	S.VARICAP	1SV166-T2B
D41	1720000220	S.VARICAP	1SV166-T2B
D42	1790000590	S.DIODE	MA110(TW)
D43	1790000590	S.DIODE	MA110(TW)
D44	1720000220	S.VARICAP	1SV166-T2B
D45	1750000070	S.DIODE	1SS228 (TE85R)
D46	1730000490	S.ZENER	RD6.8M-T2B2
D47	1790000700	DIODE	DSA3A1
D48	1750000390	S.DIODE	1SS353 TE-17
D50	1790001000	S.ZENER	MA8062-L(TX)
D51	1790000980	S.DIODE	MA742(TX)
D52	1790000980	S.DIODE	MA742(TX)
D54	1790000980	S.DIODE	MA742(TX)
D55	1790000980	S.DIODE	MA742(TX)
D57	1160000050	S.DIODE	DAP202U T107
D58	1750000390	S.DIODE	1SS353 TE-17
D59	1790001000	S.ZENER	MA8062-L(TX)
D60	1750000070	S.DIODE	1SS228 (TE85R)
D63	1160000060	S.DIODE	DAN202U T107
D65	1750000390	S.DIODE	1SS353 TE-17
D66	1750000390	S.DIODE	1SS353 TE-17
D67	1750000390	S.DIODE	1SS353 TE-17
D68	1750000390	S.DIODE	1SS353 TE-17
D71	1790000450	S.DIODE	MA862(TX)
D74	1750000390	S.DIODE	1SS353 TE-17
D75	1730000600	S.ZENER	RD3.3M-T2B2
D76	1750000390	S.DIODE	1SS353 TE-17
D77	1750000390	S.DIODE	1SS353 TE-17
D78	1750000390	S.DIODE	1SS353 TE-17
D79	1790000620	S.DIODE	MA77(TW)
FI1	2040000760	S.FILTER	HWCK001/445MHz [USA]
	2040000750	S.FILTER	HWCK002/435MHz [EUR], [ITA], [AUS], [SEA]
FI2	2040000760	S.FILTER	HWCK001/445MHz [USA]
	2040000750	S.FILTER	HWCK002/435MHz [EUR], [ITA], [AUS], [SEA]
FI3	2010001610	MONOLITHIC	FL-202 (30.850MHz)
FI4	2010001670	XTAL	FL-207 (17.200MHz)
FI5	2020001090	CERAMIC	KBF-455P-15A
FI6	2020001090	CERAMIC	KBF-455P-15A
X1	6050009090	XTAL	CR-489 (12.800MHz)
X2	6070000090	DISCRIMINATOR	CDB455C16
X3	6050008950	XTAL	CR-478 (30.395MHz)
X4	6070000090	DISCRIMINATOR	CDB455C16
X5	6050008940	XTAL	CR-477 (16.745MHz)
L1	6110001520	COIL	LA-232
L2	6110001520	COIL	LA-232
L3	6110002110	COIL	LA-382
L4	6110002130	COIL	LA-383
L5	6170000180	COIL	LW-19
L6	6110001520	COIL	LA-232
L9	6200003870	S.COIL	NL 252018T-015J
L10	6200003530	S.COIL	NL 252018T-012J
L11	6200003390	S.COIL	LL2012-F12NK
L12	6200003560	S.COIL	NL 252018T-018J
L15	6200001570	S.COIL	LER 015T 1R0M
L16	6200001570	S.COIL	LER 015T 1R0M
L17	6130002870	S.COIL	LB-288

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L18	6200001230	S.COIL	MLF2012A 1R0M-T
L19	6200001580	S.COIL	LER 015T R68M
L20	6200001580	S.COIL	LER 015T R68M
L21	6110001520	COIL	LA-232
L22	6110001520	COIL	LA-232
L23	6200000090	S.COIL	LQN 2A 18NM
L24	6200000110	S.COIL	LQN 2A 33NM
L25	6200000130	S.COIL	LQN 2A 47NM
L26	6200000120	S.COIL	LQN 2A 39NM
L27	6200002580	S.COIL	NL 252018T-033J
L28	6200003280	S.COIL	NL 252018T-2R2J
L29	6200002740	S.COIL	LL2012-F6N8K
L30	6200002740	S.COIL	LL2012-F6N8K
L31	6200002740	S.COIL	LL2012-F6N8K
L32	6200003390	S.COIL	LL2012-F12NK
L33	6200003390	S.COIL	LL2012-F12NK
L34	6200002740	S.COIL	LL2012-F6N8K
L35	6200003390	S.COIL	LL2012-F12NK
L36	6200002740	S.COIL	LL2012-F6N8K
L37	6200000110	S.COIL	LQN 2A 33NM
L38	6200002600	S.COIL	NL 252018T-047J
L39	6110002150	COIL	LA-385
L40	6110001550	COIL	LA-235
L41	6110001610	COIL	LA-244
L42	6170000180	COIL	LW-19
L43	6110001550	COIL	LA-235
L44	6110001550	COIL	LA-235
L45	6200002600	S.COIL	NL 252018T-047J
L46	6200002420	S.COIL	NL 252018T-068J
L47	6200002580	S.COIL	NL 252018T-033J
L48	6200002420	S.COIL	NL 252018T-068J
L49	6200002580	S.COIL	NL 252018T-033J
L50	6200002600	S.COIL	NL 252018T-047J
L51	6200002420	S.COIL	NL 252018T-068J
L52	6200002000	S.COIL	NL 252018T-3R3J
L53	6130002420	S.COIL	LB-270
L54	6200001580	S.COIL	LER 015T 1R8M
L55	6200001580	S.COIL	LER 015T 1R8M
L56	6200001580	S.COIL	LER 015T 1R8M
L57	6200001230	S.COIL	MLF2012A 1R0M-T
L58	6110001580	COIL	LA-236
L59	6110001580	COIL	LA-236
L60	6150004510	S.COIL	LS-506
L61	6150004510	S.COIL	LS-506
L62	6150004510	S.COIL	LS-506
L63	6150004510	S.COIL	LS-506
L64	6200002640	S.COIL	NL 252018T-R15J
L67	6200004670	S.COIL	NL 252018T-3R9J
L68	6180003020	COIL	5DS-101K
L69	6180002620	COIL	RCR664D-101K
L70	6200002600	S.COIL	NL 252018T-047J
L71	6200000110	S.COIL	LQN 2A 33NM
L72	6200002090	S.COIL	ELJFB 681K-F
L73	6200002090	S.COIL	ELJFB 681K-F
L76	6200000100	S.COIL	LQN 2A 22NM
L77	6200003880	S.COIL	NL 252018T-022J
L78	6200002580	S.COIL	NL 252018T-033J
L79	6200004060	S.COIL	MLR1608M 18NJ-T
L80	6200004060	S.COIL	MLR1608M 18NJ-T
R1	7030001130	S.RESISTOR	MCR50JZHJ 100 Ω (101)
R2	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R3	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R5	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R6	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R7	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R8	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R9	7030003790	S.RESISTOR	ERJ3GEYJ 824 V (820 kΩ)
R10	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R11	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R12	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R13	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R14	7030001190	S.RESISTOR	MCR50JZHJ 330 Ω (331)
R15	7030001040	S.RESISTOR	MCR50JZHJ 18 Ω (180)
R17	7310003590	S.TRIMMER	EVM-1XSX50 B24 (203)

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R18	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R19	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R20	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R21	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R22	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R23	7030000170	S.RESISTOR	MCR10EZHZ 18 Ω (180)
R25	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R26	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R30	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R32	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)
R33	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R34	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R35	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R36	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R37	7030003670	S.RESISTOR	ERJ3GEYJ 471 V (47.2 kΩ)
R39	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R40	7030000370	S.RESISTOR	MCR10EZHZ 820 Ω (821)
R41	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R42	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R43	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R45	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R46	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R47	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R48	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R49	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R50	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R52	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R53	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R54	7030003580	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R55	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R56	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R57	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R58	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R59	7030000460	S.RESISTOR	MCR10EZHZ 4.7 kΩ (472)
R60	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R61	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R62	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R63	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R65	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R66	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R67	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R68	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R69	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R70	7310003600	S.TRIMMER	EVM-1XSX50 B54 (503)
R71	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R72	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R73	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R74	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R75	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R76	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R77	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R78	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R79	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R80	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R81	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R82	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R83	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R84	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R85	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R86	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R87	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R88	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R89	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R90	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R91	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R92	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R93	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)
R94	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)
R95	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R96	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R97	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R98	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R99	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R100	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R101	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)
R102	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R103	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R105	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R106	7030003350	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R110	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R111	7030001130	S.RESISTOR	MCR50JZHJ 100 Ω (101)
R112	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R113	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R115	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R116	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R118	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R119	7030003790	S.RESISTOR	ERJ3GEYJ 824 V (820 kΩ)
R120	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R125	7030001210	S.RESISTOR	MCR50JZHJ 470 Ω (471)
R126	7030001050	S.RESISTOR	MCR50JZHJ 22 Ω (220)
R127	7520000110	S.POSISTOR	PTH9C22 BD 471Q-T
R128	7310003610	S.TRIMMER	EVM-1XSX50 B14 (103)
R129	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R130	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R133	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R134	7030000220	S.RESISTOR	MCR10EZJH 47 Ω (470)
R136	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R137	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R138	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R139	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)
R140	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R144	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R145	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R146	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R147	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R148	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R149	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R150	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R151	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R152	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R153	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R154	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R155	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R156	7030000480	S.RESISTOR	MCR10EZJH 4.7 kΩ (472)
R157	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R158	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R159	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R160	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R161	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R162	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R163	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R164	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R165	7030003220	S.RESISTOR	ERJ3GEYJ 150 V (15 Ω)
R166	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R167	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R169	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R170	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R171	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R172	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R173	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R174	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R175	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R176	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R177	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R178	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R179	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R180	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R181	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R182	7310003600	S.TRIMMER	EVM-1XSX50 B54 (503)
R183	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R184	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R186	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R187	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R188	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R189	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R190	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R191	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R192	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R193	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R194	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R195	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R196	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R198	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R199	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 Ω)
R200	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R201	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R202	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R203	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R204	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R205	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R206	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R207	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R208	7030001210	S.RESISTOR	MCR50JZHJ 470 Ω (471)
R209	7030006450	S.RESISTOR	MCR50JZHJ 4.7 Ω (4R7)
R210	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R211	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R212	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R213	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R214	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R215	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R217	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R218	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R221	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R222	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R223	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R224	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R225	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R231	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R232	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R233	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R234	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R235	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R236	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R237	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R238	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R239	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R240	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R241	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R242	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R243	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R244	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R245	7030003780	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R246	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R247	7310003600	S.TRIMMER	EVM-1XSX50 B54 (503)
R248	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R249	7030003730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R250	7510001010	S.THERMISTOR	NTCCF2012 4CH 154KCT
R251	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R252	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R253	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R254	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R255	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R256	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R257	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R258	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R259	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R260	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R261	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R262	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R263	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R264	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R265	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R266	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R267	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R268	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R269	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R270	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R271	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R272	7030003470	S.RESISTOR	ERJ3GEYJ 182 V (1.8 kΩ)
R273	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R274	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R276	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R277	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R278	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R279	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R280	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R281	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R282	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R283	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R284	7030003840	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R285	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R286	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R287	7310003800	S.TRIMMER	EVM-1XSX50 B54 (503)
R288	7030003820	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R289	7030003730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R290	7510001010	S.THERMISTOR	NTCCF2012 4CH 154KCT
R291	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R292	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R293	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R294	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R295	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R296	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R297	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R298	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R299	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R300	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R301	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R302	7030003630	S.RESISTOR	ERJ3GEYJ 332 V (39 kΩ)
R303	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R304	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R305	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R306	7030003600	S.RESISTOR	ERJ3GEYJ 222 V (22 kΩ)
R307	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R308	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R309	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R310	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R311	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R312	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R313	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R314	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R315	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R316	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R317	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R318	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 Ω)
R319	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R320	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R321	7030003350	S.RESISTOR	ERJ3GEYJ 181 V (180 Ω)
R322	7030000100	S.RESISTOR	MCR10EZHZ 4.7 Ω (4R7)
R323	7030000100	S.RESISTOR	MCR10EZHZ 4.7 Ω (4R7)
R324	7030003820	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R325	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R326	7030003820	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R327	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R328	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R329	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R330	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R331	7210002710	VARIABLE	TP98D00A-20F 10KB10KA-1647
R332	7210002710	VARIABLE	TP98D00A-20F 10KB10KA-1647
R333	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R334	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R335	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R336	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R337	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R338	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R339	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R340	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R341	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R342	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R343	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R344	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R345	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R346	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R347	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R348	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R349	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R350	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R351	7030003880	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R352	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R353	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R354	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R355	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R356	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R357	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R358	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R359	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R360	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R361	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R362	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R363	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R364	7030003420	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R365	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R366	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R367	7030003790	S.RESISTOR	ERJ3GEYJ 824 V (820 kΩ)
R368	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R369	7030003790	S.RESISTOR	ERJ3GEYJ 824 V (820 kΩ)
R370	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R371	7030003730	S.RESISTOR	ERJ3GEYJ 274 V (270 kΩ)
R372	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R373	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R374	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R375	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R376	7030003540	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R377	7030003840	S.RESISTOR	ERJ3GEYJ 225 V (2.2 MΩ)
R378	7030003840	S.RESISTOR	ERJ3GEYJ 225 V (2.2 MΩ)
R379	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R380	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R381	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R382	7310003770	S.TRIMMER	EVM-1XSX50 B34 (303)
R383	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R384	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R385	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R386	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R387	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R388	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R389	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R390	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R391	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R392	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R393	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R394	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R395	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R396	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R398	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R399	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R403	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R417	7520000110	S.POSISTOR	PTH9C22 BD 471Q-T
R418	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R419	7030003530	S.RESISTOR	ERJ3GEYJ 562 V (5.6 kΩ)
R420	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R422	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R423	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R424	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R425	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R426	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R427	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R428	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R429	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R431	7030000170	S.RESISTOR	MCR10EZHZ 18 Ω (180)
R432	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R433	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R434	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R436	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R437	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R438	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R439	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R440	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R441	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R442	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R443	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)
R444	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R445	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R446	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R447	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R448	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R449	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R450	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R451	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R452	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R453	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R454	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R455	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R456	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R457	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R458	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R459	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R460	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R461	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R462	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R463	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R464	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R465	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R469	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R470	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R471	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R472	7030000220	S.RESISTOR	MCR10EZHZ 47 Ω (470)
R474	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R475	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
C1	4030011090	S.CERAMIC	GRM42-6 CH 070D 500PT
C2	4030011060	S.CERAMIC	GRM42-6 CH 040C 500PT
C3	4030011110	S.CERAMIC	GRM42-6 CH 090D 500PT
C5	4030011100	S.CERAMIC	GRM42-6 CH 080D 500PT
C6	4030011080	S.CERAMIC	GRM42-6 CH 080D 500PT
C7	4030011250	S.CERAMIC	GRM42-6 W5R 471K 500PT
C8	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C9	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C10	4030011250	S.CERAMIC	GRM42-6 W5R 471K 500PT
C11	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C12	4030011020	S.CERAMIC	GRM42-6 CK 010C 500PT
C13	4030011120	S.CERAMIC	GRM42-6 CH 100D 500PT
C14	4030011070	S.CERAMIC	GRM42-6 CH 050C 500PT
C16	4030011020	S.CERAMIC	GRM42-6 CK 010C 500PT
C17	4030011120	S.CERAMIC	GRM42-6 CH 100D 500PT
C18	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C19	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C20	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C22	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C23	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C24	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C25	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C26	4510004630	S.ELECTROLITIC	ECEV1CA100SR
C27	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C28	4550006660	S.TANTALUM	ECST1CC226R
C29	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C30	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C31	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C32	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C36	4550006650	S.TANTALUM	ECST1CY685R
C39	4030006990	S.CERAMIC	C1808 CH 1H 080D-T-A
C40	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C41	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C42	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C43	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C44	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C45	4030007020	S.CERAMIC	C1808 CH 1H 120J-T-A
C46	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C47	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C48	4510004630	S.ELECTROLITIC	ECEV1CA100SR
C49	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C50	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C51	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C52	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C53	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C54	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C55	4030006990	S.CERAMIC	C1808 CH 1H 080D-T-A
C56	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C57	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C59	4030006980	S.CERAMIC	C1808 CH 1H 070D-T-A
C60	4030006980	S.CERAMIC	C1808 CH 1H 070D-T-A
C61	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C62	4510006220	S.ELECTROLITIC	ECEV1CA101UP
C63	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C64	4510006210	S.ELECTROLITIC	ECEV1VA330UP

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C65	4030006650	S.CERAMIC	C1808 JB 1H 471K-T-A
C66	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C68	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C69	4030009510	S.CERAMIC	C1808 CH 1H 010B-T-A
C70	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C71	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C72	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C73	4030009510	S.CERAMIC	C1808 CH 1H 010B-T-A
C74	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C75	4030006950	S.CERAMIC	C1808 CH 1H 040C-T-A
C76	4030006860	S.CERAMIC	C1808 CH 1H 102K-T-A
C77	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C78	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C79	4030007110	S.CERAMIC	C1808 CH 1H 680J-T-A
C80	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C81	4550006130	S.TANTALUM	ECST1VY224R
C82	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C83	4550006640	S.TANTALUM	ECST1DY225R
C84	4550006640	S.TANTALUM	ECST1DY225R
C86	4030006860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C87	4030006760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C88	4030006830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C89	4030006630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C90	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C91	4030006870	S.CERAMIC	C1808 JB 1H 222K-T-A
C92	4550006640	S.TANTALUM	ECST1DY225R
C93	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C94	4550006640	S.TANTALUM	ECST1DY225R
C95	4030006860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C96	4030011090	S.CERAMIC	GRM42-6 CH 070D 500PT
C97	4030007030	S.CERAMIC	C1808 CH 1H 150J-T-A
C98	4030006980	S.CERAMIC	C1808 CH 1H 070D-T-A
C99	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C100	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C101	4030006950	S.CERAMIC	C1808 CH 1H 040C-T-A
C102	4030010780	S.CERAMIC	C1808 CH 1H 1R5C-T-A
C103	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C104	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C105	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C106	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C107	4030007090	S.CERAMIC	C1808 CH 1H 470J-T-A
C108	4030007030	S.CERAMIC	C1808 CH 1H 150J-T-A
C109	4030006940	S.CERAMIC	C1808 CH 1H 030C-T-A
C110	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C111	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C112	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C113	4030006990	S.CERAMIC	C1808 CH 1H 080D-T-A
C114	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C115	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C116	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C118	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C119	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C120	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C121	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C122	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C123	4030011030	S.CERAMIC	GRM42-6 CK 1R5C 500PT
C124	4030010780	S.CERAMIC	C1808 CH 1H 1R5C-T-A
C125	4030010780	S.CERAMIC	C1808 CH 1H 1R5C-T-A
C126	4030006940	S.CERAMIC	C1808 CH 1H 030C-T-A
C127	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C128	4030006860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C129	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C130	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C131	4030006980	S.CERAMIC	C1808 CH 1H 070D-T-A
C132	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C133	4030006960	S.CERAMIC	C1808 CH 1H 050C-T-A
C134	4030006960	S.CERAMIC	C1808 CH 1H 050C-T-A
C135	4030006930	S.CERAMIC	C1808 CH 1H 020C-T-A
C136	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C137	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C138	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C139	4030006850	S.CERAMIC	C1808 JB 1H 471K-T-A
C140	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C141	4030006860	S.CERAMIC	C1808 JB 1H 102K-T-A
C142	4030006860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C143	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C144	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C147	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C149	4610001260	S.TRIMMER	ECR-JA020 E12W
C150	4030007070	S.CERAMIC	C1808 CH 1H 330J-T-A
C151	4030007120	S.CERAMIC	C1808 CH 1H 820J-T-A
C152	4030007090	S.CERAMIC	C1808 CH 1H 470J-T-A
C154	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C155	4510004630	S.ELECTROLITIC	ECEV1CA100SR
C156	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C160	4030011190	S.CERAMIC	GRM42-8 CH 270J 500PT
C161	4030011200	S.CERAMIC	GRM42-8 CH 300J 500PT
C162	4030011170	S.CERAMIC	GRM42-8 CH 180J 500PT
C163	4030011260	S.CERAMIC	GRM42-8 W5R 102K 500PT
C164	4030008660	S.CERAMIC	C1808 JB 1H 102K-T-A
C165	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C166	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C167	4030011250	S.CERAMIC	GRM42-8 W5R 471K 500PT
C168	4030011020	S.CERAMIC	GRM42-8 CK 010C 500PT
C169	4030011120	S.CERAMIC	GRM42-8 CH 100D 500PT
C170	4030011200	S.CERAMIC	GRM42-8 CH 300J 500PT
C171	4030011290	S.CERAMIC	GRM42-8 CH 240J 500PT
C172	4030011020	S.CERAMIC	GRM42-8 CK 010C 500PT
C173	4030011120	S.CERAMIC	GRM42-8 CH 100D 500PT
C174	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C175	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C176	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C178	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C180	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C181	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C182	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C183	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C187	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C188	4550008660	S.TANTALUM	ECST1CC226R
C189	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C190	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C191	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C192	4030007050	S.CERAMIC	C1808 CH 1H 220J-T-A
C193	4510008220	S.ELECTROLITIC	ECEV1CA101UP
C194	4550008650	S.TANTALUM	ECST1CY885R
C195	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C196	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C198	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C199	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C200	4030007080	S.CERAMIC	C1808 CH 1H 270J-T-A
C201	4030008940	S.CERAMIC	C1808 CH 1H 030C-T-A
C202	4030007050	S.CERAMIC	C1808 CH 1H 220J-T-A
C203	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C204	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C205	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C206	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C207	4030007050	S.CERAMIC	C1808 CH 1H 220J-T-A
C208	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C209	4030008970	S.CERAMIC	C1808 CH 1H 080D-T-A
C210	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C211	4030008970	S.CERAMIC	C1808 CH 1H 080D-T-A
C212	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C213	4510008210	S.ELECTROLITIC	ECEV1VA330UP
C214	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C215	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C216	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C217	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C218	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C219	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C220	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C221	4550008360	S.TANTALUM	ECST1VY104R
C222	4550008640	S.TANTALUM	ECST1DY225R
C223	4550008640	S.TANTALUM	ECST1DY225R
C225	4030008660	S.CERAMIC	C2012 JF 1C 105Z-T-A
C226	4030008760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C227	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C228	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C229	4030009510	S.CERAMIC	C1808 CH 1H 010B-T-A
C230	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C231	4030009510	S.CERAMIC	C1808 CH 1H 010B-T-A
C232	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C233	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C234	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C235	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C236	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C237	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C238	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C239	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C240	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C241	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C242	4550008640	S.TANTALUM	ECST1DY225R
C243	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C244	4030008870	S.CERAMIC	C1808 JB 1H 222K-T-A
C245	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C246	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C247	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C248	4510004630	S.ELECTROLITIC	ECEV1CA100SR
C249	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C250	4030011180	S.CERAMIC	GRM42-8 CH 150J 500PT
C251	4030007080	S.CERAMIC	C1808 CH 1H 270J-T-A
C252	4030008990	S.CERAMIC	C1808 CH 1H 080D-T-A
C253	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C254	4030008980	S.CERAMIC	C1808 CH 1H 070D-T-A
C255	4030008930	S.CERAMIC	C1808 CH 1H 020C-T-A
C258	4030007080	S.CERAMIC	C1808 CH 1H 270J-T-A
C258	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C259	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C260	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C263	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C264	4030008910	S.CERAMIC	C1808 CH 1H 0R5C-T-A
C265	4030008920	S.CERAMIC	C1808 CH 1H 010C-T-A
C266	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C268	4030008910	S.CERAMIC	C1808 CH 1H 0R5C-T-A
C269	4030008940	S.CERAMIC	C1808 CH 1H 030C-T-A
C271	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C272	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C274	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C275	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C276	4030009990	S.CERAMIC	C1808 CH 1H 200J-T-A
C277	4030008960	S.CERAMIC	C1808 CH 1H 050C-T-A
C278	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C279	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C281	4030008900	S.CERAMIC	C1808 JB 1E 103K-T-A
C282	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C284	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C285	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C286	4510004600	ELECTROLITIC	16 MV 1000 HC
C287	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C288	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C289	4550008650	S.TANTALUM	ECST1CY885R
C290	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C291	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C292	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C293	4510008220	S.ELECTROLITIC	ECEV1CA101UP
C294	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C295	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C296	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C297	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C298	4510008220	S.ELECTROLITIC	ECEV1CA101UP
C299	4510008220	S.ELECTROLITIC	ECEV1CA101UP
C300	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C301	4550008360	S.TANTALUM	ECST1VY104R
C302	4510008210	S.ELECTROLITIC	ECEV1VA330UP
C303	4510008210	S.ELECTROLITIC	ECEV1VA330UP
C304	4510008210	S.ELECTROLITIC	ECEV1VA330UP
C307	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C308	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C309	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C310	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C311	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C312	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C313	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C314	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C315	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C316	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C317	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C318	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C319	4030008990	S.CERAMIC	C1808 CH 1H 080D-T-A

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C320	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C326	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C327	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C328	4030008850	S.CERAMIC	C1808 JB 1H 471K-T-A
C329	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C331	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C332	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C333	4030007120	S.CERAMIC	C1808 CH 1H 820J-T-A
C334	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C335	4030007100	S.CERAMIC	C1808 CH 1H 560J-T-A
C336	4030007040	S.CERAMIC	C1808 CH 1H 180J-T-A
C337	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C338	4030007160	S.CERAMIC	C1808 CH 1H 181J-T-A
C339	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C340	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C341	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C342	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C343	4030008880	S.CERAMIC	C1808 JB 1H 472K-T-A
C345	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C346	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C347	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C348	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C349	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C350	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C351	4030007070	S.CERAMIC	C1808 CH 1H 330J-T-A
C352	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C353	4030008760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C354	4030008760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C355	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C356	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C357	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C358	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C359	4030008860	S.CERAMIC	C1808 JB 1C 153K-T-A
C360	4030008900	S.CERAMIC	C1808 JB 1C 333K-T-A
C361	4030008860	S.CERAMIC	C1808 JB 1C 153K-T-A
C362	4030008770	S.CERAMIC	C1808 JB 1H 562K-T-A
C363	4030008770	S.CERAMIC	C1808 JB 1H 562K-T-A
C364	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C365	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C366	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C367	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C368	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C371	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C372	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C373	4030007120	S.CERAMIC	C1808 CH 1H 820J-T-A
C374	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C375	4030007090	S.CERAMIC	C1808 CH 1H 470J-T-A
C376	4030007140	S.CERAMIC	C1808 CH 1H 121J-T-A
C377	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C378	4030007160	S.CERAMIC	C1808 CH 1H 181J-T-A
C379	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C380	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C381	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C382	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C383	4030008880	S.CERAMIC	C1808 JB 1H 472K-T-A
C385	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C386	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C387	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C388	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C389	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C390	4030008860	S.CERAMIC	C1808 JB 1H 102K-T-A
C391	4030007070	S.CERAMIC	C1808 CH 1H 330J-T-A
C392	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C393	4030008760	S.CERAMIC	C2012 X7R 1C 104K-T-A
C394	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C395	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C396	4030008830	S.CERAMIC	C1808 JF 1C 104Z-T-A
C397	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C398	4030006900	S.CERAMIC	C1808 JB 1E 103K-T-A
C399	4030008860	S.CERAMIC	C1808 JB 1C 153K-T-A
C400	4030008900	S.CERAMIC	C1808 JB 1C 333K-T-A
C401	4030008860	S.CERAMIC	C1808 JB 1C 153K-T-A
C402	4030008770	S.CERAMIC	C1808 JB 1H 562K-T-A
C403	4030008770	S.CERAMIC	C1808 JB 1H 562K-T-A
C404	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C405	4510004640	S.ELECTROLITIC	ECEV1CA470SP

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C406	4510006240	S.ELECTROLITIC	ECEV1CA221P
C407	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C408	4510006220	S.ELECTROLITIC	ECEV1CA101UP
C409	4510006260	S.ELECTROLITIC	ECEV1AA471UP
C410	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C411	4510006240	S.ELECTROLITIC	ECEV1CA221P
C412	4510006220	S.ELECTROLITIC	ECEV1CA101UP
C413	4510006260	S.ELECTROLITIC	ECEV1AA471UP
C414	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C415	4510005870	S.ELECTROLITIC	ECEV1HA3R3SR
C416	4550006140	S.TANTALUM	ECST1EY474R
C417	4550006140	S.TANTALUM	ECST1EY474R
C418	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C419	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C420	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C421	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C422	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C423	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C424	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C425	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C426	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C427	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C428	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C429	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C430	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C431	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C432	4510004630	S.ELECTROLITIC	ECEV1CA100SR
C433	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C434	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C435	4030008900	S.CERAMIC	C1808 JB 1C 333K-T-A
C436	4030007020	S.CERAMIC	C1808 CH 1H 120J-T-A
C437	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C438	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C439	4510004640	S.ELECTROLITIC	ECEV1CA470SP
C440	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C441	4030007130	S.CERAMIC	C1808 CH 1H 101J-T-A
C442	4030008650	S.CERAMIC	C1808 JB 1H 332K-T-A
C443	4030007120	S.CERAMIC	C1808 CH 1H 820J-T-A
C444	4030009490	S.CERAMIC	C1808 JB 1H 821K-T-A
C445	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C446	4030008680	S.CERAMIC	C1808 JB 1C 223K-T-A
C447	4030008920	S.CERAMIC	C1808 JB 1C 473K-T-A
C448	4030008920	S.CERAMIC	C1808 JB 1C 473K-T-A
C449	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C450	4030006870	S.CERAMIC	C1808 JB 1H 222K-T-A
C451	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C452	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C453	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C454	4510005870	S.ELECTROLITIC	ECEV1HA3R3SR
C455	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C456	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C457	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C458	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C459	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C460	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C461	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C462	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C463	4030008630	S.CERAMIC	C1808 JF 1C 104Z-T-A
C464	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C465	4030007090	S.CERAMIC	C1808 CH 1H 470J-T-A
C466	4030006910	S.CERAMIC	C1808 CH 1H 0R5C-T-A
C469	4030006980	S.CERAMIC	C1808 CH 1H 070D-T-A
C470	4030006940	S.CERAMIC	C1808 CH 1H 030C-T-A
C471	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C476	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C480	4030006990	S.CERAMIC	C1808 CH 1H 080D-T-A
C481	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C482	4030008680	S.CERAMIC	C1808 JB 1H 102K-T-A
C483	4030007010	S.CERAMIC	C1808 CH 1H 100D-T-A
C484	4030006880	S.CERAMIC	C1808 JB 1H 102K-T-A
C485	4030006880	S.CERAMIC	C1808 JB 1H 102K-T-A
C486	4030006970	S.CERAMIC	C1808 CH 1H 080D-T-A
C490	4550006660	S.TANTALUM	ECST1CC226R
C491	4510006220	S.ELECTROLITIC	ECEV1CA101UP
C492	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A
C493	4030008680	S.CERAMIC	C2012 JF 1C 105Z-T-A

S.=Surface mount

## [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C494	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C495	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C496	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C497	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C498	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C499	4030008910	S.CERAMIC	C1608 CH 1H 0R5C-T-A
C500	4030008970	S.CERAMIC	C1608 CH 1H 060D-T-A
C501	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C503	4030008860	S.CERAMIC	C2012 JF 1C 105Z-T-A
C504	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C505	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C506	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C507	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C508	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C509	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C510	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C511	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C512	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C513	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C514	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C515	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C516	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C517	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C518	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C519	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C520	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C521	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C522	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C523	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C524	4030007140	S.CERAMIC	C1608 CH 1H 121J-T-A
C525	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C526	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C527	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C528	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C529	4030008860	S.CERAMIC	C1608 JB 1H 102K-T-A
C530	4030008940	S.CERAMIC	C1608 CH 1H 030C-T-A
C531	4030007090	S.CERAMIC	C1608 CH 1H 470J-T-A
J2	6450000140	CONNECTOR	HSJ0807-01-010
J3	6450000140	CONNECTOR	HSJ0807-01-010
J4	6510014790	CONNECTOR	53253-0210
J5	6510007080	CONNECTOR	PI28A-02M
J6	6510016440	S.CONNECTOR	52465-1491
J7	6510018280	S.CONNECTOR	5-175639-0
J8	6510018280	S.CONNECTOR	5-175639-0
J9	6450001550	CONNECTOR	MJ88HOP
W1	8900004880	CABLE	OPC-465
W2	7120000380	JUMPER	JPW 01 R-01
W3	7120000380	JUMPER	JPW 01 R-01
W4	7120000380	JUMPER	JPW 01 R-01
W5	7030003860	S.JUMPER	ERJ3GE JPW V
W6	7030003860	S.JUMPER	ERJ3GE JPW V
W7	7030003860	S.JUMPER	ERJ3GE JPW V
W8	7030003860	S.JUMPER	ERJ3GE JPW V
W9	7030003970	S.JUMPER	MCR18EZHZ JPW (000)
W10	7030007150	S.JUMPER	MCR50JZHZ JPW (000)
W11	7030007150	S.JUMPER	MCR50JZHZ JPW (000)
EP1	0910044525	PCB	B 4473E
EP4	6910000630	BEAD	FSOH070RN
EP5	6910000630	BEAD	FSOH070RN

S.=Surface mount

# SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

## 7-1 CABINET PARTS

### [CHASSIS PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J 1	6510004880	Antenna connector MR-DS-E 01	1
MF 1	2710000410	Fan motor 0410-12H	1
MP 1	8010015970	1647 Chassis	1
MP 2	8930035360	1647 SP plate	1
MP 3	8930035340	1647 TR clip	1
MP 4	8810008660	Screw PH BT M3 x 8 NI-ZU	2
MP 5	8810004430	Screw PH M3 x 6 ZK	4
MP 6	8810008630	Screw PH BT M3 x 6 NI-ZU	6
MP 7	8810004430	Screw PH M3 x 6 ZK	1
MP 8	8110005550	1647 Fan cover	1
MP 9	8810004310	Screw PH M2.6 x 10 ZK	4
MP10	8810009020	Screw FH M2.6 x 5 ZK	3
MP11	8830000790	VR nut (H)	2
MP12	8830001010	HEX. nut(A)	2
MP13	8930038380	1647 Spring	1

### [MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W 1	8900004880	Cable OPC-465	1
MP 1	8930021620	Coil cover FX859	1
MP 2	8930035850	1647 Plate	1
MP 3	8510009720	1647 VCO case	2
MP 9	8510010010	1647 Filter plate	1
MP10	8930037120	1647 M-holder	2
MP11	8930037140	1647 M-sheet	2
MP12	8930037720	Himeron sheet AX	1
MP14	8930014210	Grounding spring(E) [USA]	1
MP15	8930014210	Grounding spring (E) [USA]	1
MP16	8930038170	1647 spacer	1
MP18	8930038160	Rubber sheet (S)	1

### [COVER UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP 1	8110005480	1647 COVER	1
MP 5	8930028820	Himeron sheet (AJ)	1
SP 1	2510000820	Speaker VS-57-0814	1
WS 1	8600034120	FX1647 P01CO	1

### [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
EP 2	8930037490	LCD contact base SRCN-1647-ZNN-L	1
EP 3	8930037500	LCD contact base SRCN-1647-ZNN-S	1
MP 1	8210012170	1647 LCD reflector	1
MP 2	8930036170	1647 LCD holder	1
MP 3	8930035400	1647 LCD filter	1
MP 4	8930017650	Lamp spacer FX833	1
MP 6	8930037130	1647 Mask sheet	1
MP 7	8510010161	1647 Switch cover-1	1

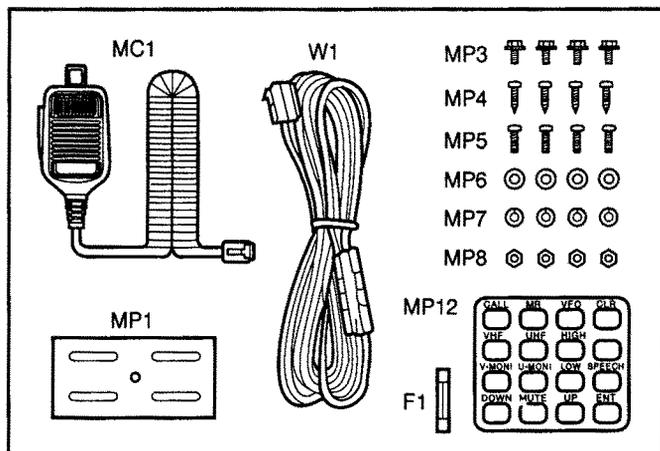
### [FRONT UNIT]

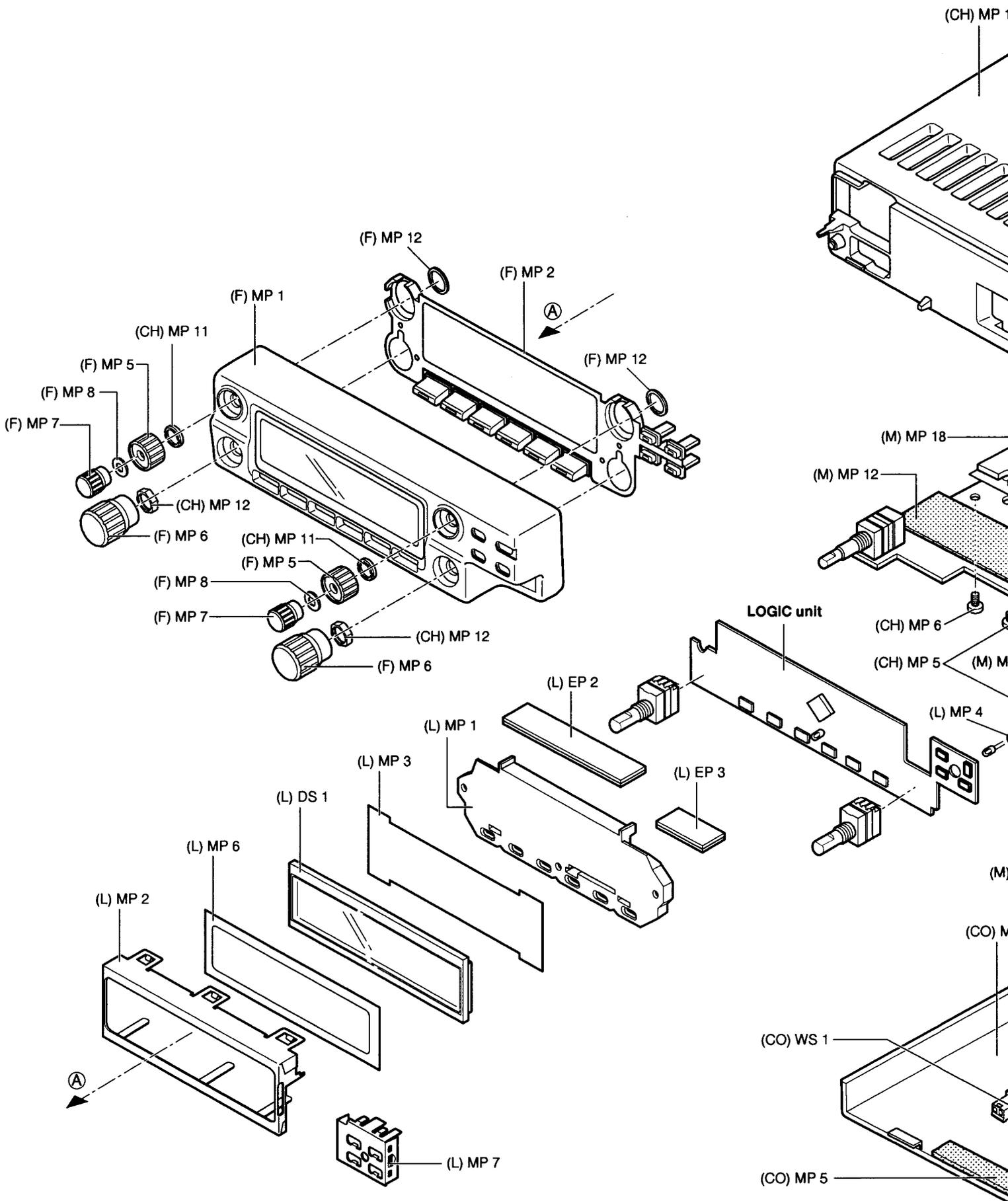
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP 1	8210013110	1647 Front panel	1
MP 2	8930035500	1647 Front key	2
MP 5	8610009860	Knob N236	2
MP 6	8610009840	Knob N234	2
MP 7	8610009850	Knob N235	2
MP 8	8930037800	Knob sheet (A)	2
MP11	8950004430	Double-sided tape (O) 4088	2
MP12	8850001590	Isolating flat washer (R)	2

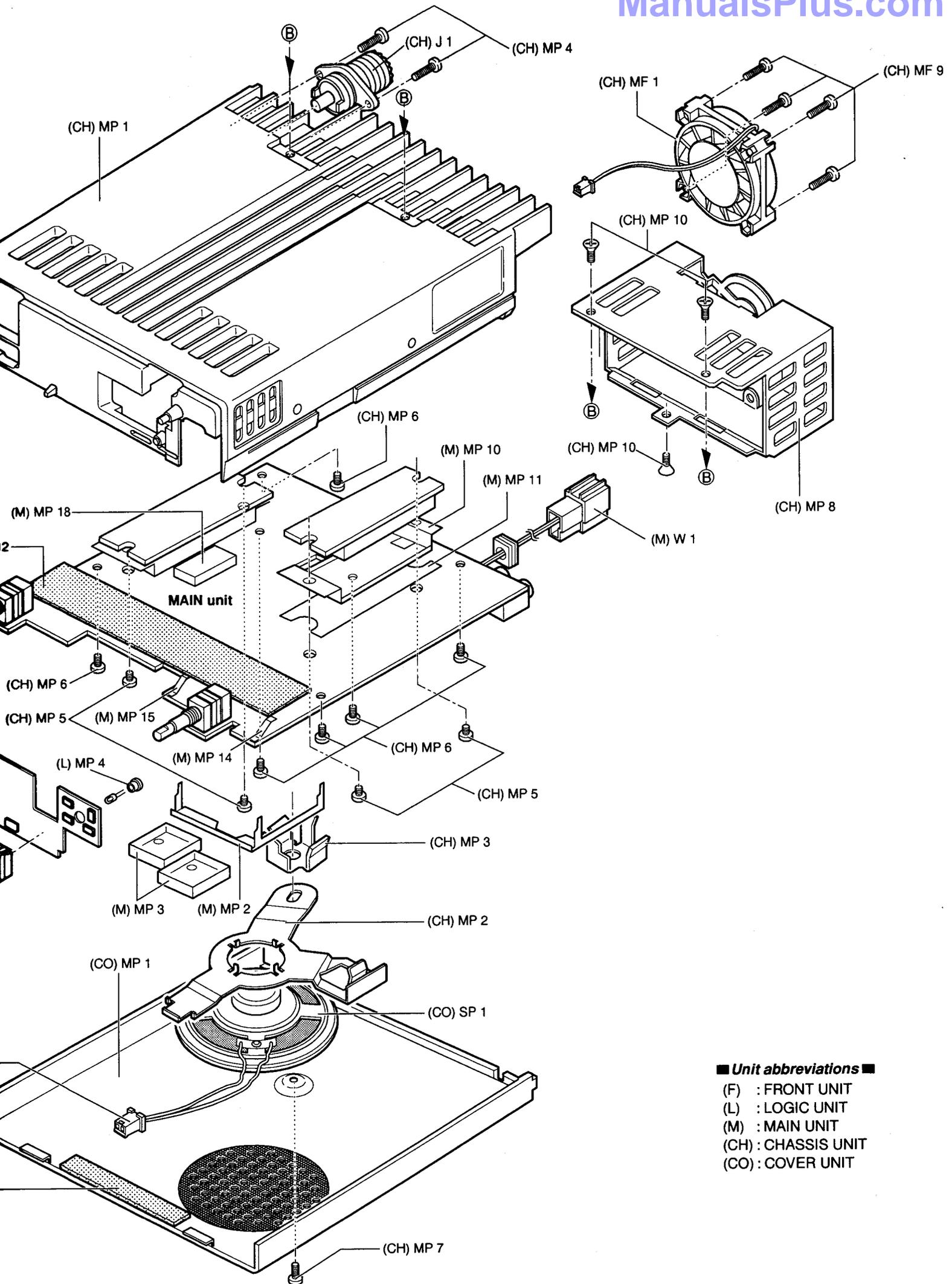
Screw abbreviations: PH: Pan head FH: Flat head B0: Self-tapping NI: Nickel ZK: Black

## 7-2 ACCESSORIES

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
F 1	5210000080	Fuse FGB 20A	1
W 1	Optional product	DC cable OPC-346	1
MC 1	Optional product	Microphone HM-95 ACC [USA], [KOR]	1
	Optional product	Microphone HM-96 ACC [AUS], [SEA]	1
	Optional product	Microphone HM-97 ACC [EUR], [ITA]	1
MP 1	Optional product	1542 Mobil bracket (B)	1
MP 3	8820000530	Frang bolt M4 x 8 NI	4
MP 4	8810000470	Screw PH M5 x 2 (+, -)	4
MP 5	8810000950	Screw PH A M5 x16	4
MP 6	8850000150	Flat washer M5 NI BS	4
MP 7	8850000390	Spring washer M5	4
MP 8	8830000120	Nut M5	4
MP12	8310036010	1647 Microphone plate [USA], [KOR]	1





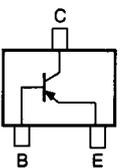
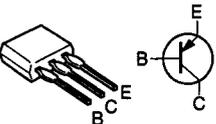
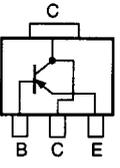
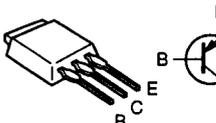
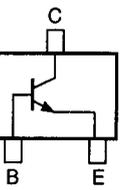
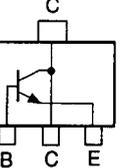
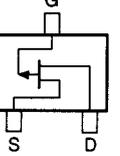
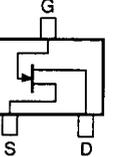


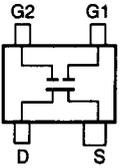
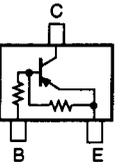
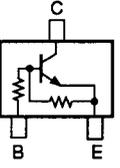
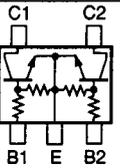
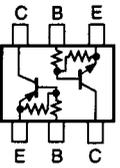
■ Unit abbreviations ■

- (F) : FRONT UNIT
- (L) : LOGIC UNIT
- (M) : MAIN UNIT
- (CH) : CHASSIS UNIT
- (CO) : COVER UNIT

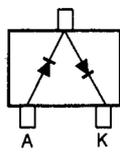
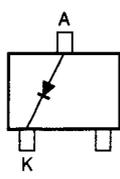
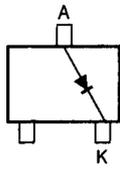
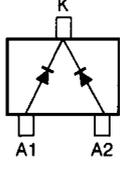
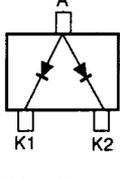
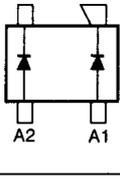
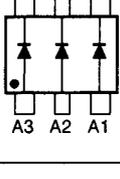
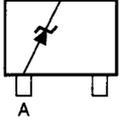
**SECTION 8 SEMI-CONDUCTOR INFORMATIONS**

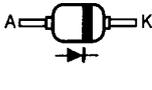
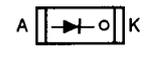
**8-1 TRANSISTORS**

NAME	SYMBOL	INSIDE VIEW
2SA1362 GR 2SA1576 R	AEG FR	
2SA1824 S	A1824	
2SB798	DK	
2SB1182 F5 Q	B1182	
2SC2712 BL 2SC3324 GR 2SC3661 TA 2SC3770-3 TA 2SC4081 R 2SC4213 B 2SC4226 2SC4228 R45 2SC4403-3	LL CBG FY JY3 BR AB R25 R45 LY3	
2SC2954 2SC3357 2SD999 CK	QK RK CK	
2SJ144 GR	VG	
2SK880 Y 2SK1577-2 2SK1740	XY P2 IJ	

NAME	SYMBOL	INSIDE VIEW
3SK166-2 3SK184 S	K 3R	
DTA144VU DTB123EK	156 F12	
DTC143 ZU DTC114EU DTC143XU DTC144EU	123 24 43 26	
UMG9N	G9	
UMH2	H2	

8-2 DIODES

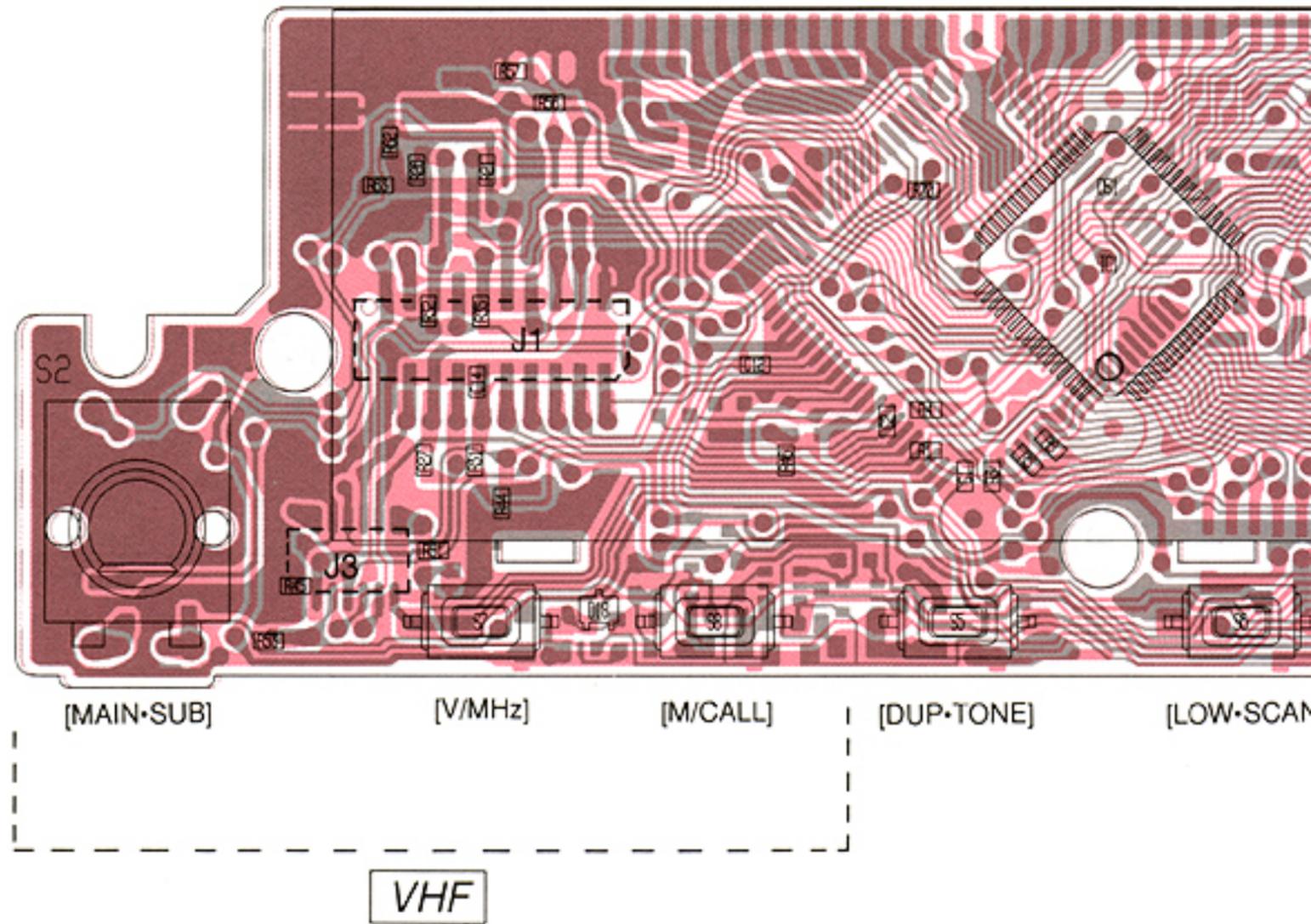
NAME	SYMBOL	INSIDE VIEW
1SS226 MA742	C3 M1U	
DA112	AZ	
DA113	AY	
DAN202 U	N	
DAP202U	P	
MA862	M1I	
MA6S121	M2D	
RD24M B2 RD3.3M B2 RD6.8M B2	242 332 682	

NAME	SYMBOL	INSIDE VIEW
1SV166 1SV167	Yellow -	
MA8043L MA8062L	4_3 6_2	
1SS353 MA110 MA77	C 1A 4B	
1SS254	Yellow	
MI809	Red dot	

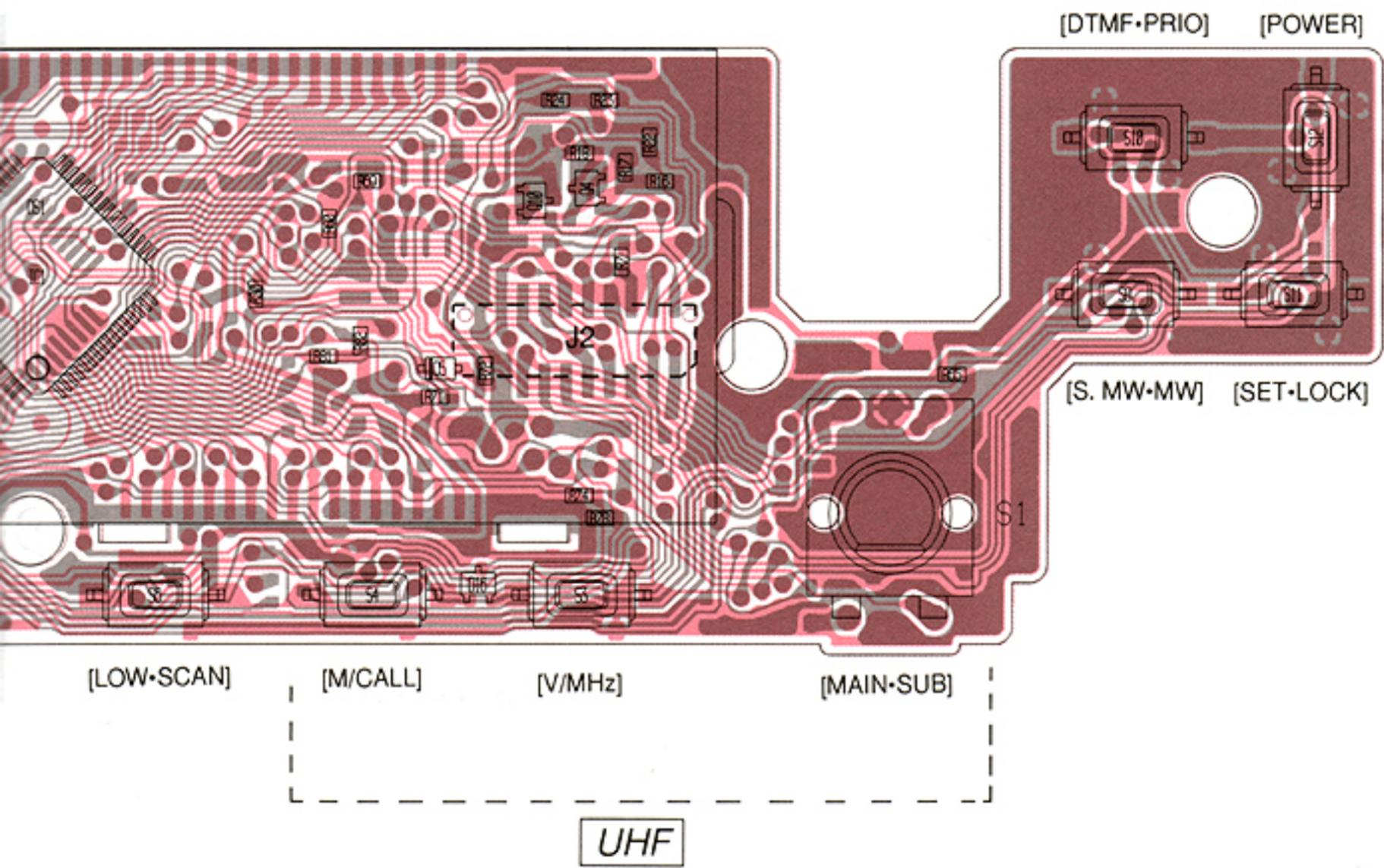
# SECTION 9 BOARD LAYOUTS

## 9-1 LOGIC UNIT

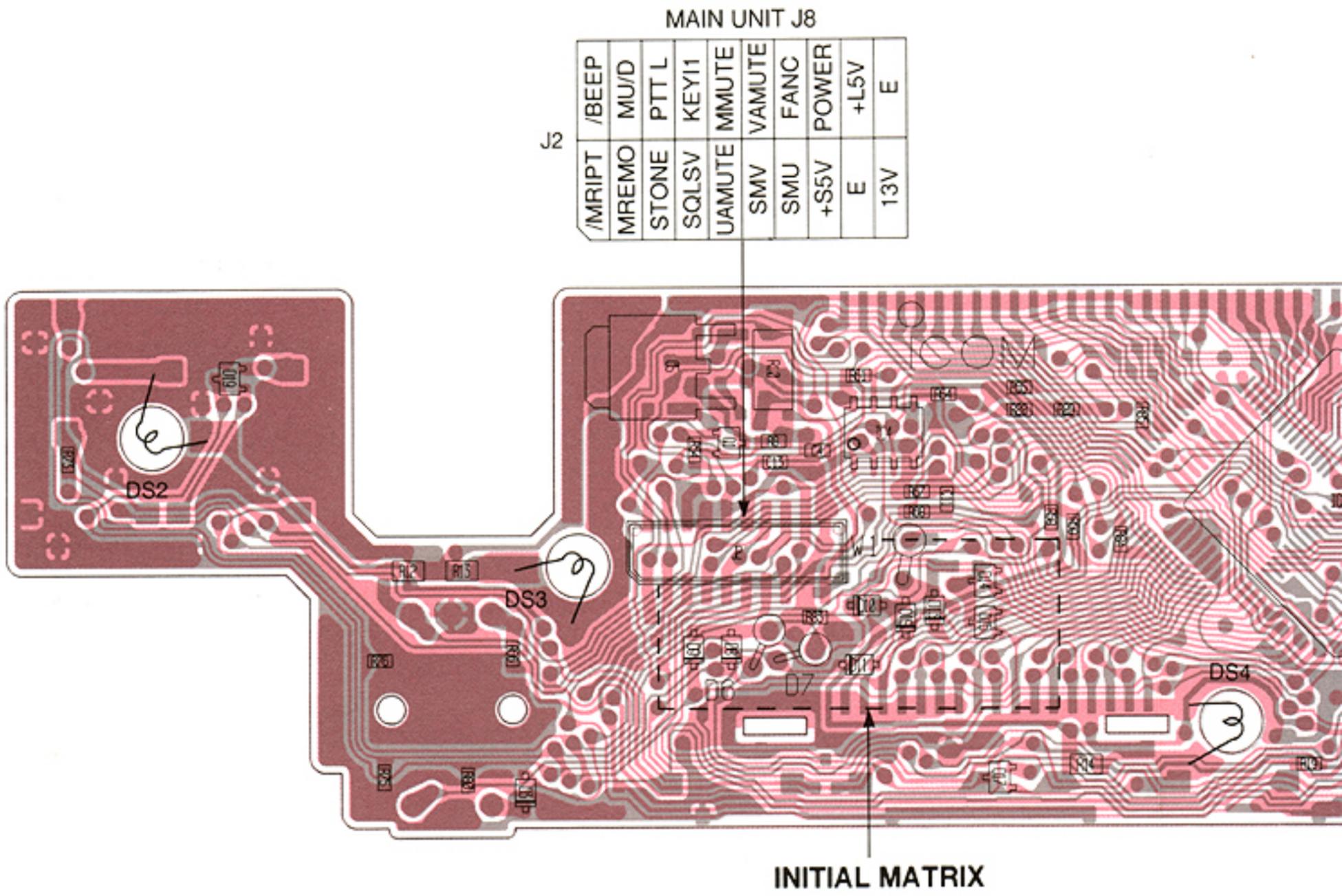
• LOGIC UNIT (TOP VIEW)



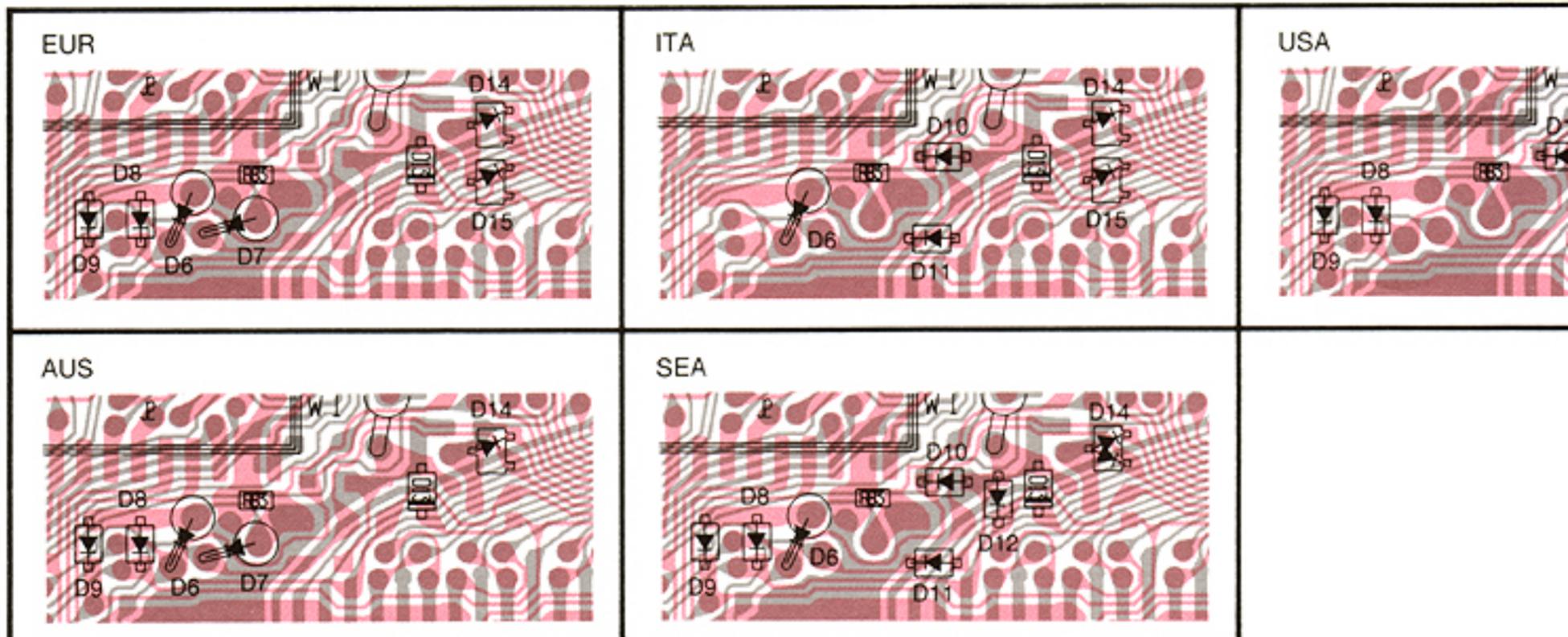
The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.



• LOGIC UNIT (BOTTOM VIEW)

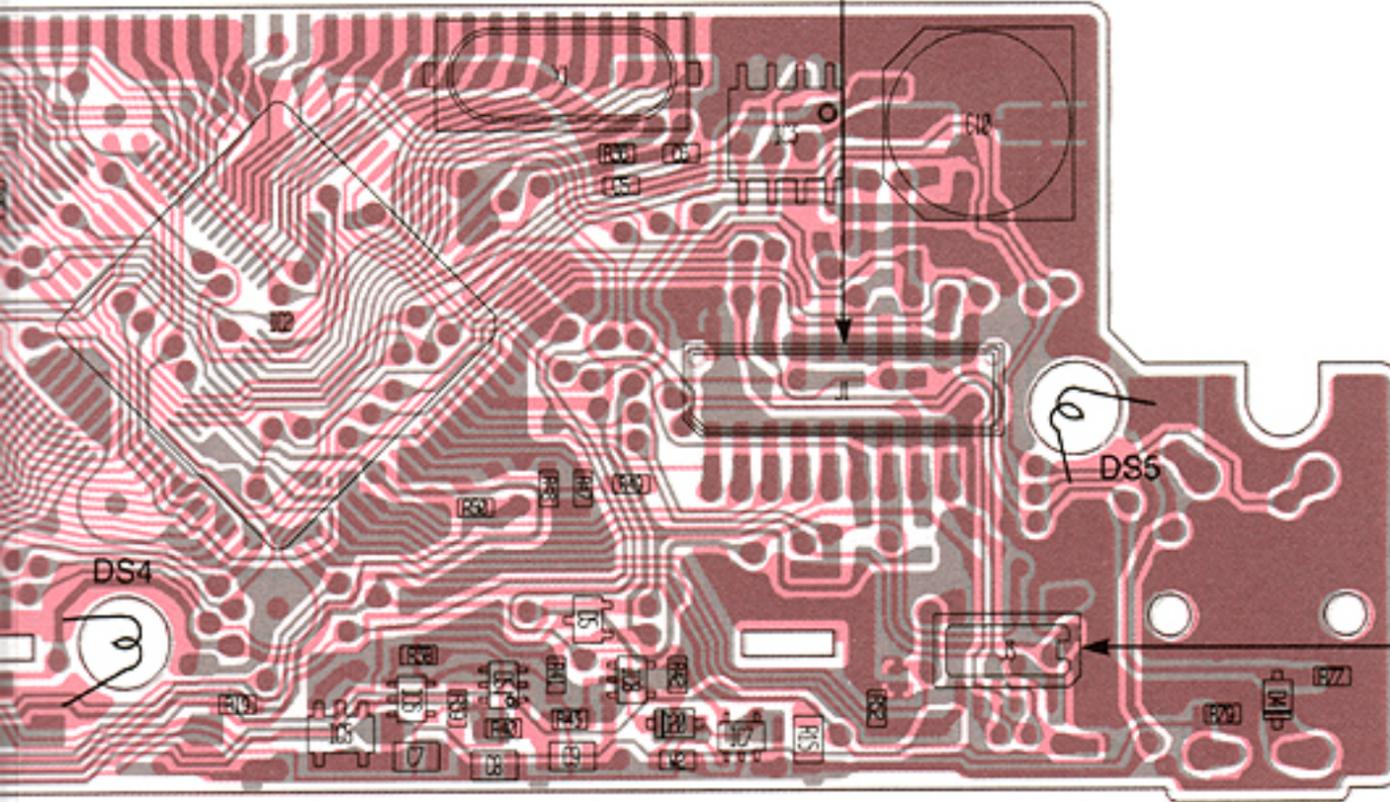


• INITIAL MATRIX



MAIN UNIT J7

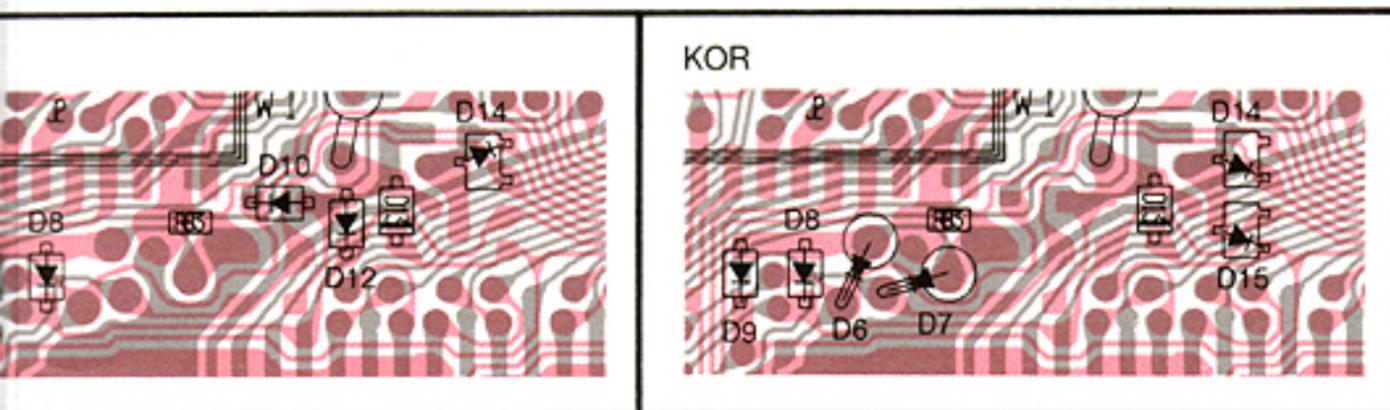
STD	E
Q4	DATA
Q3	CK
Q2	STBOD
Q1	OPTD
UNLKV	STB1
DETV	STBP
UNLKV	SQLSU
DETV	KEYI3
E	KEYS0



TSQLU	UNITT
DATA	+S5V
CK	DETV
STBTU	STBTU
TSQLV	E
DETV	STONE

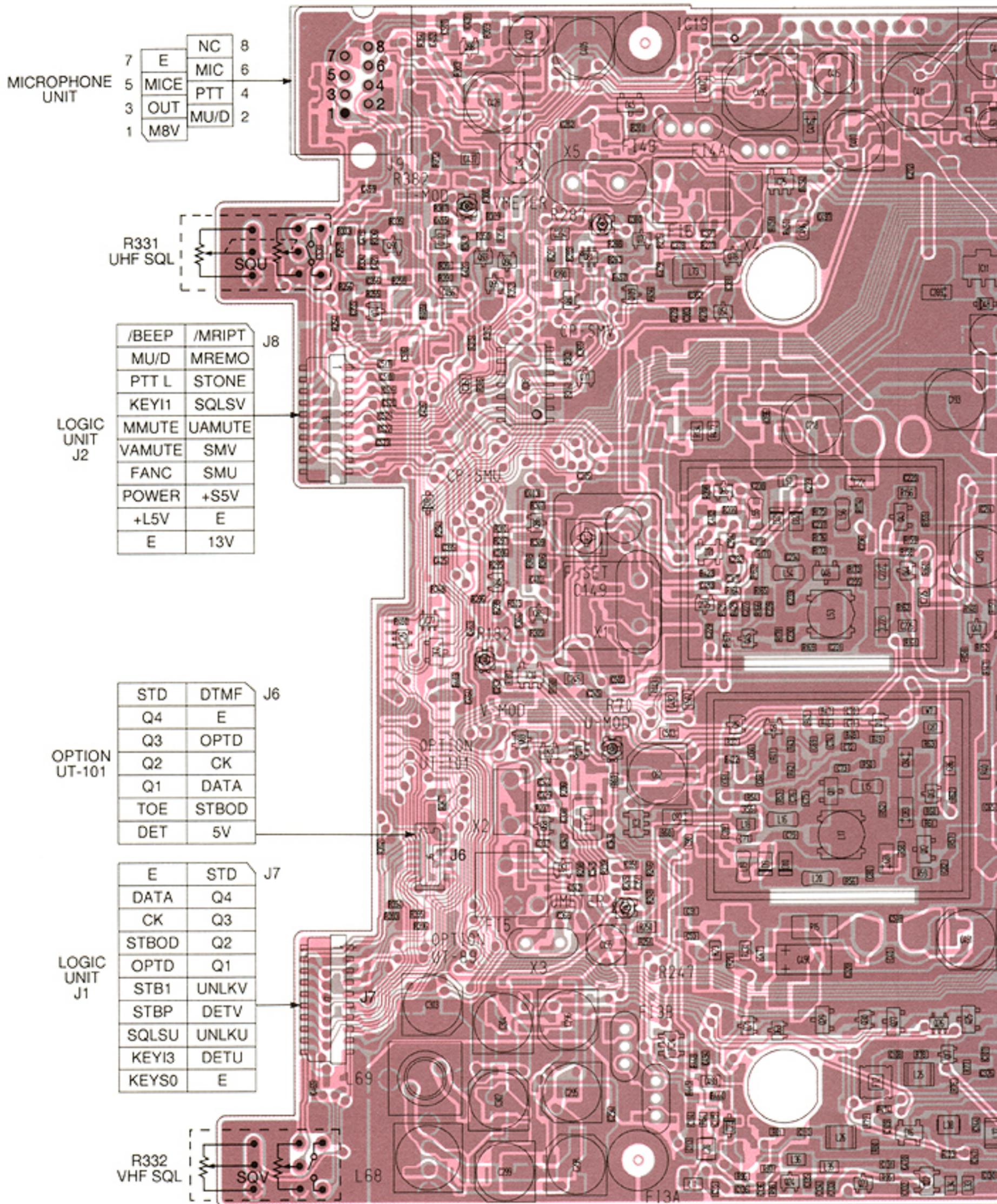
OPTION UT-89

J3



9-2 MAIN UNIT

• MAIN UNIT (TOP VIEW)



MICROPHONE UNIT

7	E	NC	8
5	MICE	MIC	6
3	OUT	PTT	4
1	M8V	MU/D	2

LOGIC UNIT J2

/BEEP	/MRIPT
MU/D	MREMO
PTT L	STONE
KEY11	SQLSV
MMUTE	UAMUTE
VAMUTE	SMV
FANC	SMU
POWER	+S5V
+L5V	E
E	13V

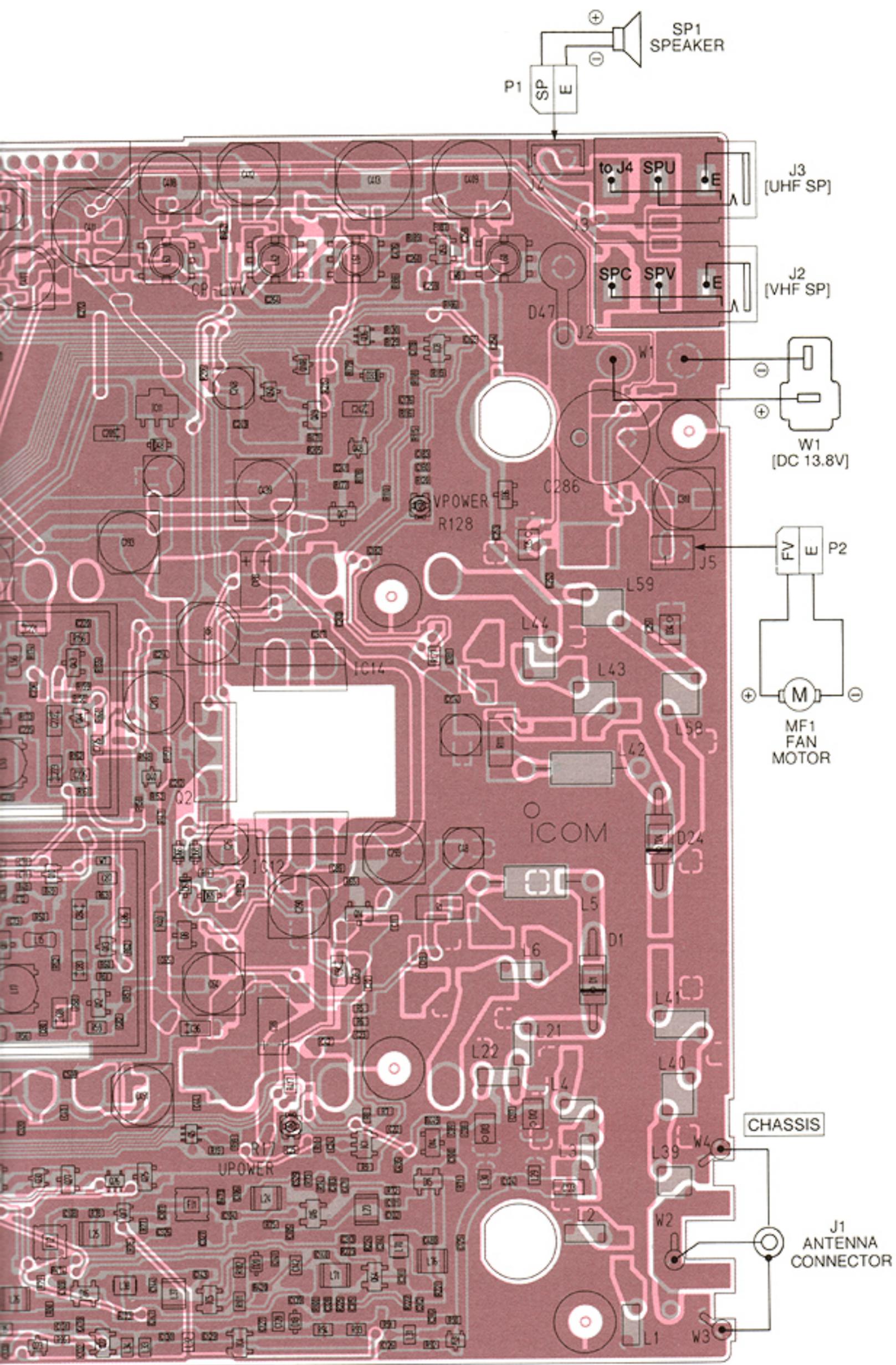
OPTION UT-101

STD	DTMF
Q4	E
Q3	OPTD
Q2	CK
Q1	DATA
TOE	STBOD
DET	5V

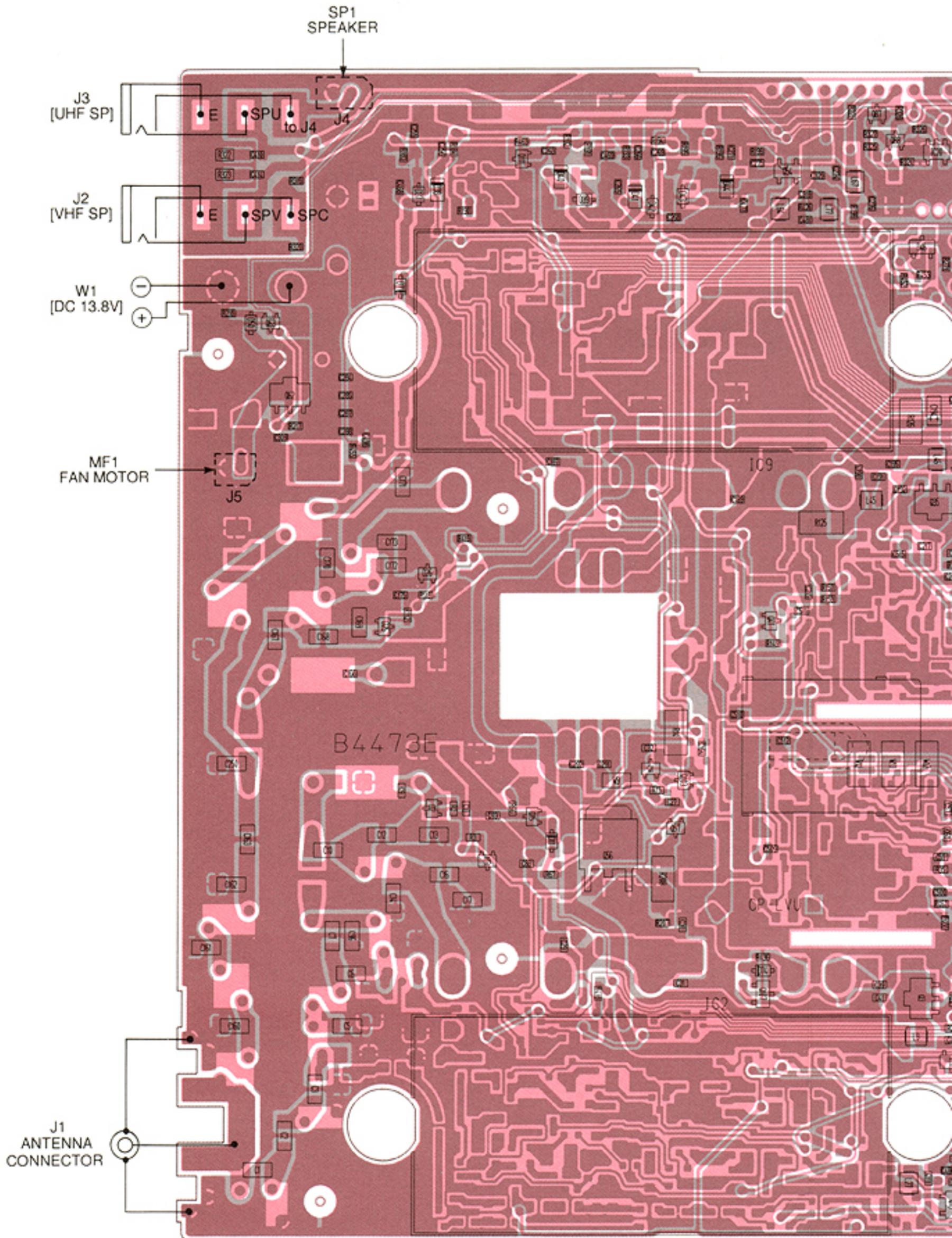
LOGIC UNIT J1

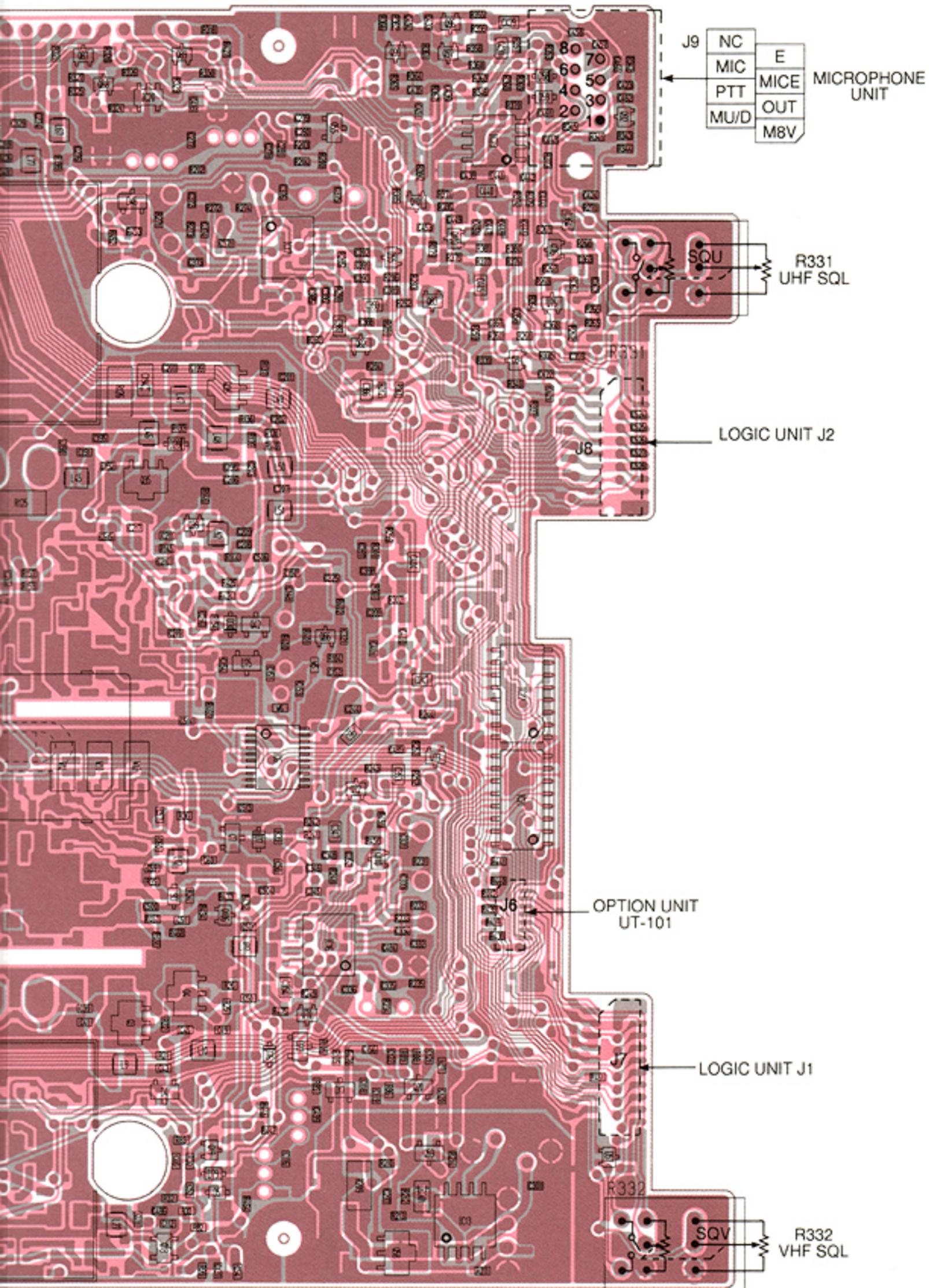
E	STD
DATA	Q4
CK	Q3
STBOD	Q2
OPTD	Q1
STB1	UNLKV
STBP	DETV
SQLSU	UNLKU
KEY13	DETV
KEYS0	E

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



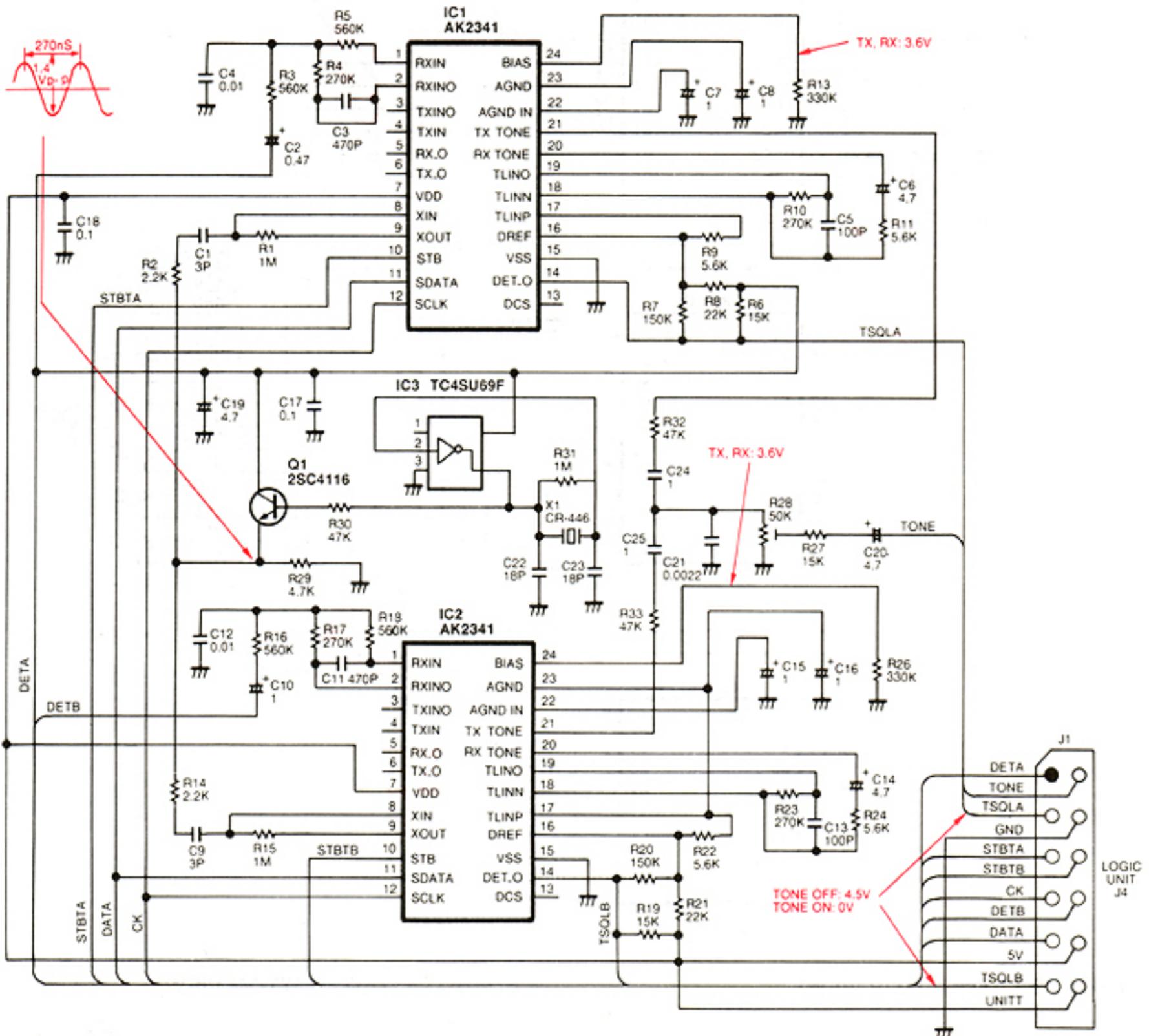
• MAIN UNIT (BOTTOM VIEW)





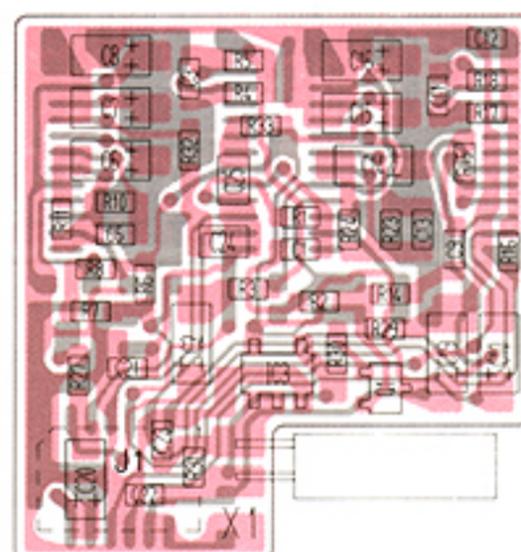
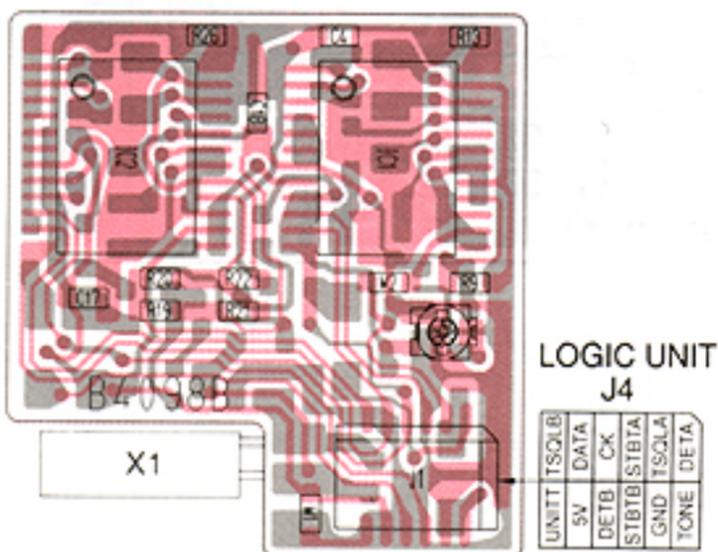
# SECTION 10 OPTIONAL UNITS

## 10-1 UT-89 TONE SQUELCH UNIT

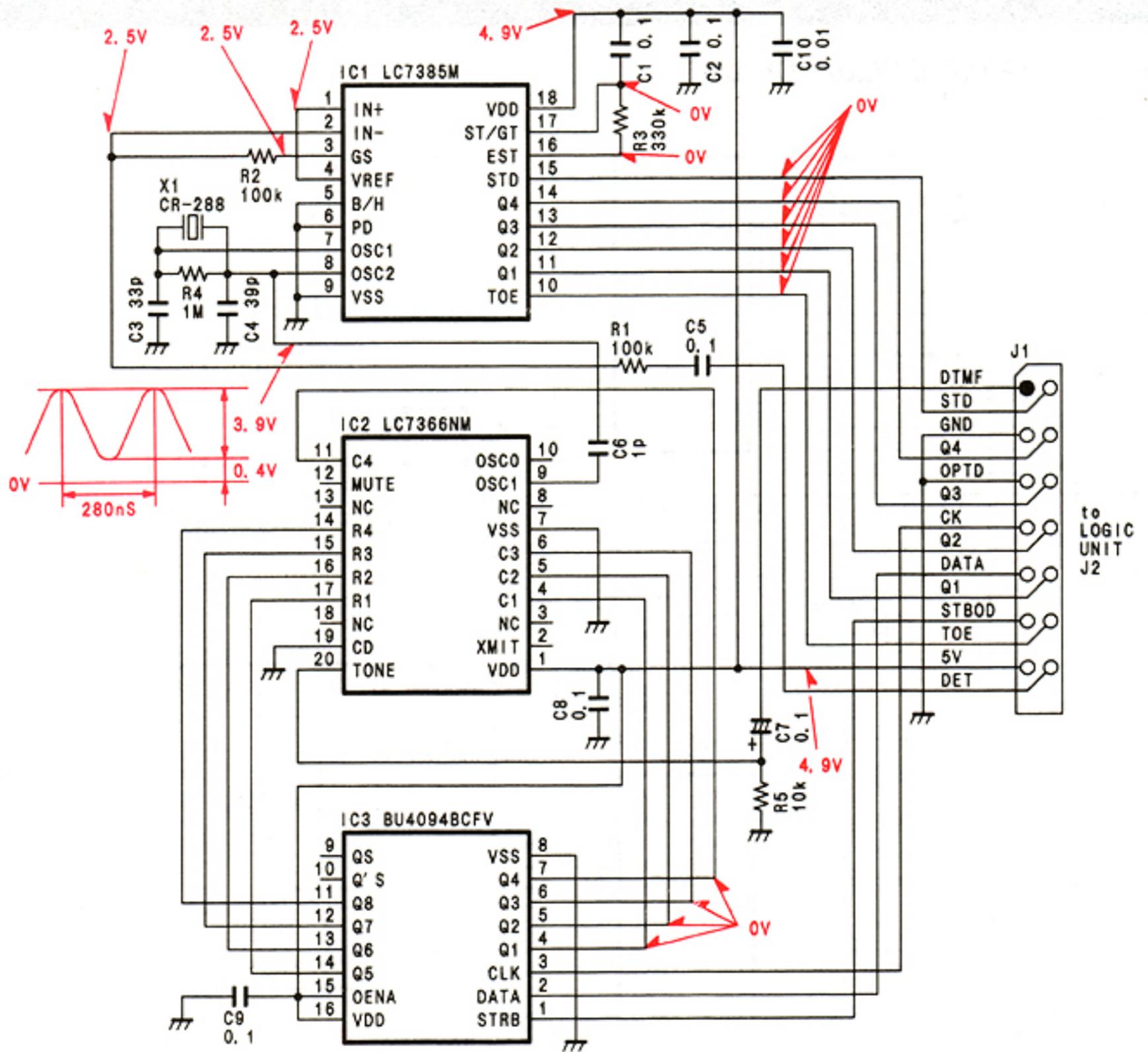


• BOARD LAYOUT (TOP VIEW)

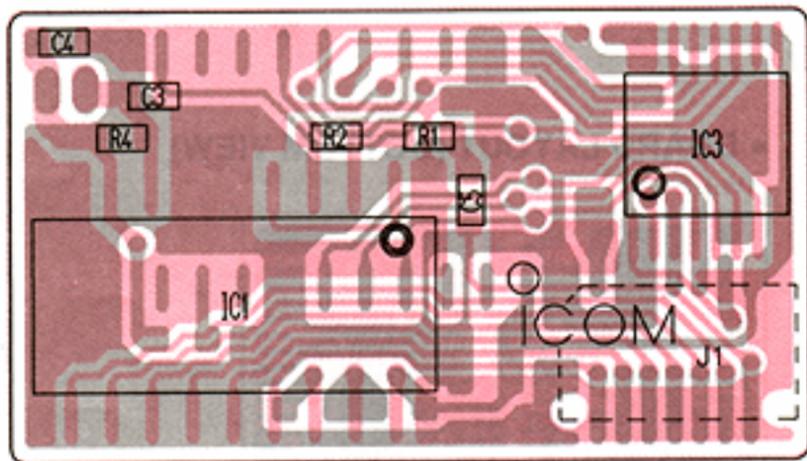
• BOARD LAYOUT (BOTTOM VIEW)



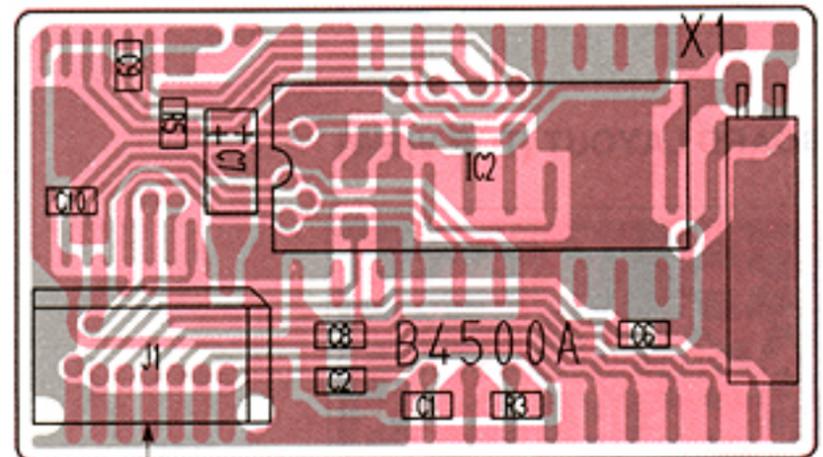
### 10-2 UT-101 DTMF UNIT



• BOARD LAYOUT (TOP VIEW)



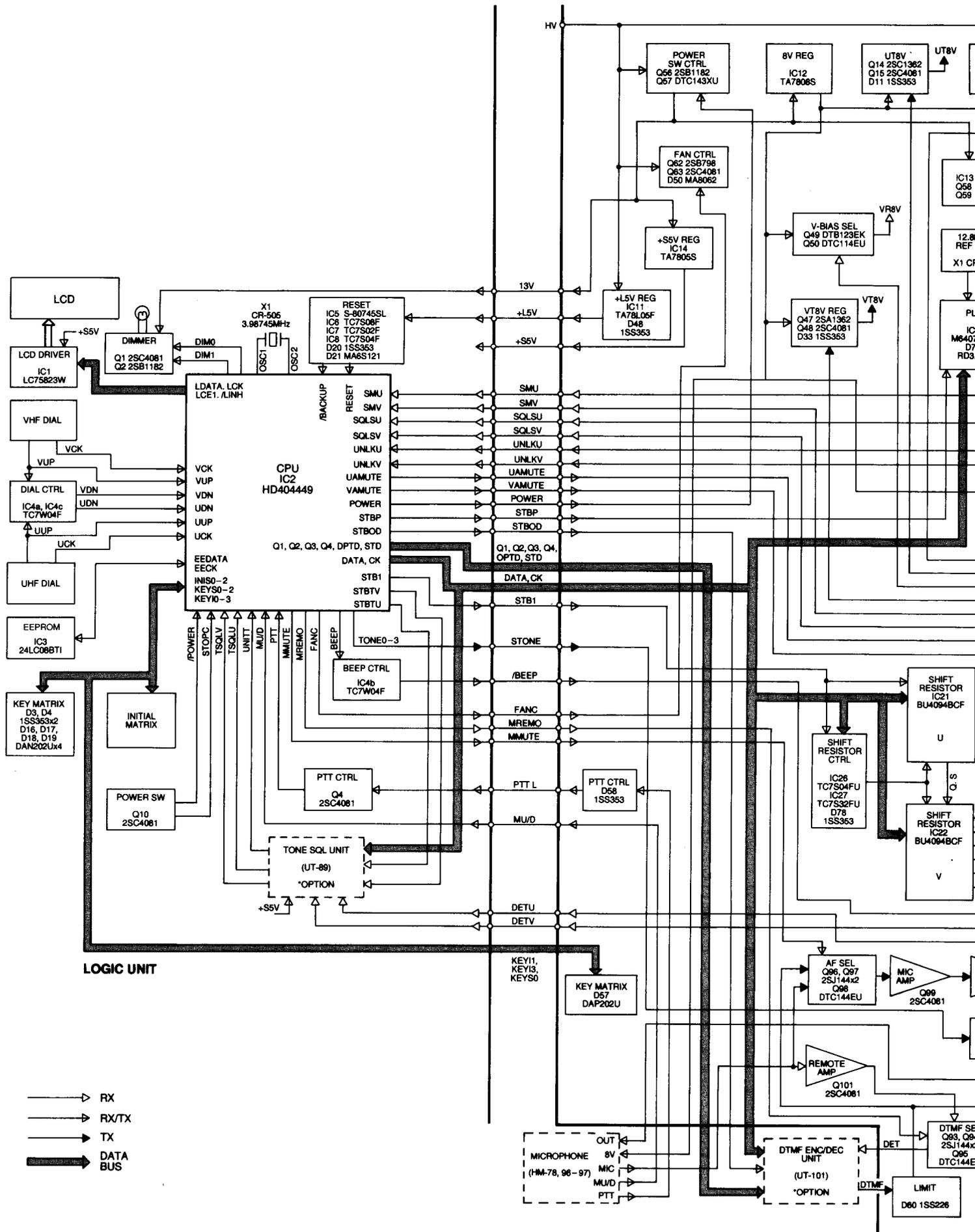
• BOARD LAYOUT (BOTTOM VIEW)



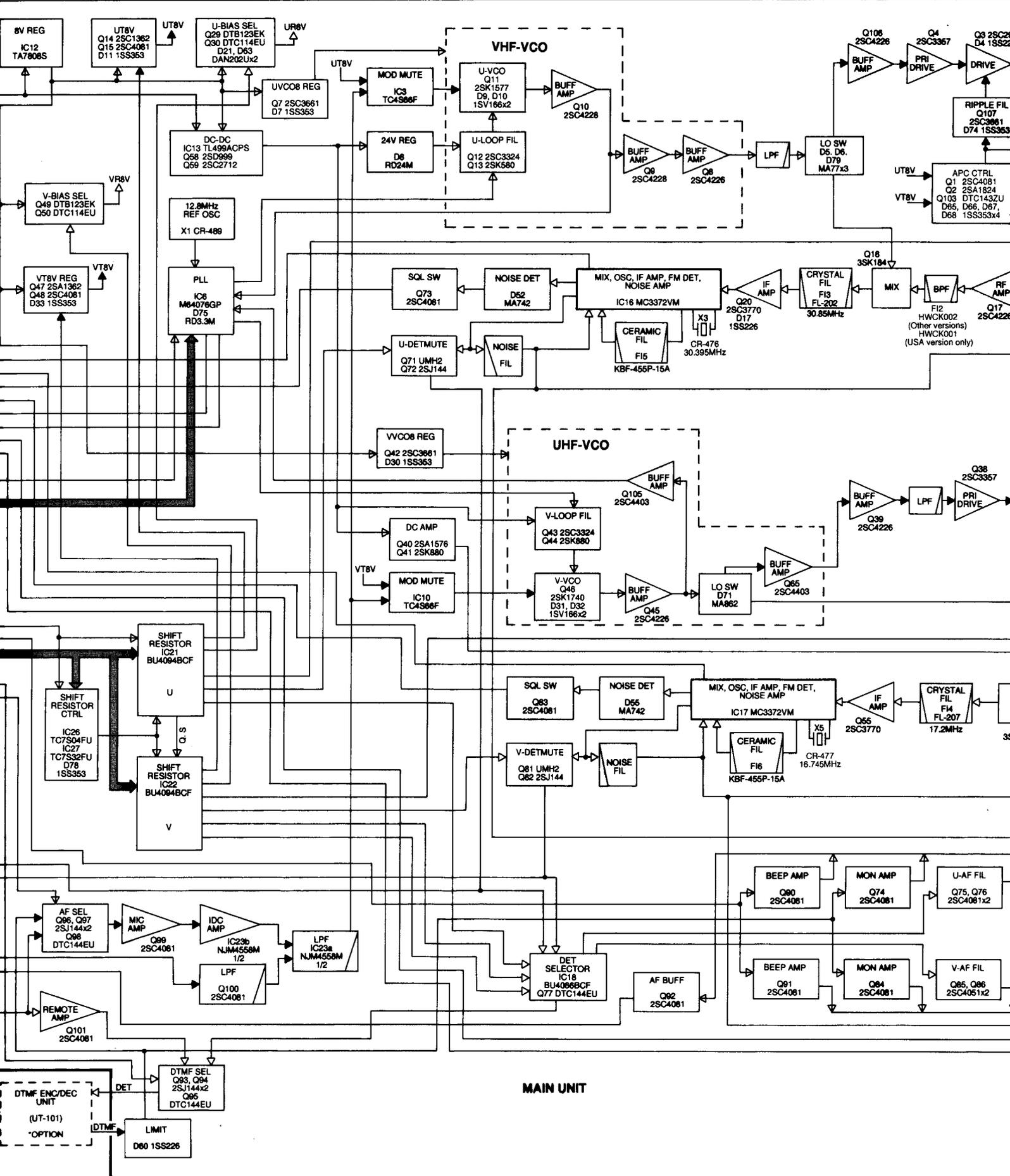
5V	STBOD	DATA	CK	OPTD	E	DTMF
DET	TOE	Q1	Q2	Q3	Q4	STD

MAIN UNIT J6

SECTION 11 BLOCK DIAGRAM



- RX
- RX/TX
- TX
- DATA BUS

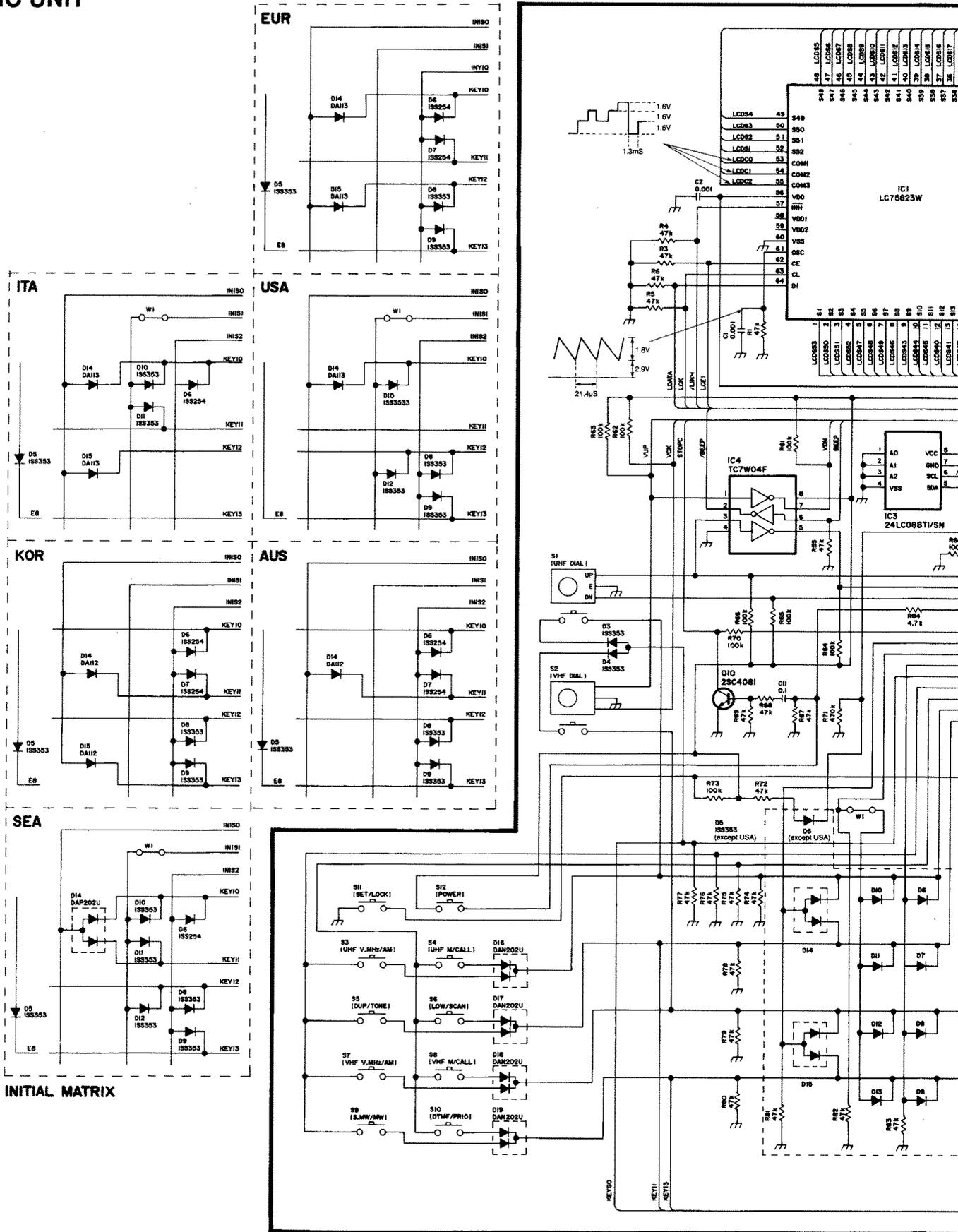


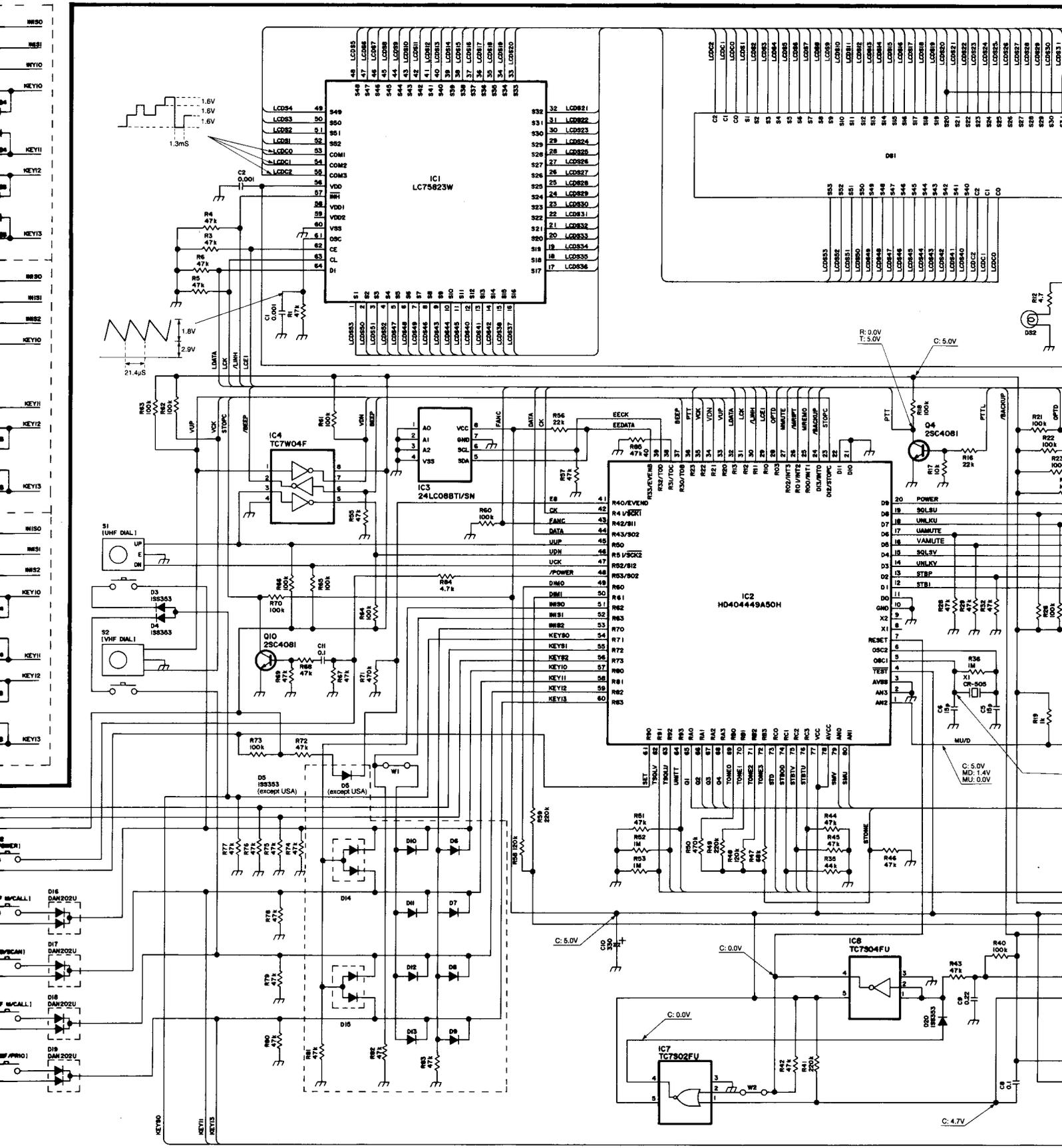
MAIN UNIT



# SECTION 12 VOLTAGE DIAGRAM

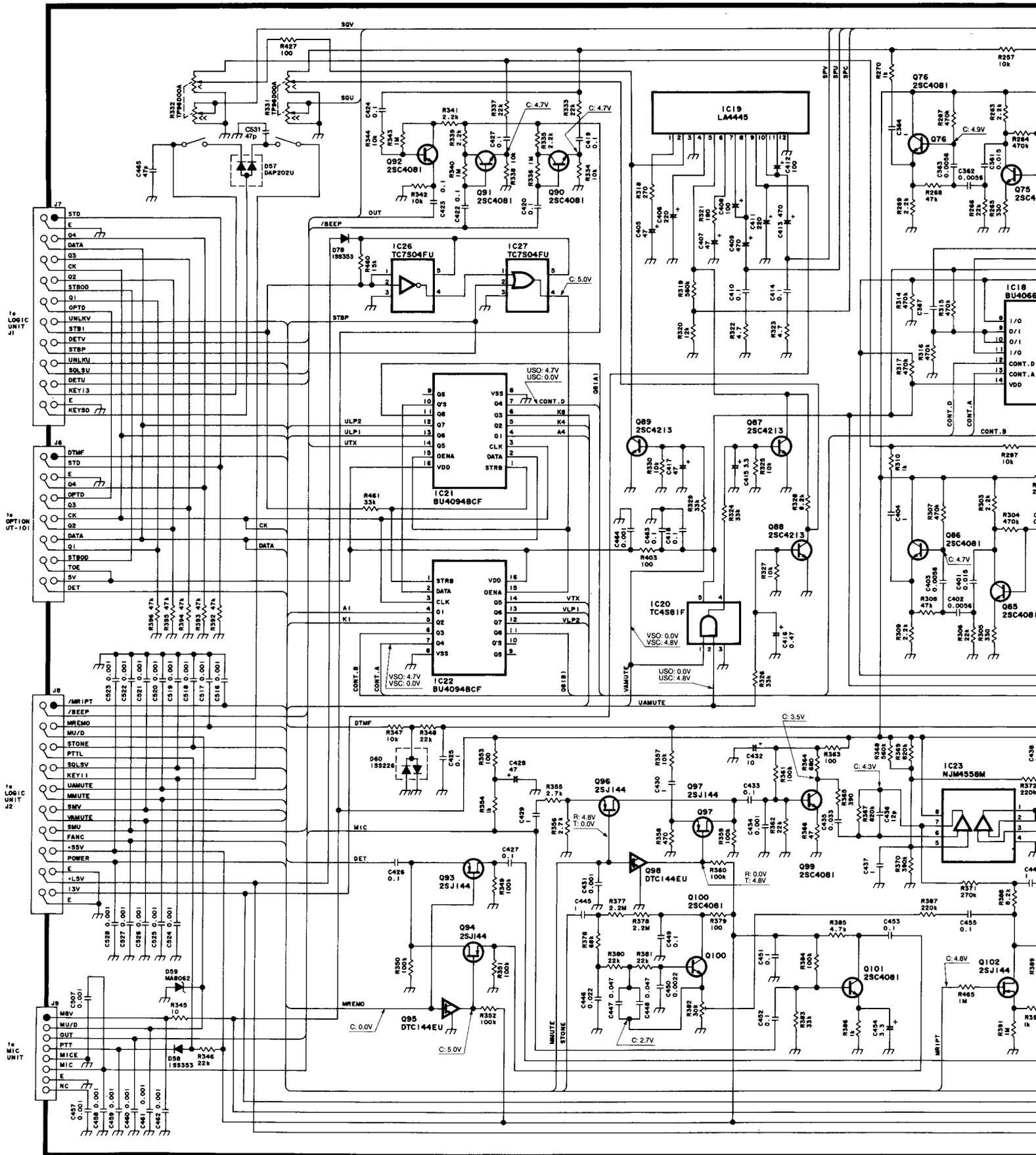
## 12-1 LOGIC UNIT



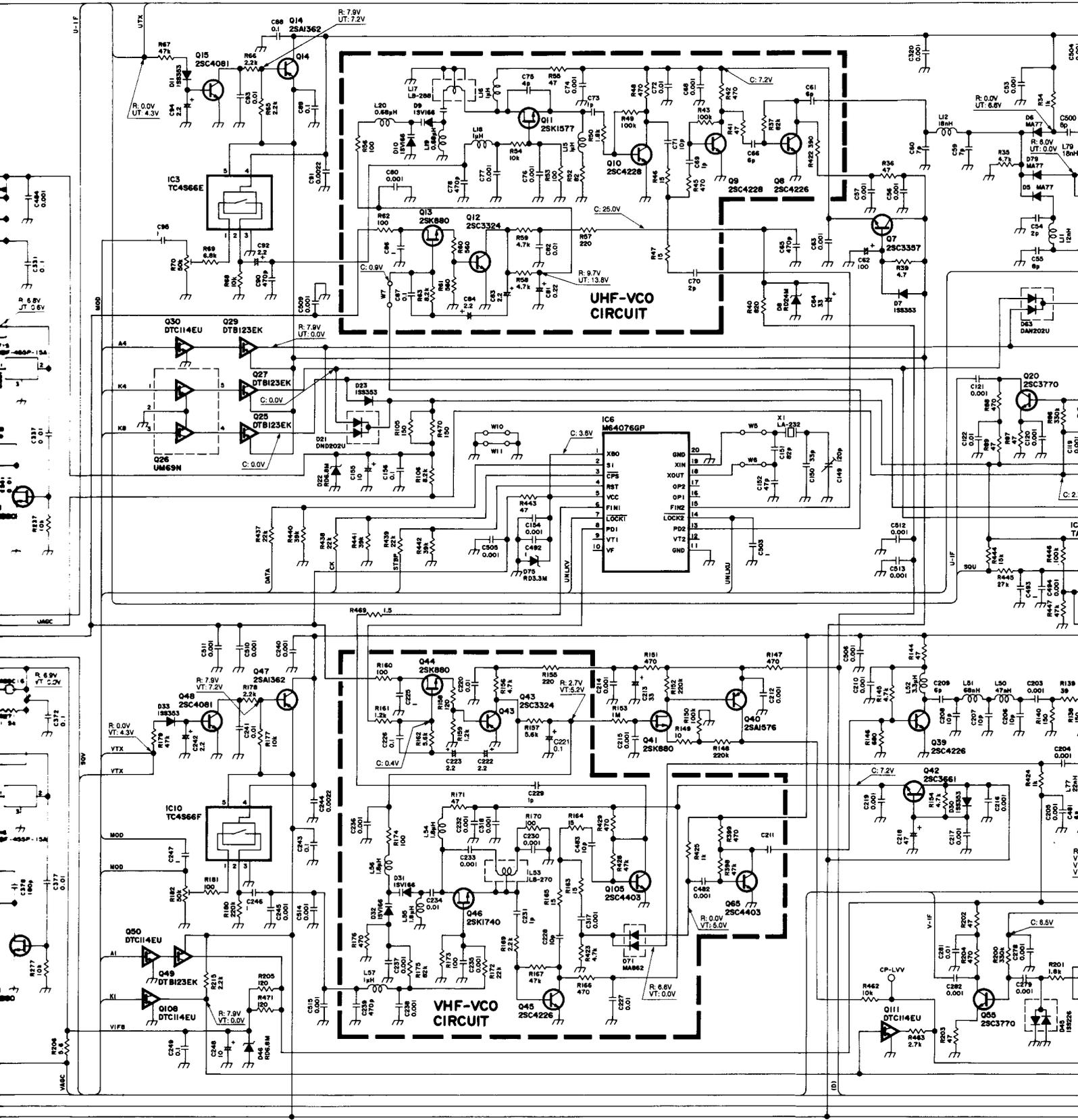




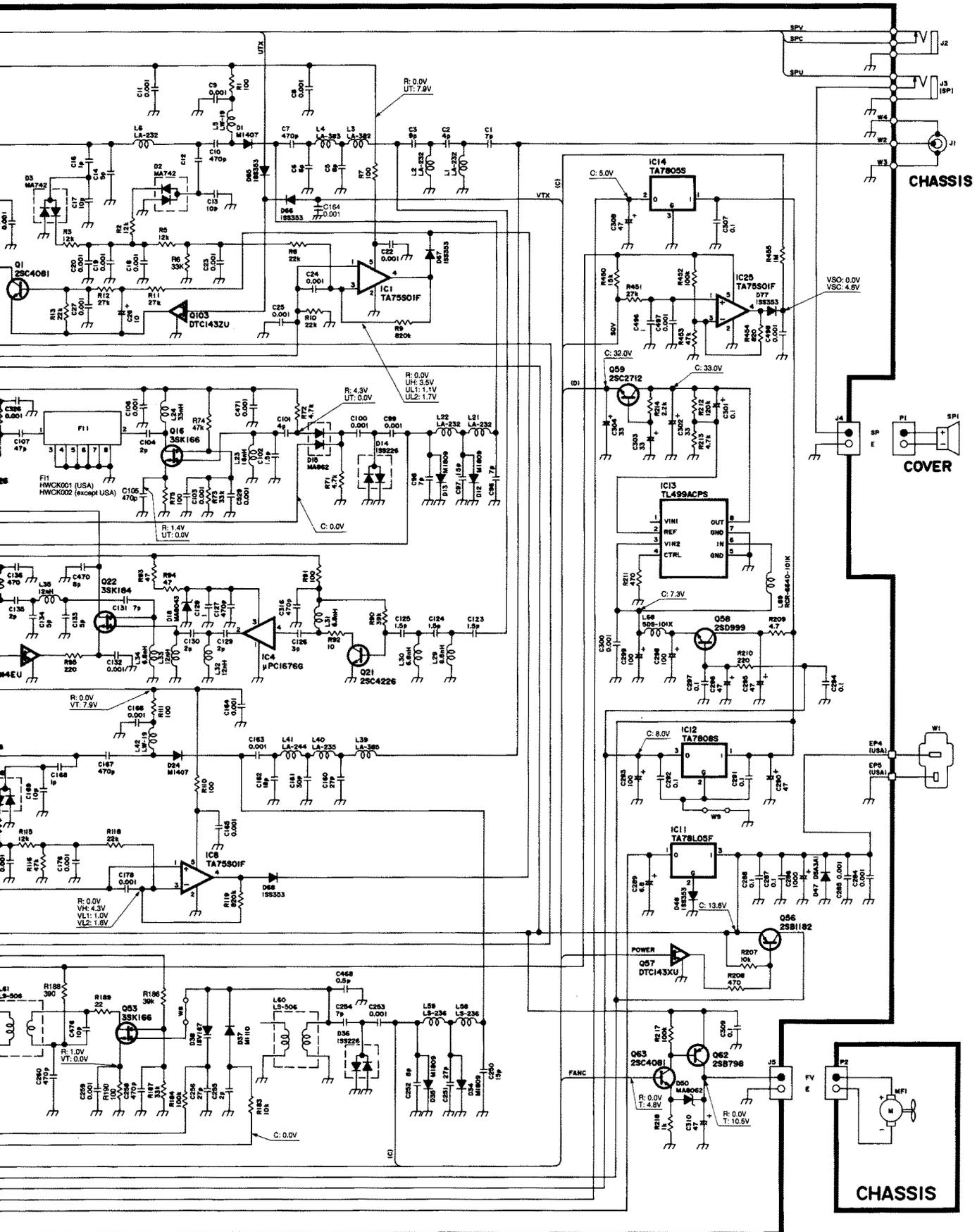
12-2 MAIN UNIT











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Fax : 06 793 0013

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Phone : (206) 454-7619

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