



# SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

**IC-W2A**

**IC-W2E**

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## INTRODUCTION

This service manual describes the latest service information for the IC-W2A/E DUAL BAND FM TRANSCEIVER at the time of publication.

MODEL	VERSION No.	VERSION	SYMBOL
IC-W2A	#05	U.S.A.	USA
	#07	Australia	AUS
	#09	Asia	SEA
IC-W2E	#02	Europe	EUR-1
	#03	U.K.	UK
	#04	Italy	EUR-2

## DANGER

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

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

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

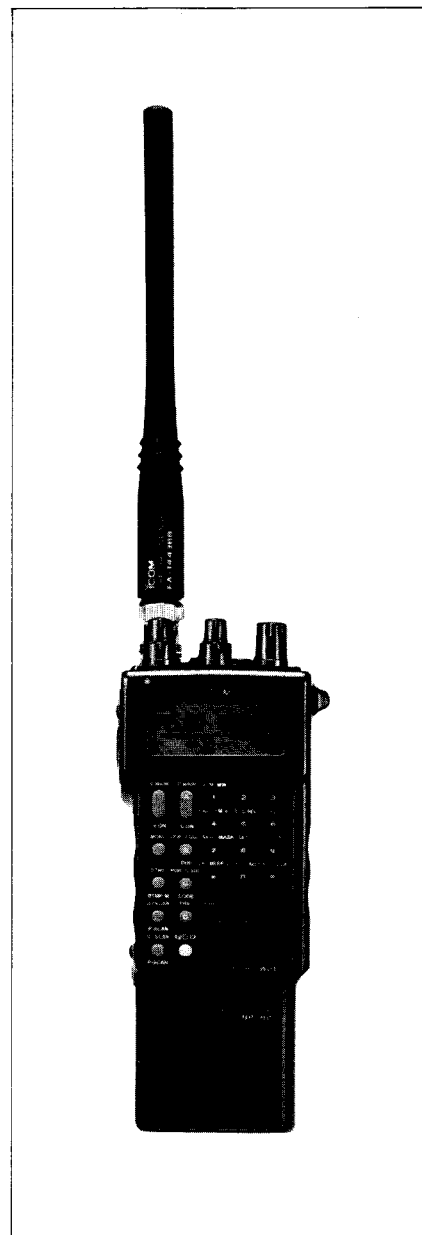
1130003760 IC TC4S71F IC-W2A/E LOGIC UNIT 5 pieces

8810004870 Screw PH M2×2.5 ZK IC-W2A/E Top cover 10 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 30 dB~40 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.



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# SECTION 1 SPECIFICATIONS

## ■ GENERAL

- Frequency coverage

MODEL	VERSION	FREQUENCY COVERAGE	
		144 MHz	430 (440) MHz
IC-W2A	U.S.A.	140~150 MHz* (Tx) 136~174 MHz* (Rx)	440~450 MHz
	Australia	144~148 MHz	430~440 MHz
	Asia	140~150 MHz* (Tx) 138~174 MHz* (Rx)	
IC-W2E	Italy	144~146 MHz	430~440 MHz
	Europe		
	U.K.		

\*Guaranteed frequency coverage is 144~148 MHz.

- Mode
- Antenna impedance
- Usable temperature range
- Frequency stability
- External DC power supply
- Current drain

- : F3 (FM)
- : 50 Ω (unbalanced)
- : -10°C~+60°C (+14°F~+140°F)
- : ±5 ppm (0°C~+50°C)
- : 6~16 V DC (negative ground)

		CONDITION	
TRANSMIT (13.5 V)	High	1.3 A	1.8 A
	Low 1	500 mA	700 mA
RECEIVE (12.5 V)	MONO BAND	Power saved	20 mA*
		Rated audio output	150 mA
	DUAL BAND	Power saved	40 mA*
		Rated audio output	200 mA

\*Average value

- Dimensions

- : 54 (W)×170 (H)×36 (D) mm; 2.1 (W)×6.7 (H)×1.4 (D) in (U.S.A.)
- 54 (W)×135 (H)×36 (D) mm; 2.1 (W)×5.3 (H)×1.4 (D) in (Australia)
- 54 (W)×154 (H)×36 (D) mm; 2.1 (W)×6.1 (H)×1.4 (D) in (Asia, Europe, U.K., Italy)

- Weight

- : 530 g, 1.2 lb (U.S.A.)
- 450 g, 15.9 oz (Asia, Europe, U.K., Italy)
- 400 g, 14.1 oz (Australia)

## ■ RECEIVER

- Sensitivity
- Receive system
- Intermediate frequencies
- Selectivity
- Audio output power
- Spurious rejection

- : Less than 0.16 μV for 12 dB SINAD
- : Double-conversion superheterodyne
- : VHF; 1st 30.850 MHz, 2nd 455 kHz
- UHF; 1st 35.800 MHz, 2nd 455 kHz
- : More than 15 kHz/-6 dB, less than 30 kHz/-60 dB
- : More than 0.18 W at 10% distortion with an 8 Ω load
- : Less than -60 dB

## ■ TRANSMITTER

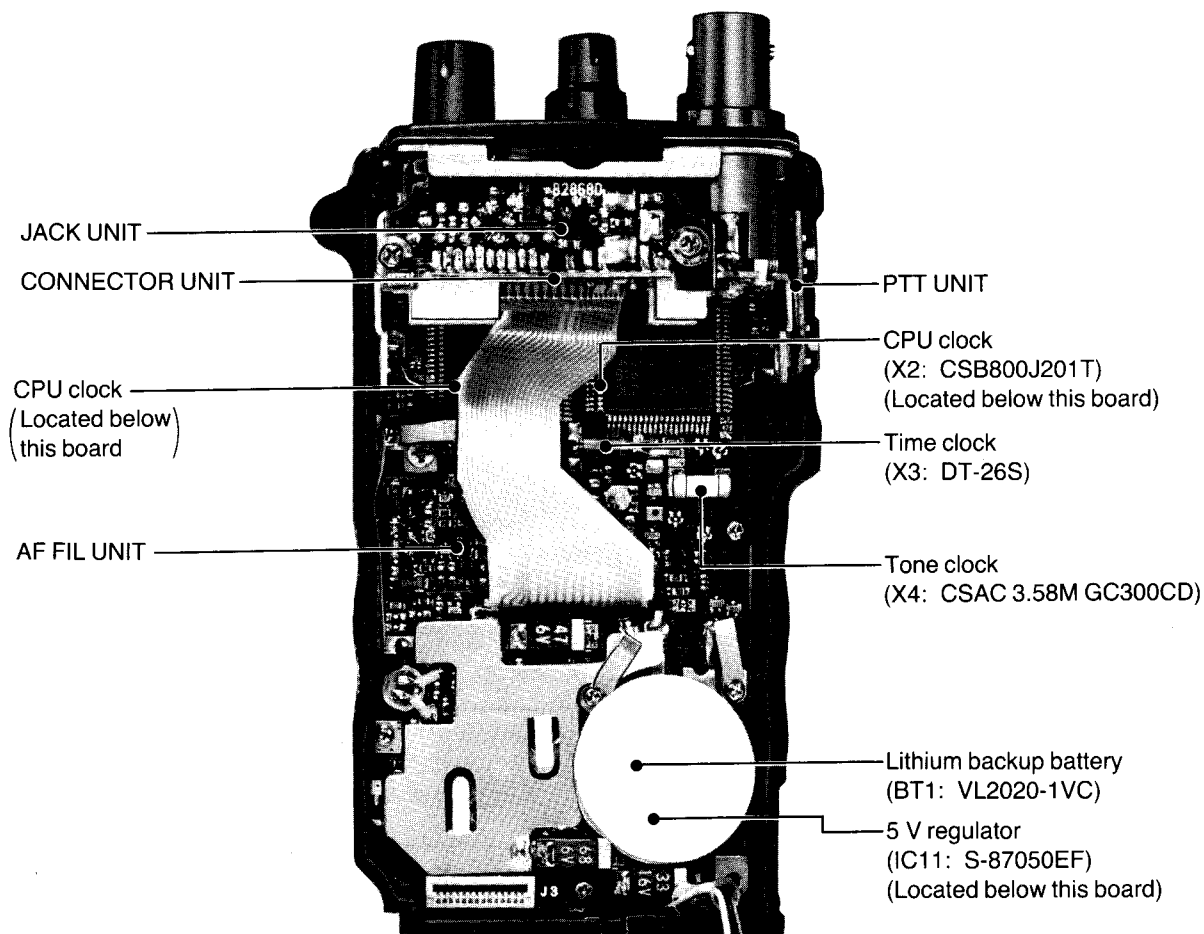
- Output power (13.5 V)
- Modulation system
- Max. frequency deviation
- Spurious emissions

- : 5 W (HIGH), 3.5 W (LOW3), 1.5 W (LOW2), 0.5 W (LOW1)
- : Variable reactance frequency modulation
- : ±5 kHz
- : Less than -60 dB

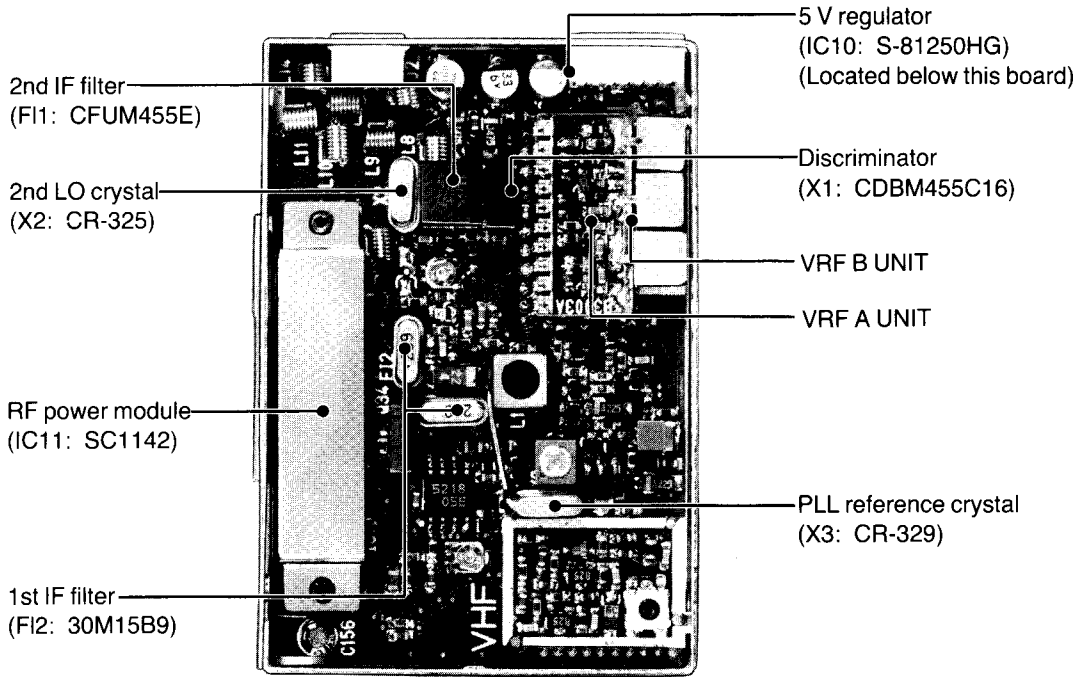
All stated specifications are subject to change without notice or obligation.

## SECTION 2 INSIDE VIEWS

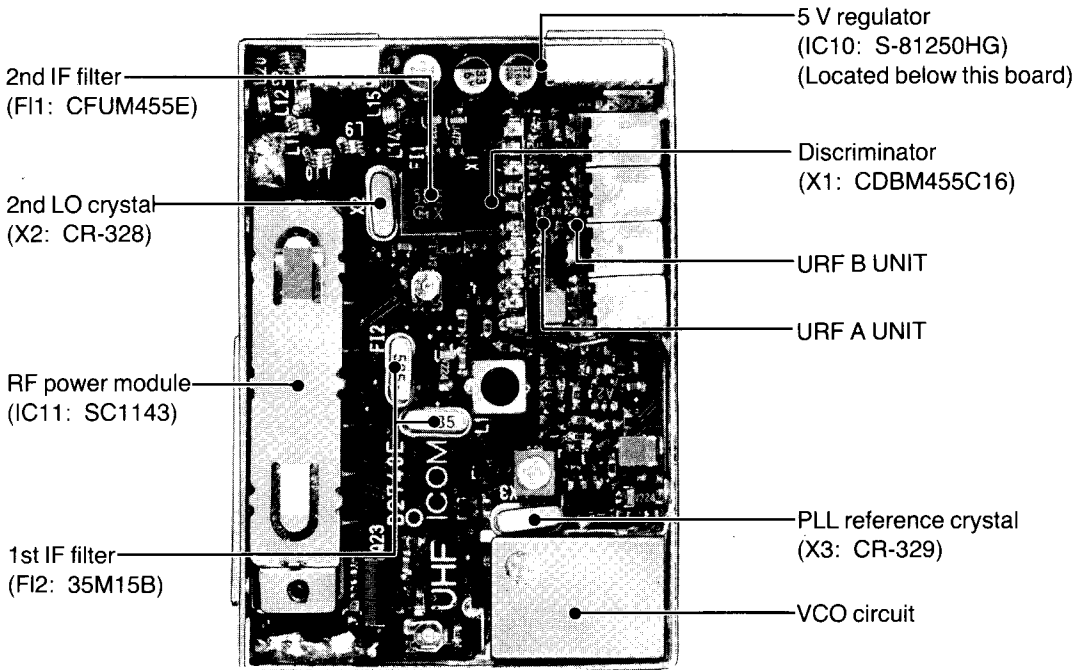
### 2-1 LOGIC UNIT



## 2-2 VHF RF UNIT



## 2-3 UHF RF UNIT



# SECTION 3 CIRCUIT DESCRIPTION

## 3-1 VHF RECEIVER CIRCUITS

### 3-1-1 ANTENNA SWITCHING CIRCUIT (CONNECTOR AND VHF RF UNITS)

The received signals enter the CONNECTOR UNIT and are divided into VHF RF signals and UHF RF signals. The VHF RF signals pass through the low-pass filter (L3~L5, C7~12). The signals are applied to the bandpass filter (L10, L11, L14, C56~60) and then to the antenna switching circuit.

The antenna switching circuit employs a  $\lambda/4$ -type diode switching system. While receiving, D23 turns OFF. The receive signals which are applied to the VRF A UNIT pass through a low-pass filter (L8, L9, C52~54, D9).

### 3-1-2 RF AND 1st MIXER CIRCUITS (VRF A AND VHF RF UNITS)

The RF circuit amplifies the received signals up to the level needed at the 1st mixer circuit. 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 can pass through a pair of crystal filters at the next stage of the 1st mixer.

The VHF RF signals from the antenna switching circuit are amplified at Q1 and Q2 and are then converted to a 1st IF signal at Q6. The frequency of the 1st IF signal is 30.85 MHz. Q6 converts the RF signal using the V PLL output signal from D16.

The VHF RF circuit adopts a tuned bandpass filter circuit that tunes the filters to the center frequency of the receiving signal using varactor diodes (D2, D4, D5). A PLL lock voltage is used for the filter tuned signal.

### 3-1-3 IF CIRCUIT (VHF RF UNIT)

The 1st IF signal passes through the crystal filter (F12) to suppress out-of-band signals. The signal is then amplified at Q5 and is applied to the FM IF IC (IC1, pin 16).

IC1 contains the 2nd mixer, local oscillator, limiter amplifier, quadrature detector, active filter and S-meter detector circuits. The local oscillator section and X2 generate 30.395 MHz for the 2nd LO signal.

The 1st IF signal is applied to a 2nd mixer section of IC1 (pin 16) and is then mixed with a 2nd LO signal for conversion to a 455 kHz 2nd IF signal.

The 2nd IF signal from the 2nd mixer (IC1, pin 3) passes through a ceramic filter (F11) where unwanted signals are suppressed. It is then amplified at the limiter amplifier section (IC1, pin 5) and applied to the quadrature detector section (IC1, pin 8) and ceramic discriminator (X1) to demodulate the 2nd IF signal into an AF signal. The AF signal is output from IC1 (pin 9).

### 3-1-4 AF CIRCUIT (AF FIL AND AF UNITS)

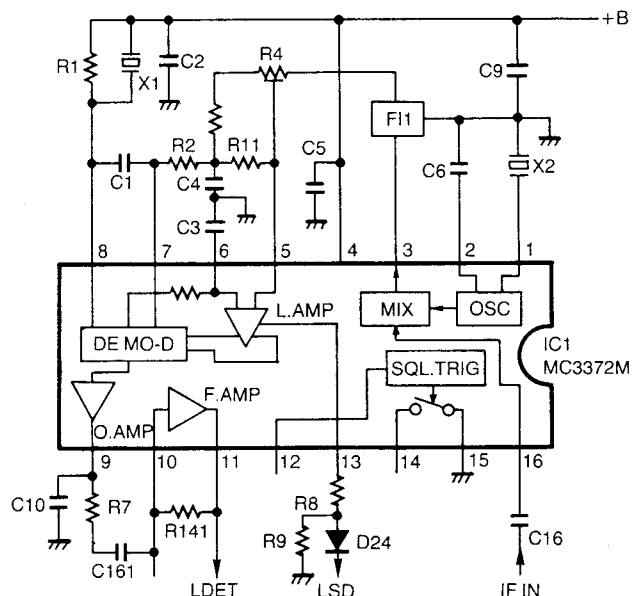
The AF signals from the VHF RF UNIT are applied to the bandpass filter (Q6). These signals are then passed through the VOL control and amplified at the power amplifier (IC1) on the AF UNIT to obtain the speaker driving level.

### 3-1-5 SQUELCH CIRCUIT (VHF RF AND LOGIC UNITS)

In an FM receiver, noise signals are automatically suppressed once a signal with voice components is received. The noise squelch circuit acts in accordance with this phenomenon.

Noise components in the AF signal (20 kHz and above) from IC1 (pin 11) are applied to the LOGIC UNIT. The noise signal passes through the SQL control (R1) and is amplified at the active filter (IC7). This signal is rectified at D29 and is converted to DC voltage. This voltage is applied to Q30 or to IC16. Thus, while receiving no signal, the "LOW" signal is output from Q30 as the "L BUSY" signal.

While IC16 is turning over the rectified DC voltage, the "L MUT" signal is controlling the AF MUTE circuit (Q4, Q5). When the "L MUT" signal is "LOW", the AF MUTE circuit turns ON.



VHF IF CIRCUIT

## 3-2 UHF RECEIVER CIRCUITS

### 3-2-1 ANTENNA SWITCHING CIRCUIT (CONNECTOR AND UHF RF UNITS)

The received signals enter the CONNECTOR UNIT and are divided into VHF RF signals and UHF RF signals. The UHF RF signals pass through the high-pass filter (L1, L2, C2~C6) and are applied to the bandpass filter (L11~L13, L20, C42~C49). These UHF RF signals are then applied to the antenna switching circuit.

While receiving, D19 turns OFF, and the receive signals are applied to the URF A UNIT through a low-pass filter (L9, L10, C39, C41, D21, D22).

### 3-2-2 RF AND 1st MIXER CIRCUITS (URF A AND UHF RF UNITS)

The UHF RF signals are amplified at Q2 and Q1, and then are converted to a 1st IF signal at Q2. The frequency of the 1st IF signal is 35.800 MHz.

Q2 on the UHF RF UNIT converts the RF signal using the U PLL output coming from D9.

The UHF RF circuit employs a helical coil bandpass filter circuit (L1, L2) to suppress out-of-band signals.

### 3-2-3 IF, AF AND SQUELCH CIRCUITS

These are the same as the ones commonly used with the VHF receiver circuit. Refer to SECTION 1-1-3~1-1-5 for details.

## 3-3 VHF TRANSMITTER CIRCUITS

### 3-3-1 MIC CONTROL CIRCUIT (LOGIC UNIT)

The mic control circuit controls the external or internal audio, DTMF tone and TONE CALL signals.

An audio signal from the external microphone is applied to the microphone control circuit (IC17, IC18, Q1, Q2). The audio signal passes through the attenuator (R19~R21) and is connected to the internal microphone. The audio signal amplified at IC20 is applied to the VHF RF UNIT. When the DTMF tone or TONE CALL signal outputs to the mic amp circuit, Q5 turns OFF the audio signal to prevent malfunctioning.

### 3-3-2 MIC AMP CIRCUIT (VHF RF UNIT)

The mic amplifier circuit amplifies audio signals with 6 dB/oct. of pre-emphasis from the microphone to a level needed for the modulation circuit.

The mic amplifier circuit has a low level amplifier with pre-emphasis (IC9a) and a limiter amplifier (IC9b).

### 3-3-3 MODULATION CIRCUIT (VHF RF UNIT)

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

The audio signal from IC9 (pin 1) changes the reactance of a varactor diode (D10) to modulate the oscillated signal at the TX VCO (Q23, Q24). The oscillated signal is buffer-amplified at Q25 and Q26 and is then applied to the drive amplifier circuit.

### 3-3-4 DRIVE AND POWER AMPLIFIER CIRCUITS (VHF RF UNIT)

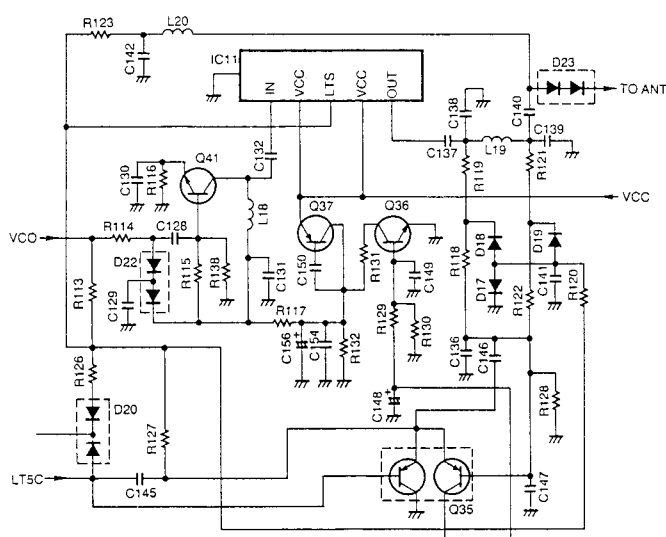
IC11 is a power module which provides a stable 5 W (DC13.5 V) of output power.

The drive amplifier (Q41) and power amplifier (IC11) amplify the VCO oscillating signal to an output level. The output signal passes through the APC circuit (D17~19) and bandpass circuit and is applied to the antenna connector. Collector voltage for the drive amplifier is controlled by the APC circuit.

### 3-3-5 APC CIRCUIT (VHF RF UNIT)

An APC circuit protects the power module (IC11) from a mismatched output load and selects either HIGH or LOW output power.

The APC circuit (D17~19, L19, R119, R121, C138, C139) detects the output signal from the power module (IC11, pin 5). Q35 compares the APC detected voltages and reference voltages. When the APC detected voltages are higher than the reference voltages, Q35 reduces the collector voltage of Q36 and Q37. This voltage is applied to the drive amplifier (Q41) to reduce the RF output power.



VHF APC CIRCUIT



### 3-4 UHF TRANSMITTER CIRCUITS

#### 3-4-1 MIC AMP CIRCUIT (UHF RF UNIT)

The audio signal from the LOGIC UNIT is applied to the low level amplifier in the mic amplifier circuit with pre-emphasis at IC8a. Then, the audio signal is applied to the limiter amplifier (IC8b).

#### 3-4-2 MODULATION CIRCUIT (UHF RF AND U VCO UNITS)

The audio signal from IC8 (pin 7) changes the reactance of a diode (D1) to modulate the oscillated signal at the VCO circuit (Q1, Q2) on the U VCO UNIT. The oscillated signal is amplified at the buffer amplifiers (Q15, Q33 and IC7) and then is applied to the drive amplifier circuit.

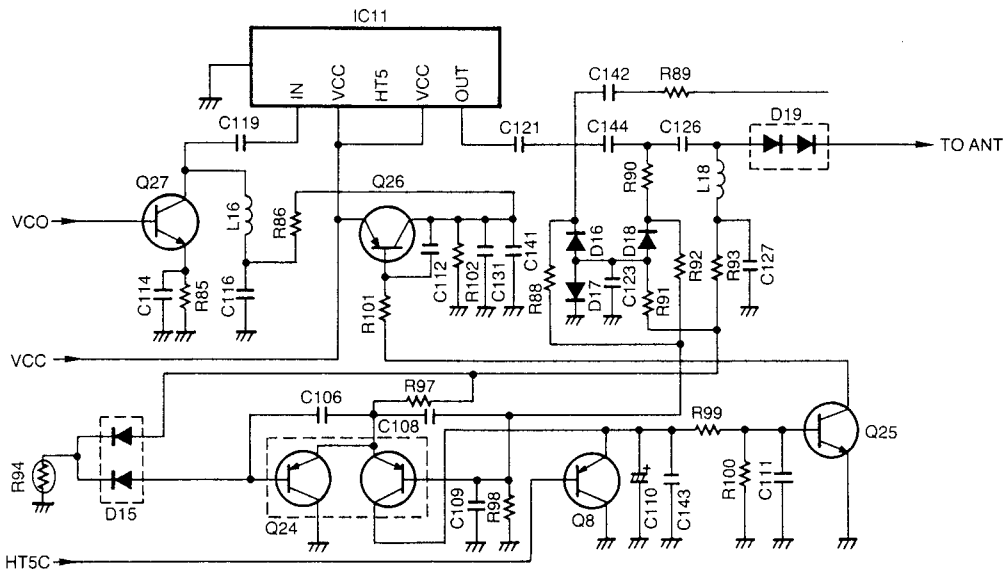
### 3-4-3 DRIVE AND POWER AMPLIFIER CIRCUITS (UHF RF UNIT)

IC11 is a power module which provides a stable 5 W (DC13.5 V) of output power.

The drive amplifier (Q34, Q27) and power amplifier (IC11) amplify the VCO oscillating signal to an output level. The output signal passes through the APC circuit (D16~18) and bandpass circuit and is applied to the antenna connector. Collector voltage for the drive amplifier (Q27) is controlled by the APC circuit.

#### 3-4-4 APC CIRCUIT (UHF RF UNIT)

The APC circuit detects the output signal from the power module (IC11, pin 5). Q24 compares the voltages detected by the APC to the reference voltages. When a voltage detected by APC exceeds a reference voltage, Q24 reduces the collector voltage of Q25 and Q26. This voltage is applied to the drive amplifier (Q27) to reduce the RF output power.



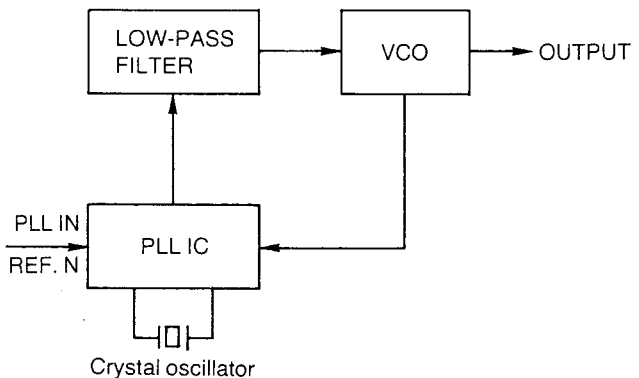
UHF APC AND POWER CIRCUIT

### 3-5 PLL CIRCUITS

#### 3-5-1 GENERAL (VHF AND UHF RF UNITS)

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 from a crystal oscillator and the divided ratio of a programmed divider.

The PLL circuit, using a one chip PLL IC (VHF: IC8, UHF: IC6), directly generates the transmit and 1st LO frequency with a VCO. The PLL IC sets the divided ratio based on serial data from the CPU on the LOGIC UNIT and compares the phases of a VCO signal and the reference oscillator frequency. The PLL IC detects the out-of-step phase and output from pin 12. The reference frequency is oscillated at X3.



PLL CIRCUIT

### 3-5-2 VHF CHARGE PUMP AND LOOP FILTER CIRCUITS (VHF RF UNIT)

Phase-detected signals from IC8 are converted to DC voltage by a constant-current circuit (Q17~19) and a lag-loop filter to control the VCO oscillating signals. The PLL lock voltage changes the reactance of varactor diodes in the VCO circuit.

The DC voltage of the VHF PLL is also used for the receiver tuning circuit on the VRF A UNIT.

### 3-5-3 UHF CHARGE PUMP AND LOOP FILTER CIRCUITS (UHF RF UNIT)

Phase-detected signals from IC6 are converted to DC voltage by a constant-current circuit (Q12, Q13, Q31) and a lag-loop filter to control the VCO oscillating signals. The PLL lock voltage changes the reactance of varactor diodes in the VCO circuit.

### 3-5-4 VHF VCO CIRCUIT (VHF RF UNIT)

The VCO circuit oscillates the PLL output frequency controlling varactor diodes.

D10, a varactor diode, provides the frequency control. The control signal from IC8 (pin 6) turns Q42 ON or OFF to switch the VCO frequency between transmission and reception.

### 3-5-5 UHF VCO CIRCUIT (VCO UNIT)

D1, a varactor diode, provides the frequency control. The control signal from IC6 (pin 6) turns Q14 ON or OFF to switch the VCO frequency between transmission and reception.

## 3-6 OTHER CIRCUITS

### 3-6-1 BATTERY CHARGING CIRCUIT (PRT UNIT)

The transceiver has a constant-current regulated circuit for charging the connected battery pack. This circuit charges the battery pack for about 15 hours.

The voltage from the external power supply is divided at D6, R6 and R8. This voltage is then applied to Q2. Q2 controls Q1, and the external power supply charges the battery pack.

### 3-6-2 S-METER CIRCUIT (VHF AND UHF RF UNITS)

The S-meter signal (VHF: "LSD" line, UHF: "HSD" line) from the VHF/UHF RF UNIT is applied to the meter comparator (VHF: IC9, pin 3; UHF: IC8, pin 3). Pin 2 of the meter comparator receives a reference signal from the CPU. The counting signal is increased step by step.

Pin 1 is "HIGH" when a reference signal is lower than the S-meter signal and becomes "LOW" when a reference signal is higher than the S-meter signal. Pin 1 is applied to the CPU (IC1 or IC2).

## 3-6-3 VOLTAGE LINES

LINE	DESCRIPTION
VCC	This voltage is supplied from a battery pack or external DC power supply.
L+5M	VHF band common 5 V converted from the VCC at Q27 and Q28 on the VHF RF UNIT.
LR5S	VHF band receive 5 V controlled by the power saver function and LSEND signal line. This voltage is converted from the VCC at Q29 and Q30 on the VHF RF UNIT.
L+5S	VHF band 5 V controlled by the power saver function. This voltage is converted from the VCC at Q31 and Q32 on the VHF RF UNIT.
LT5	VHF band transmit 5 V controlled by the LTMT signal line. This voltage is converted from the VCC at Q33 and Q34 on the VHF RF UNIT.
H+5M	UHF band common 5 V converted from the VCC at Q16 and Q17 on the UHF RF UNIT.
HR5S	UHF band receive 5 V controlled by the power saver function and HSEND signal line. This voltage is converted from the VCC at Q18 and Q19 on the UHF RF UNIT.
H+5S	UHF band 5 V controlled by the power saver function. This voltage is converted from the VCC at Q20 and Q21 on the UHF RF UNIT.
HT5	UHF band transmit 5 V controlled by the HTMT signal line. This voltage is converted from VCC at Q22 and Q23 on the UHF RF UNIT.

# SECTION 4 ADJUSTMENT PROCEDURES

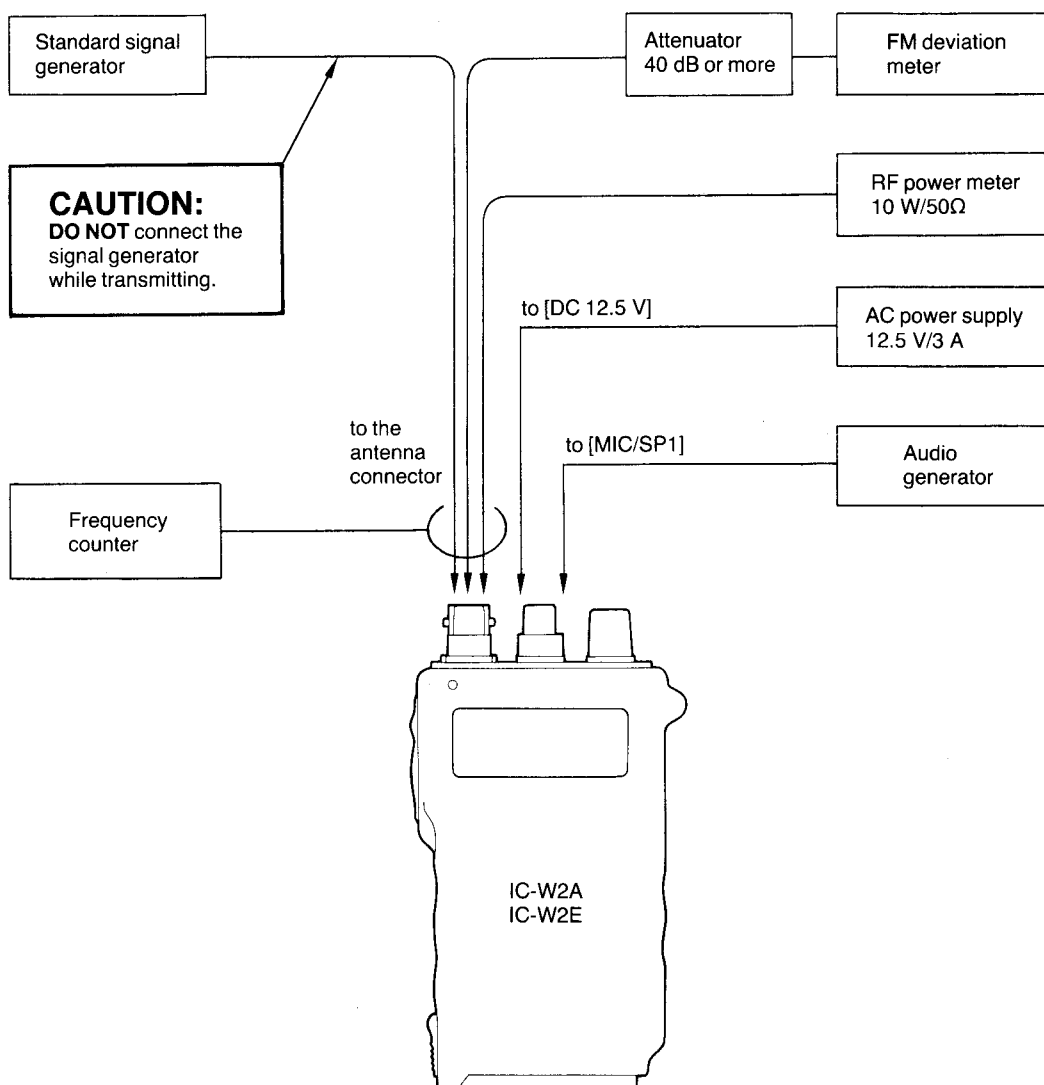
## 4-1 PREPARATION BEFORE SERVICING

### ■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 12.5 V DC 13.5 V DC (Only adjusting output power)	Standard signal generator (SSG)	Frequency range : 0.1~470 MHz Output level : -127~-17 dBm (0.1 μV~32 mV)
	Current capacity : 3 A or more	DC voltmeter	Input impedance : 50 kΩ/V DC or better
RF power meter (terminated type)	Measuring range : 1~10 W Frequency range : 0.1~500 MHz Input impedance : 50Ω SWR : 1.2 : 1 or better	Audio generator (AG)	Frequency range : 300~3000 Hz Measuring range : 1~500 mW
		Attenuator	Attenuation : 40 dB or more Capacity : 10 W or more
Frequency counter	Frequency range : 0.1~470 MHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	FM deviation meter	Frequency minimum : 470 MHz Measuring range : 0~±10 kHz
Oscilloscope	Frequency range : DC~20 MHz Output range : 0.01~10 V		

CW: Clockwise  
CCW: Counterclockwise


### ■ CONNECTION



## 4-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
VHF LOCK VOLTAGE	1	<ul style="list-style-type: none"> <li>Displayed frequency: 145.000 MHz</li> <li>Adjust either the transmit lock voltage or receive lock voltage (whichever is higher).</li> </ul>	VRF A	Connect the DC voltmeter to the TUNE line.	1.6 V	VHF RF	L16
UHF LOCK VOLTAGE	1	<ul style="list-style-type: none"> <li>Displayed frequency: 450.000 MHz (USA) 440.000 MHz (All other versions)</li> <li>Adjust either the transmit lock voltage or receive lock voltage (whichever is higher).</li> </ul>	UHF RF	Connect the DC voltmeter to the LV line.	3.0 V	VCO	C3
VHF REFERENCE FREQUENCY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 145.000 MHz</li> <li>Transmitting</li> </ul>	Top panel	Loosely couple the frequency counter to the antenna connector.	145.000 MHz	VHF RF	C69
UHF REFERENCE FREQUENCY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 440.000 MHz</li> <li>Transmitting</li> </ul>			440.000 MHz	UHF RF	C61

## 4-3 RECEIVER ADJUSTMENT

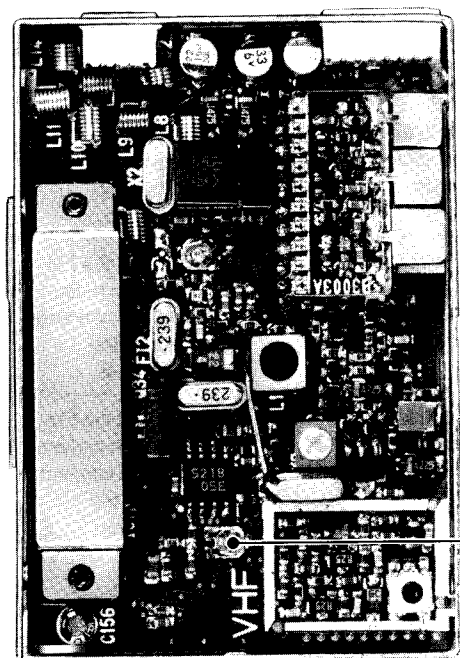
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
VHF SENSITIVITY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 145.000 MHz</li> <li>Connect the SSG to the antenna connector and set as: Level : 20 <math>\mu</math>V (-81 dBm) MOD. : 1 kHz DEV. : <math>\pm</math>3.5 kHz</li> <li>[VHF SQL] control: CCW</li> <li>Receiving</li> </ul>	VHF RF	Connect the oscilloscope to the LSD line.	Maximum	VRF B	Adjust in sequence L1, L2, L3
						VHF RF	L1
UHF SENSITIVITY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 446.000 MHz (USA) 436.000 MHz (All other versions)</li> <li>Connect the SSG to the antenna connector and set as: Level : 10 <math>\mu</math>V (-87 dBm) MOD. : 1 kHz DEV. : <math>\pm</math>3.5 kHz</li> <li>[UHF SQL] control: CCW</li> <li>Receiving</li> </ul>	UHF RF	Connect the oscilloscope to the HSD line.	Maximum	URF B	L1: input L2: output
						UHF RF	L1
VHF S-METER	1	<ul style="list-style-type: none"> <li>Displayed frequency: 145.000 MHz</li> <li>Connect the SSG to the antenna connector and set as: Level : 0.32 <math>\mu</math>V (-117 dBm) MOD. : 1 kHz DEV. : <math>\pm</math>3.5 kHz</li> <li>Receiving</li> </ul>	LCD display	S/RF indicator	S3 (4 dots)	VHF RF	R4
UHF S-METER	1	<ul style="list-style-type: none"> <li>Displayed frequency: 440.000 MHz (USA) 430.000 MHz (All other versions)</li> <li>Connect the SSG to the antenna connector and set as: Level : 0.32 <math>\mu</math>V (-117 dBm) MOD. : 1 kHz DEV. : <math>\pm</math>3.5 kHz</li> <li>Receiving</li> </ul>				UHF RF	R4



## 4-4 TRANSMITTER ADJUSTMENT (1)

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
(Note: When adjusting the output power, adjust according to the power supply requirement of 13.5 V.)						
VHF OUTPUT POWER	1 <ul style="list-style-type: none"> <li>•Displayed frequency : 145.000 MHz</li> <li>•[HI/LOW] key : HI</li> <li>•Transmitting</li> </ul>	Top panel	Connect the RF power meter to the antenna connector.	5.0 W	VHF RF	R55
UHF OUTPUT POWER	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 445.000 MHz (USA)</li> <li>: 435.000 MHz (All other versions)</li> <li>•[HI/LOW] key : HI</li> <li>•Transmitting</li> </ul>			5.0 W	UHF RF	R42
VHF DEVIATION	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 145.000 MHz</li> <li>•Connect the audio generator to the [MICROPHONE] connector and set as: <ul style="list-style-type: none"> <li>Level : 160 mV (USA)</li> <li>: 80 mV (All other versions)</li> </ul> </li> <li>MOD. : 1.0 kHz</li> <li>•Set the FM deviation meter as: <ul style="list-style-type: none"> <li>HPF : 50 Hz</li> <li>LPF : 20 kHz</li> <li>De-emphasis : OFF</li> <li>DET : (P-P)/2</li> </ul> </li> <li>•Transmitting</li> </ul>	Top Panel	Connect the FM deviation meter to the antenna connector through the attenuator.	4.8 kHz	VHF RF	R104
UHF DEVIATION	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 445.000 MHz (USA)</li> <li>: 435.000 MHz (All other versions)</li> <li>•Connect the audio generator to the [MICROPHONE] connector and set as: <ul style="list-style-type: none"> <li>Level : 160 mV (USA)</li> <li>: 80 mV (All other versions)</li> </ul> </li> <li>MOD. : 1.0 kHz</li> <li>•Set the FM deviation meter as: <ul style="list-style-type: none"> <li>HPF : 50 Hz</li> <li>LPF : 20 kHz</li> <li>De-emphasis : OFF</li> <li>DET : (P-P)/2</li> </ul> </li> <li>•Transmitting</li> </ul>			4.8 kHz	UHF RF	R73

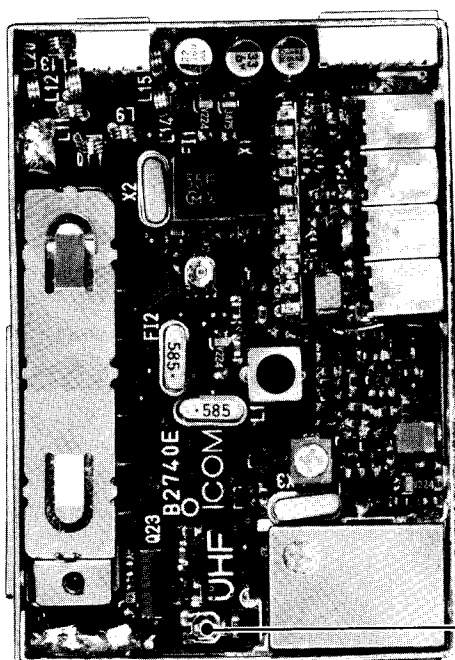
■ VHF RF UNIT



R55 VHF output power adjustment

R104 VHF deviation adjustment

■ UHF RF UNIT



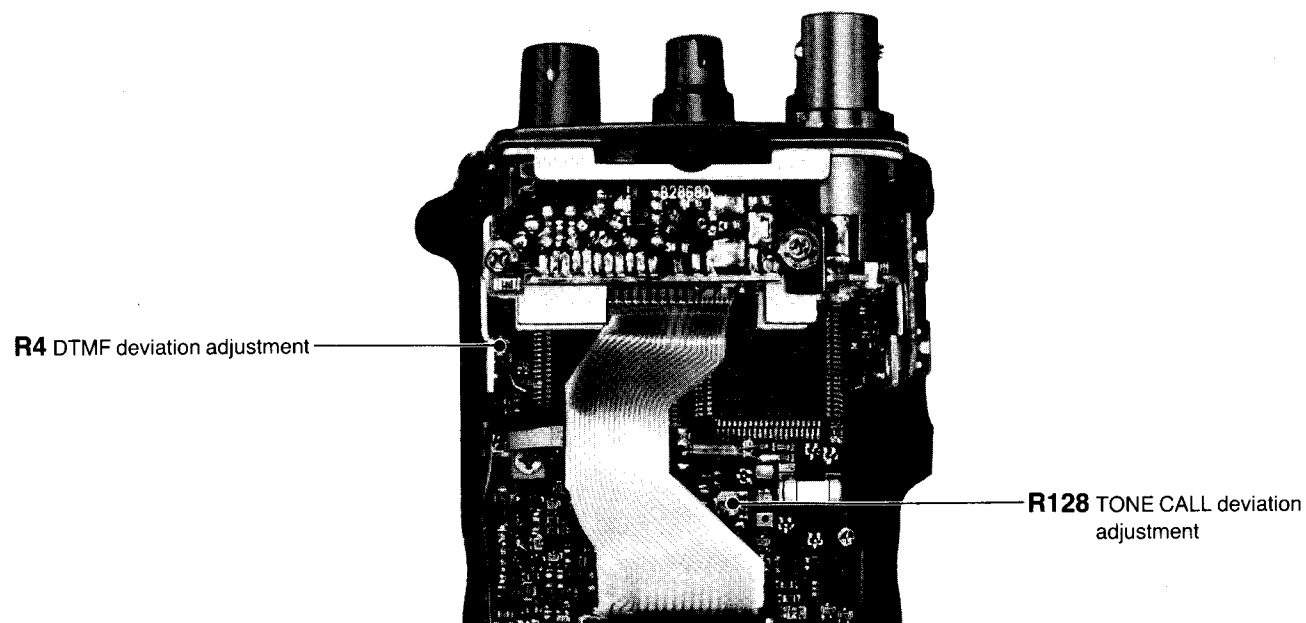
R42 UHF output power adjustment

R73 UHF deviation adjustment

## 4-5 TRANSMITTER ADJUSTMENT (2)

ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
DTMF DEVIATION	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 445.000 MHz (USA) 435.000 MHz (All other versions)</li> <li>•Push and hold the [D] key while transmitting.</li> </ul>	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	3.5 kHz	LOGIC	R4
TONE CALL DEVIATION	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 435.000 MHz (EUR-1, UK, EUR-2)</li> <li>•Push and hold [VHF] key while transmitting.</li> </ul>	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	3.5 kHz	LOGIC	R128
TONE SQL DEVIATION	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 445.000 MHz (USA)</li> <li>•TONE frequency : 88.5 Hz</li> <li>•Transmitting</li> </ul>	Top panel	Connect the FM deviation meter to the antenna connector through the attenuator.	0.75 kHz	UT-63	R13 (Refer to 8-1)

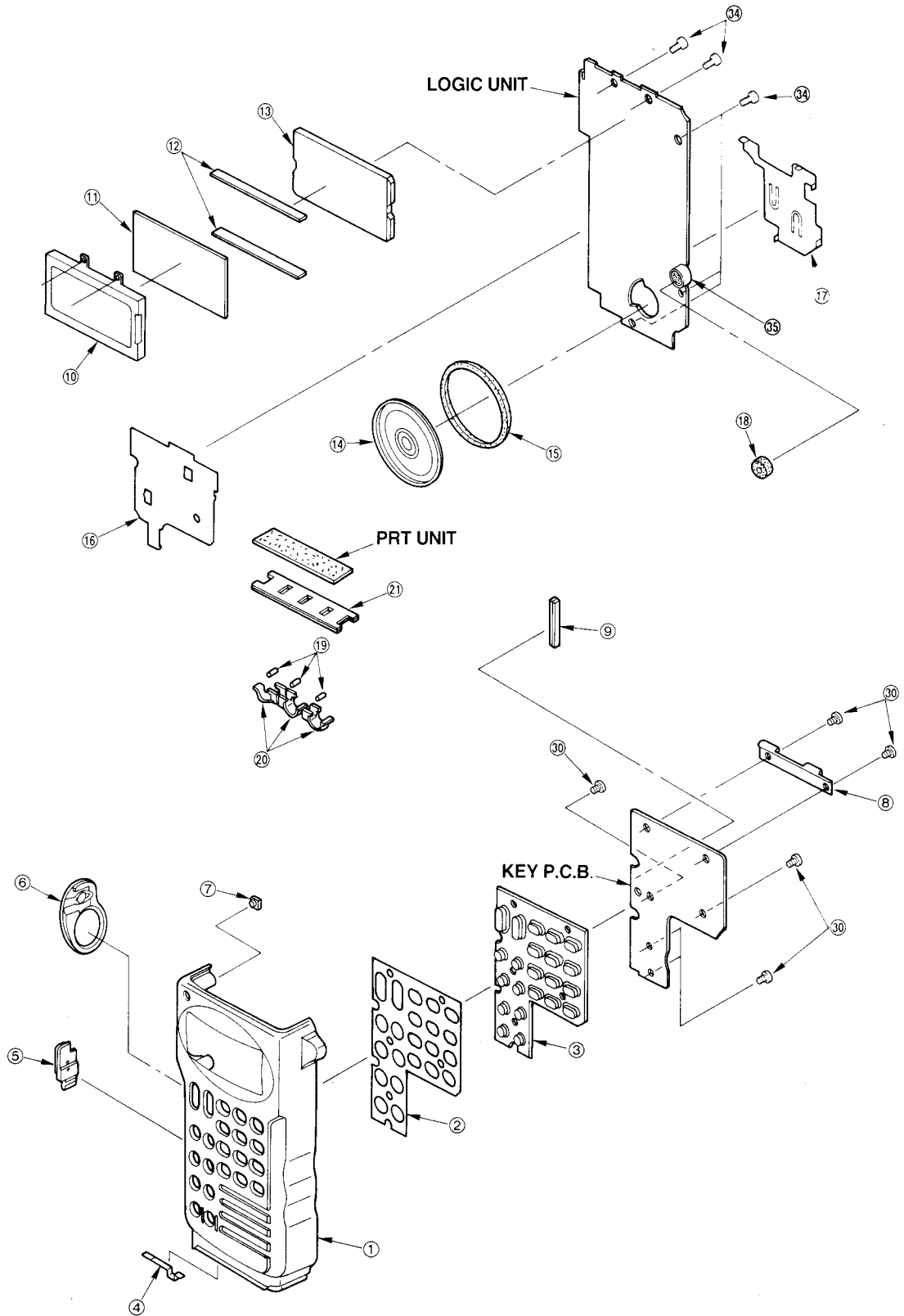
### ■ LOGIC UNIT

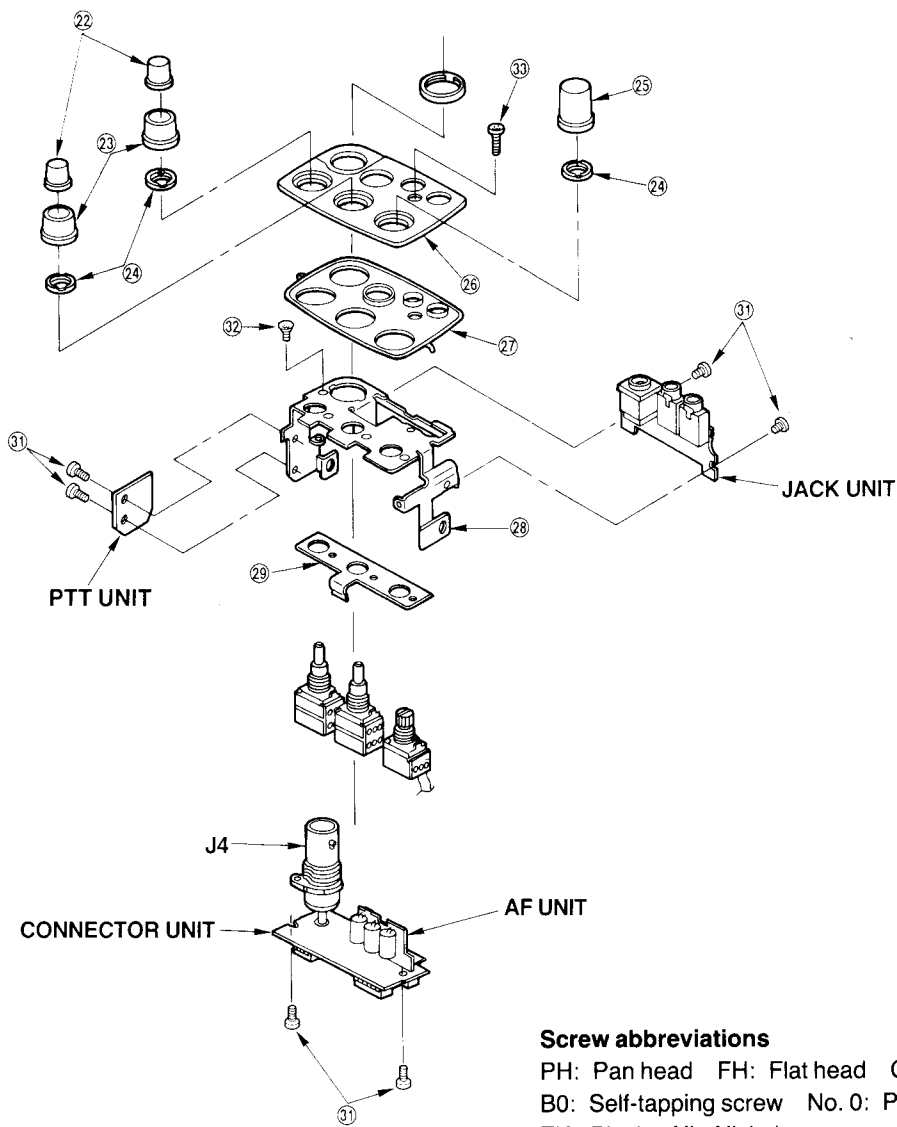




# SECTION 5 MECHANICAL PARTS AND DISASSEMBLY

## 5-1 FRONT PARTS



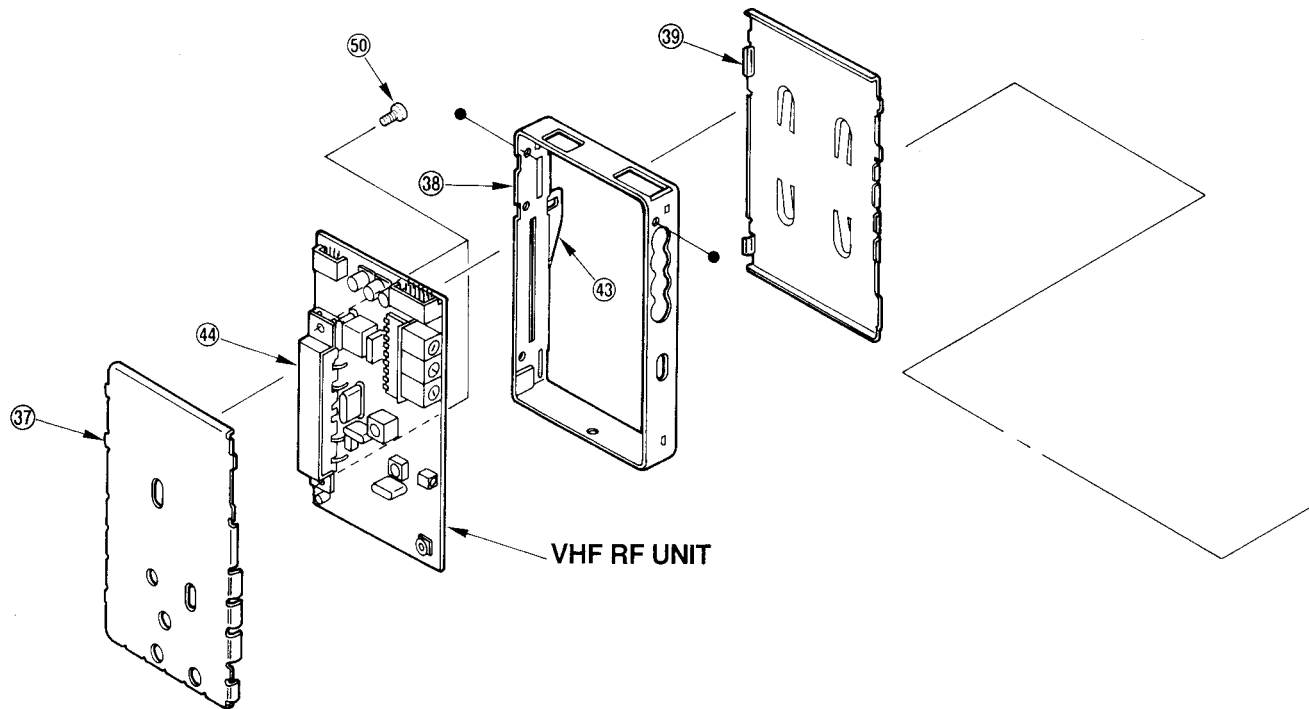


**Screw abbreviations**

PH: Pan head FH: Flat head OH: Oval countersunk head  
 B0: Self-tapping screw No. 0: Precision-type screw  
 ZK: Black Ni: Nickel

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8210006110	Front panel (B) (EUR-1, 2, UK)	1	⑱	8930021570	873 Microphone holder	1
	8210006100	Front panel (A) (USA, AUS, SEA)	1	⑲	8930016560	Terminal rubber	3
②	8510006880	873 key shield	1	⑳	8930014852	752 battery terminal-2	3
③	8010010700	873 key board	1	㉑	8930014971	752 terminal holder-1	1
④	8930020240	873 spring	1	㉒	8610006780	Knob N161	2
⑤	8930019850	873 release button	1	㉓	8610006790	Knob N162	2
⑥	8930019861	873 PTT rubber (1)	1	㉔	8830000570	643 nut (A)	3
⑦	8930019780	LED lens	1	㉕	8610006800	Knob N163	1
⑧	8510006960	873 shield	1	㉖	8210006060	873 top panel	1
⑨	8930020160	Contact strip SRCN-873	1	㉗	8930019871	873 top seal-1	1
⑩	8930019930	873 LCD holder	1	㉘	8010010760	873 top plate	1
⑪	5030000630	LCD LD-BU 5192J	1	㉙	8510006910	LOGIC shield	1
⑫	8930020150	LCD contact strip SRCN-873-W	2	㉚	8810001700	PH No. 0 M1.4×3	6
⑬	8010010690	873 LCD reflector	1	㉛	8810004870	PH No. 0 M2×2.5	6
⑭	2510000530	Speaker TO28S14I0810	1	㉜	8810005580	FH No. 0 M2×2.5	1
⑮	8930018080	873-SP ring	1	㉝	8810005360	PH No. 0 M2×3 ZK	1
⑯	8930020140	CPU shield	1	㉞	8810001720	PH No. 0 M1.4×4	6
⑰	8510006920	LOGIC-A shield	1	㉟	7700000861	WM-62A 103	1

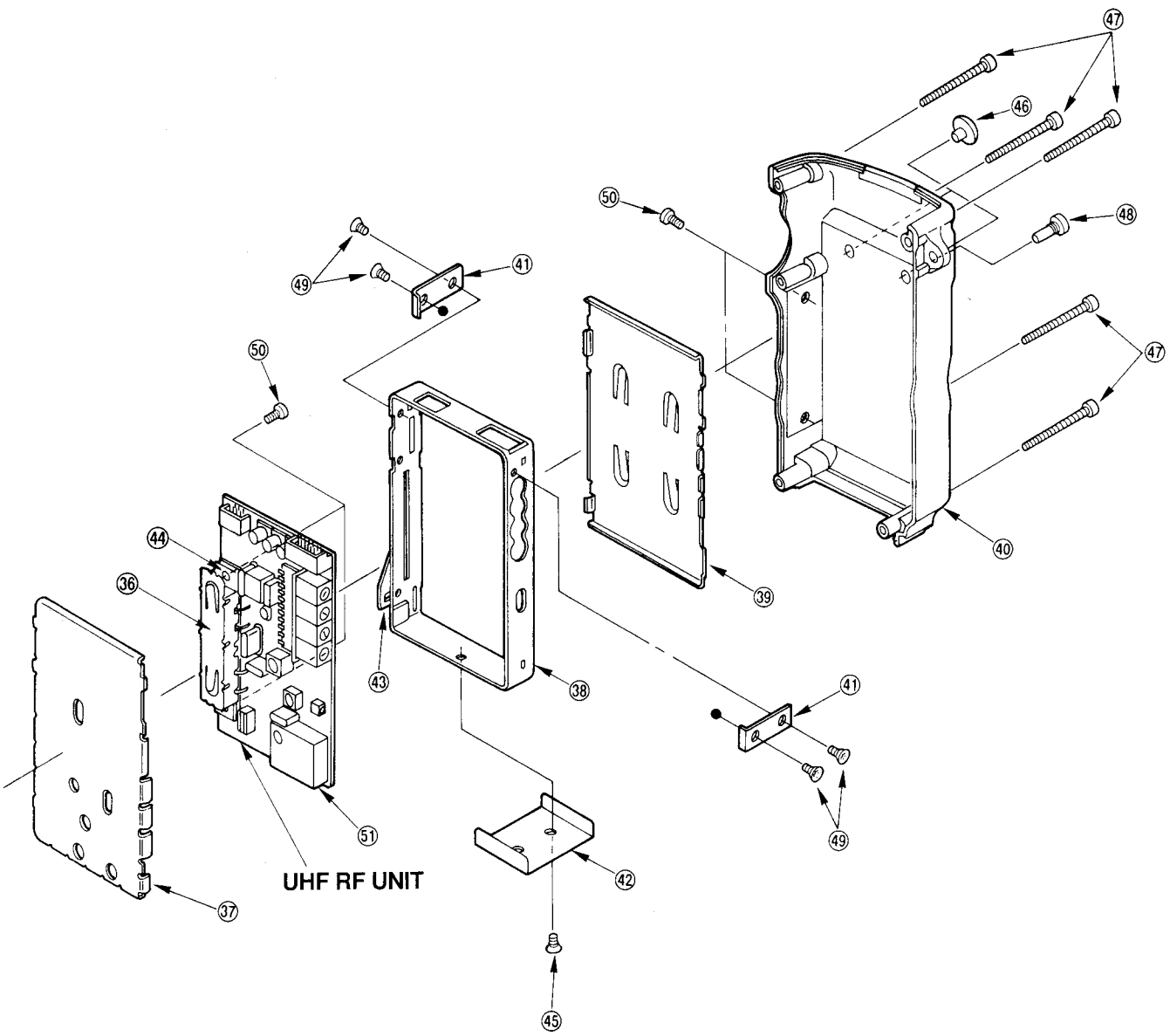
## 5-2 CHASSIS PARTS



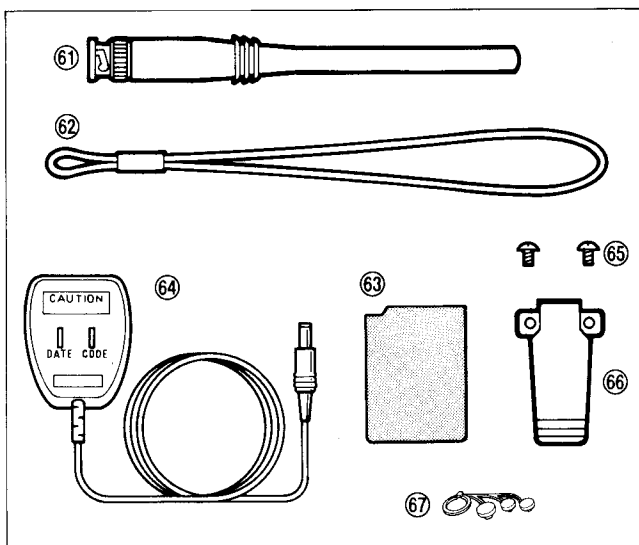
### Screw abbreviations

PH: Pan head FH: Flat head OH: Oval countersunk head  
 B0: Self-tapping screw No. 0: Precision-type screw  
 ZK: Black Ni: Nickel

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
③⑥	8510005050	VCO shield plate	1	④④	8930019950	M holder	2
③⑦	8510006890	873 top shield	2	④⑤	8810005580	FH No. 0 M2×2.5	1
③⑧	8510006860	873 unit case	2	④⑥	8010007602	Hole bushing (A)×2	2
③⑨	8510006870	873 bottom shield	2	④⑦	8810006490	PH B0 M2×25ZK	5
④①	8010010720	873 rear panel	1	④⑧	8820000620	873 screw	1
④②	8930019960	Unit plate	2	④⑨	8810005580	FH No. 0 M2×2.5	4
④③	8930020340	873 under plate	1	⑤①	8810000530	PH No. 0 M2×5ZK	6
④④	8930019940	M plate	2	⑤②	8510005940	752 VCO case	1



### 5-3 ACCESSORIES



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
⑥1	Optional product	FA-1443BB	1
⑥2	8010008970	Strap belt HK-002	1
⑥3	Optional product	BP-82 (AUS)	1
		BP-83 (EUR-1, UK, EUR-2)	1
		BP-84 (USA)	1
		BP-90 (SEA)	1
⑥4	Optional product	BC-77A (USA)	1
		BC-77D (EUR-1)	1
		BC-77E (UK, EUR-2)	1
		BC-77V (AUS)	1
⑥5	8810005730	Screw OH M3×3 ZK	2
⑥6	8010008620	752 belt clip	1
⑥7	8930020211	873 connector seal	1

# SECTION 6 PARTS LIST

[VHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110002200	IC	MC3372MR
IC3	1130000830	IC	$\mu$ PD4094BG-T1
IC5	1130003760	IC	TC4S81F (TE85R)
IC6	1130003760	IC	TC4S81F (TE85R)
IC7	1130003760	IC	TC4S81F (TE85R)
IC8	1130005700	IC	M58760FP
IC9	1110002490	IC	M5218FP-73A
IC10	1180000530	IC	S-81250HG-RD-T1
IC11	1150000980	IC	SC1142
Q1	1530002280	Transistor	2SC4081 T107 S
Q2	1530002280	Transistor	2SC4081 T107 S
Q4	1590000830	Transistor	FMG2 T149
Q5	1530002020	Transistor	2SC3770-3-TA
Q6	1560000550	FET	2SK882-Y (TE85R)
Q9	1530002560	Transistor	2SC4403-3-TR
Q10	1530002560	Transistor	2SC4403-3-TR
Q11	1530002560	Transistor	2SC4403-3-TR
Q13	1590000650	Transistor	DTA144TU T107
Q14	1590000430	Transistor	DTC144EU T107
Q15	1590000690	Transistor	IMD8 T108
Q16	1590000660	Transistor	DTC144TU T107
Q17	1590000910	Transistor	IMZ2 T108
Q18	1590000670	Transistor	FMW1 T148
Q19	1590000620	Transistor	FMS1 T148
Q21	1560000540	FET	2SK880-Y (TE85R)
Q22	1590001110	Transistor	IMT1 T110
Q23	1530000371	Transistor	2SC3356 R25-T2B
Q24	1530000371	Transistor	2SC3356 R25-T2B
Q25	1590000780	Transistor	IMX5 T109
Q26	1590000780	Transistor	IMX5 T109
Q27	1530002280	Transistor	2SC4081 T107 S
Q28	1510000620	Transistor	2SA1578 T107 S
Q29	1530002280	Transistor	2SC4081 T107 S
Q30	1510000620	Transistor	2SA1578 T107 S
Q31	1530002280	Transistor	2SC4081 T107 S
Q32	1520000200	Transistor	2SB798-T2 DK
Q33	1530002280	Transistor	2SC4081 T107 S
Q34	1520000080	Transistor	2SB909M R
Q35	1590000620	Transistor	FMS1 T148
Q36	1530002280	Transistor	2SC4081 T107 S
Q37	1520000200	Transistor	2SB798-T2 DK
Q38	1510000510	Transistor	2SA1578 T107 R
Q39	1590000430	Transistor	DTC144EU T107
Q40	1590000720	Transistor	DTA144EU T107
Q41	1530002030	Transistor	2SC3772-3-TA
Q42	1530002280	Transistor	2SC4081 T107 S
D9	1790000450	Diode	MA862 (TX)
D10	1790000530	Diode	MA333 (TW)
D11	1790000620	Diode	MA77 (TW)
D12	1750000160	Diode	DA114 T107
D13	1750000160	Diode	DA114 T107
D14	1750000160	Diode	DA114 T107
D15	1750000160	Diode	DA114 T107
D16	1790000450	Diode	MA862 (TX)
D17	1790000590	Diode	MA110 (TW)
D18	1790000680	Diode	MA728 (TW)
D19	1790000680	Diode	MA728 (TW)
D20	1160000060	Diode	DAN202U T107
D21	1750000120	Diode	DWA010-TE
D22	1720000240	Varicap	1SV172 (TE85R)
D23	1790000450	Diode	MA862 (TX)
D24	1790000590	Diode	MA110 (TW)
X1	6070000080	Discriminator	CDBM455C16
X2	6050007190	Crystal	CR-325 UM-1/T 30.39500MHZ

[VHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
X3	6050007230	Crystal	CR-329 UM-1/T 12.80000MHZ
FI1	2020000550	Ceramic Filter	CFUM455E
FI2	2010001220	Filter	30M15B9 (FL-150)
L1	6150003210	Coil	LS-319
L8	6110002000	Coil	LA-228
L9	6110002070	Coil	LA-227
L10	6110002120	Coil	LA-228
L11	6110002120	Coil	LA-228
L12	6110002010	Coil	LA-224
L13	6110002070	Coil	LA-227
L14	6110002000	Coil	LA-228
L15	6200001520	Coil	MLF2012D R82K-T
L16	6130002360	Coil	LB-257
L17	6200001500	Coil	MLF2012D R12K-T
L18	6200001510	Coil	MLF2012D R10K-T
L19	6110002070	Coil	LA-227
L20	6200001520	Coil	MLF2012D R82K-T
R1	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R2	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R3	7030003340	Resistor	ERJ3GEYJ 151 V (150 $\Omega$ )
R4	7310002590	Trimmer	RV-109 (RH03 A3AJ3X0BA)222
R5	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 k $\Omega$ )
R7	7030003760	Resistor	ERJ3GEYJ 474 V (470 k $\Omega$ )
R8	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R9	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R10	7030003740	Resistor	ERJ3GEYJ 334 V (330 k $\Omega$ )
R11	7030003470	Resistor	ERJ3GEYJ 182 V (1.8 k $\Omega$ )
R12	7030003760	Resistor	ERJ3GEYJ 474 V (470 k $\Omega$ )
R13	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R16	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 M $\Omega$ )
R18	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R19	7030003430	Resistor	ERJ3GEYJ 821 V (820 $\Omega$ )
R20	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R21	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R22	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R23	7030003410	Resistor	ERJ3GEYJ 561 V (560 $\Omega$ )
R24	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R25	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R26	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R27	7030003290	Resistor	ERJ3GEYJ 560 V (56 $\Omega$ )
R40	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R41	7030003610	Resistor	ERJ3GEYJ 273 V (27 k $\Omega$ )
R42	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R43	7030003280	Resistor	ERJ3GEYJ 470 V (47 $\Omega$ )
R44	7030003280	Resistor	ERJ3GEYJ 470 V (47 $\Omega$ )
R45	7030003340	Resistor	ERJ3GEYJ 151 V (150 $\Omega$ )
R46	7030003290	Resistor	ERJ3GEYJ 560 V (56 $\Omega$ )
R47	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R48	7030003280	Resistor	ERJ3GEYJ 470 V (47 $\Omega$ )
R49	7030003290	Resistor	ERJ3GEYJ 560 V (56 $\Omega$ )
R50	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R51	7030003700	Resistor	ERJ3GEYJ 154 V (150 k $\Omega$ )
R52	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R53	7030003720	Resistor	ERJ3GEYJ 224 V (22 k $\Omega$ )
R54	7030003620	Resistor	ERJ3GEYJ 333 V (33 k $\Omega$ )
R55	7310003520	Trimmer	RV-224 (RH03 AVA15J)104
R56	7030003200	Resistor	ERJ3GEYJ 100 V (10 $\Omega$ )
R57	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R58	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R59	7030003800	Resistor	ERJ3GEYJ 105 V (1 M $\Omega$ )
R60	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R61	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R62	7030003470	Resistor	ERJ3GEYJ 182 V (1.8 k $\Omega$ )
R64	7030003200	Resistor	ERJ3GEYJ 100 V (10 $\Omega$ )

## [VHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R66	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R67	7030003700	Resistor	ERJ3GEYJ 154 V (150 k $\Omega$ )
R68	7030003620	Resistor	ERJ3GEYJ 333 V (33 k $\Omega$ )
R69	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R71	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R72	7030003380	Resistor	ERJ3GEYJ 331 V (330 $\Omega$ )
R73	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R74	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R75	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R76	7030003360	Resistor	ERJ3GEYJ 221 V (220 $\Omega$ )
R77	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R78	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R79	7030003360	Resistor	ERJ3GEYJ 221 V (220 $\Omega$ )
R80	7030003570	Resistor	ERJ3GEYJ 123 V (12 k $\Omega$ )
R82	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R83	7030003380	Resistor	ERJ3GEYJ 331 V (330 $\Omega$ )
R84	7030003570	Resistor	ERJ3GEYJ 123 V (12 k $\Omega$ )
R85	7030003600	Resistor	ERJ3GEYJ 223 V (22 k $\Omega$ )
R86	7030003290	Resistor	ERJ3GEYJ 560 V (56 $\Omega$ )
R87	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R88	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R89	7030003880	Resistor	ERJ3GEYJ 244 V (240 k $\Omega$ )
R90	7030003370	Resistor	ERJ3GEYJ 271 V (270 $\Omega$ )
R91	7030003710	Resistor	ERJ3GEYJ 184 V (180 k $\Omega$ )
R92	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R93	7030003660	Resistor	ERJ3GEYJ 683 V (68 k $\Omega$ ) (EUR-2,AUS,SEA,EUR-1,UK)
	7030003620	Resistor	ERJ3GEYJ 333 V (33 k $\Omega$ ) (USA)
R94	7030003670	Resistor	ERJ3GEYJ 823 V (82 k $\Omega$ )
R95	7030003740	Resistor	ERJ3GEYJ 334 V (330 k $\Omega$ )
R96	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R97	7030003760	Resistor	ERJ3GEYJ 474 V (470 k $\Omega$ )
R98	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R99	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R100	7510000180	Thermistor	DTN-T203S223LS (T)
R101	7030003570	Resistor	ERJ3GEYJ 123 V (12 k $\Omega$ )
R102	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R103	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 k $\Omega$ )
R104	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA)473
R105	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R106	7030003720	Resistor	ERJ3GEYJ 224 V (220 k $\Omega$ )
R107	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R108	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R109	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R110	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R111	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R112	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R113	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R114	7030003260	Resistor	ERJ3GEYJ 330 V (33 $\Omega$ )
R115	7030003620	Resistor	ERJ3GEYJ 333 V (33 k $\Omega$ )
R116	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R117	7030003350	Resistor	ERJ3GEYJ 181 V (180 $\Omega$ )
R118	7030003380	Resistor	ERJ3GEYJ 331 V (330 $\Omega$ )
R119	7030003490	Resistor	ERJ3GEYJ 272 V (2.7 k $\Omega$ )
R120	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R121	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R122	7030003380	Resistor	ERJ3GEYJ 331 V (330 $\Omega$ )
R123	7030003340	Resistor	ERJ3GEYJ 151 V (150 $\Omega$ )
R124	7510000200	Thermistor	DTN-T203U473LS (T)
R125	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R126	7030003570	Resistor	ERJ3GEYJ 123 V (12 k $\Omega$ )
R127	7030003670	Resistor	ERJ3GEYJ 823 V (82 k $\Omega$ )
R128	7030003600	Resistor	ERJ3GEYJ 223 V (22 k $\Omega$ )
R129	7030003720	Resistor	ERJ3GEYJ 224 V (220 k $\Omega$ )
R130	7030003770	Resistor	ERJ3GEYJ 584 V (580 k $\Omega$ )
R131	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R132	7030000440	Resistor	MCR10EZHZ 3.3 k $\Omega$ (332)
R133	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R134	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R135	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R136	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R137	7030003720	Resistor	ERJ3GEYJ 224 V (220 k $\Omega$ )
R138	7030003530	Resistor	ERJ3GEYJ 582 V (5.8 k $\Omega$ )
R139	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R140	7030003200	Resistor	ERJ3GEYJ 100 V (10 $\Omega$ )
R141	7030003750	Resistor	ERJ3GEYJ 394 V (390 k $\Omega$ )

## [VHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R142	7030003710	Resistor	ERJ3GEYJ 184 V (180 k $\Omega$ )
C1	4030004060	Ceramic	GRM39 SL 270J 50PT
C2	4030008790	Ceramic	GRM39 F 104Z 25PT
C3	4030008790	Ceramic	GRM39 F 104Z 25PT
C4	4030008790	Ceramic	GRM39 F 104Z 25PT
C5	4030008790	Ceramic	GRM39 F 104Z 25PT
C6	4030004110	Ceramic	GRM39 SL 580J 50PT
C7	4030003880	Ceramic	GRM39 SL 180J 50PT
C9	4030008790	Ceramic	GRM39 F 104Z 25PT
C10	4030004240	Ceramic	GRM39 B 102K 50PT
C11	4030008920	Ceramic	C1808 JB 1C 473K-T-A
C13	4030004100	Ceramic	GRM39 SL 470J 50PT
C14	4030004100	Ceramic	GRM39 SL 470J 50PT
C15	4030004310	Ceramic	GRM39 B 103K 25PT
C16	4030004240	Ceramic	GRM39 B 102K 50PT
C17	4030004310	Ceramic	GRM39 B 103K 25PT
C18	4030004310	Ceramic	GRM39 B 103K 25PT
C19	4550003000	Tantalum	TEMSVB 0G 226M-12 L
C20	4030003890	Ceramic	GRM39 B 471K 50PT
C21	4030004030	Ceramic	GRM39 SL 120J 50PT
C22	4030004240	Ceramic	GRM39 B 102K 50PT
C23	4030004050	Ceramic	GRM39 SL 220J 50PT
C24	4030004240	Ceramic	GRM39 B 102K 50PT
C25	4030004240	Ceramic	GRM39 B 102K 50PT
C26	4030004100	Ceramic	GRM39 SL 470J 50PT
C44	4030003890	Ceramic	GRM39 B 471K 50PT
C45	4030003930	Ceramic	GRM39 SL 0R5C 50PT
C46	4030004040	Ceramic	GRM39 SL 150J 50PT
C49	4030003890	Ceramic	GRM39 B 471K 50PT
C50	4030004040	Ceramic	GRM39 SL 150J 50PT
C51	4030003890	Ceramic	GRM39 B 471K 50PT
C52	4030003880	Ceramic	GRM39 SL 180J 50PT
C53	4030004070	Ceramic	GRM39 SL 330J 50PT
C54	4030004050	Ceramic	GRM39 SL 220J 50PT
C55	4030004240	Ceramic	GRM39 B 102K 50PT
C56	4030003880	Ceramic	GRM39 SL 180J 50PT
C57	4030003960	Ceramic	GRM39 SL 030C 50PT
C58	4030004060	Ceramic	GRM39 SL 270J 50PT
C59	4030003990	Ceramic	GRM39 SL 060D 50PT
C60	4030004050	Ceramic	GRM39 SL 220J 50PT
C61	4030004000	Ceramic	GRM39 SL 070D 50PT
C62	4030003970	Ceramic	GRM39 SL 040C 50PT
C63	4030004000	Ceramic	GRM39 SL 070D 50PT
C64	4030004100	Ceramic	GRM39 SL 470J 50PT
C65	4030004000	Ceramic	GRM39 SL 070D 50PT
C66	4030004240	Ceramic	GRM39 B 102K 50PT
C67	4030008790	Ceramic	GRM39 F 104Z 25PT
C68	4030008810	Ceramic	GRM39 CH 150J 50PT
C69	4610001260	Trimmer	ECRJA020E12W
C70	4030008820	Ceramic	GRM39 CH 390J 50PT
C71	4030008920	Ceramic	C1808 JB 1C 473K-T-A
C72	4030004240	Ceramic	GRM39 B 102K 50PT
C73	4030004240	Ceramic	GRM39 B 102K 50PT
C74	4030004240	Ceramic	GRM39 B 102K 50PT
C76	4030008790	Ceramic	GRM39 F 104Z 25PT
C77	4550002950	Tantalum	TESVA 0J 335M1-8L
C78	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C79	4550000460	Tantalum	TESVA 1C 105M1-8L
C80	4030004240	Ceramic	GRM39 B 102K 50PT
C81	4030004240	Ceramic	GRM39 B 102K 50PT
C82	4030004070	Ceramic	GRM39 SL 330J 50PT
C83	4030004240	Ceramic	GRM39 B 102K 50PT
C84	4030004240	Ceramic	GRM39 B 102K 50PT
C85	4030004240	Ceramic	GRM39 B 102K 50PT
C86	4030004240	Ceramic	GRM39 B 102K 50PT
C87	4030004240	Ceramic	GRM39 B 102K 50PT
C88	4030003940	Ceramic	GRM39 SL 010C 50PT
C89	4030003940	Ceramic	GRM39 SL 010C 50PT
C90	4030004240	Ceramic	GRM39 B 102K 50PT
C91	4030003930	Ceramic	GRM39 SL 0R5C 50PT
C92	4030004240	Ceramic	GRM39 B 102K 50PT
C93	4030004050	Ceramic	GRM39 SL 220J 50PT
C94	4030004240	Ceramic	GRM39 B 102K 50PT
C95	4030004240	Ceramic	GRM39 B 102K 50PT
C97	4030004240	Ceramic	GRM39 B 102K 50PT
C99	4030004240	Ceramic	GRM39 B 102K 50PT

[VHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C100	4030003890	Ceramic	GRM39 B 471K 50PT
C101	4030004280	Ceramic	GRM39 B 472K 50PT
C102	4550003030	Tantalum	TEMSVA 0J 475M-8L
C103	4030003890	Ceramic	GRM39 B 471K 50PT
C104	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C105	4030003890	Ceramic	GRM39 B 471K 50PT
C106	4030003890	Ceramic	GRM39 B 471K 50PT
C107	4030004280	Ceramic	GRM39 B 272K 50PT
C108	4030004180	Ceramic	GRM39 SL 121J 50PT
C109	4030004310	Ceramic	GRM39 B 103K 25PT
C110	4030004310	Ceramic	GRM39 B 103K 25PT
C111	4030004240	Ceramic	GRM39 B 102K 50PT
C112	4030004310	Ceramic	GRM39 B 103K 25PT
C113	4510004430	Electrolytic	ECEV1CV220WR
C114	4030003890	Ceramic	GRM39 B 471K 50PT
C116	4510004420	Electrolytic	ECEV0JV330SR
C117	4030003890	Ceramic	GRM39 B 471K 50PT
C118	4550003030	Tantalum	TEMSVA 0J 475M-8L
C119	4030003890	Ceramic	GRM39 B 471K 50PT
C120	4030003890	Ceramic	GRM39 B 471K 50PT
C121	4550003030	Tantalum	TEMSVA 0J 475M-8L
C122	4030003890	Ceramic	GRM39 B 471K 50PT
C123	4550002890	Tantalum	TESVA 1A 225M1-8L
C124	4030003890	Ceramic	GRM39 B 471K 50PT
C125	4550002890	Tantalum	TESVA 1A 225M1-8L
C126	4030003890	Ceramic	GRM39 B 471K 50PT
C127	4550003040	Tantalum	TEMSVB2 0J 106M-8 L
C128	4030003890	Ceramic	GRM39 B 471K 50PT
C129	4030004240	Ceramic	GRM39 B 102K 50PT
C130	4030004240	Ceramic	GRM39 B 102K 50PT
C131	4030004240	Ceramic	GRM39 B 102K 50PT
C132	4030004030	Ceramic	GRM39 SL 120J 50PT
C133	4510004430	Electrolytic	ECEV1CV220WR
C134	4030004240	Ceramic	GRM39 B 102K 50PT
C136	4030004240	Ceramic	GRM39 B 102K 50PT
C137	4030004180	Ceramic	GRM39 SL 121J 50PT
C138	4030004050	Ceramic	GRM39 SL 220J 50PT
C139	4030004050	Ceramic	GRM39 SL 220J 50PT
C140	4030004240	Ceramic	GRM39 B 102K 50PT
C141	4030004240	Ceramic	GRM39 B 102K 50PT
C142	4030004240	Ceramic	GRM39 B 102K 50PT
C143	4030008790	Ceramic	GRM39 F 104Z 25PT
C144	4030003890	Ceramic	GRM39 B 471K 50PT
C145	4030003890	Ceramic	GRM39 B 471K 50PT
C146	4030003890	Ceramic	GRM39 B 471K 50PT
C147	4030003890	Ceramic	GRM39 B 471K 50PT
C148	4550003030	Tantalum	TEMSVA 0J 475M-8L
C149	4030003890	Ceramic	GRM39 B 471K 50PT
C150	4030003890	Ceramic	GRM39 B 471K 50PT
C151	4030004240	Ceramic	GRM39 B 102K 50PT
C152	4030003890	Ceramic	GRM39 B 471K 50PT
C154	4030004310	Ceramic	GRM39 B 103K 25PT
C156	4510001350	Electrolytic	18 MS5 10 $\mu$ F
C158	4030004240	Ceramic	GRM39 B 102K 50PT
C159	4030004050	Ceramic	GRM39 SL 220J 50PT
C160	4030004020	Ceramic	GRM39 SL 100D 50PT
C161	4030008920	Ceramic	C1808 JB 1C 473K-T-A
C162	4030003890	Ceramic	GRM39 B 471K 50PT
EP1	0910028404	P.C. Board	B 2742D (VHF RF)

[V RFA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530002570	Transistor	2SC4405-3-TR
Q2	1530002560	Transistor	2SC4403-3-TR
D1	1790000620	Diode	MA77 (TW)
D2	1790000640	Diode	MA363B (TX)
D3	1790000620	Diode	MA77 (TW)

[V RFA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D4	1790000640	Diode	MA363B (TX)
D5	1790000640	Diode	MA363B (TX)
D6	1790000620	Diode	MA77 (TW)
R1	7030003580	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R2	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R3	7030003240	Resistor	ERJ3GEYJ 220 V (22 $\Omega$ )
R4	7030003580	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R5	7030003280	Resistor	ERJ3GEYJ 470 V (47 $\Omega$ )
R6	7030003580	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R7	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R8	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R9	7030003580	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R10	7030003580	Resistor	ERJ3GEYJ 153 V (15 k $\Omega$ )
R11	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R14	7030003330	Resistor	ERJ3GEYJ 121 V (120 $\Omega$ )
C1	4030003880	Ceramic	GRM39 SL 180J 50PT
C2	4030004070	Ceramic	GRM39 SL 330J 50PT
C3	4030004000	Ceramic	GRM39 SL 070D 50PT
C4	4030004030	Ceramic	GRM39 SL 120J 50PT
C5	4030003890	Ceramic	GRM39 B 471K 50PT
C6	4030004000	Ceramic	GRM39 SL 070D 50PT
C7	4030004110	Ceramic	GRM39 SL 560J 50PT
C8	4030003940	Ceramic	GRM39 SL 010C 50PT
C9	4030004000	Ceramic	GRM39 SL 070D 50PT
C10	4030004240	Ceramic	GRM39 B 102K 50PT
C11	4030004110	Ceramic	GRM39 SL 560J 50PT
C12	4030004000	Ceramic	GRM39 SL 070D 50PT
C13	4030004240	Ceramic	GRM39 B 102K 50PT
C18	4030004240	Ceramic	GRM39 B 102K 50PT
C20	4030004240	Ceramic	GRM39 B 102K 50PT
C21	4030004240	Ceramic	GRM39 B 102K 50PT
C22	4030004240	Ceramic	GRM39 B 102K 50PT
EP1	0910029571	P.C. Board	B 3003A (V RFA)

[V RFB UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	8150003120	Coil	LS-321
L2	8150003120	Coil	LS-321
L3	8150003430	Coil	LS-378
EP1	0910020185	P.C. Board	B 1946E (V RFB)

[UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110002200	IC	MC3372MR
IC3	1110001871	IC	$\mu$ PC1676G-T1
IC4	1130000830	IC	$\mu$ PD4094BG-T1
IC6	1130005700	IC	M58780FP
IC7	1110001971	IC	$\mu$ PC1676G-T1
IC8	1110002490	IC	M5218FP-73A
IC10	1180000530	IC	S-81250HG-RD-T1
IC11	1150000970	IC	M87749M / SC1143
IC12	1130003760	IC	TC4S81F (TE85R)
IC13	1130003760	IC	TC4S81F (TE85R)
IC14	1130003760	IC	TC4S81F (TE85R)
Q1	1530002020	Transistor	2SC3770-3-TA
Q2	1530002560	Transistor	2SC4403-3-TR
Q3	1590000720	Transistor	DTA144EU T107

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q6	1530002640	Transistor	2SC3583 R34-T2B
Q7	1590000970	Transistor	FMA2 T148
Q8	1510000510	Transistor	2SA1578 T107 R
Q9	1590000430	Transistor	DTC144EU T107
Q10	1590000720	Transistor	DTA144EU T107
Q11	1590000660	Transistor	DTC144TU T107
Q12	1590000910	Transistor	IMZ2 T108
Q13	1590001160	Transistor	XP1401-(TX).AB
Q14	1590000430	Transistor	DTC144EU T107
Q15	1530002560	Transistor	2SC4403-3-TR
Q16	1530002280	Transistor	2SC4081 T107 S
Q17	1510000620	Transistor	2SA1578 T107 S
Q18	1530002280	Transistor	2SC4081 T107 S
Q19	1510000620	Transistor	2SA1578 T107 S
Q20	1530002280	Transistor	2SC4081 T107 S
Q21	1520000200	Transistor	2SB798-T2 DK
Q22	1530002280	Transistor	2SC4081 T107 S
Q23	1520000080	Transistor	2SB09M R
Q24	1590001160	Transistor	XP1401-(TX).AB
Q25	1530002280	Transistor	2SC4081 T107 S
Q26	1510000620	Transistor	2SA1578 T107 S
Q27	1530000371	Transistor	2SC3358 R25-T2B
Q28	1530002560	Transistor	2SC4403-3-TR
Q29	1590000440	Transistor	DTA143ZU T107
Q30	1590000430	Transistor	DTC144EU T107
Q31	1590001170	Transistor	XP1501-(TX).AB
Q32	1590000430	Transistor	DTC144EU T107
Q33	1530002560	Transistor	2SC4403-3-TR
Q34	1530002560	Transistor	2SC4403-3-TR
D2	1790000450	Diode	MA882 (TX)
D3	1790000450	Diode	MA882 (TX)
D4	1790000620	Diode	MA77 (TW)
D6	1790000450	Diode	MA882 (TX)
D7	1790000450	Diode	MA882 (TX)
D9	1790000450	Diode	MA882 (TX)
D10	1750000130	Diode	DA204U T107
D11	1790000590	Diode	MA110 (TW)
D12	1750000160	Diode	DA114 T107
D13	1750000160	Diode	DA114 T107
D14	1790000590	Diode	MA110 (TW)
D15	1160000060	Diode	DAN202U T107
D16	1790000660	Diode	MA728 (TW)
D17	1790000590	Diode	MA110 (TW)
D18	1790000660	Diode	MA728 (TW)
D19	1790000450	Diode	MA882 (TX)
D20	1790000620	Diode	MA77 (TW)
D21	1790000620	Diode	MA77 (TW)
D22	1790000620	Diode	MA77 (TW)
X1	6070000080	Discriminator	CDBM455C16
X2	6050007220	Crystal	CR-328 UM-1/T 35.34510MHZ
X3	6050007230	Crystal	CR-329 UM-1/T 12.80000MHZ
FI1	2020000550	Ceramic Filter	CFUM455E
FI2	2010001230	Filter	35M15B 35.8000M (FL-152)
L1	6150003210	Coil	LS-319
L5	6200000720	Coil	LQN 2A 10NM
L7	6200000720	Coil	LQN 2A 10NM
L8	6200000100	Coil	LQN 2A 22NM
L9	6110001990	Coil	LA-223
L10	6110001990	Coil	LA-223
L11	6110001990	Coil	LA-223
L12	6110001990	Coil	LA-223
L13	6110001990	Coil	LA-223
L14	6110001990	Coil	LA-223
L15	6110001990	Coil	LA-223
L16	6200000100	Coil	LQN 2A 22NM
L18	6200001520	Coil	MLF2012D R82K-T
L19	6200001060	Coil	MLF2012D 47NM-T
L20	6110001990	Coil	LA-223

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L21	6200000090	Coil	LQN 2A 18NM
R1	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R2	7030003200	Resistor	ERJ3GEYJ 100 V (10 $\Omega$ )
R3	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R4	7310002590	Trimmer	RV-109 (RH03 A3AJ3X0BA)222
R5	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R6	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R7	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R8	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R9	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R10	7030003430	Resistor	ERJ3GEYJ 821 V (820 $\Omega$ )
R11	7030003670	Resistor	ERJ3GEYJ 823 V (82 k $\Omega$ )
R12	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R13	7030003410	Resistor	ERJ3GEYJ 561 V (560 $\Omega$ )
R14	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R15	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R16	7030003700	Resistor	ERJ3GEYJ 154 V (150 k $\Omega$ )
R17	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R18	7030003680	Resistor	ERJ3GEYJ 883 V (88 k $\Omega$ )
R19	7030003200	Resistor	ERJ3GEYJ 100 V (10 $\Omega$ )
R27	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R28	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R29	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R30	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R31	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R32	7030003300	Resistor	ERJ3GEYJ 880 V (88 $\Omega$ )
R33	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R34	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R35	7030003720	Resistor	ERJ3GEYJ 224 V (220 k $\Omega$ )
R37	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R38	7030003700	Resistor	ERJ3GEYJ 154 V (150 k $\Omega$ )
R39	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R40	7030003720	Resistor	ERJ3GEYJ 224 V (220 k $\Omega$ )
R41	7030003620	Resistor	ERJ3GEYJ 333 V (33 k $\Omega$ )
R42	7310003520	Trimmer	RV-224 (RH03 AVA15J)104
R44	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R45	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R46	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R47	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R48	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 k $\Omega$ )
R49	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R50	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 k $\Omega$ )
R51	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R52	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R53	7030003650	Resistor	ERJ3GEYJ 563 V (56 k $\Omega$ )
R54	7030003320	Resistor	ERJ3GEYJ 101 V (100 $\Omega$ )
R55	7030003380	Resistor	ERJ3GEYJ 331 V (330 $\Omega$ )
R56	7030003290	Resistor	ERJ3GEYJ 560 V (56 $\Omega$ )
R57	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R58	7030003440	Resistor	ERJ3GEYJ 102 V (1 k $\Omega$ )
R59	7030003710	Resistor	ERJ3GEYJ 184 V (180 k $\Omega$ )
R60	7030003680	Resistor	ERJ3GEYJ 244 V (240 k $\Omega$ )
R61	7030003370	Resistor	ERJ3GEYJ 271 V (270 $\Omega$ )
R62	7030003660	Resistor	ERJ3GEYJ 683 V (68 k $\Omega$ ) (EUR-1,UK,EUR-2,AUS,SEA) ERJ3GEYJ 333 V (33 k $\Omega$ ) (USA)
R63	7030003670	Resistor	ERJ3GEYJ 823 V (82 k $\Omega$ )
R64	7030003740	Resistor	ERJ3GEYJ 334 V (330 k $\Omega$ )
R65	7030003680	Resistor	ERJ3GEYJ 104 V (100 k $\Omega$ )
R66	7030003760	Resistor	ERJ3GEYJ 474 V (470 k $\Omega$ )
R67	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R68	7030003630	Resistor	ERJ3GEYJ 393 V (39 k $\Omega$ )
R69	7030003570	Resistor	ERJ3GEYJ 123 V (12 k $\Omega$ )
R70	7510000180	Thermistor	DTN-T203S223LS (T)
R71	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )
R72	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 k $\Omega$ )
R73	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA)473
R74	7030003640	Resistor	ERJ3GEYJ 473 V (47 k $\Omega$ )
R75	7030003660	Resistor	ERJ3GEYJ 883 V (88 k $\Omega$ )
R76	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R77	7030003400	Resistor	ERJ3GEYJ 471 V (470 $\Omega$ )
R78	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R79	7030003560	Resistor	ERJ3GEYJ 103 V (10 k $\Omega$ )



## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R80	7030003560	Resistor ERJ3GEYJ 103 V (10 k $\Omega$ )
R81	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R82	7030003280	Resistor ERJ3GEYJ 470 V (47 $\Omega$ )
R83	7030003240	Resistor ERJ3GEYJ 220 V (22 $\Omega$ )
R84	7030003230	Resistor ERJ3GEYJ 180 V (18 $\Omega$ )
R85	7030003210	Resistor ERJ3GEYJ 120 V (12 $\Omega$ )
R86	7030003340	Resistor ERJ3GEYJ 151 V (150 $\Omega$ )
R87	7030003680	Resistor ERJ3GEYJ 104 V (100 k $\Omega$ )
R88	7030003400	Resistor ERJ3GEYJ 471 V (470 $\Omega$ )
R89	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R90	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k $\Omega$ )
R91	7030003550	Resistor ERJ3GEYJ 822 V (8.2 k $\Omega$ )
R92	7030003400	Resistor ERJ3GEYJ 471 V (470 $\Omega$ )
R93	7030003340	Resistor ERJ3GEYJ 151 V (150 $\Omega$ )
R94	7510000200	Thermistor DTN-T203U473LS (T)
R95	7030003570	Resistor ERJ3GEYJ 123 V (12 k $\Omega$ )
R96	7030003440	Resistor ERJ3GEYJ 102 V (1 k $\Omega$ )
R97	7030003670	Resistor ERJ3GEYJ 823 V (82 k $\Omega$ )
R98	7030003600	Resistor ERJ3GEYJ 223 V (22 k $\Omega$ )
R99	7030003600	Resistor ERJ3GEYJ 223 V (22 k $\Omega$ )
R100	7030003770	Resistor ERJ3GEYJ 564 V (560 k $\Omega$ )
R101	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R102	7030000440	Resistor MCR10EZJH 3.3 k $\Omega$ (332)
R103	7030003400	Resistor ERJ3GEYJ 471 V (470 $\Omega$ )
R104	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k $\Omega$ )
R106	7510000430	Thermistor DTN-T203K202LS (T)
R107	7030003400	Resistor ERJ3GEYJ 471 V (470 $\Omega$ )
R108	7030003650	Resistor ERJ3GEYJ 563 V (56 k $\Omega$ )
R109	7030003660	Resistor ERJ3GEYJ 883 V (88 k $\Omega$ )
R110	7030003650	Resistor ERJ3GEYJ 563 V (56 k $\Omega$ )
R111	7030003410	Resistor ERJ3GEYJ 561 V (560 $\Omega$ )
R112	7030003410	Resistor ERJ3GEYJ 561 V (560 $\Omega$ )
R113	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k $\Omega$ )
C1	4030004240	Ceramic GRM39 B 102K 50PT
C2	4030008790	Ceramic GRM39 F 104Z 25PT
C3	4030004060	Ceramic GRM39 SL 270J 50PT
C4	4030008790	Ceramic GRM39 F 104Z 25PT
C6	4030008790	Ceramic GRM39 F 104Z 25PT
C7	4030003880	Ceramic GRM39 SL 180J 50PT
C8	4030004100	Ceramic GRM39 SL 470J 50PT
C9	4030004240	Ceramic GRM39 B 102K 50PT
C10	4030008790	Ceramic GRM39 F 104Z 25PT
C11	4030008790	Ceramic GRM39 F 104Z 25PT
C12	4030004240	Ceramic GRM39 B 102K 50PT
C13	4030004310	Ceramic GRM39 B 103K 25PT
C14	4030004040	Ceramic GRM39 SL 150J 50PT
C15	4030004240	Ceramic GRM39 B 102K 50PT
C16	4030004050	Ceramic GRM39 SL 220J 50PT
C18	4030003930	Ceramic GRM39 SL 0R5C 50PT
C19	4030003990	Ceramic GRM39 SL 060D 50PT
C26	4030004240	Ceramic GRM39 B 102K 50PT
C27	4030004240	Ceramic GRM39 B 102K 50PT
C29	4030003940	Ceramic GRM39 SL 010C 50PT
C30	4030008800	Ceramic GRM39 SL 090D 50PT
C31	4030003950	Ceramic GRM39 SL 020C 50PT
C32	4030003980	Ceramic GRM39 SL 050C 50PT
C33	4030004240	Ceramic GRM39 B 102K 50PT
C34	4030004240	Ceramic GRM39 B 102K 50PT
C35	4030004310	Ceramic GRM39 B 103K 25PT
C36	4030004240	Ceramic GRM39 B 102K 50PT
C37	4030004240	Ceramic GRM39 B 102K 50PT
C38	4030003890	Ceramic GRM39 B 471K 50PT
C39	4030004240	Ceramic GRM39 B 102K 50PT
C41	4030003980	Ceramic GRM39 SL 050C 50PT
C42	4030004020	Ceramic GRM39 SL 100D 50PT
C43	4030004130	Ceramic GRM39 SL 680J 50PT
C44	4030008800	Ceramic GRM39 SL 090D 50PT
C45	4030003980	Ceramic GRM39 SL 050C 50PT
C46	4030003930	Ceramic GRM39 SL 0R5C 50PT
C47	4030008800	Ceramic GRM39 SL 090D 50PT
C48	4030003930	Ceramic GRM39 SL 0R5C 50PT
C49	4030004000	Ceramic GRM39 SL 070D 50PT
C50	4030003940	Ceramic GRM39 SL 010C 50PT
C51	4030003930	Ceramic GRM39 SL 0R5C 50PT
C52	4030008440	Ceramic C1608 SL 1H 1R5C-T-A
C53	4030003960	Ceramic GRM39 SL 030C 50PT

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C54	4030003890	Ceramic GRM39 B 471K 50PT
C56	4030009280	Ceramic GRM39 CH 820J 50PT
C57	4030008960	Ceramic C2012 JB 1C 104K-T-A
C59	4030008790	Ceramic GRM39 F 104Z 25PT
C60	4030008810	Ceramic GRM39 CH 150J 50PT
C61	4610001260	Trimmer ECRJA020E12W
C62	4030003890	Ceramic GRM39 B 471K 50PT
C63	4030008790	Ceramic GRM39 F 104Z 25PT
C64	4030004240	Ceramic GRM39 B 102K 50PT
C65	4030004000	Ceramic GRM39 SL 070D 50PT
C66	4030004240	Ceramic GRM39 B 102K 50PT
C67	4030004020	Ceramic GRM39 SL 100D 50PT
C68	4550002950	Tantalum TESVA 0J 335M1-8L
C69	4030009000	Ceramic C2012 JB 1C 224K-T-A
C70	4550000270	Tantalum TESVA 1E 474M1-8L
C71	4030004240	Ceramic GRM39 B 102K 50PT
C72	4030004240	Ceramic GRM39 B 102K 50PT
C74	4030004240	Ceramic GRM39 B 102K 50PT
C75	4030004310	Ceramic GRM39 B 103K 25PT
C76	4030004240	Ceramic GRM39 B 102K 50PT
C77	4030004280	Ceramic GRM39 B 472K 50PT
C78	4550003030	Tantalum TEMSVA 0J 475M-8L
C79	4030003890	Ceramic GRM39 B 471K 50PT
C80	4030008960	Ceramic C2012 JB 1C 104K-T-A
C81	4030003890	Ceramic GRM39 B 471K 50PT
C82	4030004240	Ceramic GRM39 B 102K 50PT
C83	4030004260	Ceramic GRM39 B 272K 50PT
C84	4030004180	Ceramic GRM39 SL 121J 50PT
C85	4030004310	Ceramic GRM39 B 103K 25PT
C86	4030004310	Ceramic GRM39 B 103K 25PT
C87	4030004240	Ceramic GRM39 B 102K 50PT
C88	4030003890	Ceramic GRM39 B 471K 50PT
C89	4510004430	Electrolytic ECEV1CV220WR
C90	4030003890	Ceramic GRM39 B 471K 50PT
C91	4030003890	Ceramic GRM39 B 471K 50PT
C93	4510004420	Electrolytic ECEV0JV330SR
C94	4550003030	Tantalum TEMSVA 0J 475M-8L
C95	4030003890	Ceramic GRM39 B 471K 50PT
C96	4030004240	Ceramic GRM39 B 102K 50PT
C97	4550000550	Tantalum TESVA 1V 224M1-8L
C98	4030004240	Ceramic GRM39 B 102K 50PT
C99	4550000550	Tantalum TESVA 1V 224M1-8L
C100	4030004240	Ceramic GRM39 B 102K 50PT
C101	4550000550	Tantalum TESVA 1V 224M1-8L
C102	4030004240	Ceramic GRM39 B 102K 50PT
C103	4550003040	Tantalum TEMSVB2 0J 106M-8 L
C104	4030008790	Ceramic GRM39 F 104Z 25PT
C105	4030003890	Ceramic GRM39 B 471K 50PT
C106	4030003890	Ceramic GRM39 B 471K 50PT
C108	4030003890	Ceramic GRM39 B 471K 50PT
C109	4030003890	Ceramic GRM39 B 471K 50PT
C110	4550003030	Tantalum TEMSVA 0J 475M-8L
C111	4030003890	Ceramic GRM39 B 471K 50PT
C112	4030003890	Ceramic GRM39 B 471K 50PT
C113	4030004240	Ceramic GRM39 B 102K 50PT
C114	4030004240	Ceramic GRM39 B 102K 50PT
C116	4030004240	Ceramic GRM39 B 102K 50PT
C117	4510004430	Electrolytic ECEV1CV220WR
C118	4030004240	Ceramic GRM39 B 102K 50PT
C119	4030003970	Ceramic GRM39 SL 040C 50PT
C120	4030004240	Ceramic GRM39 B 102K 50PT
C121	4030004240	Ceramic GRM39 B 102K 50PT
C123	4030004240	Ceramic GRM39 B 102K 50PT
C125	4030004240	Ceramic GRM39 B 102K 50PT
C126	4030004240	Ceramic GRM39 B 102K 50PT
C127	4030004240	Ceramic GRM39 B 102K 50PT
C128	4030009150	Ceramic GRM39 CH 101J 50PT
C129	4030003940	Ceramic GRM39 SL 010C 50PT
C130	4030003940	Ceramic GRM39 SL 010C 50PT
C131	4030004310	Ceramic GRM39 B 103K 25PT
C132	4030004310	Ceramic GRM39 B 103K 25PT
C133	4030008440	Ceramic C1608 SL 1H 1R5C-T-A
C134	4030004020	Ceramic GRM39 SL 100D 50PT
C135	4030004010	Ceramic GRM39 SL 080D 50PT
C136	4030003980	Ceramic GRM39 SL 050C 50PT
C137	4030004240	Ceramic GRM39 B 102K 50PT
C138	4030004240	Ceramic GRM39 B 102K 50PT
C139	4030004240	Ceramic GRM39 B 102K 50PT

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C140	4030004240	Ceramic	GRM39 B 102K 50PT
C141	4030009170	Ceramic	GRM40 F 105Z 16PT
C142	4030004240	Ceramic	GRM39 B 102K 50PT
C143	4030004240	Ceramic	GRM39 B 102K 50PT
C144	4030004240	Ceramic	GRM39 B 102K 50PT
EP2	0910027335	P.C. Board	B 2740E (UHF RF)

## [U RFA UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530002640	Transistor	2SC3583 R34-T2B
Q2	1530002620	Transistor	2SC3585 R44-T2B
D1	1790000620	Diode	MA77 (TW)
D2	1790000620	Diode	MA77 (TW)
L1	6200000720	Coil	LQN 2A 10NM
R1	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R2	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R3	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R4	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R5	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R6	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R7	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R8	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
C1	4030003890	Ceramic	GRM39 B 471K 50PT
C2	4030004240	Ceramic	GRM39 B 102K 50PT
C3	4030004240	Ceramic	GRM39 B 102K 50PT
C4	4030004040	Ceramic	GRM39 SL 150J 50PT
C5	4030004240	Ceramic	GRM39 B 102K 50PT
C6	4030004240	Ceramic	GRM39 B 102K 50PT
C7	4030004240	Ceramic	GRM39 B 102K 50PT
EP1	0910028082	P.C. Board	B 2845B (U RFA)
EP2	6510008580	Lead Frame	PT2.0-0.7-16.5 (K)

## [U RFB UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6190000320	Coil	5HW-F367PN-157A
L2	6190000320	Coil	5HW-F367PN-157A
EP1	0910020033	P.C. Board	B 1916C (U RFB)

## [U VCO UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530000371	Transistor	2SC3356 R25-T2B
Q2	1530000371	Transistor	2SC3356 R25-T2B
D1	1790000530	Diode	MA333 (TW)
D2	1790000620	Diode	MA77 (TW)

## [U VCO UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6200001520	Coil	MLF2012D R82K-T
L2	6110001990	Coil	LA-223
R1	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R2	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R3	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R4	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R5	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R6	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R7	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R8	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R9	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
C1	4030004240	Ceramic	GRM39 B 102K 50PT
C2	4030004010	Ceramic	GRM39 SL 080D 50PT
C3	4810001270	Trimmer	ECRJA010A12W
C4	4030003960	Ceramic	GRM39 SL 030C 50PT
C5	4030003940	Ceramic	GRM39 SL 010C 50PT
C6	4030003940	Ceramic	GRM39 SL 010C 50PT
C7	4030004240	Ceramic	GRM39 B 102K 50PT
C8	4030004240	Ceramic	GRM39 B 102K 50PT
C9	4030003930	Ceramic	GRM39 SL 0R5C 50PT
C10	4030003970	Ceramic	GRM39 SL 040C 50PT
C11	4030003890	Ceramic	GRM39 B 471K 50PT
C12	4030004240	Ceramic	GRM39 B 102K 50PT
C14	4030004100	Ceramic	GRM39 SL 470J 50PT
EP1	0910026991	P.C. Board	B 2720A (U VCO)

## [PRT UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1520000200	Transistor	2SB798-T2 DK
Q2	1530002280	Transistor	2SC4081 T107 S
D1	1790000680	Diode	SB20-03P-TD
D2	1790000670	Diode	SB07-03C-TA
D5	1790000590	Diode	MA110 (TW)
D6	1730002160	Zener	02CZ5.1-Z (TE85R)
R1	7030003250	Resistor	ERJ3GEYJ 270 V (27 Ω)
R2	7030003380	Resistor	ERJ3GEYJ 331 V (330 Ω)
R3	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R5	7030003470	Resistor	ERJ3GEYJ 182 V (1.8 kΩ)
R6	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R7	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R8	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R9	7030003250	Resistor	ERJ3GEYJ 270 V (27 Ω)
C1	4030004240	Ceramic	GRM39 B 102K 50PT
C2	4030004240	Ceramic	GRM39 B 102K 50PT
C3	4030004100	Ceramic	GRM39 SL 470J 50PT
C4	4030004240	Ceramic	GRM39 B 102K 50PT
C5	4030004240	Ceramic	GRM39 B 102K 50PT
C6	4030004240	Ceramic	GRM39 B 102K 50PT
EP1	0910029600	P.C. Board	B 2874 (PRT)

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
IC1	1140002040	IC SC-4808H B23
IC2	1140002050	IC SC-L4808H B24
IC3	1130005640	IC TC4W53F (TE12L)
IC8	1110002400	IC NJM2107F (TE1)
IC7	1110002400	IC NJM2107F (TE1)
IC8	1110002410	IC NJM2408F (TE1)
IC9	1110002410	IC NJM2408F (TE1)
IC10	1130003710	IC TC4S71F (TE85R)
IC11	1180000680	IC S-87050EF-VR-T1
IC12	1130003760	IC TC4S81F (TE85R)
IC13	1130004330	IC LC7385M
IC14	1130005640	IC TC4W53F (TE12L)
IC15	1130003610	IC TC4SU89F (TE85R)
IC16	1130003610	IC TC4SU89F (TE85R)
IC17	1130003610	IC TC4SU89F (TE85R)
IC18	1130004200	IC TC4S86F (TE85R)
IC19	1130004170	IC TC4S01F (TE85R)
IC20	1110002400	IC NJM2107F (TE1)
Q1	1540000350	Transistor 2SD2216-S (TX)
Q2	1540000350	Transistor 2SD2216-S (TX)
Q3	1510000510	Transistor 2SA1578 T107 R
Q4	1590001130	Transistor UN9110 (TX)
Q5	1590001150	Transistor UN9211 (TX)
Q10	1540000350	Transistor 2SD2216-S (TX)
Q11	1540000350	Transistor 2SD2216-S (TX)
Q12	1540000350	Transistor 2SD2216-S (TX)
Q13	1590001170	Transistor XP1501-(TX).AB
Q18	1590001180	Transistor XP1210 (TX)
Q19	1590001180	Transistor XP1210 (TX)
Q20	1590001180	Transistor XP1210 (TX)
Q21	1590001180	Transistor XP1210 (TX)
Q23	1590001140	Transistor UN9210 (TX)
Q24	1590001140	Transistor UN9210 (TX)
Q25	1590001130	Transistor UN9110 (TX)
Q26	1520000430	Transistor 2SB1462-R (TX)
Q27	1540000350	Transistor 2SD2216-S (TX)
Q28	1510000510	Transistor 2SA1578 T107 R
Q29	1540000350	Transistor 2SD2216-S (TX)
Q30	1540000350	Transistor 2SD2216-S (TX)
Q31	1590001140	Transistor UN9210 (TX)
Q32	1590001130	Transistor UN9110 (TX)
Q33	1590001140	Transistor UN9210 (TX)
D3	1790000860	Diode MA133 (TX)
D4	1790000590	Diode MA110 (TW)
D5	1790000820	Diode MA132K (TX)
D6	1790000840	Diode MA132WA (TX)
D7	1790000870	Diode MA1S121 (TX)
D8	1790000840	Diode MA132WA (TX)
D9	1790000840	Diode MA132WA (TX)
D10	1790000840	Diode MA132WA (TX)
D11	1790000840	Diode MA132WA (TX)
D12	1790000840	Diode MA132WA (TX)
D13	1790000840	Diode MA132WA (TX)
D14	1790000840	Diode MA132WA (TX)
D15	1790000820	Diode MA132K (TX) (EUR-1,UK,AUS)
	1790000830	Diode MA132HK (TX) (USA)
	1790000850	Diode MA132WK (TX) (SEA)
D16	1790000830	Diode MA132HK (TX) (EUR-2,USA,AUS,SEA)
D18	1790000830	Diode MA132HK (TX)
D22	1790000810	Diode MA132A (TX)
D25	1750000190	Diode 1SS322 (TE85R)
D26	1790000810	Diode MA132A (TX)
D27	1790000850	Diode MA132WK (TX)
D28	1790000490	Diode HSM88AS-TR
D29	1790000490	Diode HSM88AS-TR
D30	1790000850	Diode MA132WK (TX)
D31	1790000860	Diode MA133 (TX)
D32	1790000850	Diode MA132WK (TX)
D33	1790000860	Diode MA133 (TX)
D34	1790000860	Diode MA133 (TX)
D35	1790000860	Diode MA133 (TX)
D36	1790000860	Diode MA728 (TW)

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
D37	1790000860	Diode MA133 (TX)
D38	1790000860	Diode MA133 (TX)
X1	6060000391	Crystal CSB800J201T
X2	6060000391	Crystal CSB800J201T
X3	6050005800	Crystal DT-26S 32.768KHZ
X4	6060000150	Crystal CSAC3.58MGC300CD
R1	7410000610	Resistor Array EXB-V4V 153J
R3	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R4	7310002600	Trimmer RV-110 (RH03 A3AS4X0AA)473
R8	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R9	7030003580	Resistor ERJ3GEYJ 153 V (15 k Ω)
R11	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R12	7030003550	Resistor ERJ3GEYJ 822 V (8.2 k Ω)
R13	7410000610	Resistor Array EXB-V4V 153J
R15	7030003480	Resistor ERJ3GEYJ 222 V (2.2 k Ω)
R16	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R17	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R18	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R19	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R20	7030003450	Resistor ERJ3GEYJ 122 V (1.2 k Ω)
R21	7030003560	Resistor ERJ3GEYJ 103 V (10 k Ω)
R22	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R23	7030003840	Resistor ERJ3GEYJ 225 V (2.2 M Ω) (EUR-2,AUS,SEA,EUR-1,UK)
	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω) (USA)
R24	7030003400	Resistor ERJ3GEYJ 471 V (470 Ω)
R25	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R26	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R27	7030003440	Resistor ERJ3GEYJ 102 V (1 k Ω)
R28	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R29	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R30	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R31	7030003580	Resistor ERJ3GEYJ 153 V (15 k Ω)
R32	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R33	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R34	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R35	7030003610	Resistor ERJ3GEYJ 273 V (27 k Ω)
R36	7030003580	Resistor ERJ3GEYJ 153 V (15 k Ω)
R41	7030003200	Resistor ERJ3GEYJ 100 V (10 Ω)
R42	7030003360	Resistor ERJ3GEYJ 221 V (220 Ω)
R43	7030003360	Resistor ERJ3GEYJ 221 V (220 Ω)
R44	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R45	7030003550	Resistor ERJ3GEYJ 822 V (8.2 k Ω)
R46	7030003330	Resistor ERJ3GEYJ 121 V (120 Ω)
R47	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R48	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R63	7030003780	Resistor ERJ3GEYJ 474 V (470 k Ω)
R64	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R65	7030003690	Resistor ERJ3GEYJ 124 V (120 k Ω)
R66	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R67	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R68	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R69	7410000560	Resistor Array EXB-V4V 474J
R73	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R74	7410000590	Resistor Array EXB-V4V 473J
R76	7410000590	Resistor Array EXB-V4V 473J
R78	7410000590	Resistor Array EXB-V4V 473J
R80	7030003670	Resistor ERJ3GEYJ 823 V (82 k Ω)
R81	7410000560	Resistor Array EXB-V4V 474J
R83	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R84	7030003730	Resistor ERJ3GEYJ 274 V (270 k Ω)
R85	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R86	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R87	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R88	7030003730	Resistor ERJ3GEYJ 274 V (270 k Ω)
R89	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R90	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R91	7410000560	Resistor Array EXB-V4V 474J
R92	7410000580	Resistor Array EXB-V4V 224J
R93	7410000560	Resistor Array EXB-V4V 474J (EUR-1,UK,EUR-2)
R95	7410000600	Resistor Array EXB-V4V 222J

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R97	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R98	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R99	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R100	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R101	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R102	7030003780	Resistor ERJ3GEYJ 474 V (47 k Ω)
R103	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R104	7030004020	Resistor ERJ3GEYJ 243 V (24 k Ω)
R105	7030003360	Resistor ERJ3GEYJ 221 V (220 Ω)
R106	7030003360	Resistor ERJ3GEYJ 221 V (220 Ω)
R107	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R108	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R109	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R110	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R111	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R112	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R113	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R114	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R115	7030003740	Resistor ERJ3GEYJ 334 V (330 k Ω)
R116	7030003700	Resistor ERJ3GEYJ 154 V (150 k Ω)
R117	7030003720	Resistor ERJ3GEYJ 224 V (220 k Ω)
R118	7030003630	Resistor ERJ3GEYJ 393 V (39 k Ω)
R121	7410000570	Resistor Array EXB-V8V 474J
R122	7410000570	Resistor Array EXB-V8V 474J
R123	7410000570	Resistor Array EXB-V8V 474J
R124	7410000570	Resistor Array EXB-V8V 474J
R127	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R128	7310002600	Trimmer RV-110 (RH03 A3AS4X0AA)
		(EUR-1)
	7310002600	Trimmer RV-110 (RH03 A3AS4X0AA)
		(UK)
	7310002600	Trimmer RV-110 (RH03 A3AS4X0AA)
		(EUR-2)
R130	7030003840	Resistor ERJ3GEYJ 225 V (2.2 M Ω)
		(EUR-1,UK,EUR-2)
R131	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R132	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R134	7030003690	Resistor ERJ3GEYJ 124 V (120 k Ω)
R135	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R136	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R137	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R138	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R139	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R140	7030003690	Resistor ERJ3GEYJ 124 V (120 k Ω)
R141	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R142	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R143	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R144	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R145	7410000580	Resistor Array EXB-V4V 474J
R146	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R147	7030003640	Resistor ERJ3GEYJ 473 V (47 k Ω)
R148	7030003600	Resistor ERJ3GEYJ 223 V (22 k Ω)
R149	7030003630	Resistor ERJ3GEYJ 393 V (39 k Ω)
R150	7030003780	Resistor ERJ3GEYJ 474 V (470 k Ω)
R151	7030003620	Resistor ERJ3GEYJ 333 V (33 k Ω)
R152	7030003690	Resistor ERJ3GEYJ 124 V (120 k Ω)
R153	7030003880	Resistor ERJ3GEYJ 244 V (240 k Ω)
R154	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R155	7030003200	Resistor ERJ3GEYJ 100 V (10 Ω)
R156	7030003650	Resistor ERJ3GEYJ 583 V (58 k Ω)
R157	7030003650	Resistor ERJ3GEYJ 583 V (58 k Ω)
R158	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R159	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R160	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R161	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R163	7030003760	Resistor ERJ3GEYJ 474 V (470 k Ω)
R164	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R165	7030003520	Resistor ERJ3GEYJ 472 V (4.7 k Ω)
R167	7030003580	Resistor ERJ3GEYJ 103 V (10 k Ω)
R168	7030003800	Resistor ERJ3GEYJ 105 V (1 M Ω)
R170	7030003680	Resistor ERJ3GEYJ 104 V (100 k Ω)
R171	7030003600	Resistor ERJ3GEYJ 105 V (1 M Ω)
C2	4030004240	Ceramic GRM39 B 102K 50PT
C3	4030004150	Ceramic GRM39 SL 820J 50PT
C4	4030004210	Ceramic GRM39 SL 221J 50PT
C6	4030008980	Ceramic C2012 JB 1C 104K-T-A

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C7	4030004150	Ceramic GRM39 SL 820J 50PT
C8	4030004210	Ceramic GRM39 SL 221J 50PT
C9	4030008810	Ceramic GRM39 CH 150J 50PT
C10	4030008810	Ceramic GRM39 CH 150J 50PT
C11	4030008920	Ceramic C1608 JB 1C 473K-T-A
C12	4550003040	Tantalum TEMSVB2 0J 106M-8 L
C13	4030004240	Ceramic GRM39 B 102K 50PT
C14	4030004240	Ceramic GRM39 B 102K 50PT
C15	4030004240	Ceramic GRM39 B 102K 50PT
C16	4030008920	Ceramic C1608 JB 1C 473K-T-A
C17	4030008920	Ceramic C1608 JB 1C 473K-T-A
C18	4030008920	Ceramic C1608 JB 1C 473K-T-A
C19	4030008830	Ceramic GRM39 B 223K 25PT
C20	4030008830	Ceramic GRM39 B 223K 25PT
C21	4550003030	Tantalum TEMSVA 0J 475M-8L
C22	4030004240	Ceramic GRM39 B 102K 50PT
C23	4030008920	Ceramic C1608 JB 1C 473K-T-A
C28	4030004240	Ceramic GRM39 B 102K 50PT
C30	4030004240	Ceramic GRM39 B 102K 50PT
C31	4030004070	Ceramic GRM39 SL 330J 50PT
C32	4030004240	Ceramic GRM39 B 102K 50PT
C33	4030009220	Ceramic GRM39 B 681K 50PT
C34	4030004240	Ceramic GRM39 B 102K 50PT
C35	4030004070	Ceramic GRM39 SL 330J 50PT
C36	4030004240	Ceramic GRM39 B 102K 50PT
C37	4030003890	Ceramic GRM39 B 471K 50PT
C38	4030004310	Ceramic GRM39 B 103K 25PT
C39	4030004310	Ceramic GRM39 B 103K 25PT
C40	4030008900	Ceramic C1608 JB 1C 333K-T-A
C41	4030008900	Ceramic C1608 JB 1C 333K-T-A
C42	4030004210	Ceramic GRM39 SL 221J 50PT
C43	4550003060	Tantalum TEMSVC 0J 336M-12 L
C44	4030008980	Ceramic C2012 JB 1C 104K-T-A
C45	4030008980	Ceramic C2012 JB 1C 104K-T-A
C46	4550004000	Tantalum TEMSVD 0J 686M-12 L
C47	4030004240	Ceramic GRM39 B 102K 50PT
C48	4030004240	Ceramic GRM39 B 102K 50PT
C49	4550004020	Tantalum TEMSVD 1C 336M-12 L
C50	4550003040	Tantalum TEMSVB2 0J 106M-8 L
C51	4030004240	Ceramic GRM39 B 102K 50PT
C52	4550000790	Tantalum TESVD 0J 476M-12L
C53	4030004070	Ceramic GRM39 SL 330J 50PT
C54	4030004080	Ceramic GRM39 SL 390J 50PT
C55	4030008790	Ceramic GRM39 F 104Z 25PT
C56	4030008790	Ceramic GRM39 F 104Z 25PT
C57	4030004240	Ceramic GRM39 B 102K 50PT
C58	4030003890	Ceramic GRM39 B 471K 50PT
C60	4030003890	Ceramic GRM39 B 471K 50PT
C62	4030003890	Ceramic GRM39 B 471K 50PT
C63	4030003890	Ceramic GRM39 B 471K 50PT
C64	4030008980	Ceramic C2012 JB 1C 104K-T-A
C65	4030008980	Ceramic C2012 JB 1C 104K-T-A
C68	4030008830	Ceramic GRM39 B 223K 25PT
C69	4030008830	Ceramic GRM39 B 223K 25PT
C70	4030008980	Ceramic C2012 JB 1C 104K-T-A
C71	4030008980	Ceramic C2012 JB 1C 104K-T-A
C72	4030004240	Ceramic GRM39 B 102K 50PT
C73	4030008790	Ceramic GRM39 F 104Z 25PT
C74	4030008980	Ceramic C2012 JB 1C 104K-T-A
C75	4030008980	Ceramic C2012 JB 1C 104K-T-A
C76	4030008790	Ceramic GRM39 F 104Z 25PT
C77	4030008790	Ceramic GRM39 F 104Z 25PT
C79	4550003030	Tantalum TEMSVA 0J 475M-8L
C80	4550003030	Tantalum TEMSVA 0J 475M-8L
C81	4030004310	Ceramic GRM39 B 103K 25PT
C82	4030004310	Ceramic GRM39 B 103K 25PT
C83	4030004240	Ceramic GRM39 B 102K 50PT
C84	4030004070	Ceramic GRM39 SL 330J 50PT
C85	4030004310	Ceramic GRM39 B 103K 25PT
DS1	5030000630	LCD LD-BU5192J (E-5395)
DS2	5040001110	LED SLM-23VMWS T97B
DS3	5040000880	LED SLM-13MWS T97B
DS4	5040000880	LED SLM-13MWS T97B
SP1	2510000530	Speaker T028S14I0810

**[LOGIC UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
BT1	3020000160	Lithium Battery VL2020-1VC
MC1	7700000861	Microphone WM-62A103
SP1	2510000530	Speaker T028S14I0810
EP1	8930020150	LCD contact strip SRCN-873-W
EP2	8930020180	LCD contact strip SRCN-873
EP3	0910030394	P.C. Board B 3074D (LOGIC)
EP4	0910028842	P.C. Board B 2873B

**[PTT UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
R1	7210001910	Variable Resistor RV-199 (RK0972210)10KB
R2	7210001910	Variable Resistor RV-199 (RK0972210)10KB
S1	2260001320	Switch SW-121 (SKHUPF)
S2	2260001320	Switch SW-121 (SKHUPF)
S3	2260001400	Switch SW-122 (RK097103H)
EP1	0910028873	P.C. Board B 2871C
EP2	0910029831	P.C. Board B 3039A (PTT)

**[JACK UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
D1	1790000680	Diode SB20-03P-TD
R1	7030000340	Resistor MCR10EZJH 470 Ω (471)
C1	4030004240	Ceramic GRM39 B 102K 50PT
C2	4030004240	Ceramic GRM39 B 102K 50PT
C3	4030004240	Ceramic GRM39 B 102K 50PT
C4	4030004240	Ceramic GRM39 B 102K 50PT
C6	4030004240	Ceramic GRM39 B 102K 50PT
C7	4030004240	Ceramic GRM39 B 102K 50PT
C8	4030004240	Ceramic GRM39 B 102K 50PT
C9	4030004240	Ceramic GRM39 B 102K 50PT
C10	4030004240	Ceramic GRM39 B 102K 50PT
C11	4030004240	Ceramic GRM39 B 102K 50PT
EP1	0910028864	P.C. Board B 2868D (JACK)

**[AF UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
IC1	1110002420	IC NJM2073M (T1)
Q1	1590001170	Transistor XP1501-(TX).AB
Q2	1520000270	Transistor 2SB1182 TL Q
R1	7030003200	Resistor ERJ3GEYJ 100 V (10 Ω)
R2	7030003200	Resistor ERJ3GEYJ 100 V (10 Ω)
R3	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R4	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)

**[AF UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
R5	7030003330	Resistor ERJ3GEYJ 121 V (120 Ω)
R6	7030003330	Resistor ERJ3GEYJ 121 V (120 Ω)
R7	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R8	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R9	7030003580	Resistor ERJ3GEYJ 103 V (10 kΩ)
R10	7030003450	Resistor ERJ3GEYJ 122 V (1.2 kΩ)
R11	7030003790	Resistor ERJ3GEYJ 824 V (820 kΩ)
R12	7030003460	Resistor ERJ3GEYJ 152 V (1.5 kΩ)
C1	4030008920	Ceramic C1608 JB 1C 473K-T-A
C2	4030008920	Ceramic C1608 JB 1C 473K-T-A
C3	4030008920	Ceramic C1608 JB 1C 473K-T-A
C4	4510003180	Electrolytic 6.3 RC2 100 μF (D=5.0)
C5	4510003180	Electrolytic 6.3 RC2 100 μF (D=5.0)
C6	4550002960	Tantalum TESVA 1C 155M1-8L
C7	4030003890	Ceramic GRM39 B 471K 50PT
C8	4550002960	Tantalum TESVA 1C 155M1-8L
C9	4030008920	Ceramic C1608 JB 1C 473K-T-A
C10	4030003890	Ceramic GRM39 B 471K 50PT
C11	4030008920	Ceramic C1608 JB 1C 473K-T-A
C12	4510003180	Electrolytic 6.3 RC2 100 μF (D=5.0)
C13	4030003890	Ceramic GRM39 B 471K 50PT
C14	4030003890	Ceramic GRM39 B 471K 50PT
EP1	6910003420	Lead Frame AR1.27-0.7-12.3
EP2	0910028823	P.C. Board B 2870C (AF)

**[CONNECTOR UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION
L1	6110002300	Coil LA-412
L2	6110002010	Coil LA-224
L3	6110002320	Coil LA-414
L4	6110002320	Coil LA-414
L5	6110002040	Coil LA-225
R1	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R2	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R3	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
C1	4550003030	Tantalum TEMSVA 0J 475M-8L
C2	4030004010	Ceramic GRM39 SL 080D 50PT
C3	4030004100	Ceramic GRM39 SL 470J 50PT
C4	4030003980	Ceramic GRM39 SL 050C 50PT
C5	4030004050	Ceramic GRM39 SL 220J 50PT
C6	4030004000	Ceramic GRM39 SL 070D 50PT
C7	4030004020	Ceramic GRM39 SL 100D 50PT
C8	4030003940	Ceramic GRM39 SL 010C 50PT
C9	4030003880	Ceramic GRM39 SL 180J 50PT
C10	4030003950	Ceramic GRM39 SL 020C 50PT
C11	4030004040	Ceramic GRM39 SL 150J 50PT
C12	4030003950	Ceramic GRM39 SL 020C 50PT
C13	4030004240	Ceramic GRM39 B 102K 50PT
C14	4030004240	Ceramic GRM39 B 102K 50PT
C15	4030004240	Ceramic GRM39 B 102K 50PT
C16	4030004240	Ceramic GRM39 B 102K 50PT
EP1	0910028924	P.C. Board B 2869D
EP2	0910028791	P.C. Board B 2875A (CONNECTOR)

[AF FIL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1540000350	Transistor	2SD2216-S (TX)
Q2	1590001170	Transistor	XP1501-(TX).AB
Q3	1590001190	Transistor	XP6501-(TX).AB
Q4	1540000350	Transistor	2SD2216-S (TX)
Q5	1590001170	Transistor	XP1501-(TX).AB
Q6	1590001190	Transistor	XP6501-(TX).AB
D1	1790000860	Diode	MA133 (TX)
D2	1790000860	Diode	MA133 (TX)
D3	1790000830	Diode	MA132HK (TX)
D4	1790000860	Diode	MA133 (TX)
R2	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R3	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R4	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R5	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R6	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R7	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R8	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R9	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R10	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R11	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R12	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R13	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R14	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R16	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R17	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R18	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R19	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R20	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R21	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R22	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R23	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R24	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R25	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R26	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R27	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R28	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R29	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R30	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
C1	4550004010	Tantalum	TEMSVA2 1A 105M-8 L
C2	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C3	4030004240	Ceramic	GRM39 B 102K 50PT
C4	4030004250	Ceramic	GRM39 B 22K 50PT
C5	4030004310	Ceramic	GRM39 B 103K 25PT
C6	4030004310	Ceramic	GRM39 B 103K 25PT
C7	4550004010	Tantalum	TEMSVA2 1A 105M-8 L
C8	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C9	4030004240	Ceramic	GRM39 B 102K 50PT
C10	4030004250	Ceramic	GRM39 B 22K 50PT
C11	4030004310	Ceramic	GRM39 B 103K 25PT
C12	4030004310	Ceramic	GRM39 B 103K 25PT
C13	4030004240	Ceramic	GRM39 B 102K 50PT
C14	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C15	4030004240	Ceramic	GRM39 B 102K 50PT
C16	4030008960	Ceramic	C2012 JB 1C 104K-T-A
EP1	0910028941	P.C. Board	B 2925A (AF FIL)

[T SQL UNIT] (USA version only)

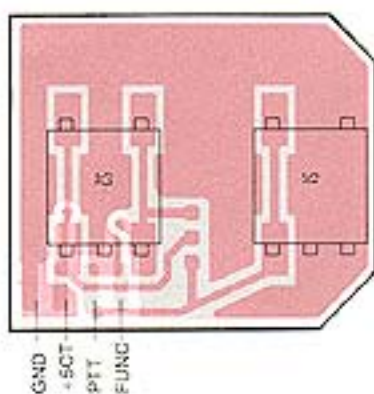
REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130005100	IC	FX365LG
IC2	1130005100	IC	FX365LG
IC3	1130003610	IC	TC4SU69F (TE85R)

[TSQL UNIT]

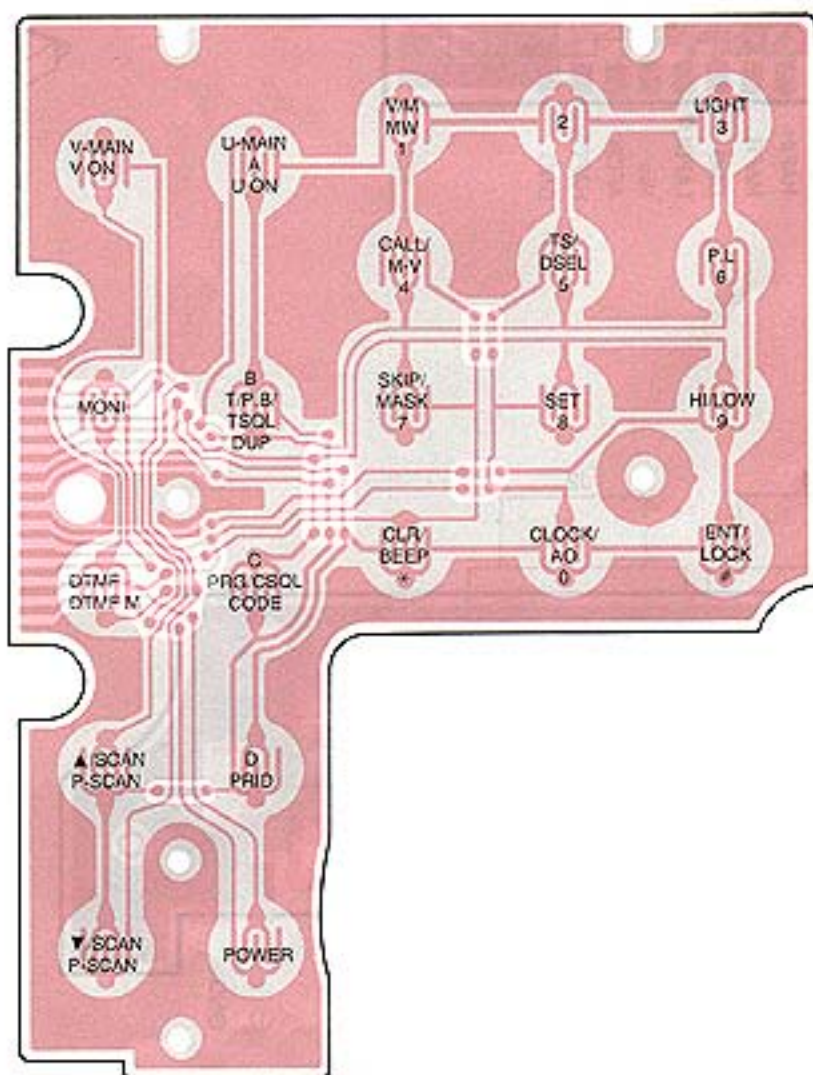
REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1590000430	Transistor	DTC144EU T107
Q2	1510000580	Transistor	2SA1362-GR (TE85R)
Q3	1590000430	Transistor	DTC144EU T107
Q4	1510000580	Transistor	2SA1362-GR (TE85R)
Q5	1530002280	Transistor	2SC4081 T107 S
Q6	1530002280	Transistor	2SC4081 T107 S
Q7	1530002280	Transistor	2SC4081 T107 S
D1	1790000590	Diode	MA110 (TW)
D2	1790000590	Diode	MA110 (TW)
D3	1790000870	Diode	MA1S121 (TX)
D4	1160000060	Diode	DAN202U T107
D5	1790000870	Diode	MA1S121 (TX)
X1	6060000480	Crystal	CSB1000J221T
R1	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R2	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R3	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 MΩ)
R4	7030003740	Resistor	ERJ3GEYJ 334 V (330 kΩ)
R5	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R6	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R7	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R9	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R10	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R11	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R13	7310003550	Trimmer	MVR32HXBR N473
R14	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 MΩ)
R15	7030003740	Resistor	ERJ3GEYJ 334 V (330 kΩ)
R16	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R17	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R18	7030003780	Resistor	ERJ3GEYJ 684 V (680 kΩ)
R19	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R20	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R21	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R22	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R23	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R24	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R25	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R26	7030003780	Resistor	ERJ3GEYJ 684 V (680 kΩ)
R27	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R28	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R29	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R30	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R31	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R32	7030003710	Resistor	ERJ3GEYJ 184 V (180 kΩ)
R33	7030003710	Resistor	ERJ3GEYJ 184 V (180 kΩ)
R34	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
C1	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C2	4030008850	Ceramic	C1608 JB 1H 471K-T-A
C3	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C4	4550000420	Tantalum	TESVA 1A 105M1-8L
C5	4550000530	Tantalum	TESVA 1V 104M1-8L
C6	4030008540	Ceramic	C1608 SL 1H 030C-T-A
C7	4550002950	Tantalum	TESVA 0J 335M1-8L
C8	4030007170	Ceramic	C1608 CH 1H 221J-T-A
C9	4030007170	Ceramic	C1608 CH 1H 221J-T-A
C10	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C11	4030008850	Ceramic	C1608 JB 1H 471K-T-A
C12	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C13	4550000420	Tantalum	TESVA 1A 105M1-8L
C15	4030008540	Ceramic	C1608 SL 1H 030C-T-A
C16	4550000530	Tantalum	TESVA 1V 104M1-8L
C17	4550002950	Tantalum	TESVA 0J 335M1-8L
C18	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C19	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C20	4030006860	Ceramic	C1608 JB 1H 102K-T-A
EP1	0910030531	P.C. Board	B 3110A (TSQL)

## SECTION 7 BOARD LAYOUTS

### 7-1 PTT UNIT

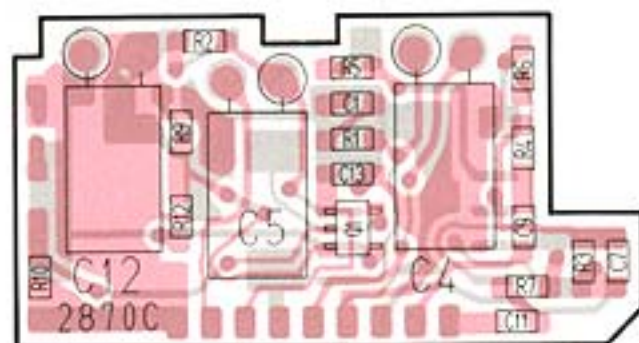


### 7-2 KEY UNIT





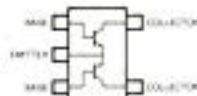
### 7-3 AF UNIT



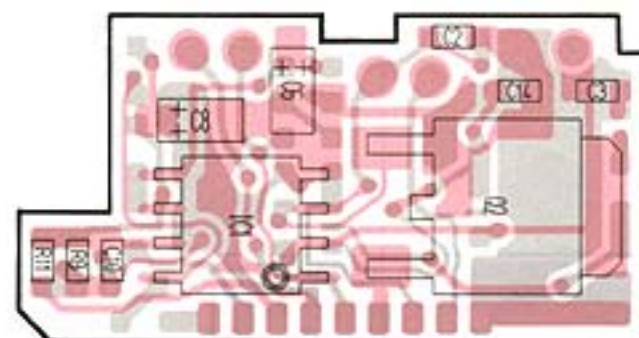
GND  
HAFOUT  
AFON  
V<sub>cc</sub>  
LAFOUT  
GND  
HAFR  
HAFIN  
LAFIN

XP1501

Q1



Symbol: 5R



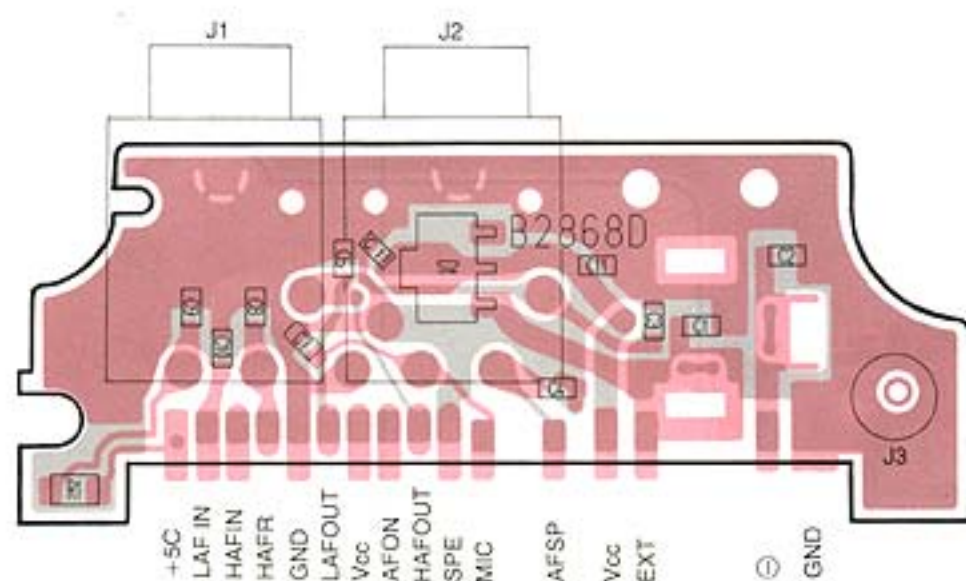
LAFIN  
HAFIN  
HAFR  
GND  
LAFOUT  
V<sub>cc</sub>  
AFON  
HAFOUT  
GND

2SB1182

Q2



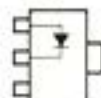
### 7-4 JACK UNIT



+5C  
LAF IN  
HAFIN  
HAFR  
GND  
LAFOUT  
V<sub>cc</sub>  
AFON  
HAFOUT  
SPE  
MIC  
AFSP  
V<sub>cc</sub>  
EXT  
⊖  
GND

SB20

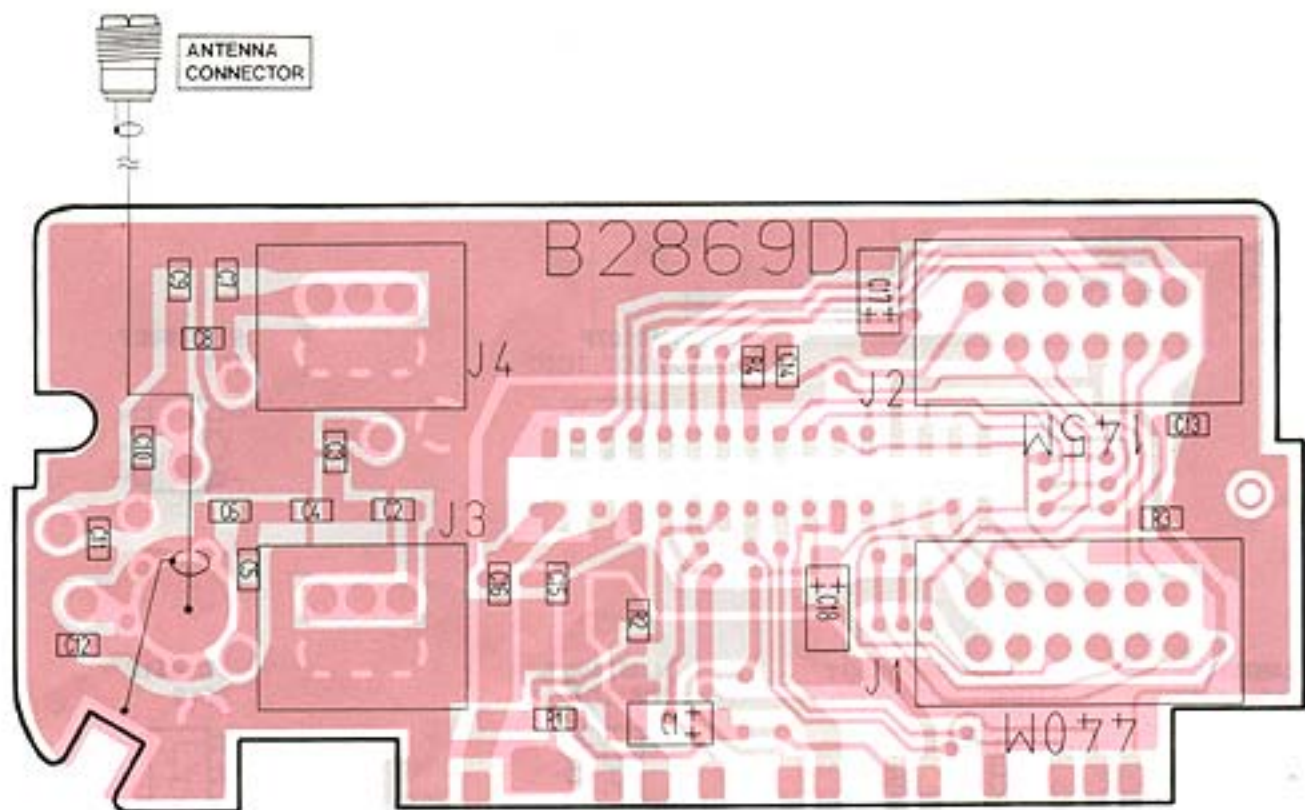
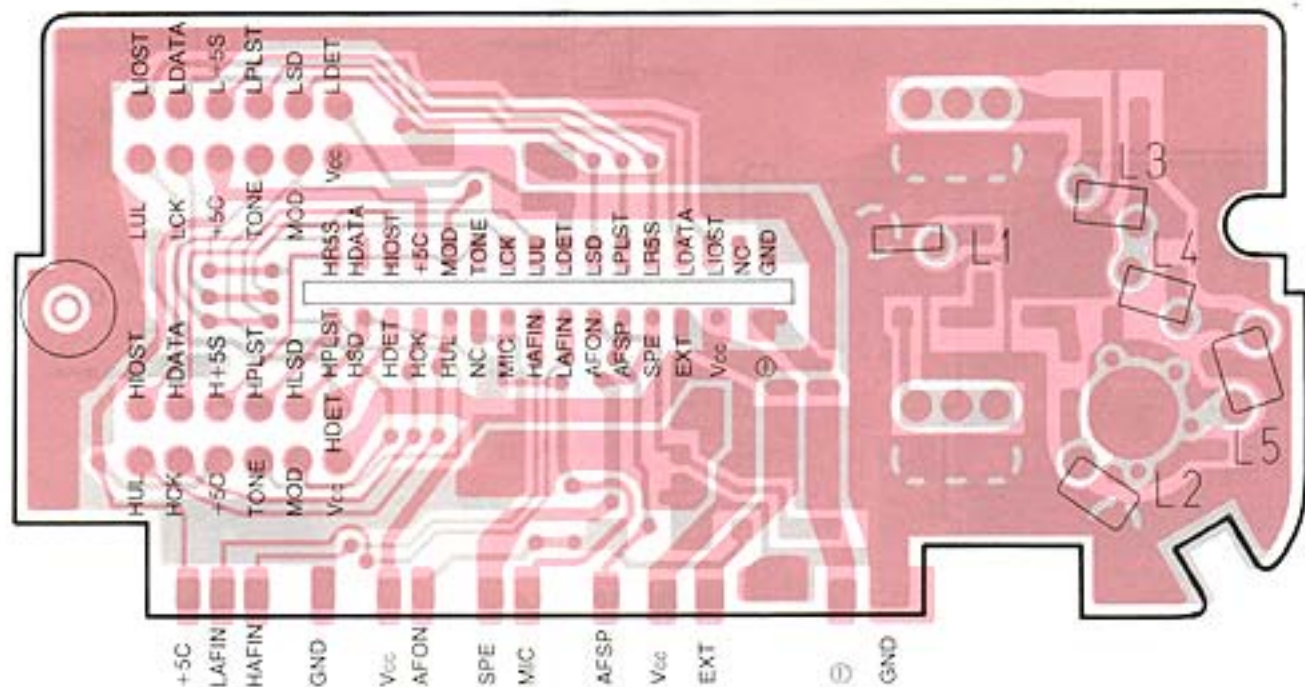
D1



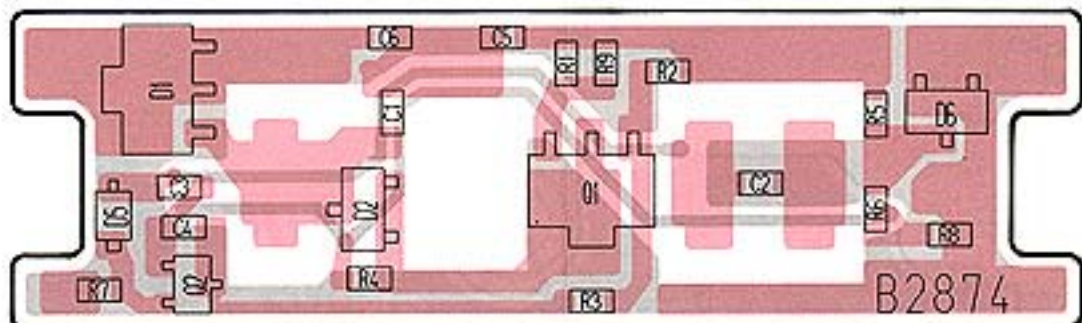
Symbol: SC



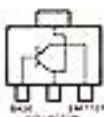
## 7-5 CONNECTOR UNIT



## 7-6 PRT UNIT

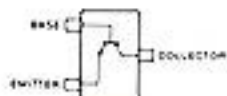


2SB798  
Q1



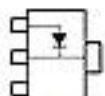
Symbol: DK

2SC4081S  
Q2



Symbol: BS

SB20  
D1



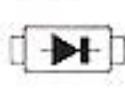
Symbol: SC

SB07  
D2



Symbol: J

MA110  
D5



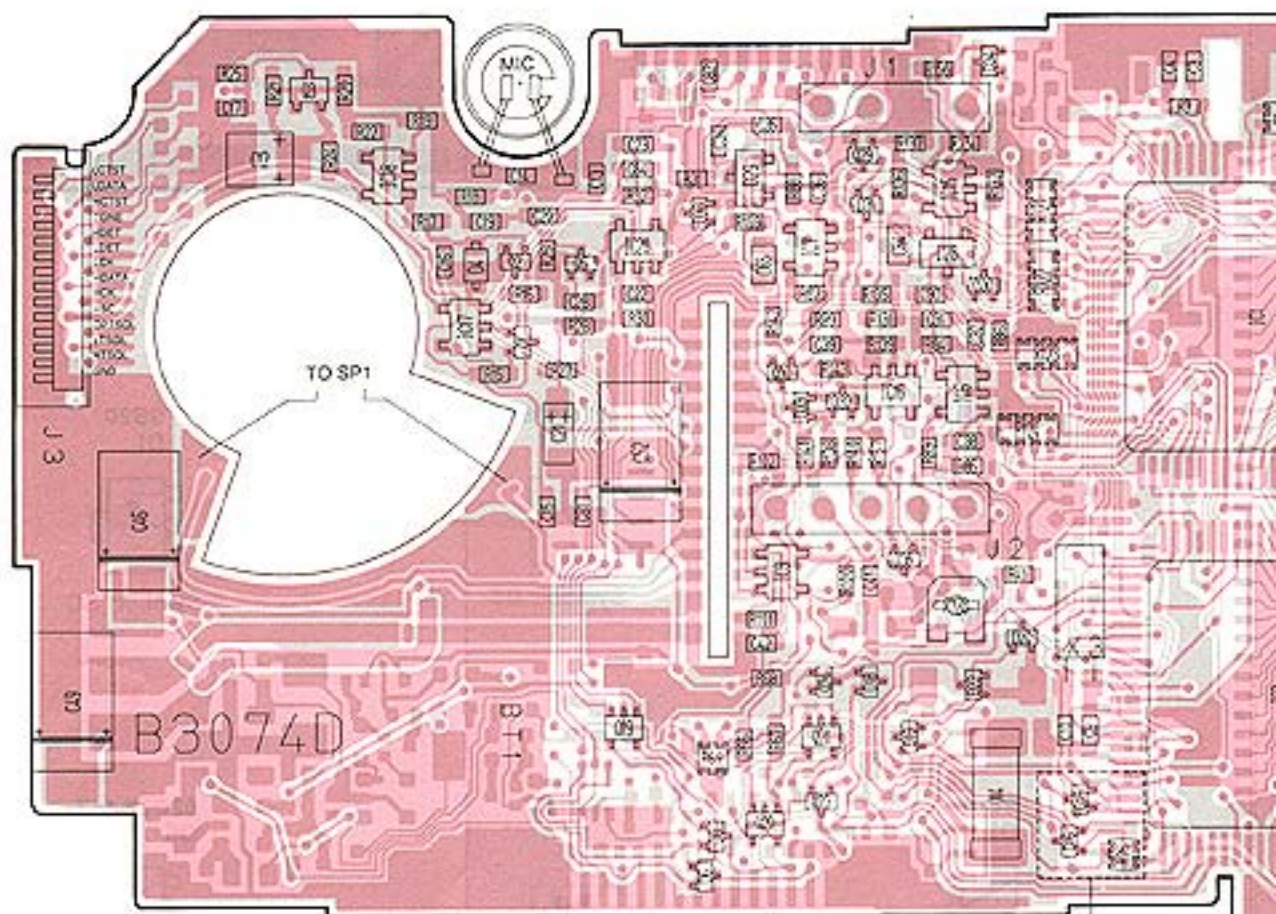
Symbol: 1A

02C25.1-Z  
D6



Symbol: 5.1S





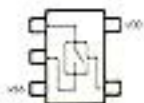
## INITIAL MATRIX

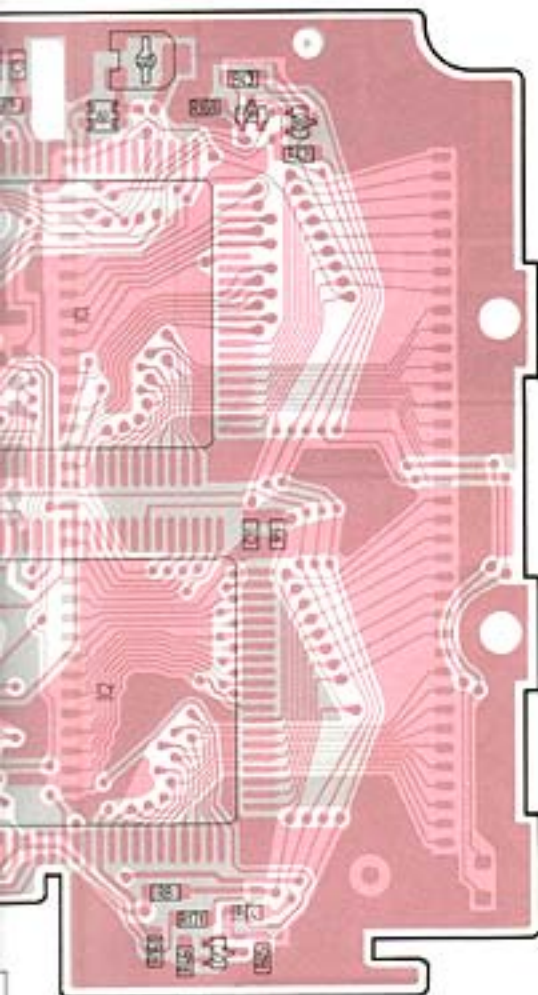
#02 (EUR 1, UN)	#04 (EUR 2)	#05 (USA)	#07 (AUS)	#09 (SEA)

TC4SU69F  
IC15, IC16, IC17

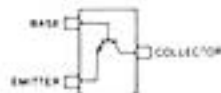


TC4S66F  
IC18

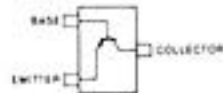




**2SD2216-S**  
Q1, Q2, Q10, Q11,  
Q12, Q27, Q29, Q30

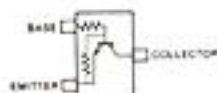


**2SA1576R**  
Q3, Q28



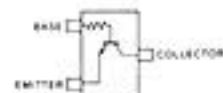
Symbol: FR

**UN9211**  
Q5



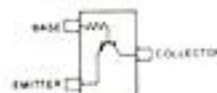
Symbol: 8A

**UN9210**  
Q23, Q24, Q31, Q33



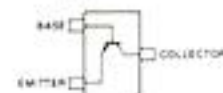
Symbol: 8L

**UN9110**  
Q4, Q25, Q32



Symbol: 6L

**2SB1462R**  
Q26



**XP1210**  
Q18, Q19, Q20, Q21



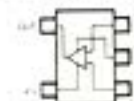
Symbol: AC

**XP1501**  
Q13

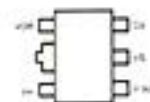


Symbol: 5R

**NJM2107F**  
IC6, IC7, IC20



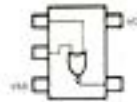
**S-87050EF**  
IC11



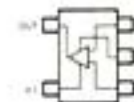
**TC4S71F**  
IC10



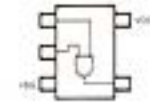
**TC4S01F**  
IC19



**NJM2406F**  
IC8, IC9



**TC4S81F**  
IC12



**MA133**  
D3, D31, D33,  
D34, D35, D37, D38



Symbol: MP

**HSM88AS**  
D28, D29



Symbol: C1

**MA132K**  
D5  
D15 (EUR-1, UK, AUS)



Symbol: MI

**MA132WA**  
D6, D8, D9, D10,  
D11, D12, D13, D14



Symbol: MO

**MA132WK**  
D15 (SEA)  
D27, D30, D32



Symbol: MU

**MA132A**  
D22, D26



Symbol: MB

**MA132HK**  
D15 (USA)  
D16 (EUR-2, USA, AUS, SEA)  
D18



Symbol: M3N

**1SS322**  
D25



Symbol: A9

**MA1S121**  
D7



Symbol: M2D

**MA728**  
D36

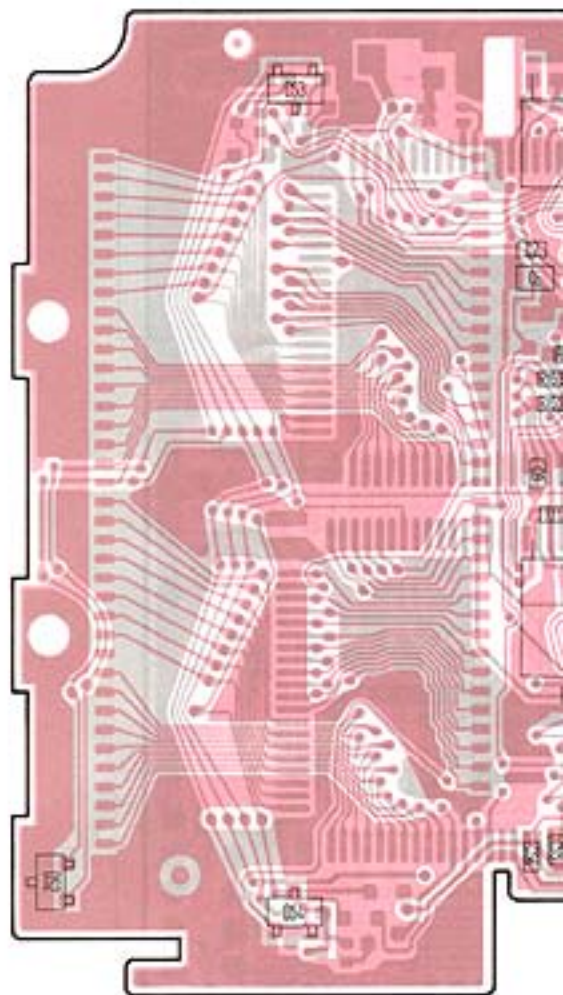


Symbol: 2A

**MA110**  
D4

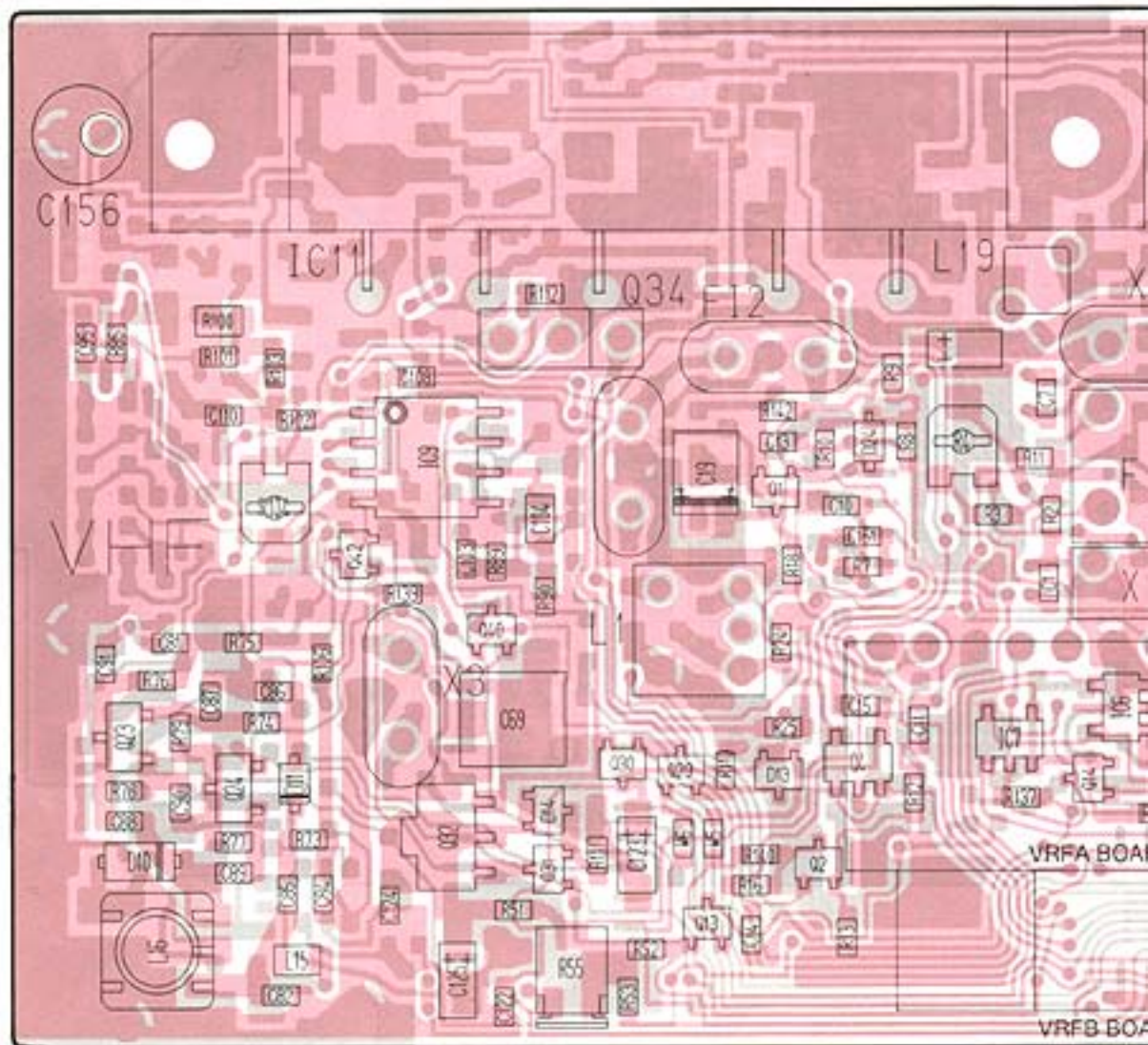


Symbol: 1A

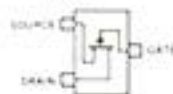








**2SK880Y**  
Q21



Symbol: XY

**FMG2**  
Q4



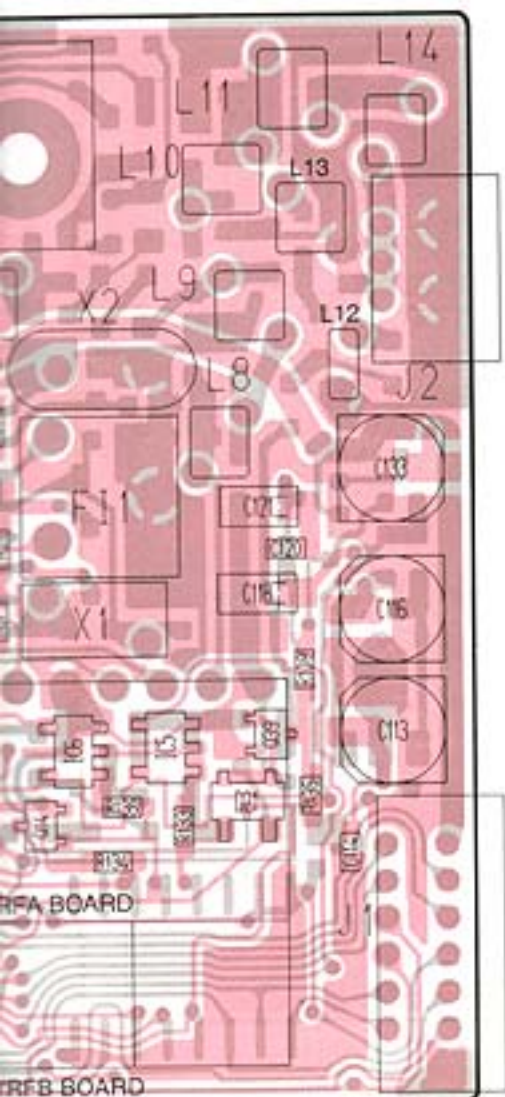
Symbol: G2

**1M22**  
Q17

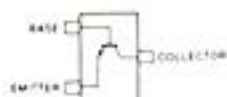


Symbol: Z2



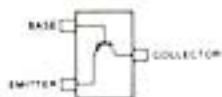


**2SC3772**  
Q41



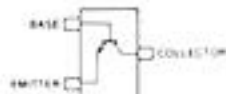
Symbol: LY3

**2SA1576-R**  
Q38



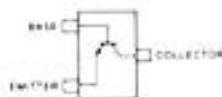
Symbol: FR

**2SC4403**  
Q9, Q10, Q11



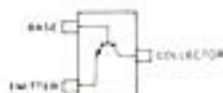
Symbol: LY3

**2SC4081S**  
Q1, Q2, Q27, Q29  
Q31, Q33, Q36, Q42



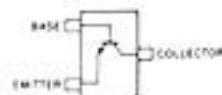
Symbol: BS

**2SC3770**  
Q5



Symbol: JY3

**2SC3356**  
Q23, Q24



Symbol: R25

**DTA144EU**  
Q40



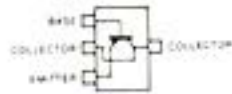
Symbol: 16

**DTA144TU**  
Q13



Symbol: 96

**2SB798**  
Q32, Q37



Symbol: DK

**2SB909M**  
Q34



**DTC144TU**  
Q16



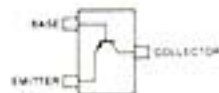
Symbol: 06

**DTC144EU**  
Q14, Q39



Symbol: 26

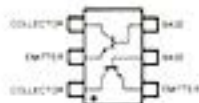
**2SA1576-S**  
Q28, Q30



Symbol: FS

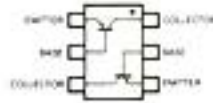


**IMX5**  
Q25, Q26



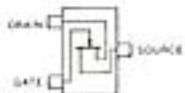
Symbol: X5

**IMT1**  
Q22



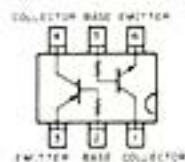
Symbol: T1

**2SK882-Y**  
Q6



Symbol: TY

**IMD6**  
Q15



Symbol: D6

**DA114**  
D12, D13, D14, D15



Symbol: AV

**MA862**  
D9, D16, D23



Symbol: M11

**15V172**  
D22



Symbol: BE

**DWA010**  
D21



Symbol: W8

**MA333**  
D10



Symbol: 6C83

**MA77**  
D11



Symbol: 4B

**MA110**  
D17, D24



Symbol: 1A

**MA728**  
D18, D19

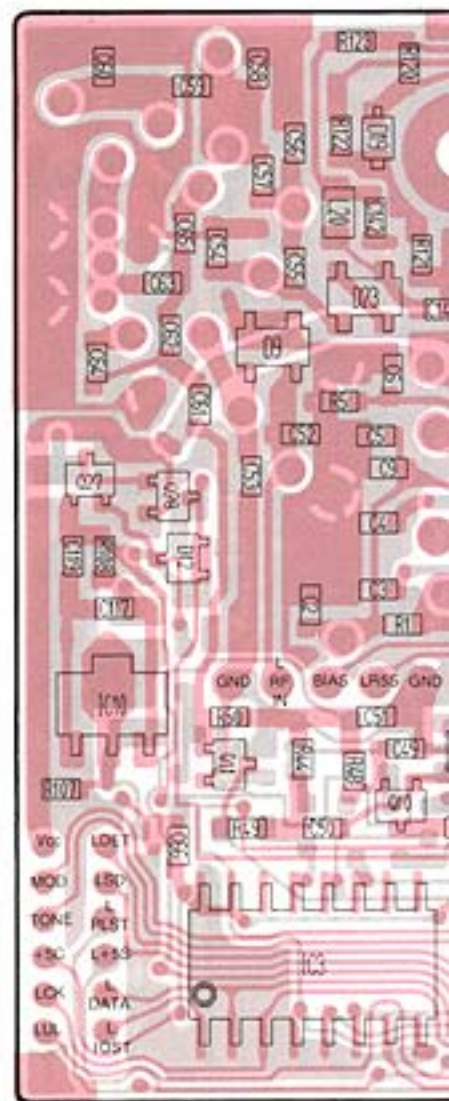


Symbol: 2A

**DAN202U**  
D20



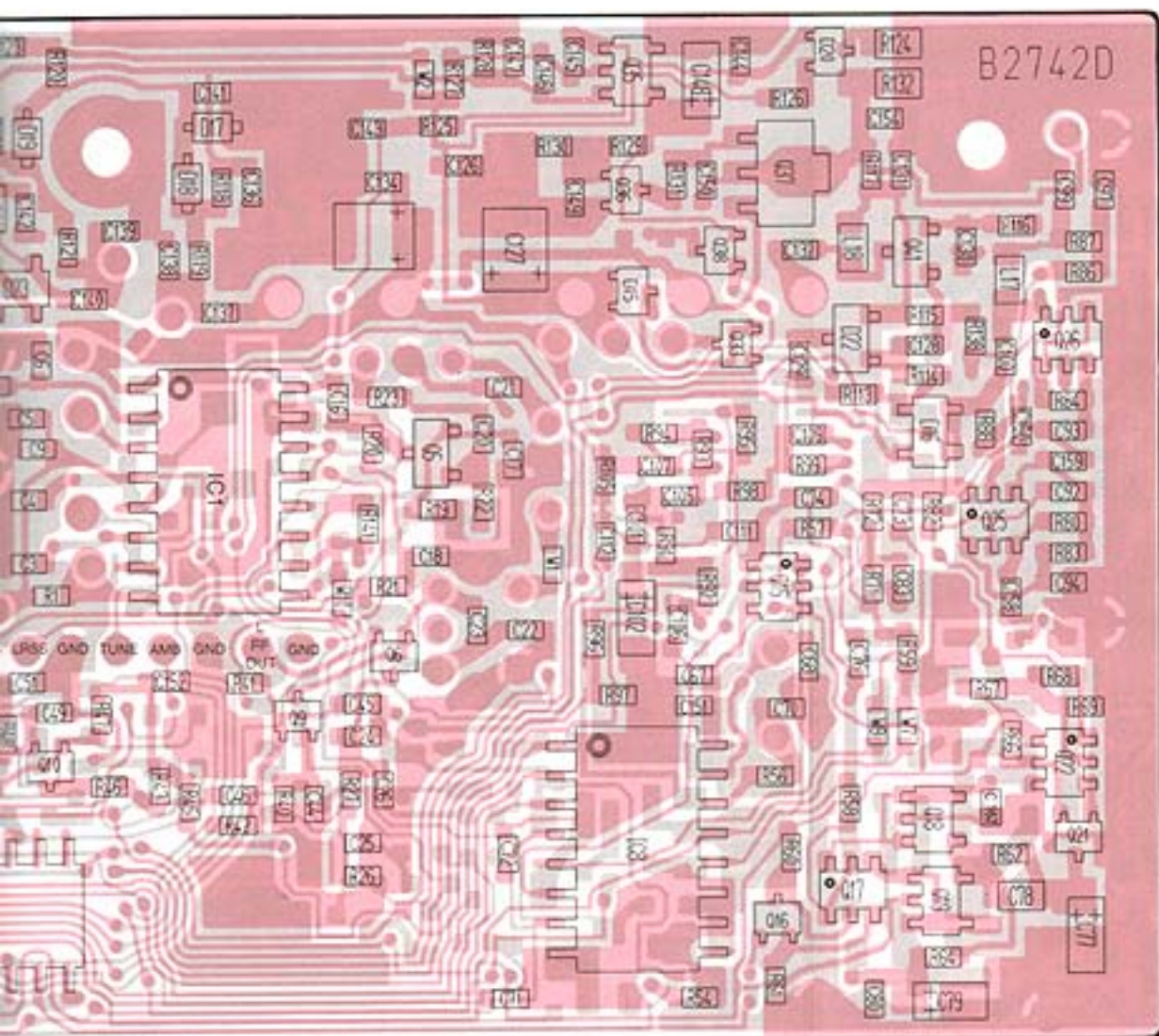
Symbol: N



**TC4**  
IC5



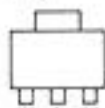
Symbol: N



TC4581F  
IC5, IC6, IC7



S-81250HG  
IC10

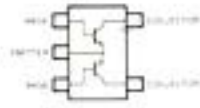


FMS1  
Q19, Q35



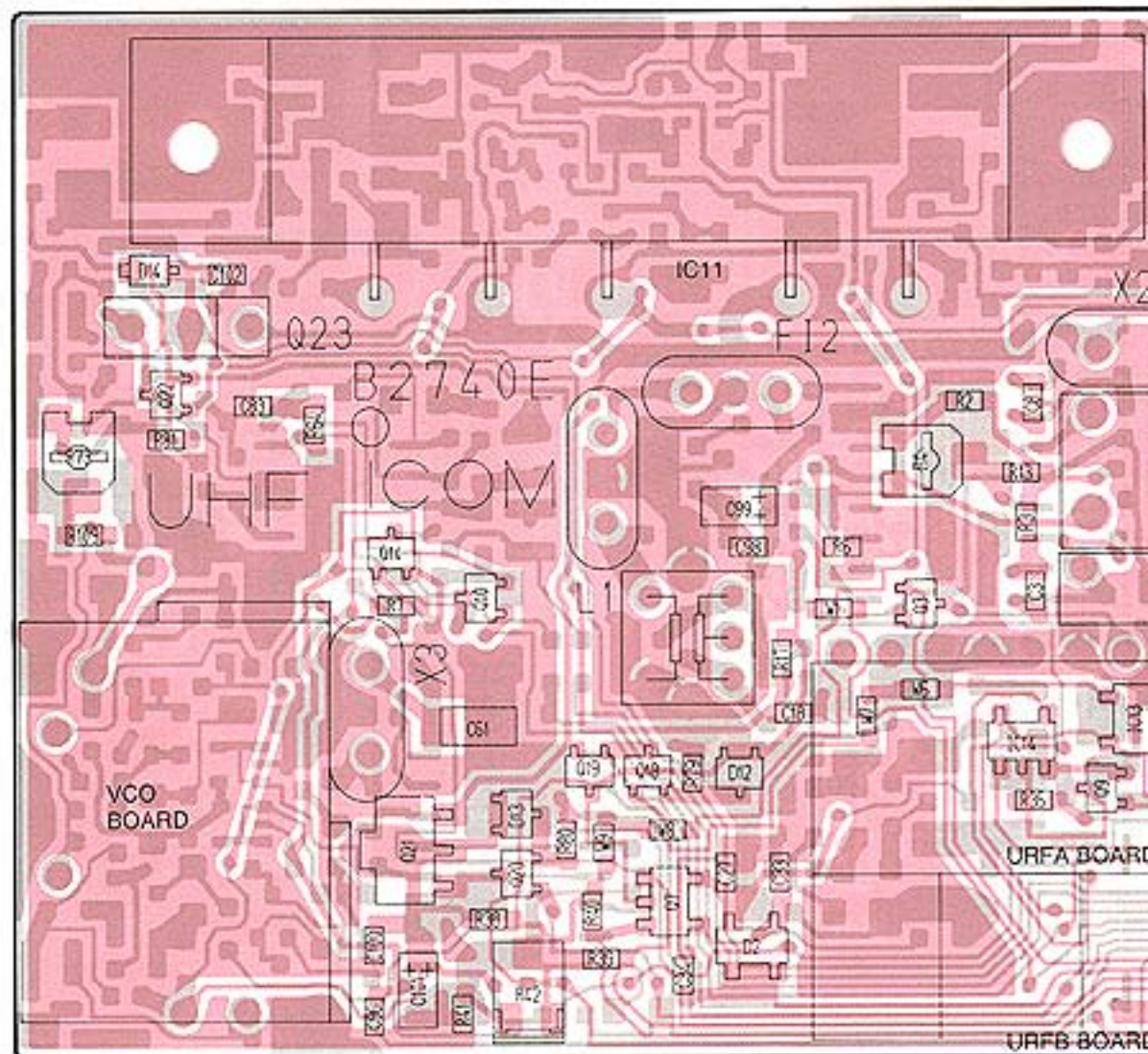
Symbol: S1

FMW1  
Q18



Symbol: W1

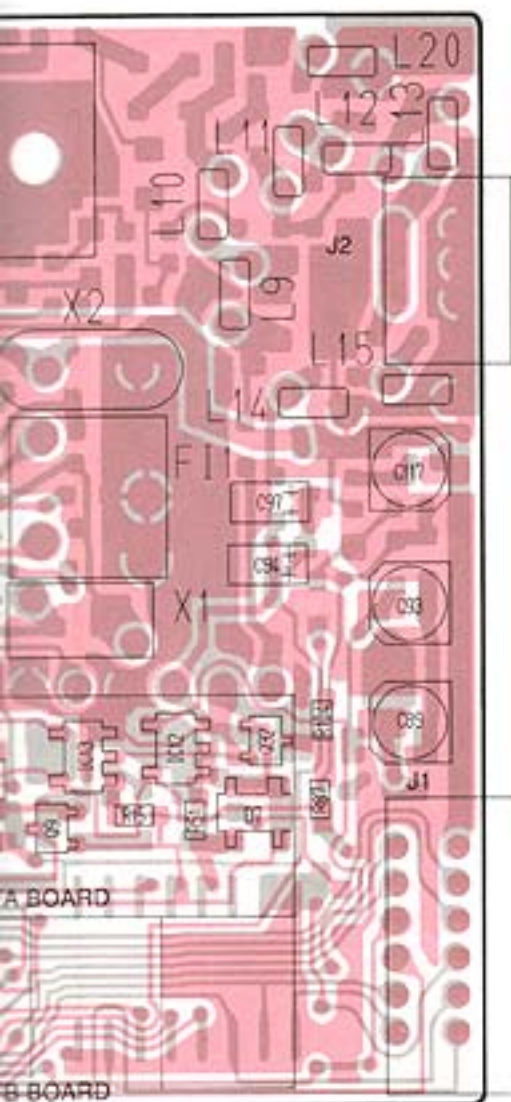




2SB798  
Q21



Symbol: DK

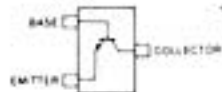


**IMZ2**  
Q12



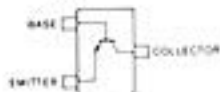
Symbol: Z2

**2SC3583**  
Q6



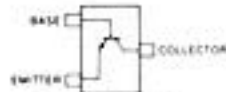
Symbol: R34

**2SC3770**  
Q1



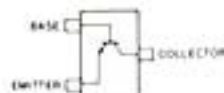
Symbol: JY3

**2SC4081S**  
Q16, Q18, Q20  
Q22, Q25



Symbol: BS

**2SC4403**  
Q2, Q15, Q28  
Q33, Q34



Symbol: LY3

**2SC3356**  
Q27



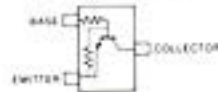
Symbol: R25

**DTC144TU**  
Q11



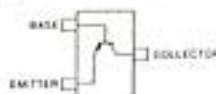
Symbol: O6

**DTC144EU**  
Q9, Q30, Q32



Symbol: 26

**2SA1576 R/S**  
Q8, Q17, Q19, Q26



Symbol: FR/FS

**DTA143ZU**  
Q29



Symbol: 113

**2SB909M**  
Q23



**XP1401**  
Q13, Q24



Symbol: 5V

**XP1501**  
Q31



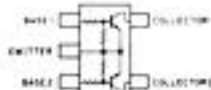
Symbol: 5R

**MA862**  
D2, D3, D6,  
D7, D9, D19



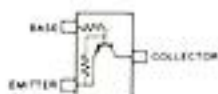
Symbol: M11

**FMA2**  
Q7



Symbol: A2

**DTA144EU**  
Q3, Q10



Symbol: 16

**DA114**  
D12, D13



Symbol: AV

**DA204U**  
D10



Symbol: K

**DAN202U**  
D15



Symbol: N

**MA728**  
D16, D18



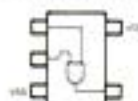
Symbol: 2A

**MA77**  
D4, D20, D21, D22



Symbol: 4B

**TC4S81F**  
IC12, IC13, IC14

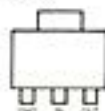


**MA110**  
D11, D14, D17

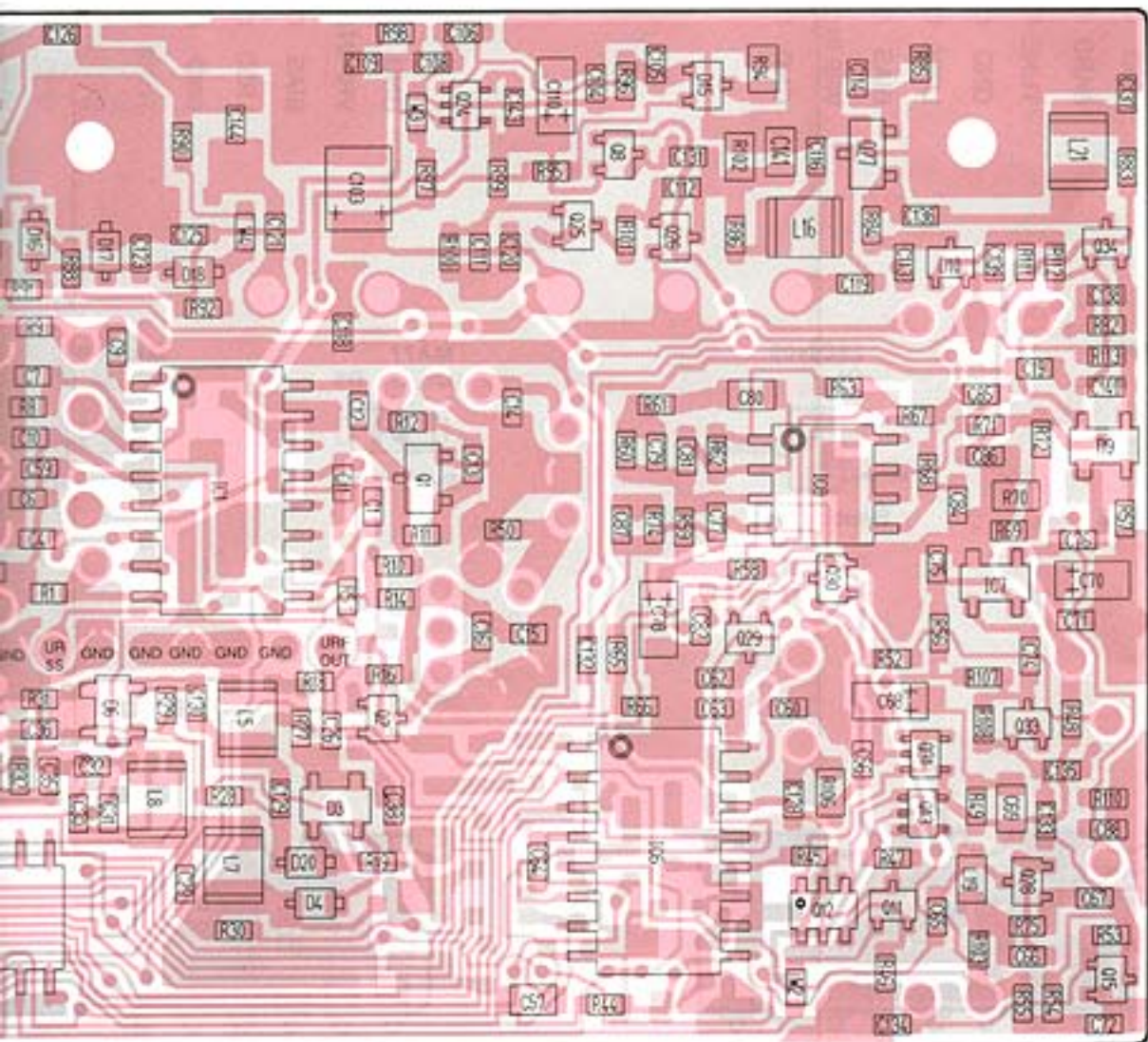


Symbol: 1A

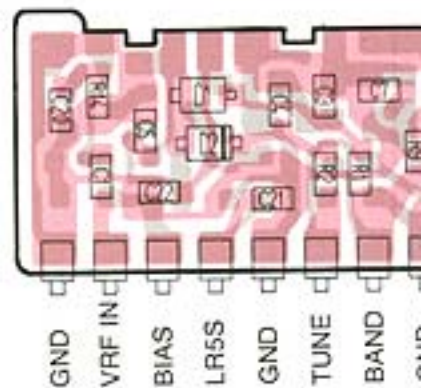
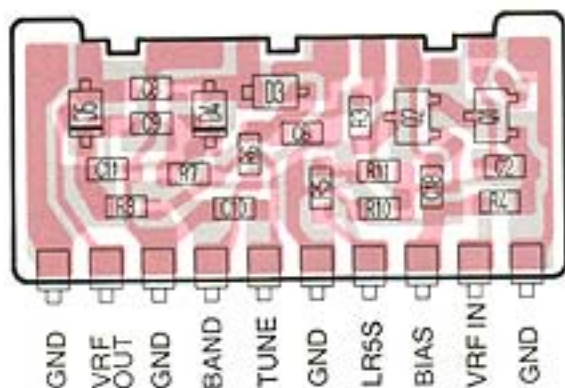
**S-81250HG**  
IC10





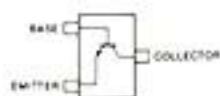


## 7-10 VRF A UNIT



2SC4403

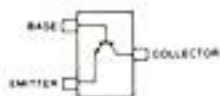
Q2



Symbol: LY3

2SC4405

Q1



Symbol: OY3

MA77

D1, D3, D6



Symbol: 4B

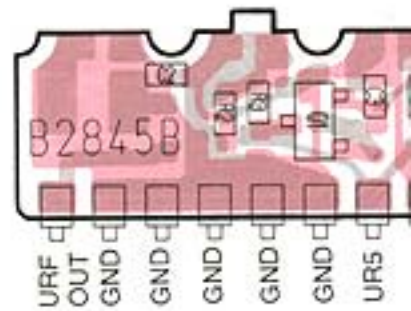
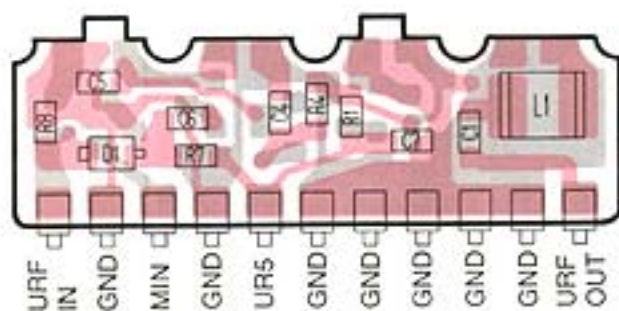
MA363B

D2, D4, D5



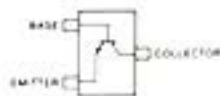
Symbol: 6D

## 7-12 URF A UNIT



2SC3583

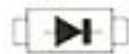
Q1



Symbol: R34

MA77

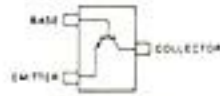
D1, D2



Symbol: 4B

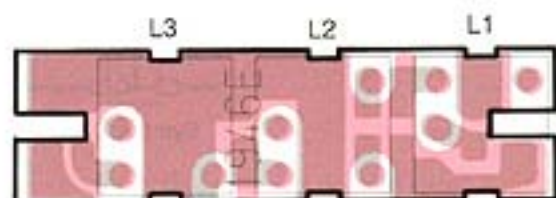
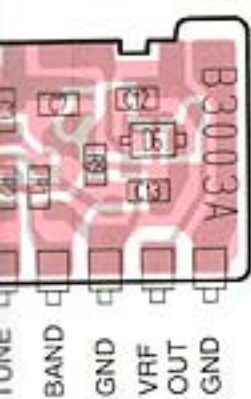
2SC3585

Q2



Symbol: R42

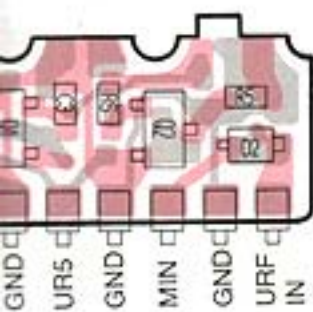
## 7-11 VRF B UNIT



A363B  
2, D4, D5



Symbol: 6D

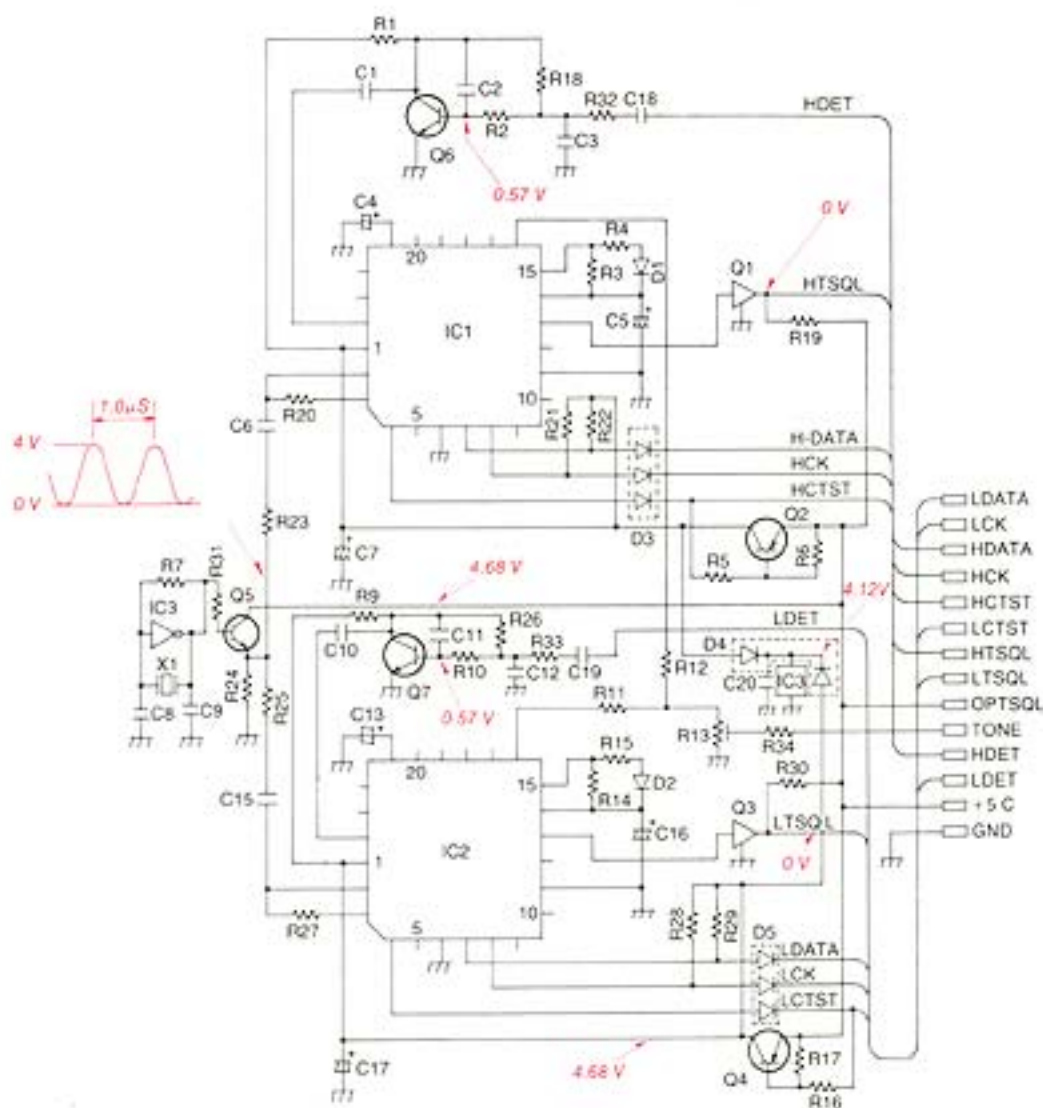




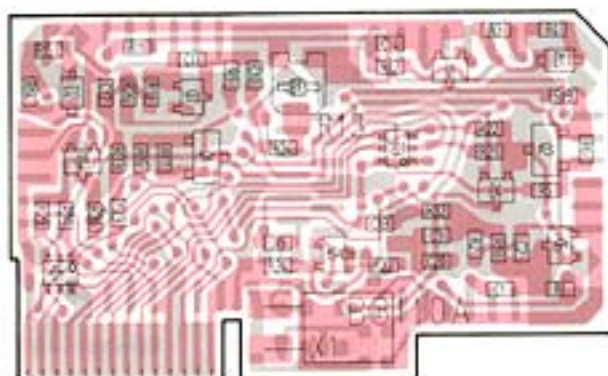


# SECTION 8 OPTIONAL UNIT

## 8-1 UT-63 TONE SQUELCH UNIT

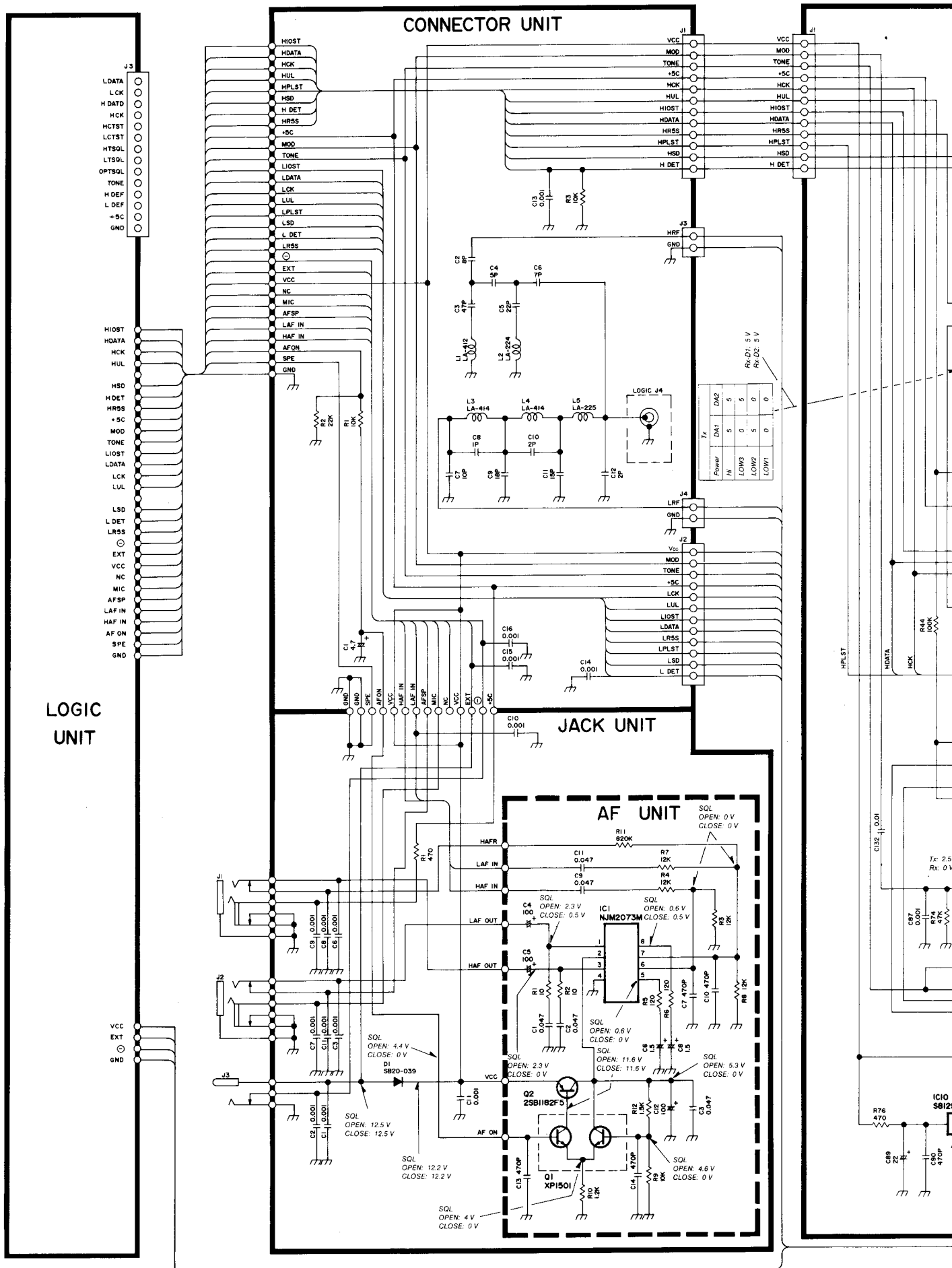


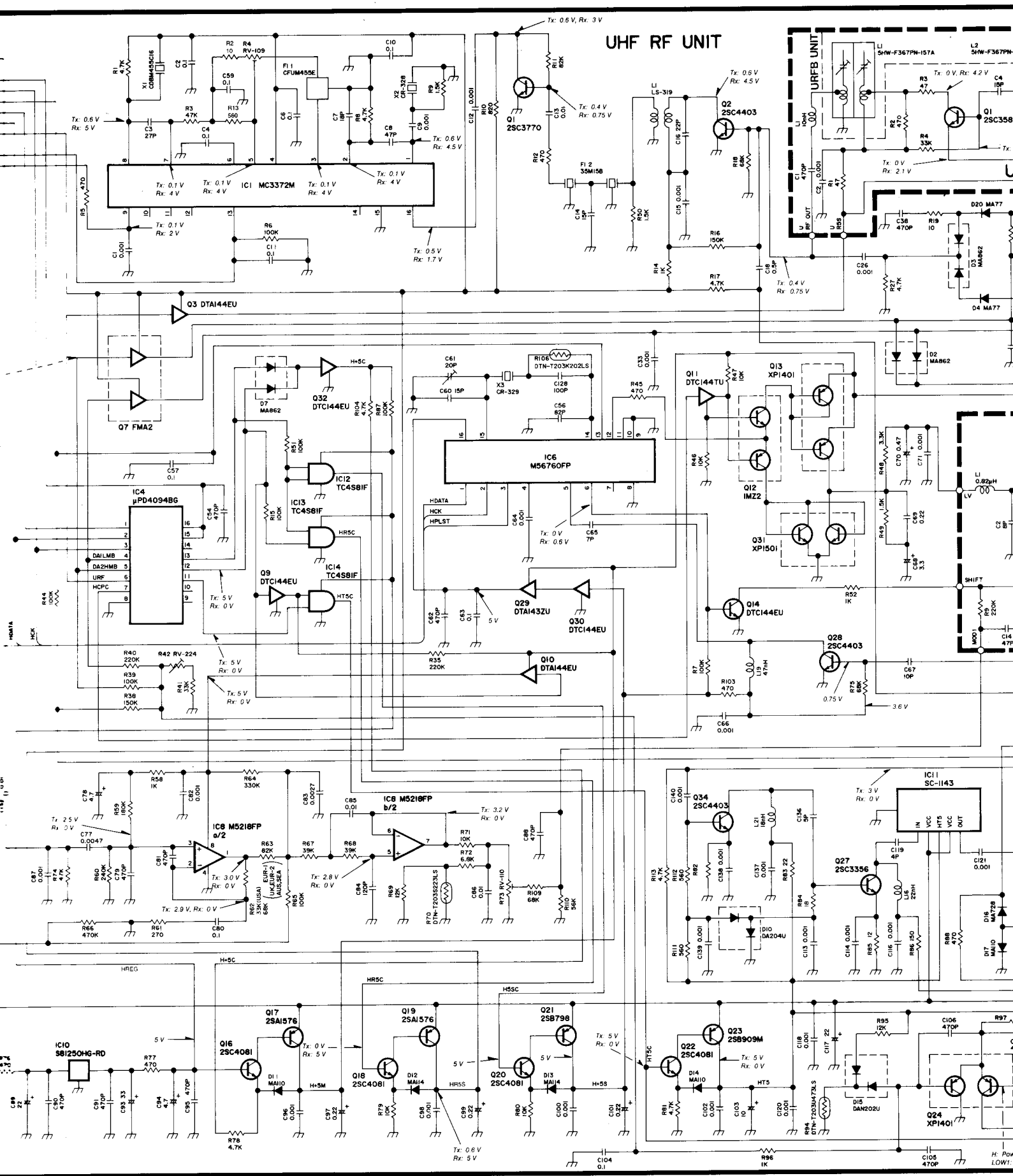
### •BOARD LAYOUTS



LC131  
 LDATA  
 LCKST  
 HCTST  
 HDATA  
 HCK  
 HCTST  
 LCTST  
 HTSQL  
 LTSQL  
 OPTSQL  
 TONE  
 HDET  
 LDET  
 +5 C  
 GND

# SECTION 9 VOLTAGE DIAGRAM





### UHF RF UNIT

### UIRFB UNIT

**IC1 MC3372M**  
Tx: 0.1 V Rx: 4 V  
Tx: 0.1 V Rx: 4 V  
Tx: 0.1 V Rx: 4 V  
Tx: 0.1 V Rx: 4 V

**Q1 2SC3770**  
Tx: 0.6 V Rx: 4.5 V

**Q2 2SC4403**  
Tx: 0.6 V Rx: 4.5 V

**UIRFB UNIT**  
5W-F367PM-157A  
L2 5W-F367PM-157A  
Tx: 0 V Rx: 4.2 V  
Tx: 0 V Rx: 2.1 V  
Tx: 0.4 V Rx: 0.75 V

**IC6 M56760FP**  
HDATA  
HCK  
HPLST

**IC4 μPD4094B6**  
DAILMB  
DAZHMB  
URF  
HPCP

**IC5 M5218FP b/2**  
Tx: 3.2 V Rx: 0 V

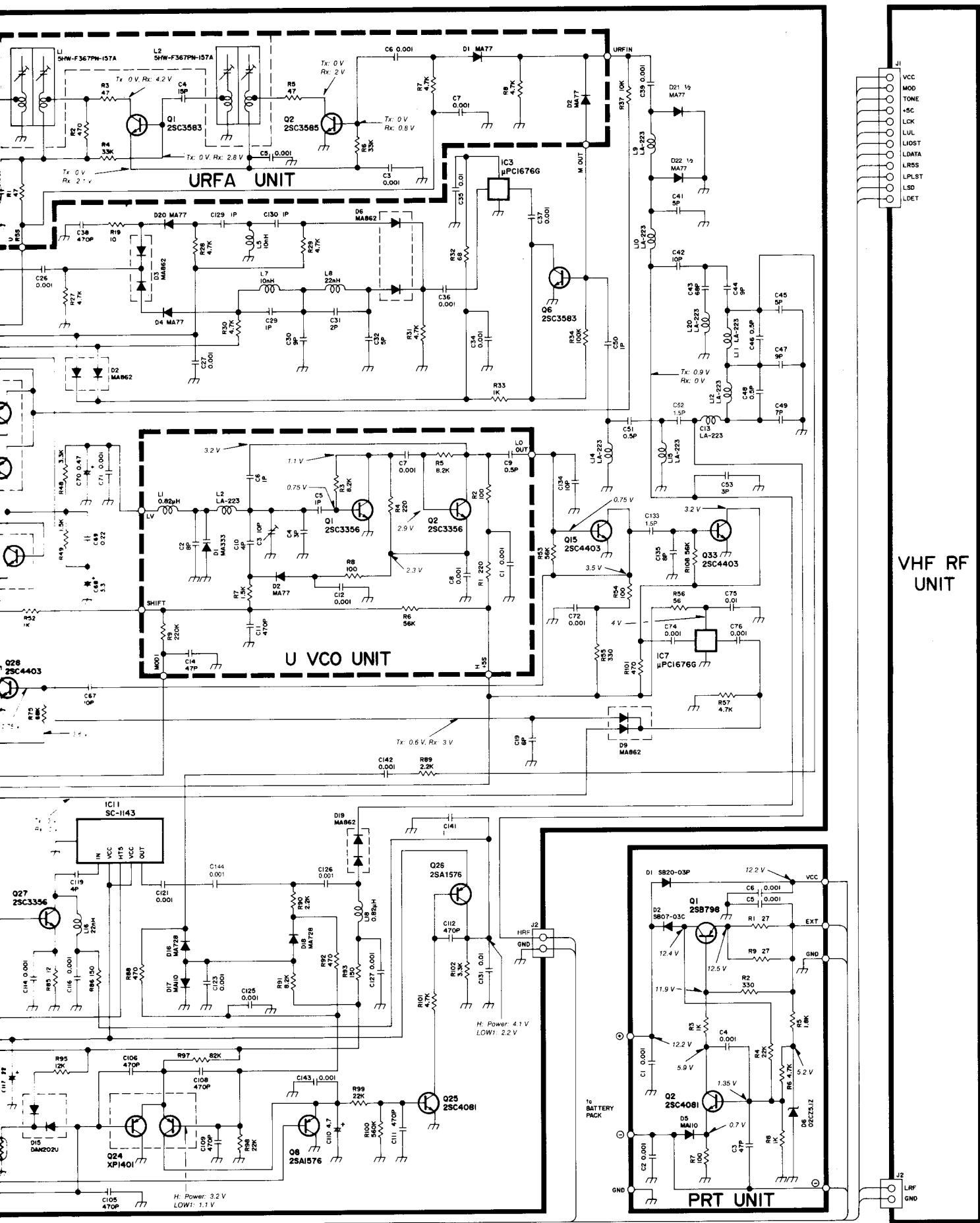
**Q11 DTC144TU**  
**Q12 IMZ2**  
**Q13 XPI401**  
**Q14 DTC144EU**  
**Q28 2SC4403**  
Tx: 0.75 V Rx: 3.6 V

**IC8 M5218FP a/2**  
Tx: 3.0 V Rx: 0 V  
Tx: 2.9 V Rx: 0 V  
Tx: 2.8 V Rx: 0 V

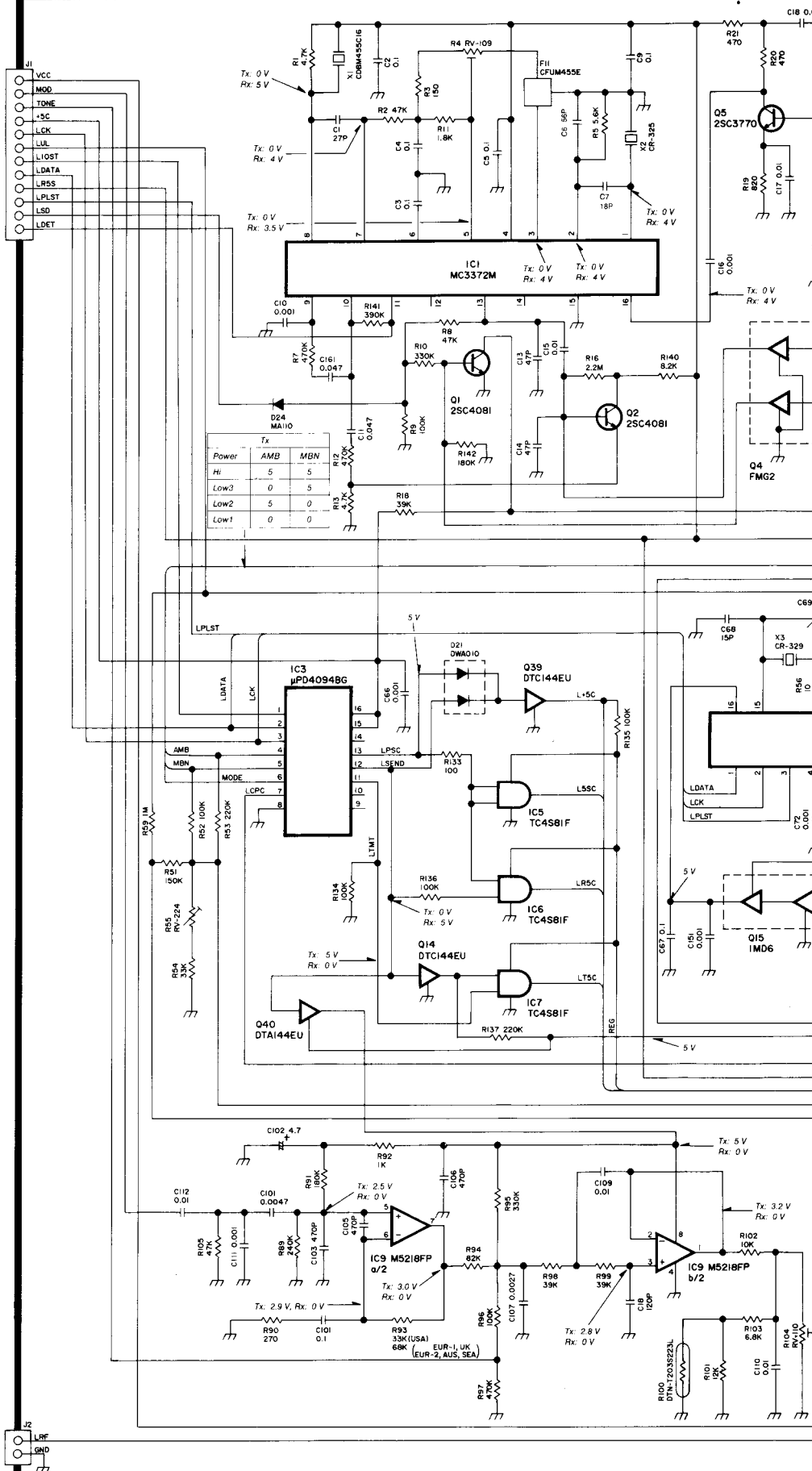
**Q34 2SC4403**  
**Q27 2SC3356**  
**IC11 SC-1143**  
IN VCC HT5 VCC OUT  
Tx: 3 V Rx: 0 V

**IC10 SB1250HG-RD**  
**Q16 2SC4081**  
**Q17 2SA1576**  
**Q18 2SC4081**  
**Q19 2SA1576**  
**Q20 2SC4081**  
**Q21 2SB798**  
Tx: 0.6 V Rx: 5 V

**Q22 2SC4081**  
**Q23 2SB909M**  
**Q24 XPI401**  
Tx: 5 V Rx: 0 V



VHF RF UNIT



	Tx	
Power	AMB	MBN
Hi	5	5
Low3	0	5
Low2	5	0
Low1	0	0

	Rx	
Power	AMB	MBN
Hi	5	5
Low3	0	5
Low2	5	0
Low1	0	0

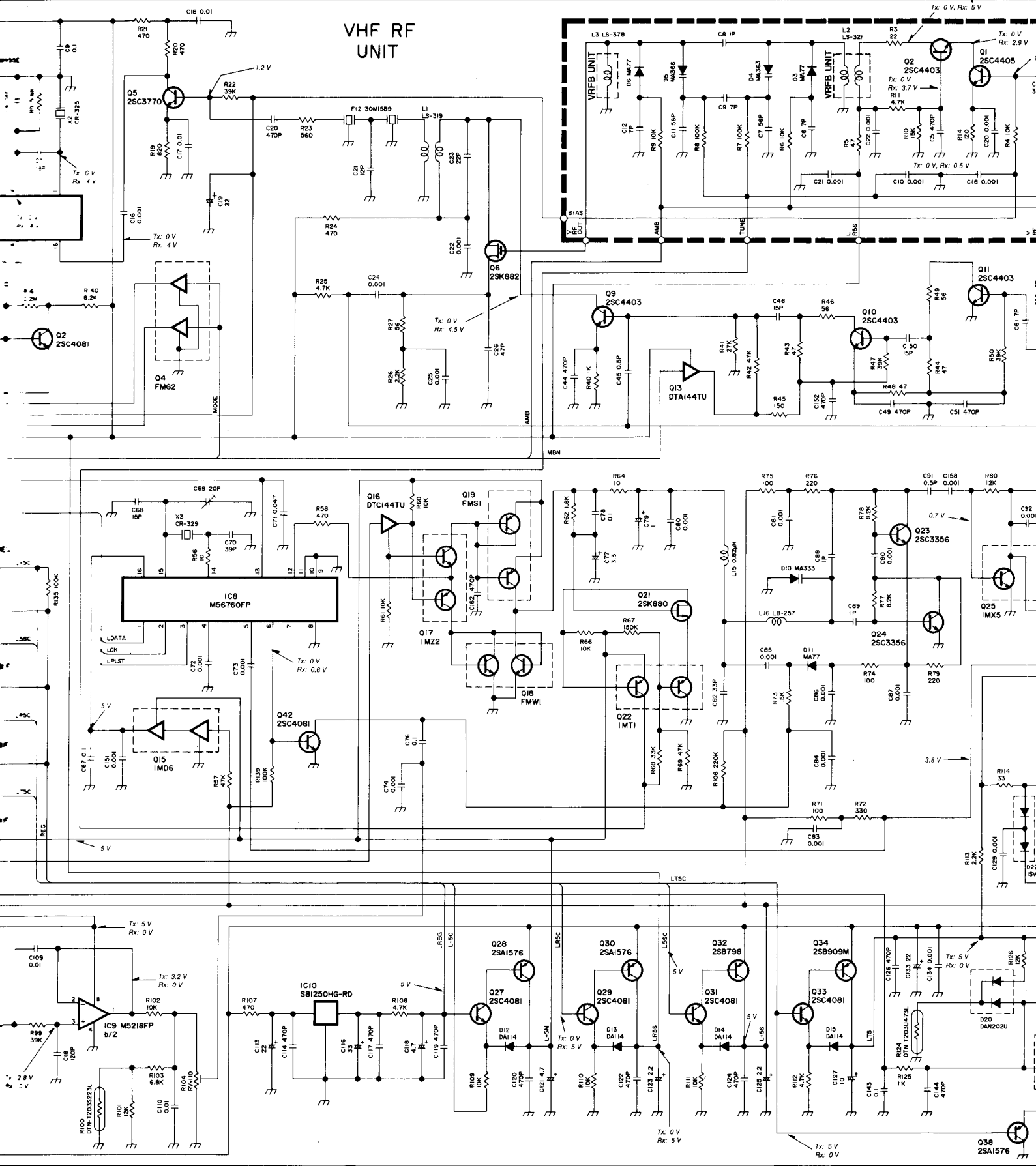
- VCC
- MOD
- TOPE
- +5C
- LCK
- LUL
- LLOST
- LDATA
- LRSS
- LPLST
- LSD
- LDET

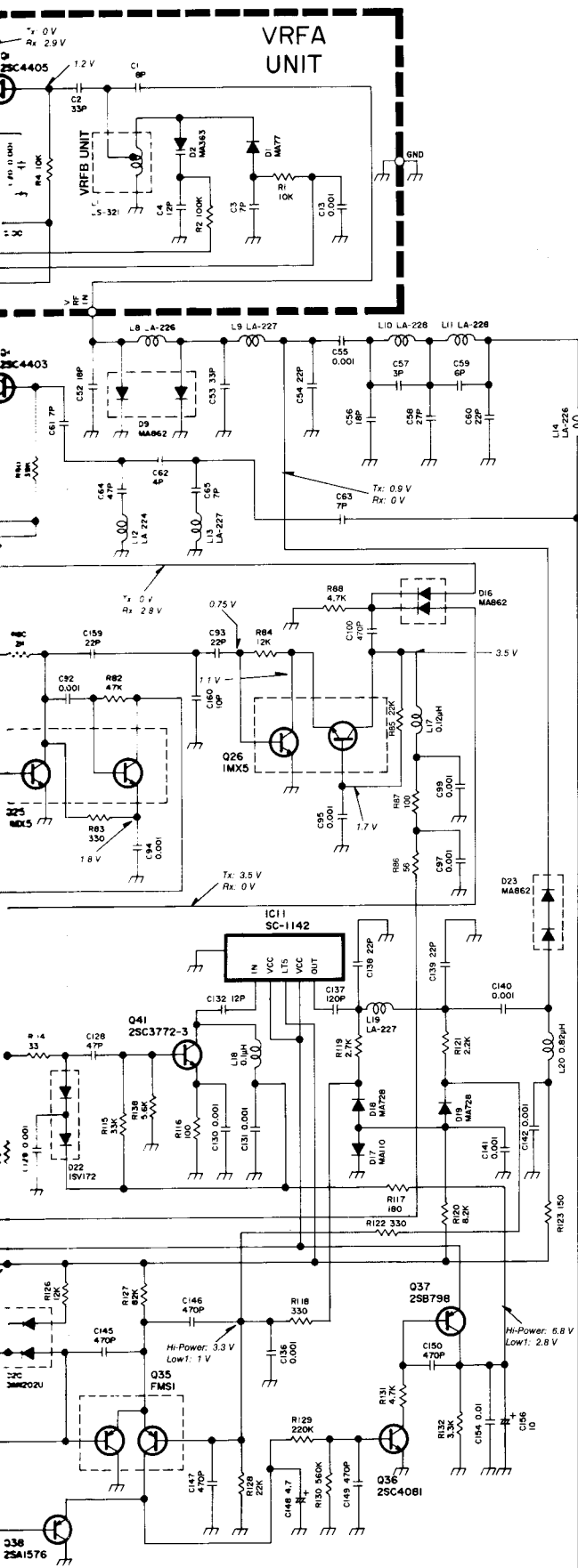
- LRF
- GND

	Tx	
Power	AMB	MBN
Hi	5	5
Low3	0	5
Low2	5	0
Low1	0	0

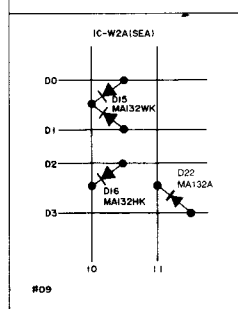
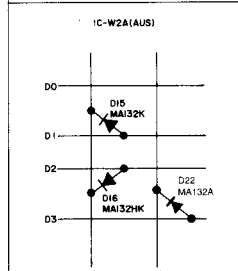
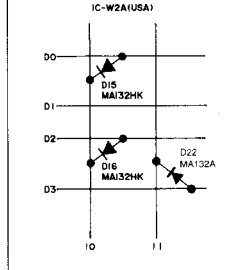
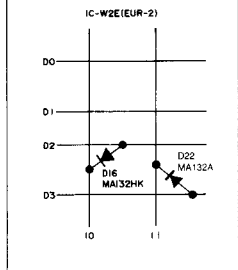
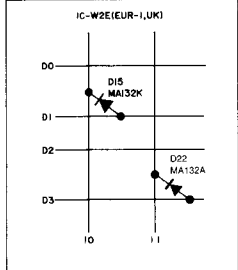
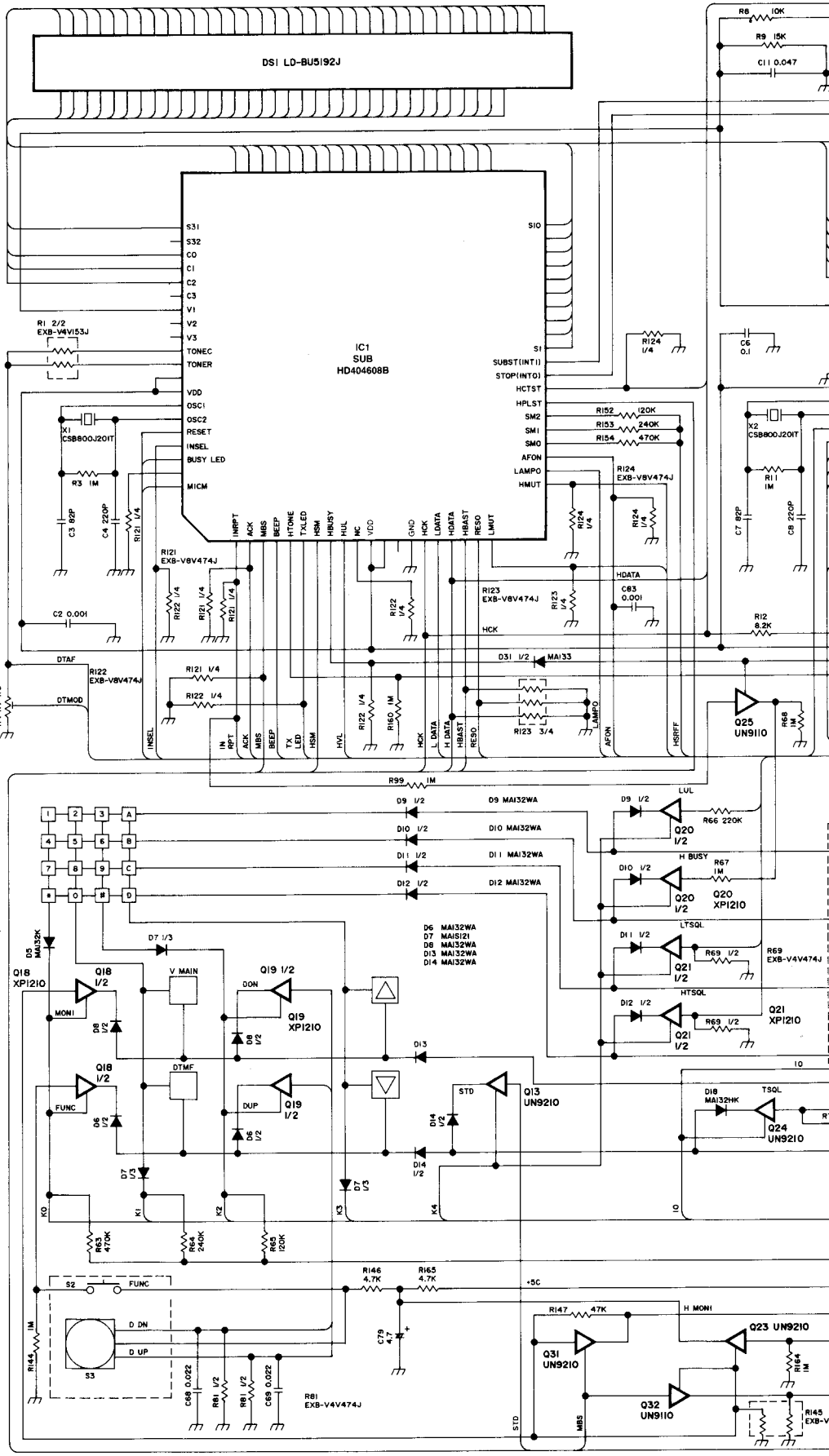
	Rx	
Power	AMB	MBN
Hi	5	5
Low3	0	5
Low2	5	0
Low1	0	0

# VHF RF UNIT

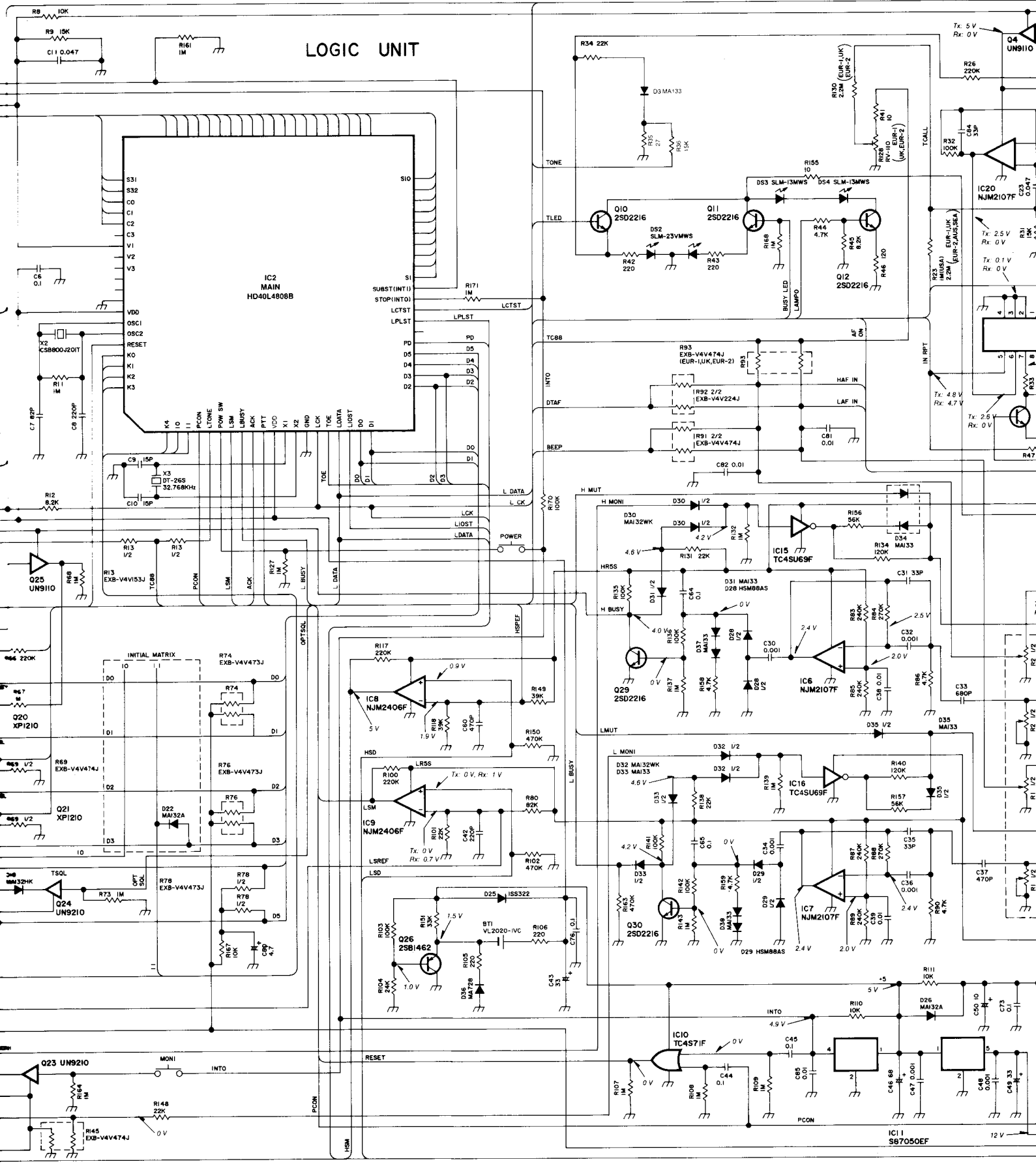


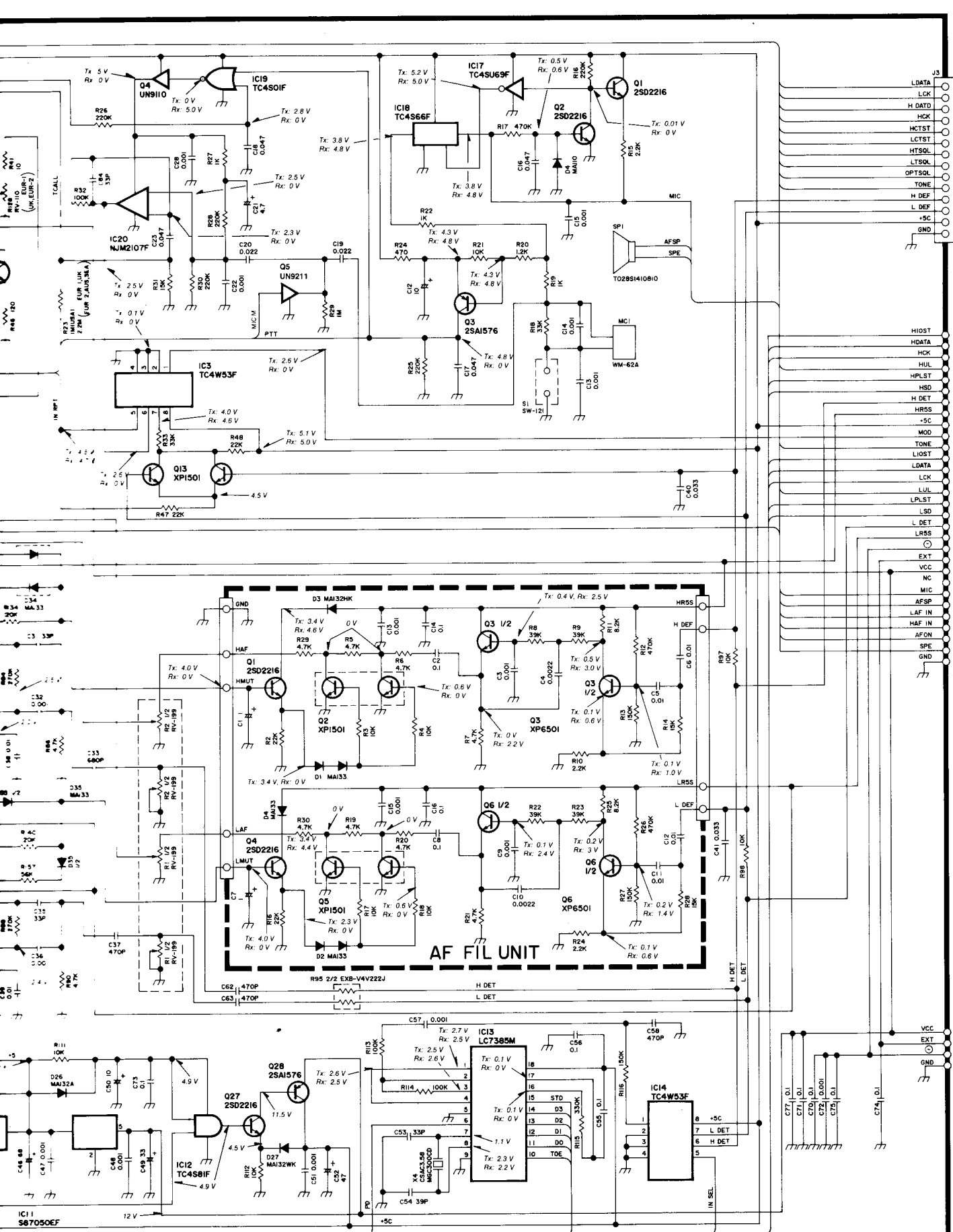






# LOGIC UNIT



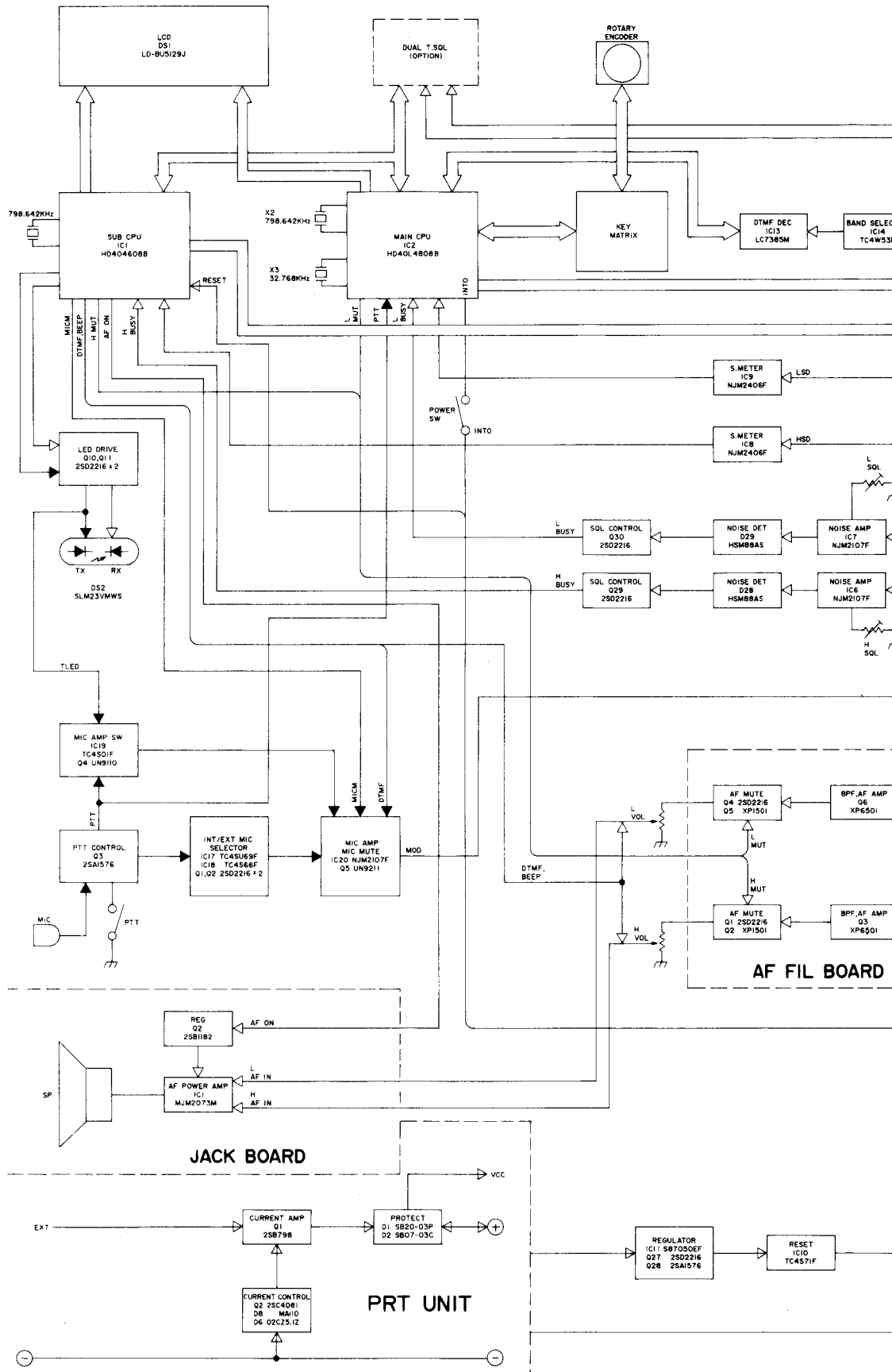


- J3
- LDATA
- LCK
- H DATED
- HCK
- HCTST
- LCTST
- HTSOL
- LTSOL
- OPTSOL
- TONER
- H DEF
- L DEF
- +5C
- GND
- HIOST
- HDATA
- HCK
- HUL
- HPLST
- HSD
- H DET
- HRSS
- +5C
- MOD
- TONER
- LIOST
- LDATA
- LCK
- LUL
- LPLST
- LSD
- L DET
- LRSS
- EXT
- VCC
- NC
- MIC
- AFSP
- LAF IN
- HAF IN
- AFON
- SPE
- GND

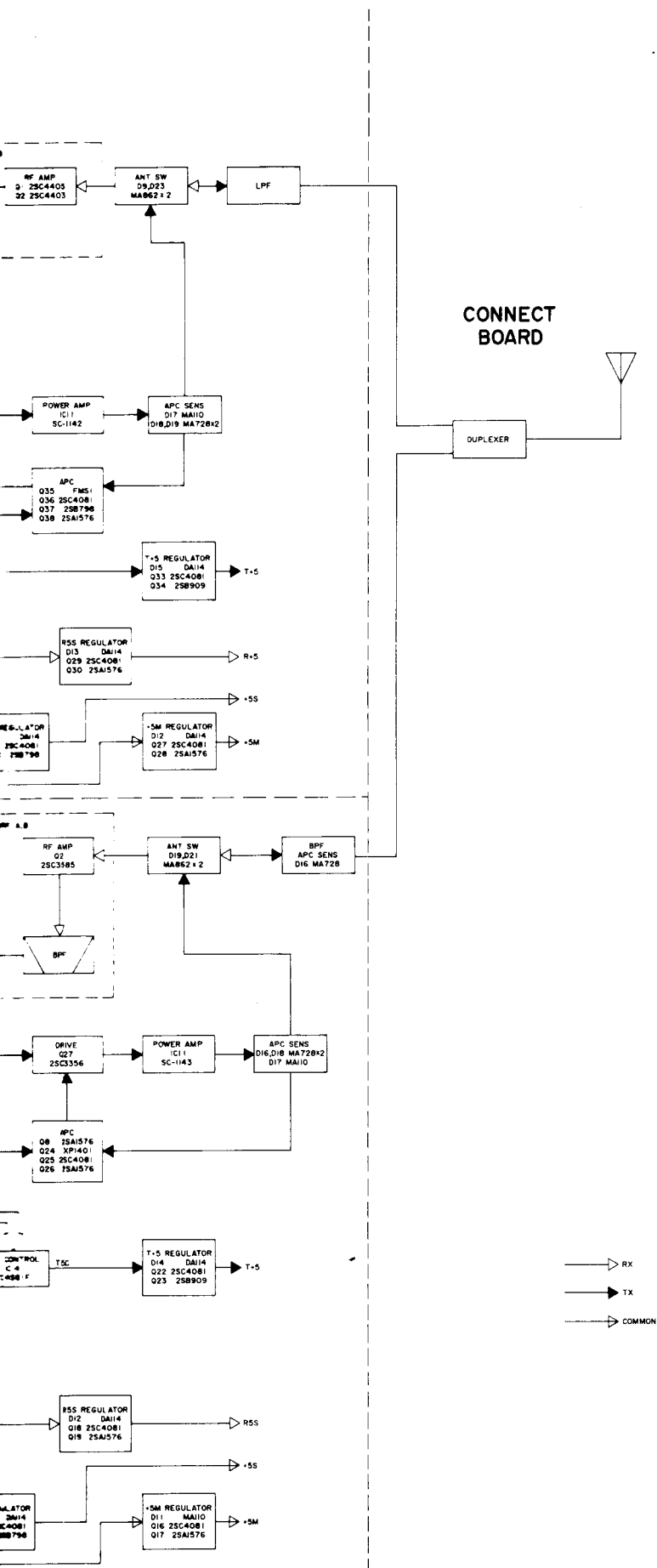
**AF FIL UNIT**

# SECTION 10 BLOCK DIAGRAM

LOGIC UNIT







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