



# SERVICE MANUAL

UHF FM TRANSCEIVERS

**IC-4SRA**

**IC-4SRE**

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## INTRODUCTION

This service manual describes the latest service information for the IC-4SRA/E 430 MHz (440 MHz) FM TRANSCEIVER at the time of publication.

MODEL	VERSION NO.	VERSION	SYMBOL
IC-4SRA	#05	U.S.A.	USA
	#07	Australia	AUS
	#09	Asia	SEA
IC-4SRE	#03, #13	U.K.	UK, UK-1
	#04, #14	Europe	EUR, EUR-1

## DANGER

**NEVER** connect the transceiver 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-4SRA/E LOGIC UNIT 5 pieces  
8810004870 Screw PH M2×2.5 ZK IC-4SRA/E Top cover 10 pieces

Adresses 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 circuit or electronic parts. An insulated tuning tool **MUST** be used 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

### ● Current drain

CONDITION			BAND	
			HAM	RECEIVER
Transmit (13.5 V)	High Power		1.6 A	—
	Low Power		700 mA	—
Receive (12.5 V)	One band operation	Power saved	20 mA* <sup>1</sup>	20 mA* <sup>1</sup>
		Rated audio output	170 mA	200 mA
	Dual band operation	Power saved	40 mA* <sup>1</sup>	
		Rated audio output	250 mA* <sup>1</sup>	

\*<sup>1</sup>Average value.

: 6~16 V DC (negative ground)

: -10°C~+60°C; +14°F~+140°F

- External DC power supply
- Usable temperature range
- Dimensions and weight  
(Projections not included.)

VERSION	DIMENSION	WEIGHT	BATTERY
IC-4SRA (U.S.A.)	54 (W)×170 (H)×36 (D) mm 2.1 (W)×6.7 (H)×1.4 (D) in	500 g 1.1 lb	BP-84
IC-4SRA (Australia) IC-4SRE	54 (W)×135 (H)×36 (D) mm 2.1 (W)×5.3 (H)×1.4 (D) in	385 g 13.6 oz	BP-82
IC-4SRA (Asia)	54 (W)×154 (H)×36 (D) mm 2.1 (W)×6.1 (H)×1.4 (D) in	430 g* <sup>2</sup> 15.2 oz* <sup>2</sup>	BP-90

\*<sup>2</sup>Weight includes 6 dry cell batteries.

## ■ HAM BAND

### General

### ● Frequency coverage

MODEL	VERSION	FREQUENCY COVERAGE
IC-4SRA	U.S.A.	440~450 MHz
IC-4SRA	Australia	430~440 MHz
	Asia	
IC-4SRE	U.K.	
	Europe	

### ● Mode

: FM

### ● Frequency stability

: ±5 ppm (0°C~+50°C; +32°F~+122°C)

### ● Antenna impedance

: 50Ω (nominal)

### Transmitter

### ● Output power (at 13.5 V)

: 5 W, 3.5 W, 1.5 W and 500 mW

### ● Max. frequency deviation

: ±5 kHz

### ● Spurious emissions

: Less than -60 dB

### Receiver

### ● Receive system

: Double-conversion superheterodyne

### ● Intermediate frequencies

: 1st 35.800 MHz 2nd 455 kHz

### ● Sensitivity

: Less than 0.16 μV for 12 dB SINAD

### ● Squelch sensitivity

: Less than 0.18 μV at threshold

### ● Selectivity

: More than 15 kHz/-6 dB

Less than 30 kHz/-60 dB

### ● Spurious response rejection

: More than 60 dB

### ● Audio output power

: 180 mW at 10% distortion with an 8Ω load.

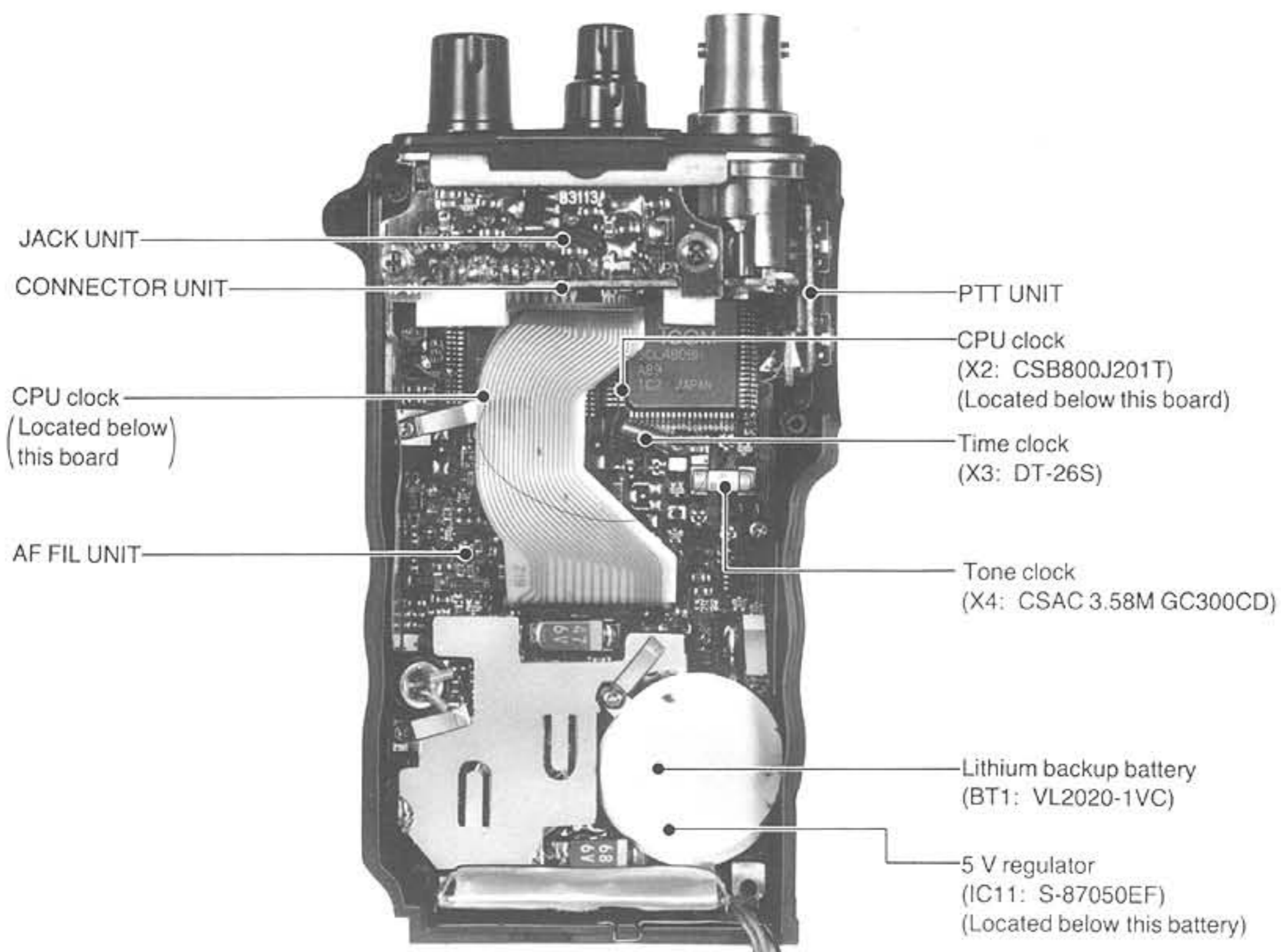
## ■ RECEIVER BAND

- Frequency coverage : 25~950 MHz  
Guaranteed frequency coverage is 50~905 MHz.
- Mode : AM, FM and WFM
- Receive system : Triple-conversion superheterodyne
- Intermediate frequencies : 1st 266.700 MHz, 2nd 10.700 MHz, 3rd 455 kHz
- Sensitivity (Typical) : AM; 1.8  $\mu$ V for 10 dB S/N  
FM; 0.56  $\mu$ V for 12 dB S/N  
WFM; 1.8  $\mu$ V for 12 dB S/N  
Values not guaranteed for spurious points.
- Selectivity : AM, FM; More than 15 kHz/−6 dB  
WFM; More than 150 kHz/−6 dB
- Audio output power : 180 mW at 10% distortion with an 8 $\Omega$  load.

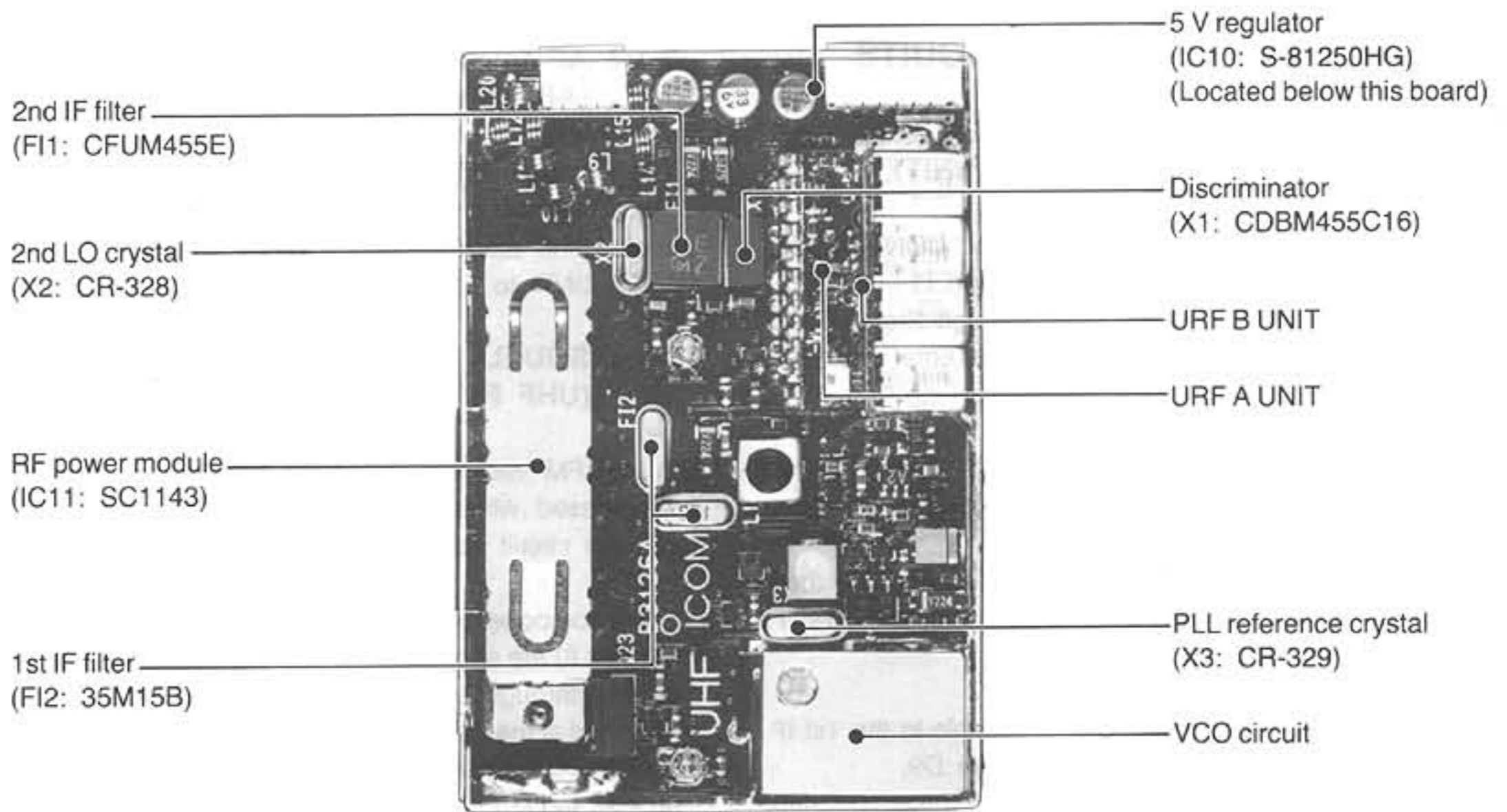
All stated specifications are subject to change without notice or obligation.

## SECTION 2 INSIDE VIEWS

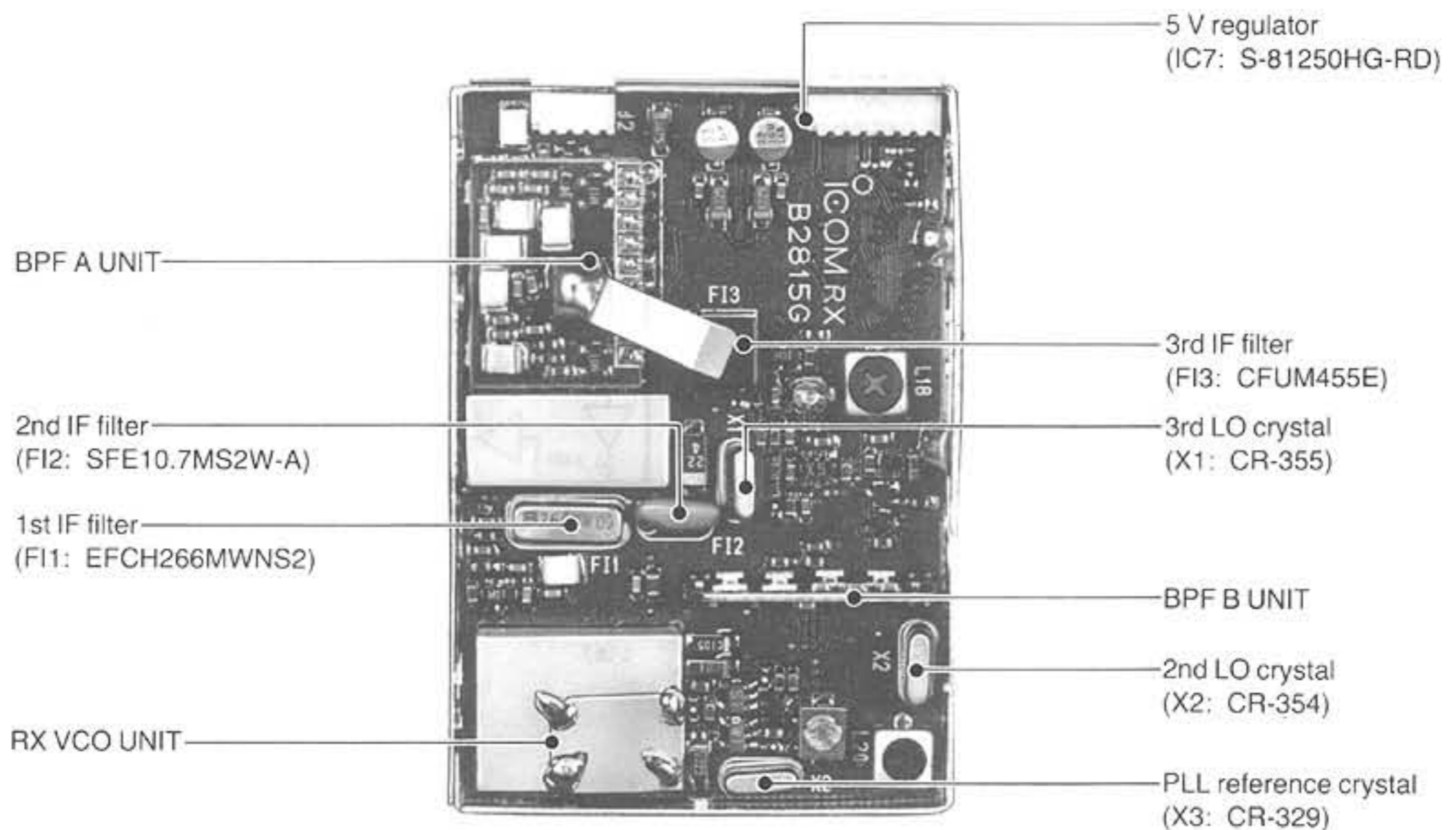
### 2-1 LOGIC UNIT



## 2-2 UHF RF UNIT



## 2-3 RX UNIT



## SECTION 3 CIRCUIT DESCRIPTION

### 3-1 HAM BAND RECEIVER CIRCUITS

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

The received ham band signals enter the CONNECTOR UNIT and are applied to the bandpass filter (L11~L13, L20, C42~C49). These RF signals pass through the antenna switching circuit (L9, D21, D22) and then enter the URF UNIT.

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

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

Q2 on UHF RF UNIT converts the RF signals to the 1st IF signal using the UPLL output coming from D9.

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

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

The 1st IF signal passes through the crystal filter (F12) to filter out the undesired signals and pick up a 35.8 MHz 1st IF frequency. The 1st IF signal is amplified at Q1 and is then applied to the FM IF IC (IC1, pin 16).

IC1 contains a 2nd mixer, local oscillator, limiter amplifier, quadrature detector, active filter and S-meter detector circuit. The local oscillator section and X2 generate 35.345 MHz for the 2nd LO signal.

The 1st IF signal is applied to the 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 AF signals. AF signals output from IC1 (pin 9) are applied to the AF FIL UNIT as an LDET signal.

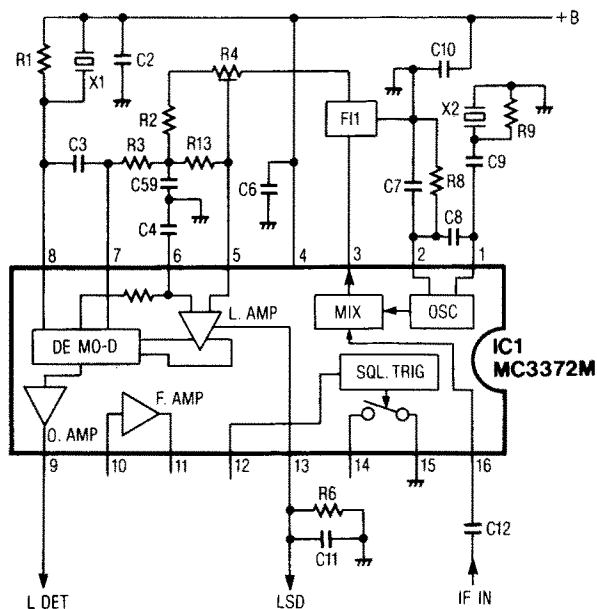
#### 3-1-4 AF CIRCUIT (AF FIL AND JACK UNITS)

The ham band AF signals are applied to bandpass filter (Q6). These signals are then passed through the HAM [VOL] control and amplified by the power amplifier (IC1) on the JACK UNIT to obtain the speaker driving level.

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

In an FM receiver, AF back noises are automatically suppressed while an RF signal 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 9) are applied to the UHF RF UNIT. The noise signal passes through the HAM [SQL] control (R1) and is then amplified at the active filter (IC7). The signal is applied to D29 and converted to a DC voltage signal. This voltage signal is applied to Q30 or to IC16. Thus, while receiving no signal, the "LOW" signal is output from Q30 as an "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 at "LOW", the AF MUTE circuit turns ON.



UHF IF CIRCUIT



## 3-2 HAM BAND TRANSMITTER CIRCUITS

### 3-2-1 MIC CONTROL CIRCUIT (LOGIC UNIT)

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

Audio signals from an external microphone are applied to the microphone control circuit (IC17, IC18, Q1, Q2). The audio signals pass through the attenuator (R19~R21) and are connected to the internal microphone. These audio signals are amplified at IC20 and are then applied to the UHF 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.

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

Audio signals from the LOGIC UNIT are applied to the low level amplifier in the mic amplifier circuit with pre-emphasis at IC8a. Then, the signals are applied to the limiter amplifier (IC8b).

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

The audio signals from IC8b (pin 7) change 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 is then applied to the drive amplifier circuit.

### 3-2-4 DRIVE AND POWER AMPLIFIER CIRCUITS (UHF RF UNIT)

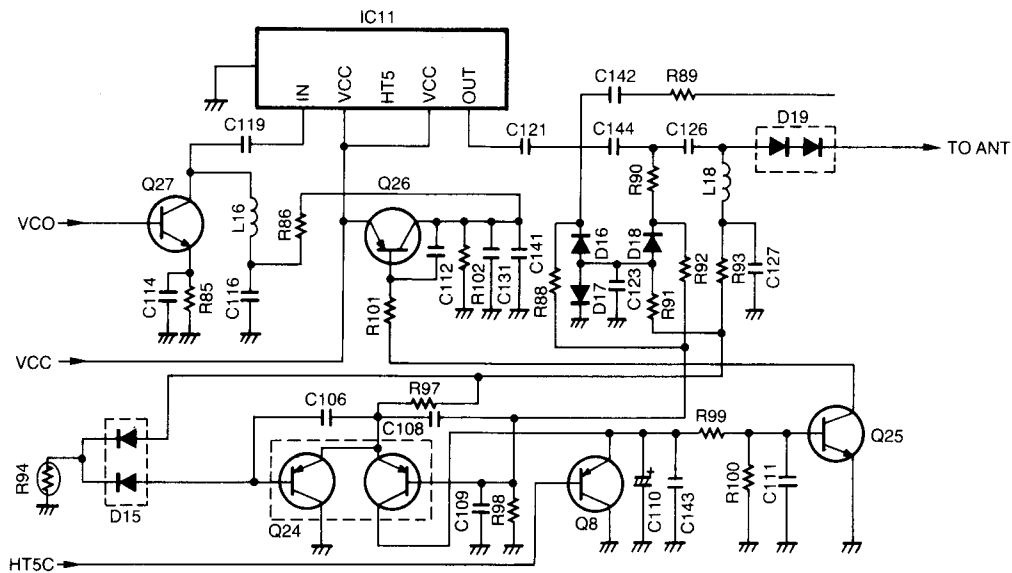
IC11 is a power module which provides a stable 5 W (DC 13.5 V) of output power.

Drive amplifiers (Q34, Q27) and power amplifier (IC11) amplify the VCO oscillating signal to an output level. The amplified signal passes through the APC detector circuit (D16~D18) and bandpass filter and is then applied to the antenna connector. Collector voltage for the drive amplifier (Q27) is controlled by the APC circuit.

### 3-2-5 APC CIRCUIT (UHF RF UNIT)

An APC circuit protects the power module (IC11) and selects high or low output power.

The APC detector circuit (D16~18) detects the output signal from the power module (IC11, pin 5). Q24 compares the voltage detected by the APC circuit with the reference voltages. When the voltage detected by the APC exceeds the reference voltages, Q24 reduces the collector voltage of the drive amplifier (Q27) via current amplifiers (Q25, Q26) to reduce the RF output power.



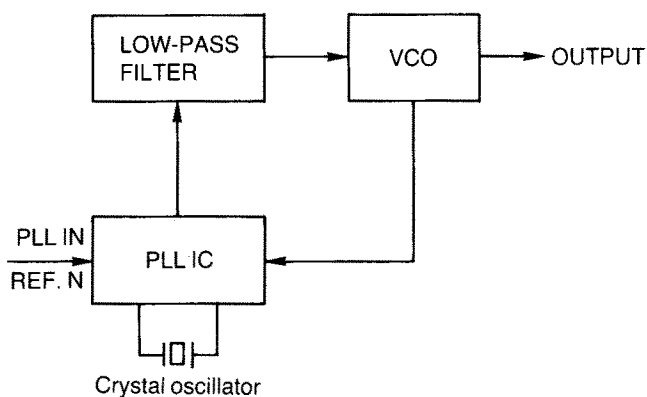
UHF APC AND POWER CIRCUIT

### 3-3 HAM BAND PLL CIRCUITS

#### 3-3-1 GENERAL (UHF RF UNIT)

A PLL circuit provides stable oscillation of the transmit frequency and the receive local frequency. The PLL circuit compares the phase of the divided VCO frequency to the reference frequency. The PLL output frequency is controlled by a crystal oscillator and the divided ratio of a programmed divider.

The PLL circuit, using a one chip PLL IC (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 (HAM BAND: IC2, RECEIVER BAND: IC1) 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

#### 3-3-2 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.

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

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

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.

### 3-4 RECEIVER BAND CIRCUITS

#### 3-4-1 GENERAL

The IC-4SRA/E's wideband receiver circuit is designed for the following bands (25~905 MHz) and modes (AM, FM, WFM).

#### 3-4-2 BANDPASS FILTER CIRCUITS (RX UNIT AND BPF A UNITS)

The received signal enters the receiver unit and passes through a limiter diode (D1) and then passes to a bandpass filter. The received signal is applied to the BPF A UNIT (25~534.190 MHz) or RF UNIT (534.200~950.000 MHz) which suppress out-of-band signals.

##### (1) 25~267.795 MHz (BA1)

RF signals from the band switch (D2) pass through the low-pass filter (C4~C12, L1~L3). The signal are applied to the RF amplifier (Q1) on the RX UNIT via the band switch (D3).

##### (2) 267.800~534.190 MHz (BA2)

RF signals from the band switch (D4) pass through the band-pass filter (C15~C25, L6~L10, L26). The signals are applied to the RF amplifier (Q1) on the RX UNIT via the band switch (D5).

##### (3) 534.200~800.895 MHz (BA3)

RF signals from the band switch (D1) pass through the bandpass filter (C1~C10, L1~L5). The signals are applied to the RF amplifier (Q1) on the RX UNIT via the band switch (D2).

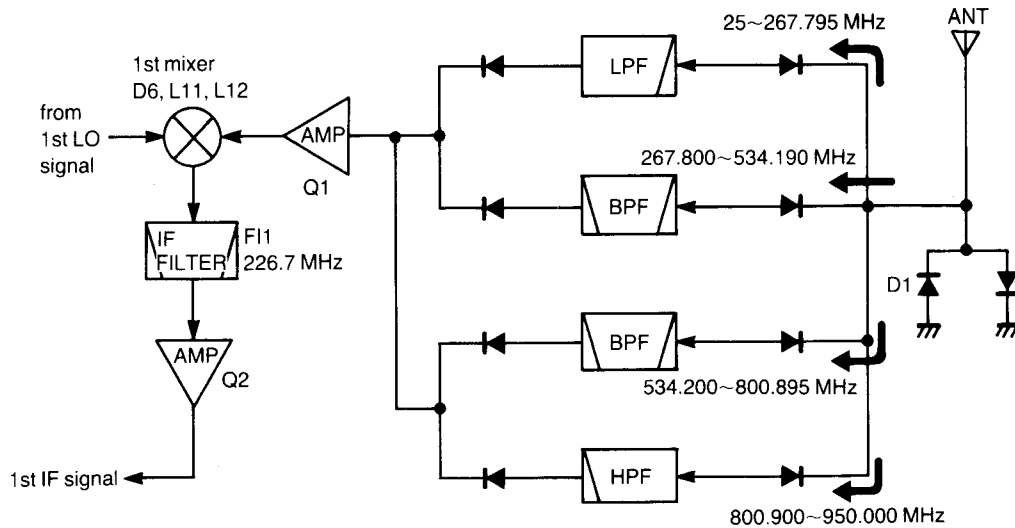
##### (4) 800.900~950.000 MHz (BA4)

RF signals from the band switch (D3) pass through the bandpass filter (C14~C19, L6~L8). The signals are applied to the RF amplifier (Q1) on the RX UNIT via the band switch (D4).

#### 3-4-3 1ST MIXER AND 1ST IF CIRCUITS (RX UNIT)

The signals from the bandpass filter circuit are amplified at the RF amplifier (Q1, IC1). The amplified signals are mixed with the 1st LO signal from the RX VCO UNIT at the 1st mixer (double balanced mixer, D6, L11, L12) to produce a 226.7 MHz 1st IF signal.

The 1st IF signal is applied to an IF filter (F11) to suppress out-of-band signals. The 1st IF signal is amplified at an IF amplifier (Q2) and then applied to the 2nd mixer (Q3).



RECEIVER RF CIRCUIT

### 3-4-4 2ND MIXER AND 2ND IF CIRCUITS (RX AND BPF B UNITS)

The 2nd mixer circuit converts the 1st IF signal to a 2nd IF signal.

The 1st IF signal from the IF amplifier (Q2) is applied to the 2nd mixer (Q3) and mixed with a 256 MHz 2nd LO signal from the BPF B UNIT to be converted to a 10.7 MHz 2nd IF signal. The 2nd IF signal passes through the crystal filter (FI2) to suppress out-of-band signals. The signal is then amplified at (Q4) and is applied to the IF IC (IC2, pin 16).

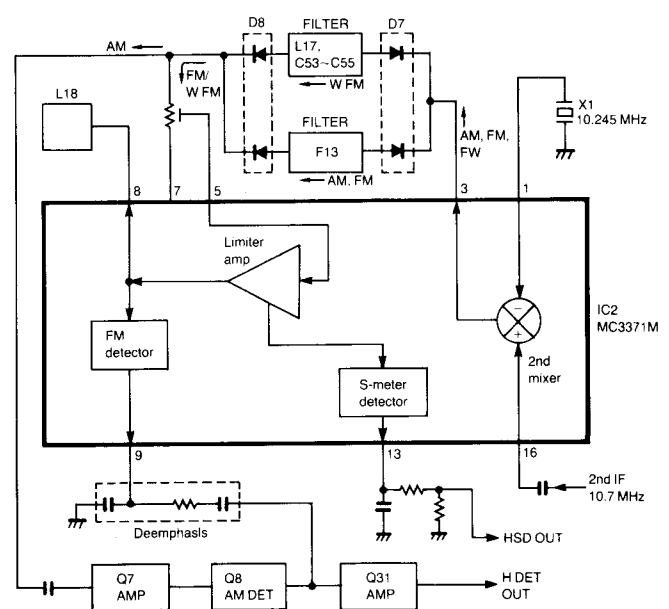
### 3-4-5 3RD IF AND DEMODULATOR CIRCUITS (RX UNIT)

The 3rd mixer circuit converts the 2nd IF signal to a 3rd IF signal.

IC2 contains the 3rd mixer, 3rd local oscillator, limiter, amplifier, quadrature detector, and S-meter detector circuit. The 3rd local oscillator section and X1 generate 10.245 MHz for the 3rd local oscillator signal.

The 2nd IF signal from the IF amplifier (Q4) is applied to the 3rd mixer section of IC2 and is mixed with a 3rd LO signal to be converted to a 455 kHz 3rd IF signal.

In AM/FM mode, the 3rd IF signal from IC2 (pin 3) passes through the ceramic filter (FI3), where unwanted signals are suppressed. In WFM mode, the 3rd IF signal passes through the filter circuit (L17, C53~C55). After passing each filter, the WFM or FM signal is applied to the limiter amplifier section IC2 (pin 5), and the quadrature detector section (IC2, pin 10 and L18) to demodulate the 3rd IF signal to an AF signals. The AM signal is amplified at Q7 and is converted to an AF signal at Q8. The AF signals are applied to Q31 and to the LOGIC UNIT.



3RD IF AND DEMODULATOR CIRCUIT

### 3-4-6 AF AND SQUELCH CIRCUITS (LOGIC UNIT)

These circuits are nearly same as the HAM BAND circuit. Refer to section 3-1-4~3-1-5.

## 3-5 RECEIVER BAND PLL CIRCUITS

### 3-5-1 GENERAL (RF UNIT)

The PLL circuit, using a one chip PLL IC (IC6), directly generates the 1st local 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 VCO signals to the reference oscillator frequency. The PLL IC detects the out-of-step phase and output from IC6 (pin 12). The reference frequency is oscillated at X3.

### 3-5-2 VCO CIRCUIT (RX AND RX VCO UNITS)

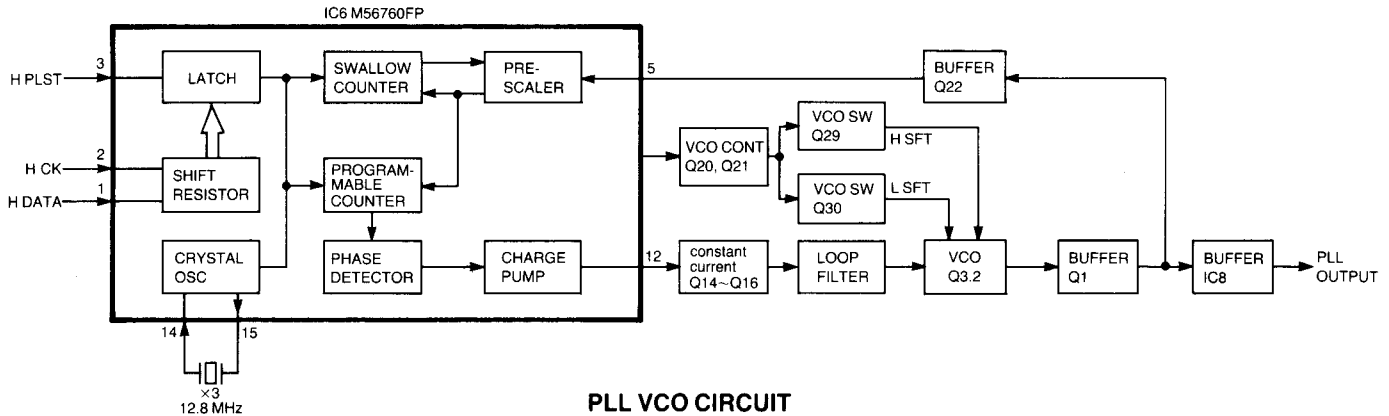
The VCO circuit oscillates the PLL output frequency controlling varactor diodes.

The varactor diodes (D1, D2) provide the frequency control. The control signal from IC6 (pin 6) controls the VCO control circuits (Q20, Q21, Q29, Q30) to switch the VCO frequency.

### 3-5-3 LOOP FILTER CIRCUIT (RF AND RX VCO UNITS)

Phase-detected signals from IC6 (pin 12) are converted to DC voltage by a constant-current circuit (Q14~Q16) and a lag-loop filter (C82, C83, C85, R62, R63) to control the VCO oscillating signal. The PLL lock voltage changes the reactance of varactor diodes in the RX VCO circuit.

The RX VCO output signal is applied to the buffer amplifiers (IC8 and Q22). The PLL output signal passes through the LO filter switches (D14, D15) and then to a 1st mixer circuit.



### 3-6 OTHER CIRCUITS

#### 3-6-1 VOLTAGE LINES

LINE	DESCRIPTION
VCC	This voltage is supplied from a battery pack or external DC power supply.
L+5M	UHF band common 5 V converted from the VCC at Q27 and Q28 on the UHF RF UNIT.
LR5S	UHF 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 UHF RF UNIT.
L+5S	UHF band 5 V controlled by the power saver function. This voltage is converted from VCC at Q31 and Q32 on the UHF RF UNIT.
LT5	UHF band transmit 5 V controlled by the LTMT signal line. This voltage is converted from the VCC at Q33 and Q34 on the UHF RF UNIT.
H+5M	UHF band common 5 V converted from VCC at Q16 and Q17 on the UHF RF UNIT.

#### 3-6-2 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 in 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.

#### 3-6-3 S-METER CIRCUIT (UHF AND RX UNITS)

The S-meter signal (UHF: "LSD" line, RX: "HSD" line) from the UHF/RX UNIT is applied to the meter comparator (UHF: IC9, pin 3; RX: 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).

# SECTION 4 ADJUSTMENT PROCEDURES

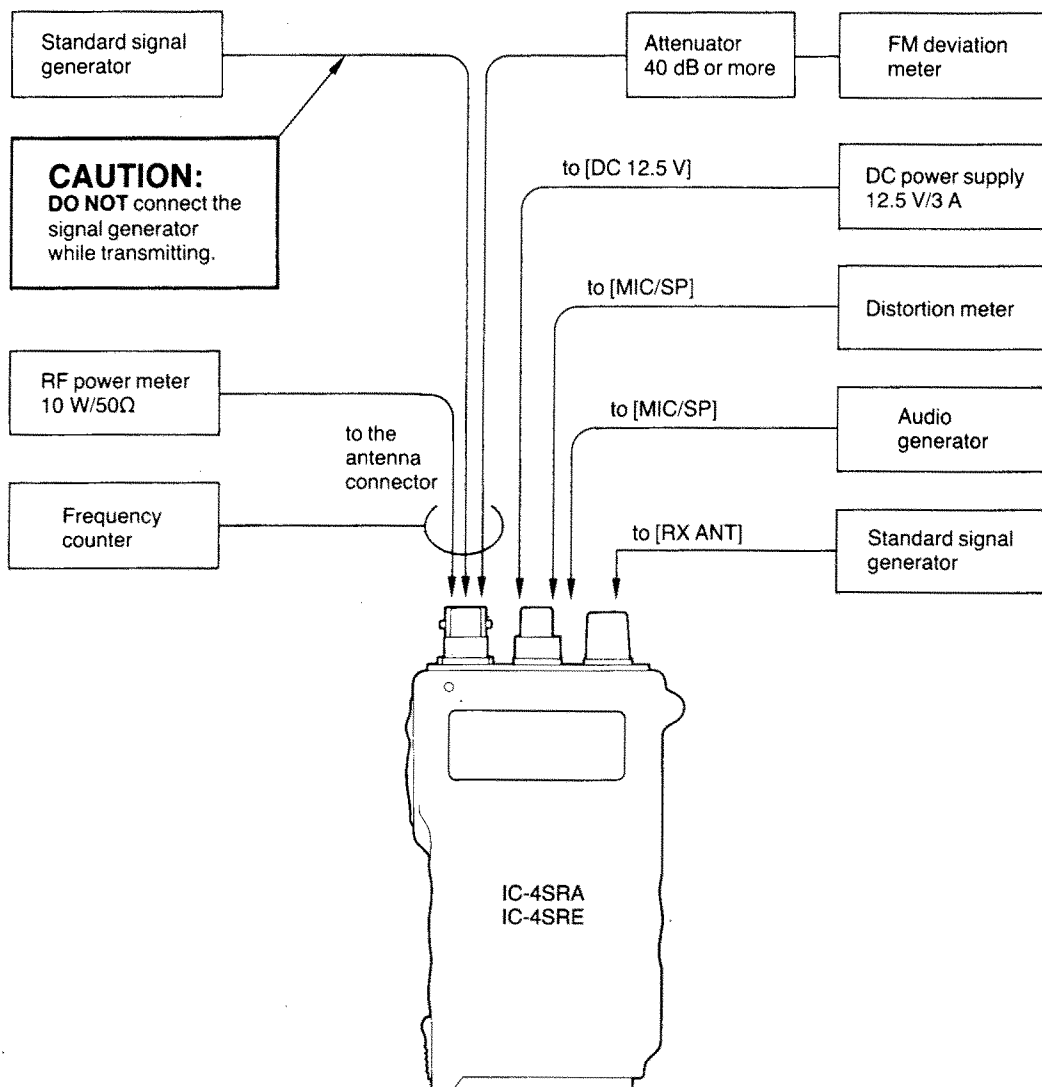
## 4-1 PREPARATION BEFORE SERVICING

### ■ 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

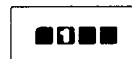


## 4-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
UHF LOCK VOLTAGE	1	<ul style="list-style-type: none"> <li>Displayed frequency: 450.000 MHz (USA) 440.00 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
RECEIVER BAND LOCK VOLTAGE	1	<ul style="list-style-type: none"> <li>Displayed frequency: 800.900 MHz</li> <li>Receiving</li> </ul>	RX	Connect the oscilloscope to CP1.	1.0 V	RX VCO	L2
UHF REFERENCE FREQUENCY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 440.000 MHz</li> <li>Transmitting</li> </ul>	Top panel	Loosely couple the frequency counter to the antenna connector.	440.000 MHz	UHF RF	C61
RECEIVER BAND 1st LO FREQUENCY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 233.300 MHz</li> <li>Receiving</li> </ul>	RX	Connect the frequency counter to CP2.	500.00 MHz	RX	C73
RECEIVER BAND 2nd LO FREQUENCY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 233.300 MHz</li> <li>Receiving</li> </ul>	BPFB	Connect the frequency counter to CP1.	256.00 MHz	RX	L20

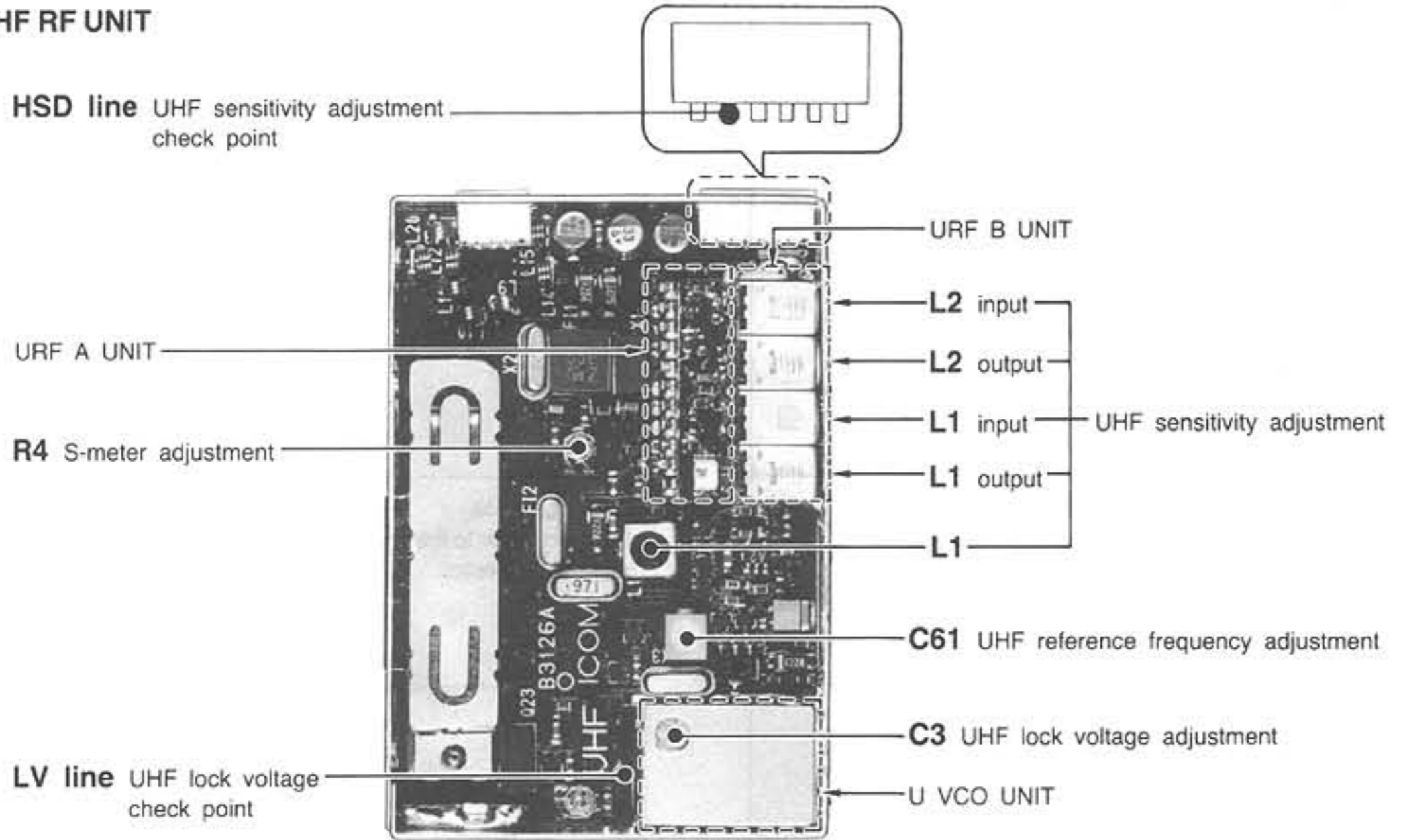
## 4-3 RECEIVER ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
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
	2	<ul style="list-style-type: none"> <li>Displayed frequency: 440.500 MHz (USA) 430.500 MHz (All other versions)</li> </ul>					L1: output L2: input
							VHF RF
RECEIVER BAND SENSITIVITY	1	<ul style="list-style-type: none"> <li>Displayed frequency: 450.000 MHz</li> <li>MODE: FM</li> <li>Connect the SSG to the [RX UNIT] connector and set as: Level : 10 mV (-47 dBm) MOD. : 1 kHz DEV. : <math>\pm</math>3.5 kHz</li> <li>Receiving</li> </ul>	RX	Connect the distortion meter to the [MIC/SP] jack with an 8 $\Omega$ load.	Minimum distortion level (Less than 5%)	RX	L18
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>	LCD display	S/R indicator	S3 (4 dots)	UHF RF	R4

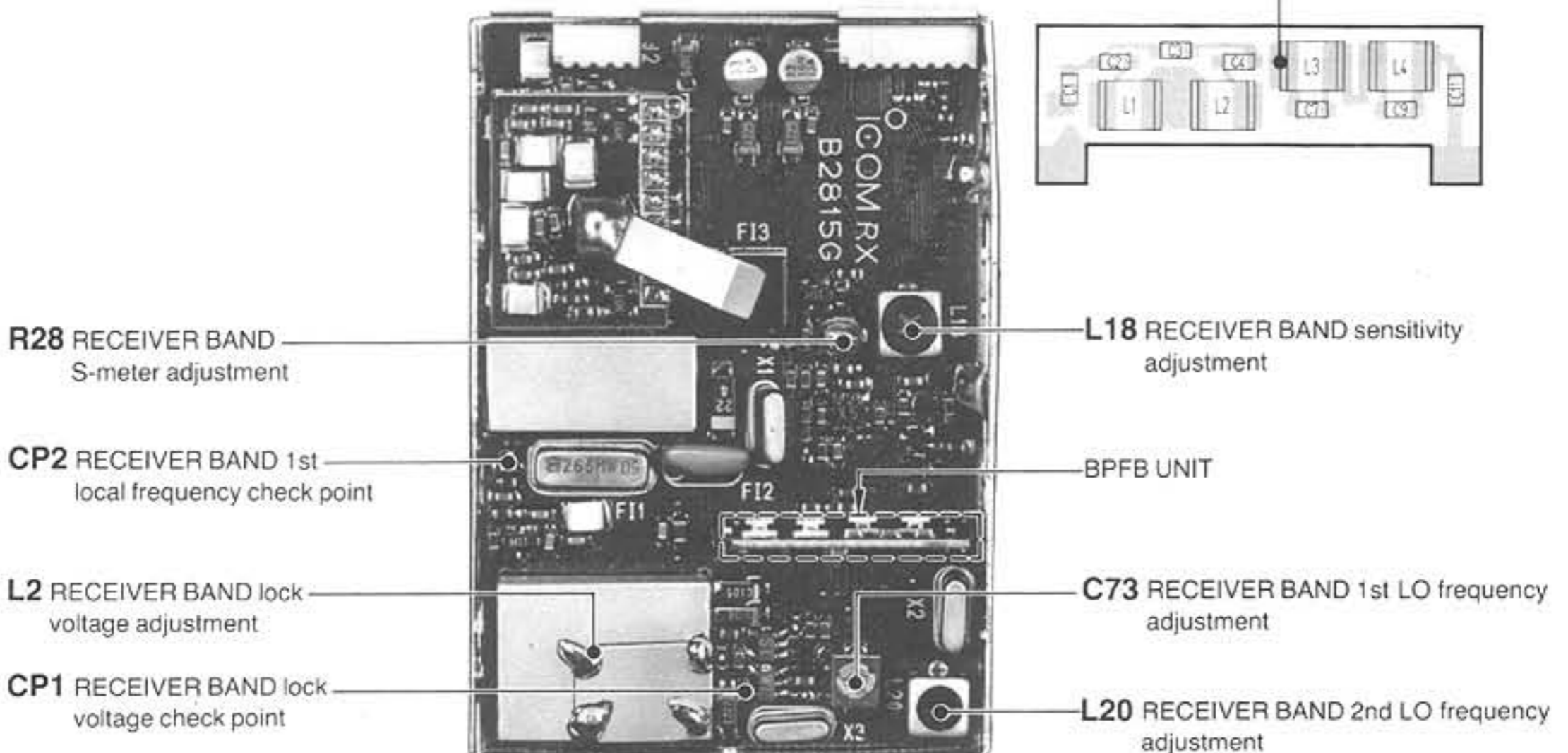


ADJUSTMENT	ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
RECEIVER BAND S-METER	1 <ul style="list-style-type: none"> <li>•Displayed frequency: 450.000 MHz</li> <li>•MODE: FM</li> <li>•Connect the SSG to the [RX ANT] connector and set as:               <ul style="list-style-type: none"> <li>Level : 10 <math>\mu</math>V (-107 dBm)</li> <li>MOD. : 1 kHz</li> <li>DEV. : <math>\pm</math>3.5 kHz</li> </ul> </li> <li>•Receiving</li> </ul>	LCD display	S/RF indicator	S3 (4 dots)	RX	R28

### UHF RF UNIT



### RX UNIT

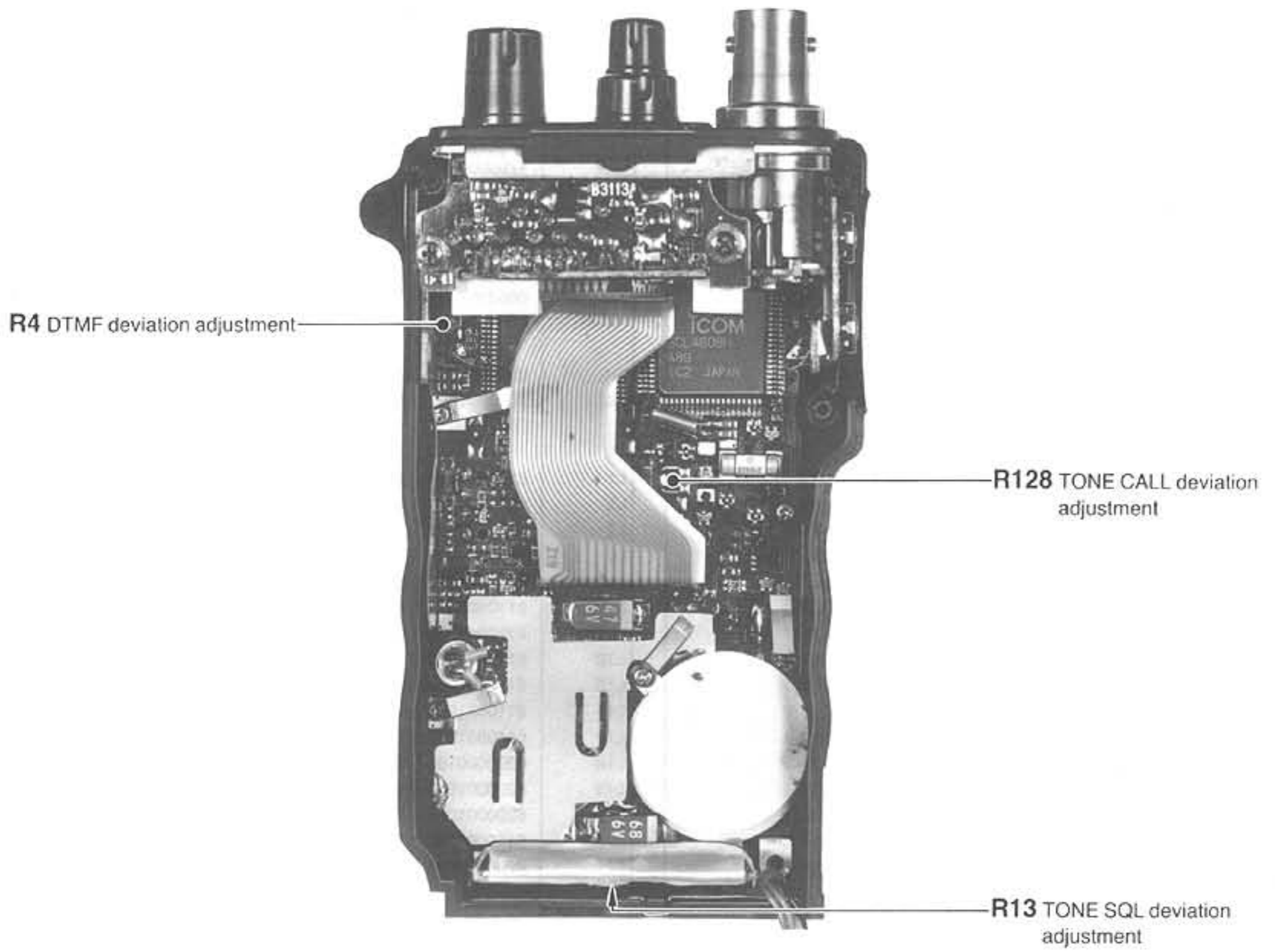


## 4-4 TRANSMITTER ADJUSTMENT

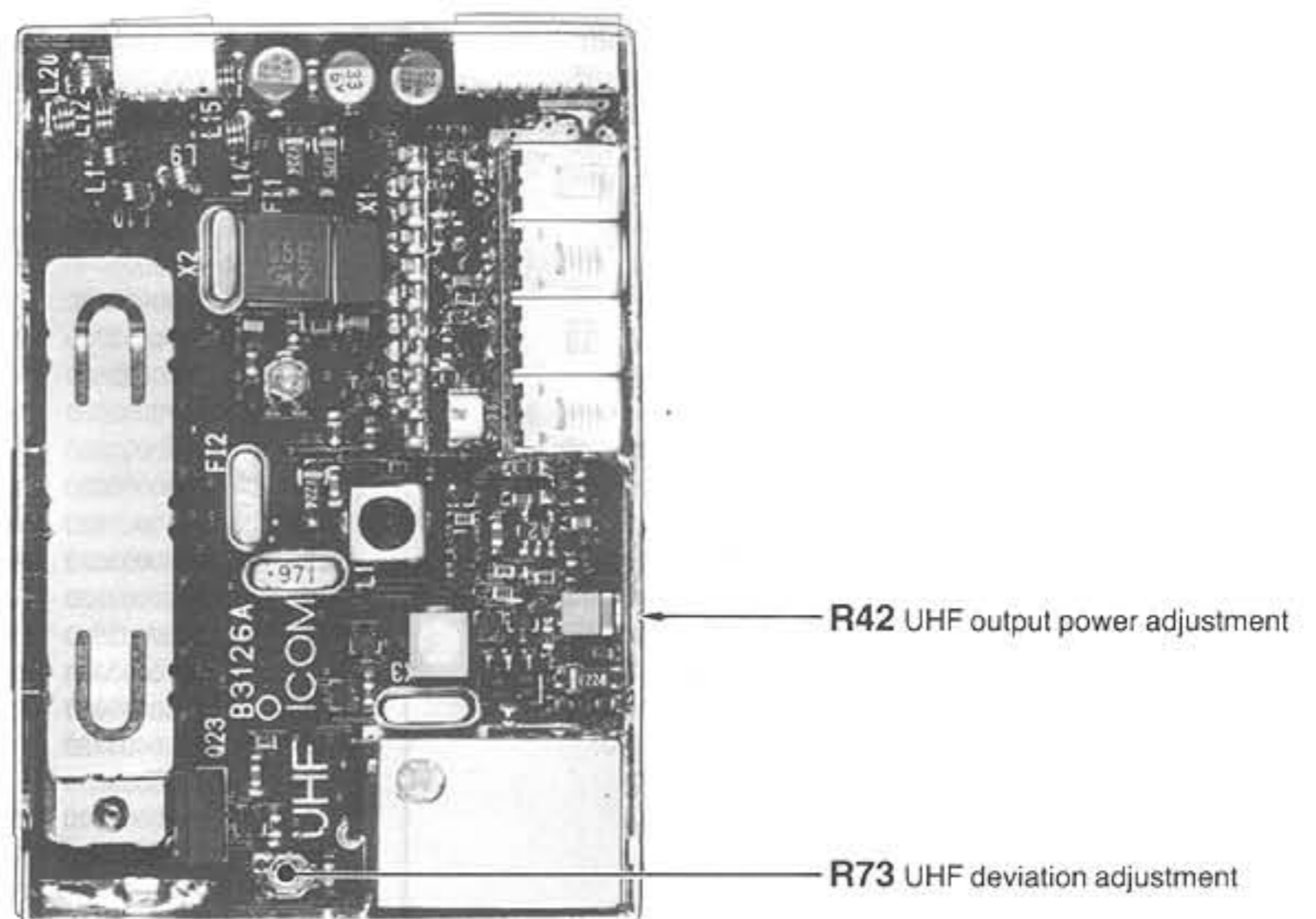
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT		
			UNIT	LOCATION		UNIT	ADJUST	
UHF OUTPUT POWER	1	<ul style="list-style-type: none"> <li>Displayed frequency: 445.000 MHz (USA) 435.000 MHz (All other versions)</li> <li>[HI/LOW]: HI</li> <li>Transmitting</li> </ul>	Top panel	Connect the RF power meter to the antenna connector.	5.0 W	UHF RF	R42	
UHF DEVIATION	1	<ul style="list-style-type: none"> <li>Displayed frequency: 445.000 MHz (USA) 435.000 MHz (All other versions)</li> <li>Connect the audio generator to the [MICROPHONE] connector and set as: Level : 160 mV (USA) 80 mV (All other versions)</li> <li>MOD. : 1.0 kHz</li> <li>Set the FM deviation meter as: HPF : 50 Hz LPF : 20 kHz De-emphasis : OFF DET : (P-P)/2</li> <li>Transmitting</li> </ul>		Connect the FM deviation meter to the antenna connector.	±4.8 kHz			R73
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>		Connect the FM deviation meter to the antenna connector through the attenuator.	±3.5 kHz	LOGIC		R4
TONE CALL DEVIATION (IC-4SRE only)	1	<ul style="list-style-type: none"> <li>Displayed frequency: 435.000 MHz</li> <li>Push and hold the [HMAIN] key while transmitting.</li> </ul>			±3.5 kHz	LOGIC		R128
CTCSS DEVIATION (USA only. Optional for other versions)	1	<ul style="list-style-type: none"> <li>Displayed frequency: 445.000 MHz (USA)</li> <li>TONE frequency: 88.5 Hz</li> <li>Set the FM deviation meter as: HPF : OFF LPF : 3 kHz De-emphasis : OFF DET : (P-P)/2</li> <li>Transmitting</li> </ul>			±0.75 kHz	UT-63		R13 (Refer to 8-1)



■ LIGIC UNIT



■ UHF RF UNIT



# SECTION 5 PARTS LIST

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110002200	IC	MC3372MR
IC3	1110001971	IC	μPC1676G-T1
IC4	1130000830	IC	μPD4094BG-T1
IC6	1130005700	IC	M56760FP
IC7	1110001971	IC	μPC1676G-T1
IC8	1110002490	IC	M5218FP-73A
IC10	1180000530	IC	S-81250HG-RD-T1
IC11	1150000970	IC	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
Q6	1530002640	Transistor	2SC3583 R34-T2B
Q7	1590000970	Transistor	FMA2 T148
Q8	1510000510	Transistor	2SA1576 T107 R
Q9	1590000430	Transistor	DTC144EU T107
Q10	1590000720	Transistor	DTA144EU T107
Q11	1590000660	Transistor	DTA144TU 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	2SA1576 T107 S
Q18	1530002280	Transistor	2SC4081 T107 S
Q19	1510000620	Transistor	2SA1576 T107 S
Q20	1530002280	Transistor	2SC4081 T107 S
Q21	1520000200	Transistor	2SB798-T2 DK
Q22	1530002280	Transistor	2SC4081 T107 S
Q23	1520000080	Transistor	2SB909M R
Q24	1590001160	Transistor	XP1401-(TX).AB
Q25	1530002280	Transistor	2SC4081 T107 S
Q26	1510000620	Transistor	2SA1576 T107 S
Q27	1530000371	Transistor	2SC3356 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	MA862 (TX)
D3	1790000450	Diode	MA862 (TX)
D4	1790000620	Diode	MA77 (TW)
D6	1790000450	Diode	MA862 (TX)
D7	1790000450	Diode	MA862 (TX)
D9	1790000450	Diode	MA862 (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	MA862 (TX)
D20	1790000620	Diode	MA77 (TW)

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D21	1790000620	Diode	MA77 (TW)
D22	1790000620	Diode	MA77 (TW)
X1	6070000080	Discriminator	CDBM455C16
X2	6050007220	Crystal	CR-328 UM-1/T 35.34510 MHz
X3	6050007230	Crystal	CR-329 UM-1/T 12.80000 MHz
FI1	2020000550	Ceramic Filter	CFUM455E
FI2	2010001230	Filter	35M15B 35.8 000M (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
L21	6200000090	Coil	LQN 2A 18NM
R1	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R2	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω)
R3	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R4	7310002590	Trimmer	RV-109 (RH03 A3AJ3X0BA) 222
R5	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R6	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R7	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R8	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R9	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R10	7030003430	Resistor	ERJ3GEYJ 821 V (820Ω)
R11	7030003670	Resistor	ERJ3GEYJ 823 V (82 kΩ)
R12	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R13	7030003410	Resistor	ERJ3GEYJ 561 V (560Ω)
R14	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R15	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R16	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R17	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R18	7030003660	Resistor	ERJ3GEYJ 683 V (68 kΩ)
R19	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω)
R27	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R28	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R29	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R30	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R31	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R32	7030003300	Resistor	ERJ3GEYJ 680 V (68Ω)
R34	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R35	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R37	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R38	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R39	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R40	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R41	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R42	7310003520	Trimmer	RV-224 (RH03 AVA15J) 104
R44	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R45	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R46	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R47	7030003650	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R48	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R49	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R50	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R51	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R52	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R53	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R54	7030003320	Resistor	ERJ3GEYJ 101 V (100Ω)
R55	7030003380	Resistor	ERJ3GEYJ 331 V (330Ω)
R56	7030003290	Resistor	ERJ3GEYJ 560 V (56Ω)
R57	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R58	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R59	7030003710	Resistor	ERJ3GEYJ 184 V (180 kΩ)
R60	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R61	7030003370	Resistor	ERJ3GEYJ 271 V (270Ω)
R62	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
	7030003660	Resistor	ERJ3GEYJ 683 V (68 kΩ) (#03, #04, #97, #13, #14)
R63	7030003670	Resistor	ERJ3GEYJ 823 V (82 kΩ)
R64	7030003740	Resistor	ERJ3GEYJ 334 V (330 kΩ)
R65	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R66	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R67	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R68	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R69	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R70	7510000180	Thermistor	DTN-T203S223LS (T)
R71	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R72	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 kΩ)
R73	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA) 473
R74	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R75	7030003660	Resistor	ERJ3GEYJ 683 V (68 kΩ)
R76	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R77	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R78	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R79	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R80	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R81	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R82	7030003280	Resistor	ERJ3GEYJ 470 V (47Ω)
R83	7030003240	Resistor	ERJ3GEYJ 220 V (22Ω)
R84	7030003230	Resistor	ERJ3GEYJ 180 V (18Ω)
R85	7030003210	Resistor	ERJ3GEYJ 120 V (12Ω)
R86	7030003340	Resistor	ERJ3GEYJ 151 V (150Ω)
R87	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R88	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R89	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R90	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R91	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R92	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R93	7030003340	Resistor	ERJ3GEYJ 151 V (150Ω)
R94	7510000200	Thermistor	DTN-T203U473LS (T)
R95	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R96	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R97	7030003670	Resistor	ERJ3GEYJ 823 V (82 kΩ)
R98	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R99	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R100	7030003770	Resistor	ERJ3GEYJ 564 V (560 kΩ)
R101	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R102	7030000440	Resistor	MCR10EZJHJ 3.3 kΩ (332)
R103	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R104	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R106	7510000430	Thermistor	DTN-T203K202LS (T)
R107	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R108	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)

## [UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R109	7030003660	Resistor	ERJ3GEYJ 683 V (68 kΩ)
R110	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R111	7030003410	Resistor	ERJ3GEYJ 561 V (560Ω)
R112	7030003410	Resistor	ERJ3GEYJ 561 V (560Ω)
R113	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R114	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
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	4030003940	Ceramic	GRM39 SL 010C 50PT
C49	4030004000	Ceramic	GRM39 SL 070D 50PT
C50	4030008840	Ceramic	GRM39 SL 1R5C 50PT
C51	4030003930	Ceramic	GRM39 SL 0R5C 50PT
C52	4030008840	Ceramic	GRM39 SL 1R5C 50PT
C53	4030003990	Ceramic	GRM39 SL 060D 50PT
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	ECR-JA020 E12W
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

[UHF RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
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	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C133	4030008840	Ceramic	GRM39 SL 1R5C 50PT
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
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
C145	4030003890	Ceramic	GRM39 B 471K 50PT
EP2	0910030741	P.C. Board	B 3126A (UHF RF)

[URF A 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 (47Ω)
R2	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R3	7030003280	Resistor	ERJ3GEYJ 470 V (47Ω)
R4	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ) (#05)
	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ) (#03, #04, #07, #13, #14)
R5	7030003280	Resistor	ERJ3GEYJ 470 V (47Ω)
R6	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ) (#05)
	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ) (#03, #04, #07, #13, #14)
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	0910031132	P.C. Board	B 2845B (U RFA)
EP2	6510008580	Lead Frame	PT2.0-0.7-16.5 (K)

[URF B 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)
L1	6200001520	Coil	MLF2012D R82K-T
L2	6110001990	Coil	LA-223
R1	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R2	7030003320	Resistor	ERJ3GEYJ 101 V (100Ω)
R3	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R4	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)

[U VCO UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
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 (100Ω)
R9	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
C1	4030004240	Ceramic	GRM39 B 102K 50PT
C2	4030004010	Ceramic	GRM39 SL 080D 50PT
C3	4610001270	Trimmer	ECR-JA010 A12W
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)

[RX UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110001971	IC	μPC1676G-T1
IC2	1110002430	IC	MC3371MR
IC4	1130000830	IC	μPD4094BG-T1
IC5	1130003760	IC	TC4S81F (TE85R)
IC6	1130005700	IC	M56760FP
IC7	1180000530	IC	S-81250HG-RD-T1
IC8	1110001971	IC	μPC1676G-T1
Q1	1530002640	Transistor	2SC3583 R34-T2B
Q2	1530002570	Transistor	2SC4405-3-TR
Q3	1530002560	Transistor	2SC4403-3-TR
Q4	1530002020	Transistor	2SC3770-3-TA
Q5	1590000720	Transistor	DTA144EU T107
Q6	1590000720	Transistor	DTA144EU T107
Q7	1590000780	Transistor	IMX5 T109
Q8	1530002280	Transistor	2SC4081 T107 S
Q9	1530002280	Transistor	2SC4081 T107 S
Q10	1590000660	Transistor	DTC144TU T107
Q11	1530002560	Transistor	2SC4403-3-TR
Q12	1530002560	Transistor	2SC4403-3-TR
Q13	1590000430	Transistor	DTC144EU T107
Q14	1590001210	Transistor	XP5601-(TX).AB
Q15	1590000620	Transistor	FMS1 T148
Q16	1590000670	Transistor	FMW1 T148
Q20	1590000430	Transistor	DTC144EU T107
Q21	1590000440	Transistor	DTA143ZU T107
Q22	1530002560	Transistor	2SC4403-3-TR
Q23	1520000200	Transistor	2SB798-T2 DK
Q24	1530002280	Transistor	2SC4081 T107 S
Q25	1510000510	Transistor	2SA1576 T107 R
Q26	1530002280	Transistor	2SC4081 T107 S
Q27	1590000440	Transistor	DTA143ZU T107
Q28	1590000430	Transistor	DTC144EU T107
Q29	1590000650	Transistor	DTA144TU T107
Q30	1590001050	Transistor	DTC114TU T107
Q31	1530002280	Transistor	2SC4081 T107 S
D1	1790000490	Diode	HSM88AS-TR
D2	1790000450	Diode	MA862 (TX)

[RX UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D3	1790000450	Diode	MA862 (TX)
D4	1790000450	Diode	MA862 (TX)
D5	1790000450	Diode	MA862 (TX)
D6	1790000890	Diode	ND433G
D7	1790000450	Diode	MA862 (TX)
D8	1790000450	Diode	MA862 (TX)
D14	1790000450	Diode	MA862 (TX)
D15	1790000450	Diode	MA862 (TX)
D16	1160000060	Diode	DAN202U T107
D17	1160000060	Diode	DAN202U T107
D18	1750000160	Diode	DA114 T107
D19	1750000160	Diode	DA114 T107
X1	6050007430	Crystal	CR-355
X2	6050007420	Crystal	CR-354
X3	6050007230	Crystal	CR-329 UM-1/T 12.80000 MHz
F11	2020000760	Ceramic Filter	EFCH266MWNS2
F12	2020000820	Ceramic Filter	SFE10.7MS2W-A
F13	2020000550	Ceramic Filter	CFUM455E
L1	6200000130	Coil	LQN 2A 47NM
L2	6200000110	Coil	LQN 2A 33NM
L3	6200000110	Coil	LQN 2A 33NM
L4	6200000080	Coil	LQH 3N R56M
L5	6200000050	Coil	LQH 3N R39M
L6	6200000090	Coil	LQN 2A 18NM
L7	6200000110	Coil	LQN 2A 33NM
L8	6200000110	Coil	LQN 2A 33NM
L9	6200000720	Coil	LQN 2A 10NM
L10	6200000720	Coil	LQN 2A 10NM
L11	6200001460	Coil	B5F (458DB-1013P 1)
L12	6200001460	Coil	B5F (458DB-1013P 1)
L13	6200000110	Coil	LQN 2A 33NM
L14	6200000130	Coil	LQN 2A 47NM
L15	6200000100	Coil	LQN 2A 22NM
L16	6200001610	Coil	MLF2012A 3R3K-T
L17	6200001450	Coil	LQH 3N 221K
L18	6150002770	Coil	LS-293
L19	6200000130	Coil	LQN 2A 47NM
L20	6150002930	Coil	LS-287
L23	6200000130	Coil	LQN 2A 47NM
L24	6200000720	Coil	LQN 2A 10NM
L25	6200000100	Coil	LQN 2A 22NM
L26	6200000110	Coil	LQN 2A 33NM
L28	6200000720	Coil	LQN 2A 10NM
L29	6200000720	Coil	LQN 2A 10NM
R1	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R2	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R3	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R4	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R5	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R6	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R7	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R8	7030003380	Resistor	ERJ3GEYJ 331 V (330Ω)
R9	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R10	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω)
R12	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R13	7030003380	Resistor	ERJ3GEYJ 331 V (330Ω)
R14	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R15	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R16	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R17	7030003410	Resistor	ERJ3GEYJ 561 V (560Ω)
R19	7030003430	Resistor	ERJ3GEYJ 821 V (820Ω)

## [RX UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R20	7030003360	Resistor ERJ3GEYJ 221 V (220Ω)
R21	7030003400	Resistor ERJ3GEYJ 471 V (470Ω)
R22	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R23	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R24	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R25	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R26	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R27	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R28	7310002590	Trimmer RV-109 (RH03 A3AJ3X0BA) 222
R29	7030003320	Resistor ERJ3GEYJ 101 V (100Ω)
R30	7030003530	Resistor ERJ3GEYJ 562 V (5.6 kΩ)
R31	7030003590	Resistor ERJ3GEYJ 183 V (18 kΩ)
R32	7030003790	Resistor ERJ3GEYJ 824 V (820 kΩ)
R33	7030003580	Resistor ERJ3GEYJ 153 V (15 kΩ)
R34	7030003720	Resistor ERJ3GEYJ 224 V (220 kΩ)
R35	7030003580	Resistor ERJ3GEYJ 153 V (15 kΩ)
R36	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R37	7030003540	Resistor ERJ3GEYJ 682 V (6.8 kΩ)
R38	7030003400	Resistor ERJ3GEYJ 471 V (470Ω)
R40	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R41	7030003200	Resistor ERJ3GEYJ 100 V (10Ω)
R42	7030003740	Resistor ERJ3GEYJ 334 V (330 kΩ)
R43	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R44	7030003630	Resistor ERJ3GEYJ 393 V (39 kΩ)
R45	7030003420	Resistor ERJ3GEYJ 681 V (680Ω)
R46	7030003660	Resistor ERJ3GEYJ 683 V (68 kΩ)
R47	7030003320	Resistor ERJ3GEYJ 101 V (100Ω)
R48	7030003480	Resistor ERJ3GEYJ 222 V (2.2 kΩ)
R49	7030003700	Resistor ERJ3GEYJ 154 V (150 kΩ)
R50	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R51	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R52	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R53	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R54	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R55	7030003200	Resistor ERJ3GEYJ 100 V (10Ω)
R56	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R57	7030003400	Resistor ERJ3GEYJ 471 V (470Ω)
R59	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R60	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R62	7030003460	Resistor ERJ3GEYJ 152 V (1.5 kΩ)
R63	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R68	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R69	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R77	7030003320	Resistor ERJ3GEYJ 101 V (100Ω)
R78	7030003420	Resistor ERJ3GEYJ 681 V (680Ω)
R79	7030003660	Resistor ERJ3GEYJ 683 V (68 kΩ)
R80	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R81	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R82	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R83	7030003430	Resistor ERJ3GEYJ 821 V (820Ω)
R84	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R85	7030003400	Resistor ERJ3GEYJ 471 V (470Ω)
R87	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R88	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R89	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R90	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R91	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R92	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R93	7030003630	Resistor ERJ3GEYJ 393 V (39 kΩ)
R95	7030003390	Resistor ERJ3GEYJ 391 V (390Ω)
R95	7030003420	Resistor ERJ3GEYJ 681 V (680Ω)
R96	7030003770	Resistor ERJ3GEYJ 564 V (560 kΩ)
R97	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R98	7030003480	Resistor ERJ3GEYJ 222 V (2.2 kΩ)
R99	7030003290	Resistor ERJ3GEYJ 560 V (56Ω)
C1	4030004310	Ceramic GRM39 B 103K 25PT

## [RX UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
C2	4030004310	Ceramic GRM39 B 103K 25PT
C3	4030003890	Ceramic GRM39 B 471K 50PT
C4	4030004030	Ceramic GRM39 SL 120J 50PT
C5	4030003970	Ceramic GRM39 SL 040C 50PT
C6	4030004040	Ceramic GRM39 SL 150J 50PT
C7	4030003960	Ceramic GRM39 SL 030C 50PT
C8	4030003960	Ceramic GRM39 SL 030C 50PT
C9	4030004170	Ceramic GRM39 SL 101J 50PT
C10	4030004210	Ceramic GRM39 SL 221J 50PT
C11	4030004110	Ceramic GRM39 SL 560J 50PT
C12	4030009210	Ceramic GRM39 SL 391J 50PT
C13	4030004150	Ceramic GRM39 SL 820J 50PT
C14	4030003890	Ceramic GRM39 B 471K 50PT
C15	4030003890	Ceramic GRM39 B 471K 50PT
C16	4030004020	Ceramic GRM39 SL 100D 50PT
C17	4030004050	Ceramic GRM39 SL 220J 50PT
C18	4030004020	Ceramic GRM39 SL 100D 50PT
C19	4030004060	Ceramic GRM39 SL 270J 50PT
C20	4030008800	Ceramic GRM39 SL 090D 50PT
C21	4030003990	Ceramic GRM39 SL 060D 50PT
C22	4030003970	Ceramic GRM39 SL 040C 50PT
C23	4030003990	Ceramic GRM39 SL 060D 50PT
C24	4030003960	Ceramic GRM39 SL 030C 50PT
C25	4030003960	Ceramic GRM39 SL 030C 50PT
C27	4030004310	Ceramic GRM39 B 103K 25PT
C28	4030008790	Ceramic GRM39 F 104Z 25PT
C29	4030004240	Ceramic GRM39 B 102K 50PT
C30	4030004240	Ceramic GRM39 B 102K 50PT
C31	4030004310	Ceramic GRM39 B 103K 25PT
C32	4030003890	Ceramic GRM39 B 471K 50PT
C33	4030004310	Ceramic GRM39 B 103K 25PT
C34	4030004240	Ceramic GRM39 B 102K 50PT
C35	4030003990	Ceramic GRM39 SL 060D 50PT
C36	4030003890	Ceramic GRM39 B 471K 50PT
C37	4550003000	Tantalum TEMSVB 0G 226M-12 L
C38	4030004310	Ceramic GRM39 B 103K 25PT
C39	4030003890	Ceramic GRM39 B 471K 50PT
C40	4030004080	Ceramic GRM39 SL 390J 50PT
C41	4030004080	Ceramic GRM39 SL 390J 50PT
C42	4030004310	Ceramic GRM39 B 103K 25PT
C43	4030003890	Ceramic GRM39 B 471K 50PT
C44	4030003890	Ceramic GRM39 B 471K 50PT
C45	4030004310	Ceramic GRM39 B 103K 25PT
C46	4030004240	Ceramic GRM39 B 102K 50PT
C47	4030004310	Ceramic GRM39 B 103K 25PT
C48	4030004240	Ceramic GRM39 B 102K 50PT
C49	4030004050	Ceramic GRM39 SL 220J 50PT
C50	4030004130	Ceramic GRM39 SL 680J 50PT
C51	4030008790	Ceramic GRM39 F 104Z 25PT
C52	4030008790	Ceramic GRM39 F 104Z 25PT
C53	4030004210	Ceramic GRM39 SL 221J 50PT
C54	4030004210	Ceramic GRM39 SL 221J 50PT
C55	4030004210	Ceramic GRM39 SL 221J 50PT
C56	4030008790	Ceramic GRM39 F 104Z 25PT
C57	4030008790	Ceramic GRM39 F 104Z 25PT
C58	4030008790	Ceramic GRM39 F 104Z 25PT
C59	4030003890	Ceramic GRM39 B 471K 50PT
C60	4030003890	Ceramic GRM39 B 471K 50PT
C61	4030004240	Ceramic GRM39 B 102K 50PT
C62	4030004310	Ceramic GRM39 B 103K 25PT
C63	4030008920	Ceramic C1608 JB 1C 473K-T-A
C64	4030004240	Ceramic GRM39 B 102K 50PT
C65	4030003890	Ceramic GRM39 B 471K 50PT
C66	4030003890	Ceramic GRM39 B 471K 50PT
C67	4030009180	Ceramic GRM39 UJ 060D 50PT
C68	4030003890	Ceramic GRM39 B 471K 50PT
C69	4030003890	Ceramic GRM39 B 471K 50PT
C70	4030009200	Ceramic GRM39 UJ 100D 50PT
C71	4030009190	Ceramic GRM39 UJ 080D 50PT

[RX UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C72	4030003890	Ceramic	GRM39 B 471K 50PT
C73	4610001260	Trimmer	ECR-JA020 E12W
C74	4030008810	Ceramic	GRM39 CH 150J 50PT
C75	4030008820	Ceramic	GRM39 CH 390J 50PT
C76	4030008790	Ceramic	GRM39 F 104Z 25PT
C77	4030003890	Ceramic	GRM39 B 471K 50PT
C78	4030008790	Ceramic	GRM39 F 104Z 25PT
C79	4030004240	Ceramic	GRM39 B 102K 50PT
C80	4030004000	Ceramic	GRM39 SL 070D 50PT
C82	4550002850	Tantalum	TESVA 1V 104K1-8L
C83	4550000460	Tantalum	TESVA 1C 105M1-8L
C85	4550000490	Tantalum	TESVA 1V 223M1-8L
C89	4030004240	Ceramic	GRM39 B 102K 50PT
C91	4030004240	Ceramic	GRM39 B 102K 50PT
C98	4030008790	Ceramic	GRM39 F 104Z 25PT
C99	4030003890	Ceramic	GRM39 B 471K 50PT
C100	4030003890	Ceramic	GRM39 B 471K 50PT
C101	4030004020	Ceramic	GRM39 SL 100D 50PT
C102	4030003890	Ceramic	GRM39 B 471K 50PT
C103	4030003980	Ceramic	GRM39 SL 050C 50PT
C104	4030003980	Ceramic	GRM39 SL 050C 50PT
C105	4030003980	Ceramic	GRM39 SL 050C 50PT
C106	4030003970	Ceramic	GRM39 SL 040C 50PT
C107	4030004010	Ceramic	GRM39 SL 080D 50PT
C108	4030003970	Ceramic	GRM39 SL 040C 50PT
C109	4030003890	Ceramic	GRM39 B 471K 50PT
C110	4030004240	Ceramic	GRM39 B 102K 50PT
C111	4550002890	Tantalum	TESVA 1A 225M1-8L
C112	4030004240	Ceramic	GRM39 B 102K 50PT
C113	4550002890	Tantalum	TESVA 1A 225M1-8L
C114	4030003890	Ceramic	GRM39 B 471K 50PT
C115	4550003030	Tantalum	TEMSVA 0J 475M-8L
C116	4510004420	Electrolytic	ECEV0JV330SR
C118	4030003890	Ceramic	GRM39 B 471K 50PT
C120	4030003890	Ceramic	GRM39 B 471K 50PT
C121	4510004430	Electrolytic	ECEV1CV220WR
C122	4030003980	Ceramic	GRM39 SL 050C 50PT
C123	4030003890	Ceramic	GRM39 B 471K 50PT
C124	4030003890	Ceramic	GRM39 B 471K 50PT
C125	4030004040	Ceramic	GRM39 SL 150J 50PT
C126	4030003890	Ceramic	GRM39 B 471K 50PT
C127	4030003980	Ceramic	GRM39 SL 050C 50PT
C128	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C129	4030008790	Ceramic	GRM39 F 104Z 25PT
C130	4030004310	Ceramic	GRM39 B 103K 25PT
C131	4030008920	Ceramic	C1608 JB 1C 473K-T-A
C132	4030003970	Ceramic	GRM39 SL 040C 50PT
C133	4030003970	Ceramic	GRM39 SL 040C 50PT
C134	4030004100	Ceramic	GRM39 SL 470J 50PT
C135	4030004100	Ceramic	GRM39 SL 470J 50PT
EP1	0910028137	P.C. Board	B 2815G (RX)

[BPF A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1790000450	Diode	MA862 (TX)
D2	1790000450	Diode	MA862 (TX)
D3	1790000450	Diode	MA862 (TX)
D4	1790000450	Diode	MA862 (TX)
L1	6200000110	Coil	LQN 2A 33NM
L2	6200000100	Coil	LQN 2A 22NM
L3	6200000090	Coil	LQN 2A 18NM
L4	6200000720	Coil	LQN 2A 10NM
L5	6200000720	Coil	LQN 2A 10NM

[BPF A UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L6	6200000720	Coil	LQN 2A 10NM
L7	6200000720	Coil	LQN 2A 10NM
L8	6200000720	Coil	LQN 2A 10NM
R1	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R2	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R3	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R4	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
C1	4030003980	Ceramic	GRM39 SL 050C 50PT
C2	4030003960	Ceramic	GRM39 SL 030C 50PT
C3	4030003960	Ceramic	GRM39 SL 030C 50PT
C4	4030004020	Ceramic	GRM39 SL 100D 50PT
C5	4030003960	Ceramic	GRM39 SL 030C 50PT
C6	4030003950	Ceramic	GRM39 SL 020C 50PT
C7	4030008840	Ceramic	GRM39 SL 1R5C 50PT
C8	4030003970	Ceramic	GRM39 SL 040C 50PT
C9	4030008840	Ceramic	GRM39 SL 1R5C 50PT
C10	4030003970	Ceramic	GRM39 SL 040C 50PT
C11	4030003890	Ceramic	GRM39 B 471K 50PT
C12	4030003890	Ceramic	GRM39 B 471K 50PT
C13	4030003890	Ceramic	GRM39 B 471K 50PT
C14	4030003960	Ceramic	GRM39 SL 030C 50PT
C15	4030003980	Ceramic	GRM39 SL 050C 50PT
C16	4030003960	Ceramic	GRM39 SL 030C 50PT
C17	4030004020	Ceramic	GRM39 SL 100D 50PT
C18	4030003970	Ceramic	GRM39 SL 040C 50PT
C19	4030003890	Ceramic	GRM39 B 471K 50PT
EP1	0910028063	P.C. Board	B 2832C (BPF A)
EP2	6510008580	Lead Frame	PT2.0-0.7-16.5 (K)

[BPF B UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6200000110	Coil	LQN 2A 33NM
L2	6200000130	Coil	LQN 2A 47NM
L3	6200000100	Coil	LQN 2A 22NM
L4	6200000100	Coil	LQN 2A 22NM
C1	4030008880	Ceramic	GRM39 SL 090D 50PT
C2	4030004100	Ceramic	GRM39 SL 470J 50PT
C3	4030004000	Ceramic	GRM39 SL 070D 50PT
C4	4030004020	Ceramic	GRM39 SL 100D 50PT
C5	4030004030	Ceramic	GRM39 SL 120J 50PT
C6	4030004050	Ceramic	GRM39 SL 220J 50PT
C7	4030003970	Ceramic	GRM39 SL 040C 50PT
C8	4030004060	Ceramic	GRM39 SL 270J 50PT
C9	4030004000	Ceramic	GRM39 SL 070D 50PT
C10	4030004030	Ceramic	GRM39 SL 120J 50PT
C11	4030003930	Ceramic	GRM39 SL 0R5C 50PT
EP1	0910028070	P.C. Board	B 2833 (BPF B)

[RX VCO UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530002560	Transistor	2SC4403-3-TR
Q2	1530000371	Transistor	2SC3356 R25-T2B
Q3	1530000371	Transistor	2SC3356 R25-T2B
D1	1790000530	Diode	MA333 (TW)
D2	1790000530	Diode	MA333 (TW)
D3	1790000620	Diode	MA77 (TW)
L1	6110001980	Coil	LA-222
L2	6110001990	Coil	LA-223
L3	6200001040	Coil	MLF2012E 6R8M-T
R1	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R2	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R3	7030003320	Resistor	ERJ3GEYJ 101 V (100Ω)
R4	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R5	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R6	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R7	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R8	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R9	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R10	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
C1	4030004240	Ceramic	GRM39 B 102K 50PT
C2	4030003930	Ceramic	GRM39 SL 0R5C 50PT
C3	4030004240	Ceramic	GRM39 B 102K 50PT
C4	4030004240	Ceramic	GRM39 B 102K 50PT
C5	4030004020	Ceramic	GRM39 SL 100D 50PT
C6	4030003940	Ceramic	GRM39 SL 010C 50PT
C7	4030003940	Ceramic	GRM39 SL 010C 50PT
C8	4550000550	Tantalum	TESVA 1V 224M1-8L
C9	4550002950	Tantalum	TESVA 0J 335M1-8L
C10	4030004240	Ceramic	GRM39 B 102K 50PT
C11	4030004240	Ceramic	GRM39 B 102K 50PT
C12	4030003890	Ceramic	GRM39 B 471K 50PT
EP1	0910030520	P.C. Board	B 3109 (RX 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 (27Ω)
R2	7030003380	Resistor	ERJ3GEYJ 331 V (330Ω)
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 (100Ω)
R8	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R9	7030003250	Resistor	ERJ3GEYJ 270 V (27Ω)

[PRT UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
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	1140001750	IC	SC-4608H A86
IC2	1140001790	IC	SC-L4808H A90
IC6	1110002400	IC	NJM2107F (TE1)
IC7	1110002400	IC	NJM2107F (TE1)
IC8	1110002410	IC	NJM2406F (TE1)
IC9	1110002410	IC	NJM2406F (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	TC4SU69F (TE85R)
IC16	1130003610	IC	TC4SU69F (TE85R)
IC17	1130003610	IC	TC4SU69F (TE85R)
IC18	1130004200	IC	TC4S66F (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	2SA1576 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)
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)
Q26	1520000430	Transistor	2SB1462-R (TX)
Q27	1540000350	Transistor	2SD2216-S (TX)
Q28	1510000510	Transistor	2SA1576 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)



## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D15	1790000830	Diode	MA132HK (TX) (#03~05, #13, #14)
D16	1790000830	Diode	MA132HK (TX) (#05, #07, #09)
D18	1790000830	Diode	MA132HK (TX)
D19	1790000860	Diode	MA133 (TX) (#04, #14)
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	1790000660	Diode	MA728 (TW)
D37	1790000860	Diode	MA133 (TX)
D38	1790000860	Diode	MA133 (TX)
X1	6060000391	Crystal	CSB800J201T
X2	6060000391	Crystal	CSB800J201T
X3	6050005800	Crystal	DT-26S 32.768 kHz
X4	6060000150	Crystal	CSAC3.58MGC300CD
R1	7410000610	Resistor Array	EXB-V4V 153JV
R3	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R4	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA) 473
R8	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R9	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R11	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R12	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)
R13	7410000610	Resistor Array	EXB-V4V 153JV
R15	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R16	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R17	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R18	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R19	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R20	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 kΩ)
R21	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R22	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R23	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ) (#05)
	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 MΩ) (#03, #04, #07, #09, #13, #14)
R24	7030003400	Resistor	ERJ3GEYJ 471 V (470Ω)
R25	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R26	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R27	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R28	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R29	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R30	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R31	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R32	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R34	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R35	7030003610	Resistor	ERJ3GEYJ 273 V (27 kΩ)
R36	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R41	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω) (#03, #04, #13, #14)
R42	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R43	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R44	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R45	7030003550	Resistor	ERJ3GEYJ 822 V (8.2 kΩ)

## [LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R46	7030003330	Resistor	ERJ3GEYJ 121 V (120Ω)
R63	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R64	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R65	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R66	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R67	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R68	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R69	7410000560	Resistor Array	EXB-V4V 474JV
R73	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R74	7410000590	Resistor Array	EXB-V4V 473JV
R76	7410000590	Resistor Array	EXB-V4V 473JV
R78	7410000590	Resistor Array	EXB-V4V 473JV
R80	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R81	7410000560	Resistor Array	EXB-V4V 474JV
R83	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R84	7030003710	Resistor	ERJ3GEYJ 184 V (180 kΩ)
R85	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R86	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)
R87	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R88	7030003730	Resistor	ERJ3GEYJ 274 V (270 kΩ)
R89	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R90	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R91	7410000560	Resistor Array	EXB-V4V 474JV
R92	7410000580	Resistor Array	EXB-V4V 224JV
R93	7410000560	Resistor Array	EXB-V4V 474JV (#03, #04, #13, #14)
R95	7410000600	Resistor Array	EXB-V4V 222JV
R97	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R98	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R100	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R101	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R102	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R103	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R104	7030004020	Resistor	ERJ3GEYG 243 V (24 kΩ)
R105	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R106	7030003360	Resistor	ERJ3GEYJ 221 V (220Ω)
R107	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R108	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R109	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R110	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R111	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R112	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R113	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R114	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R115	7030003740	Resistor	ERJ3GEYJ 334 V (330 kΩ)
R116	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R117	7030003720	Resistor	ERJ3GEYJ 224 V (220 kΩ)
R118	7030003610	Resistor	ERJ3GEYJ 273 V (27 kΩ)
R121	7410000570	Resistor Array	EXB-V8V 474JV
R122	7410000570	Resistor Array	EXB-V8V 474JV
R123	7410000570	Resistor Array	EXB-V8V 474JV
R124	7410000570	Resistor Array	EXB-V8V 474JV
R127	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R128	7310002600	Trimmer	RV-110 (RH03 A3AS4X0AA) 473 (#03, #04, #013, #14)
R130	7030003840	Resistor	ERJ3GEYJ 225 V (2.2 MΩ) (#03, #04, #13, #14)
R131	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R132	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R134	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R135	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R136	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R137	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R138	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R139	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R140	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R141	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R142	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R143	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R144	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R145	7410000560	Resistor Array	EXB-V4V 474JV
R146	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R147	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R148	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R149	7030003630	Resistor	ERJ3GEYJ 393 V (39 kΩ)
R150	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R151	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R152	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R153	7030003880	Resistor	ERJ3GEYJ 244 V (240 kΩ)
R154	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R155	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω)
R156	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R157	7030003650	Resistor	ERJ3GEYJ 563 V (56 kΩ)
R158	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R159	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R160	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R161	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R163	7030003760	Resistor	ERJ3GEYJ 474 V (470 kΩ)
R164	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R165	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R167	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R168	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R169	7030003380	Resistor	ERJ3GEYJ 331 V (330Ω)
R170	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R171	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
C2	4030004240	Ceramic	GRM39 B 102K 50PT
C3	4030004100	Ceramic	GRM39 SL 470J 50PT
C4	4030004210	Ceramic	GRM39 SL 221J 50PT
C6	4030008960	Ceramic	C2012 JB 1C 104K-T-A
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	4030004040	Ceramic	GRM39 SL 150J 50PT
C32	4030004210	Ceramic	GRM39 SL 221J 50PT
C33	4030004210	Ceramic	GRM39 SL 221J 50PT
C34	4030004240	Ceramic	GRM39 B 102K 50PT
C35	4030004070	Ceramic	GRM39 SL 330J 50PT
C36	4030004240	Ceramic	GRM39 B 102K 50PT
C37	4030009220	Ceramic	GRM39 B 681K 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	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C45	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C46	4550004000	Tantalum	TEMSVD 0J 686M-12 L
C47	4030004240	Ceramic	GRM39 B 102K 50PT

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
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	4030005100	Ceramic	C2012 JB 1H 273K-T-A
C65	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C68	4030008830	Ceramic	GRM39 B 223K 25PT
C69	4030008830	Ceramic	GRM39 B 223K 25PT
C70	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C71	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C72	4030004240	Ceramic	GRM39 B 102K 50PT
C73	4030008790	Ceramic	GRM39 F 104Z 25PT
C74	4030008960	Ceramic	C2012 JB 1C 104K-T-A
C75	4030008960	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	5030000650	LCD	LD-BU5225J (E-5402)
DS2	5040001110	LED	SLM-23VMWS T97B
DS3	5040000880	LED	SLM-13MWS T97B
DS4	5040000880	LED	SLM-13MWS T97B
BT1	3020000160	Lithium Battery	VL2020-1VC
MC1	7700000861	Microphone	WM-62A103
SP1	2510000530	Speaker	T028S14I0810
EP1	8930020150	LCD contact strip	SRCN-873-W
EP2	8930020160	LCD contact strip	SRCN-873
EP3	0910030394	P.C. Board	B 3074D (LOGIC)
EP4	0910028842	P.C. Board	B 2873B FX-873

[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	0910031153	P.C. Board	B 2871C (PTT)
EP2	0910029831	P.C. Board	B 3039A

**[JACK UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION	
D1	1790000680	Diode	SB20-03P-TD
D2	1790000620	Diode	MA77 (TW)
R1	7030000340	Resistor	MCR10EZHZ 470Ω (471)
R2	70300003240	Resistor	ERJ3GEYJ 220 V (22Ω)
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
C7	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
C12	4030004310	Ceramic	GRM39 B 103K 25PT
C13	4030004100	Ceramic	GRM39 SL 470J 50PT
EP1	0910030661	P.C. Board	B 3113A (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 (10Ω)
R2	7030003200	Resistor	ERJ3GEYJ 100 V (10Ω)
R3	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R4	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R5	7030003330	Resistor	ERJ3GEYJ 121 V (120Ω)
R6	7030003330	Resistor	ERJ3GEYJ 121 V (120Ω)
R7	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R8	7030003570	Resistor	ERJ3GEYJ 123 V (12 kΩ)
R9	7030003560	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 (D5.0)
C5	4510003180	Electrolytic	6.3 RC2 100 μF (D5.0)
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 (D5.0)
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	0910031143	P.C. Board	B 2870C (AF)

**[CONNECTOR UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530002280	Transistor	2SC4081 T107 S
L1	6200001280	Coil	MLF2012A 2R7M-T
R1	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R2	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R4	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R5	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R6	7030003320	Resistor	ERJ3GEYJ 101 V (100Ω)
R7	7030003330	Resistor	ERJ3GEYJ 121 V (120Ω)
C1	4550003030	Tantalum	TEMSVA 0J 475M-8L
C2	4030004240	Ceramic	GRM39 B 102K 50PT
C3	4030004310	Ceramic	GRM39 B 103K 25PT
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	0910031032	P.C. Board	B 3114B (CONNECT)
EP2	0910028791	P.C. Board	B 2875A

**[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	P6501-(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)

[AF FIL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
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 222K 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 222K 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)

[TSQL UNIT] (USA version only)

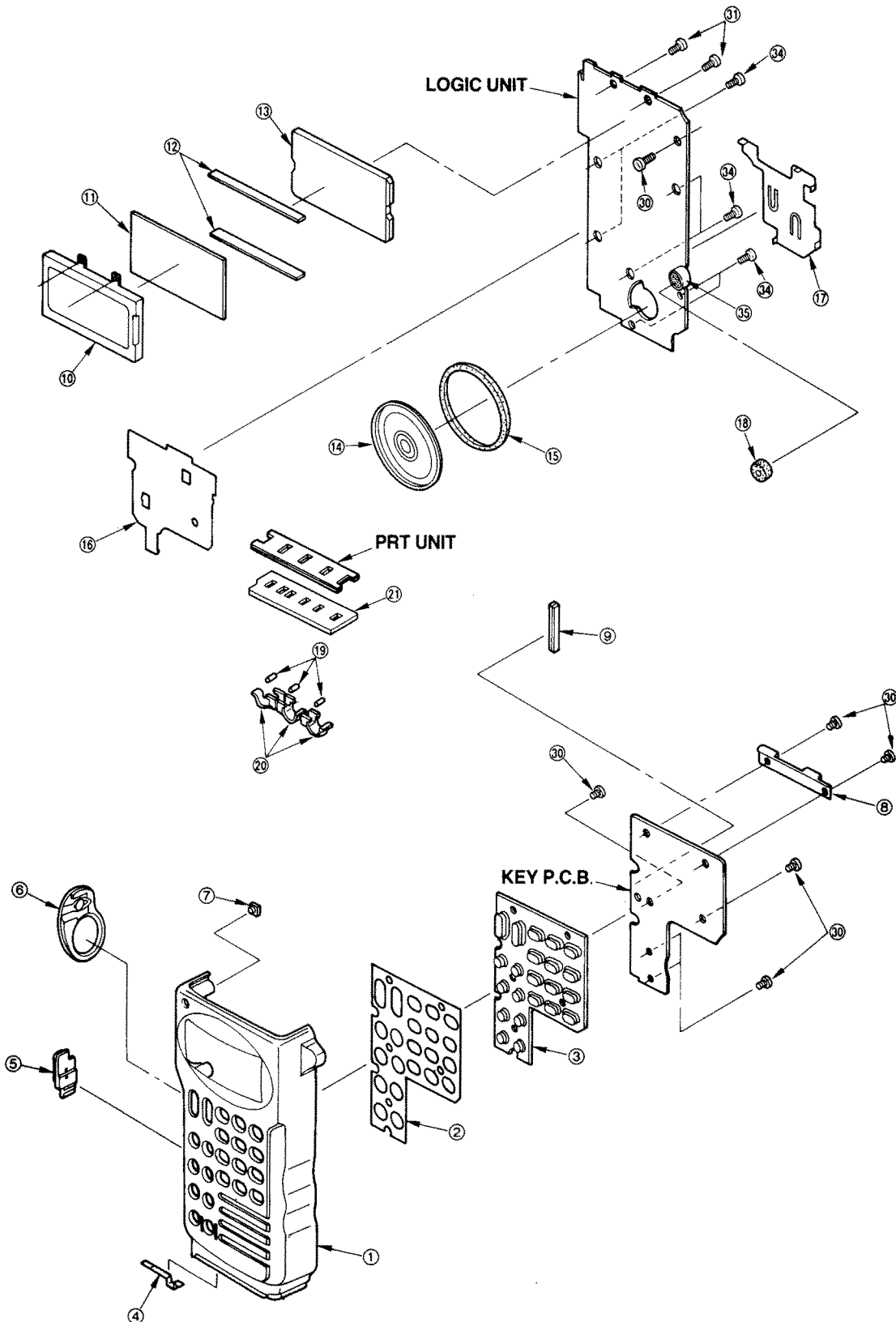
REF. NO.	ORDER NO.	DESCRIPTION	
R18	7030003780	Resistor	ERJ3GEYJ 684 V (680 kΩ)
R19	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R20	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R21	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R22	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R23	7030003480	Resistor	ERJ3GEYJ 222 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	4030006850	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	4030006540	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	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C12	4030006900	Ceramic	C1608 JB 1E 103K-T-A
C13	4550000420	Tantalum	TESVA 1A 105M1-8L
C15	4030006540	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)

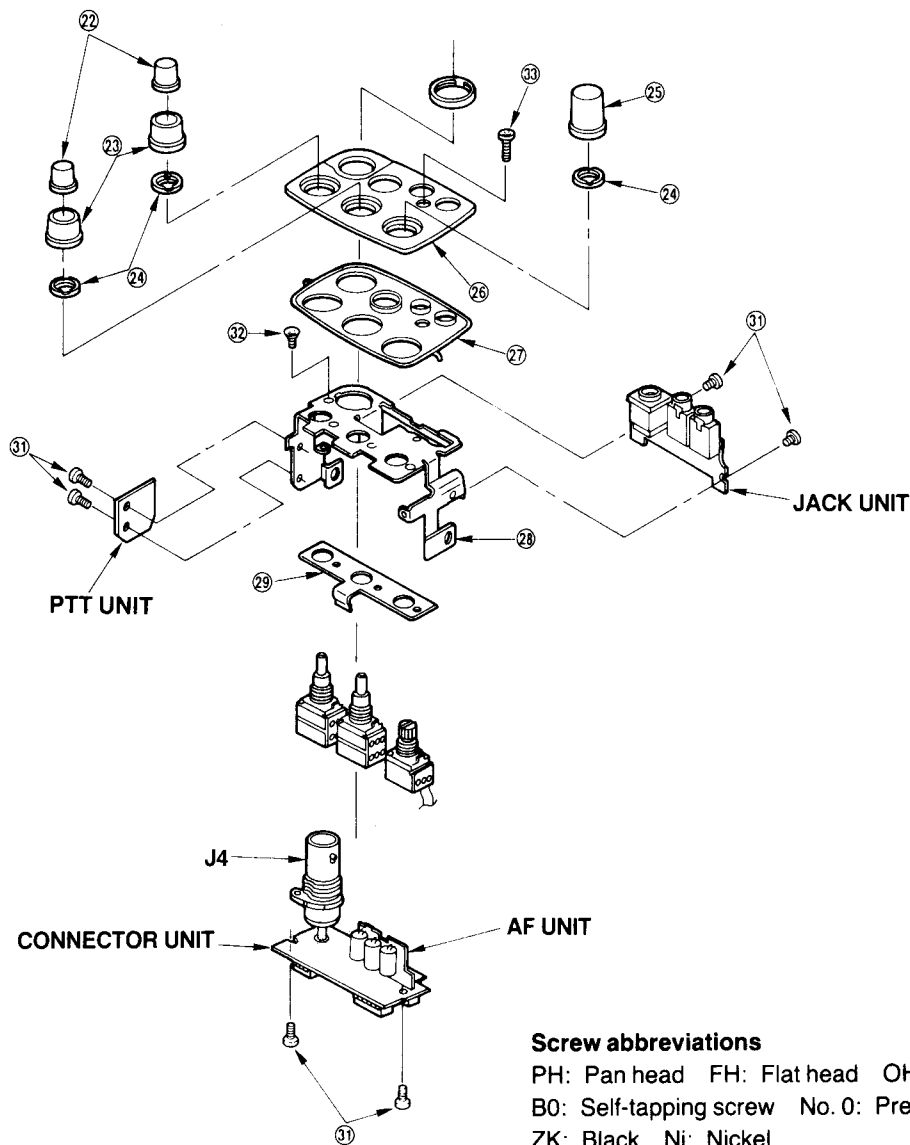
[TSQL UNIT] (USA version only)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130005100	IC	FX365LG
IC2	1130005100	IC	FX365LG
IC3	1130003610	IC	TC4SU69F (TE85R)
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	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R17	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)

# SECTION 6 MECHANICAL PARTS AND DISASSEMBLY

## 6-1 FRONT PARTS



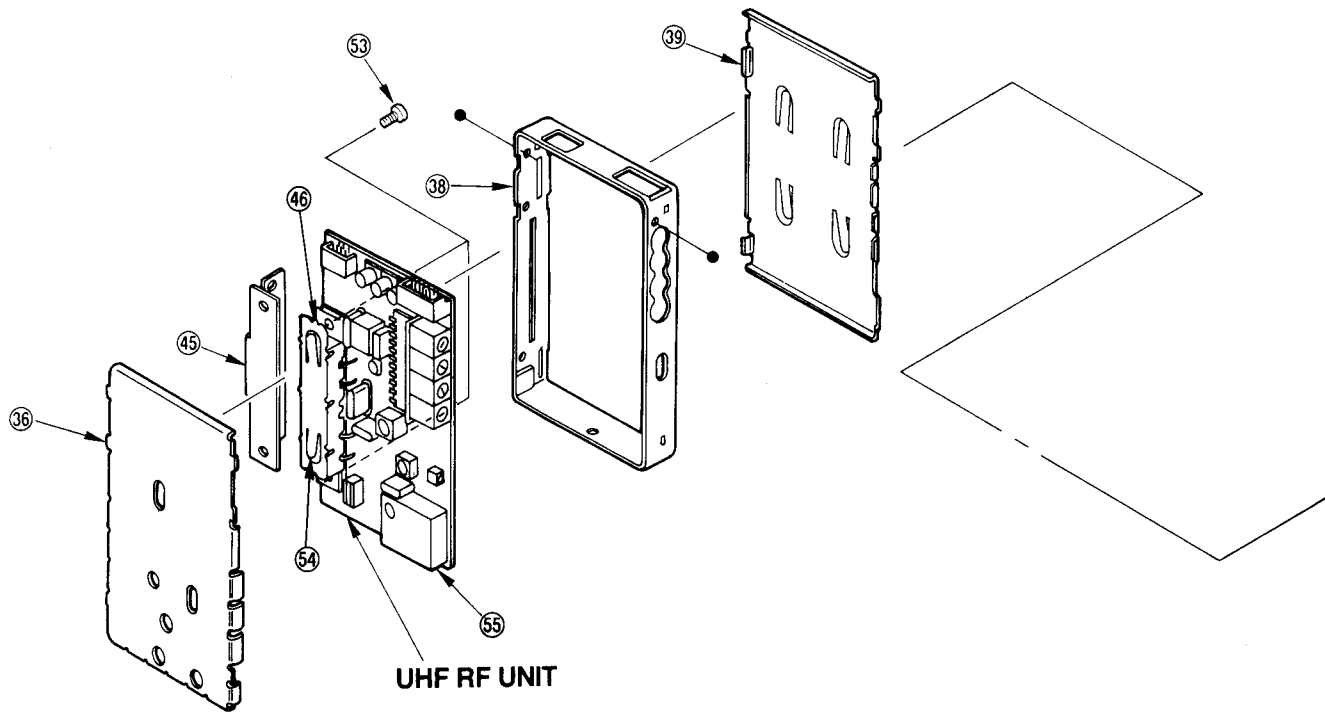


**Screw abbreviations**

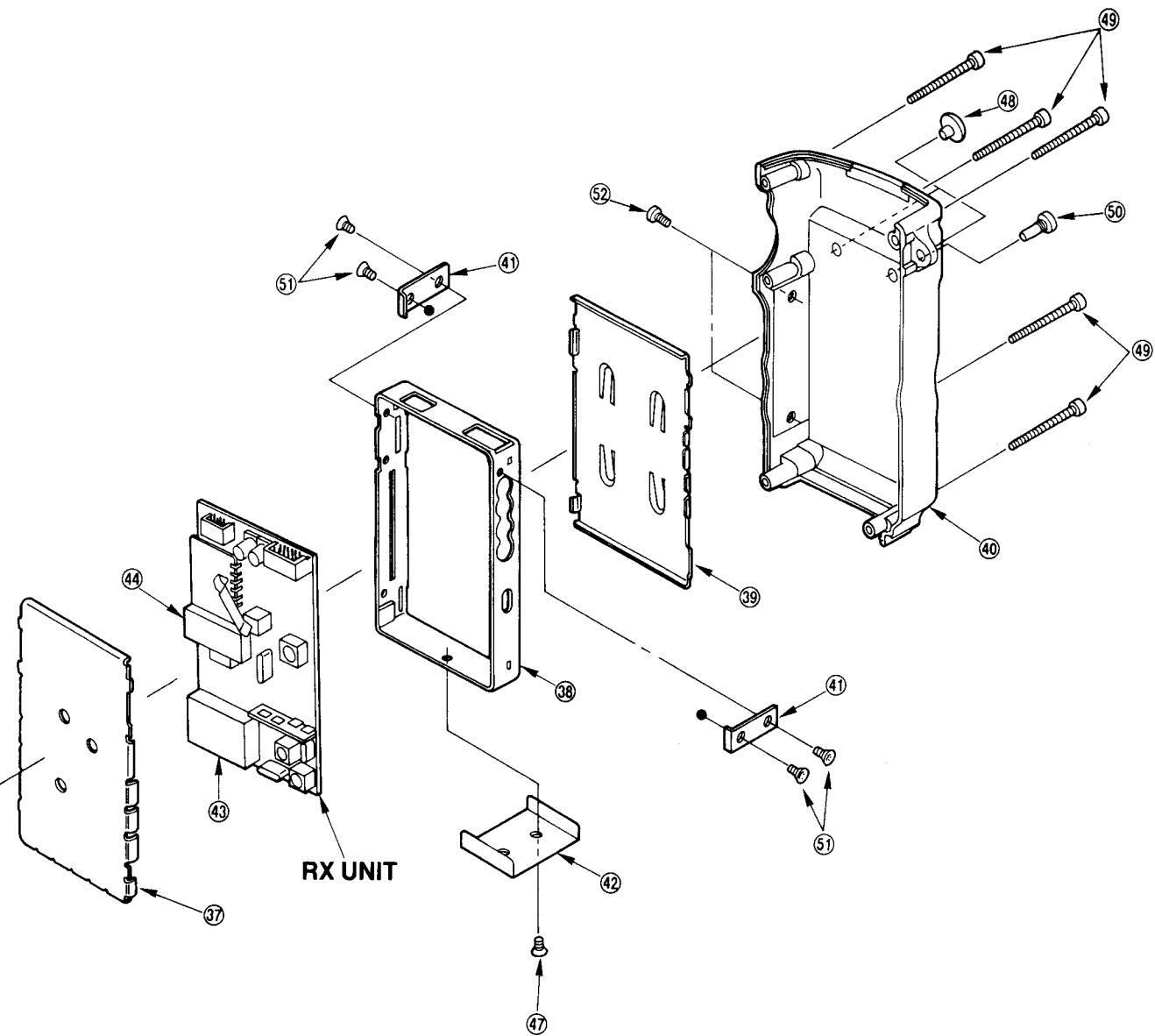
PH: Pan head FH: Flat head OH: Oval countersunk head  
 B0: Self-tapping screw No. 0: Precision-type screw  
 ZK: Black Ni: Nickel

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8210006160	Front panel (G) (#05, #07, #09)	1	⑱	8930021570	873 microphone holder	1
	8210006170	Front panel (H) (#3, #04, #13, #14)	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	8210006400	932 top panel (A)	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	5030000650	LCD LD-BU 5225J	1	㉙	8510006910	LOGIC shield	1
⑫	8930020150	LCD contact strip SRCN-873-W	2	㉚	8810001700	Screw PH No. 0 M1.4×3	7
⑬	8010010690	873 LCD reflector	1	㉛	8810004870	Screw PH No. 0 M2×2.5	8
⑭	2510000530	Speaker TO28S14I0810	1	㉜	8810005580	Screw FH No. 0 M2×2.5	1
⑮	8930018080	870-SP ring	1	㉝	8810005360	Screw PH No. 0 M2×3 ZK	1
⑯	8930020140	CPU shield	1	㉞	8810001720	Screw PH No. 0 M1.4×4	6
⑰	8510006920	LOGIC-A shield	1	㉟	7700000861	Microphone WM-62A 103	1

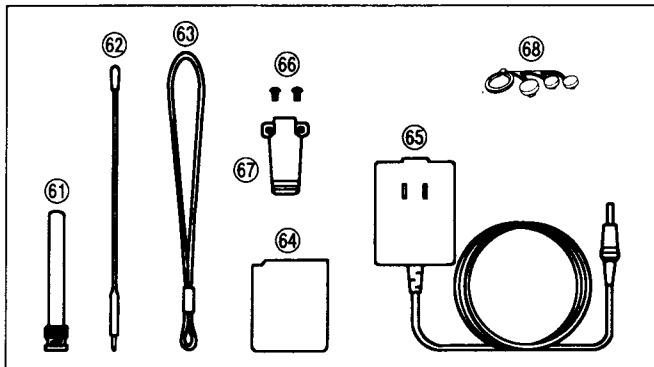
## 6-2 CHASSIS PARTS



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.	LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
③⑥	8510006890	873 top shield	1	④⑥	8930019950	M holder	1
③⑦	8510007150	930 top shield	1	④⑦	8810005580	Screw FH No. 0 M2×2.5	1
③⑧	8510006860	873 unit case	2	④⑧	8010007602	Hole bushing (A)×2	2
③⑨	8510006870	873 bottom shield	2	④⑨	8810006490	Screw PH B0 M2×25 ZK	5
④①	8010010720	873 rear panel	1	⑤①	8820000620	873 screw	1
④②	8930019960	873 unit plate	2	⑤②	8810005580	Screw FH No. 0 M2×2.5	4
④③	8930020340	873 under plate	1	⑤③	8810005700	Screw PH No. 0 M2×4 ZK	2
④④	8510007090	930 VCO case	1	⑤④	8810001770	Screw PH M2×5 Ni	2
④⑤	8510007120	930 DBM case	1	⑤⑤	8510005050	VCO shield Plate	1
④⑥	8930020930	930 plate	1	⑤⑥	8510005940	752 VCO Case	1



### 6-3 ACCESSORIES

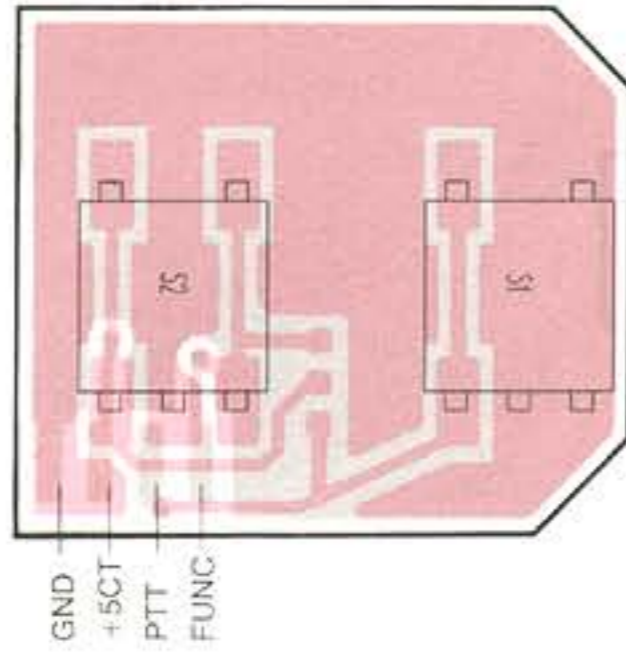


LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
61	Optional product	FA-430BB	1
62	Optional product	AH-20	1
63	8010008970	Strap belt HK-002	1
64	Optional product	BP-82 (#03, #04, #05, #07)	1
		BP-83 (#13, #14)	1
		BP-90 (#09)	1
65	Optional product	BC-77A (#05)	1
		BC-77D (#14)	1
		BC-77E (#13)	1
		BC-77V (#07)	1
		BC-78D (#04)	1
		BC-78E (#03)	1
66	8810005730	Screw OH M3×3 ZK	2
67	8010008620	752 belt clip	1
68	8930020211	873 connector seal	1

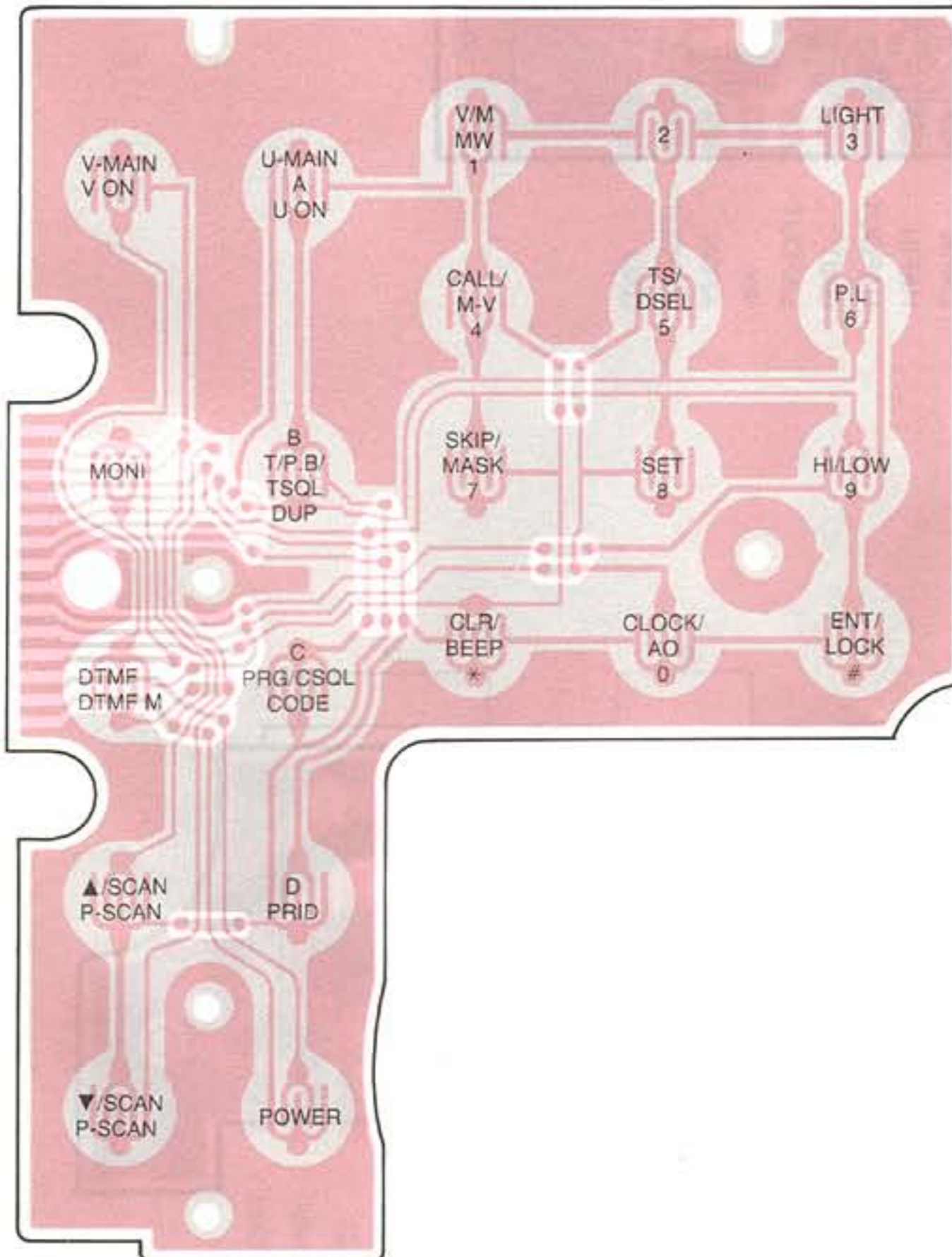


## SECTION 7 BOARD LAYOUTS

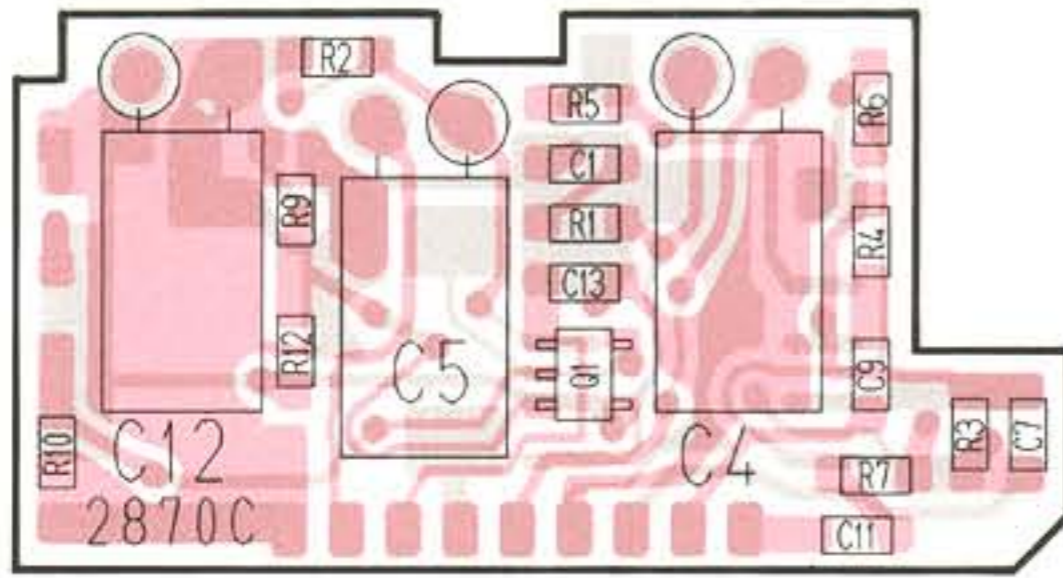
### 7-1 PTT UNIT



### 7-2 KEY UNIT

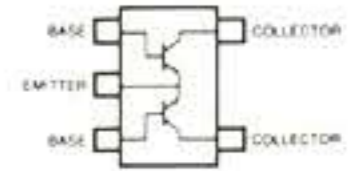


### 7-3 AF UNIT

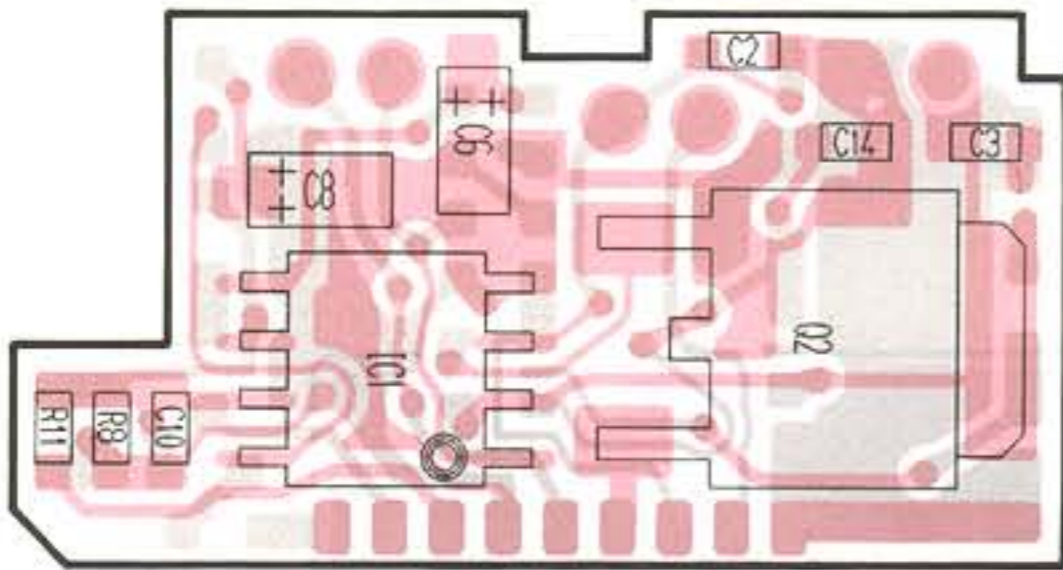


GND  
HAFOUT  
AFON  
Vcc  
LAFOUT  
GND  
HAFOUT  
HAFIN  
LAFIN

**XP1501**  
Q1



Symbol: 5R

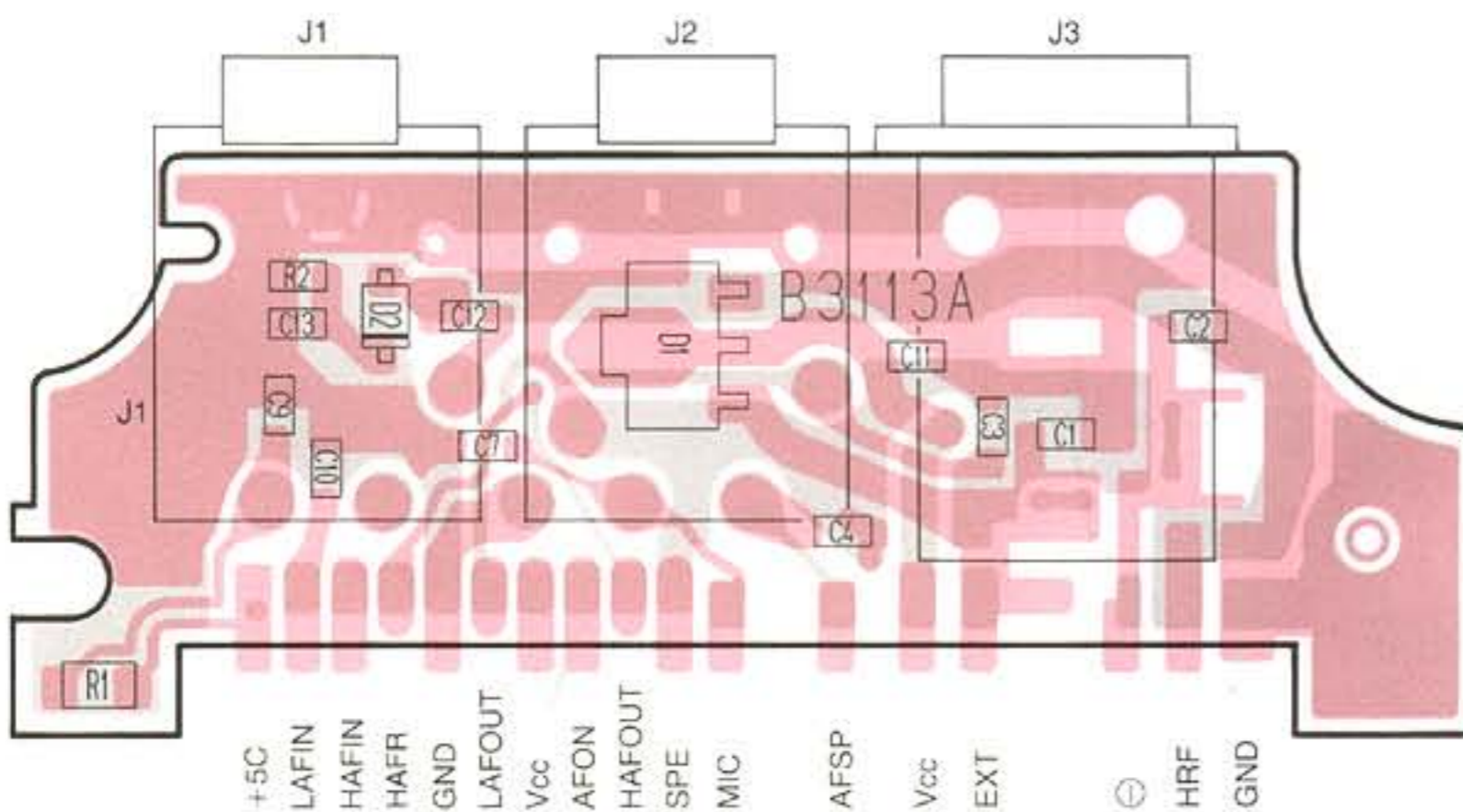


LAFIN  
HAFIN  
HAFOUT  
GND  
LAFOUT  
Vcc  
AFON  
HAFOUT  
GND

**2SB1182**  
Q2

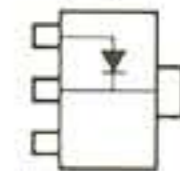


### 7-4 JACK UNIT



+5C  
LAFIN  
HAFIN  
HAFR  
GND  
LAFOUT  
Vcc  
AFON  
HAFOUT  
SPE  
MIC  
AFSP  
Vcc  
EXT  
⊖  
HRF  
GND

**SB20**  
D1



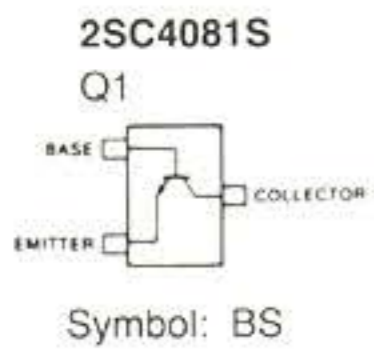
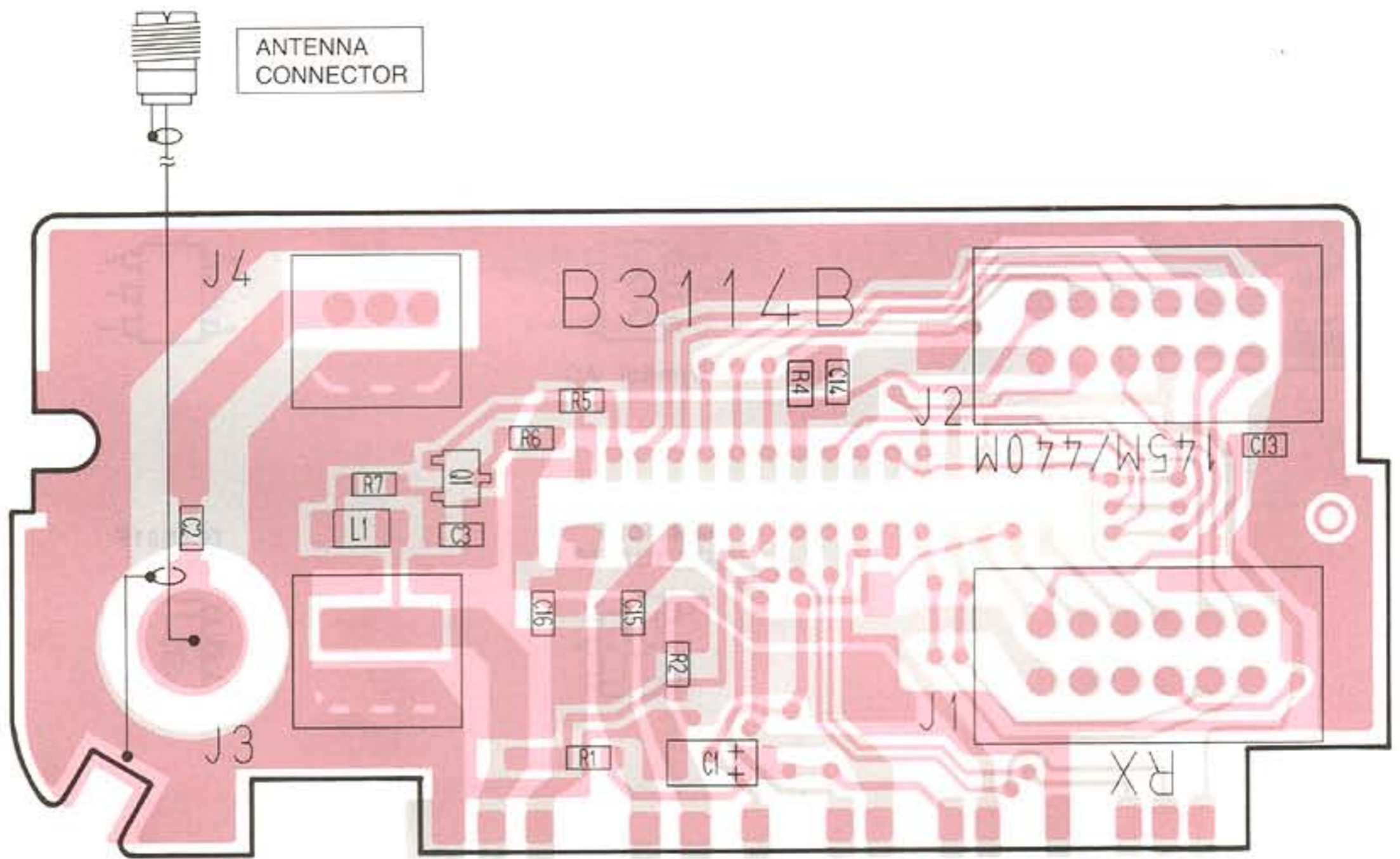
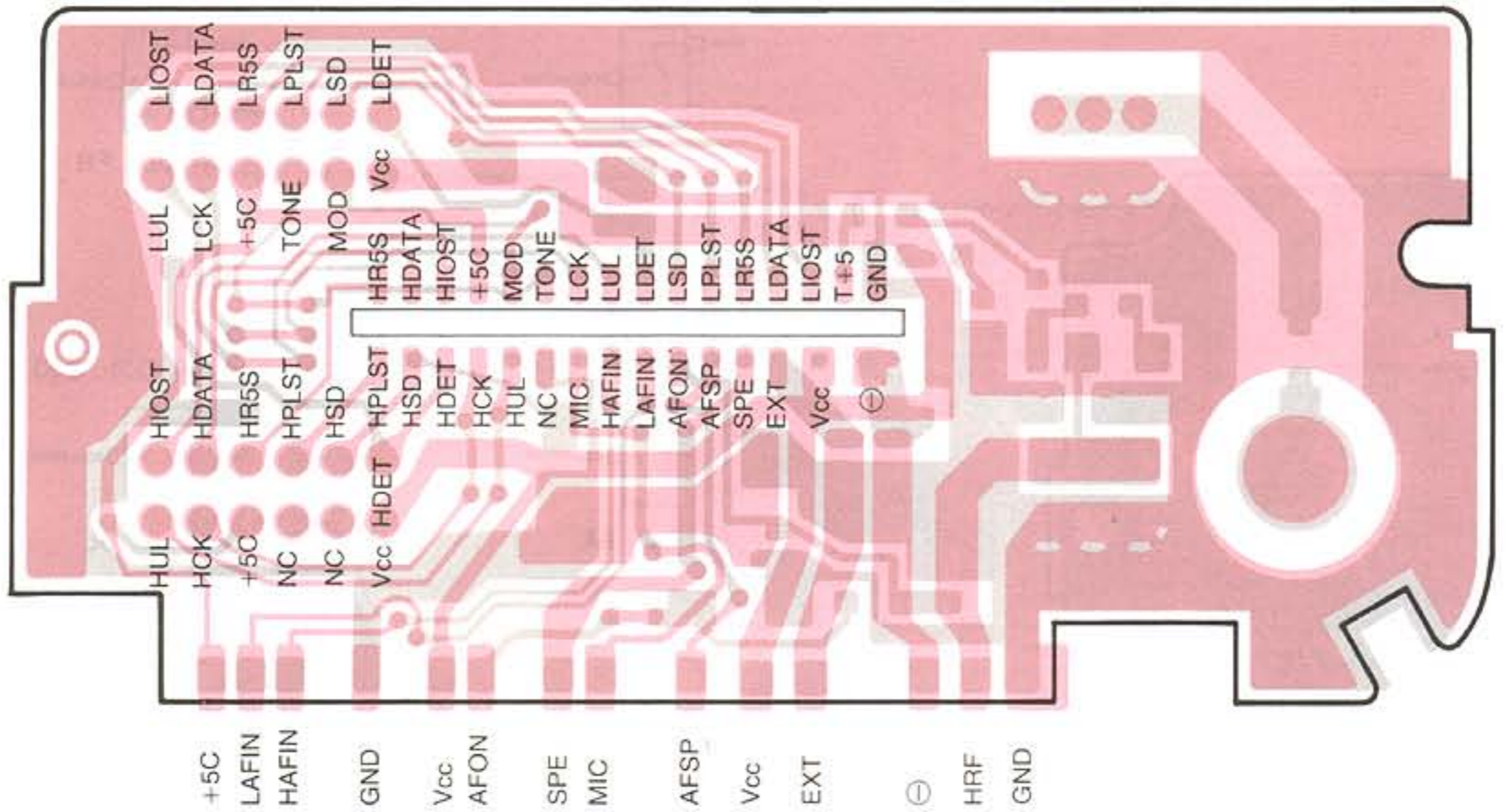
Symbol: 3C

**MA77**  
D2

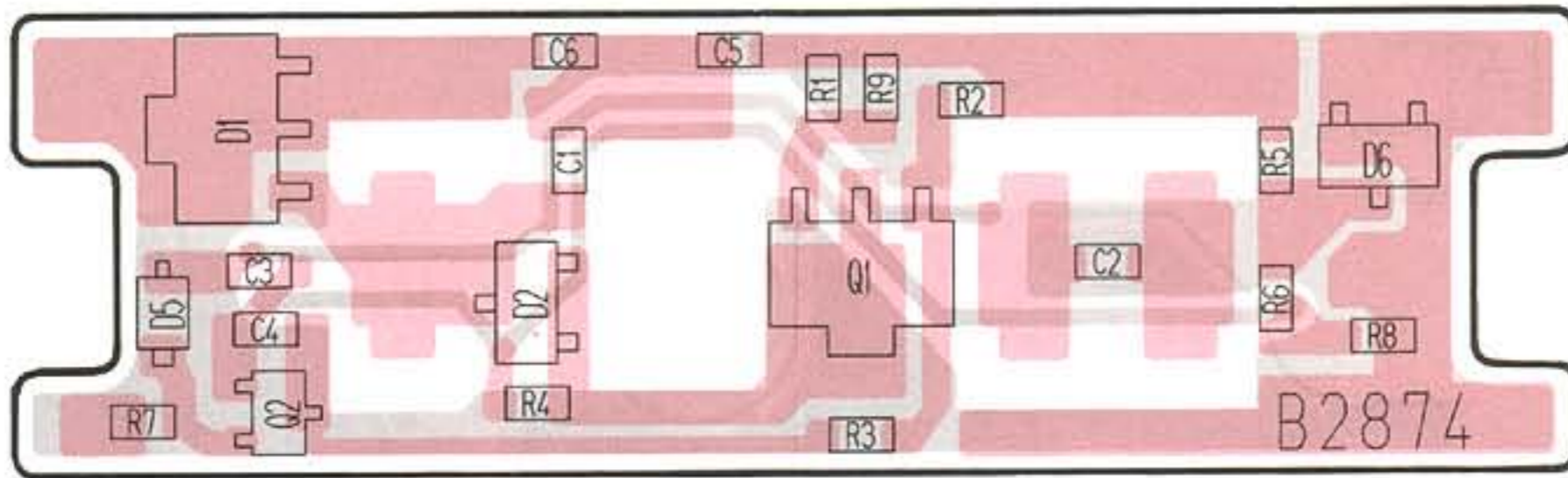


Symbol: 4B

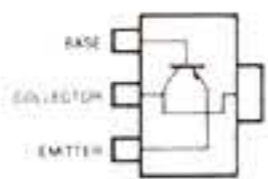
# 7-5 CONNECTOR UNIT



## 7-6 PRT UNIT

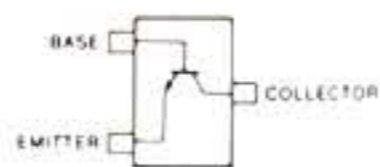


**2SB798 DK**  
Q1



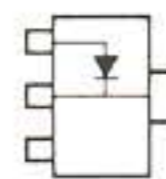
Symbol: DK

**2SC4081S**  
Q2



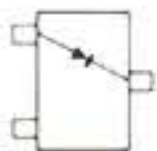
Symbol: BS

**SB20**  
D1



Symbol: SC

**SB07**  
D2



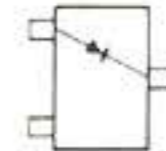
Symbol: J

**MA110**  
D5



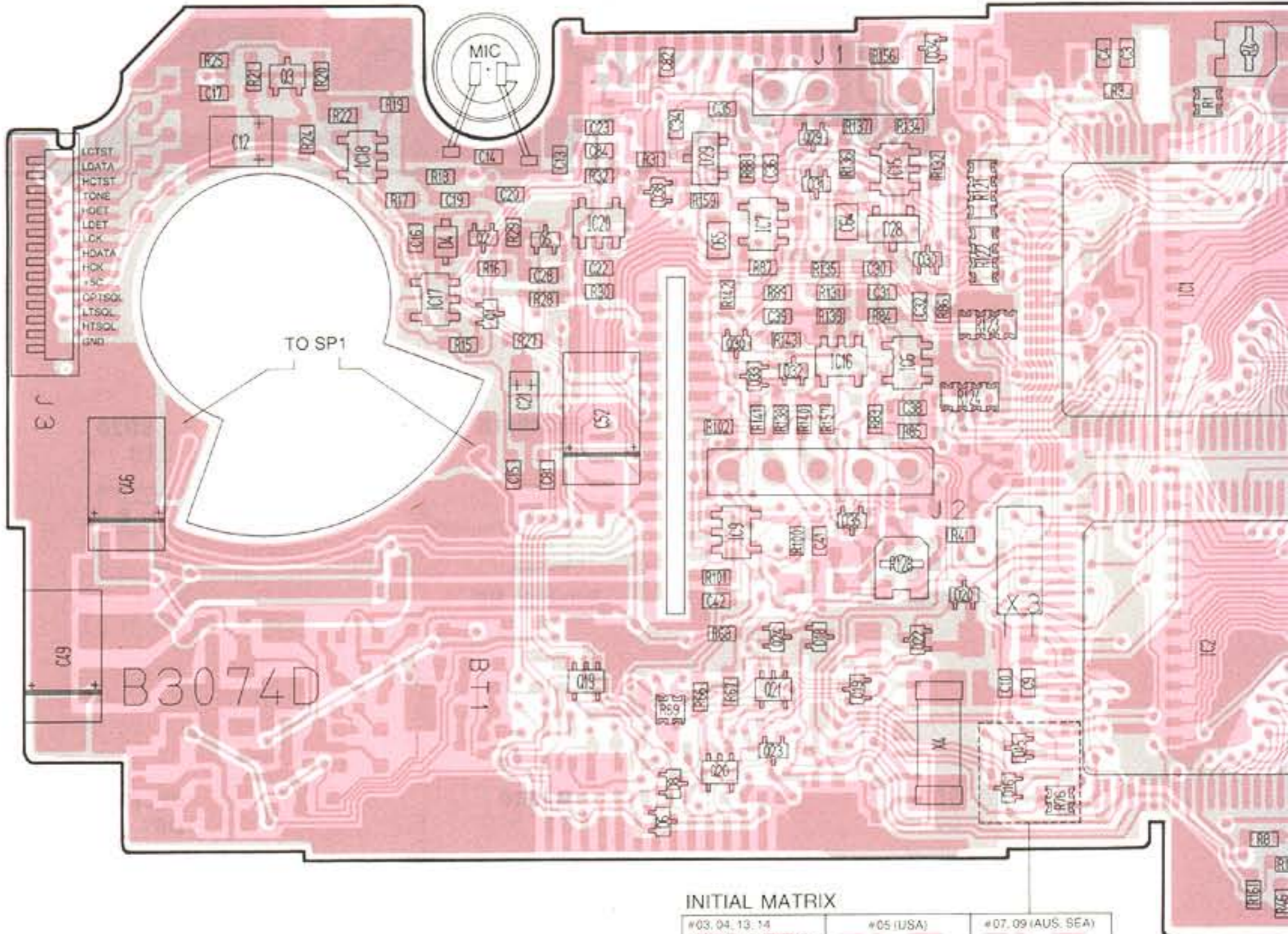
Symbol: 1A

**02CZ5.1-Z**  
D6



Symbol: 5.1S

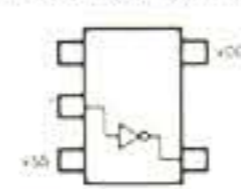
# 7-7 LOGIC UNIT



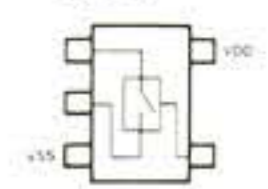
INITIAL MATRIX

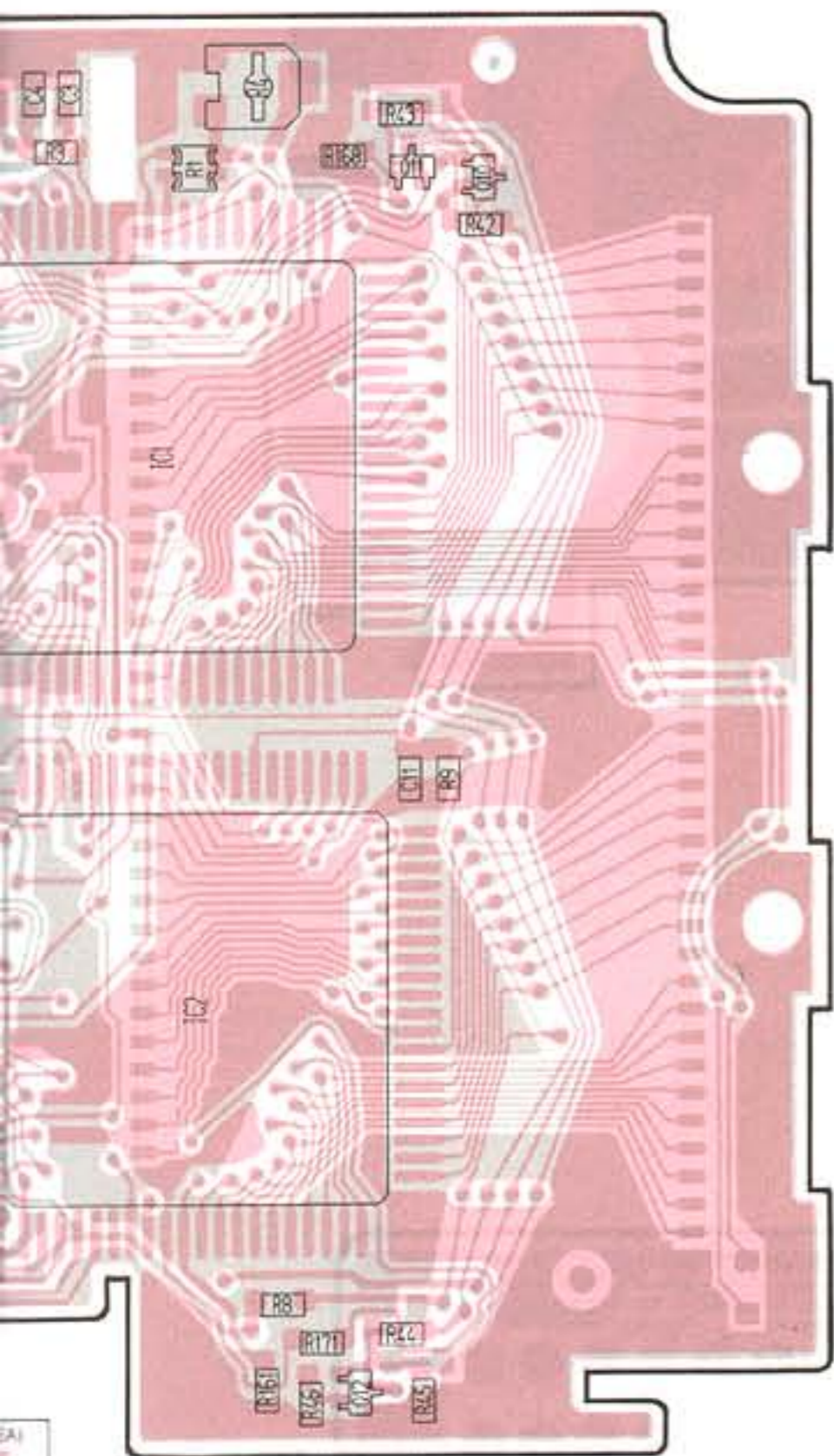
#03, 04, 13, 14 (UK, UK-1, EUR, EUR-1)	#05 (USA)	#07, 09 (AUS, SEA)

**TC4SU69F**  
IC15, IC16, IC17

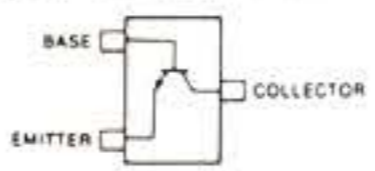


**TC4S66F**  
IC18

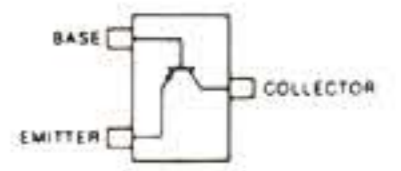




**2SD2216-S**  
Q1, Q2, Q9, Q10, Q11  
Q12, Q27, Q29, Q30

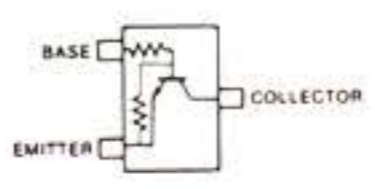


**2SA1576R**  
Q3, Q28



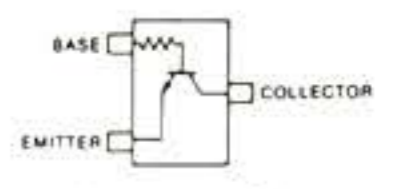
Symbol: FR

**UN9211**  
Q5



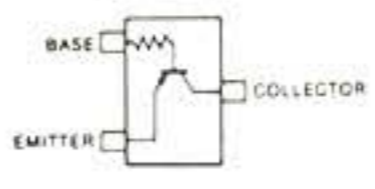
Symbol: 8A

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



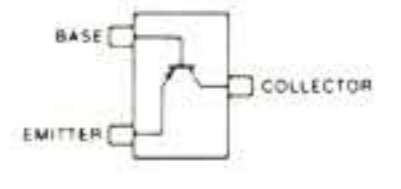
Symbol: 8L

**UN9110**  
Q4, Q25, Q32

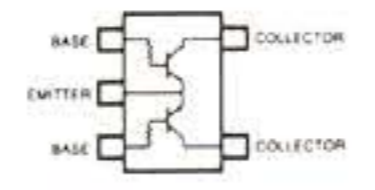


Symbol: 6L

**2SB1462R**  
Q26

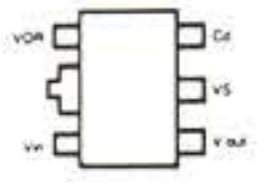


**XP1210**  
Q18, Q19, Q20, Q21

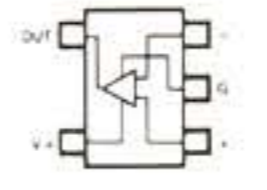


Symbol: AC

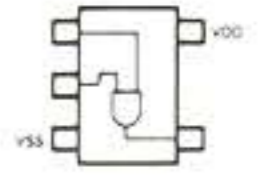
**S-87050EF**  
IC11



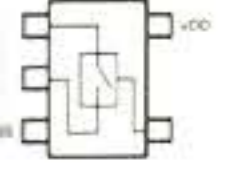
**NJM2107F**  
IC6, IC7, IC20



**TC4S81F**  
IC12



**TC4S66F**  
IC18



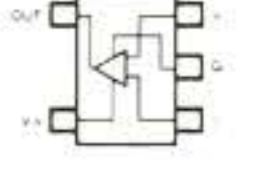
**TC4S71F**  
IC10



**TC4S01F**  
IC19

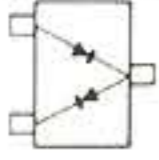


**NJM2406F**  
IC8, IC9



**MA133**

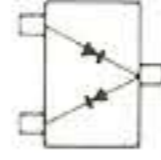
D3 (UK, EUR, USA, AUS, SEA),  
D19 (EUR), D31, D33,  
D34, D35, D37, D38



Symbol: MP

**HSM88AS**

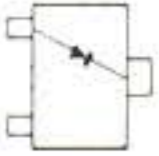
D28, D29



Symbol: C1

**MA132K**

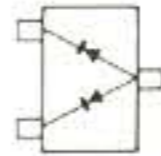
D5



Symbol: MI

**MA132WA**

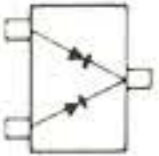
D6, D8, D9, D10,  
D11, D12, D13, D14



Symbol: MO

**MA132WK**

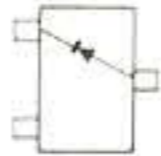
D27, D30, D32



Symbol: MU

**MA132A**

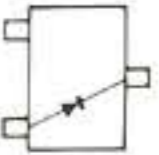
D22, D26



Symbol: MB

**MA132HK**

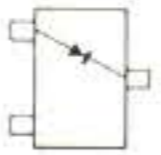
D15 (UK, EUR, USA)  
D16 (USA, AUS, SEA)  
D18



Symbol: M3N

**1SS322**

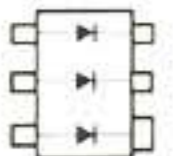
D25



Symbol: A9

**MA1S121**

D7



Symbol: M2D

**MA728**

D36



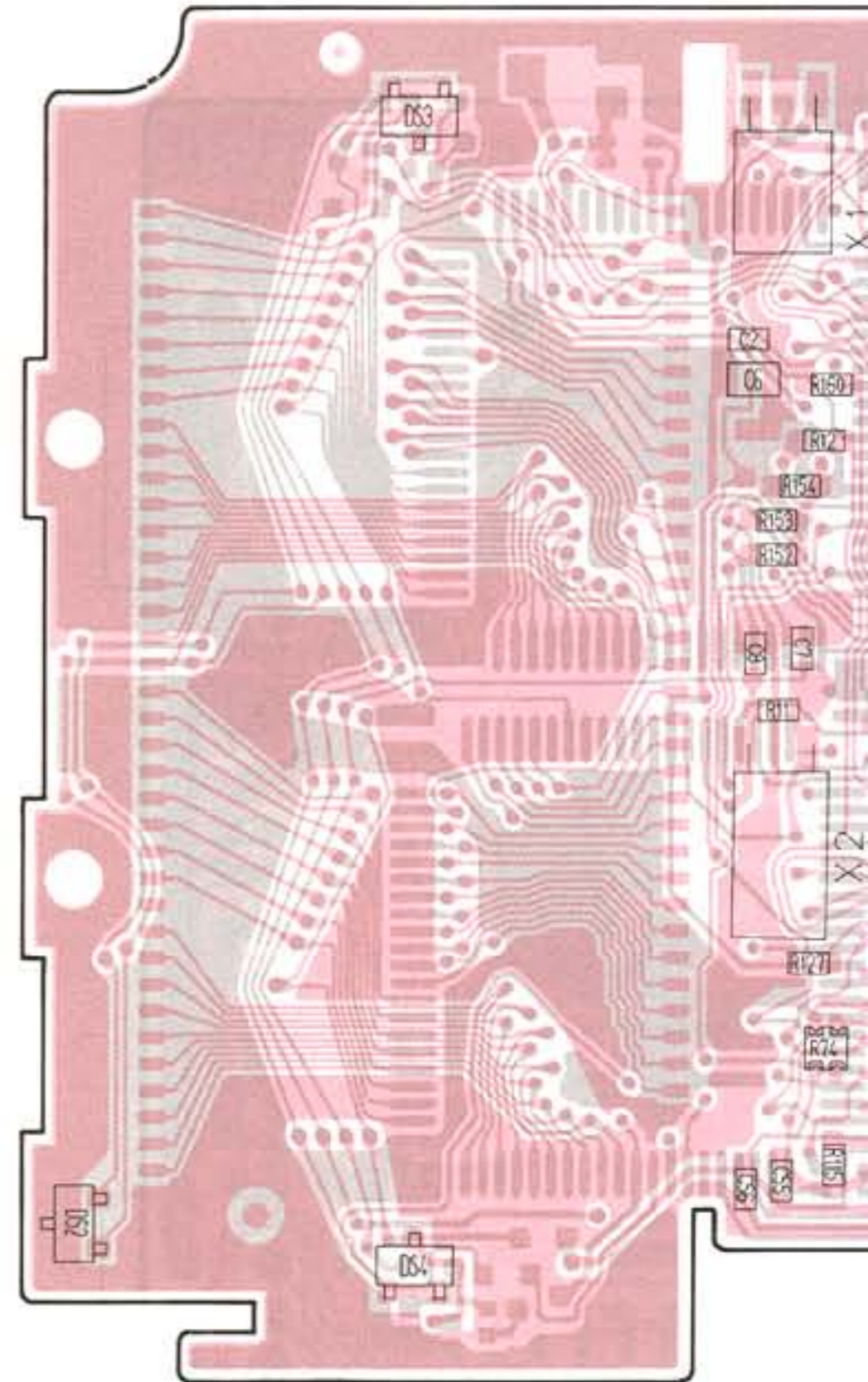
Symbol: 2A

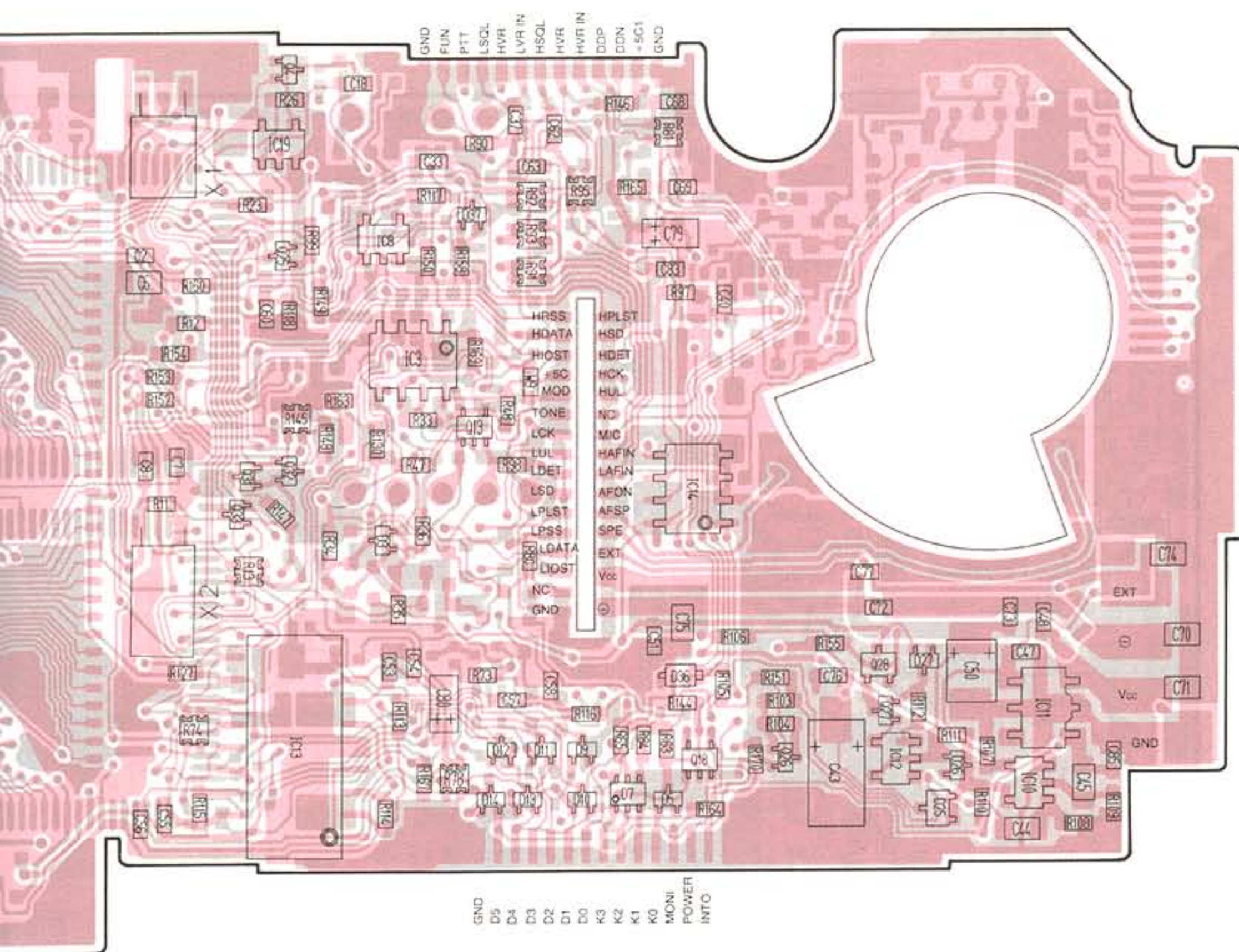
**MA110**

D4



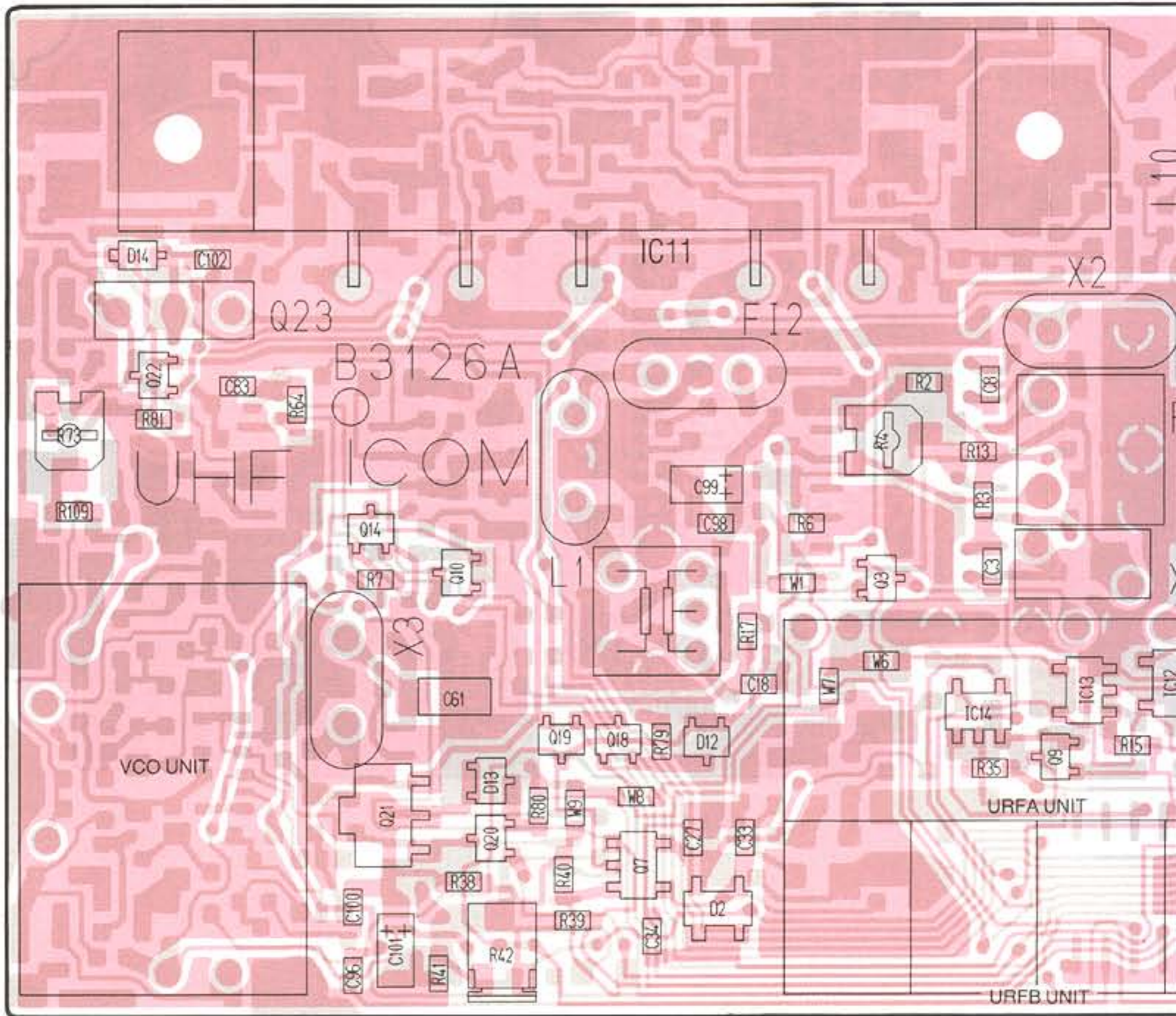
Symbol: 1A



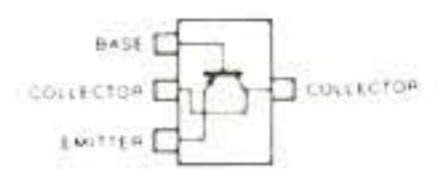




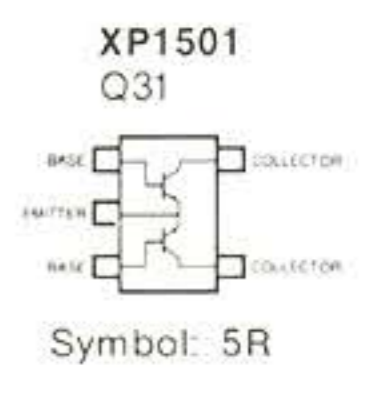
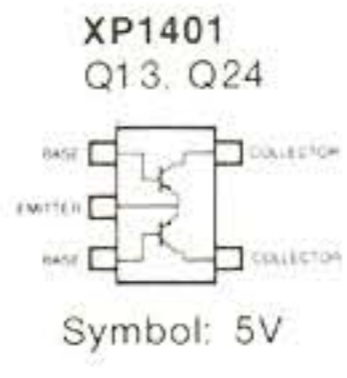
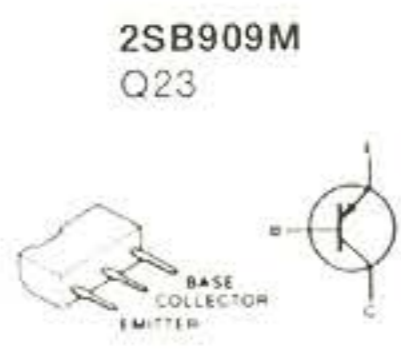
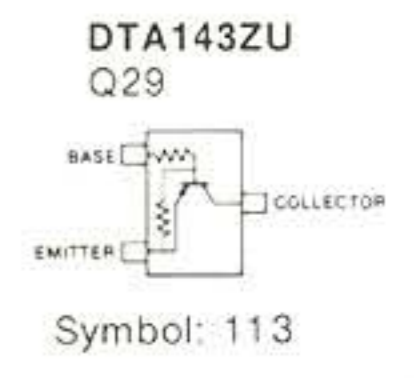
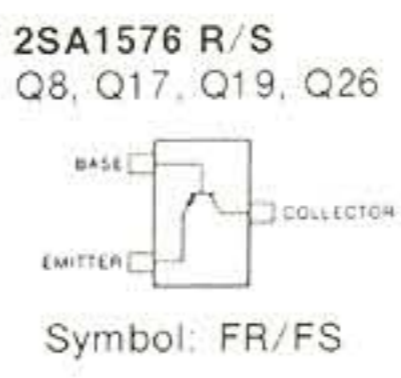
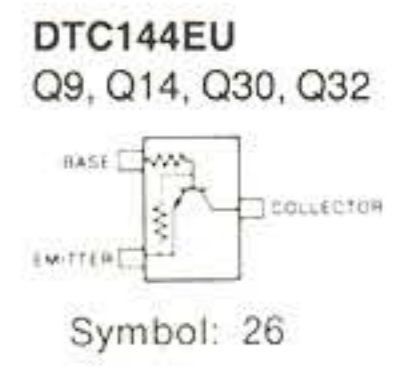
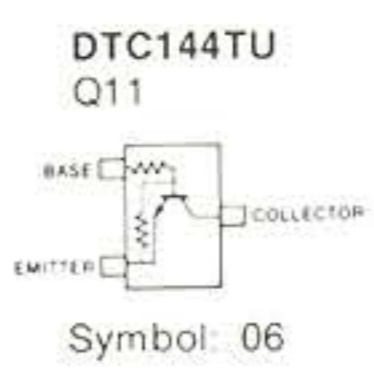
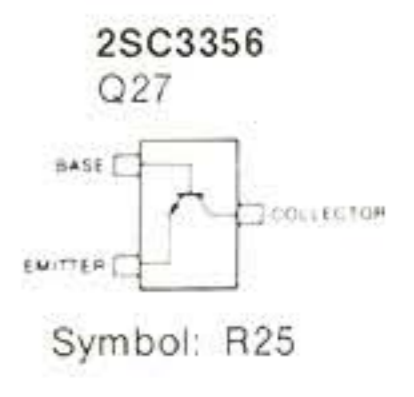
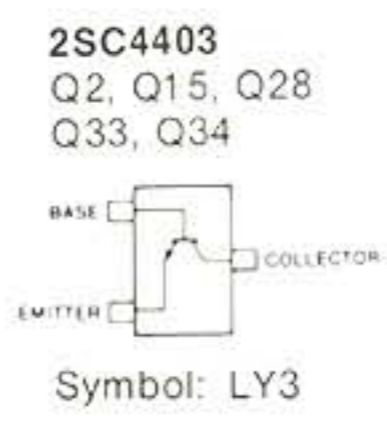
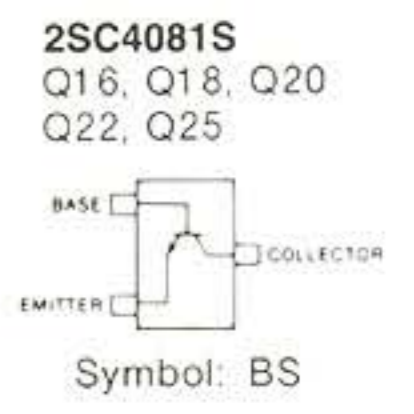
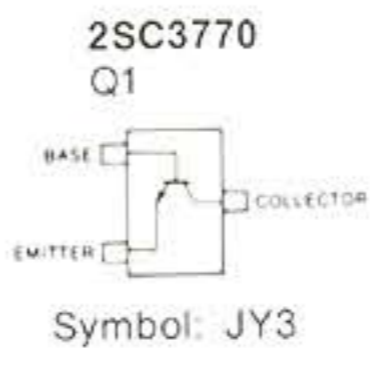
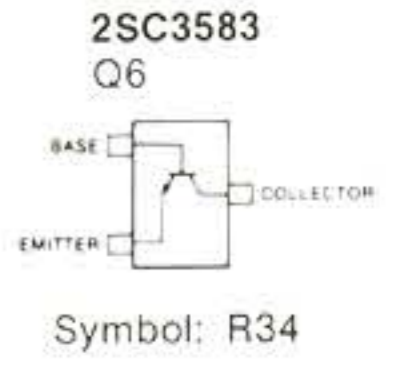
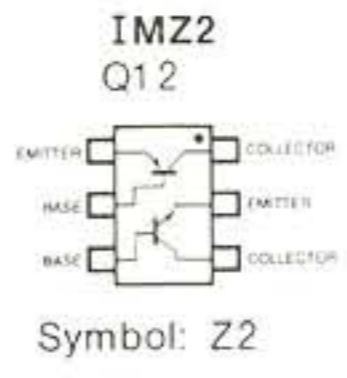
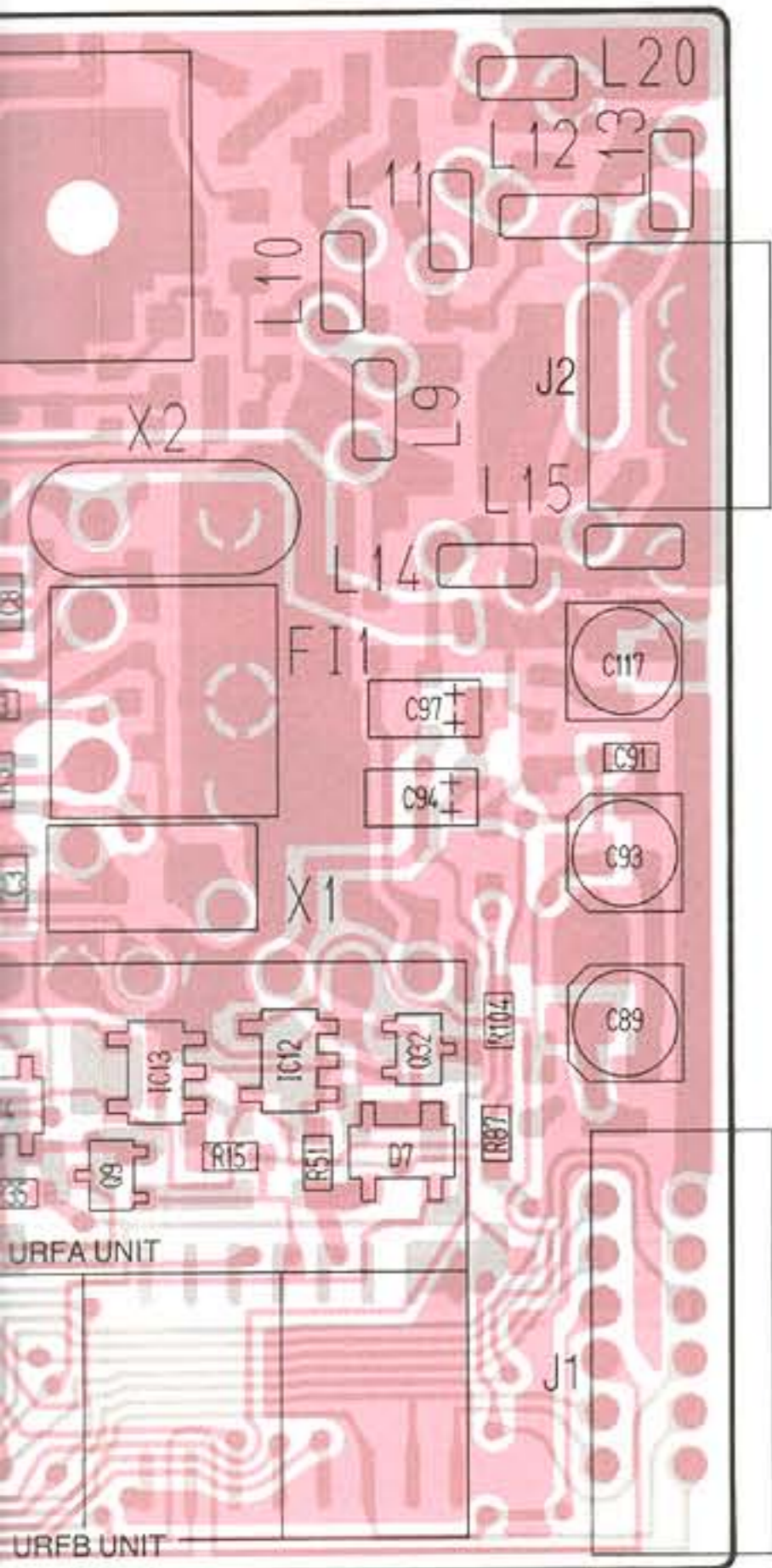
7-8 UHF RF UNIT



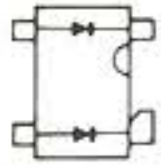
2SB798  
Q21



Symbol: DK

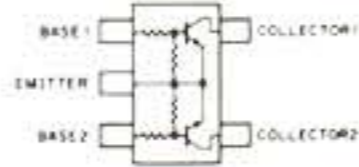


**MA862**  
D2, D3, D6,  
D7, D9, D19



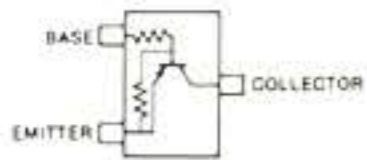
Symbol: M11

**FMA2**  
Q7



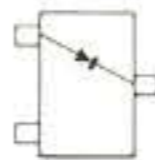
Symbol: A2

**DTA144EU**  
Q3, Q10



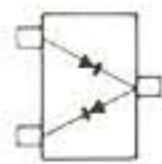
Symbol: 16

**DA114**  
D12, D13



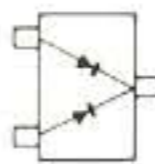
Symbol: AV

**DA204U**  
D10



Symbol: K

**DAN202U**  
D15



Symbol: N

**MA728**  
D16, D18



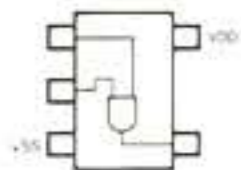
Symbol: 2A

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



Symbol: 4B

**TC4S81F**  
IC12, IC13, IC14

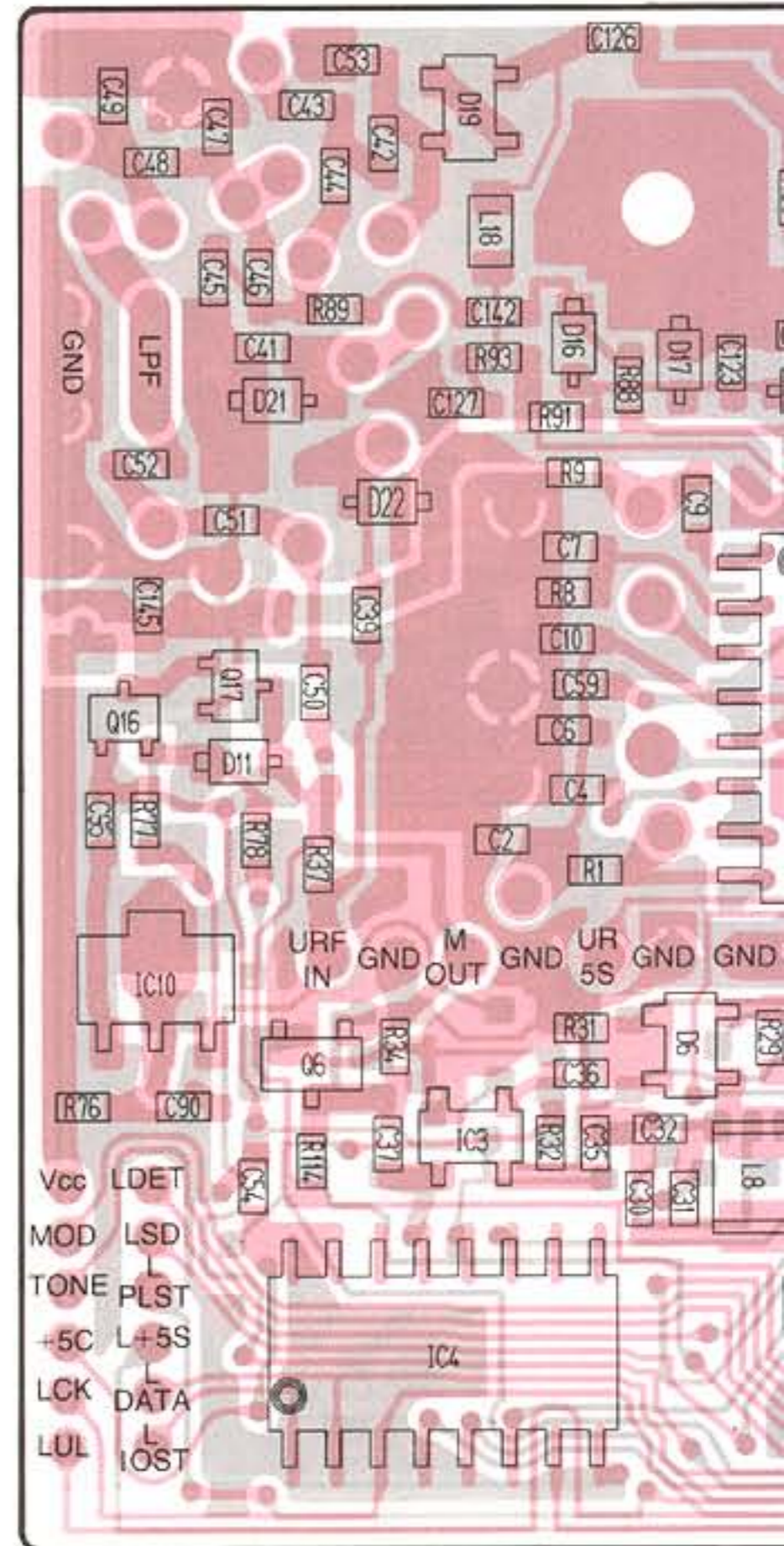
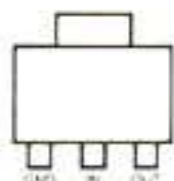


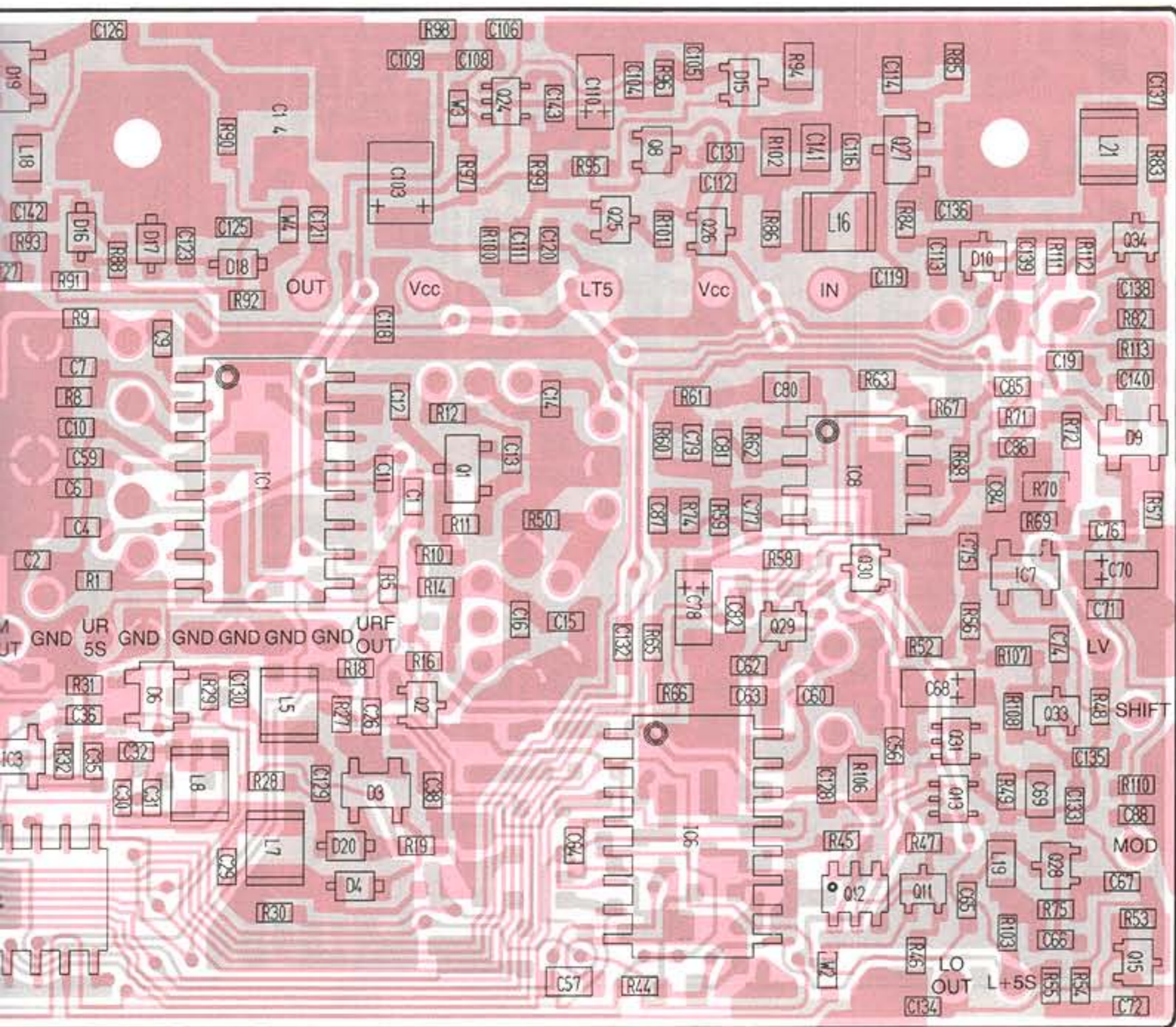
**MA110**  
D11, D14, D17



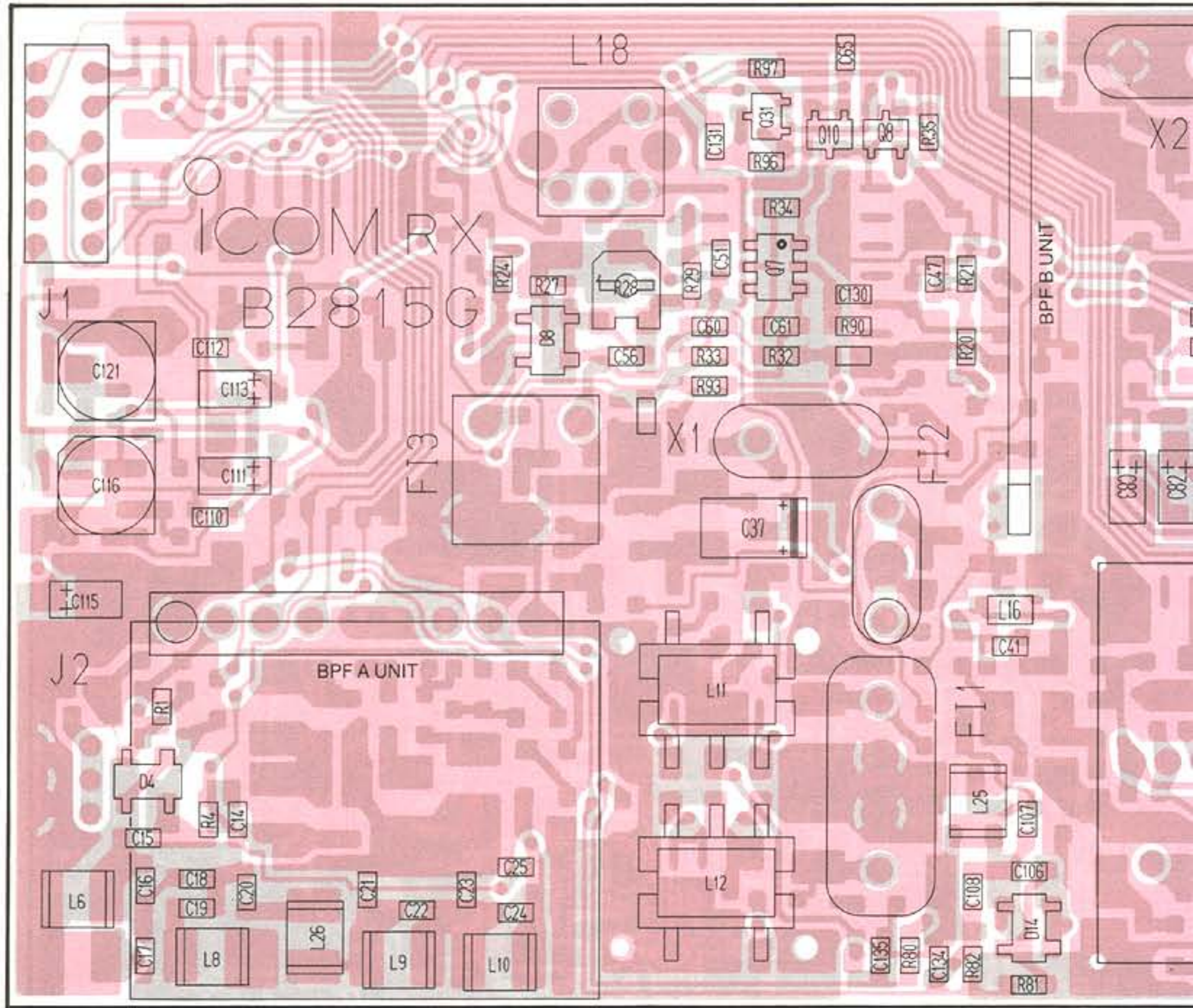
Symbol: 1A

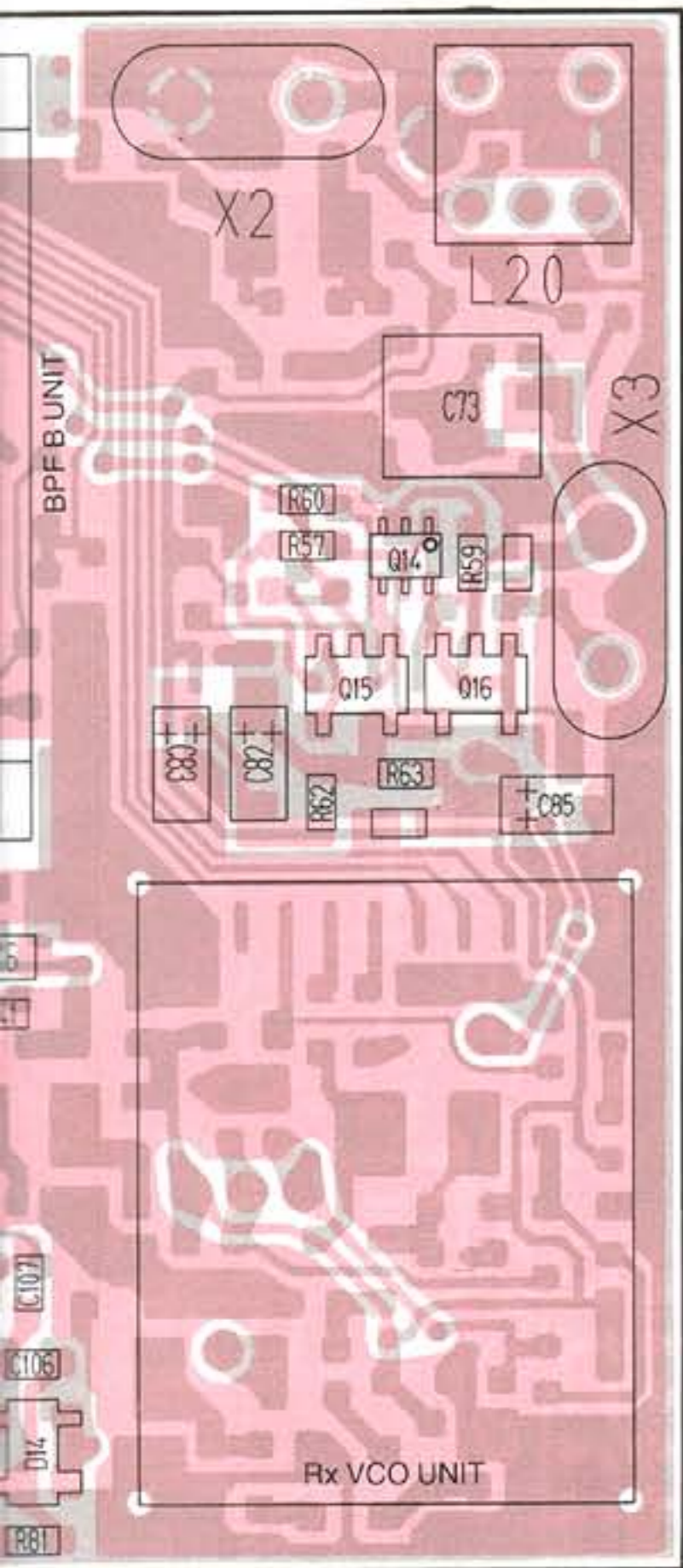
**S-81250HG**  
IC10



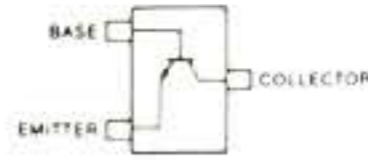


7-9 RX UNIT



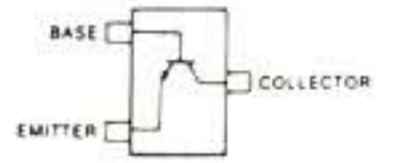


**2SC3583**  
Q1



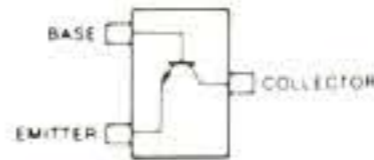
Symbol: R34

**2SC4405 3**  
Q2



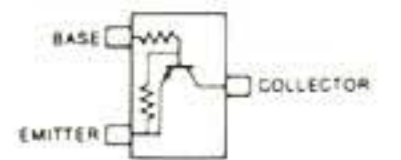
Symbol: OY3

**2SC3770 3**  
Q4



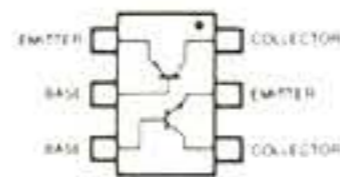
Symbol: JY3

**DTA144EU**  
Q5, Q6



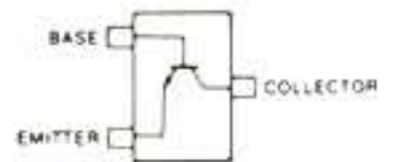
Symbol: 16

**IMX5**  
Q7



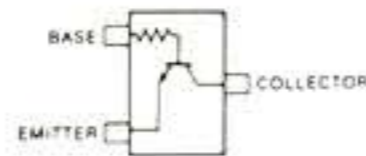
Symbol: X5

**2SC4081S**  
Q8, Q9, Q24,  
Q26, Q31



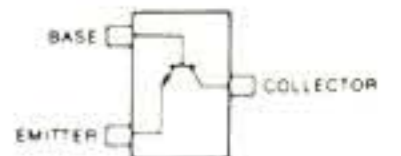
Symbol: BS

**DTC144TU**  
Q10, Q30



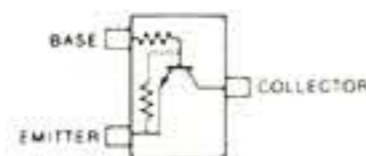
Symbol: 06

**2SC4403**  
Q3, Q11, Q12,  
Q22



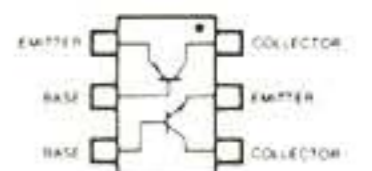
Symbol: LY3

**DTC144EU**  
Q13, Q20, Q28



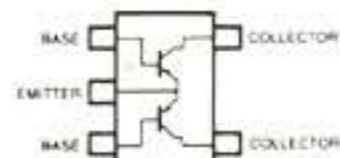
Symbol: 26

**XP5601**  
Q14



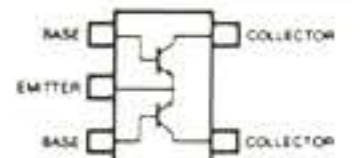
Symbol: 4N

**FMS1**  
Q15



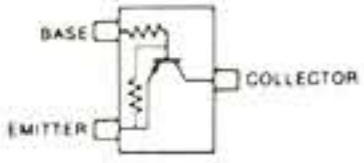
Symbol: S1

**FMW1**  
Q16



Symbol: W1

**DTA143ZU**  
Q21, Q27



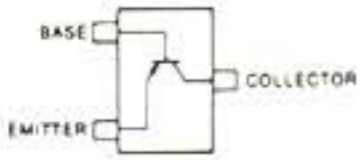
Symbol: 123

**2SB798 DK**  
Q23



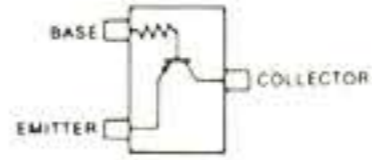
Symbol: DK

**2SA1576 R**  
Q25



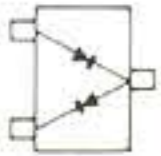
Symbol: FR

**DTA144TU**  
Q29



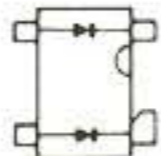
Symbol: 96

**HSM88AS**  
D1



Symbol: C1

**MA862**  
D2, D3, D4, D5,  
D7, D8, D14, D15



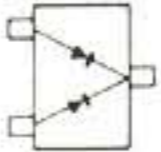
Symbol: N11

**ND433G**  
D6



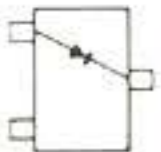
Symbol: 433

**DAN202U**  
D16, D17

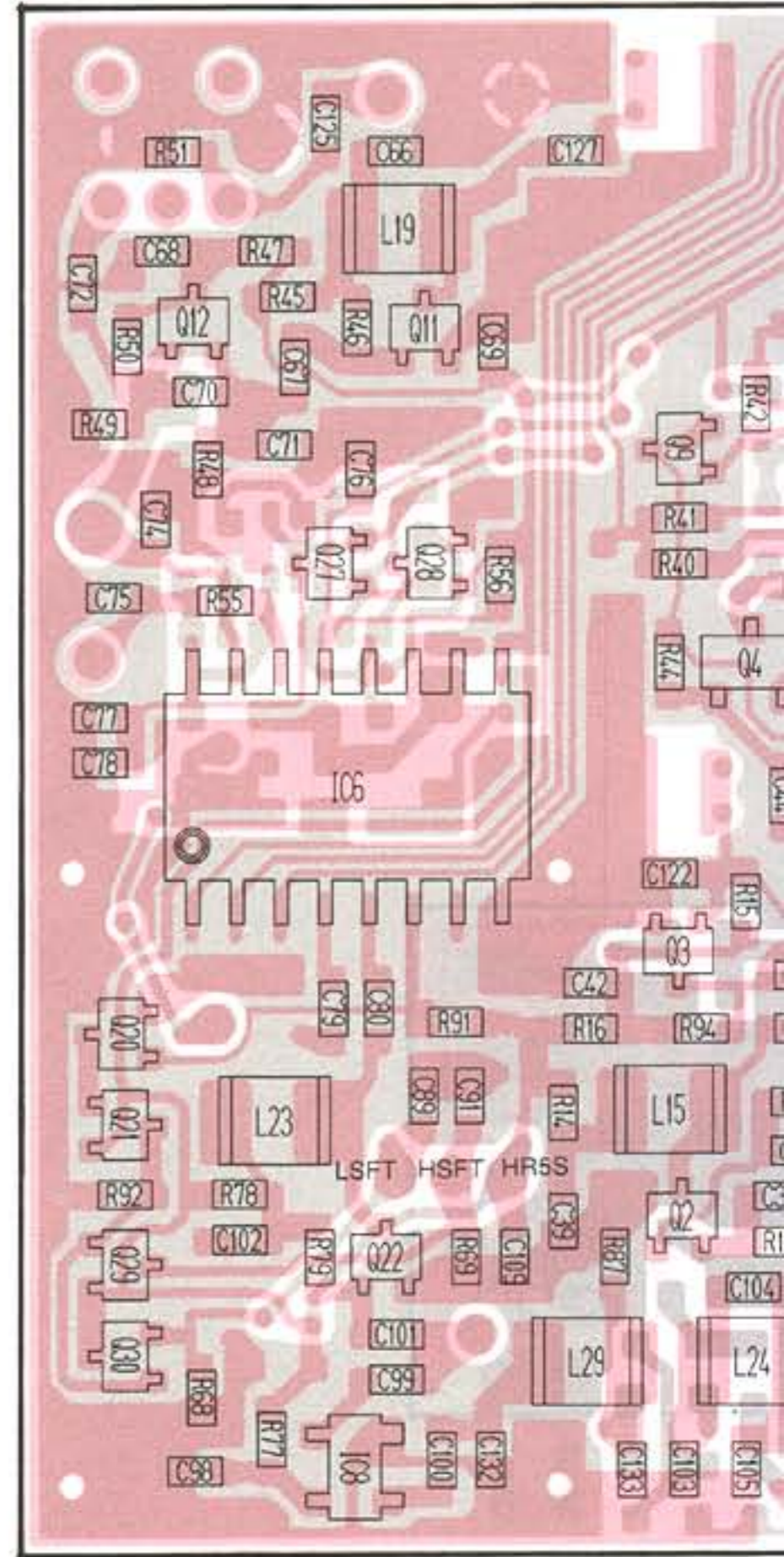


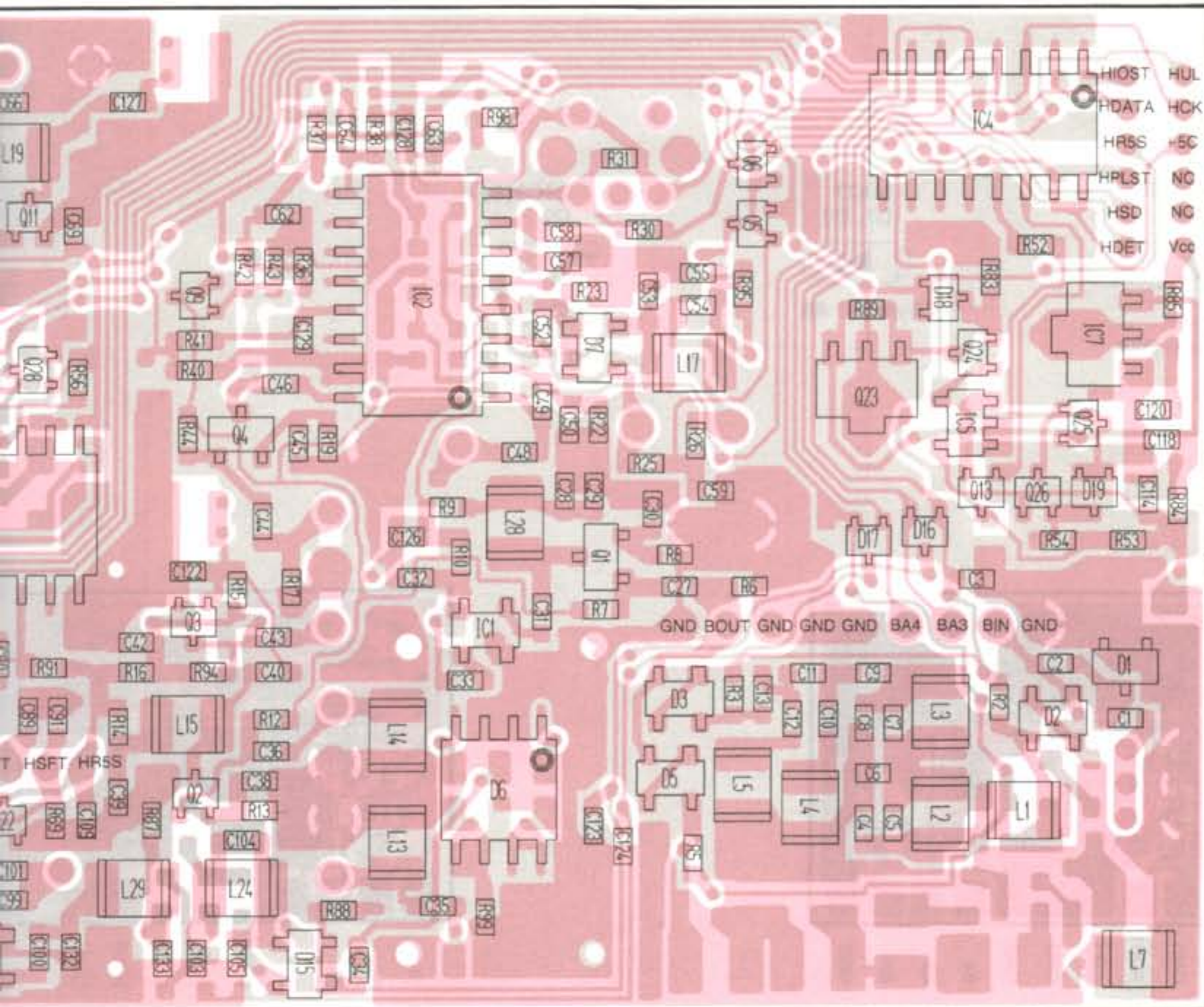
Symbol: N

**DA114**  
D18, D19



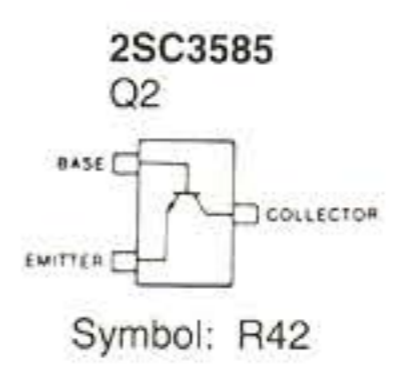
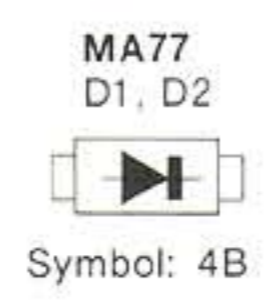
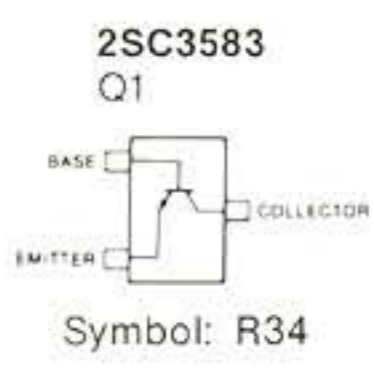
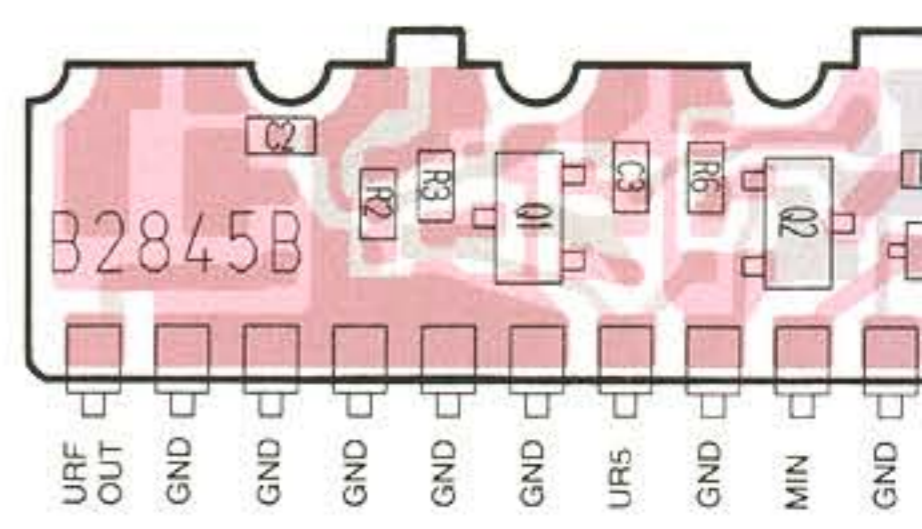
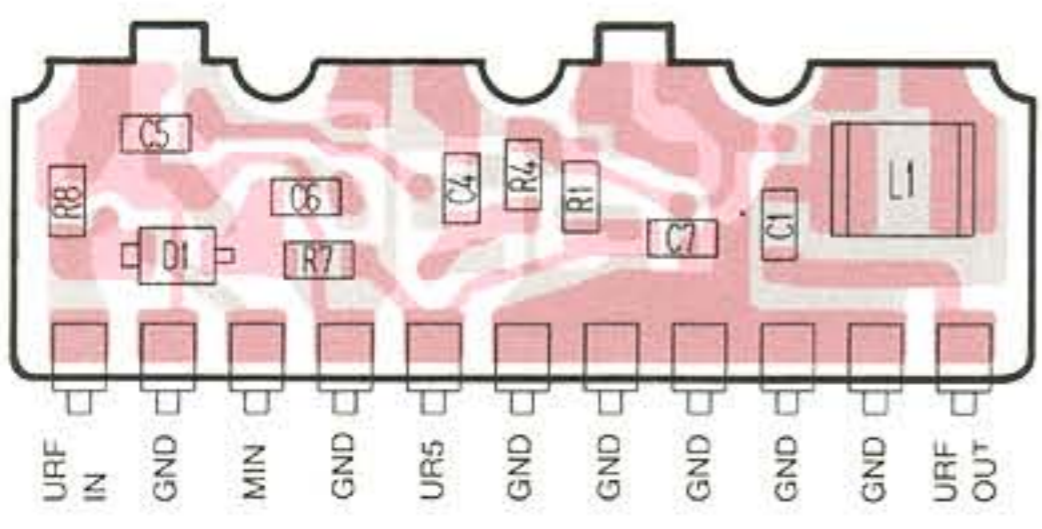
Symbol: AV



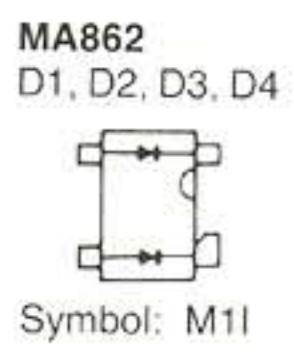
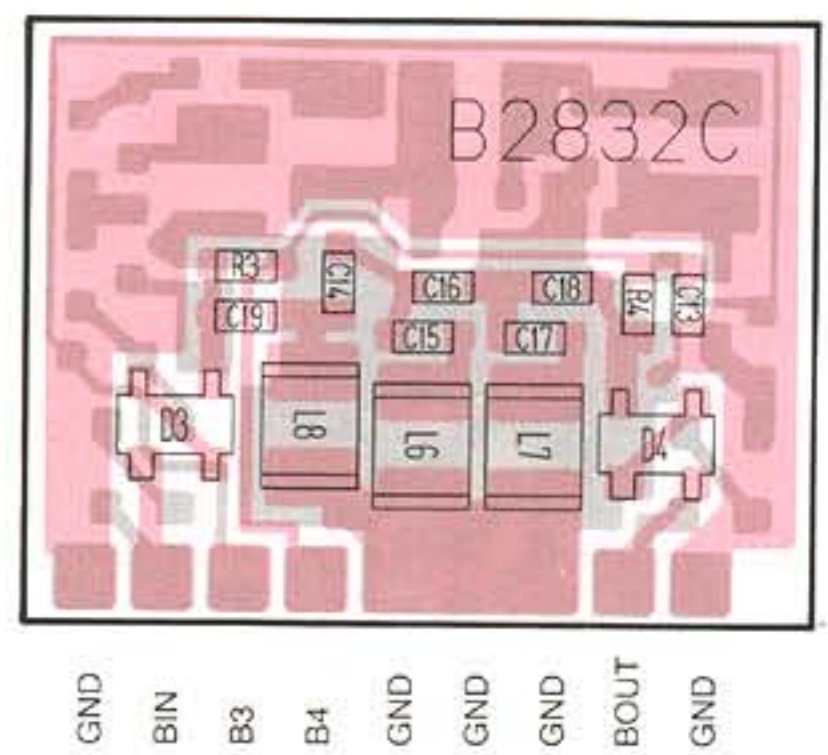
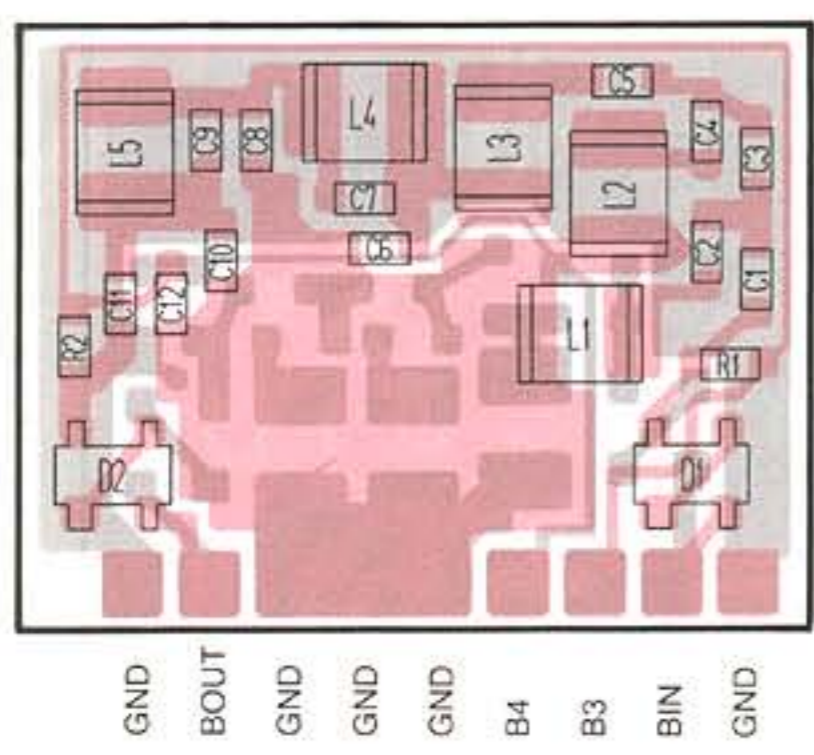




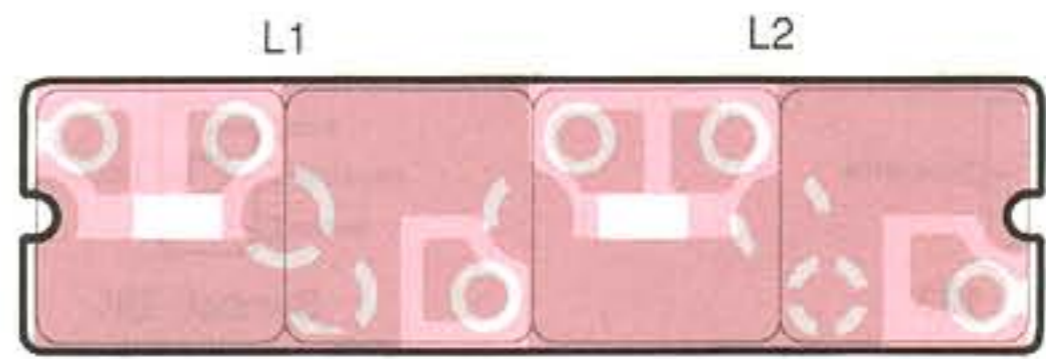
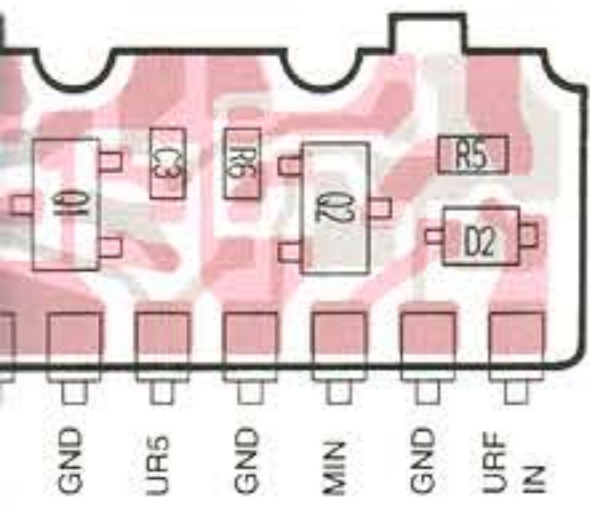
7-10 URF A UNIT



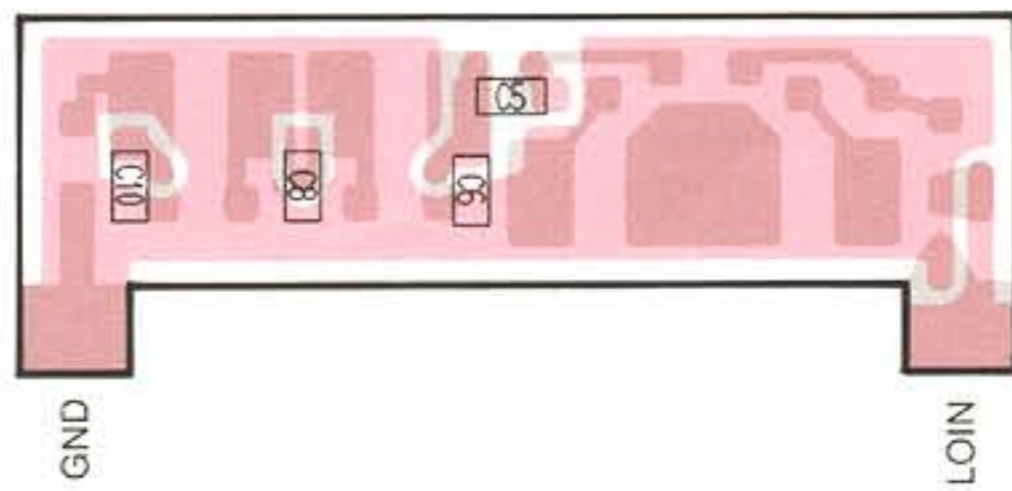
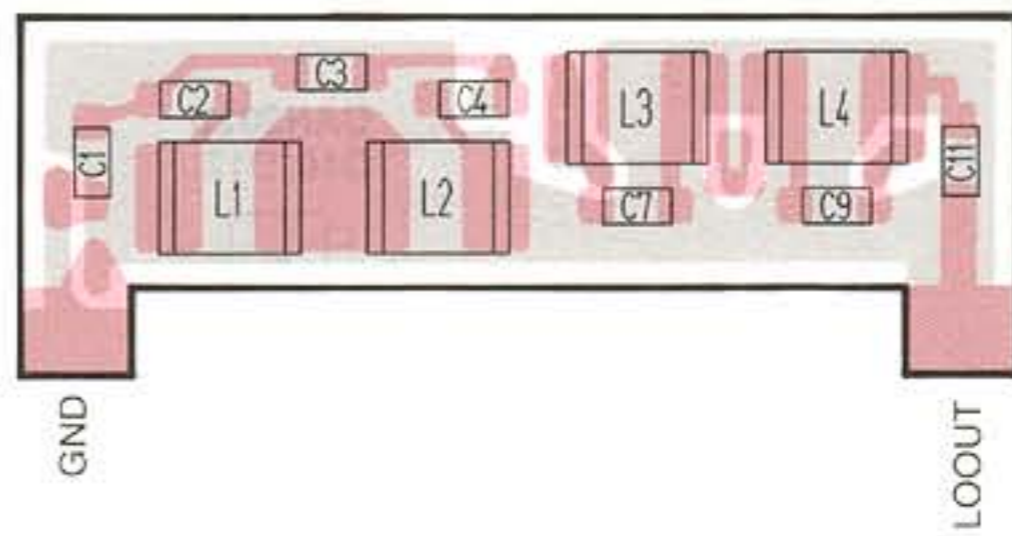
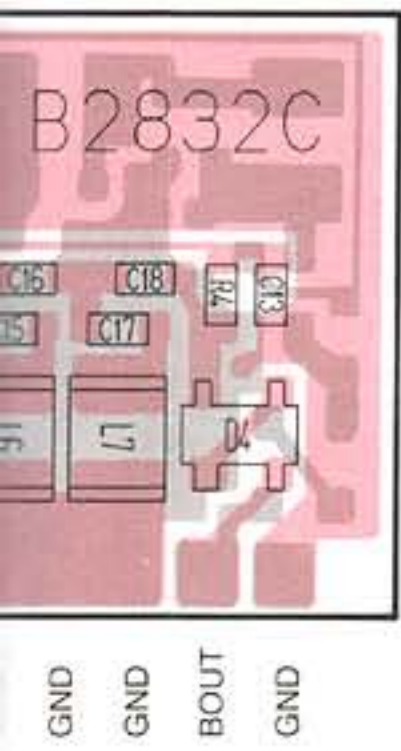
7-12 BPF A UNIT



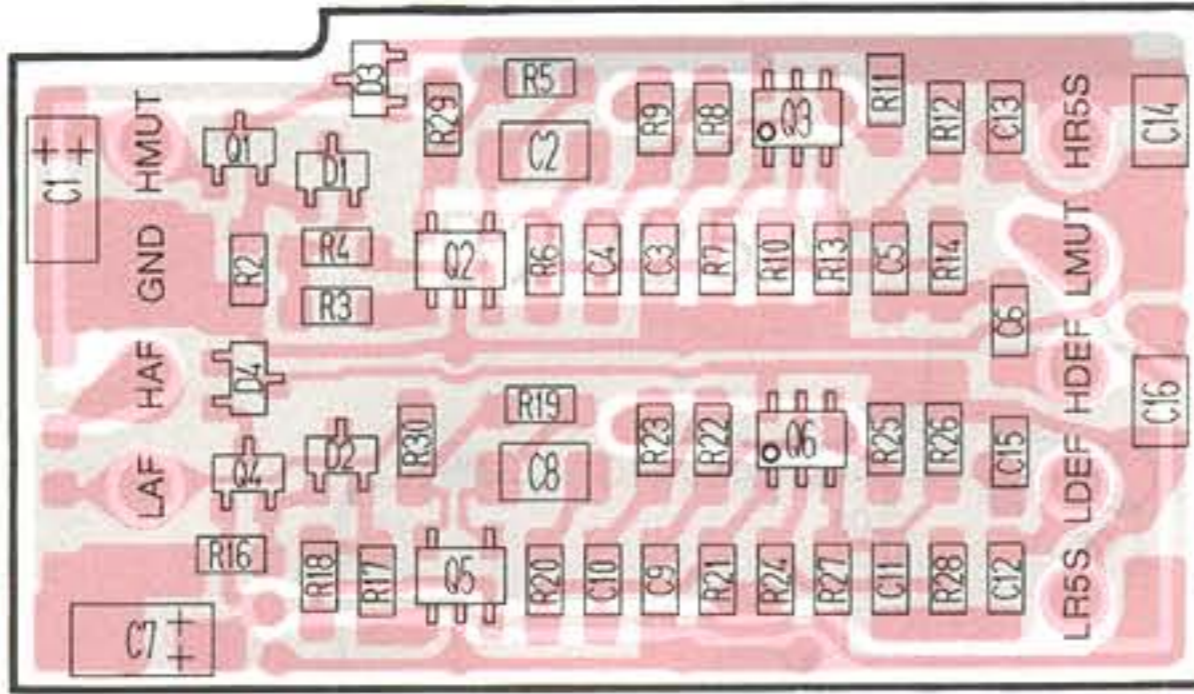
### 7-11 URF B UNIT



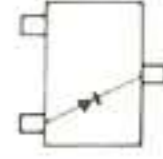
### 7-13 BPF B UNIT



## 7-14 AF FIL UNIT

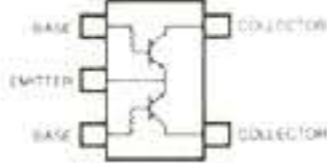


MA132HK  
D3



Symbol: M3N

XP1501  
Q2, Q5



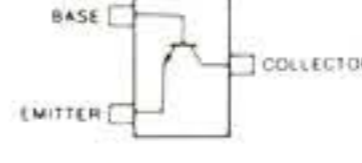
Symbol: 5R

XP6501  
Q3, Q6

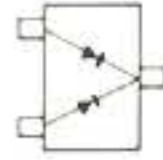


Symbol: 5H

2SD2216  
Q1, Q4

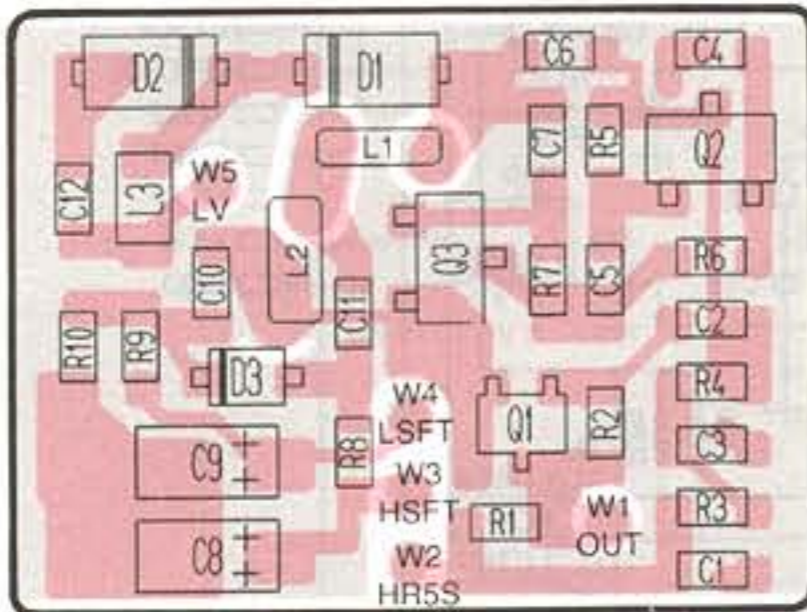


MA133  
D1, D2, D4

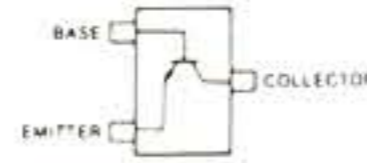


Symbol: MP

## 7-15 RX VCO UNIT

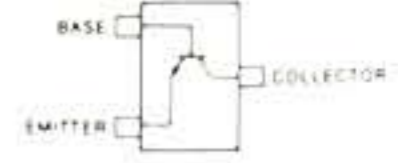


2SC3356  
Q2, Q3



Symbol: R25

2SC4403-3  
Q1



Symbol: LY3

MA333  
D1, D2



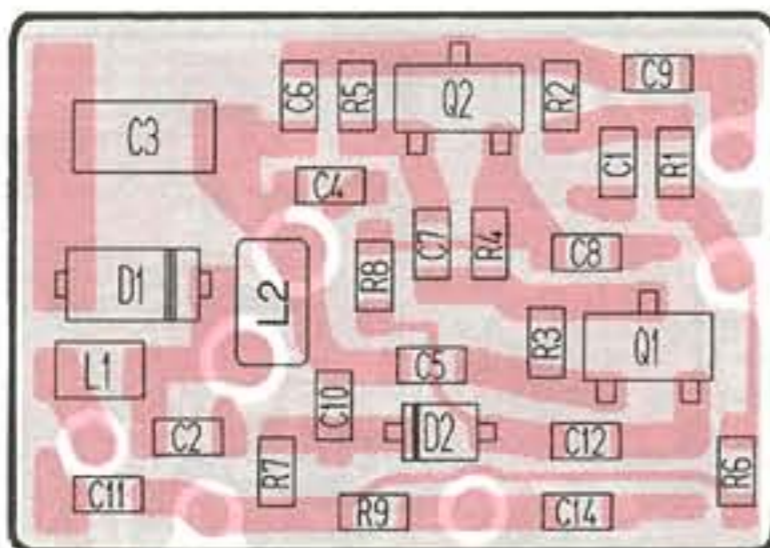
Symbol: MP

MA77  
D3

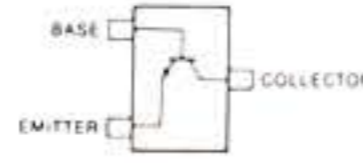


Symbol: 4B

## 7-16 U VCO UNIT



2SC3356  
Q1, Q2



Symbol: R25

MA333  
D1



Symbol: MP

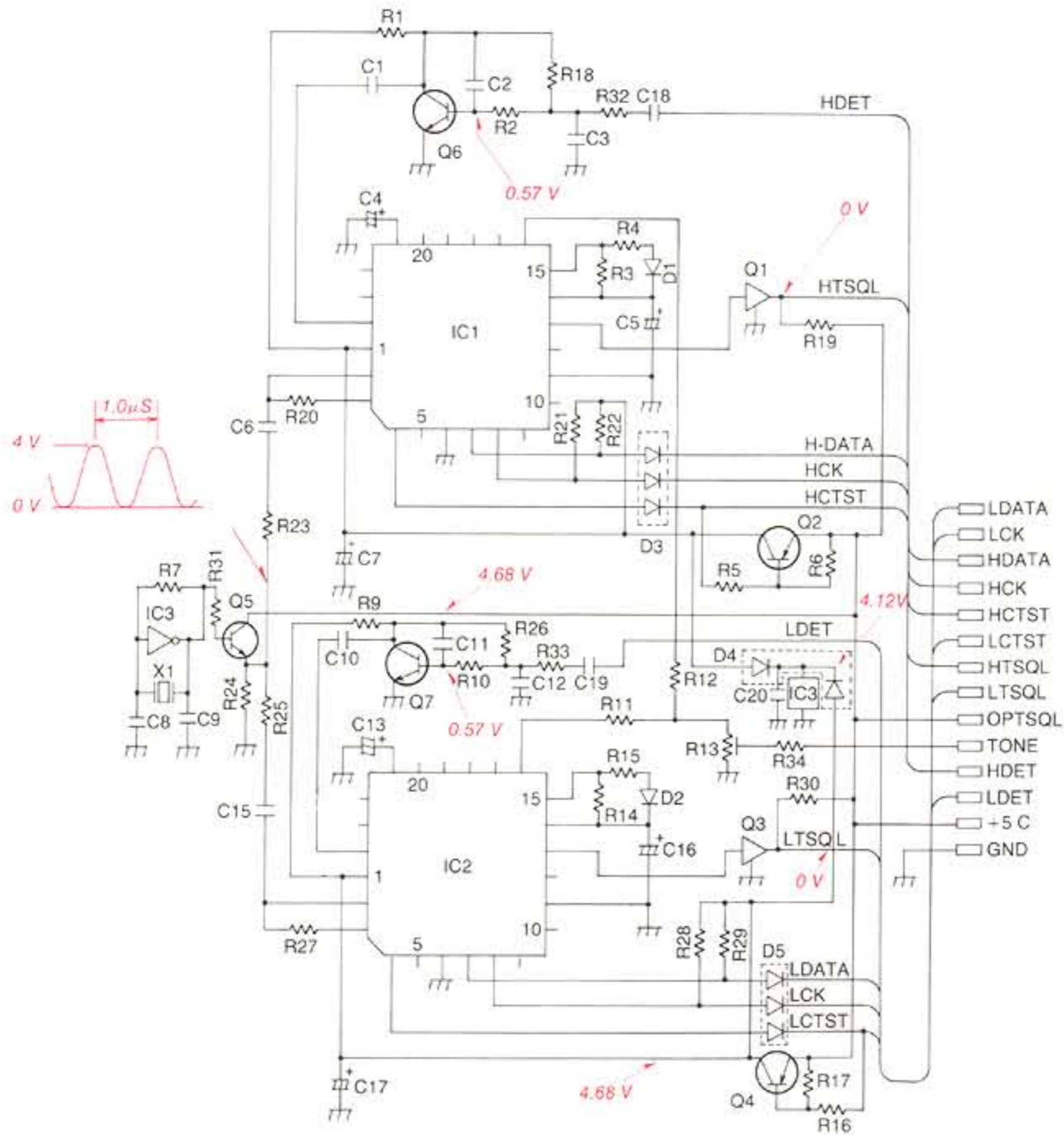
MA77  
D2



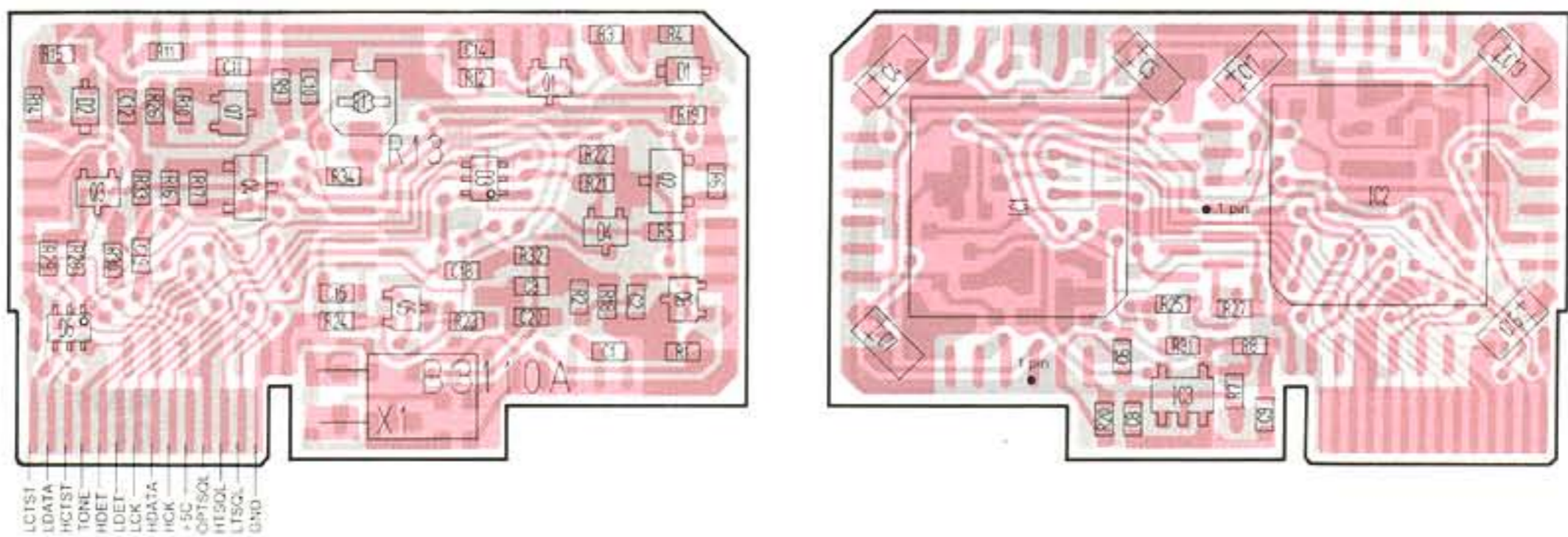
Symbol: 4B

# SECTION 8 OPTIONAL UNIT

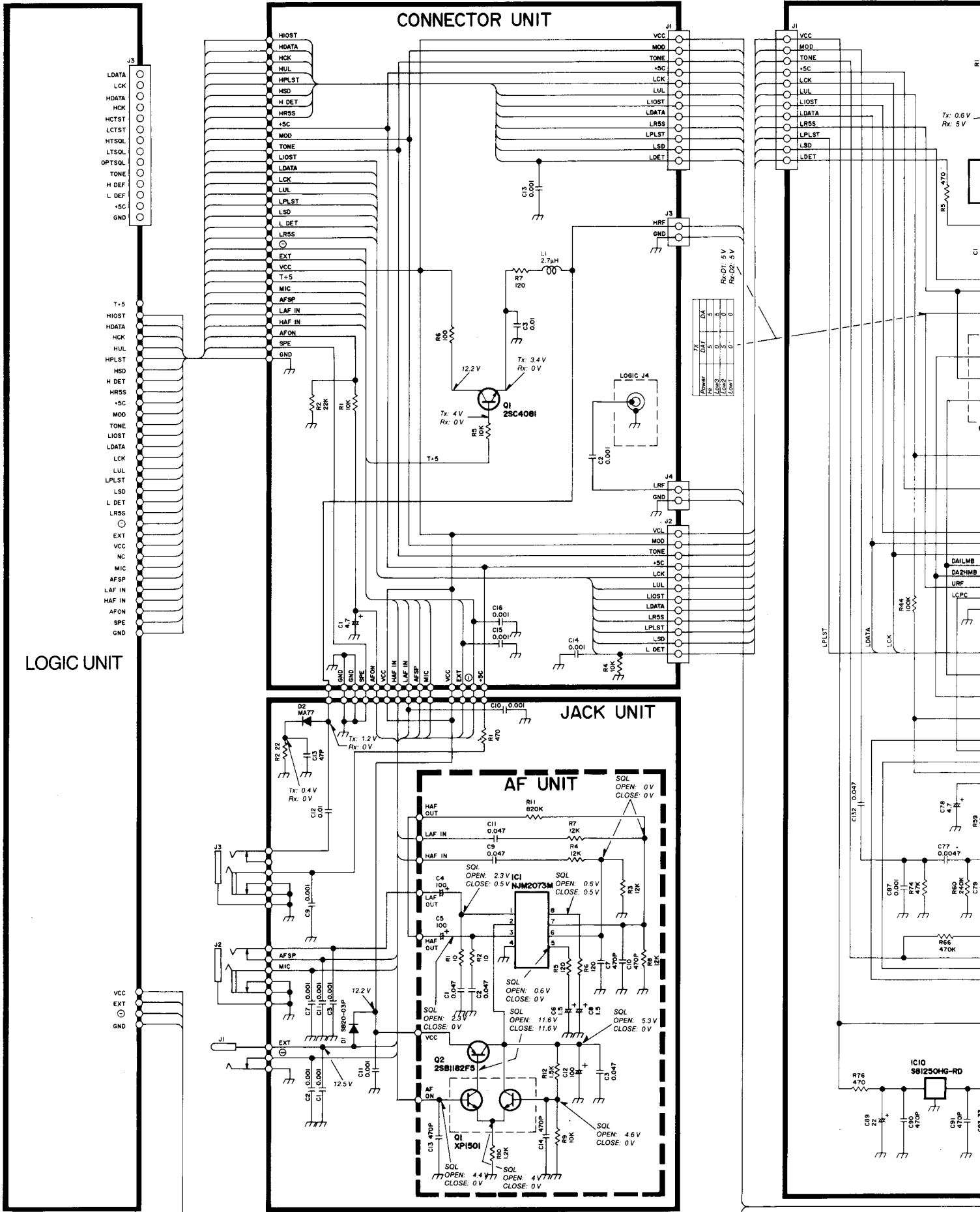
## 8-1 UT-63 TONE SQUELCH UNIT

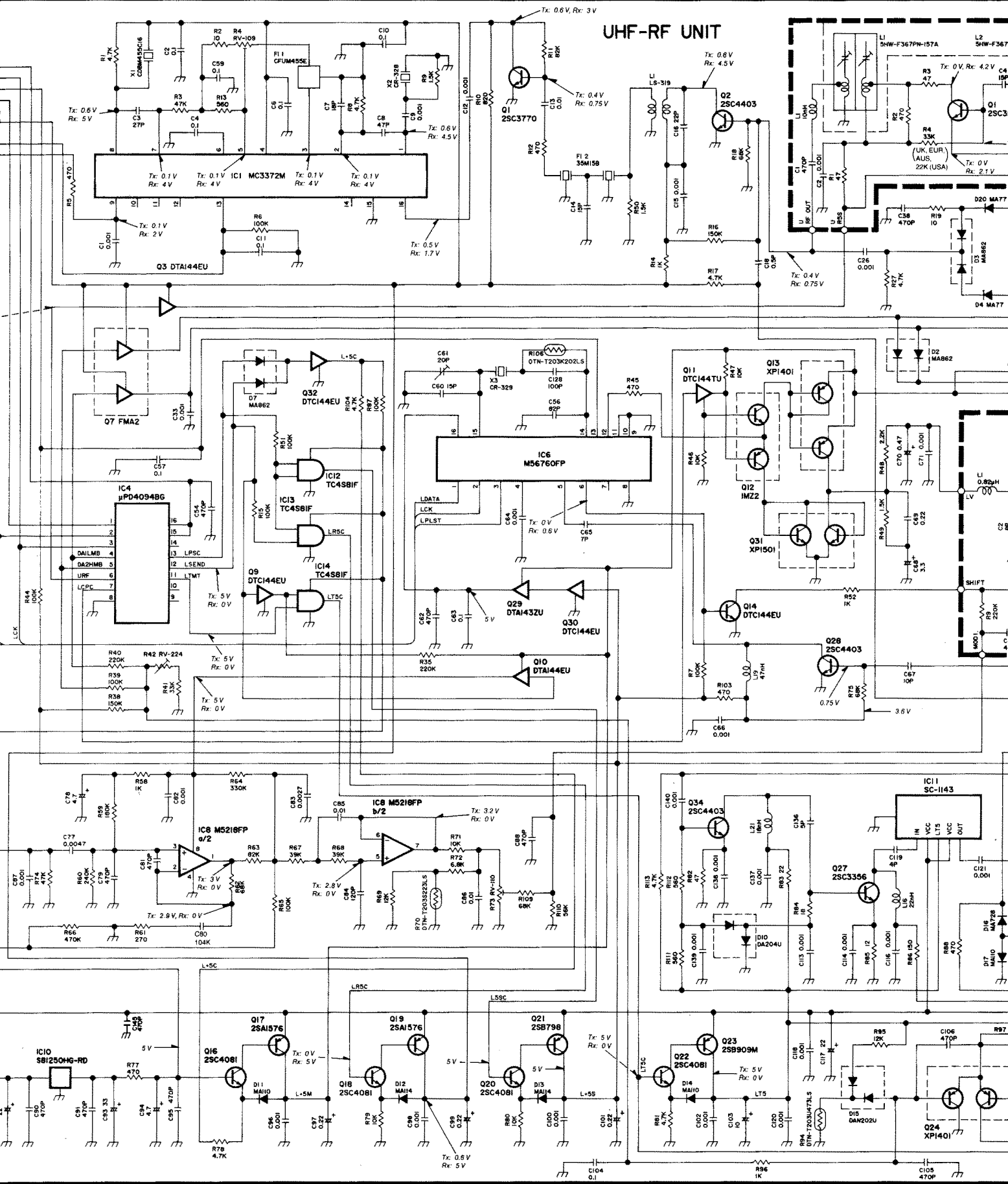


### •BOARD LAYOUTS



# SECTION 9 VOLTAGE DIAGRAM





UHF-RF UNIT

IC6 M56760FP

IC8 M5216FP

IC10 SBI250HG-RD

IC11 SC-1143

IC1 MC3372M

IC2 2SC3770

IC3 2SC4403

IC4 74V094BG

IC7 FMA2

IC9 TC4S8IF

IC12 TC4S8IF

IC13 2SC4403

IC14 2SC4403

IC15 2SC4403

IC16 2SC4403

IC17 2SC4403

IC18 2SC4403

IC19 2SC4403

IC20 2SC4403

IC21 2SC4403

IC22 2SC4403

IC23 2SC4403

IC24 2SC4403

IC25 2SC4403

IC26 2SC4403

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IC259 2SC4403

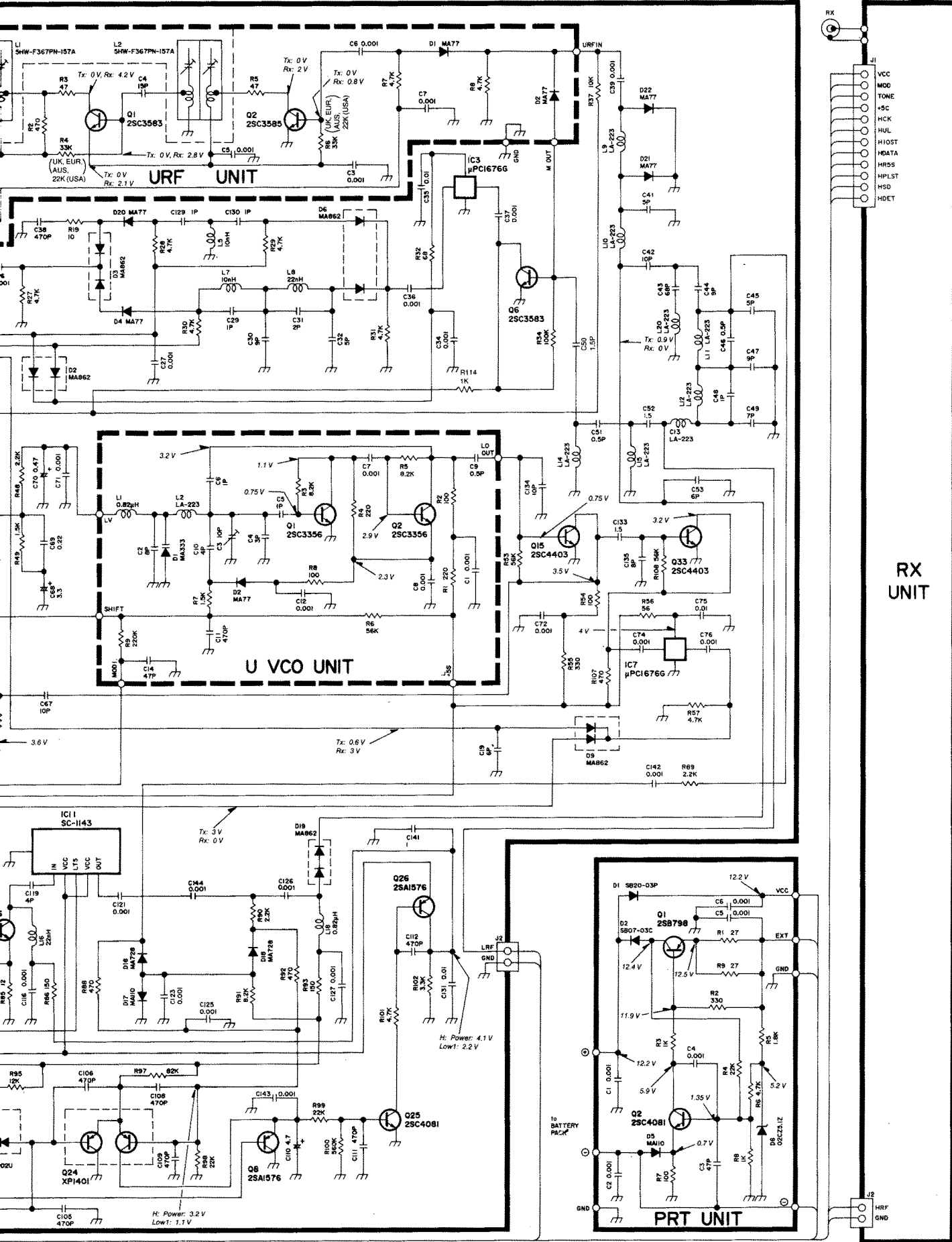
IC260 2SC4403

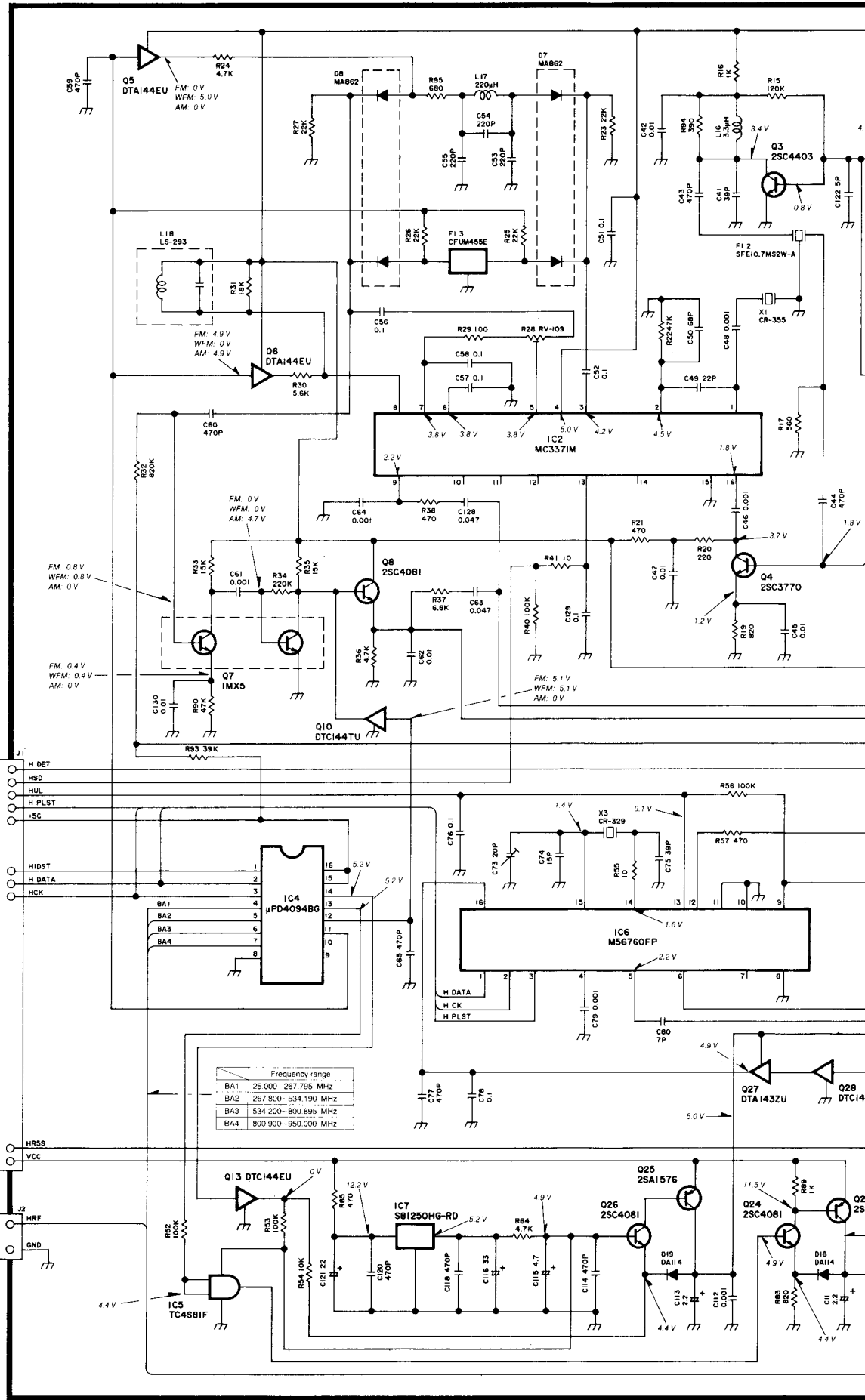
IC261 2SC4403

IC262 2SC4403

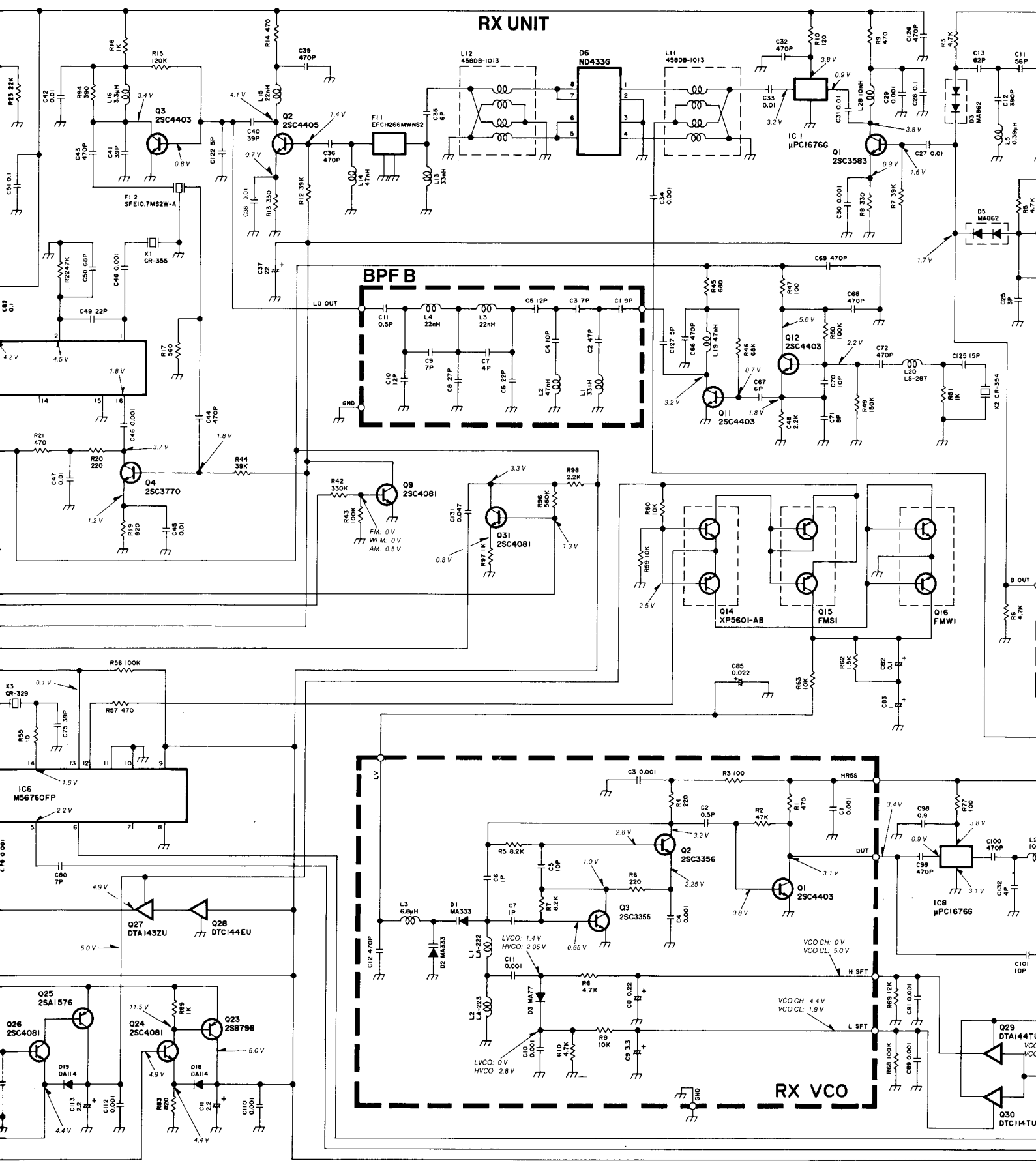
IC263 2SC4403

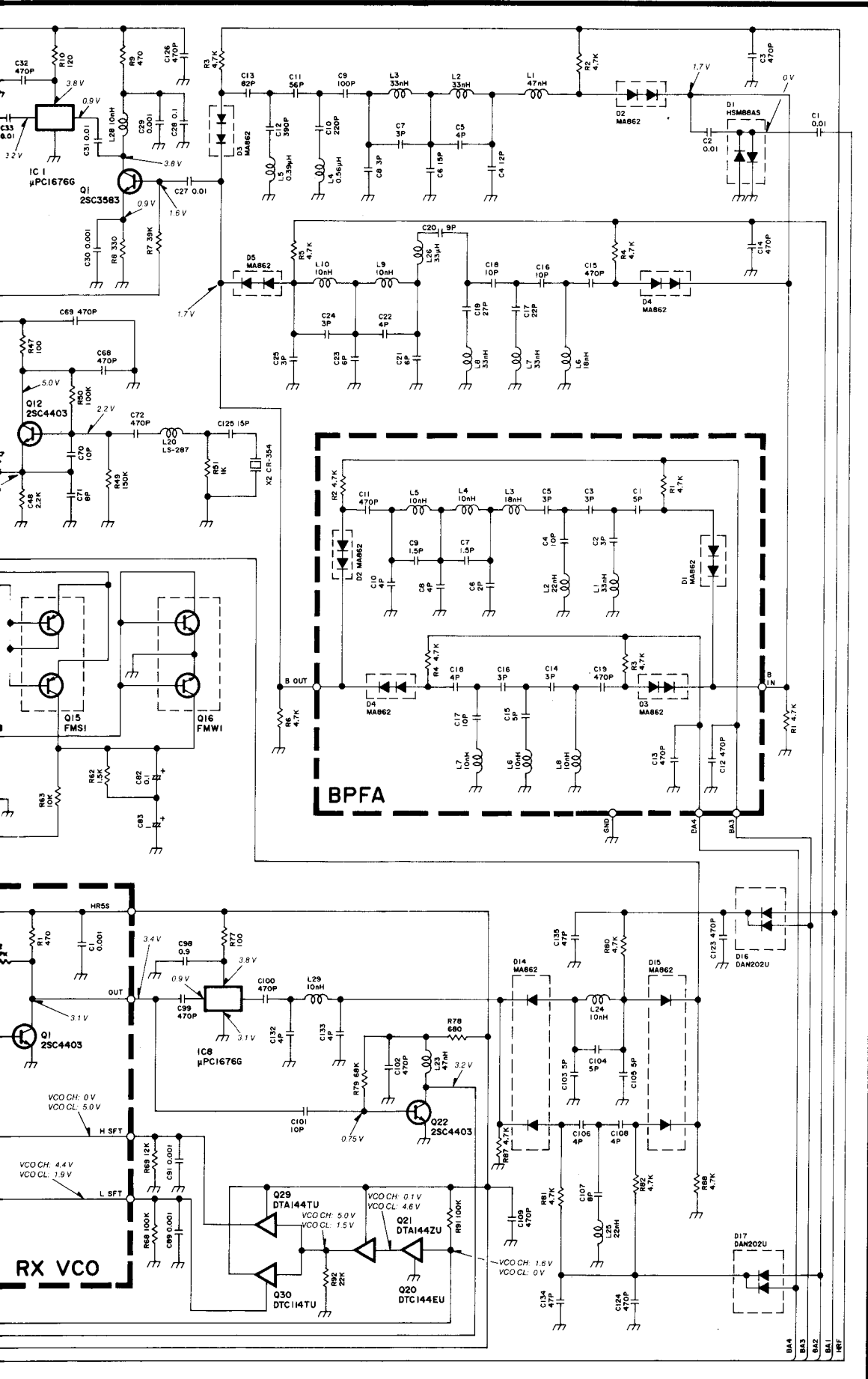
IC264 2SC4403

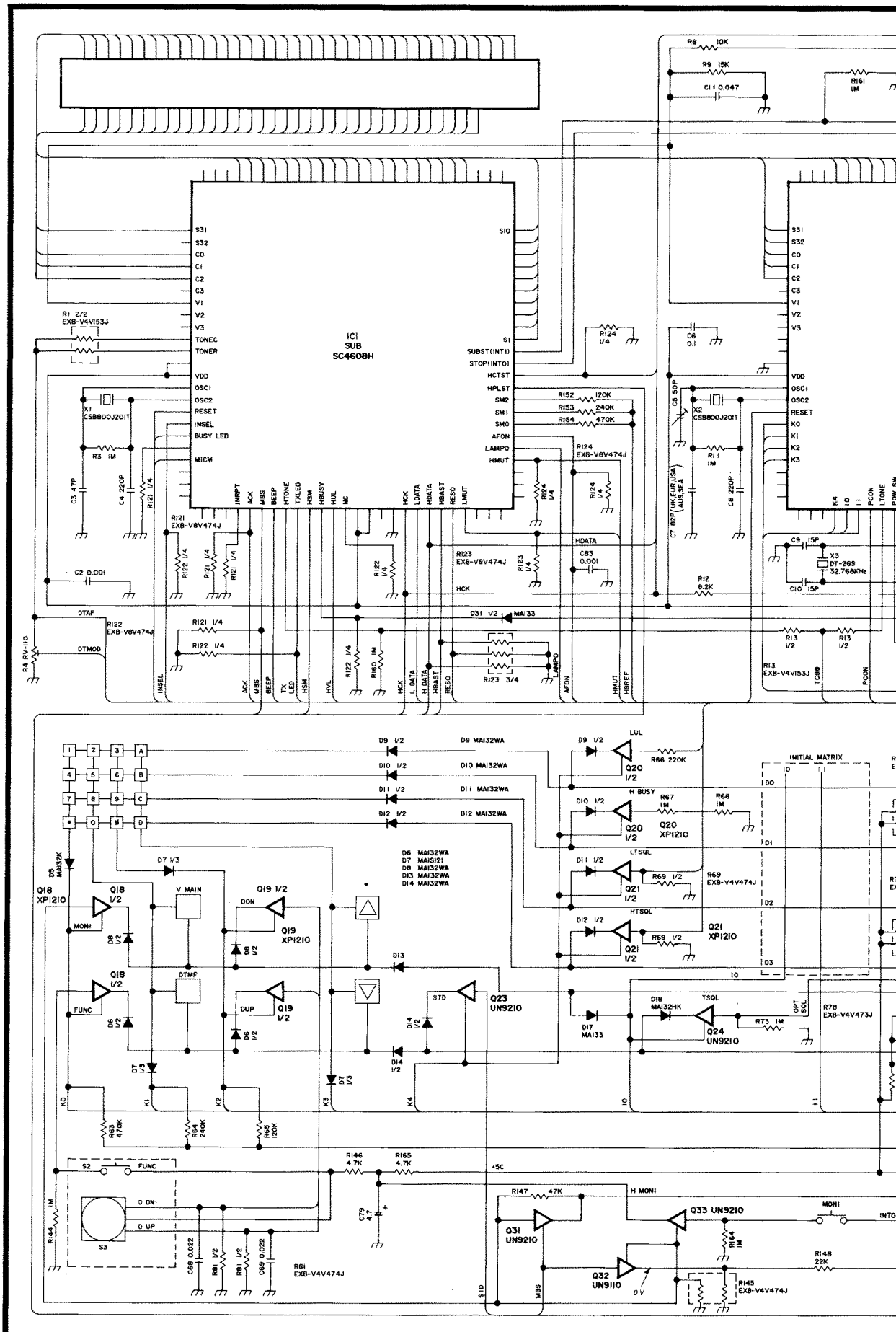
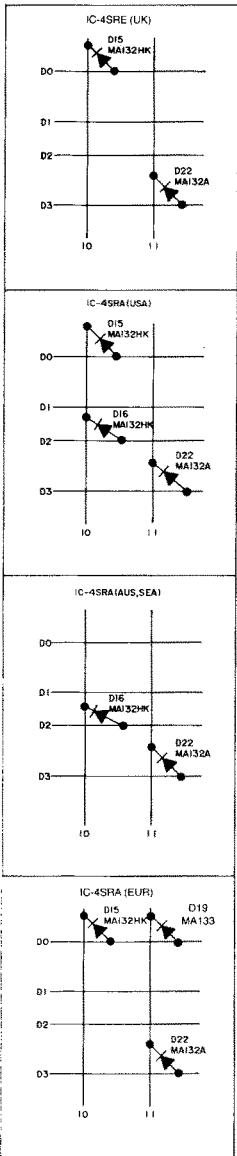




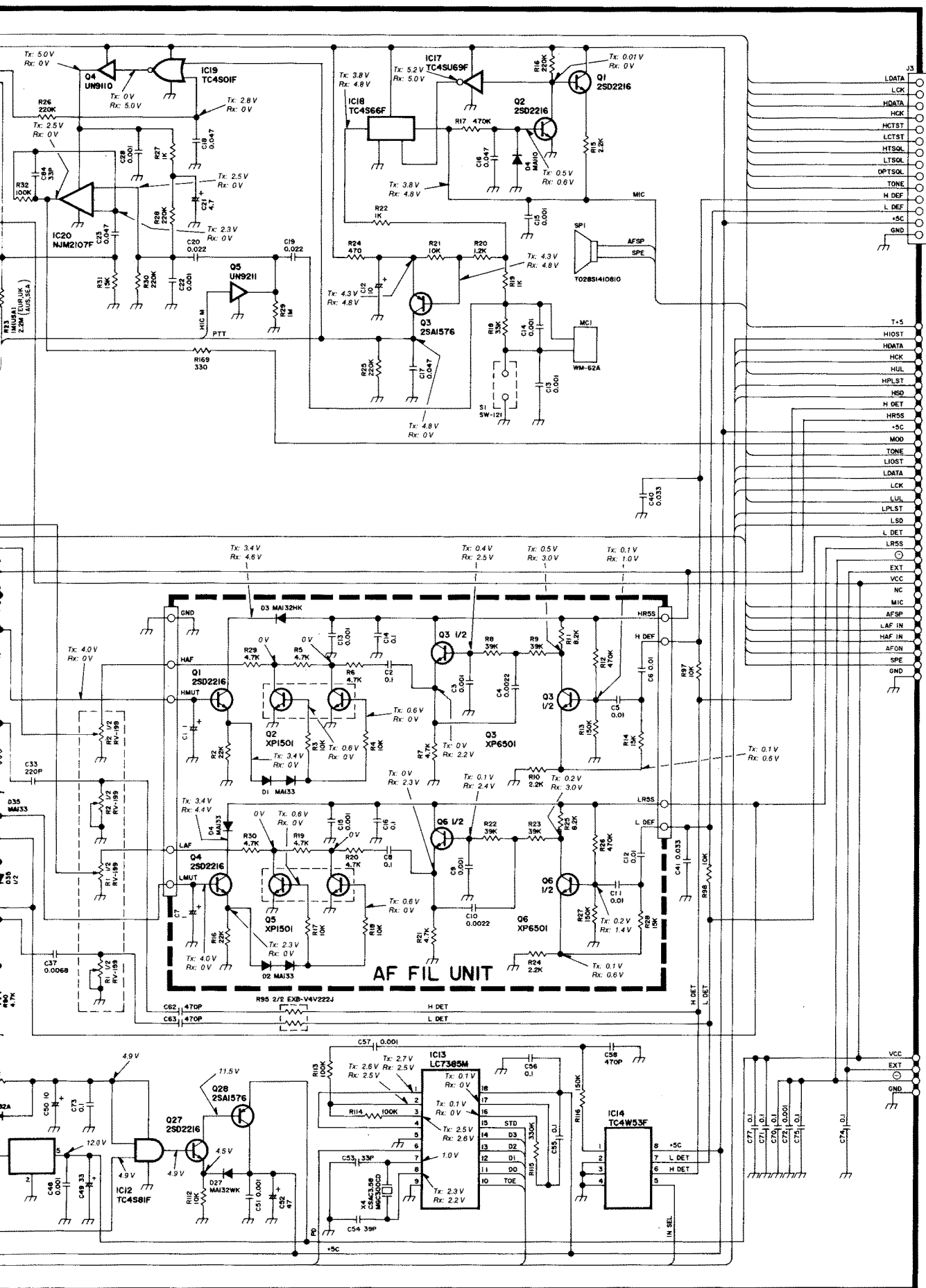




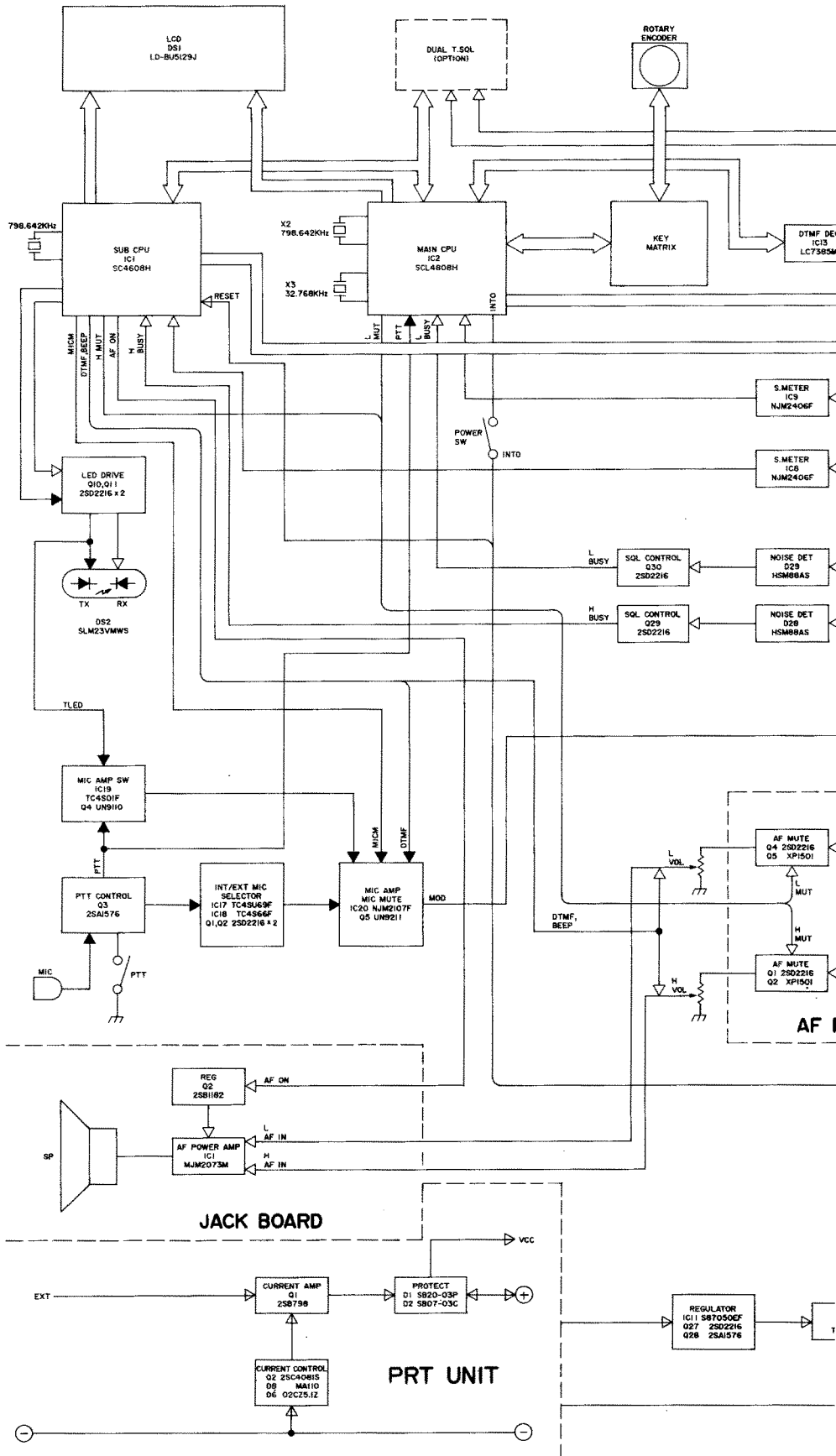








# SECTION 10 BLOCK DIAGRAM









## Icom Inc.

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Count on us!

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