ICOM

SERVICE MANUAL

WIDEBAND RECEIVER

IC-R7100

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **IC-R7100** WIDEBAND RECEIVER at the time of publication.
5 versions of the **IC-R7100** have been designed. This service manual covers each version.

VERSION NO.	VERSION	SYMBOL
#02	U.S.A.	USA
#03	Europe	EUR
#04	Australia	AUS
#05	Germany	FRG
#06	France	FRA

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

DANGER

Use **ONLY** the specified AC voltage described on the AC power socket. Other voltages will cause receiver damage or personal injury.

DO NOT touch the REG UNIT after the receiver is connected to an AC outlet. An insulated tool must be used at all times.

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

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

ORDERING PARTS

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

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

<SAMPLE ORDER>

1110001360	IC	μPC1242H	IC-R7100 MAIN UNIT	5 pieces
8810005510	Screw	FH M3 × 6 ZK BS	IC-R7100 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 receiver.
2. **DO NOT** open the receiver until the receiver is disconnected from a power source.
3. **USE** an external AC power supply to a receiver power source during testing.
4. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
5. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
6. **DO NOT** keep power ON for a long time when the receiver is defective.
7. **READ** the insturctions of test equipment thoroughly before connecting equipment to the receiver.

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS

• Frequency coverage :

VERSION	FREQUENCY COVERAGE
U.S.A. Europe Australia	25.0000~1999.9999 MHz*
France	25.0000~ 87.5000 MHz 108.0000~1999.9999 MHz*
Germany	28.0000~ 29.7000 MHz 144.0000~ 146.0000 MHz 430.0000~ 440.0000 MHz 1240.0000~1300.0000 MHz

*Specifications guaranteed for 25~1000 and 1240~1300 MHz.

• Mode : SSB (USB, LSB), AM (Normal, Narrow), WFM, FM (Normal, Narrow)

• Number of memory channels : Memory channels 900
Scan edge channels 20

• Tuning step increments : 0.1, 1, 5, 10, 12.5, 20, 25, 100 kHz, 1 MHz

• Antenna impedance : 50 Ω (Nominal)

• Power supply requirement : 117 V AC or 13.8 V DC±15 % (U.S.A. version)
240V AC or 13.8 V DC±15 % (Europe, Australia and France versions)
220 V AC (Germany version)

• Type of antenna connector : Type-N

• Current drain (at 13.8 V DC) : Squelched 1.5 A
Max. audio output 1.9 A

• Usable temperature range : +10 °C~+60 °C (+14 °F~140 °F)

• Frequency stability (in FM mode) : 25~250 MHz Less than ±1.5 kHz
250~1000 MHz Less than ±5 ppm
1240~1300 MHz Less than ±10 ppm
(0 °C~+50 °C; +32 °F~+122 °F)

• Dimensions : 241 (W)×94 (H)×239 (D) mm; 9.5 (W)×3.7 (H)×9.4 (D) in
(Projections not included)

• Weight : 6.0 kg (13.2 lb)

• Receive system : SSB, AM, FM Triple-conversion superheterodyne system
WFM Double-conversion superheterodyne system

• Intermediate frequencies :

IF	25~512 MHz	512~1025 MHz
1st	778.700 MHz	266.700 MHz
2nd	10.700 MHz	10.700 MHz
3rd*	455 kHz	455 kHz

*Except WFM (Crystal-converter system is adopted above 1025 MHz.)

• Sensitivity (typical) : SSB Less than 0.2 µV for 10 dB S/N
AM Less than 1.6 µV for 10 dB S/N
WFM Less than 1.0 µV for 12 dB SINAD
FM Less than 0.35 µV for 12 dB SINAD

• Squelch sensitivity (threshold) : AM, FM Less than 0.35 µV
SSB, WFM Less than 4.5 µV
WFM (1240~1300 MHz) Less than 6.0 µV

• Selectivity : SSB More than 2.4 kHz/−6 dB
AM, FM (Narrow) More than 6.0 kHz/−6 dB
FM, AM (Wide) More than 15 kHz/−6 dB
WFM More than 150 kHz/−6 dB

• Spurious response rejection : More than 50 dB

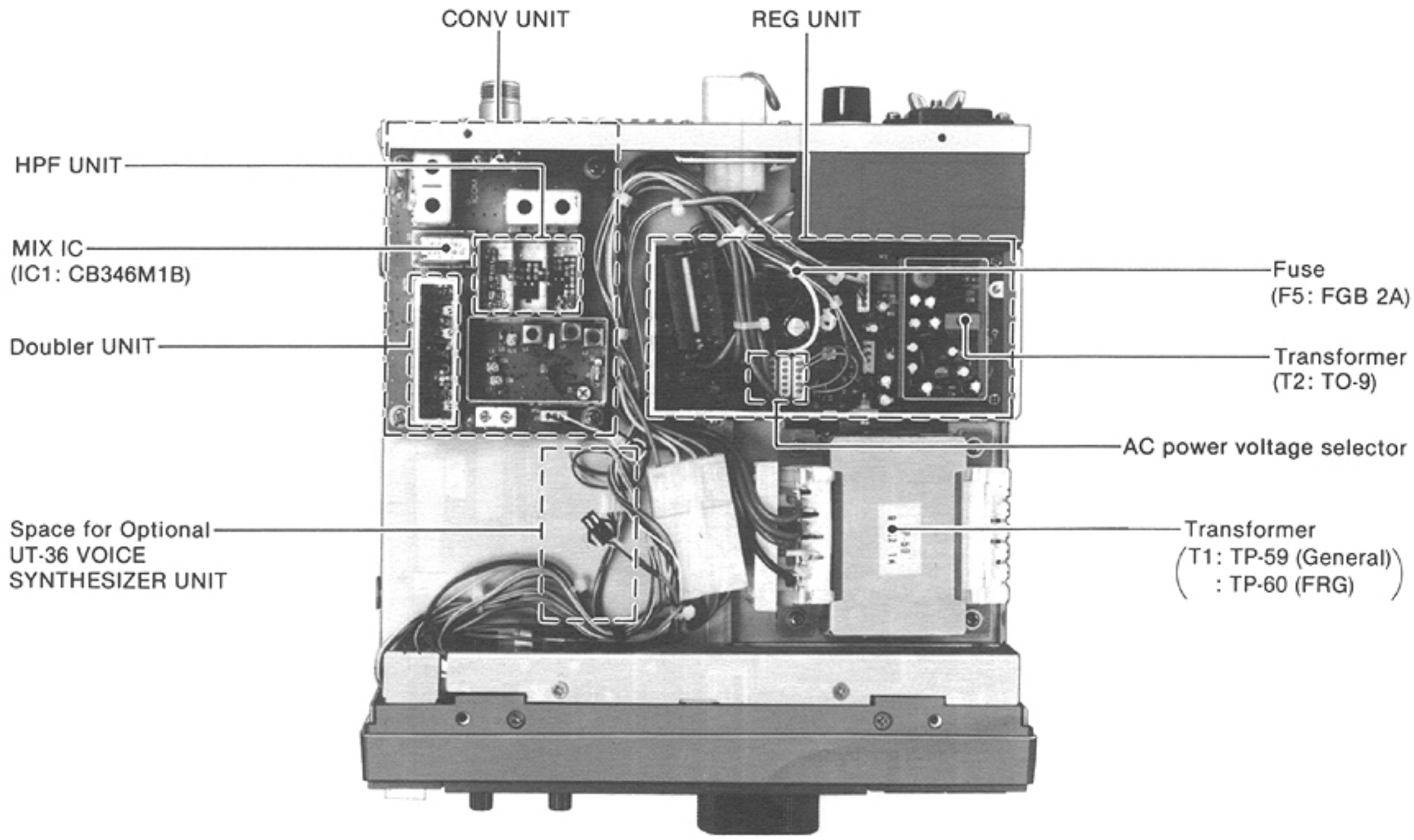
• Audio output power : More than 2.0 W* with an 8 Ω load
*More than 1.0 W in FM narrow mode

• Audio output impedance : 4~8 Ω

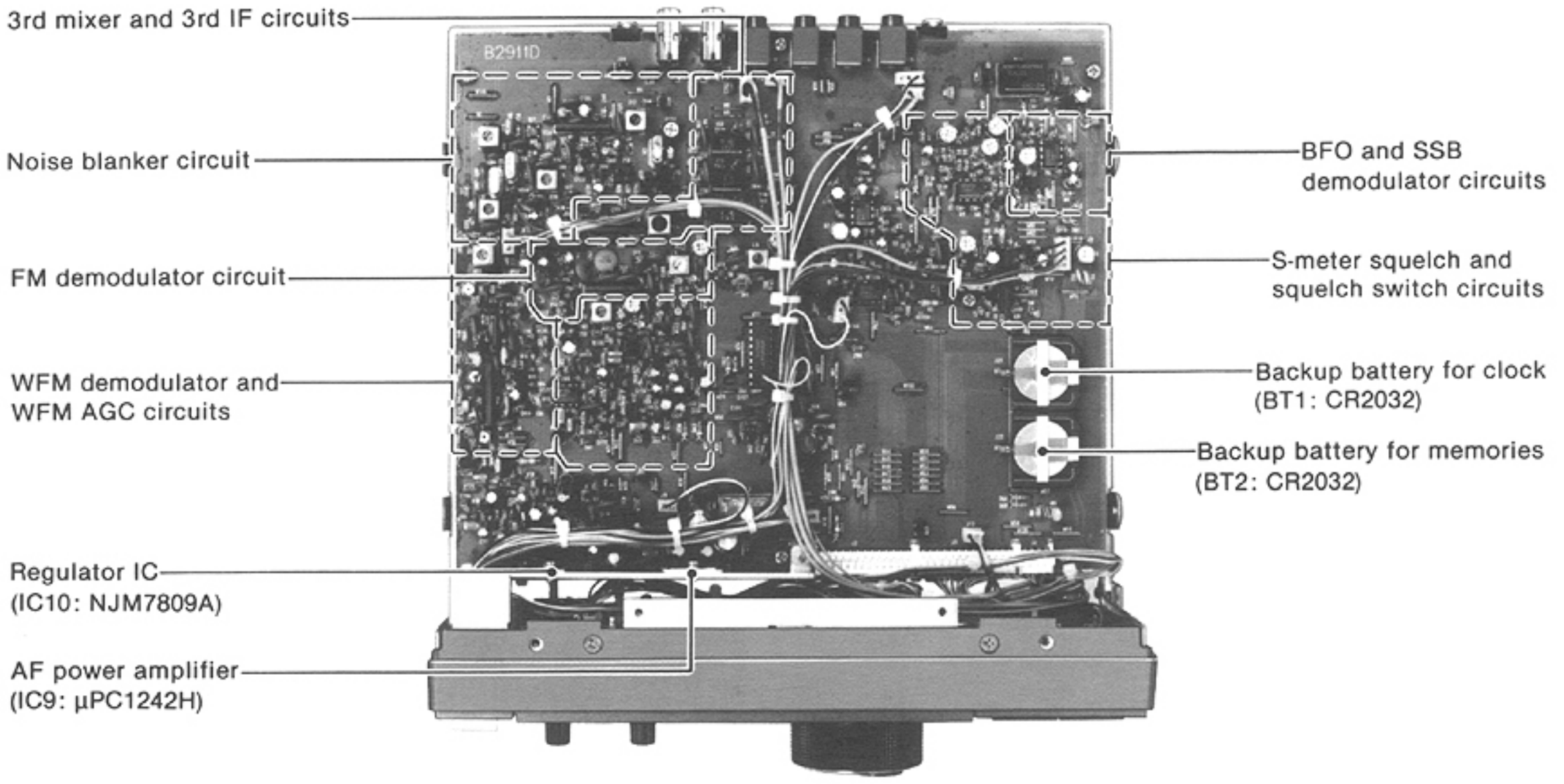
All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

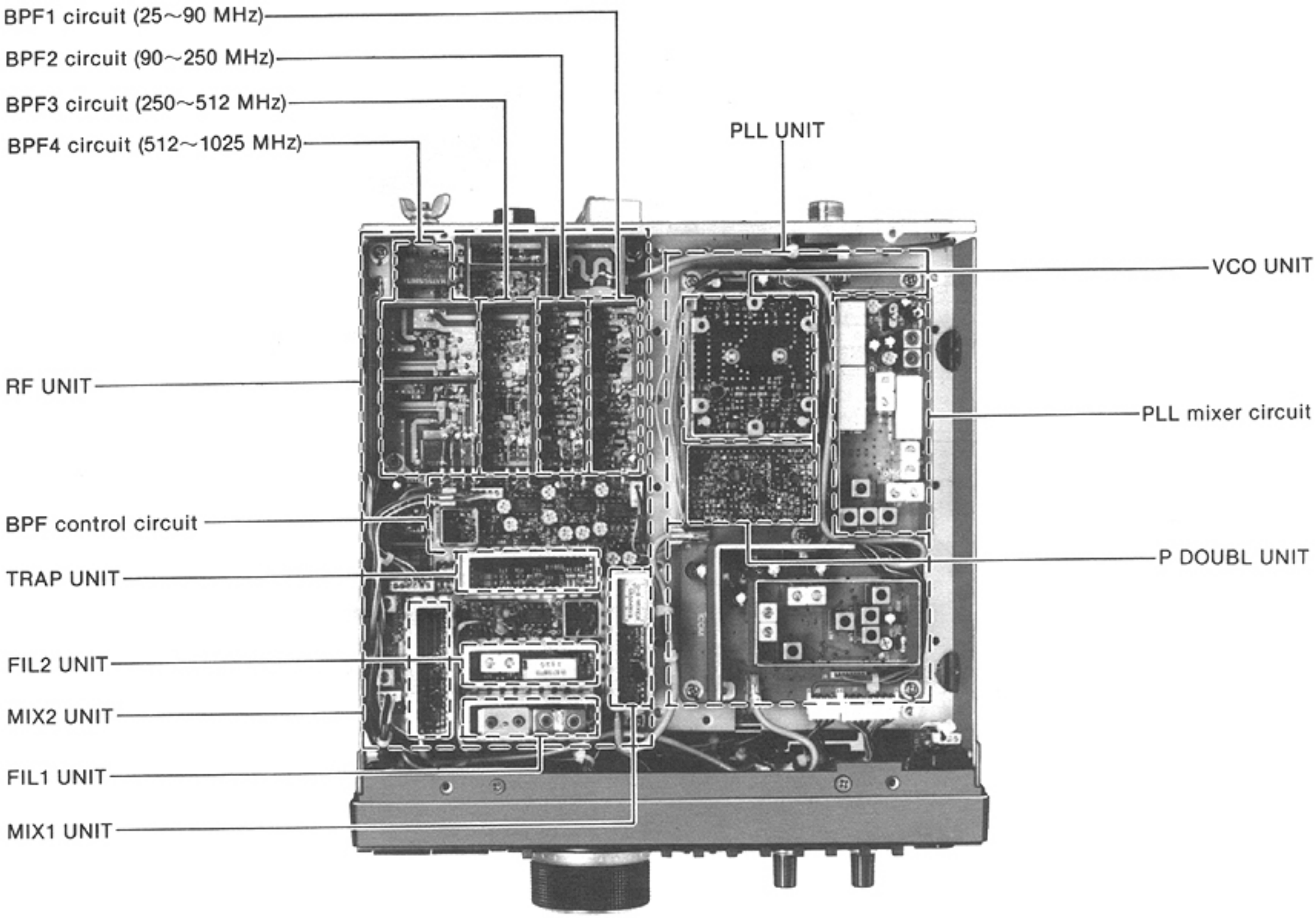
• CONV AND REG UNITS



• MAIN UNIT



• RF AND PLL UNITS



SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUITS

3-1-1 RF CONVERTER CIRCUIT (CONV, DOUBLER AND HPF UNITS)

The RF converter circuit converts the 1025~1999.9999 MHz RF signals to 25~1024.9999 MHz RF signals.

(1) 25.0000~1024.9999 MHz

RF signals from an antenna connector (J7) pass through the 1 GHz converter switching relay (RL1, RL2) and bypass the RF converter circuit. The signals are applied to the RF UNIT through J2.

(2) 1025.0000~1999.9999 MHz

RF signals from the antenna connector (J7) are applied to a high-pass filter (strip line, L3, C1~C6) on the HPF UNIT through the 1 GHz converter switching relay (RL1, RL2).

The high-pass filter attenuates the image signals below 1200 MHz and prevents 1 GHz (7 dBm) LO signals from entering the antenna connector.

The filtered signals pass through a wide range RF amplifier (IC1) to provide 20 dB gain over a wide-band frequency range and are then applied to a mixer circuit (IC1) on the CONV UNIT. IC1 employs a DBM (Double Balanced Mixer). The signals are mixed with the 1 GHz LO signal coming from the DOUBLER UNIT.

A 55.555 MHz reference signal is produced by an oscillator circuit (X1, Q1) and is then multiplied by three at L2 and L3. The resulting 166.666 MHz signal is amplified at Q3 and is then multiplied by three at Q4. The resulting 500 MHz (0 dBm) signal is doubled to produce a 1 GHz (7 dBm) LO signal on the DOUBLER UNIT.

The amplified signal is applied to IC1 on the CONV UNIT and is then mixed with RF signals coming from IC1 on the HPF UNIT. The resulting 25~1024.9999 MHz signals are applied to the RF UNIT through J2.

3-1-2 ATTENUATOR CIRCUIT (RF UNIT)

The attenuator circuit attenuates the signal strength to 20 dB to protect the RF amplifier from distortion when excessively strong signals are received.

The 25~1024.9999 MHz signals are applied to a band-pass filter (strip line, L3, C1~C6) to suppress out-of-band signals. The filtered signals either enter or bypass an attenuator circuit.

IC5 switches the power source of the attenuator circuit ON or OFF by using an "ATT" signal from the LOGIC UNIT. Q21 and D52 provide the converted and stable voltage to IC5.

When the [ATT] switch is pushed, the CPU (IC5, pin 64) on the LOGIC UNIT outputs a "HIGH" signal. The "HIGH" signal is applied to IC5 (pin 11) and activates the attenuator circuit (R2~R8).

The filtered signals are applied to the attenuator circuit (R2~R8) through a switching diode (D3). C8 compensates for attenuation when high frequencies are received. The resulting signals are applied to the RF circuit through a switching diode (D4).

When the CPU (IC5, pin 64) on the LOGIC UNIT outputs a "LOW" signal, Q12 and R106 act as an inverter. The inverter supplies a "THROUGH" signal to IC5 (pin 10); then, the filtered signals pass through a switching diode (D1) and are applied to the RF circuit through another switching diode (D2).

• RF CONVERTER AND ATTENUATOR CIRCUITS

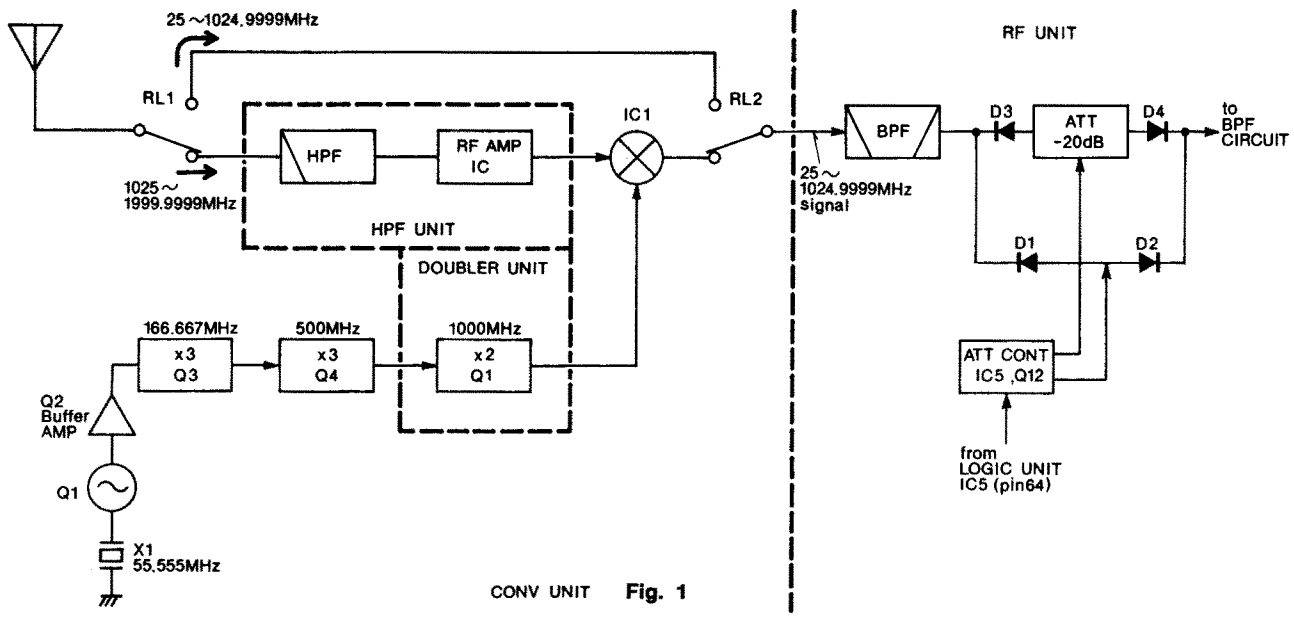


Fig. 1

3-1-3 RF CIRCUIT (RF UNIT)

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

The RF amplifiers (Q1~Q4) employ gallium arsenic FET's (3SK121). The combination of the RF amplifiers and tuned bandpass filters expand the dynamic range and enhance the sensitivity for the high frequency. Each tuned amplifier has approximately 10 dB gain.

IC4 functions as a comparator and is controlled by the BPF4 signal line. Pin 1 of IC4 outputs positive voltage in a frequency range of 512~1024.9999 MHz, while pin 7 of IC4 outputs positive voltage in a frequency range of 25.0000~511.9999 MHz.

IC5 switches the power source of BPF1~BPF4 ON or OFF by using "B1~B4" and "BH" signals from the LOGIC UNIT. Q21 and D52 provide the converted and stable voltage to IC5.

The 25~1024.9999 MHz signals are applied to four separate filters through switching diodes (D5, D12, D19, D11, D18, D25) depending on the range of frequency coverage. The relay circuit (RL1, RL2) is used instead of switching diodes for the frequencies above 512 MHz. This device prevents a diode from causing distortion when receiving very strong signals.

(1) BPF1 (25.0000~89.9999 MHz)

The 25.0000~89.9999 MHz signals pass through a parallel resonant circuit (D6, L11, C15) to suppress half of the receive frequency interference signals and are then applied to an RF amplifier (Q1) via a tuned bandpass filter (D7, D8, L12~L14). The amplified signals are applied to a 2nd RF amplifier (Q7) through a tuned bandpass filter (D9, D10, L16~L18).

D6~D10 employ varactor diodes which are controlled by the PLL lock voltage. The voltage is current-amplified at the DC amplifier circuit (IC3a, IC1a) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

D50 protects the varactor diodes from being charged over their maximum voltage.

(2) BPF2 (90.0000~249.9999 MHz)

The 90.0000~249.9999 MHz signals pass through a parallel resonant circuit (D13, L22, C25) to suppress half of the receive frequency interference signals and are then applied to a series resonant circuit (D14, L70, C61) to suppress strong signals in a frequency range of 80~110 MHz, such as FM and TV broadcasting stations. The signals are applied to an RF amplifier (Q2) via a tuned bandpass filter (D15, L23~L25, C119). The amplified signals are applied to a 2nd RF amplifier (Q7) through another tuned bandpass filter (D17, L27~L29, C120).

D13~D15 and D17 employ varactor diodes which are controlled by the PLL lock voltage. The voltage is current-amplified at the DC amplifier circuit (IC3a, IC1b) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

D51 protects varactor diodes from being negatively charged.

• **RF CIRCUIT**

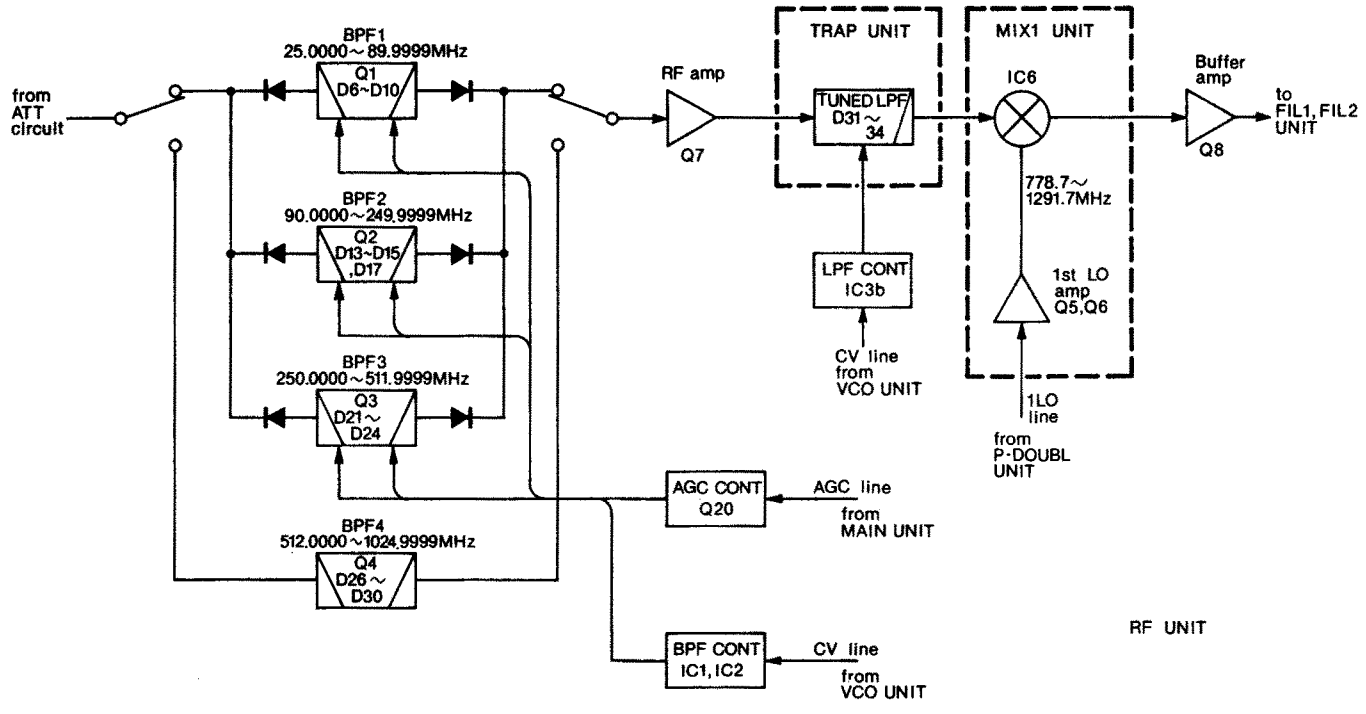


Fig. 2

(3) BPF3 (250.0000~511.9999 MHz)

The 250.0000~511.9999 MHz signals pass through a high-pass filter (L32, L69, C34, C35, C51, C133) to suppress the interference signals in low frequencies. The filter cuts out the 240 MHz frequencies. The filtered signals are applied to an RF amplifier (Q3) via a tuned bandpass filter (D21, D22, L33, L34). The amplified signals are applied to a 2nd RF amplifier (Q7) through another tuned bandpass filter (D23, D24, L36, L37).

D21~D24 employ varactor diodes which are controlled by the PLL lock voltage. The voltage is current-amplified at the DC amplifier circuit (IC3a, IC2a) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

(4) BPF4 (512.0000~1024.9999 MHz)

RF relays are used instead of a diode switching system for signals above 512 MHz. To drive these relays, Q14 and Q15 are used as current amplifiers.

The 512.0000~1024.9999 MHz signals pass through a parallel resonant circuit (D26, L39, C45) to suppress half of the receive frequency interference signals and are then applied to an RF circuit (Q4) via a tuned bandpass filter. The amplified signals are applied to a 2nd RF amplifier (Q7) through a tuned bandpass filter. The tuned bandpass filters consist of a strip line and D27~D30 and ensure stable operation at high frequencies.

D27~D30 employ varactor diodes which are controlled by the PLL lock voltage. The voltage is current-amplified at the DC amplifier circuit (IC3a, IC2b) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

(5) 2nd RF AMPLIFIER

The 2nd RF amplifier (Q7) employs a wide frequency band amplifier with approximately 10 dB gain.

The 25.0000~1024.9999 MHz signals from four separate filters are applied to the 2nd RF amplifier (Q7). The 2nd RF amplifier has a feedback circuit (L42, C67, R47) to obtain stable gain in the wide frequency range. The amplified signals are then applied to a tuned notch circuit.

3-1-4 TUNED NOTCH CIRCUIT (TRAP UNIT)

The tuned notch circuit prevents the 1st LO signal from entering the antenna connector.

This circuit consists of a strip line and D31~D34. The notch frequency is adjusted to match the 1st LO frequency by a control voltage coming from IC3b (pin 1).

D31~D34 employ varactor diodes which are controlled by the PLL lock voltage.

The voltage is current-amplified at the DC amplifier circuit (IC3a, IC3b) and is then applied to the varactor diodes. These varactor diodes tune the center frequency of an RF passband for wide bandwidth receiving and good image response rejection.

The signals from the tuned notch circuit are applied to a low-pass filter (strip line, C78, C82, C85, C89, C137) to suppress high harmonic components of the 1st LO signal. The filtered signals are applied to a 1st mixer circuit.

3-1-5 TUNED CONTROL CIRCUIT (RF UNIT)

The tuned control circuit converts the PLL lock voltage to tuned voltage for the BPF1~BPF4 on the RF UNIT and the tuned notch circuit on the TRAP UNIT.

Fig. 3 shows the relation between the PLL lock voltage and each tuned voltage, in the BPF1~BPF4 on the RF UNIT and tuned notch circuit on the TRAP UNIT.

• PLL LOCK VOLTAGE AND TUNED VOLTAGE

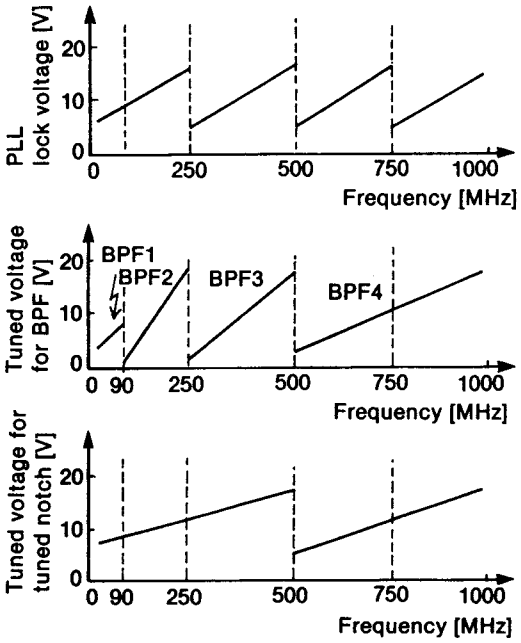


Fig. 3

The PLL lock voltage (CV) passes through the DC amplifier (IC3a) to convert the impedance and is then applied to the operational amplifiers (IC1a, IC1b, IC2a, IC2b, IC3b).

Pin 1 of IC1a supplies a tuned voltage to BPF1. R68 and R66 control the gain and offset voltage of IC1a respectively.

Pin 7 of IC1b supplies a tuned voltage to BPF2. D53 and R157 adjust the gain voltage of IC1b to fit the characteristics of BPF2.

Pin 1 of IC2a supplies a tuned voltage to BPF3.

Pin 7 of IC2b supplies a tuned voltage to BPF4. Q9 and Q10, switch the gain and offset voltage of IC2b ON or OFF and convert the variations of 2 PLL lock voltages into a continuous tuned voltage.

Pin 1 of IC3b supplies a tuned voltage to the tuned notch circuit on the TRAP UNIT.

Q11 switches the offset voltage of IC3b ON or OFF and converts the variations of 2 PLL lock voltages into a continuous tuned voltage.

3-1-6 1st MIXER CIRCUIT (MIX1 UNIT)

The 1st mixer circuit converts the received signal to a fixed frequency of the 1st IF signal with a PLL output frequency. By changing the PLL frequency, only the desired frequency will pass through the FIL1 UNIT or FIL2 UNIT at the next stage of the 1st mixer.

A 778.7~1291.7 MHz (0 dBm) 1st LO signal is applied to a bandpass filter (strip line, L78, C134, C59, C77, C53~C55) on the MIX1 UNIT to suppress unwanted signals through P1 from the PLL UNIT. The filtered signal is amplified at the 1st LO amplifiers (Q5, Q6). The 1st LO amplifiers (Q5, Q6) employ wide frequency band amplifiers with approximately 10 dB gain and amplify the 1st LO signal to approximately 10 dBm.

The 25.0000~1024.9999 MHz signals are mixed at IC6 with the 1st LO signal to produce a 266.7 or 778.7 MHz 1st IF signal. IC6 employs a DBM (Double Balanced Mixer).

Table 1 shows the relation between receive frequency and 1st LO frequency.

RECEIVE FREQUENCY [MHz]	1st LO FREQUENCY [MHz]
25~ 89.9999	803.7~ 868.6999
90~ 249.9999	868.7~1028.6999
250~ 511.9999	1028.7~1290.6999
512~1024.9999	778.7~1291.6999

Table 1

3-1-7 1st IF CIRCUIT (RF, FIL1 AND FIL2 UNITS)

The 1st IF signal (226.7 or 778.7 MHz) is applied to a 1st IF amplifier (Q8) providing approximately 10 dB gain over a wideband frequency range. The 1st IF amplifier employs a feedback circuit (L43, C72, R56) to obtain stable gain in the wide frequency range. The 2nd IF signal is applied to two separate filters depending on the receive frequency.

Table 2 shows the relation between receive frequency and 1st IF frequency.

RECEIVE FREQUENCY [MHz]	1st IF FREQUENCY [MHz]
25~ 89.9999	778.7 (FI1)
90~ 249.9999	778.7 (FI1)
250~ 511.9999	778.7 (FI1)
512~1024.9999	266.7 (FI2)

Table 2

Fig. 4 shows the characteristics of the 1st IF filter.

• 1ST IF FILTER CHARACTERISTICS

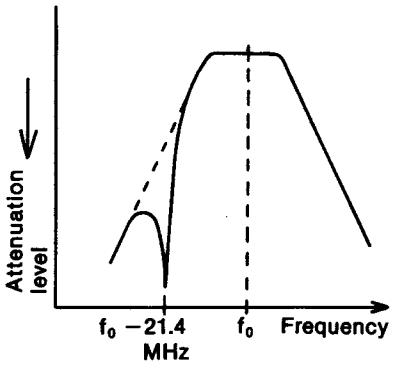


Fig. 4

(1) FIL1 CIRCUIT (25~511.9999 MHz)

The 778.7 MHz 1st IF signal is applied to an inductive bandpass filter (FI1) to suppress out-of-band signals. FI1 sets the center frequency at 778.7 MHz and covers a 5 MHz bandwidth. The filtered signal is applied to a notch filter (L51, C79) to suppress the image interference signal (757.3 MHz).

(2) FIL2 CIRCUIT (512~1024.9999 MHz)

The 266.7 MHz 1st IF signal is applied to a helical filter (L46, L47) to suppress out-of-band signals through a series resonant circuit (L73, C86). The helical filter sets the center frequency at 266.7 MHz and covers a 5 MHz bandwidth. The filtered signal passes through a notch filter (L67, L68, C88) to suppress the image interference signal (245.3 MHz) and is then applied to series resonant circuits (L74, C90). The series resonant circuits attenuate out-of-band signals.

The 266.7 or 778.7 MHz 1st IF signal is applied to a low-pass filter (strip line, C139~C141) to suppress the high harmonic components on the RF UNIT.

3-1-8 2nd MIXER CIRCUIT (MIX2 UNIT)

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

A 256 or 768 MHz (0 dBm) 2nd LO signal is applied to a 1 GHz cutoff low-pass filter (strip line, C104, C105, C146) on the MIX2 UNIT to suppress the high harmonic components through P3 from the PLL UNIT.

The filtered signal is amplified at the 2nd LO amplifiers (Q16, Q17). The 2nd LO amplifiers (Q16, Q17) employ wide frequency band amplifiers with approximately 10 dB gain and amplify the 2nd LO signal to approximately 10 dBm. The amplified signal is applied to an attenuator circuit (R116, R118).

The 266.7 or 778.7 MHz 1st IF signal is mixed at IC7 with the 2nd LO signal to produce a 10.7 MHz 2nd IF signal. The 10.7 MHz 2nd IF signal is output from IC7 (pin 1) and is then applied to the RF UNIT. IC7 employs a DBM (Double Balanced Mixer).

Table 3 shows the relation between receive frequency and 2nd LO frequency.

RECEIVE FREQUENCY [MHz]	2nd LO FREQUENCY [MHz]
25~ 89.9999	768
90~ 249.9999	768
250~ 511.9999	768
512~1024.9999	256

Table 3

3-1-9 AGC BUFFER AMPLIFIER CIRCUIT (RF UNIT)

The AGC voltage shifts from approximately 4 V to 0 V. The AGC buffer amplifier (Q20) shifts approximately 1.5 V to the minus voltage that the RF amplifiers (Q1~Q4) require.

3-1-10 2nd IF CIRCUIT (RF AND MAIN UNITS)

The 10.7 MHz 2nd IF signal is applied to a low-pass filter which cuts off the frequencies around 400 MHz. The filter consists of a strip line and C142~C144 and prevents the high harmonic components from entering the 2nd mixer (IC7) on the MIX2 UNIT.

The filtered signal passes through a 2nd IF amplifier (Q18) with approximately 20 dB gain and is then applied to the MAIN UNIT through J4.

A portion of the 2nd IF signal output from IC7 passes through a buffer-amplifier (Q19) and is then applied to a 20 MHz cutoff low-pass filter (L60, C114~C116). The filtered signal is applied to the [IF OUT] jack on the rear panel.

In WFM mode, the 10.7 MHz 2nd IF signal passes through the IF amplifiers (L1, Q55) and is then applied to a high-quality ceramic filter (FI1) covering the 230 kHz (3 dB) bandwidth. The filtered signal is amplified at Q14 and is then re-amplified at IC11. Q14 and IC11 provide approximately 40 dB gain in WFM mode. The amplified signal passes through another high-quality ceramic filter (FI2) covering the 230 kHz (3 dB) bandwidth and is then applied to the WFM demodulator circuit.

In other modes, the 10.7 MHz 2nd IF signal is applied to a pair of crystal filters (FI3) covering a ±7.5 kHz (3 dB) bandwidth in order to obtain wide selection capability and to pass only desired signals. The filtered signal is applied to Q21.

• IF CIRCUIT

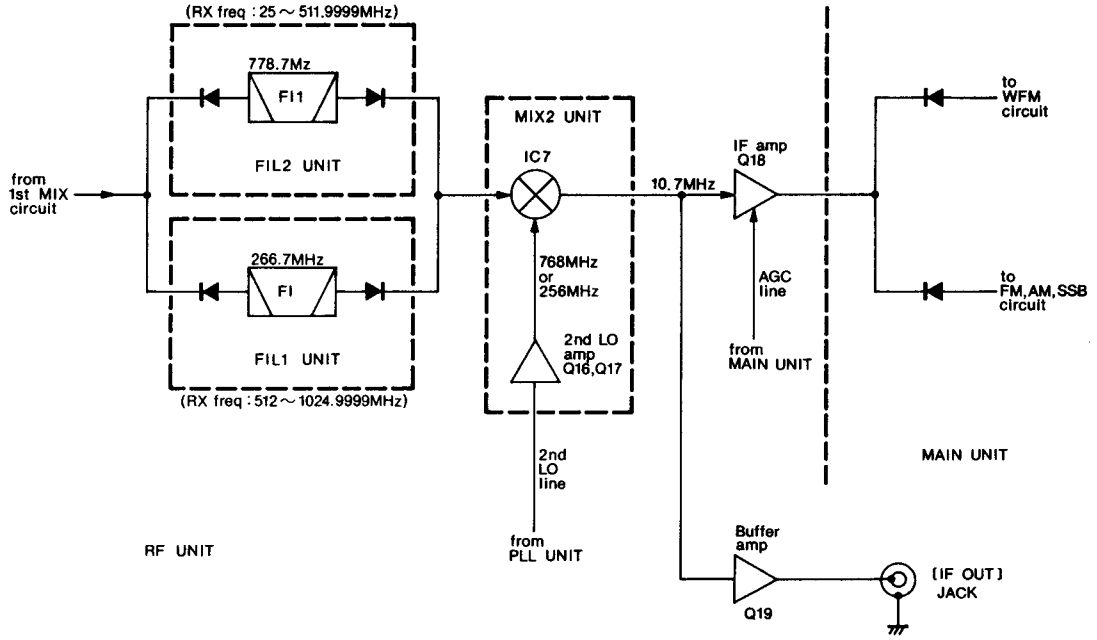


Fig. 5

3-1-11 NOISE BLANKER CIRCUIT (MAIN UNIT)

The noise blanker circuit effectively reduces interference from pulse-type noise such as car ignition systems and functions in only SSB and AM modes.

A portion of the 2nd IF signal output (drain of Q21) is applied to the noise amplifier (IC14) and is then detected at the noise detector circuit (D46, D47). The detected voltage is applied to a noise blanker switch (Q27).

The threshold level of the noise blanker switch (Q27) is set at approximately 0.3 V higher than that of Q26 to avoid malfunctions when the operating frequency or mode is changed. When the detected voltage exceeds the threshold level, Q28 outputs a blanking signal to activate the noise blanker gate circuit (D30~D32).

A portion of the detected voltage is applied to a noise blanker AGC circuit (Q26). The threshold level of the noise blanker AGC circuit (Q26) is set at 0.6 V. The noise components are fed back to the noise amplifier (IC14) through a DC amplifier (Q25). The time constant of the noise blanker AGC circuit is determined by R206, R209 and C129. This AGC circuit does not detect pulse-type noise.

Q46 turns the noise blanker circuit ON or OFF. While pulse-type signals are received, Q46 turns Q28 ON. Therefore, the noise blanker gate circuit (D30~D32) is reverse-biased to cut OFF the 2nd IF signal.

3-1-12 3rd MIXER AND 3rd IF CIRCUITS (MAIN UNIT)

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

The signal output from the noise blanker gate circuit (D30~D32) enters the 3rd mixer circuit (IC13). IC13 is a DBM (Double Balanced Mixer).

A 10.245 MHz 3rd LO signal is oscillated by (Q29, X2) and is then applied to the 3rd mixer circuit to produce a 455 kHz 3rd IF signal. C132 provides frequency control.

The 455 kHz 3rd IF signal output from IC13 (pin 3) passes through an impedance converter (L7, C97) and is then applied to three separate, high-quality ceramic filters (FI4~FI6) depending on the mode.

(1) SSB MODE

The 455 kHz 3rd IF signal is applied to FI4 covering 2.8 kHz of bandwidth in SSB mode.

(2) AM/FMN MODES

The 455 kHz 3rd IF signal is applied to FI5 coverin 6.0 kHz of bandwidth in AM or FMN mode.

(3) FM/AMW MODES

The 455 kHz 3rd IF signal is applied to FI6 covering 15.0 kHz of bandwidth in FM or AMW mode.

The filtered signal is applied to the 3rd IF amplifier circuit (Q22, Q23) and is then applied to the demodulator circuits.

3-1-13 WFM DEMODULATOR CIRCUIT (MAIN UNIT)

The 10.7 MHz 2nd IF signal output from FI2 is applied to pin 1 of IC12 to demodulate the 2nd IF signal into an AF signal.

IC12 contains a limiter amplifier, a filter, an FM detector and a signal meter circuit.

Input signal from IC12 (pin 1) passes the limiter amplifier and the filter sections of IC12. The filtered signal is demodulated into an AF signal by using the FM detector section of IC12 and the other components (X1, L2, R128, C72, C73, D26).

A varactor diode (D26) adjusts the distortion of the center frequency in a ceramic discriminator (X1) by changing its voltage.

The AF signal is output from IC12 (pin 8) and is then applied to the buffer amplifier (Q18) for AF signal switching and AF signal level adjustment in other modes.

• WFM DEMODULATOR CIRCUIT

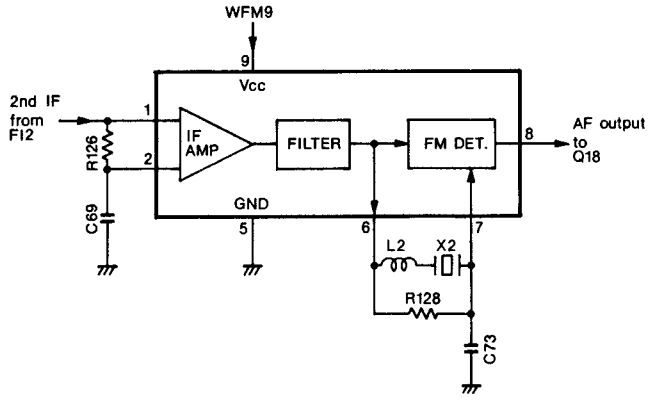


Fig. 6

3-1-14 WFM AGC CIRCUIT (MAIN UNIT)

The AGC (Automatic Gain Control) circuit reduces signal fading and keeps the audio output level constant.

The strength of the 2nd IF signal is detected at the signal meter circuit section of IC12. The detected voltage is output from pin 3 of IC12 depending on the signal strength of the input voltage (IC12, pin 1).

Q15 is a DC buffer amplifier. When the input voltage of IC12 (pin 1) becomes strong, the base voltage of Q16 increases. Therefore, Q15 turns Q16 ON to cut off the AGC voltage.

Q19 and Q20 are DC buffer amplifiers providing gain control to pin 1 of IC11. Q56 provides gain control to Q55 and Q14 by changing its voltage.

3-1-15 BFO AND SSB DEMODULATOR CIRCUITS (MAIN UNIT)

The BFO (Beat Frequency Oscillator) circuit consists of Q41 and Q42. The oscillator provides a beat frequency signal to the SSB demodulator circuit (D39~D42) for demodulating the 3rd IF signal into an AF signal. The BFO frequency is adjusted at L4 in SSB mode.

In LSB mode, the CPU (IC5, pin 74) on the LOGIC UNIT outputs a "HIGH" signal. The "HIGH" signal turns Q40 ON. Therefore, the capacitance of C180 and C181 is added to L14, C182 and C183 to increase the BFO oscillation by 3 kHz.

The AF signal output from the SSB demodulator circuit (D39~D41) is applied to a buffer amplifier (Q24) for AF signal switching and AF signal level adjustment in other modes.

3-1-16 FM DEMODULATOR CIRCUIT (MAIN UNIT)

The 3rd IF signal output from Q23 is buffer-amplified at Q30 and is then applied to a limiter amplifier (IC15) to eliminate the AM signal components.

The signal output from IC15 is applied to a ceramic discriminator (X3) to be demodulated into an AF signal. The AF signal is applied to an active filter circuit (Q31, Q32) to suppress the signals below 300 Hz.

3-1-17 AM DEMODULATOR CIRCUIT (MAIN UNIT)

The 3rd IF signal output from Q23 is buffer-amplified at Q30 and is then applied to an AM demodulator circuit (C168, D57) to be demodulated into an AF signal.

The AF signal is applied to a buffer amplifier (Q39) for AF signal switching and AF signal level adjustment in other modes.

3-1-18 AM/SSB/FMN AGC CIRCUIT (MAIN UNIT)

A portion of the 3rd IF signal output from Q30 is applied to an AGC detector circuit. The AGC voltage is detected at D56 and is then applied to a DC amplifier (Q38).

In AM or SSB mode, the "AM9" or "SSB9" line becomes "HIGH." The "HIGH" signal turns Q34 and Q35 ON. Therefore, R246 shortens the time constant. C161 and R247 are connected in parallel with the AGC time constant line to obtain an appropriate time constant.

In FM mode, the "FM9" line becomes "LOW." The "LOW" signal turns Q35 OFF. Therefore, C162 and R246 are connected in parallel with the AGC time constant line to obtain a rapid AGC release time.

R248 and R249 offset the AGC voltage to approximately 4 V when receiving no signal.

When the scan is in operation, the CPU (IC5, pin 91) on the LOGIC UNIT outputs a "HIGH" signal for 35 msec. on the "IFBK" signal line. The "HIGH" signal turns Q36 and Q37 ON to reset the AGC circuit.

• DEMODULATOR AND AGC CIRCUITS

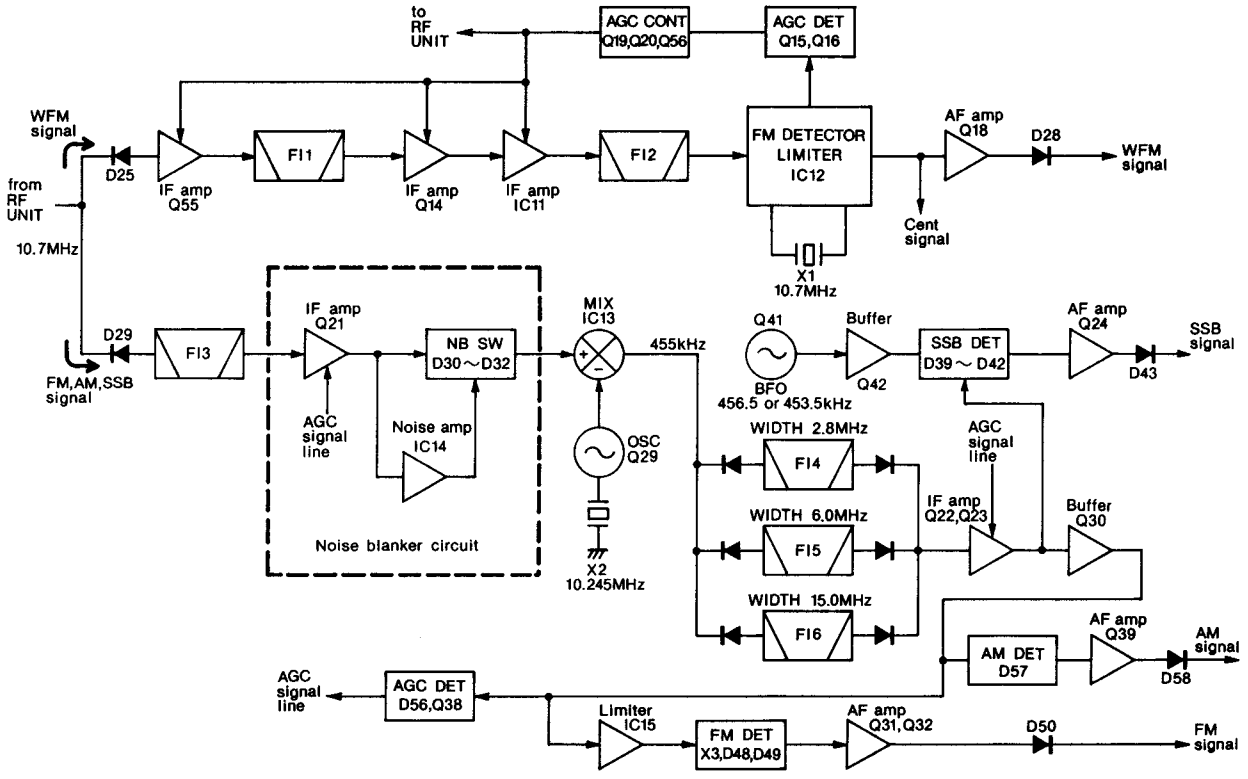


Fig. 7

3-1-19 AF AMPLIFIER CIRCUIT (MAIN AND LOGIC UNITS)

The AF signal output from the demodulator circuits is amplified at Q49. The amplified signal passes through a squelch switch (Q1) and is then applied to IC8 (pin 2). Pin 8 of IC8 is connected with the "AFUD" signal line from the LOGIC UNIT. The audio output level is varied by the [AF GAIN] control (R1) on the VR UNIT and is then applied to IC21 (pin 7) on the LOGIC UNIT through the "AFG" signal line. The signal is applied to IC8 (pin 8) on the MAIN UNIT. The AF signal is output from IC8 (pin 3) and is then power-amplified at an AF power amplifier (IC9) to drive a speaker.

The AF amplifier (Q11) amplifies the "VOIC" signal from the optional UT-36 VOICE SYNTHESIZER UNIT on the SPEECH UNIT.

3-1-20 NOISE SQUELCH CIRCUIT (MAIN UNIT)

The noise squelch functions in AM or FMN mode. Some noise components in the AF signal from the ceramic discriminator (X3) are applied to an active filter (IC17).

The active filter (IC17) amplifies noise components of frequencies 20 kHz and above, and outputs the resulting signals from pin 1. Output signals are rectified at the doubler circuit (D59, D60) and are then converted to DC voltage. The rectified noise voltage passes through a differential circuit (C179, R266) and is then applied to a DC amplifier (IC3a, pin 3).

When the scan is in operation, the CPU (IC5, pin 91) on the LOGIC UNIT outputs a "HIGH" signal for 35 msec. on the "IFBK" signal line. The "HIGH" signal turns Q36 and Q37 ON to deactivate the squelch circuit. The pulse-type signal is applied to C179 through D55 for rapid charging.

The amplified signal passes through a voltage limiter circuit (D8, D9, R49) and is then applied to a comparator (IC3b, pin 5). The noise squelch reference voltage is applied to pin 6 of IC3b and is varied by the [SQUELCH] control on the VR UNIT. R51 adjusts the input level of IC3b (pin 6).

The noise squelch is output from IC3b (pin 7) and is then applied to the base of Q47 through D10. Q51 short-circuits the output from IC3b (pin 7) in SSB mode.

3-1-21 S-METER SQUELCH AND S-METER CIRCUITS (MAIN UNIT)

The S-meter squelch functions in any mode. The AGC voltage is inverted and amplified at IC4a. The signal output from IC4a (pin 1) passes through D11 and is then applied to a comparator (IC4b, pin 6). The "ADSM" voltage line from D11 is applied to IC15 (pin 5).

The S-meter squelch reference voltage passes through a DC amplifier (Q7) and is then applied to the comparator (IC4b, pin 5) through D16 and is varied by the [SQUELCH] control on the VR UNIT. R66 adjusts the input level of IC4b (pin 5). This reference voltage is added to the S-meter voltage and is then applied to the [S.METER] on the FRONT PANEL through D15 to indicate the S-meter squelch threshold level.

The S-meter squelch is output from IC4b (pin 7) and is then applied to the base of Q47 through D17.

3-1-22 SQUELCH SWITCH CIRCUIT (MAIN UNIT)

Q47 switches Q2 ON or OFF depending on the output level from the comparators (IC3b, IC4b). Q3 controls the gate voltage of Q1 by using the collector voltage of Q2. Q1 cuts out the AF signal when the squelch is closed. Q2 outputs a "BUSY" signal to the LOGIC UNIT and lights up the [BUSY] indicator on the FRONT PANEL when the squelch is open.

• S-METER SQUELCH CIRCUIT

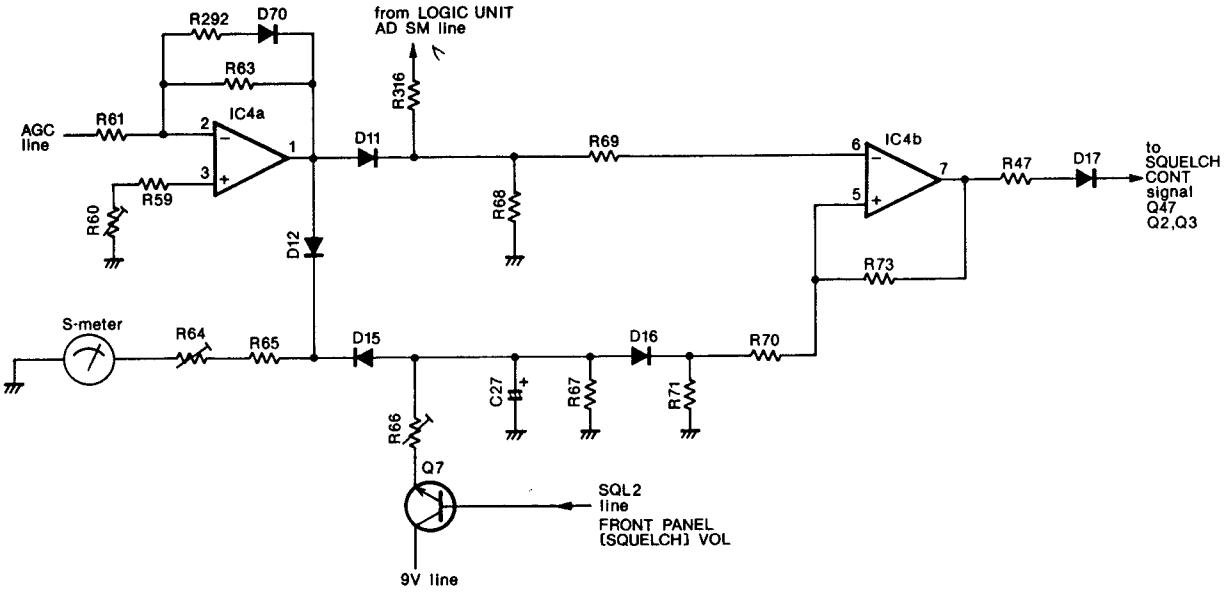


Fig. 8

3-1-23 VSC CIRCUIT (MAIN UNIT)

The VSC (Voice Scanning Control) detects the AF signal during scanning and skips undesired signals such as unmodulated signals, beat signals and noise component signals.

The AF signal output from the squelch switch (Q1) passes through an active filter circuit (IC1a, R8~R13, C6~C10) which attenuates the components of frequencies 1 kHz and above. The filtered signal is amplified sufficiently at IC1b and is then detected at D2. The detected voltage is charged at C15 and is then applied to a comparator (IC2b). Pin 7 of IC2b outputs a "HIGH" signal only when receiving AF signals.

C15 and R22 set the charge time. The release time is set at R23.

Q4, Q5 and Q52 control a relay circuit (RL1) for the [REC REMOTE] jack on the REAR PANEL. RL1 is turned ON by the "MO" signal from the LOGIC UNIT when receiving AF signals. VSC operation is given priority even when the squelch is open. When the VSC function is activated, RL1 is turned OFF by the "MO" signal from the LOGIC UNIT.

3-1-24 CENTER DETECTOR AND CENTER METER CIRCUITS (MAIN UNIT)

The center detector circuit adjusts the center frequencies of the IF signals in the WFM and FM demodulator circuits.

R224 adjusts the mismatch of the center frequencies by using the offset voltage from R224, R225 and R229.

The center signal passes through a DC amplifier (Q17 or Q43). The amplified signal is inverted and amplified at IC2a.

The resulting signal is output from IC2a (pin 1) and is then applied to IC15 (pin 4).

The center signal is applied to a window comparator (IC5a, IC5b).

R78 adjusts the offset voltage to 0 V output from IC5 when the receive frequency is matched with the center frequency. When the receive frequency is not matched with the center frequency, the cathodes of D18 and D19 become "HIGH." The scanning control circuit prevents malfunction caused by adjacent channels and spurious emissions.

3-1-25 SCANNING CONTROL CIRCUIT (MAIN UNIT)

Output signals from the squelch and center detector circuits are applied to the base of Q9. Q9 turns OFF only when both of them are "LOW." In other words, Q9 turns OFF when the squelch is open in the center frequency. The collector of Q9 provides the "STOP" signal to the LOGIC UNIT. The "STOP" signal becomes "HIGH" when the scanning function stops. When the scan is in operation, the CPU (IC5, pin 91) on the LOGIC UNIT outputs a "HIGH" signal for 35 msec. on the "IFBK" signal line. The "HIGH" signal is applied to D66 and turns Q9 ON to deactivate the scanning circuit. Q8 and D20 turn OFF the output from the center detector circuit in SSB mode.

3-1-26 IF FILTER SWITCHING CIRCUIT (MAIN UNIT)

The mode signals from the LOGIC UNIT select the IF filters in the separate modes by using the diode matrix (D51, D52, D67, D68), the mode voltage switching circuit (Q33, Q48, Q53, Q54) and a voltage buffer (IC8). The voltage buffer (IC8) converts the mode signals to the needed levels to drive each mode.

• CENTER DETECTOR CIRCUIT

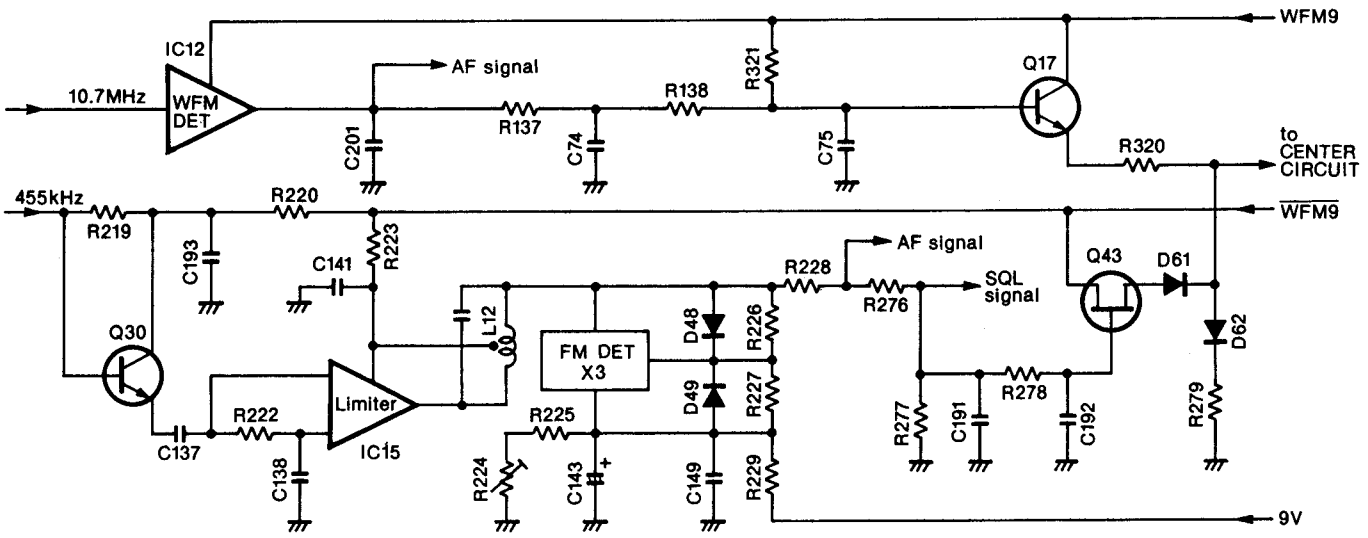


Fig. 9

3-1-27 TIMER CONTROL CIRCUIT (MAIN UNIT)

Q13 controls a relay circuit (RL2) for the timer function. The CPU (IC5, pin 34) on the LOGIC UNIT outputs a "HIGH" signal when the [TIMER] switch is pushed OUT. The "HIGH" signal is applied to Q13 through the "POC" line and turns RL2" ON.

3-1-28 REGULATOR CIRCUIT (MAIN UNIT)

IC10 is a voltage regulator providing a stable 9 V to the MAIN and RF UNITs.

3-2 PLL CIRCUITS

3-2-1 GENERAL

The PLL circuit oscillates a 1st LO frequency (778.7000 ~1291.6999 MHz) for the 1st mixer circuit on the MIX1 UNIT and a 2nd LO frequency (256 or 768 MHz) for the 2nd mixer circuit on the MIX2 UNIT. The IC-R7100 uses a heterodyne down converter PLL system. The heterodyne down converter PLL system employs a mixer circuit in the PLL loop circuit to cut off the high frequency components by mixing the frequencies when the VCO frequency exceeds the maximum frequency that the PLL IC can divide.

• PLL CIRCUIT

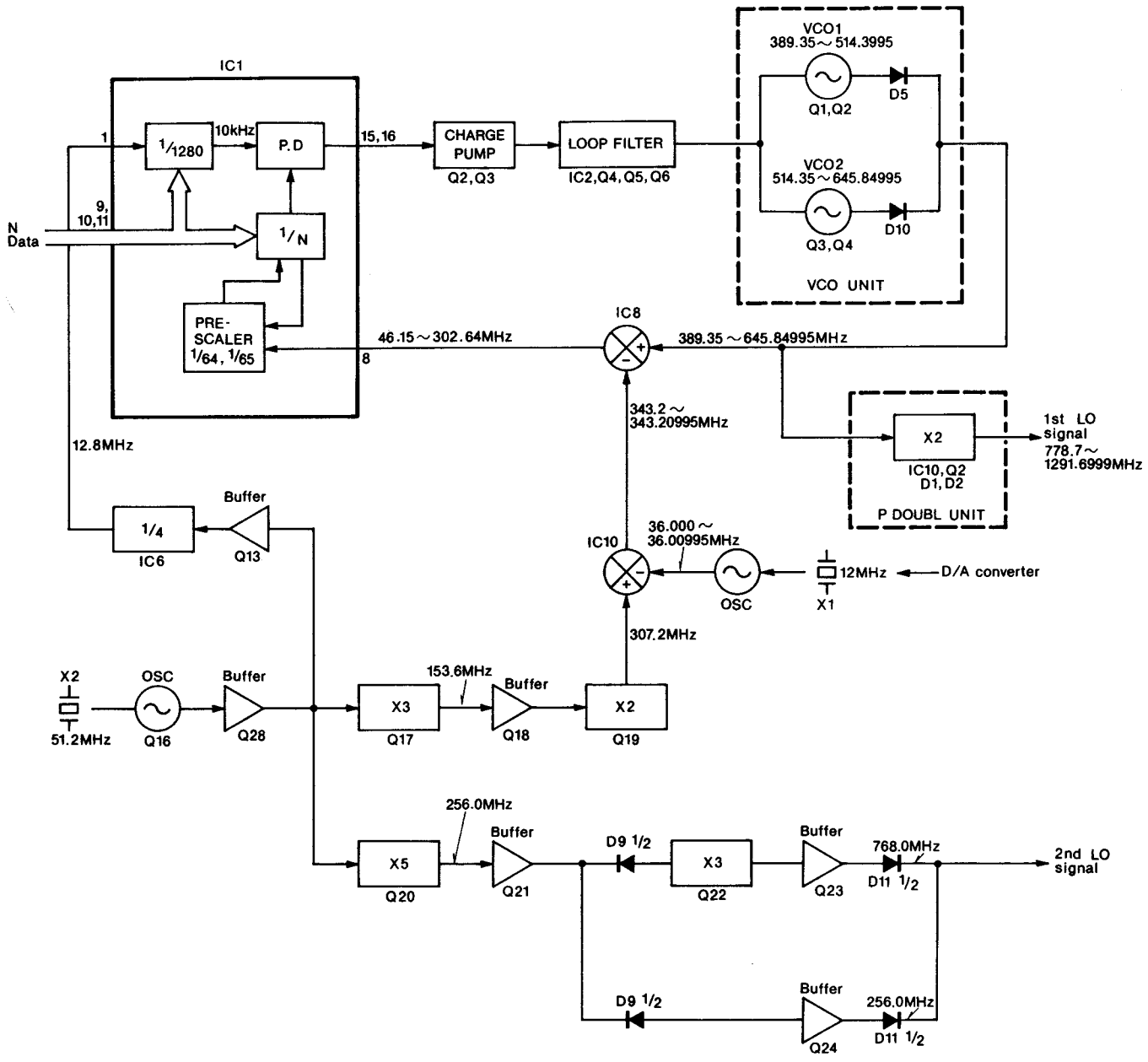


Fig. 10

3-2-2 REFERENCE OSCILLATOR CIRCUIT (PLL UNIT)

The IC-R7100 employs two reference oscillator circuits.

The 51.2 MHz reference oscillator circuit consists of Q16 and X2. The 51.2 MHz reference frequency is applied to a buffer amplifier (Q28). The amplified signal enters a buffer amplifier (Q13) or a tripler (Q17) or a 2nd LO circuit.

The reference frequency from the buffer-amplifier (Q13) is then divided by 4 at IC6 and applied to the PLL IC (IC1, pin 1).

The 51.2 MHz reference frequency from the tripler (Q17) is applied to a filter circuit (L25~L27) to eliminate spurious signals and is then buffer-amplified at Q18. The amplified signal passes through the doubler (Q19) and is applied to a helical bandpass filter (L31, L32) to eliminate spurious signals. The filtered signal is mixed with a reference frequency from X1 and Q14.

The 12.0 MHz reference oscillator circuit consists of X1 and Q4. The 12.0 MHz reference frequency is generated at X1 and is then multiplied by 3 at Q14. The resulting signal is applied to IC10 to be mixed with a reference frequency from X2 and Q16.

The resulting signal from IC10 is buffer-amplified at IC9 and is then applied to L19 to eliminate the spurious signals and then to IC8 to be mixed with VCO output from the VCO UNIT.

3-2-3 2nd LO CIRCUIT (PLL UNIT)

The 51.2 MHz reference signal is multiplied by 5 at Q20 and is then applied to a filter circuit (L36~L38) to eliminate spurious signals. The filtered signal is then buffer-amplified at Q21 and applied to the two separate amplifier circuits.

(1) 256.0 MHz 2nd LO

The amplified signal from Q21 is re-amplified at Q24 to obtain a 256.0 MHz 2nd LO signal.

(2) 768.0 MHz 2nd LO

The amplified signal from Q21 is multiplied by 3 at Q22 and is then applied to a helical bandpass filter (L42) to eliminate spurious signals. The filtered signal is buffer-amplified at Q23 to obtain a 768.0 MHz 2nd LO signal.

Either a 256.0 MHz or a 768.0 MHz 2nd LO signal is applied to the 2nd mixer circuit (IC7) on the MIX2 UNIT to produce a 10.7 MHz 2nd IF signal.

3-2-4 VCO CIRCUIT (VCO UNIT)

The VCO circuit consists of two VCO's on the VCO UNIT. VCO1 (Q1, Q2, D1~D4) generates the 389.35~514.3995 1st LO frequency, while the VCO2 (Q3, Q4, D6~D9) generates the 514.35~645.84995 MHz 1st LO signal. The varactor diodes (D1~D4, D6~D9) provide frequency control.

The output signal from the VCO circuit either passes through a three-stage low-pass filter (L59~L61, C147~C152) and is then applied to the P DOUBL UNIT or is amplified at IC3 and is then applied to IC8 to be mixed with a reference frequency from IC9.

The resulting signal from IC8 is applied to a low-pass filter circuit (L14, L15) to eliminate spurious signals and is then buffer-amplified at Q15. The amplified signal is applied to the PLL IC (IC1, pin 8).

3-2-5 DOUBLER CIRCUIT (P DOUBLE UNIT)

The VCO oscillation (389.35~645.84995 MHz) is buffer-amplified at IC10 and is then applied to a low-pass filter (strip line, C168~C172). The filtered signal is buffer-amplified at Q2 and then applied to a doubler circuit (D1, D2, L5). The amplified signal passes through a band-pass filter (strip line, C113~C115, C175, C195, C196) and a low-pass filter (strip line, C188~C192) to suppress unwanted signals. The resulting 778.7~1291.7 MHz 1st LO signal is applied to the MIX1 UNIT to produce a 266.7 or 778.7 MHz 1st IF signal.

3-2-6 PROGRAMMABLE DIVIDER AND PHASE DETECTOR CIRCUITS (PLL UNIT)

The programmable divider shifts the dividing ratio with a prescaler depending on the operating frequency and determines the VCO oscillating frequency.

The phase detector circuit detects the off-phase components of the VCO frequency using a stable reference frequency.

IC1 is a one-chip PLL IC that contains a two-modulus prescaler, a swallow counter, a programmable divider and a phase detector. IC1 accepts up to 520 MHz inputs.

The input signal from PLL IC (IC1, pin 8) passes through the two-modulus prescaler and the programmable counter sections of IC1. A 10 kHz reference frequency is applied to IC1 (pin 1) and passes through a programmable reference counter section of IC1. Both of the divided signals are compared at the phase detector section of IC1. The phase-detected signal (pulse signal) is output from IC1 (pins 15 and 16).

3-2-7 CHARGE PUMP AND LOOP FILTER CIRCUITS (VCO AND PLL UNITS)

The phase-detected signal (pulse signal) from IC1 (pins 15 and 16) passes through the charge pump (Q2, Q3) and is then applied to an active loop filter (Q4~Q6). The pulse signal is converted to DC voltage (PLL voltage) to control oscillation from the VCO UNIT. A charge pump (Q2, Q3) is used to expand the range of the PLL lock voltage. The PLL lock voltage changes the reactance of the varactor diodes (D1~D4, D6~D9) in the VCO circuit.

3-3 LOGIC CIRCUITS

The LOGIC circuit consists of a one chip 8-bit CPU (IC5), an I/O expander (IC4) controlling the input level from the key matrix, a 64 k-bit CMOS RAM (IC11) and a CI-V circuit. The 64 k-bit CMOS RAM (IC11) contains 900 memory channels which can be divided into 9 banks and 20 independent, program channels. The CI-V circuit controls frequency, mode, memory channels etc., by connecting the receiver with an optional CT-17 CI-V LEVEL CONVERTER to a personal computer equipped with an RS-232C port.

3-3-1 RESET CIRCUIT (LOGIC UNIT)

The reset circuit resets the CPU (IC5), the LCD drivers (IC8, IC9) and the I/O expander (IC4) when the three-terminal voltage regulator (IC13) detects 5 V and outputs 5 V. The leading edge voltage is applied to a time constant (R24, C22). The "LOW" pulse-type signal is output from the time constant during the delay time. The signal is inverted at Q6 and is then applied to a Schmitt trigger circuit (IC7) to tune the pulse-type signal. The reset signal is applied to the reset ports of the CPU (IC5), the LCD drivers (IC8, IC9) and the I/O expander (IC4). D14 discharges the voltage of C22.

3-3-2 DIMMER CIRCUIT (LOGIC UNIT)

The dimmer circuit consists of Q2, Q3 and D16 and drives backlights (DS4~DS7), ensuring that brightness does not change even with a change of power supply. When the [DIMMER] switch is ON, the CPU (IC5, pin 56) outputs a "LOW" signal to decrease the base voltage of Q3.

• DIMMER CIRCUIT

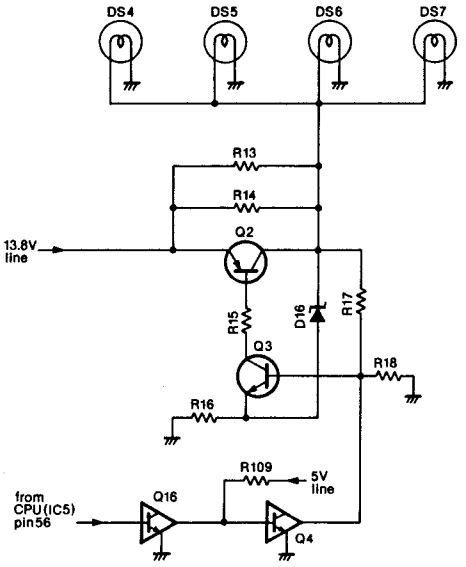


Fig. 11

3-3-3 REGULATOR CIRCUIT (LOGIC UNIT)

IC23 is a 5 V three-terminal regulator. The "LHV" line is converted from the "HV" line and passes through a resistor (R291) on the MAIN UNIT. Then, the voltage line is applied to IC23. The time constant consists of R291 on the MAIN UNIT and C71 on the LOGIC UNIT and protects the 5 V line from any drastic changes.

3-3-4 BAND SELECTION DATA (LOGIC UNIT)

The band control signals are changed depending on the receive frequencies. The CPU (IC5) outputs the following signals for the RF UNIT, PLL UNIT and MAIN UNIT.

RECEIVE FREQUENCY	RF BAND					PLL		CONV
	B1	B2	B3	B4	BH	BS	VS	
25.0000~ 89.9999 MHz	H	L	L	L	L	L	H	L
90.0000~ 249.9999 MHz	L	H	L	L	L	L	H	L
250.0000~ 511.9999 MHz	L	L	H	L	H	L	L	L
512.0000~ 761.9999 MHz	L	L	L	H	L	H	H	L
762.0000~ 1024.9999 MHz	L	L	L	H	H	H	L	L
1025.0000~ 1089.9999 MHz	H	L	L	L	L	L	H	H
1090.0000~ 1249.9999 MHz	L	H	L	L	L	L	H	H
1250.0000~ 1511.9999 MHz	L	L	H	L	H	L	L	H
1512.0000~ 1761.9999 MHz	L	L	L	H	L	H	H	H
1762.0000~ 1999.9999 MHz	L	L	L	H	H	H	L	H

3-3-5 CPU (IC5) PORT ALLOCATIONS (LOGIC UNIT)

PORT NUMBER	PORT NAME	PIN NUMBER	DESCRIPTION
P00~ P04	B1~ B4, BH	14~18	Outputs the band control signals for the RF UNIT. See the table shown in the BAND SELECTION DATA (3-3-4).
P05	CONV	19	Outputs a band control signal for the MAIN UNIT. See the table shown in the BAND SELECTION DATA (3-3-4).
P06, P07	VS, BS	20, 21	Outputs the band control signals for the PLL UNIT. See the table shown in the BAND SELECTION DATA (3-3-4).
P10	DIM	56	Becomes "LOW" when the [DIMMER] switch is ON.
P11	SSTB	57	Outputs a strobe signal for an optional UT-36 VOICE SYNTHESIZER UNIT.
P12	PSTB	58	Outputs a strobe signal for a PLL IC (IC1) on the PLL UNIT.
P13	EXSTB	59	Outputs a strobe signal for a D/A control IC (IC14) on the PLL UNIT.
P14	REML	61	Outputs an indicator signal for the [REMOTE] indicator on the front panel. This port becomes "HIGH" when the CPU enters the remote condition via the CI-V system.

PORT NUMBER	PORT NAME	PIN NUMBER	DESCRIPTION
P15	MO	62	Outputs a control signal for the [REC REMOTE] jack. This port becomes "HIGH" when the CPU drives a tape recorder to record receive audio.
P16	NB	63	Becomes "HIGH" when the [NB • AFC] switch is ON.
P17	ATT	64	Becomes "HIGH" when the [ATT] switch is ON.
P20	LBUSY	75	Inputs "BUSY" signals for LCD drivers (IC8, IC9) on the LOGIC UNIT.
P21	STOP	76	When the port becomes "LOW," the CPU is changed to the backup mode.
P22	DCK	77	Input port for the main dial clock pulses.
P23	DUP	79	Input port for the main dial UP signal.
P24	DDN	80	Input port for the main dial DOWN signal.
P24	SQLS	81	Detects a squelch signal. When the signal is "LOW," the squelch opens.
P25	VSC	82	Detects a VCS signal. This port becomes "HIGH" when the VSC circuit detects an audio signal.
P27	AD1	83	Inputs serial data from the A/D converter.
P30	CIVRX	85	Input port for CI-V data.
P31	CIVTX	86	Outputs CI-V data.
P32	CK	87	Outputs serial clock signals.
P33	DATA	88	Outputs serial data.
P34	POC	89	Becomes "HIGH" when the timer function turns the receiver ON.
P35	BEEP	90	Outputs 1 kHz or 500 Hz square waves used for beep tones.
P36	BKIF	91	Outputs a "HIGH" pulse of 35 msec. width during scanning when the [LOCK] switch is ON.
P37	LCDCD	92	Outputs command/data selector signals for the LCD drivers (IC8, IC9) on the LOGIC UNIT.
P40~ P47	AD0~ AD7	49~42	Input and output ports for address bus data.
P50~ P54	A8~ A12	40~36	Output ports for the address bus.
P55	A13	34	Not used.
P56, P57	A14, A15	33, 32	Outputs selector signals for the RAM IC (IC11) on the LOGIC UNIT.
P60	EXCS	30	Outputs selector signals for the I/O expander IC (IC4) on the LOGIC UNIT.
P61	TMCS	29	Outputs selector signals for the real time clock IC (IC12) on the LOGIC UNIT.

PORT NUMBER	PORT NAME	PIN NUMBER	DESCRIPTION
P62, P63	ADC0, ADC1	28, 27	Outputs channel selector signals for the A/D converter IC (IC15) on the LOGIC UNIT.
P64	RD	26	Outputs a strobe signal for memory reading.
P65	WR	25	Outputs a strobe signal for memory writing.
P66, P67	LCS1, LCS2	24, 23	Outputs chip selector signals for the LCD drivers (IC8, IC9) on the LOGIC UNIT.
P70	FIL W	67	Becomes "HIGH" when FM or AMW mode is selected.
P71	ADCS	68	Outputs chip selector signals for the A/D converter IC (IC 15) on the LOGIC UNIT.
P72	SSB	69	Becomes "HIGH" when SSB mode is selected.
P73	AM	71	Becomes "HIGH" when AMW or AM mode is selected.
P74	FM	72	Becomes "HIGH" when FM or FMN mode is selected.
P75	WFM	73	Becomes "HIGH" when WFM mode is selected.
P76	U/L	74	Becomes "LOW" when USB mode is selected. This port becomes "HIGH" in other modes.
PT0	VBUSY	93	Inputs a "BUSY" signal for an optional UT-36 VOICE SYNTHESIZER UNIT. This port becomes "HIGH" while synthesizing.
PT1~ PT7	—	94, 1~6	Not used.

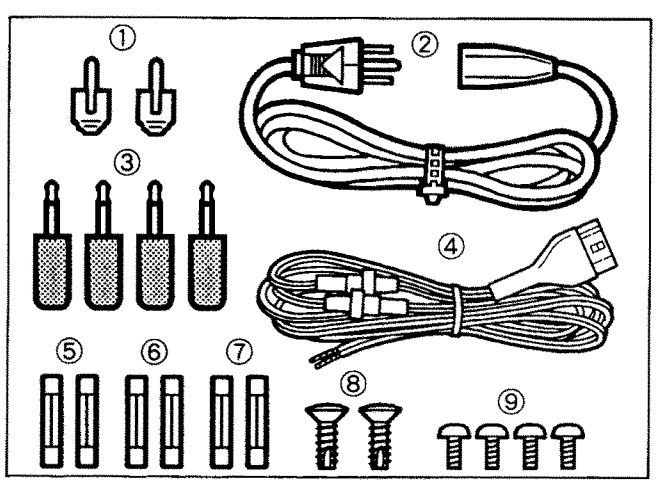
SECTION 4 MECHANICAL PARTS AND DISASSEMBLY

4-1 FRONT PANEL

LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8610004760	Knob N104 (A) [MAIN DIAL]	1
②	8930013940	610 Knob seat	1
③	8610006570	Button K121 (A) [SSB, AM/W, WFM, FM/N]	4
④	8610006560	Button K153 [SPCH, MHz, TS]	3
⑤	8610006630	Button K154 (D) [MEMORY-CH (DOWN)]	1
⑥	8610006640	Button K154 (E) [MEMORY-CH (UP)]	1
⑦	8930018010	843 VFO sponge	6
⑧	8610006610	Button K154 (B) [M-CL]	1
⑨	8610006620	Button K154 (C) [MW]	1
⑩	8610007550	Button K154 (G) [BANK]	1
⑪	8610007540	Button K154 (F) [M-SET]	1
⑫	8810005470	Screw PH M2.6×14 ZK	1
⑬	8810000220	Screw PH M3×5	1
⑭	8610004150	Knob N120 [AF GAIN, SQUELCH]	2
⑮	8610006550	Button K155 [NB•FC, ATT]	2
⑯	8210006260	843 Front panel (A)	1
⑰	8310021760	843 Window plate (A)	1
⑱	8810002160	Screw FH M3×5	4
⑲	8930018001	843 SSB sponge-1	1
⑳	8930017960	Spring	2
㉑	8930018410	Plate	1
㉒	8930018020	843 SPCH sponge	1
㉓	8810000220	Screw PH M3×5	1
㉔	8930013990	610 Brake plate	1
㉕	8930014030	610 Brake pad	1
㉖	8850001040	Insulate flat washer (I)	1
㉗	8310020270	Keyboard seal	1
㉘	8010010940	Keyboard (D)	1
㉙	8810001710	Screw PH B0 No.0-3 M1.4×3.5 ZK	6
㉚	8810002160	Screw FH M3×5	4
㉛	7600000100	Rotary encoder EC24B50B0013 [MAIN DIAL]	1
㉜	7210001960	Variable resistor RV-205 (RK0971210) 10KB×2 [SQUELCH]	1
㉝	7210001780	Variable resistor RV-166 (RK097111) 10KB [AF GAIN]	1
㉞	6450000810	Connector HLJ4306-01-3070 [PHONES]	1
㉟	2260001260	Switch SW-118 (SDDFA3) [POWER]	1
㊱	8810002160	Screw FH M3×5	7
㊲	8010009931	843 SUB chassis-1	1
㊳	8610001560	Button K42 [POWER]	1
㊴	8930000720	Thread spacer (V)	5
㊵	8610003850	Button K98 [TIMER]	1
㊶	2230000290	Switch SPPH22039A [NB•FC, ATT]	2
㊷	2230000550	Switch SPPH23079A [TIMER]	1
㊸	5510000370	Meter ME-29 [S.METER]	1
㊹	8810001320	Screw PH B1 M2.6×6 NI	4
㊺	8810003160	Setscrew A M3×6	1
㊻	8010005530	504 Reflector plate	1
㊼	8930021150	868 Shield plate	1
㊽	2260000070	Switch SKHHAK013A [M-SET, BANK, M-CL, MW]	4
㊾	2260000060	Switch SKHHAJ025A [SSB, AM/W, WFM, etc.]	9
㊿	8930017660	Insulate pipe (F)	2
(51)	8610002540	Button K66 (A) [WINDOW, VSC, SKIP, etc.]	9
(52)	2230000530	Switch SPPH23078A [WINDOW, VSC, SKIP, etc.]	9
(53)	5030000620	LCD LD-BU5214JZ [FUNCTION DISPLAY] (E-5338)	1
(54)	8930018490	Reflector plate	1
(55)	8810005510	Screw FH M3×6 ZK BS	12
(56)	8110004430	868 Top cover	1
(57)	8810003110	Screw FH M3×11 ZK BS	3
(58)	2510000040	Speaker C0SPEAKER65K12I0810	1
(59)	8930006320	Speaker holder (B)	1
(60)	8930002900	Rubber foot (A) SK1912A	2
(61)	8810005540	Screw PH B1 M4×10	2
(62)	8110002210	Bottom cover	1
(63)	8930005790	Collar foot (A)	1
(64)	8810005520	Screw PH B1 M3×8 ZK	4
(65)	8010001520	Stand (C)	1
(66)	8930005800	Collar foot (B)	1

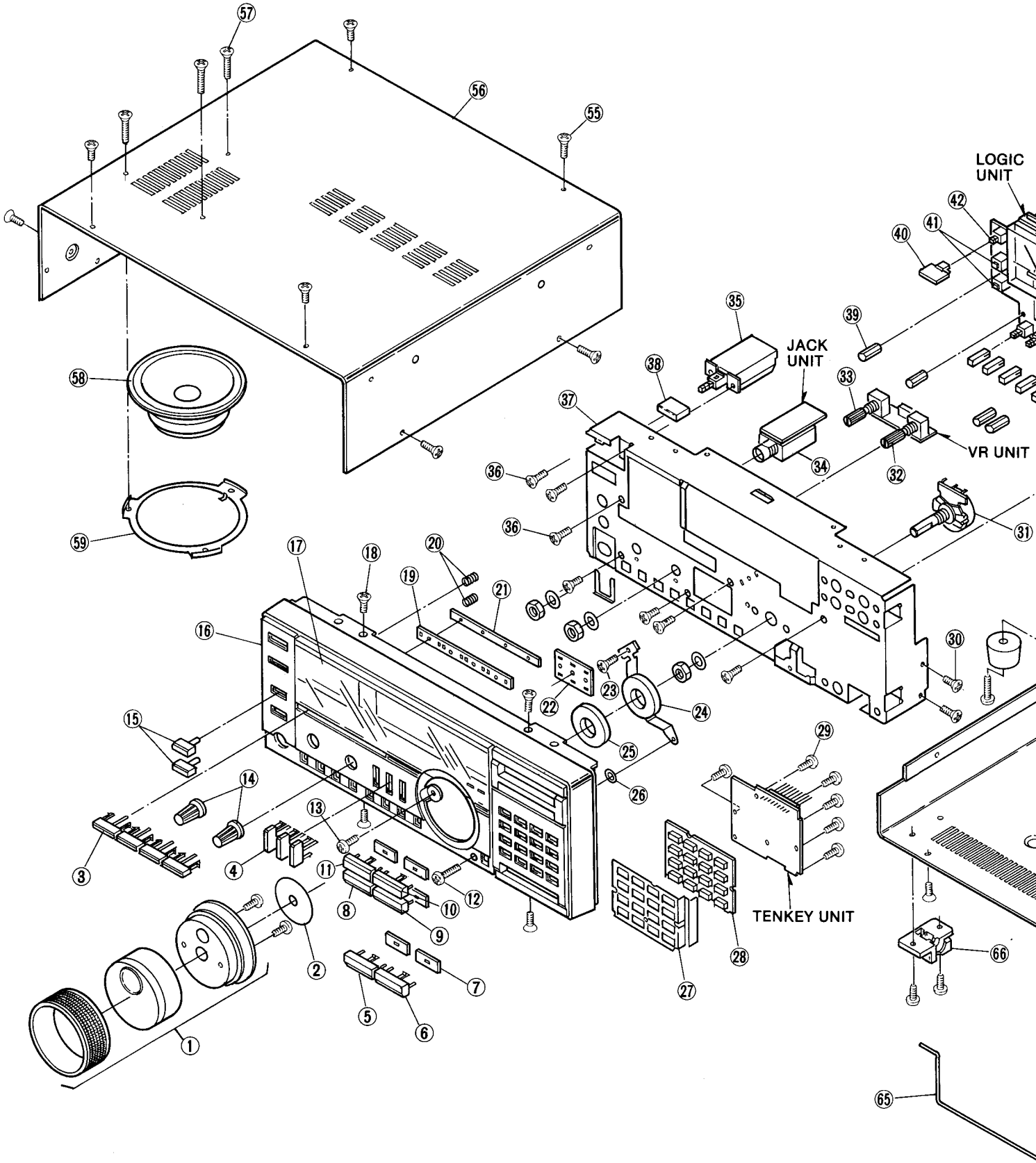
Screw abbreviations PH: Pan head FH: Flat head ZK: Black

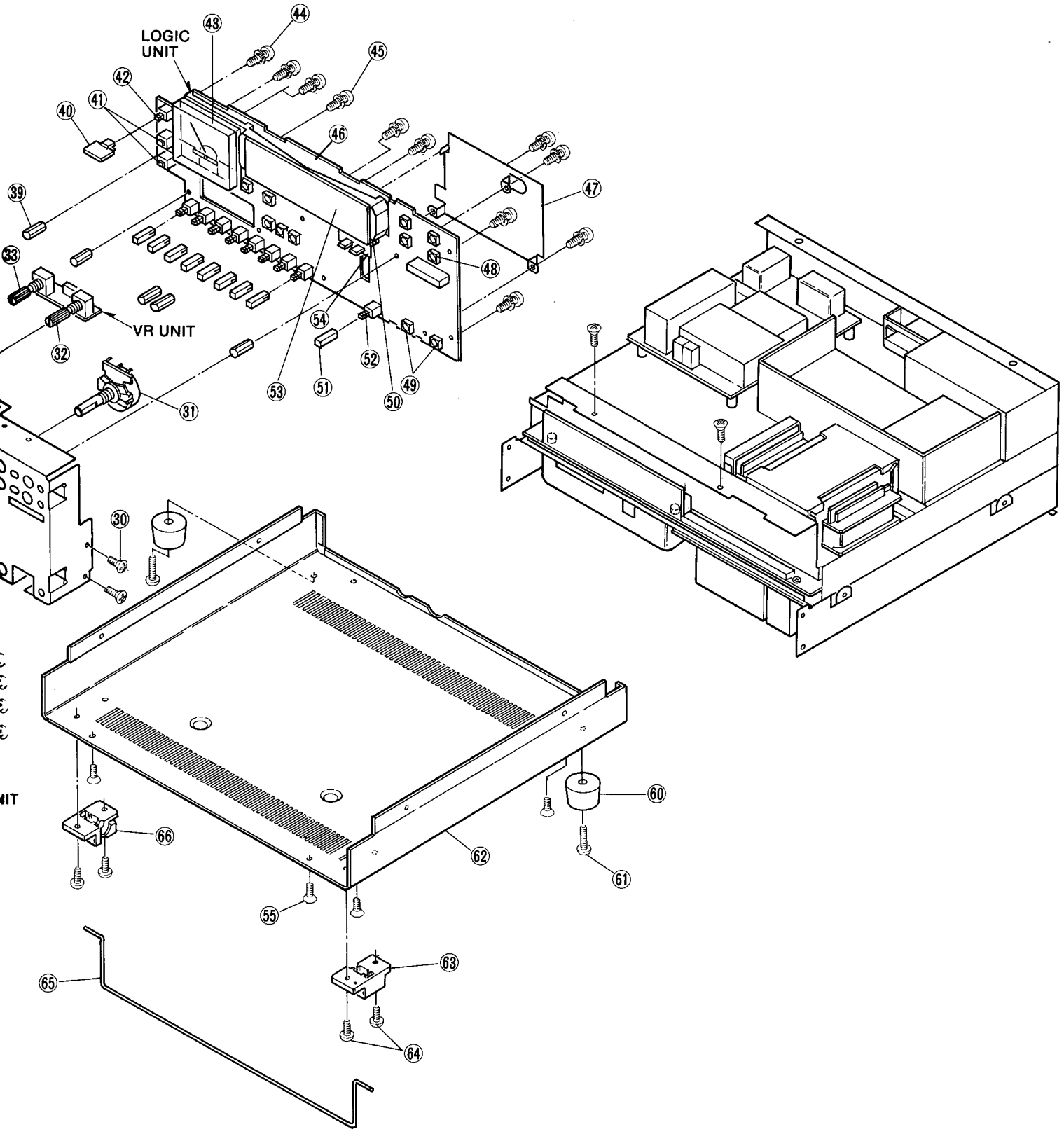
4-2 ACCESSORIES



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	6510013440	RCA plugs TP-M60	2
②	Optional product	AC power cable OPC-034 (USA)	1
		AC power cable OPC-048 B (EUR, FRG, FRA)	1
		AC power cable OPC-085 (AUS)	1
③	5610000020	Pin plugs AP313 3.5φ CS plug	4
④	Optional product	DC power cable OPC-023 C	1
⑤	5210000050	Fuse FGB 3A (USA, EUR, AUS, FRA)	2
⑥	5210000040	Fuse FGB 2A	2
⑦	5210000030	Fuse FGB 1A (USA)	1
	5210000020	Fuse FGB 0.5A (EUR, AUS, FRA)	2
	5210000170	Fuse FGMT4 0.5A (FRG)	1
⑧	8810005500	Screw FH B1 M4×12 CR	2
⑨	8810001650	Screw PH FT M3×6	4

Screw abbreviations PH: Pan head FH: Flat head


LOGIC UNIT
JACK UNIT
VR UNIT
TENKEY UNIT


LOGIC
UNIT
VR UNIT
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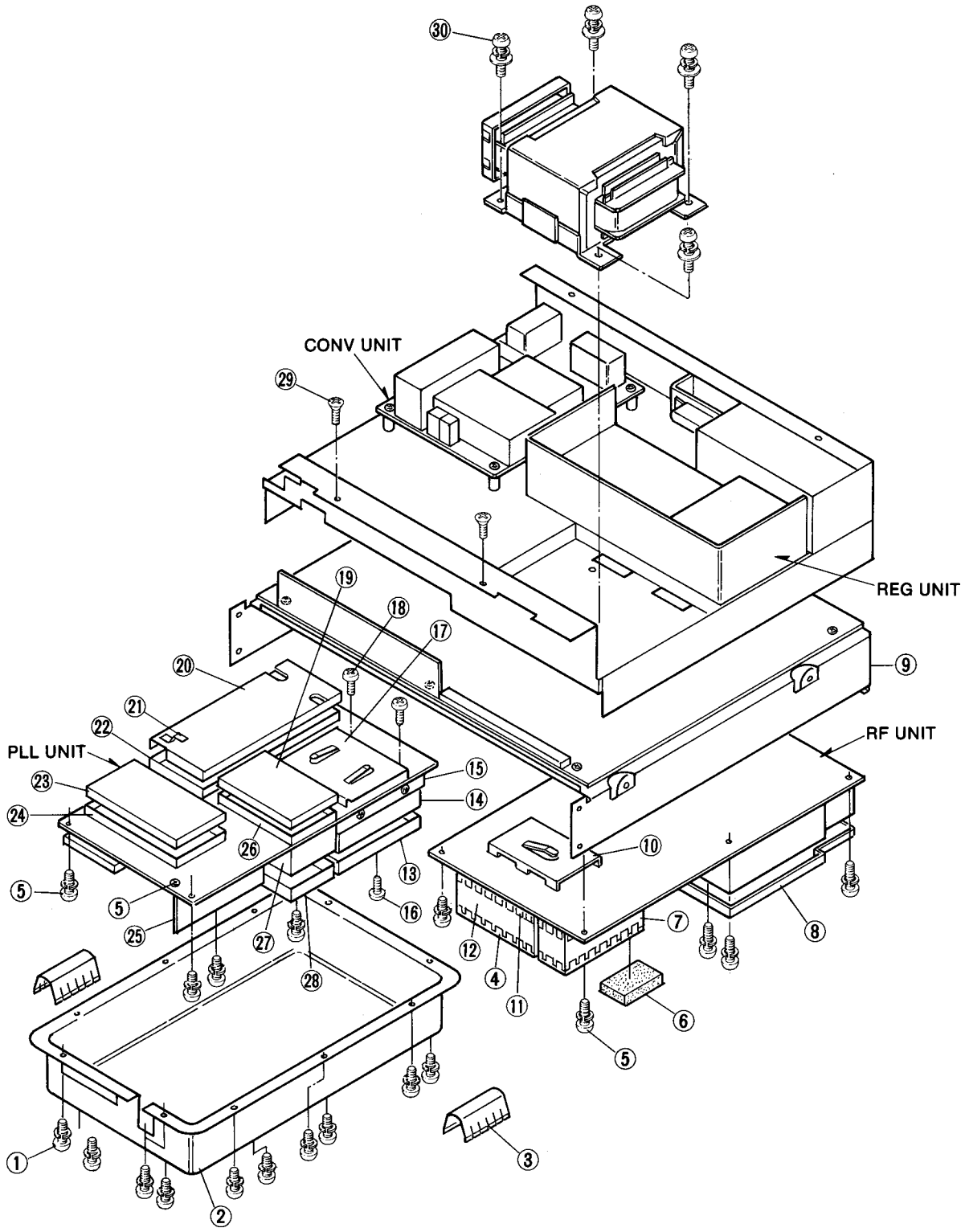
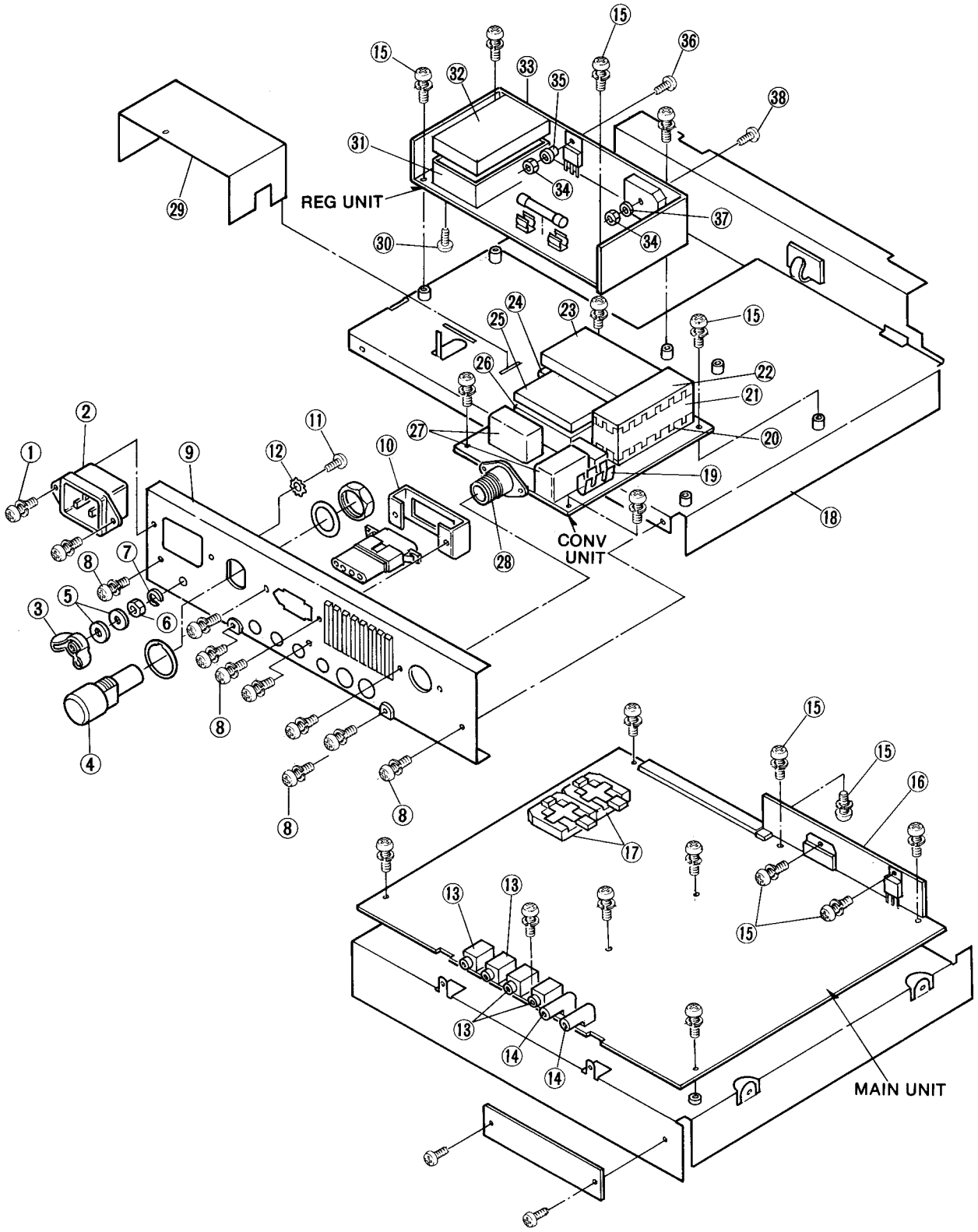
4-3 CHASSIS UNITS



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8810003150	Setscrew A M3×5	10
②	8510007070	868 PLL case	1
③	8930008120	Ground plate (A)	2
④	8510003600	RF case (C) cover (A)	1
⑤	8810003160	Setscrew A M3×6	11
⑥	8930021170	778 sponge	1
⑦	8510003620	RF case (D)	1
⑧	8510003631	RF shield case cover-1	1
⑨	8010011010	868 Chassis	1
⑩	8510007260	RF shield	1
⑪	8510003610	RF case (C) cover (B)	5
⑫	8510003590	RF case (C)	1
⑬	8510003710	VCO case cover (A)	1
⑭	8510007020	868 VCO case	1
⑮	8510003720	VCO case cover (B)	1
⑯	8810002100	Screw FH M2.6×4	12
⑰	8510007110	868 PLL shield	1
⑱	8810003150	Setscrew A M3×5	4
⑲	8510001101	Shield case (A) cover (A)-1	1
⑳	8510003560	LO shield case (B) cover	2
㉑	8930004081	Ground spring (B)-1	1
㉒	8510007050	LO shield case (E)	1
㉓	8510003510	406 shield case cover	2
㉔	8510003660	Buttom case (A)	1
㉕	8410001620	868 Heatsink	1
㉖	8510003670	Buttom case (B)	1
㉗	8510001080	Shield case (A)	1
㉘	8510001101	Shield case (A) cover (A)-1	1
㉙	8810002160	Screw FH M3×5	2
㉚	8810003360	Setscrew C M3×6	4

Screw abbreviations FH: Flat head

4-4 REAR PANEL



LABEL NUMBER	ORDER NO.	DESCRIPTION	QTY.
①	8810003250	Setscrew A M3×8 NI	2
②	6450001100	AC power socket AP300-3-A-1-NI-BLACK (V) [AC]	1
③	8830000360	Wing nut M5 NI	1
④	5220000051	Fuse holder FH-032CT	1
⑤	8850000150	Flat washer M5 NI BS	2
⑥	8830000210	Nut M5 NI BS	1
⑦	8850000440	Spring washer M5 NI	1
⑧	8810006070	Setscrew A M3×6 NI	9
⑨	8010011000	868 Rear panel	1
⑩	8930000730	Socket plate (A)	1
⑪	8810001980	Screw PH M5×16 NI BS	1
⑫	8850000590	Star washer M5	1
⑬	6450000140	Connector HSJ0807-01-010 [EXT SP, REC, etc.]	4
⑭	6450000150	Connector JPJ2545-01-510 [IF OUT, AGC]	2
⑮	8810003160	Setscrew A M3×6	20
⑯	8410001610	868 A heatsink	1
⑰	6510008370	Lithium battery case BBH-1	2
⑱	8010010990	REG chassis	1
⑲	8930001180	Ground plate	1
⑳	8510003610	RF case (C) cover (B)	1
㉑	8510003590	RF case (C)	1
㉒	8510003600	RF case (C) cover (A)	1
㉓	8510001101	Shield case (A) cover (A)-1	1
㉔	8510001080	Shield case (A)	1
㉕	8510002750	Case (B) cover	1
㉖	8510000460	Case (B)	1
㉗	8510003050	Helical case B	2
㉘	6510000360	Connector NR-DS-E 02	1
㉙	8930020360	Protect cover	1
㉚	8810001350	Screw PH B1 M3×6	2
㉛	8510001080	Shield case (A)	1
㉜	8510001101	Shield case (A) cover (A)-1	1
㉝	8410001600	868 REG heatsink	1
㉞	8830000100	Nut M3	2
㉟	6910000310	Insulate bush B312D	1
㊱	8810003180	Setscrew A M3×10	1
㊲	8850000690	Flat washer M3 (3×7×0.5) SUS	1
㊳	8810003200	Setscrew A M3×14	1

Screw abbreviations PH: Pan head

SECTION 5 PARTS LIST

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110000540	IC	NJM4558D
IC2	1110000540	IC	NJM4558D
IC3	1110002500	IC	M5218AL
IC4	1110000540	IC	NJM4558D
IC5	1110000540	IC	NJM4558D
IC8	1110002060	IC	M51131L
IC9	1110001360	IC	μPC1242H
IC10	1180000200	IC	NJM7809A
IC11	1110001930	IC	M5215TL
IC12	1110001010	IC	TA7303P-C
IC13	1110001320	IC	μPC1037HA
IC14	1110001310	IC	μPC577HA
IC15	1110001310	IC	μPC577HA
IC16	1120000970	IC	M54562P
IC17	1110000540	IC	NJM4558D
Q1	1560000040	FET	2SK30ATM-Y
Q2	1590000360	Transistor	RN2202
Q3	1590000350	Transistor	RN1204
Q4	1590000340	Transistor	RN1202
Q5	1590000350	Transistor	RN1204
Q6	1590000350	Transistor	RN1204
Q7	1530000591	Transistor	2SC2785 EL
Q8	1590000350	Transistor	RN1204
Q9	1530000591	Transistor	2SC2785 EL
Q11	1530000591	Transistor	2SC2785 EL
Q12	1530000591	Transistor	2SC2785 EL
Q13	1530000591	Transistor	2SC2785 EL
Q14	1530000150	Transistor	2SC2668-O
Q15	1560000040	FET	2SK30ATM-Y
Q16	1530000110	Transistor	2SC2458-GR
Q17	1530000110	Transistor	2SC2458-GR
Q18	1530000591	Transistor	2SC2785 EL
Q19	1510000080	Transistor	2SA1048-GR
Q20	1560000040	FET	2SK30ATM-Y
Q21	1580000010	FET	3SK101-GR
Q22	1580000010	FET	3SK101-GR
Q23	1580000010	FET	3SK101-GR
Q24	1530000591	Transistor	2SC2785 EL
Q25	1510000080	Transistor	2SA1048-GR
Q26	1530000110	Transistor	2SC2458-GR
Q27	1530000110	Transistor	2SC2458-GR
Q28	1590000360	Transistor	RN2202
Q29	1530000591	Transistor	2SC2785 EL
Q30	1530000110	Transistor	2SC2458-GR
Q31	1530000591	Transistor	2SC2785 EL
Q32	1530000591	Transistor	2SC2785 EL
Q33	1590000350	Transistor	RN1204
Q34	1590000350	Transistor	RN1204
Q35	1590000360	Transistor	RN2202
Q36	1590000350	Transistor	RN1204
Q37	1590000360	Transistor	RN2202
Q38	1530000110	Transistor	2SC2458-GR
Q39	1530000591	Transistor	2SC2785 EL
Q40	1530001810	Transistor	2SC3355
Q41	1530000591	Transistor	2SC2785 EL
Q42	1530000591	Transistor	2SC2785 EL
Q43	1560000040	FET	2SK30ATM-Y
Q44	1520000060	Transistor	2SB562C
Q45	1590000350	Transistor	RN1204
Q46	1590000340	Transistor	RN1202
Q47	1530000591	Transistor	2SC2785 EL
Q48	1590000350	Transistor	RN1204
Q49	1530000591	Transistor	2SC2785 EL
Q50	1590000360	Transistor	RN2202
Q51	1590000350	Transistor	RN1204
Q52	1590000370	Transistor	RN2204
Q53	1590000350	Transistor	RN1204
Q54	1590000360	Transistor	RN2202
Q55	1560000110	FET	2SK241-GR
Q56	1530002810	Transistor	2SC2785 FL

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q57	1590000340	Transistor	RN1202
D1	1710000050	Diode	1SS53
D2	1710000050	Diode	1SS53
D3	1710000050	Diode	1SS53
D4	1710000050	Diode	1SS53
D7	1710000050	Diode	1SS53
D8	1710000050	Diode	1SS53
D9	1710000050	Diode	1SS53
D10	1710000050	Diode	1SS53
D11	1710000050	Diode	1SS53
D12	1710000050	Diode	1SS53
D15	1710000050	Diode	1SS53
D16	1710000050	Diode	1SS53
D17	1710000050	Diode	1SS53
D18	1710000050	Diode	1SS53
D19	1710000050	Diode	1SS53
D20	1710000050	Diode	1SS53
D21	1710000050	Diode	1SS53
D22	1710000050	Diode	1SS53
D23	1710000050	Diode	1SS53
D24	1710000350	Diode	1N4002
D25	1710000050	Diode	1SS53
D26	1710000440	Diode	1S2208 (B)
D28	1710000050	Diode	1SS53
D29	1710000050	Diode	1SS53
D30	1710000050	Diode	1SS53
D31	1710000050	Diode	1SS53
D32	1710000050	Diode	1SS53
D33	1710000050	Diode	1SS53
D34	1710000050	Diode	1SS53
D35	1710000050	Diode	1SS53
D36	1710000050	Diode	1SS53
D37	1710000050	Diode	1SS53
D38	1710000050	Diode	1SS53
D39	1710000330	Diode	1K60
D40	1710000330	Diode	1K60
D41	1710000330	Diode	1K60
D42	1710000330	Diode	1K60
D43	1710000050	Diode	1SS53
D44	1710000160	Diode	1SS133
D45	1710000160	Diode	1SS133
D46	1710000330	Diode	1K60
D47	1710000330	Diode	1K60
D48	1710000330	Diode	1K60
D49	1710000330	Diode	1K60
D50	1710000050	Diode	1SS53
D51	1710000050	Diode	1SS53
D52	1710000050	Diode	1SS53
D53	1710000050	Diode	1SS53
D54	1710000050	Diode	1SS53
D55	1710000050	Diode	1SS53
D56	1710000330	Diode	1K60
D57	1710000330	Diode	1K60
D58	1710000050	Diode	1SS53
D59	1790000070	Diode	1SS237
D60	1790000070	Diode	1SS237
D61	1710000050	Diode	1SS53
D62	1710000050	Diode	1SS53
D63	1710000050	Diode	1SS53
D64	1710000160	Diode	1SS133
D65	1710000160	Diode	1SS133
D66	1710000050	Diode	1SS53
D67	1710000160	Diode	1SS133
D68	1710000160	Diode	1SS133
D70	1710000050	Diode	1SS53
D71	1790000070	Diode	1SS237
X1	6070000020	Discriminator	CDA10.7MG8-A
X2	6050002440	Crystal	CR-114

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
X3	2020000200	Discriminator	CFY455S
FI1	2020000540	Ceramic Filter	SFE10.7MMH-A
FI2	2020000540	Ceramic Filter	SFE10.7MMH-A
FI3	2010001160	Filter	10M15B7 (FL-144)
FI4	2020000440	Ceramic Filter	CFW455K1
FI5	2020000150	Ceramic	CFW455HT
FI6	2020000120	Ceramic	CFW455E
L1	6150002090	Coil	LS-214
L2	6180002900	Coil	LAL 02NA 120K
L3	6150001480	Coil	LS-164
L4	6150001480	Coil	LS-164
L5	6150001150	Coil	LS-129
L6	6150001150	Coil	LS-129
L7	6180000900	Coil	LAL 03NA 101K
L8	6150002270	Coil	LS-238
L9	6150002290	Coil	LS-240
L10	6180000990	Coil	LAL 04NA 101K
L11	6150000470	Coil	LS-66A
L12	6150000160	Coil	LS-16
L13	6180000960	Coil	LAL 03NA 102K
L14	6150002840	Coil	LS-294
L15	6180001140	Coil	FL 5H 102K
L17	6180001300	Coil	LAL 02NA 100K
L18	6180001300	Coil	LAL 02NA 100K
L19	6180002450	Coil	LAL 04NA R33M
L20	6910000670	Coil	BT01RN1-A61-001
L21	6180001510	Coil	LAL 02NA 101K
L22	6180001510	Coil	LAL 02NA 101K
R1	7010003530	Resistor	ELR20J 10 kΩ
R2	7010004390	Resistor	R20J 33 kΩ
R3	7010003580	Resistor	ELR20J 22 kΩ
R4	7010003660	Resistor	ELR20J 100 kΩ
R6	7010003740	Resistor	ELR20J 470 kΩ
R7	7010004320	Resistor	R20J 10 kΩ
R8	7010004340	Resistor	R20J 15 kΩ
R9	7010003740	Resistor	ELR20J 470 kΩ
R10	7010004340	Resistor	R20J 15 kΩ
R11	7010003550	Resistor	ELR20J 15 kΩ
R12	7010003740	Resistor	ELR20J 470 kΩ
R13	7010003540	Resistor	ELR20J 12 kΩ
R14	7010003530	Resistor	ELR20J 10 kΩ
R15	7010004190	Resistor	R20J 1 kΩ
R16	7010003520	Resistor	ELR20J 8.2 kΩ
R17	7010003740	Resistor	ELR20J 470 kΩ
R18	7010004320	Resistor	R20J 10 kΩ
R19	7010004320	Resistor	R20J 10 kΩ
R20	7010003340	Resistor	ELR20J 330 Ω
R21	7010003750	Resistor	ELR20J 560 kΩ
R22	7010003580	Resistor	ELR20J 22 kΩ
R23	7010003750	Resistor	ELR20J 560 kΩ
R24	7010003740	Resistor	ELR20J 470 kΩ
R25	7010003740	Resistor	ELR20J 470 kΩ
R26	7010003780	Resistor	ELR20J 1 MΩ
R27	7010003700	Resistor	ELR20J 220 kΩ
R29	7010004310	Resistor	R20J 8.2 kΩ
R30	7010003640	Resistor	ELR20J 68 kΩ
R31	7010003580	Resistor	ELR20J 22 kΩ
R32	7310003180	Trimmer	EVN-2ACA00 B24 (203)
R33	7010003620	Resistor	ELR20J 47 kΩ
R34	7010003680	Resistor	ELR20J 150 kΩ
R36	7010004380	Resistor	R20J 27 kΩ
R37	7010003440	Resistor	ELR20J 2.2 kΩ
R39	7010003410	Resistor	ELR20J 1.2 kΩ
R40	7010004050	Resistor	R20J 68 Ω
R41	7010004230	Resistor	R20J 2.2 kΩ
R42	7010004190	Resistor	R20J 1 kΩ
R43	7310000740	Trimmer	RH0651CS3J2KA (472)
R44	7510000300	Thermistor	ERT-D2ZGL601S
R45	7010004270	Resistor	R20J 4.7 kΩ
R46	7010003450	Resistor	ELR20J 2.7 kΩ
R47	7010003480	Resistor	ELR20J 4.7 kΩ
R48	7010003510	Resistor	ELR20J 6.8 kΩ

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R49	7010004230	Resistor	R20J 2.2 kΩ
R50	7010003440	Resistor	ELR20J 2.2 kΩ
R51	7310000740	Trimmer	RH0651CS3J2KA (472)
R52	7010003630	Resistor	ELR20J 56 kΩ
R53	7010003480	Resistor	ELR20J 4.7 kΩ
R54	7010001030	Resistor	R25XJ 100 Ω
R55	7010004560	Resistor	R20J 820 kΩ
R56	7010004320	Resistor	R20J 10 kΩ
R57	7010003280	Resistor	ELR20J 100 Ω
R58	7010004320	Resistor	R20J 10 kΩ
R59	7010004190	Resistor	R20J 1 kΩ
R60	7310000750	Trimmer	RH0651C14J2WA (103)
R61	7010004570	Resistor	R20J 1 MΩ
R62	7010004070	Resistor	R20J 100 Ω
R63	7010003810	Resistor	ELR20J 2.2 MΩ
R64	7310000780	Trimmer	RH0651CS4J25A (473)
R65	7010004190	Resistor	R20J 1 kΩ
R66	7310000720	Trimmer	RH0651CJ3J0CA (222)
R67	7010003480	Resistor	ELR20J 4.7 kΩ
R68	7010003480	Resistor	ELR20J 4.7 kΩ
R69	7010003530	Resistor	ELR20J 10 kΩ
R70	7010003530	Resistor	ELR20J 10 kΩ
R71	7010003530	Resistor	ELR20J 10 kΩ
R72	7010003780	Resistor	ELR20J 1 MΩ
R73	7010003790	Resistor	ELR20J 1.2 MΩ
R74	7010004320	Resistor	R20J 10 kΩ
R75	7010003660	Resistor	ELR20J 100 kΩ
R76	7010003530	Resistor	ELR20J 10 kΩ
R77	7010003580	Resistor	ELR20J 22 kΩ
R78	7310000780	Trimmer	RH0651CS4J25A (473)
R79	7010003660	Resistor	ELR20J 100 kΩ
R80	7010004070	Resistor	R20J 100 Ω
R81	7010003420	Resistor	ELR20J 1.5 kΩ
R82	7010003530	Resistor	ELR20J 10 kΩ
R83	7010003530	Resistor	ELR20J 10 kΩ
R84	7010003530	Resistor	ELR20J 10 kΩ
R85	7010004250	Resistor	R20J 3.3 kΩ
R88	7010004260	Resistor	R20J 3.9 kΩ
R89	7510000320	Thermistor	ERT-D2ZGL202S
R92	7010004340	Resistor	R20J 15 kΩ
R93	7010001230	Resistor	R25XJ 4.7 kΩ
R94	7010003320	Resistor	ELR20J 220 Ω
R95	7010003660	Resistor	ELR20J 100 kΩ
R96	7010003530	Resistor	ELR20J 10 kΩ
R97	7010003660	Resistor	ELR20J 100 kΩ
R98	7010004340	Resistor	R20J 15 kΩ
R99	7010001230	Resistor	R25XJ 4.7 kΩ
R100	7010003320	Resistor	ELR20J 220 Ω
R101	7310000760	Trimmer	RH0651CJ4J01A (223)
R102	7010004450	Resistor	R20J 100 kΩ
R104	7010003280	Resistor	ELR20J 100 Ω
R105	7010003530	Resistor	ELR20J 10 kΩ
R109	7010004340	Resistor	R20J 15 kΩ
R110	7010004320	Resistor	R20J 10 kΩ
R112	7010003520	Resistor	ELR20J 8.2 kΩ
R113	7010003400	Resistor	ELR20J 1 kΩ
R114	7010003890	Resistor	R20J 3.3 Ω
R115	7010003080	Resistor	ELR20J 2.2 Ω
R118	7010003440	Resistor	ELR20J 2.2 kΩ
R119	7010003440	Resistor	ELR20J 2.2 kΩ
R120	7010003700	Resistor	ELR20J 220 kΩ
R122	7010004230	Resistor	R20J 2.2 kΩ
R125	7010003340	Resistor	ELR20J 330 Ω
R126	7010003370	Resistor	ELR20J 560 Ω
R127	7010003240	Resistor	ELR20J 47 Ω
R128	7010003470	Resistor	ELR20J 3.9 kΩ
R129	7010003530	Resistor	ELR20J 10 kΩ
R131	7010003510	Resistor	ELR20J 6.8 kΩ
R132	7510000300	Thermistor	ERT-D2ZGL601S
R133	7510000300	Thermistor	ERT-D2ZGL601S
R134	7010004210	Resistor	R20J 1.5 kΩ
R135	7010003480	Resistor	ELR20J 4.7 kΩ
R136	7010003600	Resistor	ELR20J 33 kΩ
R137	7010004410	Resistor	R20J 47 kΩ
R138	7010003620	Resistor	ELR20J 47 kΩ
R139	7010004410	Resistor	R20J 47 kΩ
R140	7010003770	Resistor	ELR20J 820 kΩ
R141	7010003720	Resistor	ELR20J 330 kΩ

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R142	7010004190	Resistor	R20J 1 kΩ
R143	7010003490	Resistor	ELR20J 5.6 kΩ
R144	7010003460	Resistor	ELR20J 3.3 kΩ
R145	7010003400	Resistor	ELR20J 1 kΩ
R146	7010004270	Resistor	R20J 4.7 kΩ
R147	7010003550	Resistor	ELR20J 15 kΩ
R148	7010004410	Resistor	R20J 47 kΩ
R149	7010004300	Resistor	R20J 6.8 kΩ
R150	7010003480	Resistor	ELR20J 4.7 kΩ
R151	7310001840	Trimmer	RH0421CS3J08A (472)
R152	7010004570	Resistor	R20J 1 MΩ
R153	7010003660	Resistor	ELR20J 100 kΩ
R154	7510000071	Thermistor	ERT-D2ZHL503S
R155	7310001760	Trimmer	RH0421CJ4J09A (223)
R156	7010003580	Resistor	ELR20J 22 kΩ
R157	7010004230	Resistor	R20J 2.2 kΩ
R158	7010004450	Resistor	R20J 100 kΩ
R159	7010004450	Resistor	R20J 100 kΩ
R160	7010003380	Resistor	ELR20J 680 Ω
R161	7010004110	Resistor	R20J 220 Ω
R162	7010004230	Resistor	R20J 2.2 kΩ
R163	7010004190	Resistor	R20J 1 kΩ
R164	7010003440	Resistor	ELR20J 2.2 kΩ
R165	7010004070	Resistor	R20J 100 Ω
R166	7010003460	Resistor	ELR20J 3.3 kΩ
R167	7010003510	Resistor	ELR20J 6.8 kΩ
R168	7010004130	Resistor	R20J 330 Ω
R169	7010004070	Resistor	R20J 100 Ω
R170	7010003620	Resistor	ELR20J 47 kΩ
R171	7010004300	Resistor	R20J 6.8 kΩ
R172	7010003480	Resistor	ELR20J 4.7 kΩ
R173	7010004130	Resistor	R20J 330 Ω
R174	7010004070	Resistor	R20J 100 Ω
R175	7010003620	Resistor	ELR20J 47 kΩ
R176	7010004270	Resistor	R20J 4.7 kΩ
R177	7010003480	Resistor	ELR20J 4.7 kΩ
R178	7010003450	Resistor	ELR20J 2.7 kΩ
R179	7010004130	Resistor	R20J 330 Ω
R180	7010004070	Resistor	R20J 100 Ω
R181	7010003620	Resistor	ELR20J 47 kΩ
R182	7010004210	Resistor	R20J 1.5 kΩ
R183	7010003460	Resistor	ELR20J 3.3 kΩ
R184	7010003530	Resistor	ELR20J 10 kΩ
R185	7010003660	Resistor	ELR20J 100 kΩ
R186	7010003240	Resistor	ELR20J 47 Ω
R187	7310000700	Trimmer	RH0651CS2J1HA (471)
R188	7010004070	Resistor	R20J 100 Ω
R189	7010003670	Resistor	ELR20J 120 kΩ
R190	7010003660	Resistor	ELR20J 100 kΩ
R192	7010004320	Resistor	R20J 10 kΩ
R193	7010003370	Resistor	ELR20J 560 Ω
R194	7010004070	Resistor	R20J 100 Ω
R195	7010004110	Resistor	R20J 220 Ω
R196	7010004110	Resistor	R20J 220 Ω
R197	7010004300	Resistor	R20J 6.8 kΩ
R198	7010003530	Resistor	ELR20J 10 kΩ
R199	7010003620	Resistor	ELR20J 47 kΩ
R200	7010003460	Resistor	ELR20J 3.3 kΩ
R201	7010003400	Resistor	ELR20J 1 kΩ
R202	7010004070	Resistor	R20J 100 Ω
R203	7010003480	Resistor	ELR20J 4.7 kΩ
R204	7010004340	Resistor	R20J 15 kΩ
R205	7010003280	Resistor	ELR20J 100 Ω
R206	7010004450	Resistor	R20J 100 kΩ
R207	7010003530	Resistor	ELR20J 10 kΩ
R208	7010004070	Resistor	R20J 100 Ω
R209	7010003530	Resistor	ELR20J 10 kΩ
R210	7010004410	Resistor	R20J 47 kΩ
R211	7010004320	Resistor	R20J 10 kΩ
R212	7010004130	Resistor	R20J 330 Ω
R214	7010003660	Resistor	ELR20J 100 kΩ
R215	7010003620	Resistor	ELR20J 47 kΩ
R216	7010004190	Resistor	R20J 1 kΩ
R217	7010004190	Resistor	R20J 1 kΩ
R218	7010003440	Resistor	ELR20J 2.2 kΩ
R219	7010003700	Resistor	ELR20J 220 kΩ
R220	7010004190	Resistor	R20J 1 kΩ
R221	7010003440	Resistor	ELR20J 2.2 kΩ

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R222	7010003400	Resistor	ELR20J 1 kΩ
R223	7010004070	Resistor	R20J 100 Ω
R224	7310000790	Trimmer	RH0651C15J1UA (104)
R225	7010003480	Resistor	ELR20J 4.7 kΩ
R226	7010003530	Resistor	ELR20J 10 kΩ
R227	7010003530	Resistor	ELR20J 10 kΩ
R228	7010003530	Resistor	ELR20J 10 kΩ
R229	7010003530	Resistor	ELR20J 10 kΩ
R230	7010003640	Resistor	ELR20J 68 kΩ
R231	7010003680	Resistor	ELR20J 150 kΩ
R232	7010004370	Resistor	R20J 22 kΩ
R234	7010003600	Resistor	ELR20J 33 kΩ
R235	7010003580	Resistor	ELR20J 22 kΩ
R236	7010003580	Resistor	ELR20J 22 kΩ
R237	7010003550	Resistor	ELR20J 15 kΩ
R238	7010003280	Resistor	ELR20J 100 Ω
R239	7010003480	Resistor	ELR20J 4.7 kΩ
R240	7010003550	Resistor	ELR20J 15 kΩ
R241	7010004410	Resistor	R20J 47 kΩ
R242	7010003360	Resistor	ELR20J 470 Ω
R243	7010004150	Resistor	R20J 470 Ω
R244	7010004230	Resistor	R20J 2.2 kΩ
R245	7010003440	Resistor	ELR20J 2.2 kΩ
R246	7010003800	Resistor	ELR20J 1.8 MΩ
R247	7010004190	Resistor	R20J 1 kΩ
R248	7010003540	Resistor	ELR20J 12 kΩ
R249	7010003530	Resistor	ELR20J 10 kΩ
R250	7010004070	Resistor	R20J 100 Ω
R251	7010003760	Resistor	ELR20J 680 kΩ
R252	7010003530	Resistor	ELR20J 10 kΩ
R253	7010003480	Resistor	ELR20J 4.7 kΩ
R254	7010003690	Resistor	ELR20J 180 kΩ
R255	7010003620	Resistor	ELR20J 47 kΩ
R256	7010003740	Resistor	ELR20J 470 kΩ
R257	7010003400	Resistor	ELR20J 1 kΩ
R258	7010003480	Resistor	ELR20J 4.7 kΩ
R259	7010003480	Resistor	ELR20J 4.7 kΩ
R260	7010003550	Resistor	ELR20J 15 kΩ
R261	7010003530	Resistor	ELR20J 10 kΩ
R262	7010003400	Resistor	ELR20J 1 kΩ
R263	7010003480	Resistor	ELR20J 4.7 kΩ
R264	7010003800	Resistor	ELR20J 1.8 MΩ
R265	7010003690	Resistor	ELR20J 180 kΩ
R266	7010003660	Resistor	ELR20J 100 kΩ
R267	7010003530	Resistor	ELR20J 10 kΩ
R268	7010003530	Resistor	ELR20J 10 kΩ
R269	7010003660	Resistor	ELR20J 100 kΩ
R270	7010003620	Resistor	ELR20J 47 kΩ
R271	7010003320	Resistor	ELR20J 220 Ω
R272	7010003440	Resistor	ELR20J 2.2 kΩ
R273	7010003640	Resistor	ELR20J 68 kΩ
R274	7010003320	Resistor	ELR20J 220 Ω
R275	7010003280	Resistor	ELR20J 100 Ω
R276	7010003650	Resistor	ELR20J 82 kΩ
R277	7010003620	Resistor	ELR20J 47 kΩ
R278	7010003620	Resistor	ELR20J 47 kΩ
R279	7010003530	Resistor	ELR20J 10 kΩ
R280	7010004230	Resistor	R20J 2.2 kΩ
R281	7010003660	Resistor	ELR20J 100 kΩ
R282	7010003340	Resistor	ELR20J 330 Ω
R283	7010003620	Resistor	ELR20J 47 kΩ
R284	7010003440	Resistor	ELR20J 2.2 kΩ
R285	7010004320	Resistor	R20J 10 kΩ
R286	7010003530	Resistor	ELR20J 10 kΩ
R287	7010003680	Resistor	ELR20J 150 kΩ
R288	7010003400	Resistor	ELR20J 1 kΩ
R289	7010003280	Resistor	ELR20J 100 Ω
R290	7010003560	Resistor	ELR20J 18 kΩ
R291	7010000210	Resistor	ELR25J 47 Ω
R292	7010003810	Resistor	ELR20J 2.2 MΩ
R293	7010004210	Resistor	R20J 1.5 kΩ
R294	7010003530	Resistor	ELR20J 10 kΩ
R295	7010003660	Resistor	ELR20J 100 kΩ
R296	7010004190	Resistor	R20J 1 kΩ
R297	7310000750	Trimmer	RH0651C14J2WA (103)
R298	7010001280	Resistor	R25XJ 10 kΩ
R299	7010003530	Resistor	ELR20J 10 kΩ
R300	7010003180	Resistor	ELR20J 15 Ω

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R301	7010004320	Resistor	R20J 10 kΩ
R302	7010003530	Resistor	ELR20J 10 kΩ
R303	7010003530	Resistor	ELR20J 10 kΩ
R304	7010003360	Resistor	ELR20J 470 Ω
R305	7510000540	Thermistor	ERT-D2ZGL171S
R306	7010003380	Resistor	ELR20J 680 Ω
R308	7310001700	Trimmer	RH0421C13J09A (102)
R309	7010004270	Resistor	R20J 4.7 kΩ
R310	7010004130	Resistor	R20J 330 Ω
R311	7510000330	Thermistor	ERT-D2ZIL154S
R312	7010003380	Resistor	ELR20J 680 Ω
R313	7010004150	Resistor	R20J 470 Ω
R314	7010003330	Resistor	ELR20J 270 Ω
R315	7010003380	Resistor	ELR20J 680 Ω
R316	7010004450	Resistor	R20J 100 kΩ
R317	7510000300	Thermistor	ERT-D2ZGL601S
R318	7010003300	Resistor	ELR20J 150 Ω
R319	7010003200	Resistor	ELR20J 22 Ω
R320	7010001260	Resistor	R25XJ 6.8 kΩ
R321	7010003780	Resistor	ELR20J 1 MΩ
R322	7010003480	Resistor	ELR20J 4.7 kΩ
R323	7010003160	Resistor	ELR20J 10 Ω
R324	7510000300	Thermistor	ERT-D2ZGL601S
C1	4510003830	Electrolytic	50 MV R47 SW
C2	4510003880	Electrolytic	10 MV 47 HW
C3	4510003830	Electrolytic	50 MV R47 SW
C4	4040000250	Barrier Layer	UAT 08X 473M
C5	4010000520	Ceramic	DD108 B 472K 50V
C6	4310000020	Mylar	F2D 50V 103K
C7	4310000110	Mylar	F2D 50V 472K
C8	4310000110	Mylar	F2D 50V 472K
C9	4310000110	Mylar	F2D 50V 472K
C10	4010000380	Ceramic	DD107 SL 221J 50V
C11	4310000020	Mylar	F2D 50V 103K
C12	4510003790	Electrolytic	16 MV 10 SW
C13	4510003790	Electrolytic	16 MV 10 SW
C14	4010000380	Ceramic	DD107 SL 221J 50V
C15	4510003800	Electrolytic	25 MV 4R7 SW
C16	4510003790	Electrolytic	16 MV 10 SW
C17	4510003790	Electrolytic	16 MV 10 SW
C19	4510004450	Electrolytic	50 MV R47 NPDW
C20	4510003830	Electrolytic	50 MV R47 SW
C21	4510003920	Electrolytic	16 MV 100 HW
C22	4510003880	Electrolytic	10 MV 47 HW
C23	4510003910	Electrolytic	16 MV 47 HW
C24	4510003790	Electrolytic	16 MV 10 SW
C25	4010000520	Ceramic	DD108 B 472K 50V
C26	4510003880	Electrolytic	10 MV 47 HW
C27	4510003790	Electrolytic	16 MV 10 SW
C28	4510003790	Electrolytic	16 MV 10 SW
C29	4510003790	Electrolytic	16 MV 10 SW
C30	4010000520	Ceramic	DD108 B 472K 50V
C31	4040000260	Barrier Layer	UZE 08X 104M
C32	4040000260	Barrier Layer	UZE 08X 104M
C39	4040000260	Barrier Layer	UZE 08X 104M
C41	4040000260	Barrier Layer	UZE 08X 104M
C43	4510004350	Electrolytic	16 MV 22 SW
C44	4510003830	Electrolytic	50 MV R47 SW
C45	4510003830	Electrolytic	50 MV R47 SW
C46	4010000520	Ceramic	DD108 B 472K 50V
C47	4510004160	Electrolytic	10 MV 220 HW
C48	4040000260	Barrier Layer	UZE 08X 104M
C49	4310000090	Mylar	F2D 50V 333K
C50	4510003910	Electrolytic	16 MV 47 HW
C51	4510004160	Electrolytic	10 MV 220 HW
C52	4510003910	Electrolytic	16 MV 47 HW
C53	4510003930	Electrolytic	16 MV 470 HW
C54	4510003930	Electrolytic	16 MV 470 HW
C55	4040000260	Barrier Layer	UZE 08X 104M
C56	4010000520	Ceramic	DD108 B 472K 50V
C57	4040000260	Barrier Layer	UZE 08X 104M
C58	4510003800	Electrolytic	25 MV 4R7 SW
C59	4510003790	Electrolytic	16 MV 10 SW
C60	4040000260	Barrier Layer	UZE 08X 104M
C62	4010000520	Ceramic	DD108 B 472K 50V
C63	4010000520	Ceramic	DD108 B 472K 50V

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C64	4040000250	Barrier Layer	UAT 08X 473M
C65	4040000250	Barrier Layer	UAT 08X 473M
C66	4020000650	Cylinder	EP050 X 472M
C67	4040000250	Barrier Layer	UAT 08X 473M
C68	4040000260	Barrier Layer	UZE 08X 104M
C69	4040000250	Barrier Layer	UAT 08X 473M
C70	4040000250	Barrier Layer	UAT 08X 473M
C71	4510003840	Electrolytic	50 MV 1 SW
C72	4010000760	Ceramic	DD104 CH 180J 50V
C73	4010000640	Ceramic	DD104 CH 040C 50V
C74	4310000020	Mylar	F2D 50V 103K
C75	4310000020	Mylar	F2D 50V 103K
C76	4510004450	Electrolytic	50 MV R47 NPDW
C77	4510003790	Electrolytic	16 MV 10 SW
C78	4510003790	Electrolytic	16 MV 10 SW
C79	4510003830	Electrolytic	50 MV R47 SW
C80	4310000090	Mylar	F2D 50V 333K
C81	4010000520	Ceramic	DD108 B 472K 50V
C82	4010000340	Ceramic	DD105 SL 121J 50V
C83	4010000050	Ceramic	DD104 SL 030C 50V
C84	4010000340	Ceramic	DD105 SL 121J 50V
C85	4010000520	Ceramic	DD108 B 472K 50V
C86	4310000060	Mylar	F2D 50V 223K
C87	4040000260	Barrier Layer	UZE 08X 104M
C88	4010000520	Ceramic	DD108 B 472K 50V
C89	4510003790	Electrolytic	16 MV 10 SW
C90	4010000520	Ceramic	DD108 B 472K 50V
C91	4010000520	Ceramic	DD108 B 472K 50V
C92	4010000520	Ceramic	DD108 B 472K 50V
C93	4010000260	Ceramic	DD104 SL 470J 50V
C94	4040000260	Barrier Layer	UZE 08X 104M
C95	4040000260	Barrier Layer	UZE 08X 104M
C96	4040000260	Barrier Layer	UZE 08X 104M
C97	4010000500	Ceramic	DD104 B 102K 50V
C98	4040000260	Barrier Layer	UZE 08X 104M
C99	4040000260	Barrier Layer	UZE 08X 104M
C100	4040000260	Barrier Layer	UZE 08X 104M
C101	4040000260	Barrier Layer	UZE 08X 104M
C102	4040000260	Barrier Layer	UZE 08X 104M
C103	4040000260	Barrier Layer	UZE 08X 104M
C104	4040000260	Barrier Layer	UZE 08X 104M
C105	4040000260	Barrier Layer	UZE 08X 104M
C106	4040000250	Barrier Layer	UAT 08X 473M
C107	4310000010	Mylar	F2D 50V 102K
C108	4040000250	Barrier Layer	UAT 08X 473M
C109	4040000250	Barrier Layer	UAT 08X 473M
C110	4310000110	Mylar	F2D 50V 472K
C111	4040000250	Barrier Layer	UAT 08X 473M
C112	4010000380	Ceramic	DD107 SL 221J 50V
C113	4040000250	Barrier Layer	UAT 08X 473M
C114	4040000260	Barrier Layer	UZE 08X 104M
C115	4040000250	Barrier Layer	UAT 08X 473M
C116	4040000260	Barrier Layer	UZE 08X 104M
C117	4510003790	Electrolytic	16 MV 10 SW
C118	4510003830	Electrolytic	50 MV R47 SW
C119	4510004450	Electrolytic	50 MV R47 NPDW
C120	4510003790	Electrolytic	16 MV 10 SW
C121	4010000050	Ceramic	DD104 SL 030C 50V
C122	4040000250	Barrier Layer	UAT 08X 473M
C123	4040000250	Barrier Layer	UAT 08X 473M
C124	4040000250	Barrier Layer	UAT 08X 473M
C125	4510003910	Electrolytic	16 MV 47 HW
C126	4010000520	Ceramic	DD108 B 472K 50V
C127	4040000260	Barrier Layer	UZE 08X 104M
C128	4010000300	Ceramic	DD104 SL 680J 50V
C129	4510003830	Electrolytic	50 MV R47 SW
C130	4010000180	Ceramic	DD104 SL 220J 50V
C131	4510003790	Electrolytic	16 MV 10 SW
C132	4610001130	Trimmer	CVSSA1001
C133	4010000780	Ceramic	DD104 CH 220J 50V
C134	4010000520	Ceramic	DD108 B 472K 50V
C135	4010001020	Ceramic	DD111 CH 221J 50V
C136	4010000940	Ceramic	DD107 CH 101J 50V
C137	4010000330	Ceramic	DD105 SL 101J 50V
C138	4040000260	Barrier Layer	UZE 08X 104M
C139	4040000260	Barrier Layer	UZE 08X 104M
C140	4040000260	Barrier Layer	UZE 08X 104M
C141	4040000260	Barrier Layer	UZE 08X 104M

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C142	4310000010	Mylar	F2D 50V 102K
C143	4510003790	Electrolytic	16 MV 10 SW
C144	4040000260	Barrier Layer	UZE 08X 104M
C145	4310000110	Mylar	F2D 50V 472K
C146	4310000020	Mylar	F2D 50V 103K
C147	4310000020	Mylar	F2D 50V 103K
C148	4510003790	Electrolytic	16 MV 10 SW
C149	4310000110	Mylar	F2D 50V 472K
C150	4310000010	Mylar	F2D 50V 102K
C151	4510003790	Electrolytic	16 MV 10 SW
C152	4310000120	Mylar	F2D 50V 473K
C153	4010000500	Ceramic	DD104 B 102K 50V
C154	4040000260	Barrier Layer	UZE 08X 104M
C155	4040000260	Barrier Layer	UZE 08X 104M
C156	4040000260	Barrier Layer	UZE 08X 104M
C157	4040000260	Barrier Layer	UZE 08X 104M
C159	4040000260	Barrier Layer	UZE 08X 104M
C160	4510003790	Electrolytic	16 MV 10 SW
C161	4510003850	Electrolytic	50 MV 2R2 SW
C162	4040000260	Barrier Layer	UZE 08X 104M
C163	4010000520	Ceramic	DD108 B 472K 50V
C164	4510003790	Electrolytic	16 MV 10 SW
C165	4010000330	Ceramic	DD105 SL 101J 50V
C166	4010000300	Ceramic	DD104 SL 680J 50V
C167	4510003880	Electrolytic	10 MV 47 HW
C168	4010000380	Ceramic	DD107 SL 221J 50V
C169	4010000350	Ceramic	DD106 SL 151J 50V
C170	4010000300	Ceramic	DD104 SL 680J 50V
C171	4040000250	Barrier Layer	UAT 08X 473M
C172	4510003790	Electrolytic	16 MV 10 SW
C173	4510004450	Electrolytic	50 MV R47 NPDW
C174	4510003790	Electrolytic	16 MV 10 SW
C175	4310000010	Mylar	F2D 50V 102K
C176	4010000340	Ceramic	DD105 SL 121J 50V
C177	4010000500	Ceramic	DD104 B 102K 50V
C178	4310000110	Mylar	F2D 50V 472K
C179	4550002870	Tantalum	DN 1V R22K
C180	4010000760	Ceramic	DD104 CH 180J 50V
C181	4610001130	Trimmer	CVSSA1001
C182	4010003650	Ceramic	DD108 UJ 201J 50V
C185	4310000090	Mylar	F2D 50V 333K
C187	4010000840	Ceramic	DD105 CH 390J 50V
C188	4040000260	Barrier Layer	UZE 08X 104M
C189	4010000530	Ceramic	DD112 B 103K 50V
C190	4040000260	Barrier Layer	UZE 08X 104M
C191	4310000020	Mylar	F2D 50V 103K
C192	4310000090	Mylar	F2D 50V 333K
C193	4040000250	Barrier Layer	UAT 08X 473M
C194	4040000260	Barrier Layer	UZE 08X 104M
C195	4510004450	Electrolytic	50 MV R47 NPDW
C196	4010000450	Ceramic	DD104 B 331K 50V
C197	4010000500	Ceramic	DD104 B 102K 50V
C198	4510003840	Electrolytic	50 MV 1 SW
C199	4040000250	Barrier Layer	UAT 08X 473M
C200	4040000190	Barrier Layer	UAT 05X 103K
C201	4040000190	Barrier Layer	UAT 05X 103K
C202	4010000260	Ceramic	DD104 SL 470J 50V
C203	4010000260	Ceramic	DD104 SL 470J 50V
C204	4010000500	Ceramic	DD104 B 102K 50V
RL1	6330000580	Relay	MZ-9HG
RL2	6330000480	Relay	RZ-12
BT1	3020000110	Lithium Battery	CR2032
BT2	3020000110	Lithium Battery	CR2032
EP1	0910029035	P.C. Board	B 2911E (MAIN)
EP3	6910000970	Lead Frame	DL 2OP 2.6-3-1.2H

[RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110000540	IC	NJM4558D
IC2	1110000540	IC	NJM4558D
IC3	1110000540	IC	NJM4558D
IC4	1110000540	IC	NJM4558D
IC5	1110000290	IC	BA618
Q1	1580000050	FET	3SK121-Y
Q2	1580000050	FET	3SK121-Y
Q3	1580000050	FET	3SK121-Y
Q4	1580000050	FET	3SK121-Y
Q7	1530001810	Transistor	2SC3355
Q8	1530001810	Transistor	2SC3355
Q9	1560000110	FET	2SK241-GR
Q10	1590000350	Transistor	RN1204
Q11	1590000350	Transistor	RN1204
Q12	1590000350	Transistor	RN1204
Q13	1590000350	Transistor	RN1204
Q14	1590000350	Transistor	RN1204
Q15	1520000060	Transistor	2SB562C
Q18	1580000010	FET	3SK101-GR
Q19	1530000110	Transistor	2SC2458-GR
Q20	1560000040	FET	2SK30ATM-Y
Q21	1530000591	Transistor	2SC2785 EL
D1	1710000580	Diode	1SS265
D2	1710000580	Diode	1SS265
D3	1710000270	Diode	MI204
D4	1710000270	Diode	MI204
D5	1710000580	Diode	1SS265
D6	1720000210	Varicap	SVC321A5-SP
D7	1720000210	Varicap	SVC321A5-SP
D8	1720000210	Varicap	SVC321A5-SP
D9	1720000210	Varicap	SVC321A5-SP
D10	1720000210	Varicap	SVC321A5-SP
D11	1710000580	Diode	1SS265
D12	1710000270	Diode	MI204
D13	1720000200	Varicap	1SV88
D14	1720000200	Varicap	1SV88
D15	1720000200	Varicap	1SV88
D16	1730000050	Zener	RD3.0E B2
D17	1720000200	Varicap	1SV88
D18	1710000270	Diode	MI204
D19	1710000580	Diode	1SS265
D21	1720000060	Varicap	1SV50 (1)E
D22	1720000060	Varicap	1SV50 (1)E
D23	1720000060	Varicap	1SV50 (1)E
D24	1720000060	Varicap	1SV50 (1)E
D25	1710000580	Diode	1SS265
D26	1710000440	Diode	1S2208 (B)
D27	1710000440	Diode	1S2208 (B)
D28	1710000440	Diode	1S2208 (B)
D29	1710000440	Diode	1S2208 (B)
D30	1710000440	Diode	1S2208 (B)
D43	1710000050	Diode	1SS53
D44	1730000250	Zener	RD12E B2
D45	1730000250	Zener	RD12E B2
D46	1710000050	Diode	1SS53
D47	1730000250	Zener	RD12E B2
D48	1710000050	Diode	1SS53
D49	1710000050	Diode	1SS53
D50	1730000250	Zener	RD12E B2
D51	1710000050	Diode	1SS53
D52	1730000170	Zener	RD8.2E B1
D53	1710000160	Diode	1SS133
L1	6180000880	Coil	LAL 03NA 100K
L2	6180000880	Coil	LAL 03NA 100K
L3	6180000710	Coil	LAL 03NA R33M
L4	6180000880	Coil	LAL 03NA 100K
L7	6180001300	Coil	LAL 02NA 100K
L8	6180000880	Coil	LAL 03NA 100K
L9	6180000880	Coil	LAL 03NA 100K
L10	6180000900	Coil	LAL 03NA 101K
L11	6180000740	Coil	LAL 03NA R56M
L12	6180000730	Coil	LAL 03NA R47M

[RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L13	6110001640	Coil	LA-247
L14	6110001640	Coil	LA-247
L15	6180000880	Coil	LAL 03NA 100K
L16	6110001640	Coil	LA-247
L17	6110001640	Coil	LA-247
L18	6180000730	Coil	LAL 03NA R47M
L19	6180000900	Coil	LAL 03NA 101K
L20	6180000880	Coil	LAL 03NA 100K
L21	6180001300	Coil	LAL 02NA 100K
L22	6180000710	Coil	LAL 03NA R33M
L23	6110001570	Coil	LA-237
L24	6110001540	Coil	LA-234
L25	6110001540	Coil	LA-234
L26	6180000770	Coil	LAL 03NA 1R0M
L27	6110001540	Coil	LA-234
L28	6110001540	Coil	LA-234
L29	6110001650	Coil	LA-248
L30	6180000880	Coil	LAL 03NA 100K
L31	6180001300	Coil	LAL 02NA 100K
L32	6110001590	Coil	LA-242
L33	6110001520	Coil	LA-232
L34	6110001820	Coil	LA-158
L35	6110001640	Coil	LA-247
L36	6110001820	Coil	LA-158
L37	6110001530	Coil	LA-233
L38	6180000880	Coil	LAL 03NA 100K
L39	6110001540	Coil	LA-234
L40	6110001550	Coil	LA-235
L42	6110001530	Coil	LA-233
L43	6110001540	Coil	LA-234
L53	6180000880	Coil	LAL 03NA 100K
L54	6180001300	Coil	LAL 02NA 100K
L56	6140000630	Coil	LR-85A
L57	6150002200	Coil	LS-228
L58	6150002200	Coil	LS-228
L59	6180000990	Coil	LAL 04NA 101K
L60	6180000710	Coil	LAL 03NA R33M
L62	6180000880	Coil	LAL 03NA 100K
L63	6180000880	Coil	LAL 03NA 100K
L64	6180000880	Coil	LAL 03NA 100K
L65	6180000880	Coil	LAL 03NA 100K
L69	6110001540	Coil	LA-234
L70	6110001630	Coil	LA-246
L77	6180000880	Coil	LAL 03NA 100K
L81	6180000830	Coil	LAL 03NA 3R3K
R1	7010003390	Resistor	ELR20J 820 Ω
R2	7010003280	Resistor	ELR20J 100 Ω
R3	7010004070	Resistor	R20J 100 Ω
R4	7010003280	Resistor	ELR20J 100 Ω
R5	7010003260	Resistor	ELR20J 68 Ω
R6	7010003260	Resistor	ELR20J 68 Ω
R7	7010003310	Resistor	ELR20J 180 Ω
R8	7010003310	Resistor	ELR20J 180 Ω
R9	7010004070	Resistor	R20J 100 Ω
R10	7010003390	Resistor	ELR20J 820 Ω
R11	7010003350	Resistor	ELR20J 390 Ω
R12	7010004070	Resistor	R20J 100 Ω
R13	7010004410	Resistor	R20J 47 kΩ
R14	7010004410	Resistor	R20J 47 kΩ
R15	7010004190	Resistor	R20J 1 kΩ
R16	7010003290	Resistor	ELR20J 120 Ω
R17	7010004410	Resistor	R20J 47 kΩ
R18	7010003740	Resistor	ELR20J 470 kΩ
R19	7010003350	Resistor	ELR20J 390 Ω
R20	7010004070	Resistor	R20J 100 Ω
R21	7010004410	Resistor	R20J 47 kΩ
R22	7010004410	Resistor	R20J 47 kΩ
R23	7010004190	Resistor	R20J 1 kΩ
R24	7010003290	Resistor	ELR20J 120 Ω
R25	7010004410	Resistor	R20J 47 kΩ
R26	7010003740	Resistor	ELR20J 470 kΩ
R27	7010004070	Resistor	R20J 100 Ω
R29	7010004410	Resistor	R20J 47 kΩ
R31	7010003290	Resistor	ELR20J 120 Ω
R32	7010004410	Resistor	R20J 47 kΩ
R33	7010003740	Resistor	ELR20J 470 kΩ

[RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R34	7010004410	Resistor	R20J 47 kΩ
R35	7010004410	Resistor	R20J 47 kΩ
R36	7010003660	Resistor	ELR20J 100 kΩ
R37	7010004530	Resistor	R20J 470 kΩ
R38	7010004080	Resistor	R20J 120 Ω
R39	7010004410	Resistor	R20J 47 kΩ
R46	7010003510	Resistor	ELR20J 6.8 kΩ
R47	7010003300	Resistor	ELR20J 150 Ω
R48	7010003280	Resistor	ELR20J 100 Ω
R55	7010003510	Resistor	ELR20J 6.8 kΩ
R56	7010003300	Resistor	ELR20J 150 Ω
R57	7010003280	Resistor	ELR20J 100 Ω
R66	7310000790	Trimmer	RH0651C15J1UA (104)
R67	7010004450	Resistor	R20J 100 kΩ
R68	7310000770	Trimmer	RH0651CN4J0TA (333)
R69	7010003620	Resistor	ELR20J 47 kΩ
R70	7010003530	Resistor	ELR20J 10 kΩ
R71	7310000750	Trimmer	RH0651C14J2WA (103)
R72	7010003520	Resistor	ELR20J 8.2 kΩ
R73	7310000810	Trimmer	RH0651CS5J10A (474)
R74	7010003700	Resistor	ELR20J 220 kΩ
R75	7010004320	Resistor	R20J 10 kΩ
R76	7010003550	Resistor	ELR20J 15 kΩ
R77	7310000810	Trimmer	RH0651CS5J10A (474)
R78	7010003670	Resistor	ELR20J 120 kΩ
R79	7310000810	Trimmer	RH0651CS5J10A (474)
R80	7010003660	Resistor	ELR20J 100 kΩ
R81	7010003620	Resistor	ELR20J 47 kΩ
R82	7010003620	Resistor	ELR20J 47 kΩ
R83	7010003530	Resistor	ELR20J 10 kΩ
R84	7010003590	Resistor	ELR20J 27 kΩ
R85	7010003740	Resistor	ELR20J 470 kΩ
R86	7010003590	Resistor	ELR20J 27 kΩ
R87	7010003630	Resistor	ELR20J 56 kΩ
R88	7010003580	Resistor	ELR20J 18 kΩ
R89	7310000760	Trimmer	RH0651CJ4J01A (223)
R90	7310000770	Trimmer	RH0651CN4J0TA (333)
R91	7010003440	Resistor	ELR20J 2.2 kΩ
R92	7010003590	Resistor	ELR20J 27 kΩ
R93	7010003630	Resistor	ELR20J 56 kΩ
R95	7010003700	Resistor	ELR20J 220 kΩ
R96	7010003620	Resistor	ELR20J 47 kΩ
R97	7010003690	Resistor	ELR20J 180 kΩ
R98	7010003660	Resistor	ELR20J 100 kΩ
R99	7010003670	Resistor	ELR20J 120 kΩ
R100	7010003650	Resistor	ELR20J 82 kΩ
R101	7010003600	Resistor	ELR20J 33 kΩ
R102	7010003640	Resistor	ELR20J 68 kΩ
R103	7010003530	Resistor	ELR20J 10 kΩ
R104	7310000790	Trimmer	RH0651C15J1UA (104)
R105	7310000750	Trimmer	RH0651C14J2WA (103)
R106	7010003530	Resistor	ELR20J 10 kΩ
R107	7410000110	Resistor Array	RMX-6 103K
R108	7010003620	Resistor	ELR20J 47 kΩ
R109	7010003620	Resistor	ELR20J 47 kΩ
R110	7010003530	Resistor	ELR20J 10 kΩ
R111	7010003660	Resistor	ELR20J 100 kΩ
R112	7010003530	Resistor	ELR20J 10 kΩ
R113	7010003530	Resistor	ELR20J 10 kΩ
R114	7010003160	Resistor	ELR20J 10 Ω
R115	7010000910	Resistor	R25XJ 10 Ω
R124	7010003740	Resistor	ELR20J 470 kΩ
R125	7010003480	Resistor	ELR20J 4.7 kΩ
R126	7010003360	Resistor	ELR20J 470 Ω
R127	7010003360	Resistor	ELR20J 470 Ω
R128	7010003400	Resistor	ELR20J 1 kΩ
R129	7010003720	Resistor	ELR20J 330 kΩ
R130	7010003440	Resistor	ELR20J 2.2 kΩ
R131	7010003700	Resistor	ELR20J 220 kΩ
R132	7010003300	Resistor	ELR20J 150 Ω
R133	7010004110	Resistor	R20J 220 Ω
R135	7010003990	Resistor	R20J 22 Ω
R136	7010003200	Resistor	ELR20J 22 Ω
R137	7010004320	Resistor	R20J 10 kΩ
R138	7010001280	Resistor	R25XJ 10 kΩ
R139	7010001280	Resistor	R25XJ 10 kΩ
R140	7010001280	Resistor	R25XJ 10 kΩ
R141	7010004070	Resistor	R20J 100 Ω

[RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R142	7010003280	Resistor	ELR20J 100 Ω
R143	7010003280	Resistor	ELR20J 100 Ω
R144	7010004070	Resistor	R20J 100 Ω
R145	7010003780	Resistor	ELR20J 1 MΩ
R146	7010003320	Resistor	ELR20J 220 Ω
R147	7010003550	Resistor	ELR20J 15 kΩ
R148	7010003460	Resistor	ELR20J 3.3 kΩ
R149	7010003400	Resistor	ELR20J 1 kΩ
R150	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R152	7010003400	Resistor	ELR20J 1 kΩ
R153	7080000730	Resistor	CRB25FX 100 Ω
R154	7010003740	Resistor	ELR20J 470 kΩ
R156	7010003580	Resistor	ELR20J 22 kΩ
R157	7010003720	Resistor	ELR20J 330 kΩ
R161	7030000500	Resistor	MCR10EZHJ 10 kΩ (103)
R162	7030000500	Resistor	MCR10EZHJ 10 kΩ (103)
R163	7010004150	Resistor	R20J 470 Ω
R164	7010004150	Resistor	R20J 470 Ω
R171	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R172	7030000460	Resistor	MCR10EZHJ 4.7 kΩ (472)
C1	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C2	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C3	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C4	4030004610	Ceramic	C2012 SL 1H 101J-T-A
C5	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C6	4030004610	Ceramic	C2012 SL 1H 101J-T-A
C7	4010000500	Ceramic	DD104 B 102K 50V
C8	4010000040	Ceramic	DD104 SL 020C 50V
C9	4010000500	Ceramic	DD104 B 102K 50V
C10	4010000500	Ceramic	DD104 B 102K 50V
C11	4010000500	Ceramic	DD104 B 102K 50V
C12	4010000500	Ceramic	DD104 B 102K 50V
C13	4010000500	Ceramic	DD104 B 102K 50V
C14	4010000500	Ceramic	DD104 B 102K 50V
C15	4010000500	Ceramic	DD104 B 102K 50V
C16	4010000500	Ceramic	DD104 B 102K 50V
C17	4010000500	Ceramic	DD104 B 102K 50V
C18	4010000520	Ceramic	DD108 B 472K 50V
C19	4010000500	Ceramic	DD104 B 102K 50V
C20	4010000100	Ceramic	DD104 SL 080D 50V
C21	4010000500	Ceramic	DD104 B 102K 50V
C22	4010000500	Ceramic	DD104 B 102K 50V
C23	4010000500	Ceramic	DD104 B 102K 50V
C24	4010000220	Ceramic	DD104 SL 330J 50V
C25	4010000500	Ceramic	DD104 B 102K 50V
C26	4010000500	Ceramic	DD104 B 102K 50V
C27	4010000500	Ceramic	DD104 B 102K 50V
C28	4010000500	Ceramic	DD104 B 102K 50V
C29	4010000500	Ceramic	DD104 B 102K 50V
C30	4010000050	Ceramic	DD104 SL 030C 50V
C31	4010000500	Ceramic	DD104 B 102K 50V
C32	4010000500	Ceramic	DD104 B 102K 50V
C33	4010000500	Ceramic	DD104 B 102K 50V
C34	4010000330	Ceramic	DD105 SL 101J 50V
C35	4010000120	Ceramic	DD104 SL 100D 50V
C36	4010000500	Ceramic	DD104 B 102K 50V
C37	4010000500	Ceramic	DD104 B 102K 50V
C38	4010000500	Ceramic	DD104 B 102K 50V
C39	4010000500	Ceramic	DD104 B 102K 50V
C40	4010000040	Ceramic	DD104 SL 020C 50V
C41	4010000500	Ceramic	DD104 B 102K 50V
C42	4010000500	Ceramic	DD104 B 102K 50V
C43	4010000500	Ceramic	DD104 B 102K 50V
C44	4010000140	Ceramic	DD104 SL 120J 50V
C45	4010000460	Ceramic	DD104 B 471K 50V
C46	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C47	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C48	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C49	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C50	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C51	4010000160	Ceramic	DD104 SL 180J 50V
C52	4030004480	Ceramic	C2012 SL 1H 120J-T-A
C60	4010000500	Ceramic	DD104 B 102K 50V
C61	4010000140	Ceramic	DD104 SL 120J 50V
C65	4010000500	Ceramic	DD104 B 102K 50V
C66	4010000260	Ceramic	DD104 SL 470J 50V

[RF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C67	4030004570	Ceramic	C2012 SL 1H 470J-T-A
C68	4010000500	Ceramic	DD104 B 102K 50V
C71	4030004570	Ceramic	C2012 SL 1H 470J-T-A
C72	4010000180	Ceramic	DD104 SL 220J 50V
C73	4010000500	Ceramic	DD104 B 102K 50V
C74	4010000500	Ceramic	DD104 B 102K 50V
C75	4010000340	Ceramic	DD105 SL 121J 50V
C87	4010000260	Ceramic	DD104 SL 470J 50V
C92	4030004610	Ceramic	C2012 SL 1H 101J-T-A
C93	4530000350	Capacitor Array	B8ZC0111-32N
C94	4530000350	Capacitor Array	B8ZC0111-32N
C95	4010000500	Ceramic	DD104 B 102K 50V
C96	4310000060	Mylar	F2D 50V 223K
C97	4510003800	Electrolytic	25 MV 4R7 SW
C106	4310000020	Mylar	F2D 50V 103K
C107	4040000190	Barrier Layer	UAT 05X 103K
C108	4010000520	Ceramic	DD108 B 472K 50V
C109	4010000520	Ceramic	DD108 B 472K 50V
C110	4010000520	Ceramic	DD108 B 472K 50V
C111	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C112	4010000520	Ceramic	DD108 B 472K 50V
C113	4010000500	Ceramic	DD104 B 102K 50V
C114	4040000430	Barrier Layer	RAU 05SA 221K
C115	4010000300	Ceramic	DD104 SL 680J 50V
C116	4040000430	Barrier Layer	RAU 05SA 221K
C117	4030002770	Ceramic	GRM40 UJ 121J 50PT
C118	4030002770	Ceramic	GRM40 UJ 121J 50PT
C119	4040000540	Barrier Layer	RAU 05SA 181K
C120	4040000540	Barrier Layer	RAU 05SA 181K
C121	4510003790	Electrolytic	16 MV 10 SW
C122	4010000500	Ceramic	DD104 B 102K 50V
C133	4010000150	Ceramic	DD104 SL 150J 50V
C139	4030004430	Ceramic	C2012 SL 1H 060D-T-A
C140	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C141	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C142	4030004490	Ceramic	C2012 SL 1H 150J-T-A
C143	4030004490	Ceramic	C2012 SL 1H 150J-T-A
C144	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C150	4010000260	Ceramic	DD104 SL 470J 50V
C157	4030004570	Ceramic	C2012 SL 1H 470J-T-A
C158	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C159	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C160	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C161	4030004610	Ceramic	C2012 SL 1H 101J-T-A
C162	4030004610	Ceramic	C2012 SL 1H 101J-T-A
C163	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C164	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C165	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C166	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C167	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C168	4030004720	Ceramic	C2012 JB 1H 102K-T-A
RL1	6330000810	Relay	ARK115
RL2	6330000810	Relay	ARK115
EP1	0910030373	P.C. Board	B 3035C (RF)
EP9	6910000630	Bead core	FSOH070RN

[TRAP UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D31	1710000440	Diode	1S2208 (B)
D32	1710000440	Diode	1S2208 (B)
D33	1710000440	Diode	1S2208 (B)
D34	1710000440	Diode	1S2208 (B)
R49	7030000580	Resistor	MCR10EZHJ 47 kΩ (473)
R50	7030000580	Resistor	MCR10EZHJ 47 kΩ (473)
R51	7010004450	Resistor	R20J 100 kΩ
R166	7010004570	Resistor	R20J 1 MΩ
C69	4010000340	Ceramic	DD105 SL 121J 50V
C70	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C78	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C82	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C85	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C89	4030003140	Ceramic	GRM40 SL 1R5C 50PT
C137	4030004400	Ceramic	C2012 SL 1H 030C-T-A
EP1	0910012582	P.C. Board	B 1180B (TRAP)

[MIX 1 UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC6	6910004310	IC	CB324M1B
Q5	1530001810	Transistor	2SC3355
Q6	1530001810	Transistor	2SC3355
L66	6180001300	Coil	LAL 02NA 100K
L72	6180000880	Coil	LAL 03NA 100K
L78	6110001520	Coil	LA-232
L79	6110001520	Coil	LA-232
L80	6110001520	Coil	LA-232
R40	7030000460	Resistor	MCR10EZHJ 4.7 kΩ (472)
R41	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R42	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R43	7030000460	Resistor	MCR10EZHJ 4.7 kΩ (472)
R44	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R45	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R52	7030000310	Resistor	MCR10EZHJ 270 Ω (271)
R54	7030000160	Resistor	MCR10EZHJ 15 Ω (150)
R158	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R167	7010004570	Resistor	R20J 1 MΩ
R168	7010004570	Resistor	R20J 1 MΩ
C53	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C54	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C55	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C56	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C57	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C58	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C59	4030004370	Ceramic	C2012 SL 1H 0R5C-T-A
C63	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C64	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C77	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C131	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C132	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C134	4030004400	Ceramic	C2012 SL 1H 030C-T-A
EP1	0910012593	P.C. Board	B 1181C (MIX 1)
EP2	6910000630	Bead core	FSOH070RN

[MIX 2 UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC7	6910001390	IC	DM-251E
Q16	1530001810	Transistor	2SC3355
Q17	1530001810	Transistor	2SC3355
L55	6110001520	Coil	LA-232
L61	6180001300	Coil	LAL 02NA 100K
R116	7030000310	Resistor	MCR10EZHJ 270 Ω (271)
R118	7030000160	Resistor	MCR10EZHJ 15 Ω (150)
R119	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R120	7030000460	Resistor	MCR10EZHJ 4.7 kΩ (472)
R121	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R122	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R123	7030000480	Resistor	MCR10EZHJ 6.8 kΩ (682)
R159	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R160	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R169	7010004570	Resistor	R20J 1 MΩ
R170	7010004570	Resistor	R20J 1 MΩ
C98	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C99	4030004630	Ceramic	C2012 SL 1H 151J-T-A
C100	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C101	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C102	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C103	4030004450	Ceramic	C2012 SL 1H 080D-T-A
C104	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C105	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C145	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C146	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C147	4030004470	Ceramic	C2012 SL 1H 100D-T-A
C148	4030004430	Ceramic	C2012 SL 1H 060D-T-A
C149	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C151	4030004430	Ceramic	C2012 SL 1H 060D-T-A
EP1	0910030791	P.C. Board	B 3124A (MIX 2)

[FIL 1 UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D39	1710000270	Diode	MI204
D41	1710000580	Diode	1SS265
L45	6180000680	Coil	LAL 02NA 4R7K
L46	6130001310	Coil	LB-175
L47	6130001310	Coil	LB-175
L48	6180000680	Coil	LAL 02NA 4R7K
L67	6130001840	Coil	LB-187
L68	6130001840	Coil	LB-187
L73	6110001530	Coil	LA-233
L74	6110001530	Coil	LA-233
R60	7010004070	Resistor	R20J 100 Ω
C84	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C86	4030004470	Ceramic	C2012 SL 1H 100D-T-A
C88	4030000910	Ceramic	GRM40 CH 120J 50PT
C90	4030004470	Ceramic	C2012 SL 1H 100D-T-A
C91	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C138	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C155	4030000860	Ceramic	GRM40 CH 050C 50PT
EP1	0910012611	P.C. Board	B 1201A (FIL 1)

[FIL 2 UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
D35	1710000410	Diode	MI105
D38	1710000580	Diode	1SS265
FI1	2020000460	Ceramic Filter	EZF-B778BT13
L44	6180000680	Coil	LAL 02NA 4R7K
L49	6180000680	Coil	LAL 02NA 4R7K
L50	6180000680	Coil	LAL 02NA 4R7K
L51	6190000110	Coil	7HW-252HA-1965F
L52	6180000680	Coil	LAL 02NA 4R7K
L71	6110001520	Coil	LA-232
R58	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R62	7030000420	Resistor	MCR10EZHJ 2.2 kΩ (222)
R64	7010004070	Resistor	R20J 100 Ω
C62	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C76	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C79	4030000830	Ceramic	GRM40 CK 020C 50PT
C81	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C83	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C83	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C135	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C136	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C156	4030000850	Ceramic	GRM40 CH 040C 50PT
EP1	0910012622	P.C. Board	B 1202B (FIL 2)

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1140001310	IC	MB1504PF-G-BND
IC2	1130004200	IC	TC4S66F (TE85R)
IC3	1110001971	IC	μPC1676G-T1
IC4	1180000640	IC	MC7808CT (JBL1056CT)
IC5	1180000270	IC	NJM78M05A
IC6	1130005740	IC	TC74AC74F
IC7	1110001220	IC	BA4558F T1
IC8	1790000050	IC	ND487C1-3R
IC9	1110001971	IC	μPC1676G-T1
IC10	1790000050	IC	ND487C1-3R
IC11	1180000720	IC	AN79L05M- (E1)
Q1	1590000720	Transistor	DTA144EU T107
Q2	1510000620	Transistor	2SA1576 T107 S
Q3	1530002280	Transistor	2SC4081 T107 S
Q4	1560000540	FET	2SK880-Y (TE85R)
Q5	1530001950	Transistor	2SC2712-GR (TE85R)
Q6	1560000540	FET	2SK880-Y (TE85R)
Q7	1530002050	Transistor	2SC3661-TA
Q8	1530002050	Transistor	2SC3661-TA
Q9	1590000480	Transistor	RN2402 (TE85R)
Q10	1530002050	Transistor	2SC3661-TA
Q11	1590000480	Transistor	RN2402 (TE85R)
Q12	1590000430	Transistor	DTC144EU T107
Q13	1530002020	Transistor	2SC3770-3-TA
Q14	1530002370	Transistor	2SC2714-O (TE85R)
Q15	1530002030	Transistor	2SC3772-3-TA
Q16	1530002240	Transistor	2SC3775-3-TA
Q17	1530002370	Transistor	2SC2714-O (TE85R)
Q18	1560000430	FET	2SK302-GR (TE85R)
Q19	1530002030	Transistor	2SC3772-3-TA
Q20	1530002030	Transistor	2SC3772-3-TA
Q21	1560000430	FET	2SK302-GR (TE85R)
Q22	1530000370	Transistor	2SC3356-T2B
Q23	1530000370	Transistor	2SC3356-T2B
Q24	1530002030	Transistor	2SC3772-3-TA

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q25	1510000580	Transistor	2SA1362-GR (TE85R)
Q26	1590000430	Transistor	DTC144EU T107
Q27	1510000580	Transistor	2SA1362-GR (TE85R)
Q28	1530002050	Transistor	2SC3661-TA
Q29	1590000430	Transistor	DTC144EU T107
Q30	1590000720	Transistor	DTA144EU T107
Q31	1590000680	Transistor	DTC114EU T107
Q32	1590000680	Transistor	DTC114EU T107
D1	1730000820	Zener	RD8.2M-T2B3
D2	1730000820	Zener	RD8.2M-T2B3
D3	1750000160	Diode	DA114 T107
D4	1750000160	Diode	DA114 T107
D5	1750000160	Diode	DA114 T107
D6	1720000220	Varicap	1SV166-T2B
D7	1730000030	Zener	RD5.6M-T2B2
D9	1790000450	Diode	MA862 (TX)
D11	1790000450	Diode	MA862 (TX)
D13	1160000060	Diode	DAN202U T107
D14	1730000030	Zener	RD5.6M-T2B2
D15	1790000590	Diode	MA110 (TW)
D16	1790000590	Diode	MA110 (TW)
D17	1730000590	Zener	RD3.0M-T2B2
D18	1720000320	Varicap	1T32-T8-V
X1	6050002460	Crystal	CR-116
X2	6050007380	Crystal	CR-357
L1	6200000970	Coil	NL 322522T-100K
L2	6200000970	Coil	NL 322522T-100K
L3	6200000970	Coil	NL 322522T-100K
L4	6200000970	Coil	NL 322522T-100K
L5	6200000970	Coil	NL 322522T-100K
L6	6200000970	Coil	NL 322522T-100K
L8	6200000970	Coil	NL 322522T-100K
L9	6180000680	Coil	LAL 02NA 4R7K
L10	6200000970	Coil	NL 322522T-100K
L11	6150000990	Coil	LS-114
L12	6150000990	Coil	LS-114
L13	6200000970	Coil	NL 322522T-100K
L14	6110001590	Coil	LA-242
L15	6110001590	Coil	LA-242
L16	6110001530	Coil	LA-233
L17	6140001200	Coil	LR-145
L18	6140001200	Coil	LR-145
L19	6190000090	Coil	7HW-PTQ252HE-1876 A
L20	6200000970	Coil	NL 322522T-100K
L22	6200000970	Coil	NL 322522T-100K
L24	6200000970	Coil	NL 322522T-100K
L25	6150002050	Coil	LS-259
L26	6150002050	Coil	LS-259
L27	6150002050	Coil	LS-259
L28	6200000970	Coil	NL 322522T-100K
L29	6150002880	Coil	LS-302
L31	6190000120	Coil	7HW-PTQ252HE-1821 A
L32	6190000120	Coil	7HW-PTQ252HE-1821 A
L33	6200000970	Coil	NL 322522T-100K
L34	6140001200	Coil	LR-145
L35	6140000930	Coil	LR-116
L36	6150002220	Coil	LS-230A
L37	6150002220	Coil	LS-230A
L38	6150002220	Coil	LS-230A
L39	6150002210	Coil	LS-229
L40	6200000970	Coil	NL 322522T-100K
L41	6200000961	Coil	NL 322522T-R33M-3
L42	6190000100	Coil	7HW-TQ252HA-1822F
L43	6200000961	Coil	NL 322522T-R33M-3
L44	6190000100	Coil	7HW-TQ252HA-1822F
L45	6200000150	Coil	NL 322522T-1R0M
L46	6200000970	Coil	NL 322522T-100K
L47	6150002220	Coil	LS-230A
L48	6200000970	Coil	NL 322522T-100K
L49	6180000990	Coil	LAL 04NA 101K
L50	6200000970	Coil	NL 322522T-100K
L51	6200000970	Coil	NL 322522T-100K

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L52	6200000970	Coil	NL 322522T-100K
L53	6200000970	Coil	NL 322522T-100K
L54	6200000970	Coil	NL 322522T-100K
L55	6200000970	Coil	NL 322522T-100K
L56	6200000970	Coil	NL 322522T-100K
L57	6200000970	Coil	NL 322522T-100K
L58	6200000970	Coil	NL 322522T-100K
L59	6200000720	Coil	LQN 2A 10NM
L60	6200000720	Coil	LQN 2A 10NM
L61	6200000720	Coil	LQN 2A 10NM
L62	6200000970	Coil	NL 322522T-100K
L63	6200000970	Coil	NL 322522T-100K
L64	6200000720	Coil	LQN 2A 10NM
L65	6200000720	Coil	LQN 2A 10NM
L66	6200000720	Coil	LQN 2A 10NM
L67	6200000130	Coil	LQN 2A 47NM
L68	6200000130	Coil	LQN 2A 47NM
L69	6200000720	Coil	LQN 2A 10NM
L70	6200000970	Coil	NL 322522T-100K
L71	6200000970	Coil	NL 322522T-100K
L72	6200000100	Coil	LQN 2A 22NM
R1	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R2	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R3	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R4	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R5	7030003610	Resistor	ERJ3GEYJ 273 V (27 kΩ)
R6	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R7	7030000500	Resistor	MCR10EZHJ 10 kΩ (103)
R8	7030003510	Resistor	ERJ3GEYJ 392 V (3.9 kΩ)
R9	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R10	7030000400	Resistor	MCR10EZHJ 1.5 kΩ (152)
R11	7030000340	Resistor	MCR10EZHJ 470 Ω (471)
R12	7030000430	Resistor	MCR10EZHJ 2.7 kΩ (272)
R13	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R14	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R15	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R16	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R17	7030000500	Resistor	MCR10EZHJ 10 kΩ (103)
R18	7030003310	Resistor	ERJ3GEYJ 820 V (82 Ω)
R19	7030003310	Resistor	ERJ3GEYJ 820 V (82 Ω)
R20	7030003310	Resistor	ERJ3GEYJ 820 V (82 Ω)
R25	7030003490	Resistor	ERJ3GEYJ 272 V (2.7 kΩ)
R26	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R27	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R28	7010004690	Resistor	R50XJ 47 Ω
R29	7010004690	Resistor	R50XJ 47 Ω
R30	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R31	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R32	7030003400	Resistor	ERJ3GEYJ 471 V (470 Ω)
R33	7030003620	Resistor	ERJ3GEYJ 333 V (33 kΩ)
R35	7310000790	Trimmer	RH0651C15J1UA (104)
R36	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R37	7030003690	Resistor	ERJ3GEYJ 124 V (120 kΩ)
R38	7030003770	Resistor	ERJ3GEYJ 564 V (560 kΩ)
R39	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R40	7030003800	Resistor	ERJ3GEYJ 105 V (1 MΩ)
R41	7310000810	Trimmer	RH0851CS5J10A (474)
R42	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R43	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R44	7030003700	Resistor	ERJ3GEYJ 154 V (150 kΩ)
R45	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R46	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R47	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R48	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R49	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R50	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R51	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R52	7030003540	Resistor	ERJ3GEYJ 682 V (6.8 kΩ)
R53	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R54	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R55	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R56	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R57	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R58	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R59	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R60	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R61	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 kΩ)
R62	7030003410	Resistor	ERJ3GEYJ 561 V (560 Ω)
R63	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R64	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R65	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R66	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R67	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R68	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R69	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R70	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R71	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R72	7030003430	Resistor	ERJ3GEYJ 821 V (820 Ω)
R73	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R74	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R77	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R78	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R79	7030003270	Resistor	ERJ3GEYJ 390 V (39 Ω)
R80	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R81	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R82	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R83	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R84	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R85	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R86	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R87	7030003580	Resistor	ERJ3GEYJ 153 V (15 kΩ)
R88	7030003340	Resistor	ERJ3GEYJ 151 V (150 Ω)
R89	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R90	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R91	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R92	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R93	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R94	7030003660	Resistor	ERJ3GEYJ 683 V (68 kΩ)
R95	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R96	7030003410	Resistor	ERJ3GEYJ 561 V (560 Ω)
R97	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)
R98	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R99	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R100	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R101	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)
R102	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R103	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R104	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R105	7030003460	Resistor	ERJ3GEYJ 152 V (1.5 kΩ)
R106	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R107	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R108	7030003480	Resistor	ERJ3GEYJ 222 V (2.2 kΩ)
R109	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R111	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R112	7030003380	Resistor	ERJ3GEYJ 331 V (330 Ω)
R113	7030003600	Resistor	ERJ3GEYJ 223 V (22 kΩ)
R114	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R115	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R116	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R120	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R121	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R122	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R123	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R124	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R125	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R126	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R127	7030003280	Resistor	ERJ3GEYJ 470 V (47 Ω)
R128	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R129	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R130	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R131	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R132	7520000030	Posistor	PTH59F04BG222TS
R133	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R134	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 kΩ)
R135	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
C1	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C2	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C3	4550000450	Tantalum	TESVC 1C 106M-12L
C4	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C5	4550002750	Tantalum	TESVD2 1A 336M-12 L
C6	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C7	4550002770	Tantalum	TESVD2 1C 226M-12 L

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C8	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C9	4510004500	Electrolytic	25 MV 100 HW
C10	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C11	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C13	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C14	4510004500	Electrolytic	25 MV 100 HW
C15	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C16	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C17	4550002750	Tantalum	TESVD2 1A 336M-12 L
C18	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C19	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C20	4550002750	Tantalum	TESVD2 1A 336M-12 L
C21	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C22	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C23	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C24	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C25	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C26	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C27	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C28	4550002750	Tantalum	TESVD2 1A 336M-12 L
C29	4550002750	Tantalum	TESVD2 1A 336M-12 L
C30	4510003920	Electrolytic	16 MV 100 HW
C31	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C32	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C33	4510003920	Electrolytic	16 MV 100 HW
C34	4510003920	Electrolytic	16 MV 100 HW
C35	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C36	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C37	4510003920	Electrolytic	16 MV 100 HW
C38	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C39	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C40	4550003030	Tantalum	TEMSVA 0J 475M-8L
C41	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C42	4510003880	Electrolytic	10 MV 47 HW
C43	4510003880	Electrolytic	10 MV 47 HW
C44	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C45	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C46	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C47	4510003790	Electrolytic	16 MV 10 SW
C48	4030008360	Ceramic	C1608 UJ 1H 101J-T-A
C49	4030008360	Ceramic	C1608 UJ 1H 101J-T-A
C50	4510003910	Electrolytic	16 MV 47 HW
C51	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C52	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C53	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C54	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C55	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C57	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C58	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C59	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C60	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C61	4030006620	Ceramic	C1608 SL 1H 120J-T-A
C62	4030006530	Ceramic	C1608 SL 1H 020C-T-A
C63	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C65	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C66	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C67	4510003910	Electrolytic	16 MV 47 HW
C68	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C69	4610001130	Trimmer	CVSSA1001
C70	4030006920	Ceramic	C1608 CH 1H 010C-T-A
C71	4030004960	Ceramic	C2012 CH 1H 560J-T-A
C72	4030004960	Ceramic	C2012 CH 1H 560J-T-A
C73	4030007070	Ceramic	C1608 CH 1H 330J-T-A
C74	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C75	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C76	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C77	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C78	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C79	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C80	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C81	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C82	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C83	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C84	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C85	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C86	4030007020	Ceramic	C1608 CH 1H 120J-T-A
C87	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C88	4030006750	Ceramic	C1608 SL 1H 101J-T-A

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C89	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C90	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C91	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C92	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C93	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C94	4030006630	Ceramic	C1608 SL 1H 150J-T-A
C95	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C96	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C97	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C98	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C99	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C100	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C101	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C102	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C103	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C104	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C105	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C106	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C107	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C108	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C109	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C110	4030006710	Ceramic	C1608 SL 1H 470J-T-A
C111	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C112	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C113	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C114	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C115	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C116	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C117	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C118	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C119	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C120	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C121	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C122	4030006660	Ceramic	C1608 SL 1H 220J-T-A
C123	4030006580	Ceramic	C1608 SL 1H 070D-T-A
C124	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C125	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C126	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C127	4030006710	Ceramic	C1608 SL 1H 470J-T-A
C128	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C129	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C130	4030006760	Ceramic	C1608 SL 1H 121J-T-A
C131	4030006710	Ceramic	C1608 SL 1H 470J-T-A
C132	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C133	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C134	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C135	4030006710	Ceramic	C1608 SL 1H 470J-T-A
C136	4550002750	Tantalum	TESVD2 1A 336M-12 L
C137	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C138	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C139	4550002960	Tantalum	TESVA 1C 155M1-8L
C140	4550002960	Tantalum	TESVA 1C 155M1-8L
C141	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C142	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C143	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C144	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C145	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C146	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C147	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C148	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C149	4030006520	Ceramic	C1608 SL 1H 010C-T-A
C150	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C151	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C152	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C157	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C158	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C159	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C160	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C161	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C162	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C163	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C164	4030006590	Ceramic	C1608 SL 1H 080D-T-A
C165	4030006520	Ceramic	C1608 SL 1H 010C-T-A
C166	4030006590	Ceramic	C1608 SL 1H 080D-T-A
C167	4030006530	Ceramic	C1608 SL 1H 020C-T-A
C168	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C169	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C170	4030006690	Ceramic	C1608 SL 1H 330J-T-A

[PLL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C171	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C173	4030006890	Ceramic	C1608 JF 1H 103Z-T-A
C174	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C175	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C176	4030006690	Ceramic	C1608 SL 1H 330J-T-A
C177	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C178	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C179	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C180	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C181	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C182	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C183	4030006630	Ceramic	C1608 SL 1H 150J-T-A
C184	4030006550	Ceramic	C1608 SL 1H 040C-T-A
C185	4030006630	Ceramic	C1608 SL 1H 150J-T-A
C186	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C187	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C190	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C191	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C192	4550002890	Tantalum	TESVA 1A 225M1-8L
C193	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C194	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C195	4550000460	Tantalum	TESVA 1C 105M1-8L
C196	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C197	4030007030	Ceramic	C1608 CH 1H 150J-T-A
C198	4030006620	Ceramic	C1608 SL 1H 120J-T-A
C199	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C200	4030006570	Ceramic	C1608 SL 1H 060D-T-A
C201	4030006550	Ceramic	C1608 SL 1H 040C-T-A
EP1	0910029664	P.C. Board	B 2912D (PLL)

[VCO UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1560000130	FET	2SK125
Q2	1530000370	Transistor	2SC3356-T2B
Q3	1560000130	FET	2SK125
Q4	1530000370	Transistor	2SC3356-T2B
D1	1720000320	Varicap	1T32-T8-V
D2	1720000320	Varicap	1T32-T8-V
D3	1720000320	Varicap	1T32-T8-V
D4	1720000320	Varicap	1T32-T8-V
D5	1710000580	Diode	1SS265
D6	1720000320	Varicap	1T32-T8-V
D7	1720000320	Varicap	1T32-T8-V
D8	1720000320	Varicap	1T32-T8-V
D9	1720000320	Varicap	1T32-T8-V
D10	1710000580	Diode	1SS265
L1	6170000230	Coil	LW-25
L2	6180002530	Coil	LAL 02NA R68K
L3	6200000140	Coil	LQH 3N 1R0M
L4	6200000140	Coil	LQH 3N 1R0M
L5	6170000230	Coil	LW-25
L6	6180002530	Coil	LAL 02NA R68K
L7	6200000140	Coil	LQH 3N 1R0M
L8	6200000140	Coil	LQH 3N 1R0M
L9	6200000140	Coil	LQH 3N 1R0M
R1	7030000250	Resistor	MCR10EZHJ 82 Ω (820)
R2	7030000400	Resistor	MCR10EZHJ 1.5 kΩ (152)
R3	7030000450	Resistor	MCR10EZHJ 3.9 kΩ (392)
R4	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R5	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R6	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R7	7030000250	Resistor	MCR10EZHJ 82 Ω (820)
R8	7030000400	Resistor	MCR10EZHJ 1.5 kΩ (152)
R9	7030000450	Resistor	MCR10EZHJ 3.9 kΩ (392)
R10	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R11	7030000260	Resistor	MCR10EZHJ 100 Ω (101)
R12	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R13	7030000400	Resistor	MCR10EZHJ 1.5 kΩ (152)
R14	7030000340	Resistor	MCR10EZHJ 470 Ω (471)
R15	7030000340	Resistor	MCR10EZHJ 470 Ω (471)
R16	7010004570	Resistor	R20J 1 MΩ
R17	7010004570	Resistor	R20J 1 MΩ
R18	7010004570	Resistor	R20J 1 MΩ
C1	4030000840	Ceramic	GRM40 CJ 030C 50PT
C2	4030000840	Ceramic	GRM40 CJ 030C 50PT
C3	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C4	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C5	4030000540	Ceramic	GRM40 SL 0R5C 50PT
C6	4510003780	Electrolytic	10 MV 100 SW
C7	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C8	4030004430	Ceramic	C2012 SL 1H 060D-T-A
C9	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C10	4550000410	Tantalum	DN 1V 4R7M
C11	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C12	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C13	4030000840	Ceramic	GRM40 CJ 030C 50PT
C14	4030000840	Ceramic	GRM40 CJ 030C 50PT
C15	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C16	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C17	4030000540	Ceramic	GRM40 SL 0R5C 50PT
C18	4510003780	Electrolytic	10 MV 100 SW
C19	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C20	4030004430	Ceramic	C2012 SL 1H 060D-T-A
EP1	0910029783	P.C. Board	B 3034C (VCO)
EP2	0910012641	P.C. Board	B 1100A

[P DOUBL UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC10	1110001000	IC	μPC1651G
Q2	1530001810	Transistor	2SC3355
D1	1710000580	Diode	1SS265
D2	1710000580	Diode	1SS265
L3	6200000010	Coil	LQN 5N 1R0M
L5	6140001490	Coil	LR-168
L51	6200000010	Coil	LQN 5N 1R0M
L53	6180000900	Coil	LAL 03NA 101K
L75	6200000010	Coil	LQN 5N 1R0M
L77	6110001530	Coil	LA-233
R7	7030000180	Resistor	MCR10EZHJ 22 Ω (220)
R8	7030000480	Resistor	MCR10EZHJ 6.8 kΩ (682)
R10	7030000310	Resistor	MCR10EZHJ 270 Ω (271)
R11	7030000310	Resistor	MCR10EZHJ 270 Ω (271)
R12	7030000180	Resistor	MCR10EZHJ 15 Ω (150)
R34	7030000380	Resistor	MCR10EZHJ 1 kΩ (102)
R123	7030000280	Resistor	MCR10EZHJ 150 Ω (151)
R124	7030000210	Resistor	MCR10EZHJ 39 Ω (390)
R125	7030000280	Resistor	MCR10EZHJ 150 Ω (151)
R143	7010004570	Resistor	R20J 1 MΩ
R144	7010004570	Resistor	R20J 1 MΩ
R145	7010004570	Resistor	R20J 1 MΩ
C20	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C21	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C22	4030004520	Ceramic	C2012 SL 1H 220J-T-A
C46	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C48	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C113	4030004490	Ceramic	C2012 SL 1H 150J-T-A
C114	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C115	4030004500	Ceramic	C2012 SL 1H 180J-T-A
C116	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C164	4030004520	Ceramic	C2012 SL 1H 220J-T-A
C168	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C169	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C170	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C171	4030004380	Ceramic	C2012 SL 1H 010C-T-A
C172	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C173	4030004520	Ceramic	C2012 SL 1H 220J-T-A
C174	4030004620	Ceramic	C2012 SL 1H 121J-T-A
C175	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C188	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C189	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C190	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C191	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C192	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C195	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C196	4030004490	Ceramic	C2012 SL 1H 150J-T-A
C197	4030004710	Ceramic	C2012 JB 1H 471K-T-A
C198	4030004620	Ceramic	C2012 SL 1H 121J-T-A
EP1	0910012633	P.C. Board	B 1179C (P DOUBL)

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1130003710	IC	TC4S71F (TE85R)
IC2	1130002660	IC	μPD4030BG-T1
IC3	1130003710	IC	TC4S71F (TE85R)
IC4	1140001640	IC	TMP82C55AM-2
IC5	1140001690	IC	μPD78224GJ-546-5B G
IC6	1130005230	IC	TC74HCU04AF
IC7	1130001880	IC	μPD4069UBG-T1
IC8	1130004930	IC	μPD7225GB-3B7
IC9	1130004930	IC	μPD7225GB-3B7
IC10	1130004900	IC	MC74HC373F
IC11	1130006010	IC	HM6264ALFP15LD
IC12	1130003300	IC	RP5C15
IC13	1110001550	IC	S-8054ALB-LM-T1
IC14	1130000830	IC	μPD4094BG-T1
IC15	1130005770	IC	MB4052PF-G-BND
IC16	1130003710	IC	TC4S71F (TE85R)
IC17	1130004170	IC	TC4S01F (TE85R)
IC18	1130004170	IC	TC4S01F (TE85R)
IC19	1130004170	IC	TC4S01F (TE85R)
IC20	1130004170	IC	TC4S01F (TE85R)
IC21	1130005640	IC	TC4W53F (TE12L)
IC22	1130004830	IC	TC7SU04F (TE85R)
IC23	1180000420	IC	TA78L05F (TE12R)
Q1	1590000430	Transistor	DTC144EU T107
Q2	1520000230	Transistor	2SB909M Q
Q3	1530002060	Transistor	2SC4081 T107 R
Q4	1590000430	Transistor	DTC144EU T107
Q5	1590000430	Transistor	DTC144EU T107
Q6	1530002060	Transistor	2SC4081 T107 R
Q7	1530002060	Transistor	2SC4081 T107 R
Q8	1590000670	Transistor	FMW1 T148
Q10	1590000430	Transistor	DTC144EU T107
Q11	1510000510	Transistor	2SA1576 T107 R
Q12	1590000430	Transistor	DTC144EU T107
Q13	1510000510	Transistor	2SA1576 T107 R
Q14	1590000450	Transistor	FMG4 T148
Q15	1590000430	Transistor	DTC144EU T107
Q16	1590000430	Transistor	DTC144EU T107
D1	1750000120	Diode	DWA010-TE
D2	1750000160	Diode	DA114 T107
D3	1750000160	Diode	DA114 T107
D4	1750000120	Diode	DWA010-TE
D5	1750000120	Diode	DWA010-TE
D6	1750000120	Diode	DWA010-TE
D7	1750000120	Diode	DWA010-TE
D8	1750000120	Diode	DWA010-TE
D9	1750000120	Diode	DWA010-TE
D10	1750000120	Diode	DWA010-TE
D11	1750000160	Diode	DA114 T107
D12	1750000160	Diode	DA114 T107
D13	1750000160	Diode	DA114 T107
D14	1750000160	Diode	DA114 T107
D15	1750000160	Diode	DA114 T107
D16	1730000060	Zener	RD3.6E B1
D17	1750000160	Diode	DA114 T107
D18	1750000160	Diode	DA114 T107
D19	1750000160	Diode	DA114 T107
D20	1750000160	Diode	DA114 T107
D21	1750000160	Diode	DA114 T107
D22	1750000160	Diode	DA114 T107
D23	1750000160	Diode	DA114 T107
D24	1750000160	Diode	DA114 T107
D25	1750000160	Diode	DA114 T107
D26	1750000160	Diode	DA114 T107
D27	1750000160	Diode	DA114 T107
D28	1750000160	Diode	DA114 T107
D29	1750000160	Diode	DA114 T107
X1	6050006930	Crystal	RF-4A3 FAT NKD (9.8304M)
X2	6050004790	Crystal	NC-38 32.768M

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R1	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R2	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R3	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R4	7030003720	Resistor ERJ3GEYJ 224 V (220 kΩ)
R5	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R6	7030003720	Resistor ERJ3GEYJ 224 V (220 kΩ)
R7	7030003800	Resistor ERJ3GEYJ 105 V (1 MΩ)
R8	7030003800	Resistor ERJ3GEYJ 105 V (1 MΩ)
R9	7030003580	Resistor ERJ3GEYJ 153 V (15 kΩ)
R10	7030003580	Resistor ERJ3GEYJ 153 V (15 kΩ)
R11	7030003600	Resistor ERJ3GEYJ 223 V (22 kΩ)
R12	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R13	7010004720	Resistor R50XJ 100 Ω
R14	7010004720	Resistor R50XJ 100 Ω
R15	7030003380	Resistor ERJ3GEYJ 331 V (330 Ω)
R16	7030003380	Resistor ERJ3GEYJ 331 V (330 Ω)
R17	7030003470	Resistor ERJ3GEYJ 182 V (1.8 kΩ)
R18	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R19	7030003700	Resistor ERJ3GEYJ 154 V (150 kΩ)
R20	7030003570	Resistor ERJ3GEYJ 123 V (12 kΩ)
R21	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R22	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R23	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R24	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R25	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R26	7030003720	Resistor ERJ3GEYJ 224 V (220 kΩ)
R27	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R28	7030003780	Resistor ERJ3GEYJ 684 V (680 kΩ)
R29	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R30	7030003520	Resistor ERJ3GEYJ 472 V (4.7 kΩ)
R33	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R34	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R35	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R36	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R37	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R38	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R39	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R40	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R41	7030003560	Resistor ERJ3GEYJ 103 V (10 kΩ)
R42	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R43	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R44	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R45	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R46	7030003530	Resistor ERJ3GEYJ 562 V (5.6 kΩ)
R47	7030003500	Resistor ERJ3GEYJ 332 V (3.3 kΩ)
R48	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R49	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R50	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R51	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R52	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R53	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R54	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R55	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R56	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R57	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R58	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R59	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R60	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R61	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R62	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R63	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R64	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R65	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R66	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R67	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R68	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R69	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R70	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R71	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R72	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R73	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R74	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R75	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R76	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R77	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R78	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R79	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R80	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION
R81	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R82	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R83	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R84	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R85	7030003590	Resistor ERJ3GEYJ 183 V (18 kΩ)
R86	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R87	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R88	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R90	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R91	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R92	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R94	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R95	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R96	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R97	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R98	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R99	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R100	7010004450	Resistor R20J 100 kΩ
R101	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R102	7410000520	Resistor Array RKM7L 104J
R103	7410000340	Resistor Array RKM10L 104J
R104	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R105	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R106	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R107	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R108	7030003440	Resistor ERJ3GEYJ 102 V (1 kΩ)
R109	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R110	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R112	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
R113	7030003680	Resistor ERJ3GEYJ 104 V (100 kΩ)
R116	7030003640	Resistor ERJ3GEYJ 473 V (47 kΩ)
C1	4030006860	Ceramic C1608 JB 1H 102K-T-A
C2	4030006860	Ceramic C1608 JB 1H 102K-T-A
C3	4030006860	Ceramic C1608 JB 1H 102K-T-A
C4	4030006860	Ceramic C1608 JB 1H 102K-T-A
C5	4030006860	Ceramic C1608 JB 1H 102K-T-A
C6	4030006800	Ceramic C1608 SL 1H 221J-T-A
C7	4030006640	Ceramic C1608 SL 1H 180J-T-A
C8	4030006640	Ceramic C1608 SL 1H 180J-T-A
C9	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C10	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C11	4030006880	Ceramic C1608 JB 1H 472K-T-A
C12	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C13	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C14	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C15	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C16	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C17	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C18	4030006880	Ceramic C1608 JB 1H 472K-T-A
C20	4030006880	Ceramic C1608 JB 1H 472K-T-A
C21	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C22	4550000270	Tantalum TESVA 1E 474M1-8L
C23	4030006710	Ceramic C1608 SL 1H 470J-T-A
C24	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C25	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C26	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C27	4030006700	Ceramic C1608 SL 1H 390J-T-A
C28	4030006590	Ceramic C1608 SL 1H 080D-T-A
C29	4610001480	Trimmer CV38E 3001E
C30	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C31	4030006880	Ceramic C1608 JB 1H 472K-T-A
C32	4030006880	Ceramic C1608 JB 1H 472K-T-A
C33	4030006880	Ceramic C1608 JB 1H 472K-T-A
C34	4030006880	Ceramic C1608 JB 1H 472K-T-A
C35	4030006880	Ceramic C1608 JB 1H 472K-T-A
C36	4030006880	Ceramic C1608 JB 1H 472K-T-A
C37	4030006880	Ceramic C1608 JB 1H 472K-T-A
C38	4030006880	Ceramic C1608 JB 1H 472K-T-A
C39	4030006880	Ceramic C1608 JB 1H 472K-T-A
C40	4030006880	Ceramic C1608 JB 1H 472K-T-A
C41	4030006880	Ceramic C1608 JB 1H 472K-T-A
C42	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C43	4030008630	Ceramic C1608 JF 1C 104Z-T-A
C44	4030006880	Ceramic C1608 JB 1H 472K-T-A
C45	4030006880	Ceramic C1608 JB 1H 472K-T-A
C46	4030006880	Ceramic C1608 JB 1H 472K-T-A

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
C47	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C48	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C49	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C50	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C51	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C52	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C53	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C54	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C55	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C56	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C57	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C58	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C59	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C60	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C61	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C62	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C63	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C64	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C65	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C66	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C67	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C68	4550000280	Tantalum	TESVB2 1A 475M-8L
C69	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C70	4030008630	Ceramic	C1608 JF 1C 104Z-T-A
C71	4510004500	Electrolytic	25 MV 100 HW
DS1	5030000620	LCD	LD-BU5214JZ (E-5338) [FUNCTION DISPLAY]
DS2	5040001430	LED	SLB-25VR 3F [REMOTE]
DS3	5040001460	LED	SLB-25MG 3F [BUSY]
DS4	5080000170	LED	HRS-7219A-Y2-30
DS5	5080000170	LED	HRS-7219A-Y2-30
DS6	5080000170	LED	HRS-7219A-Y2-30
DS7	5080000170	LED	HRS-7219A-Y2-30
ME1	5510000370	Meter	ME-29 RX868 [S.METER]
S1	2260000060	Switch	SKHHAJ025A [SSB]
S2	2260000060	Switch	SKHHAJ025A [AM/W]
S3	2260000060	Switch	SKHHAJ025A [WFM]
S4	2260000060	Switch	SKHHAJ025A [FM/N]
S5	2230000290	Switch	SPPH22039A [NB•AFC]
S6	2230000290	Switch	SPPH22039A [ATT]
S7	2260000060	Switch	SKHHAJ025A [MHz]
S8	2260000060	Switch	SKHHAJ025A [TS]
S9	2230000530	Switch	SPPH23078A [WINDOW]
S10	2230000530	Switch	SPPH23078A [VSC]
S11	2230000530	Switch	SPPH23078A [SKIP]
S12	2230000530	Switch	SPPH23078A [DELAY]
S13	2230000530	Switch	SPPH23078A [CLOCK]
S14	2230000530	Switch	SPPH23078A [MODE]
S15	2230000530	Switch	SPPH23078A [SET]
S16	2260000060	Switch	SKHHAJ025A [SPCH]
S17	2260000060	Switch	SKHHAJ025A [MEMORY-CH (UP)]
S18	2260000060	Switch	SKHHAJ025A [MEMORY-CH (DOWN)]
S19	2230000530	Switch	SPPH23078A [DIMMER]
S20	2230000530	Switch	SPPH23078A [LOCK]
S21	2260000070	Switch	SKHHAK013A [M-SET]
S22	2260000070	Switch	SKHHAK013A [BANK]
S23	2260000070	Switch	SKHHAK013A [M-CL]
S24	2260000070	Switch	SKHHAK013A [MW]
S25	2230000550	Switch	SPPH23079A [TIMER]
S26	7600000100	Switch	EC24B50B0013A [MAIN DIAL]
S27	2260001260	Switch	SW-118 (SDDFA3) [POWER]
EP1	0910029045	P.C. Board	B 2913E (LOGIC)
EP2	0910030400	P.C. Board	B 3076
EP6	6910000640	Lead Frame	FSOH090RN

[TENKEY UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
EP1	0910026323	P.C. Board	B 2664C (TENKEY)

[VR UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7210001780	Variable Resistor	RV-166 (RK097111) 10KB [AF GAIN]
R2	7210001960	Variable Resistor	RV-205 (RK0971210) 10KBX2 [SQUELCH]
R3	7010003420	Resistor	ELR20J 1.5 kΩ
EP1	0910029262	P.C. Board	B 2989B (VR)

[JACK UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
L1	6180000900	Coil	LAL 03NA 101K
R1	7010003280	Resistor	ELR20J 100 Ω
R2	7010003280	Resistor	ELR20J 100 Ω
C1	4020000250	Cylinder	UP125 X 472M
EP1	0910029271	P.C. Board	B 2990A (JACK)

[CONV UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	6910004320	IC	CB346M1B
Q1	1530002240	Transistor	2SC3775-3-TA
Q2	1530002030	Transistor	2SC3772-3-TA
Q3	1560000540	FET	2SK880-Y (TE85R)
Q4	1530000370	Transistor	2SC3356-T2B
D1	1790000590	Diode	MA110 (TW)
D2	1790000590	Diode	MA110 (TW)
D3	1730000030	Zener	RD5.6M-T2B2
D4	1720000320	Varicap	1T32-T8-V
X1	6050007370	Crystal	CR-356
L1	6200000970	Coil	NL 322522T-100K
L2	6150001130	Coil	LS-127
L3	6150001130	Coil	LS-127
L4	6150002220	Coil	LS-230A
L5	6110001520	Coil	LA-232
L6	6110001520	Coil	LA-232
L7	6110001520	Coil	LA-232
L8	6190000130	Coil	7HW-252MX-1553A
L9	6200000970	Coil	NL 322522T-100K
L10	6200000970	Coil	NL 322522T-100K
L12	6200000150	Coil	NL 322522T-1R0M
L13	6200000880	Coil	NL 322522T-4R7M
L14	6200000880	Coil	NL 322522T-4R7M
L15	6200000880	Coil	NL 322522T-4R7M

[CONV UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)
R2	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 kΩ)
R3	7030003410	Resistor	ERJ3GEYJ 561 V (560 Ω)
R4	7030003360	Resistor	ERJ3GEYJ 221 V (220 Ω)
R5	7030003530	Resistor	ERJ3GEYJ 562 V (5.6 kΩ)
R6	7030003520	Resistor	ERJ3GEYJ 472 V (4.7 kΩ)
R7	7030003380	Resistor	ERJ3GEYJ 331 V (330 Ω)
R8	7030003640	Resistor	ERJ3GEYJ 473 V (47 kΩ)
R9	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R10	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R11	7030003560	Resistor	ERJ3GEYJ 103 V (10 kΩ)
R12	7030003440	Resistor	ERJ3GEYJ 102 V (1 kΩ)
R13	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R14	7030003220	Resistor	ERJ3GEYJ 150 V (15 Ω)
R15	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R16	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R17	7030000140	Resistor	MCR10EZHJ 10 Ω (100)
R18	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R19	7030003320	Resistor	ERJ3GEYJ 101 V (100 Ω)
R23	7520000030	Posistor	PTH59F04BG222TS
R24	7030003450	Resistor	ERJ3GEYJ 122 V (1.2 kΩ)
R25	7030003500	Resistor	ERJ3GEYJ 332 V (3.3 kΩ)
R26	7030003680	Resistor	ERJ3GEYJ 104 V (100 kΩ)
R27	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R28	7030003370	Resistor	ERJ3GEYJ 271 V (270 Ω)
R29	7030003230	Resistor	ERJ3GEYJ 180 V (18 Ω)
C1	4550000450	Tantalum	TESVC 1C 106M-12L
C2	4030006880	Ceramic	C1608 JB 1H 472K-T-A
C3	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C4	4610001130	Trimmer	CVSSA1001
C5	4030006920	Ceramic	C1608 CH 1H 010C-T-A
C6	4030004960	Ceramic	C2012 CH 1H 560J-T-A
C7	4030004960	Ceramic	C2012 CH 1H 560J-T-A
C8	4030007070	Ceramic	C1608 CH 1H 330J-T-A
C9	4030006710	Ceramic	C1608 SL 1H 470J-T-A
C10	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C11	4030006520	Ceramic	C1608 SL 1H 010C-T-A
C12	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C13	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C14	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C15	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C17	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C18	4030006640	Ceramic	C1608 SL 1H 180J-T-A
C19	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C20	4610001470	Trimmer	CV38D 2001E
C21	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C22	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C23	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C24	4610001450	Trimmer	CV38B 0601E
C25	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C26	4610001450	Trimmer	CV38B 0601E
C27	4030006530	Ceramic	C1608 SL 1H 020C-T-A
C28	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C29	4550000450	Tantalum	TESVC 1C 106M-12L
C30	4030006530	Ceramic	C1608 SL 1H 020C-T-A
C31	4030006560	Ceramic	C1608 SL 1H 050C-T-A
C32	4030006510	Ceramic	C1608 SL 1H 0R5C-T-A
C33	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C34	4030006540	Ceramic	C1608 SL 1H 030C-T-A
C35	4030006570	Ceramic	C1608 SL 1H R75C-T-A
C36	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C39	4030006530	Ceramic	C1608 SL 1H 020C-T-A
C40	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C41	4030007030	Ceramic	C1608 CH 1H 150J-T-A
C42	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C43	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C45	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C48	4030006860	Ceramic	C1608 JB 1H 102K-T-A
C49	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C50	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C51	4030006750	Ceramic	C1608 SL 1H 101J-T-A
C52	4030006610	Ceramic	C1608 SL 1H 100D-T-A
C53	4030006850	Ceramic	C1608 JB 1H 471K-T-A
C54	4030006520	Ceramic	C1608 SL 1H 010C-T-A

[CONV UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
RL1	6330000810	Relay	ARK115
RL2	6330000810	Relay	ARK115
EP1	0910029754	P.C. Board	B 2915D (CONV)

[HPF UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1110001890	IC	μPC1678G
D1	1730000410	Zener	RD5.1M-T2B2
L2	6110001520	Coil	LA-232
R1	7030000220	Resistor	MCR10EZHJ 47 Ω (470)
R4	7010004050	Resistor	R20J 68 Ω
R5	7010004570	Resistor	R20J 1 MΩ
C1	4010000070	Ceramic	DD104 SL 050C 50V
C2	4030004500	Ceramic	C2012 SL 1H 180J-T-A
C3	4030004420	Ceramic	C2012 SL 1H 050C-T-A
C4	4030004430	Ceramic	C2012 SL 1H 060D-T-A
C5	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C6	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C7	4030004570	Ceramic	C2012 SL 1H 470J-T-A
C8	4030004450	Ceramic	C2012 SL 1H 080D-T-A
C9	4030004720	Ceramic	C2012 JB 1H 102K-T-A
C10	4030004410	Ceramic	C2012 SL 1H 040C-T-A
C11	4030004400	Ceramic	C2012 SL 1H 030C-T-A
C12	4030004450	Ceramic	C2012 SL 1H 080D-T-A
C13	4030004430	Ceramic	C2012 SL 1H 060D-T-A
C14	4030004440	Ceramic	C2012 SL 1H 070D-T-A
C15	4030004390	Ceramic	C2012 SL 1H 020C-T-A
C16	4030004570	Ceramic	C2012 SL 1H 470J-T-A
EP1	0910030591	P.C. Board	B-3115A (HPF)

[DOUBLER UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
Q1	1530000560	Transistor	2SC2367
L1	6110001980	Coil	LA-222
L3	6910001030	Coil	IPS-1041-4
L4	6910001030	Coil	IPS-1041-4
R1	7010004190	Resistor	R20J 1 kΩ
R2	7010004270	Resistor	R20J 4.7 kΩ
R3	7010003280	Resistor	ELR20J 100 Ω
R4	7010004570	Resistor	R20J 1 MΩ
R5	7010003950	Resistor	R20J 10 Ω
C1	4010000050	Ceramic	DD104 SL 030C 50V
C2	4010000070	Ceramic	DD104 SL 050C 50V
C3	4010000020	Ceramic	DD104 SL 010C 50V
C4	4610001440	Trimmer	CV38A 0301E
C5	4610001440	Trimmer	CV38A 0301E
C6	4610001440	Trimmer	CV38A 0301E
C7	4010000500	Ceramic	DD104 B 102K 50V
C8	4010000500	Ceramic	DD104 B 102K 50V
C9	4040000470	Barrier Layer	RAU 04AK R35C
EP1	0910030802	P.C. Board	B 3125B (DOUBLER)

[ACC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
F1	5210000040	Fuse	FGB 2A
F2	5210000030	Fuse	FGB 1A (U.S.A.)
	5210000020	Fuse	FGB 0.5A (EUR,AUS,FRA)
	5210000170	Fuse	FGMT4 0.5A (FRG)
F3	5210000050	Fuse	FGB 3A

[REG UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1180000310	IC	NJM79L12A
IC2	1180000730	IC	AN78L24
Q1	1540000060	Transistor	2SD880-Y
Q2	1510000080	Transistor	2SA1048-GR
Q3	1530000110	Transistor	2SC2458-GR
Q4	1530002080	Transistor	2SC2655-Y
Q5	1530002080	Transistor	2SC2655-Y
Q7	1520000060	Transistor	2SB562C
D1	1710000130	Diode	U05B
D2	1790000350	Diode	KBU 6D
D3	1730000100	Zener	RD5.1E B2
D4	1730000100	Zener	RD5.1E B2
D5	1710000060	Diode	1SS55
D7	1710000060	Diode	1SS55
D8	1710000060	Diode	1SS55
D9	1730000170	Zener	RD8.2E B1
D10	1710000350	Diode	1N4002
D11	1710000350	Diode	1N4002
L1	6170000150	Coil	LW-16
L3	6180001000	Coil	LAL 04NA 102K

[REG UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	
R1	7010003480	Resistor	ELR20J 4.7 kΩ
R2	7010003910	Resistor	R20J 4.7 Ω
R3	7010003530	Resistor	ELR20J 10 kΩ
R4	7010003400	Resistor	ELR20J 1 kΩ
R5	7010003280	Resistor	ELR20J 100 Ω
R6	7010003450	Resistor	ELR20J 2.7 kΩ
R7	7310000690	Trimmer	RH0651CN2J02A (331)
R8	7010004190	Resistor	R20J 1 kΩ
R9	7010004280	Resistor	R20J 5.6 kΩ
R10	7010004280	Resistor	R20J 5.6 kΩ
R11	7010003870	Resistor	R20J 2.2 Ω
R12	7010000210	Resistor	ELR25J 47 Ω
R14	7010004940	Resistor	ELR25J 68 Ω
R15	7010004760	Resistor	R50XJ 470 Ω
R16	7010003440	Resistor	ELR20J 2.2 kΩ
C1	4010004440	Ceramic	DE7090 B 102K VA1-KC
C2	4010004440	Ceramic	DE7090 B 102K VA1-KC
C3	4040000260	Barrier Layer	UZE 08X 104M
C4	4510003930	Electrolytic	16 MV 470 HW
C5	4010000530	Ceramic	DD112 B 103K 50V
C6	4010000530	Ceramic	DD112 B 103K 50V
C7	4010000530	Ceramic	DD112 B 103K 50V
C8	4010000530	Ceramic	DD112 B 103K 50V
C9	4510004570	Electrolytic	35 MV 4700 HC
C10	4510004500	Electrolytic	25 MV 100 HW
C11	4040000260	Barrier Layer	UZE 08X 104M
C12	4040000260	Barrier Layer	UZE 08X 104M
C13	4510003930	Electrolytic	16 MV 470 HW
C14	4010000520	Ceramic	DD108 B 472K 50V
C15	4010004120	Ceramic	DD07 B 102K 500V
C16	4010004120	Ceramic	DD07 B 102K 500V
C17	4010000520	Ceramic	DD108 B 472K 50V
C18	4010000520	Ceramic	DD108 B 472K 50V
C19	4510004130	Electrolytic	16 MV 33 HW
C20	4510004130	Electrolytic	16 MV 33 HW
C21	4510004020	Electrolytic	50 MV 3R3 HW
C22	4510004140	Electrolytic	50 MV 10 HW
C23	4510004500	Electrolytic	25 MV 100 HW
C24	4510004500	Electrolytic	25 MV 100 HW
C25	4510004020	Electrolytic	50 MV 3R3 HW
C26	4510004490	Electrolytic	25 MV 22 HW
C27	4040000620	Barrier Layer	UAT 10X 104K
C28	4040000620	Barrier Layer	UAT 10X 104K
C29	4510003890	Electrolytic	16 MV 10 HW
C30	4510003890	Electrolytic	16 MV 10 HW
C31	4510003940	Electrolytic	25 MV 4R7 HW
C32	4510003870	Electrolytic	10 MV 22 HW
C33	4510003890	Electrolytic	16 MV 10 HW
C34	4560000060	Ceramic	D33Y5V 1H 104Z21
C35	4560000060	Ceramic	D33Y5V 1H 104Z21
F1	5220000051	Holder	FH-032CT
F2	5210000030	Fuse	FGB 1A (U.S.A.)
	5210000020	Fuse	FGB 0.5A (EUR,AUS,FRA)
F3	5220000020	Holder	S-N5051
F4	5220000020	Holder	S-N5051
F5	5210000040	Fuse	FGB 2A
T1	5910000700	Transformer	TP-59
T2	5920000100	Transformer	TO-9
EP1	0910029316	P.C. Board	B 2914F (REG)

[DL-REG UNIT] (FRG version only)

REF. NO.	ORDER NO.	DESCRIPTION	
IC1	1180000310	IC	NJM79L12A
IC2	1180000730	IC	AN78L24
Q1	1540000060	Transistor	2SD880-Y
Q2	1510000080	Transistor	2SA1048-GR
Q3	1530000110	Transistor	2SC2458-GR
Q4	1530002080	Transistor	2SC2655-Y
Q5	1530002080	Transistor	2SC2655-Y
Q7	1520000060	Transistor	2SB562C
D1	1710000130	Diode	U05B
D2	1790000350	Diode	KBU 6D
D3	1730000100	Zener	RD5.1E B2
D4	1730000100	Zener	RD5.1E B2
D5	1710000060	Diode	1SS55
D7	1710000060	Diode	1SS55
D8	1710000060	Diode	1SS55
D9	1730000170	Zener	RD8.2E B1
D10	1710000350	Diode	1N4002
D11	1710000350	Diode	1N4002
L1	6170000150	Coil	LW-16
L3	6180001000	Coil	LAL 04NA 102K
R1	7010003480	Resistor	ELR20J 4.7 kΩ
R2	7010003910	Resistor	R20J 4.7 Ω
R3	7010003530	Resistor	ELR20J 10 kΩ
R4	7010003400	Resistor	ELR20J 1 kΩ
R5	7010004070	Resistor	R20J 100 Ω
R6	7010003450	Resistor	ELR20J 2.7 kΩ
R7	7310000690	Trimmer	RH0651CN2J02A (331)
R8	7010004190	Resistor	R20J 1 kΩ
R9	7010004280	Resistor	R20J 5.6 kΩ
R10	7010004280	Resistor	R20J 5.6 kΩ
R11	7010003870	Resistor	R20J 2.2 Ω
R12	7010000210	Resistor	ELR25J 47 Ω
R14	7010004940	Resistor	ELR25J 68 Ω
R15	7010004780	Resistor	R50XJ 470 Ω
R16	7010003440	Resistor	ELR20J 2.2 kΩ
C1	4010004440	Ceramic	DE7090 B 102K VA1-KC
C2	4010004440	Ceramic	DE7090 B 102K VA1-KC
C3	4040000260	Barrier Layer	UZE 08X 104M
C4	4510003930	Electrolytic	16 MV 470 HW
C5	4010000530	Ceramic	DD112 B 103K 50V
C6	4010000530	Ceramic	DD112 B 103K 50V
C7	4010000530	Ceramic	DD112 B 103K 50V
C8	4010000530	Ceramic	DD112 B 103K 50V
C9	4510004570	Electrolytic	35 MV 4700 HC
C10	4510004500	Electrolytic	25 MV 100 HW
C11	4040000260	Barrier Layer	UZE 08X 104M
C12	4040000260	Barrier Layer	UZE 08X 104M
C13	4510003930	Electrolytic	16 MV 470 HW
C14	4010000520	Ceramic	DD108 B 472K 50V
C15	4010004120	Ceramic	DD07 B 102K 500V
C16	4010004120	Ceramic	DD07 B 102K 500V
C17	4010000520	Ceramic	DD108 B 472K 50V
C18	4010000520	Ceramic	DD108 B 472K 50V
C19	4510004130	Electrolytic	16 MV 33 HW
C20	4510004130	Electrolytic	16 MV 33 HW
C21	4510004020	Electrolytic	50 MV 3R3 HW
C22	4510004140	Electrolytic	50 MV 10 HW
C23	4510004500	Electrolytic	25 MV 100 HW
C24	4510004500	Electrolytic	25 MV 100 HW
C25	4510004020	Electrolytic	50 MV 3R3 HW
C26	4510004490	Electrolytic	25 MV 22 HW
C27	4040000620	Barrier Layer	UAT 10X 104K
C28	4040000620	Barrier Layer	UAT 10X 104K
C29	4510003890	Electrolytic	16 MV 10 HW
C30	4510003890	Electrolytic	16 MV 10 HW
C31	4510003940	Electrolytic	25 MV 4R7 HW
C32	4510003870	Electrolytic	10 MV 22 HW
C33	4510003890	Electrolytic	16 MV 10 HW

[DL-REG UNIT] (FRG version only)

REF. NO.	ORDER NO.	DESCRIPTION	
C34	4560000060	Ceramic	D33Y5V 1H 104Z21
C35	4560000060	Ceramic	D33Y5V 1H 104Z21
F1	5220000040	Holder	FH-033
F2	5210000170	Fuse	FGMT4 0.5A
F3	5220000020	Holder	S-N5051
F4	5220000020	Holder	S-N5051
F5	5210000040	Fuse	FGB 2A
T1	5910000710	Transformer	TP-60
T2	5920000100	Transformer	TO-9
EP1	0910029316	P.C. Board	B 2914F (DL-REG)

SECTION 6 ADJUSTMENT PROCEDURES

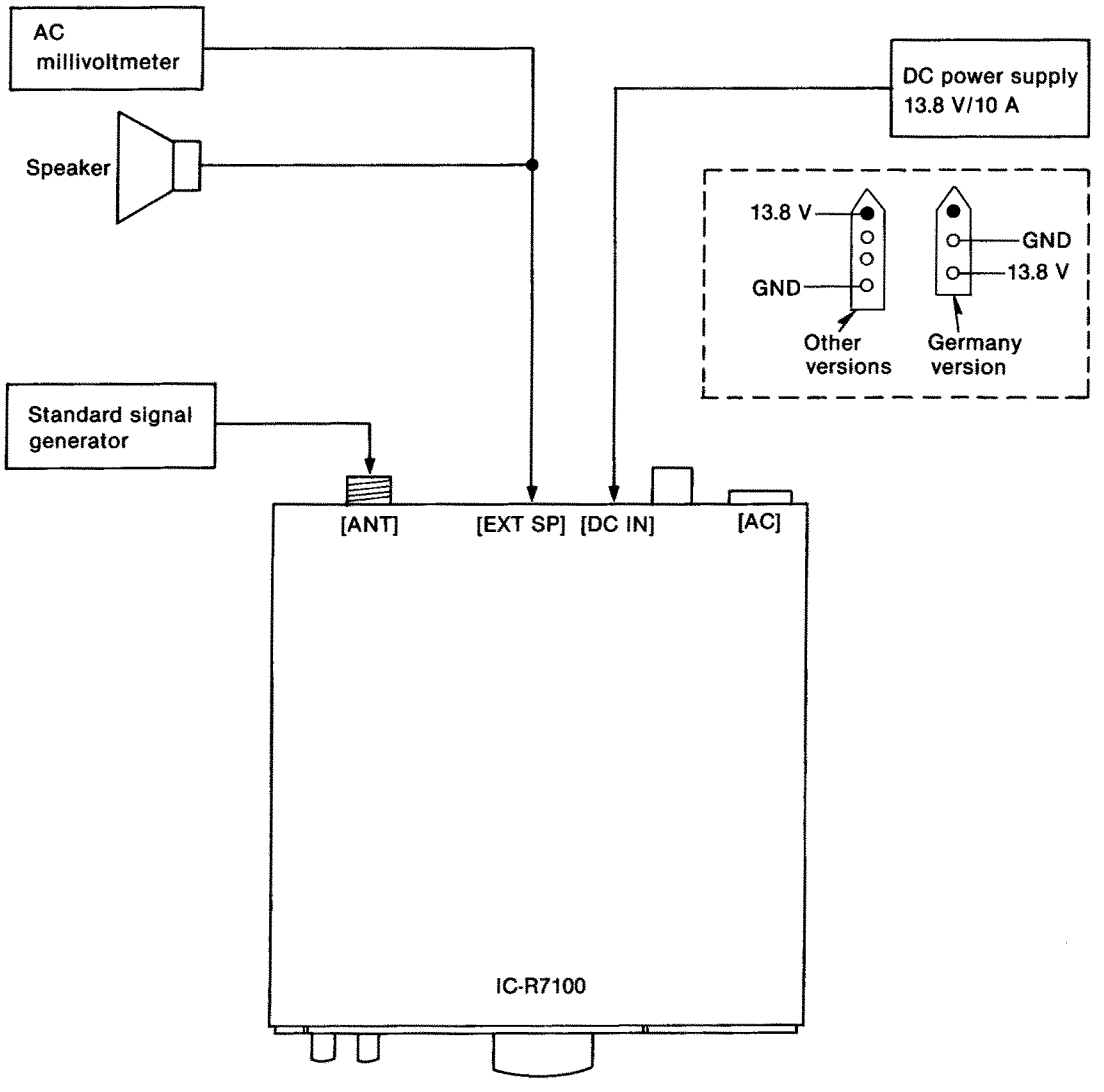
6-1 PREPARATION BEFORE SERVICING

■ 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	Oscilloscope	Frequency range : DC~50 MHz Measuring range : 0.01~10 V
Frequency counter	Frequency range : 0.1 MHz~1 GHz Frequency accuracy : ±1 ppm or better Sensitivity : 100 mV or better	AC millivoltmeter	Measuring range : 10 mV~10 V
		External speaker	Impedance : 8 Ω
RF voltmeter	Frequency range : 0.1 MHz~50 MHz Measuring range : 0.01~10 V	Standard signal generator (SSG)	Frequency range : 0.1 MHz~2 GHz Output level : −127~−17 dBm (0.1 μ~32 mV)
Distortion meter	Frequency range : 1 kHz±10 Hz Measuring range : 1~100 %	DC voltmeter	Input impedance : 50 kΩ/DC or better

CW: Clockwise CCW: Counterclockwise CP: Checkpoint

■ CONNECTION



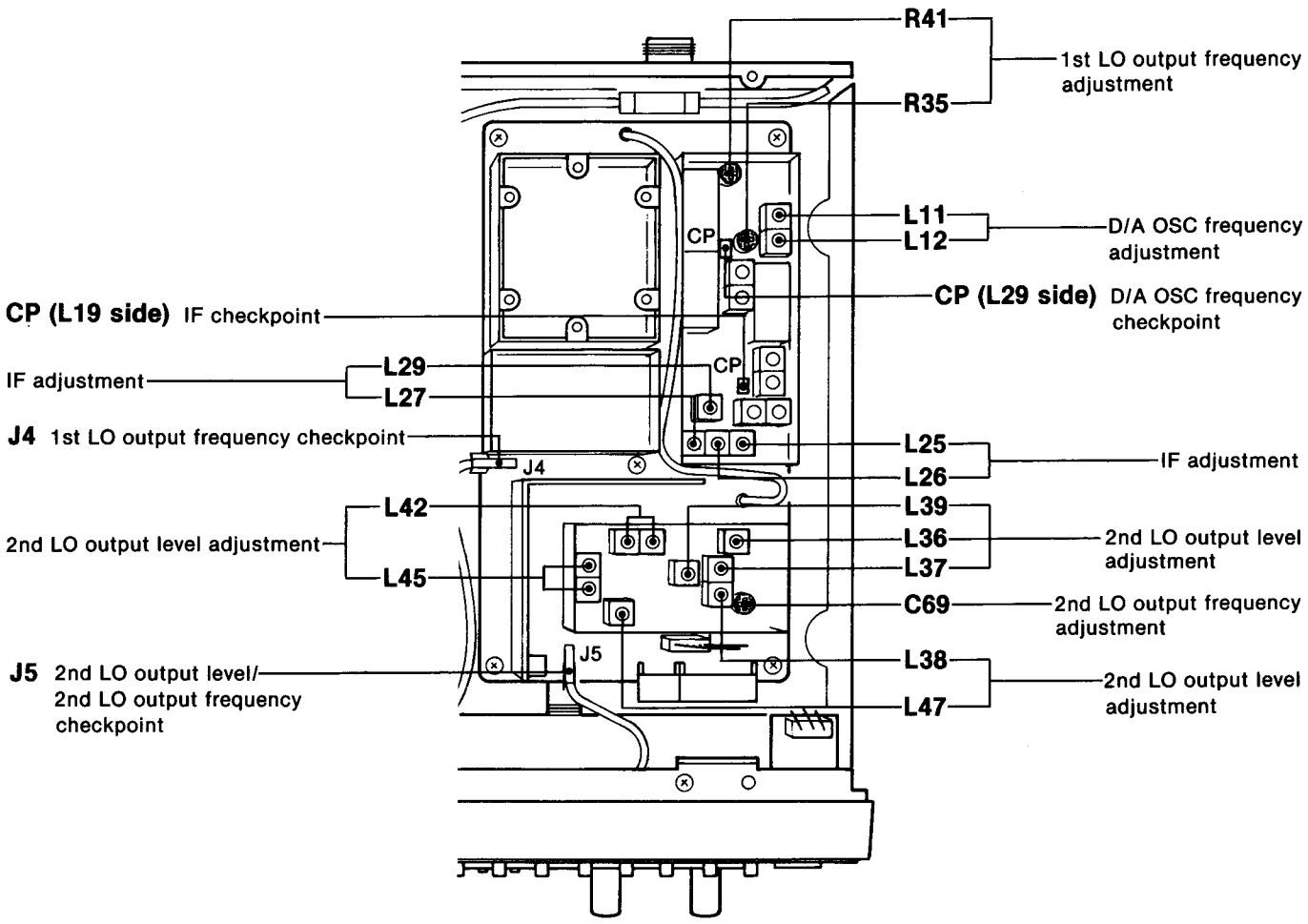
6-2 PLL ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
2nd LO OUTPUT LEVEL	1	• Displayed frequency: 512.000 MHz	PLL	Connect a spectrum analyzer or RF voltmeter to J5.	Maximum value (More than −8dBm)	PLL	L36, L37 L38, L39 L47
	2	• Displayed frequency: 511.9999 MHz			Maximum value (More than −3dBm)		L42, L44
	NOTE: Wait a few minutes after power ON to perform each adjustment.						
2nd LO OUTPUT FREQUENCY	1	• Displayed frequency: 511.9999 MHz	PLL	Connect a frequency counter to J5.	768.0000 MHz	PLL	C69
	2	• Displayed frequency: 512.0000 MHz			256.0000 MHz ±100 Hz		Verify
IF	1	• Displayed frequency: 512.0000 MHz		Connect a spectrum analyzer or RF voltmeter to CP (L29 side).	Maximum value (More than −3dBm)		L29, L25 L26, L27
D/A OSC FREQUENCY	1	• Displayed frequency: 512.0000 MHz		Connect a spectrum analyzer or RF voltmeter to CP (L19 side).	Maximum value (More than −18dBm)		L11, L12
1st LO OUTPUT FREQUENCY	1	• Displayed frequency: 145.0000 MHz • Mode : FM		Connect a frequency counter to J4.	923.7000 MHz		R35
	2	• Display frequency : 149.9999 MHz			923.6999 MHz		R41
	NOTE: Repeat steps 1 and 2 (several times).						

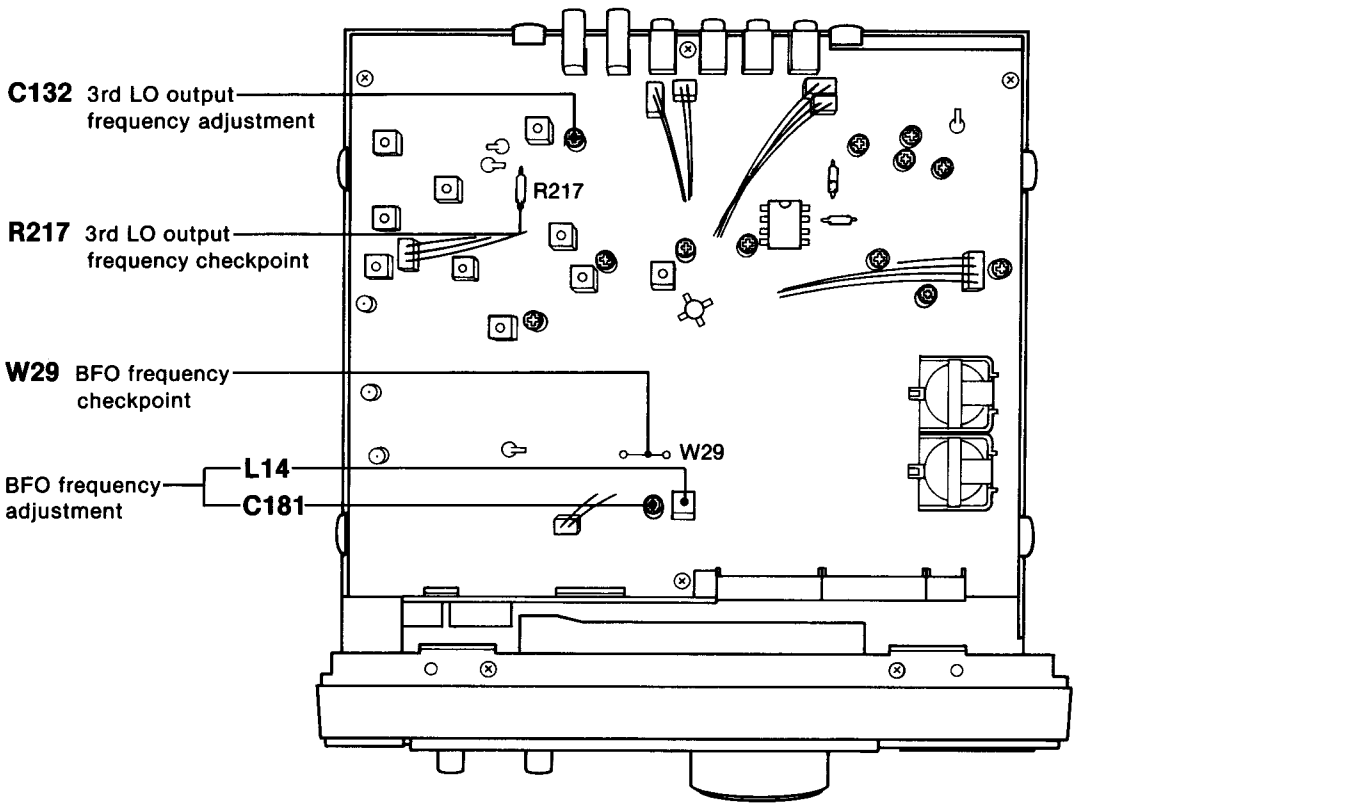
6-3 LOCAL OSCILLATOR ADJUSTMENT

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
3rd LO OUTPUT FREQUENCY	1	• Displayed frequency: 145.0000 MHz • Mode : USB	MAIN	Connect a frequency counter to R217 (C93 side).	10.2450 MHz	MAIN	C132
BFO FREQUENCY	1	• Displayed frequency: 145.0000 MHz • Mode : USB		Connect a frequency counter to W29.	456.5 kHz		L14
	2				453.5 kHz		C181

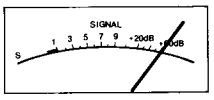
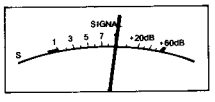
• **PLL UNIT**



• **MAIN UNIT**

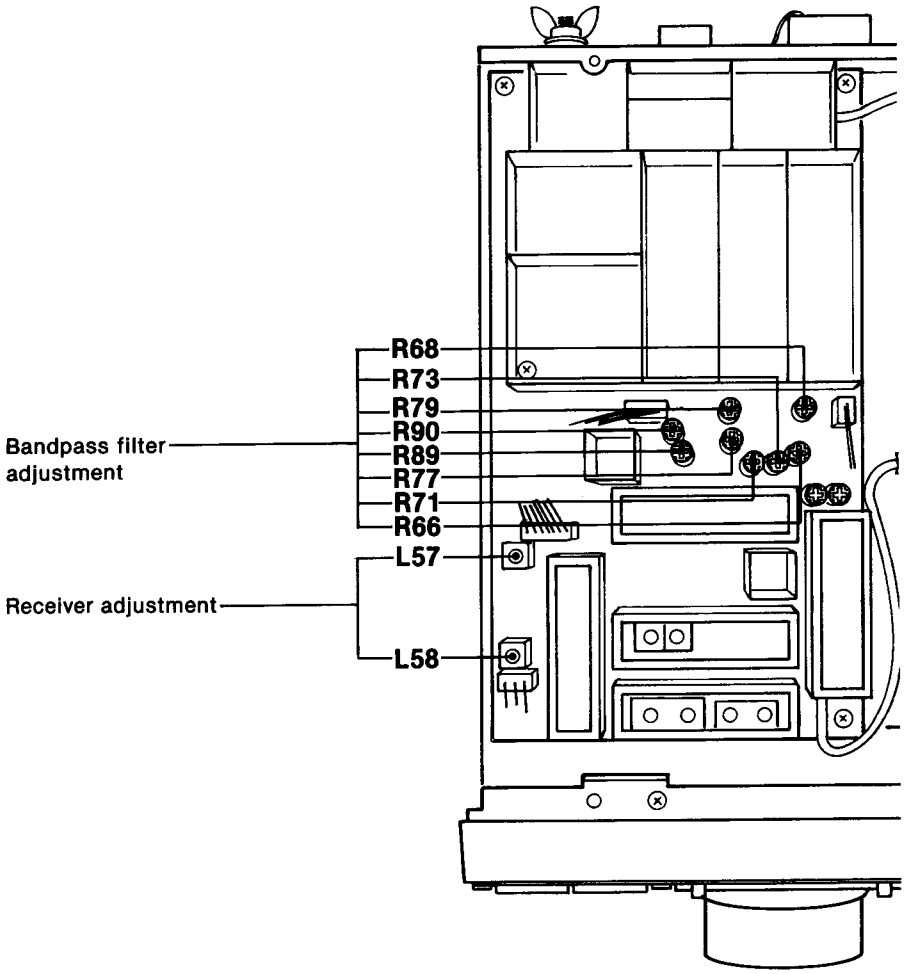


6-4 RECEIVER ADJUSTMENT

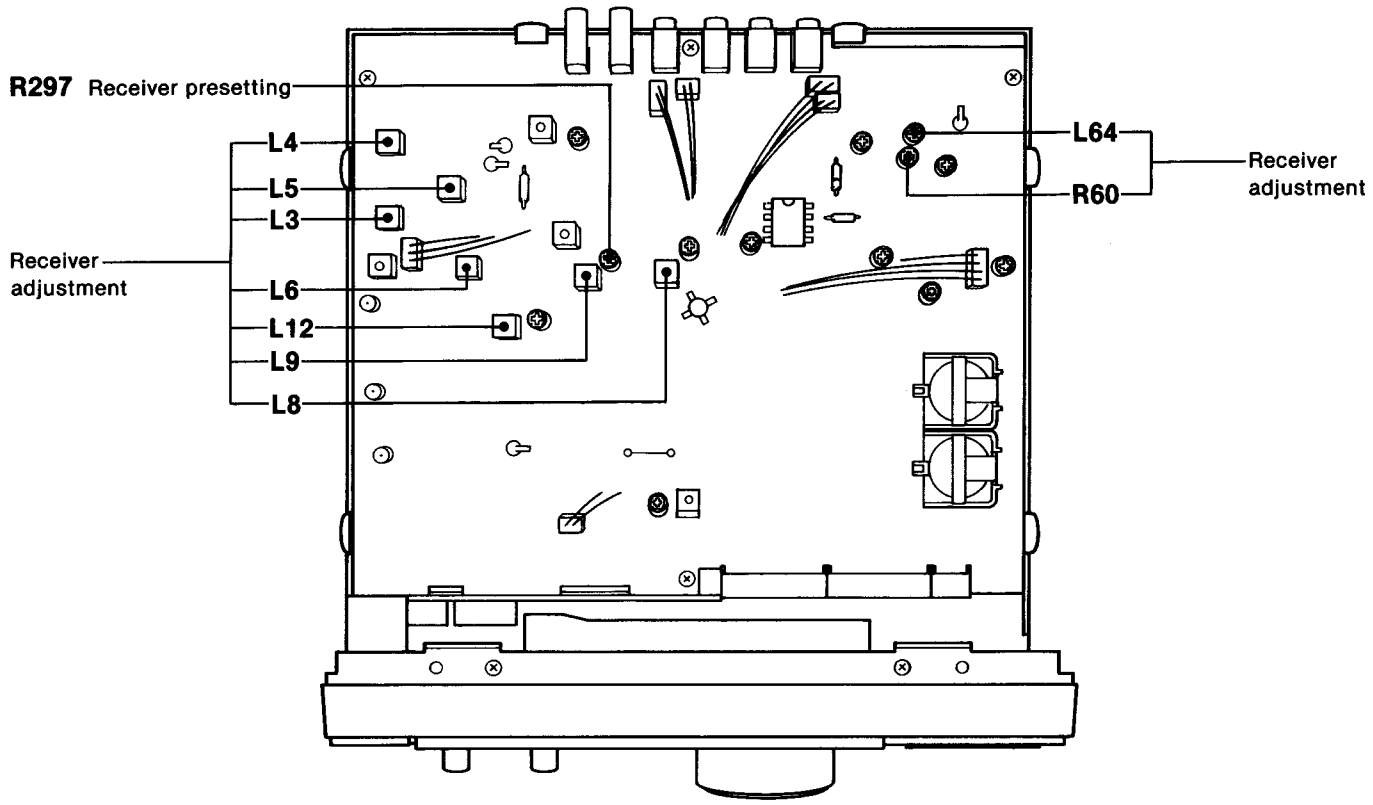
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
BANDPASS FILTER	1	• Displayed frequencies: 999.0000 MHz, 850.0000 MHz and 762.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 0.5 μV* (−113 dBm) Modulation: 1 kHz Deviation : ±3.5 kHz	Rear panel	Connect the distortion meter to the [EXT SP] jack with an 8 Ω load.	Minimum distortion level (Alternately adjust a couple of times to obtain good sensitivity balance on each frequency.)	RF	R90
	2	• Displayed frequencies: 761.0000 MHz, 650.0000 MHz and 513.0000 MHz					R89
	3	• Displayed frequencies: 250.0000 MHz, 450.0000 MHz and 511.5000 MHz					R77, R79
	4	• Displayed frequencies: 90.0000 MHz, 150.0000 MHz and 249.0000 MHz					R73, R71
	5	• Displayed frequencies: 25.0000 MHz, 55.0000 MHz, 75.0000 MHz and 89.0000 MHz					R66, R68
	NOTE: Repeat steps 1~5 (several times).						
RECEIVER	1	• Displayed frequency: 150.0000 MHz • Mode : WFM • Connect the SSG to the [ANT] connector and set as: Level : 50 μV* (−73 dBm) Modulation: 1 kHz Deviation : 150 kHz	Front panel	S-meter	Maximum value	RF	L57, L58
	2	• Mode : FM • Connect the SSG to the [ANT] connector and set as: Modulation: 1 kHz Deviation : 15 kHz • R297 (MAIN) : Max. CCW				MAIN	L3, L4 L5, L6 L8, L9
	3	• Connect the SSG to the [ANT] connector and set as: Modulation: 1 kHz Deviation : ±3.5 kHz	Rear panel	Connect the AC millivoltmeter to the [EXT SP] jack with an 8 Ω load.	Maximum audio output level		L12
	4	• Displayed frequency: 150.0000 MHz • Mode : FM • Connect the SSG to [ANT] connector and set as: Level : 50 mV* (−13 dBm)	Front panel	S-meter	S9+60 dB 		R64
	5	• Connect the SSG to the [ANT] connector and set as: Level : 50 μV* (−73 dBm)			S9 		R60

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

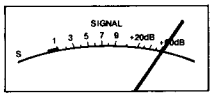
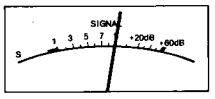
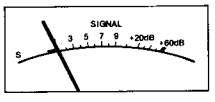
• **RF UNIT**



• **MAIN UNIT**

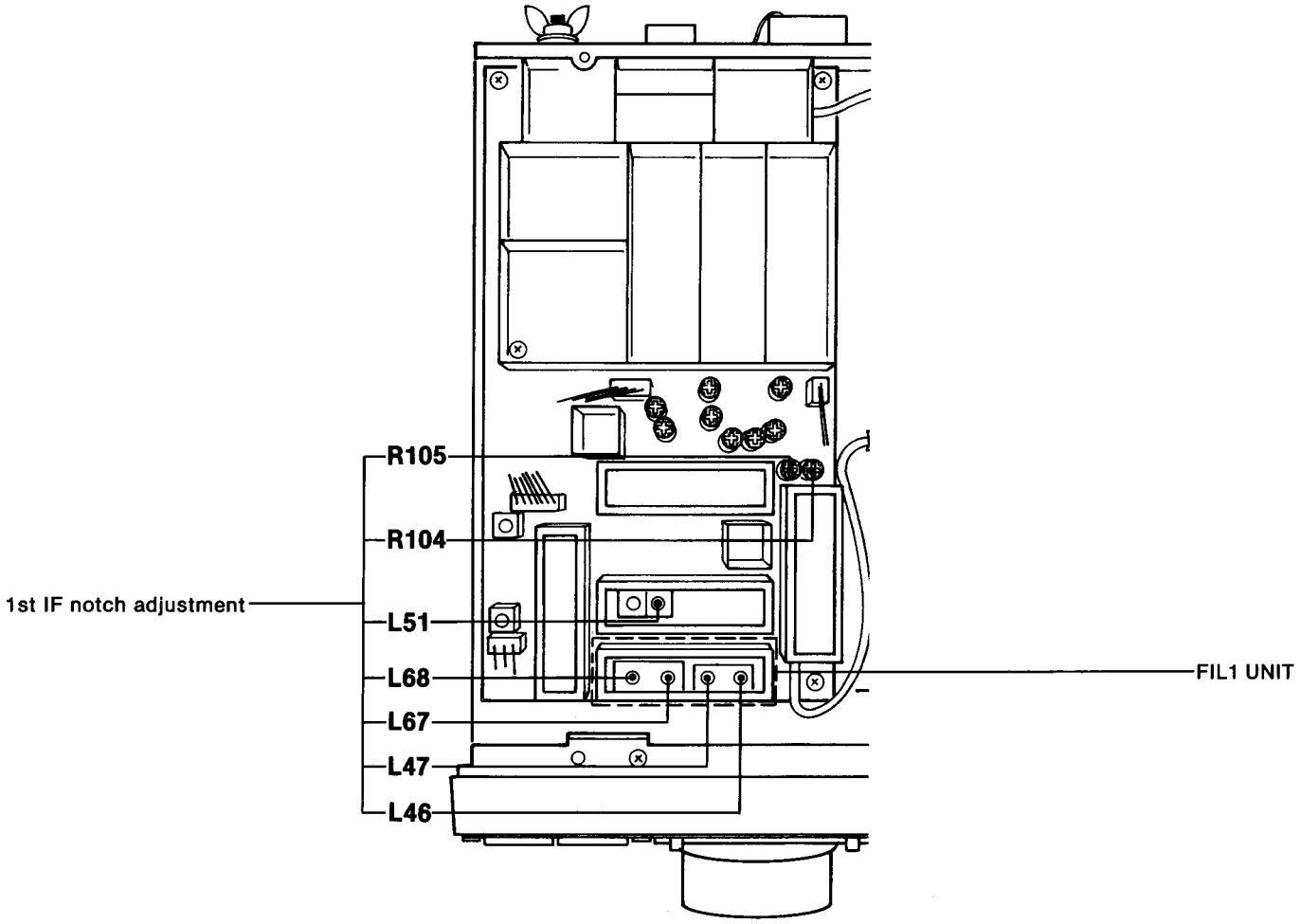


RECEIVER ADJUSTMENT (Continued)

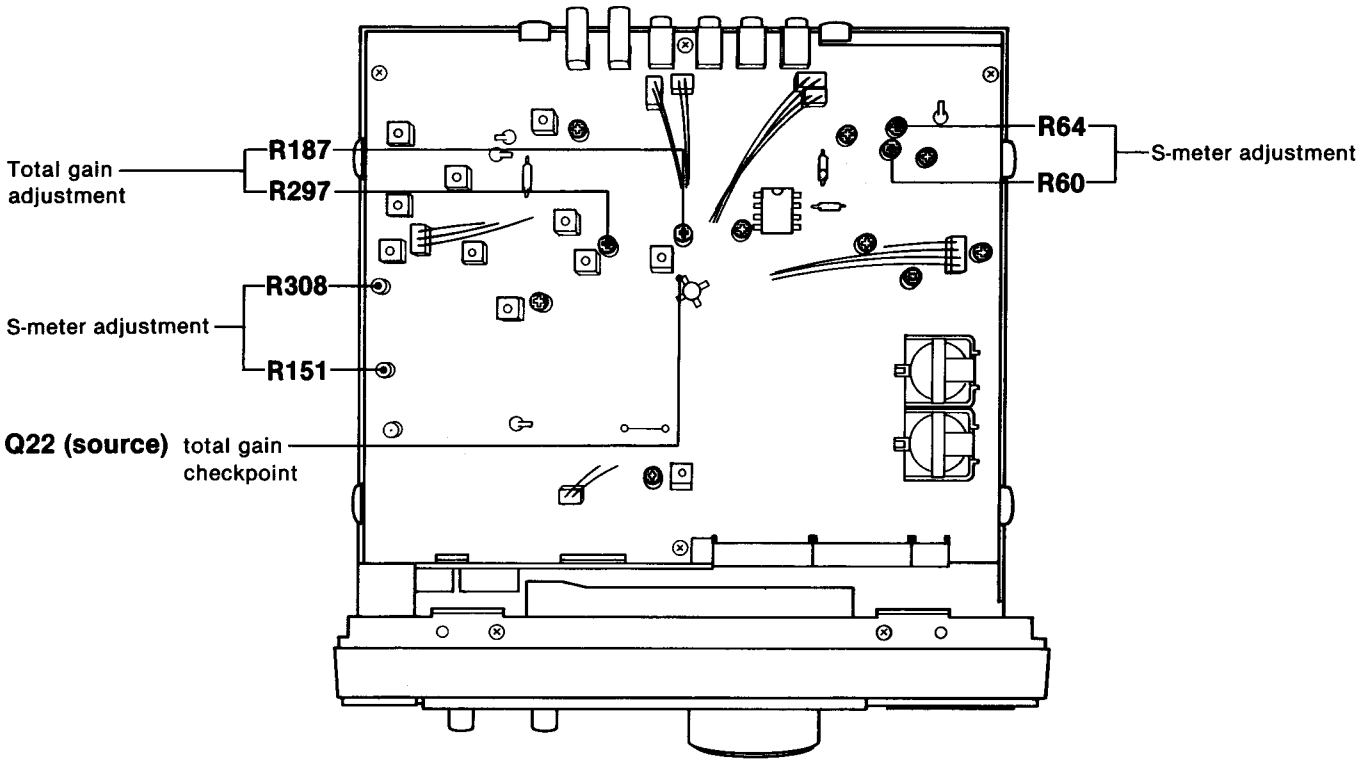
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
1st IF NOTCH	1	• Displayed frequency: 250.0000 MHz • Mode : FM	RF	Connect the DC voltmeter to IC3 pin 1.	9 V	RF	R105
	2	• Displayed frequency: 511.0000 MHz			13~15 V		Verify
	3	• Displayed frequency: 249.0000 MHz			9 V		R104
	4	• Displayed frequency: 25.0000 MHz			4~5 V		Verify
	5	• Displayed frequency: 800.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 32 mV* (−17 dBm) Modulation: OFF		S-meter	Maximum value	RF (FIL1)	L46, L47
	6	• Displayed frequency: 778.6000 MHz • Keep the SSG output frequency, level and modulation.			Minimum value (Less than S7)		L67, L68
	7	• Displayed frequency: 378.6000 MHz • Connect the SSG to the [ANT] connector and set as: frequency : 400.0000 MHz					L51
TOTAL GAIN	1	• Displayed frequency: 150.0000 MHz • Mode : USB • Connect the SSG to the [ANT] connector and set as: Level : OFF	MAIN	Connect the DC voltmeter to the source of Q22.	2.5V	MAIN	R187
	2	• Connect the SSG to the [ANT] connector and set as: Level : 50 μV* (−73 dBm)	Rear panel	Connect the AC millivoltmeter to the [EXT SP] jack with an 8 Ω load.	−20 dB of level down when the SSG is turned OFF.		R297
S-METER	1	• Displayed frequency: 150.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 50 mV* (−13 dBm) Modulation: OFF	Rear panel	S-meter	S9+60 dB 	MAIN	R64
	2	• Connect the SSG to the [ANT] connector and set as: Level : 50 μV* (−73 dBm)			S9 		R60
	3	• Mode : WFM • Connect the SSG to the [ANT] connector and set as: Level : 50 mV* (−13 dBm)			S9+60 dB		R151
	4	• Connect the SSG to the [ANT] connector and set as: Level : 1.4 μV* (−104 dBm)			S1 		R308
	NOTE: Repeat steps 1~4 (several times).						

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

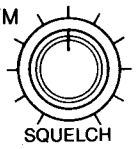
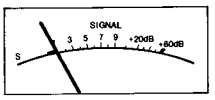
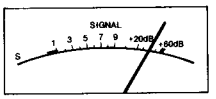
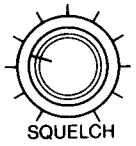
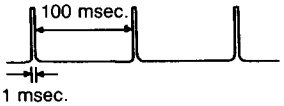
• **RF UNIT**



• **MAIN UNIT**



RECEIVER ADJUSTMENT (Continued)

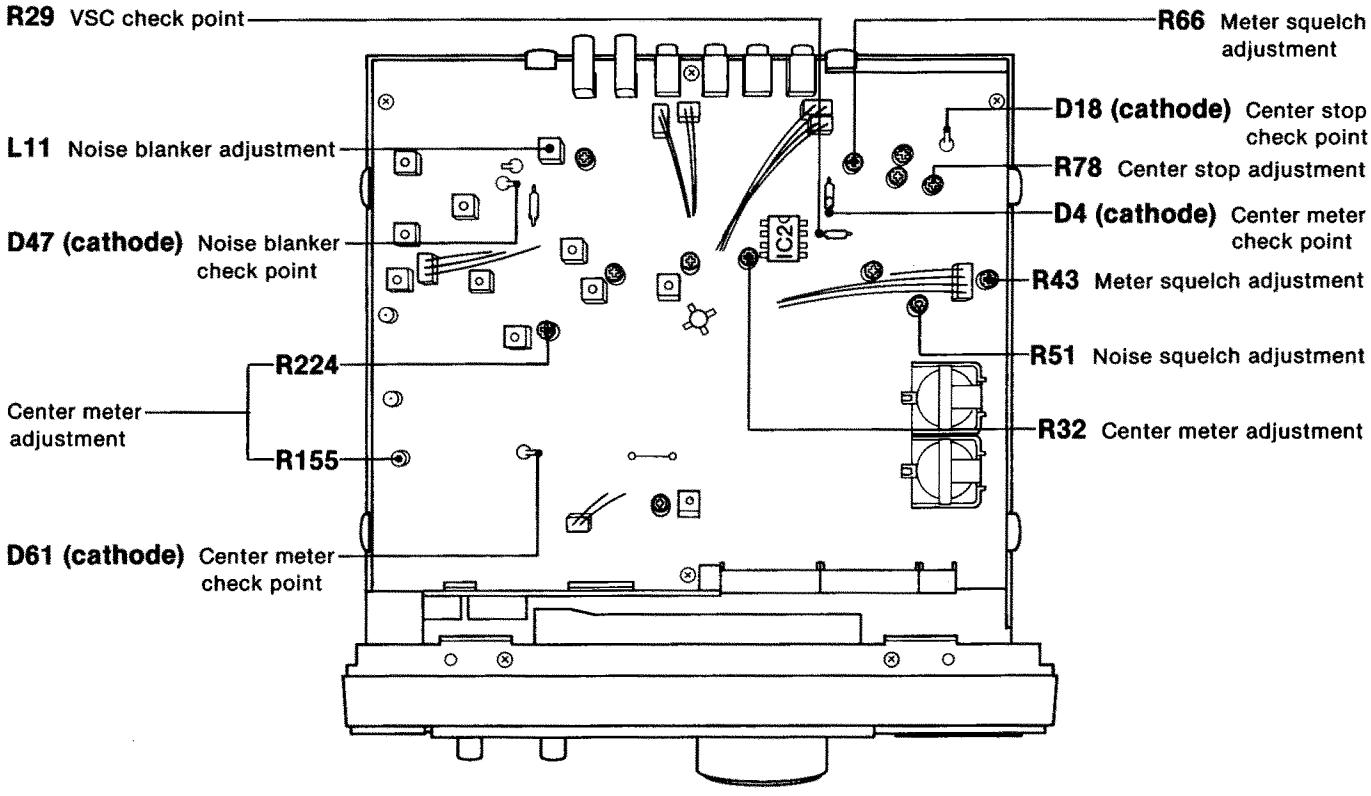
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
CENTER METER	1	• Displayed frequency: 150.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 32 µV* (−77 dBm) Modulation: OFF • R32 in the MAIN UNIT: Center	MAIN	Connect the oscilloscope or digital multi-meter to the cathode of D61.	2.7 V	MAIN	R224
	2	• Mode: WFM					R155
	3	• Connect the SSG to the [ANT] connector and set as: Level : 32 µV* (−77 dBm) Modulation: OFF		Connect the oscilloscope or digital multi-meter to the cathode of D4.	1.27 V		R32
CENTER STOP	1	• Displayed frequency: 150.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 32 µV* (−77 dBm) Modulation: OFF	MAIN	Connect the Oscilloscope to the cathode of D18.	0 V	MAIN	R78
METER SQUELCH	1	• Mode : FM • [SQUELCH] control: 	Front panel	S-meter	S1 	MAIN	R43
	2	• [SQUELCH] control: CW			S9+40 dB 		R66
	NOTE: Repeat steps 1 and 2 (several times).						
NOISE SQUELCH	1	• Mode: FM • [SQUELCH] control: 	Front panel	S-meter	Squelch closes.	MAIN	R51
NOISE BLANKER	1	• Displayed frequency: 26.0000 MHz • Mode : USB • [NB • AFC] switch : OFF • Connect the SSG to the [ANT] connector and set as: Level : 3.2 µV* (−97 dBm) Add the following signal into the signal generator output. 	MAIN	Connect the oscilloscope to the cathode of D47.	Adjust the maximum noise wave displayed on the oscilloscope.	MAIN	L11
	2	• [NB • AFC] switch : ON • Connect the SSG to the [ANT] connector and set as: Level : 0.1 µV* (−87 dBm) Add the same signal above.			The noise must be blanked.		Verify

RECEIVER ADJUSTMENT (Continued)

ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
VSC	1	• Displayed frequency: 150.0000 MHz • Mode : FM • Connect the SSG to the [ANT] connector and set as: Level : 32 μV* (−77 dBm) Modulation: 1 kHz Deviation : 3.5 kHz	MAIN	Connect the oscilloscope or digital multi-meter to R29 (IC2 side).	More than 3.5 V	MAIN	Verify
	2	• Connect the SSG to the [ANT] connector and set as: Modulation: OFF			Less than 1.5 V		Verify

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

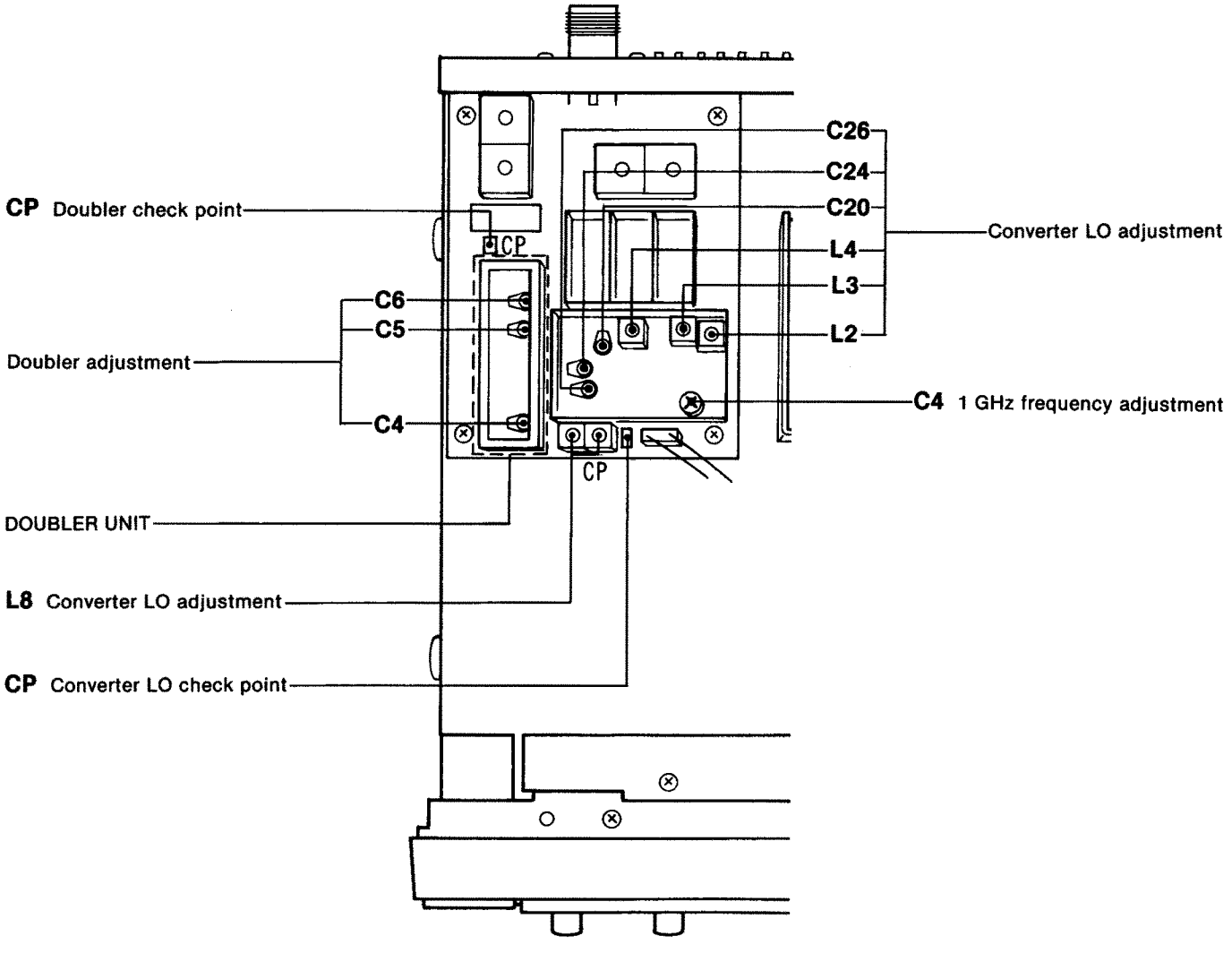
• MAIN UNIT



RECEIVER ADJUSTMENT (Continued)

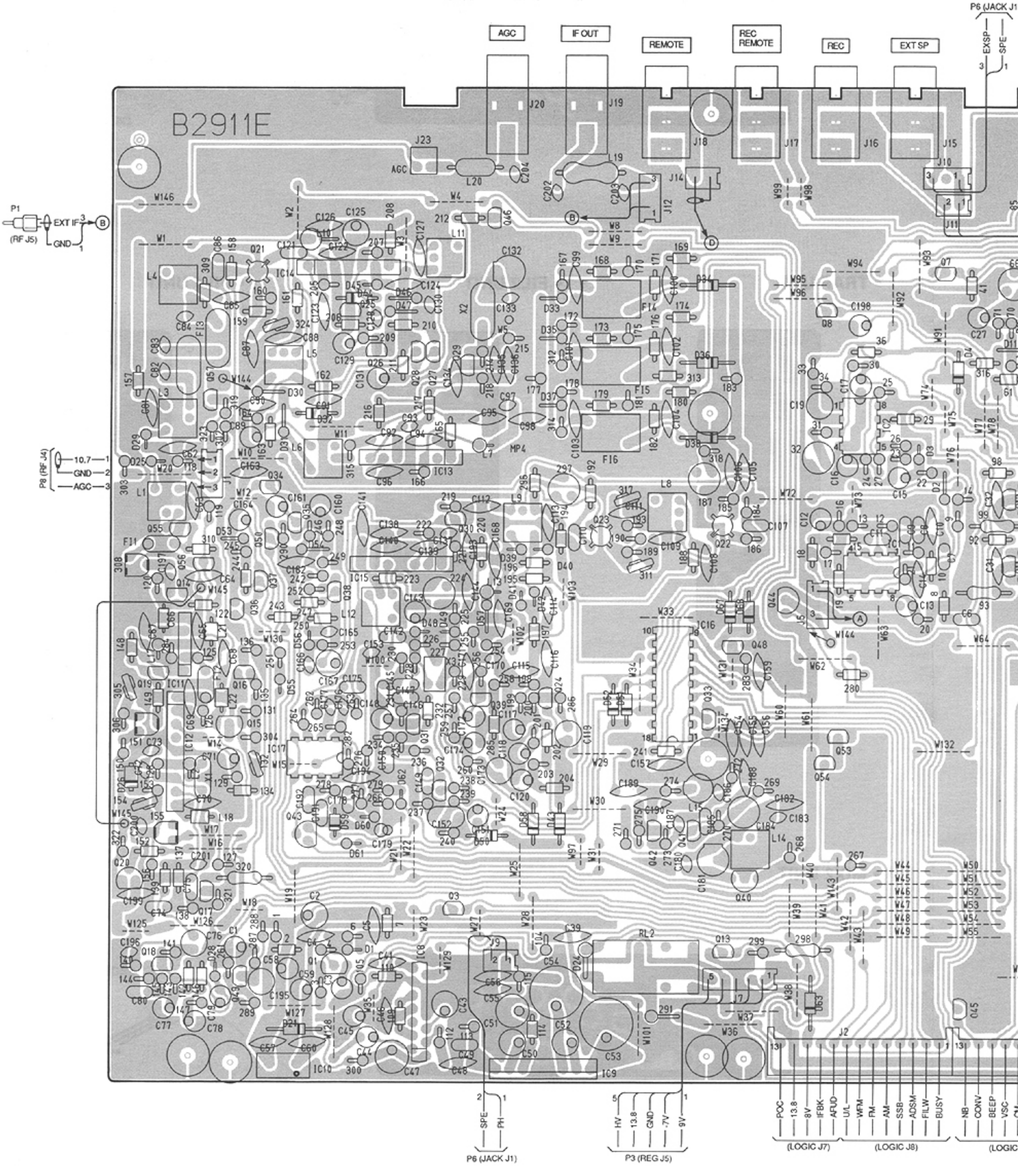
ADJUSTMENT		ADJUSTMENT CONDITIONS	MEASUREMENT		VALUE	ADJUSTMENT POINT	
			UNIT	LOCATION		UNIT	ADJUST
CONVERTER LO	1	• Displayed frequency: 130.0000 MHz • C4, C5, C6 : Center (DOUBLER UNIT)	CONV	Connect the RF voltmeter to the CP (L8 side).	Maximum value (More than −5 dBm)	CONV	Adjust in sequence L2, L3 L4, C20 C24, C26 L8
DOUBLER	1	• Displayed frequency: 1300.0000 MHz	DOUBLER	Connect the RF voltmeter to the CP (IC1 side).	Maximum value (More than +6 dBm)	DOUBLER	Adjust in sequence C4, C5 C6
	2			Connect the frequency counter to the CP (IC1 side).	1000.000 MHz	CONV	C4

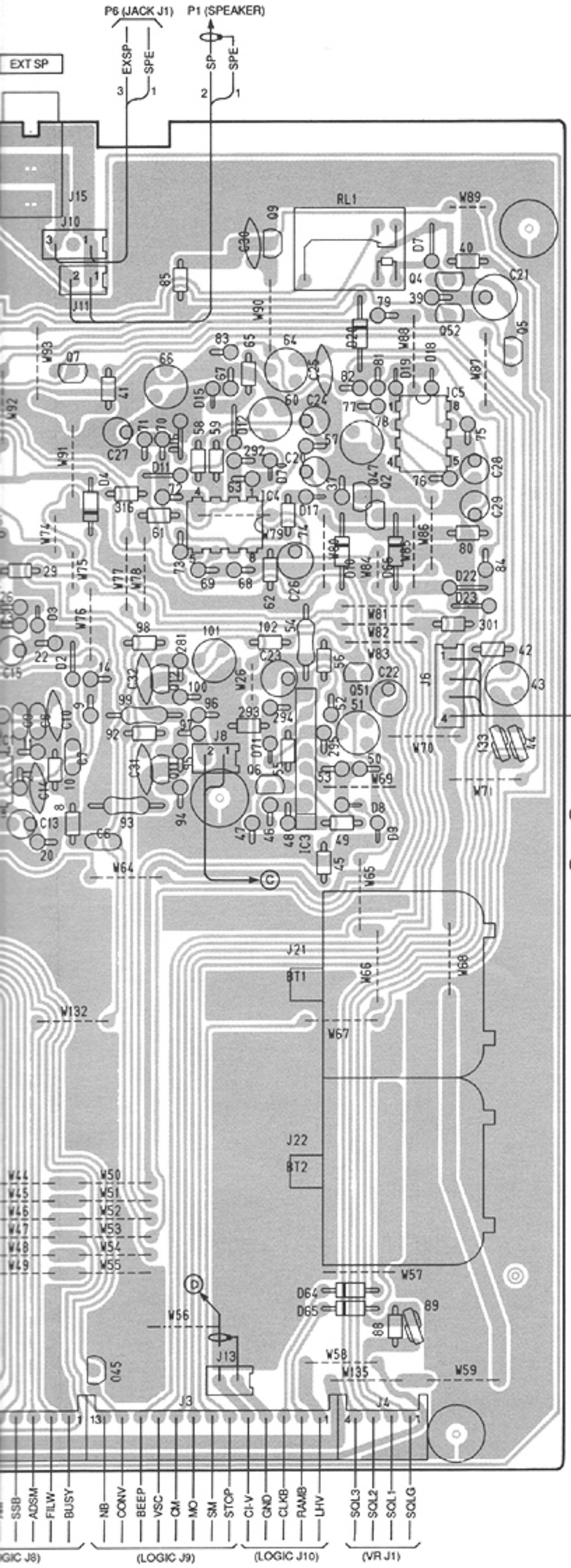
• CONV UNIT



SECTION 7 BOARD LAYOUTS

7-1 MAIN UNIT

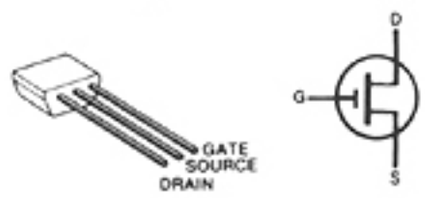




2SA1048 GR

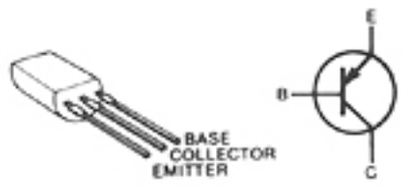
Q19, Q25

2SK241 GR



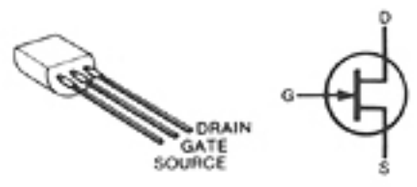
Q55

2SB562 C



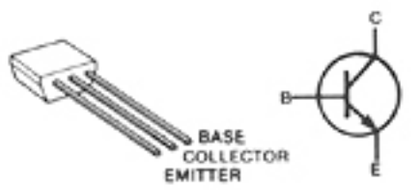
Q44

2SK30ATM-Y



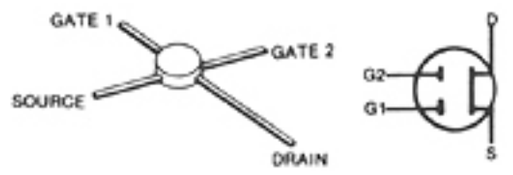
Q1, Q15, Q20, Q43

2SC2458-GR



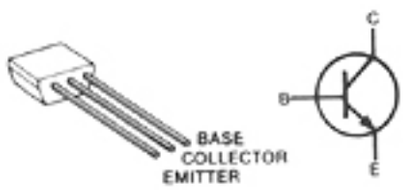
Q16, Q17, Q26, Q27,
Q30, Q38

3SK101 GR



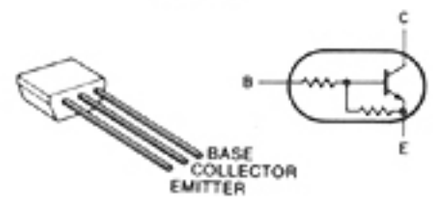
Q21, Q22, Q23

2SC2668 O



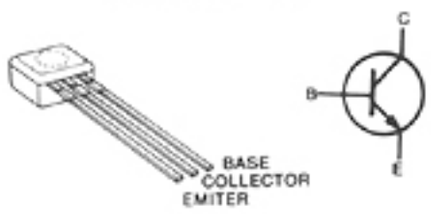
Q14

RN1202



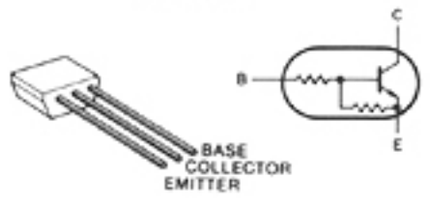
Q4, Q46, Q57

2SC2785 EL



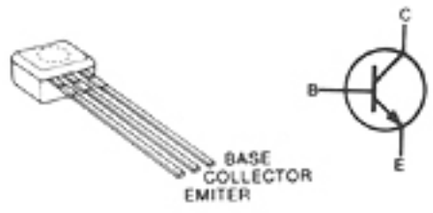
Q7, Q9, Q11, Q12,
Q13, Q18, Q24, Q29,
Q31, Q32, Q39, Q41,
Q42, Q47, Q49

RN1204



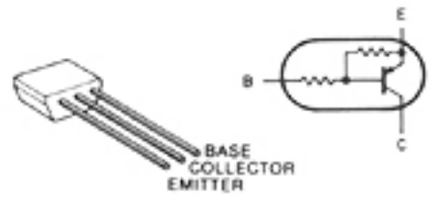
Q3, Q5, Q6, Q8,
Q33, Q34, Q36, Q45,
Q48, Q51, Q53

2SC2785 FL



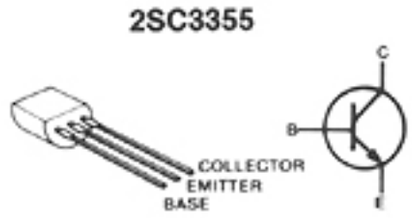
Q56

RN2202



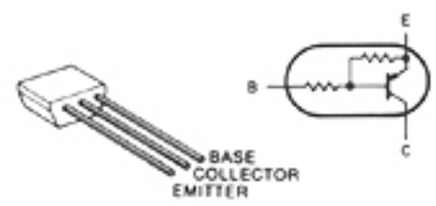
Q2, Q28, Q35, Q37,
Q50, Q54

2SC3355



Q40

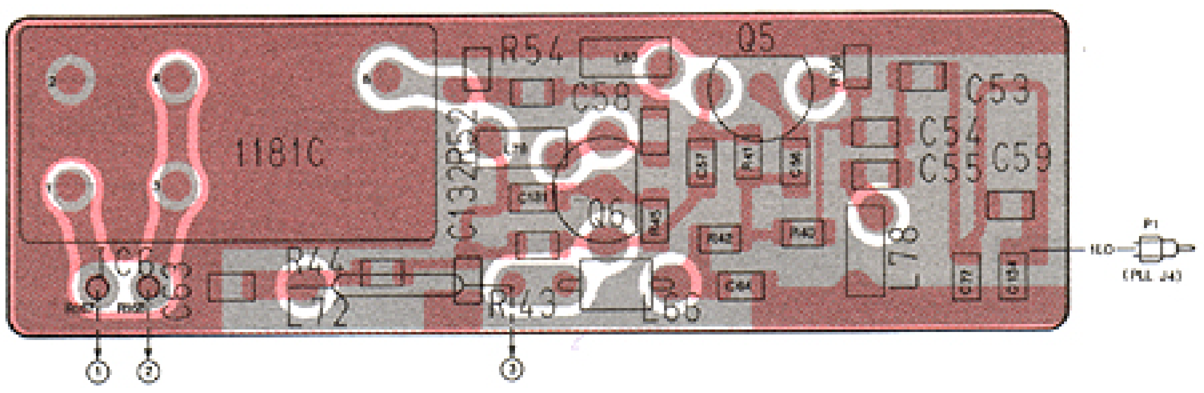
RN2204



Q52

7-2 RF UNIT

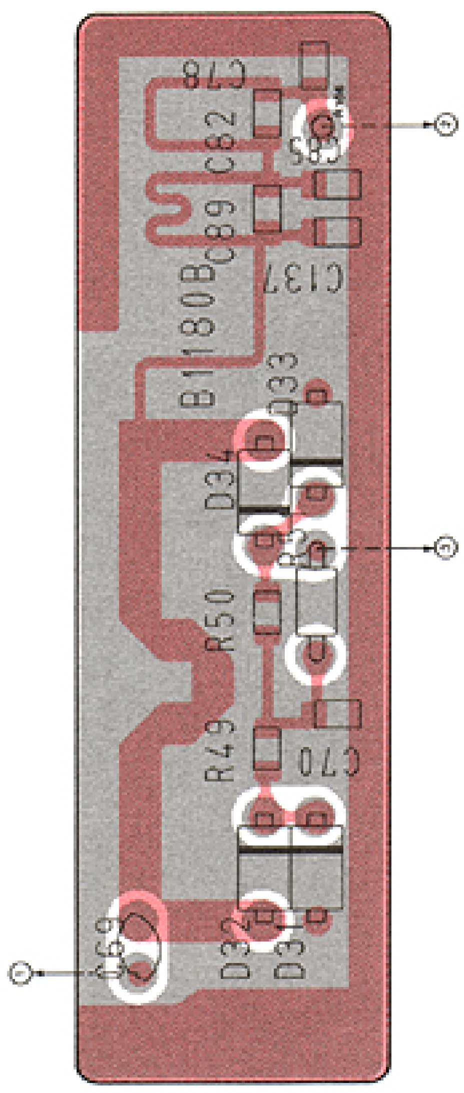
• MIX1 UNIT



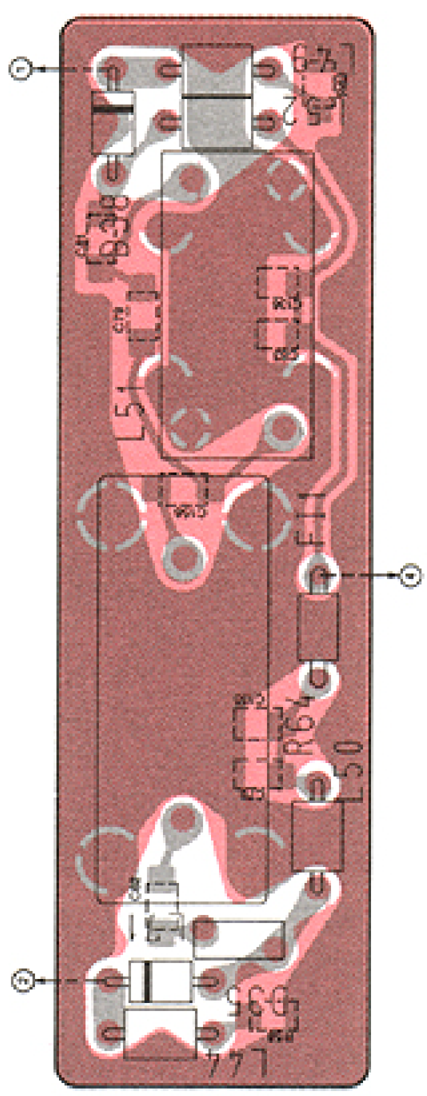
2SC3355

Q5, Q6

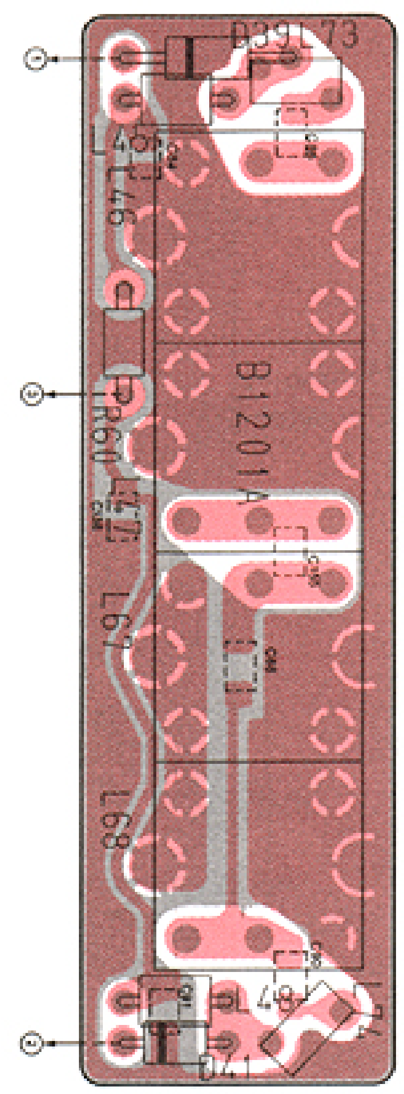
• TRAP UNIT



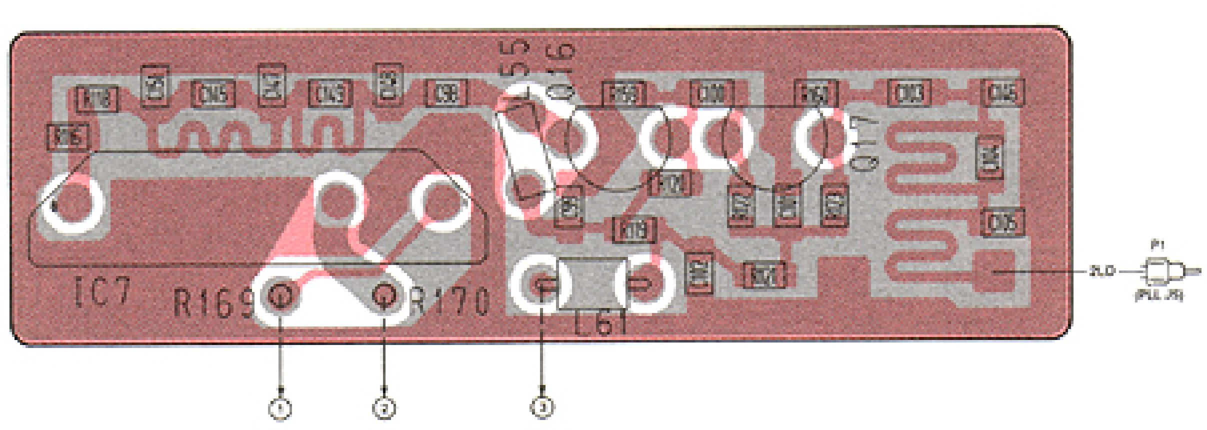
• FIL2 UNIT



• FIL1 UNIT



• MIX2 UNIT

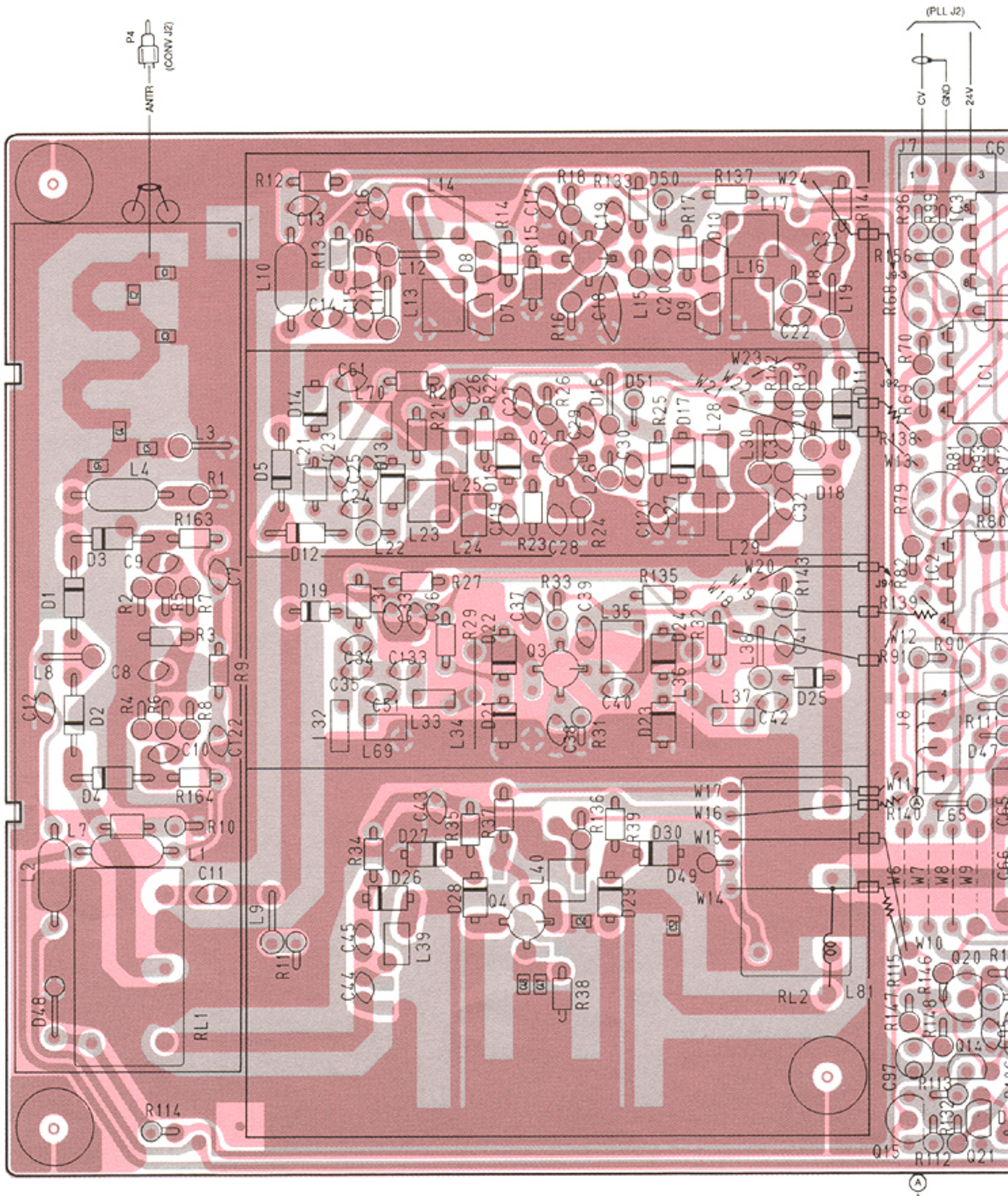


2SC3355

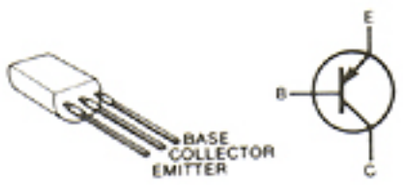
Q16, Q17

• RF UNIT

The
the
P.C.

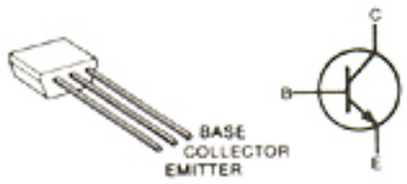


2SB562 C



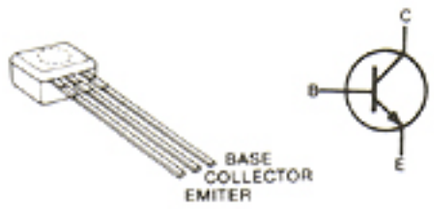
Q15

2SC2458-GR



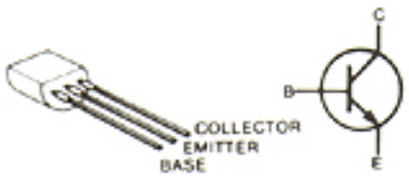
Q19

2SC2785 EL



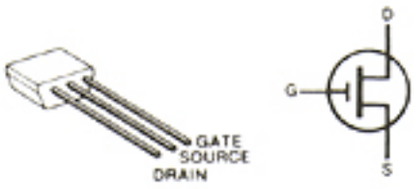
Q21

2SC3355



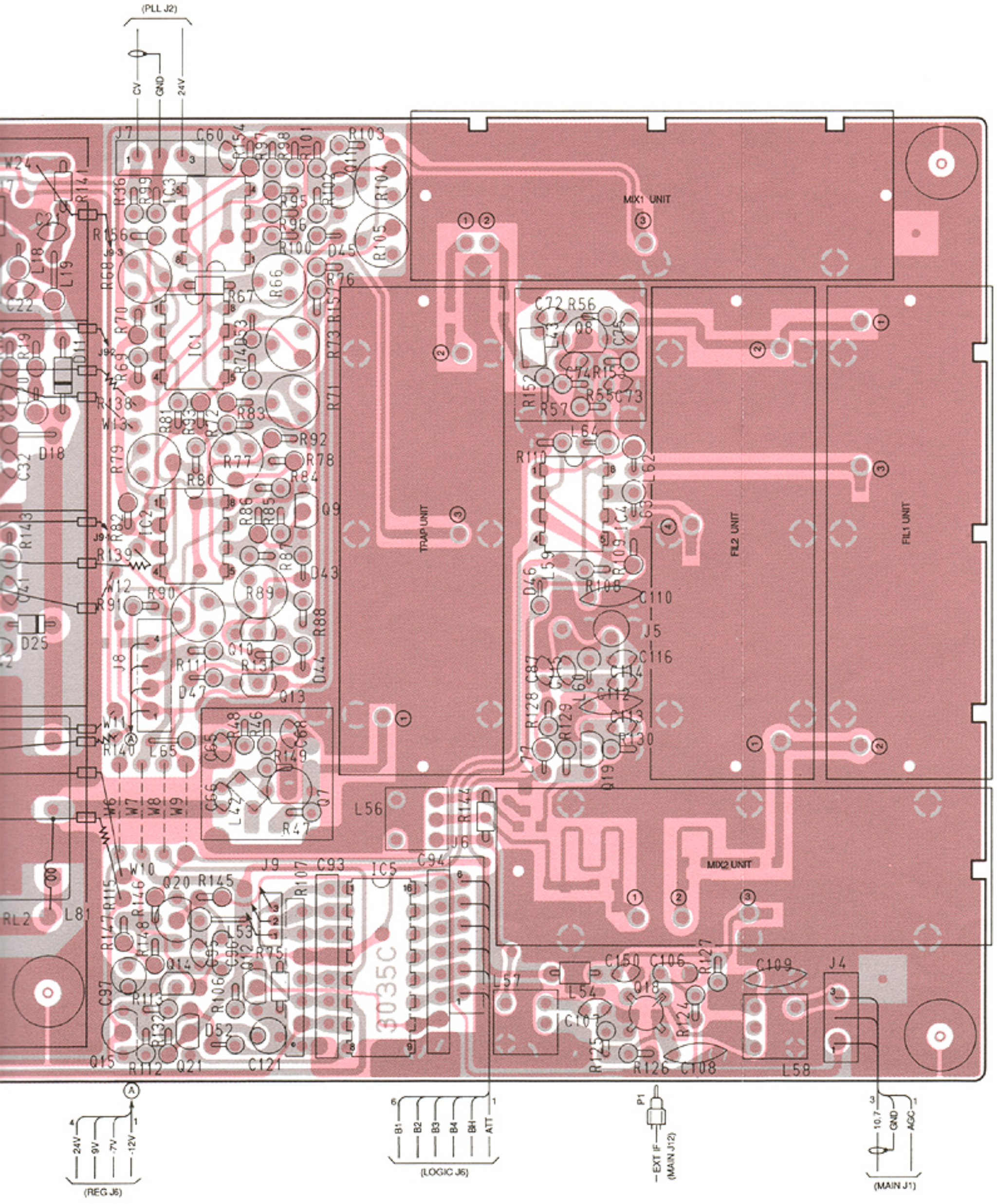
Q7, Q8

2SK241 GR

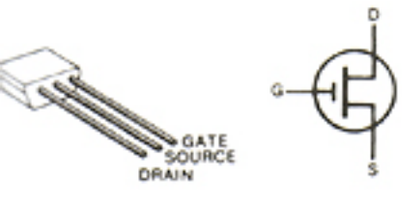


Q9

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

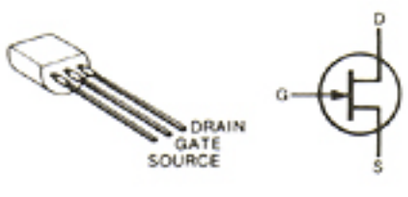


2SK241 GR



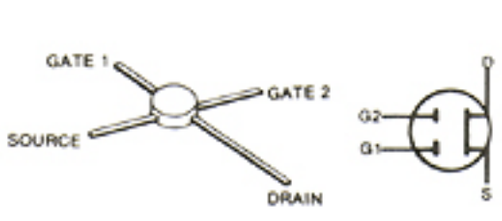
Q9

2SK30ATM-Y



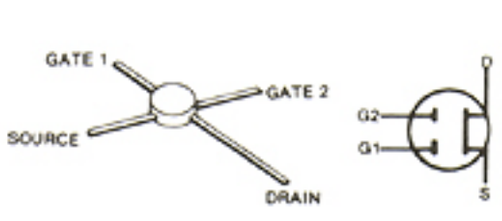
Q20

3SK101 GR



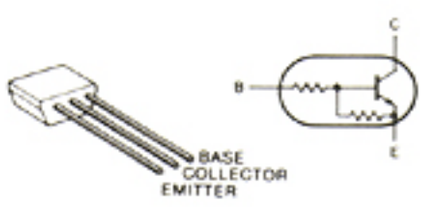
Q18

3SK121 Y



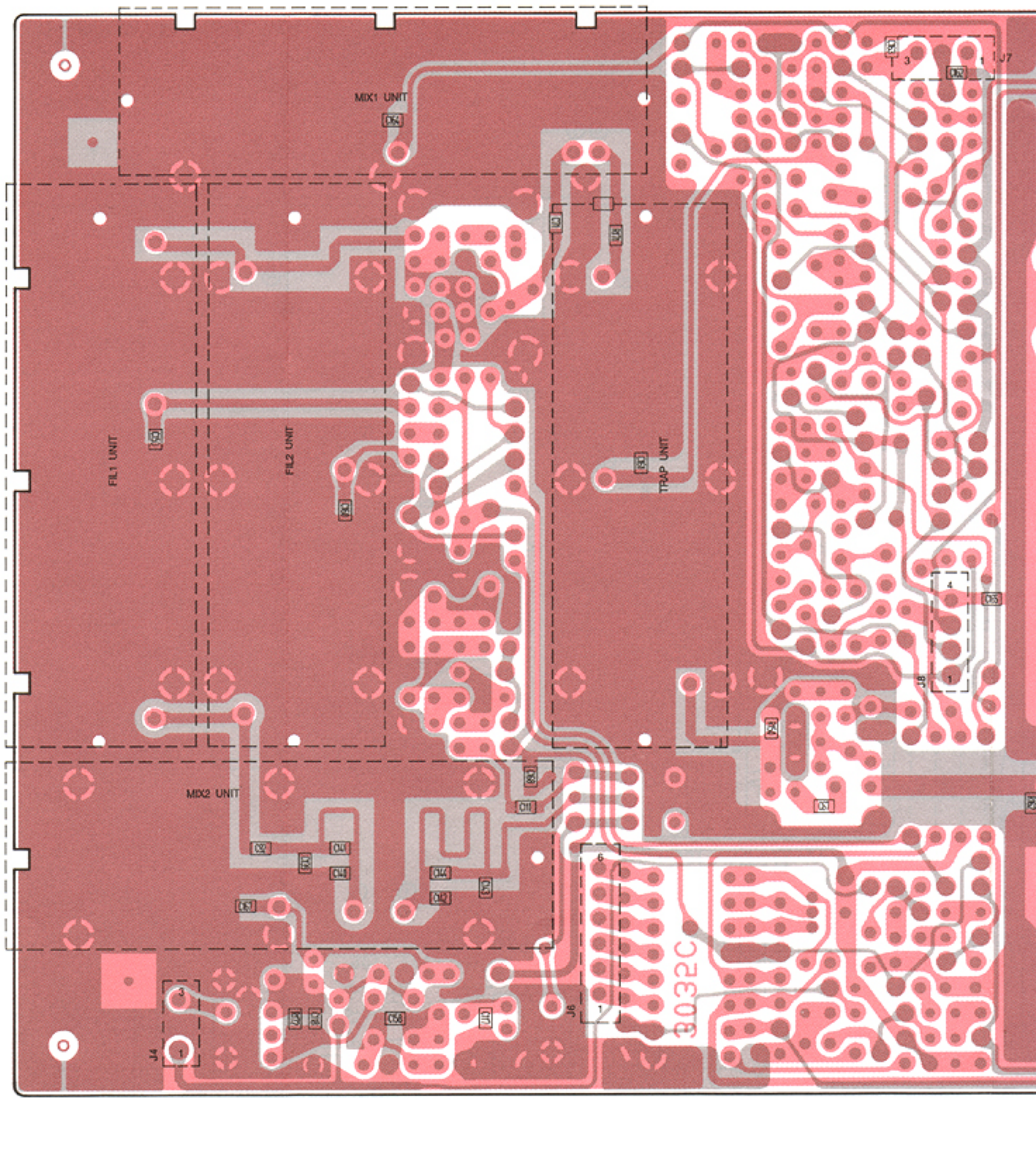
Q1, Q2, Q3, Q4

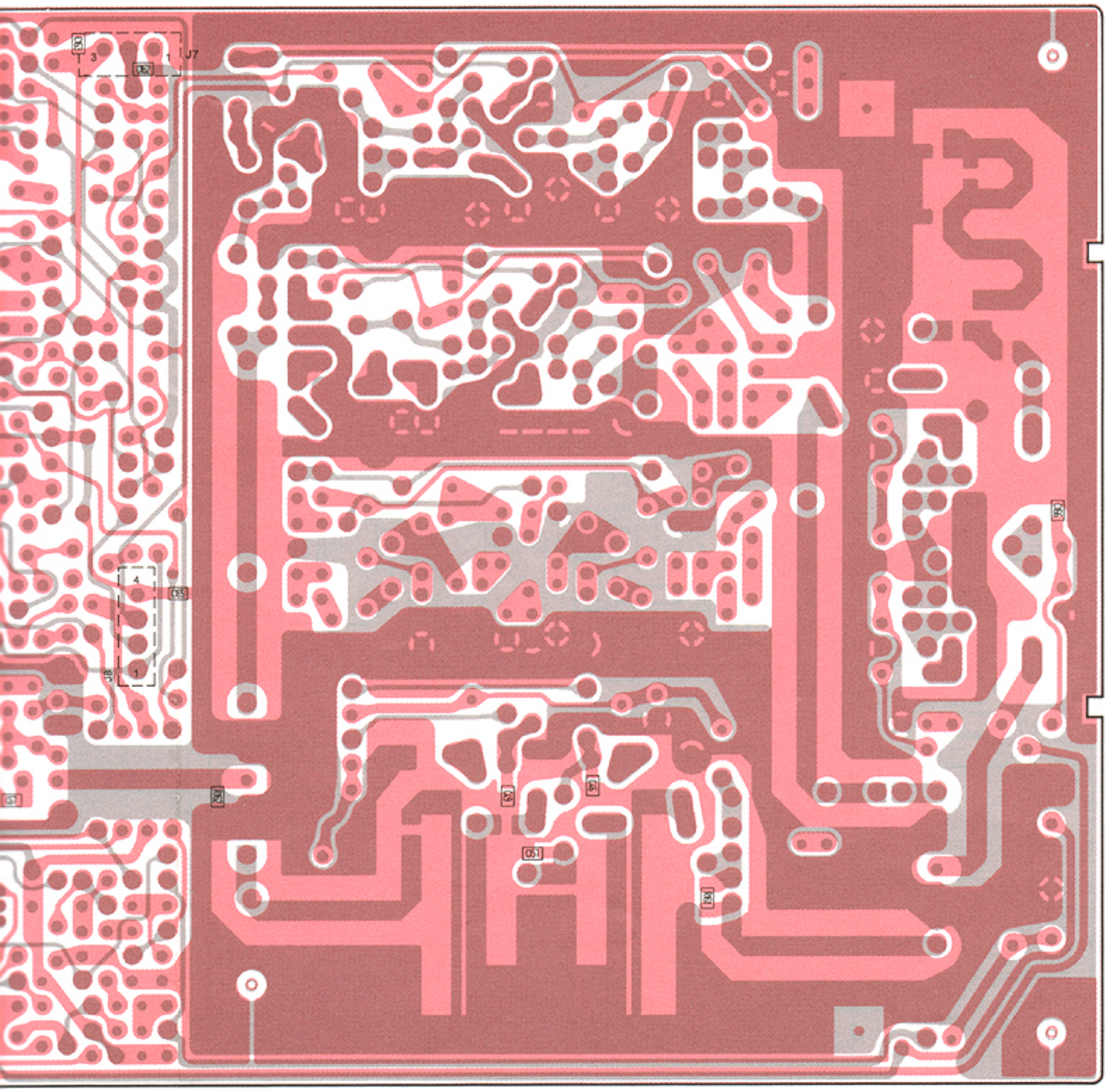
RN1204



Q10, Q11, Q12, Q13, Q14

• RF UNIT




J7
J8

7-3 PLL UNIT

DA114
(Symbol: AV)

D3, D4, D5

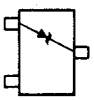
DNA202U
(Symbol: N)

D13

MA862
(Symbol: M1I)

D9, D11

RD3.0M-T2B2
(Symbol: 302)



D17

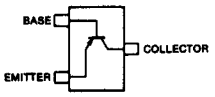
RD5.6M B2
(Symbol: 562)

D7, D14

RD8.2M-T2B3
(Symbol: 822)

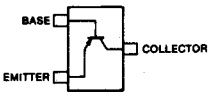
D1, D2

2SA1362 GR
(Symbol: AEG)



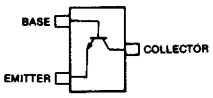
Q25, Q27

2SA1576 S
(Symbol: FS)



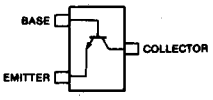
Q2

2SC2712 GR
(Symbol: LG)



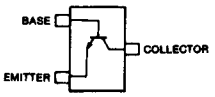
Q5

2SC2714 O
(Symbol: QO)



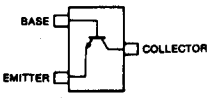
Q14, Q17

2SC3356
(Symbol: R22)



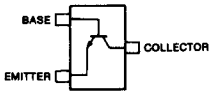
Q22, Q23

2SC3661 TA
(Symbol: CP)



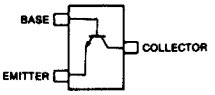
Q7, Q8, Q10, Q28

2SC3770 3
(Symbol: JY3)



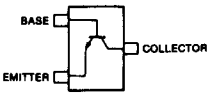
Q13

2SC3772 3
(Symbol: LY3)



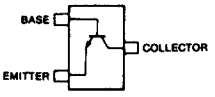
Q15, Q19, Q20, Q24

2SC3775 3
(Symbol: OY3)



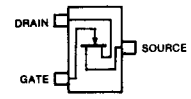
Q16

2SC4081 S
(Symbol: BS)



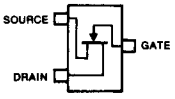
Q3

2SK302 GR
(Symbol: TG)



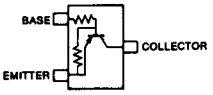
Q18, Q21

2SK880 Y
(Symbol: XY)



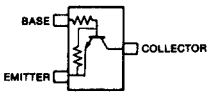
Q4, Q6

DTA144EU
(Symbol: 16)



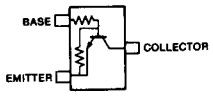
Q1, Q30

DTC114EU
(Symbol: 24)



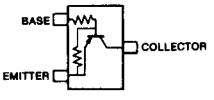
Q31, Q32

DTC144EU
(Symbol: 26)



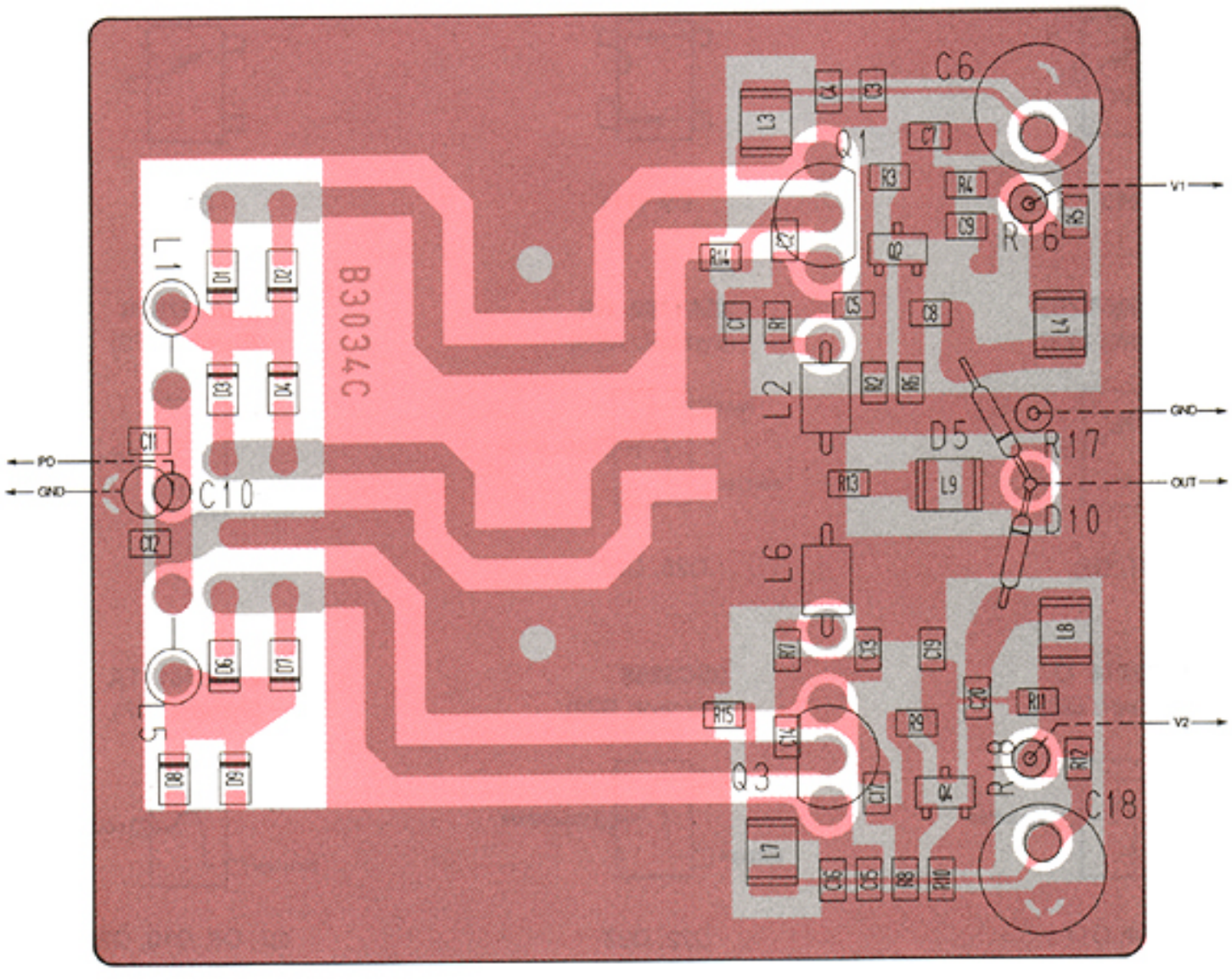
Q12, Q26, Q29

RN2402
(Symbol: YB)

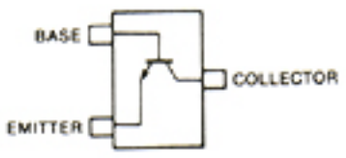


Q9, Q11

• VCO UNIT

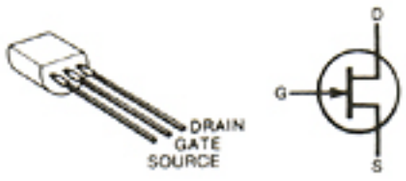


2SC3356
(Symbol: R22)



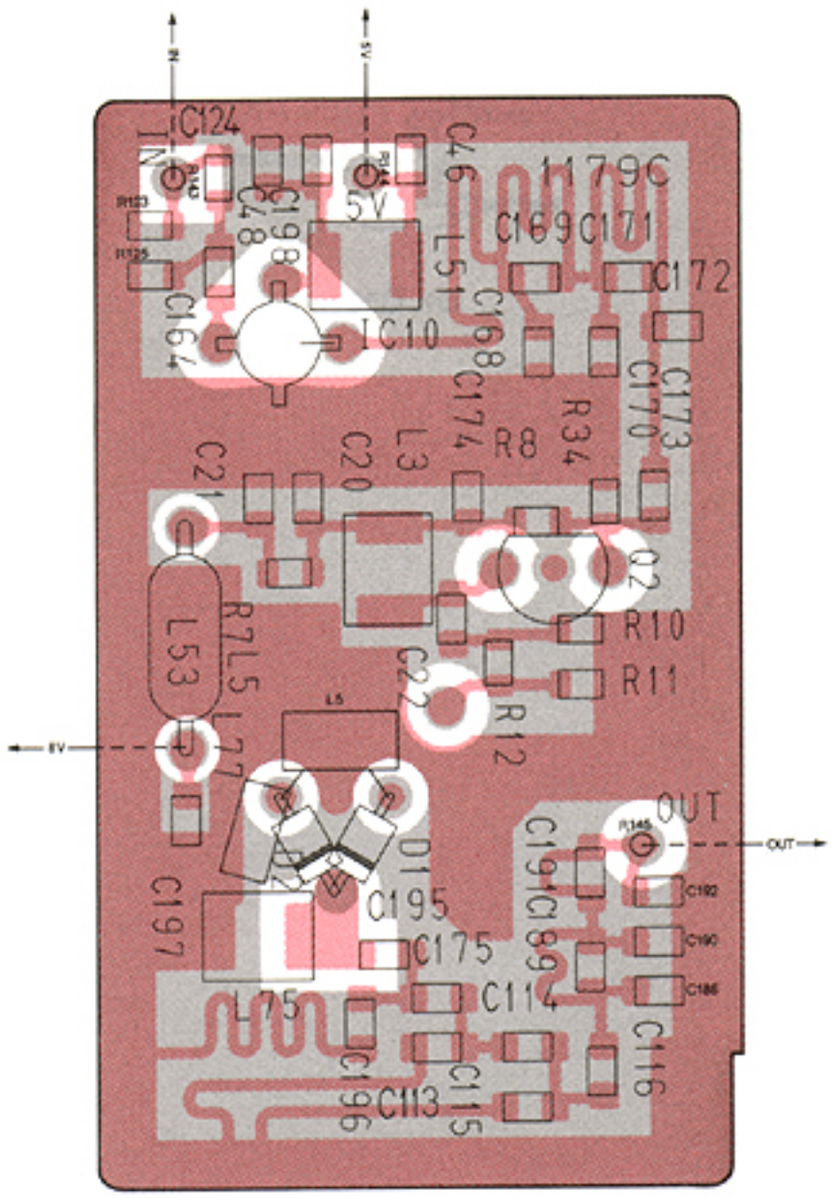
Q2, Q4

2SK125

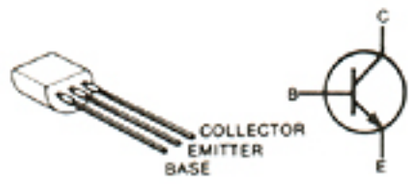


Q1, Q3

• P DOUBL UNIT

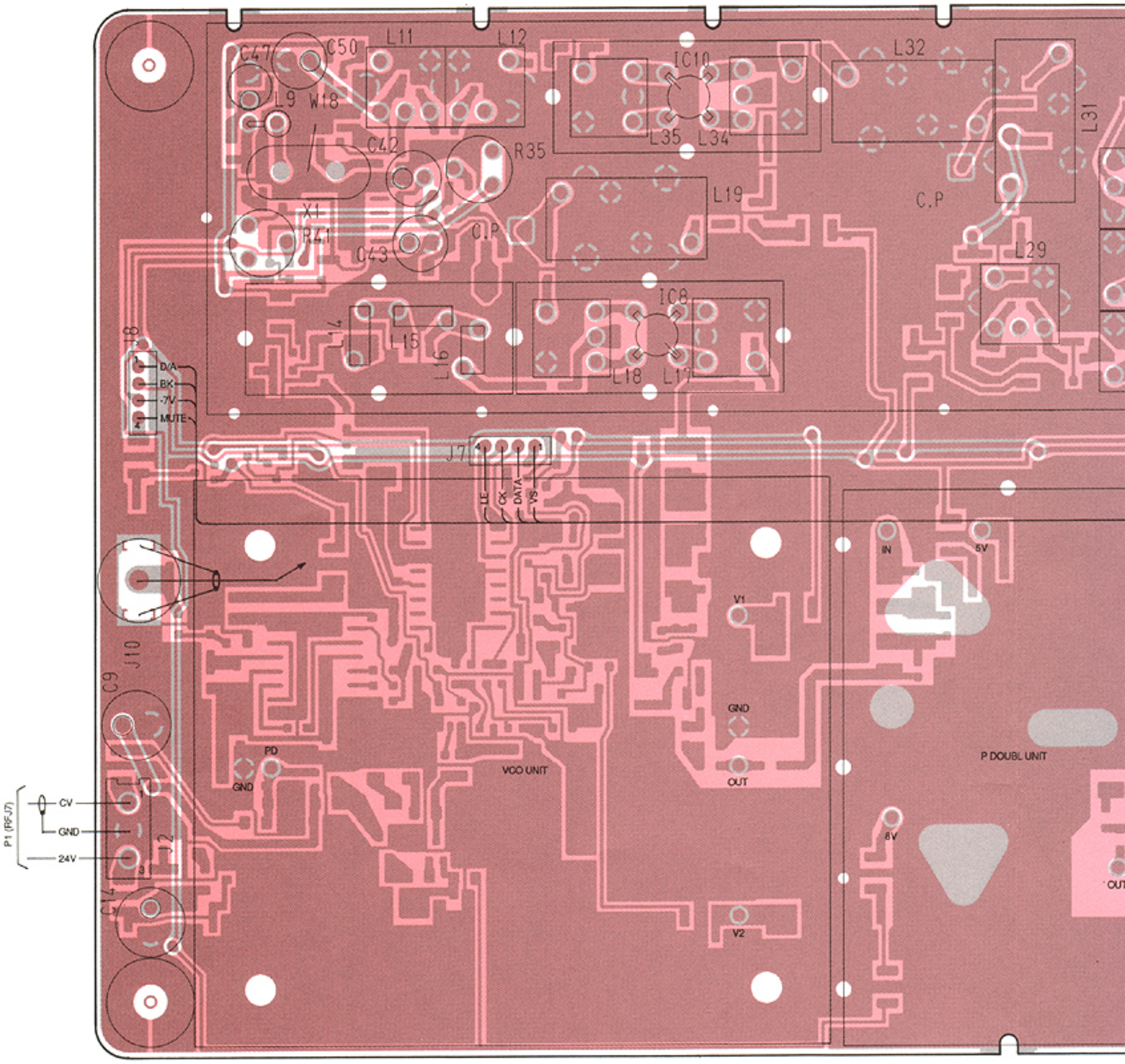


2SC3355

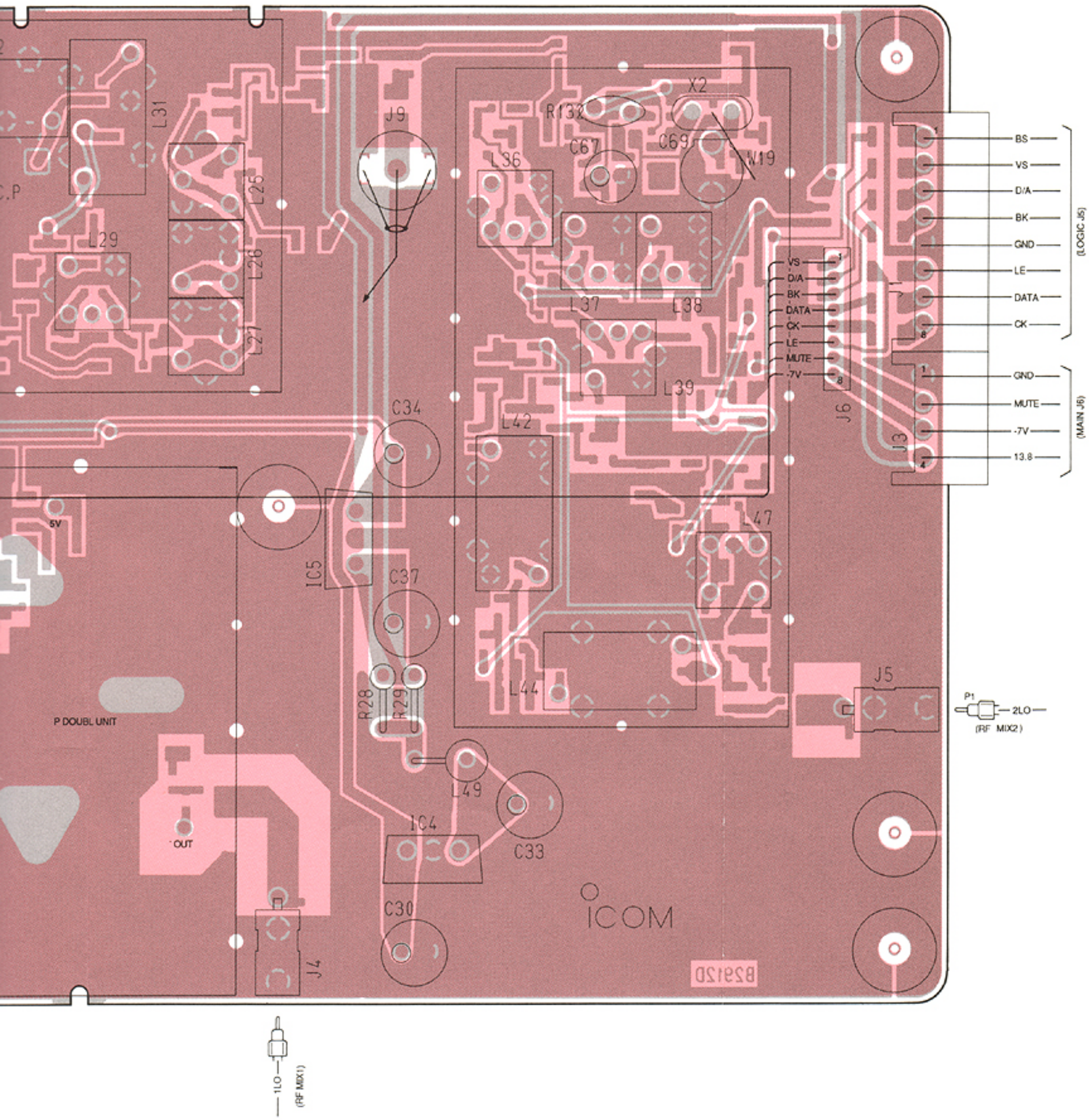


Q2

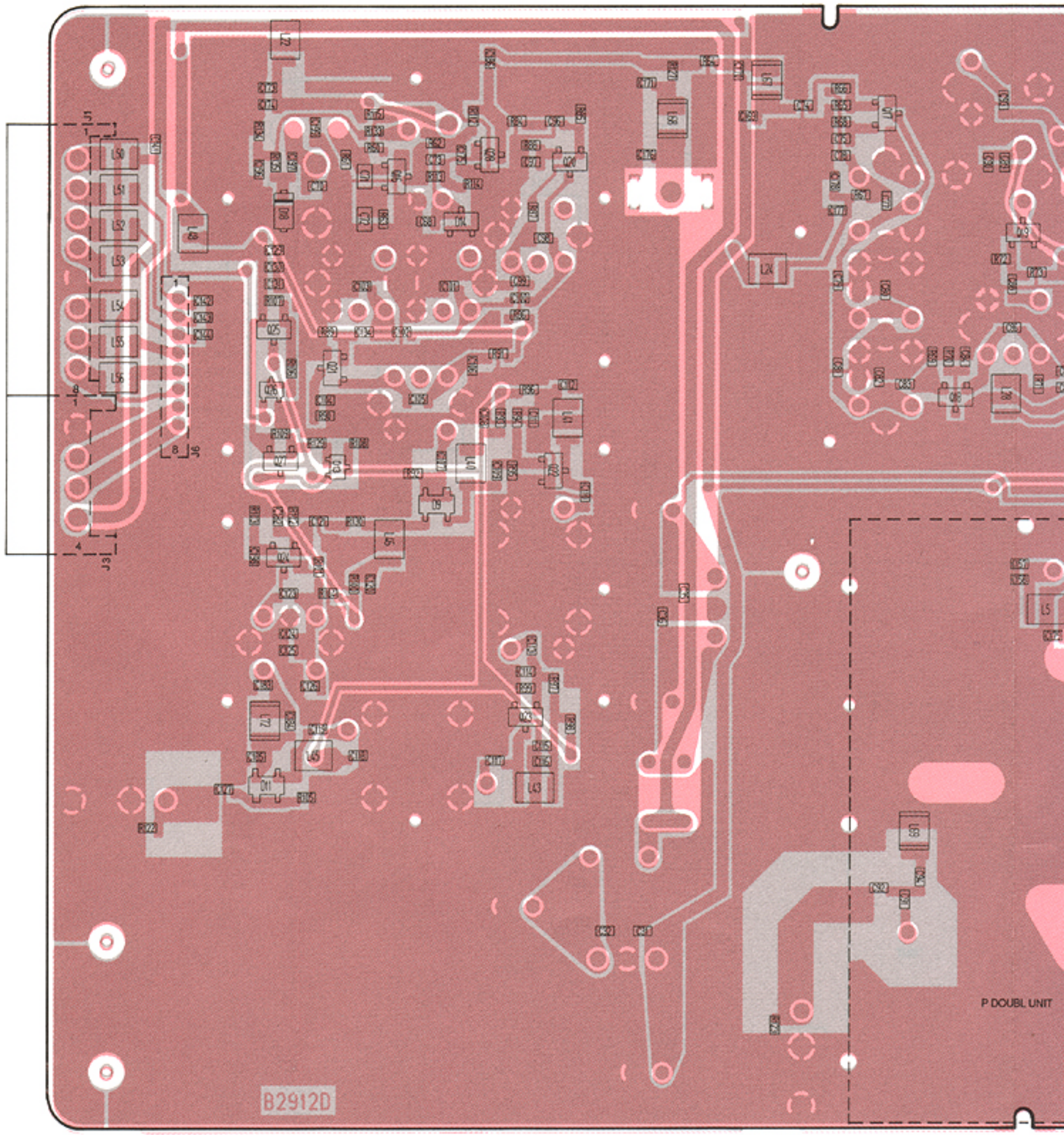
• **PLL UNIT**

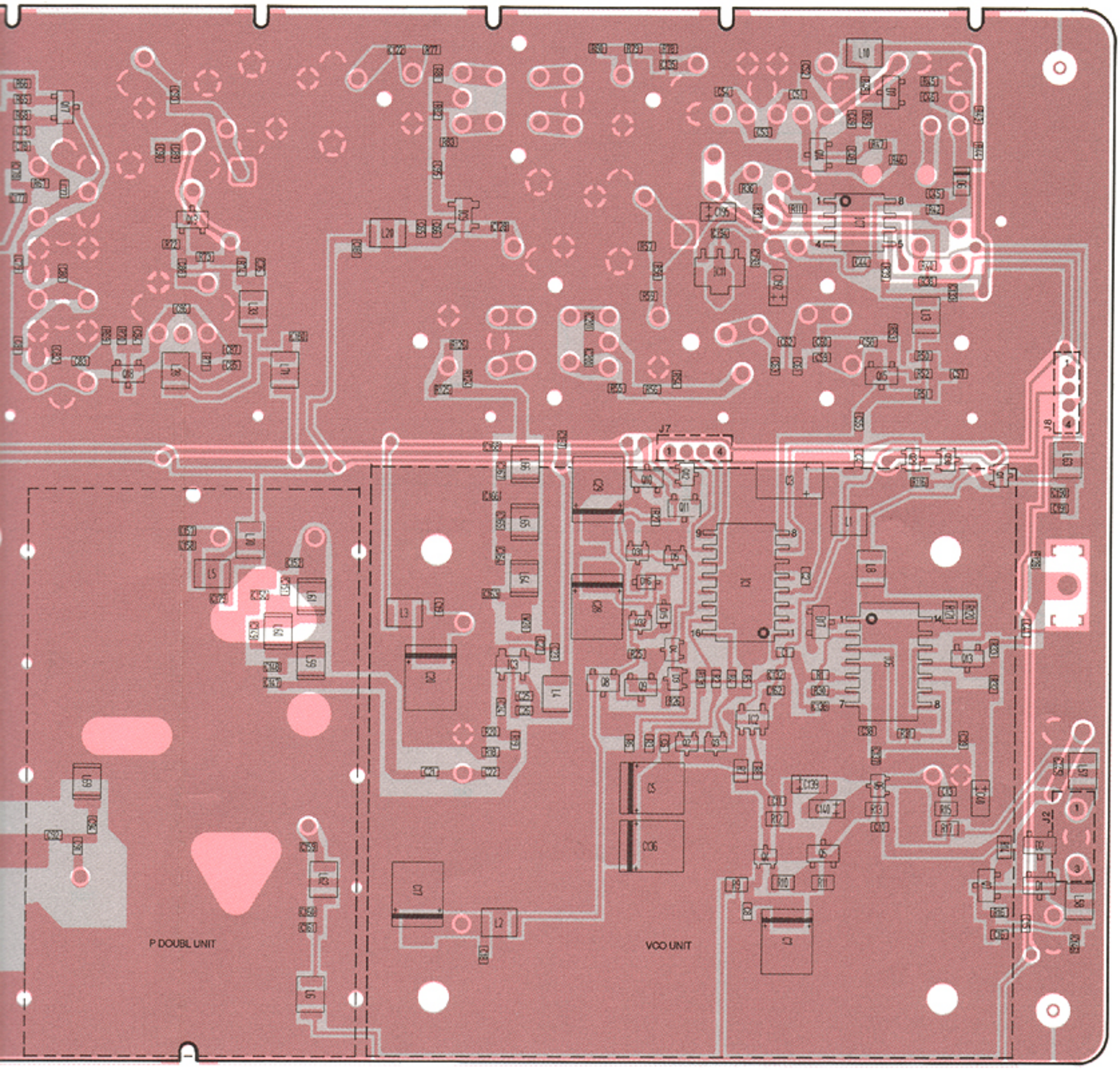

C47
C50
L11
L12
L9
W18
C42
R35
X1
R41
C43
C.P
IC10
L35
L34
L32
L31
L19
C.P
L29
IC8
L15
L14
L16
L18
L17
J8
D/A
BK
-7V
MUTE
J7
LE
CK
DATA
VS
IN
5V
V1
GND
OUT
P DOUBL UNIT
J10
C9
PD
GND
VCO UNIT
8V
OUT
V2
P1 (P/F-J7)
CV
GND
24V
J2
C14

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



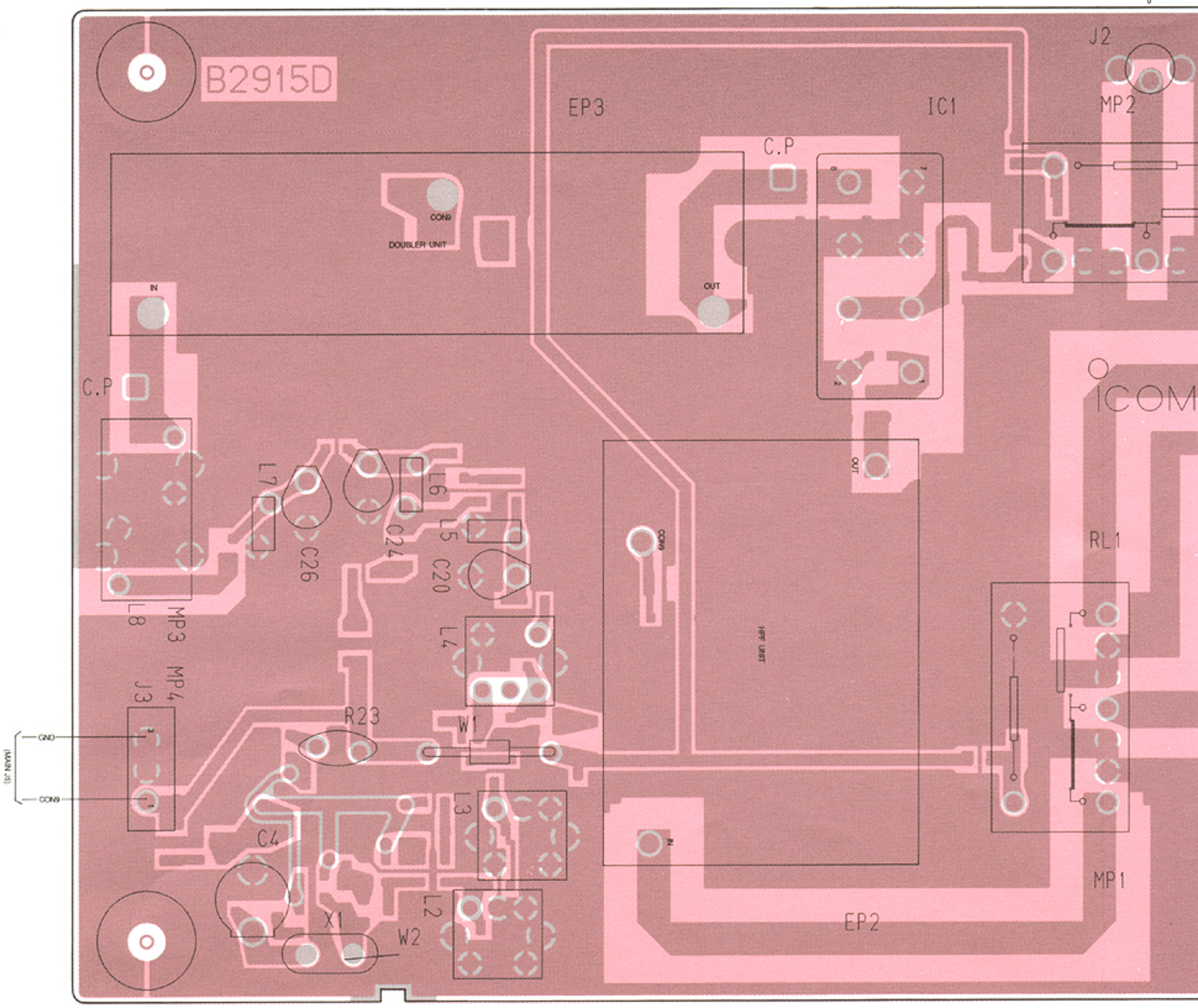
• **PLL UNIT**



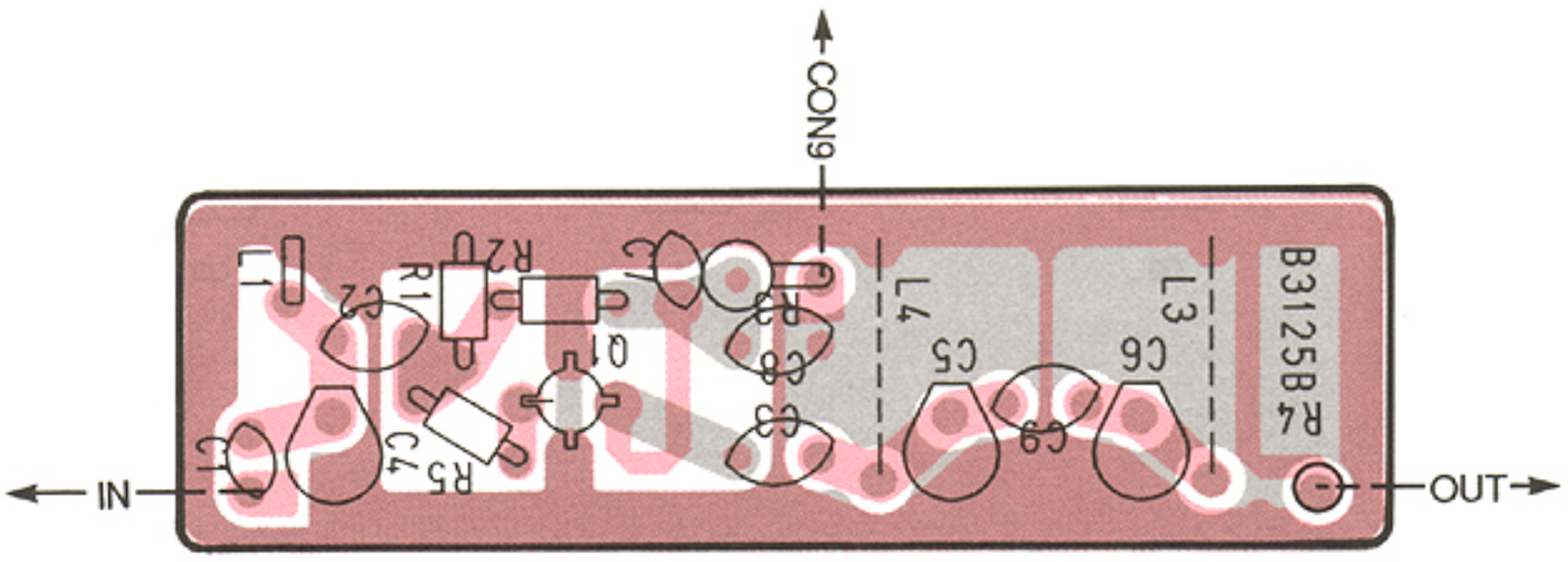

P DOUBL UNIT
VCO UNIT

7-4 CONV UNIT

The co
the un
P.C. Bo



• DOUBLER UNIT



2SC2367

Q1

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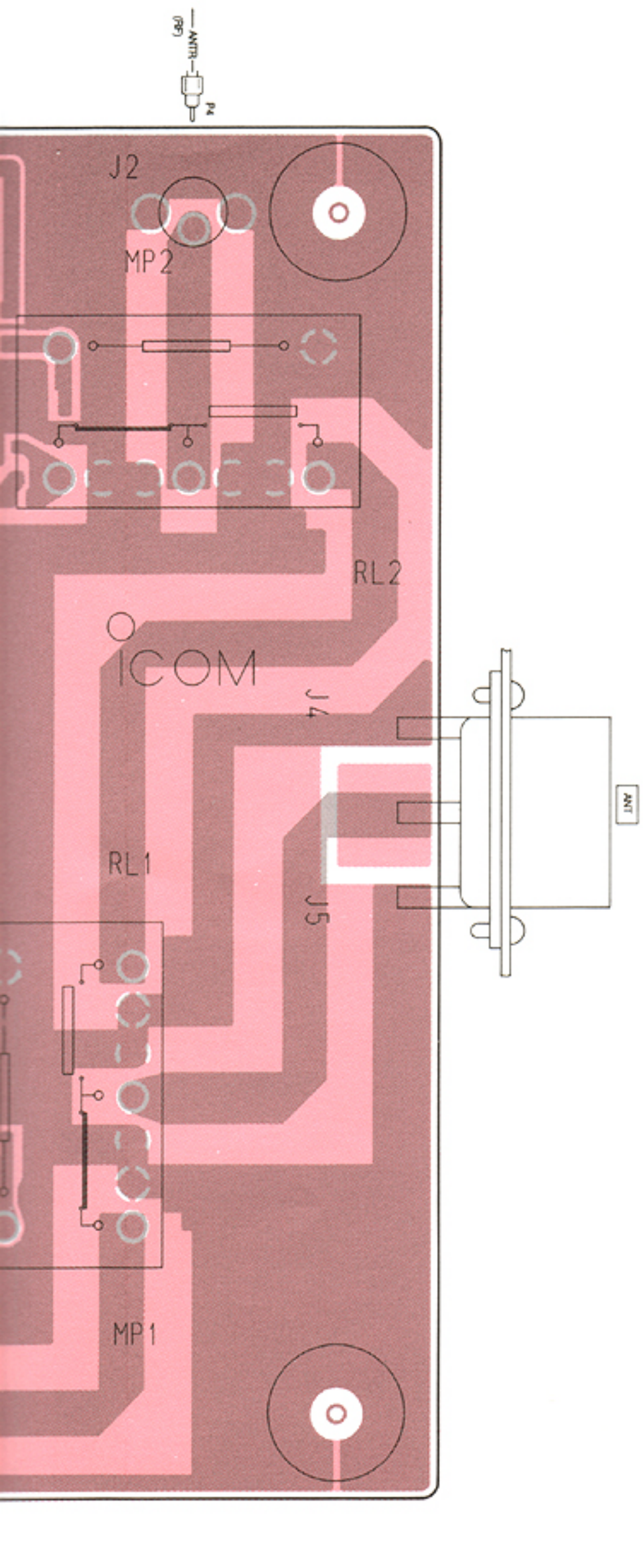
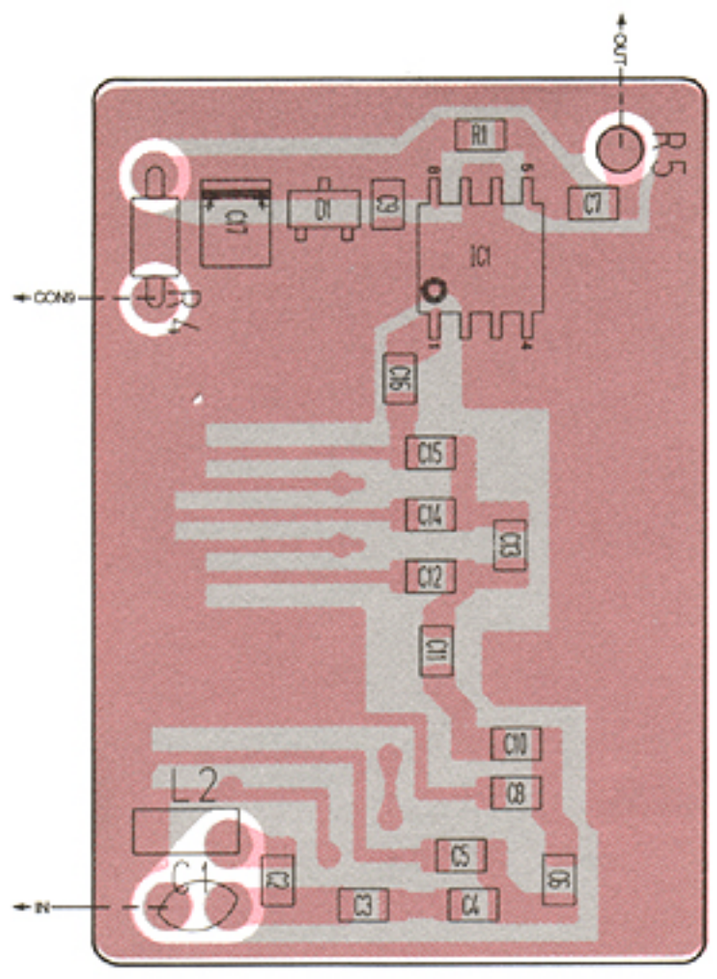
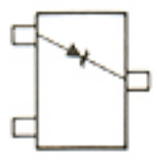


• HPF UNIT

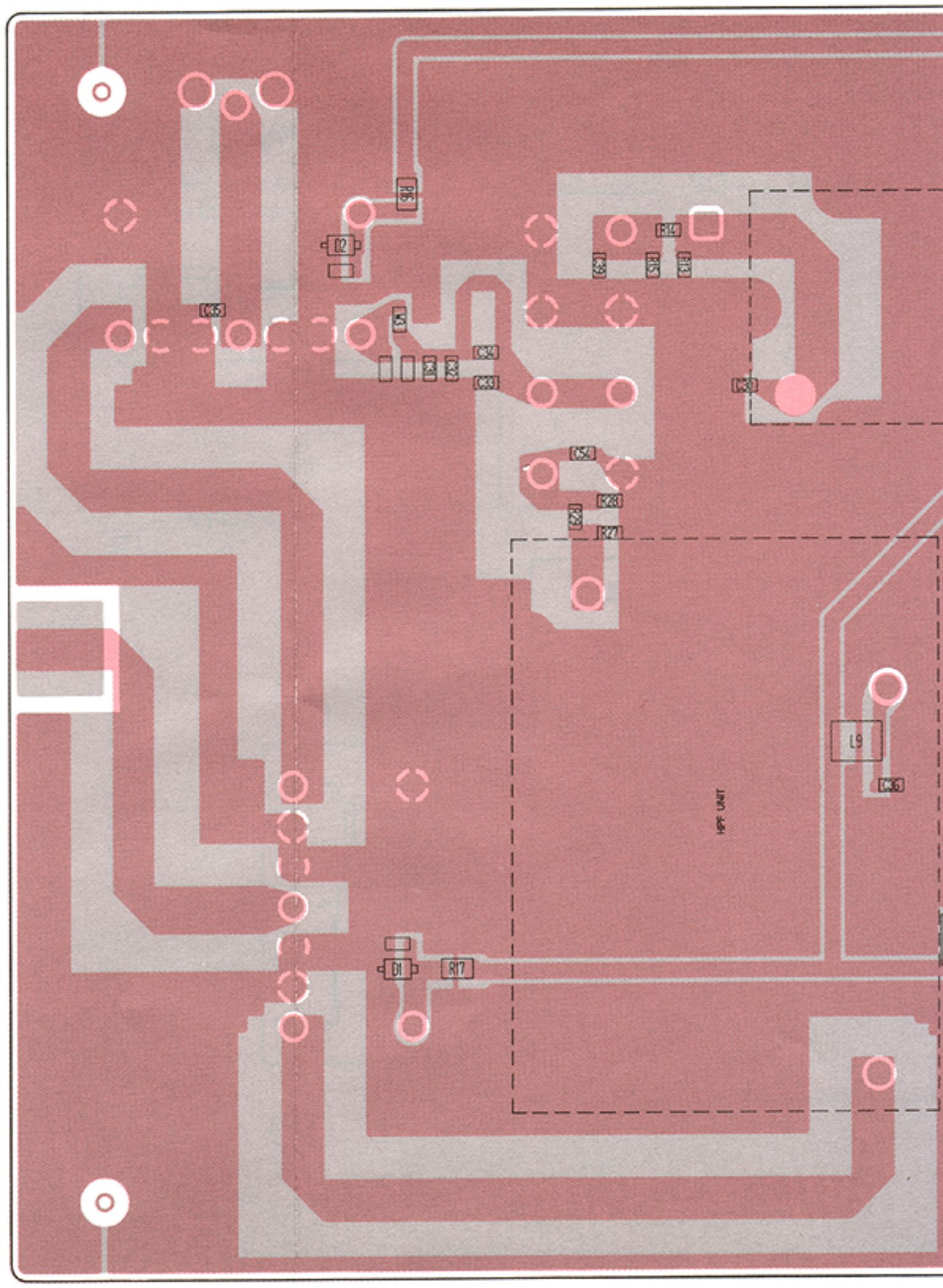


RD5.1M-T2B2
(Symbol: 512)

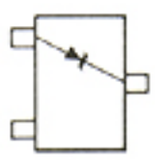


D1

• **CONV UNIT**

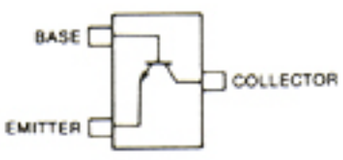


RD5.6M B2
(Symbol: 562)



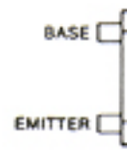
D3

2SC3356
(Symbol: R22)



Q4

2SC
(Sym



RD5.6M B2
(Symbol: 562)

D3

2SC3356
(Symbol: R22)

Q4

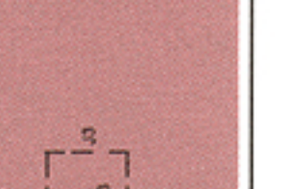
2SC3772 3
(Symbol: LY3)

Q2

2SC3775 3
(Symbol: QY3)

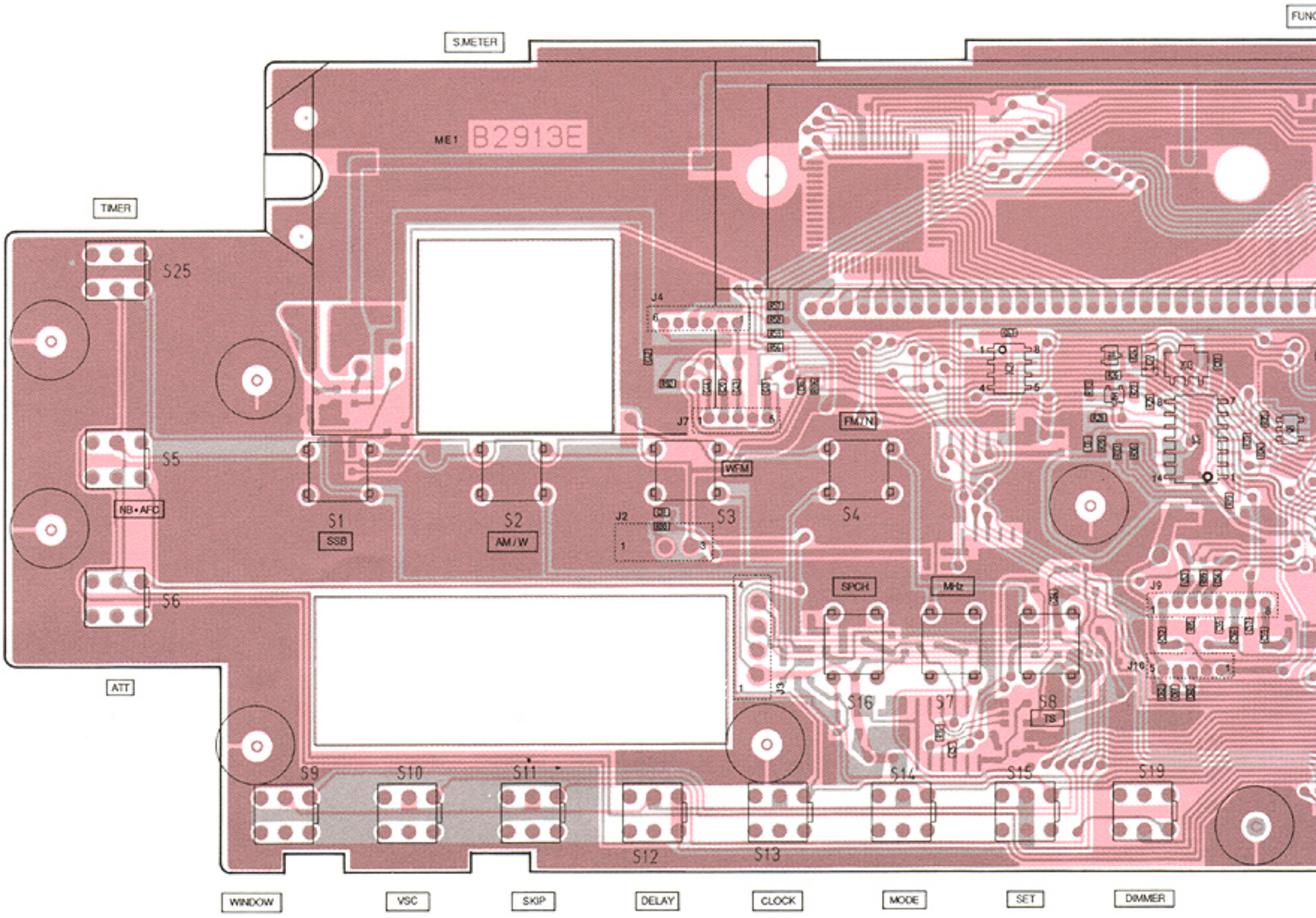
Q1

2SK880 Y
(Symbol: XY)

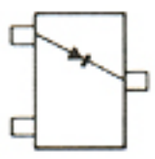


Q3

7-5 LOGIC UNIT

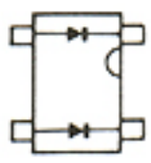


DA114
(Symbol: AV)



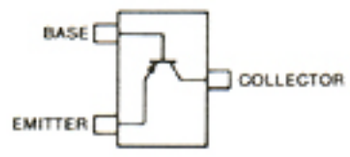
D2, D3, D11, D12, D13, D14, D15, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29

DWA010
(Symbol: W8)



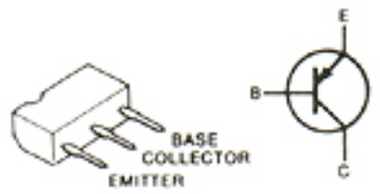
D1, D4, D5, D6, D7, D8, D9, D10

2SA1576 R
(Symbol: FR)



Q11, Q13

2SB909M Q



Q2

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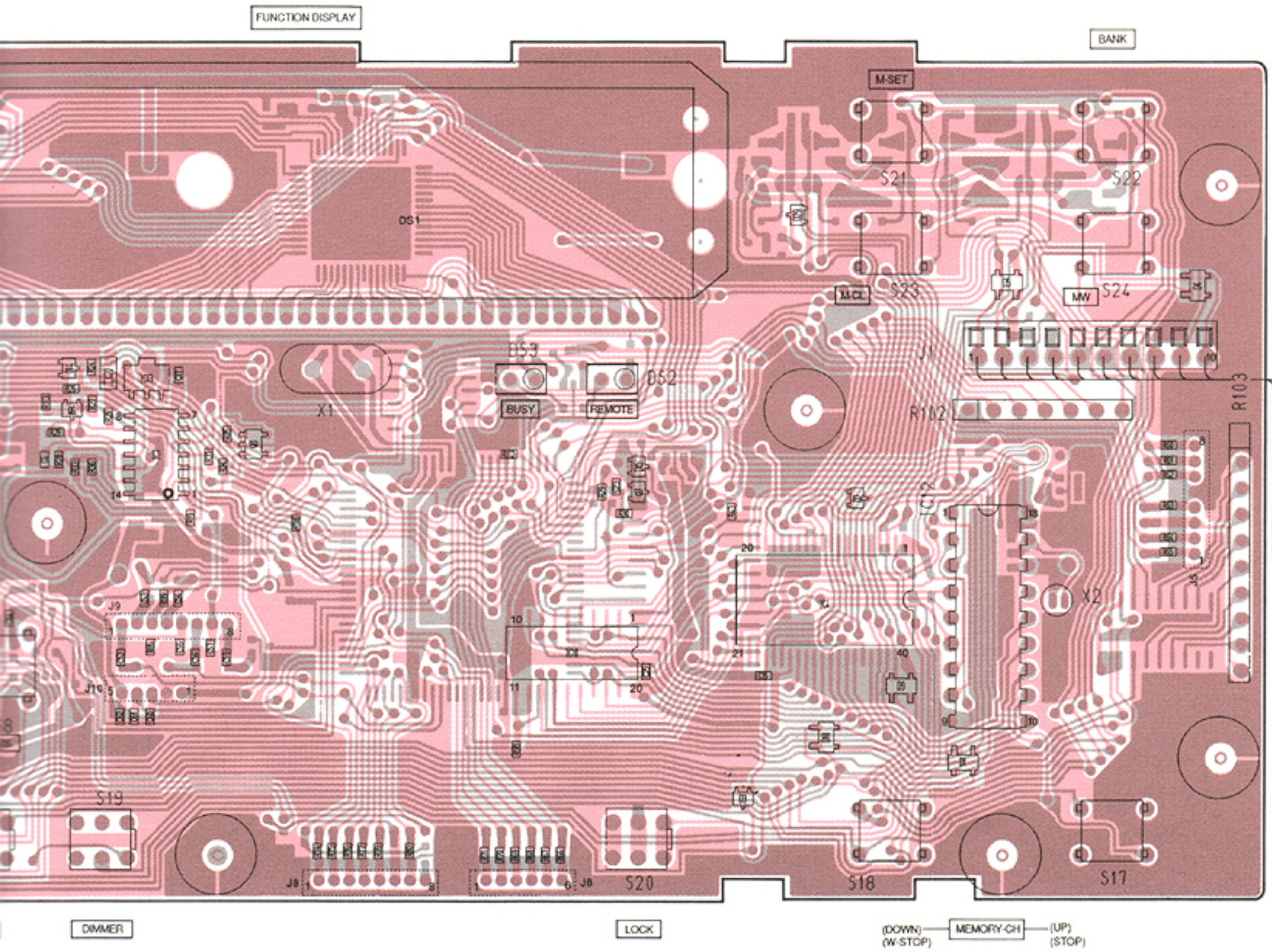
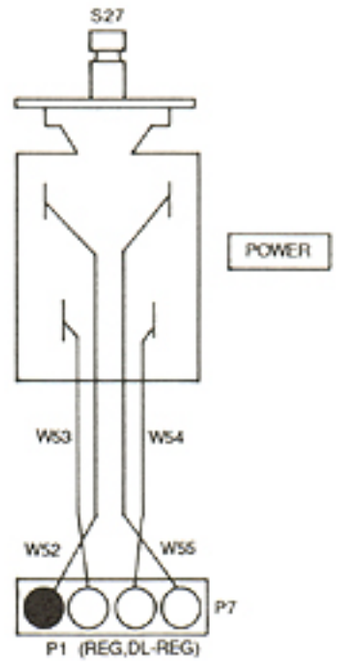
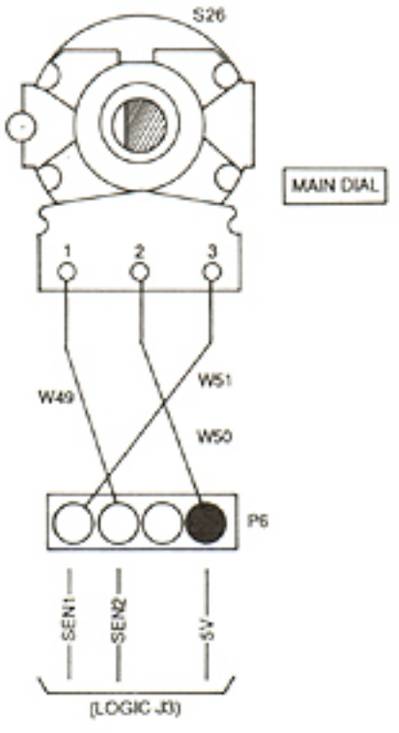
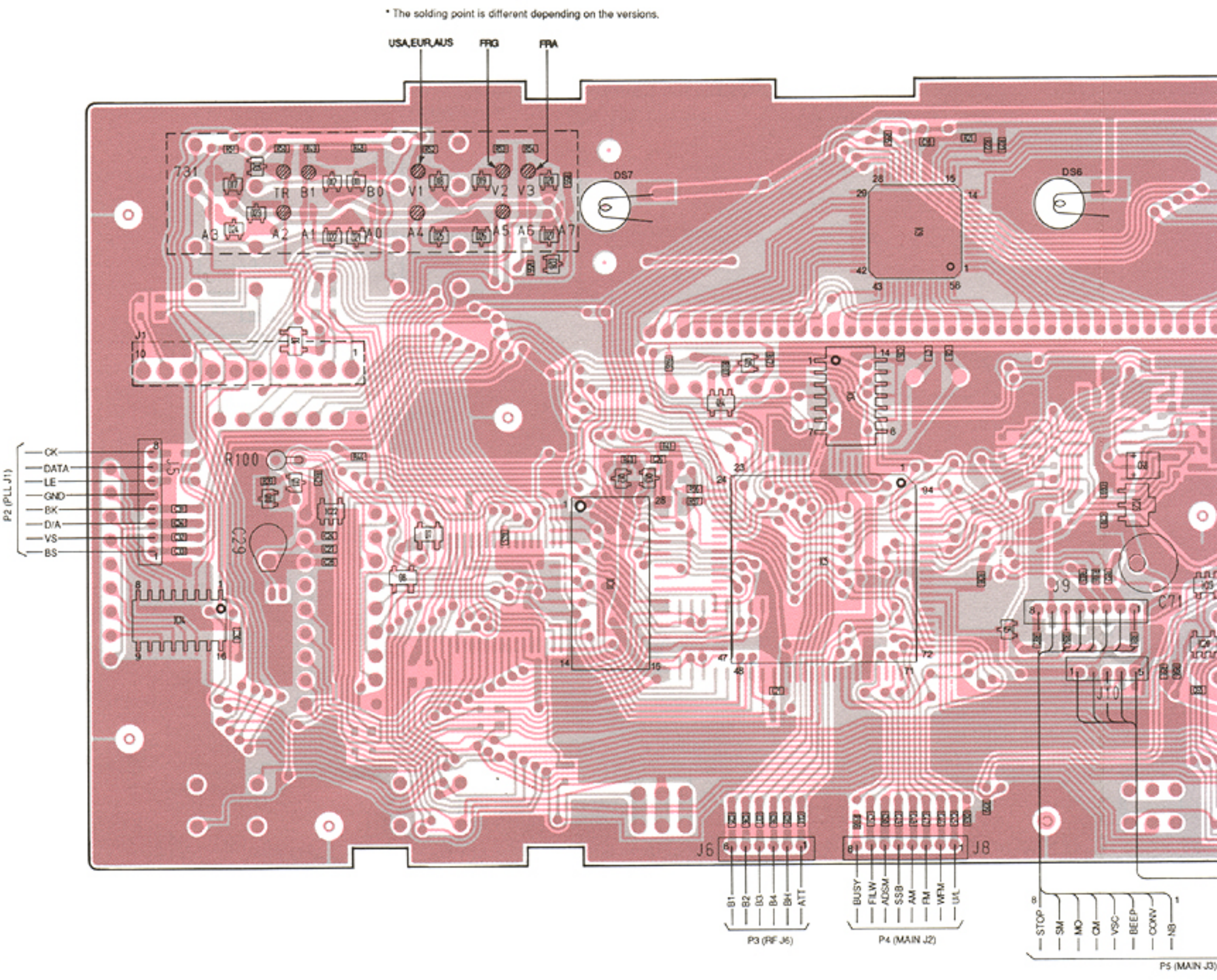
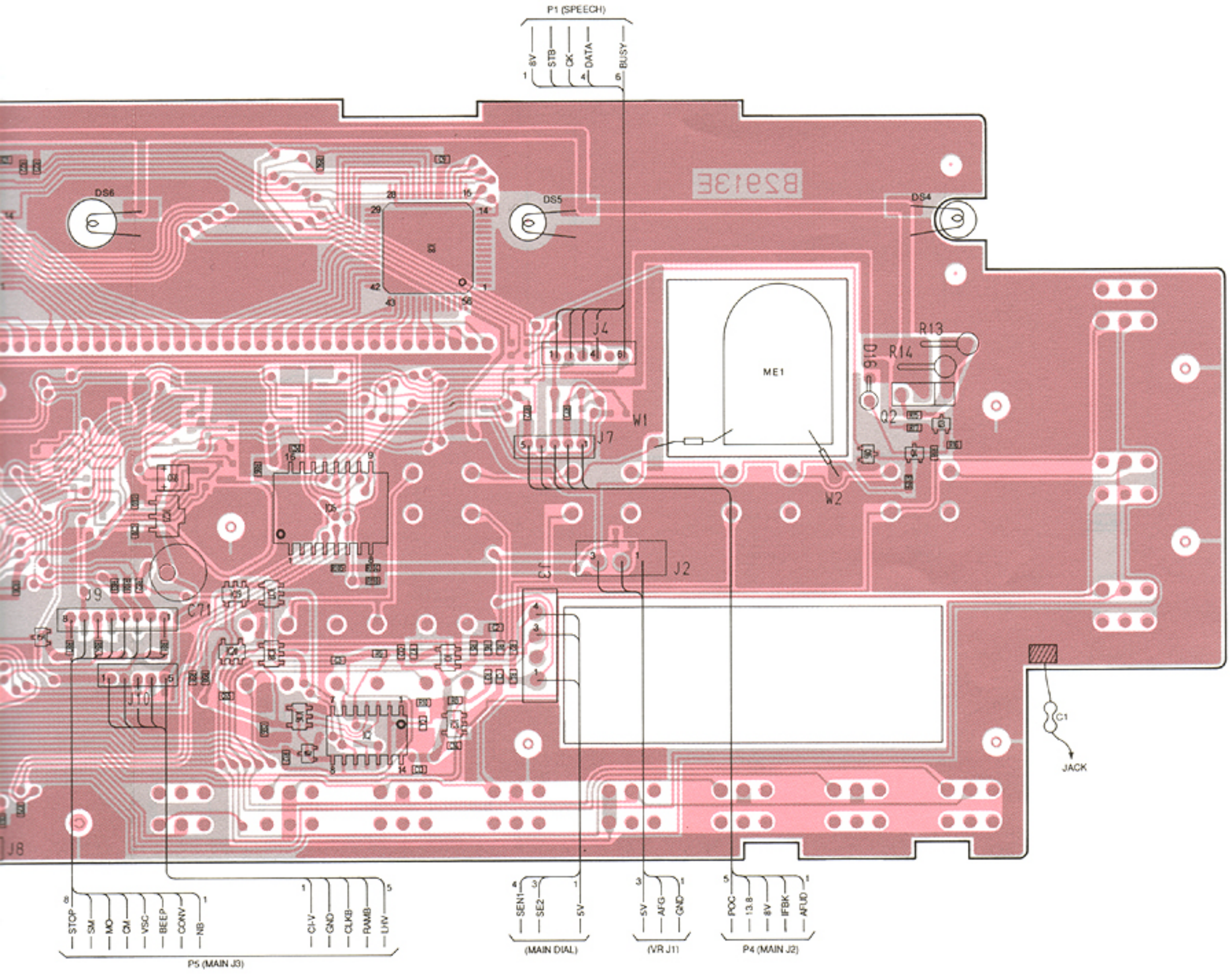




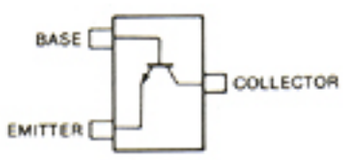


• LOGIC UNIT


* The solding point is different depending on the versions.
USA,EUR,AUS
FRG
FRA
731
TR B1 B0 V1 V2 V3
A3 A2 A1 A0 A4 A5 A6 A7
DS7
DS6
J1
10
1
R100
CK
DATA
LE
GND
BK
D/A
VS
BS
P2 (PLL J1)
J6
J8
B1
B2
B3
B4
BH
ATT
P3 (RF J6)
BUSY
FILW
ADSM
SSB
AM
FM
WFM
U/L
P4 (MAIN J2)
STOP
SM
MO
CM
VSC
BEEP
CONV
NB
P5 (MAIN J3)

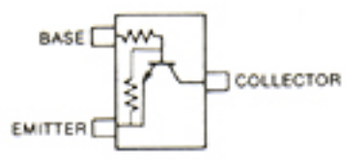


2SC408T R
(Symbol: BR)



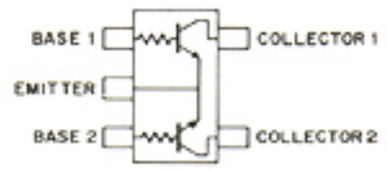
Q3, Q6, Q7

DTC144EU
(Symbol: 26)



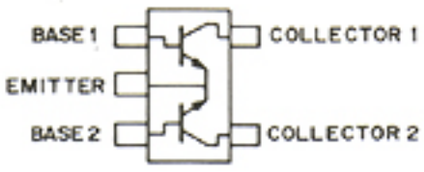
Q1, Q4, Q5, Q10,
Q12, Q15, Q16

FMG4
(Symbol: G4)



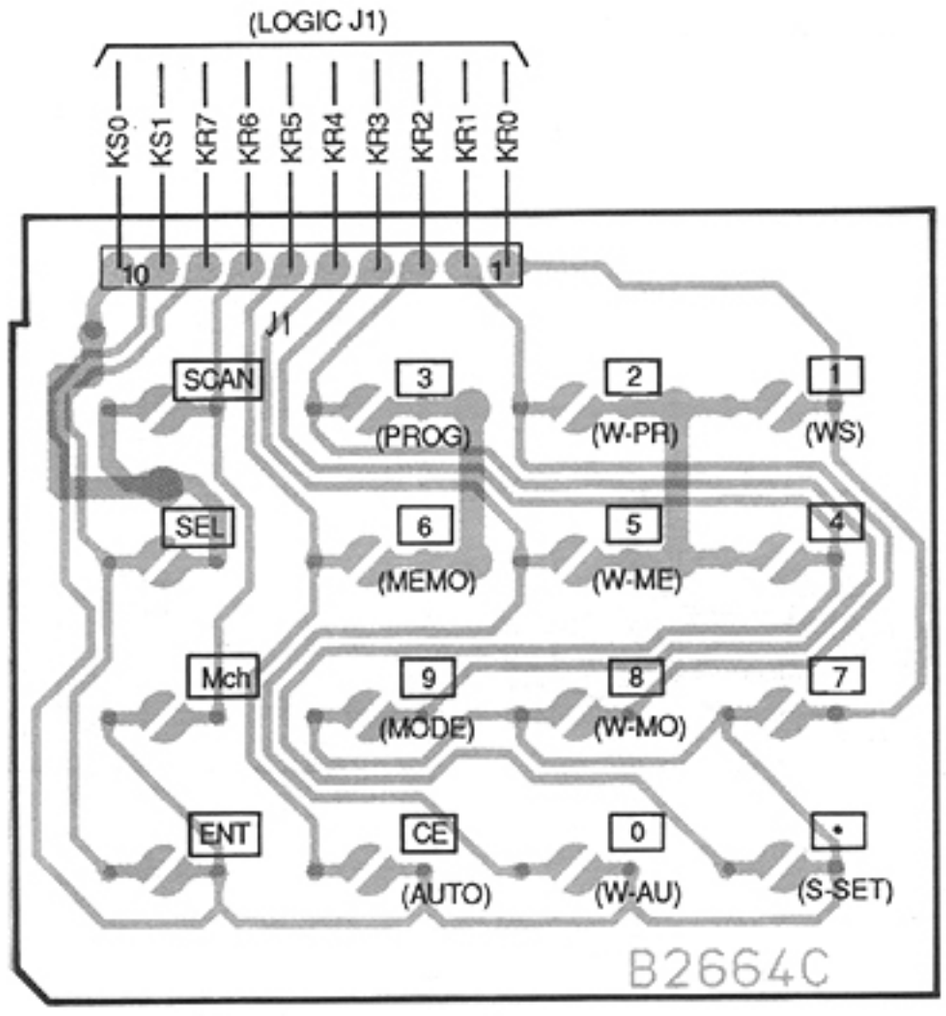
Q14

FMW1
(Symbol: W1)

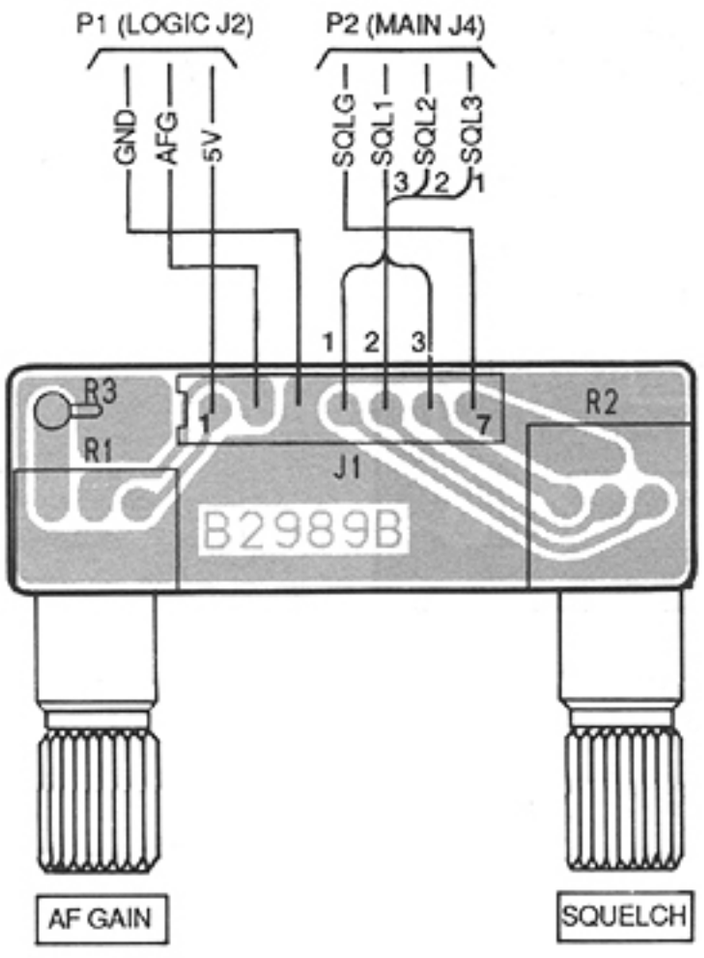


Q8

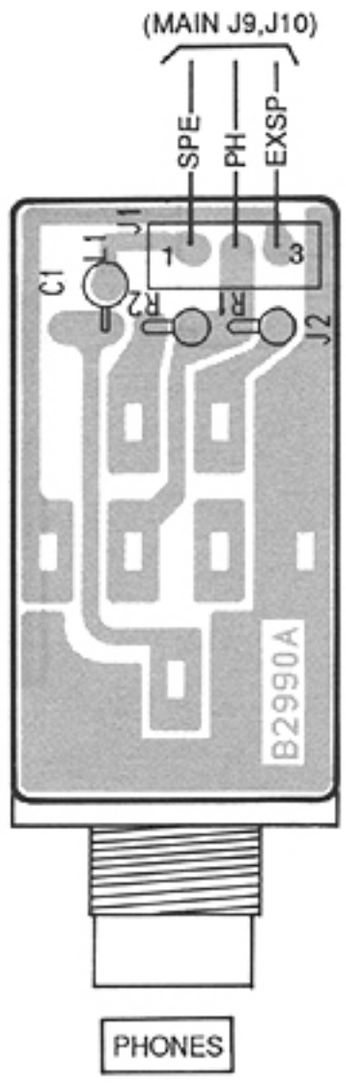
• TENKEY UNIT



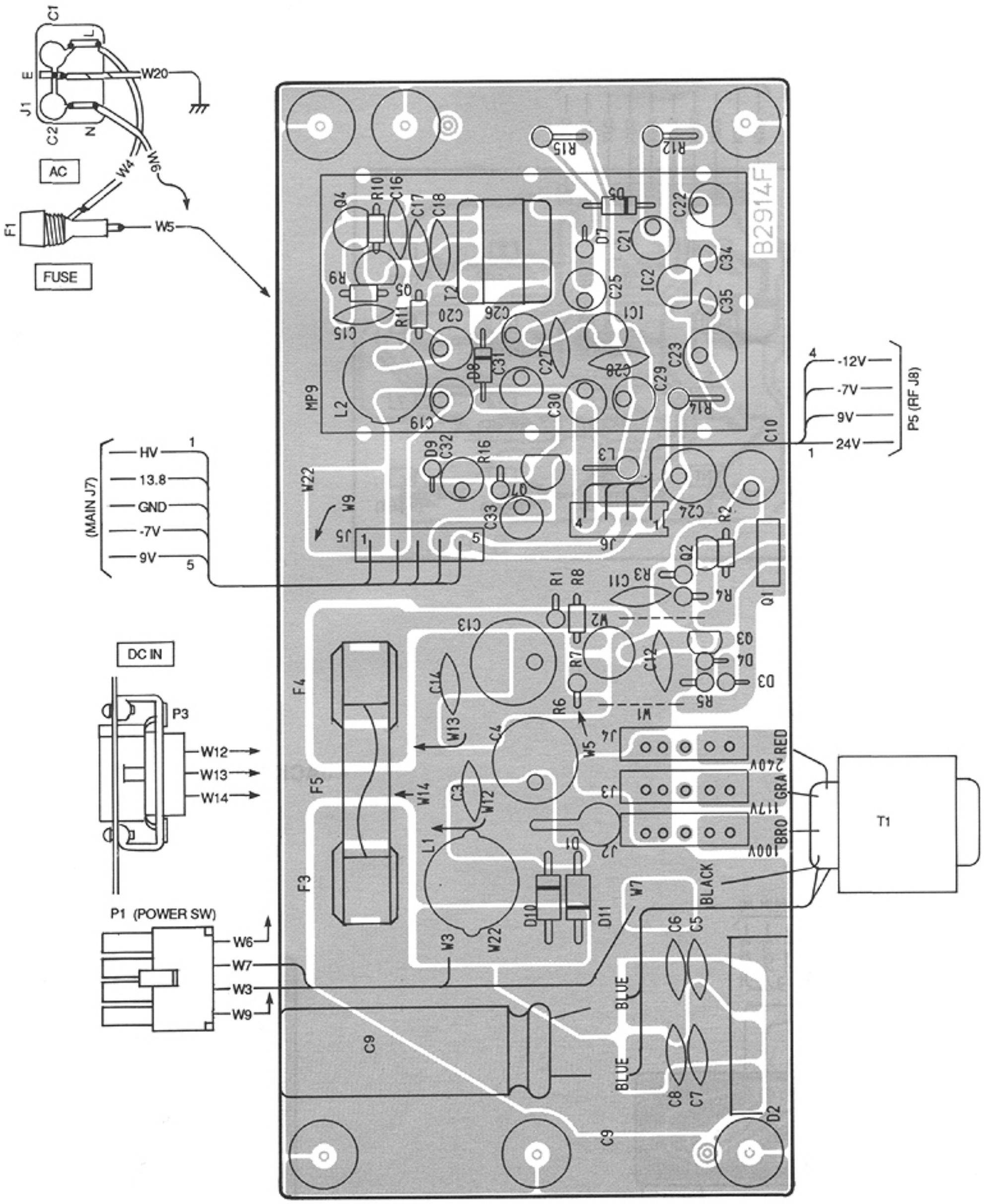
• VR UNIT



• JACK UNIT



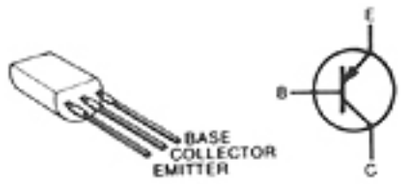
7-6 REG UNIT



2SA1048 GR

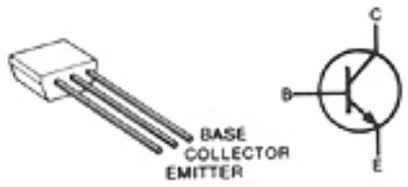
Q2

2SB562 C



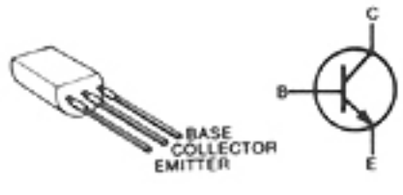
Q7

2SC2458-GR



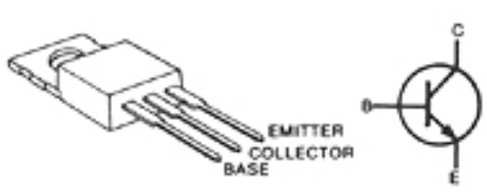
Q3

2SC2655 Y



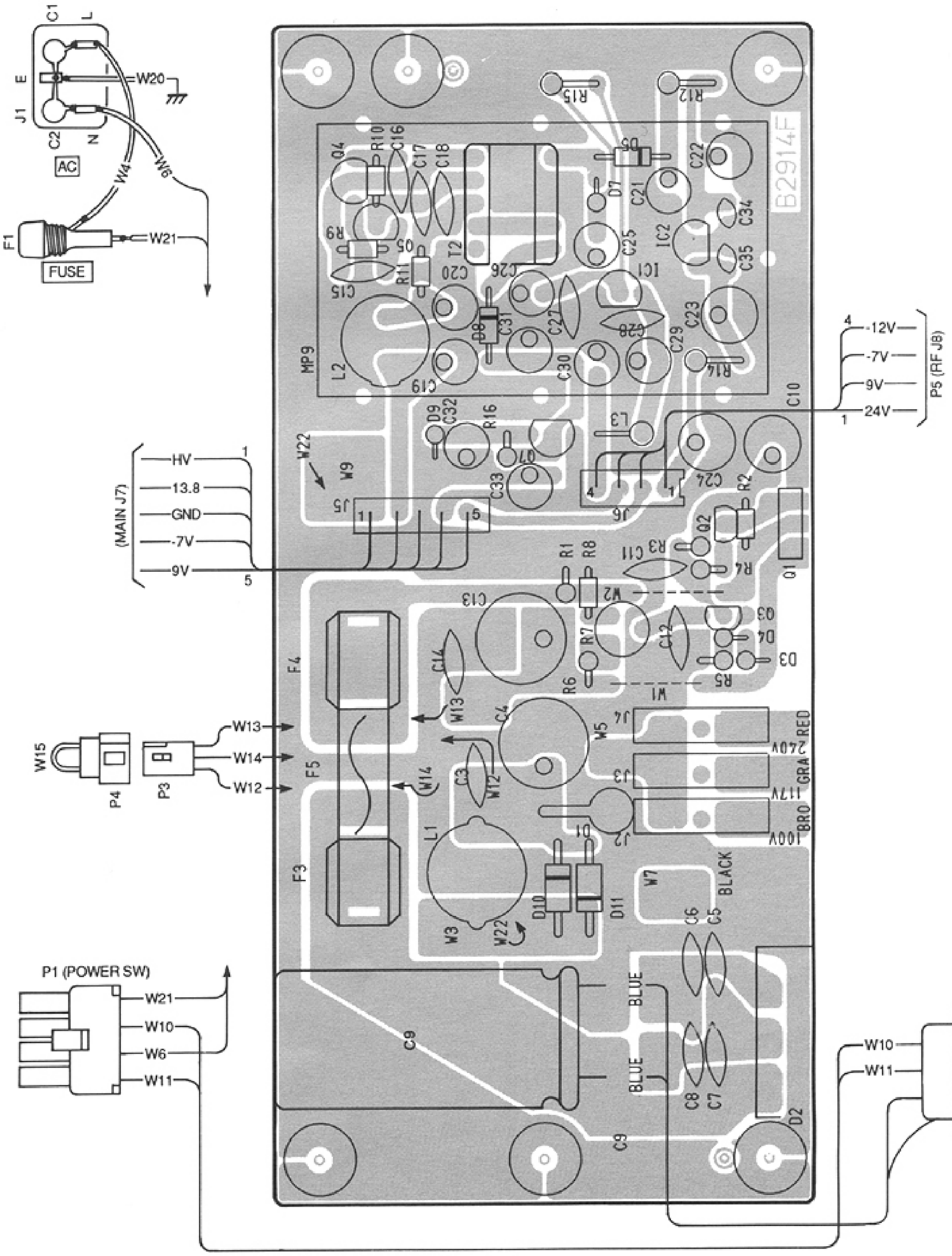
Q4, Q5

2SD880 Y



Q1

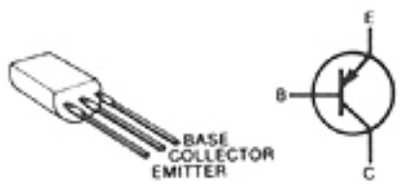
7-7 DL-REG UNIT



2SA1048 GR

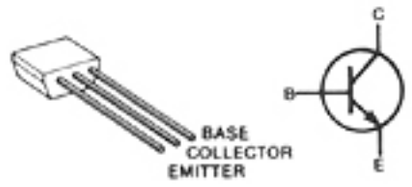
Q2

2SB562 C



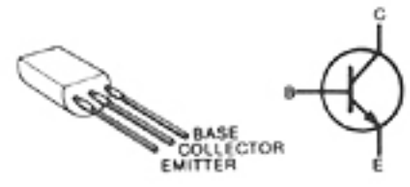
Q7

2SC2458-GR



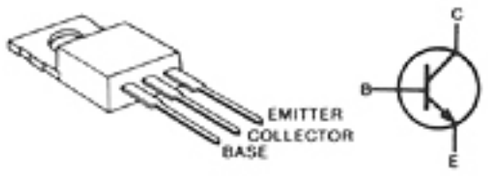
Q3

2SC2655 Y



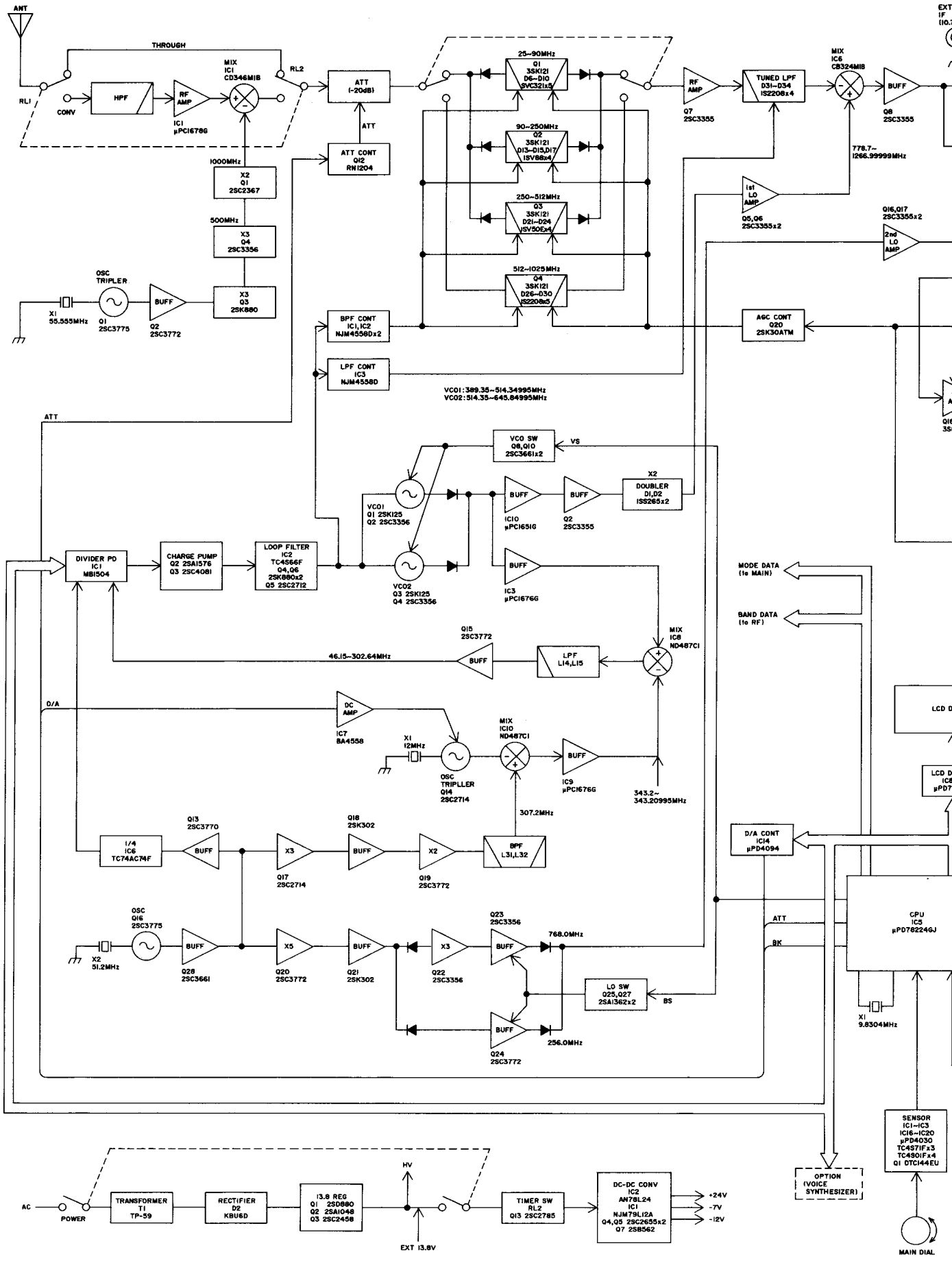
Q4, Q5

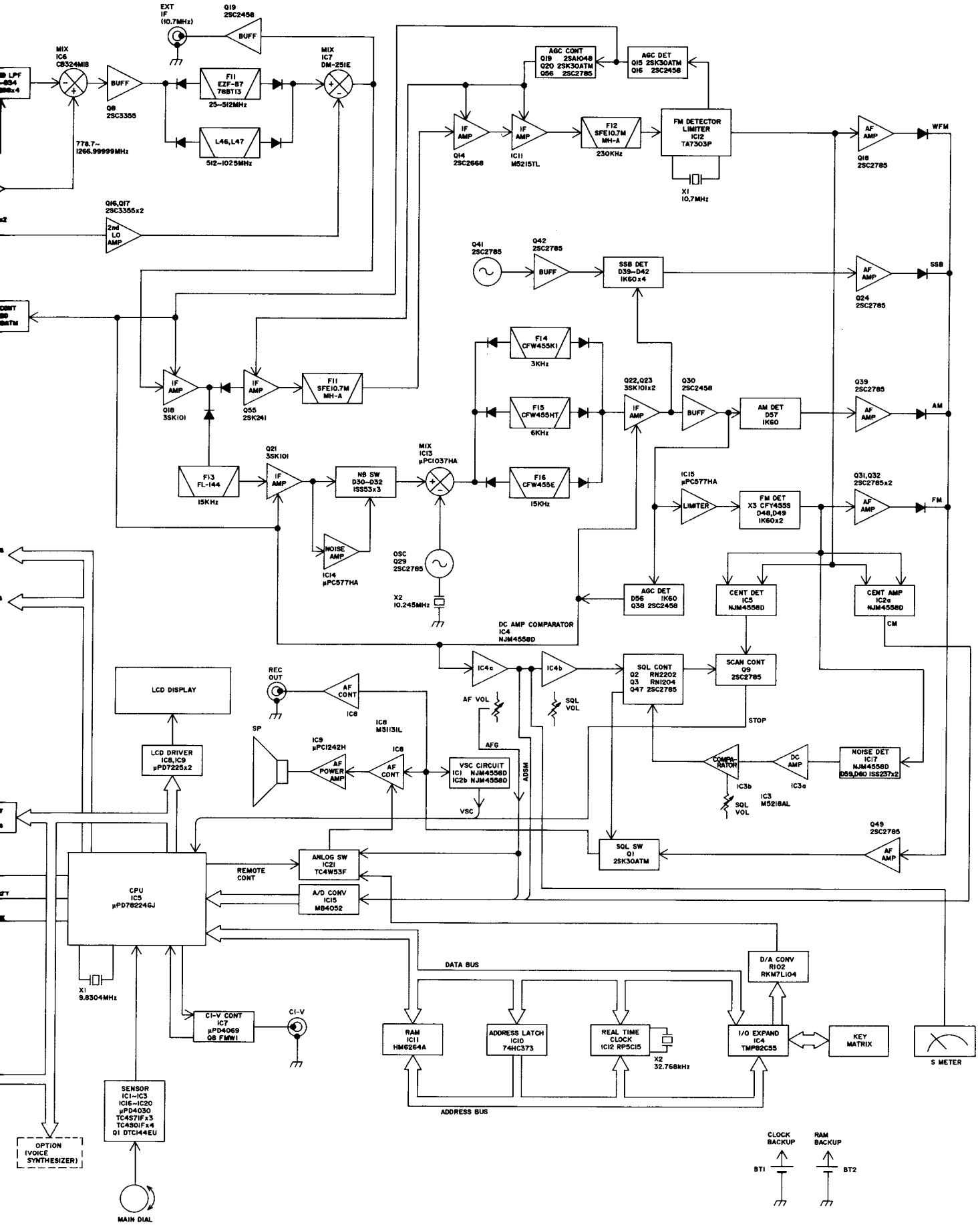
2SD880 Y



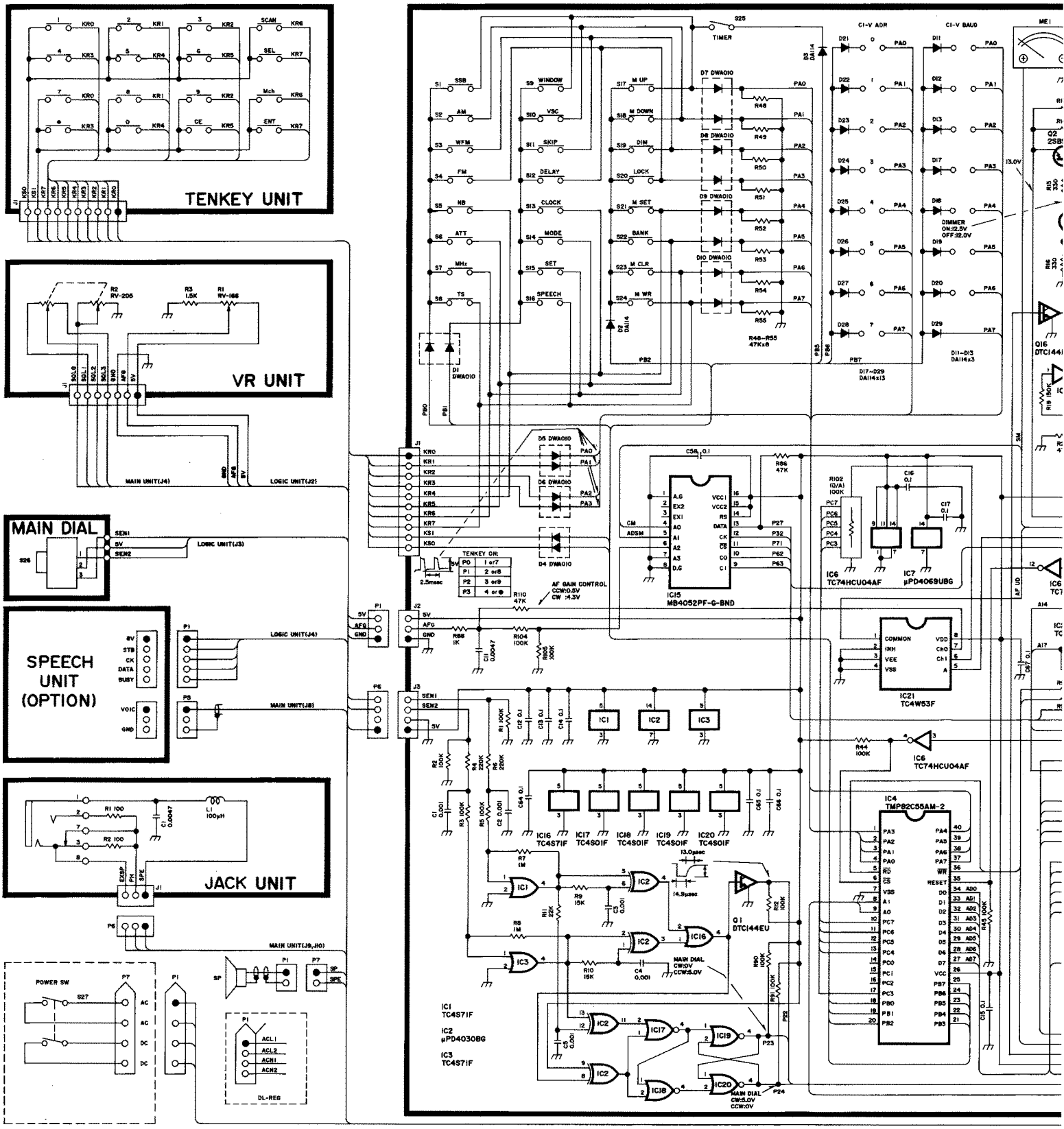
Q1

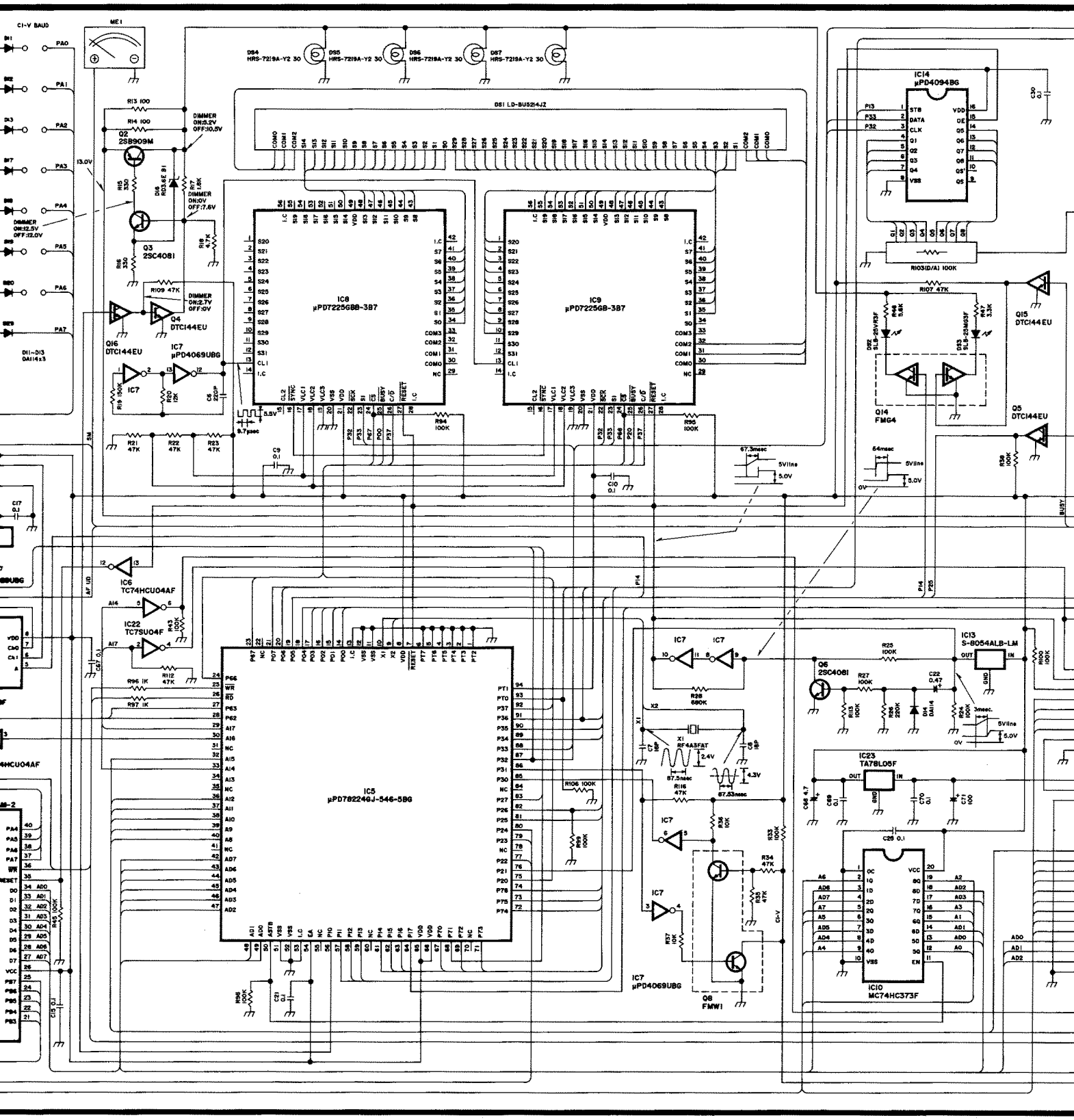
SECTION 8 BLOCK DIAGRAM

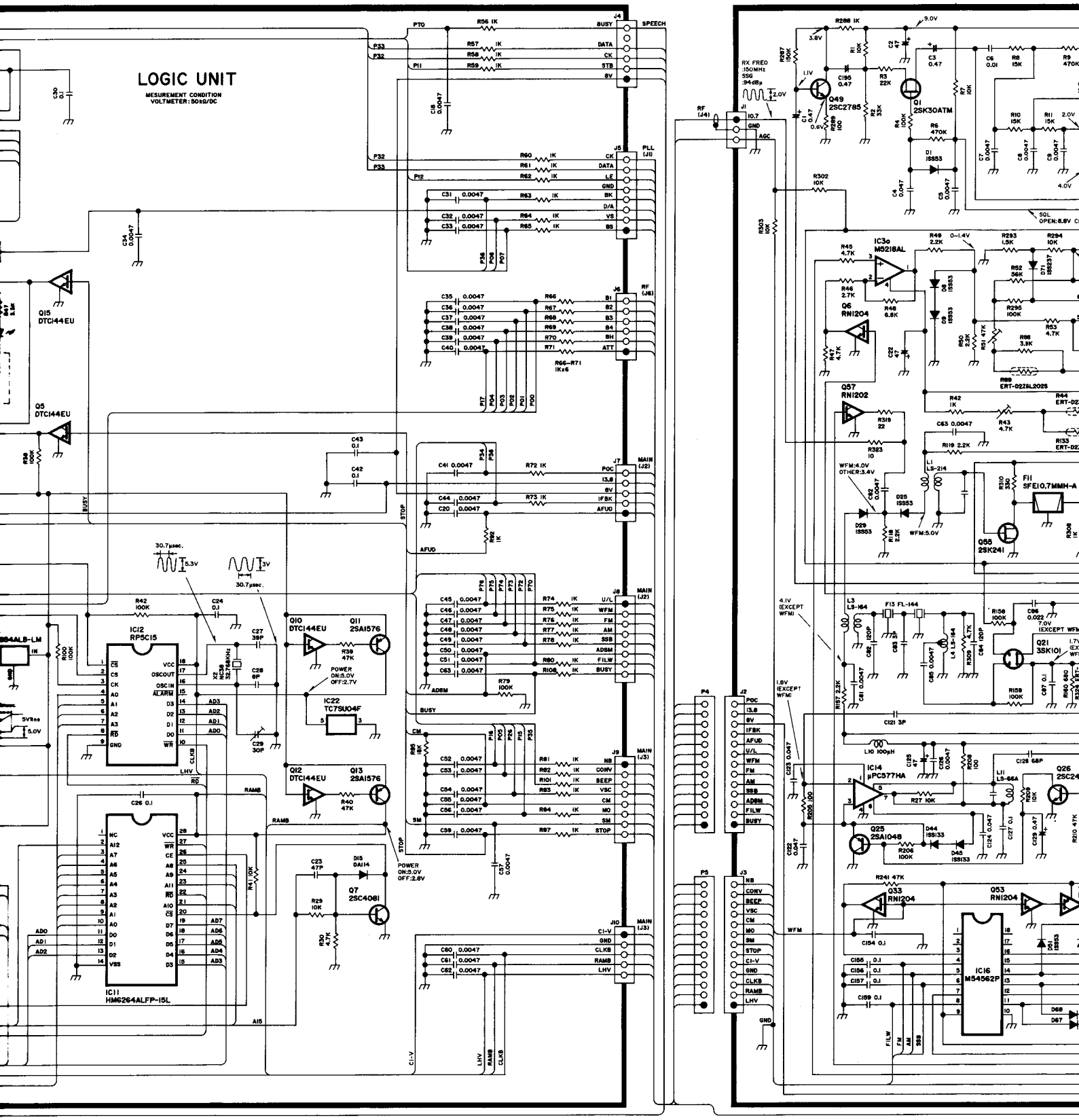


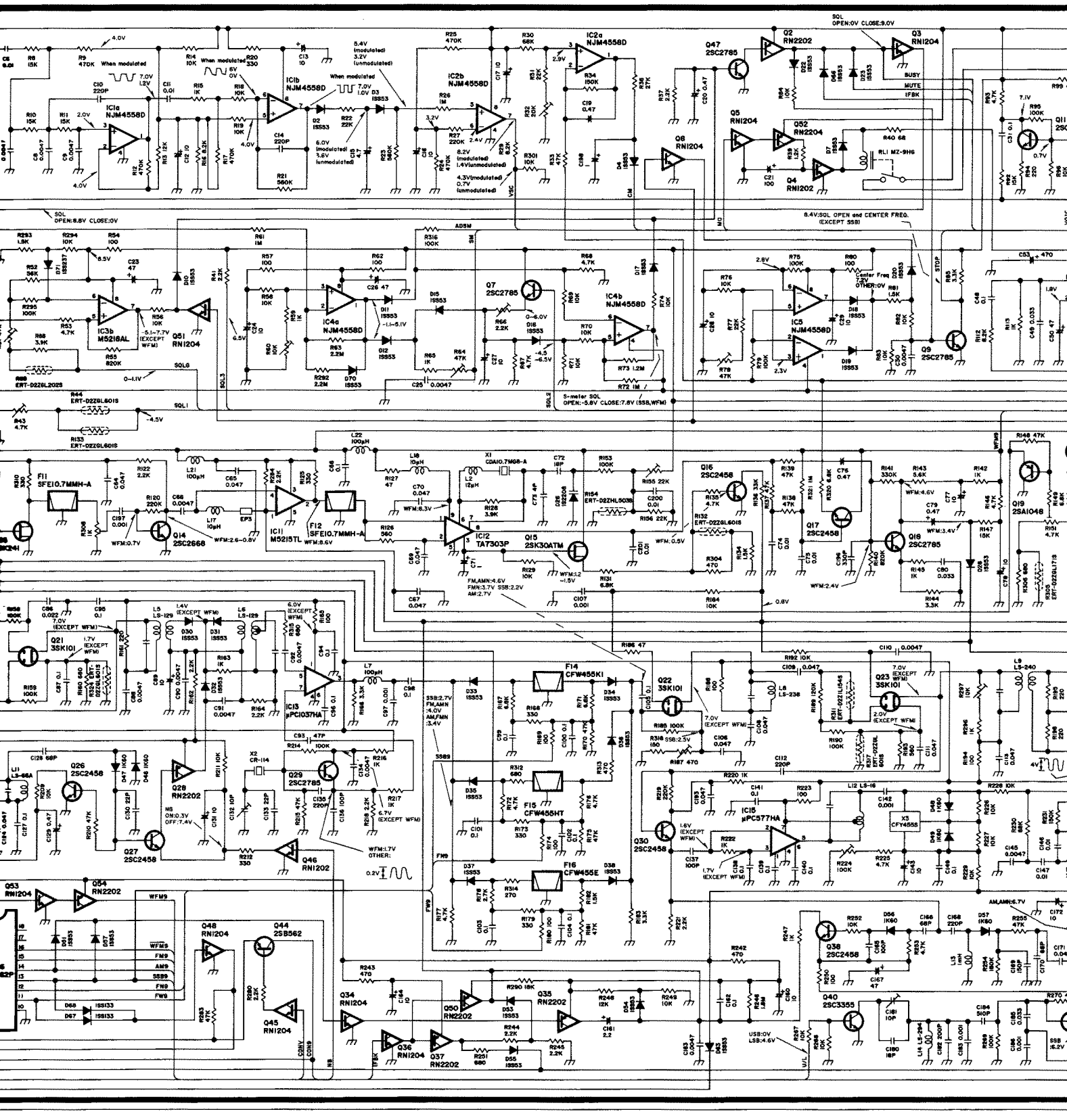

EXT IF (10.7MHz)
Q19 2SC2458
BUFF
MIX IC6 CB324MIB
MIX IC7 DM-251E
BUFF
Q8 2SC3355
F11 EZF-B7 76BT13
25-512MHz
L46,L47
512-1025MHz
778.7-1266.99999MHz
Q16,Q17 2SC3355x2
2nd LO AMP
AGC CONT Q19 2SA1048 Q20 2SK30ATM Q56 2SC2785
AGC DET Q15 2SK30ATM Q16 2SC2458
IF AMP
Q14 2SC2668
IF AMP
IC11 M52115TL
F12 SFE10.7M MH-A
230KHz
FM DETECTOR LIMITER IC12 TA7303P
X1 10.7MHz
AF AMP
Q18 2SC2785
WFM
Q41 2SC2785
Q42 2SC2785
BUFF
SSB DET D39-D42 1K60x4
AF AMP
Q24 2SC2785
SSB
F14 CFW455K1
3KHz
F15 CFW455HT
6KHz
F16 CFW455E
15KHz
IF AMP
Q18 3SK101
IF AMP
Q55 2SK241
F11 SFE10.7M MH-A
Q22,Q23 3SK101x2
Q30 2SC2458
BUFF
AM DET D57 1K60
Q39 2SC2785
AF AMP
AM
F13 FL-144
15KHz
Q21 3SK101
IF AMP
NB SW D30-Q32 1SS53x3
MIX IC13 μPC1037HA
NOISE AMP
IC14 μPC577HA
OSC Q29 2SC2785
X2 10.245MHz
IC15 μPC577HA
LIMITER
FM DET X3 CFY455S D48,D49 1K60x2
Q31,Q32 2SC2785x2
AF AMP
FM
AGC DET D56 1K60 Q38 2SC2458
CENT DET IC5 NJM4558D
CENT AMP IC2a NJM4558D
CM
DC AMP COMPARATOR IC4 NJM4558D
IC4a
IC4b
SQL CONT Q2 RN2202 Q3 RN1204 Q47 2SC2785
SCAN CONT Q9 2SC2785
STOP
LCD DISPLAY
REC OUT
AF CONT
IC8
IC8 M51131L
AF VOL
SQL VOL
SP
IC9 μPC1242H
AF POWER AMP
IC8
AF CONT
VSC CIRCUIT IC1 NJM4558D IC2b NJM4558D
AFG
ADSM
VSC
LCD DRIVER IC8,IC9 μPD7225x2
COMPARATOR
DC AMP
IC3b
IC3a
IC3 M5218AL
SQL VOL
NOISE DET IC17 NJM4558D D59,D60 1SS237x2
Q49 2SC2785
AF AMP
SQL SW Q1 2SK30ATM
CPU IC5 μPD78224GJ
REMOTE CONT
ANLOG SW IC21 TC4W53F
A/D CONV IC15 M84052
X1 9.8304MHz
CI-V CONT IC7 μPD4069 Q8 FMW1
CI-V
DATA BUS
D/A CONV RI02 RKM7LI04
RAM IC11 HM6264A
ADDRESS LATCH IC10 74HC373
REAL TIME CLOCK IC12 RP5C15
X2 32.768kHz
I/O EXPAND IC4 TMP82C55
KEY MATRIX
S METER
ADDRESS BUS
SENSOR IC1~IC3 IC16~IC20 μPD4030 TC4S71F x3 TC4S01F x4 Q1 DTC144EU
OPTION (VOICE SYNTHESIZER)
MAIN DIAL
CLOCK BACKUP
RAM BACKUP
BT1
BT2

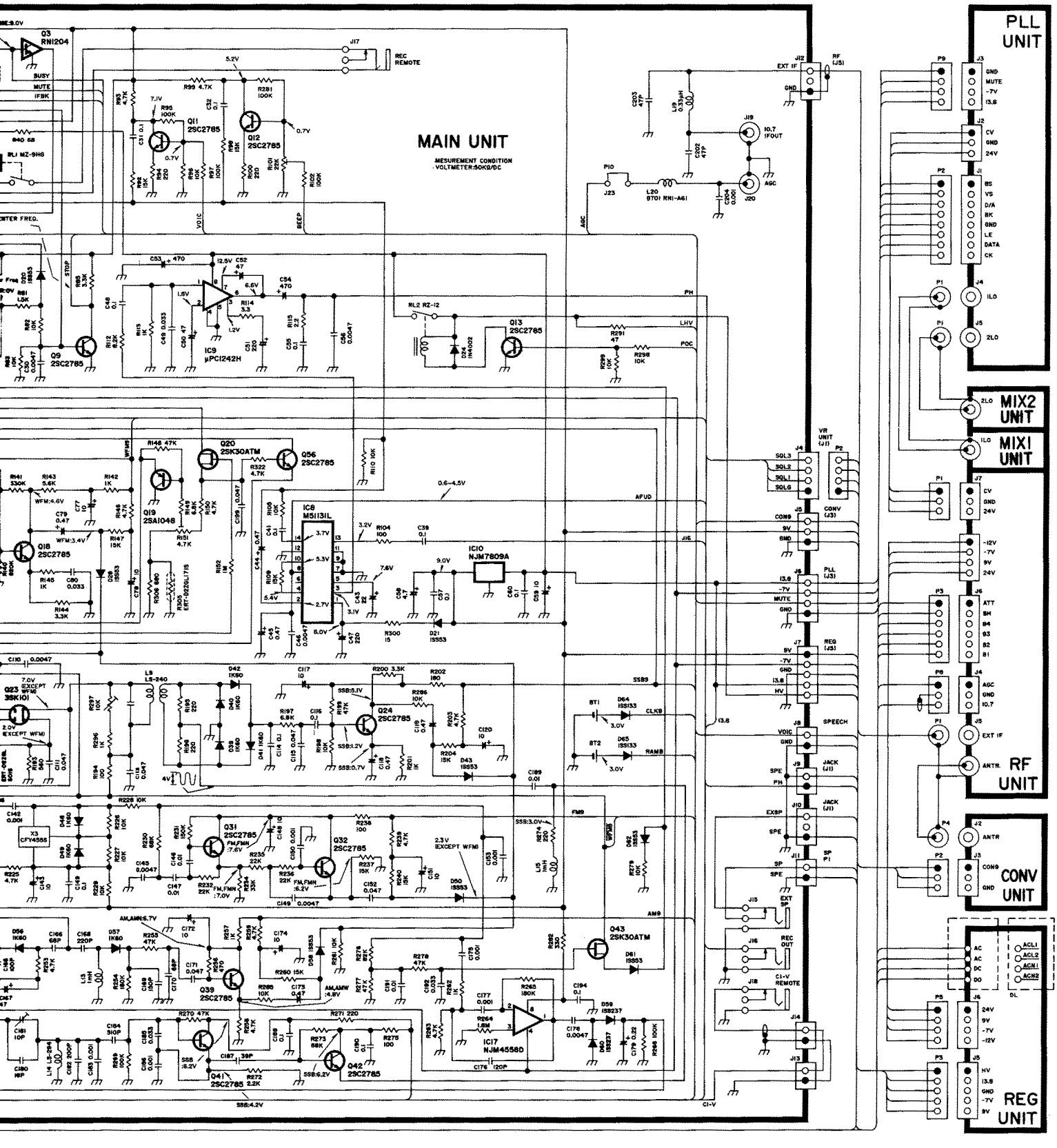
SECTION 9 VOLTAGE DIAGRAM

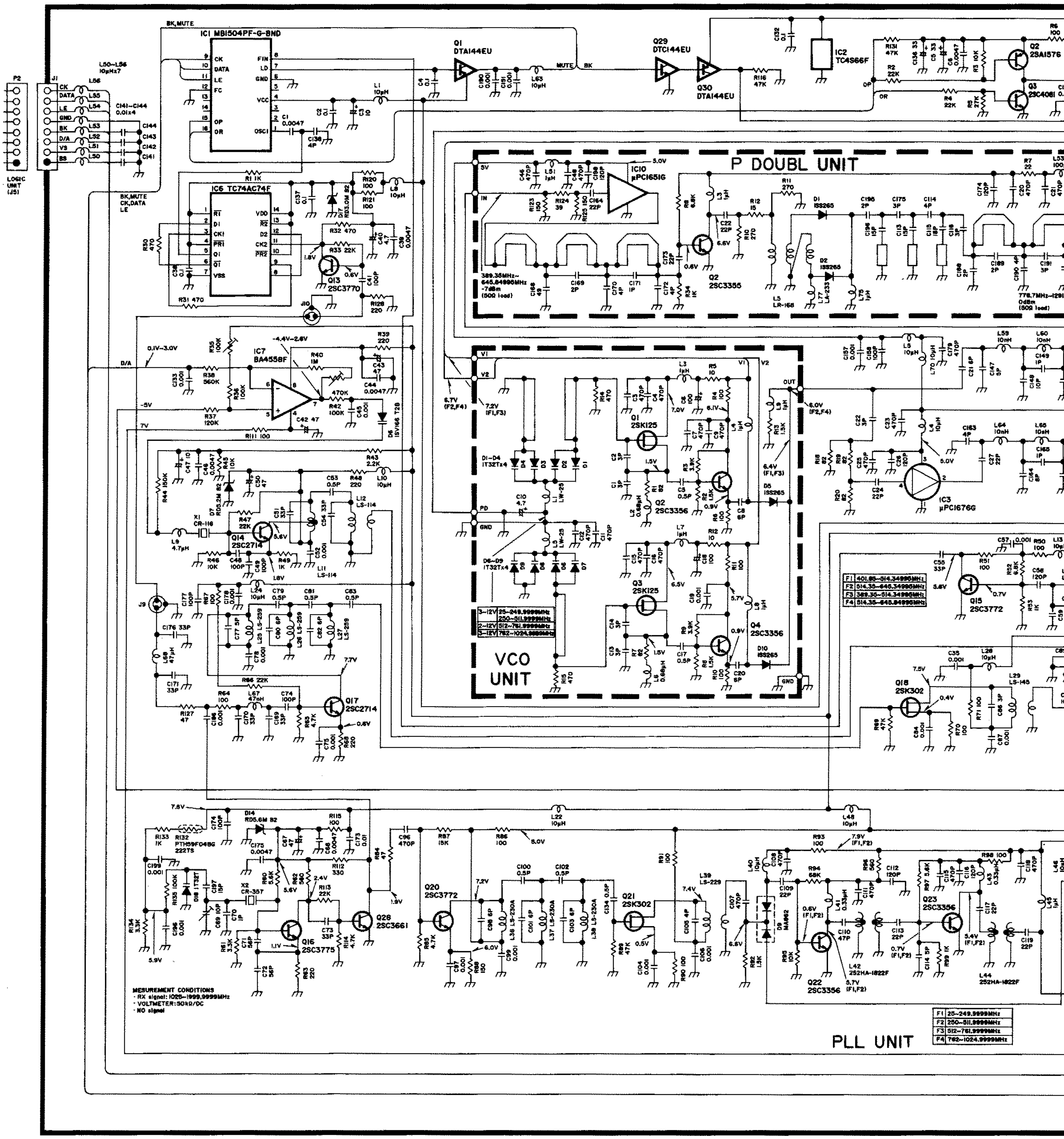



IC8
μPD7225GB8-3B7
IC9
μPD7225GB-3B7
IC5
μPD782124GJ-546-5B6
IC14
μPD4094BG
IC6
TC74HCU04AF
IC22
TC7SU04F
IC7
μPD4069UBG
IC13
S-8054ALB-LM
IC23
TA78L05F
IC10
MC74HC373F
Q1
2SB909M
Q2
2SB909M
Q3
2SC4081
Q4
DTC144EU
Q5
DTC144EU
Q6
2SC4081
Q8
FMW1
Q14
FMG4
Q15
DTC144EU
Q16
DTC144EU
DSI LD-BUS24JZ
DIMMER
ON:12.5V
OFF:10.5V
DIMMER
ON:10V
OFF:7.6V
DIMMER
ON:7.7V
OFF:10V
DIMMER
ON:12.5V
OFF:12.0V
13.0V
5.5V
0.7μsec
67.3msec
64msec
5Vline
5.0V
0V
2.4V
4.3V
87.5nsec
87.53nsec
3msec.
BUSY
CI-V BAUD

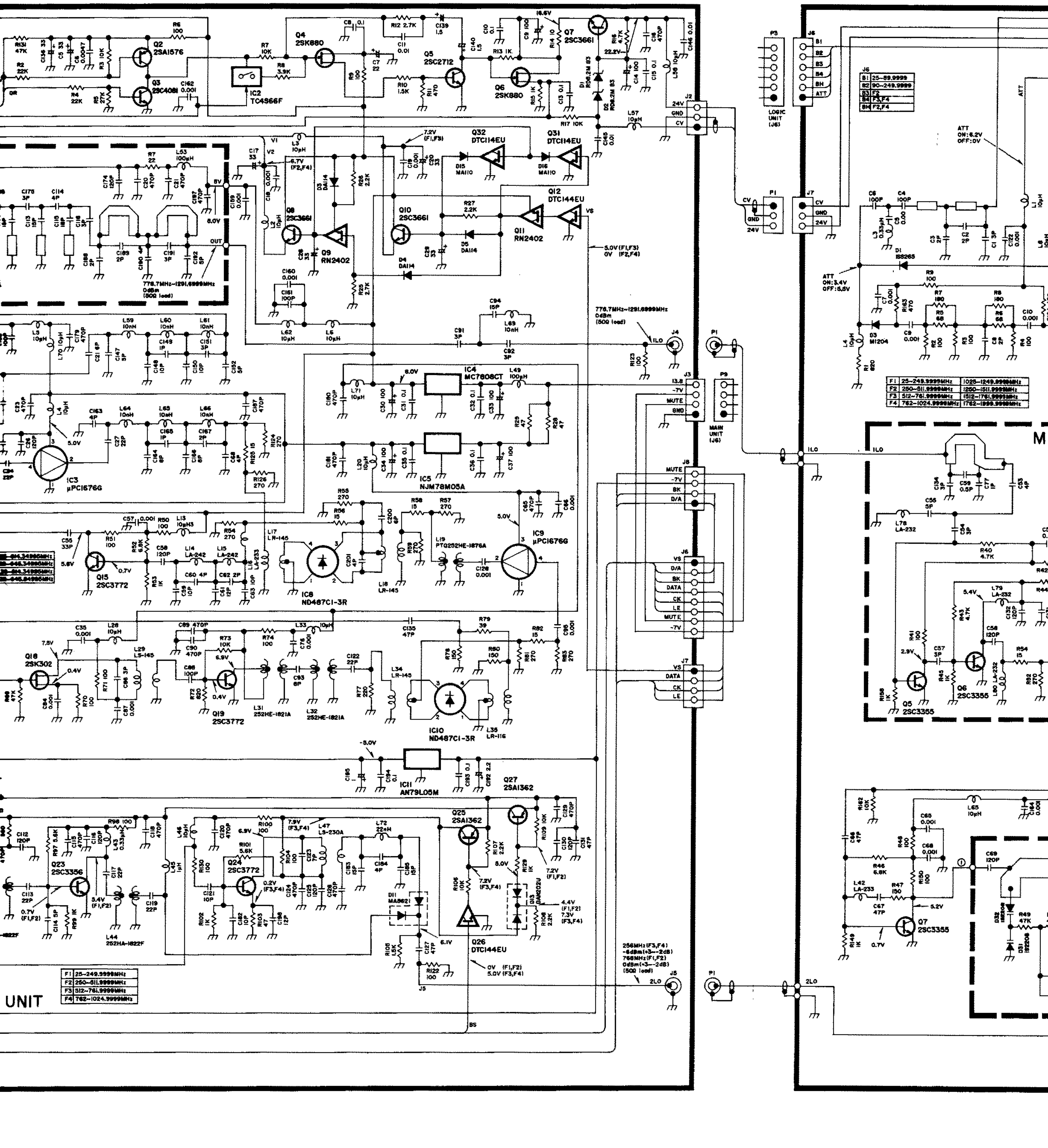

LOGIC UNIT
MESUREMENT CONDITION
VOLTMETER:50kΩ/DC
SPEECH
PLL (J1)
RF (J6)
MAIN (J2)
MAIN (J3)
MAIN (J2)
MAIN (J3)
IC12 RP5C15
IC11 HM6264ALFP-15L
Q10 DTC144EU
Q11 2SA1576
Q12 DTC144EU
Q13 2SA1576
IC22 TC7SU04F
Q7 2SC4081
D15 DA114
Q15 DTC144EU
Q5 DTC144EU
POWER ON:5.0V OFF:2.7V
POWER ON:5.0V OFF:2.8V
30.7μsec.
5.3V
3V
RX FREQ 150MHz SSG -34dBμ
Q49 2SC2785
Q1 2SK30ATM
IC3a M52168AL
Q6 RN1204
Q57 RN1202
Q55 2SK241
IC14 μPC577HA
Q25 2SA1048
Q33 RN1204
Q53 RN1204
IC16 M54562P
F11 SFE10.7MMH-A
Q21 3SK101
D25 1SS53
D29 1SS53
D1 1SS53
D8 1SS53
D9 1SS53
D71 1SS237
D44 1SS133
D45 1SS53
D61 1SS53
D68
D67
WFM:4.0V OTHER:3.4V
WFM:5.0V
SQL OPEN:8.6V
4.1V (EXCEPT WFM)
1.8V (EXCEPT WFM)
7.0V (EXCEPT WFM)
BUSY
STOP
AFUD
RAMB
LHV
CLKB
C1-V
AI5
WFM
GND

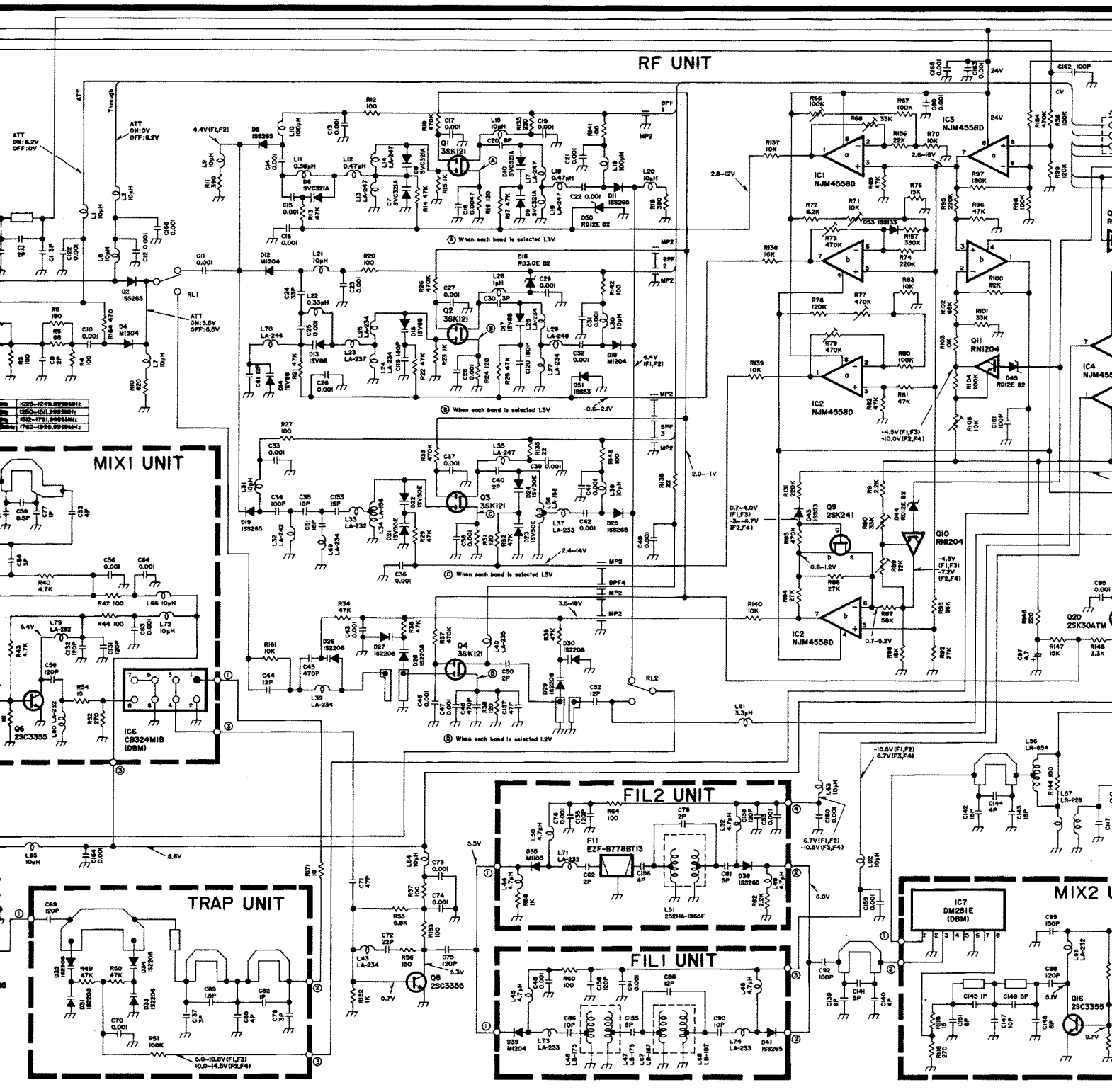


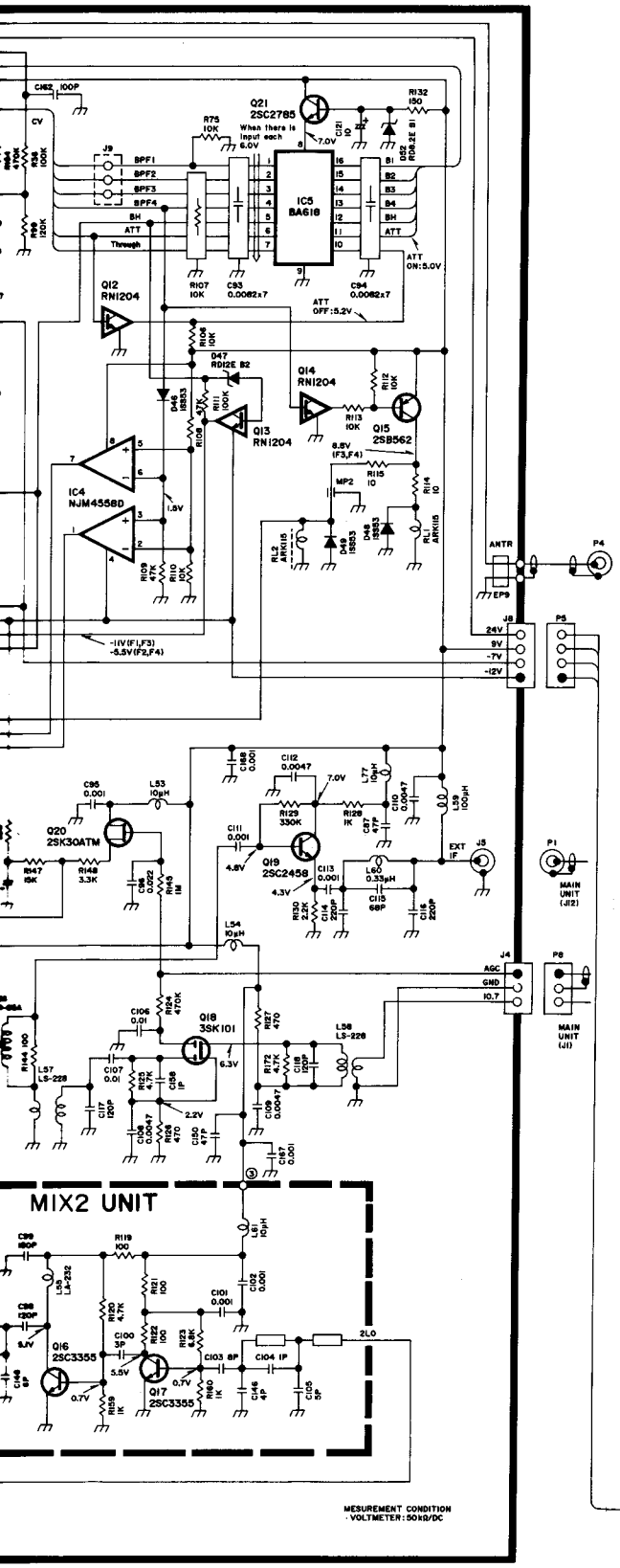

MAIN UNIT
MESUREMENT CONDITION
VOLTMETER:50KΩ/DC
PLL UNIT
MIX2 UNIT
MIX1 UNIT
RF UNIT
CONV UNIT
REG UNIT
VR UNIT (J1)
REC REMOTE
Q11 2SC2785
Q12 2SC2785
Q13 2SC2785
Q9 2SC2785
IC9 μPC1242H
Q20 2SK30ATM
Q56 2SC2785
Q19 2SA1048
Q18 2SC2785
IC8 M51131L
IC10 NJM7809A
Q24 2SC2785
Q31 2SC2785
Q32 2SC2785
Q39 2SC2785
Q41 2SC2785
Q42 2SC2785
Q43 2SK30ATM
IC17 NJM4558D
Q23 3SK101
X3 CFV455S
L9 LS-240
L13 1mH
L14 LS-294
L20 8T01 RNI-A61
L19 0.33μH
L15 1mH
D64 1SS133
D65 1SS133
D21 1SS53
D50 1SS53
D61 1SS53
D59 1SS237
D60 1SS237
D62 1SS237
D63 1SS53
D56 1N60
D57 1N60
D58 1SS53
D42 1K60
D40 1K60
D39 1K60
D41 1N60
D46 1N60
D48 1N60
D49 1N60
J12 RF (J51)
J19 10.7 IFOUT
J20 AGC
J23
P10
J3 GND MUTE -7V 13.8
J2 CV GND 24V
J1 BS VS D/A BK GND LE DATA CK
J4 ILO
J5 2LO
J4 SQL3 SQL2 SQL1 SQL0
J5 CONV (J3)
J6 PLL (J3)
J7 REG (J51)
J8 SPEECH
J9 JACK (J1)
J10 JACK (J1)
J11 SP P1
J15 EXT SP
J16 REC OUT
J18 CI-V REMOTE
J14
J13
J7 CV GND 24V
J6 -12V -7V 9V 24V
J6 ATT BH B4 B3 B2 B1
J4 AGC GND 10.7
J5 EXT IF
J5 ANTR.
J2 ANTR
J3 CONV GND
J5 AC AC DC DO
J6 24V 9V -7V -12V
J5 HV 13.8 GND -7V 9V
ACL1 ACL2 ACN1 ACN2
DL
CI-V
BUSY
MUTE
IFBK
STOP
BEEP
VOIC
AFUD
AGC
PH
LHV
POC
SSB9
FM9
AM9
CLK9
RAMB
SPE
EXSP
SP
EXT IF
ANTR.
13.8
0.6~4.5V
SSB:5.1V
SSB:1.2V
SSB:0.7V
SSB:6.2V
SSB:4.2V
FM,FMN :6.2V
FM,FMN :7.0V
AM,AMN:6.7V
AM,AMN :4.8V
2.3V (EXCEPT WFM)
7.0V (EXCEPT WFM)
WFM:4.6V
WFM:3.4V
SSB:3.0V
RL1 MZ-9HG
RL2 RZ-12

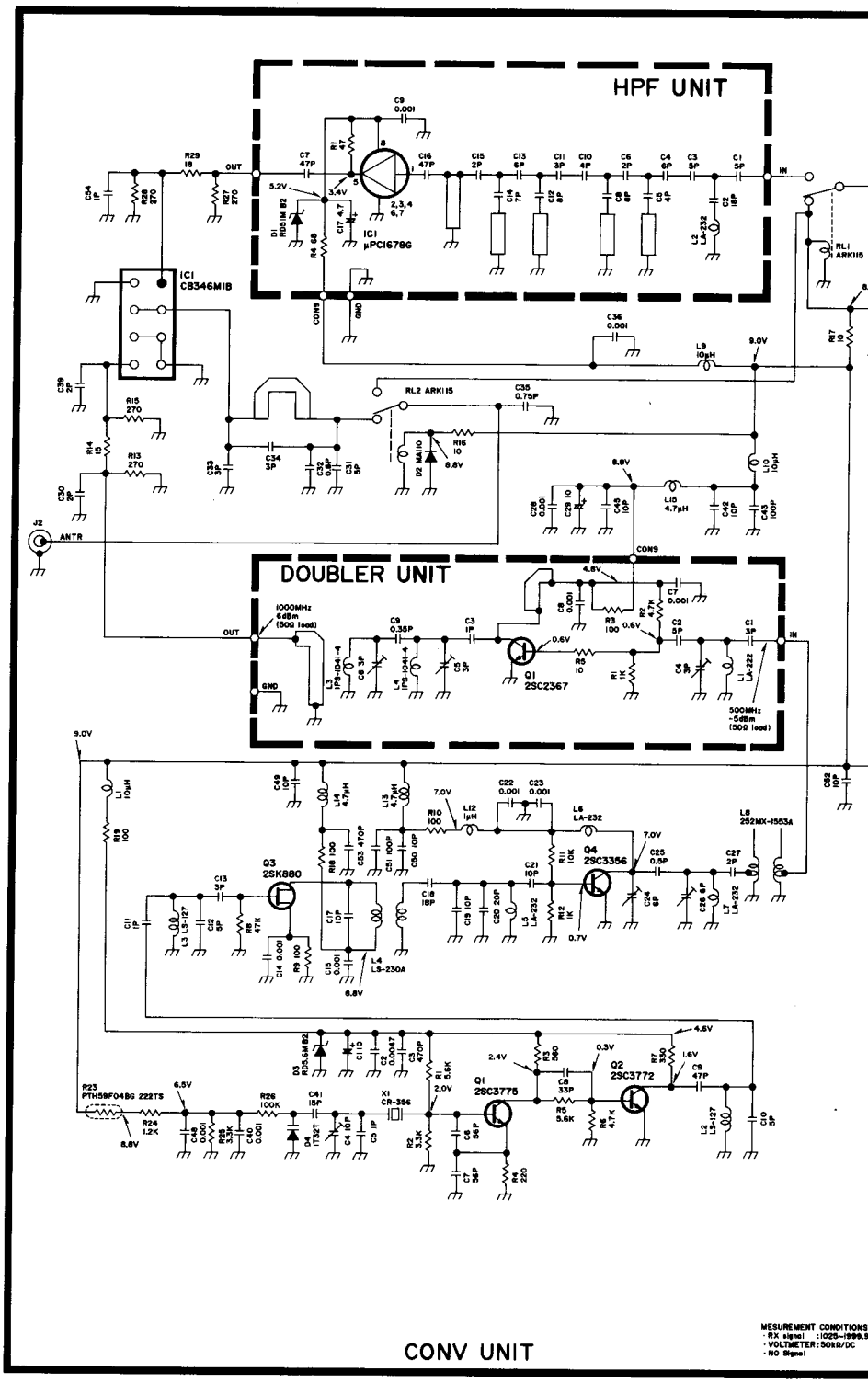


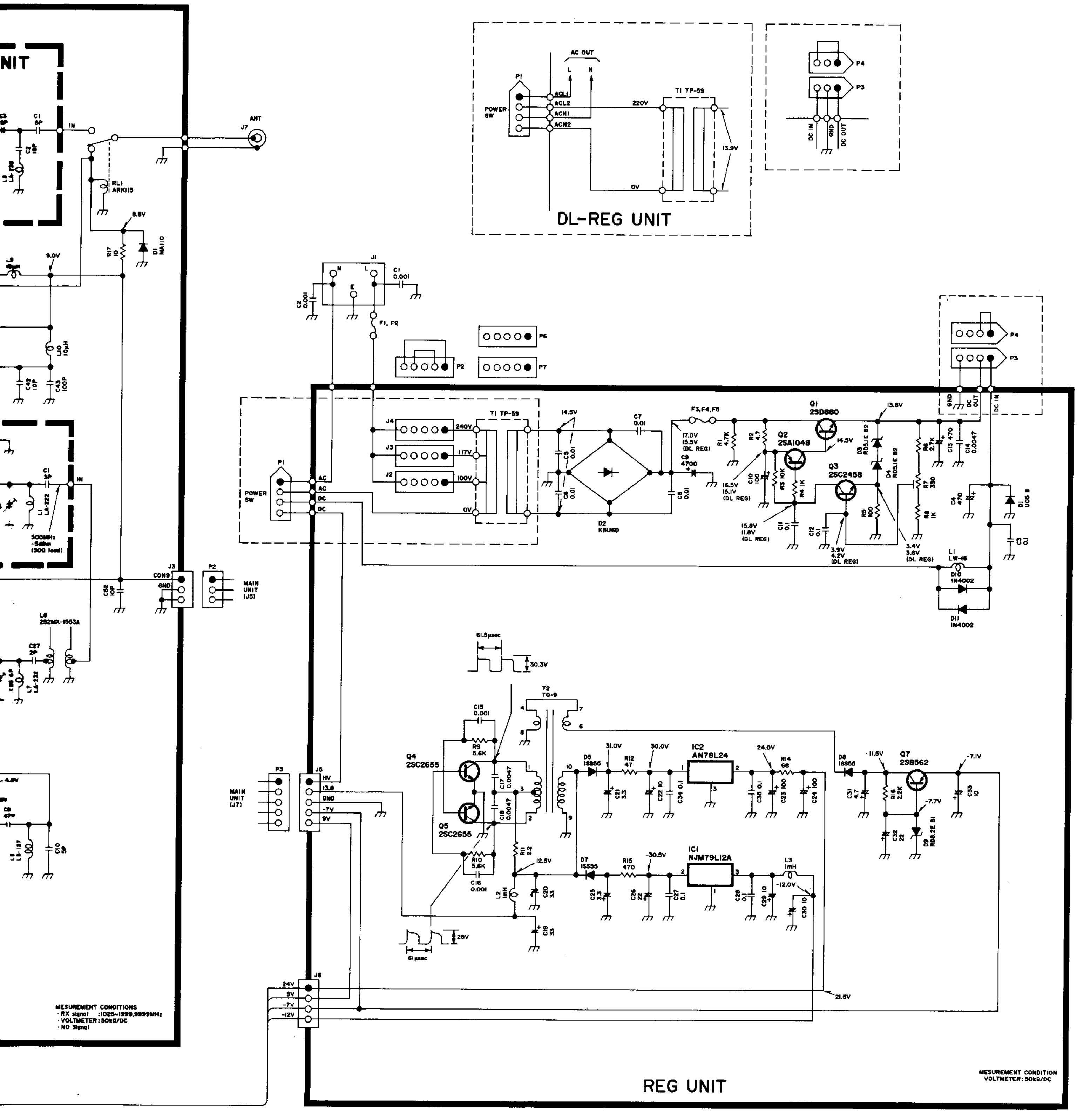
IC1 MB1504PF-G-BND
IC6 TC74AC74F
IC7 BA4558F
IC2 TC4S66F
Q1 DTA144EU
Q29 DTC144EU
Q30 DTA144EU
Q2 2SA1576
Q3 2SC4081
LOGIC UNIT (J5)
L50~L56 10µHx7
C141~C144 0.01x4
BK,MUTE
CK,DATA
LE
P DOUBL UNIT
IC10 µPC1651G
IC3 µPC1676G
389.35MHz~645.84995MHz -7dBm (50Ω load)
VCO UNIT
D1~D4 1T32Tx4
D6~D9 1T32Tx4
3~12V 25~249.9999MHz
3~12V 250~511.9999MHz
2~12V 512~761.9999MHz
3~12V 762~1024.9999MHz
F1 401.85~514.34995MHz
F2 514.35~645.34995MHz
F3 389.35~514.34995MHz
F4 514.35~645.84995MHz
PLL UNIT
F1 25~249.9999MHz
F2 250~511.9999MHz
F3 512~761.9999MHz
F4 762~1024.9999MHz
MESUREMENT CONDITIONS
· RX signal: 1025~1999.9999MHz
· VOLTMETER: 50kΩ/DC
· NO signal


UNIT
LOGIC UNIT (J6)
MAIN UNIT (J6)
B1 25–89.9999
B2 90–249.9999
B3 F2
B4 F3,F4
BH F2,F4
F1 25–249.9999MHz
F2 250–511.9999MHz
F3 512–761.9999MHz
F4 762–1024.9999MHz
ATT ON:6.2V OFF:0V
ATT ON:3.4V OFF:5.5V
776.7MHz–1291.6999MHz 0dBm (50Ω load)
IC3 µPC1676G
IC4 MC7808CT
IC5 NJM78M05A
IC8 ND487C1-3R
IC9 µPC1676G
IC10 ND487C1-3R
IC11 AN79L05M
IC2 TC4S66F


RF UNIT
MIX1 UNIT
TRAP UNIT
FIL2 UNIT
FIL1 UNIT
MIX2 U
IC1 NJM4558D
IC2 NJM4558D
IC3 NJM4558D
IC4 NJM455
IC6 CB324M1B (DBM)
IC7 DM251E (DBM)
Q1 3SK121
Q2 3SK121
Q3 3SK121
Q4 3SK121
Q6 2SC3355
Q8 2SC3355
Q9 2SK241
Q10 RN1204
Q11 RN1204
Q16 2SC3355
Q20 2SK30ATM
F11 EZF-B7788T13
L51 252HA-1965F
ATT
Through
RL1
RL2
BPF 1
BPF 2
BPF 3
BPF4
MP2
24V
5V
2.6~12V
2.0~11V
2.4~14V
3.8~18V
5.4V
5.5V
6.0V
5.3V
0.7V
8.6V
-10.5V(F1,F2) 6.7V(F3,F4)
-4.5V(F1,F3) -10.0V(F2,F4)
-4.3V (F1,F3) -7.2V (F2,F4)
0.7~4.0V (F1,F3) -3.~-4.7V (F2,F4)
0.8~1.2V
0.7~5.2V
-0.6~2.1V
5.0~10.0V(F1,F3) 10.0~14.0V(F2,F4)
4.4V(F1,F2)
Ⓐ When each band is selected 1.3V
Ⓑ When each band is selected 1.3V
Ⓒ When each band is selected 1.5V
Ⓓ When each band is selected 1.2V


MIX2 UNIT
MESUREMENT CONDITION
· VOLTMETER : 50kΩ/DC


HPF UNIT
DOUBLER UNIT
CONV UNIT
MESUREMENT CONDITIONS
· RX signal : 1025~1999.9
· VOLTMETER : 50kΩ/DC
· NO Signal



DL-REG UNIT
AC OUT
POWER SW
T1 TP-59
220V
0V
13.9V
DC IN
GND
DC OUT
P1
P3
P4
ANT
J7
RL1 ARK115
REG UNIT
J1
F1, F2
P2
P6
P7
J2
J3
J4
240V
117V
100V
D2 KBU6D
C9 4700
F3,F4,F5
Q1 2SD880
Q2 2SA1048
Q3 2SC2458
L1 LW-16
D10 1N4002
D11 1N4002
T2 T0-9
Q4 2SC2655
Q5 2SC2655
IC2 AN78L24
IC1 NJM79L12A
Q7 2SB562
MAIN UNIT (J7)
MAIN UNIT (J5)
J5
J6
HV
13.8
GND
-7V
9V
24V
-12V
MESUREMENT CONDITIONS
· RX signal :1020~1999.9999MHz
· VOLTMETER: 50kΩ/DC
· NO Signal
MESUREMENT CONDITION
VOLTMETER: 50kΩ/DC

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