



# SERVICE MANUAL

VHF MARINE TRANSCEIVER  
**IC-M602**

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## INTRODUCTION

This service manual describes the latest service information for the **IC-M602** VHF MARINE TRANSCEIVER at the time of publication.

MODEL	VERSION	MICROPHONE	COLOR
IC-M602	USA	HM-136B	BLACK
	USA-1	HM-136W	WHITE

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

## ANGER

**NEVER** connect the transceiver to an AC outlet or to a DC power supply that uses more than 15.6 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:

- 10-digit order numbers
- Component part number and name
- Equipment model name and unit name
- Quantity required

### <SAMPLE ORDER>

1110003490 S.IC TA31136FN IC-M602 MAIN UNIT 5 pieces  
 8820001210 Screw 2438 screw IC-M602 Top cover 10 pieces  
 Addresses are provided on the inside back cover for your convenience.

## REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
- DO NOT** open the transceiver until the transceiver is disconnected from its power source.
- DO NOT** force any of the variable components. Turn them slowly and smoothly.
- DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
- DO NOT** keep power ON for a long time when the transceiver is defective.
- DO NOT** transmit power into a signal generator or a sweep generator.
- ALWAYS** connect a 50 dB to 60 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
- READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

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## SECTION 1 SPECIFICATIONS

### ■ GENERAL

- Frequency coverage : 156.020–157.425 MHz (Tx)  
156.050–163.275 MHz (Rx)
- Mode : 16K0G3E (FM) / 16K0G2B (DSC)
- Usable channels : All international, U.S.A and Canadian channels, plus, 10 Weather channels
- Power supply requirement : 13.8 V DC  $\pm$ 15 % (negative ground)
- Usable temperature range :  $-20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ ;  $-4^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$
- Current drain (at 13.8 V DC) : Transmit at 25 W 5.2 A typical  
Receive max. audio 1.2 A typical
- Antenna connector : SO-239 (50  $\Omega$ )
- Dimensions (projections not included) : 220(W) $\times$ 110(H) $\times$ 109.4(D) mm; 8<sup>21</sup>/<sub>32</sub>(W)  $\times$  4<sup>11</sup>/<sub>32</sub>(H)  $\times$  4<sup>5</sup>/<sub>16</sub>(D) inch
- Weight : 1350 g; 2.97 lb

### ■ TRANSMITTER

- Output power (at 13.8 V DC) : High 25 W  
Low 1 W
- Modulation : Variable reactance frequency modulation
- Maximum frequency deviation :  $\pm$ 5.0 kHz
- Frequency error :  $\pm$ 0.3 kHz
- Spurious emissions : Less than  $-70$  dBc
- Adjacent channel power : More than 70 dB
- Residual modulation : More than 40 dB
- Audio harmonic distortion : Less than 10% at 60% deviation
- Audio frequency response :  $+1$  dB to  $-3$  dB of 6 dB octave from 300 Hz to 3000 Hz
- Microphone impedance : 2 k $\Omega$

### ■ RECEIVER

- Receive system : Double conversion superheterodyne system
- Intermediate frequencies : 1st 21.7 MHz\*<sup>1</sup>, 31.05 MHz\*<sup>2</sup>  
2nd 450 kHz
- Sensitivity : Less than  $-10$  dB $\mu$  at 12 dB SINAD
- Squelch sensitivity : Less than  $-10$  dB $\mu$  at threshold
- Adjacent channel selectivity : More than 80 dB
- Spurious response : More than 80 dB
- Intermodulation rejection ratio : more than 80 dB
- Hum and noise : More than 40 dB
- Audio output power (at 13.8 V DC) : 5.0 W at 10% distortion with a 4  $\Omega$  load
- Audio frequency response :  $+1$  dB to  $-3$  dB of  $-6$  dB octave from 300 Hz to 3000 Hz
- GPS interface : NMEA0183 Ver. 2.0 or 3.01

\*<sup>1</sup>For Channel 70 only, \*<sup>2</sup>For other channels

Specifications are measured in accordance with TIA/EIA 603

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

## ■ VHF MARINE CHANNEL LIST

Channel No.			Frequency (MHz)		Channel No.			Frequency (MHz)		Channel No.			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650	21A		21A	157.050	157.050	70*2	70*2	70*2	156.525	156.525
01A			156.050	156.050			21b	RX only	161.650	71	71	71	156.575	156.575
	02	02	156.100	160.700		22		157.100	161.700	72	72	72	156.625	156.625
	03	03	156.150	160.750	22A		22A	157.100	157.100	73	73	73	156.675	156.675
03A			156.150	156.150		23	23	157.150	161.750	74	74	74	156.725	156.725
	04		156.200	160.800	23A			157.150	157.150	77*1	77	77*1	156.875	156.875
		04A	156.200	156.200	24	24	24	157.200	161.800		78		156.925	161.525
	05		156.250	160.850	25	25	25	157.250	161.850	78A		78A	156.925	156.925
05A		05A	156.250	156.250			25b	RX only	161.850		79		156.975	161.575
06	06	06	156.300	156.300	26	26	26	157.300	161.900	79A		79A	156.975	156.975
	07		156.350	160.950	27	27	27	157.350	161.950		80		157.025	161.625
07A		07A	156.350	156.350	28	28	28	157.400	162.000	80A		80A	157.025	157.025
08	08	08	156.400	156.400			28b	RX only	162.000		81		157.075	161.675
09	09	09	156.450	156.450		60	60	156.025	160.625	81A		81A	157.075	157.075
10	10	10	156.500	156.500		61		156.075	160.675		82		157.125	161.725
11	11	11	156.550	156.550	61A		61A	156.075	156.075	82A		82A	157.125	157.125
12	12	12	156.600	156.600		62		156.125	160.725		83	83	157.175	161.775
13*1	13	13*1	156.650	156.650			62A	156.125	156.125	83A		83A	157.175	157.175
14	14	14	156.700	156.700		63		156.175	160.775			83b	RX only	161.775
15*1	15*1	15*1	156.750	156.750	63A			156.175	156.175	84	84	84	157.225	161.825
16	16	16	156.800	156.800		64	64	156.225	160.825	84A			157.225	157.225
17*1	17	17*1	156.850	156.850	64A		64A	156.225	156.225	85	85	85	157.275	161.875
	18		156.900	161.500		65		156.275	160.875	85A			157.275	157.275
18A		18A	156.900	156.900	65A	65A	65A	156.275	156.275	86	86	86	157.325	161.925
	19		156.950	161.550		66		156.325	160.925	86A			157.325	157.325
19A		19A	156.950	156.950	66A	66A	66A*1	156.325	156.325	87	87	87	157.375	161.975
20	20	20*1	157.000	161.600	67*1	67	67	156.375	156.375	87A			157.375	157.375
20A			157.000	157.000	68	68	68	156.425	156.425	88	88	88	157.425	162.025
	21	21	157.050	161.650	69	69	69	156.475	156.475	88A			157.425	157.425

\*1 Low power only, \*2 Receive only

**NOTE:** Channels 3, 21, 23, 61, 64, 81, 82 and 83 **CANNOT** be used by the general public in USA waters.

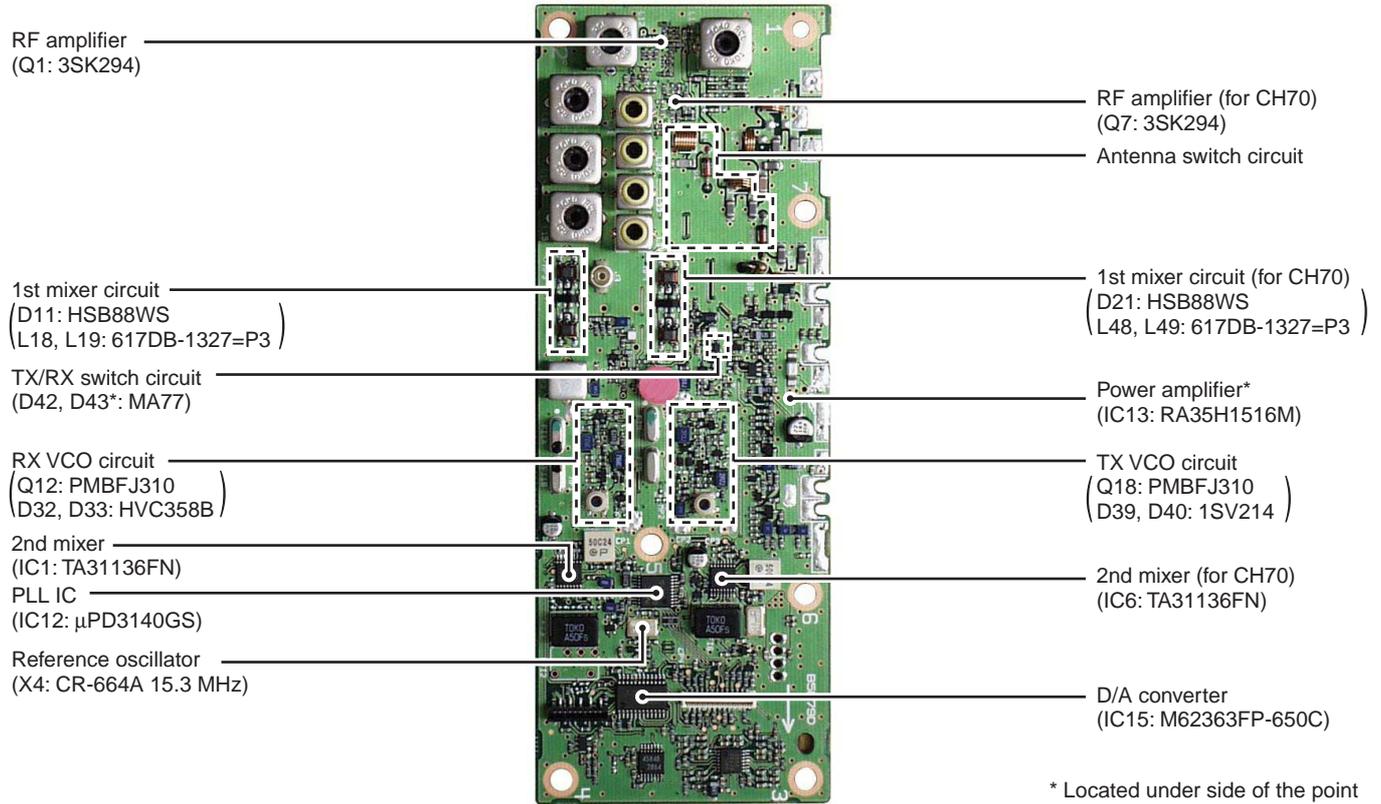
## ■ WX CHANNEL LIST

Weather channel	Frequency (MHz)		Weather channel	Frequency (MHz)	
	Transmit	Receive		Transmit	Receive
WX01	Receive only	162.550	WX06	Receive only	162.500
WX02	Receive only	162.400	WX07	Receive only	162.525
WX03	Receive only	162.475	WX08	Receive only	161.650
WX04	Receive only	162.425	WX09	Receive only	161.775
WX05	Receive only	162.450	WX10	Receive only	163.275

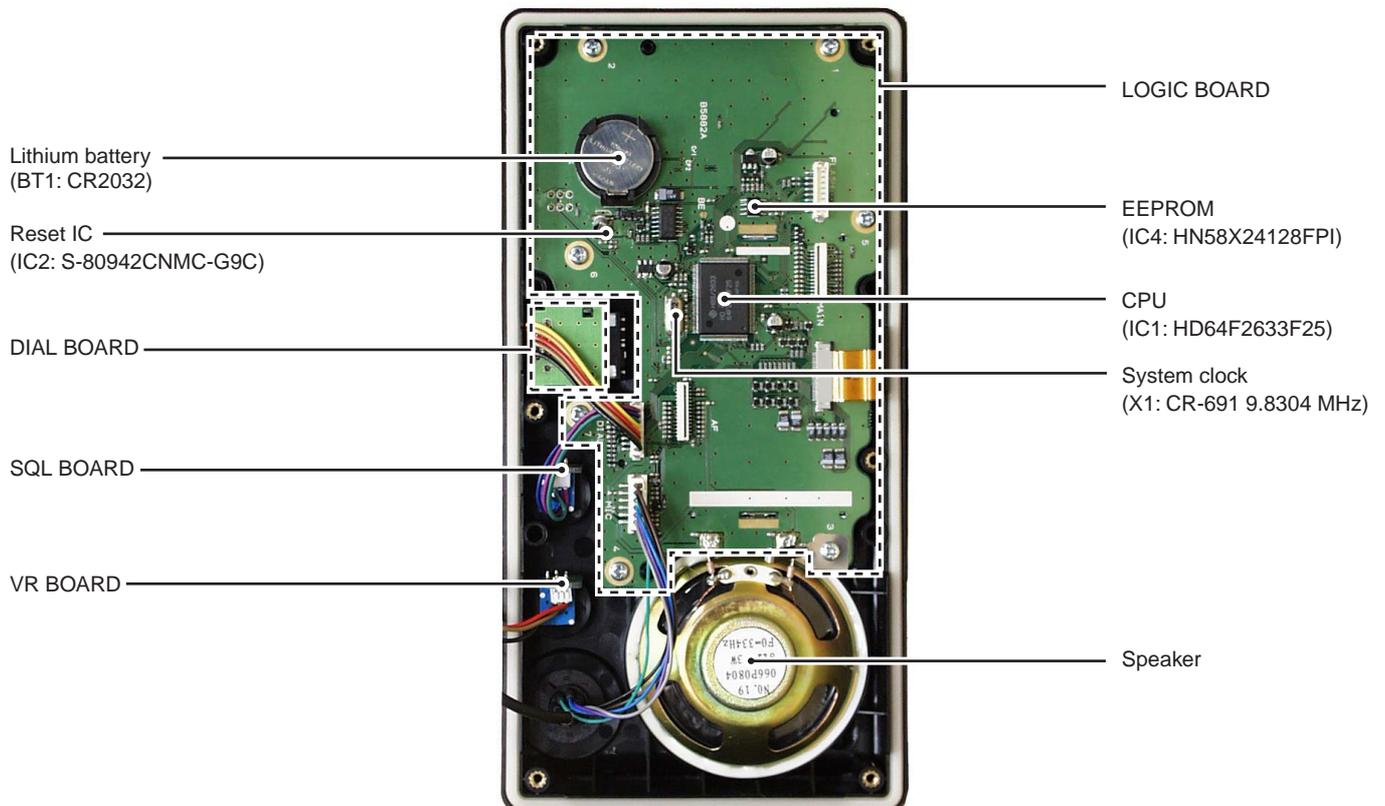
## SECTION 2 INSIDE VIEWS

### 2-1 IC-M602

#### • MAIN UNIT

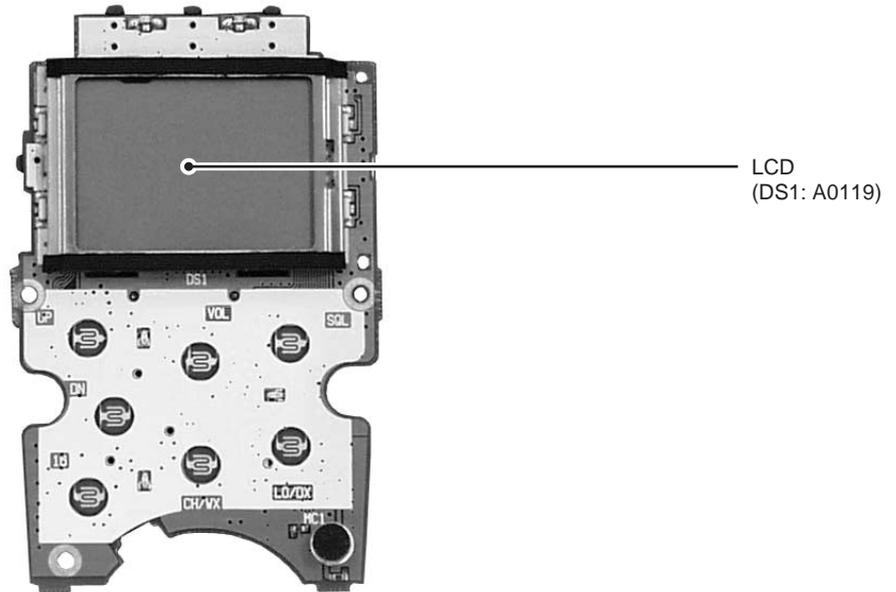


#### • LOGIC BOARD

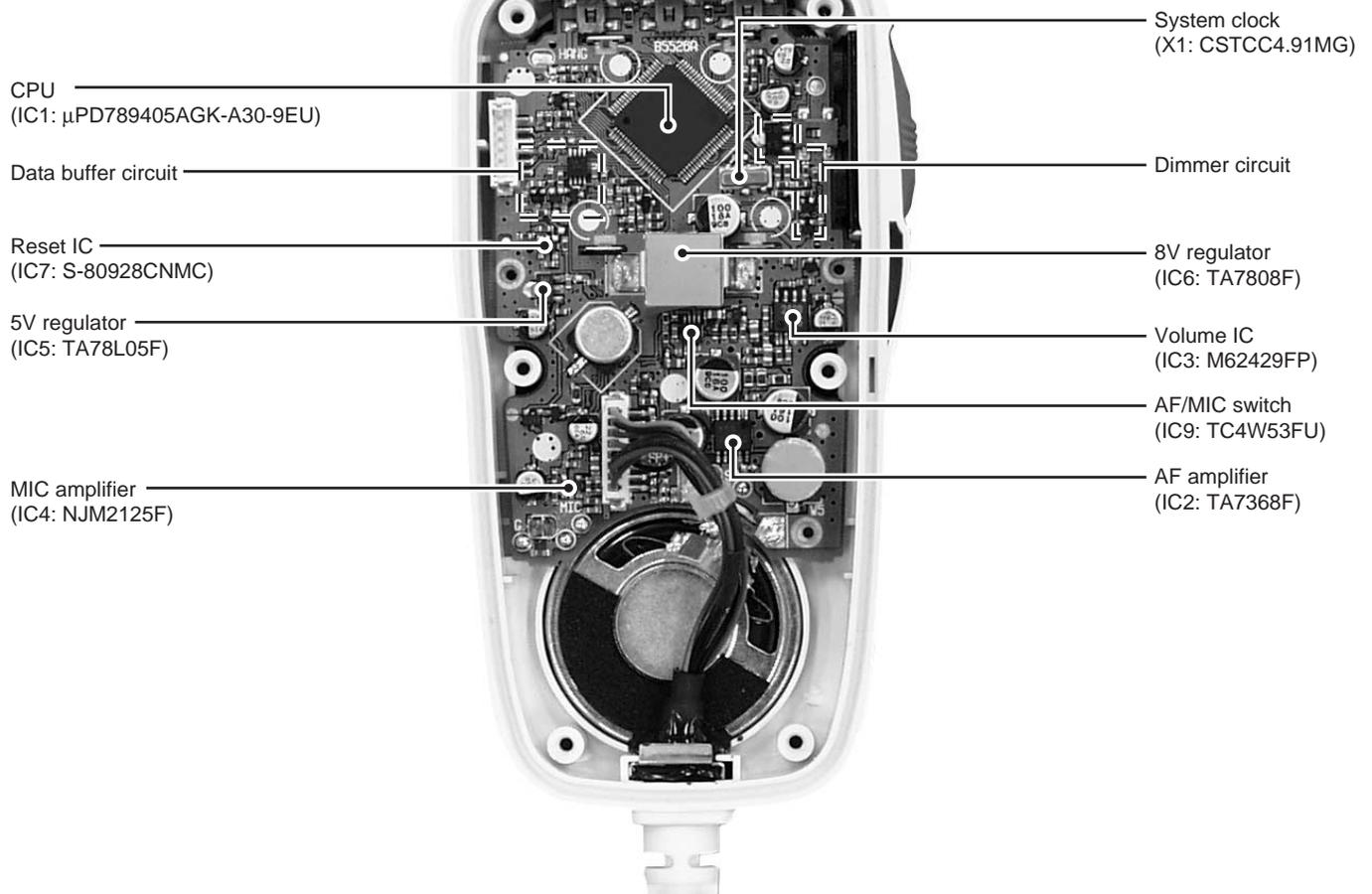


2-2 HM-127 (OPTIONAL UNIT)

• TOP VIEW



• BOTTOM VIEW

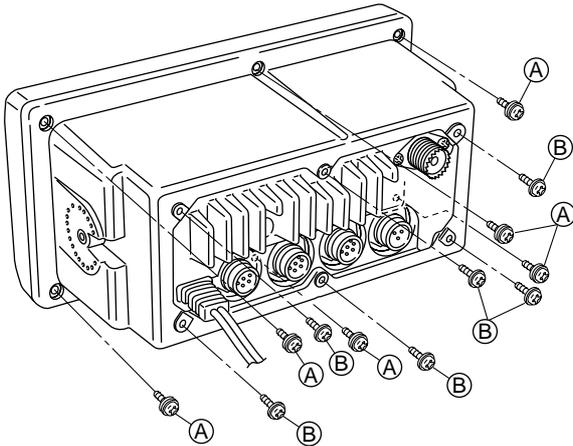


## SECTION 3 DISASSEMBLY AND OPTIONS INSTRUCTIONS

**CAUTION: DISCONNECT** the DC power cable from the transceiver before performing any work on the transceiver. Otherwise, there is danger of electric shock and/or equipment damage.

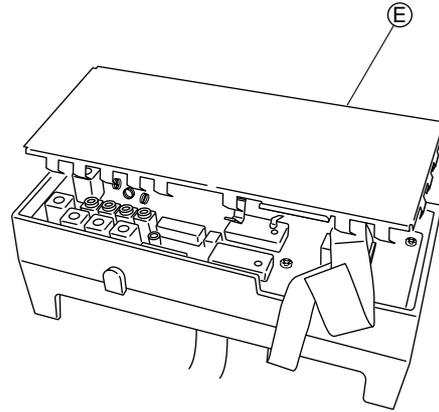
### • Opening the transceiver case

- ① Unscrew 6 screws (A), and remove the front unit.
- ② Unscrew 6 screws (B), and remove the rear panel.



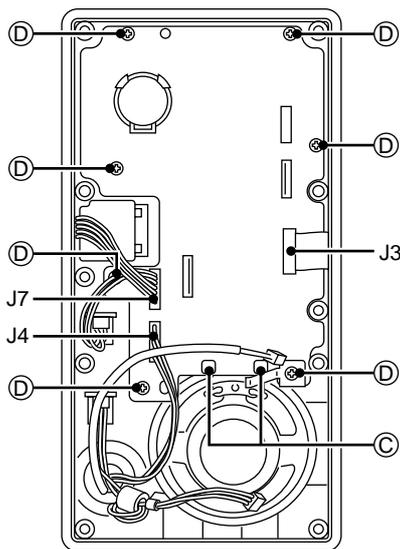
### • Removing the MAIN unit

- ① Remove the shield cover (E).

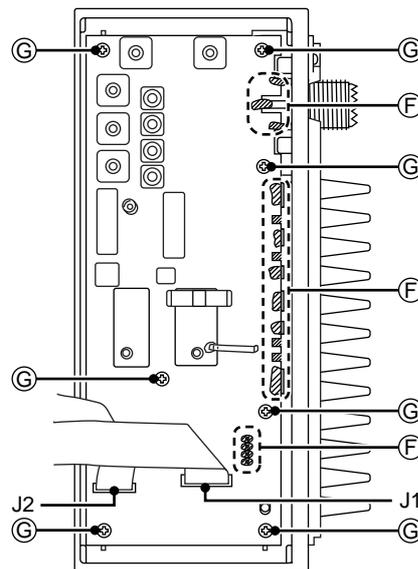


### • Removing the LOGIC board

- ① Unsolder 2 points (C).
- ② Disconnect microphone connector from J4 and SQL/DIAL connector from J7.
- ③ Unscrew 7 screws (D), and remove the LOGIC board.



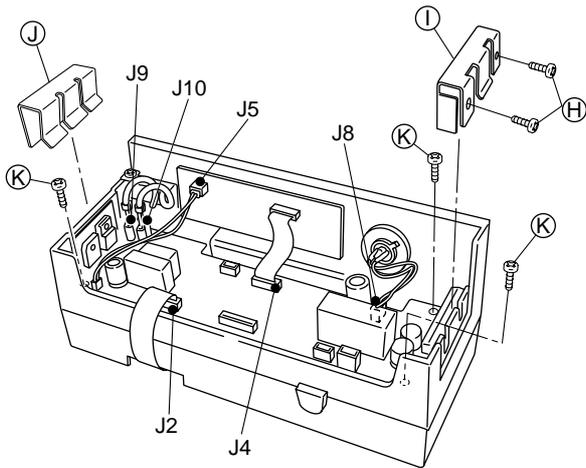
- ② Disconnect flat cables from J1 and J2.
- ③ Unsolder 17 points (F).
- ④ Unscrew 7 screws (G), and remove the MAIN unit.



 Unsolder point

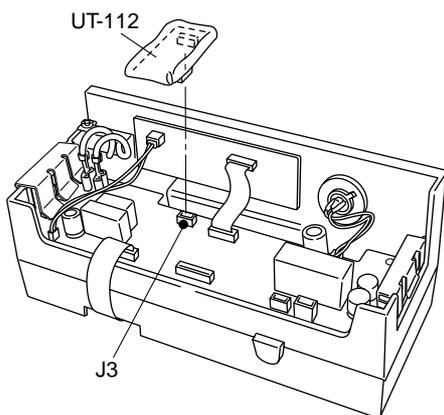
• **Removing the AF unit**

- ① Disconnect 4 connectors from J5, J8, J9 and J10.
- ② Disconnect 2 flat cables from J2 and J4
- ③ Unscrew 2 screws (H), and remove 2 clips (I, J).
- ④ Unscrew 3 screws (K), and remove the AF unit.



• **UT-112 VOICE SCRAMBLER UNIT INSTALLATION**

- ① Plug UT-112 into J3 on the AF unit.



## SECTION 4 CIRCUIT DESCRIPTION

### 4-1 RECEIVER CIRCUITS

#### 4-1-1 ANTENNA SWITCHING CIRCUIT (MAIN UNIT)

The antenna switching circuit functions as a low-pass filter while receiving and as resonator circuit while transmitting. The circuit does not allow transmit signals to enter the receiver circuits.

Received signals enter the MAIN unit from the antenna connector and pass through the low-pass filter (L1, L2, C1, C3, C5). The signals are then applied to the RF circuit via the antenna switching circuit (D1, L3, L4, C7–C9).

#### 4-1-2 RF CIRCUIT (MAIN 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 the tunable bandpass filter (L11, C23–C25) which the object signals are led to each RF amplifier of channel 70 circuit (Q7) or other channels (except channel 70) circuit (Q1).

##### • CHANNEL 70 CIRCUIT

The amplified signals from the RF amplifier (Q7) are applied to the 4-stage bandpass filter (L31–L34, C407, C408, C410–C423) to suppress unwanted signals and improve the selectivity. The signals are then applied to the 1st mixer circuit for channel 70.

##### • OTHER CHANNELS CIRCUIT

The amplified signals from the RF amplifier (Q1) are applied to the 4-stage bandpass filter (L12–L15, C33, C34, C36–C48) to suppress unwanted signals and improve the selectivity. The signals are then applied to the 1st mixer circuit for other channels.

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

The 1st mixer circuit converts the received signal into a fixed frequency of the 1st IF signal with a 1st LO (VCO output) frequency. By changing the 1st LO frequency, only the desired frequency will pass through a pair of crystal filters at the next stage of the mixer.

##### • CHANNEL 70 CIRCUIT

The signals from the RF circuit are mixed with the 1st LO signals at the 1st mixer circuit (D21, L48, L49) to produce a 21.7 MHz 1st IF signal.

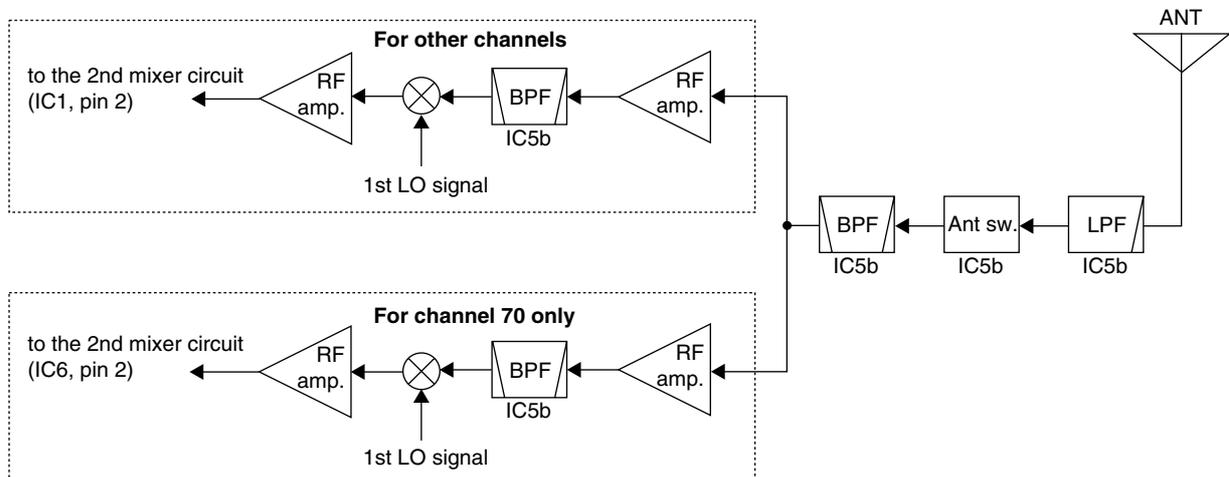
The 1st IF signal is amplified at the 1st IF amplifiers (Q8, Q9), and then passes through the pair of crystal bandpass filters (F14, F15) to suppress out-of-band signals. The filtered signal is then amplified at the 2nd IF amplifier (Q10), and is then applied to the 2nd mixer circuit (IC6).

##### • OTHER CHANNELS CIRCUIT

The signals from the RF circuit are mixed with the 1st LO signals at the 1st mixer circuit (D11, L18, L19) to produce a 31.05 MHz 1st IF signal.

The 1st IF signal is amplified at the 1st IF amplifiers (Q3, Q4), and then passes through the crystal bandpass filter (F11) to suppress out-of-band signals. The filtered signal is then amplified at the 2nd IF amplifier (Q2), and is then applied to the 2nd mixer circuit (IC1).

#### • 1ST MIXER AND 1ST IF CIRCUITS



**4-1-4 2ND IF AND DEMODULATOR CIRCUITS (MAIN UNIT)**

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

The FM IF IC (IC6 for channel 70, IC1 for other channels) contains the 2nd local oscillator, 2nd mixer, limiter amplifier, quadrature detector, and noise detector circuits, etc.

**• CHANNEL 70 CIRCUIT**

The 1st IF signal from the 2nd IF amplifier (Q10) is applied to the 2nd mixer section of FM IF IC (IC6, pin 16), and is mixed with a 21.25 MHz 2nd LO signal, which is generated at the 2nd oscillator section in IC6 and X3, to produce a 450 kHz 2nd IF signal.

The 2nd IF signal from IC6 (pin 3) is passed through the ceramic filter (F16), which unwanted signals are suppressed, and is then applied to the 2nd IF (limiter) amplifier in IC6 (pin 5). The signal is applied to the FM detector section in IC6 for demodulating into AF signals.

The FM detector circuit employs a quadrature detection method (linear phase detection), which uses a ceramic discriminator (X2) for phase delay to obtain a non-adjusting circuit. The detected signal from IC6 (pin 9) is applied to the AF circuit.

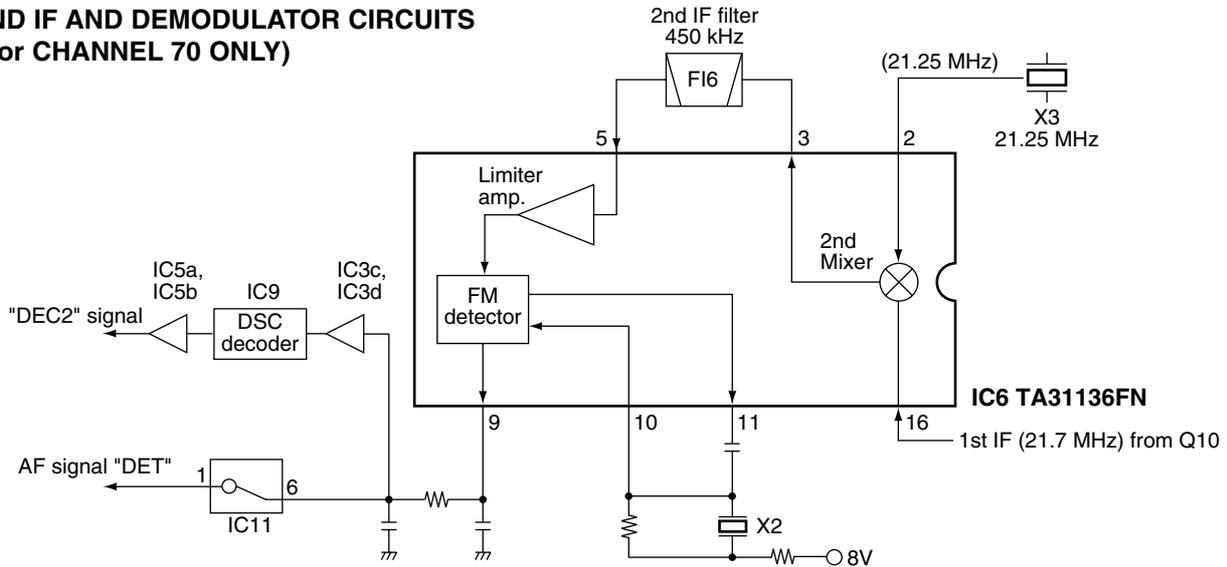
**• OTHER CHANNELS CIRCUIT**

The 1st IF signal from the 2nd IF amplifier (Q2) is applied to the 2nd mixer section of FM IF IC (IC1, pin 16), and is mixed with a 30.6 MHz 2nd LO signal, which is generated at the PLL circuit using the reference frequency (15.3 MHz), to produce a 450 kHz 2nd IF signal.

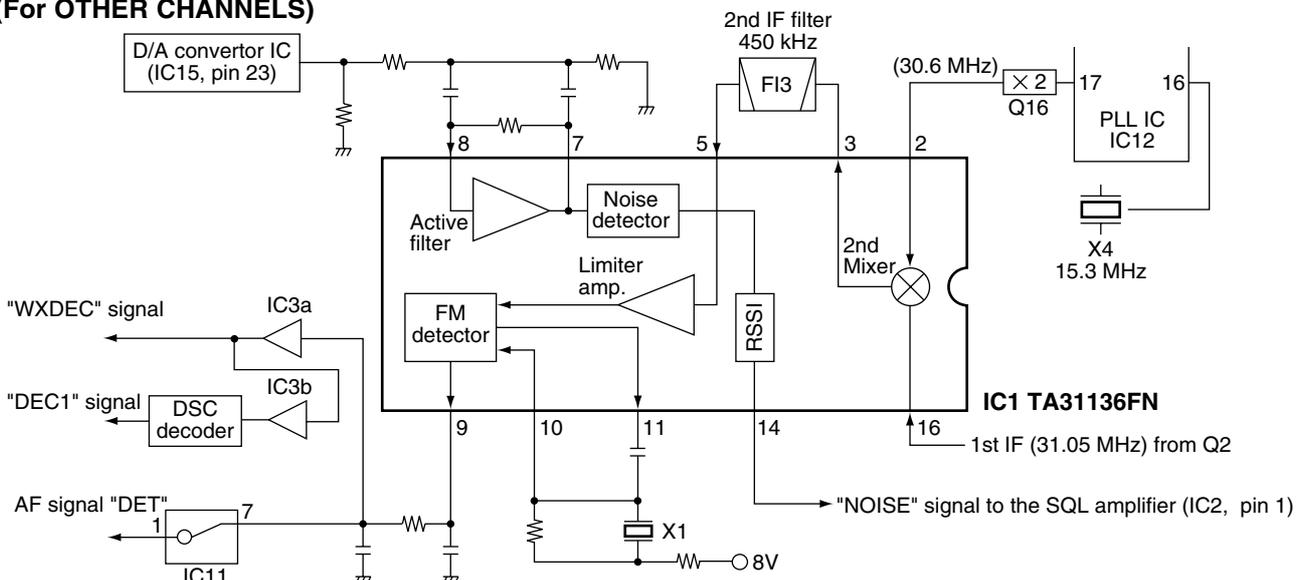
The 2nd IF signal from IC1 (pin 3) is passed through the ceramic filter (F13), which unwanted signals are suppressed, and is then applied to the 2nd IF (limiter) amplifier in IC1 (pin 5). The signal is applied to the FM detector section in IC1 for demodulating into AF signals.

The FM detector circuit employs a quadrature detection method (linear phase detection), which uses a ceramic discriminator (X1) for phase delay to obtain a non-adjusting circuit. The detected signal from IC1 (pin 9) is applied to the AF circuit.

**• 2ND IF AND DEMODULATOR CIRCUITS (For CHANNEL 70 ONLY)**



**• 2ND IF AND DEMODULATOR CIRCUITS (For OTHER CHANNELS)**



#### 4-1-5 AF AMPLIFIER CIRCUIT (AF UNIT)

The AF amplifier circuit amplifies the demodulated signals to drive a speaker. The AF circuit includes an AF mute circuit for the squelch.

AF signals from the FM IF ICs (channel 70; IC6, pin 9, other channels IC1, pin 9) are passed through the analog switch (IC7, pins 10, 11) via the "DET" signal, and are applied to the de-emphasis circuit (R31, C41). The de-emphasis circuit is an integrated circuit with frequency characteristic of  $-6$  dB/octave.

The signals pass through the bandpass filter (Q11, Q12), and are then applied to the AF mute switch (Q11). The signals passed through the [VOLUME] control (VR unit; R1), and are then applied to the AF power amplifier (IC3, pin 1) to obtain 5 W AF audio output power. The amplified AF signals drive the internal speaker as "SP+" signal directly or external speaker as "AF" signal via the RL2.

#### 4-1-6 SQUELCH CIRCUIT (MAIN AND LOGIC UNITS)

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

A portion of the AF signals from the FM IF IC (IC1, pin 9) is passed through C89, and is applied to the D/A converter (IC15, pin 24) to control the amplitude. The signal is applied to the FM IF IC's active filter section (IC1, pin 8). The active filter section amplifies and filters noise components. The filtered signals are applied to the noise detector section and output from pin 14 as the "SQL" signal. The "SQL" signal is amplified at the DC amplifier (IC2) and applied to the main CPU (LOGIC unit; IC1, pin 104) as the "SQL" signal. The main CPU compares "SQL" voltage with "SQLV" voltage from the SQL board, and outputs the "MICM" and "RMUTE" signals to toggle the AF mute switches (Q7, Q13).

### 4-2 TRANSMITTER CIRCUITS

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

The microphone amplifier circuit amplifies audio signals with  $+6$  dB/octave pre-emphasis from the microphone to a level needed at the modulation circuit.

- **USING HM-136**

The AF signals from the microphone (ACC unit; HM-136) are amplified at the microphone amplifier (IC6a) via the analog switch (IC4, pins 11, 10) as "MIC" signal. A capacitor (C77) and resistor (R73) are connected to the microphone amplifier to obtain the pre-emphasis characteristics.

- **USING HM-127**

The AF signals from the microphone (ACC unit; HM-127) are amplified at the microphone amplifier (IC6a) via the analog switch (connecting option1 jack: IC16, pins 2, 3, 4; connecting option2 jack: IC16, pins 4, 9, 10) as "AF/MIC1" or "AF/MIC2" signals. A capacitor (C77) and resistor (R73) are connected to the microphone amplifier to obtain the pre-emphasis characteristics.

The amplified signals are applied to the IDC amplifier (IC8a, pin 2) via the analog switch (IC7, pins 2, 3, 9), and are then passed through the splatter filter (IC8b) to suppress unwanted 3 kHz or higher signals. The filtered signals are applied to the modulation circuit.

#### 4-2-2 MODULATION CIRCUIT (MAIN UNIT)

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

The audio signals from the splatter filter (IC8b) are passed through the D/A converter IC (IC15, pins 11, 12), and are then applied to the modulation circuit. The applied signals change the reactance of the varactor diode (D37), and modulate the oscillated signal at the TX-VCO (Q18).

#### 4-2-3 PRE-DRIVE AND YGR AMPLIFIERS CIRCUIT (MAIN UNIT)

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

The output signal from VCO circuit is amplified at the buffer amplifiers (Q19 and Q27), and is applied to the TX/RX switch (D43). The transmit signal from the TX/RX switch is amplified at the pre-drive (Q28) and YGR (Q30) amplifiers to obtain an approximate 50 mW signal level. The amplified signal is then applied to the RF power amplifier (IC13).

#### 4-2-4 POWER AMPLIFIER CIRCUIT (MAIN UNIT)

The power amplifier circuit amplifies the driver signal to an output power level.

IC13 is a power module which has amplification output capabilities of about 35 W with 50 mW input. The output signal from IC13 (pin 1) is passed through the antenna switching circuit (D46) and is then applied to the antenna connector via the low-pass filter (L1, L2, L89, C1, C3, C5, C361, C364).

### 4-2-5 APC CIRCUIT (MAIN UNIT)

The APC (Automatic Power Controller) circuit stabilizes the TX output power.

The RF output signal from the power amplifier (IC13) is detected at the power detector circuit (D47, D48) and is applied to APC controller. The applied voltage compares to "PCON" signal from the D/A converter IC (IC15, pin 14), and then outputs the differential bias voltage for power amplifier (IC13, pin 3). Thus the APC circuit maintains a constant output power.

## 4-3 PLL CIRCUITS

### 4-3-1 GENERAL

The PLL circuit provides stable oscillation of the transmit frequency and receive 1st LO frequency. The PLL circuit compares the phase of divided VCO frequency with the reference frequency. The PLL output frequency is controlled by the crystal oscillator and divided ratio of the programmable divider.

IC12 is a dual PLL IC, which controls both TX and RX VCO circuits, and contains a prescaler, programmable counter, programmable divider, phase detector, charge pump and etc.

The PLL circuit, using a one chip PLL IC (IC12), directly generates the transmit frequency and receive 1st IF frequency with VCOs. The PLL IC sets the divided ratio based on serial data from the main CPU, and compares the phases of VCO signals with the reference oscillator frequency. The PLL IC detects the out-of-step phase and outputs from pins 8 and 13 for TX and RX, respectively. The reference frequency (15.3 MHz) is oscillated at the reference oscillator (X4).

### 4-3-2 TX AND CHANNEL 70 (RX) LOOPS

The generated signal at the TX-VCO/CHANNEL 70-VCO (Q18, D39, D40) enters the PLL IC (IC2, pin 2) and is divided at the programmable divider section and is then applied to the phase detector section.

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

The pulse-type signal is converted into DC voltage (lock voltage) at the loop filter (R217–R219, C247, C249, C278), and is then applied to the varactor diodes (D39, D40) of the TX-VCO to stabilize the oscillated frequency.

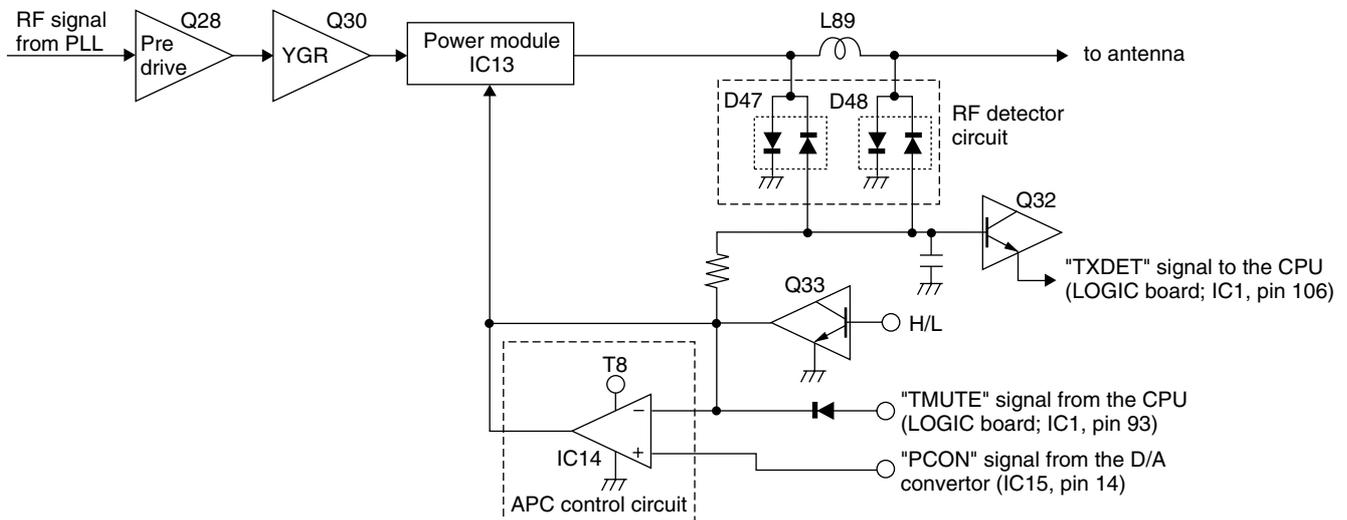
### 4-3-3 OTHER CHANNELS (RX) LOOP

The generated signal at the RX-VCO (Q12, D32, D33) enters the PLL IC (IC2, pin 19) and is divided at the programmable divider section and is then applied to the phase detector section.

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

The pulse-type signal is converted into DC voltage (lock voltage) at the loop filter (R182, R213, R214, C225, C248), and is then applied to the varactor diodes (D32, D33) of the RX-VCO to stabilize the oscillated frequency. The lock voltage from the loop filter is amplified at the buffer amplifier (Q23), and is then applied to the RF circuit.

## • APC CIRCUIT



**4-3-4 VCO CIRCUIT (MAIN UNIT)**

**• TX-VCO/CHANNEL 70-VCO (RX) CIRCUITS**

The VCO outputs from TX-VCO/CHANNEL 70-VCO (Q18) are amplified at the buffer amplifiers (Q19 and Q27), and are applied to the TX/RX switch circuit (D42, D43). The receiver LO signal is applied to the 1st mixer circuit for CHANNEL 70 (D21, L48, L49) passing through a low-pass filter (L51, L52, C150–C152), and the transmitter signal is applied to the pre-drive amplifier (Q28). A portion of the VCO output signal is re-applied to the PLL IC (IC2, pin 2) via the buffer amplifier (Q15).

**• OTHER CHANNELS-VCO (RX) CIRCUITS**

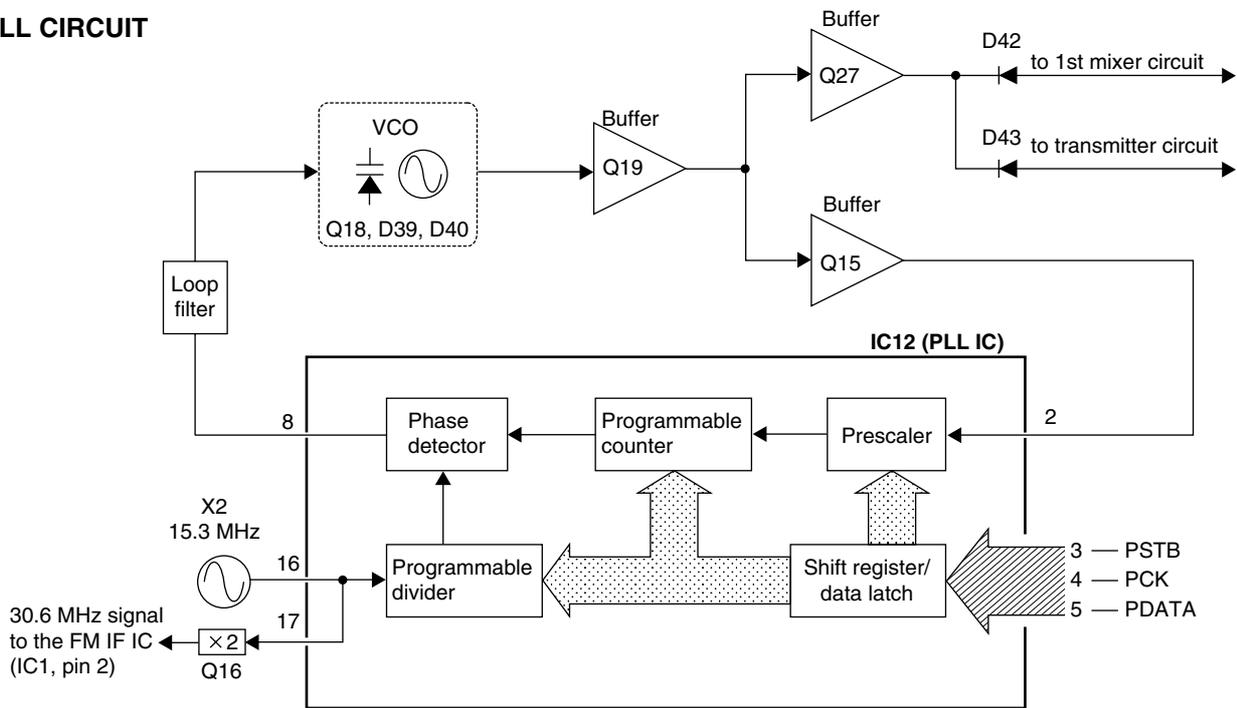
The VCO outputs from OTHER CHANNELS-VCO (Q12) are amplified at the buffer amplifiers (Q13 and Q23). The receiver LO signal is applied to the 1st mixer circuit for OTHER CHANNELS (D11, L18, L19) passing through a low-pass filter (L21, L22, C52–C54). A portion of the VCO output signal is re-applied to the PLL IC (IC2, pin 2 or pin 19) via the buffer amplifier (Q19).

**4-4 DSC CIRCUITS**

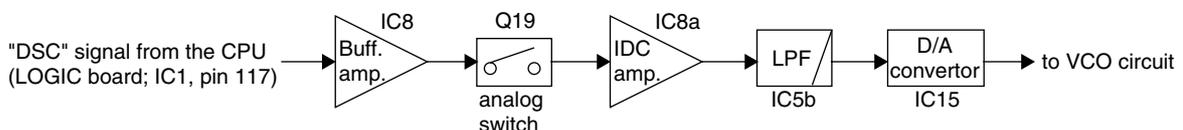
**4-4-1 DSC MODULATION CIRCUIT (LOGIC, AF AND MAIN UNITS)**

The ATIS signal from the CPU (LOGIC unit; IC1, pin 117) is applied to the buffer amplifier (AF unit; Q18) as "DSC" signal. The signal passes through the analog switch (AF unit; IC7, pin 1), and then applied to IDC amplifier (AF unit; IC8a). Then, the amplified signal is applied to the transmitter circuit.

**• PLL CIRCUIT**



**• DSC CIRCUIT**



The signals passed through the splatter filter (AF unit; IC8b) to suppress unwanted 3 kHz or higher signals. The filtered signals are then applied to the TX modulation circuit via the D/A converter IC (MAIN unit; IC15, pins 11, 12) as a DSC modulation signal "MOD".

**4-5 LOGIC CIRCUITS**

**4-5-1 MAIN UNIT**

**• CPU**

IC1 is a 8 bit single chip micro-computer, which contains LCD driver, serial I/O, timer, A/D converter, programmable I/O, ROM and RAM.

**• SYSTEM CLOCK CIRCUIT**

X1 is a crystal oscillator, which oscillates 9.8304 MHz system clock for the main CPU (IC1).

**• RESET CIRCUIT**

IC2 is a reset IC, which outputs a reset signal ("LOW" pulse) to main CPU (IC1, pin 79) when turning transceiver power ON.

**4-6 POWER SUPPLY CIRCUITS****4-6-1 VOLTAGE LINE (MAIN UNIT)**

LINE	DESCRIPTION
13.8	The 13.8 V from the connected DC power supply.
HV	Same voltage as the HV line which is passed through the [PWR] switch (LOGIC unit; S1).
HVS	Same voltage as the HVS line which is passed through the power controller (AF unit; RL1).
VCC	Same voltage as the 13.8 V line, and is applied to the AF power amplifiers (AF unit; IC3, IC10), LOGIC unit, etc.
8V	Common 8 V converted from the VCC line at the +8V regulator circuit (AF unit; IC1). The output voltage is applied to the T8 controller (MAIN unit; Q36, Q36), +5 regulator (AF unit; IC2), R8 regulator (AF unit; Q1, Q2), etc.
5V	Common 5 V converted from the 8V line at the +5 regulator circuit (AF unit; IC2). The output voltage is applied to the buffer amplifiers (AF unit; IC19, Q14), expander ICs (AF unit; IC17, IC18), etc.
T8	Transmit 8 V controlled by the T8 control circuit (MAIN unit; Q35, Q36) using the "SEND" signal from main CPU. The output voltage is applied to the pre-drive (MAIN unit; Q28), YGR amplifier (MAIN unit; Q30), APC controller (MAIN unit; IC14), etc.
R8	Receive 8 V controlled by the R8 control circuit (AF unit; Q1, Q2) using the RCV signal from main CPU. The controlled voltage is applied to the bandpass filter (AF unit; Q11, Q12), buffer and IF amplifiers (AF unit; Q2 and Q23), etc.

**4-7 PORT ALLOCATIONS****4-7-1 EXPANDER IC (AF unit; IC18)**

Pin number	Port name	Description
4	MICS2	Outputs HM-127/2 control signal. High : While transmitting via the HM-127/2.
5	MICS1	Outputs HM-127/1 control signal. High : While transmitting via the HM-127/1.
6	SPS2	Outputs HM-127/2 control signal. High : While receiving via the HM-127/2.
7	SPS1	Outputs HM-127/1 control signal. High : While receiving via the HM-127/1.
11	SP	Outputs the internal speaker (FRONT unit; SP1) control signal. High : The speaker is activating.
12	BPLVL	Outputs beep audio level control signal. Low : Beep audio level is maximum.
13	RCV	Outputs the R8 regulator (AF unit; Q1, Q2) control signal. High : While receiving.
14	HLC	Outputs the Hailer speaker TX/RX select signal. High : While transmitting via the Hailer speaker.

**4-7-2 EXPANDER IC (AF unit; IC17)**

Pin number	Port name	Description
4	STRU	Outputs scrambler unit bypass control signal. High : Bypassing the scrambler unit.
5	AFSUB	Outputs sound signals to the HM-127. High : Sounding from HM-127.
6	INCMH	Outputs voice signals from IC-M602 to HM-127 using intercom function. High : While receiving.
7	INCHM	Outputs voice signals from HM-127 to IC-M602 using intercom function. High : While transmitting.
11	MIC/DSC	Outputs MIC/DSC modulation circuit control signal. High : While the DSC signal is modulated.
12	HAILIN	Outputs the microphone select signal. High : While using the hailer speaker.
13	FOGC	Outputs fog horn control signal. High : Fog horn is ON.
14	HAILOUT	Outputs the microphone select signal. High : While using the HM-136.

4-7-3 CPU (LOGIC BOARD; IC1)

Pin number	Port name	Description															
7	UNLK	Input port for PLL unlock signal from the PLL IC (MAIN unit; IC12, pin 7). High : While PLL is unlocked.															
25	EDATA	I/O port for the data signals to the EEPROM (IC4, pin 5).															
28	ECK	Outputs a clock signal to the EEPROM (IC4, pin 6).															
34	DEC3	Input port for the decode signal for channel 70 receiver.															
38	DEC1	Input port for the ATIS/DSC decode signals.															
39	BEEP	Outputs beep audio signals.															
58	DATAMC	I/O port for the cloning data from the transceiver.															
59	DATACM	I/O port for the cloning data to the transceiver.															
63	DATAMH1	I/O port for the communicating signal from the transceiver to the microphone (HM-127/1).															
64	DATAH1M	I/O port for the communicating signal from the microphone (HM-127/1) to the transceiver.															
66	DATANM	I/O port for the GGA signals															
69	DATAMN	I/O port for the NMEA data.															
70	PDATA	Outputs a data signal to the PLL IC (MAIN unit; IC12, pin 5).															
71	PCK	Outputs a clock signal to the PLL IC (MAIN unit; IC12, pin 4).															
74	OPTIN	Outputs the voice scrambler unit (UT-112) detecting signal. Low : While UT-112 is connecting.															
91	RMUTE	Outputs RX muting signal. High : While RX signal is muting.															
93	TMUTE	Outputs transmit mute signal. High : While TX muting.															
94	SEND	Outputs T8 regulator control signal. High: While transmitting.															
95	H/L	Output port for RF output power (High or Low) select signal. Low : While Low power is selected.															
97 98	ATT1 ATT2	Output RX attenuator control signals. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>ATT level</th> <th>OFF</th> <th>ON (1)</th> <th>ON (2)</th> <th>MAX.</th> </tr> </thead> <tbody> <tr> <td>ATT1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td> </tr> <tr> <td>ATT2</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	ATT level	OFF	ON (1)	ON (2)	MAX.	ATT1	1	1	0	1	ATT2	1	0	1	1
ATT level	OFF	ON (1)	ON (2)	MAX.													
ATT1	1	1	0	1													
ATT2	1	0	1	1													
103	WXDEC	Input port for the weather alert signal.															
104	SQL	Input port for the FM IF IC (MAIN unit; IC1, pin 14)'s noise amplifier detecting signal.															

Pin number	Port name	Description
105	LBAT	Input port for the low-battery detecting signal. Low battery indicator appears when the battery becomes less than 2.58 V
106	TXDET	Input port for transmit detecting signal.
107	TEMP	Input port for the inside temperature detecting signal.
111-114	DIAL1-DIAL4	Input ports for the dial data signals.
115	PTT	Input port for the HM-136's PTT button detecting signal. Low : While PTT button is pushed.
116	HANG	Input port for the microphone hanger detecting signal Low : The microphone on hook.
117	DSC	Outputs ATIS/DSC encode signals.
120	SCON	Outputs the voice scrambler unit (UT-112) control signal.
121	OPSTB	Outputs a strobe signal to the voice scrambler unit (UT-112).
124	DASTB	Outputs a strobe signal to the PLL IC (MAIN unit; IC12, pin 3).
125	PSTB	Outputs a strobe signal to the D/A convertor IC (MAIN unit; IC15, pin 6).
126	DATAH2M	I/O port for the communicating signal from the microphone (HM-127/2) to the transceiver.
127	DATAMH2	I/O port for the communicating signal from the transceiver to the microphone (HM-127/2).

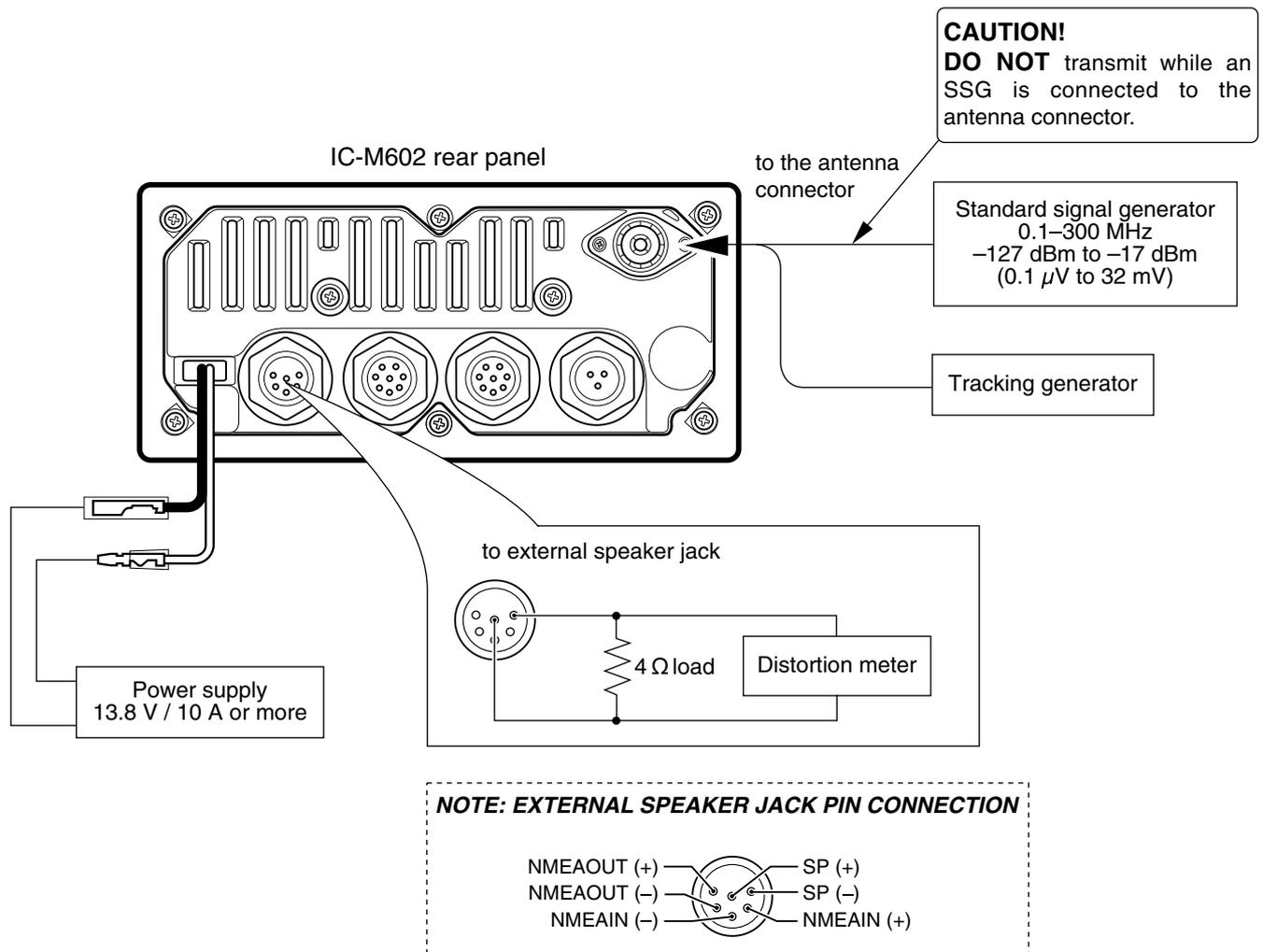
## SECTION 5 ADJUSTMENT PROCEDURES

### 5-1 PREPARATION

#### ■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE	EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.8 V DC Current capacity : 10 A or more	Standard signal generator (SSG)	Frequency range : 0.1–300 MHz Output level : 0.1 $\mu$ V–32 mV (–127 to –17 dBm)
External speaker	Input impedance : 4 $\Omega$ Capacity : 5 W or more	DC voltmeter	Input impedance : 50 k $\Omega$ /V DC or better
Tracking generator	Frequency range : 100–300 MHz Output level : 0.1 $\mu$ V–32 mV (–127 dBm to –17 dBm)	Distortion meter	Frequency range : 1 kHz $\pm$ 10 % Measuring range : 1–100 %

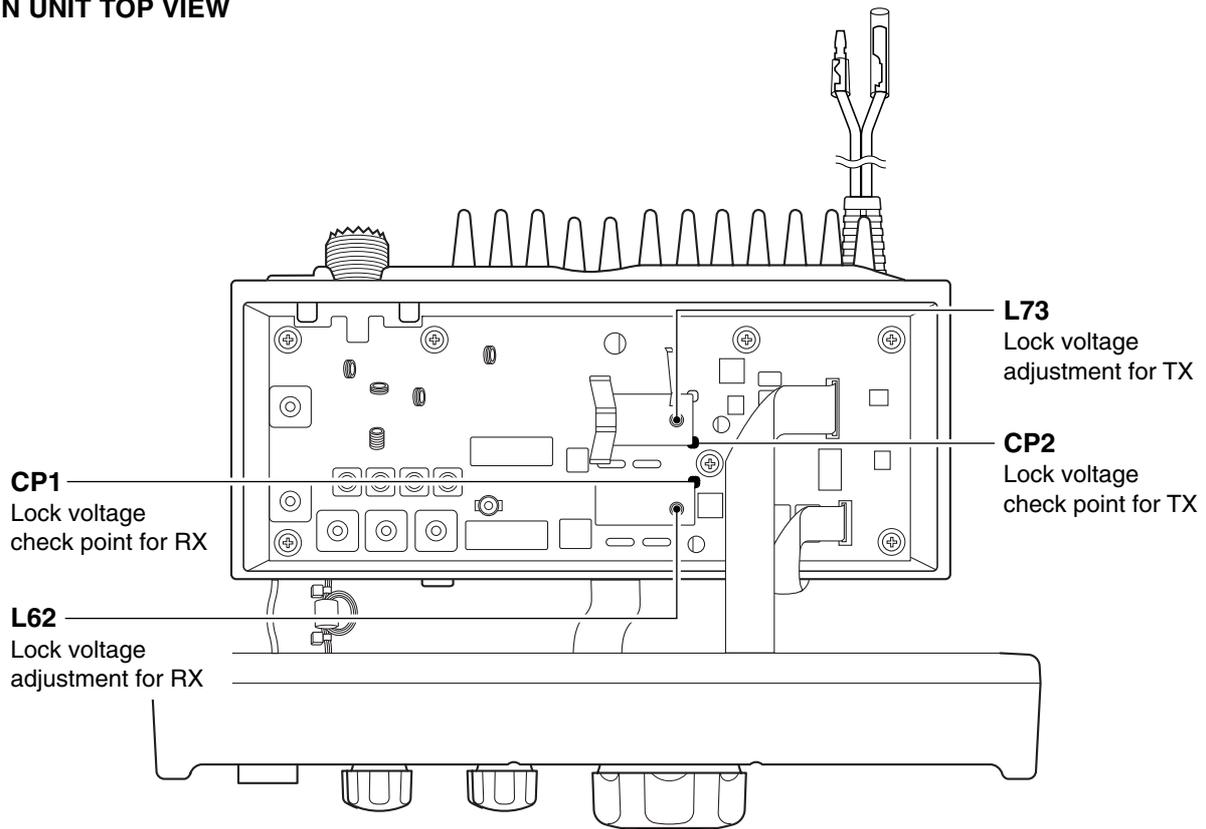
#### ■ CONNECTION



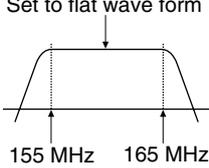
5-2 PLL ADJUSTMENTS

ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
LOCK VOLTAGE	1 • Operating channel : ch P2 • Receiving	MAIN	Connect a digital multi-meter or oscilloscope to check point CP1.	3.8 V – 4.0 V	MAIN	L62
	2 • Operating channel : ch P2 • Output power : Low • Transmitting		Connect a digital multi-meter or oscilloscope to check point CP2.			L73
	3 • Operating channel : ch 70 • Receiving					2.7–3.7 V

• MAIN UNIT TOP VIEW

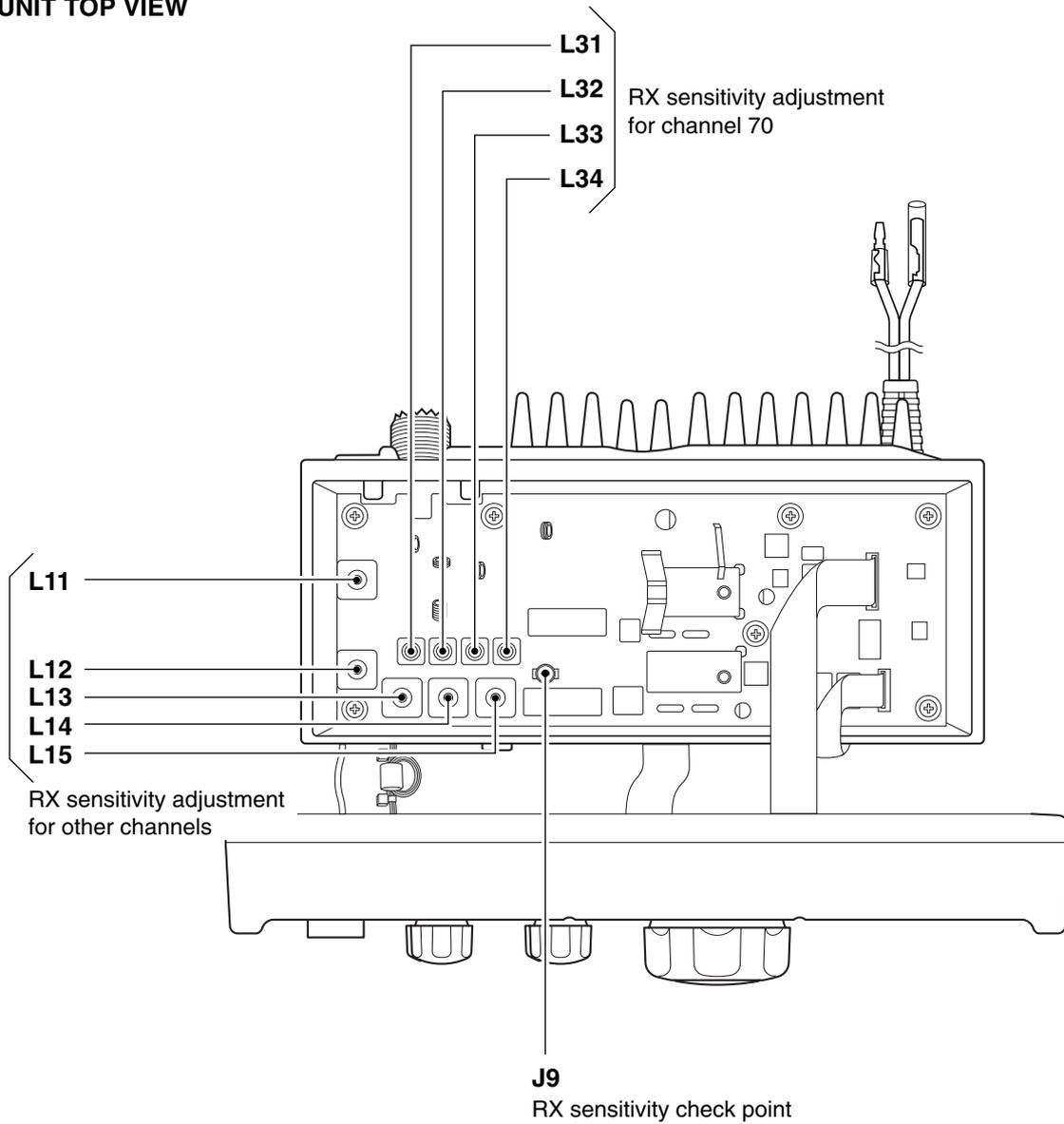


## 5-3 RECEIVER ADJUSTMENTS

ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
SENSITIVITY (Except channel 70)	1 <ul style="list-style-type: none"> <li>• Operating channel : ch 16</li> <li>• Connect a tracking generator's output to the antenna connector and set as: Level : 7.1 mV* (-30 dBm)</li> </ul>	MAIN	Connect a tracking generator's input to the MAIN unit; J3.	Set the flat wave form as shown below.  Set to flat wave form 	MAIN	L11 L12 L13 L14 L15
(Channel 70)	2 <ul style="list-style-type: none"> <li>• Operating channel : ch 16</li> <li>• Connect an SSG to the antenna connector and set as: Frequency : 156.800 MHz Level : 10 <math>\mu</math>V* (-97 dBm) Modulation : 1 kHz Deviation : <math>\pm</math>3.5 kHz</li> <li>• Set the internal speaker OFF in the SET mode, and connect a distortion meter with a 4 <math>\Omega</math> load to [EXT SP] receptacle.</li> <li>• Receiving</li> </ul>	MAIN	Connect a DC voltmeter to check point CP3.	Maximum voltage	MAIN	L31 L32 L33 L34

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

• MAIN UNIT TOP VIEW



## SECTION 6 PARTS LIST

### 6-1 IC-M602

#### [SQL BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
R1	7210002360	VARIABLE	TP96N97-15F-10KB-1301
EP1	0910055532	PCB	B 5885B

#### [VR BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
R1	7210003080	VARIABLE	TP96N97-15F-10KA-2345
W1	8900011710	CABLE	OPC-1186
EP1	0910055522	PCB	B 5884B

#### [CONNECT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
J1	6510022440	CONNECTOR	LTW-8MP-C <LIA>
J2	6510022440	CONNECTOR	LTW-8MP-C <LIA>
J3	6510023320	CONNECTOR	LTWD-06PMMP-LC <LIA>
J4	6510023090	S.CONNECTOR	20FLT-SM1-TB
J5	6510014960	S.CONNECTOR	B2B-ZR-SM3-TF
EP1	0910055492	PCB	B 5881B

#### [DIAL UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
S1	2250000470	ENCODER	EVQ-V9C00116E
W1	8900011720	CABLE	OPC-1187
EP1	0910055512	PCB	B 5883B

#### [FRONT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
SP1	2510001210	SPEAKER	066P0804 <KS>
W1	8900011470	CABLE	OPC-1177 <LIA>
W2	7120000470	JUMPER	ERDS2T0
W3	7120000470	JUMPER	ERDS2T0

#### [LOGIC BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1140010584	S.IC	HD64F2633F25 (FX2577A-4)
IC2	1110005770	S.IC	S-80942CNMC-G9C-T2
IC3	1130007450	S.IC	RTC-4553A
IC4	1140009240	S.IC	HN58X24128FP1
IC5	1180002420	S.IC	S-818A33AUC-BGN-T2
Q1	1510000580	S.TRANSISTOR	2SA1362-GR (TE85R)
Q2	1590000430	S.TRANSISTOR	DTC144EUA T106
Q4	1590000430	S.TRANSISTOR	DTC144EUA T106
Q5	1590000430	S.TRANSISTOR	DTC144EUA T106
Q6	1590000430	S.TRANSISTOR	DTC144EUA T106
Q7	1590000720	S.TRANSISTOR	DTA144EUA T106
Q8	1590000430	S.TRANSISTOR	DTC144EUA T106
Q11	1590000430	S.TRANSISTOR	DTC144EUA T106
Q12	1590000720	S.TRANSISTOR	DTA144EUA T106
Q13	1590000720	S.TRANSISTOR	DTA144EUA T106
Q15	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q16	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q17	1520000460	S.TRANSISTOR	2SB1132 T100 R
D1	1160000070	S.DIODE	DAN202K T146
D2	1750000150	S.DIODE	DA204K T146
D3	1750000150	S.DIODE	DA204K T146
D4	1750000150	S.DIODE	DA204K T146
D5	1730002360	S.ZENER	MA8062-M (TX)
D11	1720000360	S.DIODE	HSU88TRF
D12	1720000360	S.DIODE	HSU88TRF
D13	1720000360	S.DIODE	HSU88TRF
D14	1720000360	S.DIODE	HSU88TRF
D15	1720000360	S.DIODE	HSU88TRF
D16	1720000360	S.DIODE	HSU88TRF
D17	1720000360	S.DIODE	HSU88TRF
D18	1720000360	S.DIODE	HSU88TRF
X1	6050011090	S.XTAL	CR-691 (9.8304 MHz)
R1	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R3	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R4	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R5	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R6	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R7	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R8	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R9	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R10	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R14	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R15	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R16	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R21	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R22	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R23	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R24	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R25	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R27	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R28	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R29	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R31	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R32	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R33	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R35	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R36	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R37	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R38	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R39	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R40	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R41	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R42	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)

S.=Surface mount

## [LOGIC BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
R43	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R44	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R45	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R46	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R47	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R48	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R49	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R50	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R51	7030003330	S.RESISTOR	ERJ3GEYJ 121 V (120 Ω)
R52	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R53	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R55	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R56	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R57	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R58	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R61	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R62	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R63	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R64	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R65	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R81	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R82	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R83	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R84	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
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)
R91	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R92	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R93	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R94	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R95	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R96	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R97	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R98	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R101	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R102	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R103	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
C1	4550006660	S.TANTALUM	ECST1CC226R
C2	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C3	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C4	4030008890	S.CERAMIC	C1608 JB 1H 273K-T
C5	4510005860	S.ELECTROLYTIC	ECEV1HA2R2SR
C6	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C7	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C8	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C9	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C11	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C12	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C15	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C16	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C17	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C18	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C19	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C20	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C21	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C25	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C26	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C27	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C31	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C32	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C33	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C34	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C35	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C37	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C38	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C39	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C40	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C41	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C42	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C45	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C46	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C47	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C48	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C49	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C50	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C51	4030007130	S.CERAMIC	C1608 CH 1H 101J-T
C52	4030007130	S.CERAMIC	C1608 CH 1H 101J-T

## [LOGIC BOARD]

REF NO.	ORDER NO.	DESCRIPTION	
C61	4550006460	S.TANTALUM	ECST1VX225R
C62	4550006460	S.TANTALUM	ECST1VX225R
C63	4550006460	S.TANTALUM	ECST1VX225R
C64	4550006460	S.TANTALUM	ECST1VX225R
C65	4550007000	S.TANTALUM	ECST1VY105R
C66	4550007000	S.TANTALUM	ECST1VY105R
C67	4550007000	S.TANTALUM	ECST1VY105R
C68	4550007000	S.TANTALUM	ECST1VY105R
C69	4550007000	S.TANTALUM	ECST1VY105R
C101	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C102	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C103	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C104	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C105	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C106	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C107	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C108	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C109	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C110	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C111	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C112	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C113	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C114	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C115	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C116	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C117	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C118	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C119	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C120	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C121	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C122	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C123	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C124	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C125	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C126	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C127	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C128	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C129	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C130	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C131	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C132	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C133	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C134	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C135	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C136	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C137	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C138	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C139	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C140	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C141	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C142	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C143	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
J1	6510023360	S.CONNECTOR	26FLT-SM1-TB
J2	6510023510	S.CONNECTOR	28FLT-SM1-TB
J3	6510023390	S.CONNECTOR	27FLZ-SM1-TB
J4	6510023260	S.CONNECTOR	B6B-PH-SM3-TB
J5	6510021860	CONNECTOR	BH-800.8 <LTC>
J6	6510019420	S.CONNECTOR	B8B-ZR-SM3-TF
J7	6510019420	S.CONNECTOR	B8B-ZR-SM3-TF
DS1	5030002390	LCD	HLM7784-010100
DS2	5040002660	S.LED	FY1101F-TR (LED)
DS3	5040002660	S.LED	FY1101F-TR (LED)
DS4	5040002660	S.LED	FY1101F-TR (LED)
DS5	5040002660	S.LED	FY1101F-TR (LED)
DS6	5040002660	S.LED	FY1101F-TR (LED)
DS7	5040002660	S.LED	FY1101F-TR (LED)
DS8	5040002310	S.LED	SML-311YTT86
DS9	5040002310	S.LED	SML-311YTT86
DS10	5040002310	S.LED	SML-311YTT86
DS11	5040002310	S.LED	SML-311YTT86
DS12	5040002310	S.LED	SML-311YTT86
DS13	5040002310	S.LED	SML-311YTT86
DS14	5040002310	S.LED	SML-311YTT86
DS15	5040002310	S.LED	SML-311YTT86
DS16	5040002310	S.LED	SML-311YTT86
DS17	5040002310	S.LED	SML-311YTT86
DS18	5040002310	S.LED	SML-311YTT86
DS19	5040002310	S.LED	SML-311YTT86

S.=Surface mount

**[LOGIC BOARD]**

REF NO.	ORDER NO.	DESCRIPTION	
DS20	5040002660	S.LED	FY1101F-TR (LED)
DS21	5040002660	S.LED	FY1101F-TR (LED)
DS22	5040002660	S.LED	FY1101F-TR (LED)
DS23	5040002660	S.LED	FY1101F-TR (LED)
DS24	5040002660	S.LED	FY1101F-TR (LED)
DS25	5040002660	S.LED	FY1101F-TR (LED)
S1	2230000250	SWITCH	SPPH22014A
BT1	3020000110	LITHIUM	CR2032
EP1	0910055503	PCB	B 5882C

**[AF UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1110002030	IC	TA7808S
IC2	1180000420	S.IC	TA78L05F (TE12R)
IC3	1110003090	IC	LA4425A
IC4	1130007690	S.IC	BU4066BCF-E2
IC5	1130007690	S.IC	BU4066BCF-E2
IC6	1110003750	S.IC	M5218AFP 600C
IC7	1130007690	S.IC	BU4066BCF-E2
IC8	1110003750	S.IC	M5218AFP 600C
IC9	1110003750	S.IC	M5218AFP 600C
IC10	1110005800	IC	TA8225L
IC11	1110004520	S.IC	M5222FP 600C
IC12	1170000350	S.IC	PC357N6T
IC13	1130011120	S.IC	BU4584BFV-E2
IC14	1110002400	S.IC	NJM2107F-TE1
IC16	1130007690	S.IC	BU4066BCF-E2
IC17	1130007570	S.IC	BU4094BCFV-E2
IC18	1130007570	S.IC	BU4094BCFV-E2
IC19	1130007430	S.IC	TC7S14FU (TE85R)
IC20	1110002400	S.IC	NJM2107F-TE1
Q1	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q2	1590000430	S.TRANSISTOR	DTC144EUA T106
Q7	1530002550	S.TRANSISTOR	2SC3326-B (TE85R)
Q8	1590000430	S.TRANSISTOR	DTC144EUA T106
Q9	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q11	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q12	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q13	1590001390	S.FET	2SJ144-Y (TE85R)
Q18	1560000810	S.FET	2SK1069-4-TL
Q21	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q22	1530002280	S.TRANSISTOR	2SC4081 T106 S
Q23	1590000430	S.TRANSISTOR	DTC144EUA T106
Q24	1560000810	S.FET	2SK1069-4-TL
Q25	1530002280	S.TRANSISTOR	2SC4081 T106 S
Q26	1510000510	S.TRANSISTOR	2SA1576A T106R
Q28	1560000810	S.FET	2SK1069-4-TL
Q29	1530002280	S.TRANSISTOR	2SC4081 T106 S
Q30	1510000510	S.TRANSISTOR	2SA1576A T106R
D1	1790000700	DIODE	DSA3A1
D2	1750000550	S.DIODE	1SS355 TE-17
D5	1160000080	S.DIODE	DAP202K T146
D6	1750000150	S.DIODE	DA204K T146
D7	1750000550	S.DIODE	1SS355 TE-17
D8	1730002360	S.ZENER	MA8062-M (TX)
D11	1750000550	S.DIODE	1SS355 TE-17
D12	1750000550	S.DIODE	1SS355 TE-17
D13	1750000150	S.DIODE	DA204K T146
D14	1730002360	S.ZENER	MA8062-M (TX)
D15	1730002360	S.ZENER	MA8062-M (TX)
R1	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R11	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R13	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)

**[AF UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	
R14	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R15	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R16	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R17	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R18	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R19	7030000100	S.RESISTOR	MCR10EZHJ 4.7 Ω (4R7)
R20	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R21	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R31	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R32	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R33	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R34	7030003770	S.RESISTOR	ERJ3GEYJ 564 V (560 kΩ)
R35	7030003710	S.RESISTOR	ERJ3GEYJ 184 V (180 kΩ)
R36	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R37	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R38	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R39	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R40	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R41	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R42	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R43	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R44	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R45	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R46	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R47	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R48	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R49	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R50	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R51	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R52	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R53	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R54	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R55	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R56	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R57	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R59	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R60	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R61	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R62	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R63	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R64	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R67	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R68	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R69	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R71	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R72	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R73	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R74	7030003750	S.RESISTOR	ERJ3GEYJ 394 V (390 kΩ)
R75	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R76	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R79	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R80	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R81	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R82	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R83	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R84	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R85	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R86	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R87	7030003690	S.RESISTOR	ERJ3GEYJ 124 V (120 kΩ)
R88	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R89	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R90	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R91	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R92	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R94	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R95	7030003650	S.RESISTOR	ERJ3GEYJ 563 V (56 kΩ)
R96	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R97	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R197	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R198	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R199	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R201	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R202	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R203	7030003790	S.RESISTOR	ERJ3GEYJ 824 V (820 kΩ)
R204	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R205	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R206	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R207	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R208	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R209	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R210	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R211	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)

S.=Surface mount

## [AF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R212	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R213	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R214	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R215	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R216	7030000020	S.RESISTOR	MCR10EZHZ 1 Ω (010)
R217	7030000020	S.RESISTOR	MCR10EZHZ 1 Ω (010)
R218	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R219	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R221	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R222	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R223	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R224	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R225	7030003210	S.RESISTOR	ERJ3GEYJ 120 V (12 Ω)
R226	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R230	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R231	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R232	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R233	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R244	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R245	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R260	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R261	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R262	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R263	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R264	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R265	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R267	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R268	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R269	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R270	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R271	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R272	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R273	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R274	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R275	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R276	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R277	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R314	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R315	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R316	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R317	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R318	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
C1	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C2	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C3	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C4	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C5	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C6	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C7	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C8	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C9	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C10	4510004590	ELECTROLYTIC	16 MV 470 HC
C11	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C12	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C21	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C22	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C23	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C24	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C25	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C26	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C27	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C31	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C32	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C33	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C34	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C35	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C36	4510004590	ELECTROLYTIC	16 MV 470 HC
C37	4510004590	ELECTROLYTIC	16 MV 470 HC
C38	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C39	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C41	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C42	4030008890	S.CERAMIC	C1608 JB 1H 273K-T
C43	4030008890	S.CERAMIC	C1608 JB 1H 273K-T
C44	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C45	4030010040	S.CERAMIC	C1608 JB 1H 561K-T
C46	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C47	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C48	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C49	4030010770	S.CERAMIC	C1608 JB 1H 392K-T
C50	4030012600	S.CERAMIC	C2012 JB 1A 105M-T

## [AF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C51	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C52	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C53	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C55	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C56	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C58	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C59	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C60	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C61	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C63	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C64	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C71	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C72	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C73	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C75	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C76	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C77	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C78	4030007020	S.CERAMIC	C1608 CH 1H 120J-T
C79	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C80	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C81	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C82	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C83	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C84	4030007050	S.CERAMIC	C1608 CH 1H 220J-T
C85	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C86	4030010770	S.CERAMIC	C1608 JB 1H 392K-T
C87	4030007120	S.CERAMIC	C1608 CH 1H 820J-T
C89	4030008900	S.CERAMIC	C1608 JB 1H 333K-T
C90	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C91	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C92	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C93	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C94	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C95	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C96	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C97	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C98	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C200	4510005870	S.ELECTROLYTIC	ECEV1HA3R3SR
C201	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C202	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C204	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C205	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C206	4510005870	S.ELECTROLYTIC	ECEV1HA3R3SR
C207	4510004600	ELECTROLYTIC	16 MV 1000 HC
C208	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C209	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C210	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C211	4510004640	S.ELECTROLYTIC	ECEV1CA470SP
C212	4510006240	S.ELECTROLYTIC	ECEV1CA221P
C213	4510006240	S.ELECTROLYTIC	ECEV1CA221P
C214	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C215	4030008920	S.CERAMIC	C1608 JB 1H 473K-T
C216	4030008920	S.CERAMIC	C1608 JB 1H 473K-T
C217	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C219	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C220	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C221	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C222	4030006880	S.CERAMIC	C1608 JB 1H 472K-T
C225	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C227	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C228	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C231	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C237	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C251	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C254	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C260	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C261	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C262	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C263	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C265	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C266	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C267	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C271	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C272	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C273	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C274	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C275	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C276	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C277	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C278	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C279	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C280	4030006860	S.CERAMIC	C1608 JB 1H 102K-T

S.=Surface mount

[AF UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C281	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C282	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C283	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C301	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
RL1	6330001670	RELAY	FTR-P3CP012W1
RL2	6330001620	RELAY	FTR-F3AA012E
RL3	6330001460	RELAY	FTR-F1CA012V
J1	6510023510	S.CONNECTOR	28FLT-SM1-TB
J2	6510022620	S.CONNECTOR	10FMN-BMTTR-A-TBT
J3	6510016430	S.CONNECTOR	53307-1491
J4	6510023090	S.CONNECTOR	20FLT-SM1-TB
J5	6510023420	CONNECTOR	SB4P-HVQ-A
J6	6510019370	S.CONNECTOR	B3B-ZR-SM3-TF
J7	6510018960	S.CONNECTOR	B2B-PH-SM3-TB
J8	6510003380	CONNECTOR	B02B-EH-S
J9	6510020800	CONNECTOR	OP-10
J10	6510020800	CONNECTOR	OP-10
W1	7030000010	S.JUMPER	MCR10EZHZ JPW (000)
W5	7030003860	S.JUMPER	ERJ3GE JPW V
W6	8900011870	CABLE	OPC-1203
EP1	0910055484	PCB	B 5880D
EP2	6910013370	S.BEAD	BLM18BB221SN1D (BLM11B221SB)
EP3	6910013370	S.BEAD	BLM18BB221SN1D (BLM11B221SB)

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1110003490	S.IC	TA31136FN (D,EL)
IC2	1120002830	S.IC	NJM2125F-TE1
IC3	1110003780	S.IC	NJM2902V-TE1
IC5	1130011120	S.IC	BU4584BFV-E2
IC6	1110003490	S.IC	TA31136FN (D,EL)
IC9	1110003650	S.IC	NJM2211M-TE1
IC11	1130005640	S.IC	TC4W53F (TE12L)
IC12	1130007610	S.IC	μPD3140GS-E1 (DS8)
IC13	1150002080	IC	RA35H1516M-01
IC14	1110002400	S.IC	NJM2107F-TE1
IC15	1190000350	S.IC	M62363FP-650C
Q1	1580000750	S.FET	3SK294 (TE85L)
Q2	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q3	1560000990	S.FET	PMBFJ310
Q4	1560000990	S.FET	PMBFJ310
Q7	1580000750	S.FET	3SK294 (TE85L)
Q8	1560000990	S.FET	PMBFJ310
Q9	1560000990	S.FET	PMBFJ310
Q10	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q11	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q12	1560000990	S.FET	PMBFJ310
Q13	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q14	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q15	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q16	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q17	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q18	1560000990	S.FET	PMBFJ310
Q19	1530002600	S.TRANSISTOR	2SC4215-O (TE85R)
Q21	1590000720	S.TRANSISTOR	DTA144EUA T106
Q22	1590000430	S.TRANSISTOR	DTC144EUA T106
Q23	1530003420	S.TRANSISTOR	2SC5110-O (TE85R)
Q27	1530003420	S.TRANSISTOR	2SC5110-O (TE85R)
Q28	1530002240	S.TRANSISTOR	2SC3775-3-TB
Q29	1590000430	S.TRANSISTOR	DTC144EUA T106
Q30	1530002240	S.TRANSISTOR	2SC3775-3-TB
Q32	1590000660	S.TRANSISTOR	DTC144TU T106
Q33	1590000430	S.TRANSISTOR	DTC144EUA T106
Q35	1510000920	S.TRANSISTOR	2SA1577 T106 Q
Q36	1590000430	S.TRANSISTOR	DTC144EUA T106

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
D1	1710001080	DIODE	XB15A308
D3	1750000580	S.DIODE	1SV307 (TPH3)
D4	1750000580	S.DIODE	1SV307 (TPH3)
D11	1750000430	S.DIODE	HSB88WSTR
D12	1790001330	S.ZENER	MA8036-L (TX)
D15	1790000980	S.DIODE	MA742 (TX)
D21	1750000430	S.DIODE	HSB88WSTR
D22	1790001330	S.ZENER	MA8036-L (TX)
D32	1720000810	S.VARICAP	HVC358BTRF
D33	1720000810	S.VARICAP	HVC358BTRF
D35	1720000660	S.VARICAP	1SV288 (TPH2)
D37	1720000260	S.VARICAP	1SV214 (TPH2)
D39	1720000260	S.VARICAP	1SV214 (TPH2)
D40	1720000260	S.VARICAP	1SV214 (TPH2)
D41	1790001620	S.DIODE	1SV308 (TPL3)
D42	1790000620	S.DIODE	MA77 (TX)
D43	1790000620	S.DIODE	MA77 (TX)
D44	1750000550	S.DIODE	1SS355 TE-17
D46	1710001080	DIODE	XB15A308
D47	1790000690	S.DIODE	HSM88ASR-TR
D48	1790000690	S.DIODE	HSM88ASR-TR
D49	1730002320	S.ZENER	MA8051-M (TX)
D52	1790001250	S.DIODE	MA2S111-(TX)
FI1	2030000250	MONOLITH	FL-285 IMD:-100 (31.05 MHz)
FI3	2020001840	CERAMIC	ALFYM450F=K
FI4	2030000240	MONOLITH	FL-298 IMD:-100 (21.7 MHz)
FI5	2010002330	MONOLITH	FL-298 (21.700 MHz)
FI6	2020001840	CERAMIC	ALFYM450F=K
X1	6070000190	S.DISCRIMINATOR	CDBC450KCAY24-R0
X2	6070000190	S.DISCRIMINATOR	CDBC450KCAY24-R0
X3	6050011590	S.XTAL	CR-744 (21.25 MHz)
X4	6050011070	S.XTAL	CR-664A (15.300 MHz)
L1	6110001600	COIL	LA-243
L2	6110001600	COIL	LA-243
L3	6110001600	COIL	LA-243
L4	6110001580	COIL	LA-238
L5	6200003550	S.COIL	MLF1608A 4R7K-T
L6	6200003550	S.COIL	MLF1608A 4R7K-T
L11	6190001590	COIL	E526HNA-100312
L12	6190001590	COIL	E526HNA-100312
L13	6190001590	COIL	E526HNA-100312
L14	6190001590	COIL	E526HNA-100312
L15	6190001590	COIL	E526HNA-100312
L18	6130002960	S.COIL	617DB-1327=P3
L19	6130002960	S.COIL	617DB-1327=P3
L20	6200001830	S.COIL	NL 322522T-100J
L21	6200002430	S.COIL	NL 252018T-082J
L22	6200008090	S.COIL	LQW2BHN68NJ01L
L25	6200002860	S.COIL	NL 252018T-4R7J
L26	6200010520	S.COIL	C2520C-R75G (0.75U)
L31	6190001580	COIL	E544ENAS-100014
L32	6190001580	COIL	E544ENAS-100014
L33	6190001580	COIL	E544ENAS-100014
L34	6190001580	COIL	E544ENAS-100014
L48	6130002960	S.COIL	617DB-1327=P3
L49	6130002960	S.COIL	617DB-1327=P3
L50	6200001830	S.COIL	NL 322522T-100J
L51	6200002160	S.COIL	ELJNC 82NK-F
L52	6200008090	S.COIL	LQW2BHN68NJ01L
L55	6200002860	S.COIL	NL 252018T-4R7J
L56	6200010440	S.COIL	C2520C-1R2G (1.2U)
L57	6200010510	S.COIL	ACL2520L-3R9K-T
L61	6200003100	S.COIL	NL 322522T-3R9J-3
L62	6130002370	S.COIL	LB-258
L63	6200002990	S.COIL	NL 322522T-2R2J-3
L64	6200009560	S.COIL	MLG1608B R10J-T
L65	6200009560	S.COIL	MLG1608B R10J-T
L66	6200006990	S.COIL	ELJRE 56NG-F
L67	6200009560	S.COIL	MLG1608B R10J-T
L68	6200001980	S.COIL	NL 252018T-1R0J
L69	6200001980	S.COIL	NL 252018T-1R0J
L70	6200006990	S.COIL	ELJRE 56NG-F
L72	6200003320	S.COIL	NL 322522T-3R3J-3
L73	6130002370	S.COIL	LB-258
L74	6200003090	S.COIL	NL 322522T-2R7J-3
L75	6200009560	S.COIL	MLG1608B R10J-T

S.=Surface mount

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
L79	6200003280	S.COIL	NL 252018T-2R2J
L81	6200009560	S.COIL	MLG1608B R10J-T
L83	6200009560	S.COIL	MLG1608B R10J-T
L84	6200005740	S.COIL	ELJRE 47NG-F
L85	6200002430	S.COIL	NL 252018T-082J
L86	6200002430	S.COIL	NL 252018T-082J
L87	6200002600	S.COIL	NL 252018T-047J
L88	6200002600	S.COIL	NL 252018T-047J
L89	6110001600	COIL	LA-243
L90	6170000230	COIL	LW-25
L91	6200008950	S.COIL	LQH32MM221K21L
R1	7030003670	S.RESISTOR	ERJ3GEYJ 823 V (82 kΩ)
R3	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)
R4	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R5	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R6	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R11	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R12	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R13	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R14	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R15	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R16	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R17	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R18	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R19	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R31	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R32	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R33	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R34	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R37	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R38	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R39	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R40	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R41	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R43	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R47	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R48	7030003740	S.RESISTOR	ERJ3GEYJ 334 V (330 kΩ)
R49	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R50	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R51	7030003430	S.RESISTOR	ERJ3GEYJ 821 V (820 Ω)
R53	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R59	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R61	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R62	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R63	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R64	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R65	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R66	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R71	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R72	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R73	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R74	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R75	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R76	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R77	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R80	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R85	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R86	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R87	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R95	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R96	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R97	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R98	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R104	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 Ω)
R105	7030003230	S.RESISTOR	ERJ3GEYJ 180 V (18 Ω)
R106	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 Ω)
R107	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R108	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R111	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R112	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R113	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R116	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R120	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R121	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R122	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R123	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R124	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R142	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R143	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R144	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R145	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R146	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R147	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R148	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R149	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R150	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R151	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R154	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R155	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R157	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R158	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R159	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R160	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R161	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R163	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R181	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R182	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R185	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R186	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R188	7030003380	S.RESISTOR	ERJ3GEYJ 331 V (330 Ω)
R189	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R190	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R191	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R192	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R193	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R194	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R195	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R196	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R201	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R202	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R203	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R204	7030003300	S.RESISTOR	ERJ3GEYJ 680 V (68 Ω)
R205	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R207	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R208	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R209	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R212	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R213	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R214	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R217	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R218	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R219	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R220	7030003260	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)
R221	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R222	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R226	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R227	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R228	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R230	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R232	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R233	7030003660	S.RESISTOR	ERJ3GEYJ 683 V (68 kΩ)
R236	7030001150	S.RESISTOR	MCR50JZHJ 150 Ω (151)
R238	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R239	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R241	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R242	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R243	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R244	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R245	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R251	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R252	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R253	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R254	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R255	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R256	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R257	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R258	7030003270	S.RESISTOR	ERJ3GEYJ 390 V (39 Ω)
R259	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R260	7030003390	S.RESISTOR	ERJ3GEYJ 391 V (390 Ω)
R262	7030003200	S.RESISTOR	ERJ3GEYJ 100 V (10 Ω)
R263	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R264	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R265	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R267	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R268	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R271	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R272	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R273	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R274	7030003310	S.RESISTOR	ERJ3GEYJ 820 V (82 Ω)
R277	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R278	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R282	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)

S.=Surface mount

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R283	7030003460	S.RESISTOR	ERJ3GEYJ 152 V (1.5 kΩ)
R284	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R285	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R286	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R287	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R288	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R290	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R291	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R292	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R293	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R296	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R297	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R299	7410000950	S.ARRAY	EXB-V8V 102JV
R302	7510001660	S.THRMISTOR	NTCG16 4LH 473KT
R306	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R307	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R308	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R309	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R310	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R311	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R312	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R313	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R314	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R315	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R316	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R317	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R318	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R319	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R320	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R321	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R322	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R323	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R324	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R325	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R329	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R330	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R331	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R332	7030003660	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R333	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R334	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R335	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R336	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R337	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R338	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R341	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R342	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
C1	4030011070	S.CERAMIC	GRM31M2C2H5R0CY21L
C3	4030011190	S.CERAMIC	GRM31M2C2H270JV01L
C5	4030011170	S.CERAMIC	GRM31M2C2H180JV01L
C6	4030017200	S.CERAMIC	GRM31BR32J102KY01L
C7	4030011210	S.CERAMIC	GRM31M2C2H330JV01L
C8	4030011190	S.CERAMIC	GRM31M2C2H270JV01L
C9	4030018350	S.CERAMIC	GRM31A5C2J151JW01D
C11	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C13	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C14	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C21	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C23	4030007070	S.CERAMIC	C1608 CH 1H 330J-T
C24	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C25	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C26	4030007170	S.CERAMIC	C1608 CH 1H 221J-T
C27	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C28	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C29	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C30	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C32	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C33	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C34	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C35	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C36	4030009520	S.CERAMIC	C1608 CH 1H 020B-T
C37	4030009350	S.CERAMIC	C1608 CH 1H 3R5B-T
C38	4030006990	S.CERAMIC	C1608 CH 1H 080D-T
C39	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T
C40	4030009520	S.CERAMIC	C1608 CH 1H 020B-T
C41	4030009350	S.CERAMIC	C1608 CH 1H 3R5B-T
C42	4030006990	S.CERAMIC	C1608 CH 1H 080D-T
C43	4030009510	S.CERAMIC	C1608 CH 1H 010B-T
C44	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C45	4030007020	S.CERAMIC	C1608 CH 1H 120J-T
C47	4030007100	S.CERAMIC	C1608 CH 1H 560J-T

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C48	4030009550	S.CERAMIC	C1608 CH 1H 2R5B-T
C49	4030009520	S.CERAMIC	C1608 CH 1H 020B-T
C52	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C53	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C54	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C55	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C56	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C57	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C59	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C60	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C61	4030018400	S.CERAMIC	CM105 CH 330G 50AT
C62	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T
C63	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C64	4030011770	S.CERAMIC	C1608 CH 1H 060B-T
C67	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C68	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C69	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C70	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C71	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C72	4030007130	S.CERAMIC	C1608 CH 1H 101J-T
C73	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C74	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C77	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C78	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C79	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C80	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C81	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C83	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C84	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C86	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C87	4030007160	S.CERAMIC	C1608 CH 1H 181J-T
C88	4030007160	S.CERAMIC	C1608 CH 1H 181J-T
C89	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C90	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C91	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C92	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C93	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C94	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C95	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C96	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C98	4550006700	S.TANTALUM	ECST1AY106R
C99	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C100	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C102	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C103	4030008850	S.CERAMIC	C1608 JB 1H 123K-T
C104	4030008900	S.CERAMIC	C1608 JB 1H 333K-T
C105	4030008900	S.CERAMIC	C1608 JB 1H 333K-T
C106	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C113	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C114	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C150	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C151	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C152	4030008560	S.CERAMIC	C1608 CH 1H 300J-T
C155	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C157	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C158	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C159	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C160	4030018400	S.CERAMIC	CM105 CH 330G 50AT
C161	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C164	4030009910	S.CERAMIC	C1608 CH 1H 040B-T
C165	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C166	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C167	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C168	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C169	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C170	4030007130	S.CERAMIC	C1608 CH 1H 101J-T
C171	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C172	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C175	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C176	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C177	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C178	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C179	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C182	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C183	4030007100	S.CERAMIC	C1608 CH 1H 560J-T
C184	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C186	4550006700	S.TANTALUM	ECST1AY106R
C187	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C190	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C191	4030008850	S.CERAMIC	C1608 JB 1H 123K-T
C192	4030008900	S.CERAMIC	C1608 JB 1H 333K-T
C193	4030008900	S.CERAMIC	C1608 JB 1H 333K-T

S.=Surface mount

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C194	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C195	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C196	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C197	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C199	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C200	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C201	4030008920	S.CERAMIC	C1608 JB 1H 473K-T
C202	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C204	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C205	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C206	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C207	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C208	4340000180	S.MYLAR	ECHU 1C 333JB5
C221	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C222	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C223	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C224	4550006700	S.TANTALUM	ECST1AY106R
C225	4550000510	S.TANTALUM	TESVA 1V 473M1-8L
C227	4030009520	S.CERAMIC	C1608 CH 1H 020B-T
C228	4030008270	S.CERAMIC	C1608 UJ 1H 180J-T
C229	4030008270	S.CERAMIC	C1608 UJ 1H 180J-T
C230	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C231	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C232	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C233	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C235	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C236	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C237	4030007020	S.CERAMIC	C1608 CH 1H 120J-T
C239	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C240	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C241	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C242	4030009990	S.CERAMIC	C1608 CH 1H 200J-T
C243	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C244	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C245	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C246	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C247	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C248	4550000510	S.TANTALUM	TESVA 1V 473M1-8L
C249	4550006560	S.TANTALUM	ECST1CY225R
C251	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C252	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C253	4030009990	S.CERAMIC	C1608 CH 1H 200J-T
C254	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C255	4030007080	S.CERAMIC	C1608 CH 1H 390J-T
C256	4030009910	S.CERAMIC	C1608 CH 1H 040B-T
C257	4030007110	S.CERAMIC	C1608 CH 1H 680J-T
C258	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C259	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C260	4030007060	S.CERAMIC	C1608 CH 1H 270J-T
C261	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C262	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C263	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C264	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C265	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C266	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C267	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C268	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C269	4030007010	S.CERAMIC	C1608 CH 1H 100D-T
C271	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C272	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C273	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C274	4550006700	S.TANTALUM	ECST1AY106R
C275	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C276	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C277	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C278	4550000530	S.TANTALUM	TESVA 1V 104M1-8L
C280	4030009510	S.CERAMIC	C1608 CH 1H 010B-T
C281	4030009350	S.CERAMIC	C1608 CH 1H 3R5B-T
C282	4030011770	S.CERAMIC	C1608 CH 1H 060B-T
C283	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T
C284	4030009910	S.CERAMIC	C1608 CH 1H 040B-T
C285	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C286	4030007010	S.CERAMIC	C1608 CH 1H 100D-T
C287	4030007010	S.CERAMIC	C1608 CH 1H 100D-T
C288	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C289	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C290	4030009500	S.CERAMIC	C1608 CH 1H 0R5B-T
C292	4030007020	S.CERAMIC	C1608 CH 1H 120J-T
C294	4030006870	S.CERAMIC	C1608 JB 1H 222K-T
C295	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C307	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C308	4030007010	S.CERAMIC	C1608 CH 1H 100D-T

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C309	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C316	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C317	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C318	4030007030	S.CERAMIC	C1608 CH 1H 150J-T
C319	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C320	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C322	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C323	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C324	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C325	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C330	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C331	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C332	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C333	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C334	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C335	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C338	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C339	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C341	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C342	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C343	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C345	4030007050	S.CERAMIC	C1608 CH 1H 220J-T
C346	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C347	4030007080	S.CERAMIC	C1608 CH 1H 390J-T
C348	4030007040	S.CERAMIC	C1608 CH 1H 180J-T
C351	4550006700	S.TANTALUM	ECST1AY106R
C352	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C353	4510005310	S.ELECTROLYTIC	ECEV1CA220SR
C354	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C355	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C356	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C361	4030011170	S.CERAMIC	GRM31M2C2H180JV01L
C362	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C363	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C364	4030011170	S.CERAMIC	GRM31M2C2H180JV01L
C365	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C370	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C371	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C372	4550006130	S.TANTALUM	ECST1VY224R
C373	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C374	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C375	4030007050	S.CERAMIC	C1608 CH 1H 220J-T
C376	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C377	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C378	4550006700	S.TANTALUM	ECST1AY106R
C379	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C381	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C383	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C385	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C386	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C391	4550006650	S.TANTALUM	ECST1CY685R
C392	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C393	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C397	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C398	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C399	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C400	4030009520	S.CERAMIC	C1608 CH 1H 020B-T
C401	4030007170	S.CERAMIC	C1608 CH 1H 221J-T
C402	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C403	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C404	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C405	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C406	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C407	4030009920	S.CERAMIC	C1608 CH 1H 050B-T
C408	4030011770	S.CERAMIC	C1608 CH 1H 060B-T
C409	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C410	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T
C411	4030009510	S.CERAMIC	C1608 CH 1H 010B-T
C412	4030006990	S.CERAMIC	C1608 CH 1H 080D-T
C413	4030009350	S.CERAMIC	C1608 CH 1H 3R5B-T
C414	4030009560	S.CERAMIC	C1608 CH 1H R75B-T
C415	4030009560	S.CERAMIC	C1608 CH 1H R75B-T
C416	4030006990	S.CERAMIC	C1608 CH 1H 080D-T
C417	4030009350	S.CERAMIC	C1608 CH 1H 3R5B-T
C418	4030009510	S.CERAMIC	C1608 CH 1H 010B-T
C419	4030009540	S.CERAMIC	C1608 CH 1H 1R5B-T
C420	4030007020	S.CERAMIC	C1608 CH 1H 120J-T
C421	4030009530	S.CERAMIC	C1608 CH 1H 030B-T
C423	4030007100	S.CERAMIC	C1608 CH 1H 560J-T
C427	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C428	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C431	4030006860	S.CERAMIC	C1608 JB 1H 102K-T

S.=Surface mount

**[MAIN UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	
C432	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C433	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C434	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C435	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C436	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C437	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C438	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C439	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C440	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C441	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
J1	6510023360	S.CONNECTOR	26FLT-SM1-TB
J2	6510022620	S.CONNECTOR	10FMN-BMTTR-A-TBT
J3	6510007020	CONNECTOR	TMP-J01X-V6
W1	7030003860	S.JUMPER	ERJ3GE JPW V
W2	7030003860	S.JUMPER	ERJ3GE JPW V
W3	7030003860	S.JUMPER	ERJ3GE JPW V
W4	7030003860	S.JUMPER	ERJ3GE JPW V
W5	7030003860	S.JUMPER	ERJ3GE JPW V
W6	7030003860	S.JUMPER	ERJ3GE JPW V
W7	7030010840	S.JUMPER	MJP-0.2-T
W8	7030010850	S.JUMPER	MCR100JZHJ JPW
W9	7030010850	S.JUMPER	MCR100JZHJ JPW
W10	7030010850	S.JUMPER	MCR100JZHJ JPW
W11	7030010850	S.JUMPER	MCR100JZHJ JPW
W12	7030010860	JUMPER	MJP-0.6
EP1	0910055475	PCB	B 5879E
EP2	6910013370	S.BEAD	BLM18BB221SN1D
EP3	6910002160	CASE	BM7

**6-2 HM-136****[MAIN UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	
R1	7010006890	RESISTOR	R20J 12 kΩ
R2	7010006880	RESISTOR	R20J 6.8 kΩ
R3	7010006900	RESISTOR	R20J 15 kΩ
R4	7010006910	RESISTOR	R20J 33 kΩ
R5	7070001110	RESISTOR	ERG2SJ 150 <KN>
C1	4010007710	CERAMIC	HE40SJ YB 471K 50V
C2	4030017280	S.CERAMIC	C1608 CH 1H 471J-T <KN>
J1	6510022450	CONNECTOR	S07B-EH-S <KN>
MC1	7700002120	MICROPHONE	KUC2123-030245
S1	2260002330	SWITCH	SKHHLPO14A
S2	2260002340	SWITCH	SKHHAM024A
S3	2260002340	SWITCH	SKHHAM024A
S4	2260002340	SWITCH	SKHHAM024A
SP1	2510001092	SPEAKER	036D0801B <KS>
W1	9044902012	WIRE	71/98/010/X98/X98
W2	9044902012	WIRE	71/98/010/X98/X98
W3	9045995030	WIRE	71/98/020/X98/X98
W4	9045995030	WIRE	71/98/020/X98/X98
EP1	0910052553	PCB	B 5431C
EP2	9029701901	TUBE	IRRAX 0.7 (d) L=4 mm

**6-3 HM-127 (OPTIONAL MICROPHONE)****[MAIN UNIT]**

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1140009390	S.IC	μPD789405AGK-A30-9EU
IC2	1110001810	S.IC	TA7368F (TP1)
IC3	1110004490	S.IC	M62429FP 700C
IC4	1120002830	S.IC	NJM2125F-TE1
IC5	1180000420	S.IC	TA78L05F (TE12R)
IC6	1180001250	S.IC	TA7808F (TE16L)
IC7	1110005730	S.IC	S-80928CNMC
IC8	1130007420	S.IC	TC7W14FU (TE12L)
IC9	1130006220	S.IC	TC4W53FU (TE12L)
Q1	1560000810	S.FET	2SK1069-4-TL
Q2	1520000460	S.TRANSISTOR	2SB1132 T100 R
Q3	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
Q4	1590001390	S.FET	2SJ144-Y (TE85R)
Q5	1590000430	S.TRANSISTOR	DTC144EUA T106
Q6	1590000980	S.TRANSISTOR	DTB123EK T146
Q9	1560000810	S.FET	2SK1069-4-TL
Q10	1530002060	S.TRANSISTOR	2SC4081 T106 R
Q11	1510000510	S.TRANSISTOR	2SA1576A T106R
Q12	1530002850	S.TRANSISTOR	2SC4116-BL (TE85R)
D1	1750000130	S.DIODE	DA204U T106
D2	1160000060	S.DIODE	DAN202U T106
D3	1750000550	S.DIODE	1SS355 TE-17
X1	6060000750	S.CERAMIC	CSTCC4M91G53-R0
R1	7030000270	S.RESISTOR	MCR10EZHZ 120 Ω (121)
R2	7030000270	S.RESISTOR	MCR10EZHZ 120 Ω (121)
R3	7030000280	S.RESISTOR	MCR10EZHZ 150 Ω (151)

S.=Surface mount

## [MAIN UNIT]

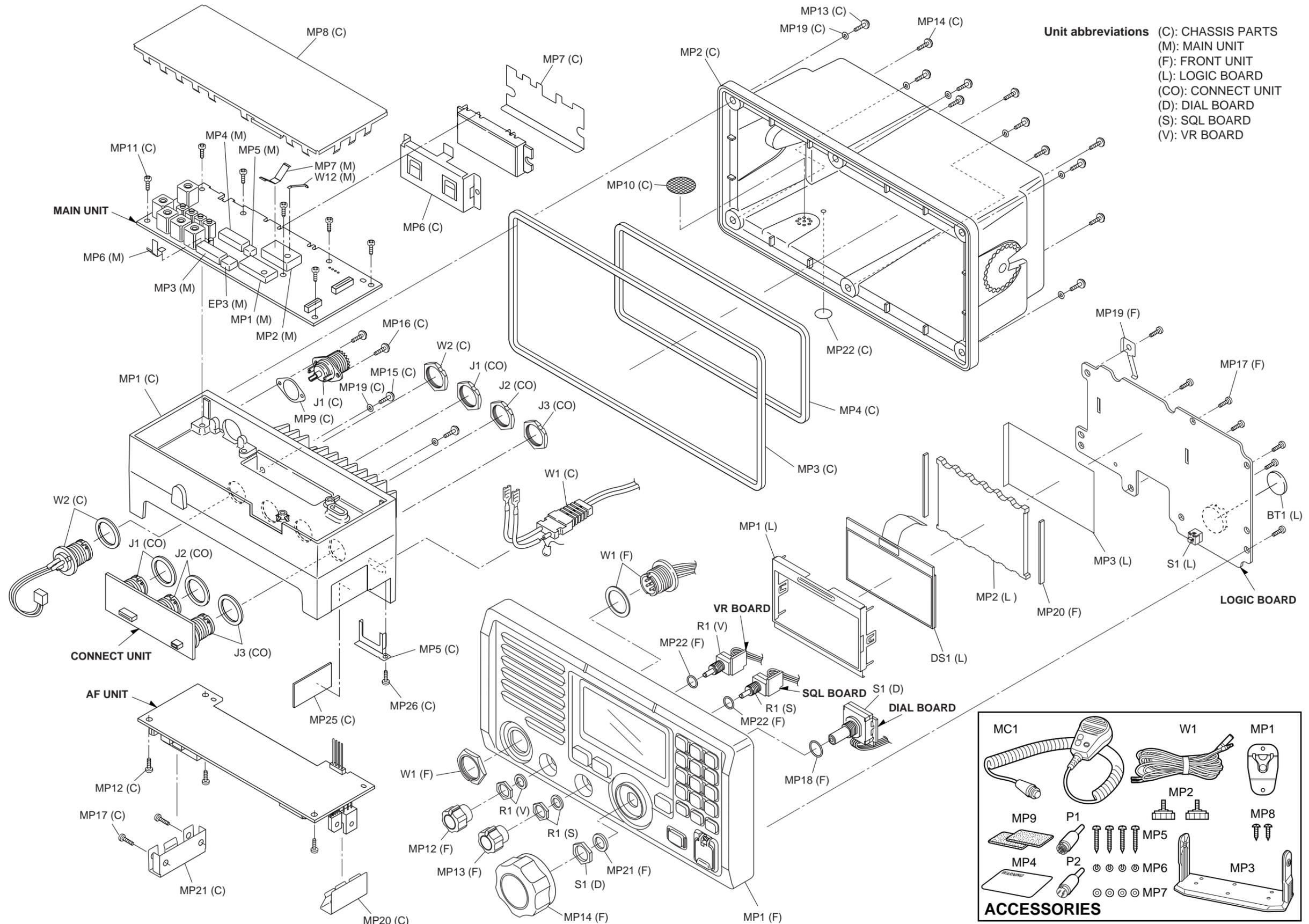
REF NO.	ORDER NO.	DESCRIPTION	
R6	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R7	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R8	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R9	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R10	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R11	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R12	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R13	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R14	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R15	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R16	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R17	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R18	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R19	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R20	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R21	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R22	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)
R23	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R24	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R25	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R26	7510001670	S.THERMISTOR	NTCG16 4BH 103KT
R27	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R28	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R30	7030003590	S.RESISTOR	ERJ3GEYJ 183 V (18 kΩ)
R31	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R32	7030004120	S.RESISTOR	ERJ3GEYJ 203 V (20 kΩ)
R33	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R34	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R35	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R36	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R37	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R38	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R39	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R40	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R41	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R42	7030003570	S.RESISTOR	ERJ3GEYJ 123 V (12 kΩ)
R43	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R44	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R45	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R46	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R47	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R50	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R51	7030003610	S.RESISTOR	ERJ3GEYJ 273 V (27 kΩ)
R52	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R53	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R54	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R55	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R56	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R57	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R58	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R59	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R60	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R61	7030003630	S.RESISTOR	ERJ3GEYJ 393 V (39 kΩ)
R62	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R63	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R64	7030003510	S.RESISTOR	ERJ3GEYJ 392 V (3.9 kΩ)
R65	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R66	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R67	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R68	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R69	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R70	7030003260	S.RESISTOR	ERJ3GEYJ 330 V (33 Ω)
R75	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
R76	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
R77	7030000180	S.RESISTOR	MCR10EZHJ 22 Ω (220)
C1	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C3	4510005430	S.ELECTROLYTIC	ECEV0JA220SR
C4	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C5	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C6	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C7	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C9	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C10	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C11	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C12	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C13	4030008920	S.CERAMIC	C1608 JB 1H 473K-T
C14	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C15	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C16	4510006220	S.ELECTROLYTIC	ECEV1CA101UP

## [MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C17	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C18	4510006250	S.ELECTROLYTIC	ECEV1CA331UP
C22	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C23	4510005430	S.ELECTROLYTIC	ECEV0JA220SR
C24	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C25	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C26	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C27	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C28	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C29	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C30	4510004630	S.ELECTROLYTIC	ECEV1CA100SR
C31	4030011810	S.CERAMIC	C1608 JB 1A 224K-T
C32	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C33	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
C34	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C35	4510005430	S.ELECTROLYTIC	ECEV0JA220SR
C36	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C37	4510005430	S.ELECTROLYTIC	ECEV0JA220SR
C38	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C39	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C40	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C41	4510006250	S.ELECTROLYTIC	ECEV1CA331UP
C42	4030008890	S.CERAMIC	C1608 JB 1H 273K-T
C44	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C45	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C46	4030011600	S.CERAMIC	C1608 JB 1E 104K-T
C47	4030006850	S.CERAMIC	C1608 JB 1H 471K-T
C50	4030006860	S.CERAMIC	C1608 JB 1H 102K-T
C51	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C52	4030007090	S.CERAMIC	C1608 CH 1H 470J-T
C53	4030006900	S.CERAMIC	C1608 JB 1H 103K-T
C54	4030012600	S.CERAMIC	C2012 JB 1A 105M-T
J1	6510019420	S.CONNECTOR	B8B-ZR-SM3-TF
J2	6510021440	S.CONNECTOR	B6B-ZR-SM3-TF
DS1	5030001900	LCD	A0119 LCD36*28.5
DS2	5040002660	S.LED	FY1101F-TR (LED)
DS3	5040002660	S.LED	FY1101F-TR (LED)
DS4	5040002310	S.LED	SML-311YTT86
DS5	5040002660	S.LED	FY1101F-TR (LED)
DS6	5040002660	S.LED	FY1101F-TR (LED)
DS7	5040002310	S.LED	SML-311YTT86
DS8	5040002310	S.LED	SML-311YTT86
DS9	5040002310	S.LED	SML-311YTT86
DS10	5040002310	S.LED	SML-311YTT86
MC1	7700002480	MICROPHONE	SKB-2746 LPC
S1	2260002710	S.SWITCH	SKQLLCE012
S2	2260002710	S.SWITCH	SKQLLCE012
S3	2260002710	S.SWITCH	SKQLLCE012
S4	2260002710	S.SWITCH	SKQLLCE012
EP1	0910053144	PCB	B 5526D
EP2	8930051120	LCD CONTACT	SRCN-2320-SP-N-W

S.=Surface mount





**7-2 HM-136**

**[CHASSIS PARTS]**

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900011480	Cable OPC-1180 [BLACK]	1
	8900011490	Cable OPC-1181 [WHITE]	1
MP1	8210017670	2352 front panel (B)-1 [BLACK]	1
	8210019241	2352 front panel (G)-1 [WHITE]	1
MP2	8210016851	2352 rear panel-1 [BLACK]	1
	8210019221	2352 rear panel (B)-1 [WHITE]	1
MP3	8930052160	2352 key	1
MP4	8930052150	2352 PTT rubber	1
MP5	8930052140	2352 PTT holder	1
MP6	8930052690	2352 mic rubber	1
MP7	8930052120	2352 rubber	1
MP8	8930052110	2352 main seal	1
MP9	8610010870	2352 hanger knob	1
MP10	8310048760	2352 R-plate	1
MP11	8310048780	2352 mic plate	1
MP12	8820001150	2352 screw	5
MP13	8850001850	ICOM washer (Y)	5
MP14	8930052340	O ring (AE)	5
MP15	8930052350	O ring (AF)	1
MP16	8930053870	2352 sheet (A)	1
MP17	8930053040	2352 SP net	1
MP18	8850001610	Spring washer M4 SUS	1
MP19	8810009260	Screw PH BT 2 × 6 NI	3
MP20	8810008900	Screw PH M3 × 6 NI	1
MP21	8810009240	Screw M4 × 10 ZK	1
MP23	8930053850	2352 SP rubber	1
MP24	8930058590	2589 A-mic sheet	1

**[MAIN UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MC1	7700002120	Microphone KUC2123-030245	1
SP1	2510001092	Speaker 036D0801B	1

**Screw abbreviations** BT: Self-tapping PH: Pan head  
 FH: Flat head ZK: Black  
 SUS: Stainless NI: Nickel  
 NI-ZU: Nickel-Zinc

**7-3 HM-127 (OPTIONAL UNIT)**

**[CHASSIS PARTS]**

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W3	8900010220	Cable OPC-997 [BLACK]	1
	8900010230	Cable OPC-998 [WHITE]	1
SP1	2510001090	Speaker 036D0801	1
MP1	8210017360	2417 front panel assembly [BLACK]	1
	8210017390	2417 front panel (A) assembly [WHITE]	1
MP3	8930053510	2417 key board	1
MP4	8930053540	2417 PTT rubber	1
MP5	8930053990	2417 PTT sheet	1
MP6	8930053550	2417 PTT holder	1
MP7	8930053520	2417 top key	1
MP8	8930053760	2417 key plate	1
MP10	8930039000	1757 sheet	1
MP11	8810009180	Screw FH BT M2 × 5 NI-ZU	3
MP12	8930053750	2417 plate	1
MP13	8210017250	2417 rear panel [BLACK]	1
	8210017300	2417 rear panel (A) [WHITE]	1
MP14	8310049970	2417 R-plate	1
MP15	8610010980	2417 hanger knob	1
MP16	8930053740	O ring (AJ)	1
MP17	8810008450	Screw M4 × 8 ZK	1
MP18	8850000490	Spring washer M4 SUS	1
MP19	8930053530	2417 rubber	1
MP20	8820001180	2417 screw 2.6 × 16	6
MP21	8930053730	O ring (AI)	6
MP23	8930054430	Film tape (C)	1
MP24	8930054440	Film tape (D)	2

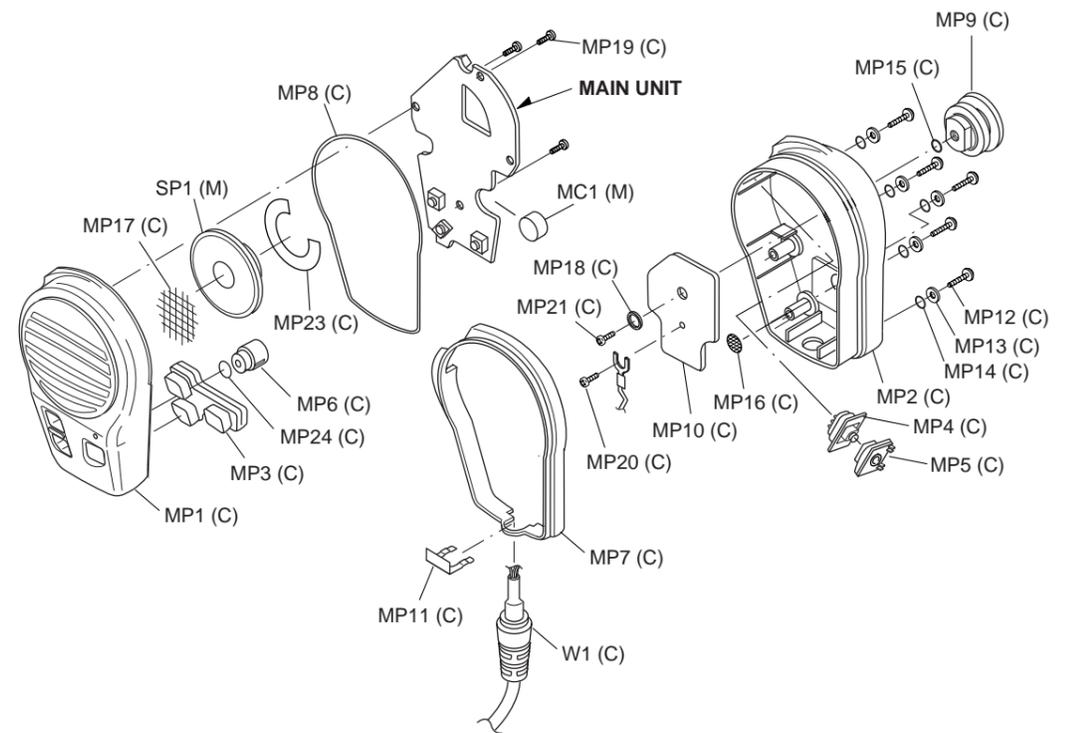
**[MAIN UNIT]**

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
DS1	5030001900	LCD A0119 (LCD 36 × 28.5)	1
EP2	8930051120	LCD contact SRCN-2320-SP-N-W	2
MC1	7700002480	Microphone SKB-2746 LPC	1
MP1	8930053780	2417 LCD holder	1
MP2	8210017240	2417 reflector	1
MP3	8310050200	2417 H-plate	1
MP4	8930039610	Thermally sheet (C)	1
MP5	8930054120	Insulate sheet (J)	2

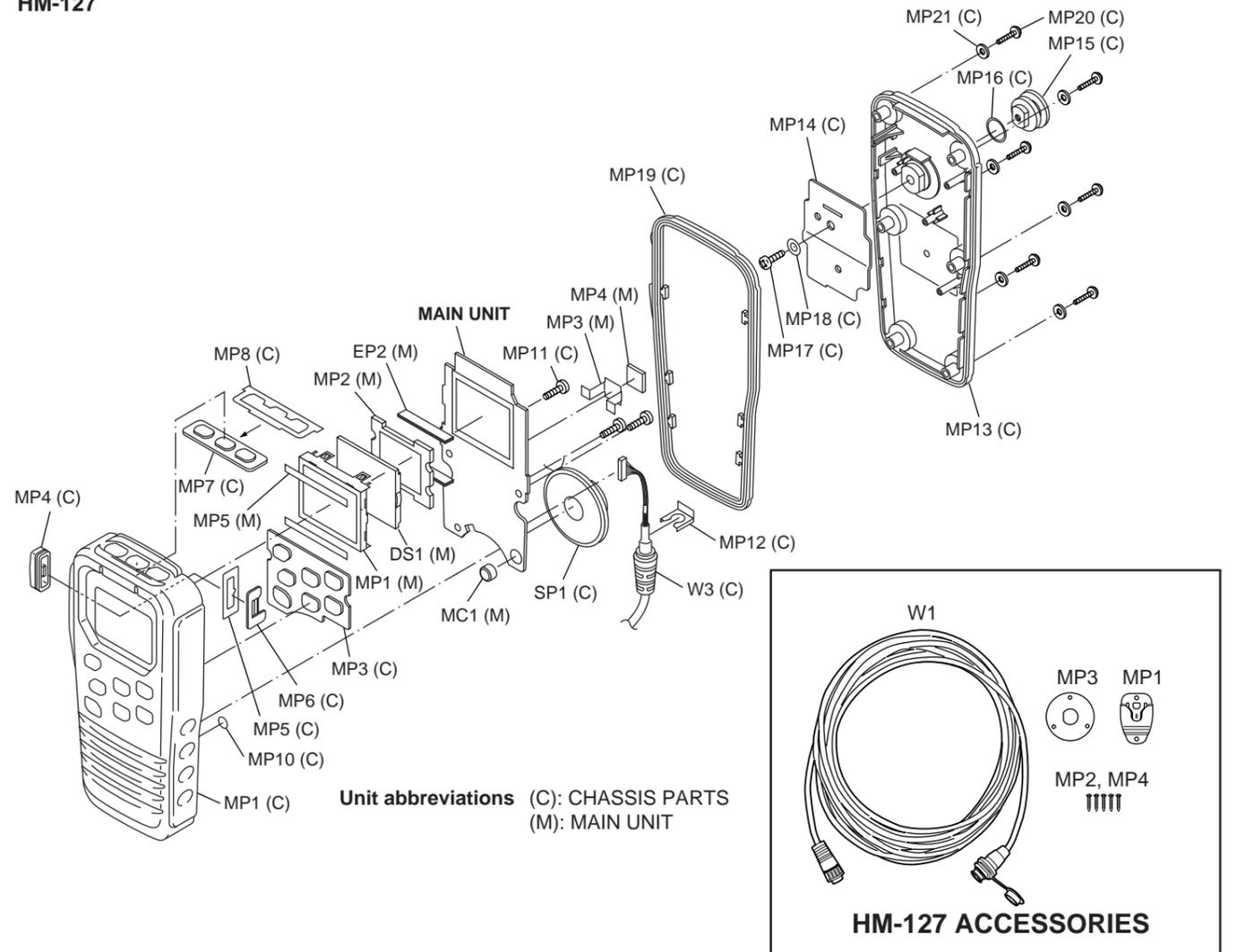
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REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W1	8900010280	Cable OPC-1000	1
MP1	8950005110	2289 mic hanger	1
MP2	8810004700	Screw PH A M3 × 16 SUS	2
MP3	8310050320	2417 C-plate	1
MP4	8810004700	Screw PH A M3 × 16 SUS	3

**HM-136**



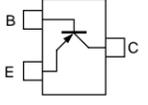
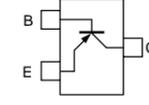
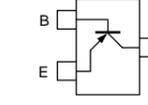
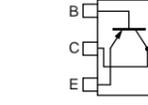
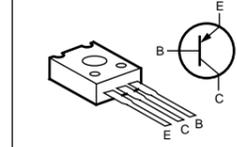
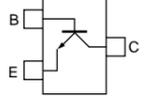
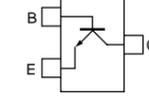
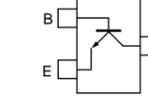
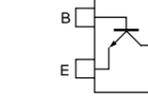
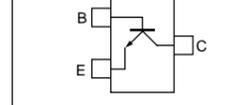
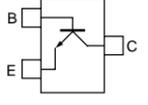
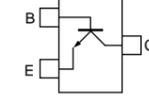
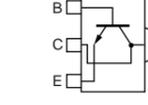
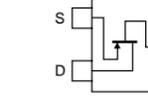
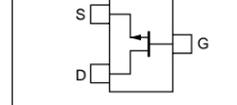
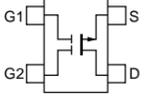
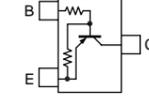
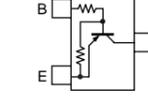
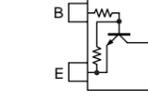
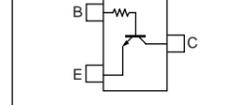
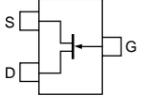
**HM-127**



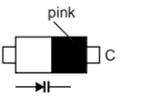
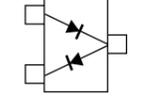
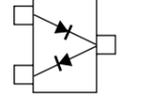
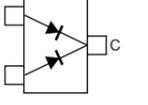
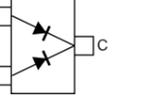
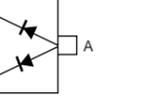
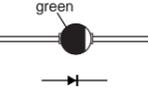
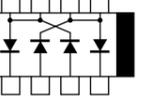
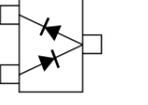
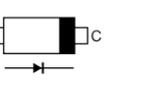
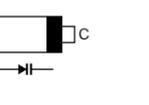
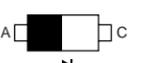
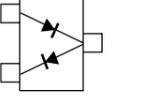
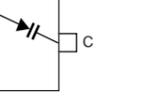
**Unit abbreviations** (C): CHASSIS PARTS (M): MAIN UNIT

## SECTION 8 SEMI-CONDUCTOR INFORMATION

### • TRANSISTORS AND FET'S

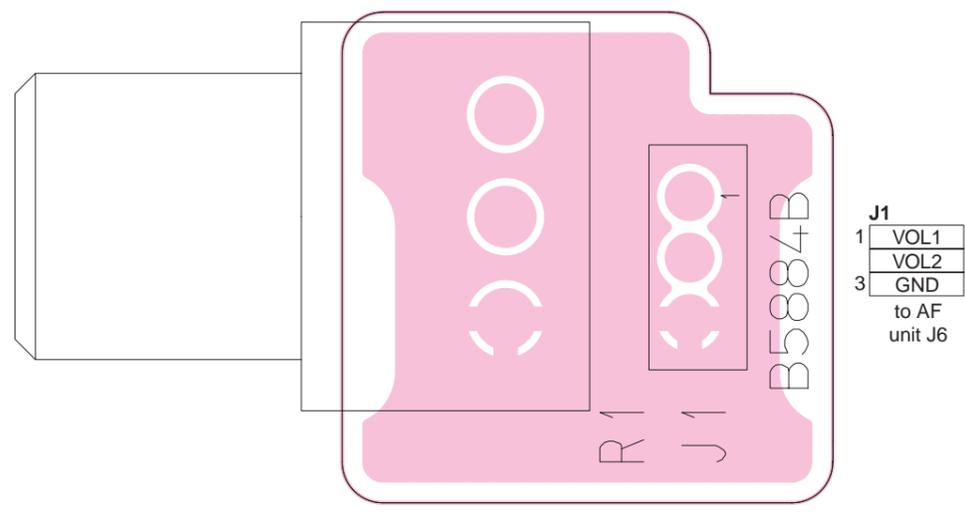
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<b>2SC3326 B</b> (Symbol: CCB) 	<b>2SC3775 3 TB</b> (Symbol: OY3) 	<b>2SC4081 T106 R</b> (Symbol: BR) 	<b>2SC4081 T106 S</b> (Symbol: BS) 	<b>2SC4116 BL</b> (Symbol: LL) 
<b>2SC4215 O</b> (Symbol: QO) 	<b>2SC5110 O</b> (Symbol: MGO) 	<b>2SD1664 Q</b> (Symbol: DAQ) 	<b>2SJ144 Y</b> (Symbol: VY) 	<b>2SK1069 4 TL</b> (Symbol: FJ) 
<b>3SK294</b> (Symbol: UV) 	<b>DTA144EUA T106</b> (Symbol: 16) 	<b>DTB123 EK T146</b> (Symbol: F12) 	<b>DTC144EUA T106</b> (Symbol: 26_) 	<b>DTC144TU T106</b> (Symbol: 06) 
<b>PMBFJ310</b> (Symbol: M10) 				

### • DIODES

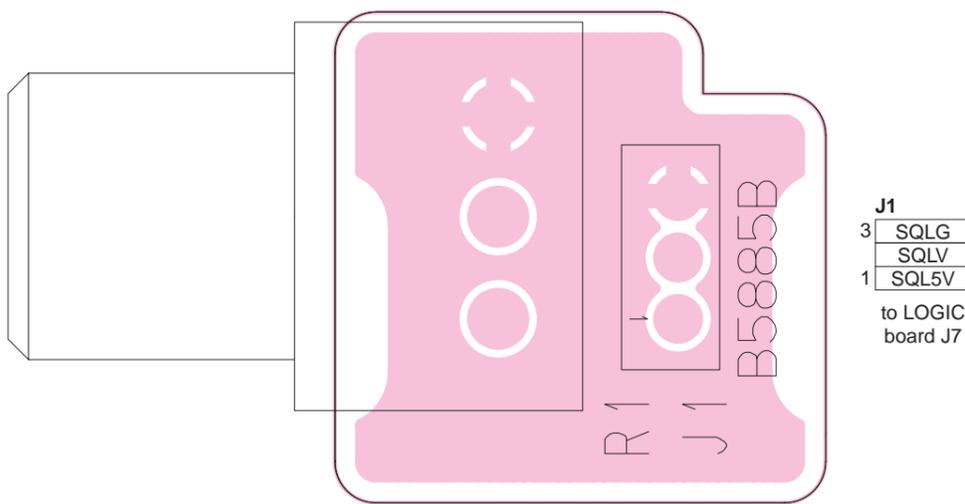
<b>1SS355</b> (Symbol: A) 	<b>1SV214</b> (Symbol: T1) 	<b>1SV288</b> (Symbol: TJ) 	<b>1SV307</b> (Symbol: TX) 	<b>1SV308</b> (Symbol: TX) 
<b>DA204 K T146</b> (Symbol: K) 	<b>DA204 U T106</b> (Symbol: K) 	<b>DAN202 K T146</b> (Symbol: N) 	<b>DAN202 U T106</b> (Symbol: N) 	<b>DAP202K T146</b> (Symbol: P) 
<b>DSA3A1</b> (Color: Green) 	<b>HSB88WSTR</b> (Symbol: Silver line) 	<b>HSM88ASR TR</b> (Symbol: C3) 	<b>HSU88TRF</b> (Symbol: 9) 	<b>HVC358B</b> (Symbol: B2) 
<b>MA2S111</b> (Symbol: A) 	<b>MA77</b> (Symbol: 4B) 	<b>MA742</b> (Symbol: M1U) 	<b>MA8036 L</b> (Symbol: 3_6) 	<b>MA8051 M</b> (Symbol: 5-1) 
<b>MA8062 M</b> (Symbol: 6-2) 				

**SECTION 9 BOARD LAYOUTS**

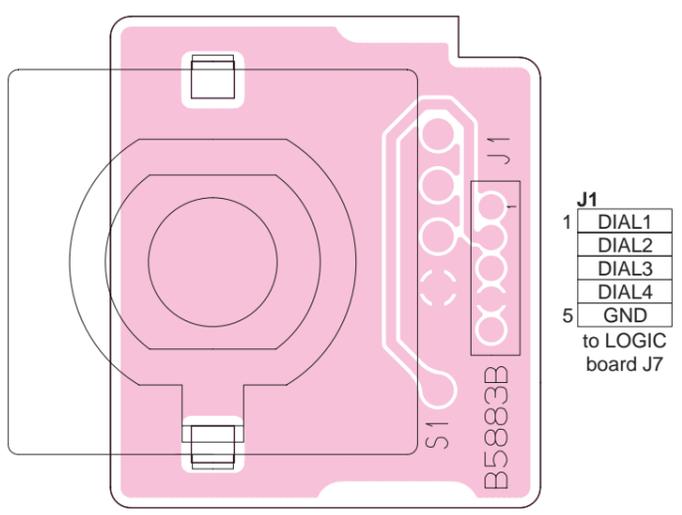
**9-1 VR BOARD**



**9-2 SQL BOARD**

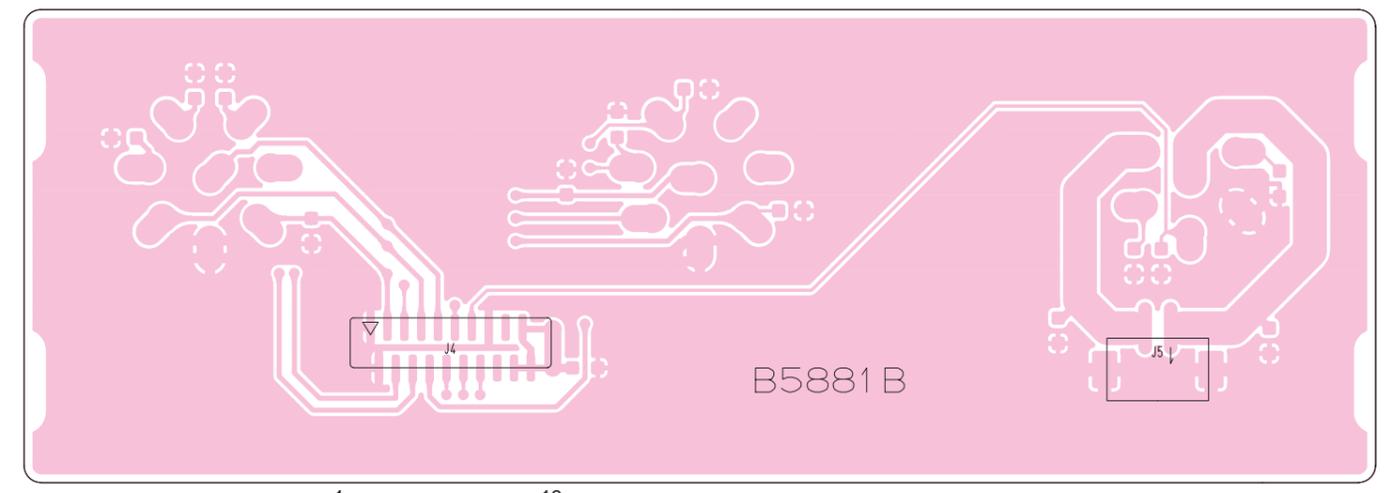


**9-3 DIAL BOARD**



**9-4 CONNECT UNIT**

• TOP VIEW



**J4**

1	GND	MICG	RTXDA2	PTTC	ICF3	RRXDA1	NMEAOUT-	NMEAIN-	GND	NC	VCC	19
2	GND	AF/MIC2	RRXDA2	AF/MIC1	RTADA1	NMEAOUT+	NMEAIN+	NC	VCC	VCC	20	

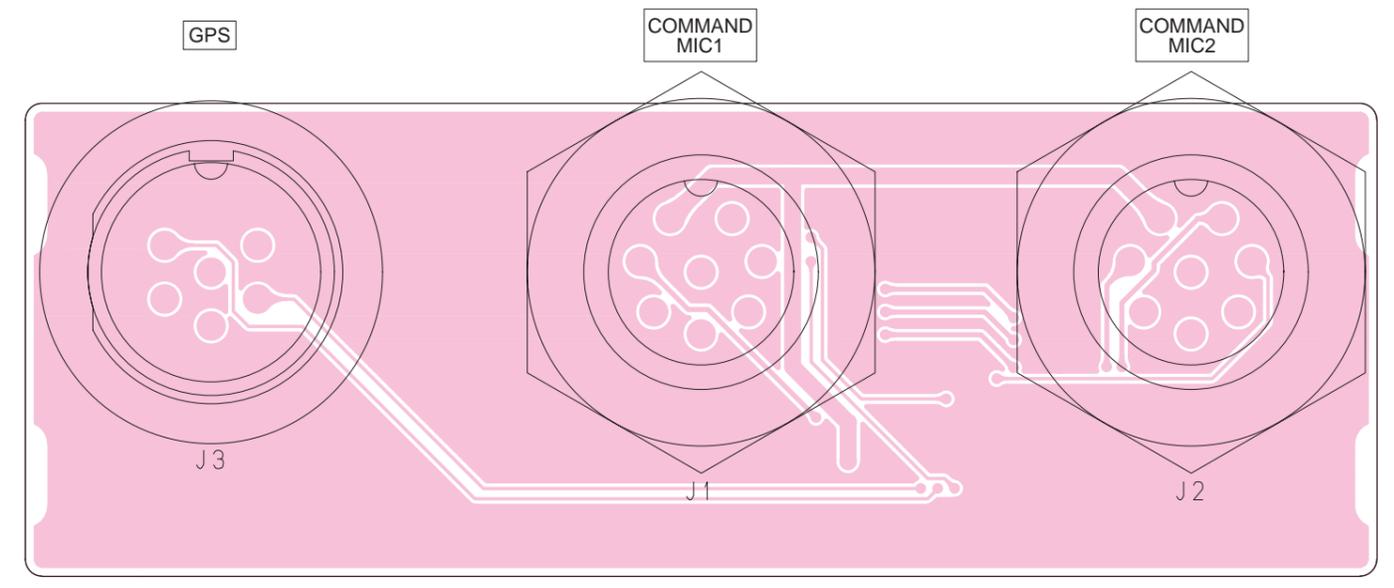
to AF unit J4

**J5**

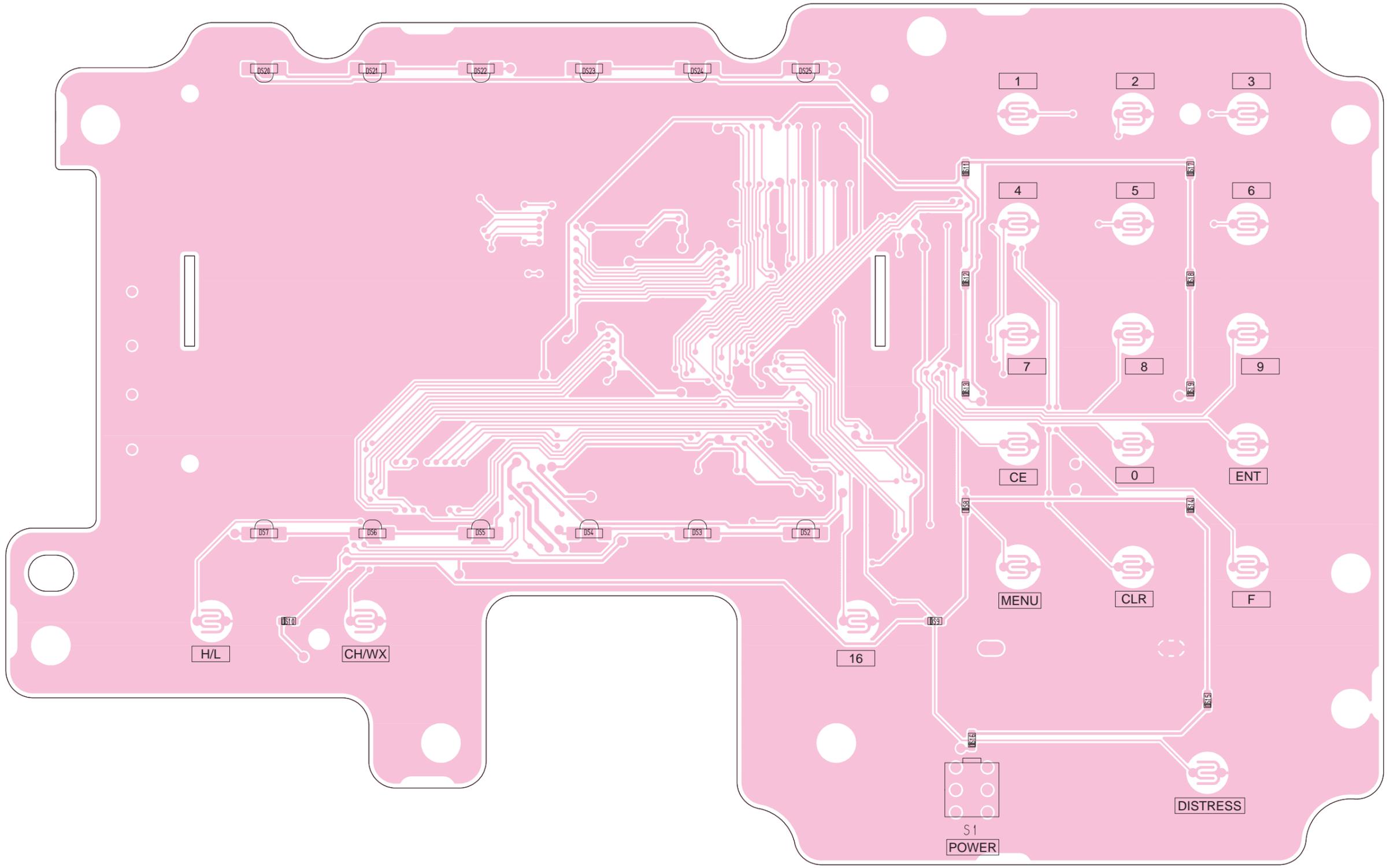
2	SP-
1	SP+

to AF unit W6

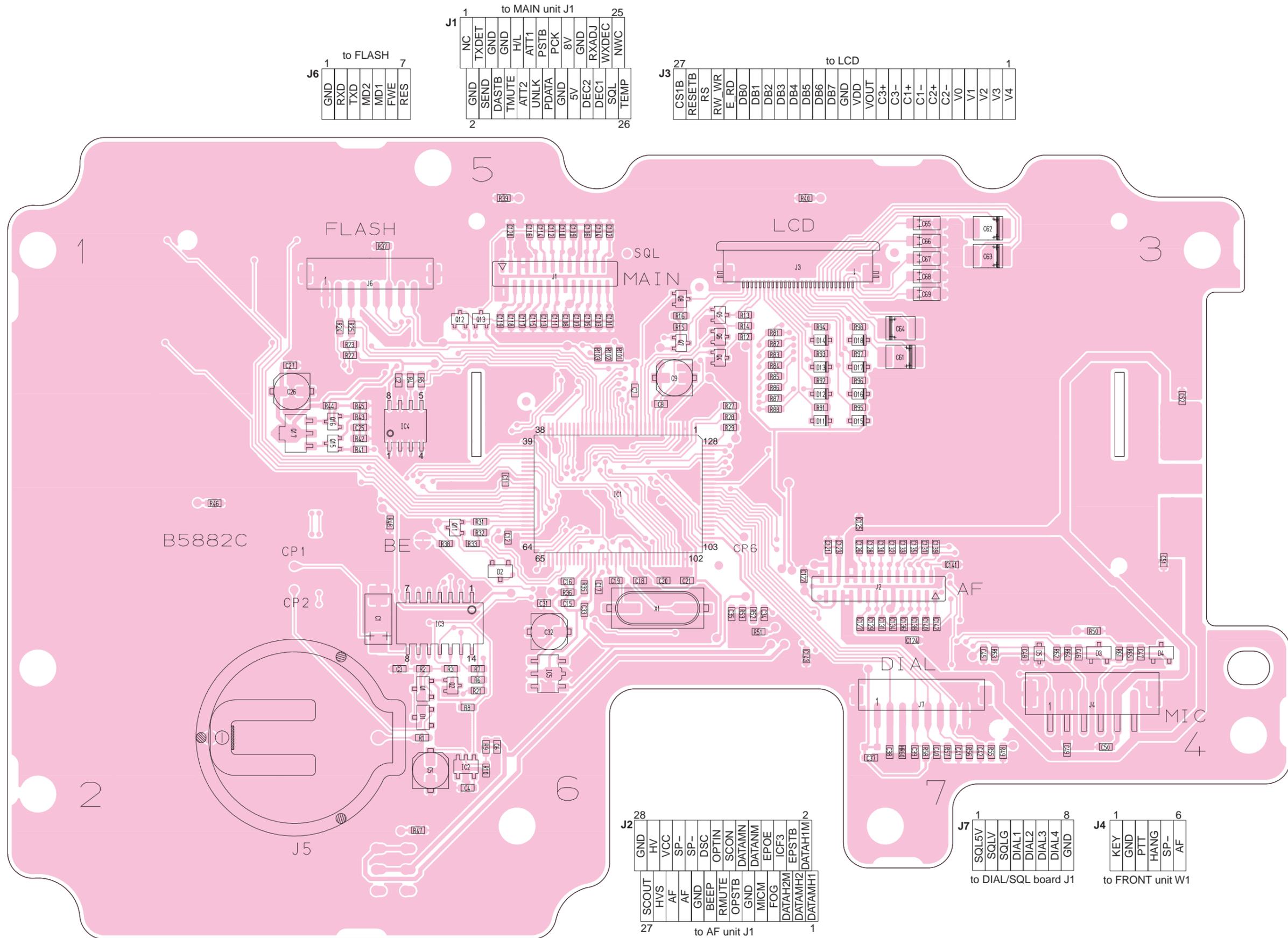
• BOTTOM VIEW (CONNECT UNIT)



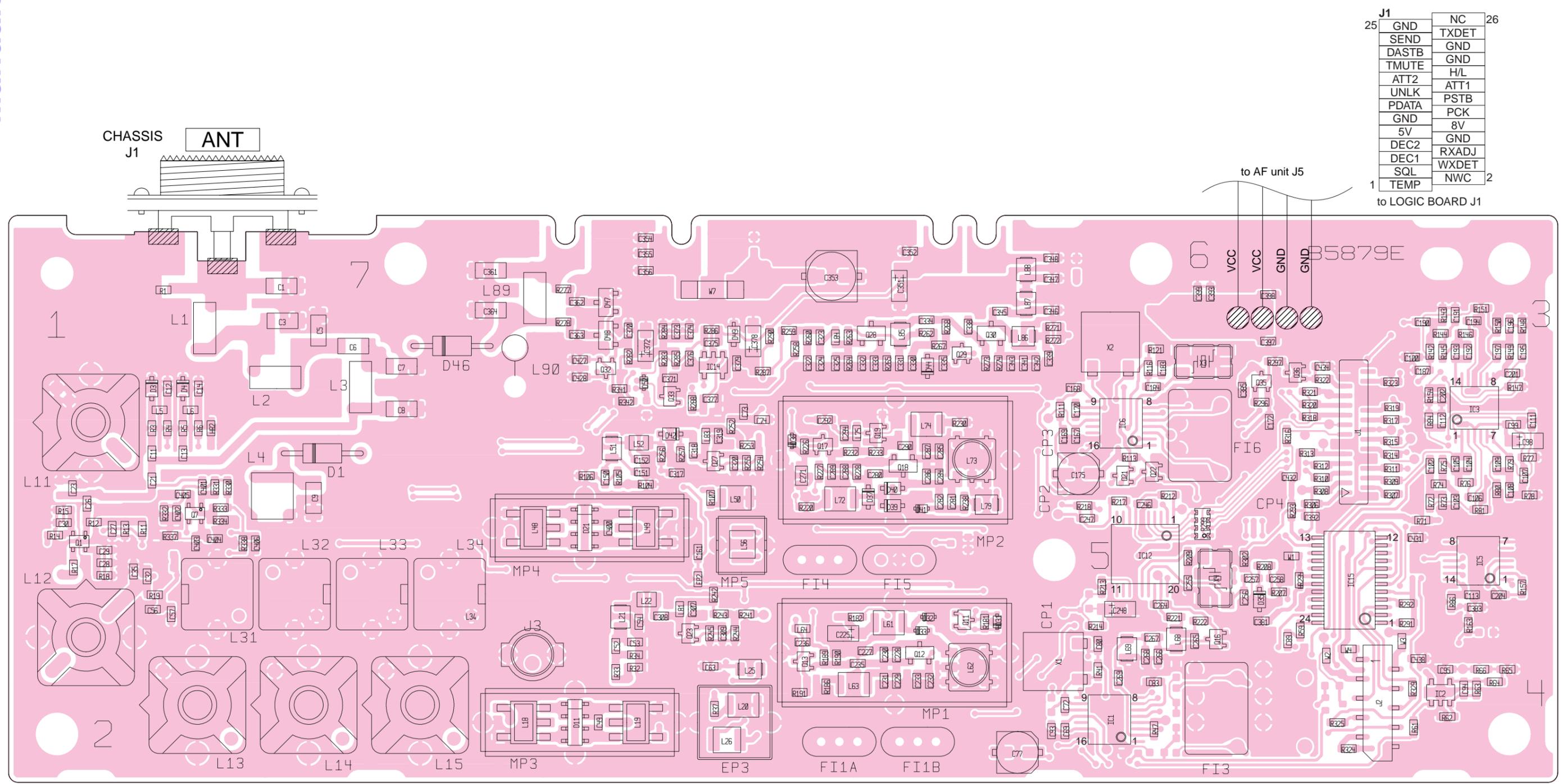
9-5 LOGIC BOARD  
• TOP VIEW



• BOTTOM VIEW (LOGIC BOARD)



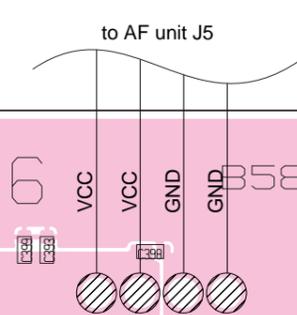
9-6 MAIN UNIT  
• TOP VIEW



**J1**

25	GND	NC	26
	SEND	TXDET	
	DASTB	GND	
	TMUTE	GND	
	ATT2	ATT1	
	UNLK	PSTB	
	PDATA	PCK	
	GND	8V	
	5V	GND	
	DEC2	RXADJ	
	DEC1	WXDET	
	SQL	NWC	
1	TEMP		2

to LOGIC BOARD J1

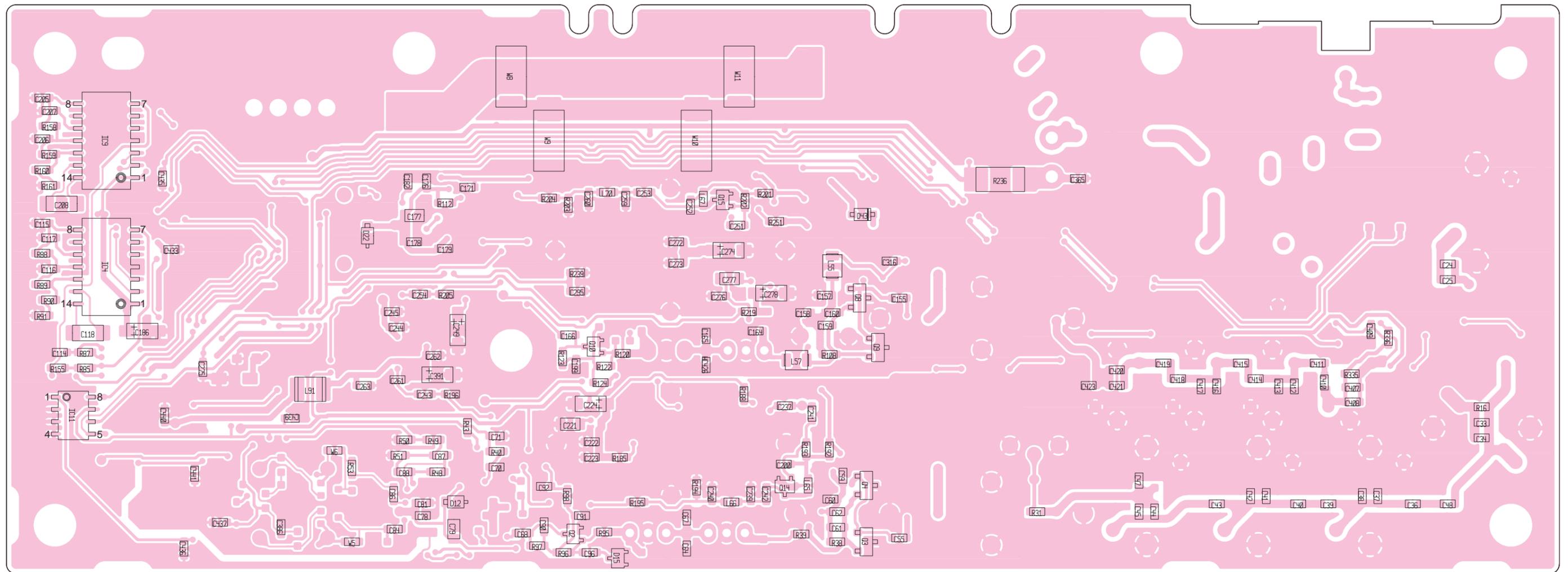


**J2**

1	8V	5V	2
	R8	PCK	
	PDATA	HLVL	
	MOD	NWC	
9	DET	GND	10

to AF unit J2

• BOTTOM VIEW (MAIN UNIT)



9-7 AF UNIT  
• TOP VIEW

to FRONT unit W1

J7	1	2
	MIC	MIC

to VR board J1

J6	1	3
	VOL1	VOL2
		GND

to LOGIC board J2

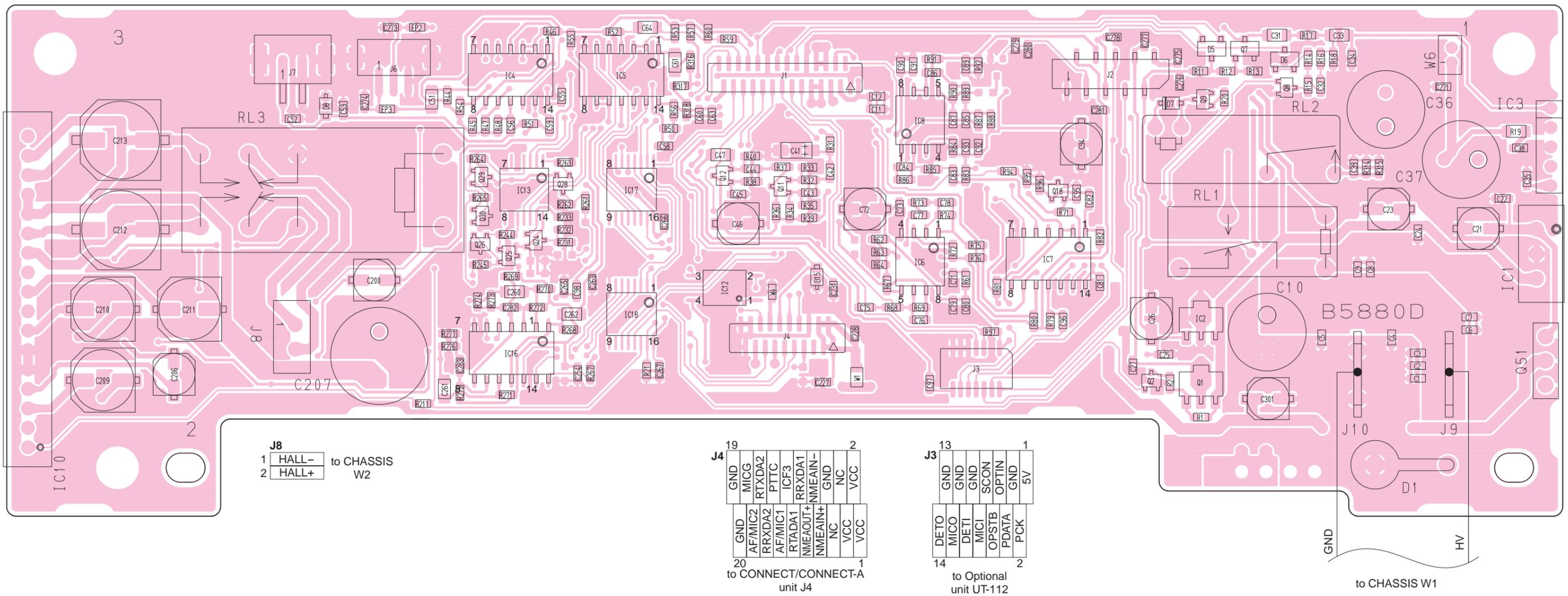
J1	28	2
	DATAH1	DATAH2
	EPSTB	DATAH2M
	ICF3	FOG
	EPOE	MICM
	DATANM	GND
	DATANM	OPSTB
	SCON	RMUTE
	OPTIN	BEEP
	DSC	GND
	SP-	AF
	SP-	AF
	VCC	HVS
	HV	SCOUT
	GND	
27		1

to MAIN unit J2

J2	2	10
	DET	MOD
	NWC	HLVL
	HLVL	PDATA
	PCK	R8
	5V	8V
1		9

W6 to CONNECT unit J5

2	SP+
1	SP-



J8 to CHASSIS W2

J8	1	HALL-
	2	HALL+

to CONNECT/CONNECT-A unit J4

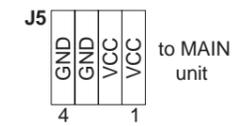
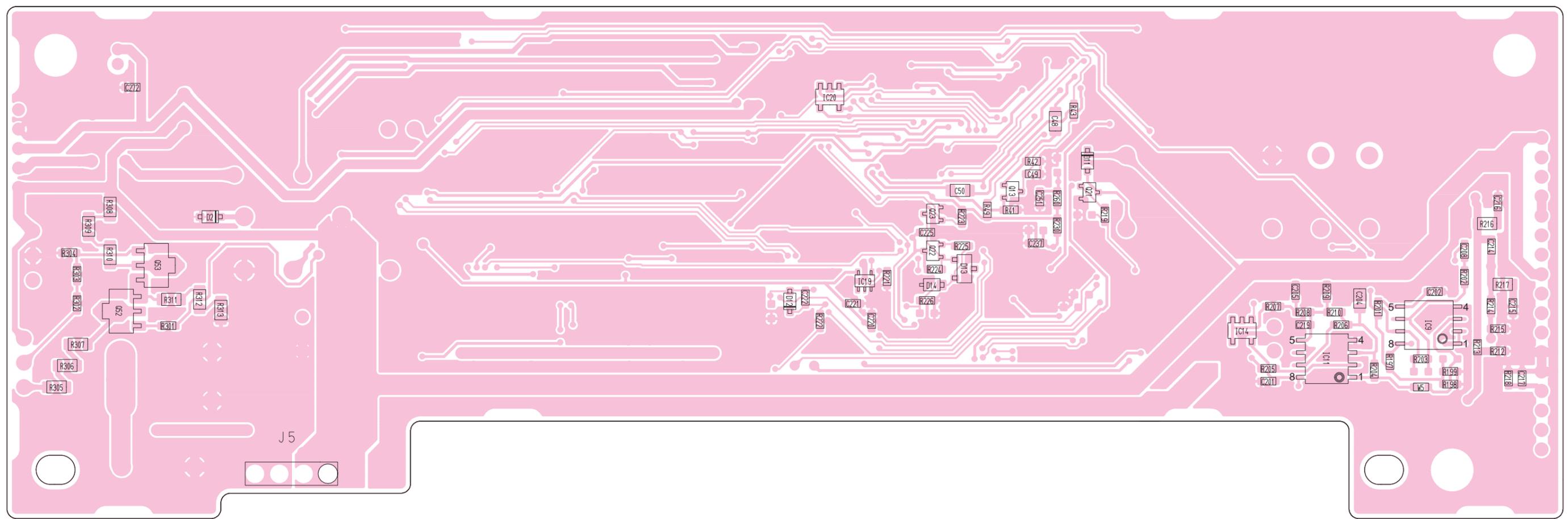
J4	19	2
	GND	MICG
	AF/MIC2	RTXDA2
	RRXDA2	PTTC
	AF/MIC1	ICF3
	RTADA1	RRXDA1
	NMEAIN+	NMEAIN-
	NC	GND
	VCC	NC
	VCC	VCC
20		1

to Optional unit UT-112

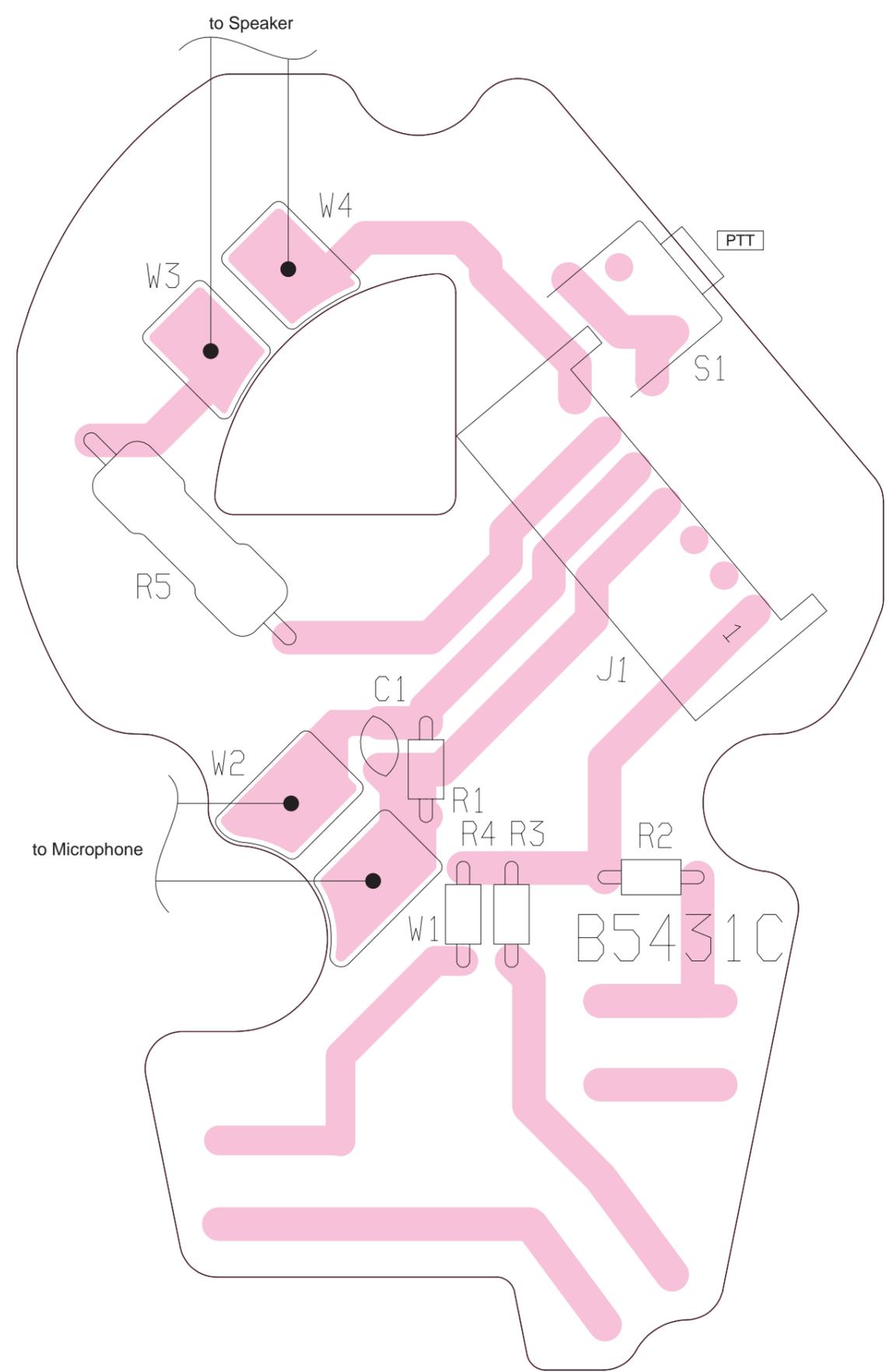
J3	13	1
	GND	GND
	MICO	DET1
	DET1	MIC1
	OPSTB	SCON
	PDATA	OPTIN
	PCK	GND
	5V	5V
14		2

GND HV  
to CHASSIS W1

• BOTTOM VIEW (AF UNIT)



9-8 HM-136  
• TOP VIEW

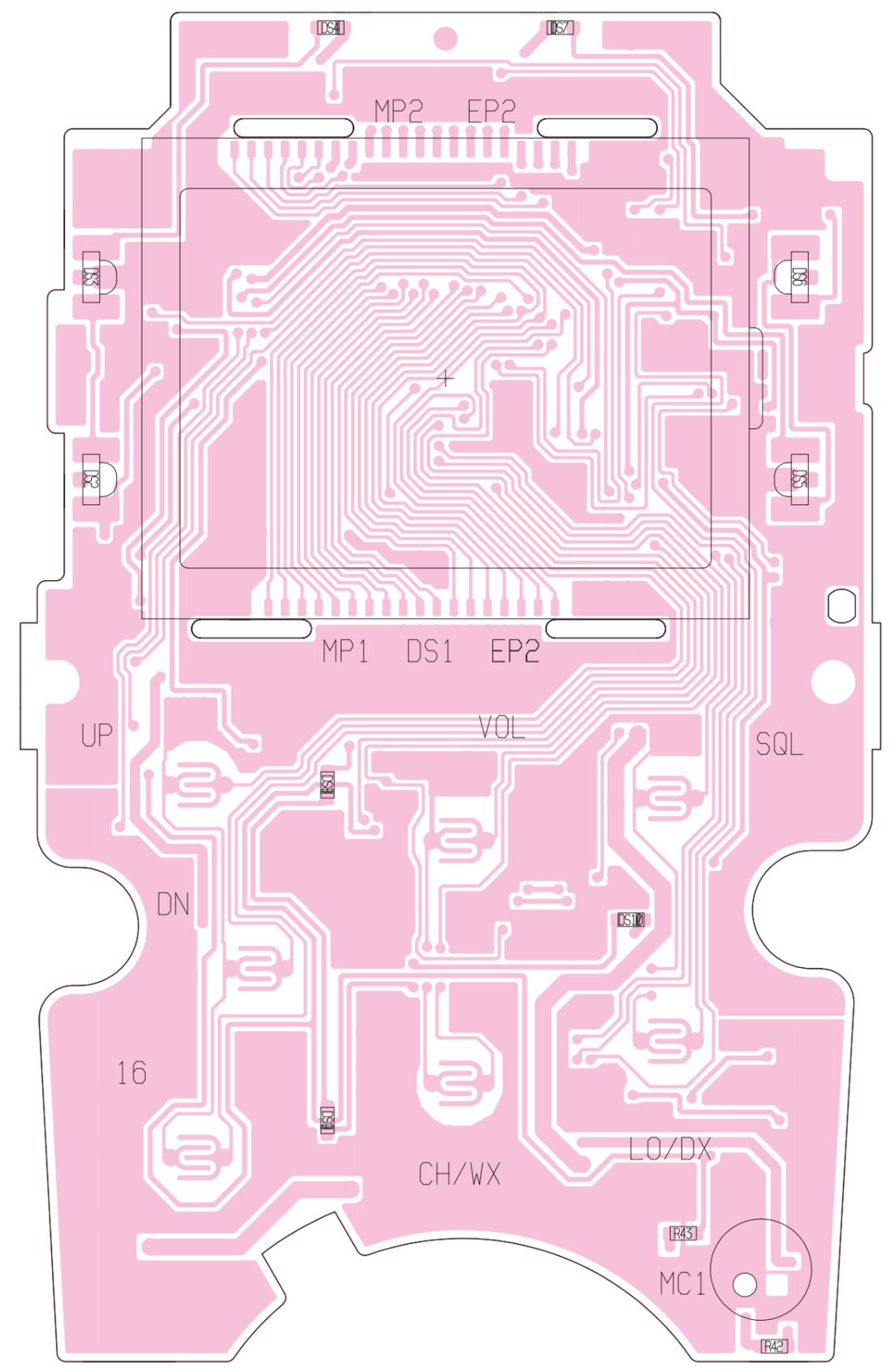


**J1**

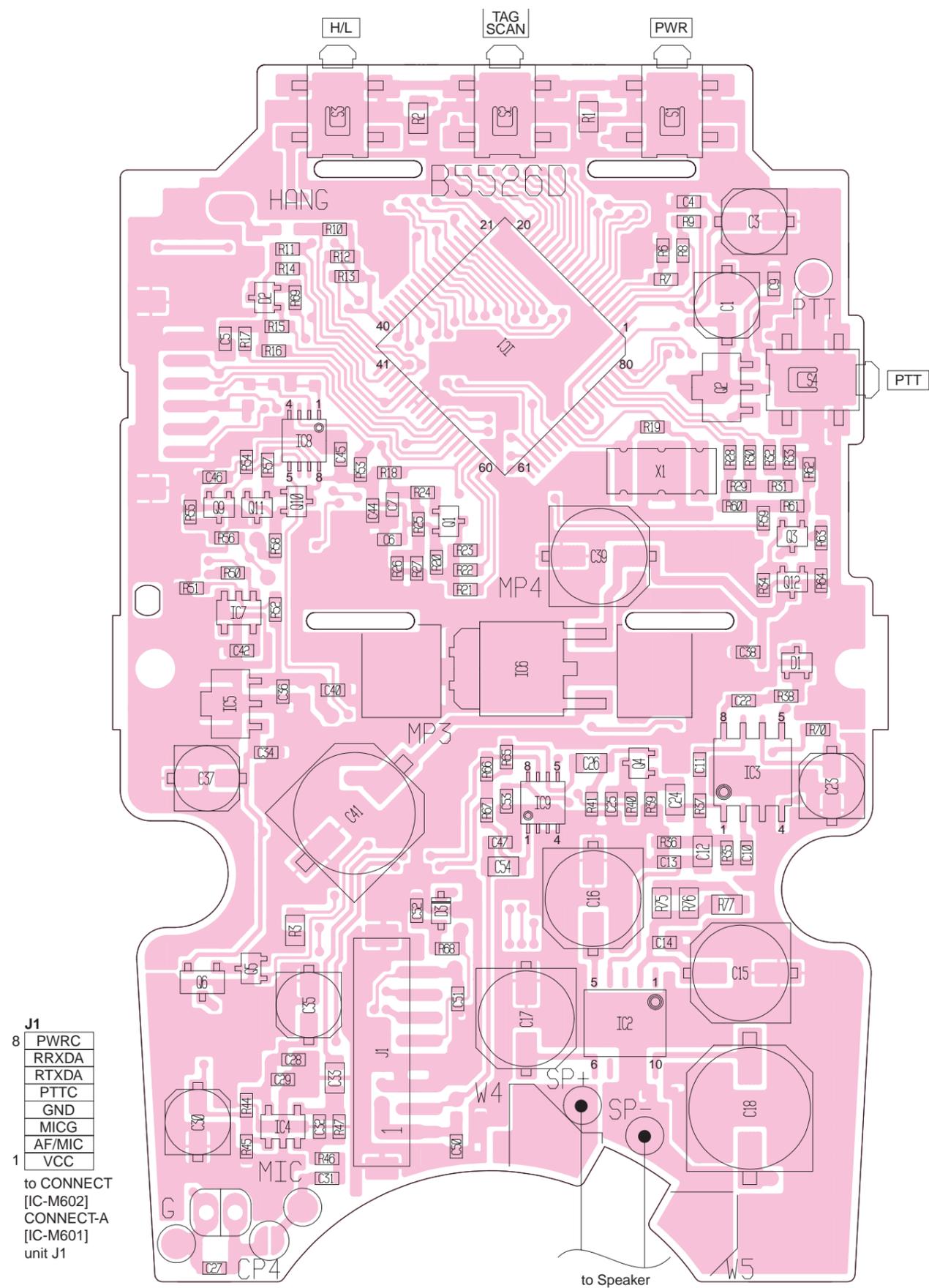
7	SP-
	SP+
	MICE
	MIC
	PTT
	GND
1	KEY

to IC-M601/M602  
FRONT unit W1

9-9 HM-127 (OPTIONAL UNIT)  
• TOP VIEW



• BOTTOM VIEW (HM-127)

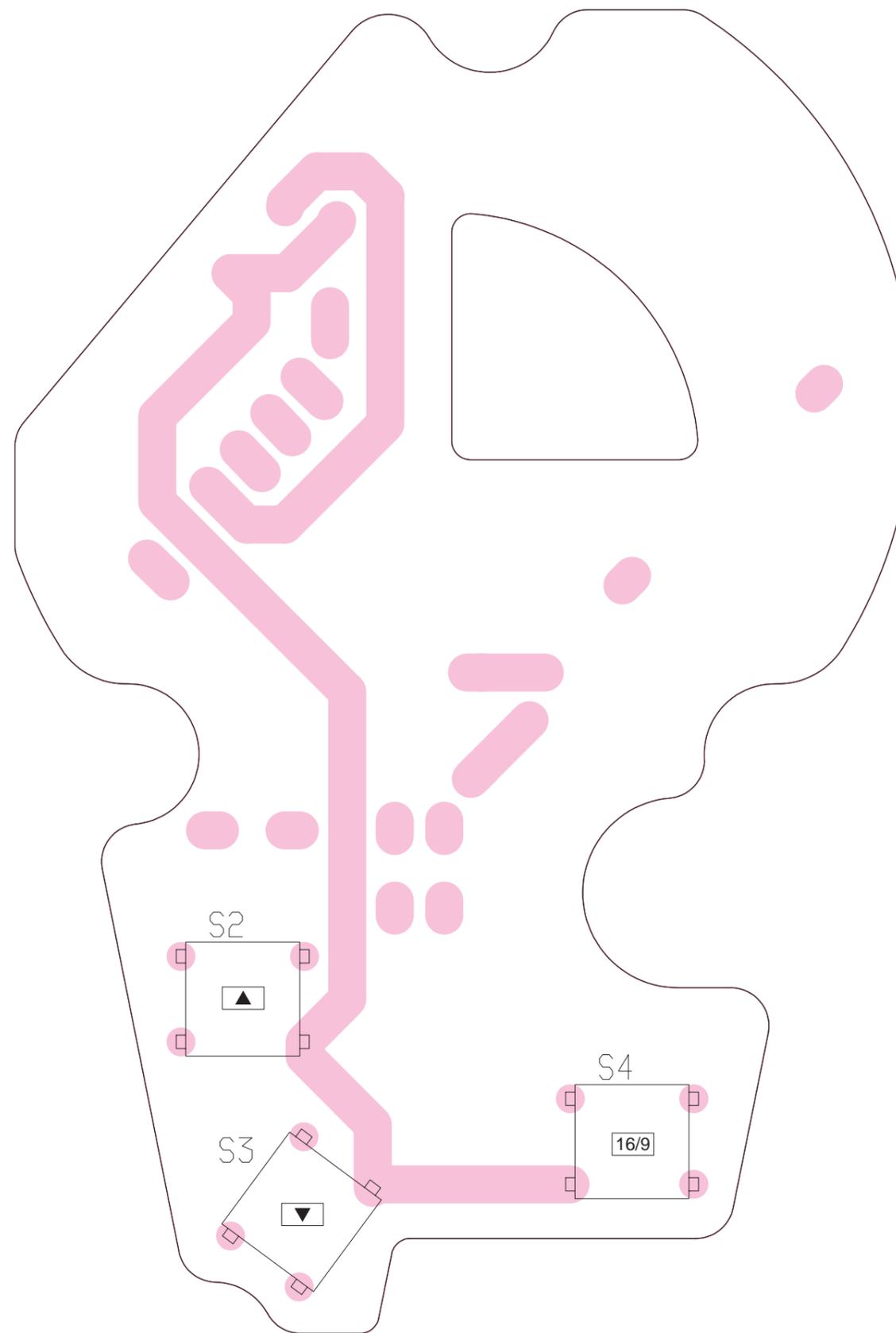


**J1**

8	PWRC
	RRXDA
	RTXDA
	PTTC
	GND
	MICG
	AF/MIC
1	VCC

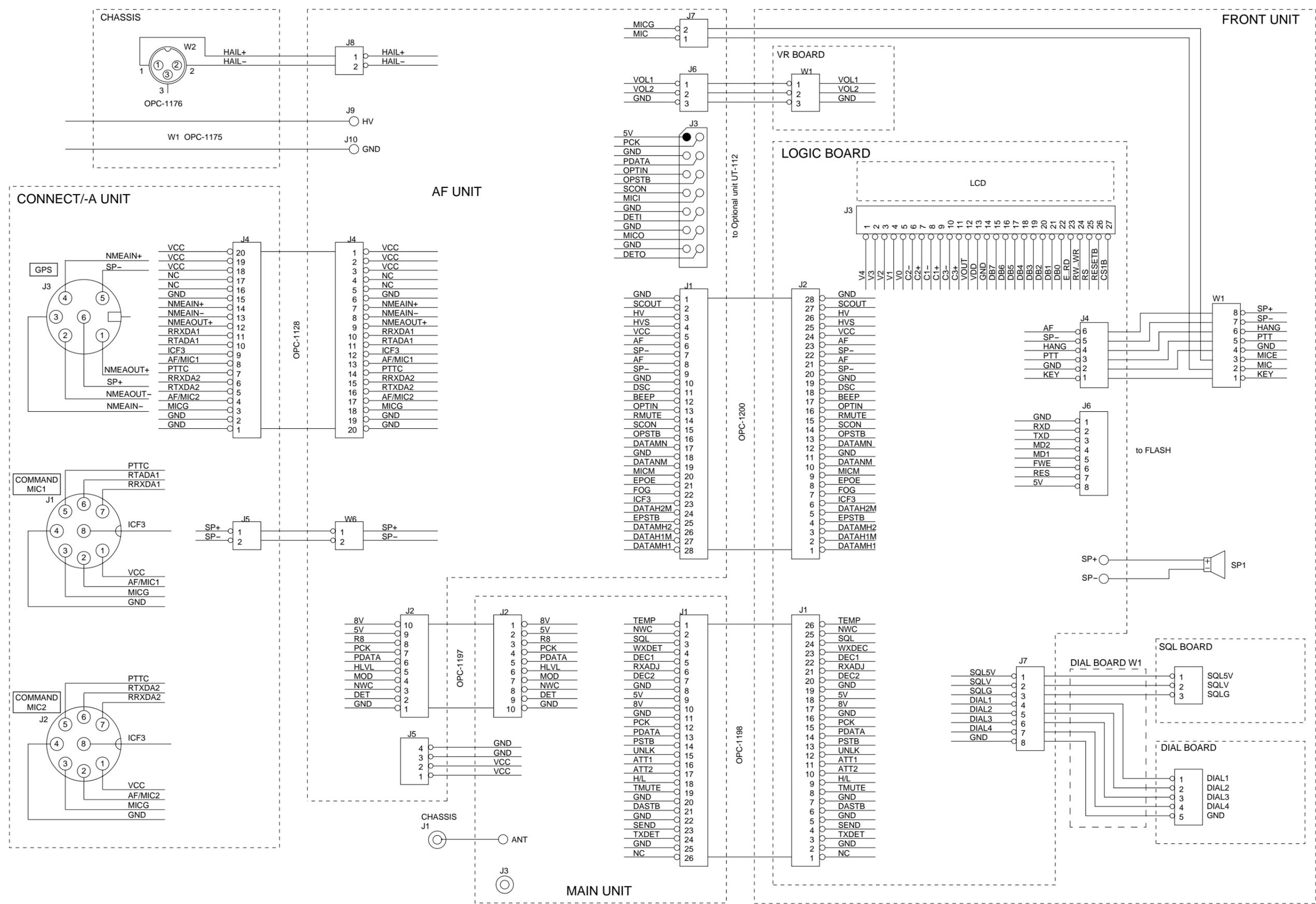
to CONNECT  
[IC-M602]  
CONNECT-A  
[IC-M601]  
unit J1

• BOTTOM VIEW (HM-136)



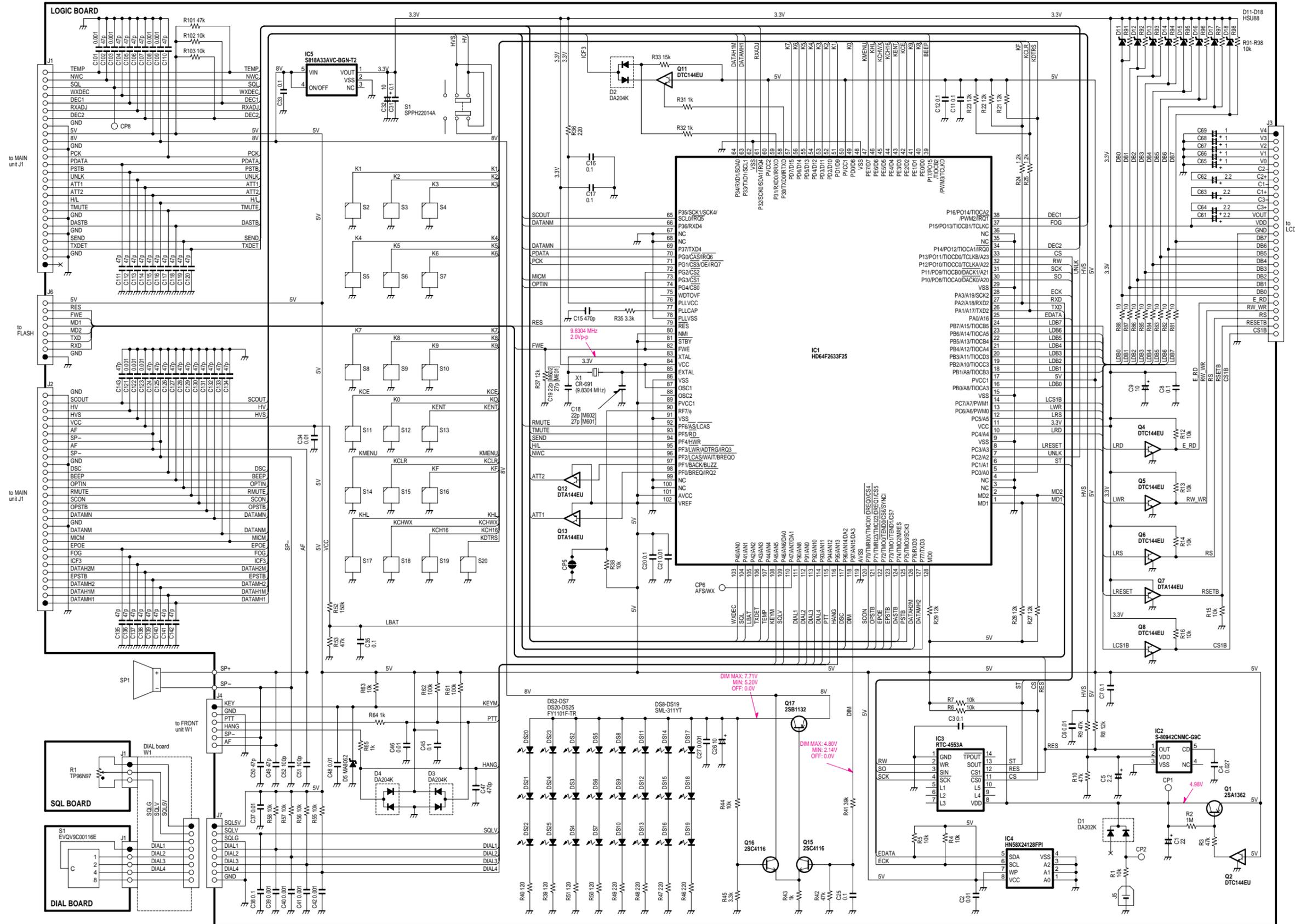


# SECTION 11 WIRING DIAGRAM

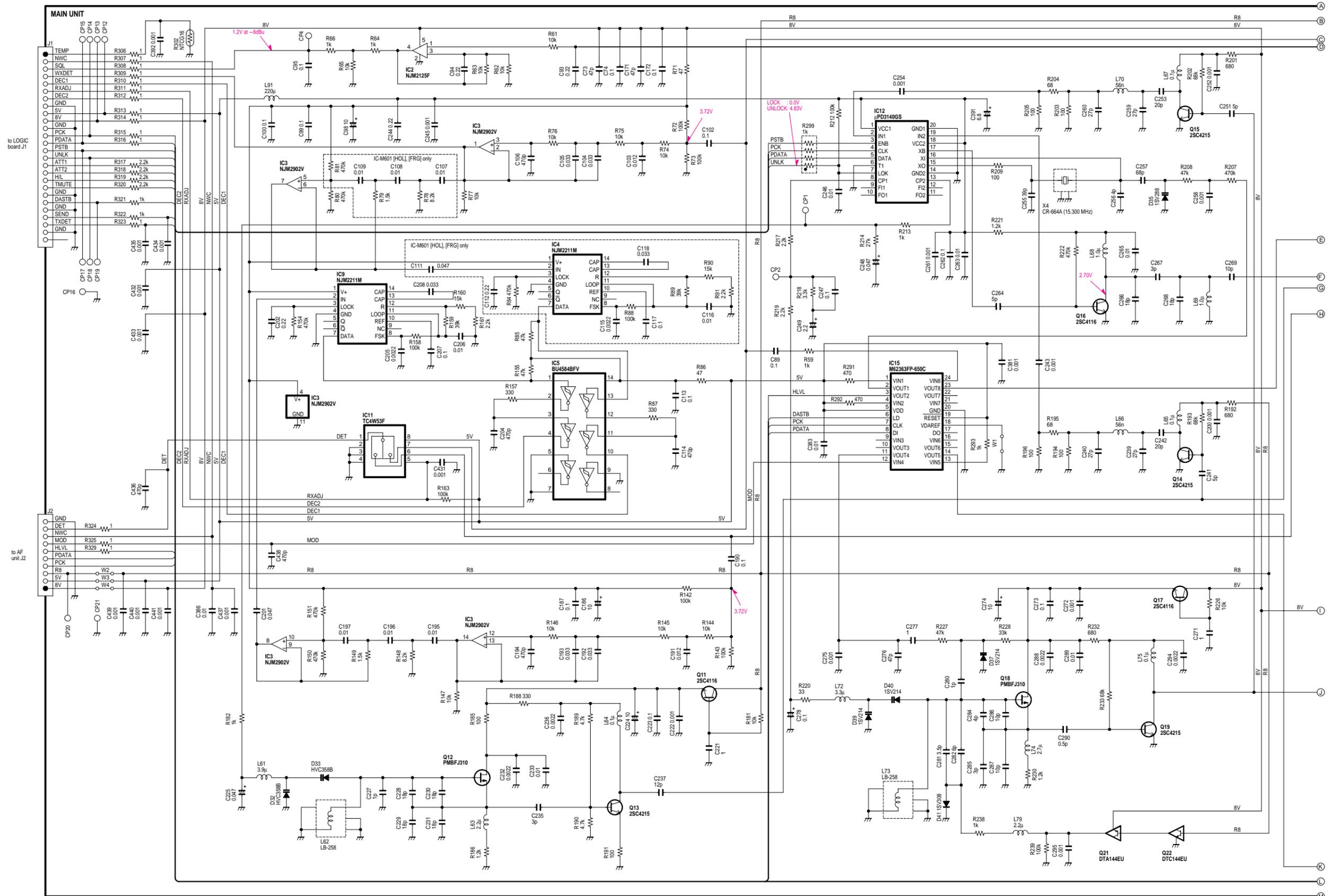


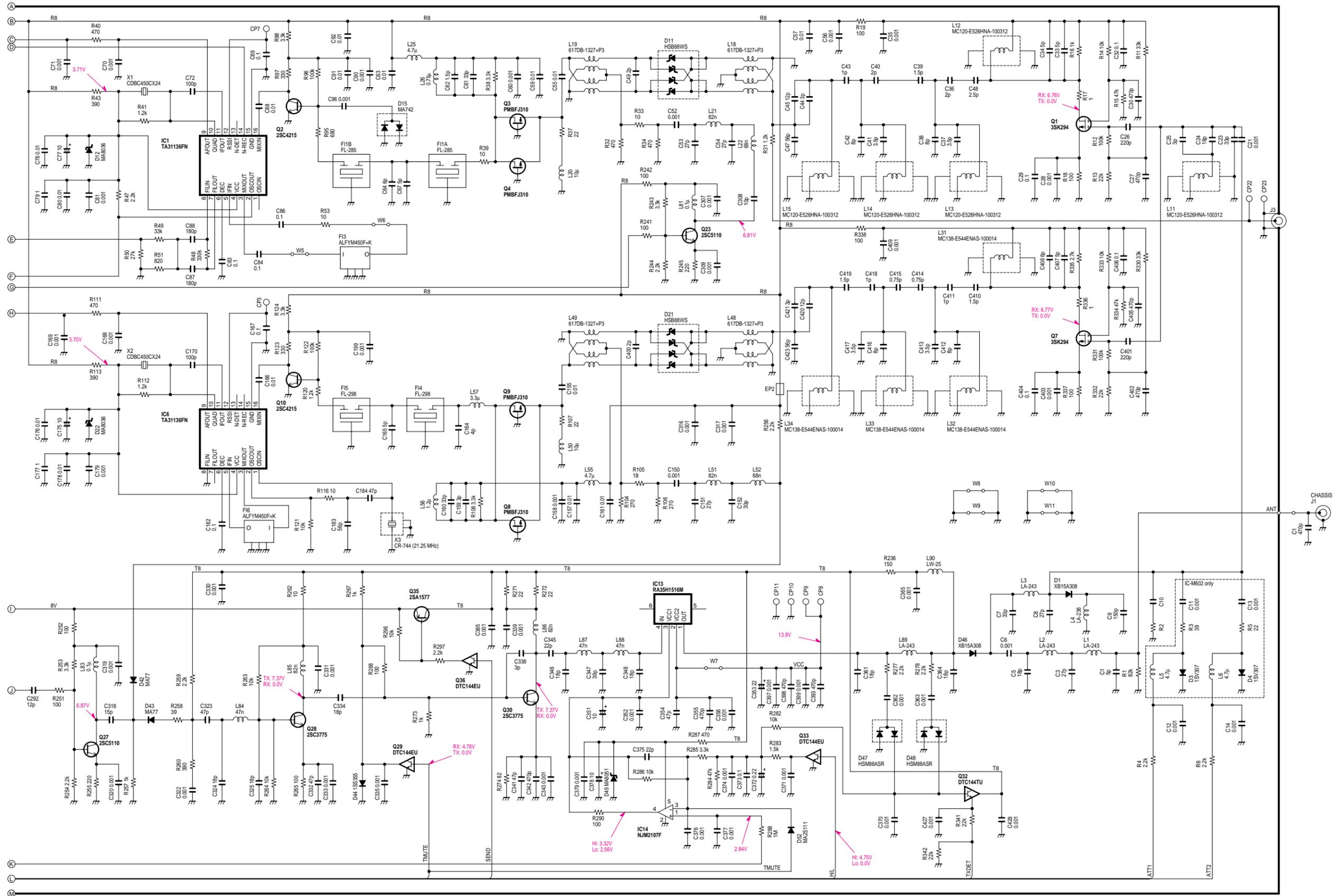
# SECTION 12 VOLTAGE DIAGRAMS

## 12-1 LOGIC BOARD

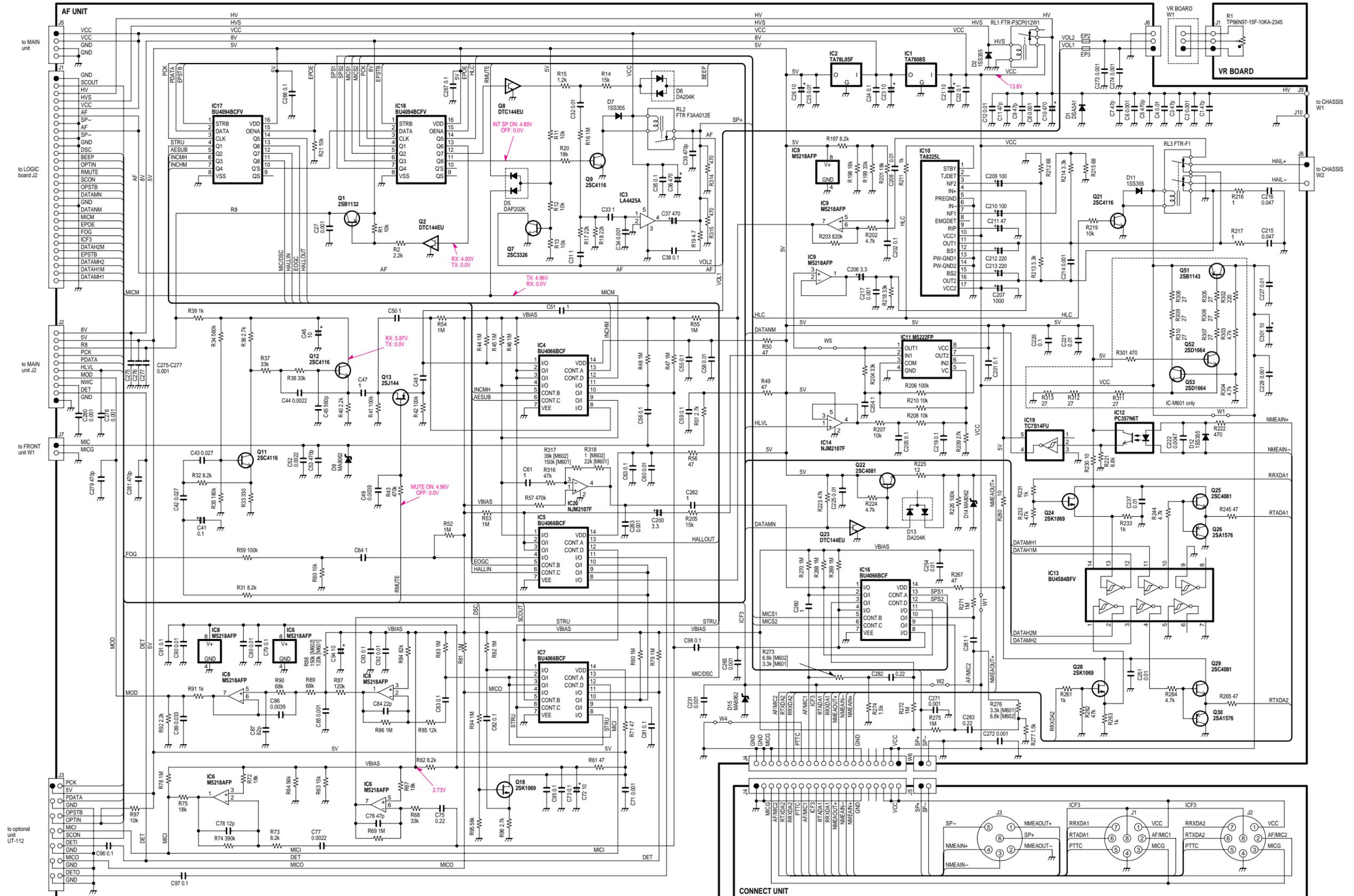


12-2 MAIN UNIT

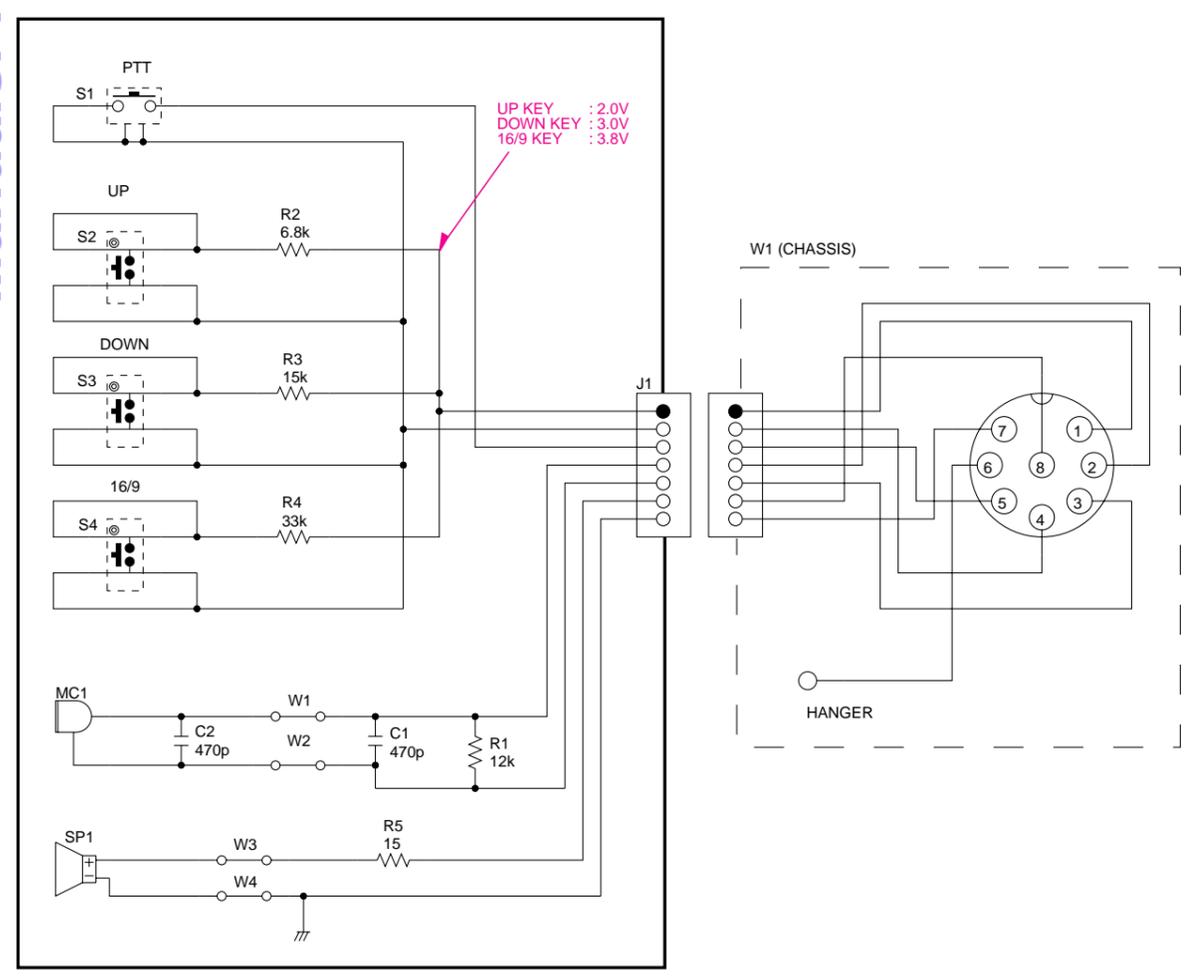




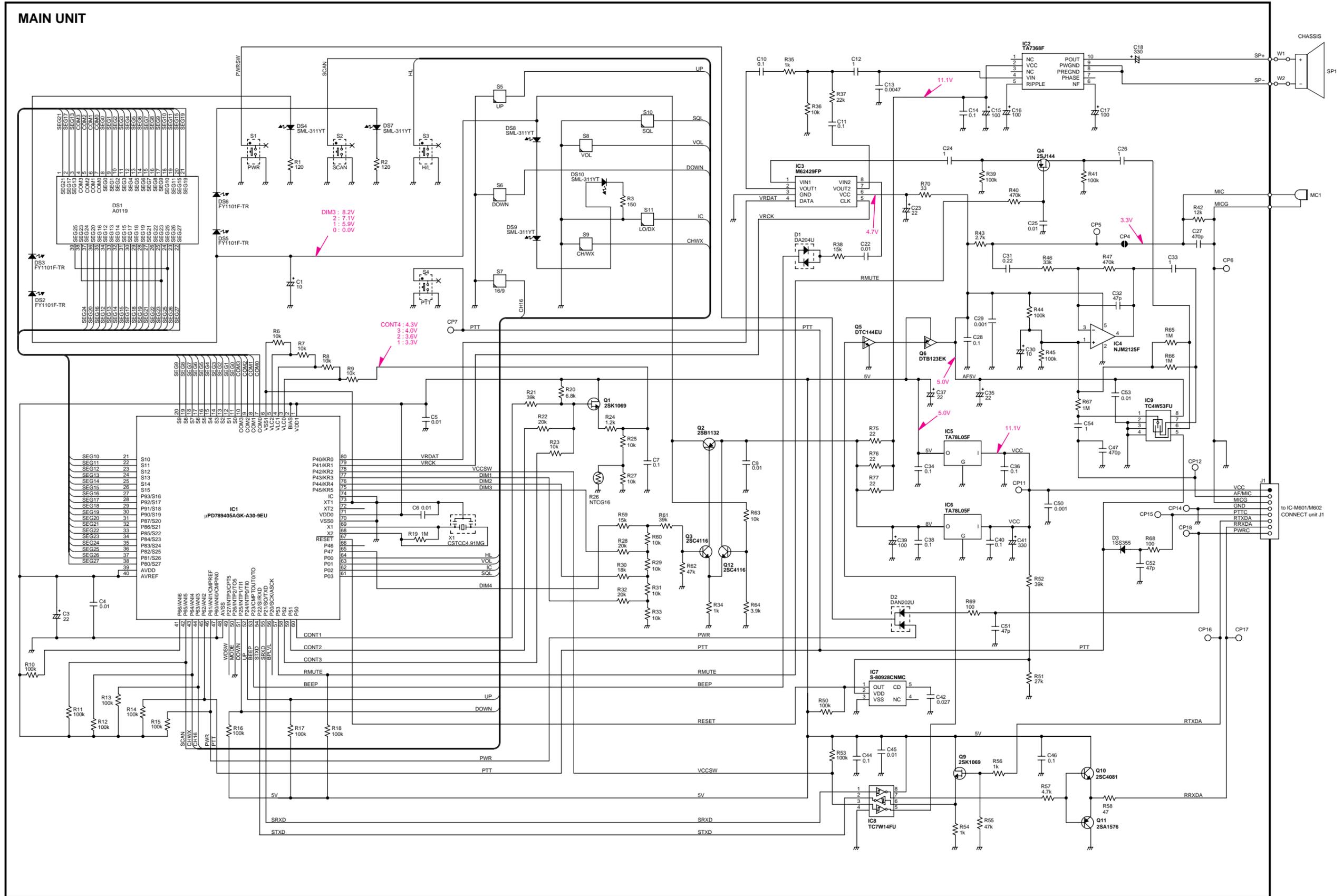
12-3 AF UNIT



12-4 HM-136



12-5 HM-127 (OPTIONAL UNIT)



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