

GM-110DSC

DSC TERMINAL UNIT

INTRODUCTION

This service manual describes the latest service information for the **GM-110DSC DSC TERMINAL UNIT** at the time of publication.

	VERSION.	VERSION.
GM-110DSC	U.S.A.	USA
	Europe	EUR

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

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>

1130007700 S.IC BU4094BCF GM-110DSC PLL UNIT 5 pieces
8810009030 Screw OH M3 x 8 ZK GM-110DSC Top cover 10 pieces

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

DANGER

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

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

DO NOT reverse the polarities of the power supply when connecting the receiver.

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

REPAIR NOTES

1. Make sure a problem is internal before disassembling the terminal unit.
2. **DO NOT** open the terminal unit until the terminal unit is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the terminal unit is defective.
6. **READ** the instructions of test equipment thoroughly before connecting equipment to the terminal unit.

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SECTION 1 SPECIFICATIONS

■ GENERAL

- Antenna impedance : 50 Ω (SO-239)
- Frequency stability : ± 10 Hz (measured on detected audio frequency)
- Number of memory channels :
 - Command memory 9 channels
 - Frequency memory 35 channels
 - Address ID memory 100 channels
- Power supply requirement :
 - U.S.A. version : 13.6 V DC (negative ground)
 - Europe version : 13.6 V DC (floating ground)
- Current drain (at 13.6 V DC) :
 - Receive audio max. 1.5 A
 - Receive standby 1 A
 - At power ON 3 A (max.)
- Usable temperature range : -15°C to $+60^{\circ}\text{C}$
 $+5^{\circ}\text{F}$ to $+140^{\circ}\text{F}$
- Dimensions (projections not included) : 150(W) \times 49.5(H) \times 180(D) mm;
 $5^{29}/32$ (W) \times $1^{15}/16$ (H) \times $7^{3}/32$ (D) inch
- Weight :
 - Terminal unit 1.6 kg (3.5 lb)
 - DC-DC converter 1.0 kg (Europe version only)

■ RECEIVER

- Receive system : Single conversion superheterodyne
- Intermediate frequency : 9.0106 MHz
- Sensitivity (typical) : 0.5 μV for symbol error rate $\leq 10^{10^{-2}}$
- Selectivity : Less than ± 500 Hz/ -40 dB
- Spurious response : More than 70 dB
- Intermodulation rejection : More than 70 dB
- Audio output power (at 13.6 V DC) : More than 1.5W at 10 % distortion with an 8 Ω load
- External speaker connector : 2-conductor 6.35 mm ($1/4$ ") / 8 Ω

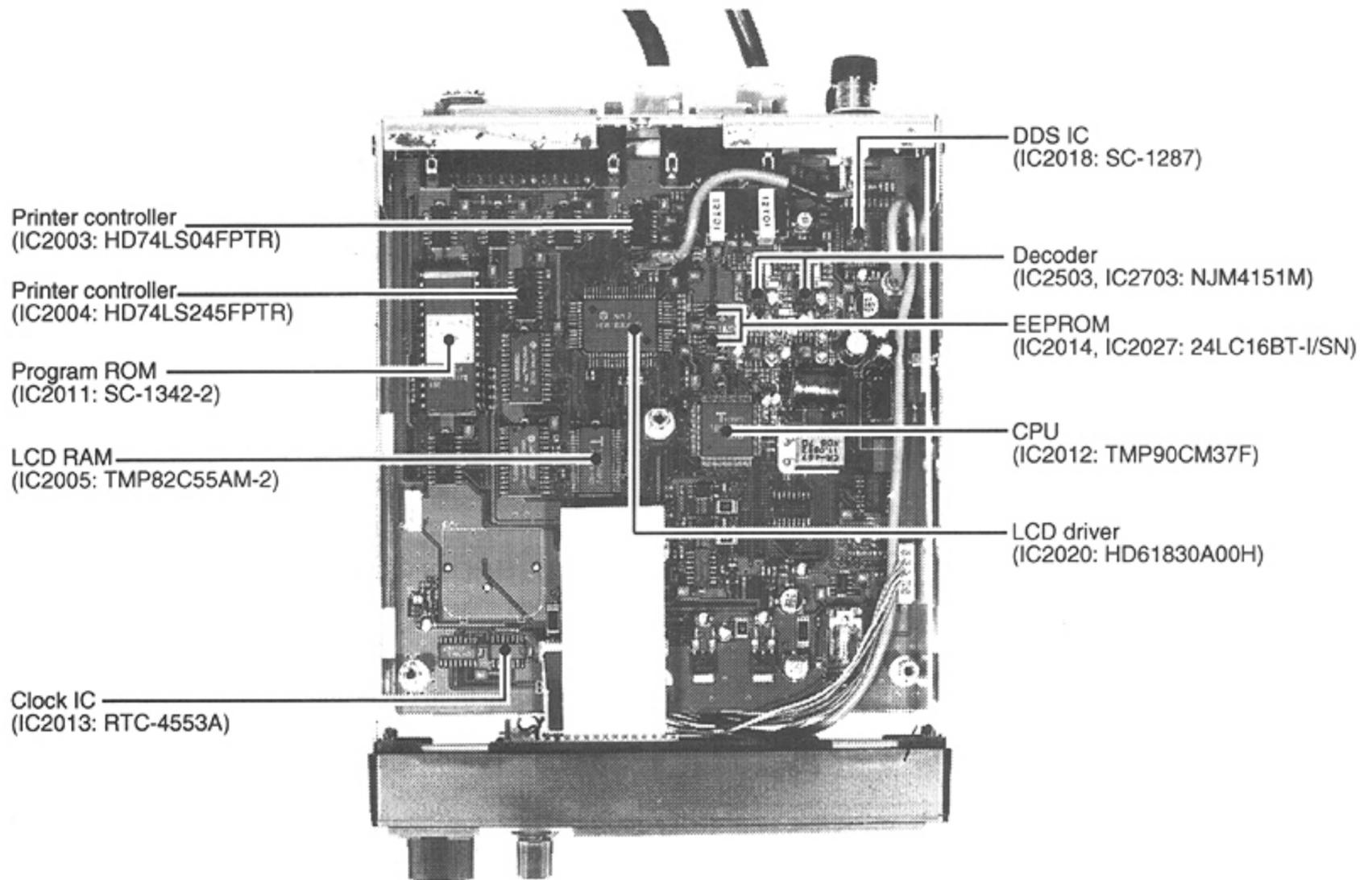
■ EXTERNAL CONNECTION

- NMEA connector : BNC (NMEA 0183 ver 1.5 or 2.0; command GGA or GLL is acceptable)
- Printer socket : D-sub 25 (IBM[®] centronics or compatible system)
- External distress switch box : RC-18 (attached)

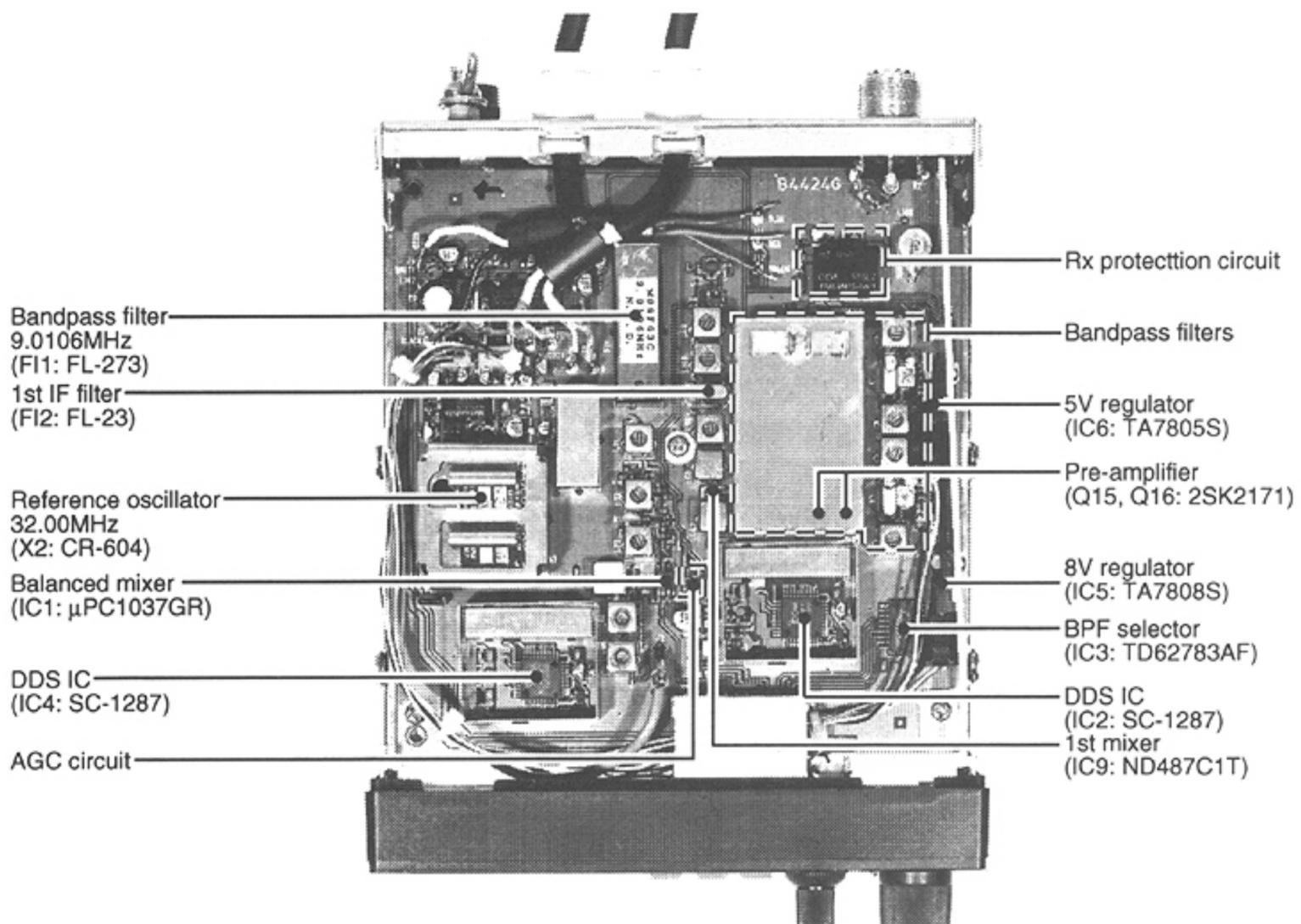
All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

• LOGIC UNITS



• MAIN UNITS



SECTION 3 CIRCUIT DESCRIPTION

3-1 RECEIVER CIRCUITS

3-1-1 RF PROTECTION CIRCUIT (MAIN UNIT)

The RF protection circuit protects RF circuits when very strong RF signals are received.

A portion of the RF signals from the antenna connector are detected at D13 via C72 and C73. The detected RF signals are converted to DC voltage by R3 and C74, and then applied to Q1 to control the RF switch (RL1) via Q2.

3-1-2 BANDPASS FILTER AND RF CIRCUITS (MAIN UNIT)

The RF signals from the RF protection circuit are applied to one of 3 bandpass filters, depending on the receive frequencies, via the switching diodes (D1, D3). The filtered signals are passed through the switching diodes (D2, D4) and then applied to the RF amplifier circuit (Q15, Q16).

The RF amplifier circuit amplifies the filtered signals from the switching diodes (D2, D4), and are then applied to the 1st mixer circuit (IC9). The RF amplifier circuit uses low-noise junction FETs (Q15, Q16) to provide 10 dB gain.

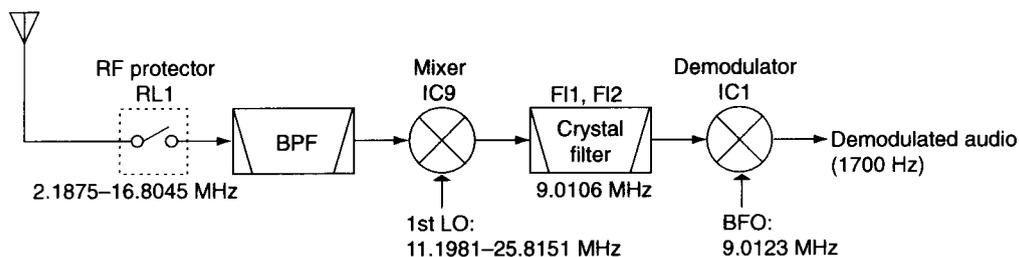
Bandpass filters correspond to the BPF switching voltage (B1-B3) based on the CPU via the filter selector (IC3).

• BANDPASS FILTERS USED

Frequency	Control signal	Entrance coil
2.1875 MHz 4.2075 MHz 6.3120 MHz	B1	L3
8.4145 MHz	B2	L52
12.5577 MHz 16.8045 MHz	B3	L13

The bandpass filter for 8.4145 MHz also consists of a notch filter circuit (X1, X3, R134, R136, C212, C217). The notch filter circuit suppresses the 9.0106 MHz 1st LO signal to improve the IF image rejection ratio.

• RECEIVER FREQUENCY CONSTRUCTION



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

The mixer circuit converts the received signals to a fixed frequency, 9.0106 MHz 1st IF signal, with a 1st LO frequency. By changing the 1st LO frequency, only the desired frequency will be picked up at the crystal filters (FI2) at the next stage.

The IF signal from FI2 is amplified at the IF amplifier (Q3). The signal is again applied and then passed through to the other filter (FI1) and then amplified at Q4.

These IF amplifiers provide up to 20 dB gain at each stage. AGC voltage is applied to these amplifiers to improve saturation characteristics.

The signal is again amplified at Q5 to the level needed at the demodulator circuit and then applied to the buffer amplifier (Q6). The amplified signal is applied to the demodulator circuit (IC1).

3-1-4 DEMODULATOR CIRCUIT (MAIN UNIT)

This circuit mixes the IF and BFO signals to pick up the AF components.

The IF signal from Q6 is applied to the balanced mixer (IC1, pin 6). The 9.0123 MHz BFO signal comes from the DDS circuit (IC4). The demodulated signals are output from pin 3 and are then applied to the amplifiers (LOGIC unit IC-501, IC-502) via the analog switch (LOGIC unit, IC-25). The amplified signal is applied to the F/V converter (IC-503), then converted to DC voltage (3 V at 1615 Hz and 5 V at 1785 Hz).

The converted voltage is amplified at IC-504, fed to the C-MOS level (Q501, Q502), and then the waveform is corrected at IC-35. The signal is finally inverted by IC-36 and applied to the CPU.

3-1-5 AF POWER AMPLIFIER CIRCUIT (LOGIC UNIT)

The alarm or beep tone signals are passed through the AF volume control (VR board, R1) then applied to the AF power amplifier (IC2, pin 1) via the AF drive amplifier (Q5).

The amplified signals are output from pin 6 and are applied to the internal speaker and external speaker jack.

The AF amplifier circuit also amplifies demodulated audio signals when a unit is set to adjustment mode.

3-1-6 AGC CIRCUIT (MAIN UNIT)

The AGC (automatic gain control) circuit reduces IF amplifier gain to prevent the receiver from distorting.

A portion of the IF signal from Q6 is rectified at D16 and C99. The rectified signal is amplified at the DC amplifier (Q7) and then applied to the IF amplifiers (Q3, Q4).

When a strong signal is received, the rectified voltage increases and the voltage of the AGC line is decreased by Q7 via the -5 V voltage line. The AGC line is used for the bias voltage of the IF amplifiers (Q3, Q4), so that these amplifiers reduce the gain.

3-1-7 REFERENCE OSCILLATOR CIRCUIT (MAIN UNIT)

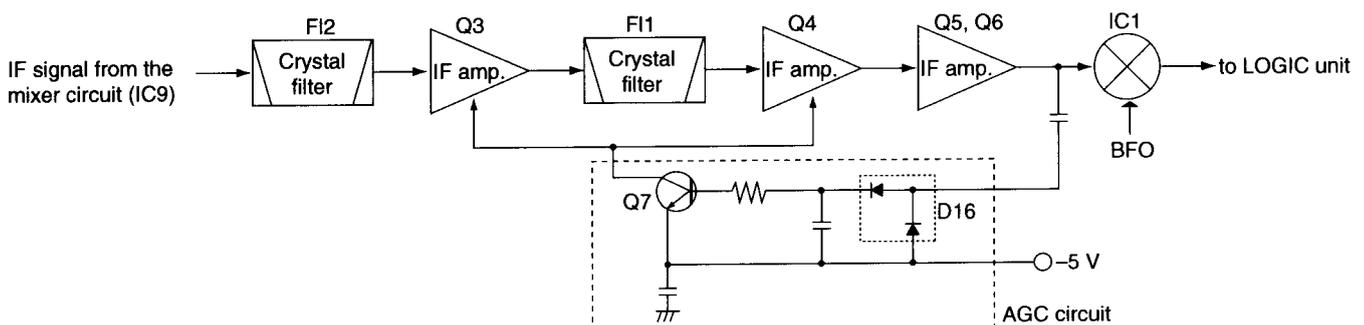
The reference oscillator circuit consists of X2, Q23, IC15A and an oscillating 32.00 MHz signal. The oscillating signal is doubled to a 64.00 MHz signal at the multiply circuit (Q10, L84, L85), and is then applied to buffer amplifiers (IC12, IC13, LOGIC unit IC11). Then the amplified signal is applied to each DDS circuit as system clock signals.

3-1-8 1ST LO AND BFO CIRCUITS (MAIN UNIT)

The 1st LO and BFO (beat frequency oscillator) signals are oscillated at different DDS circuits.

The 1st LO signal is oscillated at the DDS circuits (IC2). The DDS circuit generates a 9.0106 MHz higher frequency than the wanted RF signal from a clock signal and frequency data. The generated digital sine-wave signal is converted to an analog sine-wave at the D/A converter (R33–R52), and then applied to the low-pass filter (L76, L77, C112–C116) to suppress any unwanted higher signals. The filtered signal is amplified at the LO amplifiers (Q8, Q17) and is then applied to the mixer circuit (IC9).

• AGC CIRCUIT



The BFO signal is oscillated at another one of the DDS circuits (IC4). This DDS circuit oscillates a 9.0123 MHz signal. The BFO signal is passed through the low-pass filter (L89, L90, C146–C150), and then applied to the demodulator circuit (IC1).

3-1-9 DECODER FUNCTION FOR EXTERNAL INPUT (LOGIC UNIT)

Demodulated signals from another receiver or transceiver are passed through the analog switch (IC25) via J7 (DAF + line) and are then applied to the decoder circuit (IC701, IC702, IC703, IC704). The applied signals are converted to digital signals (1/0) then applied to the CPU (IC12, pin 77) via the trigger circuit (IC31, pins 2, 4).

3-2 DC-DC CONVERTER CIRCUIT (REG UNIT; Europe version only)

The GM-110 DSC Europe version employs a floating ground system which is not connected between the unit's ground and the negative terminal of the power supply.

The 13.6 V DC from the DC power connector passes through the noise filter (L7001, C7001–C7005) and is then applied to the switching transformer (T7001). The MOS-FETs (Q7001, Q7002) are turned ON and OFF by D7003 and Q7003, respectively.

IC7001 is a switching control IC which contains a 5 V reference voltage regulator (pin 12, 14), two error amplifiers (pins 1, 2, 3, 15, 16), a saw tooth oscillator (pins 4, 5, 6) and a comparator. The switching frequency is determined by R7008 and C7007 and is set at 25 kHz.

AC voltages appear on the secondary terminal of T7001 and are rectified by D7002. The rectified DC voltages are passed through the noise filter (L7003, C7009, C7010) and are then applied to the MAIN unit as a 13.6 V DC voltage line.

3-3 POWER SUPPLY CIRCUITS

Line	Description
13.6 V	The voltage from the external power supply through the relay (RL2).
8 V	Common 8 V converted from the 13.6 V line at the 8 V regulator circuits (MAIN unit; IC5, LOGIC unit; IC15).
5 V	Common 5 V converted from the 13.6 V line at the 5 V regulator circuits (MAIN unit; IC6, LOGIC unit; IC16).
-5 V	Common -5 V converted from the 13.6 V line at the -5 V DC-DC converter circuit (IC7, D20). The voltage supplies the AGC and analog switch circuits, etc.

3-4 PORT ALLOCATIONS

3-4-1 CPU (LOGIC UNIT, IC12)

Pin number	Port name	Description
1	SCLB	Outputs clock signal for the EEPROM (IC27).
7	P60	Input port for the [8] key. Low: When [8] is pushed.
8	P61	Input port for the [9] key. Low: When [9] is pushed.
9	P62	Input port for the [CLR] key. Low: When [CLR] is pushed.
10	P63	Input port for the [ENT] key. Low: When [ENT] is pushed.
11	P64	Input port for the [CALL] key. Low: When [CALL] is pushed.
12	P65	Input port for the [TEST] key. Low: When [CTL OFF] is pushed.
13	P66	Input port for the [EMER] key. Low: When [EMERGENCY] is pushed.
16	NMEA12	Input port for NMEA data from the connected transceiver via the trigger circuit (IC28, IC17b).
17	NMEAO	Output port for NMEA data to the connected transceiver.

CPU (LOGIC UNIT, IC12)

Pin number	Port name	Description
18	NMEA11 /CL1	Input port for: NMEA data from the connected navigation system. Cloning data during cloning mode.
19	STB	Outputs strobe signals for DDS circuits.
20	CLO	Output port for clone data.
27	SOUT	Input port for serial data.
28	CLK	Outputs serial clock signal.
29	DATA	Outputs serial data.
30	RES	Outputs reset signal.
31	RDAT	Input port for decoded DSC signals from the decoder circuit (IC22).
32	UP	Input pulse signals from the [DIAL] (DISP unit, S1).
52	FSK0	Output port for DSC encode data. High: 1615 Hz Low: 1785 Hz
53	FSK1	Outputs control signal for DSC encode data. High: Inhibits output.
58	LRS	Outputs register select signal for the LCD controller (IC19). High: instruction register is selected. Low: data register is selected.
62	SDA	Data bus line for the EEPROM (IC14).
64-71	DB0-DB7	Data bus line for the LCD controller (IC20).
72	SDAB	Data bus line for the EEPROM (IC27).
73	EXSTB	Outputs strobe signals for output expander IC (IC26).
74	TONE	Output port for beep audio signals.
76	SECK	Input pulse signals from the [DIAL] (DISP unit, S1).
77	DDAT	Input port for the decoded DSC signal.
80	SCL	Outputs clock signal for the EEPROM (IC27).

3-4-2 I/O EXPANDER (LOGIC UNIT IC5)

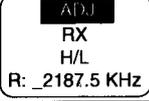
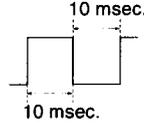
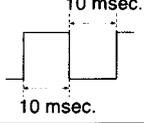
Pin number	Port name	Description
1-4	PDAT4- PDAT1	Output ports for printer data.
16	TSTB	Outputs strobe signal for DSC encoder circuit (DDS).
17	PSTB	Outputs strobe signals for printer.
18	PB0	Input port for the [0] key. Low: When [0] is pushed.
19	PB1	Input port for the [1] key. Low: When [1] is pushed.
20	PB2	Input port for the [2] key. Low: When [2] is pushed.
21	PB3	Input port for the [3] key. Low: When [3] is pushed.
22	PB4	Input port for the [4] key. Low: When [4] is pushed.
23	PB5	Input port for the [5] key. Low: When [5] is pushed.
24	PB6	Input port for the [6] key. Low: When [6] is pushed.
25	PB7	Input port for the [7] key. Low: When [7] is pushed.
37-40	PDAT8- PDAT5	Output ports for printer data.

3-4-3 OUTPUT EXPANDER (LOGIC UNIT IC26)

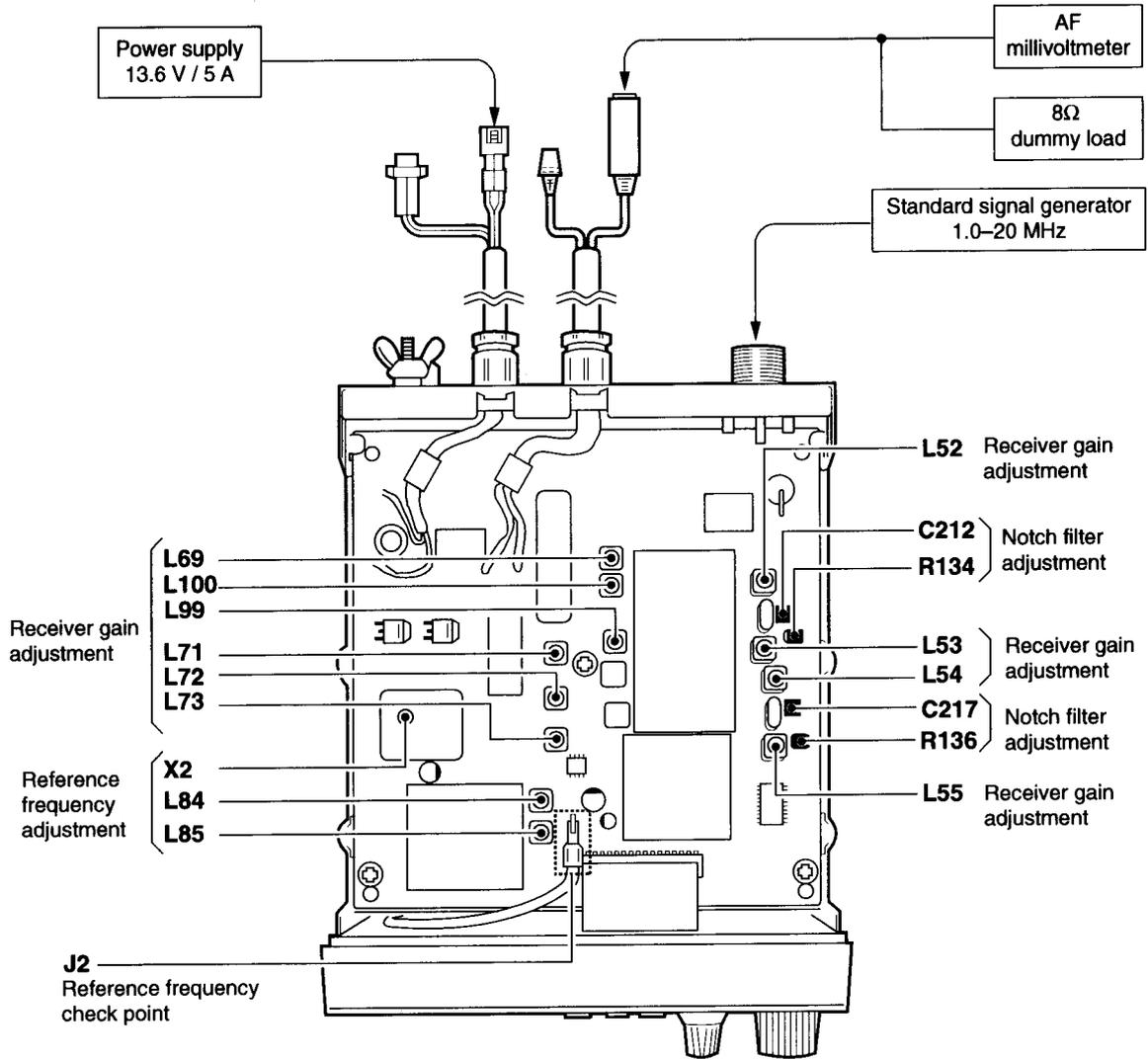
Pin number	Port name	Description
4	B1	Outputs BPF select signal. High: BPF for 2, 4 and 6 MHz band is selected.
5	B2	Outputs BPF select signal. High: BPF for 8 MHz band is selected.
6	B3	Outputs BPF select signal. High: BPF for 12 and 16 MHz band is selected.
11	CLONE	Output port for cloning enable signal.
12	ADJ	Outputs select signal of AF power amplifier input to the relay (RL1). High: In adjustment mode. (Demodulated audio signals are selected.) Low: Normal. (Beep audio signals are selected.)
13	DIM	Outputs dimmer control signal. High: When LCD backlight lights.
14	TEST	Outputs self-check signals for DDS circuits.

SECTION 4 ADJUSTMENT PROCEDURES

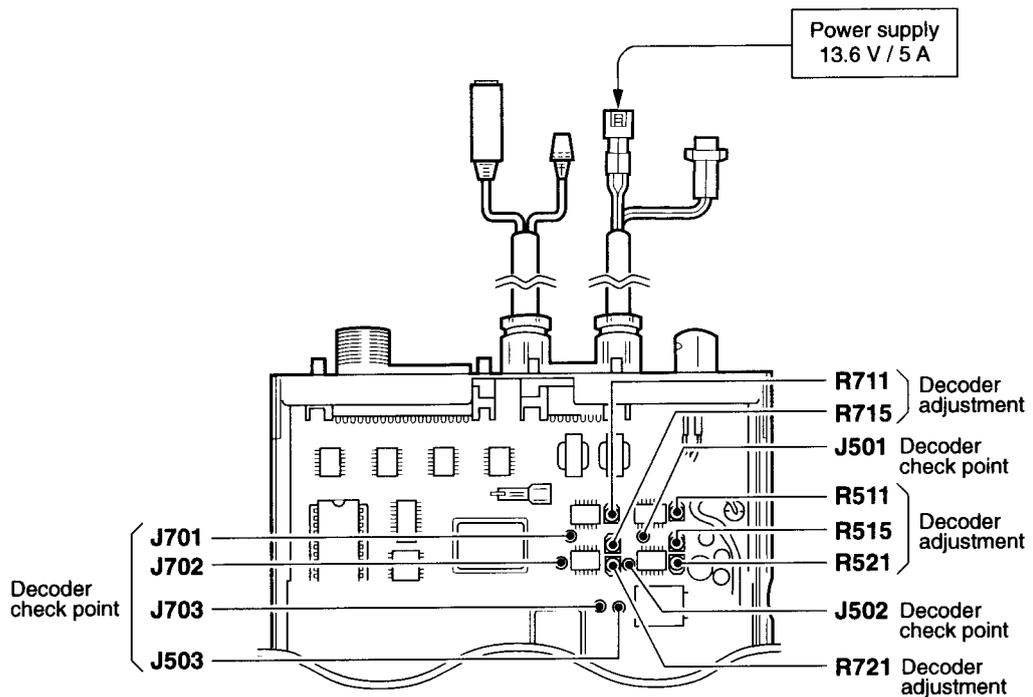
4-1 REFERENCE AND RECEIVER ADJUSTMENTS

ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT		
		UNIT	LOCATION		UNIT	ADJUST	
REFERENCE FREQUENCY	1 <ul style="list-style-type: none"> • Turn ON the power while pushing and holding the [CTRL] and [CALL] keys. • Wait for 5 min. after power ON. • Displayed frequency: any 	MAIN	Connect a frequency counter to the J2 (MAIN unit).	64.000000 MHz	MAIN	X2	
	2 <ul style="list-style-type: none"> • Displayed frequency: any 	MAIN	Connect an RF voltmeter to the J2 (MAIN unit).	Maximum level (more than 0 dBm)	MAIN	Adjust in sequence L84, L85	
RECEIVER GAIN	1 <ul style="list-style-type: none"> • Displayed frequency: 8414.5 kHz • Connect an SSG to the antenna connector and set as: <ul style="list-style-type: none"> Frequency : 8.4145 MHz Level : 1 μV* (-107 dBm) Modulation : OFF • Receiving 	Rear Panel	Connect an AC millivoltmeter with an 8 Ω load to external [SP] jack	Maximum audio output level.	MAIN	Adjust in sequence L52, L53, L54, L55, L99, L100, L69, L71, L72, L73	
NOTCH FILTER	1 <ul style="list-style-type: none"> • Displayed frequency • Set an SSG as: <ul style="list-style-type: none"> Frequency : 9.01056 MHz Level : 32 mV* (-17 dBm) Modulation : OFF • Receiving 	Rear Panel	Connect an AC millivoltmeter with an 8 Ω load to external [SP] jack	Minimum audio output level.	MAIN	C212, Adjust R134 at 3 c'clock.	
	2 <ul style="list-style-type: none"> • Set an SSG as: <ul style="list-style-type: none"> Frequency : 9.01064 MHz Level : 32 mV* (-17 dBm) Modulation : OFF • Receiving 					C217, Adjust R136 at 3 c'clock.	
DECORDER (External unit)	1 <ul style="list-style-type: none"> • Select "Decode" with [SEL] key. • Select "H/L" with [MENU] key, then select "TX" with [CALL] key. 	LOGIC	Connect a digital multimeter to J501.	4.1 V	LOGIC	R511	
			2	Connect a digital multimeter to J502.		4.0 V	R515
			3	Connect an oscilloscope to the J503 (LOGIC unit).		Set square wave to 50 % duty ratio.	
	4		• Select "TX" with [CALL] key.	Connect a digital multimeter to J701.		4.1 V	R711
	5			Connect a digital multimeter to J702.		4.0 V	R715
	6			Connect an oscilloscope to the J703 (LOGIC unit).		Set square wave to 50 % duty ratio.	
SELF CHECK	3 <ul style="list-style-type: none"> • RESET the transceiver while pushing [CLR] and [ENT] keys. 	Front Panel	Select [SELF TEST] and push [ENT].	Self check [OK]	Front Panel	Verify	

• MAIN UNIT



• LOGIC UNIT



SECTION 5 PARTS LIST

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1110003350	S.IC	μPC1037GR-E1
IC2	1140004550	S.IC	SC1287
IC3	1160000130	S.IC	TD62783AF (TP1)
IC4	1140004550	S.IC	SC1287
IC5	1110002030	IC	TA7808S
IC6	1110002020	IC	TA7805S
IC7	1110001400	S.IC	μPC1555G2-T1
IC9	1110003280	S.IC	ND487C1T-E3
IC10	1130001240	S.IC	μPD4013BG-T1
IC12	1130003830	S.IC	TC7S04F (TE85R)
IC13	1130003830	S.IC	TC7S04F (TE85R)
IC14	1180000420	S.IC	TA78L05F (TE12R)
IC15	1110000960	S.IC	NJM4558M (T1)
Q1	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2	1590001330	S.TRANSISTOR	DTA114EU AT106
Q3	1580000620	S.FET	3SK131-T2 MAS
Q4	1580000620	S.FET	3SK131-T2 MAS
Q5	1560000560	S.FET	2SK882-GR (TE85L)
Q6	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q7	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q8	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q10	1530002560	S.TRANSISTOR	2SC4403-3-TL
Q12	1530002800	S.TRANSISTOR	2SC2873-Y (TE12RC)
Q13	1590000680	S.TRANSISTOR	DTC114EU AT106
Q14	1590000680	S.TRANSISTOR	DTC114EU AT106
Q15	1560000720	S.FET	2SK2171-4-TD
Q16	1560000720	S.FET	2SK2171-4-TD
Q17	1530003150	S.TRANSISTOR	2SC4673D-TD
Q23	1590000680	S.TRANSISTOR	DTC114EU AT106
D1	1790000450	S.DIODE	MA862 (TX)
D2	1790000450	S.DIODE	MA862 (TX)
D3	1790000450	S.DIODE	MA862 (TX)
D4	1790000450	S.DIODE	MA862 (TX)
D7	1730000880	S.ZENER	RD11M-T2B2
D8	1790000620	S.DIODE	MA77 (TW)
D9	1750000270	S.DIODE	1SS301 (TE85R)
D10	1790000620	S.DIODE	MA77 (TW)
D11	1750000270	S.DIODE	1SS301 (TE85R)
D12	1790000700	DIODE	DSA3A1
D13	1750000230	S.DIODE	1SS315 TPH-3
D14	1790000620	S.DIODE	MA77 (TW)
D16	1790000690	S.DIODE	HSM88ASR-TR
D17	1750000270	S.DIODE	1SS301 (TE85R)
D18	1730000880	S.ZENER	RD11M-T2B2
D19	1790000690	S.DIODE	HSM88ASR-TR
D20	1730000030	S.ZENER	RD5.6M B2
D23	1750000270	S.DIODE	1SS301 (TE85R)
F11	2010002220	XTAL	FL-273 (9.0106 MHz)
F12	2010000270	FILTER	FL-23
X1	6050003020	XTAL	CR-168
X2	6050010320	XTAL	CR-604 (32.000 MHz)
X3	6050003020	XTAL	CR-168
L1	6200003260	S.COIL	NL 322522T-101J
L2	6200003260	S.COIL	NL 322522T-101J
L3	6200002990	S.COIL	NL 322522T-2R2J-3
L4	6200003090	S.COIL	NL 322522T-2R7J-3
L5	6200003080	S.COIL	NL 322522T-1R8J-3
L6	6200003150	S.COIL	NL 322522T-180J
L7	6200003090	S.COIL	NL 322522T-2R7J-3
L8	6200002990	S.COIL	NL 322522T-2R2J-3
L9	6200001710	S.COIL	NL 322522T-220J
L10	6200003320	S.COIL	NL 322522T-3R3J-3
L11	6200003260	S.COIL	NL 322522T-101J
L12	6200003260	S.COIL	NL 322522T-101J
L13	6200003070	S.COIL	NL 322522T-1R5J-3
L14	6200003000	S.COIL	NL 322522T-R22J-3

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
L15	6200003080	S.COIL	NL 322522T-1R8J-3
L16	6200003060	S.COIL	NL 322522T-1R2J-3
L17	6180002960	S.COIL	NL 322522T-R18J-3
L18	6200003070	S.COIL	NL 322522T-1R5J-3
L19	6200003080	S.COIL	NL 322522T-1R8J-3
L20	6200003000	S.COIL	NL 322522T-R22J-3
L21	6200003260	S.COIL	NL 322522T-101J
L52	6150001590	COIL	LS-175
L53	6150001590	COIL	LS-175
L54	6150001590	COIL	LS-175
L55	6150001590	COIL	LS-175
L59	6200003070	S.COIL	NL 322522T-1R5J-3
L62	6200003070	S.COIL	NL 322522T-1R5J-3
L64	6200003260	S.COIL	NL 322522T-101J
L65	6200003260	S.COIL	NL 322522T-101J
L66	6200003260	S.COIL	NL 322522T-101J
L67	6140002060	COIL	LR-225
L68	6140002060	COIL	LR-225
L69	6150001640	COIL	LS-180B
L70	6200003140	S.COIL	NL 322522T-150J
L71	6150001590	COIL	LS-175
L72	6150001470	COIL	LS-163
L73	6150001590	COIL	LS-175
L74	6200001830	S.COIL	NL 322522T-100J
L75	6200002960	S.COIL	NL 322522T-4R7J-3
L76	6200003110	S.COIL	NL 322522T-6R8J
L77	6200003110	S.COIL	NL 322522T-6R8J
L79	6200003260	S.COIL	NL 322522T-101J
L80	6170000230	COIL	LW-25
L81	2040000490	COIL	EXC-ELDR25C
L82	6150000760	COIL	LS-94
L83	6200003260	S.COIL	NL 322522T-101J
L84	6150000990	COIL	LS-114
L85	6150000990	COIL	LS-114
L87	6200001830	S.COIL	NL 322522T-100J
L88	6200001830	S.COIL	NL 322522T-100J
L89	6200003140	S.COIL	NL 322522T-150J
L90	6200003140	S.COIL	NL 322522T-150J
L91	6200003140	S.COIL	NL 322522T-150J
L92	6200001830	S.COIL	NL 322522T-100J
L93	6200003060	S.COIL	NL 322522T-1R2J-3
L95	6200003040	S.COIL	NL 322522T-R68J-3
L96	6200003040	S.COIL	NL 322522T-R68J-3
L97	6140000640	COIL	LR-86
L98	6140001540	COIL	LR-169
L99	6150001640	COIL	LS-180B
L100	6150001640	COIL	LS-180B
L101	6200003330	S.COIL	NL 322522T-1R0J-3
L102	6910003570	COIL	2943-666663
L103	6140001460	COIL	LR-170
L104	6200003260	S.COIL	NL 322522T-101J
L105	6200002990	S.COIL	NL 322522T-2R2J-3
L106	6200002990	S.COIL	NL 322522T-2R2J-3
R1	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R2	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R3	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R4	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R5	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R6	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R7	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
R8	7030003760	S.RESISTOR	ERJ3GEYJ 474 V (470 kΩ)
R10	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R11	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R12	7030003420	S.RESISTOR	ERJ3GEYJ 681 V (680 Ω)
R13	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R14	7030003360	S.RESISTOR	ERJ3GEYJ 221 V (220 Ω)
R15	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R16	7510000090	THERMISTOR	ERT-D2FGL 202S
R18	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R19	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R20	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R21	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R22	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R23	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)

S.=Surface mount

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R24	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R25	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R26	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R27	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R28	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R29	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R30	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R31	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R32	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R33	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R34	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R35	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R36	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R37	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R38	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R39	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R40	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R41	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R42	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R43	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R44	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R45	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R46	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R47	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R48	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R49	7030005380	S.RESISTOR	RR0816P-102-B (1 kΩ)
R50	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R51	7030005380	S.RESISTOR	RR0816P-102-B (1 kΩ)
R52	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R53	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R54	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R55	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R57	7030003370	S.RESISTOR	ERJ3GEYJ 271 V (270 Ω)
R58	7030003580	S.RESISTOR	ERJ3GEYJ 153 V (15 kΩ)
R59	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R60	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R61	7030003400	S.RESISTOR	ERJ3GEYJ 471 V (470 Ω)
R62	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R63	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R64	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R65	7030003340	S.RESISTOR	ERJ3GEYJ 151 V (150 Ω)
R70	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R71	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R72	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R73	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R74	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R75	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R76	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R77	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R78	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R79	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R80	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R81	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R82	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R83	7030005400	S.RESISTOR	RR0816P-202-D (2 kΩ)
R84	7030005390	S.RESISTOR	RR0816P-102-D (1 kΩ)
R85	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R86	7030005380	S.RESISTOR	RR0816P-102-B (1 kΩ)
R87	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R88	7030005380	S.RESISTOR	RR0816P-102-B (1 kΩ)
R89	7030005370	S.RESISTOR	RR0816P-202-B (2 kΩ)
R90	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R91	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R92	7030006060	S.RESISTOR	ERJ12YJ100H (10 Ω)
R93	7030006080	S.RESISTOR	ERJ12YJ220H (22 Ω)
R94	7030006220	S.RESISTOR	ERJ12YJ470H (47 Ω)
R95	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R96	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R97	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R100	7540000100	ABSORBER	SRYH-350L
R104	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R105	7030003480	S.RESISTOR	ERJ3GEYJ 222 V (2.2 kΩ)
R106	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R107	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R108	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R109	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R110	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R111	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R112	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R113	7030003700	S.RESISTOR	ERJ3GEYJ 154 V (150 kΩ)
R114	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R115	7030003780	S.RESISTOR	ERJ3GEYJ 684 V (680 kΩ)

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R116	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R117	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R118	7030003500	S.RESISTOR	ERJ3GEYJ 332 V (3.3 kΩ)
R120	7030003550	S.RESISTOR	ERJ3GEYJ 822 V (8.2 kΩ)
R121	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R122	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R123	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R125	7030003280	S.RESISTOR	ERJ3GEYJ 470 V (47 Ω)
R126	7030003240	S.RESISTOR	ERJ3GEYJ 220 V (22 Ω)
R130	7030003450	S.RESISTOR	ERJ3GEYJ 122 V (1.2 kΩ)
R131	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R132	7030004040	S.RESISTOR	ERJ3GEYJ 4R7 V (4.7 Ω)
R133	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R134	7310002740	S.TRIMMER	RV-150
R135	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R136	7310002740	S.TRIMMER	RV-150
R152	7030008060	S.RESISTOR	RR0816P-222-D (2.2KΩ)
R153	7030008060	S.RESISTOR	RR0816P-222-D (2.2KΩ)
R154	7030005350	S.RESISTOR	RR0816P-182-D (1.8 kΩ)
R155	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)
C1	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C2	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C3	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C4	4030009490	S.CERAMIC	C1608 JB 1H 821K-T-A
C5	4030010020	S.CERAMIC	C1608 JB 1H 122K-T-A
C6	4030007170	S.CERAMIC	C1608 CH 1H 221J-T-A
C7	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C8	4030010020	S.CERAMIC	C1608 JB 1H 122K-T-A
C9	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C10	4030009580	S.CERAMIC	C1608 JB 1H 681K-T-A
C11	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C12	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C13	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C14	4030007120	S.CERAMIC	C1608 CH 1H 820J-T-A
C15	4030010150	S.CERAMIC	C1608 SL 1H 561J-T-A
C16	4030007110	S.CERAMIC	C1608 CH 1H 680J-T-A
C17	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C18	4030009580	S.CERAMIC	C1608 JB 1H 681K-T-A
C19	4030007120	S.CERAMIC	C1608 CH 1H 820J-T-A
C20	4030007110	S.CERAMIC	C1608 CH 1H 680J-T-A
C21	4030010150	S.CERAMIC	C1608 SL 1H 561J-T-A
C22	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C23	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C53	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C55	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C57	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C62	4030010030	S.CERAMIC	C1608 SL 1H 511J-T-A
C64	4030007100	S.CERAMIC	C1608 CH 1H 560J-T-A
C65	4030010150	S.CERAMIC	C1608 SL 1H 561J-T-A
C67	4030007060	S.CERAMIC	C1608 CH 1H 270J-T-A
C68	4030011330	S.CERAMIC	C1608 CH 1H 391J-T-A
C69	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C70	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C71	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C72	4030007010	S.CERAMIC	C1608 CH 1H 100D-T-A
C73	4030007030	S.CERAMIC	C1608 CH 1H 150J-T-A
C74	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C75	4510006130	S.ELECTROLYTIC	ECEV1VS2R2SR
C76	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C77	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C78	4030007110	S.CERAMIC	C1608 CH 1H 680J-T-A
C79	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C80	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C81	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C82	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C83	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C86	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C87	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C88	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C89	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C90	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C91	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C92	4030007170	S.CERAMIC	C1608 CH 1H 221J-T-A
C93	4030006880	S.CERAMIC	C1608 CH 1H 472K-T-A
C94	4030007150	S.CERAMIC	C1608 CH 1H 151J-T-A
C95	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C96	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C97	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C98	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C99	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A

S.=Surface mount

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION
C100	4510004640	S.ELECTROLYTIC ECEV1CA470SP
C101	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C102	4510004440	S.ELECTROLYTIC ECEV1HA010SR
C103	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C104	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C105	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C106	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C107	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C108	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C109	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C112	4030007000	S.CERAMIC C1608 CH 1H 090D-T-A
C113	4030006920	S.CERAMIC C1608 CH 1H 010C-T-A
C114	4030006980	S.CERAMIC C1608 CH 1H 070D-T-A
C115	4030006910	S.CERAMIC C1608 CH 1H 0R5C-T-A
C116	4030006950	S.CERAMIC C1608 CH 1H 040C-T-A
C117	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C118	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C120	4030007020	S.CERAMIC C1608 CH 1H 120J-T-A
C128	4030006860	S.CERAMIC C1608 JB 1H 102K-T-A
C129	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C130	4030007170	S.CERAMIC C1608 CH 1H 221J-T-A
C131	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C132	4030007010	S.CERAMIC C1608 CH 1H 100D-T-A
C133	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C134	4030006920	S.CERAMIC C1608 CH 1H 010C-T-A
C135	4030007010	S.CERAMIC C1608 CH 1H 100D-T-A
C138	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C139	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C140	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C141	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C142	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C143	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C144	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C145	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C146	4030007010	S.CERAMIC C1608 CH 1H 100D-T-A
C147	4030006920	S.CERAMIC C1608 CH 1H 010C-T-A
C148	4030007040	S.CERAMIC C1608 CH 1H 180J-T-A
C149	4030006930	S.CERAMIC C1608 CH 1H 020C-T-A
C150	4030007030	S.CERAMIC C1608 CH 1H 150J-T-A
C151	4030006860	S.CERAMIC C1608 JB 1H 102K-T-A
C152	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C153	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C154	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C155	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C156	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C157	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C158	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C159	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C160	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C161	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C162	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C163	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C164	4030006860	S.CERAMIC C1608 JB 1H 102K-T-A
C165	4030006900	S.CERAMIC C1608 JB 1E 103K-T-A
C166	4510004990	ELECTROLYTIC 16 MV 100 HC
C167	4510006120	S.ELECTROLYTIC ECEV1ES4R7SR
C168	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C172	4030010110	S.CERAMIC C1608 SL 1H 471J-T-A
C173	4030010110	S.CERAMIC C1608 SL 1H 471J-T-A
C177	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C178	4030007040	S.CERAMIC C1608 CH 1H 180J-T-A
C179	4030007040	S.CERAMIC C1608 CH 1H 180J-T-A
C180	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C181	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C182	4510005310	S.ELECTROLYTIC ECEV1CA220SR
C183	4510004440	S.ELECTROLYTIC ECEV1HA010SR
C184	4510006120	S.ELECTROLYTIC ECEV1ES4R7SR
C185	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C186	4030006860	S.CERAMIC C1608 JB 1H 102K-T-A
C187	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C188	4510005310	S.ELECTROLYTIC ECEV1CA220SR
C189	4030007170	S.CERAMIC C1608 CH 1H 221J-T-A
C190	4030006830	S.CERAMIC C1608 SL 1H 331J-T-A
C191	4030007170	S.CERAMIC C1608 CH 1H 221J-T-A
C192	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C193	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C194	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C195	4030007130	S.CERAMIC C1608 CH 1H 101J-T-A
C196	4030007130	S.CERAMIC C1608 CH 1H 101J-T-A
C197	4510004510	ELECTROLYTIC 25 MV 470 HC
C198	4030007170	S.CERAMIC C1608 CH 1H 221J-T-A
C199	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A

[MAIN UNIT]

REF NO.	ORDER NO.	DESCRIPTION
C200	4030008920	S.CERAMIC C1608 JB 1C 473K-T-A
C201	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C202	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C204	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C205	4030009990	S.CERAMIC C1608 CH 1H 200J-T-A
C208	4030007090	S.CERAMIC C1608 CH 1H 470J-T-A
C209	4030007070	S.CERAMIC C1608 CH 1H 330J-T-A
C210	4030007070	S.CERAMIC C1608 CH 1H 330J-T-A
C211	4030007090	S.CERAMIC C1608 CH 1H 470J-T-A
C212	4610001270	S.TRIMMER ECR-JA010 A12W
C213	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C214	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C215	4030007070	S.CERAMIC C1608 CH 1H 330J-T-A
C216	4030007070	S.CERAMIC C1608 CH 1H 330J-T-A
C217	4610001270	S.TRIMMER ECR-JA010 A12W
C218	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C219	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C220	4560000070	CERAMIC D33Y5V 1H 473Z21
C221	4560000070	CERAMIC D33Y5V 1H 473Z21
C224	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C225	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
C226	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
C227	4510004870	S.ELECTROLYTIC ECEV1CA330P
C228	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
C229	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
C230	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
C231	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C232	4030011600	S.CERAMIC C1608 JB 1C 104KT-N
RL1	6330000180	RELAY MZ-12HG
RL2	6330000940	RELAY G6EK-134P-1-US DC9V
RL3	6330001320	RELAY AHY103
J1	6510018050	CONNECTOR 52045-2445
J2	6510003250	CONNECTOR TMP-J01X-A2
J3	6510003100	CONNECTOR RT01T-1.3B
J5	6510003100	CONNECTOR RT01T-1.3B
J6	6510003100	CONNECTOR RT01T-1.3B
W1	7120000380	JUMPER JPW 01 R-01
W2	7120000380	JUMPER JPW 01 R-01
W3	7120000010	JUMPER JPW 02A
W4	7120000010	JUMPER JPW 02A
W5	7030003860	S.JUMPER ERJ3GE JPW V
W6	7030003860	S.JUMPER ERJ3GE JPW V
W7	7030003860	S.JUMPER ERJ3GE JPW V
WS1	8600035970	M.OTHER P01xJ09MA
WS2	8600035980	M.OTHER P02xJ10MA
EP1	0910047089	PCB B 4424I
EP2	6910002160	CASE BM7 SHILD CAN
EP4	9029405901	TUBE IRRAX 0.8(d) L=5 mm

S.=Surface mount

[LOGIC UNIT]

REF NO.	ORDER NO.		DESCRIPTION
IC2001	1110001550	S.IC	S-8054ALB-LM-T1
IC2002	1110000890	IC	µPC1241H
IC2003	1120002460	S.IC	HD74LS04FPTR
IC2004	1120002470	S.IC	HD74LS245FPTR
IC2005	1140001640	S.IC	TMP82C55AM-2
IC2006	1130004921	S.IC	TC74HC04AF(TP1)
IC2007	1130006080	S.IC	TC74HC02AF (TP1)
IC2008	1130006010	S.IC	HM6264ALFP-L
IC2009	1130006880	S.IC	TC74HC373AF(TP1)
IC2010	1130005240	S.IC	TC74HC00AF
IC2011	1140005782	IC	SC-1342-2
IC2012	1140004800	S.IC	TMP90CM37F
IC2013	1130007450	S.IC	RTC-4553A
IC2014	1130007290	S.IC	24LC16BT-I/SN
IC2015	1180001250	S.IC	TA7808F(TE16L)
IC2016	1180001070	S.IC	TA7805F(TE16L)
IC2017	1130002670	S.IC	µPD4093BG-E1
IC2018	1140004550	S.IC	M65343FP/SC1287
IC2019	1130006010	S.IC	HM6264ALFP-L
IC2020	1130007750	S.IC	HD61830A00H
IC2025	1130005970	S.IC	TC74HC4053AF
IC2026	1130000830	S.IC	µPD4094BG-T1
IC2027	1130007290	S.IC	24LC16BT-I/SN
IC2028	1170000280	S.IC	TLP121 (GB)
IC2029	1170000280	S.IC	TLP121 (GB)
IC2030	1130006680	S.IC	TC7S02F (TE85R)
IC2031	1130005820	S.IC	TC4S584F(TE85R)
IC2032	1130003830	S.IC	TC7S04F (TE85R)
IC2033	1130006110	S.IC	TC74HC367AF (TP1)
IC2034	1130005640	S.IC	TC4W53F (TE12L)
IC2035	1130005820	S.IC	TC4S584F(TE85R)
IC2036	1130003830	S.IC	TC7S04F (TE85R)
IC2037	1180000420	S.IC	TA78L05F (TE12R)
IC2501	1130003830	S.IC	TC7S04F (TE85R)
IC2502	1130003830	S.IC	TC7S04F (TE85R)
IC2503	1190000730	S.IC	NJM4151M-TE3
IC2504	1110001220	S.IC	BA4558F T1
IC2701	1130003830	S.IC	TC7S04F (TE85R)
IC2702	1130003830	S.IC	TC7S04F (TE85R)
IC2703	1190000730	S.IC	NJM4151M-TE3
IC2704	1110001220	S.IC	BA4558F T1
Q2001	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2002	1510000770	S.TRANSISTOR	2SA1586-GR (TE85R)
Q2003	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2004	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2005	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2006	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2007	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2008	1510000770	S.TRANSISTOR	2SA1586-GR (TE85R)
Q2009	1530002690	S.TRANSISTOR	2SC4116-GR (TE85R)
Q2010	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2011	1590001330	S.TRANSISTOR	DTA114EU AT106
Q2501	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2502	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2701	1590000680	S.TRANSISTOR	DTC114EU AT106
Q2702	1590000680	S.TRANSISTOR	DTC114EU AT106
D2001	1750000270	S.DIODE	1SS301 (TE85R)
D2002	1750000270	S.DIODE	1SS301 (TE85R)
D2003	1750000270	S.DIODE	1SS301 (TE85R)
D2004	1750000290	S.DIODE	1SS300 (TE85R)
D2005	1750000270	S.DIODE	1SS301 (TE85R)
D2006	1750000300	S.DIODE	1SS302 (TE85R)
D2007	1750000270	S.DIODE	1SS301 (TE85R)
D2008	1750000270	S.DIODE	1SS301 (TE85R)
D2009	1750000270	S.DIODE	1SS301 (TE85R)
D2010	1750000300	S.DIODE	1SS302 (TE85R)
X2001	6050009030	XTAL	CR-487
L2001	6200001830	S.COIL	NL 322522T-100J
L2002	6200001830	S.COIL	NL 322522T-100J
L2003	6200001830	S.COIL	NL 322522T-100J
L2004	6200001830	S.COIL	NL 322522T-100J
L2005	6200001830	S.COIL	NL 322522T-100J
L2006	6200001830	S.COIL	NL 322522T-100J
L2007	6200001830	S.COIL	NL 322522T-100J

[LOGIC UNIT]

REF NO.	ORDER NO.		DESCRIPTION
L2008	6200001830	S.COIL	NL 322522T-100J
L2009	6200001830	S.COIL	NL 322522T-100J
L2010	6200001830	S.COIL	NL 322522T-100J
L2011	6200001830	S.COIL	NL 322522T-100J
L2012	6200001830	S.COIL	NL 322522T-100J
L2013	6200001830	S.COIL	NL 322522T-100J
L2014	6200001830	S.COIL	NL 322522T-100J
L2015	6200001830	S.COIL	NL 322522T-100J
L2016	6170000140	COIL	LW-15
L2017	6200001830	S.COIL	NL 322522T-100J
L2023	6200003120	S.COIL	NL 322522T-8R2J
L2024	6200003120	S.COIL	NL 322522T-8R2J
L2025	6200001850	S.COIL	NL 322522T-5R6J
L2026	6200001830	S.COIL	NL 322522T-100J
L2027	6200001830	S.COIL	NL 322522T-100J
L2028	6200001830	S.COIL	NL 322522T-100J
L2029	6200001830	S.COIL	NL 322522T-100J
L2030	6200001830	S.COIL	NL 322522T-100J
L2031	6200001830	S.COIL	NL 322522T-100J
L2032	6200001830	S.COIL	NL 322522T-100J
L2033	6200001830	S.COIL	NL 322522T-100J
L2034	6200001830	S.COIL	NL 322522T-100J
L2035	6200001830	S.COIL	NL 322522T-100J
L2036	6200001830	S.COIL	NL 322522T-100J
L2037	6200001830	S.COIL	NL 322522T-100J
L2038	6200001830	S.COIL	NL 322522T-100J
L2501	6200001830	S.COIL	NL 322522T-100J
L2502	6200001830	S.COIL	NL 322522T-100J
L2701	6200001830	S.COIL	NL 322522T-100J
L2702	6200001830	S.COIL	NL 322522T-100J
T2001	5920000570	TRANSFOM	12T01
T2002	5920000570	TRANSFOM	12T01
R2001	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R2002	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R2005	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2006	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2007	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2008	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2009	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2010	7030003410	S.RESISTOR	ERJ3GEYJ 561 V (560 Ω)
R2011	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2012	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2013	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2014	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R2015	7030003600	S.RESISTOR	ERJ3GEYJ 223 V (22 kΩ)
R2016	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2017	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2018	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2019	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2020	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2021	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2022	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2023	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2024	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2025	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2026	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2027	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2028	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2029	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2030	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2031	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2032	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2033	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2034	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2035	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2036	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2037	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2038	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R2039	7030003320	S.RESISTOR	ERJ3GEYJ 101 V (100 Ω)
R2040	7030004050	S.RESISTOR	ERJ3GEYJ 1R0 V (1 Ω)
R2041	7030006270	S.RESISTOR	ERJ12YJ221H (220 Ω)
R2042	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R2043	7030003210	S.RESISTOR	ERJ3GEYJ 120 V (12 Ω)
R2044	7030003640	S.RESISTOR	ERJ3GEYJ 473 V (47 kΩ)
R2045	7030003520	S.RESISTOR	ERJ3GEYJ 472 V (4.7 kΩ)
R2046	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R2047	7030003540	S.RESISTOR	ERJ3GEYJ 682 V (6.8 kΩ)
R2048	7030003620	S.RESISTOR	ERJ3GEYJ 333 V (33 kΩ)

S.=Surface mount

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION
R2049	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2050	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2051	7030003580	S.RESISTOR ERJ3GEYJ 153 V (15 kΩ)
R2053	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2054	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2055	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2056	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2057	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2058	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2059	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2060	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2061	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2062	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2063	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2064	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2065	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2066	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2067	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2068	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2069	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2070	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2071	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2072	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2073	7030005670	S.RESISTOR RR0816R-393-D (39 kΩ)
R2074	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2075	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2076	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2077	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2080	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2087	7030006060	S.RESISTOR ERJ12YJ100H (10 Ω)
R2088	7030006080	S.RESISTOR ERJ1WYJ220H (22 Ω)
R2090	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2091	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2092	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2093	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2094	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2095	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2096	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2097	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2098	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2099	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2100	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2101	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2102	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2103	7030005400	S.RESISTOR RR0816P-202-D (2 kΩ)
R2104	7030005390	S.RESISTOR RR0816P-102-D (1 kΩ)
R2105	7030005370	S.RESISTOR RR0816P-202-B (2 kΩ)
R2106	7030005380	S.RESISTOR RR0816P-102-B (1 kΩ)
R2107	7030005370	S.RESISTOR RR0816P-202-B (2 kΩ)
R2108	7030005380	S.RESISTOR RR0816P-102-B (1 kΩ)
R2109	7030005370	S.RESISTOR RR0816P-202-B (2 kΩ)
R2111	7030003600	S.RESISTOR ERJ3GEYJ 223 V (22 kΩ)
R2112	7030003600	S.RESISTOR ERJ3GEYJ 223 V (22 kΩ)
R2113	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2126	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2127	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2128	7030006270	S.RESISTOR ERJ12YJ221H (220 Ω)
R2129	7030003720	S.RESISTOR ERJ3GEYJ 224 V (220 kΩ)
R2130	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2131	7030003800	S.RESISTOR ERJ3GEYJ 105 V (10 kΩ)
R2132	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2133	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2134	7030003680	S.RESISTOR ERJ3GEYJ 104 V (100 kΩ)
R2135	7030006080	S.RESISTOR ERJ1WYJ 220H (22 Ω)
R2501	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2502	7030003840	S.RESISTOR ERJ3GEYJ 225 V (2.2 MΩ)
R2503	7030003360	S.RESISTOR ERJ3GEYJ 221 V (220 Ω)
R2504	7030003840	S.RESISTOR ERJ3GEYJ 225 V (2.2 MΩ)
R2505	7030003530	S.RESISTOR ERJ3GEYJ 562 V (5.6 kΩ)
R2506	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2507	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2508	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2509	7030005450	S.RESISTOR RR0816P-153-D (15 kΩ)
R2510	7030006560	S.RESISTOR RR0816P-223-D (22 kΩ)
R2511	7310002720	S.TRIMMER RV-148
R2512	7030005730	S.RESISTOR RR0816R-823-D (82 kΩ)
R2513	7030005680	S.RESISTOR RR0816R-473-D (47 kΩ)
R2514	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2515	7310002740	S.TRIMMER RV-150
R2516	7510000530	THERMISTOR ERT-D2FHL 103S
R2517	7030005670	S.RESISTOR RR0816R-393-D (39 kΩ)
R2518	7030005680	S.RESISTOR RR0816R-473-D (47 kΩ)

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION
R2519	7030008140	S.RESISTOR RR0816P-224-D (220 kΩ)
R2520	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2521	7310002740	S.TRIMMER RV-150
R2522	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2523	7030003800	S.RESISTOR ERJ3GEYJ 105 V (10 kΩ)
R2524	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2525	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2526	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2701	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2702	7030003840	S.RESISTOR ERJ3GEYJ 225 V (2.2 MΩ)
R2703	7030003360	S.RESISTOR ERJ3GEYJ 221 V (220 Ω)
R2704	7030003840	S.RESISTOR ERJ3GEYJ 225 V (2.2 MΩ)
R2705	7030003530	S.RESISTOR ERJ3GEYJ 562 V (5.6 kΩ)
R2706	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2707	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2708	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2709	7030005450	S.RESISTOR RR0816P-153-D (15 kΩ)
R2710	7030006560	S.RESISTOR RR0816P-223-D (22 kΩ)
R2711	7310002720	S.TRIMMER RV-148
R2712	7030005730	S.RESISTOR RR0816R-823-D (82 kΩ)
R2713	7030005680	S.RESISTOR RR0816R-473-D (47 kΩ)
R2714	7030003440	S.RESISTOR ERJ3GEYJ 102 V (1 kΩ)
R2715	7310002740	S.TRIMMER RV-150
R2716	7510000530	THERMISTOR ERT-D2FHL 103S
R2717	7030005670	S.RESISTOR RR0816R-393-D (39 kΩ)
R2718	7030005680	S.RESISTOR RR0816R-473-D (47 kΩ)
R2719	7030008140	S.RESISTOR RR0816P-224-D (220 kΩ)
R2720	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2721	7310002740	S.TRIMMER RV-150
R2722	7030003640	S.RESISTOR ERJ3GEYJ 473 V (47 kΩ)
R2723	7030003800	S.RESISTOR ERJ3GEYJ 105 V (10 kΩ)
R2724	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2725	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
R2726	7030003560	S.RESISTOR ERJ3GEYJ 103 V (10 kΩ)
C2001	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2002	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2003	4550003220	S.TANTALUM TEMSVA 1E 105M-8L
C2004	4510004990	ELECTROLYTIC 16 MV 100 HC
C2005	4510004590	ELECTROLYTIC 16 MV 470 HC
C2006	4030006860	S.CERAMIC C1608 JB 1H 102K-T-A
C2007	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2008	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2009	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2010	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2011	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2012	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2013	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2014	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C2015	4030007100	S.CERAMIC C1608 CH 1H 560J-T-A
C2016	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2017	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2018	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C2019	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2020	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2021	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C2022	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2023	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2024	4510005600	S.ELECTROLYTIC ECEV1CS100SR
C2025	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2026	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2027	4510006220	S.ELECTROLYTIC ECEV1CA101UP
C2028	4030006900	S.CERAMIC C1608 JB 1E 103K-T-A
C2029	4510006150	S.ELECTROLYTIC ECEV1HSR22SR
C2030	4510004590	ELECTROLYTIC 16 MV 470 HC
C2031	4510006150	S.ELECTROLYTIC ECEV1HSR22SR
C2032	4030006880	S.CERAMIC C1608 JB 1H 472K-T-A
C2033	4510004640	S.ELECTROLYTIC ECEV1CA470SP
C2034	4510004990	ELECTROLYTIC 16 MV 100 HC
C2035	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2036	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2037	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2038	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2039	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2040	4030007030	S.CERAMIC C1608 CH 1H 150J-T-A
C2041	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2042	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2043	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2044	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A
C2045	4340000110	S.MYLAR ECH-U 1C273JB5
C2046	4030010070	S.CERAMIC C1608 X7S 1C 104K-T-A

S.=Surface mount

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C2047	4340000110	S.MYLAR	ECH-U 1C273JB5
C2048	4340000120	S.MYLAR	ECH-U 1C 682JB5
C2049	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2050	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2051	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2052	4340000110	S.MYLAR	ECH-U 1C273JB5
C2053	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2054	4340000110	S.MYLAR	ECH-U 1C273JB5
C2055	4340000120	S.MYLAR	ECH-U 1C 682JB5
C2062	4510006220	S.ELECTROLYTIC	ECEV1CA101UP
C2063	4510005600	S.ELECTROLYTIC	ECEV1CS100SR
C2065	4510005600	S.ELECTROLYTIC	ECEV1CS100SR
C2066	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2067	4030006960	S.CERAMIC	C1608 CH 1H 050C-T-A
C2068	4030007000	S.CERAMIC	C1608 CH 1H 090D-T-A
C2069	4030006990	S.CERAMIC	C1608 CH 1H 080D-T-A
C2070	4510005830	S.ELECTROLYTIC	ECEV1HAN010R
C2073	4030006920	S.CERAMIC	C1608 CH 1H 010C-T-A
C2074	4030006910	S.CERAMIC	C1608 CH 1H 0R5C-T-A
C2075	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2076	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2077	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2078	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2079	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2080	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2081	4550003220	S.TANTALUM	TEMSVA 1E 105M-8L
C2083	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2084	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2085	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2086	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2087	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2088	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2089	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2090	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2091	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2092	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2093	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2094	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2095	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2096	4030007130	S.CERAMIC	C1608 CH 1H 101J-T-A
C2097	4030006860	S.CERAMIC	C1608 JB 1H 102K-T-A
C2098	4030007070	S.CERAMIC	C1608 CH 1H 330J-T-A
C2099	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2100	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2101	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2102	4510005750	S.ELECTROLYTIC	ECEV1EA220SP
C2103	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2104	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
C2105	4510004640	S.ELECTROLYTIC	ECEV1CA470SP
C2106	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
C2501	4030006900	S.CERAMIC	C1608 JB 1E 103K-T-A
C2502	4030008920	S.CERAMIC	C1608 JB 1C 473K-T-A
C2503	4030010070	S.CERAMIC	C1608 X7S 1C 104K-T-A
RL2001	6330000800	RELAY	G5A-237P DC12V
J2001	6510018050	CONNECTOR	52045-2445
J2002	6510003390	CONNECTOR	B03B-EH-S
J2003	6510003410	CONNECTOR	B05B-EH-S
J2004	6510017670	CONNECTOR	52045-2045
J2005	6510017650	CONNECTOR	52045-1045
J2007	6510017990	CONNECTOR	DELC-J9SAF-20L9
J2008	6510018000	CONNECTOR	DBLC-J25SAF-20L9
J2009	6510003250	CONNECTOR	TMP-J01X-A2
J2011	2610000200	CONNECTOR	ICC05-028 360T
J2501	6910001040	CONNECTOR	IPS-1136
J2502	6910001040	CONNECTOR	IPS-1136
J2503	6910001040	CONNECTOR	IPS-1136
J2701	6910001040	CONNECTOR	IPS-1136
J2702	6910001040	CONNECTOR	IPS-1136
J2703	6910001040	CONNECTOR	IPS-1136
W2001	7030003860	S.JUMPER	ERJ3GE JPW V
W2002	7030003860	S.JUMPER	ERJ3GE JPW V
W2003	7030003860	S.JUMPER	ERJ3GE JPW V
W2004	7030003860	S.JUMPER	ERJ3GE JPW V

[LOGIC UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
EP2001	0910047077	PCB	B 4423G
EP2501	9029405901	TUBE	IRRAX 0.8(d) L=5 mm
EP2701	9029405901	TUBE	IRRAX 0.8(d) L=5 mm

[DISP UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC3001	1130007730	S.IC	HD44100H
IC3002	1130007740	S.IC	HD61200
IC3003	1110000960	S.IC	NJM4558M(T1)
IC3004	1110003870	S.IC	NJM2058M-T1
IC3005	1130007250	S.IC	TC4S30F(TE85R)
Q3002	1520000560	S.TRANSISTOR	2SB1123T-TD
Q3003	1560000870	S.FET	2SK515-T1B (X33)
R3001	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R3002	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R3004	7510000140	THERMISTOR	ERT-D2FHL 802S
R3005	7030005320	S.RESISTOR	RR0816P-103-D (10 kΩ)
R3006	7030005330	S.RESISTOR	RR0816P-562-D (5.6 kΩ)
R3007	7030005340	S.RESISTOR	RR0816P-332-D (3.3 kΩ)
R3008	7030005340	S.RESISTOR	RR0816P-332-D (3.3 kΩ)
R3009	7030005340	S.RESISTOR	RR0816P-332-D (3.3 kΩ)
R3010	7030005340	S.RESISTOR	RR0816P-332-D (3.3 kΩ)
R3011	7030005340	S.RESISTOR	RR0816P-332-D (3.3 kΩ)
R3012	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3013	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3014	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3015	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3016	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3017	7030003440	S.RESISTOR	ERJ3GEYJ 102 V (1 kΩ)
R3018	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R3019	7030003490	S.RESISTOR	ERJ3GEYJ 272 V (2.7 kΩ)
R3020	7030003720	S.RESISTOR	ERJ3GEYJ 224 V (220 kΩ)
R3021	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R3022	7030003800	S.RESISTOR	ERJ3GEYJ 105 V (1 MΩ)
R3023	7030003560	S.RESISTOR	ERJ3GEYJ 103 V (10 kΩ)
R3024	7030003680	S.RESISTOR	ERJ3GEYJ 104 V (100 kΩ)
R3025	7030003400	S.RESISTOR	ERJ3GEYJ 107 V (470 Ω)
C3001	4030006880	S.CERAMIC	C1608 JB 1H 472K-T-A
DS3001	5030001530	LCD	T535003A
DS3002	5080000150	LAMP	HRS-7219A
DS3003	5080000150	LAMP	HRS-7219A
DS3004	5080000150	LAMP	HRS-7219A
S3001	2250000310	ENCODER	RH90N945E20-14F-1562
S3002	2260001860	SWITCH	SW-148 (SKHHBW)
J3001	6510019030	CONNECTOR	52080-1010
J3002	6510019040	CONNECTOR	52080-2010
J3003	6510007260	CONNECTOR	5124-15BHPB
EP3001	0910047067	PCB	B 4422G
EP3002	89300037450	LCD CONTACT	SRCN-1562 ZNN
EP3003	9021201001	TUBE	IRRAX 0.7(d) L=7 mm
EP3004	9019501150	TUBE	6.0(d) L=10 mm

S.=Surface mount

[VR UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R3401	7210002700	VARIABLE	RV-299
WS1	8600034820	M.OTHER	P3401xJ3401x3402VR
EP3401	0910047090	PCB	B 4557

[SW UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
J3601	6510010860	CONNECTOR	3022-15B
EP3601	0910047272	PCB	B 2461B

[FRONT UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
W3801	8900005350	CABLE	OPC-523
W3802	8900005390	CABLE	OPC-527

[REG UNIT] — Europe version only

REF NO.	ORDER NO.	DESCRIPTION	
IC7001	1110001950	IC	μPC494C
IC7002	1110002260	IC	μPC1093J
IC7003	1170000190	IC	TLP521-1(BL)
Q7001	1560000580	FET	2SK811
Q7002	1560000580	FET	2SK811
Q7003	1510000410	TRANSISTOR	2SA933S S
D7001	1790000700	DIODE	DSA3A1
D7002	1790000270	DIODE	ESAC85-009
D7003	1790000070	DIODE	1SS237
L7001	5920000450	COIL	FK-080E-1020
L7003	5920000450	COIL	FK-080E-1020
T7001	5920000440	TRANSFOM	TO-25
R7001	7010001200	RESISTOR	R25XJ 2.7 kΩ
R7002	7010003480	RESISTOR	ELR20J 4.7 kΩ
R7003	7010003520	RESISTOR	ELR20J 8.2 kΩ
R7004	7010003410	RESISTOR	ELR20J 1.2 kΩ
R7005	7010003480	RESISTOR	ELR20J 4.7 kΩ
R7006	7010003480	RESISTOR	ELR20J 4.7 kΩ
R7007	7010003510	RESISTOR	ELR20J 6.8 kΩ
R7008	7010003460	RESISTOR	ELR20J 3.3 kΩ
R7009	7010004690	RESISTOR	R50XJ 47 Ω
R7010	7010004780	RESISTOR	R50XJ 470 Ω
R7011	7010003480	RESISTOR	ELR20J 4.7 kΩ
R7012	7010003300	RESISTOR	ELR20J 150 Ω
R7013	7310000710	TRIMMER	RH0651C13J1YA (102)
R7014	7010003470	RESISTOR	ELR20J 3.9 kΩ
R7015	7010003400	RESISTOR	ELR20J 1 kΩ
R7016	7010003220	RESISTOR	ELR20J 33 Ω
R7017	7010004690	RESISTOR	R50XJ 47 Ω
R7018	7010004780	RESISTOR	R50XJ 470 Ω
R7019	7010003360	RESISTOR	ELR20J 470 Ω
R7020	7010003400	RESISTOR	ELR20J 1 kΩ

[REG UNIT] — Europe version only

REF NO.	ORDER NO.	DESCRIPTION	
C7001	4510002380	ELECTROLYTIC	16 SS 470UF)
C7002	4040000690	BARRIERLAYR	UAT 08X 473K
C7003	4560000050	CERAMIC	D67X5T 1E 684M51
C7004	4510000130	ELECTROLYTIC	ECEA1CG102S
C7005	4510000130	ELECTROLYTIC	ECEA1CG102S
C7006	4510001100	ELECTROLYTIC	16 MS7 10UF
C7007	4310000360	MYLAR	50 F2D 103J
C7008	4010000520	CERAMIC	DD107-601 B 472K 50V
C7009	4510000130	ELECTROLYTIC	ECEA1CG102S
C7010	4510000130	ELECTROLYTIC	ECEA1CG102S
C7011	4560000050	CERAMIC	D67X5T 1E 684M51
C7012	4010006890	CERAMIC	HE60SJ YB 222K 50V
C7013	4510003090	ELECTROLYTIC	16 SS 2200UF
C7014	4560000050	CERAMIC	D67X5T 1E 684M51
C7015	4560000050	CERAMIC	D67X5T 1E 684M51
J7001	6510003100	CONNECTOR	RT01T-1.3B
J7002	6510003100	CONNECTOR	RT01T-1.3B
J7003	6510003100	CONNECTOR	RT01T-1.3B
J7004	6510003100	CONNECTOR	RT01T-1.3B
J7005	6510003100	CONNECTOR	RT01T-1.3B
J7006	6510003100	CONNECTOR	RT01T-1.3B
J7007	6510003100	CONNECTOR	RT01T-1.3B
J7008	6510003100	CONNECTOR	RT01T-1.3B
J7009	6510003100	CONNECTOR	RT01T-1.3B
W7005	6910001020	JUMPER	IPS-1041-2
W7006	7120000010	JUMPER	JPW 02A
W7007	6910001030	JUMPER	IPS-1041-4
W7009	6910001030	JUMPER	IPS-1041-4
W7010	8900006360	CABLE	OPC-615
WS1	8600034830	M.OTHER	P7001RE
WS2	8600034840	M.OTHER	P7002RE
EP7001	0910028424	PCB	B 2865D
EP7002	6910000340	SHEET	P101 KD

S.=Surface mount

SECTION 6 MECHANICAL PARTS AND DISASSEMBLY

[CHASSIS PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
J1001	6510000410	Connector MR-DS-E 02	1
J1002	6510011420	Connector 31-10	1
S1001	2230001000	Switch EHM-5S04CK1P1	1
W1003	8900006590	Cable OPC-638	1
W1004	8900007690	Cable OPC-729	1
W1005	8900006020	Cable OPC-573	1
W1009	8900007700	Cable OPC-736	1
MP1001	8110005490	1562 cover	1
MP1002	8210011730	1562 back panel	1
MP1003	8930035460	1562 back A seal	1
MP1004	8930035480	1562 back plate	1
MP1005	8930035450	1562 front seal	1
MP1007	8930012070	Waterproof cap	1
MP1008	8010016000	Chassis (A)	1
MP1009	8930035490	1562 SP plate	1
MP1010	8930000470	Spacer (S)	3
MP1011	8930017620	PCB spacer (H)	3
MP1012	8930035471	1562 back B seal -1	1
MP1013	8930019020	ANT seal	1
MP1014	8930037350	833 SP holder (B)	1
MP1016	8930000100	Stand-off (F)	3
MP1017	8810009020	Screw FH M2.6 x 5 ZK	4
MP1018	8810009060	Screw FH M3 x 6 ZK	4
MP1019	8810000580	Screw PH M3 x 6 SUS	6
MP1020	8810009020	Screw FH M2.6 x 5 ZK	2
MP1021	8810000580	Screw PH M3 x 6 SUS	3
MP1022	8810000580	Screw PH M3 x 6 SUS	3
MP1023	8810003960	Set screw A M2.6 x 5	4
MP1024	8810003960	Set screw A M2.6 x 5	6
MP1026	8810000580	Screw PH M3 x 6 SUS	2
MP1027	8930036390	1562 CA-plate	1
MP1028	8930036400	1562 CB-plate	1
MP1029	8930036270	1562 side seal	4
MP1030	8930037030	1562 stand-off	4
MP1031	8810008800	Screw PH UNC No. 4 x 4 SUS	4
MP1032	8830000370	Wing nut M5 SUS	1
MP1033	8830000250	Nut M5 SUS	1
MP1034	8850000180	Flat washer M5 SUS	2
MP1035	8850000500	Spring washer M5 SUS	1
MP1036	8850001620	Icom washer (X)	4
MP1037	8930036900	1562 A-sheet	2
MP1038	8930036910	1562 B-sheet	2
MP1039	8930037300	Cap 025-5060-000	1
MP1040	8930037290	Cap 025-5057-000	1
MP1041	8930037280	M-cap	1
MP1042	8010016050	1562 sub chassis	1
MP1043	8930007580	Stand SJ-5018 (rubber foot E)	4
MP1044	8810008980	Hex bolt M4 x 8 SUS (+)	4
MP1045	8930018050	LCD cover	1
MP1048	8930028840	Sponge (DF)	1
MP1049	8930028840	Sponge (DF)	1
MP1050	8510010610	1562 LOGIC cover	1
MP1051	8510010621	1562 MAIN cover -1	1
MP1052	8930040580	Sealing washer (K)	4
MP1053	8810009420	Screw PH No. 0 M2 x 3 SUS	4
MP1054	8930040270	Embossed tape (H)	2
MP1055	8510011150	1562 D-plate	1
MP1057	8110006140	1815 cover (A)	1
MP1058	8510011270	1815 case	1
MP1059	8930043740	1815 rubber	1
MP1060	6910011020	EH-1080	1
MP1061	6910011030	EH-1092K	2
SP1001	2510000470	Speaker EAS-6P100SA	1

[FRONT PARTS]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W3801	8900005350	Cable OPC-523 (N: 10, L: 100)	1
W3802	8900005390	Cable OPC-527 (N: 20, L: 100)	1
MP3801	8210012091	Front panel A-1 with window plate [EUR]	1
	8210014741	Front panel A with window plate B [USA]	1
MP3802	8210012080	10-key (A)	1
MP3804	8610006470	Knob N151	1
MP3805	8610006480	Knob N152	1
MP3806	8930034270	1562 EMER button [EUR]	1
	8930043710	1562 EMER button (A) [USA]	1
MP3807	8830000550	VR nut (E)	1
MP3808	8930035700	1562 VR rubber	1
MP3811	8930037940	1562 S-plate	1
MP3812	8930038610	1562 SW-U rubber	1
MP3813	8810005900	Screw PH B0 No. 0-3 M1.4 x 3.5 NI [EUR]	1
	8810009480	Screw PH C0 No. 0-3 M1.4 x 3.5 (PS) [USA]	5

[LOGIC UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP2001	8410001500	Main heat sink	1
MP2002	8810003160	Set screw A M3 x 6	1
MP2003	8830000100	Nut M3	1

[MAIN UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
MP1	8510001080	Shield case (A)	1
MP2	8510001101	Shield case (A) cover (A)-1	1
MP3	8510002690	PA shield case (B)	1
MP4	8510004360	PA shield case (B) cover (A)	1
MP5	8510005330	Coil case	1
MP6	8510002690	PA shield case (B)	1
MP7	8510004360	PA shield case (B) cover (A)	1
MP8	8510005330	Coil case	1
MP9	8510002020	MIX shield case	1
MP10	8930014140	Ground spring (D)	1
MP11	8930014140	Ground spring (D)	1
MP12	8930014140	Ground spring (D)	1
MP13	8930001160	Ground spring	1
MP14	8930014140	Ground spring (D)	1
MP16	8410002190	1562 heat sink	1
	8410002190	1562 heat sink	1
MP17	8810008680	Screw PH M3 x 8 NI	2
MP18	8830000100	Nut M3	2
MP19	8510011650	1562 crystal cover	1

[DISP UNIT]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
DS3001	5030001210	LCD T535003 [EUR]	1
	5030001530	LCD T535003A [USA]	1
EP3002	8930037450	LCD contact SRCN-1562 ZNN	2
MP3001	8010009710	851 reflector	1
MP3002	8930018360	LCD filter	1
MP3003	8930017850	LCD holder	1

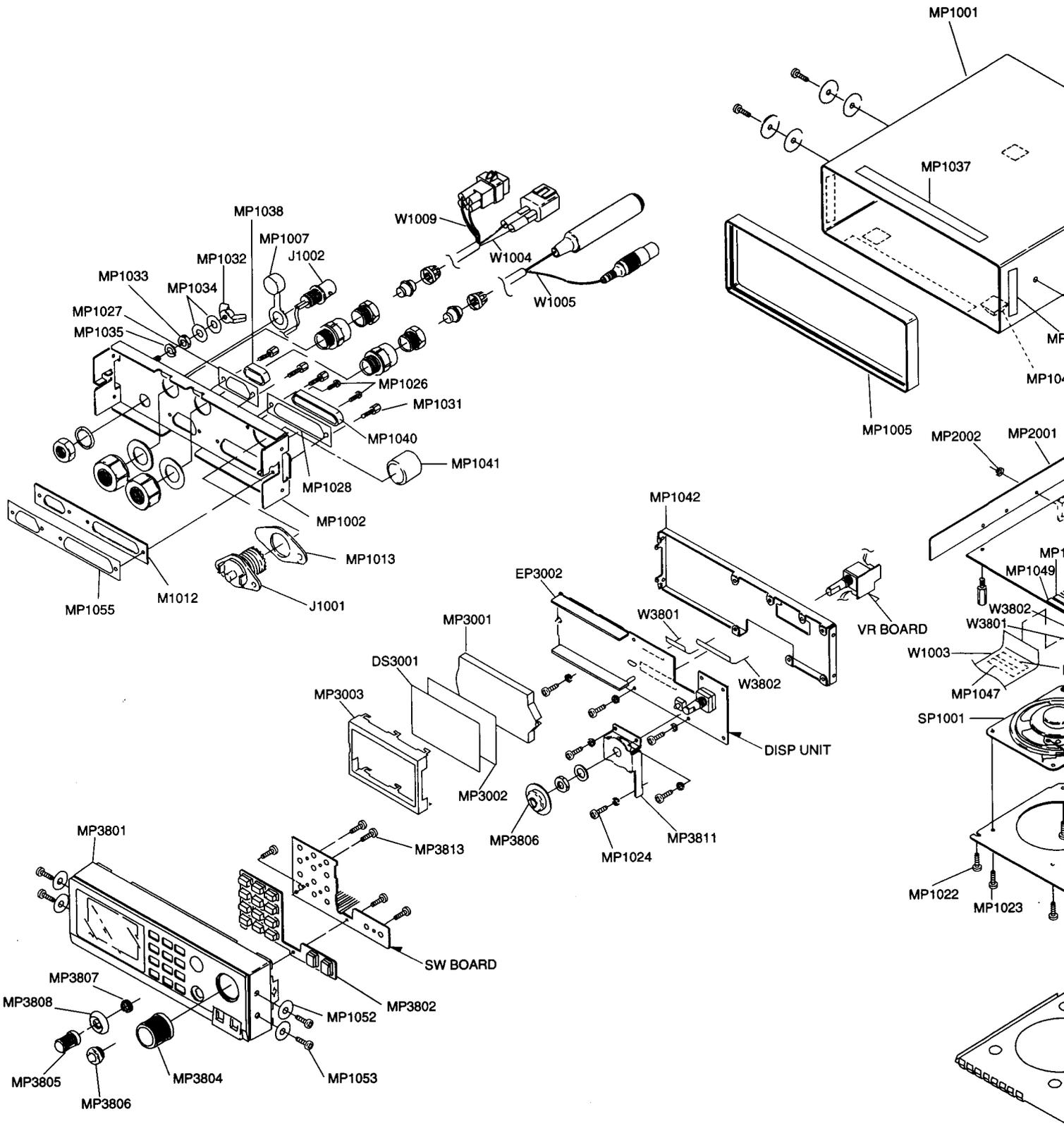
[REG UNIT] (Europe version only)

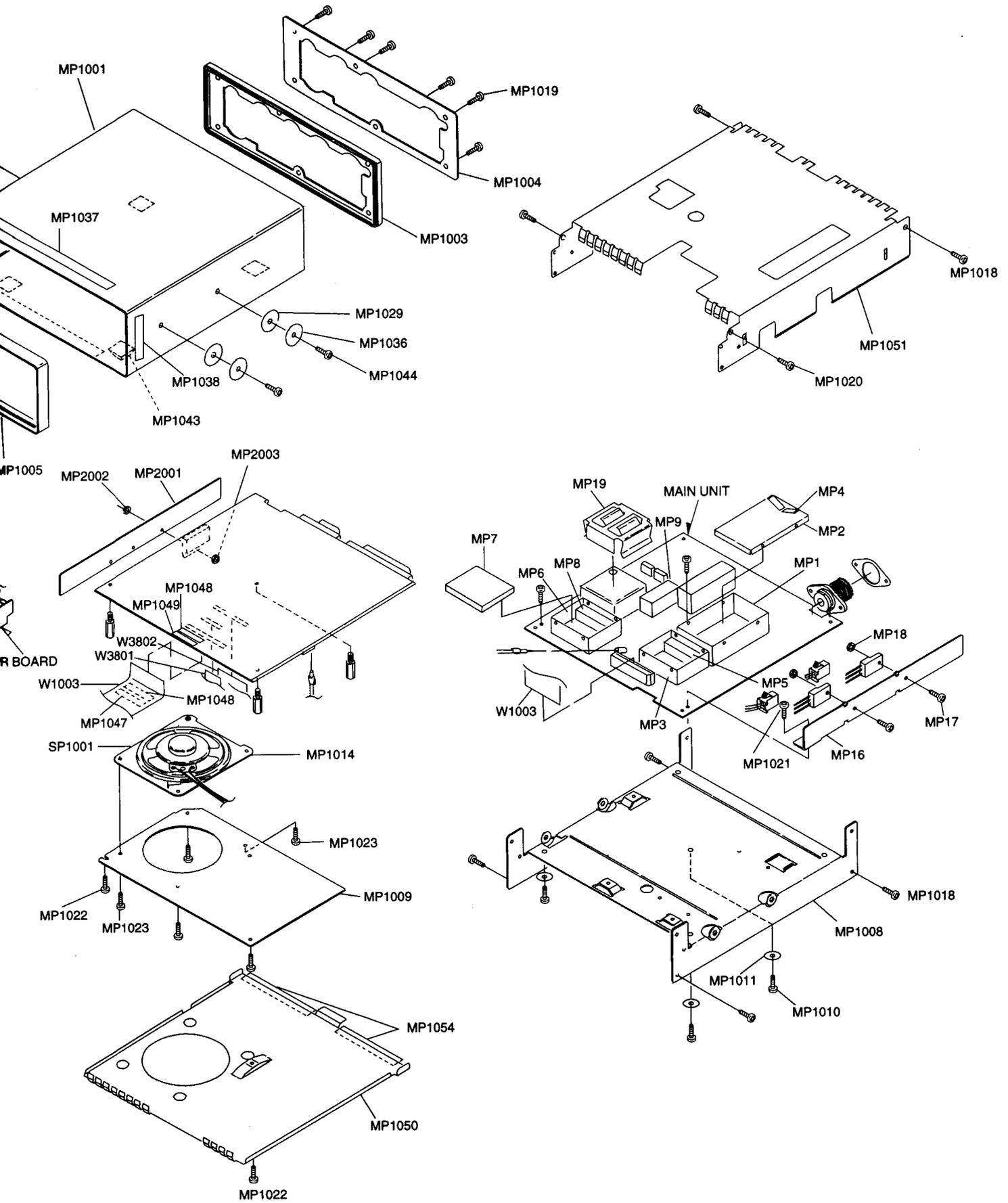
REF. NO.	ORDER NO.	DESCRIPTION	QTY.
W7010	8900006360	Cable OPC-615	1
EP7002	6910000340	Mylar sheet	1
MP7001	8010005120	Case (C)	1
MP7002	8010005130	Case (D)	1
MP7003	8930000660	Screw spacer (P)	3
MP7004	8810004710	Set screw A M3 x 4	1
MP7005	8810004280	Screw PH M3 x 5 ZK	3
MP7006	8810009070	Screw PH M2.6 x 8 ZK	1
MP7007	8810009070	Screw PH M2.6 x 8 ZK	1
MP7008	8850000830	Insulation washer (H)	1
MP7009	8830000180	Nut M2.6 NI BS	1
MP7010	8830000180	Nut M2.6 NI BS	1
MP7011	8810008660	Screw PH BT M3 x 8 NI-ZU	14
MP7012	8930001510	Sponge (V)	1
MP7013	8810009070	Screw PH M2.6 x 8 ZK	1
MP7014	8830000180	Nut M2.6 NI BS	1
MP7015	8930038070	1562 L angle	1
MP7016	8930038080	1562 R angle	1
MP7017	8010016480	1562 REG case	1

[UNPACKING]

REF. NO.	ORDER NO.	DESCRIPTION	QTY.
F4001	5210000050	Spare fuse FGB 3A	2
J4001	5610000040	Connector AP321	1
P4001	5610000130	Connector 25K0256-00	1
P4002	5610000140	Connector 01K0403-20	1
W4001	8900006000	Cable OPC-571	1
W4002	8900005970	Cable OPC-530	1
W4003	8900006370	Cable OPC-616	1
MP4001	8010016730	150 mounting bracket	1
MP4002	8930008050	Mounting felt	2
MP4003	8810000700	Screw PH M5 x 20 SUS	4
MP4004	8830000250	Nut M5 SUS	4
MP4005	8850000180	Flat washer M5 SUS	8
MP4006	8810001490	Screw PH A M5 x 20 SUS	4
MP4007	8850000500	Spring washer M5 SUS	4
MP4008	8810005050	Screw PH A M4 x 20 SUS	2

Screw abbreviations A, B0, BT: Self-tapping PH: Pan head FH: Flat head
BS: Brass NI: Nickel NI-ZU: Nickel-Zinc
SUS: Stainless ZK: Black

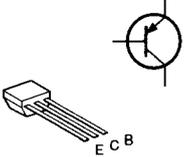
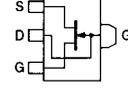
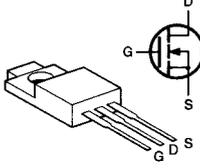
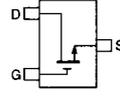
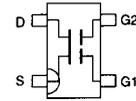




SECTION 7

SEMI-CONDUCTOR INFORMATION

• TRANSISTOR AND FET'S

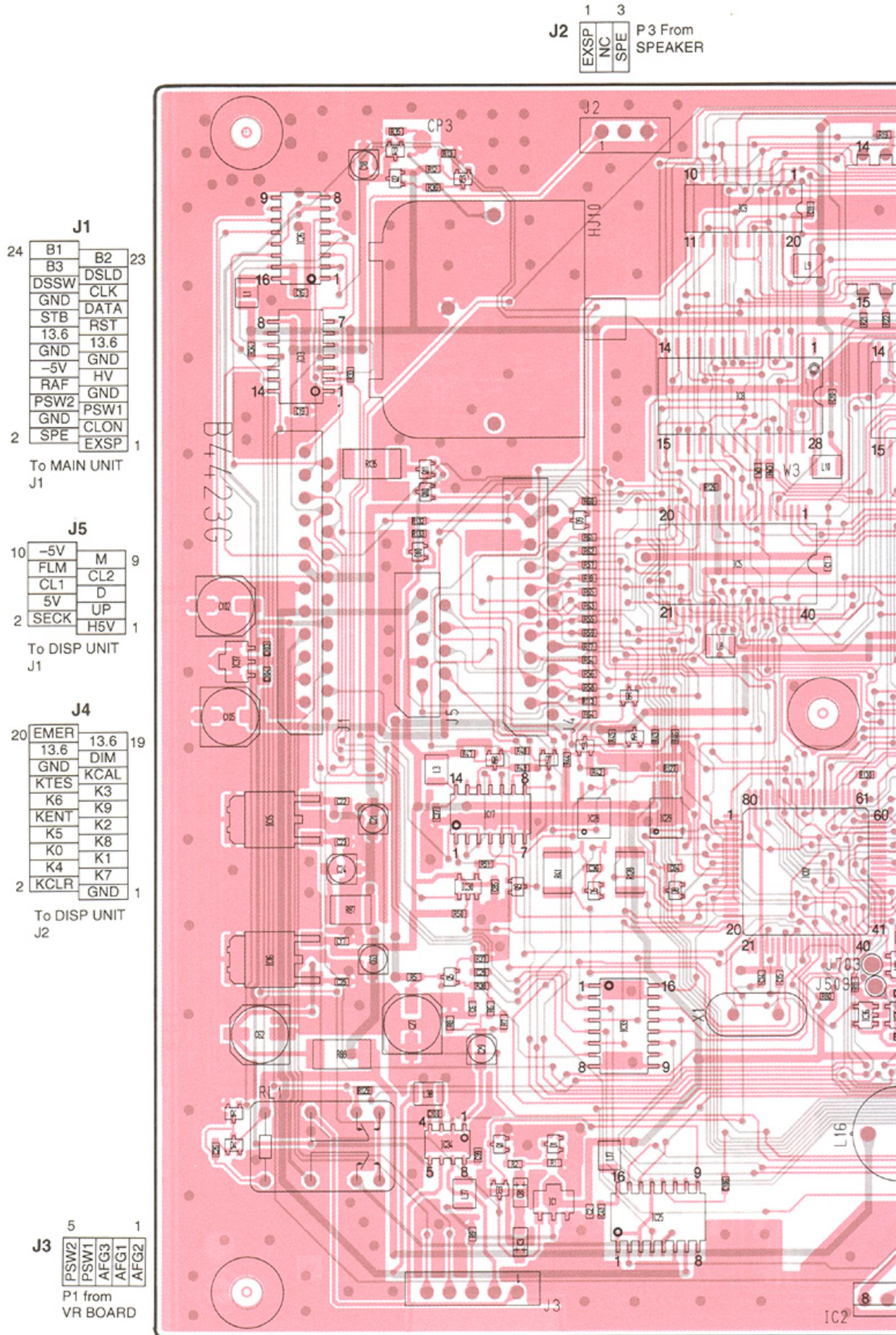
<p>2SA1586 GR (Symbol: SG)</p> 	<p>2SA933S</p> 	<p>2SB1123T (Symbol: BF)</p> 	<p>2SC2873 Y (Symbol: M)</p> 
<p>2SC4116 GR (Symbol: LG)</p> 	<p>2SC4403 3 (Symbol: LY3)</p> 	<p>2SC4673D (Symbol: CO)</p> 	<p>2SK2171 4 (Symbol: No Symbol)</p> 
<p>2SK515 (Symbol: X33)</p> 	<p>2SK811</p> 	<p>2SK882 GR (Symbol: TG)</p> 	<p>3SK131 MAS (Symbol: VIT)</p> 
<p>DTA114EU (Symbol: 14)</p> 	<p>DTC114EU (Symbol: 24)</p> 		

• DIODES

<p>1SS300 (Symbol: A3)</p> 	<p>1SS301 (Symbol: B3)</p> 	<p>1SS302 (Symbol: C3)</p> 	<p>ESAC85-009</p> 
<p>HSM88ASR (Symbol: C3)</p> 	<p>MA862 (Symbol: M11)</p> 	<p>RD11M T2B2/RD5.1M T2B2/RD5.6M T2B2/RD9.1M T2B3 (Symbol: 112/512/562/913)</p> 	

SECTION 8 BOARD LAYOUTS

8-1 LOGIC UNIT



J1

24	B1	B2	23
	B3	DSL D	
	DSSW	CLK	
	GND	DATA	
	STB	RST	
	13.6	13.6	
	GND	GND	
	-5V	HV	
	RAF	GND	
	PSW2	PSW1	
	GND	CLON	
2	SPE	EXSP	1

To MAIN UNIT
J1

J5

10	-5V	M	9
	FLM	CL2	
	CL1	D	
	5V	UP	
2	SECK	H5V	1

To DISP UNIT
J1

J4

20	EMER	13.6	19
	13.6	DIM	
	GND	KCAL	
	KTES	K3	
	K6	K9	
	KENT	K2	
	K5	K8	
	K0	K1	
	K4	K7	
2	KCLR	GND	1

To DISP UNIT
J2

J3

5	PSW2	1
	PSW1	
	AFG3	
	AFG1	
	AFG2	

P1 from
VR BOARD

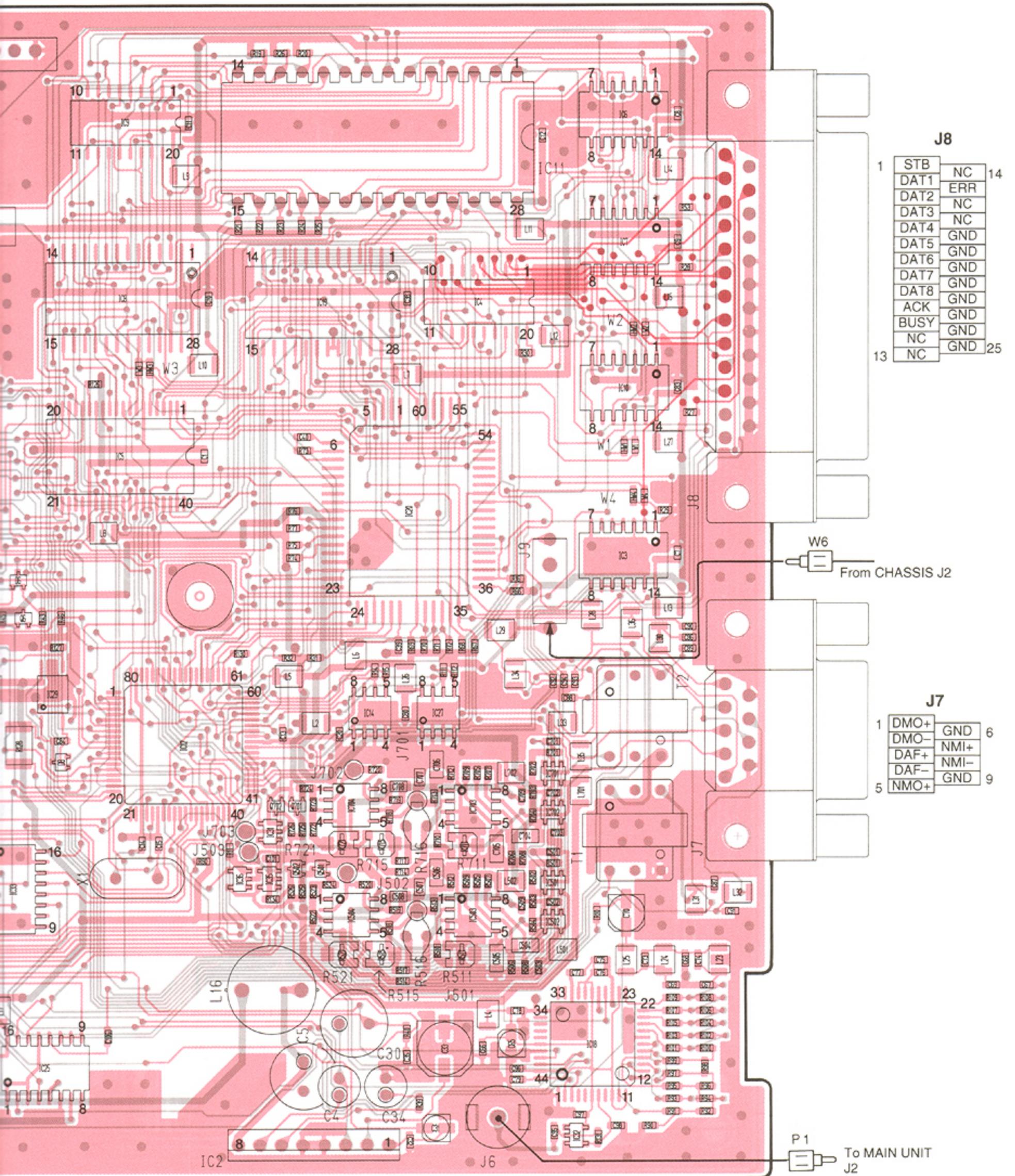
J2

1	EXSP	3
	NC	
	SPE	

P3 From
SPEAKER

3
SPE

P3 From
SPEAKER



J8

1	STB	NC	14
	DAT1	ERR	
	DAT2	NC	
	DAT3	NC	
	DAT4	NC	
	DAT5	GND	
	DAT6	GND	
	DAT7	GND	
	DAT8	GND	
	ACK	GND	
	BUSY	GND	
	NC	GND	
13	NC	GND	25

J7

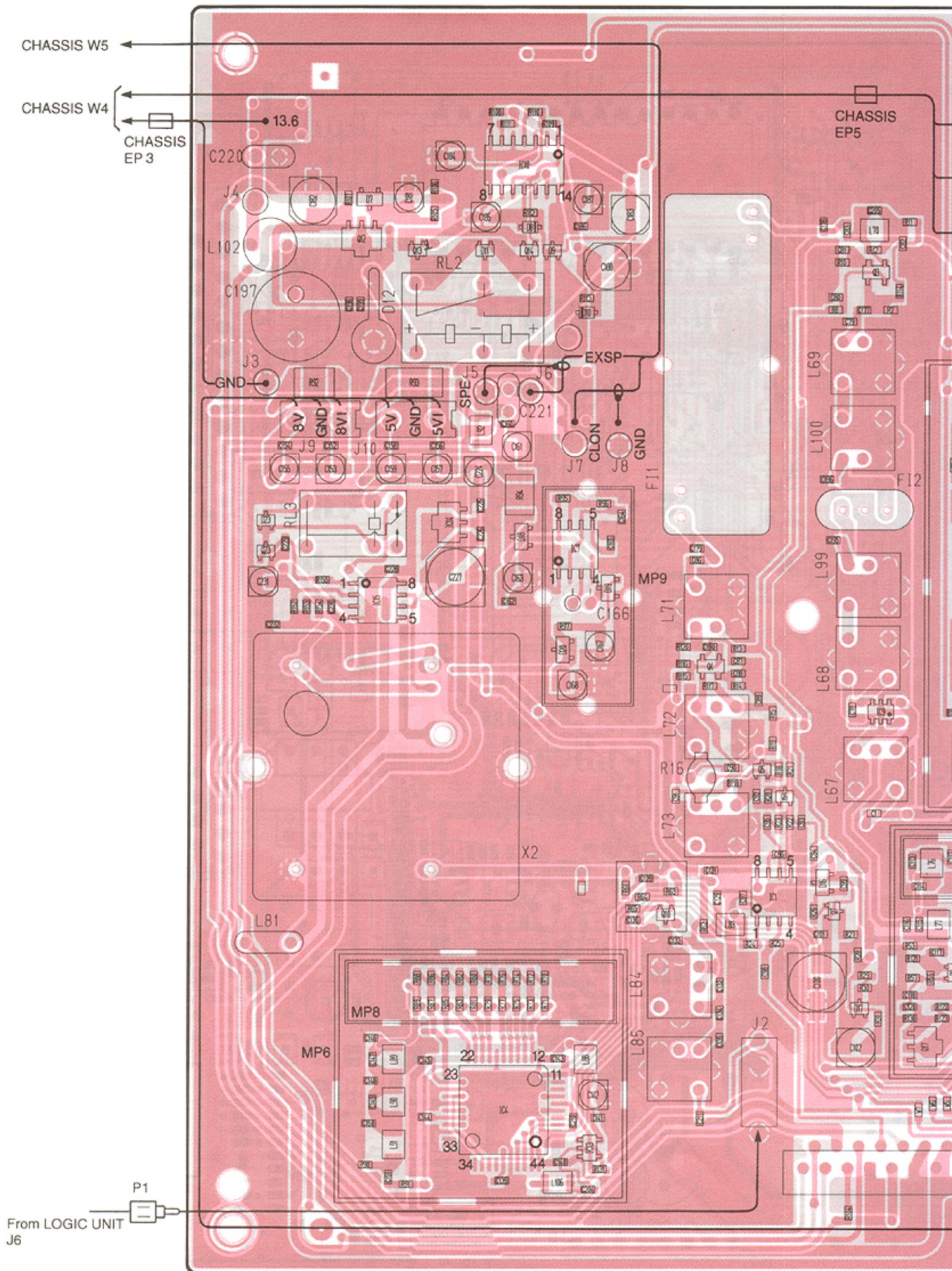
1	DMO+	GND	6
	DMO-	NMI+	
	DAF+	NMI-	
	DAF-	GND	9
5	NMO+		

W6 From CHASSIS J2

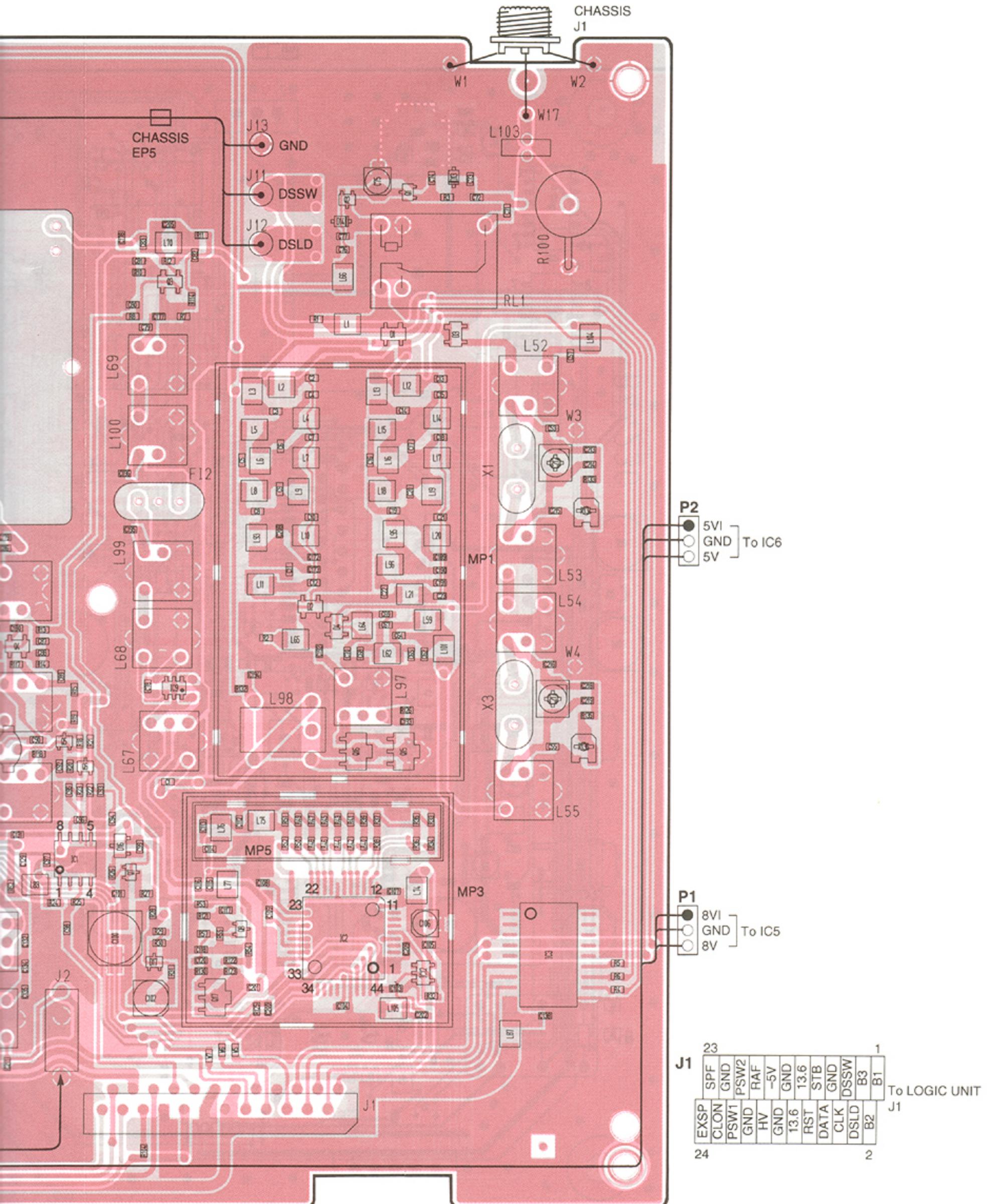
P1 To MAIN UNIT
J2

Note: Add "2000" to each indicated part number on the unit for the actual number.

8-2 MAIN UNIT

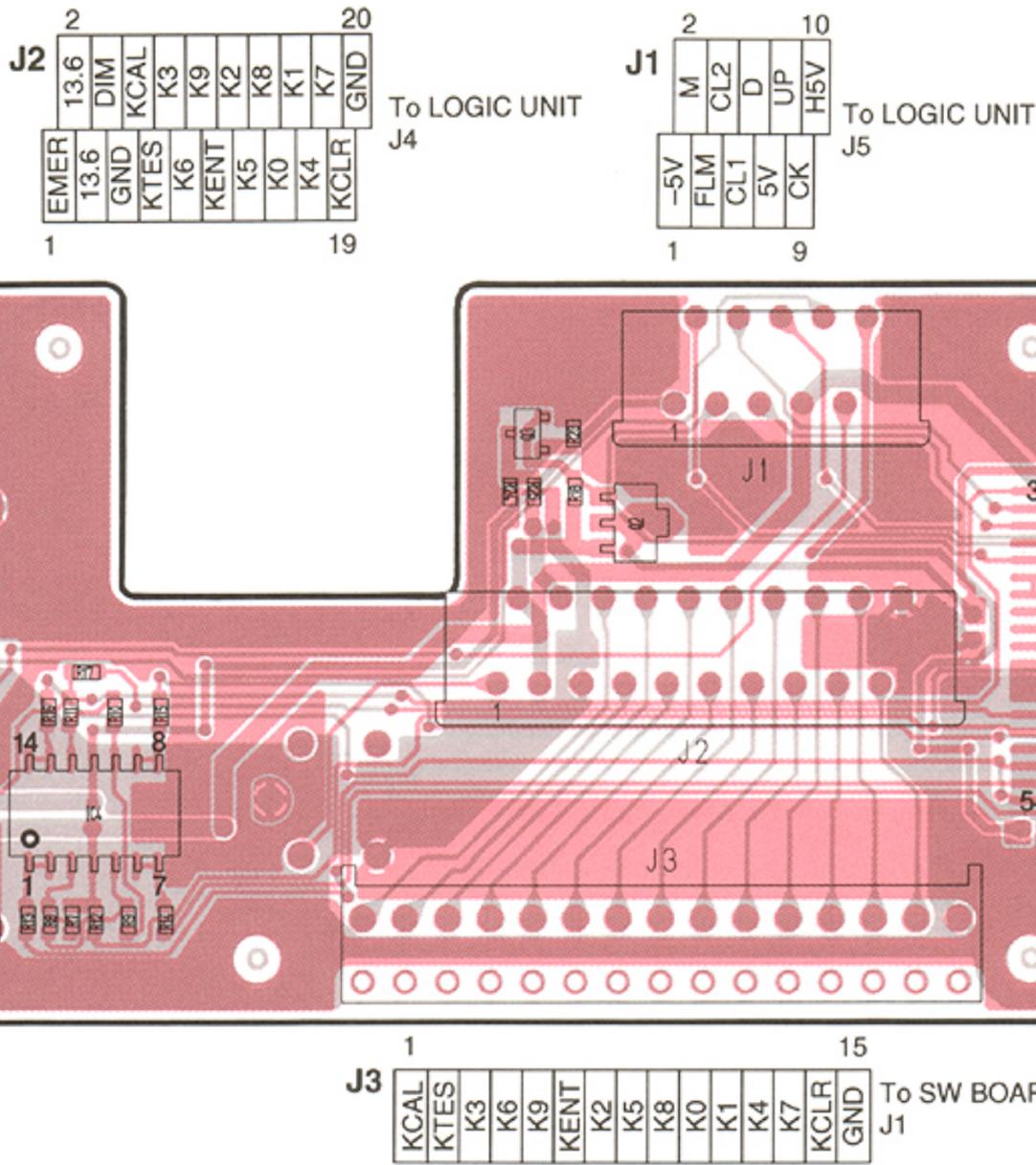


Note: Add "1000" to each indicated part number on the unit for the actual number.



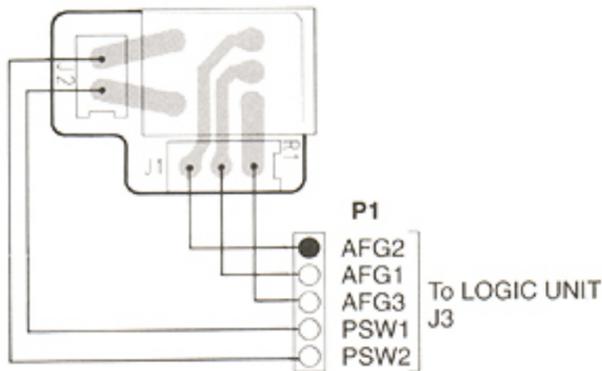
8-3 DISP, SW AND REG UNITS

● DISP BOARD



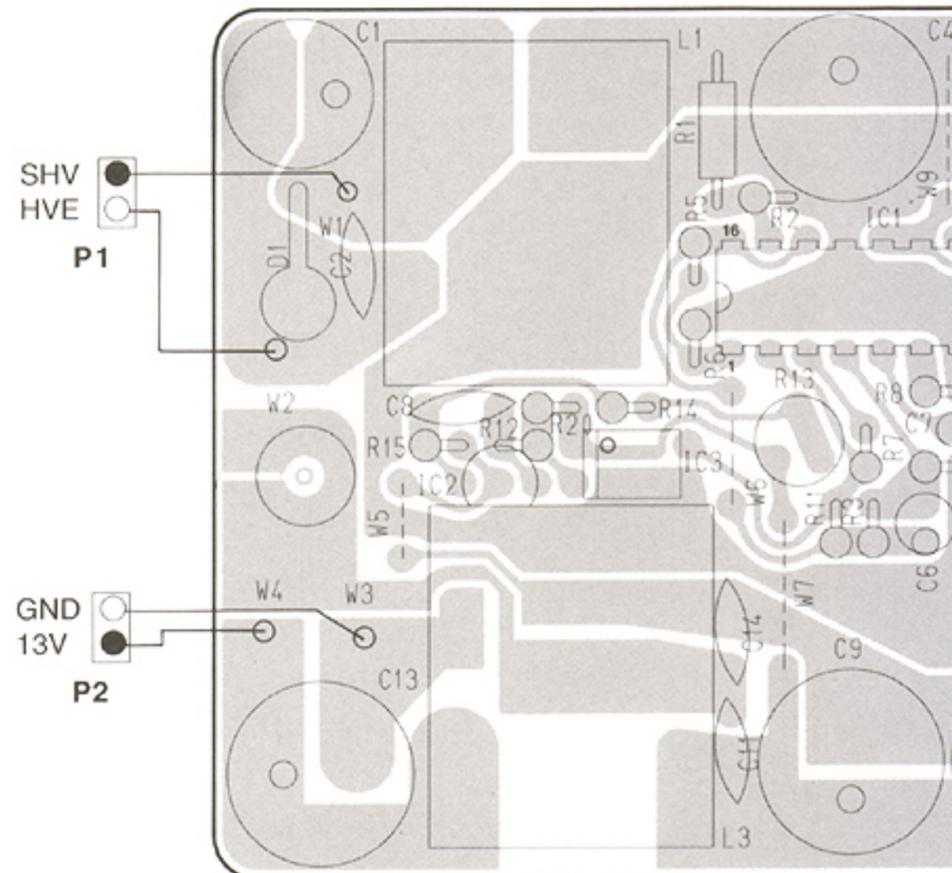
Note: Add "3000" to each indicated part number on the unit for the actual number.

● VR BOARD

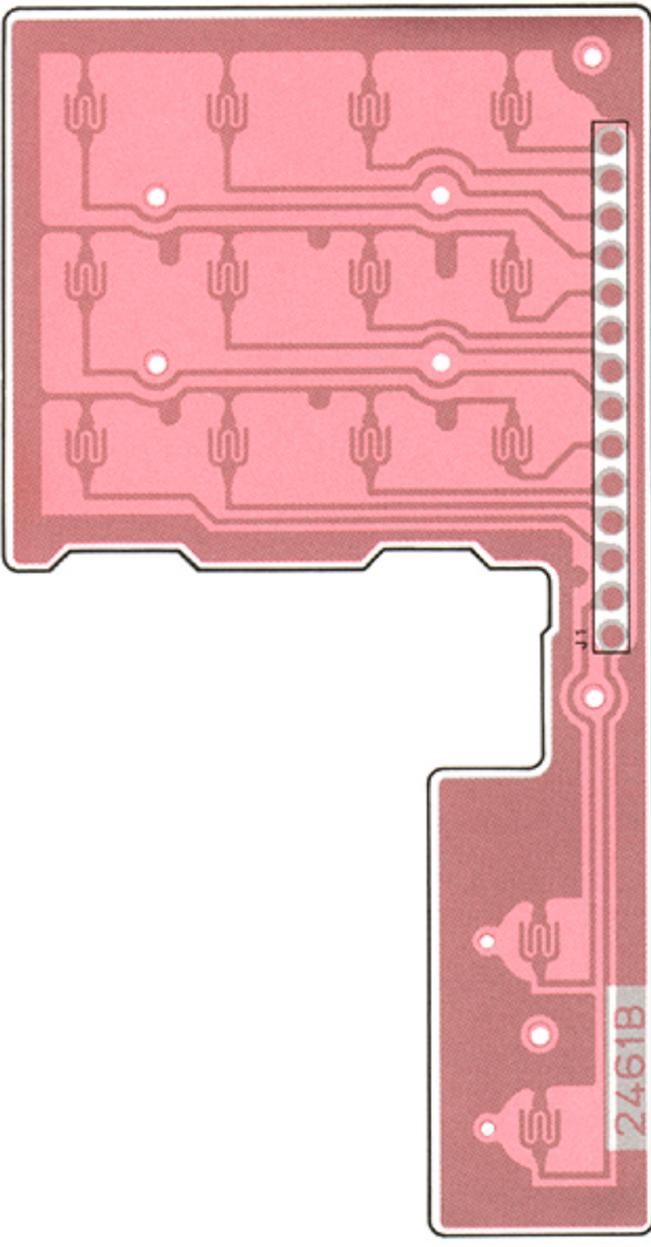
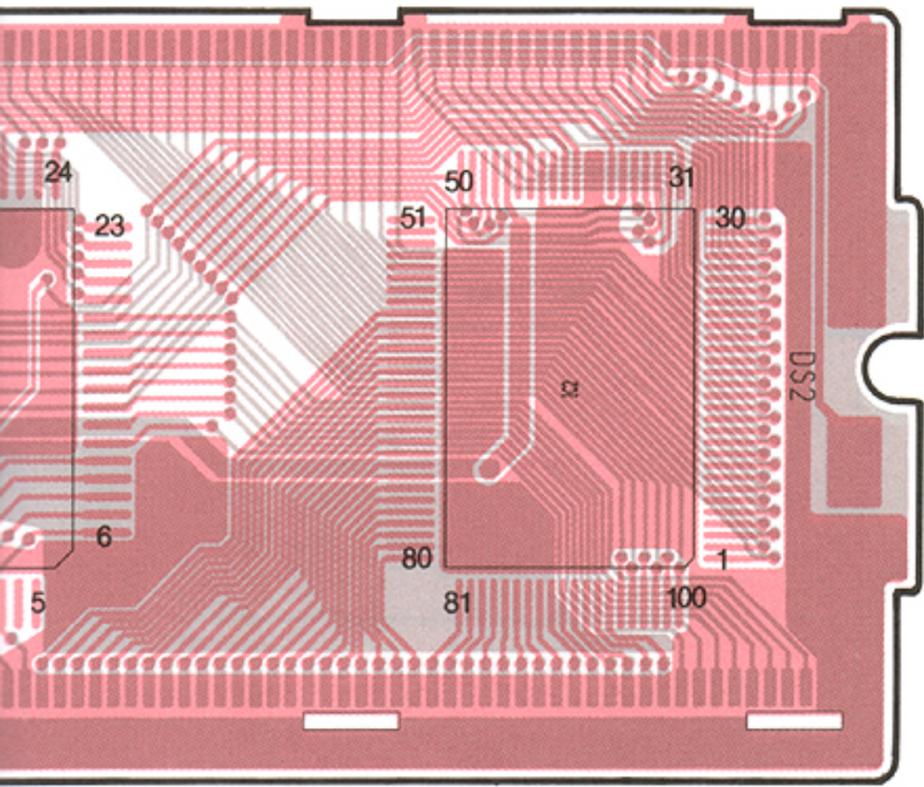


Note: Add "3400" to each indicated part number on the unit for the actual number.

● REG UNIT



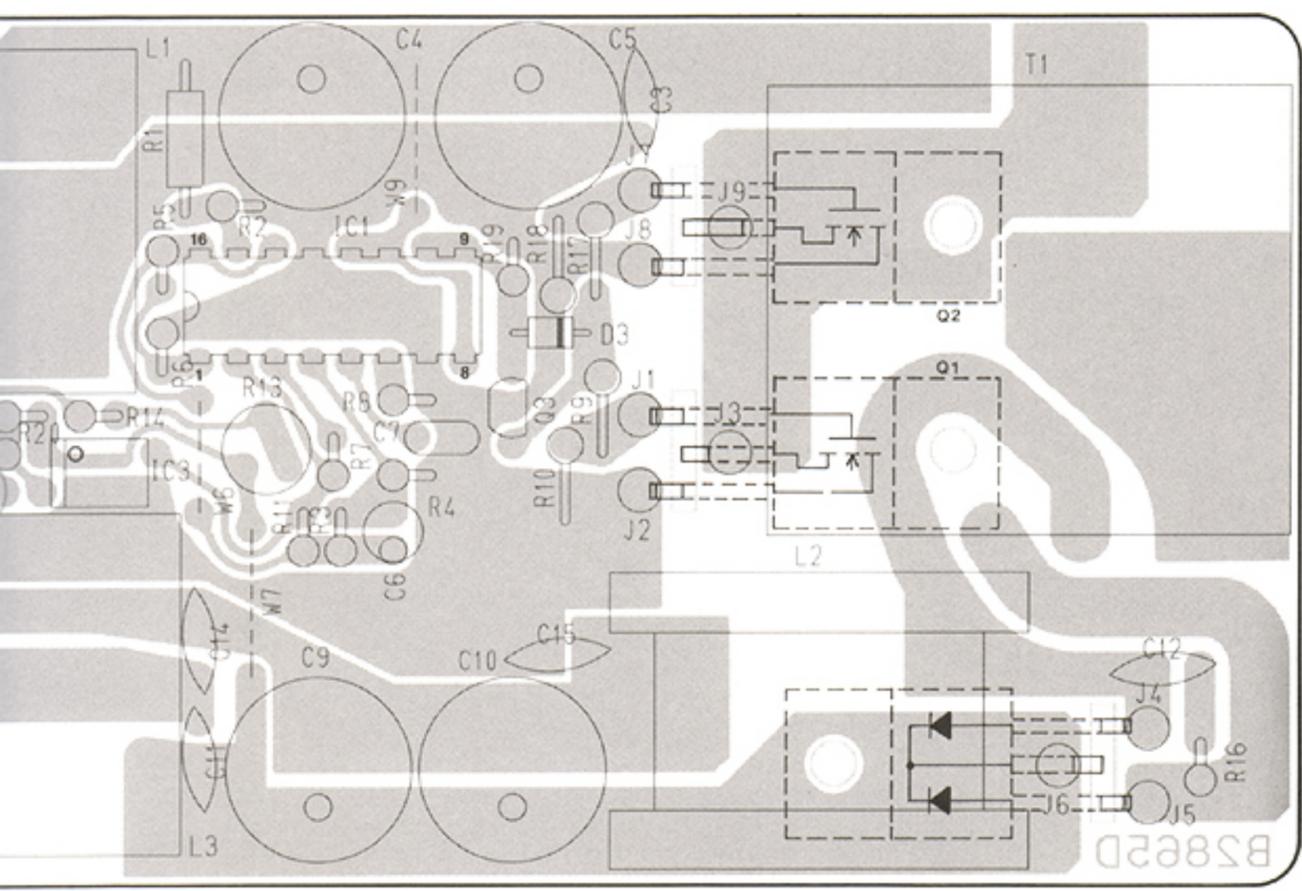
● SW BOARD



15	J1
	GND
	KCLR
	K7
	K4
	K1
	K0
	K8
	K5
	K2
	KENT
	K9
	K6
	K3
	KTES
1	KCAL

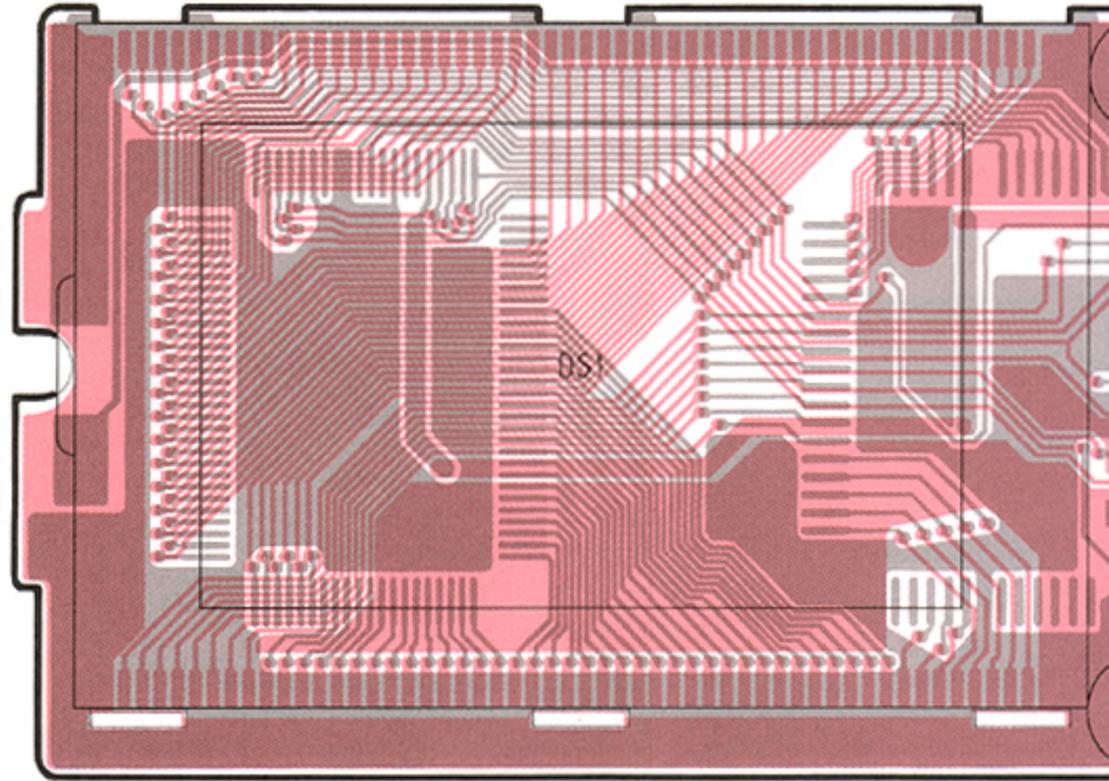
To DISP UNIT
J3

Note: Add "3600" to each indicated part number on the unit for the actual number.

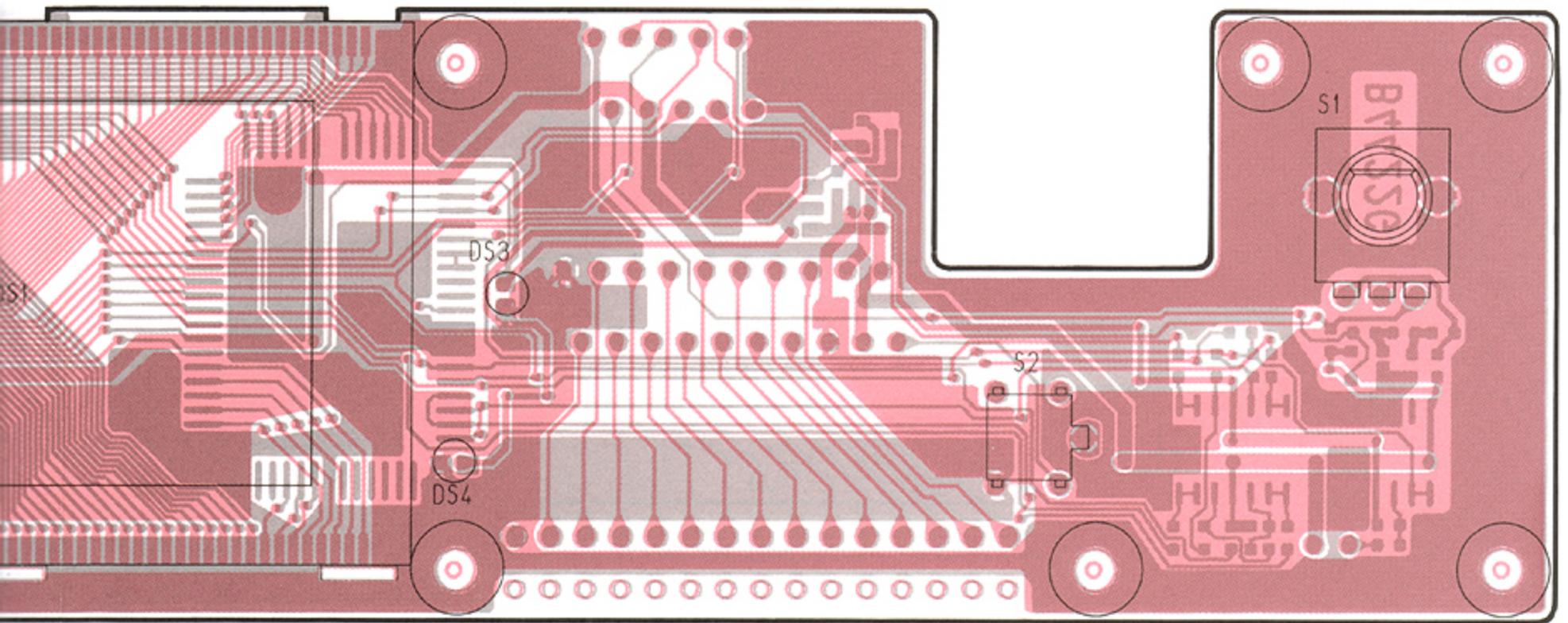


Note: Add "7000" to each indicated part number on the unit for the actual number.

● DISP BOARD

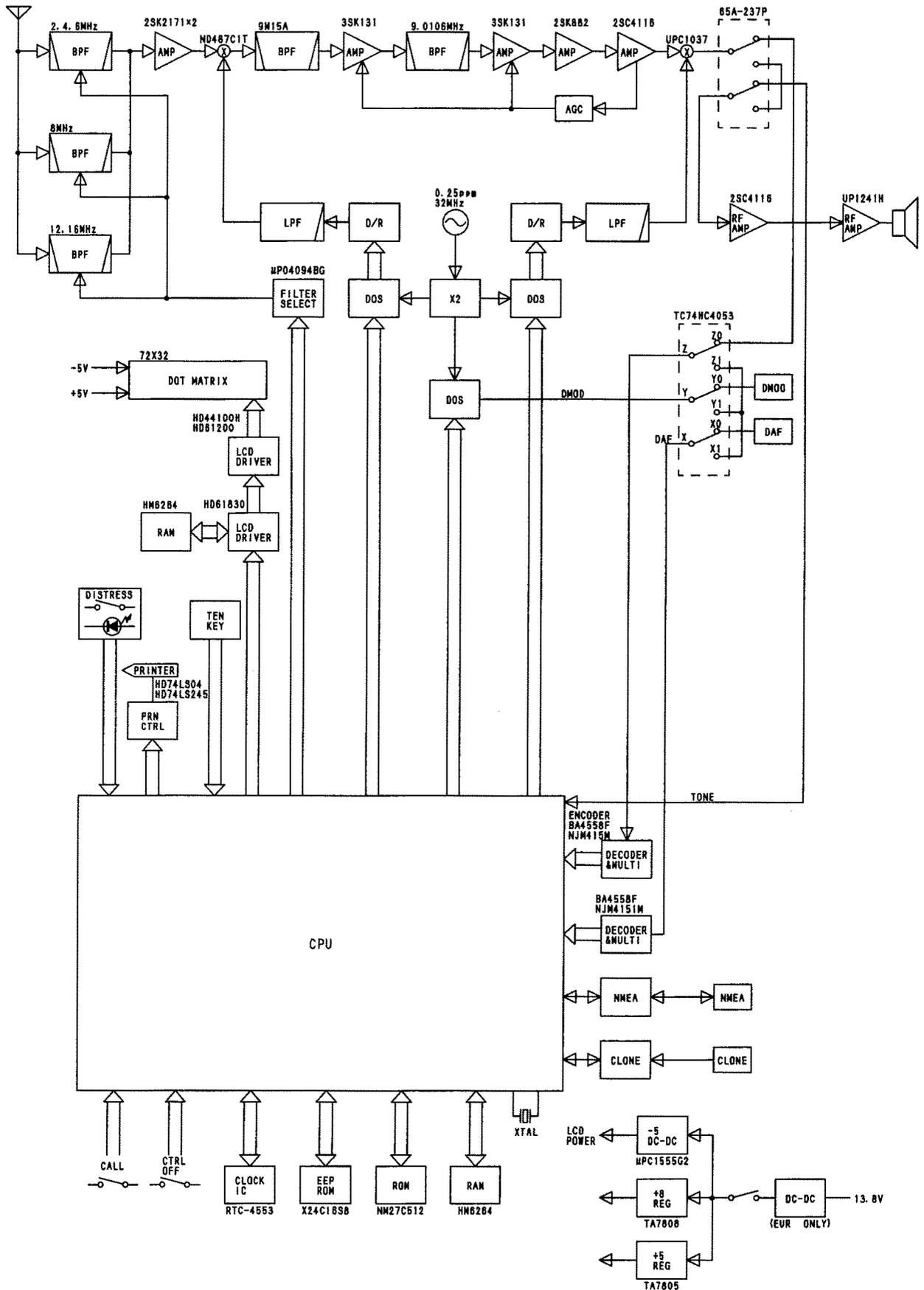


Note: Add "7000" to each indicated part number on the unit for the actual number.

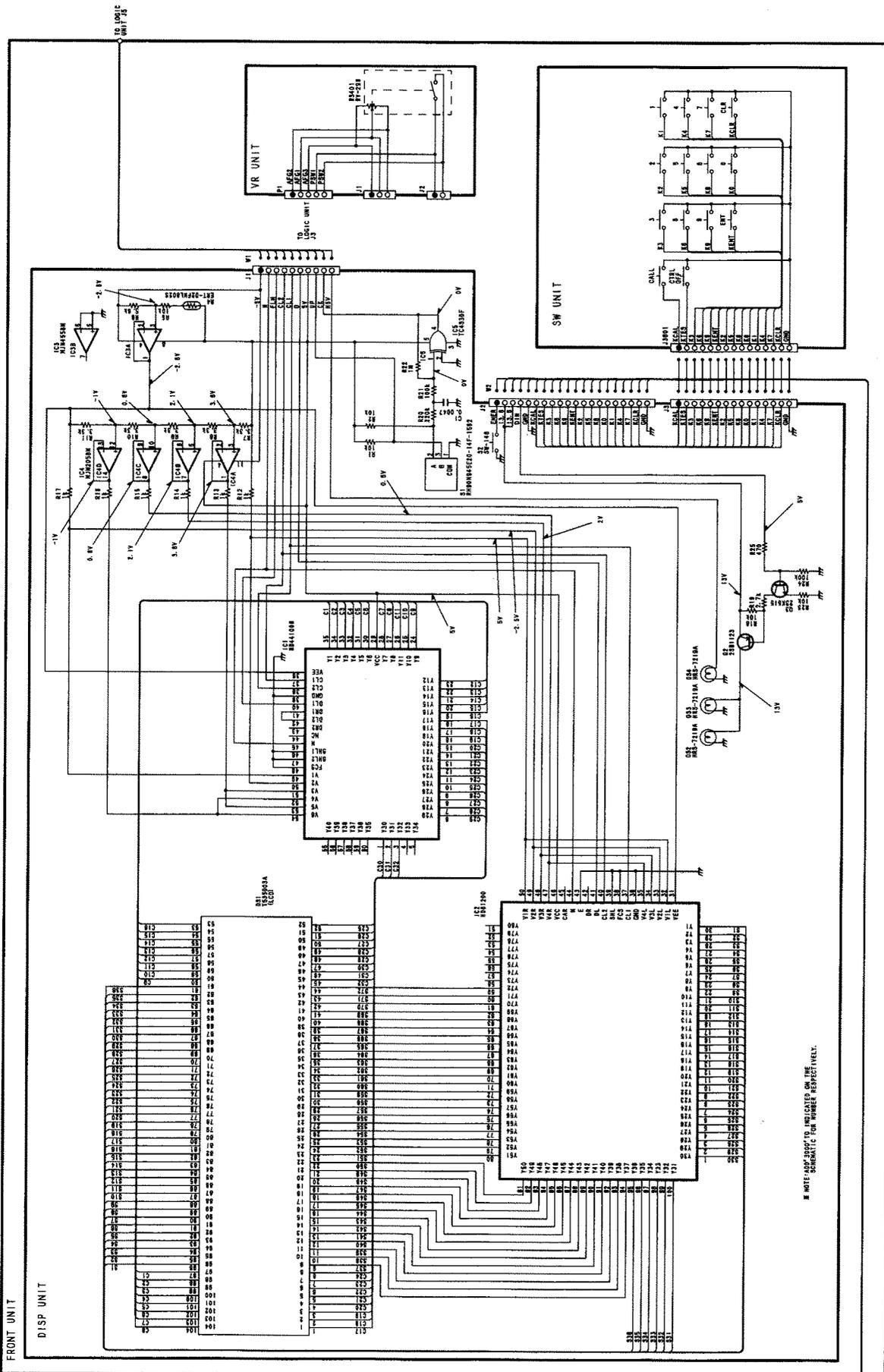


er on the unit for the actual number.

SECTION 9 BLOCK DIAGRAM



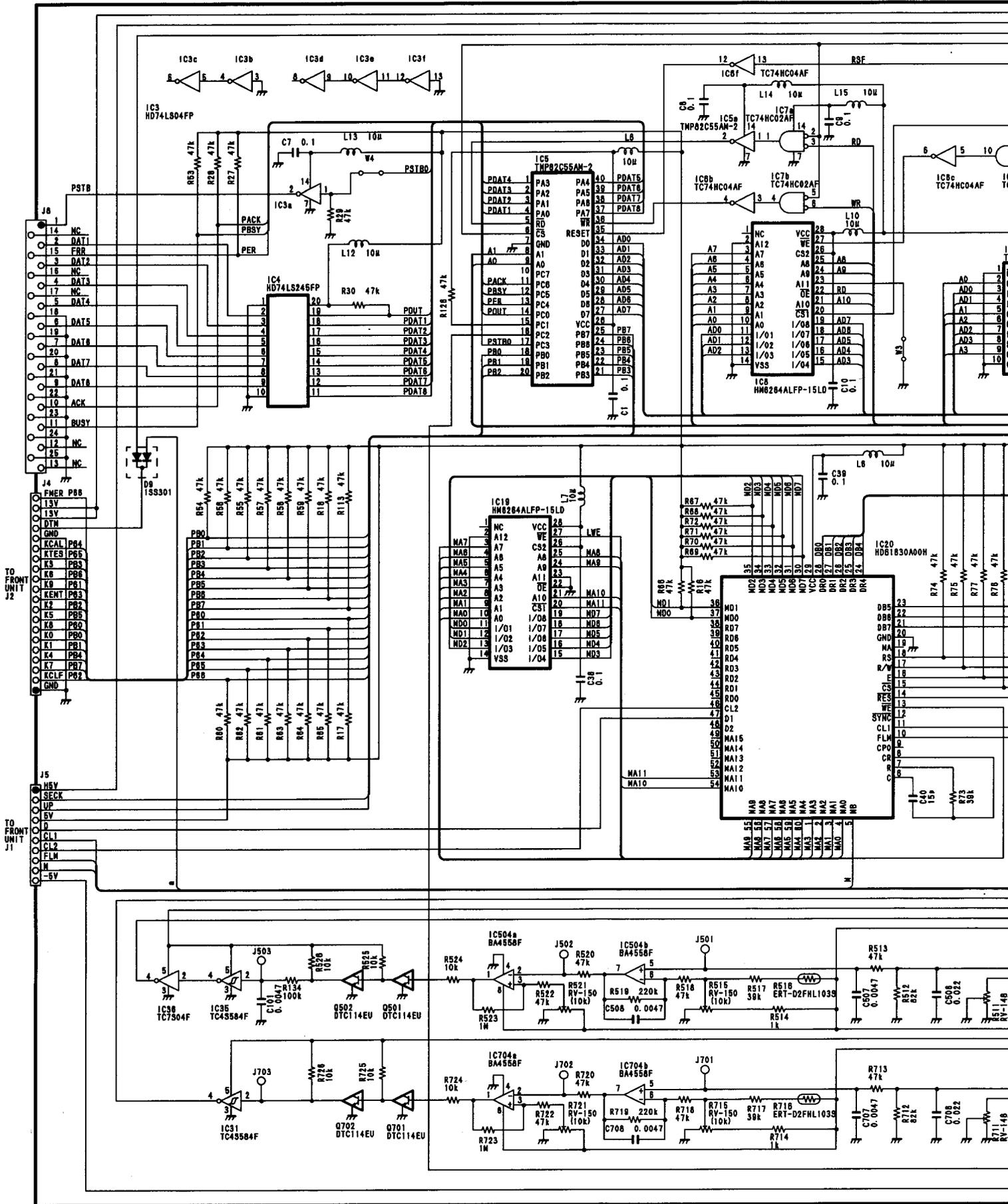
SECTION 10 VOLTAGE DIAGRAM

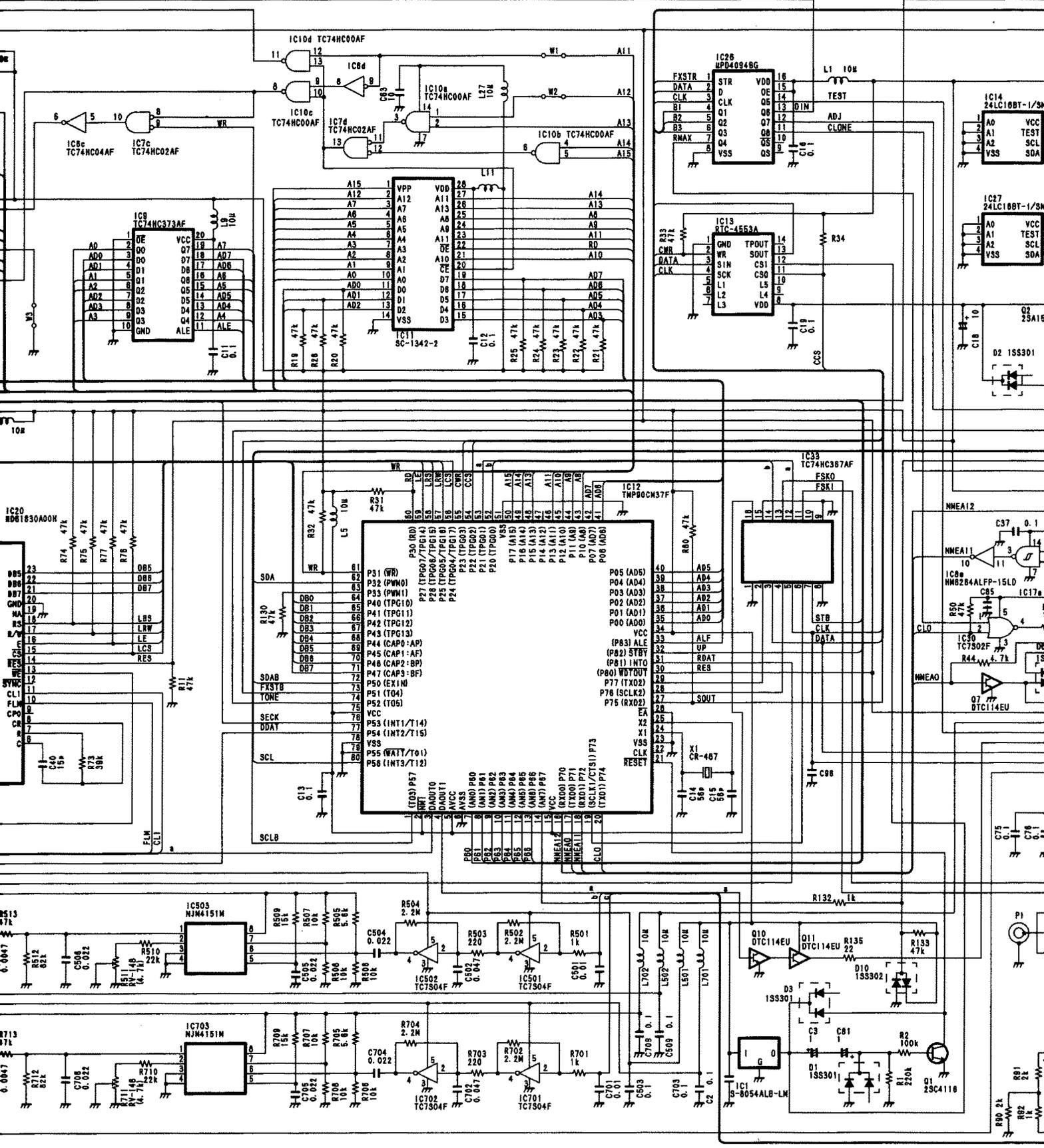


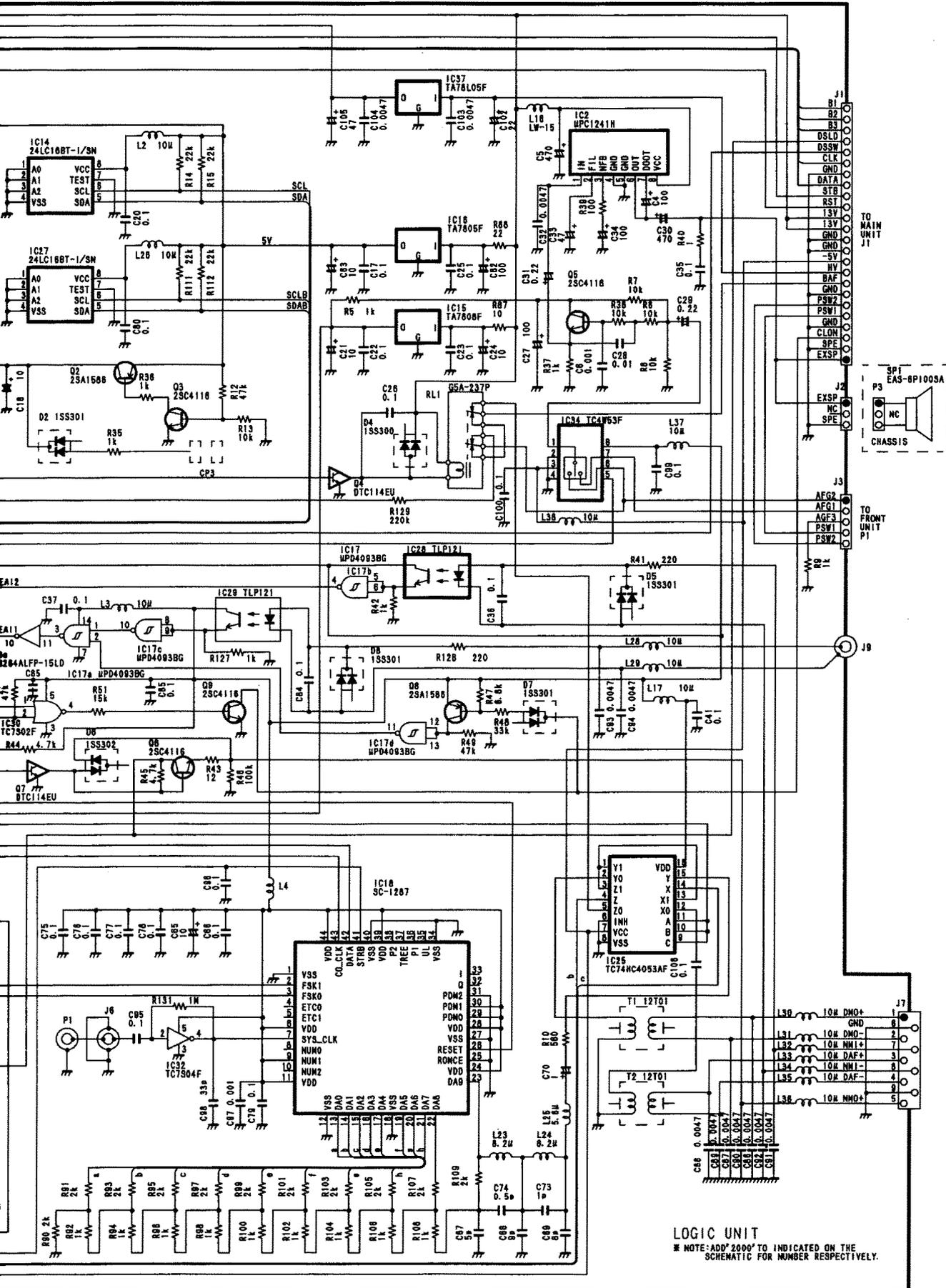
NOTE: AMP SUPPLY IS INDICATED ON THE SCHEMATIC FOR NUMBER RESPECTIVELY.

10-1

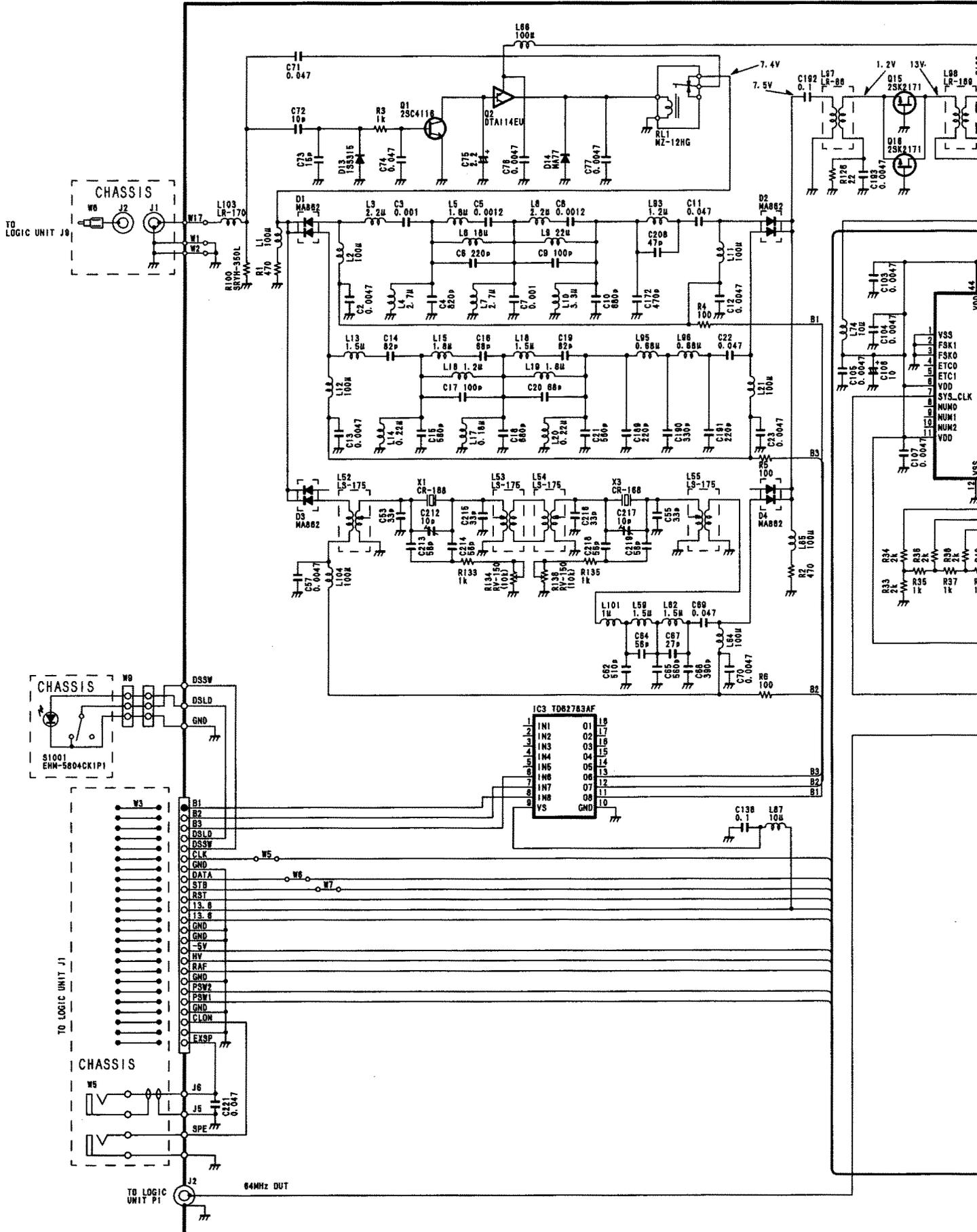
● LOGIC UNIT

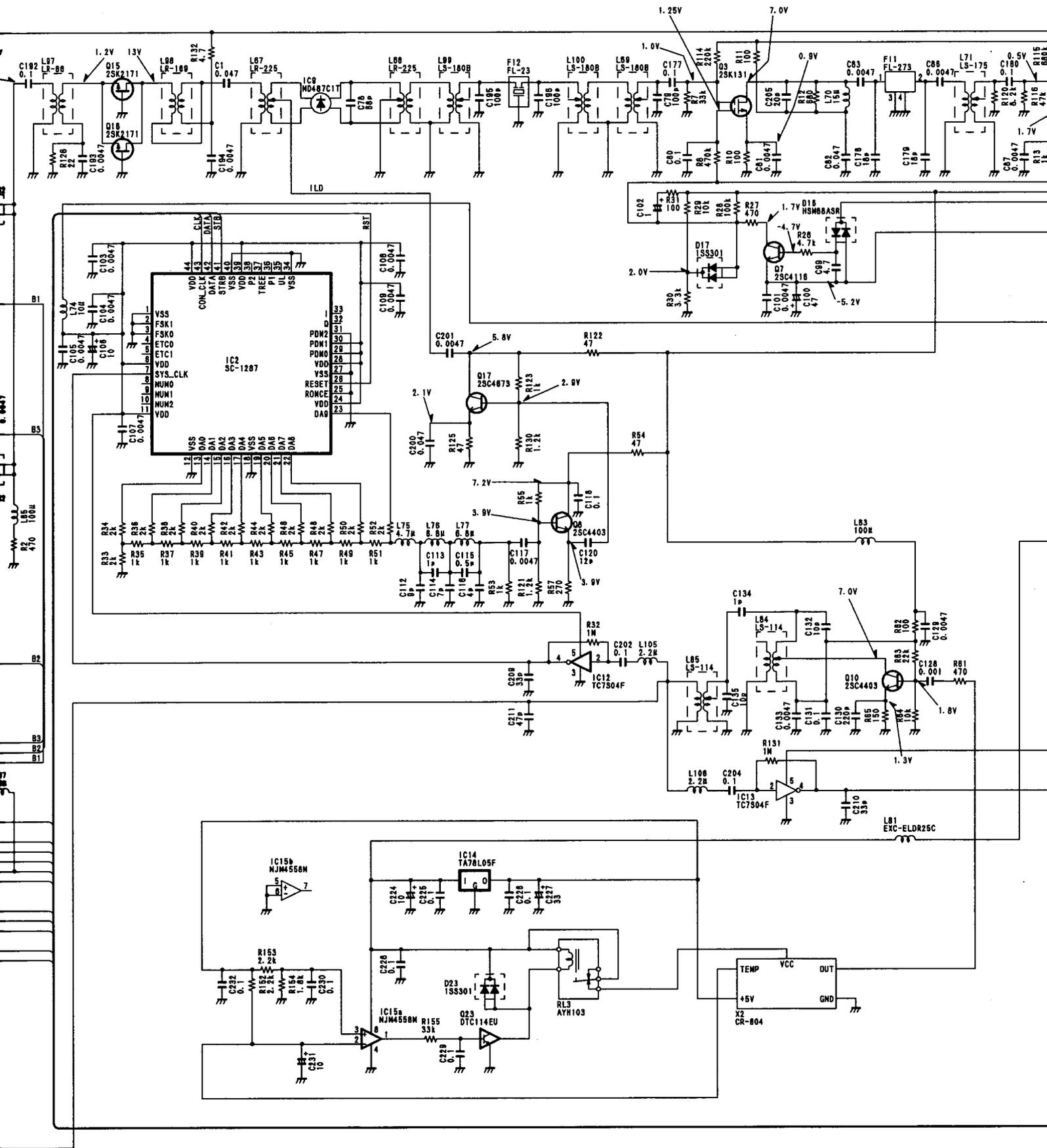


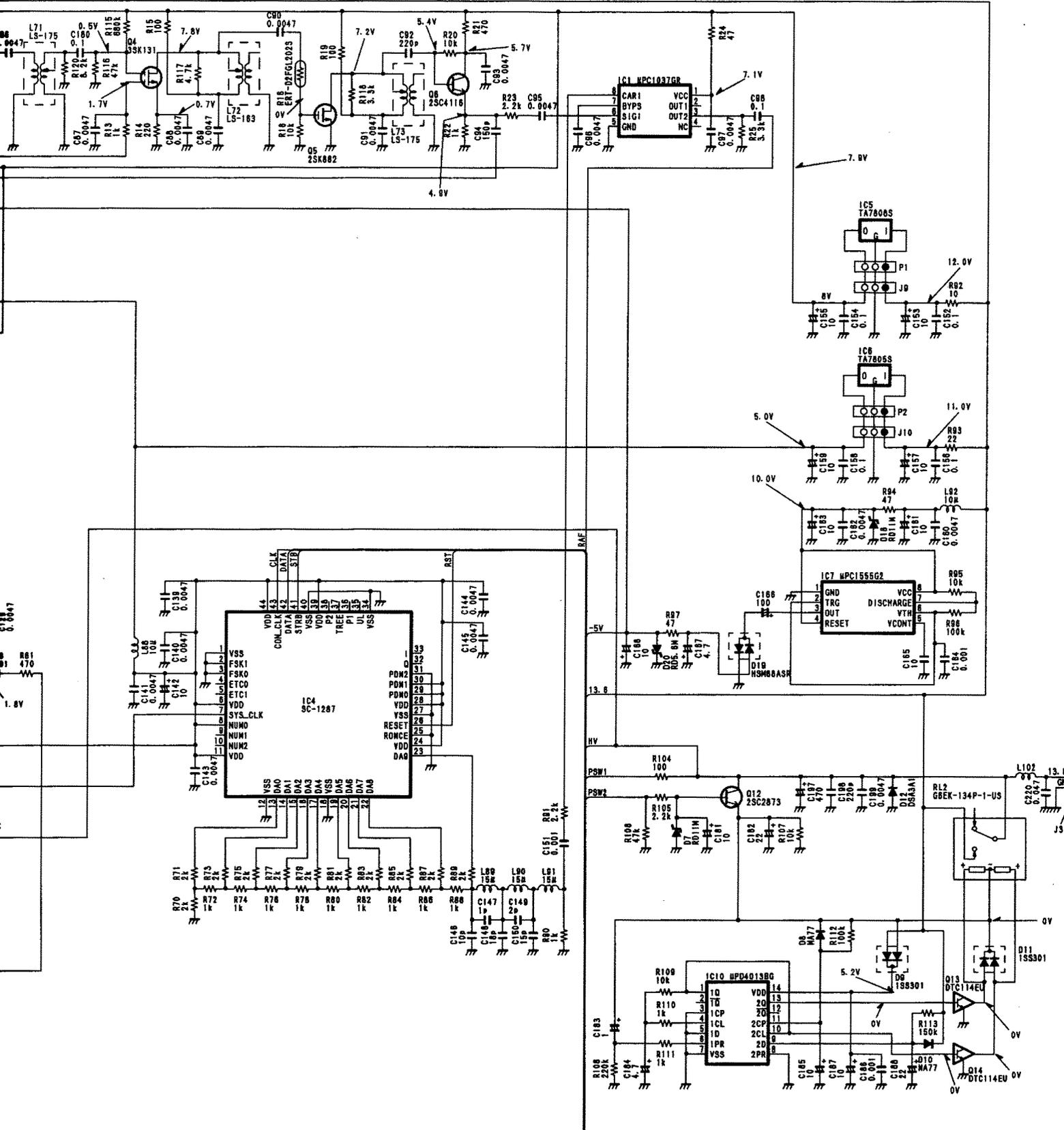




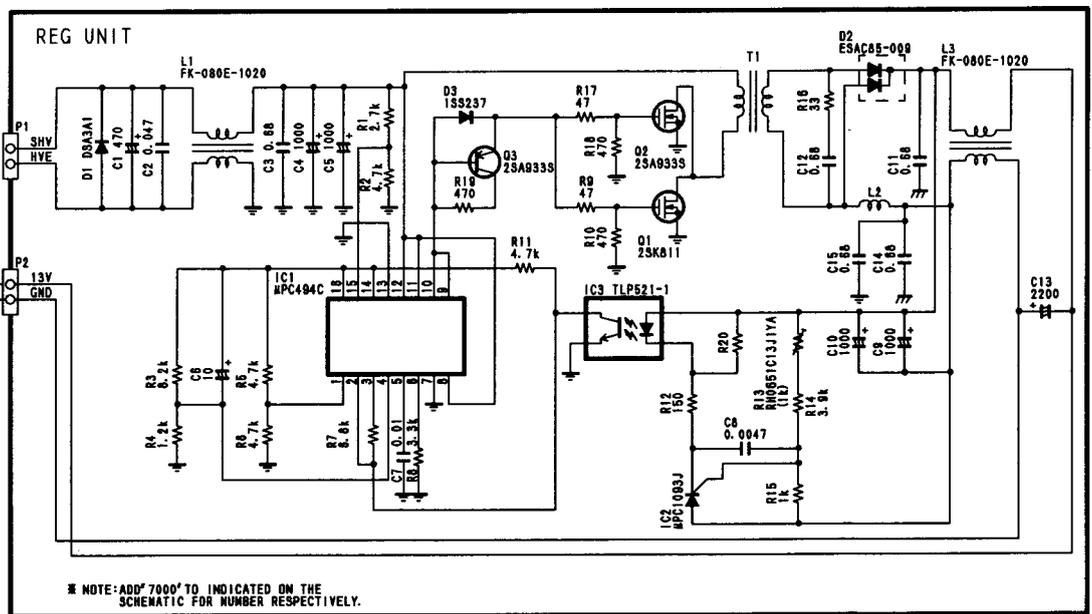
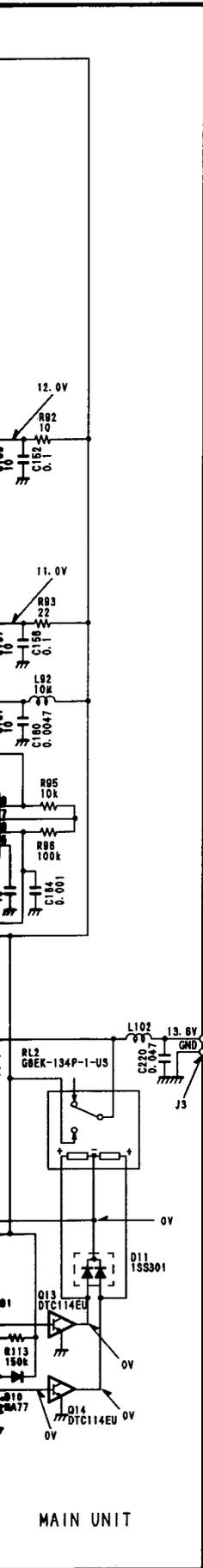
● MAIN UNIT







MAIN UNIT



AT-130

AT-130E

HF AUTOMATIC ANTENNA TUNER

INTRODUCTION

This service manual describes the latest service information for the **AT-130/AT-130E** AUTOMATIC ANTENNA TUNER at the time of publication.

MODEL	VERSION	SYMBOL
AT-130	U.S.A.	USA
AT-130E	Europe	EUR

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

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>

1110003140 IC LA1150N AT-130 MAIN UNIT 5 pieces
 8810008560 Screw PH M3 x 8 SUS ZK AT-130 Rear panel 10 pieces

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

DANGER

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

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

DO NOT reverse the polarities of the power supply when connecting the antenna tuner.

REPAIR NOTES

1. Make sure a problem is internal before disassembling the antenna tuner.
2. **DO NOT** open the antenna tuner until the antenna tuner is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated tuning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the antenna tuner is defective.
6. **READ** the instructions of test equipment thoroughly before connecting equipment to the antenna tuner.

TABLE OF CONTENTS

SECTION 1 SPECIFICATIONS

SECTION 2 INSIDE VIEWS

SECTION 3 CIRCUIT DESCRIPTION

SECTION 4 ADJUSTMENT PROCEDURES

SECTION 5 PARTS LIST

SECTION 6 BOARD LAYOUTS

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6 - 2 MANUAL UNIT	6 - 2

SECTION 7 BLOCK DIAGRAM

SECTION 8 VOLTAGE DIAGRAM

SECTION 1 SPECIFICATIONS

• Number of memory channels		: 45
• Frequency range		: 1.6 MHz to 30 MHz with a 7 m (23 ft) or longer antenna element
• Power capability		: 150 W PEP 100 W continuous
• Input impedance		: 50 Ω
• Automatic tuning power		: 5 to 15 W
• Automatic tuning time		:
General		: Approx. 2 to 3 sec. (max. 15 sec.)
Returning to a memorized frequency		: Approx. 1 sec.
• Automatic tuning accuracy (VSWR)		: Less than 2.0 : 1 (after tuning; except for multiples of $\frac{1}{2} \lambda$)
• Antenna required		: Marconi-type with suitable RF ground (More than 7 m (23 ft) is suggested)
• Power supply required		: DC 13.6 V \pm 15 % (supplied from HF transceiver)
• Current drain		: Less than 2 A
• Usable temperature range		: -30°C to $+60^{\circ}\text{C}$; -22°F to $+140^{\circ}\text{F}$
• Dimensions (projections not included)		: 230(W) \times 80(H) \times 340(D) mm 9 $\frac{3}{32}$ (W) \times 3 $\frac{3}{32}$ (H) \times 13 $\frac{13}{32}$ (D) in
• Case construction		: Weatherproof
• Weight		:
	AT-130	: 2.5 kg; 5 lb 8 oz
	AT-130E	: 2.7 kg; 6 lb
• Control cable		: AWG 14 \times 4 conductors

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

SECTION 2 CIRCUIT DESCRIPTION

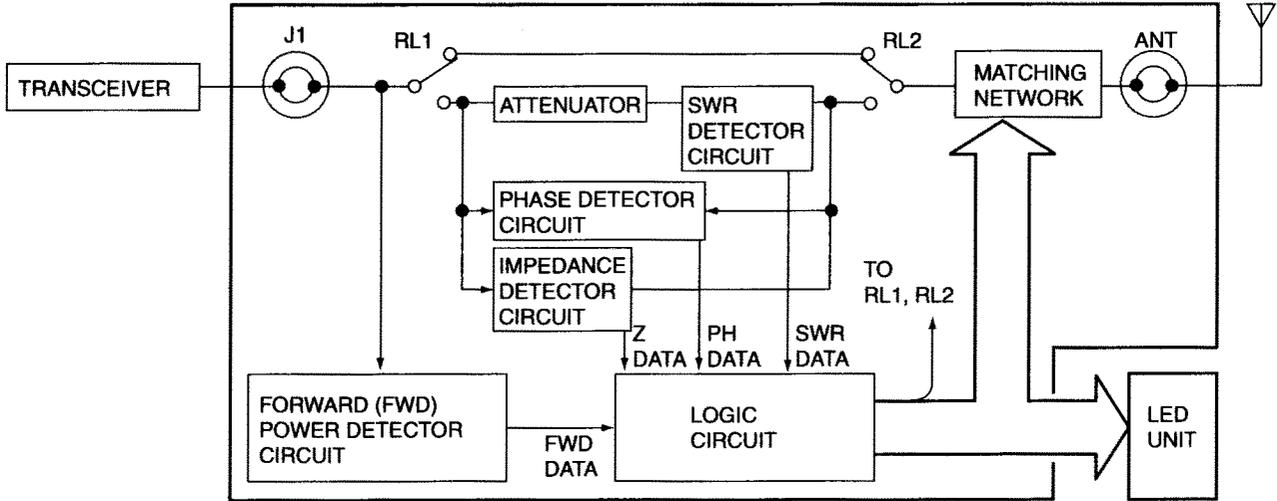
3-1 GENERAL

An 8-bit microprocessor controls the AT-130. The tuner matches the antenna system to the transceiver by using four kinds of detector circuits. These circuits are:

- (1) FORWARD POWER DETECTOR
- (2) SWR DETECTOR
- (3) PHASE DETECTOR
- (4) IMPEDANCE DETECTOR

Detailed descriptions of each circuit follows.

• General

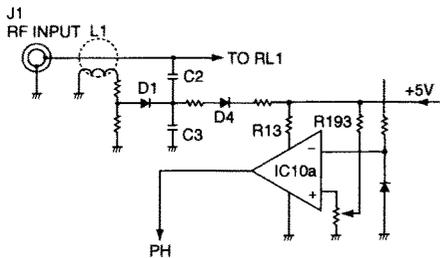


3-2 FORWARD (FWD) POWER DETECTOR CIRCUIT

This circuit ensures the input power from the transceiver is low enough to be handled by the attenuator within the tuner.

On the TUNER UNIT, L1 and D1 detects the RF input current. C2 and C3 divide the detected voltage and feed it to IC10a.

• Forward power detector circuit



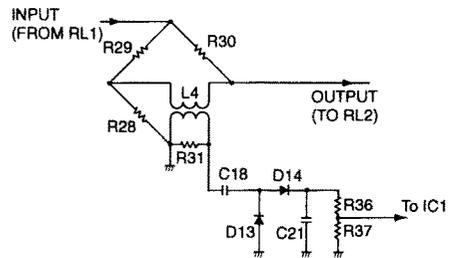
3-3 SWR DETECTOR CIRCUIT

The reflected power from the antenna system provides a detection voltage.

The voltage doubler, consisting of D13 and D14, rectifies this voltage and passes through the voltage divider formed by R36 and R37.

These SWR data from voltage divider feed into IC1, The CPU. The CPU controls the setting of the coils and capacitors in the matching network.

• SWR detector circuit

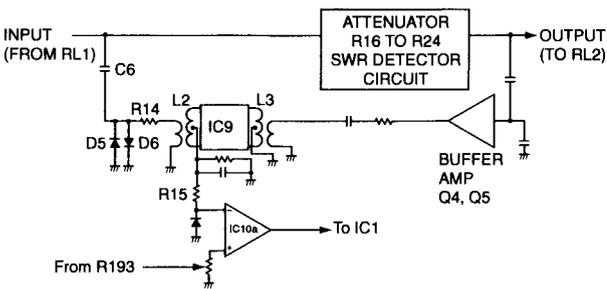


3-4 PHASE DETECTOR CIRCUIT

This circuit consists of L2, L3 and IC9. The phase detector's purpose is to detect reactance components and provide a pure resistance.

The output of IC9 is a reference voltage of approximately 4 V when the load of L3 is a pure resistance with no reactance. An inductive load produces an output voltage from IC9 which is lower than the reference voltage, whereas, a capacitive load produces an output voltage higher than the reference voltage. IC10a amplifies the output voltage and passes it to comparator IC10a.

• Phase detector circuit



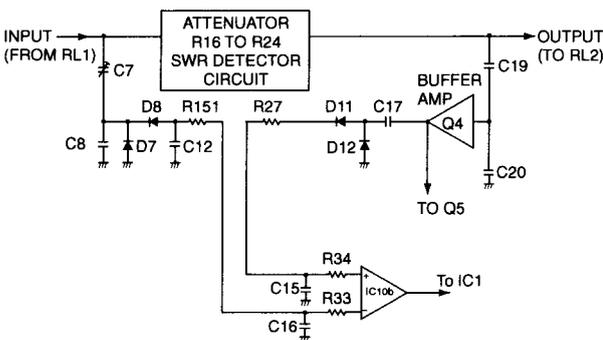
3-5 IMPEDANCE DETECTOR CIRCUIT

The tuner uses an attenuator to reduce the transmit power to a very low level. The low power minimizes the risk of interference to other stations while matching an antenna to the transmitter.

The VSWR at the input terminal is usually close to 1:1 even with a large change of impedance at the attenuator output due to the 16 dB of isolation between the input and the matching network.

The circuit uses the constant voltage at D7 and D8 on The TUNER unit as a reference. If the impedance of the attenuator output is higher than 50 Ω, the detected voltage by D11 and D12 is HIGH. If the impedance is lower than 50 Ω, the voltage is LOW. Both the reference and detected voltages feed to comparator IC10b.

• Impedance detector circuit



3-6 LOGIC CIRCUIT

IC1, The CPU, controls the antenna matching network. The CPU receives +5V through IC8 when DC power is applied to the tuner. This voltage initializes the CPU. The stored program in the Read Only Memory (ROM) IC12 sets each relay to the initial condition.

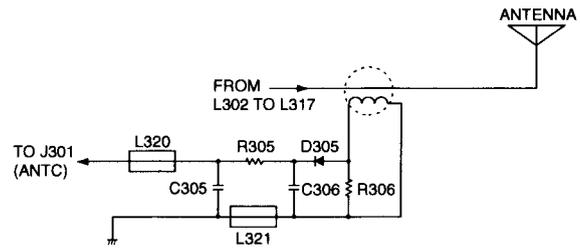
The tuning program begins only if the START line is at LOW level. RL1 and RL2 activate when RF power at the input antenna connector from the transceiver is present at an appropriate level (See Section 6-2).

The data from the previously described detectors (input RF power, reflected RF power, phase difference, impedance difference) feed into the CPU. The coil data then passes to IC4, the capacitor data to IC3 and the control data to IC2 according to the tuning program.

3-8 ANTENNA CURRENT DETECTOR CIRCUIT (MANUAL UNIT — Europe version only)

On the MANUAL UNIT, L319 detects the antenna current. D305 rectifies the detected voltage and feed it to J301 through low-pass filter comprising R305, C305 and C306.

• Antenna current detector circuit



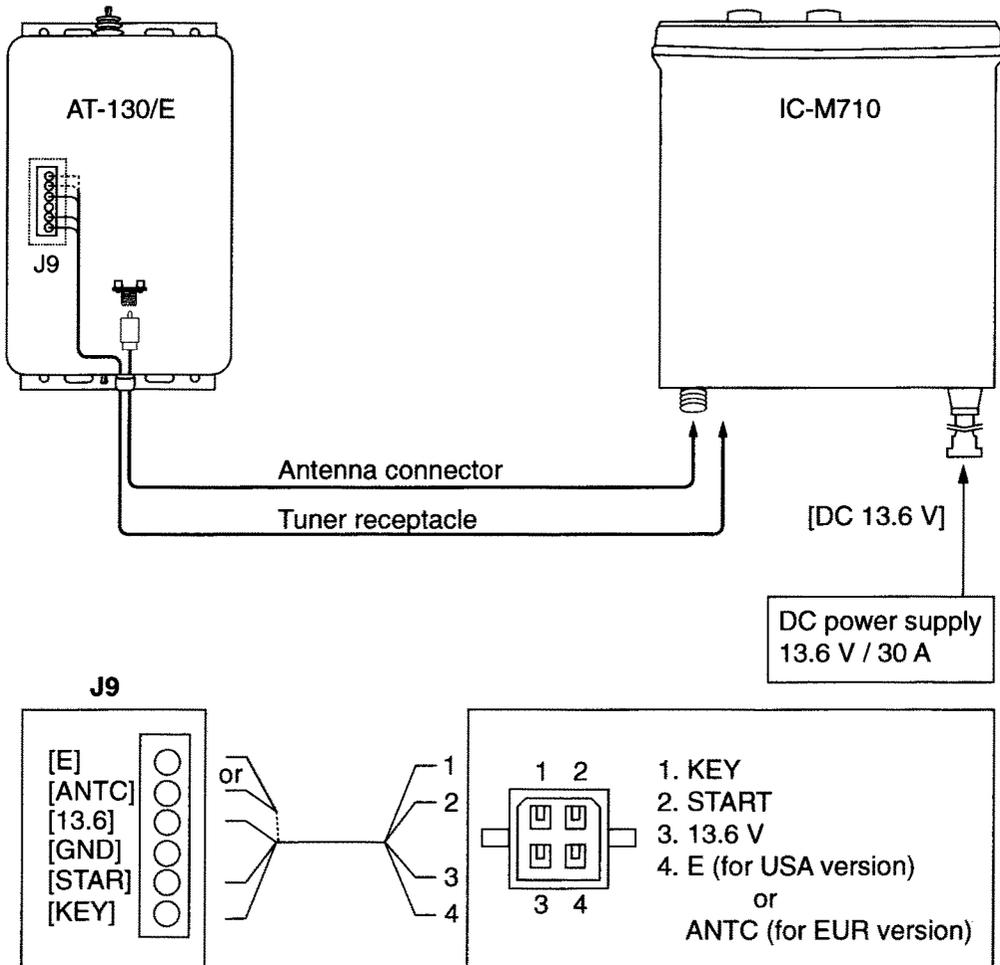
SECTION 3 ADJUSTMENT PROCEDURES

3-1 PREPARATION

■ REQUIRED TEST EQUIPMENT

EQUIPMENT	GRADE AND RANGE
DC power supply	Output voltage : 13.6 V DC Current capacity : 10 A or more
Oscilloscope	Frequency range : DC-20 MHz Measuring range : 0.01-10 V
Transceiver	: IC-M710

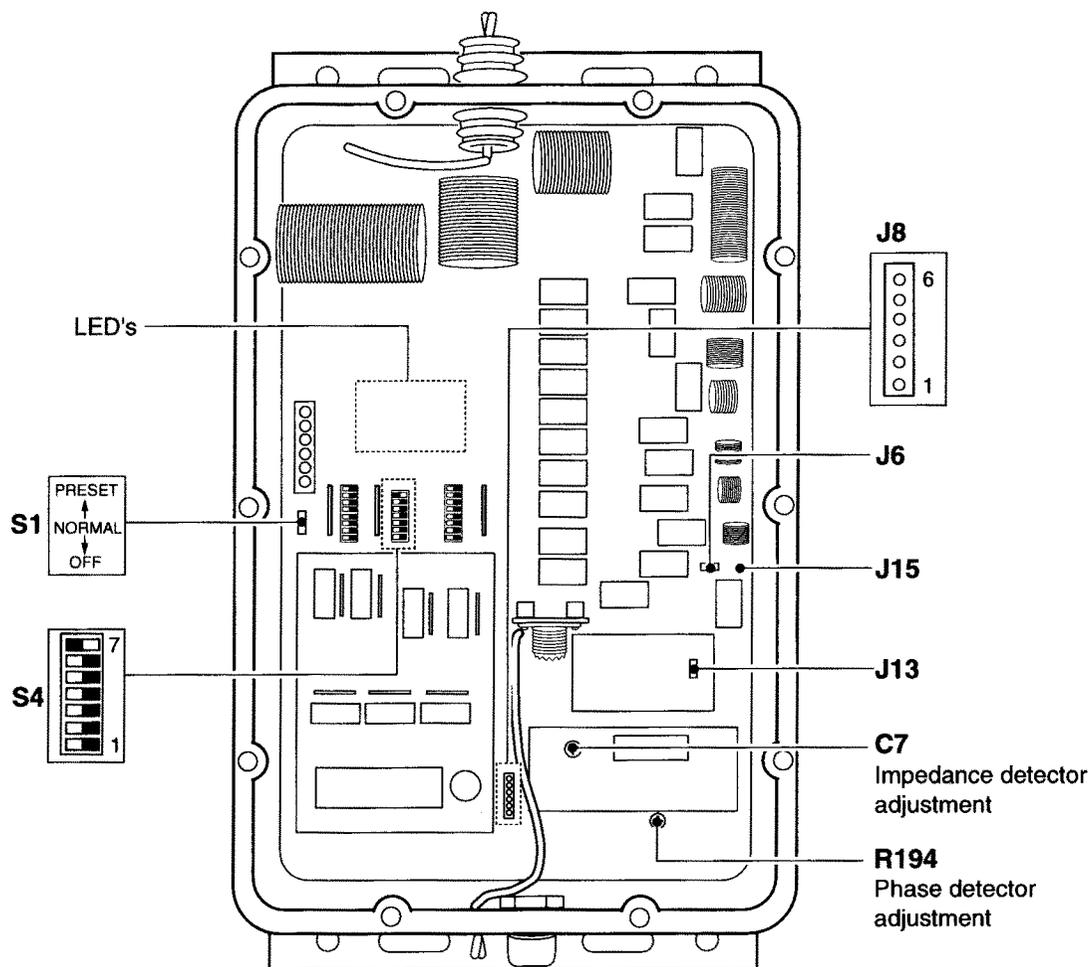
■ CONNECTIONS



3-2 ANTENNA TUNER ADJUSTMENT

ADJUSTMENT	ADJUSTMENT CONDITION	MEASUREMENT		VALUE	ADJUSTMENT POINT	
		UNIT	LOCATION		UNIT	ADJUST
PHASE DETECTOR CIRCUIT	1 <ul style="list-style-type: none"> • S1 : PRESET • S4-7 : OFF • Short pins of J13. • Disconnect P6 from J6. • Ground J15 with a jumper wire. • TRANSCIEIVER Display freq. : 1.6 MHz Output power : 10 W (carrer only) Transmitting 	TUNER	Connect an oscilloscope to the check point pin 2 of J8.	5 V (Tune R194 just before drope.)	TUNER	R56
IMPEDANCE DETECTOR CIRCUIT	2 • Same as above		Connect an oscilloscope to check point pin 3 of J8.	5 V (Tune C7 just before drope.)		C7
FORWARD DETECTOR CIRCUIT	3 • Same as above		Connect an oscilloscope to check point pin 1 of J8.	1.4 – 2.4 V		Verify
SWR DETECTOR CIRCUIT	4 • Same as above		Connect an oscilloscope to check point pin 4 of J8.	0 – 0.1 V		Verify

NOTE: • After adjustment, remove the jumper wires from J15 and ground.
 • After adjustment, Disconnect pins of J13.
 • After adjustment, reconnect P6 to J6 and set S1 to [NORMAL] position.



SECTION 4 PARTS LIST

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
IC1	1140003000	IC	µPD78212CW-613
IC2	1130006930	IC	TC74HC574AP
IC3	1130006930	IC	TC74HC574AP
IC4	1130006930	IC	TC74HC574AP
IC5	1130005200	IC	TC74HC393AP
IC6	1130000050	IC	TC4013BP (NEW)
IC7	1110003160	IC	S-80741AL
IC8	1110002020	IC	TA7805S
IC9	1790000060	IC	ND487C2-3R
IC10	1110000060	IC	TA75393S
IC11	1160000100	IC	UPA2004C
IC12	1160000100	IC	UPA2004C
IC13	1160000100	IC	UPA2004C
IC14	1160000100	IC	UPA2004C
Q1	1560000110	FET	2SK241-GR
Q2	1530000150	TRANSISTOR	2SC2668-O
Q3	1590000350	TRANSISTOR	RN1204
Q4	1530000110	TRANSISTOR	2SC2458-GR
Q5	1530000110	TRANSISTOR	2SC2458-GR
Q7	1510000080	TRANSISTOR	2SA1048-GR
Q8	1530000110	TRANSISTOR	2SC2458-GR
Q9	1590000350	TRANSISTOR	RN1204
Q10	1530000110	TRANSISTOR	2SC2458-GR
Q11	1530000110	TRANSISTOR	2SC2458-GR
D1	1710000330	DIODE	1K60
D2	1710000580	DIODE	1SS265
D3	1710000580	DIODE	1SS265
D4	1710000160	DIODE	1SS133
D5	1710000330	DIODE	1K60
D6	1710000330	DIODE	1K60
D7	1710000330	DIODE	1K60
D8	1710000330	DIODE	1K60
D9	1710000160	DIODE	1SS133
D10	1710000160	DIODE	1SS133
D11	1710000330	DIODE	1K60
D12	1710000330	DIODE	1K60
D13	1710000330	DIODE	1K60
D14	1710000330	DIODE	1K60
D15	1710000160	DIODE	1SS133
D16	1710000060	DIODE	1SS55
D17	1710000060	DIODE	1SS55
D18	1710000350	DIODE	1N4002
D19	1710000350	DIODE	1N4002
D20	1710000350	DIODE	1N4002
D21	1710000160	DIODE	1SS133
D22	1710000160	DIODE	1SS133
D24	1710000040	DIODE	1S953
D25	1730000170	ZENER	RD8.2E B1
D26	1710000040	DIODE	1S953
D29	1710000160	DIODE	1SS133
D30	1710000160	DIODE	1SS133
D31	1710000160	DIODE	1SS133
D32	1710000160	DIODE	1SS133
D33	1710000160	DIODE	1SS133
D34	1710000160	DIODE	1SS133
D35	1710000160	DIODE	1SS133
D36	1710000160	DIODE	1SS133
D37	1710000160	DIODE	1SS133
D38	1710000160	DIODE	1SS133
D39	1710000160	DIODE	1SS133
D40	1710000160	DIODE	1SS133
D41	1710000160	DIODE	1SS133
D42	1710000160	DIODE	1SS133
D43	1710000160	DIODE	1SS133
D44	1710000160	DIODE	1SS133
D45	1710000160	DIODE	1SS133
D46	1710000160	DIODE	1SS133
D47	1710000160	DIODE	1SS133
D48	1710000160	DIODE	1SS133
D49	1710000160	DIODE	1SS133
D50	1710000160	DIODE	1SS133
D51	1710000160	DIODE	1SS133

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
D52	1710000060	DIODE	1SS55
D52	1710000060	DIODE	1SS55
D53	1710000060	DIODE	1SS55
D54	1710000060	DIODE	1SS55
D55	1710000060	DIODE	1SS55
D56	1710000060	DIODE	1SS55
D57	1710000060	DIODE	1SS55
D58	1710000060	DIODE	1SS55
D59	1710000060	DIODE	1SS55
D60	1710000060	DIODE	1SS55
D61	1710000060	DIODE	1SS55
D62	1710000060	DIODE	1SS55
D63	1710000060	DIODE	1SS55
D64	1710000060	DIODE	1SS55
D65	1710000060	DIODE	1SS55
D66	1710000060	DIODE	1SS55
D67	1710000060	DIODE	1SS55
D68	1710000060	DIODE	1SS55
D69	1710000060	DIODE	1SS55
D70	1710000060	DIODE	1SS55
D71	1710000060	DIODE	1SS55
D72	1710000060	DIODE	1SS55
D73	1710000060	DIODE	1SS55
D74	1710000060	DIODE	1SS55
D75	1710000060	DIODE	1SS55
D76	1710000060	DIODE	1SS55
D77	1710001460	DIODE	1SS165
D78	1710000160	DIODE	1SS133
D79	1710000160	DIODE	1SS133
D80	1790001460	DIODE	1SS165
X1	6050006930	XTAL	RF-4A3 FAT (9.8304 MHz)
L1	6140000100	COIL	LR-22A
L2	6140000930	COIL	LR-116
L3	6140000930	COIL	LR-116
L4	6140000070	COIL	LR-19
L5	6180000450	COIL	RFC L6 222K
L6	6110002750	COIL	LA-459
L7	6110002760	COIL	LA-460
L8	6110002770	COIL	LA-461
L9	6110002780	COIL	LA-462
L10	6110002790	COIL	LA-463
L11	6110002800	COIL	LA-464
L12	6110002810	COIL	LA-465
L13	6110002820	COIL	LA-466
L14	6110002830	COIL	LA-467
L15	6110002840	COIL	LA-468
L16	6110002850	COIL	LA-469
L17	6110002860	COIL	LA-470
L18	6180000900	COIL	LAL 03NA 101K
L19	6910000670	COIL	BL01RN1-A62-001 [EUR] only
L20	6910000670	COIL	BL01RN1-A62-001
L22	6910000670	COIL	BL01RN1-A62-001
L23	6910000670	COIL	BL01RN1-A62-001
L24	6180000900	COIL	LAL 03NA 101K
L25	6180000900	COIL	LAL 03NA 101K
L26	6910000670	COIL	BL01RN1-A62-001
L27	6910000670	COIL	BL01RN1-A62-001
L28	6180000900	COIL	LAL 03NA 101K
L29	6180000900	COIL	LAL 03NA 101K
L30	6910000670	COIL	BL01RN1-A62-001
L31	6180001220	COIL	LAL 04NA 100K
L32	6180000880	COIL	LAL 03NA 100K
L33	6180002270	COIL	LAL 03NA 470K
R1	7010004190	RESISTOR	R20J 1 kΩ
R2	7010004670	RESISTOR	R50XJ 22 Ω
R3	7010004670	RESISTOR	R50XJ 22 Ω
R4	7010003340	RESISTOR	ELR20J 330 Ω
R5	7010003740	RESISTOR	ELR20J 470 kΩ
R6	7010003240	RESISTOR	ELR20J 47 Ω
R8	7010004320	RESISTOR	R20J 10 kΩ

S.=Surface mount

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION
R9	7010004230	RESISTOR R20J 2.2 kΩ
R10	7010004410	RESISTOR R20J 47 kΩ
R11	7010003440	RESISTOR ELR20J 2.2 kΩ
R12	7010003480	RESISTOR ELR20J 4.7 kΩ
R13	7010000290	RESISTOR ELR25J 220 Ω
R14	7010003950	RESISTOR R20J 10 Ω
R15	7010004320	RESISTOR R20J 10 kΩ
R16	7070000731	RESISTOR ERG2SJ 331 (330 Ω)
R17	7070000731	RESISTOR ERG2SJ 331 (330 Ω)
R18	7070000721	RESISTOR ERG2SJ 271 (270 Ω)
R19	7070000291	RESISTOR ERG2SJ 221 (220 Ω)
R20	7070000291	RESISTOR ERG2SJ 221 (220 Ω)
R21	7070000291	RESISTOR ERG2SJ 221 (220 Ω)
R22	7070000300	RESISTOR CRH100X R-02J 330 Ω
R23	7070000300	RESISTOR CRH100X R-02J 330 Ω
R24	7070000711	RESISTOR ERG1SJ 271 (270 Ω)
R25	7010004410	RESISTOR R20J 47 kΩ
R26	7010004410	RESISTOR R20J 47 kΩ
R27	7010003440	RESISTOR ELR20J 2.2 kΩ
R28	7010004690	RESISTOR R50XJ 47 Ω
R29	7010004690	RESISTOR R50XJ 47 Ω
R30	7010004690	RESISTOR R50XJ 47 Ω
R31	7010004690	RESISTOR R50XJ 47 Ω
R32	7010004030	RESISTOR R20J 47 Ω
R33	7010004490	RESISTOR R20J 220 kΩ
R34	7010004490	RESISTOR R20J 220 kΩ
R35	7010004420	RESISTOR R20J 56 kΩ
R36	7010004230	RESISTOR R20J 2.2 kΩ
R37	7010004410	RESISTOR R20J 47 kΩ
R38	7010004190	RESISTOR R20J 1 kΩ
R39	7010004320	RESISTOR R20J 10 kΩ
R40	7010004320	RESISTOR R20J 10 kΩ
R41	7010004320	RESISTOR R20J 10 kΩ
R42	7010003400	RESISTOR ELR20J 1 kΩ
R43	7010001020	RESISTOR R25XJ 82 Ω
R44	7010004110	RESISTOR R20J 220 Ω
R45	7540000010	ABSORBER DSA-301LA
R46	7010000590	RESISTOR ELR25J 47 kΩ
R47	7010003200	RESISTOR ELR20J 22 Ω
R49	7010000160	RESISTOR ELR25J 18 Ω
R51	7010004940	RESISTOR ELR25J 68 Ω
R52	7010001010	RESISTOR R25XJ 68 Ω
R53	7010004400	RESISTOR R20J 39 kΩ
R54	7010003380	RESISTOR ELR20J 680 Ω
R55	7100000150	RESISTOR SRW2P 22 Ω (220)
R56	7010003580	RESISTOR ELR20J 22 kΩ
R57	7010004450	RESISTOR R20J 100 kΩ
R58	7010004250	RESISTOR R20J 3.3 kΩ
R59	7010003550	RESISTOR ELR20J 15 kΩ
R60	7010004230	RESISTOR R20J 2.2 kΩ
R61	7010003490	RESISTOR ELR20J 5.6 kΩ
R62	7010004110	RESISTOR R20J 220 Ω
R63	7010003390	RESISTOR ELR20J 820 Ω
R64	7010003620	RESISTOR ELR20J 47 kΩ
R66	7010003660	RESISTOR ELR20J 100 kΩ
R67	7010004410	RESISTOR R20J 47 kΩ
R68	7080001191	RESISTOR RN14K2E 390 kΩ (F)
R70	7410000080	ARRAY RMX- 4 473K
R71	7010003400	RESISTOR ELR20J 1 kΩ
R72	7010004190	RESISTOR R20J 1 kΩ
R73	7010004190	RESISTOR R20J 1 kΩ
R74	7010004190	RESISTOR R20J 1 kΩ
R75	7010003320	RESISTOR ELR20J 220 Ω
R76	7010003660	RESISTOR ELR20J 100 kΩ
R77	7010003700	RESISTOR ELR20J 220 kΩ
R78	7080000410	RESISTOR CRB25FX 480 kΩ
R79	7410000220	ARRAY RMX- 8 473K
R80	7410000220	ARRAY RMX- 8 473K
R81	7410000220	ARRAY RMX- 8 473K
R82	7010003620	RESISTOR ELR20J 47 kΩ
R83	7410000200	ARRAY RMX- 8 222K
R84	7010004150	RESISTOR R20J 470 Ω
R85	7010004150	RESISTOR R20J 470 Ω
R86	7010004150	RESISTOR R20J 470 Ω
R87	7010004150	RESISTOR R20J 470 Ω
R88	7010004150	RESISTOR R20J 470 Ω
R89	7010004150	RESISTOR R20J 470 Ω
R90	7010004150	RESISTOR R20J 470 Ω
R91	7410000200	ARRAY RMX- 8 222K
R92	7010004150	RESISTOR R20J 470 Ω
R93	7010004150	RESISTOR R20J 470 Ω
R94	7010004150	RESISTOR R20J 470 Ω

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION
R95	7010004150	RESISTOR R20J 470 Ω
R96	7010004150	RESISTOR R20J 470 Ω
R97	7010004150	RESISTOR R20J 470 Ω
R98	7010004150	RESISTOR R20J 470 Ω
R99	7010004150	RESISTOR R20J 470 Ω
R100	7410000200	ARRAY RMX- 8 222K
R101	7010004150	RESISTOR R20J 470 Ω
R102	7010004150	RESISTOR R20J 470 Ω
R103	7010004150	RESISTOR R20J 470 Ω
R104	7010004150	RESISTOR R20J 470 Ω
R105	7010004150	RESISTOR R20J 470 Ω
R106	7010004150	RESISTOR R20J 470 Ω
R107	7010004150	RESISTOR R20J 470 Ω
R108	7010004150	RESISTOR R20J 470 Ω
R109	7010003990	RESISTOR R20J 22 Ω
R111	7010003990	RESISTOR R20J 22 Ω
R113	7010003990	RESISTOR R20J 22 Ω
R115	7010003990	RESISTOR R20J 22 Ω
R117	7010003990	RESISTOR R20J 22 Ω
R119	7010003990	RESISTOR R20J 22 Ω
R121	7010003990	RESISTOR R20J 22 Ω
R123	7010003990	RESISTOR R20J 22 Ω
R125	7010003990	RESISTOR R20J 22 Ω
R127	7010003990	RESISTOR R20J 22 Ω
R129	7010003990	RESISTOR R20J 22 Ω
R131	7010003990	RESISTOR R20J 22 Ω
R133	7010003200	RESISTOR ELR20J 22 Ω
R135	7010003990	RESISTOR R20J 22 Ω
R137	7010003990	RESISTOR R20J 22 Ω
R139	7010003990	RESISTOR R20J 22 Ω
R141	7010003990	RESISTOR R20J 22 Ω
R143	7010003990	RESISTOR R20J 22 Ω
R145	7010003990	RESISTOR R20J 22 Ω
R147	7010003990	RESISTOR R20J 22 Ω
R149	7010004150	RESISTOR R20J 470 Ω
R150	7010003480	RESISTOR ELR20J 4.7 kΩ
R151	7010003440	RESISTOR ELR20J 2.2 kΩ
R152	7010000940	RESISTOR R25XJ 18 Ω
R154	7010000940	RESISTOR R25XJ 18 Ω
R156	7010003620	RESISTOR ELR20J 47 kΩ
R157	7080001191	RESISTOR RN14K2E 390 kΩ (F)
R158	7010003450	RESISTOR ELR20J 2.7 kΩ
R159	7010003530	RESISTOR ELR20J 10 kΩ
R160	7010003360	RESISTOR ELR20J 470 Ω
R161	7010003620	RESISTOR ELR20J 47 kΩ
R162	7010003620	RESISTOR ELR20J 47 kΩ
R163	7010004450	RESISTOR R20J 100 kΩ
R164	7010004450	RESISTOR R20J 100 kΩ
R165	7010000940	RESISTOR R25XJ 18 Ω
R167	7010003410	RESISTOR ELR20J 1.2 kΩ
R168	7010003410	RESISTOR ELR20J 1.2 kΩ
R169	7010003410	RESISTOR ELR20J 1.2 kΩ
R170	7010003410	RESISTOR ELR20J 1.2 kΩ
R171	7010003410	RESISTOR ELR20J 1.2 kΩ
R172	7010003410	RESISTOR ELR20J 1.2 kΩ
R173	7010003410	RESISTOR ELR20J 1.2 kΩ
R174	7010003410	RESISTOR ELR20J 1.2 kΩ
R175	7010003410	RESISTOR ELR20J 1.2 kΩ
R176	7010003410	RESISTOR ELR20J 1.2 kΩ
R177	7010003410	RESISTOR ELR20J 1.2 kΩ
R178	7010003410	RESISTOR ELR20J 1.2 kΩ
R179	7010003410	RESISTOR ELR20J 1.2 kΩ
R180	7010003410	RESISTOR ELR20J 1.2 kΩ
R181	7010003410	RESISTOR ELR20J 1.2 kΩ
R182	7010003410	RESISTOR ELR20J 1.2 kΩ
R183	7010003410	RESISTOR ELR20J 1.2 kΩ
R184	7010003410	RESISTOR ELR20J 1.2 kΩ
R185	7010003410	RESISTOR ELR20J 1.2 kΩ
R186	7010003410	RESISTOR ELR20J 1.2 kΩ
R187	7010003410	RESISTOR ELR20J 1.2 kΩ
R188	7010003410	RESISTOR ELR20J 1.2 kΩ
R189	7010003410	RESISTOR ELR20J 1.2 kΩ
R190	7010001030	RESISTOR R25XJ 100 Ω
R191	7010001190	RESISTOR R25XJ 2.2 kΩ
R192	7010003520	RESISTOR ELR20J 8.2 kΩ
R193	7010003720	RESISTOR ELR20J 330 kΩ
R194	7310000660	TRIMMER RH0621C14J19A (103)
R195	7010003400	RESISTOR ELR20J 1 kΩ
R196	7010003490	RESISTOR ELR20J 5.6 kΩ
R197	7010005220	RESISTOR ELR20J 10M Ω
R198	7010004420	RESISTOR R20J 56 kΩ
R200	7010003660	RESISTOR ELR20J 100 kΩ

S.=Surface mount

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
R201	7010004190	RESISTOR	R20J 1 kΩ
R202	7010003700	RESISTOR	ELR20J 220 kΩ
R203	7010003620	RESISTOR	ELR20J 47 kΩ
R204	7010004410	RESISTOR	R20J 47 kΩ
R205	7410000350	ARRAY	RMX- 3 104K
R206	7410000350	ARRAY	RMX- 3 104K
R207	7410000350	ARRAY	RMX- 3 104K
R208	7410000350	ARRAY	RMX- 3 104K
R209	7410000350	ARRAY	RMX- 3 104K
C1	4040000250	BARRIERLAYR	UAT 08X 473M
C2	4010003860	CERAMIC	DD06 SL 100D 500V
C3	4010000380	CERAMIC	DD106-601 SL 221J 50V
C4	4010000410	CERAMIC	DD107 SL 331J 50V
C5	4040000250	BARRIERLAYR	UAT 08X 473M
C6	4010003910	CERAMIC	DD06 SL 220K 500V
C7	4610001430	TRIMMER	ECV-1ZW 10X32E
C8	4010000360	CERAMIC	DD106 SL 181J 50V
C9	4510004130	ELECTROLYTIC	16 MV 33 HW
C10	4010000520	CERAMIC	DD107-601 B 472K 50V
C11	4040000250	BARRIERLAYR	UAT 08X 473M
C12	4010000410	CERAMIC	DD107 SL 331J 50V
C13	4010000410	CERAMIC	DD107 SL 331J 50V
C14	4040000250	BARRIERLAYR	UAT 08X 473M
C15	4040000150	BARRIERLAYR	UAT 05X 472K
C16	4010000520	CERAMIC	DD107-601 B 472K 50V
C17	4040000260	BARRIERLAYR	UZE 08X 104M
C18	4040000250	BARRIERLAYR	UAT 08X 473M
C19	4020000080	CYLINDER	UP125 SL 100J
C20	4010000210	CERAMIC	DD104 SL 300J 50V
C21	4010000410	CERAMIC	DD107 SL 331J 50V
C22	4010000520	CERAMIC	DD107-601 B 472K 50V
C23	4040000250	BARRIERLAYR	UAT 08X 473M
C24	4320000660	DIP MICA	KD20C 122J5
C25	4320000660	DIP MICA	KD20C 122J5
C26	4320000660	DIP MICA	KD20C 122J5
C28	4010004740	CERAMIC	DE1207 SL 271J 2KV
C29	4010004750	CERAMIC	DE1510 SL 331J 2KV
C30	4010004280	CERAMIC	DE1207 SL 151J 3KV
C31	4010004280	CERAMIC	DE1207 SL 151J 3KV
C32	4010004280	CERAMIC	DE1207 SL 151J 3KV
C34	4010000520	CERAMIC	DD107-601 B 472K 50V
C35	4010004280	CERAMIC	DE1207 SL 151J 3KV
C36	4010004280	CERAMIC	DE1207 SL 151J 3KV
C37	4010004790	CERAMIC	DE1210 SL 680J 6KV
C38	4010004260	CERAMIC	DE0907 SL 820J 3KV
C39	4010004770	CERAMIC	DE0910 SL 390J 6KV
C40	4010004770	CERAMIC	DE0910 SL 390J 6KV
C41	4010005040	CERAMIC	DE0707 SL 180J 3KV
C42	4010005040	CERAMIC	DE0707 SL 180J 3KV
C43	4010000520	CERAMIC	DD107-601 B 472K 50V
C44	4010004810	CERAMIC	DE1310 SL 101J 6KV
C45	4010004810	CERAMIC	DE1310 SL 101J 6KV
C46	4010004810	CERAMIC	DE1310 SL 101J 6KV
C47	4010004810	CERAMIC	DE1310 SL 101J 6KV
C48	4010000520	CERAMIC	DD107-601 B 472K 50V
C50	4040000260	BARRIERLAYR	UZE 08X 104M
C52	4010000520	CERAMIC	DD107-601 B 472K 50V
C53	4510003900	ELECTROLYTIC	16 MV 22 HW
C54	4010000520	CERAMIC	DD107-601 B 472K 50V
C55	4010000520	CERAMIC	DD107-601 B 472K 50V
C56	4510003910	ELECTROLYTIC	16 MV 47 HW
C57	4010000520	CERAMIC	DD107-601 B 472K 50V
C58	4010000520	CERAMIC	DD107-601 B 472K 50V
C59	4040000250	BARRIERLAYR	UAT 08X 473M
C60	4510004590	ELECTROLYTIC	16 MV 470 HC
C61	4010000520	CERAMIC	DD107-601 B 472K 50V
C62	4010000520	CERAMIC	DD107-601 B 472K 50V
C64	4010000520	CERAMIC	DD107-601 B 472K 50V
C65	4010000520	CERAMIC	DD107-601 B 472K 50V
C66	4010000520	CERAMIC	DD107-601 B 472K 50V
C68	4040000150	BARRIERLAYR	UAT 05X 472K
C69	4010000500	CERAMIC	DD104 B 102K 50V
C70	4010000520	CERAMIC	DD107-601 B 472K 50V
C71	4010000520	CERAMIC	DD107-601 B 472K 50V
C72	4040000150	BARRIERLAYR	UAT 05X 472K
C73	4040000150	BARRIERLAYR	UAT 05X 472K
C74	4010000520	CERAMIC	DD107-601 B 472K 50V
C75	4310000520	MYLAR	50 F2D 224J
C76	4010000520	CERAMIC	DD107-601 B 472K 50V
C77	4010000520	CERAMIC	DD107-601 B 472K 50V

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
C78	4010000430	CERAMIC	DD108-601 SL 471J 50V
C79	4010000460	CERAMIC	DD104 B 471K 50V
C81	4040000150	BARRIERLAYR	UAT 05X 472K
C82	4550000340	TANTALUM	DN 1C 100M
C83	45100005460	ELECTROLYTIC	FYDOH 474Z
C84	4310000520	MYLAR	50 F2D 224J
C85	4310000520	MYLAR	50 F2D 224J
C86	4010000500	CERAMIC	DD104 B 102K 50V
C87	4010000810	CERAMIC	DD104 CH 300J 50V
C88	4010000810	CERAMIC	DD104 CH 300J 50V
C89	4040000150	BARRIERLAYR	UAT 05X 472K
C90	4530000250	ARRAY	B8XC0112-32N
C91	4010000520	CERAMIC	DD107-601 B 472K 50V
C92	4040000150	BARRIERLAYR	UAT 05X 472K
C93	4530000250	ARRAY	B8XC0112-32N
C94	4010000520	CERAMIC	DD107-601 B 472K 50V
C95	4010000520	CERAMIC	DD107-601 B 472K 50V
C96	4530000250	ARRAY	B8XC0112-32N
C98	4010000520	CERAMIC	DD107-601 B 472K 50V
C100	4010000520	CERAMIC	DD107-601 B 472K 50V
C102	4010000520	CERAMIC	DD107-601 B 472K 50V
C104	4010000520	CERAMIC	DD107-601 B 472K 50V
C106	4010000520	CERAMIC	DD107-601 B 472K 50V
C108	4010000520	CERAMIC	DD107-601 B 472K 50V
C110	4010000520	CERAMIC	DD107-601 B 472K 50V
C112	4010000520	CERAMIC	DD107-601 B 472K 50V
C114	4010000520	CERAMIC	DD107-601 B 472K 50V
C116	4010000520	CERAMIC	DD107-601 B 472K 50V
C118	4010000520	CERAMIC	DD107-601 B 472K 50V
C120	4010000520	CERAMIC	DD107-601 B 472K 50V
C122	4010000520	CERAMIC	DD107-601 B 472K 50V
C124	4010000520	CERAMIC	DD107-601 B 472K 50V
C126	4010000520	CERAMIC	DD107-601 B 472K 50V
C128	4010000520	CERAMIC	DD107-601 B 472K 50V
C130	4010000520	CERAMIC	DD107-601 B 472K 50V
C132	4010000520	CERAMIC	DD107-601 B 472K 50V
C134	4010000520	CERAMIC	DD107-601 B 472K 50V
C136	4010000520	CERAMIC	DD107-601 B 472K 50V
C137	4530000250	ARRAY	B8XC0112-32N
C138	4530000250	ARRAY	B8XC0112-32N
C139	4530000250	ARRAY	B8XC0112-32N
C140	4530000250	ARRAY	B8XC0112-32N
C141	4530000250	ARRAY	B8XC0112-32N
C142	4530000250	ARRAY	B8XC0112-32N
C144	4530000050	ARRAY	B5RC0126-33N
C147	4010000520	CERAMIC	DD107-601 B 472K 50V
C148	4040000150	BARRIERLAYR	UAT 05X 472K
C150	4010000520	CERAMIC	DD107-601 B 472K 50V
C152	4010000520	CERAMIC	DD107-601 B 472K 50V
C153	4010000520	CERAMIC	DD107-601 B 472K 50V
C155	4010000520	CERAMIC	DD107-601 B 472K 50V
C156	4040000150	BARRIERLAYR	UAT 05X 472K
C162	4010003910	CERAMIC	DD06 SL 220K 500V [USA]
	4010003860	CERAMIC	DD06 SL 100D 500V [EUR]
C163	4040000150	BARRIERLAYR	UAT 05X 472K
C164	4010000520	CERAMIC	DD107-601 B 472K 50V
C165	4010000520	CERAMIC	DD107-601 B 472K 50V
C166	4530000250	ARRAY	B8XC0112-32N
C167	4530000250	ARRAY	B8XC0112-32N
C168	4530000250	ARRAY	B8XC0112-32N
C169	4010000520	CERAMIC	DD107-601 B 472K 50V
C170	4040000150	BARRIERLAYR	UAT 05X 472K
C171	4010000520	CERAMIC	DD107-601 B 472K 50V
C172	4010000520	CERAMIC	DD107-601 B 472K 50V
C173	4010000520	CERAMIC	DD107-601 B 472K 50V
C174	4040000250	BARRIERLAYR	UAT 08X 473M
C175	4040000150	BARRIERLAYR	UAT 05X 472K
C176	4010000520	CERAMIC	DD107-601 B 472K 50V
C177	4040000150	BARRIERLAYR	UAT 05X 472K
C178	4010000520	CERAMIC	DD107-601 B 472K 50V
C179	4010000520	CERAMIC	DD107-601 B 472K 50V
C181	4040000150	BARRIERLAYR	UAT 05X 472K
C182	4010003930	CERAMIC	DD06 SL 270K 500V [EUR] only
RL1	6330001070	RELAY	AJQ1341 B01
RL2	6330001070	RELAY	AJQ1341 B01
RL3	6330001060	RELAY	APQ 3311
RL4	6330000570	RELAY	AR-39251
RL5	6330001060	RELAY	APQ 3311
RL6	6330001060	RELAY	APQ 3311

S.=Surface mount

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
RL7	6330001060	RELAY	APQ 3311
RL8	6330001060	RELAY	APQ 3311
RL9	6330001060	RELAY	APQ 3311
RL10	6330001060	RELAY	APQ 3311
RL11	6330001060	RELAY	APQ 3311
RL12	6330001060	RELAY	APQ 3311
RL13	6330001060	RELAY	APQ 3311
RL14	6330001060	RELAY	APQ 3311
RL15	6330001060	RELAY	APQ 3311
RL16	6330001060	RELAY	APQ 3311
RL17	6330001060	RELAY	APQ 3311
RL18	6330001060	RELAY	APQ 3311
RL19	6330001060	RELAY	APQ 3311
RL20	6330001060	RELAY	APQ 3311
RL21	6330001060	RELAY	APQ 3311
RL22	6330001060	RELAY	APQ 3311
RL23	6330001060	RELAY	APQ 3311
RL24	6330001060	RELAY	APQ 3311
RL25	6330000570	RELAY	AR-39251
RL26	6330000570	RELAY	AR-39251
RL27	6330000570	RELAY	AR-39251
DS1	5040002400	LED	EL202HD
DS2	5040002400	LED	EL202HD
DS3	5040002400	LED	EL202HD
DS4	5040002400	LED	EL202HD
DS5	5040002400	LED	EL202HD
DS6	5040002400	LED	EL202HD
DS7	5040002400	LED	EL202HD
DS8	5040002400	LED	EL202HD
DS9	5040002400	LED	EL202HD
DS10	5040002400	LED	EL202HD
DS11	5040002400	LED	EL202HD
DS12	5040002400	LED	EL202HD
DS13	5040002400	LED	EL202HD
DS14	5040002400	LED	EL202HD
DS15	5040002400	LED	EL202HD
DS16	5040002400	LED	EL202HD
DS17	5040002400	LED	EL202HD
DS18	5040002400	LED	EL202HD
DS19	5040002400	LED	EL202HD
DS20	5040002400	LED	EL202HD
DS21	5040002400	LED	EL202HD
DS22	5040002400	LED	EL202HD
DS23	5040002400	LED	EL202HD
DS24	5040002400	LED	EL202HD
S1	2260000200	SWITCH	MS621C
S2	2260000580	SWITCH	SKHLAD035A
S3	2260000830	SWITCH	SSGM18049A
S4	2260000610	SWITCH	SSGM17012A
S5	2260000830	SWITCH	SSGM18049A
J1	6510000130	CONNECTOR	FM MDR MI
J4	6910003140	CONNECTOR	IMSA-9202B-1-02T
J5	6910003140	CONNECTOR	IMSA-9202B-1-02T
J6	6910003140	CONNECTOR	IMSA-9202B-1-02T
J8	6510002280	CONNECTOR	TL25P06V1
J9	6510015150	CONNECTOR	ML-800S1V-6P
J13	6910003140	CONNECTOR	IMSA-9202B-1-02T
J15	6510003100	CONNECTOR	RT01T-1.3B
J16	6510003100	CONNECTOR	RT01T-1.3B
P4	6910003120	CONNECTOR	IMSA-9206H-T
P5	6910003120	CONNECTOR	IMSA-9206H-T
P6	6910003120	CONNECTOR	IMSA-9206H-T
W1	7120000010	JUMPER	JPW 02A
W2	6910001030	JUMPER	IPS-1041-4
W3	6910001030	JUMPER	IPS-1041-4
W4	6910001030	JUMPER	IPS-1041-4
W5	6910001020	JUMPER	IPS-1041-2
W6	6910001030	JUMPER	IPS-1041-4
W7	6910001030	JUMPER	IPS-1041-4
W8	6910001020	JUMPER	IPS-1041-2
W9	6910001020	JUMPER	IPS-1041-2
W10	6910001020	JUMPER	IPS-1041-2

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
W11	6910001020	JUMPER	IPS-1041-2
W12	6910001030	JUMPER	IPS-1041-4
W13	6910001030	JUMPER	IPS-1041-4
W16	6910001020	JUMPER	IPS-1041-2
W36	6910001030	JUMPER	IPS-1041-4
W42	6910001030	JUMPER	IPS-1041-4
W49	6910001030	JUMPER	IPS-1041-4
W50	6910001030	JUMPER	IPS-1041-4
W51	6910001030	JUMPER	IPS-1041-4
W52	6910001030	JUMPER	IPS-1041-4
W53	6910001030	JUMPER	IPS-1041-4
W54	6910001030	JUMPER	IPS-1041-4
W55	6910001030	JUMPER	IPS-1041-4
W56	6910001030	JUMPER	IPS-1041-4
W57	6910001030	JUMPER	IPS-1041-4
W58	6910001030	JUMPER	IPS-1041-4
W59	6910001030	JUMPER	IPS-1041-4
W60	6910001030	JUMPER	IPS-1041-4
W70	6910001030	JUMPER	IPS-1041-4
W71	6910001030	JUMPER	IPS-1041-4
W72	6910001020	JUMPER	IPS-1041-2
W73	6910001030	JUMPER	IPS-1041-4
W74	6910001030	JUMPER	IPS-1041-4
W75	6910001030	JUMPER	IPS-1041-4
W76	6910001020	JUMPER	IPS-1041-2
W77	7120000010	JUMPER	JPW 02A
W78	6910001030	JUMPER	IPS-1041-4
W79	6910001020	JUMPER	IPS-1041-2
W80	6910001030	JUMPER	IPS-1041-4
W81	6910001030	JUMPER	IPS-1041-4
W82	6910001020	JUMPER	IPS-1041-2
W83	6910001020	JUMPER	IPS-1041-2
W84	6910001020	JUMPER	IPS-1041-2
W85	6910001030	JUMPER	IPS-1041-4
W87	6910001030	JUMPER	IPS-1041-4
W88	6910001030	JUMPER	IPS-1041-4
W89	6910001030	JUMPER	IPS-1041-4
W90	6910001020	JUMPER	IPS-1041-2
W91	6910001030	JUMPER	IPS-1041-4
W92	6910001020	JUMPER	IPS-1041-2
W93	6910001030	JUMPER	IPS-1041-4
W94	6910001030	JUMPER	IPS-1041-4
W95	6910001030	JUMPER	IPS-1041-4
W96	7120000010	JUMPER	JPW 02A
W97	7120000010	JUMPER	JPW 02A
W98	6910001030	JUMPER	IPS-1041-4
W99	6910001020	JUMPER	IPS-1041-2
W100	6910001020	JUMPER	IPS-1041-2
W102	6910001030	JUMPER	IPS-1041-4
W104	6910001020	JUMPER	IPS-1041-2
W105	6910001020	JUMPER	IPS-1041-2
W106	6910001020	JUMPER	IPS-1041-2
W107	6910001020	JUMPER	IPS-1041-2
W108	6910001030	JUMPER	IPS-1041-4
W109	6910001020	JUMPER	IPS-1041-2
W110	6910001030	JUMPER	IPS-1041-4
W111	6910001020	JUMPER	IPS-1041-2
W112	6910001030	JUMPER	IPS-1041-4
W113	6910001030	JUMPER	IPS-1041-4
W114	6910001020	JUMPER	IPS-1041-2
W115	6910001030	JUMPER	IPS-1041-4
W116	6910001020	JUMPER	IPS-1041-2
W117	6910001020	JUMPER	IPS-1041-2
W120	6910001030	JUMPER	IPS-1041-4
W121	7120000010	JUMPER	JPW 02A
W122	6910001030	JUMPER	IPS-1041-4
W123	6910001030	JUMPER	IPS-1041-4
W124	6910001020	JUMPER	IPS-1041-2
W125	6910001030	JUMPER	IPS-1041-4
W126	6910001030	JUMPER	IPS-1041-4
W127	6910001030	JUMPER	IPS-1041-4
W128	6910001030	JUMPER	IPS-1041-4
W129	6910001030	JUMPER	IPS-1041-4
W130	6910001030	JUMPER	IPS-1041-4
W131	6910001020	JUMPER	IPS-1041-2
W132	6910001030	JUMPER	IPS-1041-4
W133	6910001030	JUMPER	IPS-1041-4
W134	6910001030	JUMPER	IPS-1041-4
W135	6910001030	JUMPER	IPS-1041-4
W136	6910001030	JUMPER	IPS-1041-4
W137	6910001020	JUMPER	IPS-1041-2
W138	6910001020	JUMPER	IPS-1041-2

S.=Surface mount

[TUNER UNIT]

REF NO.	ORDER NO.	DESCRIPTION	
W139	6910001020	JUMPER	IPS-1041-2
W140	6910001020	JUMPER	IPS-1041-2
W141	6910001020	JUMPER	IPS-1041-2
W142	6910001030	JUMPER	IPS-1041-4
W144	6910001020	JUMPER	IPS-1041-2
W145	6910001030	JUMPER	IPS-1041-4
W146	6910001030	JUMPER	IPS-1041-4
W147	6910001020	JUMPER	IPS-1041-2
W148	6910001020	JUMPER	IPS-1041-2
W149	6910001030	JUMPER	IPS-1041-4
W150	6910001030	JUMPER	IPS-1041-4
W151	6910001030	JUMPER	IPS-1041-4
W152	7120000010	JUMPER	JPW 02A
W157	6910001030	JUMPER	IPS-1041-4
W158	7120000010	JUMPER	JPW 02A
W160	6910001020	JUMPER	IPS-1041-2
W161	6910001030	JUMPER	IPS-1041-4
W162	6910001020	JUMPER	IPS-1041-2
W163	6910001020	JUMPER	IPS-1041-2
W164	6910001030	JUMPER	IPS-1041-4
W165	6910001020	JUMPER	IPS-1041-2
W168	6910001020	JUMPER	IPS-1041-2
WS1	8970020241	M.OTHER	1 (10)/TU
WS2	8600030510	M.OTHER	J03TU [USA]
	8970020250	M.OTHER	(3)/TU [EUR]
WS3	8600030520	M.OTHER	J02TU [USA]
	8600030510	M.OTHER	J03TU [EUR]
WS4	8970020260	M.OTHER	(2)/TU [USA]
	8600030520	M.OTHER	J02TU [EUR]
WS5	8600030530	M.OTHER	P01TU [EUR] only
EP1	0910037483	PCB	B 3678C
EP2	9030602001	TUBE	IRRAX 1(d) L=10 mm
EP3	9029403902	TUBE	IRRAX 1(d) L=5 mm
EP4	0910037981	PCB	B 3758A

[MANUAL UNIT] — Europe version only

REF NO.	ORDER NO.	DESCRIPTION	
D301	1710000030	DIODE	1S1555
D302	1710000030	DIODE	1S1555
D303	1710000030	DIODE	1S1555
D304	1710000030	DIODE	1S1555
D305	1710000330	DIODE	1K60
L302	6110002870	COIL	LA-473
L303	6110002870	COIL	LA-473
L304	6110002870	COIL	LA-473
L305	6110002870	COIL	LA-473
L306	6110002870	COIL	LA-473
L307	6110002870	COIL	LA-473
L308	6110002870	COIL	LA-473
L309	6110002870	COIL	LA-473
L310	6110002870	COIL	LA-473
L311	6110002870	COIL	LA-473
L312	6110002870	COIL	LA-473
L313	6110002870	COIL	LA-473
L314	6110002870	COIL	LA-473
L315	6110002870	COIL	LA-473
L316	6110002870	COIL	LA-473
L317	6110002880	COIL	LA-474
L319	6140001550	COIL	LR-174
L320	6910000670	COIL	BL01RN1-A62-001
L321	6910000670	COIL	BL01RN1-A62-001
R301	7010001000	RESISTOR	R25XJ 56 Ω
R302	7010001000	RESISTOR	R25XJ 56 Ω
R303	7010001000	RESISTOR	R25XJ 56 Ω
R304	7010000940	RESISTOR	R25XJ 18 Ω
R305	7010001340	RESISTOR	R25XJ 33 kΩ
R306	7070000340	RESISTOR	CRH100X R-02J 33 Ω

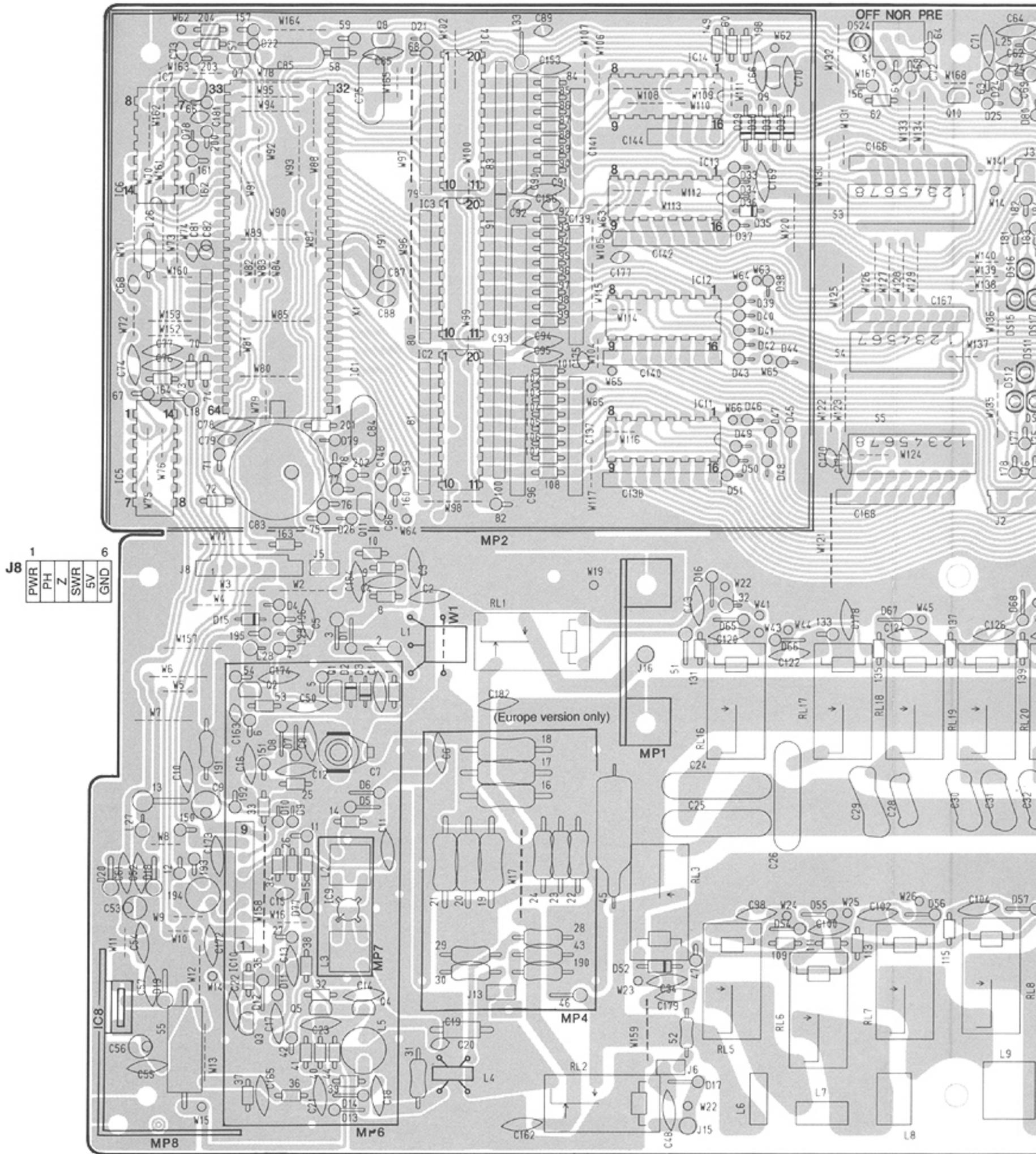
[MANUAL UNIT] — Europe version only

REF NO.	ORDER NO.	DESCRIPTION	
C301	4010000520	CERAMIC	DD107-601 B 472K 50V
C302	4010000520	CERAMIC	DD107-601 B 472K 50V
C303	4010000520	CERAMIC	DD107-601 B 472K 50V
C304	4010000520	CERAMIC	DD107-601 B 472K 50V
C305	4010000520	CERAMIC	DD107-601 B 472K 50V
C306	4010000420	CERAMIC	DD107-601 SL 391J 50V
C308	4610000470	TRIMMER	E 43 B 720P
C309	4320000280	DIP MICA	DM20C 122J5
C310	4320000210	DIP MICA	DM19C 561J5
C311	4320000270	DIP MICA	DM20C 102J5
C312	4010004260	CERAMIC	DE0907 SL 820J 3KV
C313	4010004260	CERAMIC	DE0907 SL 820J 3KV
C314	4010004260	CERAMIC	DE0907 SL 820J 3KV
C315	4010004250	CERAMIC	DE1007 SL 101J 3KV
C316	4010004250	CERAMIC	DE1007 SL 101J 3KV
C317	4010004250	CERAMIC	DE1007 SL 101J 3KV
RL301	6330000840	RELAY	G2R-1 DC12V
RL302	6330000840	RELAY	G2R-1 DC12V
RL303	6330000840	RELAY	G2R-1 DC12V
RL304	6330000570	RELAY	AR-39251
J301	6510002250	CONNECTOR	TL25P03V1
J302	6910003160	CONNECTOR	IMSA-9202B-2-08T
J303	6510003100	CONNECTOR	RT01T-1.3B
J304	6510003100	CONNECTOR	RT01T-1.3B
J305	6510003100	CONNECTOR	RT01T-1.3B
J307	6510006600	CONNECTOR	RT01N-2.3A
J308	6510006600	CONNECTOR	RT01N-2.3A
J309	6510006600	CONNECTOR	RT01N-2.3A
J310	6510006600	CONNECTOR	RT01N-2.3A
J311	6510006600	CONNECTOR	RT01N-2.3A
J312	6510006600	CONNECTOR	RT01N-2.3A
J313	6510006600	CONNECTOR	RT01N-2.3A
J314	6510006600	CONNECTOR	RT01N-2.3A
J315	6510006600	CONNECTOR	RT01N-2.3A
J316	6510006600	CONNECTOR	RT01N-2.3A
J317	6510006600	CONNECTOR	RT01N-2.3A
J318	6510006600	CONNECTOR	RT01N-2.3A
J319	6510006600	CONNECTOR	RT01N-2.3A
J320	6510006600	CONNECTOR	RT01N-2.3A
J321	6510006600	CONNECTOR	RT01N-2.3A
J322	6510006600	CONNECTOR	RT01N-2.3A
J323	6510006600	CONNECTOR	RT01N-2.3A
P301	6910003120	CONNECTOR	IMSA-9206H-T
P302	6910003120	CONNECTOR	IMSA-9206H-T
P303	6910003120	CONNECTOR	IMSA-9206H-T
P304	6910003120	CONNECTOR	IMSA-9206H-T
WS1	8970020270	M.OTHER	(3)/MN
WS2	8600030540	M.OTHER	P305MN
EP301	0910015132	PCB	B 1238B

S.=Surface mount

SECTION 5 BOARD LAYOUTS

5-1 TUNER UNIT

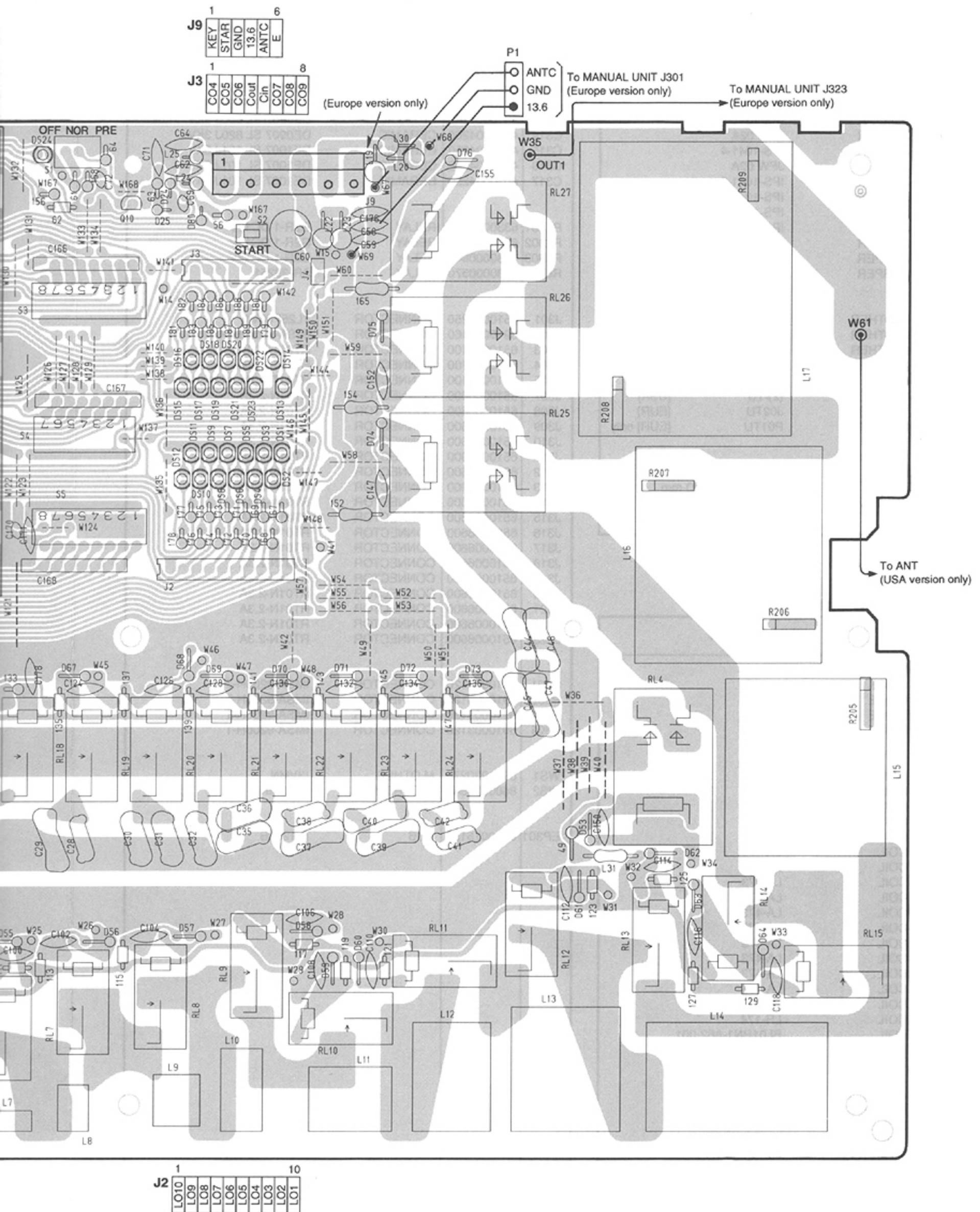


J8

1	2	3	4	5	6
PWR	PH	Z	SWR	5V	GND

J2

1	2
LO10	LO9



1	2	3	4	5	6
KEY	STAR	GND	13.6	ANTC	E

1	2	3	4	5	6	7	8
CO4	CO5	CO6	COut	Cin	CO7	CO8	CO9

P1	1	2	3
ANTC	GND	13.6	

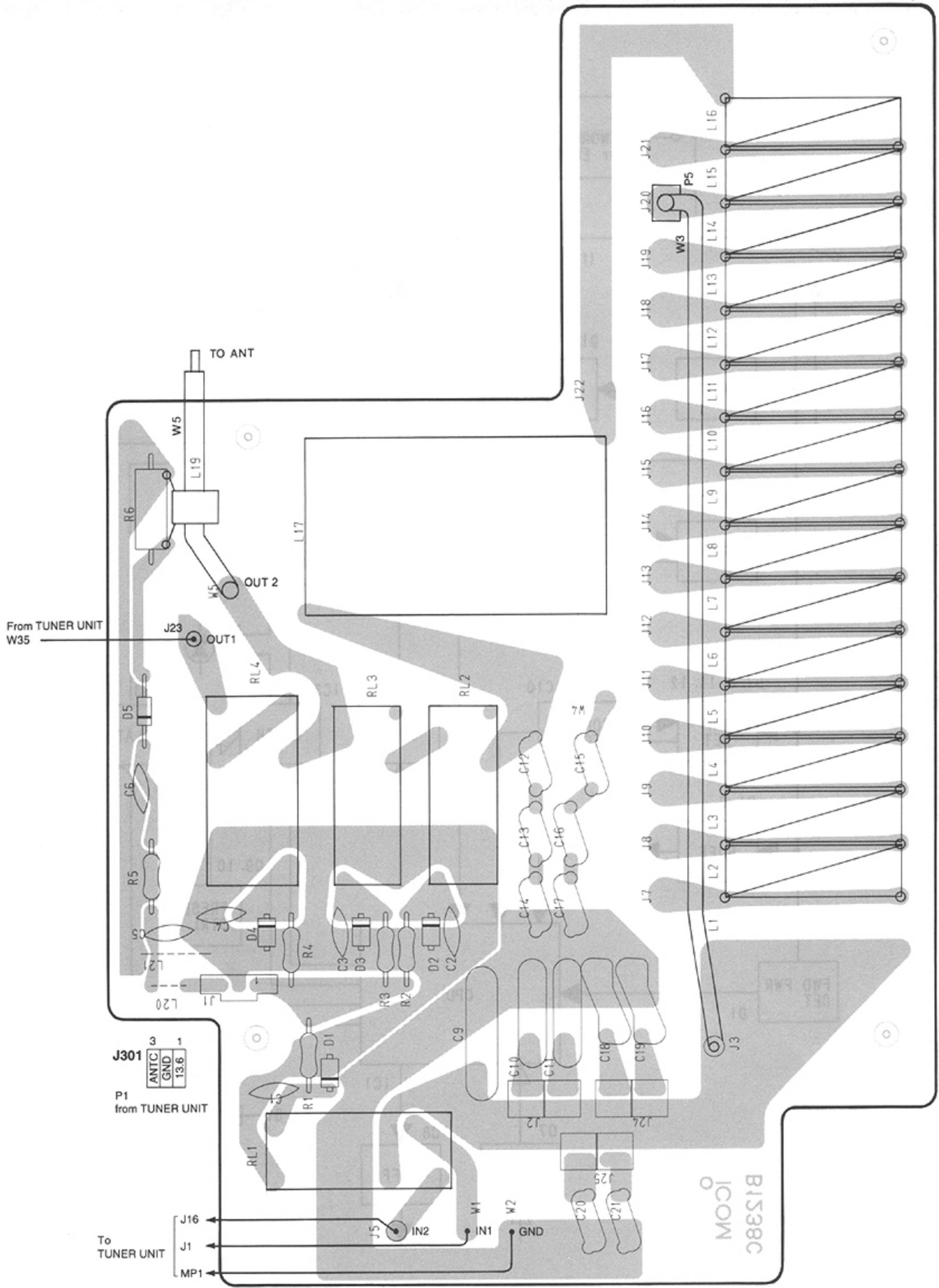
To MANUAL UNIT J301
(Europe version only)

To MANUAL UNIT J323
(Europe version only)

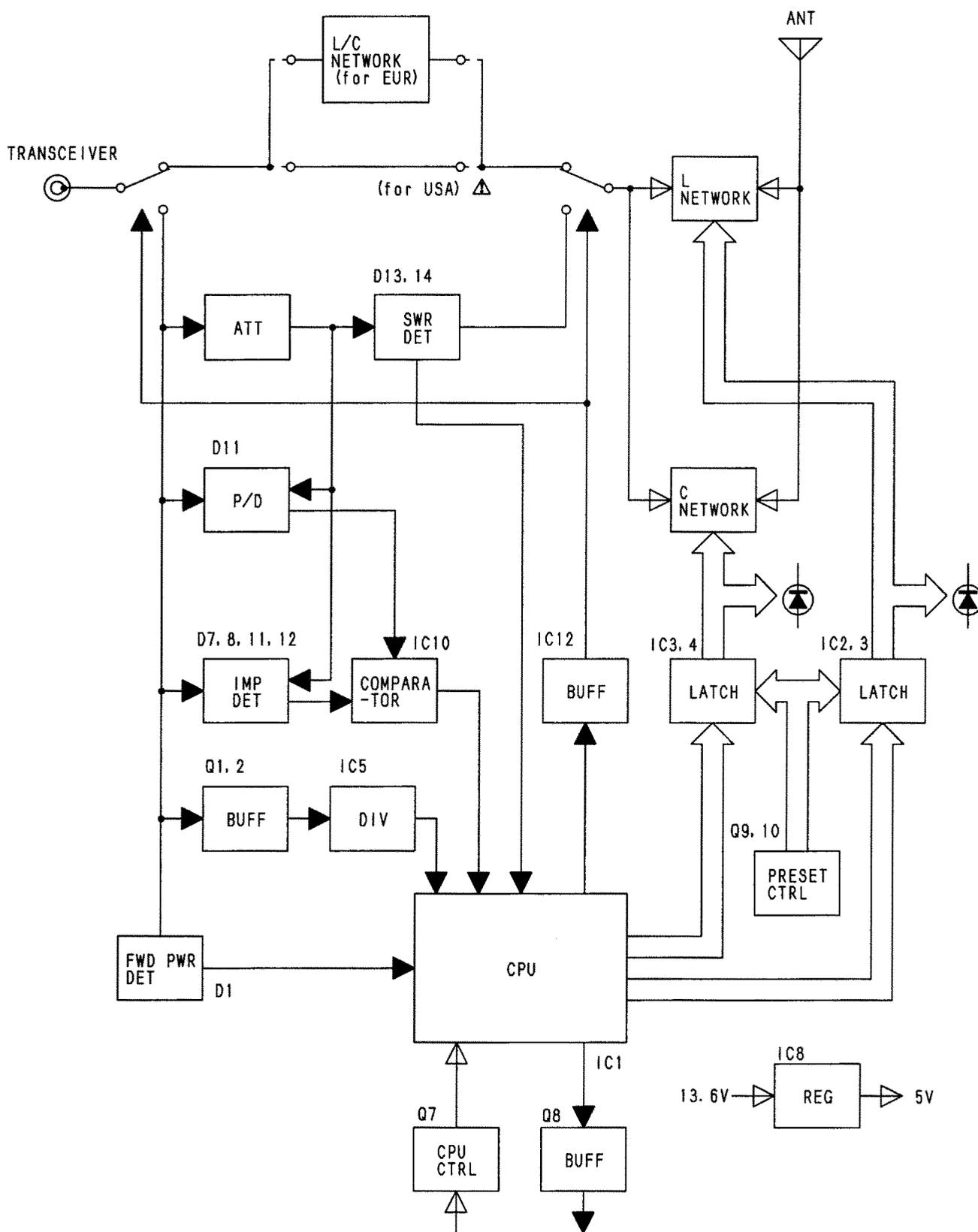
To ANT
(USA version only)

1	2	3	4	5	6	7	8	9	10
LO10	LO9	LO8	LO7	LO6	LO5	LO4	LO3	LO2	LO1

5-2 MANUAL UNIT



SECTION 6 BLOCK DIAGRAM



SECTION 7 VOLTAGE DIAGRAM

