



# SERVICE MANUAL

DUAL BAND FM TRANSCEIVER

**IC-Z1A**  
**IC-Z1E**

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## INTRODUCTION

This service manual describes the latest service information for the IC-Z1A/E DUAL BAND FM TRANSCEIVER at the time of publication.

| MODEL  | VERSION No. | VERSION   | SYMBOL |
|--------|-------------|-----------|--------|
| IC-Z1E | #02         | Europe    | EUR    |
|        | #04         | Italy     | ITA    |
| IC-Z1A | #05         | U.S.A.    | USA    |
|        | #07         | Australia | AUS    |
|        | #09         | Asia      | SEA    |

## DANGER

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

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

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

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

## ORDERING PARTS

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

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

### <SAMPLE ORDER>

|            |       |                  |        |             |           |
|------------|-------|------------------|--------|-------------|-----------|
| 1140004600 | IC    | HD404639A84FS    | IC-Z1A | LOGIC UNIT  | 5 pieces  |
| 8810004370 | Screw | PH B0 M2 x 10 ZK | IC-Z1A | Front panel | 10 pieces |

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

## REPAIR NOTES

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



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

# SECTION 1 SPECIFICATIONS

## ■ GENERAL

### ● Frequency coverage

| Version | 144 MHz band   | 440 MHz band   |
|---------|--|--|
| U.S.A.  | Rx:136.0–174.0 MHz* <sup>1</sup><br>Tx:144.0–148.0 MHz | Rx:400.0–470.0 MHz* <sup>2</sup><br>Tx:440.0–450.0 MHz |
| Italy   | Rx:136.0–174.0 MHz* <sup>1</sup><br>Tx:144.0–148.0 MHz | Rx:400.0–470.0 MHz* <sup>3</sup><br>Tx:430.0–440.0 MHz |
| EUR     | 144.0–146.0 MHz  | 430.0–440.0 MHz  |
| Asia    | Rx:140.0–150.0 MHz* <sup>1</sup><br>Tx:144.0–148.0 MHz | 430.0–440.0 MHz  |

Guaranteed ranges are: \*<sup>1</sup> 144.0–148.0 MHz  
\*<sup>2</sup> 440.0–450.0 MHz  
\*<sup>3</sup> 440.0–470.0 MHz

- Mode : FM (F3E)
- Number of memory channels : 104 (VHF 52 ch, UHF 52 ch)
- Frequency stability:  $\pm 5$  ppm (0 °C to +50 °C, +32 °F to +122 °F)
- Tuning steps : 5, 10, 12.5, 15, 20, 25, 30 or 50 kHz
- Antenna impedance: 50  $\Omega$  (nominal)
- External DC power : 4.5 to 16 V DC (negative ground)
- Current drain : at 13.5 V, typical

| CONDITION |                    | VHF                 | UHF                 |
|-----------|--------------------|---------------------|---------------------|
| Tx        | High               | 1.3 A               | 1.5 A               |
|           | Low                | 500 mA              | 600 mA              |
| 1 band Rx | Power saved        | 23 mA* <sup>4</sup> | 25 mA* <sup>4</sup> |
|           | Rated audio output | 160 mA              | 170 mA              |
| 2 band Rx | Power saved        | 34 mA* <sup>4</sup> |                     |
|           | Rated audio output | 210 mA              |                     |

\*<sup>4</sup> average value

- Usable temperature range : –10 °C to +60 °C (+14 °F to +140 °F)
- Dimensions (projections not included)
  - U.S.A. version : 57 (W) x 137 (H) x 37 (D) mm (with BP-180) 2.2 (W) x 5.3 (H) x 1.43 (D) in
  - Other versions (with BP-170 or BP-171) : 57 (W) x 125 (H) x 36 (D) mm 2.2 (W) x 4.9 (H) x 1.4 (D) in
- Weight
  - U.S.A. version (with BP-180) : 405 g ; 14.3 oz
  - EUR, Italy, Australia versions : 380 g ; 13.4 oz (with BP-171)
  - Asia versions (with BP-170) : 360 g ; 12.7 oz

## ■ TRANSMITTER

- Output power : 5 W, 0.5 W, 15 mW (selectable)
- Modulation system : Variable reactance frequency modulation
- Max. freq. deviation\*<sup>5</sup> :  $\pm 5.0$  kHz
- Spurious emissions : Less than –60 dB
- Microphone impedance : 2 k $\Omega$

## ■ RECEIVER

- Receiver system : Double conversion superheterodyne
- Intermediate frequencies
  - : VHF 1st 43.100 MHz
  - : VHF 2nd 455 kHz
  - : UHF 1st 35.800 MHz
  - : UHF 2nd 455 kHz
- Sensitivity\* (12 dB SINAD) : Less than 0.16  $\mu$ V  
Less than 0.32  $\mu$ V for V/V and U/U
- Squelch sensitivity : Less than 0.16  $\mu$ V (at threshold)
- Selectivity : More than 15 kHz/–6 dB  
Less than 30 kHz/–60 dB
- Spurious and image rejection ratio\*<sup>5</sup> : More than 60 dB (more than 45 dB at IF/2)
- Audio output power\*<sup>5</sup> (at 13.5 V) : More than 180 mW (at 10 % distortion with an 8  $\Omega$  load)
- Audio output impedance : 8  $\Omega$

\*<sup>5</sup> Specifications guaranteed at a transceiver temperature of +25 °C (+77 °F).

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

## SECTION 2 DISASSEMBLY INSTRUCTIONS

### ● Removing the rear panel

- ① Remove the 4 screws, **A** (black, 2 mm), and 2 screws, **B** (silver, 2 mm), to separate front and rear panel as shown below.

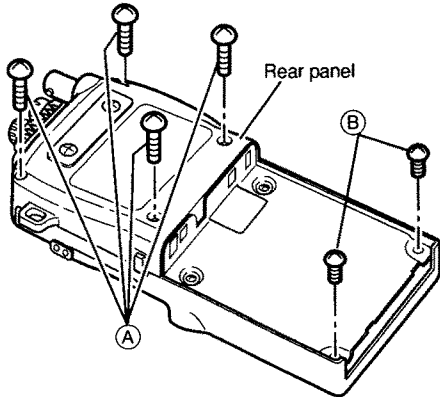


Fig. 1 Removing the rear panel

### ● Removing the LOGIC unit

- ② Unplug J1 and J3 to separate front and rear panel then remove 3 screws, **C** (silver, 2 mm).

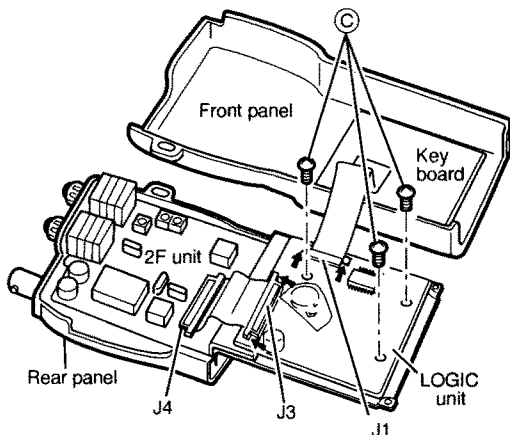


Fig. 2 Removing the LOGIC unit

### ● Removing the 2F unit

- ③ Remove 4 screws, **D** (silver, 2 mm), to separate the rear plate as shown Fig. 3.
- ④ Unsolder the point **E**, and remove 2 nuts **F** (black).
- ⑤ Remove 3 screws, **G** (silver, 1.4 mm), to separate the contact base and rear panel. Take off the contact base in the direction of the arrow.
- ⑥ Remove 2 screws, **H** (silver, 2 mm), and unplug J4 – J7 on the bottom side, to separate 2F and 1F units.

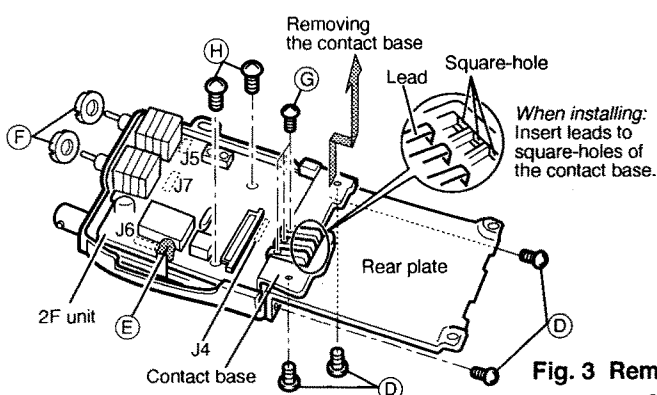


Fig. 3 Removing the 2F unit

### ● Removing the 1F unit

- ⑦ Remove 3 screws, **I** (nickel, 2 mm), and 1 screw, **J** (black, 2 mm), 1 nut **K** (incl. antenna connector unit), to separate the 1F unit.

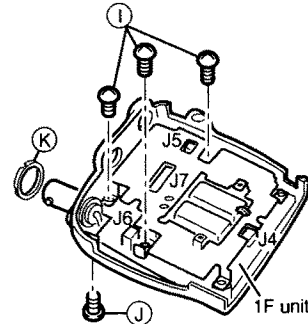


Fig. 4 Removing the 1F unit

### ● Removing the DISPLAY unit

- ⑧ Remove 3 screws, **L** (black, 2mm), to separate front and rear panel.

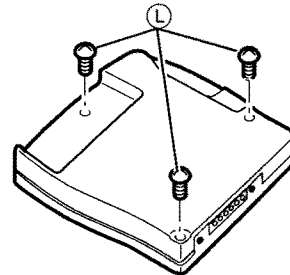


Fig. 5-1 Removing the DISPLAY unit

- ⑨ Remove 5 screws, **M** (nickel, 2 mm), **N** (nickel, 1.4mm), **O** (black, 2 mm), to separate the DISPLAY unit.

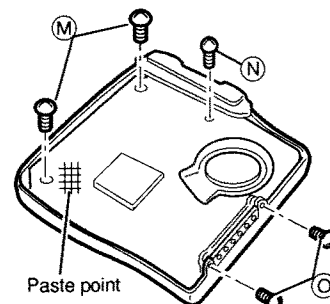
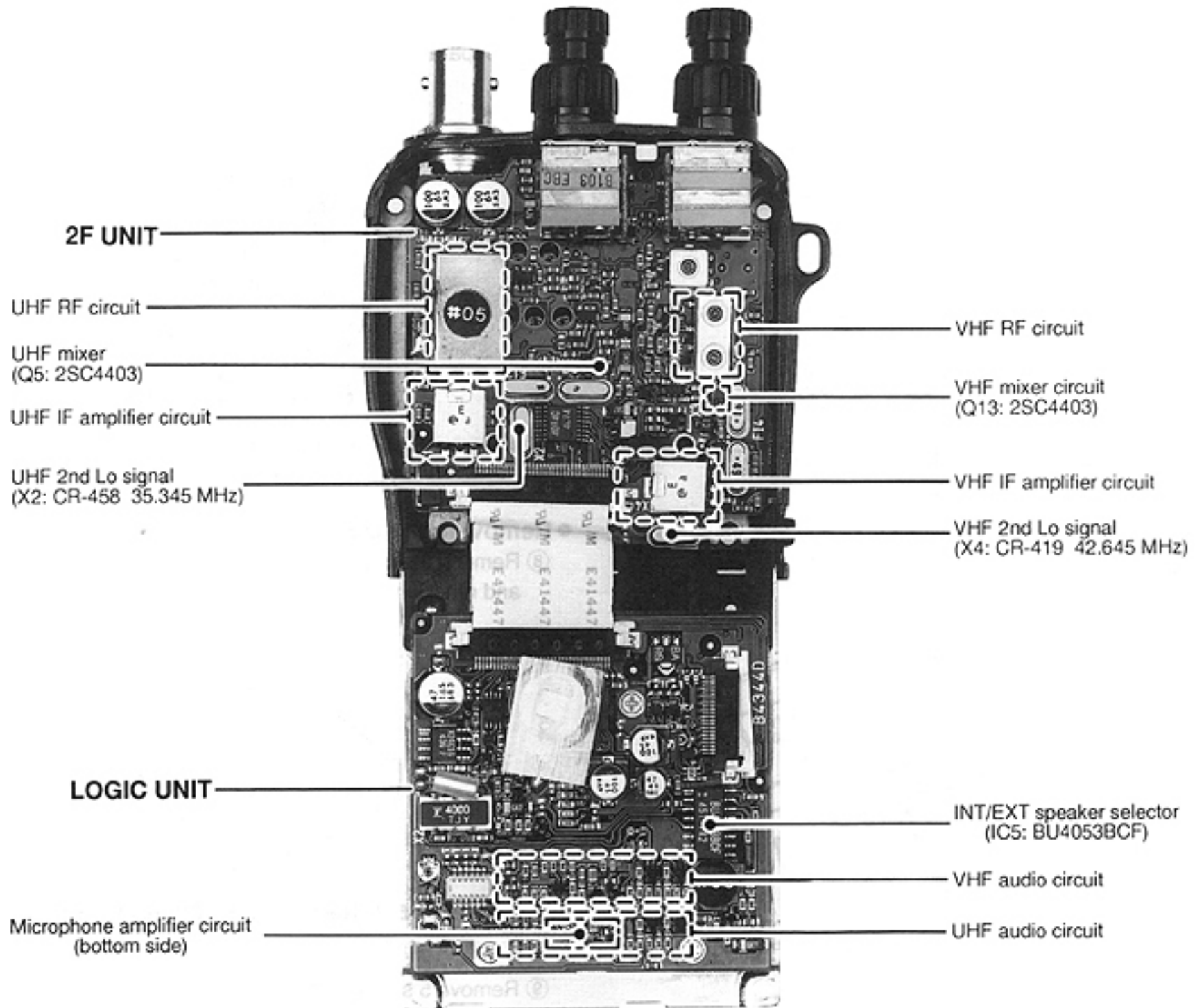


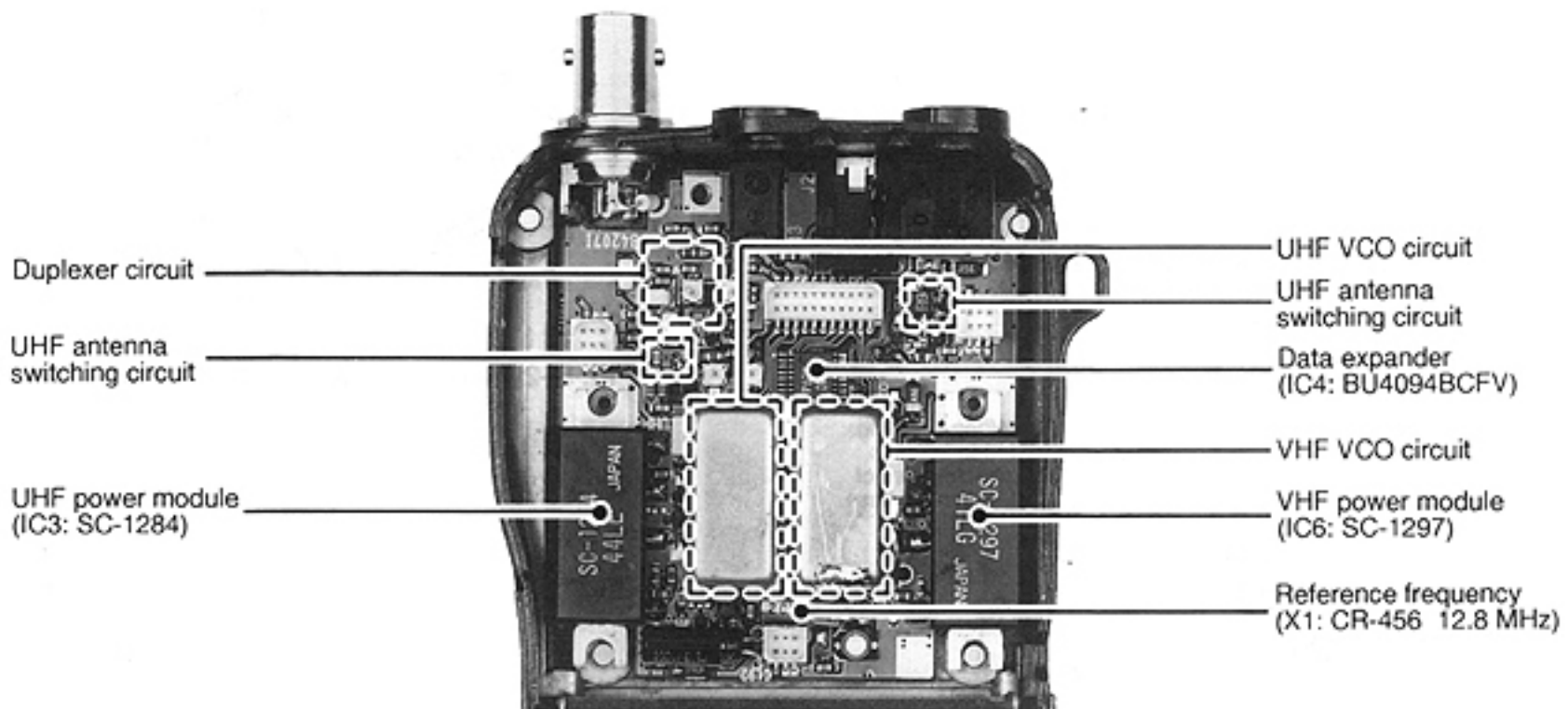
Fig. 5-2 Removing the DISPLAY unit

# SECTION 3 INSIDE VIEWS

## 2-1 LOGIC AND 2F UNITS



## 2-2 1F UNIT



## SECTION 4 CIRCUIT DESCRIPTION

### 4-1 RECEIVER CIRCUITS

#### 4-1-1 DUPLEXER CIRCUIT (1F UNIT)

The transceiver has a duplexer (low-pass and high-pass filters) on the first stage from the antenna connector to separate the signals into VHF and UHF signals. The low-pass filter (L14–L16, C53–C58) for VHF signals and the high-pass filter (C48, C49, C147, C148, L11, L12) for UHF signals. The separated signals are applied to each RF circuit.

#### 4-1-2 VHF ANTENNA SWITCHING CIRCUIT (1F UNIT)

The antenna switching circuit functions as a low-pass filter while receiving. However, its impedance becomes very high while transmitting by grounding cathode of D37 and D38. Thus, transmit signals are blocked from entering the receiver circuits. The antenna switching circuit employs a  $1/4\lambda$  type diode switching system. The passed signals are then applied to the RF amplifier circuit on the 2F unit.

#### 4-1-3 VHF RF CIRCUIT (2F UNIT)

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

The signals from the antenna switching circuit pass through a band-pass filter (L10, D15), and are applied to the RF amplifier (Q18, Q19). The RF amplifier consists of a cascade circuit. The amplified signals are passed through the next stage band-pass filter (L8, L9, D12, D13) to suppress unwanted signals. The filtered signals are then applied to the mixer circuit (Q13).

D12 and D13 track the band-pass filters and are controlled by the PLL lock voltage. These diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

#### 4-1-4 VHF 1ST MIXER AND 1ST IF CIRCUITS (2F UNIT)

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

The signals from the VHF RF circuit are mixed with the VLO signal at the 1st mixer (Q13) to produce a 43.10 MHz 1st IF signal.

The 1st IF signal is applied to a pair of crystal filters (FI4) to suppress out-of-band signals. The 1st IF signal is amplified at the IF amplifier (Q10) and applied to the 2nd mixer circuit (IC2).

#### 4-1-5 V/V FUNCTION CIRCUIT

During the V/V function, VHF RF signals are applied to the UHF mixer (Q5) as well as the VHF mixer.

When the V/V function is activated, Q4 is turned ON, thus the VHF RF signals are entered to the UHF mixer via D10.

Q5 mixers doubled VCO output and RF signals for UHF receiving, however, direct VCO components are used for VHF receiving.

#### 4-1-6 VHF 2ND IF AND DEMODULATOR CIRCUITS (2F UNIT)

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

The 1st IF signal from the FI4 is amplified at Q10 and is applied to the 2nd mixer section of IC2 (pin 16), and is mixed with the 2nd LO signal to be converted to a 455 kHz 2nd IF signal.

IC2 contains the 2nd mixer, 2nd local oscillator, limiter amplifier, S-meter detector and quadrature detector circuits. The 2nd local oscillator section and X4 generate 42.645 MHz for the 2nd LO signal.

The 2nd IF signal (455 kHz) from the 2nd mixer (IC2 pin 3) passes through the ceramic filter (FI3) where unwanted signals are suppressed. It is then amplified at the limiter amplifier section (IC2 pin 5) and applied to the quadrature detector section (IC2 pin 8 and ceramic discriminator X3) to demodulate the 2nd IF signal into AF signals.

AF signals output from IC2 (pin 9) are applied to the AF amplifier (2F unit IC6), through the LOGIC unit. The S-meter output "L SD" signal from IC2 (pin 13) is applied to the CPU (IC1 pin 4). See Figure 1.

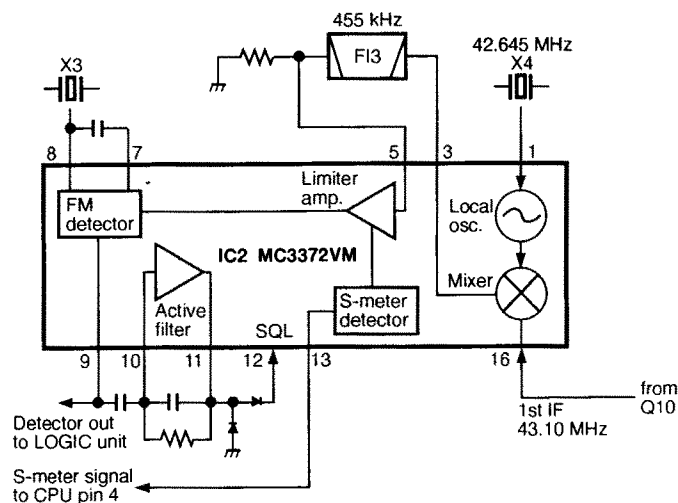


Fig. 1 VHF 2ND IF AMPLIFIER

### 4-1-7 VHF AF AMPLIFIER CIRCUIT (LOGIC AND 2F UNITS)

The AF amplifier circuit, including an AF mute switch, amplifies the demodulated signal to drive a speaker.

AF signals are applied to Q19 on the LOGIC unit. Q19 (pins 2 – 4) is an active filter that functions as a high-pass filter to suppress subaudible tone signals for tone squelch operation. Q19 (pins 1, 5, 6) is also an active filter that functions as a low-pass filter to suppress higher noise signals.

The filtered signals are amplified at Q21 after passing through the AF mute switch (Q18) and the volume control circuit (Q12, Q13) and are then applied to the [INT/EXT] speaker selector (IC5). When the VHF audio is selected to the internal speaker by the separate speaker selector, AF signals are applied to IC6 (pin 7) on the 2F unit; when the external speaker is selected, AF signals are applied to IC6 (pin 6). See Figure 2.

IC9 converts from the serial data of the CPU (IC1) to the parallel data. Those parallel data controls the attenuation level of Q10–Q13 for the volume control.

### 4-1-8 VHF NOISE SQUELCH (2F UNIT)

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

Some of the noise components in the AF signal from IC2 (2F unit pin 9) are applied to the active filter section (IC2 pin 10, pin 11). The [VHF SQL] control on the V VR board adjusts the IC2 input level.

The active filter section amplifies noise components of frequencies of 20 kHz and above. Output signals are rectified by D25 for conversion to DC voltage.

The rectified voltage triggers the squelch switch section (IC2 pin 12). The squelch switch section sets the "LBUSY" line "HIGH/LOW" to apply the signal to the CPU (IC1 pin 49) on the LOGIC unit. Then the CPU outputs the L RMUTE and LBLEED signals.

The LRMUTE signal, activates the AF mute circuit (Q18) on the LOGIC unit to cut the VHF AF signals. The LBLEED signal is applied to the LED drive (Q5) on the LOGIC unit.

### 4-1-9 AF POWER AMPLIFIER CIRCUIT (2F UNIT)

The AF power amplifier circuit employs a 2-channel stereo IC (IC6) for separate output of the internal and external speaker.

Audio signals for the internal speaker and external speaker are applied to pins 7 and 6 of IC6 respectively. When no plug is connected to the [EXT SP] jack, the amplified audio signals for external speaker are combined with the internal speaker audio. The combined signals are amplified at AF power amplifier (IC6, pin 7) and are then applied to the internal speaker. See Figure 2.

The voltage regulator (Q30, Q31) supplies power to the AF power amplifier. The AF ON signal from the CPU (LOGIC unit IC1) controls Q30 (2F unit) to reduce the current drain while the squelch is closed.

### 4-1-10 UHF RF CIRCUIT (1F AND 2F UNITS)

UHF band signals from the antenna connector pass through the high-pass filter (L11 – L13, C48 – C50), low-pass filter (L9, L10, L36, C43 – C47) and the antenna switching circuit (D18, D19, L5).

The UHF RF signals are applied to the 2F unit and are then amplified at the RF amplifiers (Q32, IC7). Saw filters (F15, F16) are used at the last stage of these amplifiers.

### 4-1-11 UHF 1ST MIXER AND 1ST IF CIRCUITS (2F UNIT)

The filtered signals are mixed at Q5 with a ULO signal to produce a 35.8 MHz 1st IF signal.

The 1st IF signal passes through the pair of crystal filters (F12) and is then amplified at Q1 and applied to the FM IF IC (IC1 pin 16).

### 4-1-12 U/U FUNCTION CIRCUIT

During the U/U function, UHF RF signals are applied to the VHF mixer (Q13) parallel with the UHF mixer.

When the U/U function is activated, Q25 is turned ON, thus the UHF RF signals are amplified at IC7, and then applied to the VHF mixer.

Q13 mixes the UHF RF signals and doubled components of VHF PLL output to produce a 43.10 MHz IF signal.

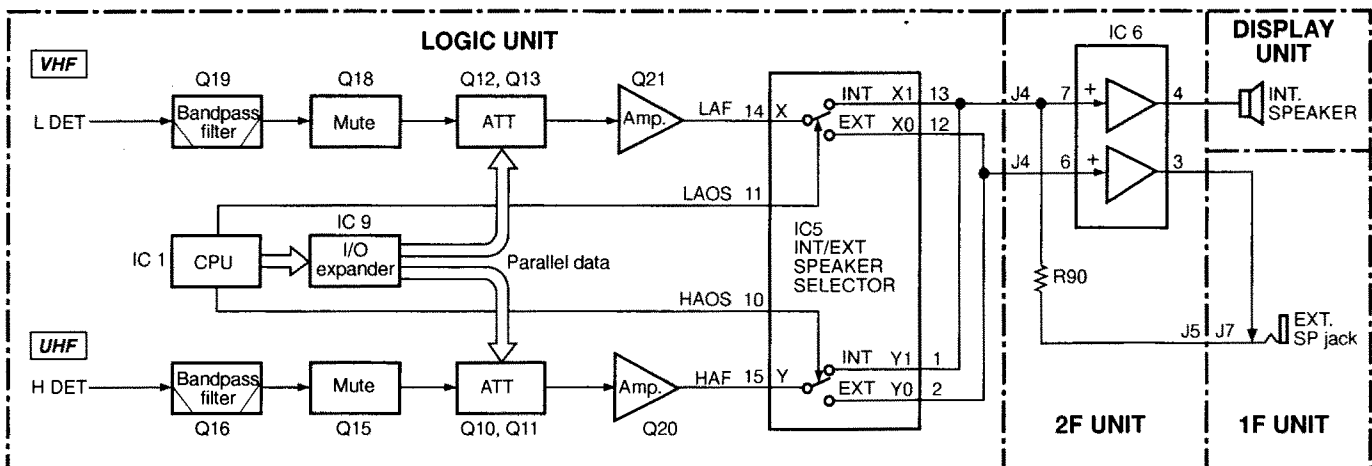


Fig. 2 AF SIGNAL LINE



### 4-1-13 UHF 2ND IF AND DEMODULATOR CIRCUITS (2F UNIT)

A 2nd mixer, 2nd IF, 2nd local oscillator, limiter amplifier, quadrature detector circuit and S-meter detector circuit are incorporated in IC1. The 2nd local oscillator section and X2 generate a 35.345 MHz for the 2nd LO signal.

A 35.8 MHz IF signal is mixed with the 2nd Lo signal to produce the 2nd IF signal (455 kHz) at IC1. The 2nd IF signal from pin 3 is applied to pin 5 through the ceramic filter (F11) and is amplified at the limiter amplifier section in IC1. It is then applied to the quadrature detector section (IC1 pin 8 and ceramic discriminator X1) to demodulate the 2nd IF signal into AF signals.

The signals are output from IC1 (pin 9) as an "HDET" signal and then applied to the AF circuit (LOGIC unit).

The S-meter output "H SD" signal is applied to the CPU (IC1 pin 3) on the LOGIC unit from from the FM IF IC (IC1 pin 13).

### 4-1-14 UHF AF CIRCUIT (LOGIC UNIT)

The "HDET" signals (AF signals) from the FM IF IC (IC1 pin 9) are applied to the active filter (Q16) on the LOGIC unit. The filtered signals pass through the AF mute switch (Q15) and the volume control (Q10, Q11). The signals are amplified at Q20 and are then applied to the [INT/EXT] speaker selector (IC5, pin 15). When the UHF audio is selected to the internal speaker by the [INT/EXT] speaker selector, AF signals are applied to IC6 (pin 7) on the 2F unit.

### 4-1-15 UHF SQUELCH CIRCUIT (2F UNIT)

Some of the noise components in the AF signal from IC1 (pin 9) are applied to the active filter section (IC1 pins 10 and 11). The [UHF SQL] control on the U VR board adjusts the IC1 input level. IC1 amplifies noise components and D1 rectifies them for conversion to DC voltage.

The rectified voltage triggers the squelch switch section (IC1 pin 12). The squelch switch controls the "HBUSY" signal to inform the CPU (IC1 pin 47) on the LOGIC unit.

## 4-2 TRANSMITTER CIRCUITS

### 4-2-1 MICROPHONE AMPLIFIER CIRCUIT (LOGIC UNIT)

The microphone amplifier circuit amplifies audio signals with +6 dB/octave pre-emphasis from the microphone to a level needed for the modulation circuit. The microphone amplifier circuit is used for both the VHF and UHF bands.

The AF signals from the built-in condenser microphone, or from the [MIC] jack are applied to the microphone amplifier (IC10 pin 16).

The output signals from IC10 (pin 8) pass through the low-pass filter (C76, C78, R111, R112) where signal components greater than 3 kHz are attenuated. The signals are applied to the VHF VCO or UHF VCO circuit in the IF unit.

### 4-2-2 VHF MODULATION CIRCUIT (V VCO BOARD)

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

The "V MOD" signal changes the reactance of a diode (D1) to modulate the oscillated signal at the VHF VCO circuit (Q1, Q2, D1). The VCO output is buffer-amplified at Q3 and Q28 on the 1F unit and is then applied to the transmit/receive switching circuit (D24, D25) on the 1F unit.

### 4-2-3 VHF POWER AMPLIFIER CIRCUIT (1F UNIT)

IC6 is a power module which provides more than 5 W of output power with a 13.5 V DC power source.

An RF signal from the transmit/receive switching circuit (D25) is amplified at the drive amplifiers (Q29, Q31) and then applied to IC6. The amplified signal is then applied to the antenna connector via the transmit/receive switching circuit (D39) and duplexer.

When E LOW power is selected, the output of the drive amplifier (Q31) bypasses the power module (IC6) through D30 and D32.

### 4-2-4 VHF APC CIRCUIT (1F UNIT)

The APC circuit protects the power module (IC6) from a mismatched output load and selects HIGH, LOW1 or LOW2 output power.

The APC detector circuit (L21, D34 – D36) detects forward signals and rectified signals at D35 and D36 respectively. The combined voltage is at a minimum level when the antenna is matched at 50  $\Omega$  and is increased when it is mismatched.

The detected voltage is applied to one of the differential amplifier inputs (Q25). When the antenna impedance is mismatched, the detected voltage exceeds the reference voltage. Thus the bias voltage of IC6 is decreased via Q13.

Low output power is obtained by changing the reference voltage (Q25 base) coming from IC4 pin 7. A thermistor (R93) controls APC reference voltage to reduce the output power when the temperature is increased.

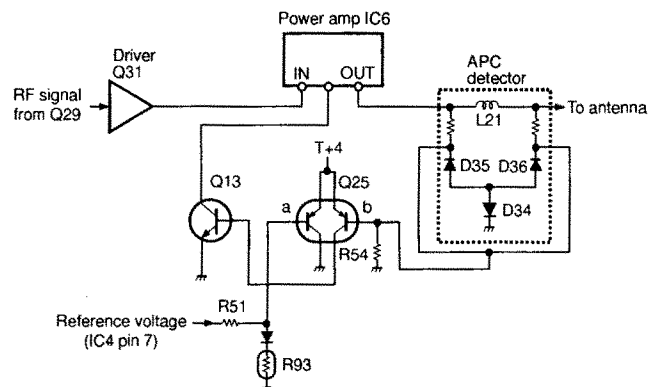


Fig. 3 VHF APC CIRCUIT

#### 4-2-6 VHF ANTENNA SWITCHING CIRCUIT (1F UNIT)

The antenna switching circuit applies receive signals to the receiver circuit and transmit signals to the antenna connector.

When transmitting, D39 is turned ON. The RF output signal is applied to the antenna connector via the duplexer.

#### 4-2-7 UHF MODULATION CIRCUIT (UHF VCO BOARD)

The audio signals from the microphone amplifier circuit (described in Section 4-2-1) are applied to D3 on the UHF VCO board.

The audio signals change the reactance of D3 to modulate the oscillated signal (200 MHz band) at the UHF VCO circuit (Q1, Q2). The oscillated signal is amplified at Q3 and doubled at Q1 (UHF VCO2F board). The signal (400 MHz band) is amplified at the buffer amplifier (1F unit Q4) and then applied to the drive amplifiers (Q8, Q9).

#### 4-2-8 UHF POWER AMPLIFIER CIRCUIT (1F UNIT)

IC3 is a power module which provides a stable 5 W (DC 13.5 V) of output power.

The drive amplifier (Q8, Q9) and power amplifier (IC3) amplify the VCO oscillating signal to an output level. The output signal passes through the APC detector circuit (L20, D20, D21) and duplexer, and is applied to the antenna connector.

#### 4-2-9 UHF APC CIRCUIT (1F UNIT)

The APC circuit detects the output signal from the UHF power module on the 1F unit. Q25 compares the voltages detected by the APC detector and the reference voltages. When a voltage detected by APC exceeds a reference voltage, Q25 controls bias voltage of IC3 via Q13 to reduce the RF output power.

### 4-3 PLL CIRCUITS

#### 4-3-1 VHF PLL CIRCUIT (1F UNIT)

The oscillated signal at the VHF VCO circuit (VHF VCO board Q1, Q2) is amplified at Q27 and then applied to the PLL IC (IC5 pin 19). IC5 divides this input with the serial data from the CPU and phase-detects it with the divided reference frequency and then outputs the phase difference as pulses.

The output signals from IC5 (pin 13) are converted to DC voltages (lock voltage) by the loop filter (R58, C104) and are then fed back to the VCO circuit to stabilize the VCO frequency.

The DC voltage is also applied to the receiver turned bandpass filters as a "VTUNE" signal.

#### 4-3-2 UHF PLL CIRCUITS (1F UNIT)

The oscillated signal at the UHF VCO circuit (UHF VCO board Q1, Q2, D2) is amplified at Q3 and then applied to the UHF VCO 2F board.

The signal is doubled on the board to obtain 370 – 380 MHz frequency. The doubled signal is applied to the PLL IC (IC1 pin 19).

IC1 divides this input with the serial data from the CPU and phase-detects it with the reference frequency from IC5 and then outputs the phase difference as pulses.

The output signals from IC1 (pin 13) are converted to DC voltage (lock voltage) by the loop filter (R1 – R3, C1 – C3) and are then fed back to the VCO circuit to stabilize the VCO frequency.

The oscillated signal is doubled for UHF transmit and receiver circuits or bypassed the doubler circuit for V/V function.

### 4-4 OTHER CIRCUITS

#### 4-4-1 TONE SQUELCH UNIT (U.S.A. version only: TSQL UNIT)

The TSQL UNIT provides pocket beep, tone squelch and programmable tone encoder functions.

##### ENCODER FUNCTION

The serial data from the CPU (LOGIC unit IC1) is applied to IC1 (VHF) and IC2 (UHF). The tone signal reply to the data signal is output from IC1 (VHF pin 21) or IC2 (UHF pin 21) and is applied to R9 through the buffer amplifier (IC4). R9 adjusts the deviation level.

##### DECODER FUNCTION

The received signal from the L DET (or H DET) signal line is applied to the active low-pass filter between pin 1 and pin 2 within IC1(or IC2). The filtered signal is compared with the programmed tone signal. Pin 14 of IC1 (or IC2) becomes "LOW" when the received signal matches to the programmed tone frequency.

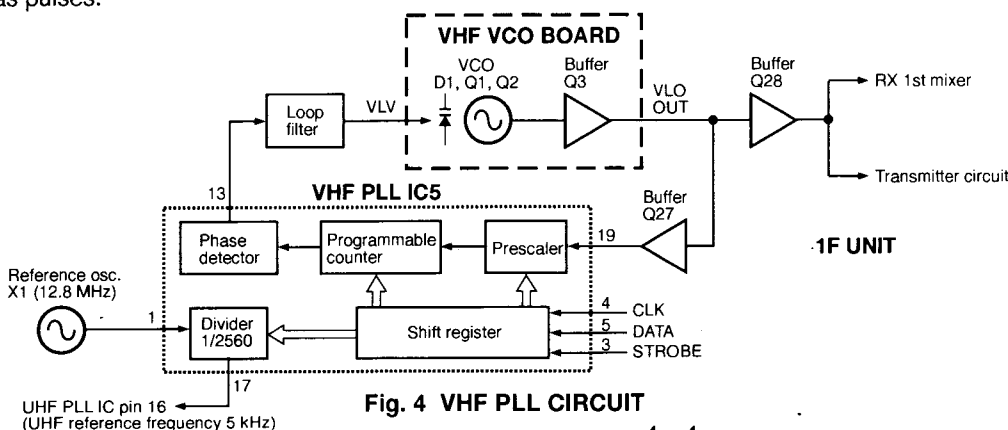


Fig. 4 VHF PLL CIRCUIT

## 4-5 PORT ALLOCATIONS

### 4-5-1 CPU (LOGIC UNIT)

| Pin number | Port name | Description  |
|------------|-----------|--|
| 1          | BATT      | Input port for the CPU power source.   |
| 2          | REMOTE    | Input port for optional speaker-microphones remote control signal.                                   |
| 3          | HSD       | Input port for a UHF S-meter detection signal.   |
| 4          | LSD       | Input port for a VHF S-meter detection signal.   |
| 7, 8       | OSC1, 2   | Clock oscillator terminals for a CPU clock.  |
| 9          | RESET     | CPU is initialized when this port receives "HIGH."   |
| 10, 11     | X1, X2    | Clock oscillator terminals for clock/timer function.   |
| 13         | POSW      | Input port for the [POWER] key. "LOW" : [POWER] key is pushed.                                       |
| 14         | LIGHT     | Outputs the LCD backlight signal. "HIGH" : lights.   |
| 15         | ECK       | Outputs a serial clock signal for the EEPROM (IC3).  |
| 16         | EDATA     | Outputs a serial data for the EEPROM (IC3).  |
| 17         | LPLST     | Outputs a strobe signal to the VHF PLL IC (1F unit, IC5).  |
| 18         | LCK       | Outputs a serial clock signal for the VHF band's data, expander (1F unit, IC4) and the VHF PLL IC.   |
| 19         | LDATA     | Outputs serial data for the VHF band.  |
| 20         | LIOST     | Outputs a strobe signal to the VHF band's data expander (1F unit, IC4).                              |
| 21         | HPLST     | Outputs a strobe signal to the UHF PLL IC (1F unit, IC1).  |
| 22         | HCK       | Outputs a serial clock signal to the UHF PLL IC (1F unit, IC1).                                      |
| 23         | HDATA     | Outputs a serial data for the UHF PLL IC (1F unit, IC1).   |
| 24         | AFON      | Outputs an AF power amplifier control signal. "HIGH" : AF amp activates. "LOW" : AF amp deactivates. |
| 25         | PTT       | Input port for the [PTT] switch. "HIGH" : [PTT] is pushed.   |
| 26         | STD1      | Input port for detection of a DTMF decoder.  |
| 27         | INT       | CPU enters back up mode when this port receives "LOW."   |
| 28         | MSTI      | Data bus for the SUB CPU.  |
| 29         | LDCK      | Input port for the VHF dial clock signal.  |
| 30         | HDCK      | Input port for the UHF dial clock signal.  |
| 31         | LDDN      | Input port for the VHF dial down signal.   |
| 32         | LDUP      | Input port for the VHF dial up signal.   |
| 33         | HDDN      | Input port for the UHF dial down signal.   |
| 34         | HDUP      | Input port for the UHF dial up signal.   |

| Pin number | Port name  | Description   |
|------------|------------|---|
| 35         | INSEL      | Outputs a DTMF audio selector signal. "LOW" : UHF band "HIGH" : VHF band                                |
| 36         | DPD        | Outputs a DTMF decoder power control signal.  |
| 37         | DCK        | Outputs a serial clock signal for the DTMF decoder (IC4).   |
| 38         | DDATA      | Input port for DTMF decoder data from IC4.  |
| 39         | HUL        | Input port for the UHF PLL unlock signal "HIGH" : When PLL is unlocked.                                 |
| 40         | LUL        | Input port for the VHF PLL unlock signal "HIGH" : When PLL is unlocked.                                 |
| 41         | LTX        | Outputs VHF transmit control signal.  |
| 42         | HTX        | Outputs UHF transmit control signal.  |
| 43         | LBLED      | Outputs the receive LED signal (VHF band).  |
| 44         | HBLED      | Outputs the receive LED signal (UHF band).  |
| 45, 46     | MSTI, MSTO | Data bus line for the SUB CPU.  |
| 47         | H BUSY     | Input port for the UHF noise squelch condition. "HIGH" : Squelch close. "LOW" : Squelch open.           |
| 48         | RCK        | Outputs a serial clock signal to I/O expanders (LOGIC unit IC9, 2F unit IC5).                           |
| 49         | L BUSY     | Input port for the VHF noise squelch condition. "HIGH" : Squelch close. "LOW" : Squelch open.           |
| 50         | RDATA      | Outputs a strobe signal to I/O expanders (LOGIC unit IC9, 2F unit IC5).                                 |
| 51-54      | KR0-KR3    | Input port for the key matrix.  |
| 55-59      | KS0-KS4    | Outputs strobe signals to the key matrix.   |
| 60         | PCON       | Outputs the power save control signal. "LOW" : When the circuits are idled.                             |
| 61         | LAOS       | Outputs VHF band's separate speaker function signal. "HIGH" : Internal speaker "LOW" : External speaker |
| 62         | HAOS       | Outputs UHF band's separate speaker function signal. "HIGH" : Internal speaker "LOW" : External speaker |
| 63         | MICM       | Outputs a microphone mute signal. "HIGH" : Mic mute   |
| 64         | MICC       | Outputs a microphone amplifier control signal.  |
| 65         | LRMUT      | Outputs a VHF band audio mute signal.   |
| 66         | HRMUT      | Outputs a UHF band audio mute signal.   |

| Pin number | Port name | Description  |
|------------|-----------|--|
| 71         | HCTST     | Outputs a strobe signal for a UHF tone squelch.  |
| 72         | LCTST     | Outputs a strobe signal for a VHF tone squelch.  |
| 73         | HTSQL     | Input port for the UHF tone squelch decoder signal.<br>"LOW": When matched tone is received. |
| 74         | LTSQL     | Input port for the VHF tone squelch decoder signal.<br>"LOW": When matched tone is received. |
| 75         | RIOST     | Outputs a strobe signal to I/O expanders (LOGIC unit IC9, 2F unit IC5).                      |
| 77,78      | TONE C    | Output DTMF row and column signals.  |

#### 4-5-2 I/O EXPANDERS

##### ● 1F UNIT IC4

| Pin number | Port name | Description  |
|------------|-----------|--|
| 4          | U3SC      | Outputs a power save control signal for the UHF band.<br>"HIGH": When the circuits are idled.        |
| 5          | UELO      | Outputs an E LOW power control signal for the UHF band.<br>"LOW": When E LOW is selected.            |
| 6          | U SHIFT   | Outputs a UHF VCO switching signal.<br>"LOW": During transmission.                                   |
| 7          | H/L       | Outputs a RF power selection signal.<br>"HIGH": When high power is selected.                         |
| 11         | VV3SC     | Outputs a power save control signal during the V/V function.<br>"HIGH": When the circuits are idled. |
| 12         | VELO      | Outputs an E LOW power control signal for the VHF band.<br>"LOW": When E LOW is selected.            |
| 14         | V3SC      | Outputs a power save control signal for the VHF band.<br>"HIGH": When the circuits are idled.        |

# SECTION 5 ADJUSTMENT PROCEDURES

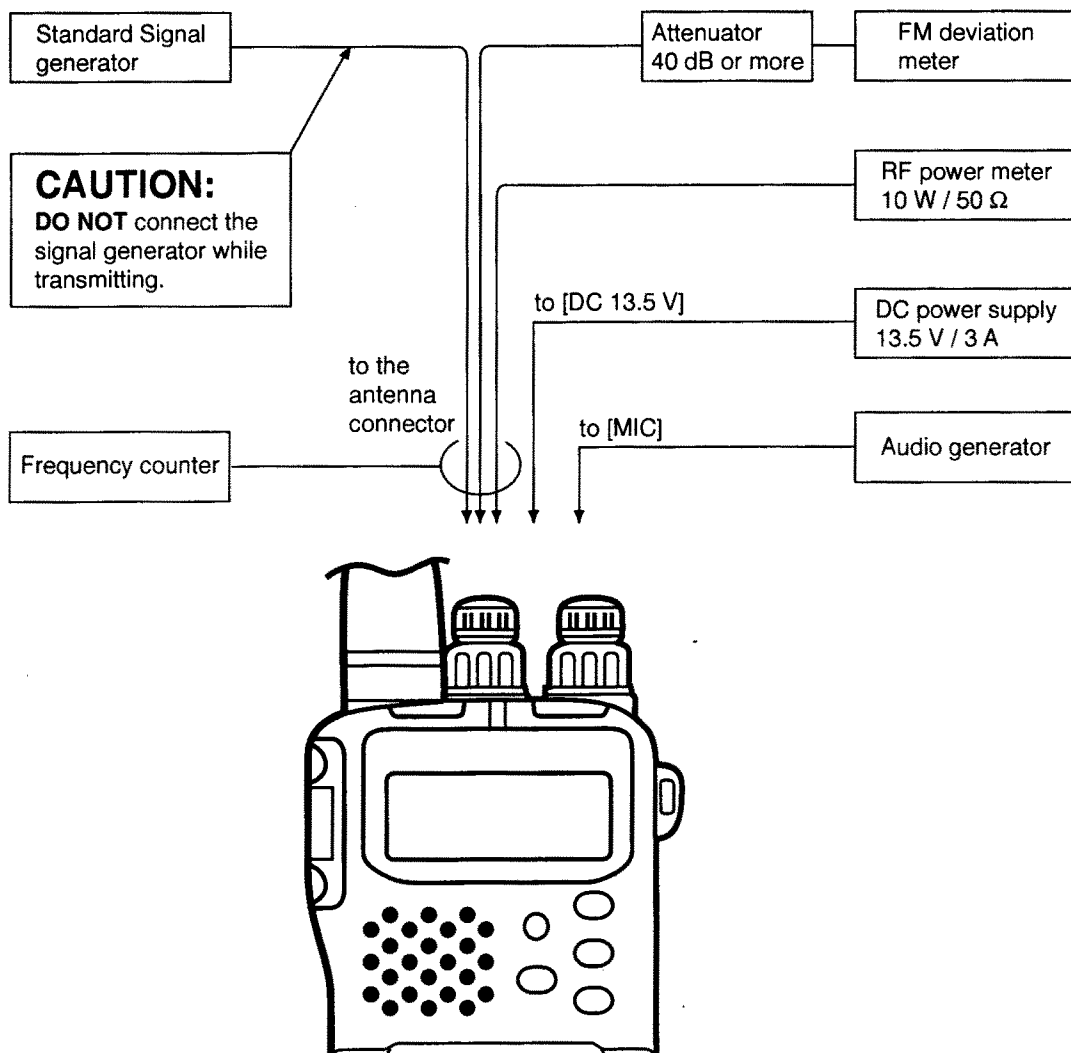
## 5-1 PREPARATION BEFORE SERVICING

### ■ REQUIRED TEST EQUIPMENT

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

CW: Clockwise  
CCW: Counterclockwise

### ■ CONNECTIONS



## 5-2 PLL ADJUSTMENT

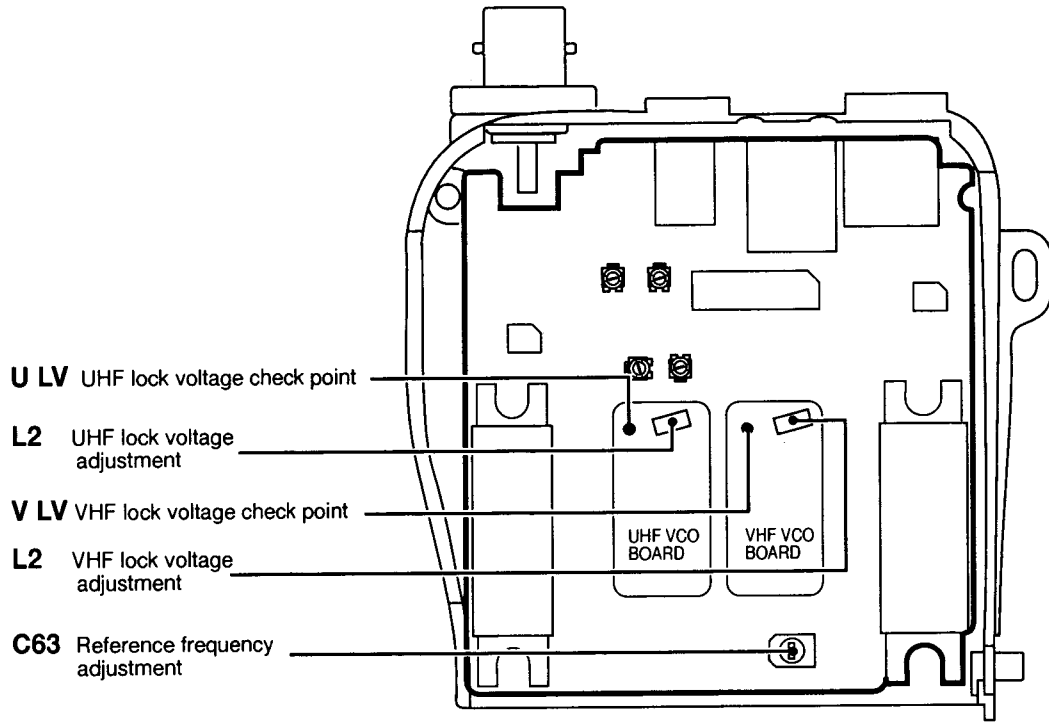
| ADJUSTMENT          | ADJUSTMENT CONDITIONS   | MEASUREMENT |  | VALUE   | ADJUSTMENT POINT |        |
|---------------------|---|-------------|--|---|------------------|--------|
|                     |   | UNIT        | LOCATION   |   | UNIT             | ADJUST |
| VHF LOCK VOLTAGE    | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 145.000 MHz</li> <li>• Adjust either the transmit lock voltage or receive lock voltage.</li> </ul>  | VHF VCO     | Connect the DC voltmeter to the point, "VLV."                  | 1.4 V $\pm$ 0.3 V (Transmitting)<br>1.3 V $\pm$ 0.3 V (Receiving) | VHF VCO          | L2     |
| UHF LOCK VOLTAGE    | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 440.000 MHz (USA)<br/>430.000 MHz (All other versions)</li> <li>• Adjust either the transmit lock voltage or receive lock voltage (whichever is higher).</li> </ul> | UHF VCO     | Connect the DC voltmeter to the point, "ULV."                  | 1.9 V $\pm$ 0.3 V (USA)<br>1.5 V $\pm$ 0.3 V (All other versions) | UHF VCO          | L2     |
| 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   | 1F               | C63    |

## 5-3 RECEIVER ADJUSTMENT

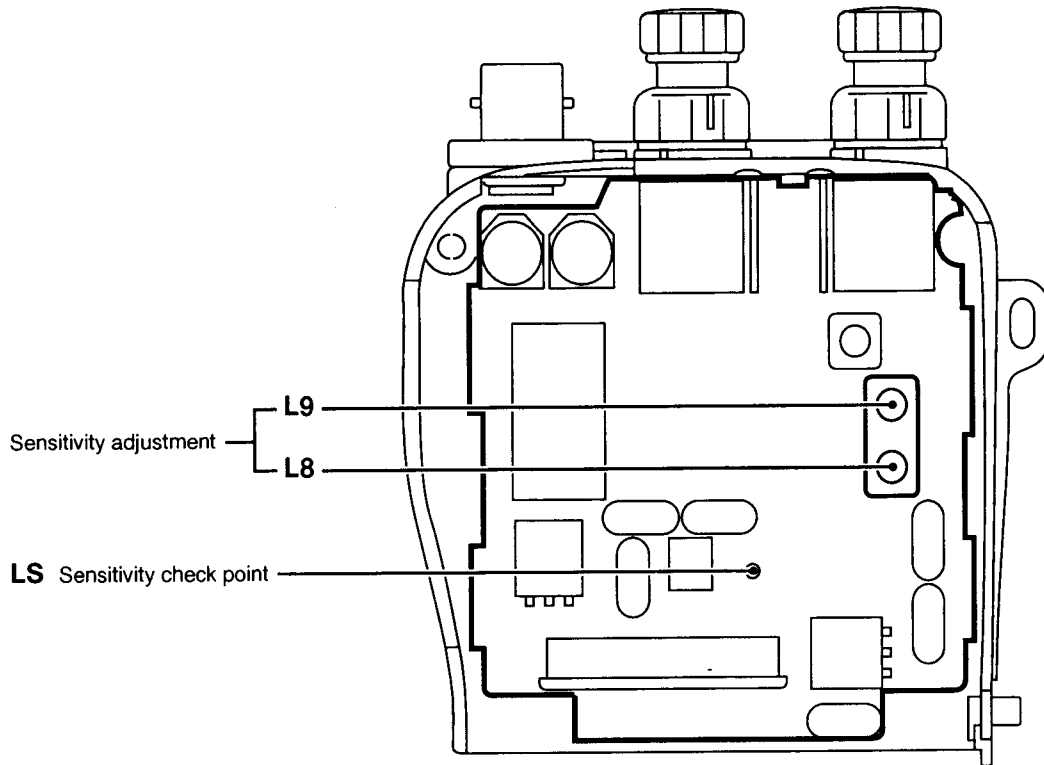
| ADJUSTMENT   | ADJUSTMENT CONDITIONS  | MEASUREMENT |  | VALUE  | ADJUSTMENT POINT  |                           |
|--|--|-------------|--|--|---|---------------------------|
|  |  | UNIT        | LOCATION                                     |  | UNIT  | ADJUST                    |
| SENSITIVITY  | 1 <ul style="list-style-type: none"> <li>• Displayed frequency : 145.000 MHz</li> <li>• Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Level : 1.0 <math>\mu</math>V* (-107 dBm)</li> <li>Modulation : 1 kHz</li> <li>Deviation : <math>\pm</math>3.5 kHz</li> </ul> </li> <li>• [VHF SQL] control : CCW</li> <li>• Receiving</li> </ul>  | 2F          | Connect the oscilloscope to the point, "LS." | Maximum DC voltage                               | 2F  | Adjust in sequence L9, L8 |
| NOTE : The transceiver has no adjustment points for the UHF sensitivity. |  |             |  |  |   |                           |
| S-METER  | 1 <ul style="list-style-type: none"> <li>• VHF displayed frequency: 145.000 MHz</li> <li>• UHF displayed frequency: 443.000 MHz (USA)<br/>433.000 MHz (All other versions)</li> <li>• Connect the SSG to the antenna connector and set as:               <ul style="list-style-type: none"> <li>Level : 0.5 <math>\mu</math>V (-113 dBm)</li> <li>Modulation : 1 kHz</li> <li>Deviation : <math>\pm</math>3.5 kHz</li> </ul> </li> <li>• Receiving</li> <li>• Connect the terminator to the [MIC] jack as shown Page 5 - 3.</li> </ul> |             |  |  | For VHF adjustment :<br>While pushing the [VOL] key, push [MONI].<br><br>For UHF adjustment :<br>While pushing the [VOL] key, push [RPT-M]. |                           |
|  | 2 <ul style="list-style-type: none"> <li>• Set the SSG output for the S-meter becoming to S3.</li> </ul>   |             | The SSG output level.                        | 0.32 $\mu$ V to 1 $\mu$ V (-117 dBm to -107 dBm) |   | Verify                    |

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

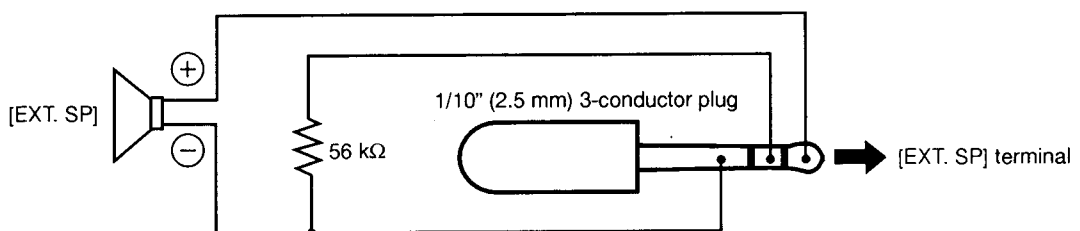
• 1F UNIT



• 2F UNIT



• Terminator for the S-meter adjustment

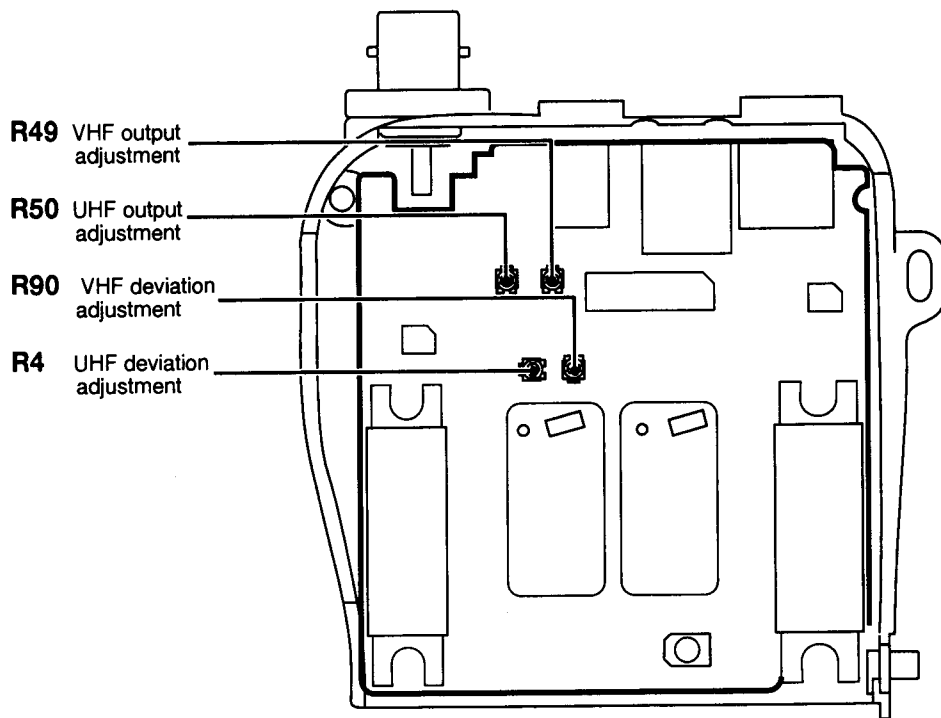


## 5-4 TRANSMITTER ADJUSTMENT

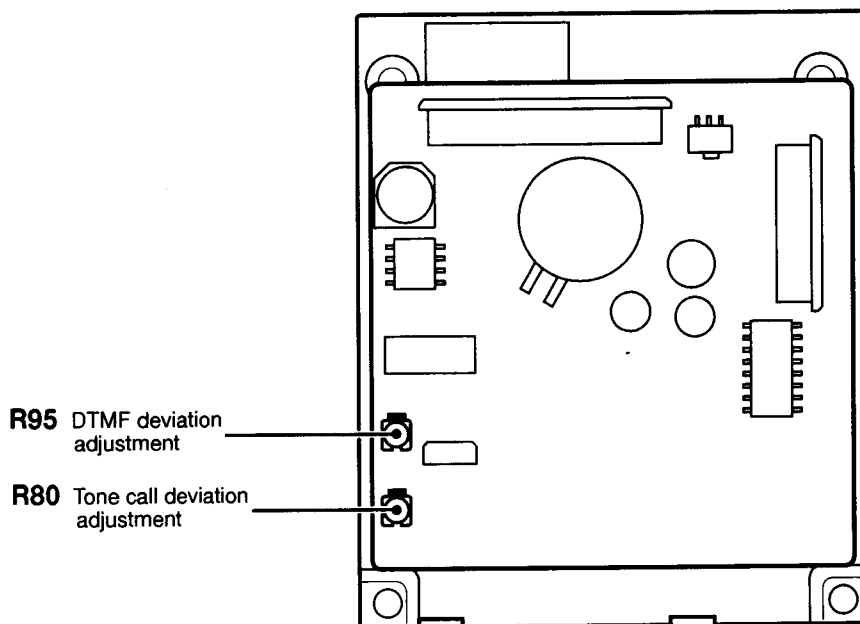
| ADJUSTMENT                                       | ADJUSTMENT CONDITIONS   | MEASUREMENT |   | VALUE    | ADJUSTMENT POINT |                               |
|--|---|-------------|---|----------|------------------|-------------------------------|
|  |   | UNIT        | LOCATION  |          | UNIT             | ADJUST                        |
| VHF<br>OUTPUT<br>POWER                           | 1 <ul style="list-style-type: none"> <li>• Displayed frequency 145.00 MHz</li> <li>• Output power : High</li> <li>• Transmitting</li> <li>• Be sure the power supply voltage is 13.5 V.</li> </ul>  | Top panel   | Connect the RF power meter to the antenna connector.                            | 5.0 W    | 1F               | R49                           |
|  | 2 <ul style="list-style-type: none"> <li>• Output power : Low (RF-meter 1 dot)</li> </ul>   |             |   |          |                  | 0.25 W–1.0 W                  |
| UHF<br>OUTPUT                                    | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 445.000 MHz (USA)<br/>435.000 MHz<br/>(All other versions))</li> <li>• Output power : High</li> <li>• Transmitting</li> <li>• Be sure the power supply voltage is 13.5 V.</li> </ul>  | Top panel   | Connect the RF power meter to the antenna connector.                            | 5.0 W    | 1F               | R50                           |
|  | 2 <ul style="list-style-type: none"> <li>• Output power : Low (RF-meter 1 dot)</li> </ul>   |             |   |          |                  | 0.25 W–1.0 W                  |
| VHF<br>DEVIATION                                 | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 145.00 MHz</li> <li>• Connect the audio generator to the [MIC] connector and set as: 95 mV/1.0 kHz</li> <li>• Set the FM deviation meter as:<br/>HPF : 50 Hz<br/>LPF : 20 kHz<br/>De-emphasis : OFF<br/>Detector : (P-P)/2</li> <li>• Transmitting</li> </ul>   | Top panel   | Connect the FM deviation meter to the antenna connector through the attenuator. | ±4.6 kHz | 1F               | R90                           |
|  | 2 <ul style="list-style-type: none"> <li>• Set the audio generator for the deviation becoming to ±3.5 kHz.</li> </ul>   |             |   |          |                  | Audio generator output level. |
| UHF<br>DEVIATION                                 | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 445.000 MHz (USA)<br/>435.000 MHz<br/>(All other versions))</li> <li>• Connect the audio generator to the [MIC] connector and set as : 95 mV/1.0 kHz</li> <li>• Set the FM deviation meter as:<br/>HPF : 50 Hz<br/>LPF : 20 kHz<br/>De-emphasis : OFF<br/>Detector : (P-P)/2</li> <li>• Transmitting</li> </ul> | Top panel   | Connect the FM deviation meter to the antenna connector through the attenuator. | ±4.6 kHz | 1F               | R4                            |
|  | 2 <ul style="list-style-type: none"> <li>• Set the audio generator for the deviation becoming to ±3.5 kHz.</li> </ul>   |             |   |          |                  | Audio generator output level. |
| TONE CALL<br>DEVIATION<br>(EUR, UK, ITA<br>only) | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 435.000 MHz</li> <li>HPF : 50 Hz</li> <li>LPF : 20 kHz</li> <li>De-emphasis : OFF</li> <li>Detector : (P-P)/2</li> <li>• Push and hold [RPT·M] key while transmitting.</li> </ul>   | Top panel   | Connect the FM deviation meter to the antenna connector through the attenuator. | ±3.5 kHz | LOGIC            | R80                           |
| DTMF<br>DEVIATION                                | 1 <ul style="list-style-type: none"> <li>• Displayed frequency: 445.00 MHz (USA)<br/>435.00 MHz<br/>(All other versions)</li> <li>• Push [D] key while transmitting.</li> </ul>   | Top panel   | Connect the FM deviation meter to the antenna connector through the attenuator. | ±3.5 kHz | LOGIC            | R95                           |



• 1F UNIT



• LOGIC UNIT



# SECTION 6 PARTS LIST

## [DISPLAY UNIT]

| REF. NO. | ORDER NO.   | DESCRIPTION  |                         |
|----------|-------------|--------------|-------------------------|
| IC1      | 1140004440  | S.IC         | HD404829C02H            |
| IC2      | 1130003920  | S.IC         | TC4S89F (TE85R)         |
| Q1       | 1530003280  | S.TRANSISTOR | 2SC4211-8-TR            |
| Q2       | 1530003280  | S.TRANSISTOR | 2SC4211-8-TR            |
| Q3       | 1530003280  | S.TRANSISTOR | 2SC4211-8-TR            |
| Q4       | 1590000880  | S.TRANSISTOR | DTC144TU T107           |
| Q5       | 1590000430  | S.TRANSISTOR | DTC144EU T107           |
| D1       | 1790001250  | S.DIODE      | MA2S111-(TX)            |
| D2       | 1790001250  | S.DIODE      | MA2S111-(TX)            |
| D3       | 1790000990  | S.ZENER      | MA8051-H(TX)            |
| X1       | 6060000520  | S.CERAMIC    | CSAC2.00MGC200-TC       |
| R1       | 7030003620  | S.RESISTOR   | ERJ3GEYJ 333 V (33 kΩ)  |
| R2       | 7030003800  | S.RESISTOR   | ERJ3GEYJ 105 V (1 MΩ)   |
| R3       | 7030003800  | S.RESISTOR   | ERJ3GEYJ 105 V (1 MΩ)   |
| R4       | 7030003890  | S.RESISTOR   | ERJ3GEYJ 124 V (120 kΩ) |
| R5       | 7030003860  | S.RESISTOR   | ERJ3GEYJ 883 V (88 kΩ)  |
| R6       | 7030003540  | S.RESISTOR   | ERJ3GEYJ 682 V (6.8 kΩ) |
| R7       | 7030003340  | S.RESISTOR   | ERJ3GEYJ 151 V (150 Ω)  |
| R8       | 7410000930  | S.ARRAY      | EXB-V4V 121JV (120 Ω)   |
| R9       | 7410000930  | S.ARRAY      | EXB-V4V 121JV (120 Ω)   |
| R10      | 7410000850  | S.ARRAY      | EXB-V4V 151JV (150 Ω)   |
| R11      | 7030003620  | S.RESISTOR   | ERJ3GEYJ 333 V (33 kΩ)  |
| R12      | 7030003400  | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R13      | 7030003600  | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)  |
| R15      | 7030003440  | S.RESISTOR   | ERJ3GEYJ 102 V (1 kΩ)   |
| R16      | 7030003580  | S.RESISTOR   | ERJ3GEYJ 153 V (15 kΩ)  |
| R17      | 7030003670  | S.RESISTOR   | ERJ3GEYJ 823 V (82 kΩ)  |
| C1       | 4030010070  | S.CERAMIC    | C1808 X7S 1C 104K-T-A   |
| C2       | 4030010070  | S.CERAMIC    | C1808 X7S 1C 104K-T-A   |
| C3       | 45500008190 | S.TANTALUM   | ECST0GY108R             |
| C4       | 4030010070  | S.CERAMIC    | C1808 X7S 1C 104K-T-A   |
| C5       | 4030006850  | S.CERAMIC    | C1808 JB 1H 471K-T-A    |
| C6       | 4030006850  | S.CERAMIC    | C1808 JB 1H 471K-T-A    |
| C7       | 4030006850  | S.CERAMIC    | C1808 JB 1H 471K-T-A    |
| C8       | 4030006850  | S.CERAMIC    | C1808 JB 1H 471K-T-A    |
| C9       | 4030007080  | S.CERAMIC    | C1808 CH 1H 390J-T-A    |
| C10      | 4030007090  | S.CERAMIC    | C1808 CH 1H 470J-T-A    |
| W1       | 9029701008  | WIRE         | 72/98/020/X98/X98       |
| DS1      | 5030001140  | LCD          | T-535001A               |
| DS2      | 5040001950  | S.LED        | SML-110LT T86           |
| DS3      | 5040001920  | S.LED        | SML-110MT T86           |
| DS4      | 5040001920  | S.LED        | SML-110MT T86           |
| DS5      | 5040001920  | S.LED        | SML-110MT T86           |
| DS6      | 5040001920  | S.LED        | SML-110MT T86           |
| DS7      | 5010000120  | S.LED        | LN1371G-(TR)            |
| DS8      | 5010000120  | S.LED        | LN1371G-(TR)            |
| S1       | 2230000900  | S.SWITCH     | JPM1990-2013R           |
| S2       | 2230000900  | S.SWITCH     | JPM1990-2013R           |
| S3       | 2280002140  | S.SWITCH     | SKQLLC                  |
| S4       | 2280002140  | S.SWITCH     | SKQLLC                  |
| S5       | 2280002140  | S.SWITCH     | SKQLLC                  |
| MC1      | 7700001750  | MICROPHONE   | EM-123TH                |
| J1       | 6510018131  | CONNECTOR    | 1480 B-CONNECTOR-1      |
| EP1      | 0910044143  | PCB          | B 4345C                 |
| EP2      | 8930034870  | LCD CONTACT  | SRCN-1480 SC            |

## [KEYBOARD UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                        |
|----------|------------|-------------|------------------------|
| R4       | 7410000880 | S.ARRAY     | EXB-V4V 181JV (180 Ω)  |
| R5       | 7410000880 | S.ARRAY     | EXB-V4V 181JV (180 Ω)  |
| R6       | 7410000880 | S.ARRAY     | EXB-V4V 181JV (180 Ω)  |
| R7       | 7030003400 | S.RESISTOR  | ERJ3GEYJ 471 V (470 Ω) |
| R8       | 7030003400 | S.RESISTOR  | ERJ3GEYJ 471 V (470 Ω) |
| W1       | 8900005450 | CABLE       | OPC-537                |
| DS1      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS2      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS3      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS4      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS5      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS6      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS7      | 5010000120 | S.LED       | LN1371G-(TR)           |
| DS8      | 5010000120 | S.LED       | LN1371G-(TR)           |
| J1       | 6510018060 | S.CONNECTOR | IL-FPR-22S-HF-E3000    |
| EP1      | 0910045590 | PCB         | B 4537                 |

## [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                      |
|----------|------------|--------------|----------------------|
| IC1      | 1140004600 | S.IC         | HD404839A84FS        |
| IC2      | 1130007110 | S.IC         | TC7W04FU(TE12L)      |
| IC3      | 1140004620 | S.IC         | X24C16S8-2.7         |
| IC4      | 1130007560 | S.IC         | LC73881M-TLM         |
| IC5      | 1130007680 | S.IC         | BU4053BCF-T1         |
| IC6      | 1180001240 | S.IC         | S-81335HG-KI-T1      |
| IC7      | 1110003380 | S.IC         | S-80730SL-AT-T1      |
| IC8      | 1130003760 | S.IC         | TC4S81F (TE85R)      |
| IC9      | 1130007570 | S.IC         | BU4094BCFV-EZ        |
| IC10     | 1110003410 | S.IC         | μPC5023GR-043-GJG-T2 |
| IC11     | 1130008220 | S.IC         | TC4W53FU (TE12L)     |
| Q1       | 1590001470 | S.TRANSISTOR | UN9213(TX)           |
| Q2       | 1590001140 | S.TRANSISTOR | UN9210(TX)           |
| Q3       | 1590001140 | S.TRANSISTOR | UN9210(TX)           |
| Q4       | 1540000350 | S.TRANSISTOR | 2SD2216-S(TX)        |
| Q5       | 1540000350 | S.TRANSISTOR | 2SD2216-S(TX)        |
| Q6       | 1510000670 | S.TRANSISTOR | 2SA1588-GR (TE85R)   |
| Q7       | 1590001470 | S.TRANSISTOR | UN9213(TX)           |
| Q8       | 1590001170 | S.TRANSISTOR | XP1501-(TX).AB       |
| Q9       | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R       |
| Q10      | 1590001180 | S.TRANSISTOR | XP1210(TX)           |
| Q11      | 1590001180 | S.TRANSISTOR | XP1210(TX)           |
| Q12      | 1590001180 | S.TRANSISTOR | XP1210(TX)           |
| Q13      | 1590001180 | S.TRANSISTOR | XP1210(TX)           |
| Q14      | 1590001860 | S.TRANSISTOR | UN9215(TX)           |
| Q15      | 1550000010 | S.FET        | 2SJ364-Q (TX)        |
| Q16      | 1590001190 | S.TRANSISTOR | XP8501-(TX).AB       |
| Q17      | 1590001860 | S.TRANSISTOR | UN9215(TX)           |
| Q18      | 1550000010 | S.FET        | 2SJ364-Q (TX)        |
| Q19      | 1590001190 | S.TRANSISTOR | XP8501-(TX).AB       |
| Q20      | 1540000350 | S.TRANSISTOR | 2SD2216-S(TX)        |
| Q21      | 1540000350 | S.TRANSISTOR | 2SD2216-S(TX)        |
| Q22      | 1540000350 | S.TRANSISTOR | 2SD2216-S(TX)        |
| Q23      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R       |

S.=Surface mount

## [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                                     |
|----------|------------|--------------|-------------------------------------|
| Q24      | 1540000350 | S.TRANSISTOR | 2SD2218-S(TX)                       |
| Q25      | 1590001150 | S.TRANSISTOR | UN9211(TX)                          |
| Q26      | 1520000430 | S.TRANSISTOR | 2SB1482-R(TX)                       |
| Q27      | 1590001130 | S.TRANSISTOR | UN9110(TX)                          |
| Q28      | 1590001190 | S.TRANSISTOR | XP6501-(TX).AB                      |
| D1       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D2       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D3       | 1750000340 | S.DIODE      | 1SS357 (TPHR3)                      |
| D4       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D5       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D6       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D7       | 1790001250 | S.DIODE      | MA2S111-(TX)                        |
| D8       | 1790001200 | S.DIODE      | MA6S121(TX)                         |
| D11      | 1750000220 | S.DIODE      | DA113W T107<br>[Eur], [USA]         |
|          | 1160000050 | S.DIODE      | DAP202U T107<br>[SEA]               |
| D12      | 1750000220 | S.DIODE      | DA113W T107<br>[USA], [ITA], [SEA]  |
| D14      | 1790001250 | S.DIODE      | MA2S111-(TX)<br>[Eur], [USA], [SEA] |
| D15      | 1160000050 | S.DIODE      | DAP202U T107<br>[Eur], [USA], [SEA] |
| D17      | 1790000970 | S.DIODE      | MA729(TX)                           |
| D18      | 1750000340 | S.DIODE      | 1SS357 (TPHR3)                      |
| X1       | 6060000570 | S.CERAMIC    | FAR-C3CA-04000-J00-R                |
| X2       | 6050008780 | XTAL         | CR-462 (32.768kHz)                  |
| X3       | 6050009020 | S.CERAMIC    | EFOS4194E3                          |
| R1       | 7030005470 | S.RESISTOR   | RR0816R-244-D (240 kΩ)              |
| R2       | 7030005490 | S.RESISTOR   | RR0816R-363-D (36 kΩ)               |
| R3       | 7030003780 | S.RESISTOR   | ERJ3GEYJ 474 V (470 kΩ)             |
| R4       | 7030003440 | S.RESISTOR   | ERJ3GEYJ 102 V (1 kΩ)               |
| R5       | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)              |
| R6       | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)              |
| R7       | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)              |
| R8       | 7030003780 | S.RESISTOR   | ERJ3GEYJ 474 V (470 kΩ)             |
| R9       | 7030003620 | S.RESISTOR   | ERJ3GEYJ 333 V (33 kΩ)              |
| R10      | 7030003730 | S.RESISTOR   | ERJ3GEYJ 274 V (270 kΩ)             |
| R11      | 7030003800 | S.RESISTOR   | ERJ3GEYJ 105 V (1 MΩ)               |
| R12      | 7030003800 | S.RESISTOR   | ERJ3GEYJ 105 V (1 MΩ)               |
| R13      | 7030003780 | S.RESISTOR   | ERJ3GEYJ 474 V (470 kΩ)             |
| R14      | 7030003810 | S.RESISTOR   | ERJ3GEYJ 125 V (1.2 MΩ)             |
| R15      | 7030003580 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)              |
| R16      | 7030003410 | S.RESISTOR   | ERJ3GEYJ 581 V (580 Ω)              |
| R17      | 7030003640 | S.RESISTOR   | ERJ3GEYJ 473 V (47 kΩ)              |
| R18      | 7030003580 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)              |
| R19      | 7030003510 | S.RESISTOR   | ERJ3GEYJ 392 V (3.9 kΩ)             |
| R20      | 7030003580 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)              |
| R21      | 7030003470 | S.RESISTOR   | ERJ3GEYJ 182 V (1.8 kΩ)             |
| R22      | 7030003650 | S.RESISTOR   | ERJ3GEYJ 583 V (58 kΩ)              |
| R23      | 7030003550 | S.RESISTOR   | ERJ3GEYJ 822 V (8.2 kΩ)             |
| R24      | 7030003620 | S.RESISTOR   | ERJ3GEYJ 333 V (33 kΩ)              |
| R25      | 7030003580 | S.RESISTOR   | ERJ3GEYJ 153 V (15 kΩ)              |
| R26      | 7030003590 | S.RESISTOR   | ERJ3GEYJ 183 V (18 kΩ)              |
| R27      | 7030003570 | S.RESISTOR   | ERJ3GEYJ 123 V (12 kΩ)              |
| R28      | 7030003480 | S.RESISTOR   | ERJ3GEYJ 222 V (2.2 kΩ)             |
| R29      | 7030003470 | S.RESISTOR   | ERJ3GEYJ 182 V (1.8 kΩ)             |
| R30      | 7030003650 | S.RESISTOR   | ERJ3GEYJ 583 V (58 kΩ)              |
| R31      | 7030003550 | S.RESISTOR   | ERJ3GEYJ 822 V (8.2 kΩ)             |
| R32      | 7030003620 | S.RESISTOR   | ERJ3GEYJ 333 V (33 kΩ)              |
| R33      | 7030003580 | S.RESISTOR   | ERJ3GEYJ 153 V (15 kΩ)              |
| R34      | 7030003590 | S.RESISTOR   | ERJ3GEYJ 183 V (18 kΩ)              |
| R35      | 7030003570 | S.RESISTOR   | ERJ3GEYJ 123 V (12 kΩ)              |
| R36      | 7030003480 | S.RESISTOR   | ERJ3GEYJ 222 V (2.2 kΩ)             |
| R37      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ)             |
| R38      | 7030003780 | S.RESISTOR   | ERJ3GEYJ 474 V (470 kΩ)             |
| R39      | 7030003800 | S.RESISTOR   | ERJ3GEYJ 105 V (1 MΩ)               |
| R40      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ)             |

## [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |  |
|----------|------------|-------------|--|
| R41      | 7030003630 | S.RESISTOR  | ERJ3GEYJ 393 V (39 kΩ)                   |
| R42      | 7030003630 | S.RESISTOR  | ERJ3GEYJ 393 V (39 kΩ)                   |
| R43      | 7030003480 | S.RESISTOR  | ERJ3GEYJ 222 V (2.2 kΩ)                  |
| R44      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 153 V (15 kΩ)                   |
| R45      | 7030003550 | S.RESISTOR  | ERJ3GEYJ 822 V (8.2 kΩ)                  |
| R46      | 7030003750 | S.RESISTOR  | ERJ3GEYJ 394 V (390 kΩ)                  |
| R47      | 7030003700 | S.RESISTOR  | ERJ3GEYJ 154 V (150 kΩ)                  |
| R49      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ)                  |
| R50      | 7030003780 | S.RESISTOR  | ERJ3GEYJ 474 V (470 kΩ)                  |
| R51      | 7030003800 | S.RESISTOR  | ERJ3GEYJ 105 V (1 MΩ)                    |
| R52      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ)                  |
| R53      | 7030003630 | S.RESISTOR  | ERJ3GEYJ 393 V (39 kΩ)                   |
| R54      | 7030003630 | S.RESISTOR  | ERJ3GEYJ 393 V (39 kΩ)                   |
| R55      | 7030003480 | S.RESISTOR  | ERJ3GEYJ 222 V (2.2 kΩ)                  |
| R56      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 153 V (15 kΩ)                   |
| R57      | 7030003550 | S.RESISTOR  | ERJ3GEYJ 822 V (8.2 kΩ)                  |
| R58      | 7030003750 | S.RESISTOR  | ERJ3GEYJ 394 V (390 kΩ)                  |
| R59      | 7030003700 | S.RESISTOR  | ERJ3GEYJ 154 V (150 kΩ)                  |
| R61      | 7030003440 | S.RESISTOR  | ERJ3GEYJ 102 V (1 kΩ)                    |
| R62      | 7030003740 | S.RESISTOR  | ERJ3GEYJ 334 V (330 kΩ)                  |
| R63      | 7030003730 | S.RESISTOR  | ERJ3GEYJ 274 V (270 kΩ)                  |
| R64      | 7030003500 | S.RESISTOR  | ERJ3GEYJ 332 V (3.3 kΩ)                  |
| R65      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)                   |
| R66      | 7030003440 | S.RESISTOR  | ERJ3GEYJ 102 V (1 kΩ)                    |
| R67      | 7030003740 | S.RESISTOR  | ERJ3GEYJ 334 V (330 kΩ)                  |
| R68      | 7030003730 | S.RESISTOR  | ERJ3GEYJ 274 V (270 kΩ)                  |
| R69      | 7030003500 | S.RESISTOR  | ERJ3GEYJ 332 V (3.3 kΩ)                  |
| R70      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)                   |
| R71      | 7410000750 | S.ARRAY     | EXB-V4V 104JV (100 kΩ)                   |
| R72      | 7410000580 | S.ARRAY     | EXB-V4V 224JV (220 kΩ)<br>[IC-Z1E only]  |
| R73      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)<br>[IC-Z1A]       |
|          | 7030003670 | S.RESISTOR  | ERJ3GEYJ 823 V (82 kΩ)<br>[IC-Z1E]       |
| R74      | 7030003600 | S.RESISTOR  | ERJ3GEYJ 223 V (22 kΩ)                   |
| R75      | 7030003650 | S.RESISTOR  | ERJ3GEYJ 583 V (58 kΩ)<br>[IC-Z1A only]  |
| R76      | 7030003670 | S.RESISTOR  | ERJ3GEYJ 823 V (82 kΩ)<br>[IC-Z1A only]  |
| R77      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)<br>[IC-Z1A only]  |
| R78      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 183 V (18 kΩ)<br>[IC-Z1A]       |
|          | 7030003600 | S.RESISTOR  | ERJ3GEYJ 223 V (22 kΩ)<br>[IC-Z1E]       |
| R79      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 183 V (18 kΩ)<br>[IC-Z1A]       |
|          | 7030003600 | S.RESISTOR  | ERJ3GEYJ 223 V (22 kΩ)<br>[IC-Z1E]       |
| R80      | 7310003910 | S.TRIMMER   | MVR32HXBR N502 (5K)<br>[IC-Z1E only]     |
| R81      | 7030003500 | S.RESISTOR  | ERJ3GEYJ 332 V (3.3 kΩ)<br>[IC-Z1A only] |
| R82      | 7030003420 | S.RESISTOR  | ERJ3GEYJ 681 V (680 Ω)<br>[IC-Z1A only]  |
| R83      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ)                  |
| R84      | 7030005470 | S.RESISTOR  | RR0816R-244-D (240 kΩ)                   |
| R85      | 7030005500 | S.RESISTOR  | RR0816R-124-D (120 kΩ)                   |
| R86      | 7030005980 | S.RESISTOR  | RR0816R-823-D (82 kΩ)                    |
| R87      | 7030005510 | S.RESISTOR  | RR0816P-303-D (30 kΩ)                    |
| R88      | 7030005450 | S.RESISTOR  | RR0816P-153-D (15 kΩ)                    |
| R89      | 7030005450 | S.RESISTOR  | RR0816P-153-D (15 kΩ)                    |
| R90      | 7030005830 | S.RESISTOR  | RR0816R-154-D (150 kΩ)                   |
| R91      | 7030005830 | S.RESISTOR  | RR0816R-154-D (150 kΩ)                   |
| R92      | 7030005830 | S.RESISTOR  | RR0816R-154-D (150 kΩ)                   |
| R93      | 7410000830 | S.ARRAY     | EXB-V4V 103JV (10 kΩ)                    |
| R94      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)                   |
| R95      | 7310003550 | S.TRIMMER   | MVR32HXBR N473                           |
| R96      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)                   |

S.=Surface mount

## [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION    |  |
|----------|------------|----------------|--|
| R97      | 7030003580 | S.RESISTOR     | ERJ3GEYJ 153 V (15 k $\Omega$ )<br>[IC-Z1E only] |
| R98      | 7030003440 | S.RESISTOR     | ERJ3GEYJ 102 V (1 k $\Omega$ )                   |
| R99      | 7030003440 | S.RESISTOR     | ERJ3GEYJ 102 V (1 k $\Omega$ )                   |
| R100     | 7030003450 | S.RESISTOR     | ERJ3GEYJ 122 V (1.2 k $\Omega$ )                 |
| R101     | 7030003580 | S.RESISTOR     | ERJ3GEYJ 103 V (10 k $\Omega$ )                  |
| R102     | 7030003400 | S.RESISTOR     | ERJ3GEYJ 471 V (470 $\Omega$ )                   |
| R103     | 7030003720 | S.RESISTOR     | ERJ3GEYJ 224 V (220 k $\Omega$ )                 |
| R104     | 7030003410 | S.RESISTOR     | ERJ3GEYJ 581 V (580 $\Omega$ )                   |
| R105     | 7030003650 | S.RESISTOR     | ERJ3GEYJ 583 V (58 k $\Omega$ )                  |
| R106     | 7030003640 | S.RESISTOR     | ERJ3GEYJ 473 V (47 k $\Omega$ )                  |
| R107     | 7030003690 | S.RESISTOR     | ERJ3GEYJ 124 V (120 k $\Omega$ )                 |
| R108     | 7030003710 | S.RESISTOR     | ERJ3GEYJ 184 V (180 k $\Omega$ )                 |
| R109     | 7030003720 | S.RESISTOR     | ERJ3GEYJ 224 V (220 k $\Omega$ )                 |
| R110     | 7030003590 | S.RESISTOR     | ERJ3GEYJ 183 V (18 k $\Omega$ )                  |
| R111     | 7030003650 | S.RESISTOR     | ERJ3GEYJ 583 V (58 k $\Omega$ )                  |
| R112     | 7030003640 | S.RESISTOR     | ERJ3GEYJ 473 V (47 k $\Omega$ )                  |
| R116     | 7030003760 | S.RESISTOR     | ERJ3GEYJ 474 V (470 k $\Omega$ )                 |
| R117     | 7030005330 | S.RESISTOR     | RR0816P-582-D (5.8 k $\Omega$ )                  |
| R118     | 7410000830 | S.ARRAY        | EXB-V4V 103JV (10 k $\Omega$ )                   |
| R120     | 7410000820 | S.ARRAY        | EXB-V4V 223JV (22 k $\Omega$ )                   |
| R122     | 7030003840 | S.RESISTOR     | ERJ3GEYJ 225 V (2.2 M $\Omega$ )                 |
| R123     | 7030003840 | S.RESISTOR     | ERJ3GEYJ 225 V (2.2 M $\Omega$ )                 |
| R124     | 7410001020 | S.ARRAY        | EXB-V4V 152JV (1.5 k $\Omega$ )                  |
| R126     | 7030003520 | S.RESISTOR     | ERJ3GEYJ 472 V (4.7 k $\Omega$ )                 |
| R127     | 7030003520 | S.RESISTOR     | ERJ3GEYJ 472 V (4.7 k $\Omega$ )                 |
| R128     | 7030003520 | S.RESISTOR     | ERJ3GEYJ 472 V (4.7 k $\Omega$ )                 |
| R129     | 7030003520 | S.RESISTOR     | ERJ3GEYJ 472 V (4.7 k $\Omega$ )                 |
| R130     | 7410000850 | S.ARRAY        | EXB-V4V 151JV (150 $\Omega$ )                    |
| C1       | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A                             |
| C2       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C3       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C4       | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A                             |
| C5       | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C6       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C7       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C8       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C9       | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C11      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C12      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C13      | 4550006190 | S.TANTALUM     | ECST0GY106R                                      |
| C14      | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A                             |
| C15      | 4030006870 | S.CERAMIC      | C1608 JB 1H 222K-T-A                             |
| C16      | 4030007030 | S.CERAMIC      | C1608 CH 1H 150J-T-A                             |
| C17      | 4030007030 | S.CERAMIC      | C1608 CH 1H 150J-T-A                             |
| C18      | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A                             |
| C19      | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A                             |
| C20      | 4510005900 | S.ELECTROLITIC | ECEV0GA101SR                                     |
| C21      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C22      | 4510004640 | S.ELECTROLITIC | ECEV1CA470SP                                     |
| C23      | 4510005900 | S.ELECTROLITIC | ECEV0GA101SR                                     |
| C24      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C25      | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A                             |
| C26      | 4550006180 | S.TANTALUM     | ECST0GY475R                                      |
| C27      | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C28      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C29      | 4510006090 | S.ELECTROLITIC | ECEV0GA470SR                                     |
| C30      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C31      | 4030006900 | S.CERAMIC      | C1608 JB 1C 333K-T-A                             |
| C32      | 4030009000 | S.CERAMIC      | C2012 JB 1C 224K-T-A                             |
| C33      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C34      | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C35      | 4030010070 | S.CERAMIC      | C1608 X7S 1C 104K-T-A                            |
| C36      | 4030006870 | S.CERAMIC      | C1608 JB 1H 222K-T-A                             |
| C37      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C38      | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A                             |
| C39      | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A                             |
| C41      | 4030006900 | S.CERAMIC      | C1608 JB 1C 333K-T-A                             |
| C42      | 4030009000 | S.CERAMIC      | C2012 JB 1C 224K-T-A                             |
| C43      | 4030006870 | S.CERAMIC      | C1608 JB 1H 222K-T-A                             |
| C44      | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A                             |
| C45      | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A                             |
| C46      | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A                             |
| C48      | 4550006570 | S.TANTALUM     | ECST0GY158R                                      |

## [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                                  |
|----------|------------|-------------|----------------------------------|
| C49      | 4030010070 | S.CERAMIC   | C1608 X7S 1C 104K-T-A            |
| C50      | 4030009000 | S.CERAMIC   | C2012 JB 1C 224K-T-A             |
| C51      | 4550006570 | S.TANTALUM  | ECST0GY158R                      |
| C52      | 4030010070 | S.CERAMIC   | C1608 X7S 1C 104K-T-A            |
| C53      | 4030009000 | S.CERAMIC   | C2012 JB 1C 224K-T-A             |
| C54      | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A<br>[IC-Z1A] |
|          | 4030006880 | S.CERAMIC   | C1608 JB 1H 472K-T-A<br>[IC-Z1E] |
| C55      | 4030008850 | S.CERAMIC   | C1608 JB 1C 123K-T-A<br>[IC-Z1A] |
|          | 4030006870 | S.CERAMIC   | C1608 JB 1H 222K-T-A<br>[IC-Z1E] |
| C56      | 4030010070 | S.CERAMIC   | C1608 X7S 1C 104K-T-A            |
| C57      | 4550006150 | S.TANTALUM  | ECST1CY105R<br>[IC-Z1A only]     |
| C58      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C59      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C60      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C61      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C62      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C63      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C64      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A             |
| C66      | 4030006880 | S.CERAMIC   | C1608 JB 1C 223K-T-A             |
| C67      | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A             |
| C68      | 4550006180 | S.TANTALUM  | ECST0GY475R                      |
| C69      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A             |
| C70      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A             |
| C71      | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A             |
| C72      | 4030007150 | S.CERAMIC   | C1608 CH 1H 151J-T-A             |
| C73      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A             |
| C74      | 4550006140 | S.TANTALUM  | ECST1EY474R                      |
| C75      | 4550006150 | S.TANTALUM  | ECST1CY105R                      |
| C76      | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A             |
| C77      | 4030009970 | S.CERAMIC   | C1608 JB 1H 182K-T-A             |
| C78      | 4030006880 | S.CERAMIC   | C1608 JB 1H 472K-T-A             |
| C79      | 4030010070 | S.CERAMIC   | C1608 X7S 1C 104K-T-A            |
| C80      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A             |
| C81      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A             |
| C82      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A             |
| C83      | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A             |
| C84      | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A             |
| C85      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A             |
| C86      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A             |
| C87      | 4030007090 | S.CERAMIC   | C1608 CH 1H 470J-T-A             |
| C88      | 4030007090 | S.CERAMIC   | C1608 CH 1H 470J-T-A             |
| C89      | 4030007090 | S.CERAMIC   | C1608 CH 1H 470J-T-A             |
| C92      | 4550006150 | S.TANTALUM  | ECST1CY105R                      |
| C93      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A             |
| C94      | 4030007090 | S.CERAMIC   | C1608 CH 1H 470J-T-A             |
| W1       | 7030003860 | S.JUMPER    | ERJ3GE JPW V                     |
| W2       | 7030003860 | S.JUMPER    | ERJ3GE JPW V                     |
| W3       | 8900005440 | CABLE       | OPC-536                          |
| W4       | 7030003860 | S.JUMPER    | ERJ3GE JPW V                     |
| BT1      | 3020000220 | LITHIUM     | VL1220-1VC                       |
| J1       | 6510018060 | S.CONNECTOR | IL-FPR-22S-HF-E3000              |
| J2       | 6510016190 | S.CONNECTOR | 52465-1290                       |
| J3       | 6510017940 | S.CONNECTOR | IL-FPR-U38S-HF-E3000             |
| EP1      | 0910045490 | PCB         | B 4538                           |

S.=Surface mount

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                    |
|----------|------------|--------------|--------------------|
| IC1      | 1130007810 | S.IC         | μPD3140GS-E1 (DS8) |
| IC2      | 1130007280 | S.IC         | TC7S32FU(TE85R)    |
| IC3      | 1150001530 | IC           | SC1284             |
| IC4      | 1130007570 | S.IC         | BU4094BCFV-EZ      |
| IC5      | 1130007810 | S.IC         | μPD3140GS-E1 (DS8) |
| IC8      | 1140004380 | IC           | SC1297             |
| IC7      | 1130004500 | S.IC         | TC4S11F (TE85R)    |
| Q1       | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q3       | 1530002560 | S.TRANSISTOR | 2SC4403-3-TR       |
| Q4       | 1530002920 | S.TRANSISTOR | 2SC4226-T2 R25     |
| Q5       | 1590001890 | S.TRANSISTOR | UN9115(TX)         |
| Q8       | 1590001890 | S.TRANSISTOR | UN9115(TX)         |
| Q7       | 1590002080 | S.TRANSISTOR | UN9117(TX)         |
| Q8       | 1530002900 | S.TRANSISTOR | 2SC4228-T2 R45     |
| Q9       | 1530002920 | S.TRANSISTOR | 2SC4226-T2 R25     |
| Q10      | 1590001140 | S.TRANSISTOR | UN9210(TX)         |
| Q11      | 1510000870 | S.TRANSISTOR | 2SA1588-GR (TE85R) |
| Q12      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q13      | 1530003280 | S.TRANSISTOR | 2SC4211-8-TR       |
| Q14      | 1530003190 | S.TRANSISTOR | 2SC4617 TLQ        |
| Q15      | 1530003190 | S.TRANSISTOR | 2SC4617 TLQ        |
| Q18      | 1530003190 | S.TRANSISTOR | 2SC4617 TLQ        |
| Q17      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R     |
| Q18      | 1510000870 | S.TRANSISTOR | 2SA1588-GR (TE85R) |
| Q20      | 1510000870 | S.TRANSISTOR | 2SA1588-GR (TE85R) |
| Q21      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q22      | 1510000870 | S.TRANSISTOR | 2SA1588-GR (TE85R) |
| Q23      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q24      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q25      | 1590001160 | S.TRANSISTOR | XP1401-(TX).AB     |
| Q26      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q27      | 1530002560 | S.TRANSISTOR | 2SC4403-3-TR       |
| Q28      | 1530002570 | S.TRANSISTOR | 2SC4405-3-TR       |
| Q29      | 1530002560 | S.TRANSISTOR | 2SC4403-3-TR       |
| Q30      | 1590002080 | S.TRANSISTOR | UN9117(TX)         |
| Q31      | 1530002920 | S.TRANSISTOR | 2SC4226-T2 R25     |
| Q32      | 1590001140 | S.TRANSISTOR | UN9210(TX)         |
| Q33      | 1510000870 | S.TRANSISTOR | 2SA1588-GR (TE85R) |
| Q34      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R     |
| Q35      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q36      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| Q37      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R     |
| Q38      | 1590001970 | S.TRANSISTOR | UN921E(TX)         |
| Q39      | 1590001140 | S.TRANSISTOR | UN9210(TX)         |
| Q40      | 1590001130 | S.TRANSISTOR | UN9110(TX)         |
| Q41      | 1540000410 | S.TRANSISTOR | 2SD2345(TX)S       |
| Q42      | 1550000010 | S.FET        | 2SJ364-Q (TX)      |
| Q43      | 1590001150 | S.TRANSISTOR | UN9211(TX)         |
| D1       | 1790000860 | S.DIODE      | MA133(TX)          |
| D2       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D3       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D4       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D5       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D8       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D7       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D8       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D9       | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D10      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D11      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D12      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D14      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D15      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D16      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D17      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D18      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D19      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D20      | 1790001240 | S.DIODE      | MA2S728-(TX)       |
| D21      | 1790001240 | S.DIODE      | MA2S728-(TX)       |
| D22      | 1790001250 | S.DIODE      | MA2S111-(TX)       |
| D24      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D25      | 1790001260 | S.DIODE      | MA2S077-(TX)       |
| D26      | 1790001250 | S.DIODE      | MA2S111-(TX)       |

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                         |
|----------|------------|-------------|-------------------------|
| D27      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D28      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D29      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D30      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D31      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D32      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D34      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D35      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| D36      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| D37      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D38      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D39      | 1790001260 | S.DIODE     | MA2S077-(TX)            |
| D42      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D43      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D44      | 1790001030 | S.DIODE     | SB30-03P-TD             |
| D46      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| D47      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| D48      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| D49      | 1790001250 | S.DIODE     | MA2S111-(TX)            |
| D50      | 1790001240 | S.DIODE     | MA2S728-(TX)            |
| X1       | 6050008730 | XTAL        | CR-456 (12.6 MHz)       |
| L1       | 6200004380 | S.COIL      | LL1608-F18NK            |
| L3       | 6200004380 | S.COIL      | LL1608-F18NK            |
| L4       | 6200004380 | S.COIL      | LL1608-F18NK            |
| L5       | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L6       | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L7       | 6200004680 | S.COIL      | LL1608-F8N2K            |
| L8       | 6200004410 | S.COIL      | LL1608-F27NK            |
| L9       | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L10      | 6200002340 | S.COIL      | LQN 1A 23NJ04           |
| L11      | 6200002340 | S.COIL      | LQN 1A 23NJ04           |
| L12      | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L13      | 6200002830 | S.COIL      | LQN 1A 84NJ04           |
| L14      | 6200002820 | S.COIL      | LQN 1A 47NJ04           |
| L15      | 6200002390 | S.COIL      | LQN 1A 64NJ04           |
| L16      | 6200002820 | S.COIL      | LQN 1A 47NJ04           |
| L17      | 6200004460 | S.COIL      | MLF1608D 82NM-T         |
| L18      | 6200004460 | S.COIL      | MLF1608D 82NM-T         |
| L19      | 6200004430 | S.COIL      | LL1608-F58NK            |
| L20      | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L21      | 6200002820 | S.COIL      | LQN 1A 47NJ04           |
| L22      | 6200002820 | S.COIL      | LQN 1A 47NJ04           |
| L23      | 6200002820 | S.COIL      | LQN 1A 47NJ04           |
| L24      | 6200004480 | S.COIL      | MLF1608D R82K-T         |
| L25      | 6200004480 | S.COIL      | MLF1608D R82K-T         |
| L26      | 6200004380 | S.COIL      | LL1608-F18NK            |
| L27      | 6200004490 | S.COIL      | LL1608-F39NK            |
| L30      | 6200004480 | S.COIL      | MLF1608D R82K-T         |
| L31      | 6200004480 | S.COIL      | MLF1608D 82NM-T         |
| L32      | 6200004470 | S.COIL      | MLF1608D R12K-T         |
| L34      | 6200004600 | S.COIL      | MLF1608D R15K-T         |
| L35      | 6200004370 | S.COIL      | LL1608-F15NK            |
| L36      | 6200002100 | S.COIL      | LQN 1A 17NJ04           |
| L37      | 6200003550 | S.COIL      | MLF1608A 4R7K-T         |
| R1       | 7030003360 | S.RESISTOR  | ERJ3GEYJ 221 V (220 Ω)  |
| R2       | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R3       | 7030003490 | S.RESISTOR  | ERJ3GEYJ 272 V (2.7 kΩ) |
| R4       | 7310003800 | S.TRIMMER   | EVM-1XSX50 B54 (503)    |
| R5       | 7030003590 | S.RESISTOR  | ERJ3GEYJ 183 V (18 kΩ)  |
| R6       | 7030003300 | S.RESISTOR  | ERJ3GEYJ 680 V (68 Ω)   |
| R10      | 7030003610 | S.RESISTOR  | ERJ3GEYJ 273 V (27 kΩ)  |
| R11      | 7030003300 | S.RESISTOR  | ERJ3GEYJ 680 V (68 Ω)   |
| R12      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R13      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R14      | 7030003490 | S.RESISTOR  | ERJ3GEYJ 272 V (2.7 kΩ) |
| R15      | 7030003490 | S.RESISTOR  | ERJ3GEYJ 272 V (2.7 kΩ) |
| R16      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R17      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 153 V (15 kΩ)  |
| R18      | 7030003280 | S.RESISTOR  | ERJ3GEYJ 470 V (47 Ω)   |
| R19      | 7030003570 | S.RESISTOR  | ERJ3GEYJ 123 V (12 kΩ)  |

S.=Surface mount

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                         |
|----------|------------|--------------|-------------------------|
| R20      | 7030003510 | S.RESISTOR   | ERJ3GEYJ 392 V (3.9 kΩ) |
| R21      | 7030003460 | S.RESISTOR   | ERJ3GEYJ 152 V (1.5 kΩ) |
| R22      | 7030003230 | S.RESISTOR   | ERJ3GEYJ 180 V (18 Ω)   |
| R23      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R24      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R25      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R29      | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R31      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R32      | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R33      | 7030003720 | S.RESISTOR   | ERJ3GEYJ 224 V (220 kΩ) |
| R34      | 7030003480 | S.RESISTOR   | ERJ3GEYJ 222 V (2.2 kΩ) |
| R35      | 7030003440 | S.RESISTOR   | ERJ3GEYJ 102 V (1 kΩ)   |
| R36      | 7030003720 | S.RESISTOR   | ERJ3GEYJ 224 V (220 kΩ) |
| R37      | 7030003640 | S.RESISTOR   | ERJ3GEYJ 473 V (47 kΩ)  |
| R38      | 7030003680 | S.RESISTOR   | ERJ3GEYJ 104 V (100 kΩ) |
| R39      | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)  |
| R40      | 7030003500 | S.RESISTOR   | ERJ3GEYJ 332 V (3.3 kΩ) |
| R41      | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R42      | 7030003500 | S.RESISTOR   | ERJ3GEYJ 332 V (3.3 kΩ) |
| R43      | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R44      | 7030003550 | S.RESISTOR   | ERJ3GEYJ 822 V (8.2 kΩ) |
| R45      | 7030003320 | S.RESISTOR   | ERJ3GEYJ 101 V (100 Ω)  |
| R47      | 7030003670 | S.RESISTOR   | ERJ3GEYJ 823 V (82 kΩ)  |
| R49      | 7310003580 | S.TRIMMER    | EVM-1XSX50 B15 (104)    |
| R50      | 7310003580 | S.TRIMMER    | EVM-1XSX50 B15 (104)    |
| R51      | 7030003440 | S.RESISTOR   | ERJ3GEYJ 102 V (1 kΩ)   |
| R52      | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R53      | 7030003670 | S.RESISTOR   | ERJ3GEYJ 823 V (82 kΩ)  |
| R54      | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)  |
| R55      | 7030005670 | S.RESISTOR   | RR0818R-393-D (39 kΩ)   |
| R56      | 7030000330 | S.RESISTOR   | MCR10EZJHJ 390 Ω (391)  |
| R58      | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R59      | 7030003460 | S.RESISTOR   | ERJ3GEYJ 152 V (1.5 kΩ) |
| R60      | 7030003310 | S.RESISTOR   | ERJ3GEYJ 820 V (82 Ω)   |
| R62      | 7030003640 | S.RESISTOR   | ERJ3GEYJ 473 V (47 kΩ)  |
| R64      | 7030003310 | S.RESISTOR   | ERJ3GEYJ 820 V (82 Ω)   |
| R66      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R67      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R68      | 7030003530 | S.RESISTOR   | ERJ3GEYJ 562 V (5.6 kΩ) |
| R69      | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R70      | 7030003290 | S.RESISTOR   | ERJ3GEYJ 560 V (56 Ω)   |
| R71      | 7030003470 | S.RESISTOR   | ERJ3GEYJ 182 V (1.8 kΩ) |
| R72      | 7030003510 | S.RESISTOR   | ERJ3GEYJ 392 V (3.9 kΩ) |
| R73      | 7030003230 | S.RESISTOR   | ERJ3GEYJ 180 V (18 Ω)   |
| R74      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R75      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R76      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R77      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R78      | 7030003640 | S.RESISTOR   | ERJ3GEYJ 473 V (47 kΩ)  |
| R79      | 7030003440 | S.RESISTOR   | ERJ3GEYJ 102 V (1 kΩ)   |
| R80      | 7030003720 | S.RESISTOR   | ERJ3GEYJ 224 V (220 kΩ) |
| R83      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R84      | 7030003420 | S.RESISTOR   | ERJ3GEYJ 681 V (680 Ω)  |
| R85      | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R86      | 7030003420 | S.RESISTOR   | ERJ3GEYJ 681 V (680 Ω)  |
| R87      | 7030003550 | S.RESISTOR   | ERJ3GEYJ 822 V (8.2 kΩ) |
| R88      | 7030003320 | S.RESISTOR   | ERJ3GEYJ 101 V (100 Ω)  |
| R90      | 7310003600 | S.TRIMMER    | EVM-1XSX50 B54 (503)    |
| R91      | 7030003490 | S.RESISTOR   | ERJ3GEYJ 272 V (2.7 kΩ) |
| R93      | 7510000940 | S.THERMISTOR | TBPS1R473K475H5Q        |
| R94      | 7030003600 | S.RESISTOR   | ERJ3GEYJ 223 V (22 kΩ)  |
| R95      | 7030003420 | S.RESISTOR   | ERJ3GEYJ 681 V (680 Ω)  |
| R96      | 7030003340 | S.RESISTOR   | ERJ3GEYJ 151 V (150 Ω)  |
| R101     | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R102     | 7030003680 | S.RESISTOR   | ERJ3GEYJ 104 V (100 kΩ) |
| R103     | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R104     | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R105     | 7030003520 | S.RESISTOR   | ERJ3GEYJ 472 V (4.7 kΩ) |
| R106     | 7030003560 | S.RESISTOR   | ERJ3GEYJ 103 V (10 kΩ)  |
| R108     | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R109     | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R110     | 7030003200 | S.RESISTOR   | ERJ3GEYJ 100 V (10 Ω)   |
| R111     | 7030003200 | S.RESISTOR   | ERJ3GEYJ 100 V (10 Ω)   |
| R112     | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R113     | 7030003400 | S.RESISTOR   | ERJ3GEYJ 471 V (470 Ω)  |
| R114     | 7030003310 | S.RESISTOR   | ERJ3GEYJ 820 V (82 Ω)   |

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                         |
|----------|------------|-------------|-------------------------|
| R115     | 7030003340 | S.RESISTOR  | ERJ3GEYJ 151 V (150 Ω)  |
| R116     | 7030003380 | S.RESISTOR  | ERJ3GEYJ 331 V (330 Ω)  |
| R118     | 7030003380 | S.RESISTOR  | ERJ3GEYJ 331 V (330 Ω)  |
| R119     | 7030003320 | S.RESISTOR  | ERJ3GEYJ 101 V (100 Ω)  |
| R120     | 7030003480 | S.RESISTOR  | ERJ3GEYJ 222 V (2.2 kΩ) |
| R121     | 7030003400 | S.RESISTOR  | ERJ3GEYJ 471 V (470 Ω)  |
| R122     | 7030003400 | S.RESISTOR  | ERJ3GEYJ 471 V (470 Ω)  |
| R123     | 7030003640 | S.RESISTOR  | ERJ3GEYJ 473 V (47 kΩ)  |
| R125     | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R127     | 7030003540 | S.RESISTOR  | ERJ3GEYJ 682 V (6.8 kΩ) |
| C1       | 4550006180 | S.TANTALUM  | ECST1CY155R             |
| C2       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C3       | 4550006360 | S.TANTALUM  | ECST1VY104R             |
| C4       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C5       | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A    |
| C6       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C7       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C8       | 4030006970 | S.CERAMIC   | C1608 CH 1H 060D-T-A    |
| C9       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C10      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C11      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C13      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C14      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C15      | 4030006980 | S.CERAMIC   | C1608 CH 1H 070D-T-A    |
| C17      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C18      | 4030006970 | S.CERAMIC   | C1608 CH 1H 060D-T-A    |
| C19      | 4030006970 | S.CERAMIC   | C1608 CH 1H 060D-T-A    |
| C20      | 4030006970 | S.CERAMIC   | C1608 CH 1H 060D-T-A    |
| C21      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C22      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C23      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C24      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C25      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C26      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C27      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A    |
| C28      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A    |
| C29      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C30      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C31      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C32      | 4550006140 | S.TANTALUM  | ECST1EY474R             |
| C33      | 4550006080 | S.TANTALUM  | TEMSVB2 1C 106M-8L      |
| C34      | 4030009530 | S.CERAMIC   | C1608 CH 1H 030B-T-A    |
| C35      | 4030009920 | S.CERAMIC   | C1608 CH 1H 050B-T-A    |
| C38      | 4030009520 | S.CERAMIC   | C1608 CH 1H 020B-T-A    |
| C39      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C40      | 4030006860 | S.CERAMIC   | C1608 CH 1H 070D-T-A    |
| C41      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A    |
| C43      | 4030009520 | S.CERAMIC   | C1608 CH 1H 020B-T-A    |
| C44      | 4030009500 | S.CERAMIC   | C1608 CH 1H 0R5B-T-A    |
| C45      | 4030009920 | S.CERAMIC   | C1608 CH 1H 050B-T-A    |
| C46      | 4030009510 | S.CERAMIC   | C1608 CH 1H 010B-T-A    |
| C47      | 4030009920 | S.CERAMIC   | C1608 CH 1H 050B-T-A    |
| C48      | 4030007070 | S.CERAMIC   | C1608 CH 1H 330J-T-A    |
| C49      | 4030007150 | S.CERAMIC   | C1608 CH 1H 151J-T-A    |
| C50      | 4030006890 | S.CERAMIC   | C1608 CH 1H 080D-T-A    |
| C51      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C53      | 4030009510 | S.CERAMIC   | C1608 CH 1H 010B-T-A    |
| C54      | 4030007020 | S.CERAMIC   | C1608 CH 1H 120J-T-A    |
| C55      | 4030009520 | S.CERAMIC   | C1608 CH 1H 020B-T-A    |
| C56      | 4030007080 | S.CERAMIC   | C1608 CH 1H 270J-T-A    |
| C57      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A    |
| C58      | 4030009650 | S.CERAMIC   | C1608 CH 1H 240J-T-A    |
| C59      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C60      | 4030007070 | S.CERAMIC   | C1608 CH 1H 330J-T-A    |
| C61      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A    |
| C62      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C63      | 4610001910 | S.TRIMMER   | CTZ3E-10A-W1            |
| C64      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C65      | 4550006190 | S.TANTALUM  | ECST0GY106R             |
| C66      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C69      | 4550006190 | S.TANTALUM  | ECST0GY106R             |
| C70      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C72      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C73      | 4550006220 | S.TANTALUM  | TEMSVA 0J 156M-8L       |

S.=Surface mount

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                       |
|----------|------------|-------------|-----------------------|
| C74      | 4550008220 | S.TANTALUM  | TEMSVA 0J 156M-8L     |
| C75      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C76      | 4550008220 | S.TANTALUM  | TEMSVA 0J 156M-8L     |
| C77      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C79      | 4550008121 | S.TANTALUM  | TEMSVA 0G 226M-8R     |
| C80      | 4550008121 | S.TANTALUM  | TEMSVA 0G 226M-8R     |
| C81      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C82      | 4550008190 | S.TANTALUM  | ECST0GY108R           |
| C85      | 4030007050 | S.CERAMIC   | C1808 CH 1H 220J-T-A  |
| C86      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C87      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C90      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C92      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C93      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C94      | 4550008150 | S.TANTALUM  | ECST1CY105R           |
| C95      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C96      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C97      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C98      | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C99      | 4550008080 | S.TANTALUM  | TEMSVB2 1C 106M-8L    |
| C100     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C101     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C102     | 4030010070 | S.CERAMIC   | C1808 X7S 1C 104K-T-A |
| C103     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C104     | 4550008360 | S.TANTALUM  | ECST1VY104R           |
| C105     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C106     | 4550008340 | S.TANTALUM  | ECST1AY335R           |
| C108     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C109     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C110     | 4030007040 | S.CERAMIC   | C1808 CH 1H 180J-T-A  |
| C111     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C112     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C113     | 4030009500 | S.CERAMIC   | C1808 CH 1H 0R5B-T-A  |
| C114     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C115     | 4030007040 | S.CERAMIC   | C1808 CH 1H 180J-T-A  |
| C117     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C118     | 4030007040 | S.CERAMIC   | C1808 CH 1H 180J-T-A  |
| C119     | 4030007020 | S.CERAMIC   | C1808 CH 1H 120J-T-A  |
| C120     | 4030007050 | S.CERAMIC   | C1808 CH 1H 220J-T-A  |
| C121     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C122     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C123     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C124     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C125     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C126     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C128     | 4550008080 | S.TANTALUM  | TEMSVB2 1C 106M-8L    |
| C129     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C130     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C132     | 4030007030 | S.CERAMIC   | C1808 CH 1H 150J-T-A  |
| C133     | 4030007040 | S.CERAMIC   | C1808 CH 1H 180J-T-A  |
| C134     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C135     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C136     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C137     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C138     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C139     | 4030007030 | S.CERAMIC   | C1808 CH 1H 150J-T-A  |
| C140     | 4030007070 | S.CERAMIC   | C1808 CH 1H 330J-T-A  |
| C141     | 4030007030 | S.CERAMIC   | C1808 CH 1H 150J-T-A  |
| C142     | 4550008150 | S.TANTALUM  | ECST1CY105R           |
| C144     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C146     | 4030007020 | S.CERAMIC   | C1808 CH 1H 120J-T-A  |
| C147     | 4030007010 | S.CERAMIC   | C1808 CH 1H 100D-T-A  |
| C148     | 4030008970 | S.CERAMIC   | C1808 CH 1H 080D-T-A  |
| C149     | 4030007040 | S.CERAMIC   | C1808 CH 1H 180J-T-A  |
| C153     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C170     | 4030009510 | S.CERAMIC   | C1808 CH 1H 010B-T-A  |
| C171     | 4030009000 | S.CERAMIC   | C2012 JB 1C 224K-T-A  |
| C172     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C173     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C174     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C175     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C176     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C177     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C178     | 4030008850 | S.CERAMIC   | C1808 JB 1H 471K-T-A  |
| C180     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |
| C182     | 4030008880 | S.CERAMIC   | C1808 JB 1H 102K-T-A  |

[1F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                                 |
|----------|------------|--------------|---------------------------------|
| C183     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C185     | 4030007050 | S.CERAMIC    | C1808 CH 1H 220J-T-A            |
| C186     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C187     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C188     | 4030007070 | S.CERAMIC    | C1808 CH 1H 330J-T-A            |
| C189     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C190     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C191     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C192     | 4510005810 | ELECTROLITIC | ECA 0JG 101X                    |
| C193     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C197     | 4030009500 | S.CERAMIC    | C1808 CH 1H 0R5B-T-A            |
| C198     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A [USA only] |
| C199     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C200     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| C201     | 4030008880 | S.CERAMIC    | C1808 JB 1H 102K-T-A            |
| W2       | 7120000380 | JUMPER       | JPW 01 R-01                     |
| W3       | 7030003880 | S.JUMPER     | ERJ3GE JPW V                    |
| W4       | 7030003880 | S.JUMPER     | ERJ3GE JPW V                    |
| W5       | 7030003880 | S.JUMPER     | ERJ3GE JPW V                    |
| W6       | 7030003880 | S.JUMPER     | ERJ3GE JPW V                    |
| W7       | 7030003880 | S.JUMPER     | ERJ3GE JPW V                    |
| J1       | 6450000130 | CONNECTOR    | HSJ1102-01-540                  |
| J2       | 6450001080 | CONNECTOR    | HSJ1493-01-010                  |
| J3       | 6450000870 | CONNECTOR    | HEC2711-01-020                  |
| J4       | 6510017630 | S.CONNECTOR  | 53284-0890                      |
| J5       | 6510017630 | S.CONNECTOR  | 53284-0890                      |
| J8       | 6510017630 | S.CONNECTOR  | 53284-0890                      |
| J7       | 6510017610 | S.CONNECTOR  | 53284-2290                      |
| EP1      | 0910045510 | PCB          | B 4534                          |

[V VCO BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                        |
|----------|------------|--------------|------------------------|
| Q1       | 1530003280 | S.TRANSISTOR | 2SC5008-T1             |
| Q2       | 1530003280 | S.TRANSISTOR | 2SC5008-T1             |
| Q3       | 1530003280 | S.TRANSISTOR | 2SC5008-T1             |
| D1       | 1790001280 | S.VARICAP    | MA304(TX)              |
| D2       | 1790001280 | S.DIODE      | MA2S077-(TX)           |
| L1       | 6200004480 | S.COIL       | MLF1808D R82K-T        |
| L2       | 6110003100 | COIL         | LA-499                 |
| L3       | 6200004480 | S.COIL       | MLF1808D 82NM-T        |
| R1       | 7030008050 | S.RESISTOR   | RR0510P-181-D (180 Ω)  |
| R2       | 7030008030 | S.RESISTOR   | RR0510P-822-D (8.2 kΩ) |
| R3       | 7030005700 | S.RESISTOR   | ERJ2GEJ 274 X (270 kΩ) |
| R4       | 7030005810 | S.RESISTOR   | RR0510P-152-D (1.5 kΩ) |
| R5       | 7030005780 | S.RESISTOR   | RR0510P-221-D (220 Ω)  |
| R6       | 7030005110 | S.RESISTOR   | ERJ2GEJ 224 X (220 kΩ) |
| R7       | 7030005780 | S.RESISTOR   | RR0510R-680-D (68 Ω)   |
| R8       | 7030008030 | S.RESISTOR   | RR0510P-822-D (8.2 kΩ) |
| R9       | 7030005880 | S.RESISTOR   | RR0510R-820-D (82 Ω)   |
| R10      | 7030005840 | S.RESISTOR   | RR0510R-473-D (47 kΩ)  |
| R11      | 7030005770 | S.RESISTOR   | RR0510P-101-D (100 Ω)  |
| R13      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R14      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R15      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R16      | 7030005760 | S.RESISTOR   | RR0510R-680-D (68 Ω)   |

S.=Surface mount

[V VCO BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION |                      |
|----------|------------|-------------|----------------------|
| C1       | 4030008580 | S.CERAMIC   | C1608 CH 1H 300J-T-A |
| C2       | 4030008880 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C4       | 4030009550 | S.CERAMIC   | C1608 CH 1H 2R5B-T-A |
| C5       | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C6       | 4030009550 | S.CERAMIC   | C1608 CH 1H 2R5B-T-A |
| C7       | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C8       | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C9       | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C10      | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C11      | 4030009670 | S.CERAMIC   | C1005 CH 1E 010C-T-A |
| C12      | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C13      | 4030009830 | S.CERAMIC   | C1005 CH 1E 180J-T-A |
| C14      | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
| C15      | 4030009810 | S.CERAMIC   | C1005 JB 1E 102K-T-A |
|          |            |             |                      |
| J1       | 6910008020 | CONNECTOR   | IPS-1323             |
| J2       | 6910008020 | CONNECTOR   | IPS-1323             |
| J3       | 6910008020 | CONNECTOR   | IPS-1323             |
| J4       | 6910008020 | CONNECTOR   | IPS-1323             |
| J5       | 6910008020 | CONNECTOR   | IPS-1323             |
| J6       | 6910008020 | CONNECTOR   | IPS-1323             |
|          |            |             |                      |
| EP1      | 0910045540 | PCB         | B 4577               |

[U VCO BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                        |
|----------|------------|--------------|------------------------|
| Q1       | 1530003260 | S.TRANSISTOR | 2SC5006-T1             |
| Q2       | 1530003260 | S.TRANSISTOR | 2SC5006-T1             |
| Q3       | 1530003260 | S.TRANSISTOR | 2SC5006-T1             |
|          |            |              |                        |
| D2       | 1790001310 | S.VARICAP    | 1SV270(TPH3)           |
| D3       | 1790001260 | S.DIODE      | MA2S077-(TX)           |
|          |            |              |                        |
| L1       | 6200001520 | S.COIL       | MLF2012D R82K-T        |
| L2       | 6110003100 | COIL         | LA-499                 |
| L3       | 6200004400 | S.COIL       | LL1608-F47NK           |
|          |            |              |                        |
| R1       | 7030008020 | S.RESISTOR   | RR0510P-882-D (6.8 kΩ) |
| R2       | 7030005880 | S.RESISTOR   | RR0510R-820-D (82 Ω)   |
| R4       | 7030005810 | S.RESISTOR   | RR0510P-152-D (1.5 kΩ) |
| R5       | 7030005780 | S.RESISTOR   | RR0510P-221-D (220 Ω)  |
| R6       | 7030006030 | S.RESISTOR   | RR0510P-822-D (8.2 kΩ) |
| R7       | 7030005880 | S.RESISTOR   | RR0510R-820-D (82 Ω)   |
| R8       | 7030005850 | S.RESISTOR   | RR0510R-583-D (58 kΩ)  |
| R9       | 7030005760 | S.RESISTOR   | RR0510R-680-D (68 Ω)   |
| R11      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R12      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R13      | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R14      | 7030005760 | S.RESISTOR   | RR0510R-680-D (68 Ω)   |
| R15      | 7030005110 | S.RESISTOR   | ERJ2GEJ 224 X (220 kΩ) |
| R16      | 7030005770 | S.RESISTOR   | RR0510P-101-D (100 Ω)  |
|          |            |              |                        |
| C1       | 4030007090 | S.CERAMIC    | C1608 CH 1H 470J-T-A   |
| C2       | 4030007140 | S.CERAMIC    | C1608 CH 1H 121J-T-A   |
| C3       | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C4       | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C6       | 4030009510 | S.CERAMIC    | C1608 CH 1H 010B-T-A   |
| C7       | 4030009510 | S.CERAMIC    | C1608 CH 1H 010B-T-A   |
| C8       | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C9       | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C10      | 4030009890 | S.CERAMIC    | C1005 CH 1E 020C-T-A   |
| C11      | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C12      | 4030009730 | S.CERAMIC    | C1005 CH 1E 090D-T-A   |
| C13      | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |

[U VCO BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION |          |
|----------|------------|-------------|----------|
| J1       | 6910008020 | CONNECTOR   | IPS-1323 |
| J2       | 6910008020 | CONNECTOR   | IPS-1323 |
| J3       | 6910008020 | CONNECTOR   | IPS-1323 |
|          |            |             |          |
| EP1      | 0910045530 | PCB         | B 4576   |

[U VCO-2F BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                        |
|----------|------------|--------------|------------------------|
| Q1       | 1530003260 | S.TRANSISTOR | 2SC5006-T1             |
| Q2       | 1530003260 | S.TRANSISTOR | 2SC5006-T1             |
|          |            |              |                        |
| L2       | 6200004410 | S.COIL       | LL1608-F27NK           |
| L3       | 6200004370 | S.COIL       | LL1608-F15NK           |
| L4       | 6200004390 | S.COIL       | LL1608-F22NK           |
| L6       | 6200004420 | S.COIL       | LL1608-F33NK           |
| L7       | 6200004410 | S.COIL       | LL1608-F27NK           |
|          |            |              |                        |
| R1       | 7030006290 | S.RESISTOR   | RR0510R-333-D (33 kΩ)  |
| R2       | 7030005950 | S.RESISTOR   | RR0510R-123-D (12 kΩ)  |
| R3       | 7030006280 | S.RESISTOR   | RR0510R-330-D (33 Ω)   |
| R4       | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R5       | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R6       | 7030005740 | S.RESISTOR   | RR0510R-150-D (15 Ω)   |
| R8       | 7030005780 | S.RESISTOR   | RR0510P-221-D (220 Ω)  |
| R9       | 7030006290 | S.RESISTOR   | RR0510R-333-D (33 kΩ)  |
| R11      | 7030003320 | S.RESISTOR   | ERJ3GEYJ 101 V (100 Ω) |
|          |            |              |                        |
| C1       | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C2       | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C3       | 4030009690 | S.CERAMIC    | C1005 CH 1E 030C-T-A   |
| C4       | 4030010380 | S.CERAMIC    | C1005 CH 1E 820J-T-A   |
| C5       | 4030009840 | S.CERAMIC    | C1005 CH 1E 080D-T-A   |
| C6       | 4030009740 | S.CERAMIC    | C1005 CH 1E 100D-T-A   |
| C7       | 4030009690 | S.CERAMIC    | C1005 CH 1E 030C-T-A   |
| C8       | 4030009760 | S.CERAMIC    | C1005 CH 1E 150J-T-A   |
| C9       | 4030009670 | S.CERAMIC    | C1005 CH 1E 010C-T-A   |
| C10      | 4030009720 | S.CERAMIC    | C1005 CH 1E 080D-T-A   |
| C11      | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C12      | 4030009810 | S.CERAMIC    | C1005 JB 1E 102K-T-A   |
| C13      | 4030009690 | S.CERAMIC    | C1005 CH 1E 030C-T-A   |
| C14      | 4030009840 | S.CERAMIC    | C1005 CH 1E 080D-T-A   |
| C15      | 4030009790 | S.CERAMIC    | C1005 CH 1E 330J-T-A   |
|          |            |              |                        |
| J1       | 6910008020 | CONNECTOR    | IPS-1323               |
| J2       | 6910008020 | CONNECTOR    | IPS-1323               |
| J3       | 6910008020 | CONNECTOR    | IPS-1323               |
| J4       | 6910008020 | CONNECTOR    | IPS-1323               |
|          |            |              |                        |
| EP1      | 0910045500 | PCB          | B 4533                 |

S.=Surface mount



[2F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                            |
|----------|------------|--------------|----------------------------|
| IC1      | 1110003570 | S.IC         | MC3372VMEL                 |
| IC2      | 1110003570 | S.IC         | MC3372VMEL                 |
| IC3      | 1110003370 | S.IC         | μPC2748T-E3                |
| IC4      | 1110003370 | S.IC         | μPC2748T-E3                |
| IC5      | 1130007570 | S.IC         | BU4094BCFV-EZ              |
| IC6      | 1110002420 | S.IC         | NJM2073M(T1)               |
| IC7      | 1110003370 | S.IC         | μPC2748T-E3                |
| Q1       | 1530003220 | S.TRANSISTOR | 2SC4406-4-TR               |
| Q2       | 1590001690 | S.TRANSISTOR | UN9115(TX)                 |
| Q4       | 1590002080 | S.TRANSISTOR | UN9117(TX)                 |
| Q5       | 1530002560 | S.TRANSISTOR | 2SC4403-3-TR               |
| Q6       | 1530003280 | S.TRANSISTOR | 2SC4211-6-TR               |
| Q7       | 1590001140 | S.TRANSISTOR | UN9210(TX)                 |
| Q8       | 1530003280 | S.TRANSISTOR | 2SC4211-6-TR               |
| Q9       | 1590001140 | S.TRANSISTOR | UN9210(TX)                 |
| Q10      | 1530003220 | S.TRANSISTOR | 2SC4406-4-TR               |
| Q12      | 1590001690 | S.TRANSISTOR | UN9115(TX)<br>[except USA] |
| Q13      | 1530002560 | S.TRANSISTOR | 2SC4403-3-TR               |
| Q14      | 1590001690 | S.TRANSISTOR | UN9115(TX)                 |
| Q15      | 1590002080 | S.TRANSISTOR | UN9117(TX)                 |
| Q16      | 1590002080 | S.TRANSISTOR | UN9117(TX)<br>[except USA] |
| Q17      | 1590001690 | S.TRANSISTOR | UN9115(TX)                 |
| Q18      | 1530002570 | S.TRANSISTOR | 2SC4405-3-TR               |
| Q19      | 1530002570 | S.TRANSISTOR | 2SC4405-3-TR               |
| Q20      | 1530003280 | S.TRANSISTOR | 2SC4211-6-TR               |
| Q21      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R             |
| Q22      | 1510000670 | S.TRANSISTOR | 2SA1588-GR (TE85R)         |
| Q23      | 1510000670 | S.TRANSISTOR | 2SA1588-GR (TE85R)         |
| Q24      | 1560000540 | S.FET        | 2SK880-Y (TE85R)           |
| Q25      | 1590001860 | S.TRANSISTOR | UN9215(TX)                 |
| Q27      | 1520000460 | S.TRANSISTOR | 2SB1132 T100 R             |
| Q30      | 1590001170 | S.TRANSISTOR | XP1501-(TX).AB             |
| Q31      | 1520000650 | S.TRANSISTOR | 2SB1201-S-TL               |
| D1       | 1790000490 | S.DIODE      | HSM88AS-TR                 |
| D3       | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D4       | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D5       | 1790001250 | S.DIODE      | MA2S111-(TX)               |
| D6       | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D7       | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D8       | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D10      | 1750000350 | S.VARICAP    | 1SV252(TE85R)              |
| D11      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D12      | 1790001290 | S.VARICAP    | MA304(TX)                  |
| D13      | 1790001290 | S.VARICAP    | MA304(TX)                  |
| D14      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D15      | 1790001290 | S.VARICAP    | MA304(TX)                  |
| D16      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D17      | 1790001250 | S.DIODE      | MA2S111-(TX)               |
| D18      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D19      | 1790001240 | S.DIODE      | MA2S728-(TX)               |
| D20      | 1790001030 | S.DIODE      | SB30-03P-TD                |
| D21      | 1750000130 | S.DIODE      | DA204U T107                |
| D22      | 1790000670 | S.DIODE      | SB07-03C-TA                |
| D25      | 1790000490 | S.DIODE      | HSM88AS-TR                 |
| D27      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D28      | 1790001250 | S.DIODE      | MA2S111-(TX)               |
| D29      | 1790001250 | S.DIODE      | MA2S111-(TX)               |
| D30      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D31      | 1790000980 | S.DIODE      | MA742(TX)                  |
| D32      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D33      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| D34      | 1790001260 | S.DIODE      | MA2S077-(TX)               |
| FI1      | 2020001050 | S.CERAMIC    | SFPC455E-TC01              |
| FI2      | 2010001640 | FILTER       | FL-203 (35.800MHz)         |
| FI3      | 2020001050 | S.CERAMIC    | SFPC455E-TC01              |
| FI4      | 2010001780 | MONOLITHIC   | FL-219 (43.100MHz)         |

[2F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION   |                          |
|----------|------------|---------------|--------------------------|
| X1       | 6070000080 | DISCRIMINATOR | CDBM455C18               |
| X2       | 6050008880 | XTAL          | CR-458 (35.345106MHz)    |
| X3       | 6070000080 | DISCRIMINATOR | CDBM455C18               |
| X4       | 6050008400 | XTAL          | CR-419 (42.845MHz)       |
| L1       | 6200002710 | S.COIL        | ELJFC 1R8K-F             |
| L2       | 6200002240 | S.COIL        | ELJFC 2R2K-F             |
| L3       | 6200004350 | S.COIL        | LL1608-F10NK             |
| L4       | 6200004350 | S.COIL        | LL1608-F10NK             |
| L5       | 6200004390 | S.COIL        | LL1608-F22NK             |
| L6       | 6200004380 | S.COIL        | LL1608-F18NK             |
| L7       | 6200002710 | S.COIL        | ELJFC 1R8K-F             |
| L8       | 6130002800 | S.COIL        | LB-320                   |
| L9       | 6130002810 | S.COIL        | LB-321                   |
| L10      | 6150004340 | S.COIL        | LS-490                   |
| L13      | 6200004380 | S.COIL        | LL1608-F18NK             |
| L15      | 6200004370 | S.COIL        | LL1608-F15NK             |
| L16      | 6200004390 | S.COIL        | LL1608-F22NK             |
| L17      | 6200004380 | S.COIL        | LL1608-F18NK             |
| L18      | 6200004660 | S.COIL        | MLF1608A 1R8K-T          |
| R1       | 7030003470 | S.RESISTOR    | ERJ3GEYJ 182 V (1.8 kΩ)  |
| R2       | 7030003840 | S.RESISTOR    | ERJ3GEYJ 473 V (47 kΩ)   |
| R3       | 7030003510 | S.RESISTOR    | ERJ3GEYJ 392 V (3.9 kΩ)  |
| R4       | 7030003480 | S.RESISTOR    | ERJ3GEYJ 222 V (2.2 kΩ)  |
| R5       | 7030003560 | S.RESISTOR    | ERJ3GEYJ 103 V (10 kΩ)   |
| R7       | 7030003640 | S.RESISTOR    | ERJ3GEYJ 473 V (47 kΩ)   |
| R8       | 7030003500 | S.RESISTOR    | ERJ3GEYJ 332 V (3.3 kΩ)  |
| R9       | 7030003680 | S.RESISTOR    | ERJ3GEYJ 104 V (100 kΩ)  |
| R10      | 7030003310 | S.RESISTOR    | ERJ3GEYJ 820 V (82 Ω)    |
| R11      | 7030003670 | S.RESISTOR    | ERJ3GEYJ 823 V (82 kΩ)   |
| R12      | 7030003400 | S.RESISTOR    | ERJ3GEYJ 471 V (470 Ω)   |
| R13      | 7030003460 | S.RESISTOR    | ERJ3GEYJ 152 V (1.5 kΩ)  |
| R14      | 7030003440 | S.RESISTOR    | ERJ3GEYJ 102 V (1 kΩ)    |
| R15      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R16      | 7030003690 | S.RESISTOR    | ERJ3GEYJ 124 V (12.4 kΩ) |
| R17      | 7030003660 | S.RESISTOR    | ERJ3GEYJ 683 V (68 kΩ)   |
| R18      | 7030003220 | S.RESISTOR    | ERJ3GEYJ 150 V (15 Ω)    |
| R19      | 7030003220 | S.RESISTOR    | ERJ3GEYJ 150 V (15 Ω)    |
| R20      | 7030003220 | S.RESISTOR    | ERJ3GEYJ 150 V (15 Ω)    |
| R22      | 7030003480 | S.RESISTOR    | ERJ3GEYJ 222 V (2.2 kΩ)  |
| R23      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R24      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R25      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R26      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R27      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R28      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R30      | 7030003470 | S.RESISTOR    | ERJ3GEYJ 182 V (1.8 kΩ)  |
| R31      | 7030003740 | S.RESISTOR    | ERJ3GEYJ 334 V (330 kΩ)  |
| R32      | 7030003500 | S.RESISTOR    | ERJ3GEYJ 332 V (3.3 kΩ)  |
| R33      | 7030003560 | S.RESISTOR    | ERJ3GEYJ 103 V (10 kΩ)   |
| R35      | 7030003650 | S.RESISTOR    | ERJ3GEYJ 563 V (56 kΩ)   |
| R36      | 7030003740 | S.RESISTOR    | ERJ3GEYJ 334 V (330 kΩ)  |
| R38      | 7030003840 | S.RESISTOR    | ERJ3GEYJ 225 V (2.2 MΩ)  |
| R39      | 7030003540 | S.RESISTOR    | ERJ3GEYJ 682 V (6.8 kΩ)  |
| R40      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R41      | 7030003740 | S.RESISTOR    | ERJ3GEYJ 334 V (330 kΩ)  |
| R42      | 7030003700 | S.RESISTOR    | ERJ3GEYJ 154 V (150 kΩ)  |
| R43      | 7030003680 | S.RESISTOR    | ERJ3GEYJ 104 V (100 kΩ)  |
| R45      | 7030003300 | S.RESISTOR    | ERJ3GEYJ 680 V (68 Ω)    |
| R46      | 7030003400 | S.RESISTOR    | ERJ3GEYJ 471 V (470 Ω)   |
| R47      | 7030003460 | S.RESISTOR    | ERJ3GEYJ 152 V (1.5 kΩ)  |
| R48      | 7030003440 | S.RESISTOR    | ERJ3GEYJ 102 V (1 kΩ)    |
| R49      | 7030003680 | S.RESISTOR    | ERJ3GEYJ 104 V (100 kΩ)  |
| R50      | 7030003680 | S.RESISTOR    | ERJ3GEYJ 683 V (68 kΩ)   |
| R51      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R52      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R53      | 7030003220 | S.RESISTOR    | ERJ3GEYJ 150 V (15 Ω)    |
| R54      | 7030003220 | S.RESISTOR    | ERJ3GEYJ 150 V (15 Ω)    |
| R55      | 7030003480 | S.RESISTOR    | ERJ3GEYJ 222 V (2.2 kΩ)  |
| R56      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R57      | 7030003520 | S.RESISTOR    | ERJ3GEYJ 472 V (4.7 kΩ)  |
| R58      | 7030003680 | S.RESISTOR    | ERJ3GEYJ 104 V (100 kΩ)  |
| R59      | 7030003680 | S.RESISTOR    | ERJ3GEYJ 104 V (100 kΩ)  |

S.=Surface mount

[2F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                         |
|----------|------------|-------------|-------------------------|
| R60      | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R61      | 7030003400 | S.RESISTOR  | ERJ3GEYJ 471 V (470 Ω)  |
| R62      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R63      | 7030003280 | S.RESISTOR  | ERJ3GEYJ 470 V (47 Ω)   |
| R64      | 7030003280 | S.RESISTOR  | ERJ3GEYJ 470 V (47 Ω)   |
| R65      | 7030003460 | S.RESISTOR  | ERJ3GEYJ 152 V (1.5 kΩ) |
| R66      | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R67      | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R68      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R69      | 7030003280 | S.RESISTOR  | ERJ3GEYJ 152 V (33 Ω)   |
| R70      | 7030003610 | S.RESISTOR  | ERJ3GEYJ 273 V (27 kΩ)  |
| R71      | 7030003220 | S.RESISTOR  | ERJ3GEYJ 150 V (15 Ω)   |
| R73      | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R74      | 7030003300 | S.RESISTOR  | ERJ3GEYJ 800 V (88 Ω)   |
| R75      | 7030003680 | S.RESISTOR  | ERJ3GEYJ 104 V (100 kΩ) |
| R76      | 7030003640 | S.RESISTOR  | ERJ3GEYJ 473 V (47 kΩ)  |
| R77      | 7030003510 | S.RESISTOR  | ERJ3GEYJ 392 V (3.9 kΩ) |
| R78      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 100 V (15 kΩ)  |
| R79      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 472 V (4.7 kΩ) |
| R80      | 7030003680 | S.RESISTOR  | ERJ3GEYJ 104 V (100 kΩ) |
| R81      | 7030003580 | S.RESISTOR  | ERJ3GEYJ 153 V (15 kΩ)  |
| R83      | 7030003520 | S.RESISTOR  | ERJ3GEYJ 222 V (4.7 kΩ) |
| R84      | 7030000180 | S.RESISTOR  | MCR10EZHZ 22 Ω (220)    |
| R85      | 7030003200 | S.RESISTOR  | ERJ3GEYJ 100 V (10 Ω)   |
| R86      | 7030003200 | S.RESISTOR  | ERJ3GEYJ 100 V (10 Ω)   |
| R87      | 7030003200 | S.RESISTOR  | ERJ3GEYJ 100 V (10 Ω)   |
| R88      | 7030003200 | S.RESISTOR  | ERJ3GEYJ 100 V (10 Ω)   |
| R89      | 7030003570 | S.RESISTOR  | ERJ3GEYJ 123 V (12 kΩ)  |
| R90      | 7030003830 | S.RESISTOR  | ERJ3GEYJ 185 V (1.8 MΩ) |
| R91      | 7030003480 | S.RESISTOR  | ERJ3GEYJ 222 V (2.2 kΩ) |
| R92      | 7030003570 | S.RESISTOR  | ERJ3GEYJ 123 V (12 kΩ)  |
| R93      | 7030003480 | S.RESISTOR  | ERJ3GEYJ 222 V (2.2 kΩ) |
| R94      | 7030005330 | S.RESISTOR  | RR0816P-562-D (5.6 kΩ)  |
| R95      | 7030005320 | S.RESISTOR  | RR0816P-103-D (10 kΩ)   |
| R96      | 7030003450 | S.RESISTOR  | ERJ3GEYJ 122 V (1.2 kΩ) |
| R97      | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R98      | 7030000200 | S.RESISTOR  | MCR10EZHZ 33 Ω (330)    |
| R104     | 7030003720 | S.RESISTOR  | ERJ3GEYJ 224 V (220 kΩ) |
| R105     | 7030000180 | S.RESISTOR  | MCR10EZHZ 22 Ω (220)    |
| R109     | 7030003730 | S.RESISTOR  | ERJ3GEYJ 274 V (270 kΩ) |
| R110     | 7030003730 | S.RESISTOR  | ERJ3GEYJ 274 V (270 kΩ) |
| R111     | 7030003650 | S.RESISTOR  | ERJ3GEYJ 563 V (56 kΩ)  |
| R112     | 7030003650 | S.RESISTOR  | ERJ3GEYJ 563 V (56 kΩ)  |
| R113     | 7030005330 | S.RESISTOR  | RR0816P-562-D (5.6 kΩ)  |
| R114     | 7030005330 | S.RESISTOR  | RR0816P-562-D (5.6 kΩ)  |
| R115     | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R117     | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R118     | 7030003560 | S.RESISTOR  | ERJ3GEYJ 103 V (10 kΩ)  |
| R119     | 7030003520 | S.RESISTOR  | ERJ3GEYJ 274 V (4.7 kΩ) |
| R120     | 7030000200 | S.RESISTOR  | MCR10EZHZ 33 Ω (330)    |
| R121     | 7030003450 | S.RESISTOR  | ERJ3GEYJ 122 V (1.2 kΩ) |
| R122     | 7030003440 | S.RESISTOR  | ERJ3GEYJ 102 V (1 kΩ)   |
| R123     | 7030003450 | S.RESISTOR  | ERJ3GEYJ 122 V (1.2 kΩ) |
| R124     | 7030000200 | S.RESISTOR  | MCR10EZHZ 33 Ω (330)    |
| R125     | 7030003640 | S.RESISTOR  | ERJ3GEYJ 473 V (47 kΩ)  |
| C1       | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A    |
| C2       | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A    |
| C3       | 4030007060 | S.CERAMIC   | C1608 CH 1H 270J-T-A    |
| C4       | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A    |
| C5       | 4030006850 | S.CERAMIC   | C1608 JB 1H 471K-T-A    |
| C6       | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C7       | 4030007070 | S.CERAMIC   | C1608 CH 1H 330J-T-A    |
| C8       | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A    |
| C9       | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A    |
| C10      | 4030006990 | S.CERAMIC   | C1608 CH 1H 080D-T-A    |
| C11      | 4030007040 | S.CERAMIC   | C1608 CH 1H 180J-T-A    |
| C12      | 4030007030 | S.CERAMIC   | C1608 CH 1H 150J-T-A    |
| C13      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C14      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C15      | 4030007020 | S.CERAMIC   | C1608 CH 1H 120J-T-A    |
| C17      | 4030006990 | S.CERAMIC   | C1608 CH 1H 080D-T-A    |
| C18      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C19      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |
| C20      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A    |

[2F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION |                      |
|----------|------------|-------------|----------------------|
| C21      | 4030009520 | S.CERAMIC   | C1608 CH 1H 020B-T-A |
| C22      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C23      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C25      | 4030009530 | S.CERAMIC   | C1608 CH 1H 030B-T-A |
| C26      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C27      | 4030007060 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C28      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C29      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C30      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C31      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C32      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A |
| C33      | 4030009520 | S.CERAMIC   | C1608 CH 1H 020B-T-A |
| C34      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A |
| C35      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C36      | 4030006990 | S.CERAMIC   | C1608 CH 1H 080D-T-A |
| C37      | 4030009530 | S.CERAMIC   | C1608 CH 1H 030B-T-A |
| C38      | 4030007020 | S.CERAMIC   | C1608 CH 1H 120J-T-A |
| C39      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C40      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C41      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C42      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C43      | 4030006990 | S.CERAMIC   | C1608 CH 1H 080D-T-A |
| C44      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C45      | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A |
| C46      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C47      | 4030007070 | S.CERAMIC   | C1608 CH 1H 330J-T-A |
| C48      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A |
| C49      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A |
| C50      | 4030007030 | S.CERAMIC   | C1608 CH 1H 150J-T-A |
| C52      | 4030007060 | S.CERAMIC   | C1608 CH 1H 270J-T-A |
| C53      | 4030010740 | S.CERAMIC   | C1608 JB 1A 104K-T-A |
| C54      | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A |
| C56      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C57      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C58      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C59      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C61      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A |
| C62      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C63      | 4030006980 | S.CERAMIC   | C1608 CH 1H 070D-T-A |
| C64      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C65      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C66      | 4030009530 | S.CERAMIC   | C1608 CH 1H 030B-T-A |
| C67      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C68      | 4030007010 | S.CERAMIC   | C1608 CH 1H 100D-T-A |
| C69      | 4030009530 | S.CERAMIC   | C1608 CH 1H 030B-T-A |
| C70      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C71      | 4030007030 | S.CERAMIC   | C1608 CH 1H 150J-T-A |
| C72      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C73      | 4030009920 | S.CERAMIC   | C1608 CH 1H 050B-T-A |
| C74      | 4030009910 | S.CERAMIC   | C1608 CH 1H 040B-T-A |
| C75      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C76      | 4030009540 | S.CERAMIC   | C1608 CH 1H 1R5B-T-A |
| C77      | 4030007020 | S.CERAMIC   | C1608 CH 1H 120J-T-A |
| C78      | 4030006980 | S.CERAMIC   | C1608 CH 1H 070D-T-A |
| C79      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C80      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C81      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C82      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C83      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C84      | 4030007120 | S.CERAMIC   | C1608 CH 1H 820J-T-A |
| C85      | 4030007020 | S.CERAMIC   | C1608 CH 1H 120J-T-A |
| C86      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C87      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C88      | 4030006900 | S.CERAMIC   | C1608 JB 1E 103K-T-A |
| C89      | 4030008920 | S.CERAMIC   | C1608 JB 1C 473K-T-A |
| C91      | 4550006190 | S.TANTALUM  | ECST0GY106R          |
| C92      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C93      | 4550006190 | S.TANTALUM  | ECST0GY106R          |
| C94      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C95      | 4550006121 | S.TANTALUM  | TEMSVA 0G 226M-8R    |
| C96      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C97      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C98      | 4550006320 | S.TANTALUM  | ECST0JY475R          |
| C99      | 4030006860 | S.CERAMIC   | C1608 JB 1H 102K-T-A |
| C100     | 4550006320 | S.TANTALUM  | ECST0JY475R          |
| C101     | 4550006590 | S.TANTALUM  | ECST1CY684R          |

S.=Surface mount

[2F UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION    |                      |
|----------|------------|----------------|----------------------|
| C102     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C103     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C104     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C105     | 4030006900 | S.CERAMIC      | C1608 JB 1E 103K-T-A |
| C106     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C107     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C108     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C109     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C110     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C111     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C112     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C113     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C114     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C115     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C116     | 4550006121 | S.TANTALUM     | TEMSVA 0G 226M-8R    |
| C117     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C118     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C122     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C123     | 4510005320 | S.ELECTROLITIC | ECEV0JA101SP         |
| C124     | 4510005320 | S.ELECTROLITIC | ECEV0JA101SP         |
| C125     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C126     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C127     | 4550006170 | S.TANTALUM     | ECST1AY225R          |
| C128     | 4550006170 | S.TANTALUM     | ECST1AY225R          |
| C129     | 4030006880 | S.CERAMIC      | C1608 JB 1H 472K-T-A |
| C130     | 4030006880 | S.CERAMIC      | C1608 JB 1H 472K-T-A |
| C131     | 4510005320 | S.ELECTROLITIC | ECEV0JA101SP         |
| C132     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C133     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C134     | 4550006600 | S.TANTALUM     | ECST0JY335R          |
| C135     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C142     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C144     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C145     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C146     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C148     | 4030009530 | S.CERAMIC      | C1608 CH 1H 030B-T-A |
| C149     | 4030007040 | S.CERAMIC      | C1608 CH 1H 180J-T-A |
| C150     | 4030008920 | S.CERAMIC      | C1608 JB 1C 473K-T-A |
| C151     | 4030008920 | S.CERAMIC      | C1608 JB 1C 473K-T-A |
| C152     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C153     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C154     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C155     | 4030008960 | S.CERAMIC      | C2012 JB 1C 104K-T-A |
| C156     | 4030008920 | S.CERAMIC      | C1608 JB 1C 473K-T-A |
| C157     | 4030008920 | S.CERAMIC      | C1608 JB 1C 473K-T-A |
| C158     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C159     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C160     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C161     | 4030006850 | S.CERAMIC      | C1608 JB 1H 471K-T-A |
| C162     | 4030009520 | S.CERAMIC      | C1608 CH 1H 020B-T-A |
| C163     | 4030009910 | S.CERAMIC      | C1608 CH 1H 040B-T-A |
| C164     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C165     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C166     | 4030007060 | S.CERAMIC      | C1608 CH 1H 270J-T-A |
| C167     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C168     | 4510005310 | S.ELECTROLITIC | ECEV1CA220SR         |
| C169     | 4030006860 | S.CERAMIC      | C1608 JB 1H 102K-T-A |
| C170     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C171     | 4030010740 | S.CERAMIC      | C1608 JB 1A 104K-T-A |
| C172     | 4030007170 | S.CERAMIC      | C1608 CH 1H 221J-T-A |
| C173     | 4030007170 | S.CERAMIC      | C1608 CH 1H 221J-T-A |
| C174     | 4030007170 | S.CERAMIC      | C1608 CH 1H 221J-T-A |
| C175     | 4030007170 | S.CERAMIC      | C1608 CH 1H 221J-T-A |
| J1       | 6510018180 | S.CONNECTOR    | 52365-0690           |
| J2       | 6510018180 | S.CONNECTOR    | 52365-0690           |
| J3       | 6510018180 | S.CONNECTOR    | 52365-0690           |
| J4       | 6510017940 | S.CONNECTOR    | IL-FPR-U36S-HF-E3000 |
| J5       | 6510017620 | S.CONNECTOR    | 52357-2290           |
| EP1      | 0910045551 | PCB            | B 4578A              |

[V VR BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION |                         |
|----------|------------|-------------|-------------------------|
| C1       | 4030007090 | S.CERAMIC   | C1608 CH 1H 470J-T-A    |
| S1       | 7600000170 | ENCODER     | TP96D96E20-15FB10K-1460 |
| EP1      | 0910045571 | PCB         | B 4580A                 |

[U VR BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION |                         |
|----------|------------|-------------|-------------------------|
| S1       | 7600000170 | ENCODER     | TP96D96E20-15FB10K-1460 |
| EP1      | 0910045561 | PCB         | B 4579A                 |

[UHF RF BOARD]

| REF. NO. | ORDER NO.  | DESCRIPTION  |                        |
|----------|------------|--------------|------------------------|
| IC7      | 1110003370 | S.IC         | μPC2748T-E3            |
| Q32      | 1530002900 | S.TRANSISTOR | 2SC4228-T2 R45         |
| D1       | 1790001260 | S.DIODE      | MA2S077-(TX)           |
| F15      | 2040000760 | S.FILTER     | HWCK001 (445MHz)       |
|          | 2040000750 | S.FILTER     | HWCK002 (435MHz)       |
| F16      | 2040000780 | S.FILTER     | [Others]               |
|          | 2040000750 | S.FILTER     | HWCK001 (445MHz)       |
|          |            |              | [USA]                  |
|          |            |              | HWCK002 (435MHz)       |
|          |            |              | [Others]               |
| L11      | 6200002340 | S.COIL       | LQN 1A 23NJ04          |
| L12      | 6200002350 | S.COIL       | LQN 1A 27NJ04          |
| R99      | 7030003370 | S.RESISTOR   | ERJ3GEYJ 271 V (270 Ω) |
| R100     | 7030003230 | S.RESISTOR   | ERJ3GEYJ 180 V (18 Ω)  |
| R101     | 7030003370 | S.RESISTOR   | ERJ3GEYJ 271 V (270 Ω) |
| R102     | 7030003360 | S.RESISTOR   | ERJ3GEYJ 221 V (220 Ω) |
| R103     | 7030003640 | S.RESISTOR   | ERJ3GEYJ 473 V (47 kΩ) |
| R116     | 7030003380 | S.RESISTOR   | ERJ3GEYJ 331 V (330 Ω) |
| C1       | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C136     | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C137     | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C138     | 4030006860 | S.CERAMIC    | C1608 JB 1H 102K-T-A   |
| C139     | 4030006990 | S.CERAMIC    | C1608 CH 1H 080D-T-A   |
| C140     | 4030006850 | S.CERAMIC    | C1608 JB 1H 471K-T-A   |
| C154     | 4030006850 | S.CERAMIC    | C1608 JB 1H 471K-T-A   |
| J1       | 6910008020 | CONNECTOR    | IPS-1323               |
| J2       | 6910008020 | CONNECTOR    | IPS-1323               |
| J3       | 6910008020 | CONNECTOR    | IPS-1323               |
| J4       | 6910008020 | CONNECTOR    | IPS-1323               |
| EP1      | 0910045520 | PCB          | B 4535                 |

S.=Surface mount

# SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

## 7-1 CABINET PARTS

### [DISPLAY UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION                      | QTY. |
|----------|------------|----------------------------------|------|
| J 1      | 6510018131 | 1460 B-connector-1               | 1    |
| DS 1     | 5030001140 | LCD T535001A                     | 1    |
| EP 2     | 8930034870 | LCD contact SRCN-1460 SC         | 2    |
| MP 1     | 8210012260 | 1460 M-Front panel (IC-Z1E)      | 1    |
|          | 8210012270 | 1460 M-Front panel (IC-Z1A)      |      |
| MP 2     | 8210011610 | 1460 M-rear panel                |      |
| MP 3     | 8930033750 | 1460 LCD holder                  |      |
| MP 5     | 8210011620 | 1460 Reflector                   | 1    |
| MP 6     | 8930035321 | 1460 PTT button-1                | 1    |
| MP 7     | 8930033850 | 1460 B-rubber button             | 1    |
| MP 9     | 8930034561 | 1460 Up/Down button-1            | 1    |
| MP 11    | 8930034530 | LED lens                         | 1    |
| MP 12    | 8930024231 | 1121 Microphone seal-1           | 1    |
| MP 13    | 8810005860 | Screw PH No. 0 M2 x 3 NI         | 2    |
| MP 14    | 8810007210 | Screw PH B0 No. 0 M2 x 5 ZK      | 3    |
| MP 15    | 8810008100 | Screw PH B0 No. 0 M2 x 3.5 ZK    | 2    |
| MP 16    | 8510009651 | 1460 Grounding plate-1           | 1    |
| MP 18    | 8810005900 | Screw PH B0 No. 0-3 1.4 x 3.5 NI | 1    |

### [KEYBOARD UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION                   | QTY. |
|----------|------------|-------------------------------|------|
| J 2      | 6510018140 | 1460 C-connector              | 1    |
| MP 1     | 8210012210 | 1460 Front panel (incl. MP2)  | 1    |
| MP 2     | 8930033790 | 1460 Lock cover               | 1    |
| MP 3     | 8930034540 | 1460 F-LED lens               | 1    |
| MP 4     | 8930033860 | 1460 Key button               | 1    |
| MP 5     | 8310034910 | 1460 Lock plate               | 1    |
| MP 6     | 8930034570 | 1460 Lock button              | 1    |
| MP 7     | 8510009530 | 1460 L-shield plate           | 1    |
| MP 8     | 8510009540 | 1460 R-shield plate           | 1    |
| MP 10    | 8810007510 | Screw PH B0 No. 0 M2 x 2.5    | 1    |
| MP 11    | 8850000110 | Flat washer M2 BS NI          | 1    |
| MP 12    | 8810008100 | Screw PH B0 No. 0 M2 x 3.5 ZK | 2    |
| MP 13    | 8810006760 | Screw PH B0 No. 0 M2 x 3 NI   | 5    |
| MP 14    | 8930034800 | 1460 Spring                   | 1    |
| MP 15    | 8810006760 | Screw PH B0 No. 0 M2 x 3 NI   | 2    |
| MP 16    | 8930035140 | 1460 Cover sheet              | 1    |

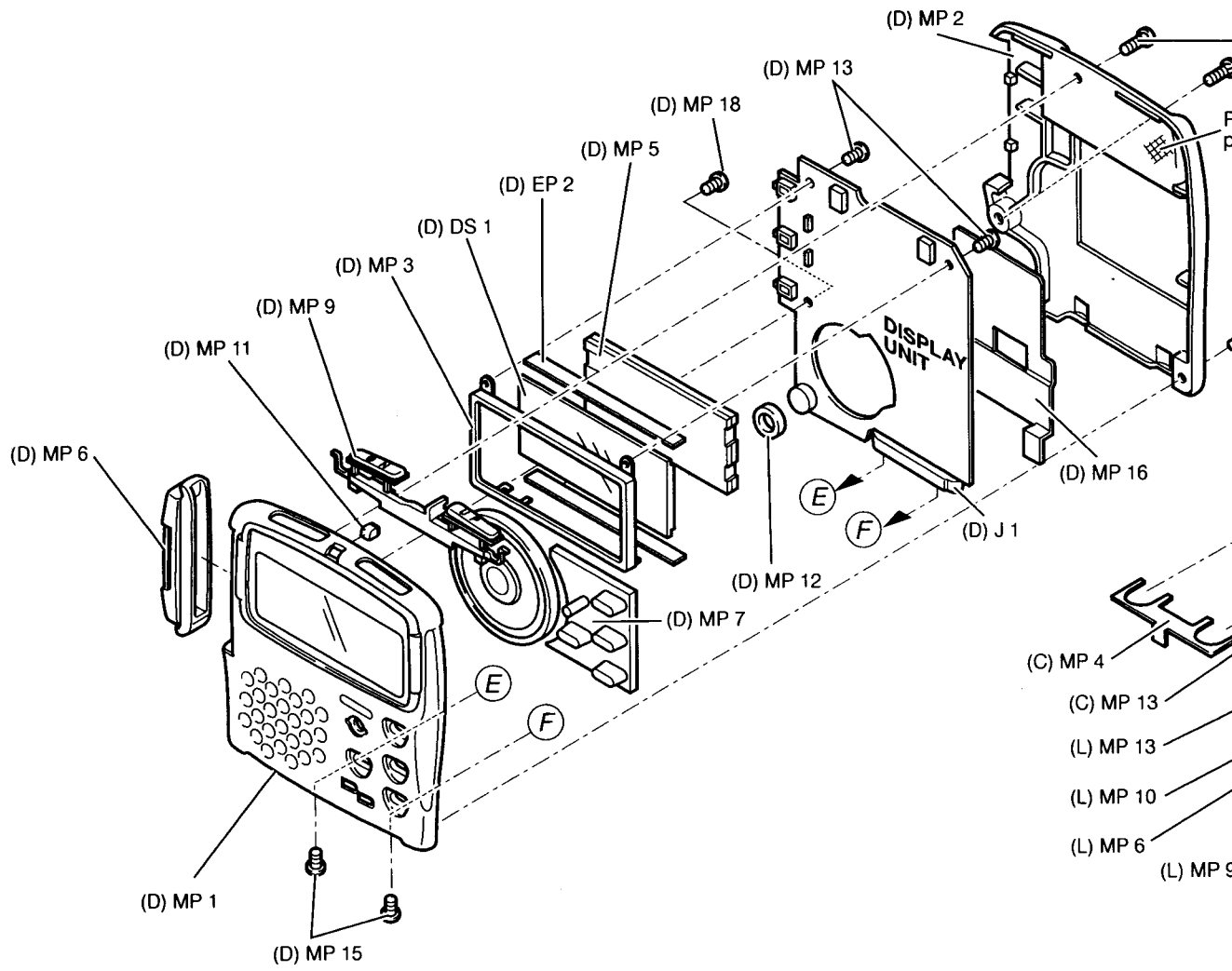
### [LOGIC UNIT]

| REF. NO. | ORDER NO.  | DESCRIPTION                      | QTY. |
|----------|------------|----------------------------------|------|
| W 3      | 8900005440 | Cable OPC-536                    | 1    |
| MP 2     | 8930033760 | 1460 Release plate               | 1    |
| MP 3     | 8930033770 | 1460 Release button              | 1    |
| MP 4     | 8930033800 | 1460 Rear plate                  | 1    |
| MP 5     | 8310034261 | 1460 Contact base-1              | 1    |
| MP 6     | 8930033820 | 1460 Contact spring              | 3    |
| MP 7     | 8930035130 | Spring (V)                       | 1    |
| MP 9     | 8810006760 | Screw PH B0 No. 0 M2 x 3 NI      | 2    |
| MP 10    | 8810003850 | Screw PH B0 No. 0-3 1.4 x 2.5 NI | 3    |
| MP 11    | 8810005860 | Screw PH B0 No. 0 M2 x 3 NI      | 2    |
| MP 12    | 8810005860 | Screw PH B0 No. 0 M2 x 3.5 ZK    | 3    |
| MP 13    | 8930035410 | 1460 Contact rubber              | 3    |

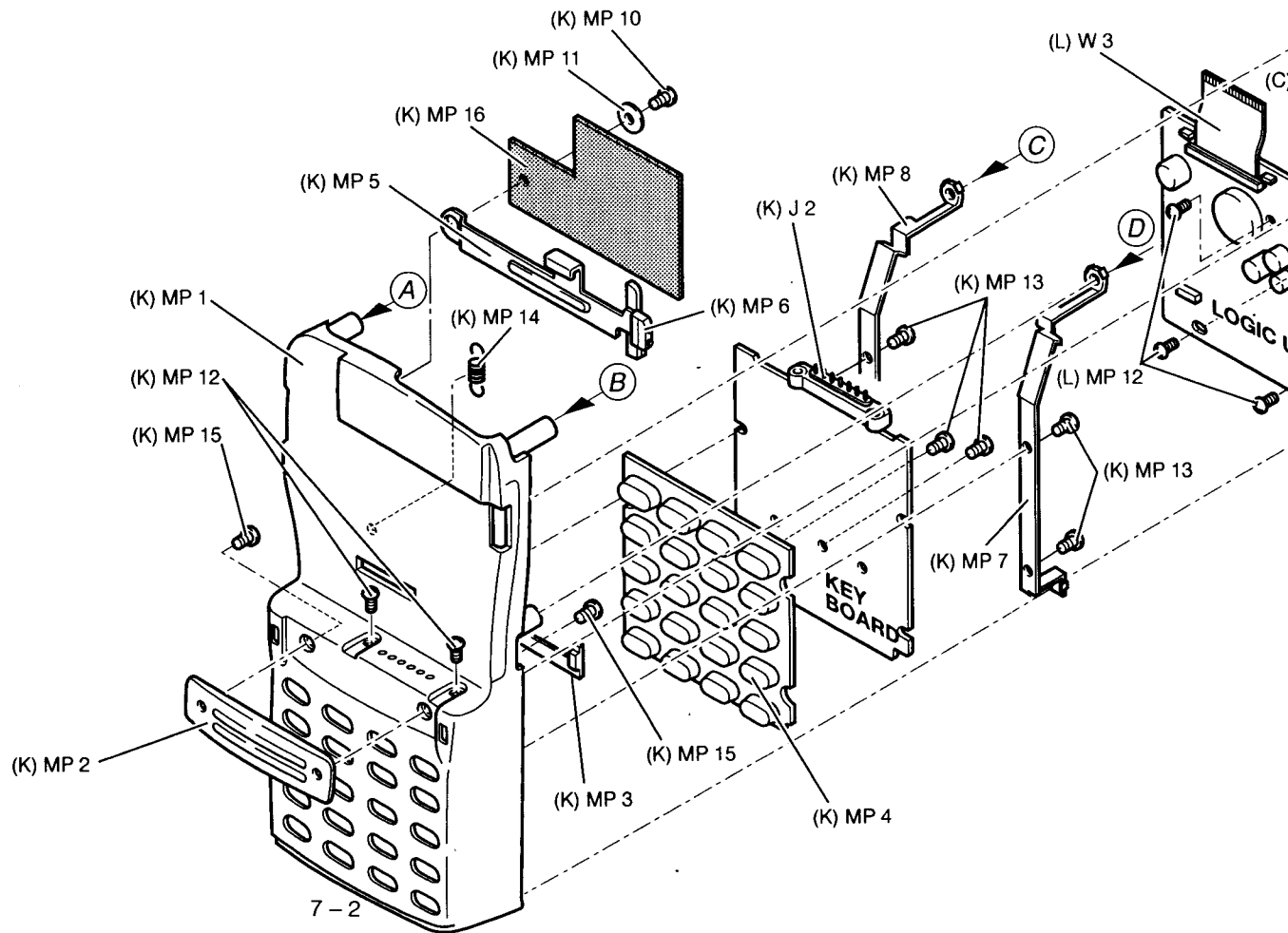
### [CHASSIS PARTS]

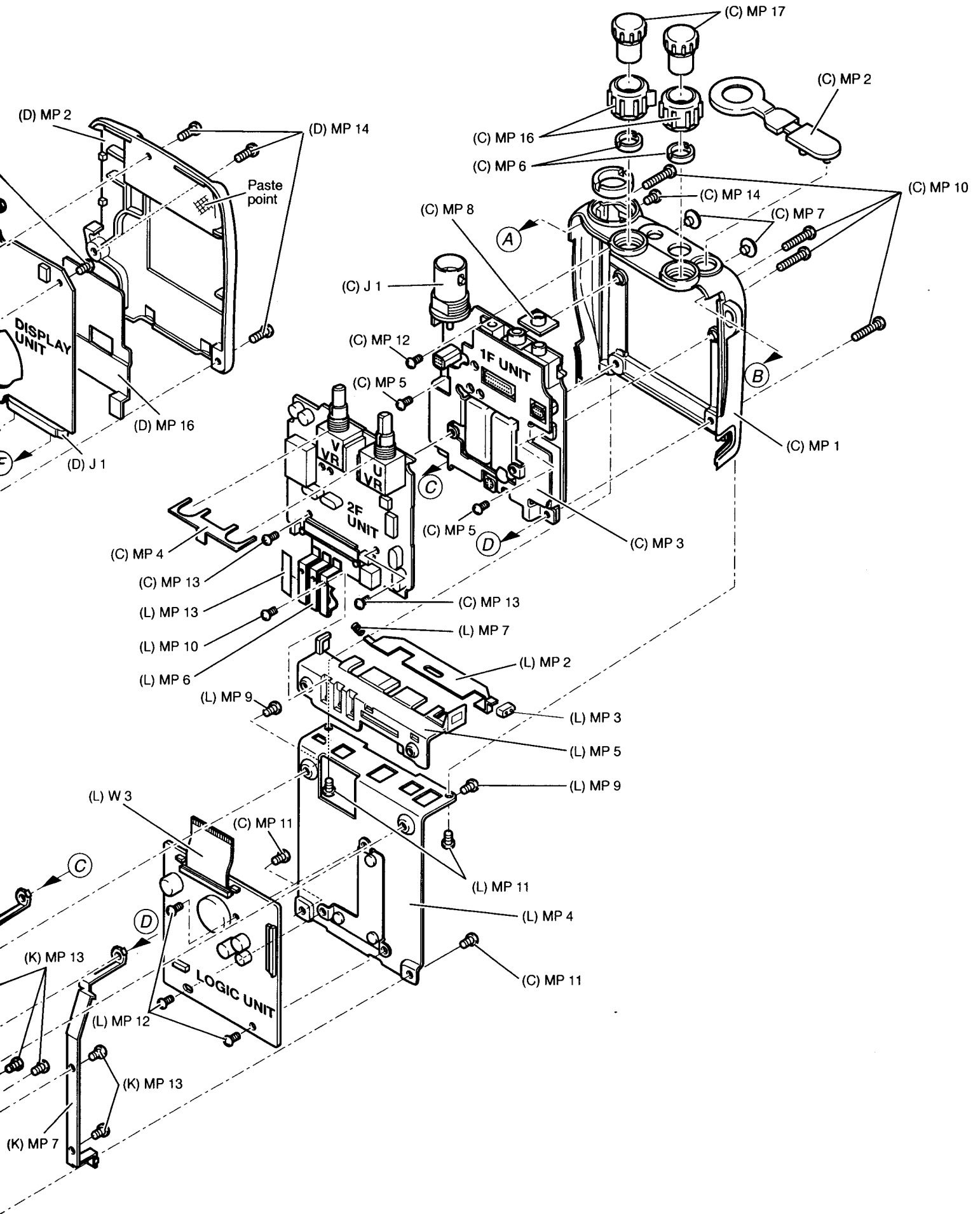
| REF. NO. | ORDER NO.  | DESCRIPTION                            | QTY. |
|----------|------------|--|------|
| J 1      | 6510015550 | Antenna connector BNC-R117 (Incl. nut) | 1    |
| MP 1     | 8210011590 | 1460 Rear panel                        | 1    |
| MP 2     | 8930033811 | 1460 Connector seal                    | 1    |
| MP 3     | 8510009310 | 1460 Shield plate                      | 1    |
| MP 4     | 8930035030 | 1460 VR spacer                         | 1    |
| MP 5     | 8810005320 | Screw PH M 2 x 4 NI                    | 2    |
| MP 6     | 8830000570 | VR nut (A)                             | 2    |
| MP 7     | 8010014982 | Hole bush (B)-2                        | 2    |
| MP 8     | 8930034520 | 1460 Microphone jack seal              | 1    |
| MP 10    | 8810004370 | Screw PH B0 M2 x 10 ZK                 | 4    |
| MP 11    | 8810006760 | Screw PH B0 No. 0 M2 x 3 NI            | 2    |
| MP 12    | 8810005860 | Screw PH B0 No. 0 M2 x 3 NI            | 1    |
| MP 13    | 8810005860 | Screw PH B0 No. 0 M2 x 3 NI            | 2    |
| MP 14    | 8810005360 | Screw PH B0 No. 0 M2 x 3 ZK            | 1    |
| MP 16    | 8610009330 | Knob N-225 (SQUELCH)                   | 2    |
| MP 17    | 8610009341 | Knob N-226-1 (DIAL)                    | 2    |

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



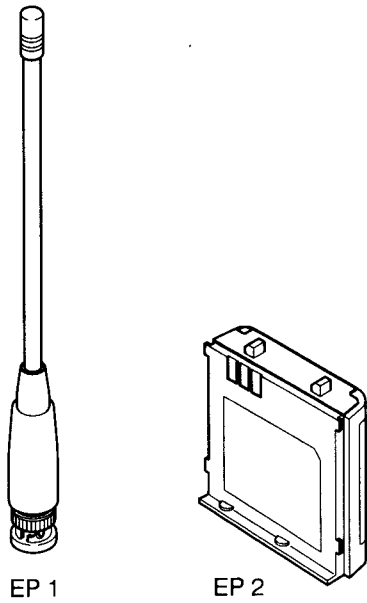
- (C) MP 4
- (C) MP 13
- (L) MP 13
- (L) MP 10
- (L) MP 6
- (L) MP 9





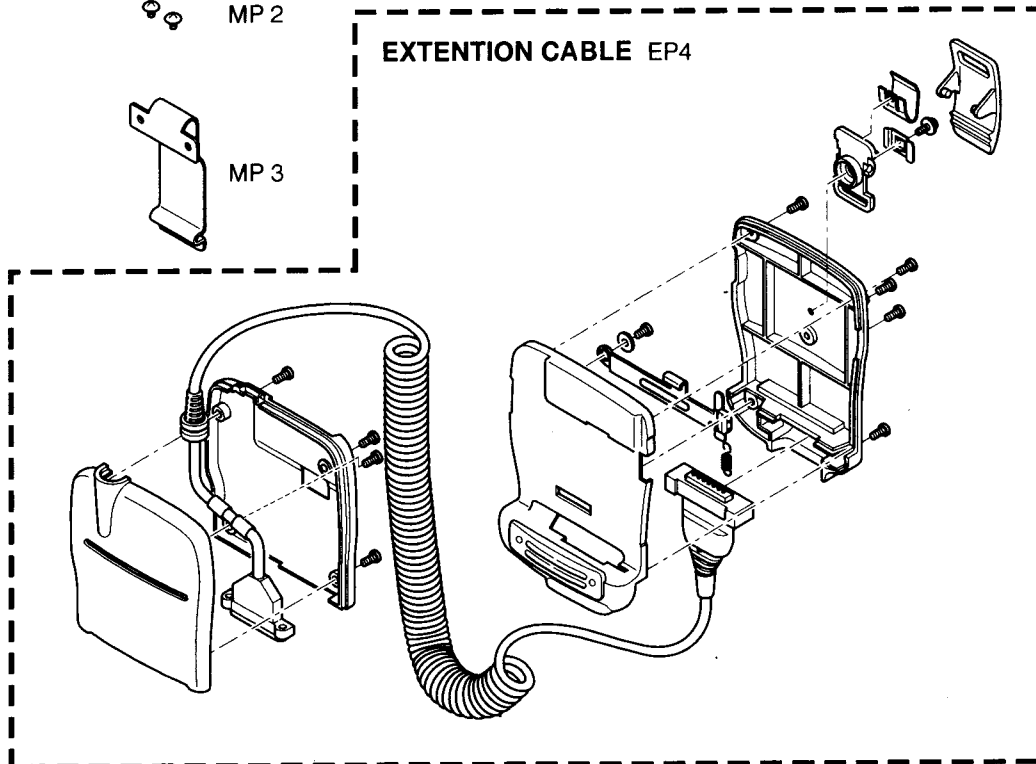
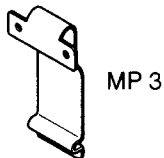
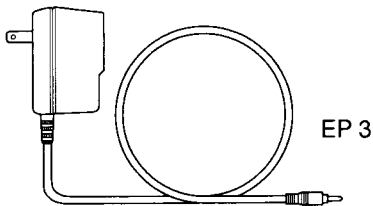
Unit abbreviations (C) : CHASSIS PARTS (D) : DISPLAY UNIT  
 (K) : KEYBOARD UNIT (L) : LOGIC UNIT

## 7-2 ACCESSORIES



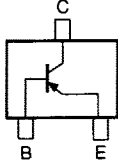
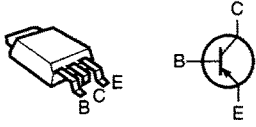
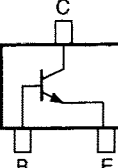
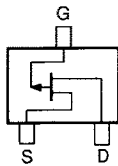
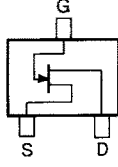
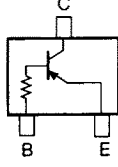
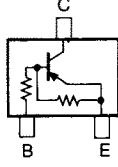
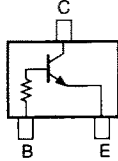
### [ACCESSORIES]

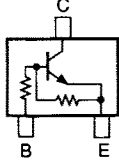
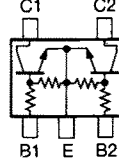
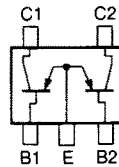
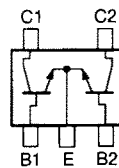
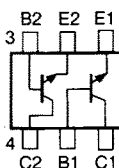
| REF. NO. | ORDER NO.         | DESCRIPTION  | QTY. |
|----------|-------------------|--|------|
| EP 1     | Optional products | Flexible antenna FA-1443B (USA)<br>FA-B270C (Other versions)     | 1    |
| EP 2     | Optional products | Battery pack BP-180 (USA)<br>BP-171 (EUR, ITA, AUS)              | 1    |
|          |                   | Battery case BP-170 (SEA)  | 1    |
| EP 2     | Optional products | Wall charger* BC-74D (EUR, ITA)<br>BC-74A (USA)<br>BC-110V (AUS) | 1    |
|          |                   | * Not supplied with battery case versions.                       |      |
| EP 4     | 0800002830        | Extension cable OPC-500  | 1    |
| MP 1     | 8010011960        | Handstrap HK-005   | 1    |
| MP 2     | 8810005730        | Screw M3 x 3 BS ZK   | 2    |
| MP 3     | 8930035330        | 752 Belt clip (A)  | 1    |



# SECTION 8 SEMI-CONDUCTOR INFORMATIONS

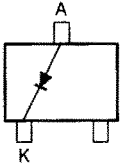
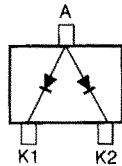
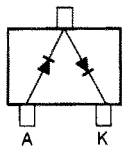
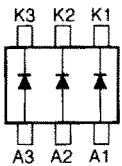
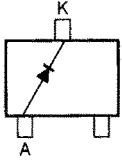
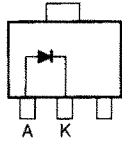
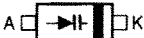
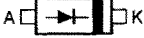
## 8-1 TRANSISTORS

| NAME  | SYMBOL  | INSIDE VIEW   |
|---|---|---|
| 2SA1588-GR<br>2SB1132-R<br>2SB1462-R  | ZG<br>BAR<br>AR   |    |
| 2SB1201   | -   |    |
| 2SC4211-TR<br>2SC4226-T2<br>2SC4228-T2<br>2SC4403-TR<br>2SC4406-4-TR<br>2SC4405-3-TR<br>2SC4617-TLQ<br>2SC5006-T1<br>2SD2216-S<br>2SD2345 | L7<br>R25<br>R44<br>LY3<br>JT4<br>OY3<br>BQ<br>24<br>YS<br>1Z |   |
| 2SJ364Q   | 4M  |  |
| 2SK880-Y  | XY  |  |
| UN9110  | 6L  |  |
| UN9115<br>UN9117  | 6E<br>6H  |  |
| DTC144TU<br>UN9210<br>UN9215  | 06<br>8L<br>8E  |  |

| NAME                                   | SYMBOL               | INSIDE VIEW   |
|--|----------------------|---|
| DTC144EU<br>UN921E<br>UN9211<br>UN9213 | 26<br>8N<br>8A<br>8C |    |
| XP1210                                 | AC                   |    |
| XP1401                                 | 5V                   |    |
| XP1501                                 | 5R                   |   |
| XP6501 AB                              | 5N                   |  |



## 8-2 DIODES

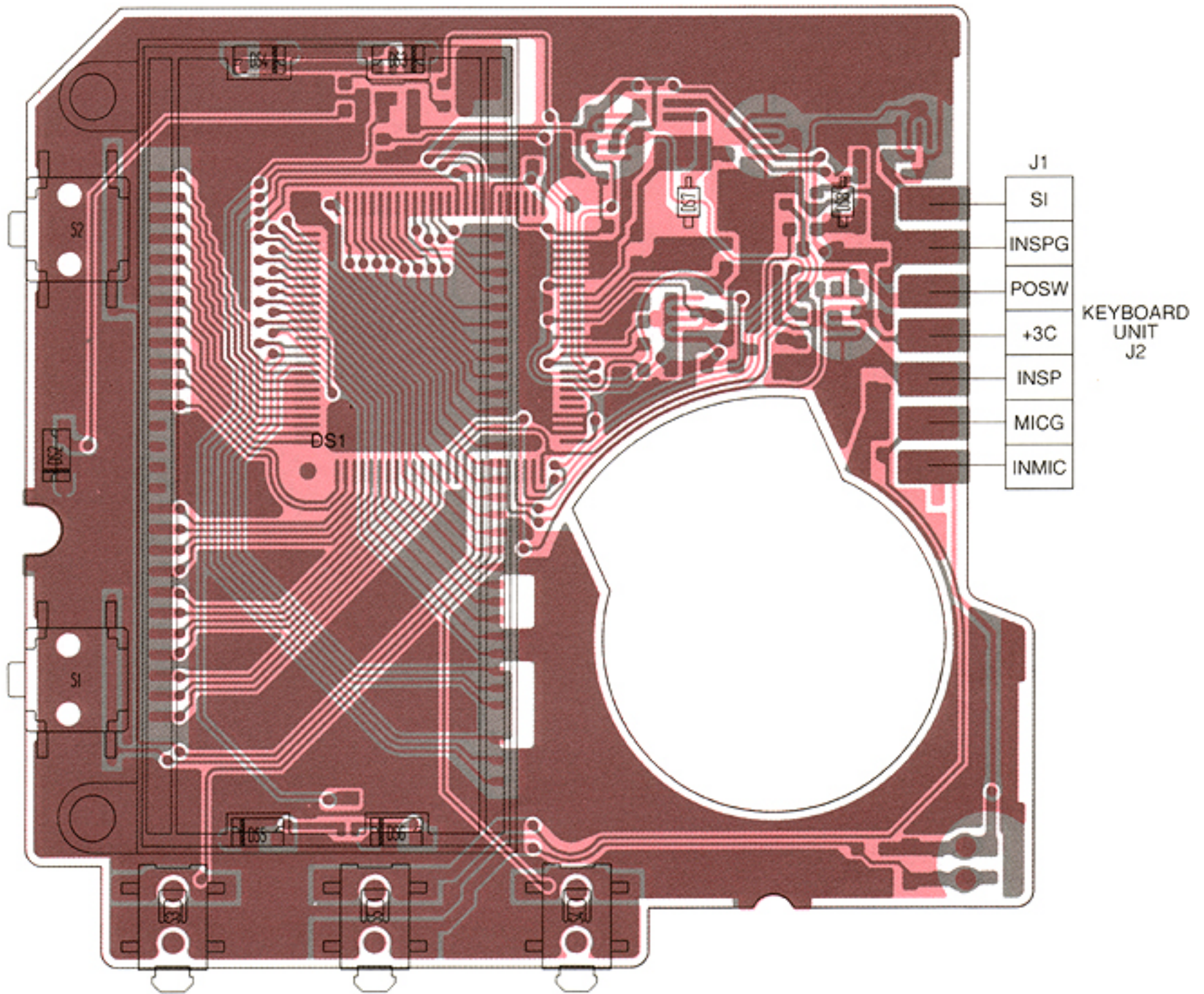
| NAME   | SYMBOL                     | INSIDE VIEW   |
|--|----------------------------|---|
| DA113W   | AY                         |    |
| DAP202U  | P                          |    |
| 1SV252<br>DA204U<br>MA133<br>MA742<br>HSM88AS    | 3E<br>K<br>MP<br>N1V<br>C1 |   |
| MA6S121  | M2D                        |  |
| SB07-03C-TA                                      | J                          |  |
| SB30-03P   | SG                         |  |
| 1SV270<br>MA304                                  | TF<br>7R                   |  |
| 1SS357<br>MA729<br>MA2S111<br>MA2S077<br>MA2S728 | S3<br>2B<br>A<br>S<br>B    |  |

## SECTION 9 BOARD LAYOUTS

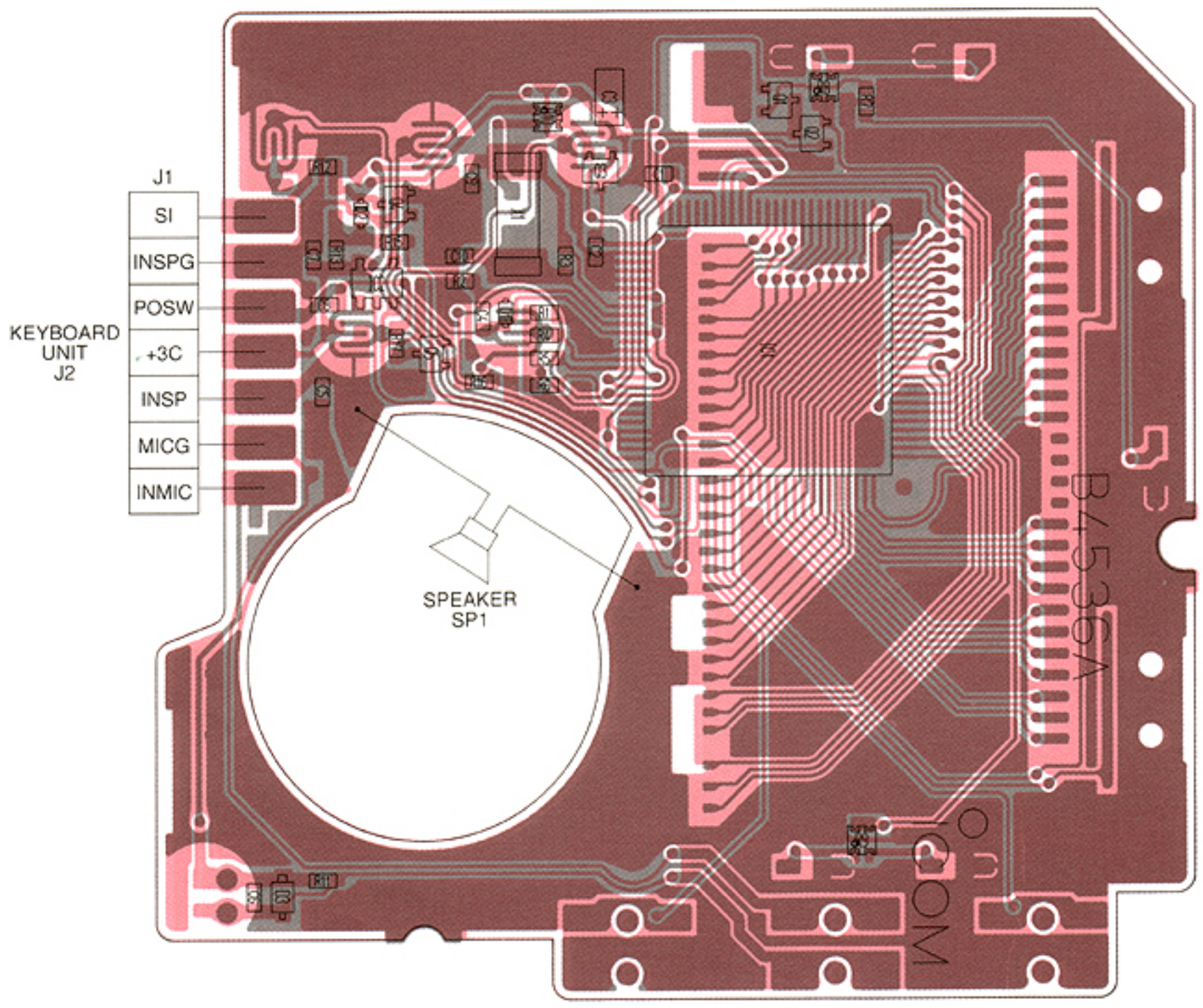
### 9-1 DISPLAY UNIT

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

#### • DISPLAY UNIT (TOP VIEW)



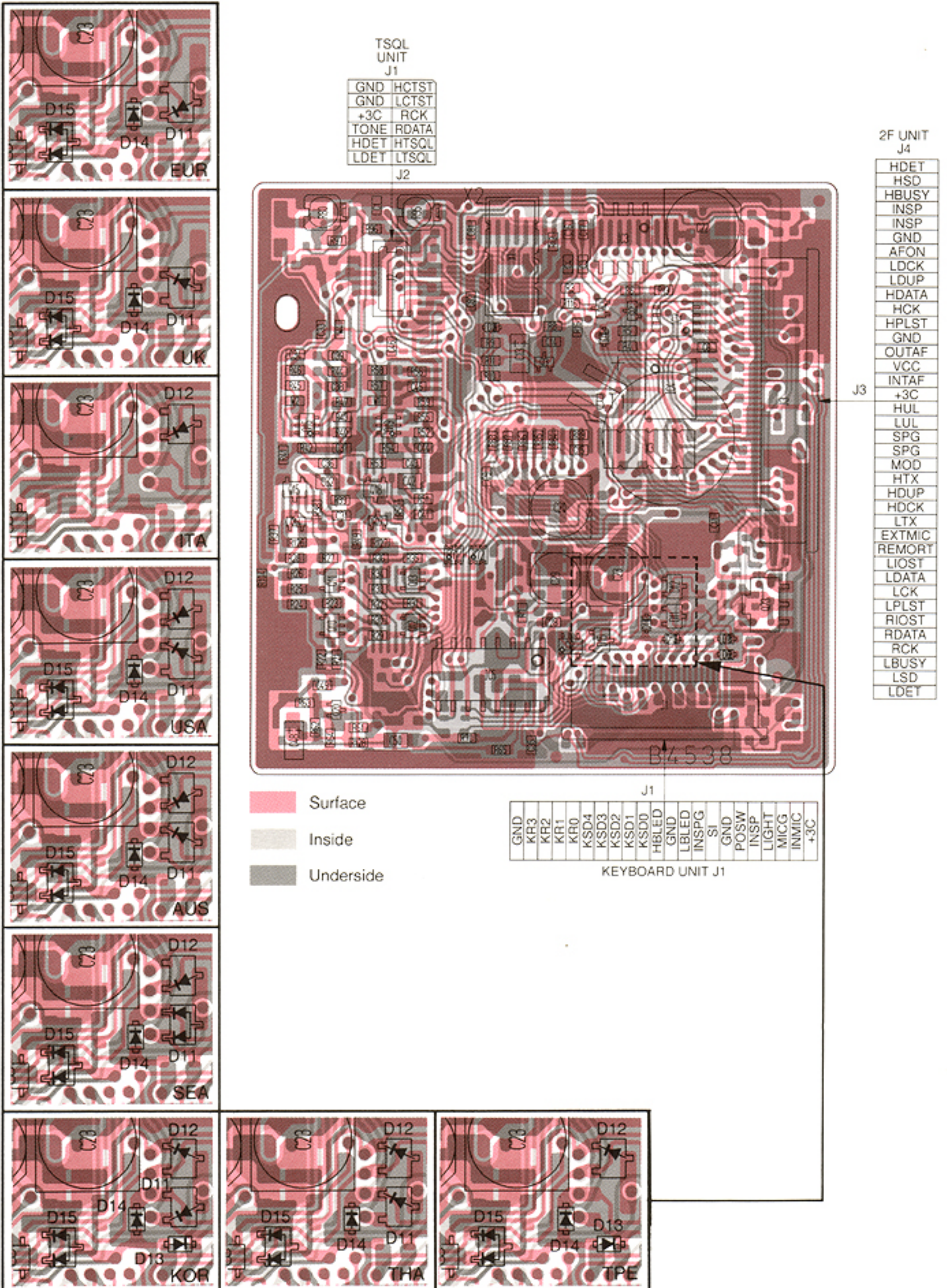
• DISPLAY UNIT (BOTTOM VIEW)



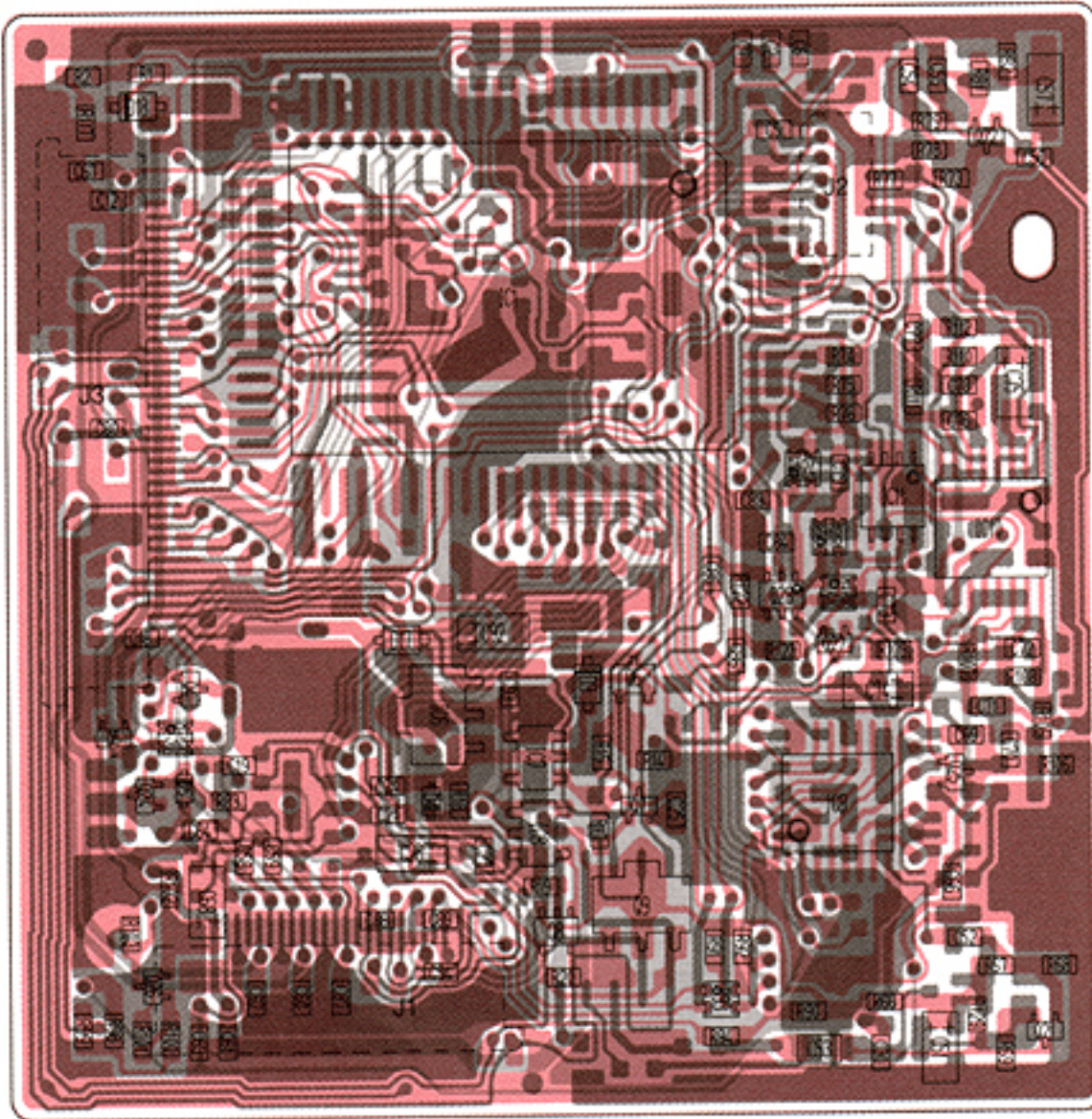
The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

## 9-2 LOGIC UNIT

### • LOGIC UNIT (TOP VIEW)



• LOGIC UNIT (BOTTOM VIEW)

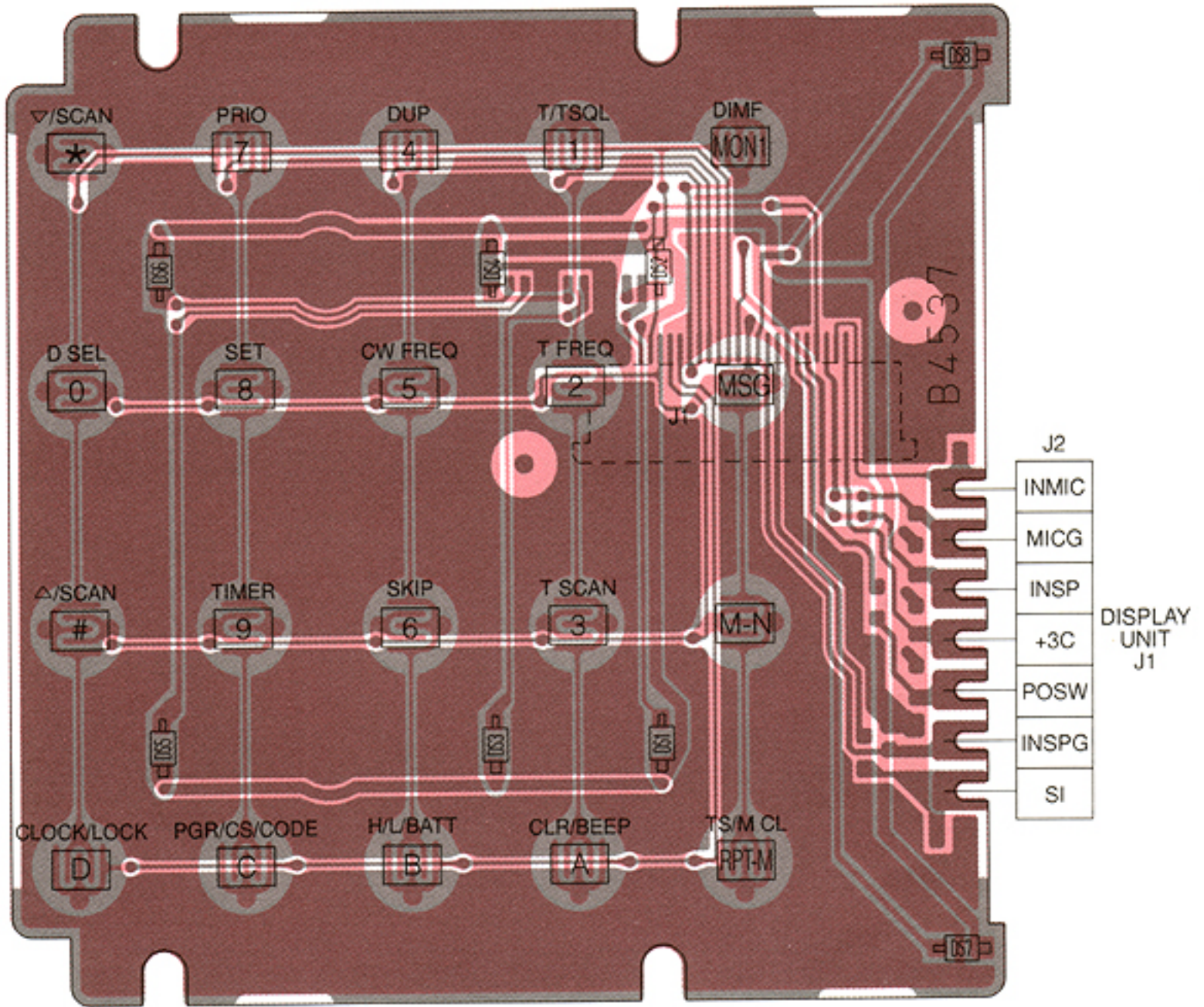


■ Surface    ■ Inside    ■ Underside

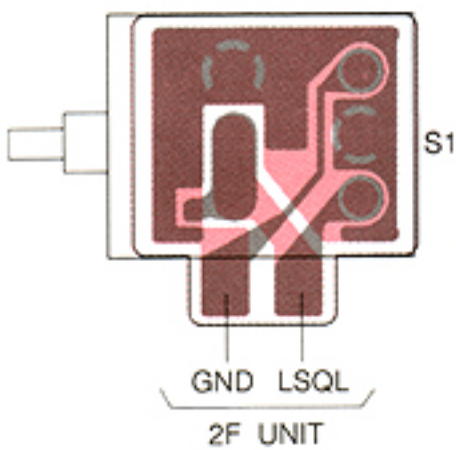
# 9-3 KEYBOARD UNIT

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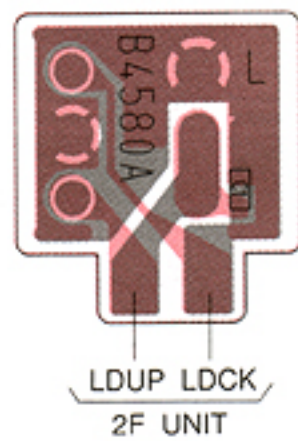
## • KEYBOARD UNIT (TOP VIEW)



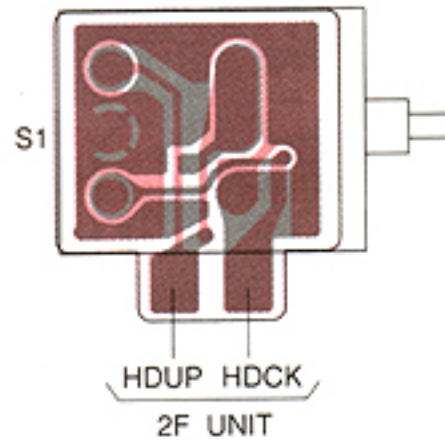
### • V VR BOARD (TOP VIEW)



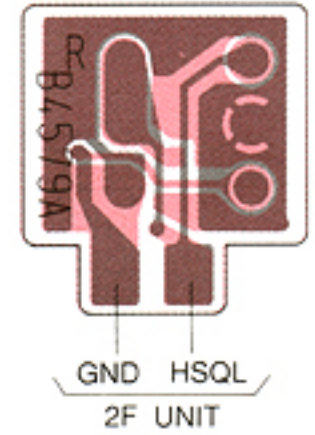
### • V VR BOARD (BOTTOM VIEW)



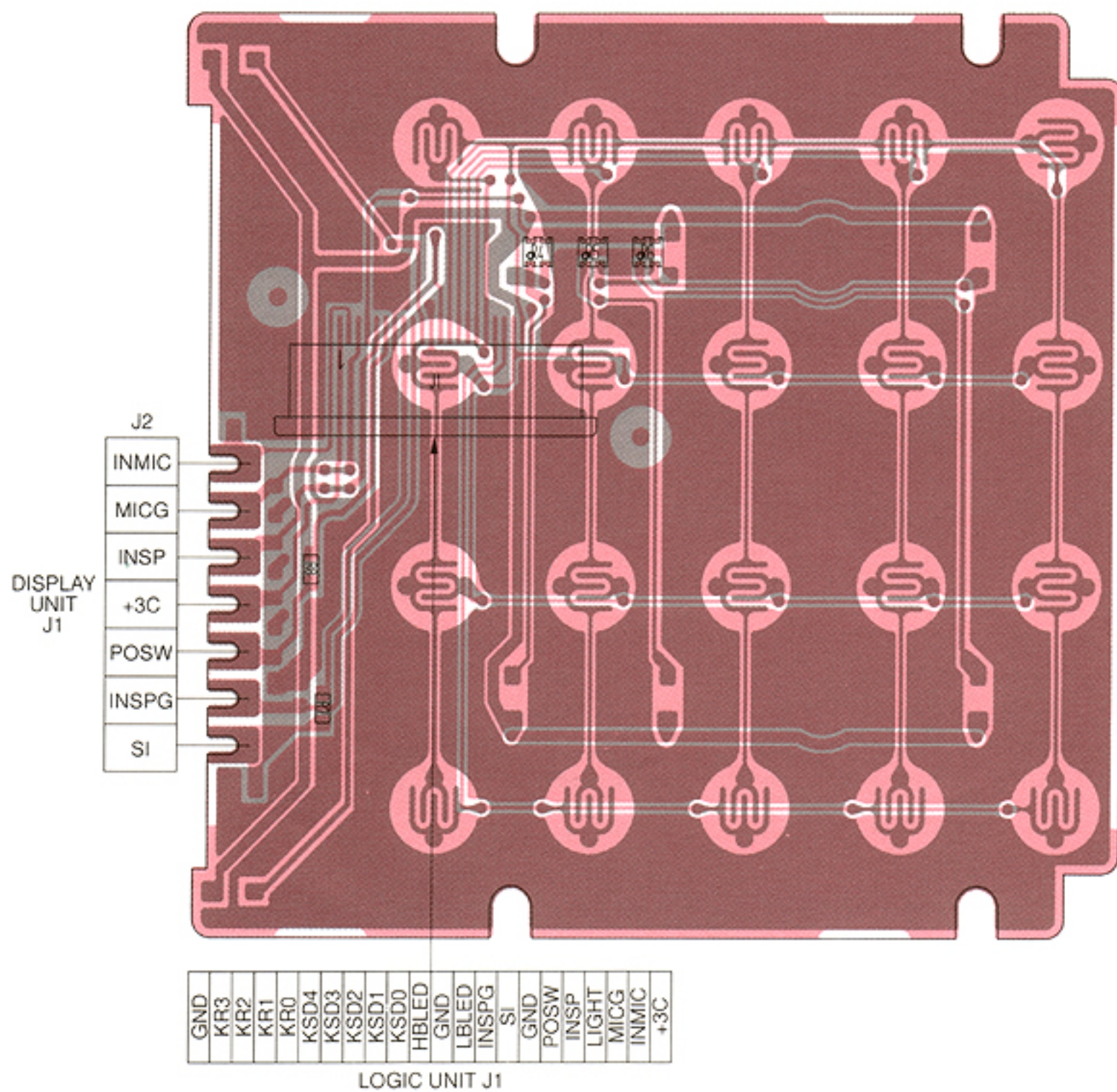
### • U VR BOARD (TOP VIEW)



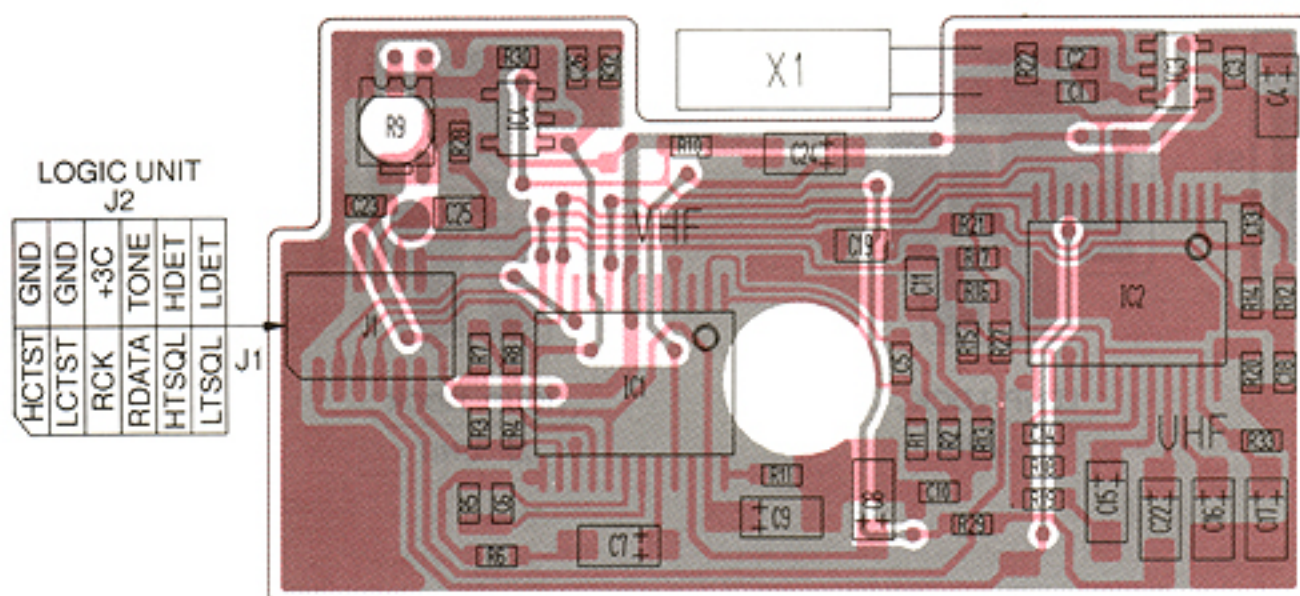
### • U VR BOARD (BOTTOM VIEW)



• KEYBOARD UNIT (BOTTOM VIEW)



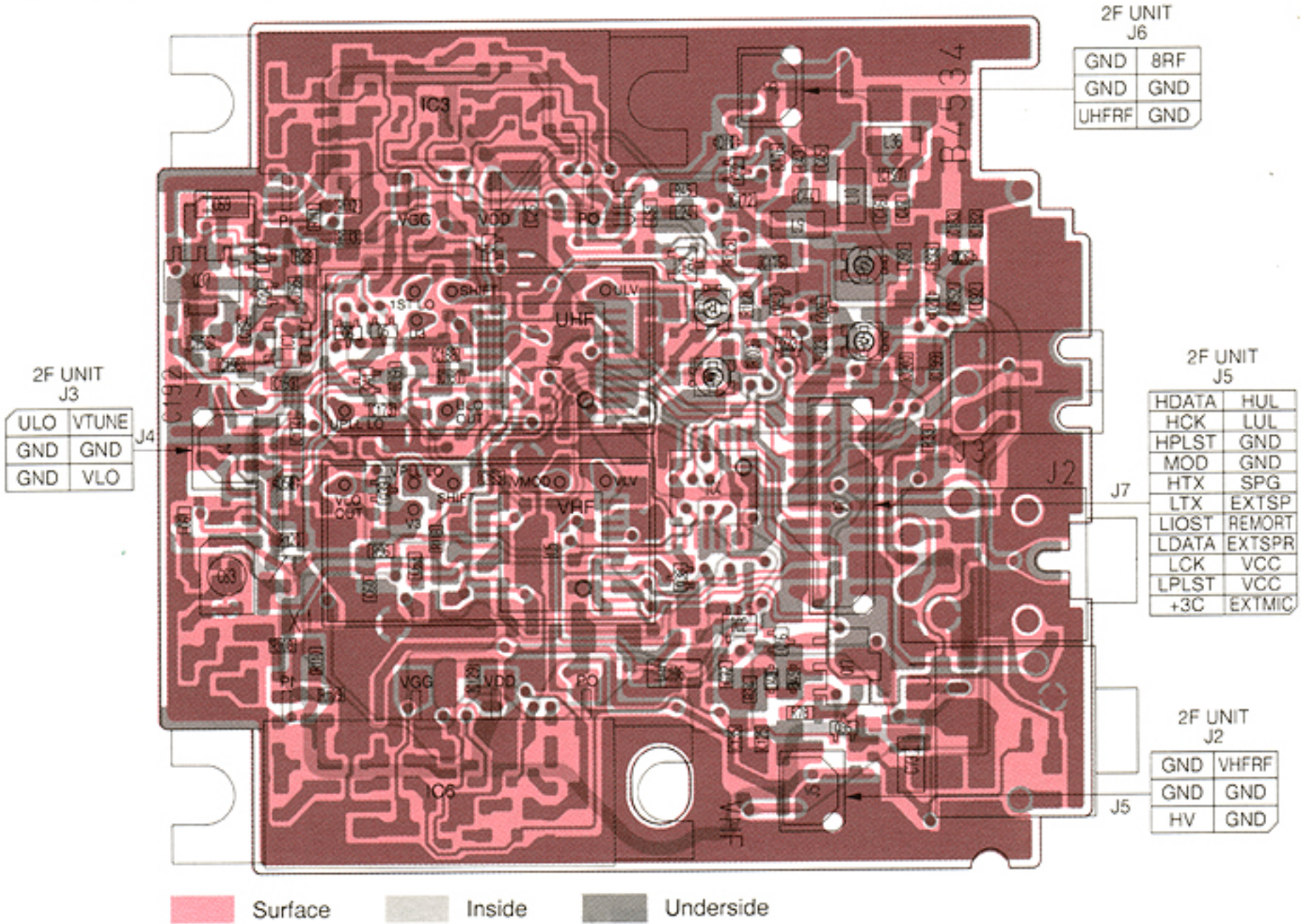
• TSQL UNIT (TOP VIEW)



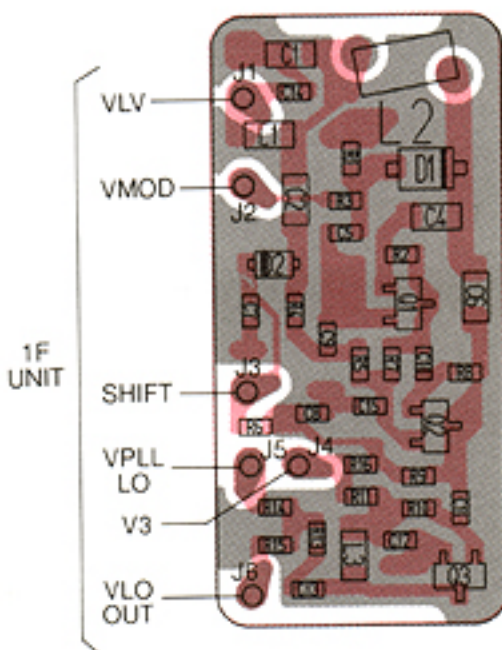
# 9-4 1F UNIT

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

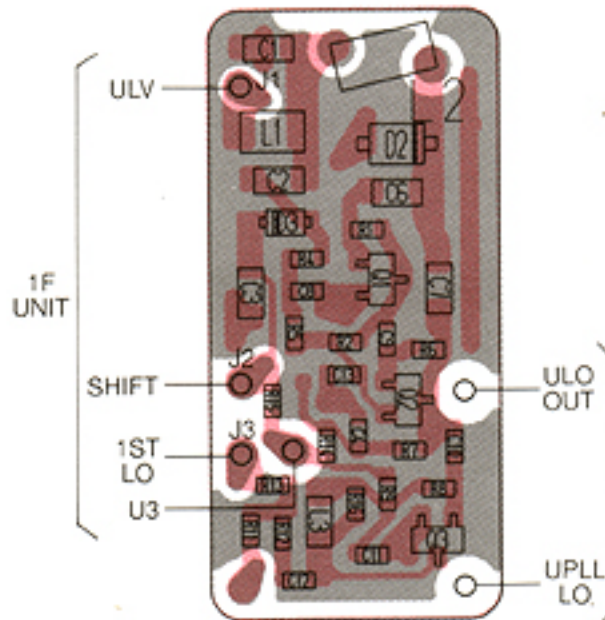
## • 1F UNIT (TOP VIEW)



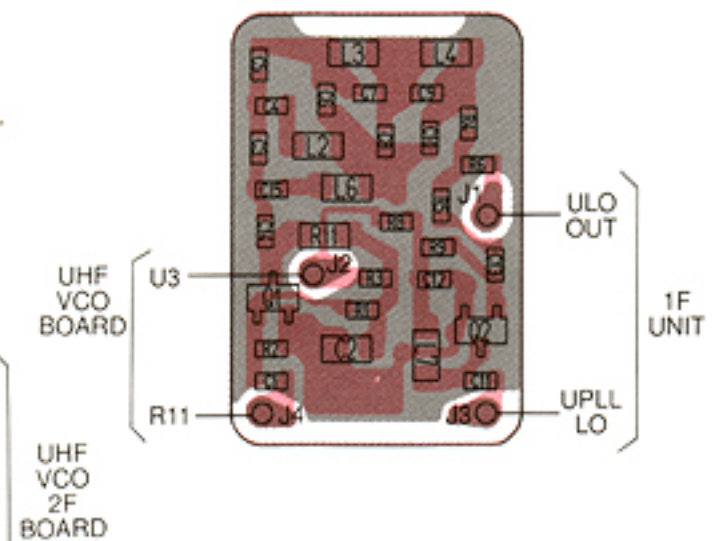
## • VHF VCO BOARD (TOP VIEW)



## • UHF VCO BOARD (TOP VIEW)

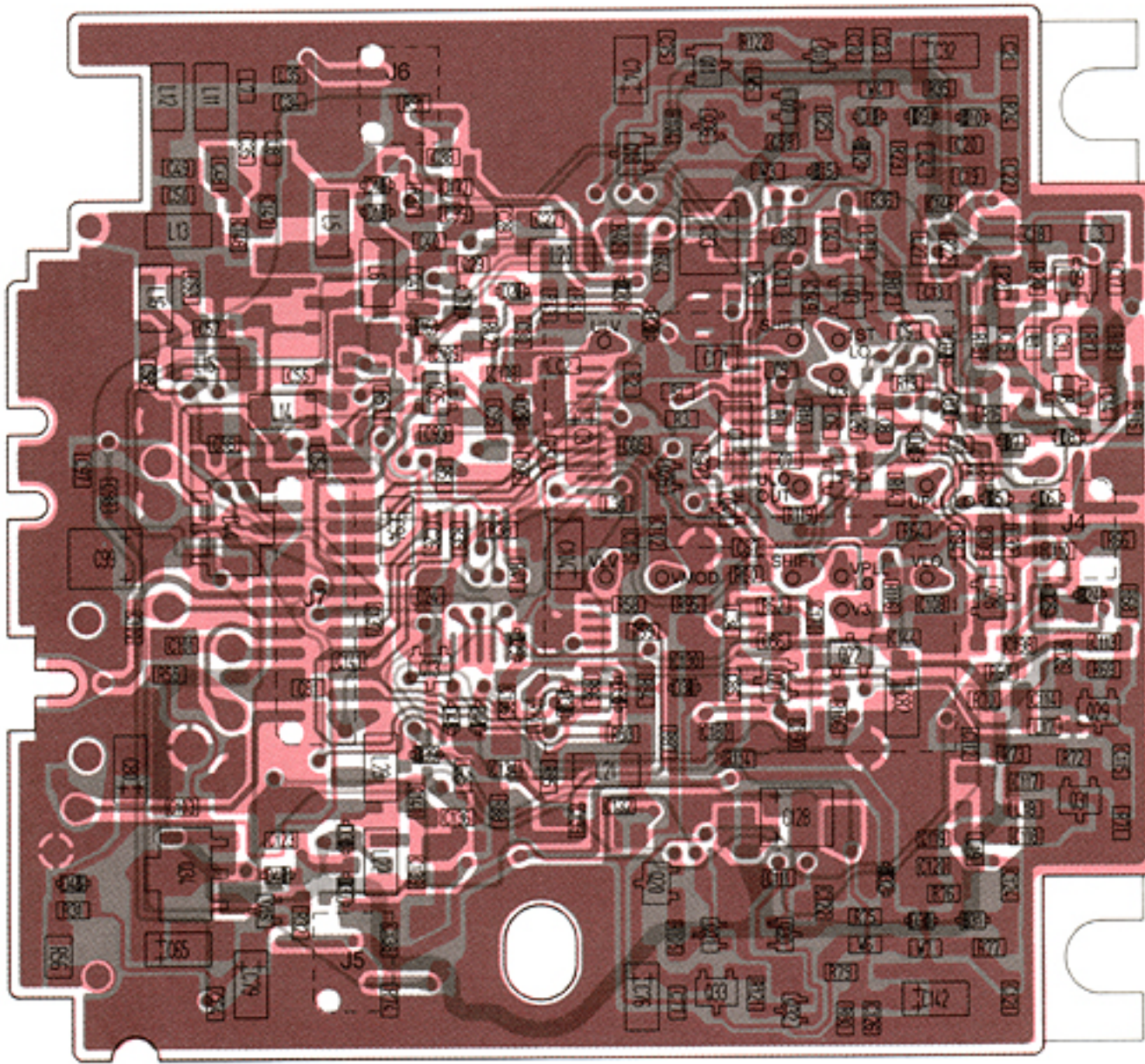


## • UHF VCO 2F BOARD (TOP VIEW)





• 1F UNIT (BOTTOM VIEW)

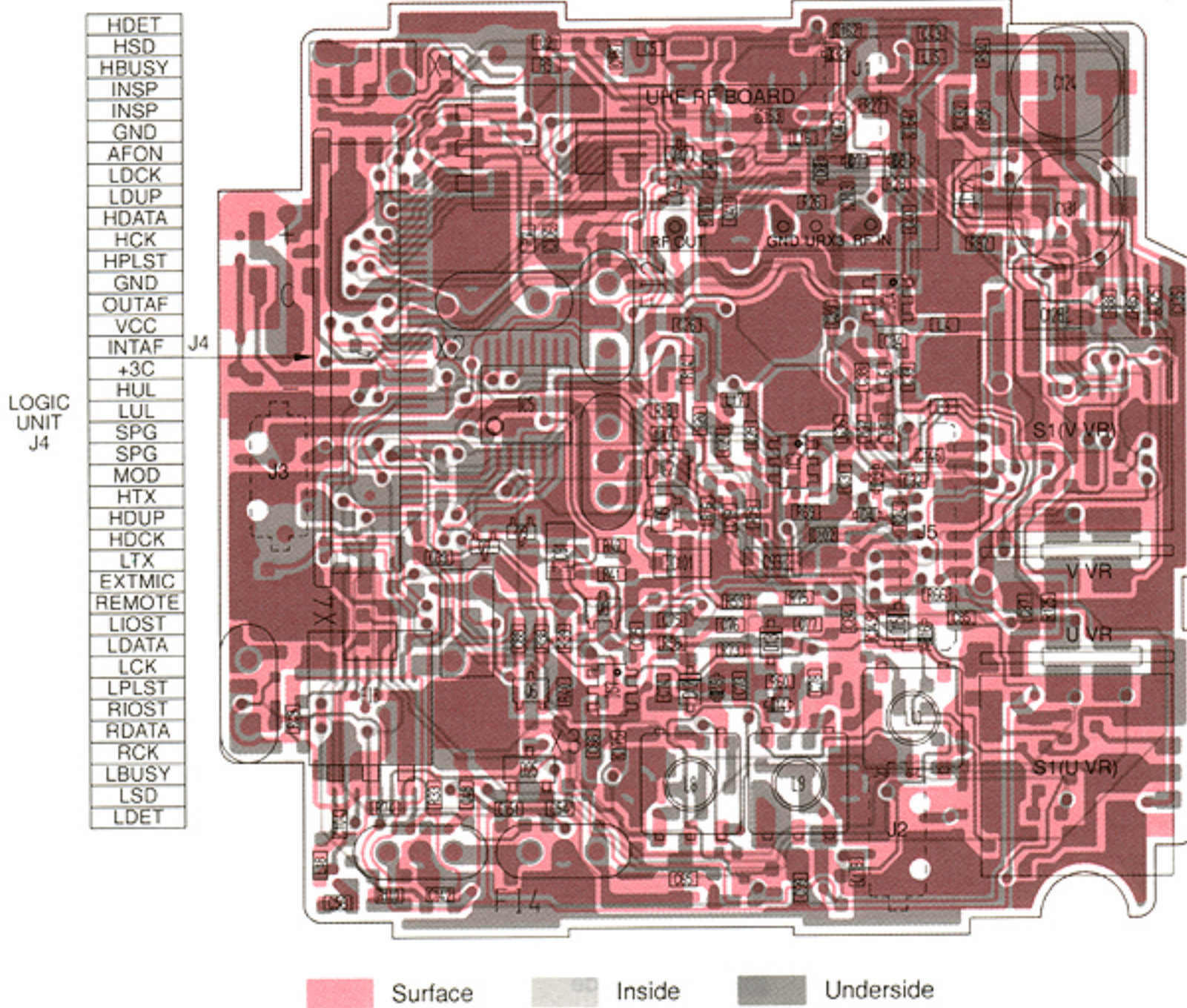


Surface    Inside    Underside

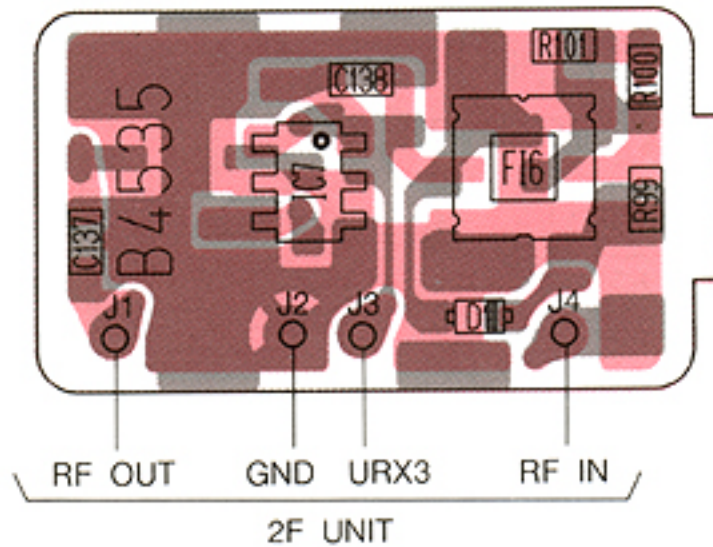
# 9-5 2F UNIT

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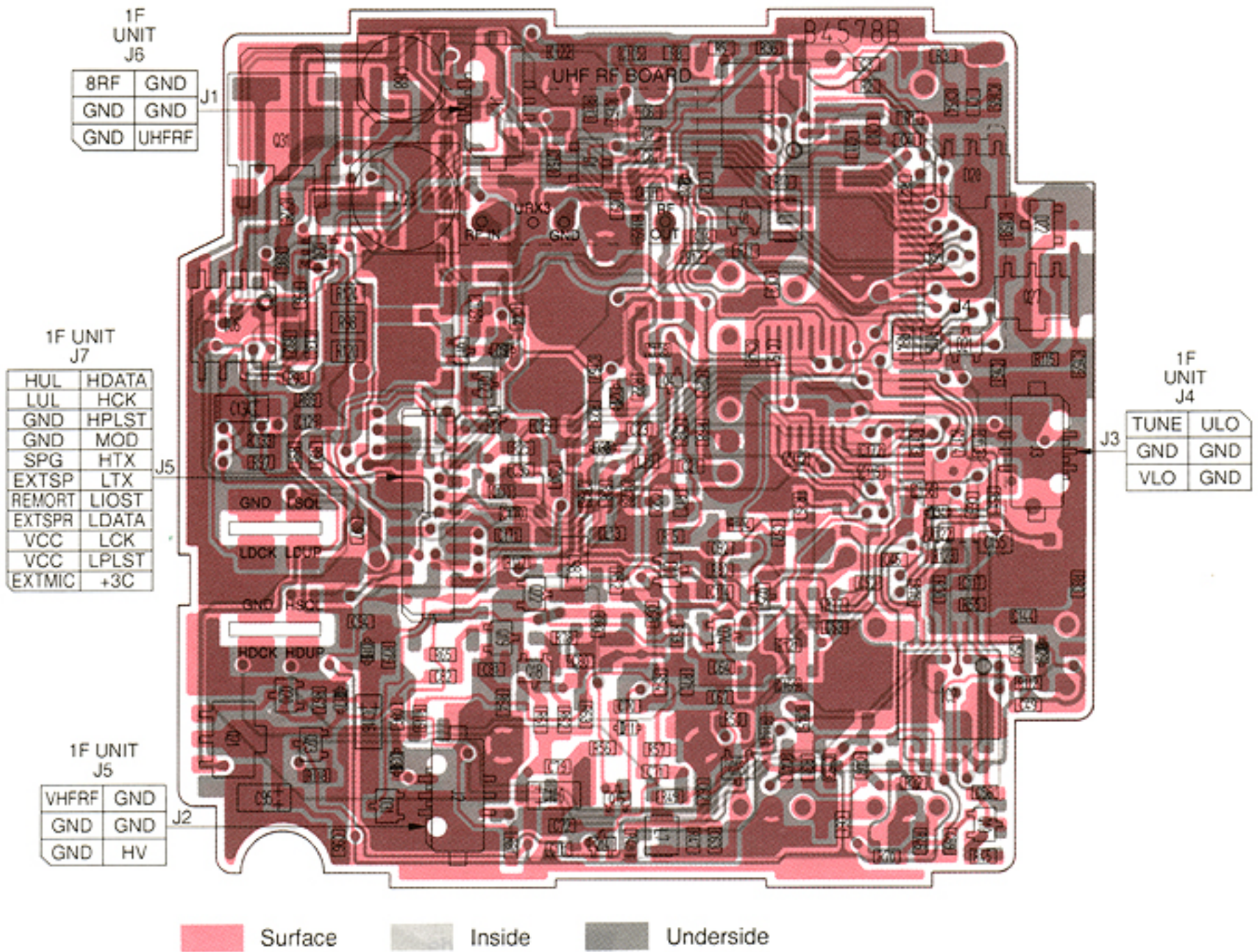
## • 2F UNIT (TOP VIEW)



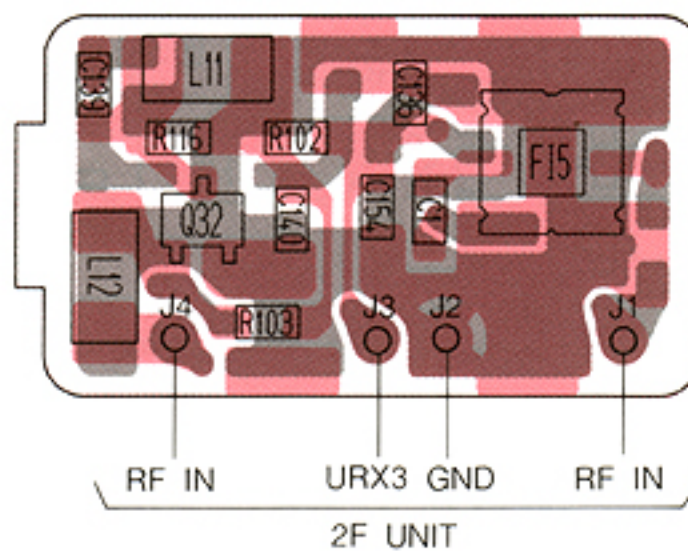
## • UHF RF BOARD (TOP VIEW)



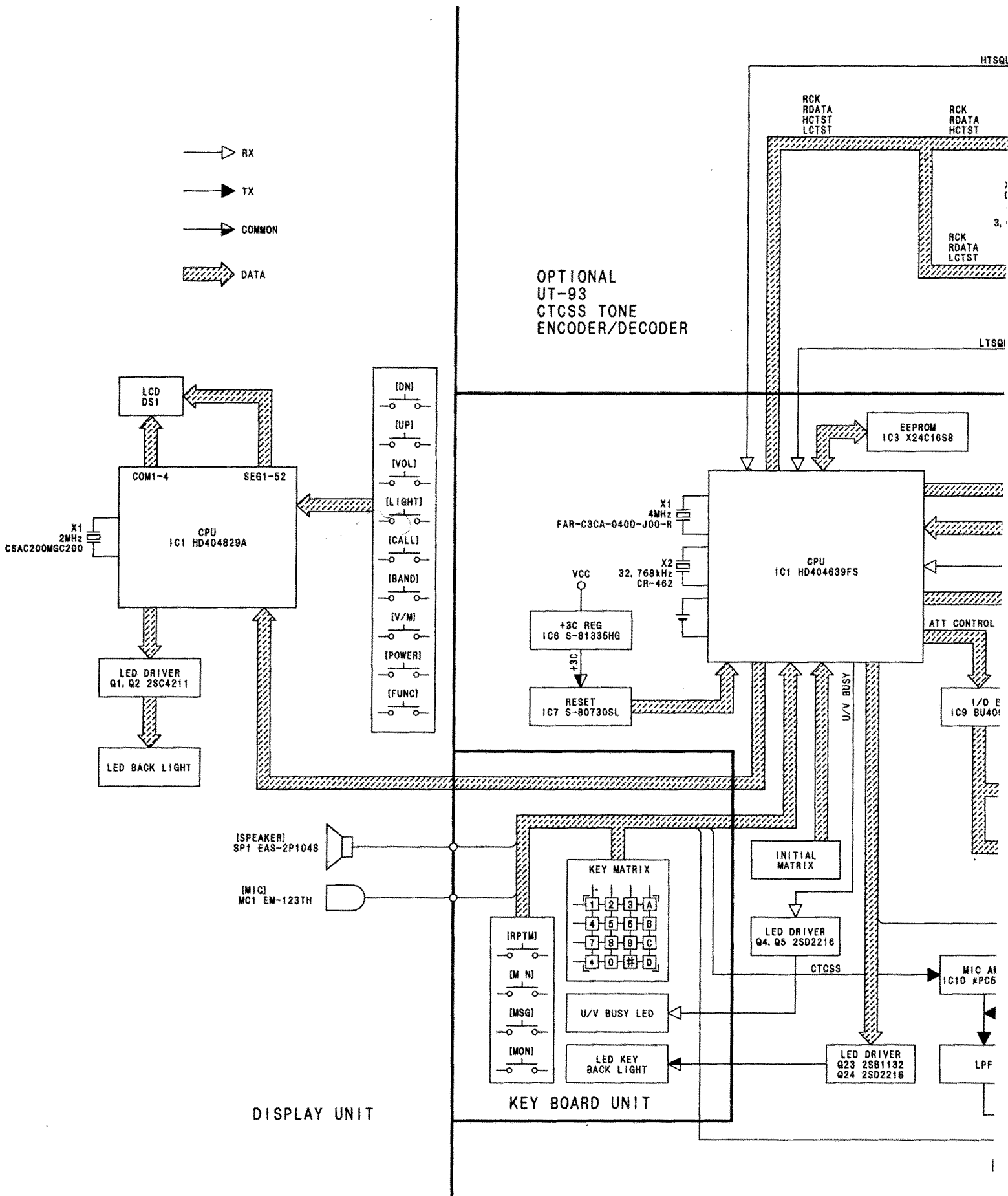
• 2F UNIT (BOTTOM VIEW)

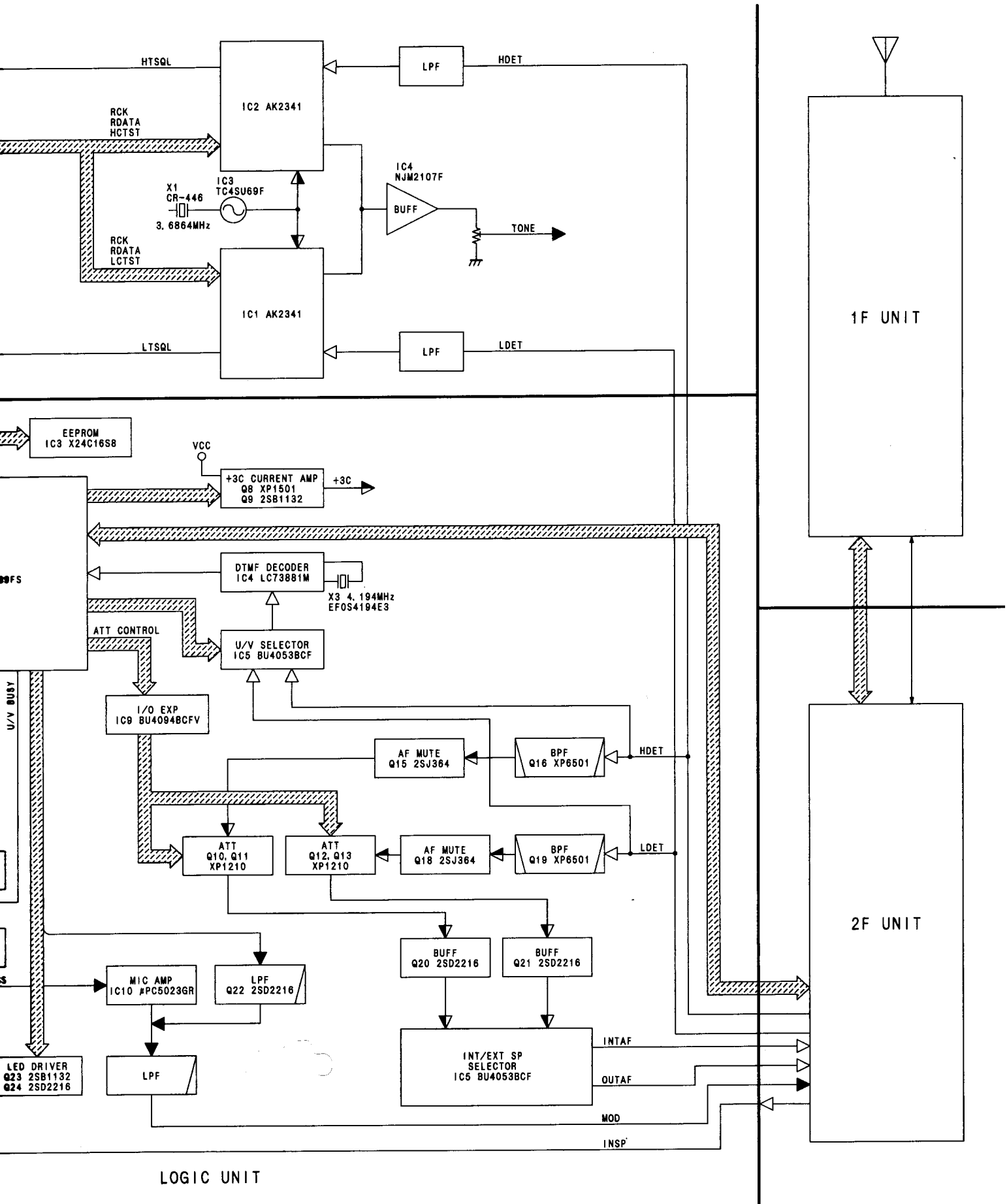


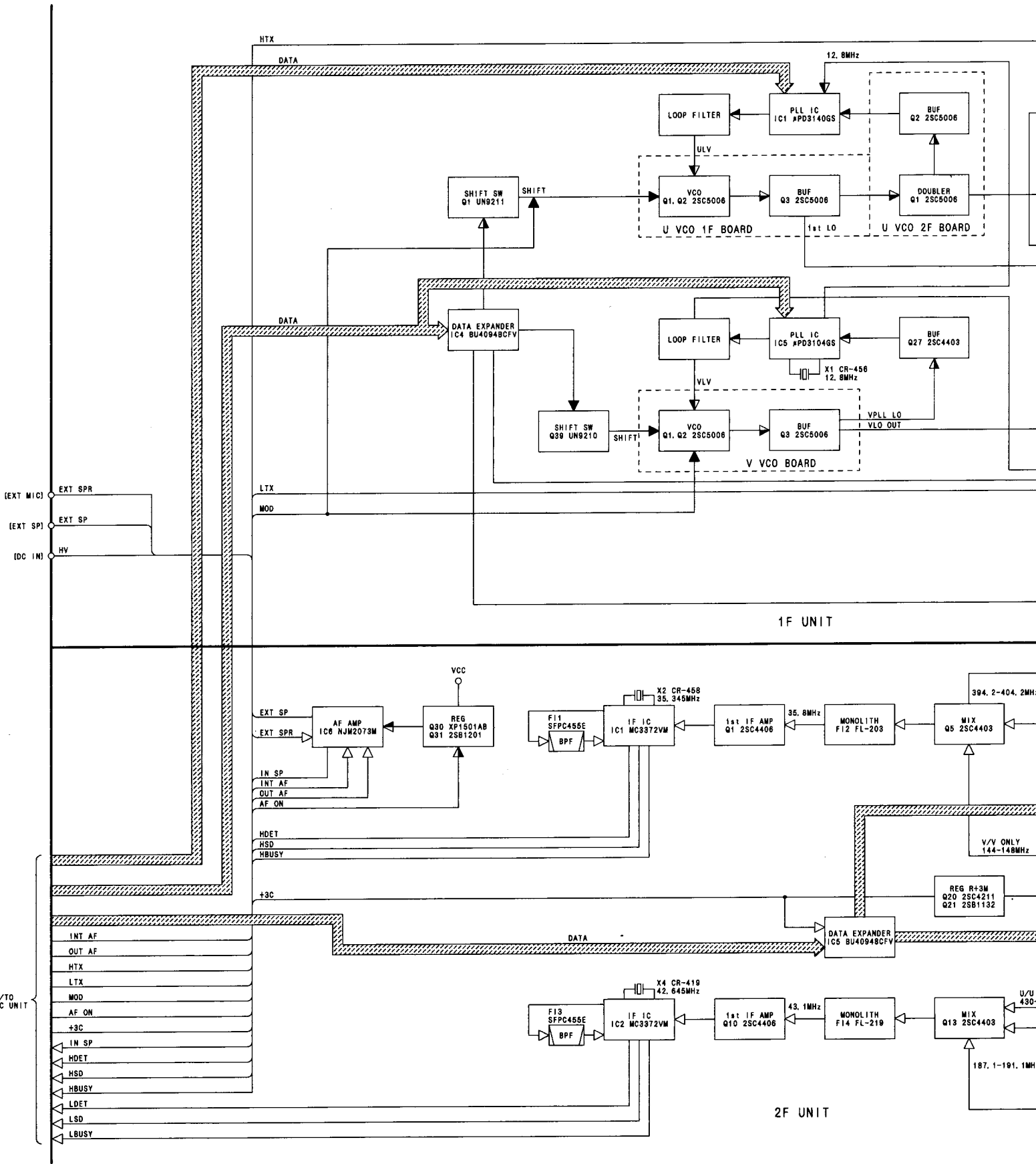
• UHF RF BOARD (BOTTOM VIEW)

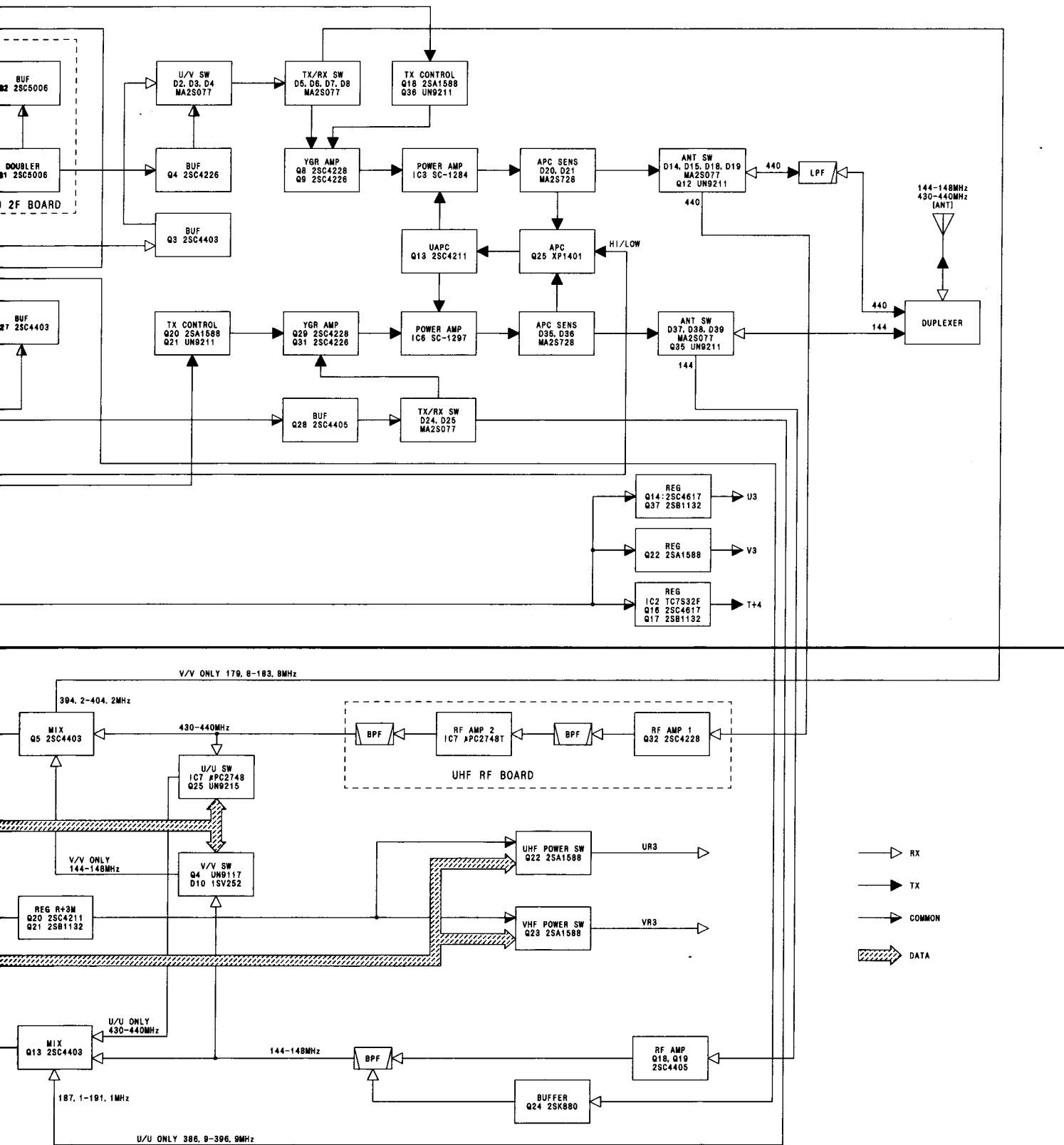


# SECTION 10 BLOCK DIAGRAM



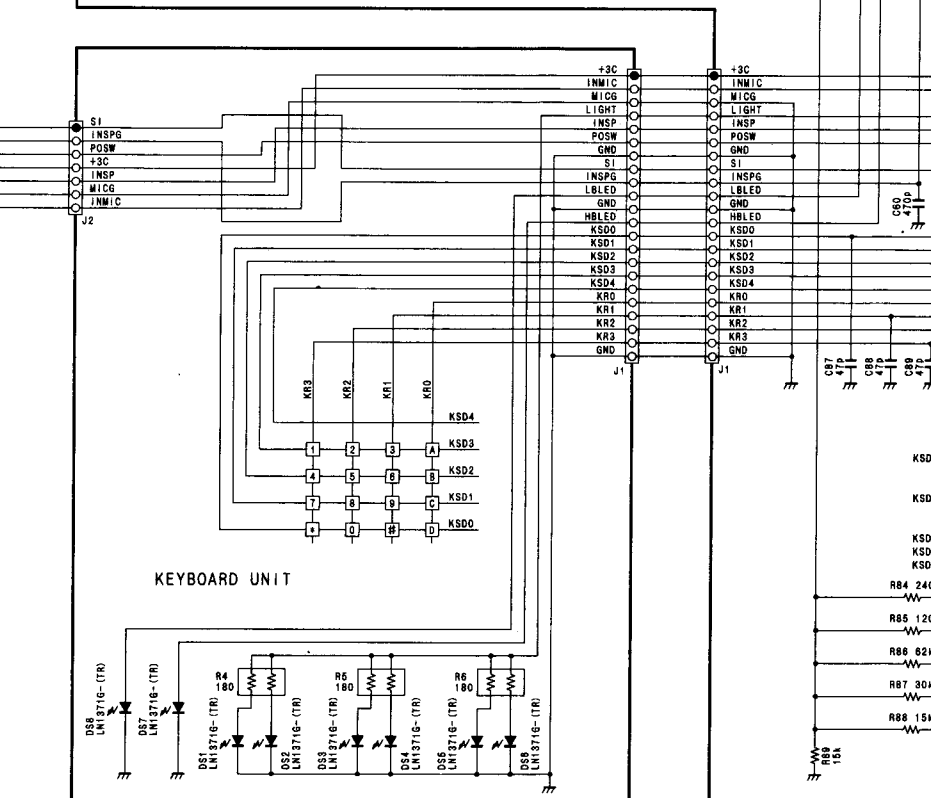
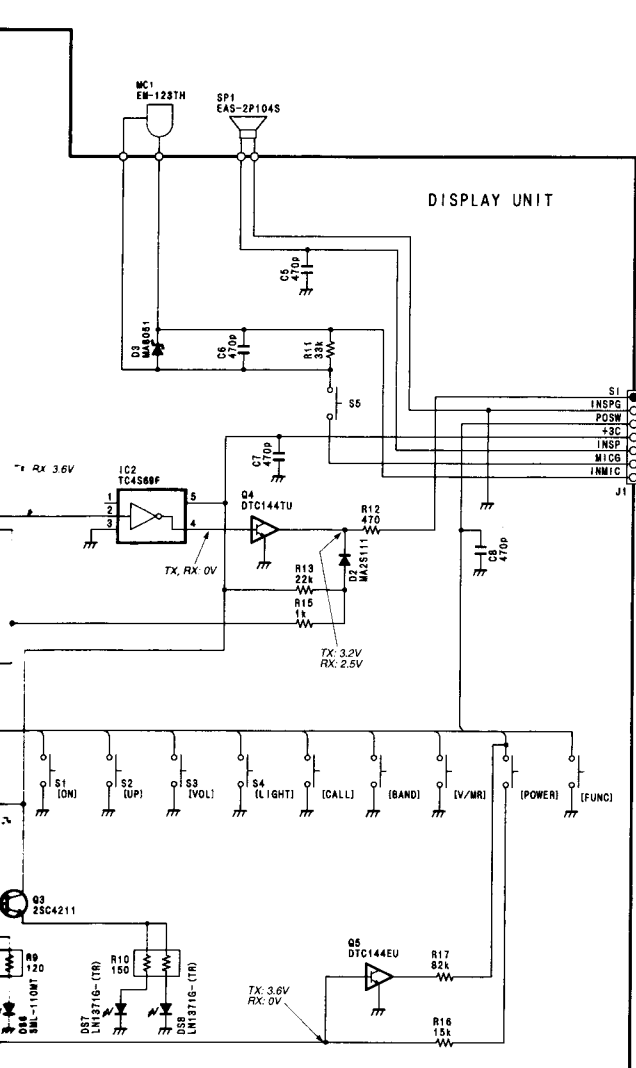
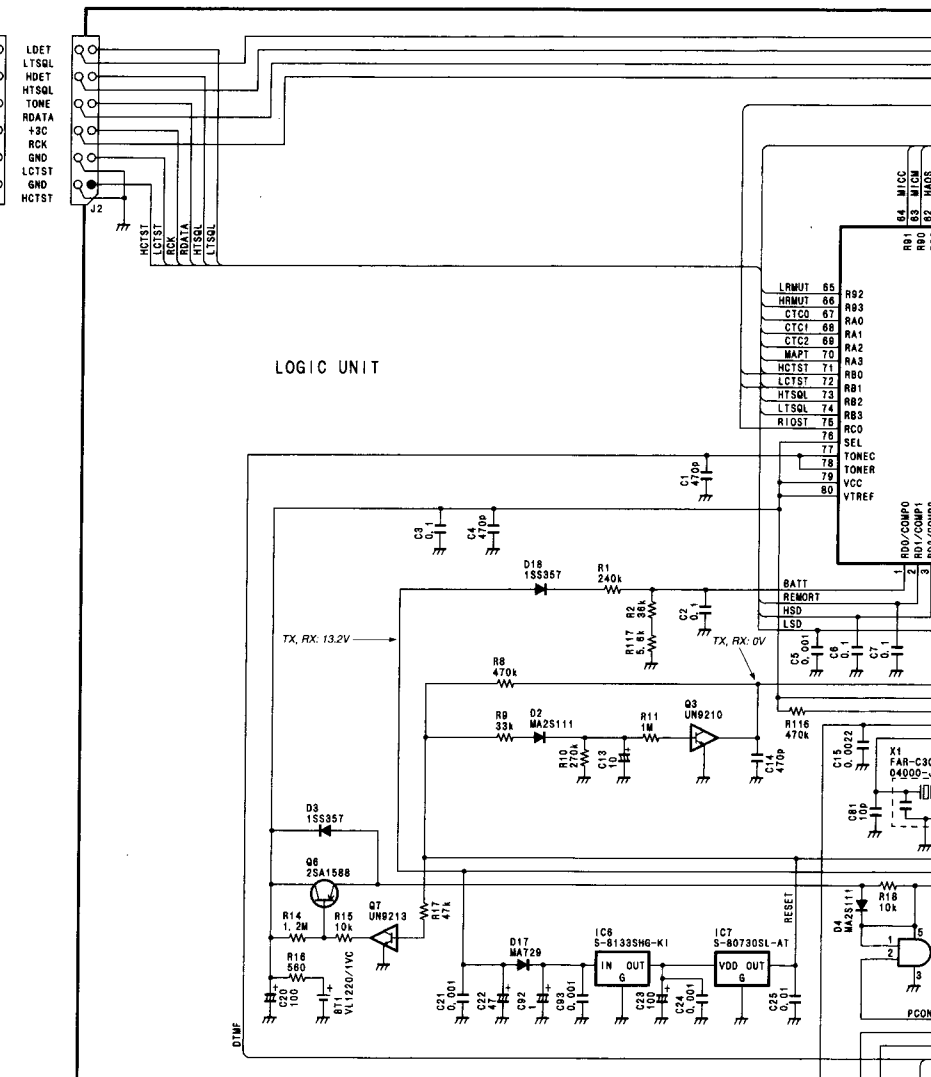
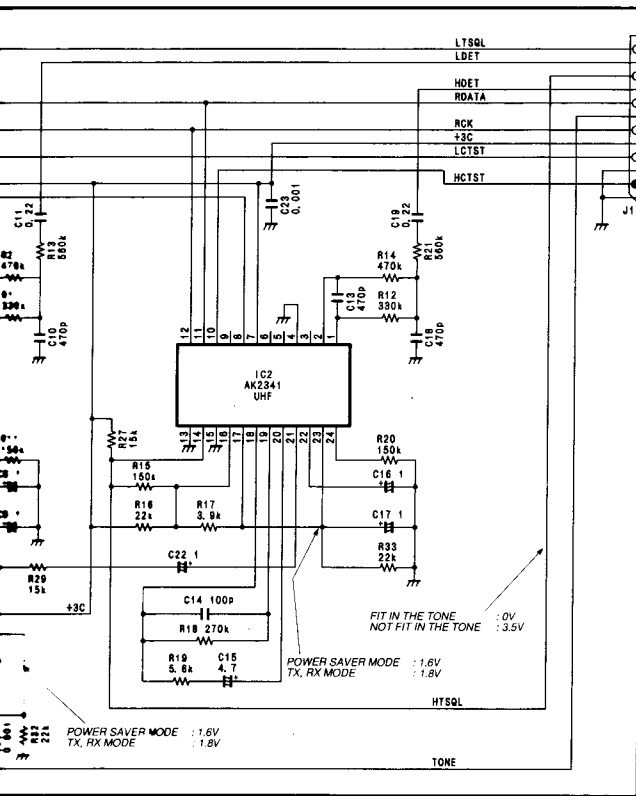


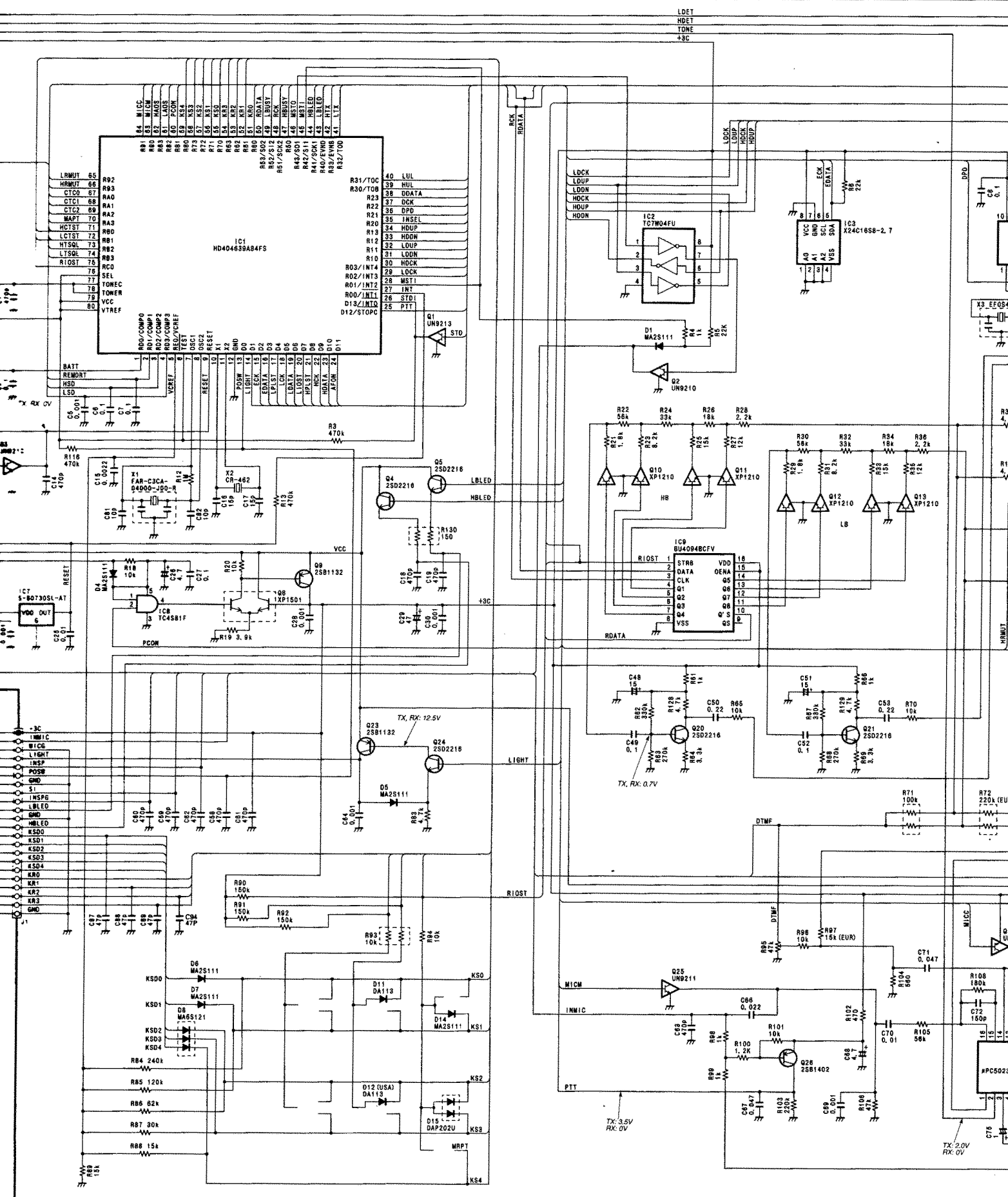


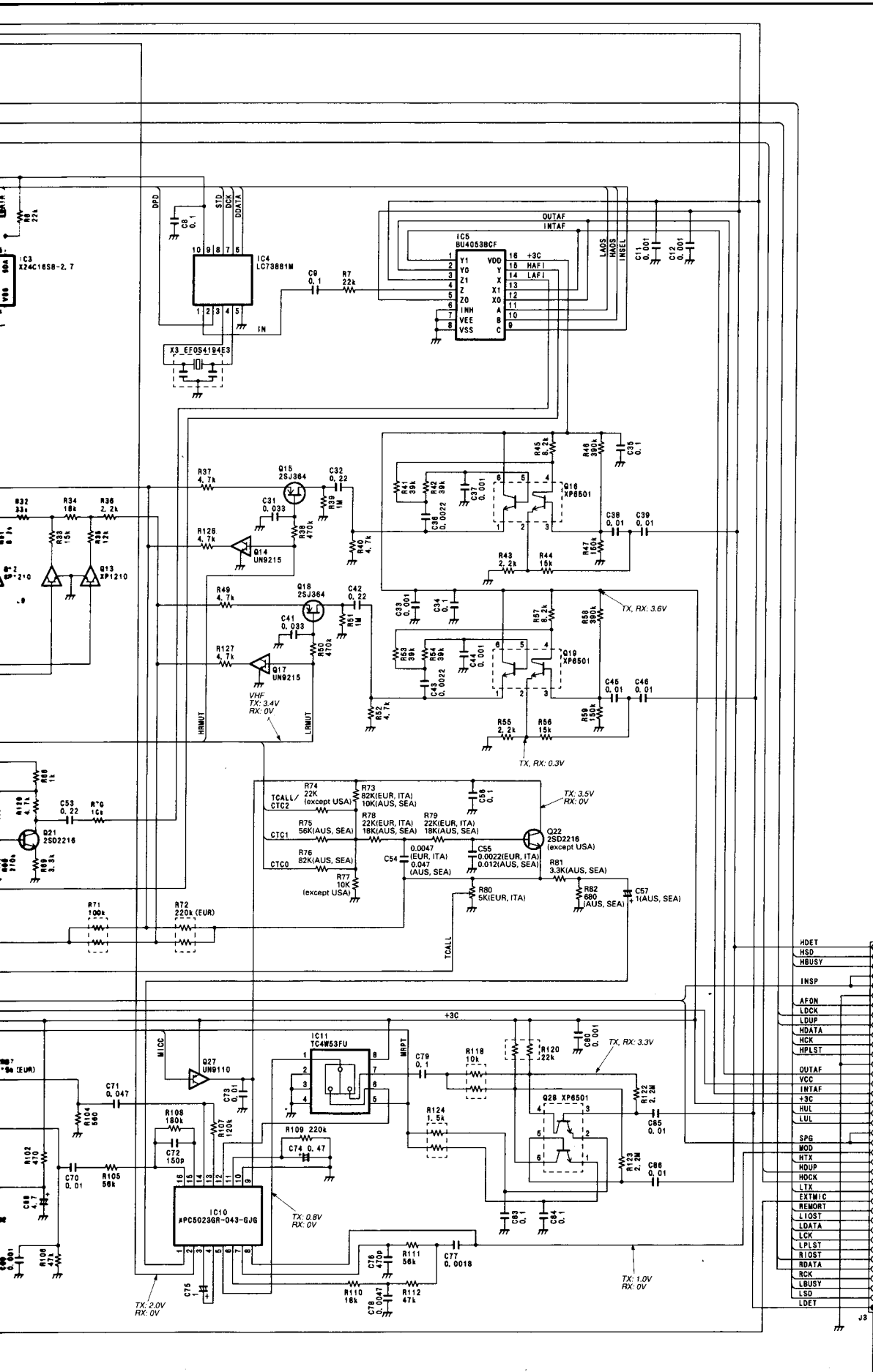






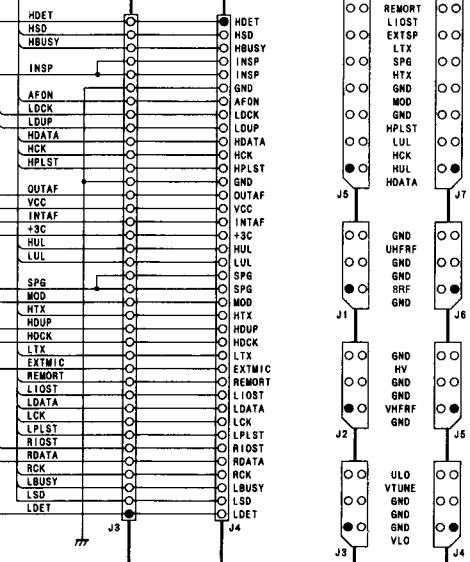


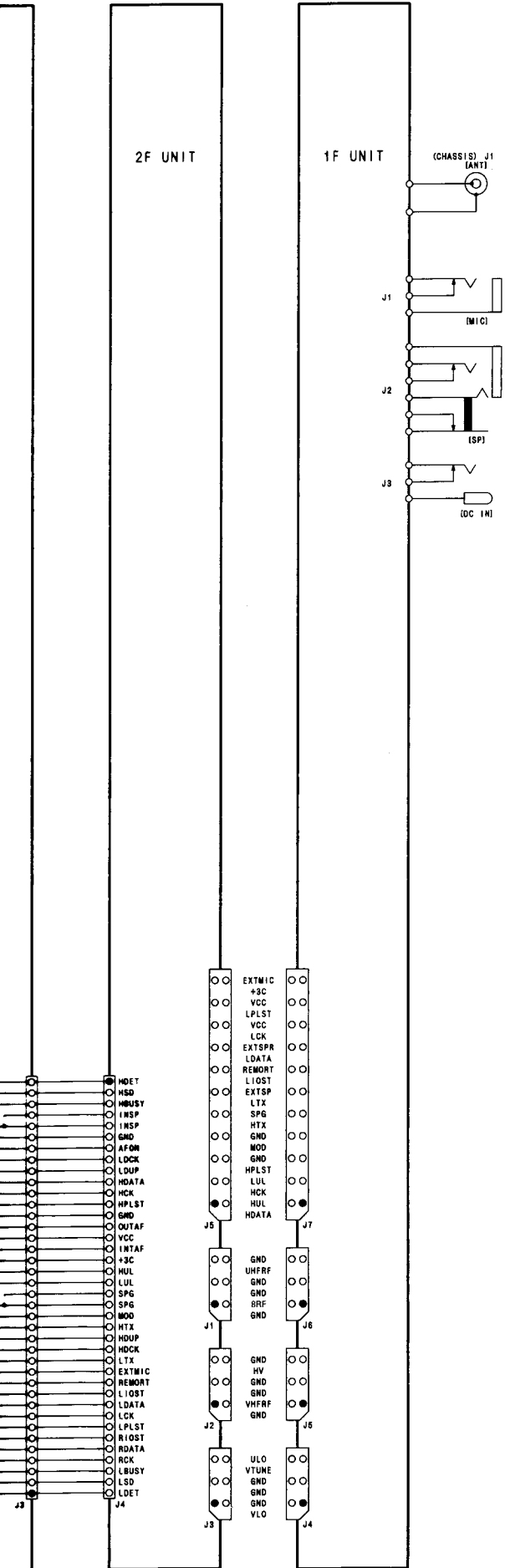




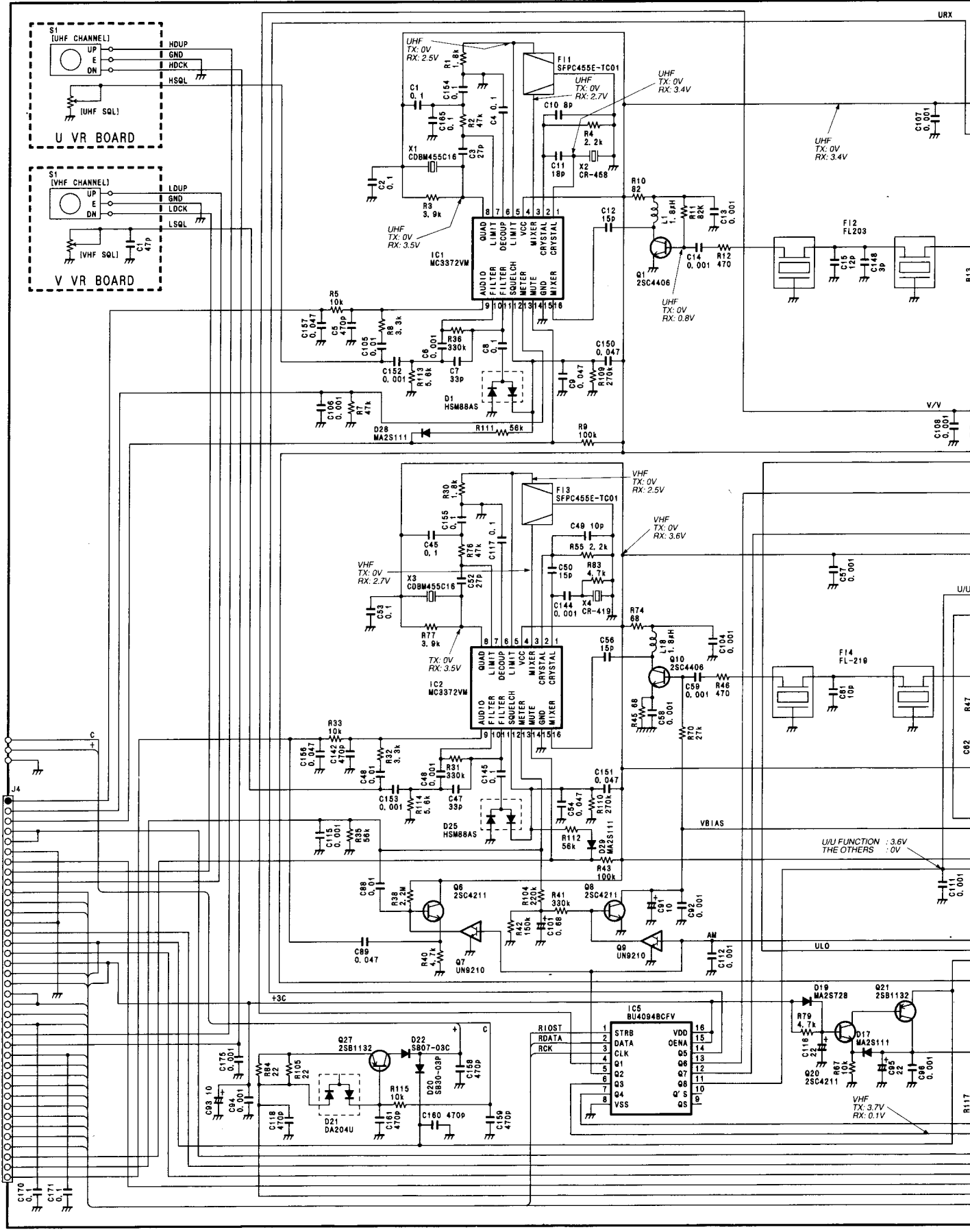
2F UNIT

1F UNIT

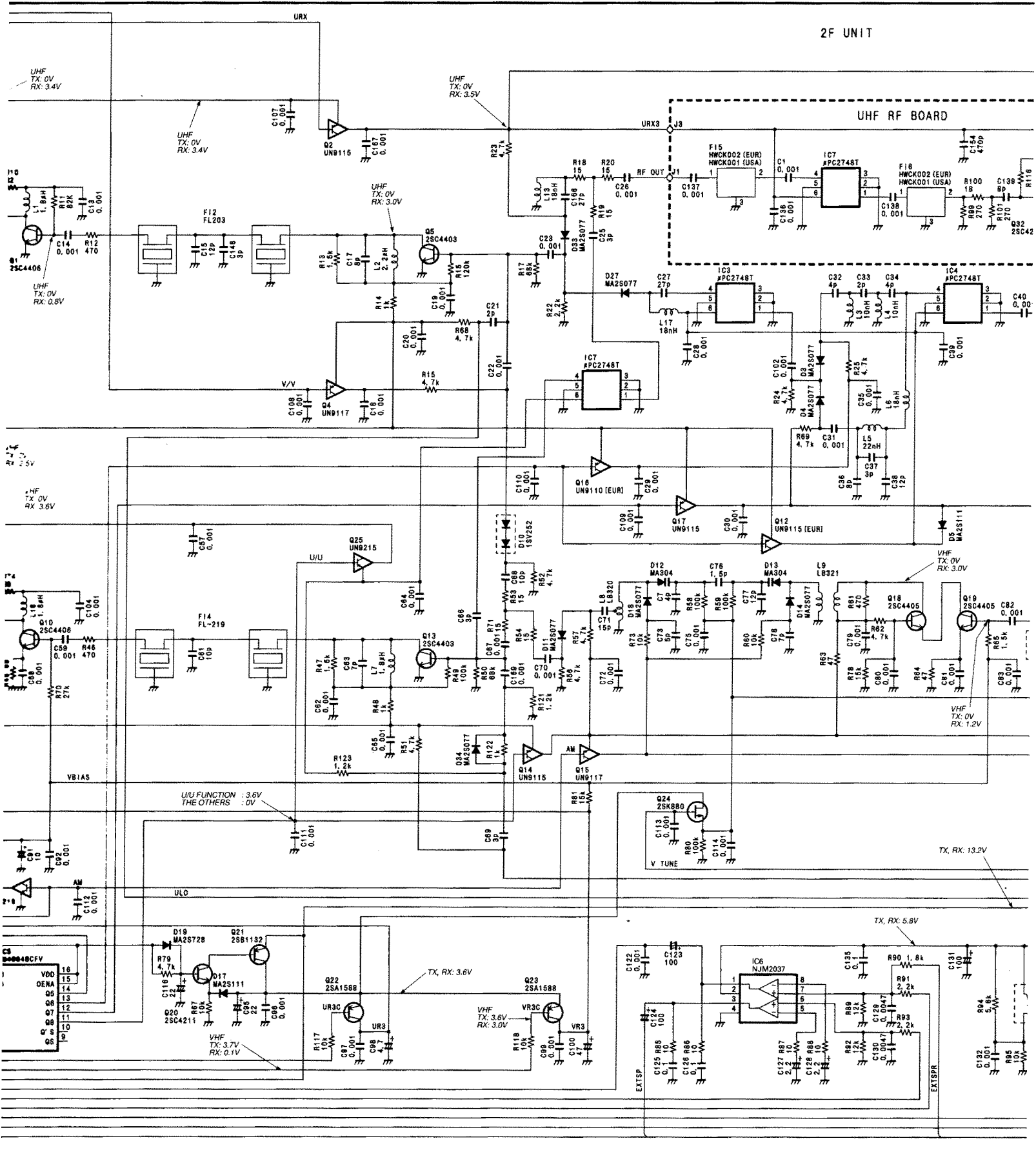


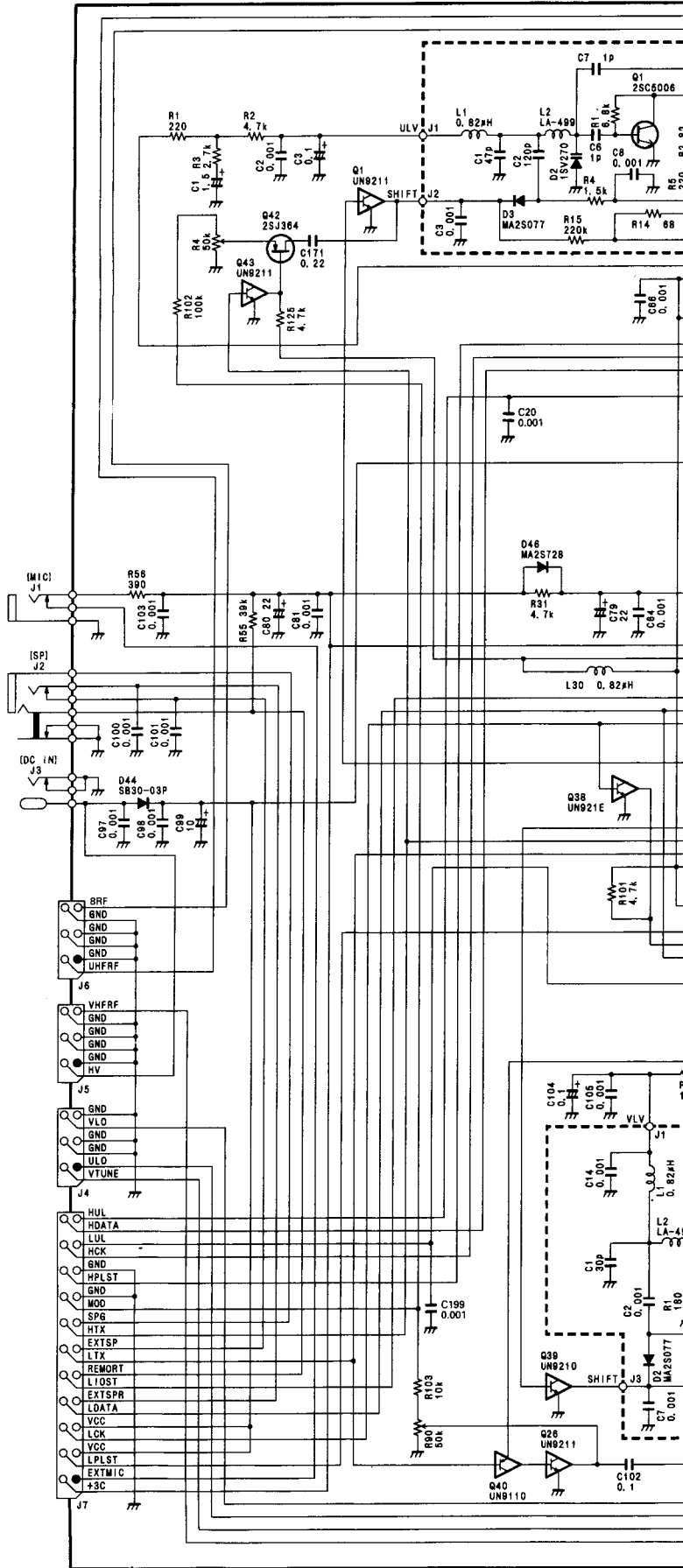
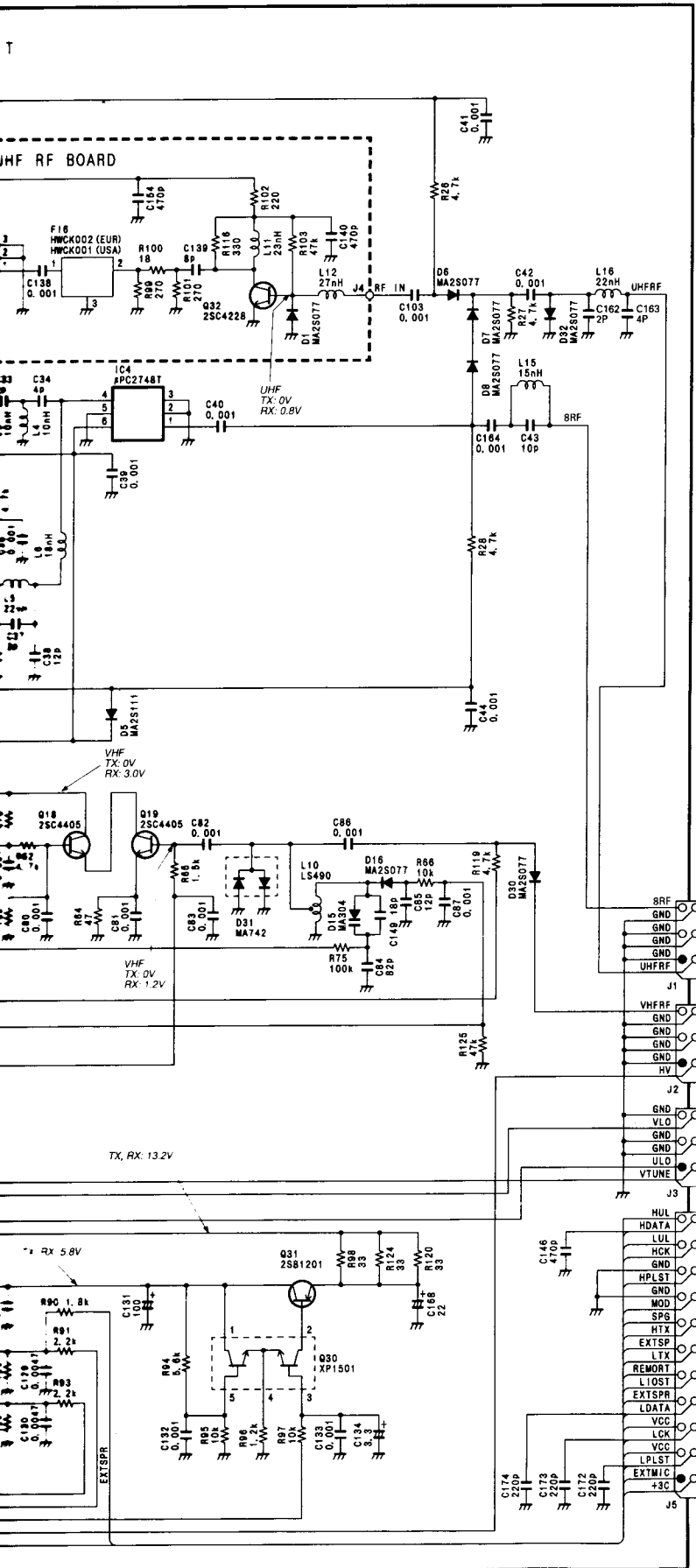


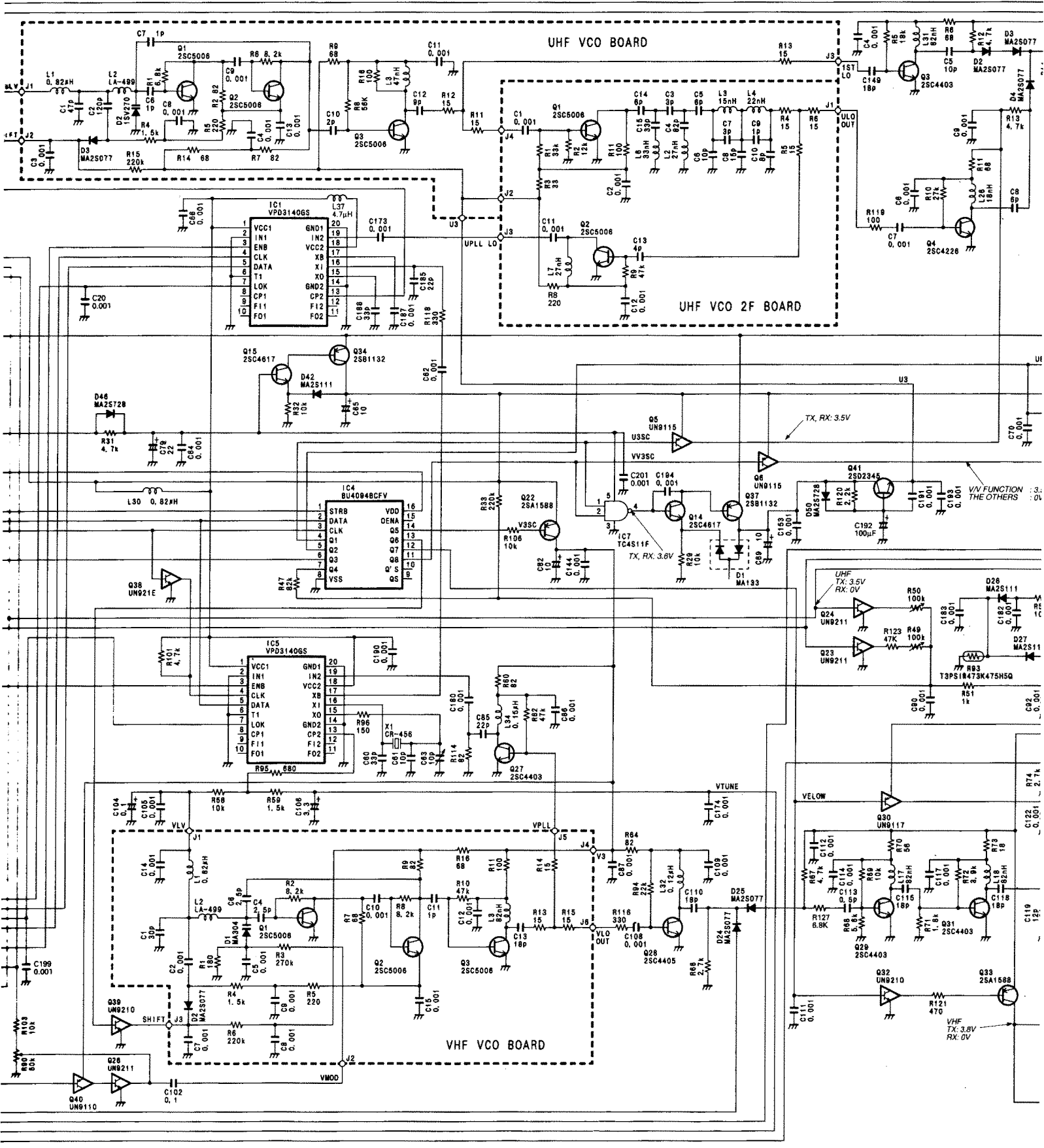
TO BATTERY  
 HDET  
 HSD  
 HBSUY  
 INSP  
 INSP  
 AFON  
 LOCK  
 LDUP  
 LDUP  
 HDATA  
 HCK  
 HCK  
 HPLST  
 GND  
 OUTAF  
 VCC  
 INTAF  
 +3C  
 HUL  
 LUL  
 SPG  
 SPG  
 MOD  
 HTX  
 HDUP  
 HDCK  
 LTX  
 EXTMIC  
 REMOTE  
 LIOST  
 LDATA  
 LCK  
 LPLST  
 RIOST  
 RDATA  
 RCK  
 LBSUY  
 LSD  
 LOET



2F UNIT







UHF VCO BOARD

UHF VCO 2F BOARD

VHF VCO BOARD

IC1 VPD3140GS

IC4 BU40B4BCFV

IC5 VPD3140GS

U33C

VLOW

VTUNE

VHF

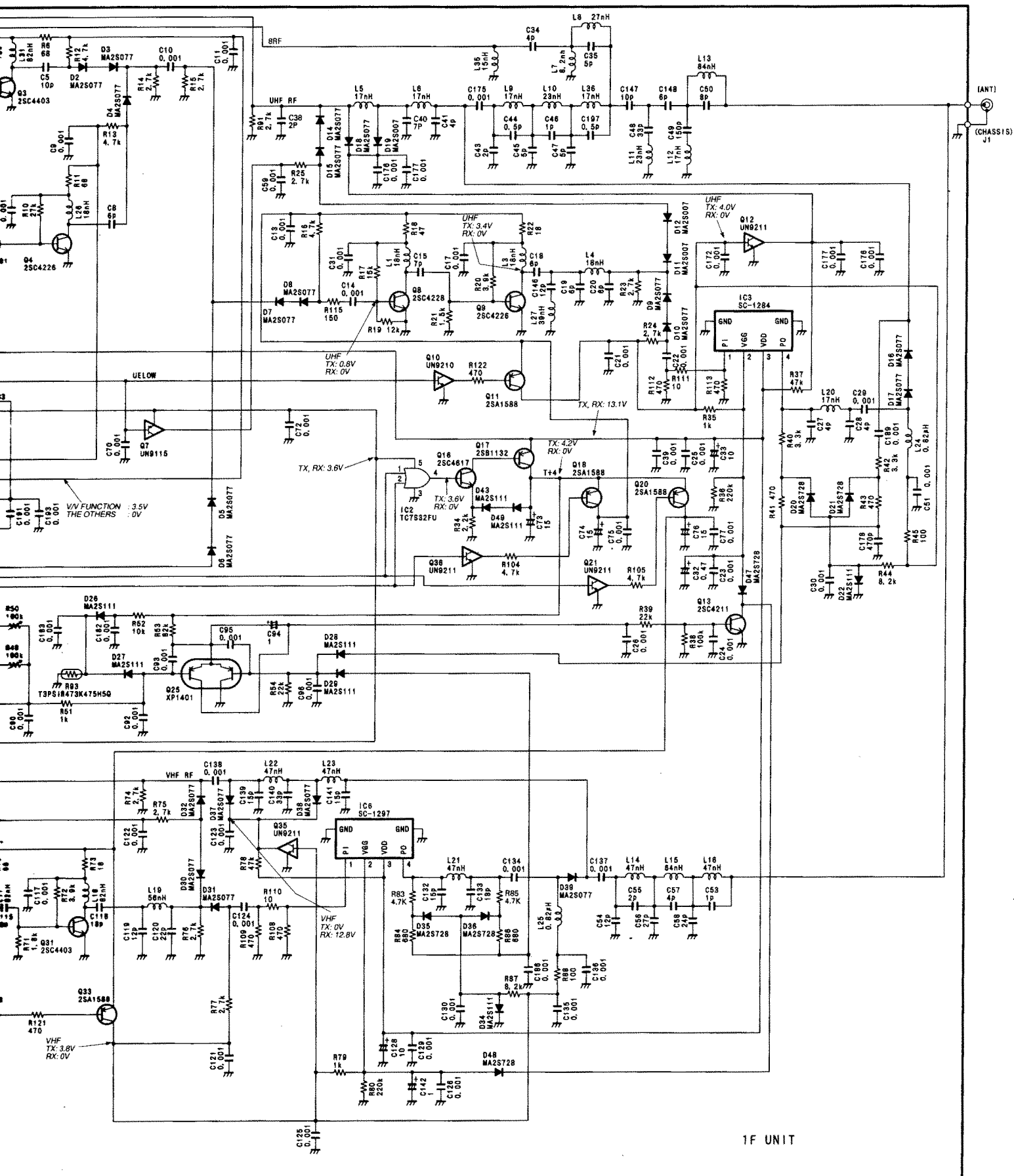
V/V FUNCTION: 3: THE OTHERS: 0V

TX: 3.5V RX: 0V

TX: 3.8V RX: 0V

TX: 3.5V RX: 0V





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Count on us!

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