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General

			VHF	UHF
Receiver range(MHz)	DJ-G5T	L-band	108.000~173.995 (AM FM)	420.000~479.995 (FM)
		R-band	130.000~173.995 (FM)	
Transmitter range(MHz)	DJ-G5E		144.000~145.995	430.000~439.995
	DJ-G5T		144.000~147.995	438.000~449.995
	DJ-G5E		144.000~145.995	430.000~439.995
Modulation			F2E.,F3E(FM)	
Antenna impedance			50 ohm	
Operating temperature range			-10 ~ +60°C	
Supply voltage (rated voltage)	External (V)		4.5~16.0(13.8)	
	Ni-Cd(V)		4.5~16.0(4.8)	
Current (regulated supply voltage)	Tx Hi: 13.8VDC(external)		approx. 1.4A	approx. 1.5A
	Tx Hi: 9.6VDC(Ni-Cd)		approx. 1.4A	approx. 1.5A
	Tx Hi: 7.2VDC(Ni-Cd)		approx. 1.4A	approx. 1.5A
	Tx Hi: 4.8VDC(Ni-Cd)		approx. 1.0A	approx. 1.2A
	TxMid: 4.8VDC(Ni-Cd)		approx. 0.8A	
	TxLo: 4.8VDC(Ni-Cd)		approx. 0.5A	
	Rxsquelched(twinband)		approx. 85mA	
	Rxsquelched(monoband)		approx. 50mA	
Rx Battery-Save On (800/200 twin band)		approx. 25mA		
Ground			Negative ground	
Microphone impedance			2k ohm	
Dimensions without projection (with projections)			W57(63) x H138(155) x D27.5(31.5)	
Weight (Ant. belt-clip, strap, and Ni-Cd EBP-33N inclusive)			approx. 350g	
Transmitter				
Power output (regulated supply voltage)	Hi: 13.8VDC(external)		approx. 5W	
	Hi: 9.6VDC(Ni-Cd)		approx. 4.5W	
	Hi: 7.2VDC(Ni-Cd)		approx. 3.5w	approx. 3W
	Hi: 4.8VDC(Ni-Cd)		approx. 1.5W	approx. 1 W
Modulation			Variable reactance	
Maximum deviation			+/-5kHz	
Spurious emission			notmorethan-60dB	
Receiver				
System			Double-conversion superheterodyne	
First I.F.			38.9MHz	45.1 MHz
Second I.F.			455kHz	
Sensitivity	DJ-G5T	L-band: 144.000~147.995MHz	better than -16dBu	better than -15dBu
		R-band: 438.000~449.995MHz		
		L-band: 438.000~449.995MHz	better than -12dBu	
		R-band: 144.000~147.995MHz		
	DJ-G5E	L-band: 144.000~145.995MHz	better than -16dBu	better than -15dBu
R-band: 430.000~439.995MHz				
		L-band: 430.000~439.995MHz	better than-12dBu	
R-band: 144.000~145.995MHz				
Squelch sensitivity			better than-20dBu (0.1uV)	
Selectivity (-6dB/-60dB)			more than 12kHz / less than 30kHz	
A.F.output(@ 10% distortion)			100mW(8ohm load)	

CIRCUIT DESCRIPTION

1) Receiver System

The receiver system is the double-conversion superheterodyne. In L band the first IF is 38.9MHz and second IF is 455kHz, and in R band the first IF is 45.1MHz and second IF is 455kHz.

1 Front End

1-1 108.00MHz~ 173.995MHz (144M Band Main)

The receiving signal is passed through the low-pass filter (L90, L91 , L92, C220, C229, C230, C231, C235), and amplified in RF amplifier (Q77), then led to the resonant circuit (L85, L86, varicap D68, D69). The signal is amplified in RF amplifier Q75, and passed through the resonant circuit (L81 , L82 varicap D66 and D67), then converted into the frequency of 38.9MHz in the mixer Q79.

Two resonant circuits consisting of L85, L86, varicap D68, D69, L81 , L82, varicap D66, D67, are controlled by the trucking voltage to obtain the best condition to the receiving frequency.

The local signal from VVCO OUT is passed through the buffer Q79, and fed to the base of the mixer Q76. The sum of the displayed frequency and IF frequency is employed.

1-2 420.00MHz~51 1.995MHz: (430M Band Sub)

The receiving signal is passed through the band-pass filter (C59, C60, C61 , C66, C67, C68, L57, L58, L53, L54), RF amplifier (Q62, Q72), band switch (D63), and high-pass filter (C175, C176, C186, C187, L77, L78), and converted into the frequency of 38.9MHz in mixer (Q74).

The local signal is passed through the buffer (Q70), and the difference frequency between IF frequency and the displayed frequency is fed to the base of the mixer (Q74).

1-3 130.00MHz~173.995MHz (144M Band Sub)

The receiving signal is passed through the low-pass filter (L90, L91 , L92, C220, C229, C230, C231 and C235), and RF amplifier (Q68), low-pass filter (C145, C146, C153 and C154), then converted into the frequency of 45.1MHz in the mixer (Q67).

The local signal is passed through the buffer (Q69), then the sum of displayed frequency and IF frequency is fed to the base of the mixer (Q67).

1-4 420.00MHz~51 1.995MHz (433M Band Main)

The receiving signal is passed through the band-pass filter (C59, C60, C61 , C66, C67, C68, L57, L58, L53, L54), RF amplifier (Q62, Q72) and the band-pass filter (FL51), and amplified in RF amplifier (Q63), then converted into the frequency of 45.1MHz.

The band-pass filter (FL51) is the helical filter to obtain the band width characteristics.

The local signal from UVCO OUT is passed through the diode switch (D58), buffer (Q64), then the difference frequency between the displayed and IF is fed to the base of the mixer (Q61).

2 IF

2-1 L Band

The sum/difference between the receiving signal and local signal is made in each mixer. The crystal filter (XF53) selects the difference of 38.9MHz and eliminates unwanted signal, then it is amplified in the first IF amplifier (Q78).

2-2 R Band

The sum/difference between the receiving signal and local signal is made in each mixer. The crystal filter (XF51) selects the difference of 45.1 MHz and eliminates unwanted signal, then it is amplified in the first IF amplifier (Q60).

3 Demodulation

3-1 L Band

After amplified in the first IF amplifier (Q78), the signal is fed to the demodulation IC (IC302) Pin24. The first IF signal outputted to Pin24 (38.9MHz) is mixed in the mixer of IC302 with the local signal of 38.455MHz which is oscillated in the oscillation circuit of IC302 and the crystal oscillator (X303), then converted into the second IF signal of 455kHz. The second IF is supplied from the IC302 Pin3. After eliminating unwanted signal by the ceramic filter (FL302), the signal is applied to Pin5 and Pin7.

As for the FM demodulation, the second IF signal applied to Pin7 is demodulated in limiter amplifier and quadrature detection circuit of IC302 when IC302 Pin4 is open, and it is outputted from Pin12 as the audio signal.

As for the AM demodulation, the second IF signal applied to Pin5 is demodulated in AM amplifier and AM detection circuits of IC302 when the voltage of IC302 Pin14 is low, and it is outputted from Pin13 as the audio signal.

3-2 R Band

After amplified in the first IF amplifier (Q60), the signal is applied to the demodulation IC301, Pin16. It is mixed in the mixer of IC301 with the local signal of 45.555MHz which is oscillated in the oscillation circuit and the crystal oscillator (X301) of IC301, then converted into the second IF signal of 455kHz. The second IF is outputted from IC301 Pin3, and applied to Pin5 and Pin7 after eliminating unwanted signal by the ceramic filter (FL301).

4 Audio Circuit

4-1 FM (L band) The audio signal supplied from IC302 is pre-emphasized white transmitting. So the audio frequency should be compensated in the de-emphasis circuit (R366, C363), then the signal is passed through FM/AM selection switch (IC303). The frequency of 300Hz or below is cut in the audio high-pass filter circuit (Q313), and it is applied to the electronic volume (IC304) Pin1. The signal is passed through the buffer (IC306), and adjusted the volume, then led to the audio power amplifier (IC307) to drive the speaker.

4-2 AM (L band) When AM mode is selected, the switching transistor (Q312) is turned ON, and IC302 Pin14 becomes low, then AM demodulation circuit of IC302 is activated.

The audio signal provided from IC302 Pin14 is passed through the de-emphasis circuit (R362, C360), and FM/AM selection switch (IC303), then led to audio high-pass filter circuit (Q313), electronic volume (IC304), buffer (IC306) and the audio power amplifier (IC307) to drive the speaker.

Note:

The FM detection circuit in IC301 (TK10930) is operating even while AM receiving. (The squelch circuit is activated by FM detection output.) So the FM audio is not outputted by FM/AM selection switch (IC303).

4-3 FM (R band)

The audio signal supplied by IC301 Pin9 is compensated the audio frequency characteristics in de-emphasis circuit (R330, C327), and the signal is passed through the audio high-pass filter (Q306), then applied to the electronic volume (IC304) Pin20. It is passed through the buffer (IC305), and led to the audio power amplifier (IC307) to drive the speaker.

5 Squelch Circuit

5-1 L Band

A part of the audio signal of IC302 Pin12 is selected and amplified by the noise amplifiers in R351, R352, R350, R353, C351, C352, C353, and IC302. Then it is supplied from IC302 Pin20 to be amplified again in the noise amplifier (Q309). The amplified noise factor is rectified in D302, adjusted the level in VR303, and applied to CPU (IC508) Pin96, then converted to the digital signal.

5-2 R Band

A part of the audio signal of IC301 Ping is selected and amplified by the noise amplifiers in R316, R317, R318, R319, C318, C319, C320, and IC301. Then it is supplied from IC301 Pin11 to be amplified again in the noise amplifier (Q303). The amplified noise factor is rectified in D301, adjusted the level in VR301, and applied to CPU (IC508) Pin97, then converted to the digital signal.

6 Attenuator Circuit

6-1 VHF Band

When the ATT key is pressed, "L" is applied from shift resistor (IC52) Pin14, and D71 is turned ON, then the Attenuator circuit (Q56, R151, C194, R160) is activated.

The receiving signal passed through the low-pass filter is attenuated approximately 15dB by the attenuator to decrease the interference of the adjacent channel, etc.

6-2 UHF Band

When the ATT key is pressed, "L" is applied from shift resistor (IC52) Pin13, and D55 is turned ON, then the Attenuator circuit (Q56, R73, C90, R80) is activated.

The receiving signal passed through the low-pass filter is attenuated approximately 15dB by the attenuator to decrease the interference of the adjacent channel, etc.

2) Transmitter System

1 Demodulation Circuit

The voice is converted into the electric signal by the internal or external microphone, then it is applied to the mic amplifier (IC310). This IC310 has two operational amplifiers. The pre-emphasis and IDC consist of Pin1, 2 and 3, and the splutter filter consists of Pin5, 6 and 7.

The output from the microphone amplifier is passed through variable resistors VR305 and VR306 for maximum deviation adjustment to cathode of varicap diode of the VCO, controlling the VCO frequency and so producing a frequency-modulation.

2 Power Amplifier

2-1

The transmitting signal oscillated in VVCO is amplified in pre-drive amplifier (Q81) and drive amplifier (Q80), then fed to the power module (IC54). The transmitting signal amplified in IC54 is supplied to the antenna after attenuated the harmonics enough in the antenna switch (D72) and the Low-pass filter (L90, L91, L92, C220, C229, C230, C231, C235).

2-2

The transmitting signal oscillated in UVCO is amplified in pre-drive amplifier (Q54) and drive amplifier (Q53), then fed to the power module (IC51). The transmitting signal amplified in IC51 is supplied to the antenna after attenuated the harmonics enough in the antenna switch (D52), and the bandpass filter (L57, L58, L53, L54, C59, C60, C61, C66, C67, C68).

3 APC Circuit

3-1 VHF Band

A part of transmitting voltage from low-pass filter is detected by D74, and converted into the DC voltage. The converted detection voltage is differential amplified, and the output voltage controls the bias voltage of power module (IC54) Pin2 to fix the transmitting power.

3-2 UHF Band

A part of transmitting voltage from low-pass filter is detected by D56, and converted into the DC voltage. The converted detection voltage is differential amplified, and the output power controls the bias voltage of power module (IC51) Pin2 to fix the transmitting power.

3) PLL Synthesizer Circuit

1 PLL

The data is sent to the PLL IC (IC53) Pin2 and the clock is sent to Pin3 from CPU (IC508), then the ratio of the division is decided each in L band and R band. Each VCO oscillating signal is amplified in the buffer (Q73: L band, Q66: R band), and the signal in L band is applied to Pin15, then the signal in R band is applied to Pin6. The programmable divider of IC53 is determined by frequency data, and it divides (1/N) input signal of IC53. Resulting signal will be 5kHz or 6.25kHz.

2 Reference frequency division

The reference frequency of 5kHz or 6.25kHz according to the channel step is produced by dividing the reference oscillation 12.8MHz (X51) by 2560 or 2048, the data from CPU (IC508). The channel steps of 5kHz, 10kHz, 15kHz, 20kHz, 25kHz, 30kHz and 50kHz use the reference frequency of 5kHz, and the channel step of 12.5kHz uses the reference frequency of 6.25kHz.

3 Phase comparator

The reference frequency of IC53 is 5kHz or 6.25kHz.

The VCO output frequency divided by N is compared with 5kHz or 6.25kHz in the phase comparator.

4 PLL Loop Filter Circuit

If the phase error should occur in PLL, the charge pump of IC53 Pin13 (L band) and Pin8 (R band) outputs the pulse. The signal is converted into the DC voltage in PLL loop filter, then inputted to the varicap of each VCO unit.

5 VVCO Circuit (VHF Band)

Q705 is turned ON, and the desired frequency is oscillated in the Colpitts oscillator consisting of Q701. The frequency control voltage is applied to the varicap (D702, D703), and the oscillating frequency is changed, then amplified in VCO buffer (Q703), and outputted from the VCO unit.

6 VVCO Circuit (UHF Band)

Q704 is turned ON, and the desired frequency is oscillated in the Colpitts oscillator consisting of Q702. The frequency control voltage is applied to the varicap (D704, D705), and the oscillating frequency is changed, then amplified in VCO buffer (Q703), and outputted from the VCO unit.

7 UVCO Circuit (UHF Band)

Q605 is turned ON, and the desired frequency is oscillated in the Colpitts oscillator consisting of Q601. The frequency control voltage is applied to the varicap (D602, D603), and the oscillating frequency is changed, then amplified in VCO buffer (Q603), and outputted from the VCO unit.

8 UVCO Circuit (VHF Band)

Q604 is turned ON, and the desired frequency is oscillated in the Colpitts oscillator consisting of Q602. The frequency control voltage is applied to the varicap (D604, D605), and the oscillating frequency is changed, then amplified in VCO buffer (Q603), and outputted from the VCO unit.

4) CPU and Peripheral Circuit

1 LCD Display Circuit

The strobe, serial data, and clock are sent to the LCD driver (IC503) Pin 75~77 from CPU (IC508), and the LCD is activated with 1/4 duty and 1/3 bias. The frame frequency is 137Hz.

2 Display Lamp Circuit

The regulated power supply circuit consisting of Q505, Q507, R508, R509 supplies H from CPU (IC508) when LAMP key is pressed. Then it is applied to the base of Q507, and the voltage of 3.5V is outputted from the collector of Q505. It is fed to each LED (D503~D506, D509, D511, D513, D514).

3 Reset and Backup Circuit

When the voltage of approximately 3.0V or more is supplied from the external (DC jack, battery), the reset signal of "H" level is outputted from Reset IC (IC506), and it is fed to CPU (IC508) Pin9, then the CPU is reset. Until the clock (X502) of CPU is stabilized, the reset signal is fed to CPU after it is delayed in C522 and R581.

When the voltage from external is decreased to approximately 3.3V or below, the voltage of Pin18 in CPU is changed from "H" level to "L" level, then the CPU enters into the backup mode.

4 S (signal) Meter Circuit

4-1 L Band

The DC voltage of IC302 Pin16 is low when the signal is weak and high when the signal is strong. This change of DC voltage is adjusted the level at the trim pot (VR304), and led to CPU (IC508) Pin98, then displayed on the LCD as S meter after A/D converting.

4-2 R Band

The DC voltage of IC301 Pin13 is adjusted the level at the trim pot (VR302), and led to CPU (IC508) Pin99, then displayed on the LCD as S meter after A/D converting.

5 Full-duplex Circuit

When the DUP key is pressed, in the receiving side Q317 is turned ON and the audio signal supplied to audio amplifier is decreased. In transmitting side Q510 is turned ON, and the modulation signal is decreased to prevent the howling.

6 X-Band Repeater Circuit

In X-band repeater mode, Q323 is turned OFF, the audio signal which is opened the squelch is passed through the audio high-pass filter (Q313: L band, Q306: R band), and the signal is applied to the other modulation circuit. Then the radio enters into the transmitting mode.

7 DTMF

7-1 Encoder

The DTMF encoder is built in the CPU (IC508). The DTMF signal output from Pin91 is adjusted its level at VR308, and amplified by the mic amplifier (IC310), then fed to the varicap for modulation of each VCO.

Simultaneously the monitor sound is passed through AF circuit, and it is supplied from the speaker.

7-2 Decoder

A part of the audio signal which is demodulated in IC301, IC302 is fed to the DTMF switch (IC501), then only the selected band audio signal is fed to DTMF IC (IC502) Pin1. The supplied signal is judged whether valid or not by the signal judgement circuit in IC502, and converted into 4-bit code, then supplied to IC508 Pin85.

8 Tone Squelch

8-1 Encoder

The tone signal supplied from Tone IC (IC504) Pin21 (67.0Hz~254.1Hz) is adjusted the level at VR307, and amplified in the tone amplifier (Q322), then applied to the varicap for modulation of each VCO.

8-2 Decoder

A part of the audio signal which is demodulated in IC301, IC302 is fed to the tone switch (IC504), then only the selected band audio signal is fed to tone IC (IC504) Pin1.

When the signal is accord with the programmed tone frequency, "LO" is outputted from IC504 Pin14, and it is fed to CPU (IC508) Pin74, then the squelch is opened.

5) Terminal function of CPU

No.	Name	Pin Name	I/O	Description	H	L	HiZ
1	ANO	+BD	I	Power supply voltage detection	Analog IN		
2	AVSS	GND	/	Analogground			
3	TEST	GND	/	Connect to ground			
4	X2	OPEN		Open when not used			
5	X1	VDD	/	Power supply			
6	VSS	GND	/	Ground			
7	OSC1	OSC1	I	Internal oscillator input			
8	OSC2	OSC2	O	Internal oscillator output			
9	RES	REST	I	CPU reset	At work		
10	NMI	VDD	/				
11	P20	CLK	O	Clock input	Pulse	Normal	
12	P21	DATA	O	Data input	Pulse	Normal	
13	P22	STB1	O	RF4094 strobe	Pulse	Normal	
14	P23	STB2	O	IF4094 strobe	Pulse	Normal	
15	P24	STB3	O	Electronic volume strobe	Pulse	Normal	
16	P25	OPEN	/				
17	P26	+BDSW	O	+BD input ON/OFF	ON	OFF	
18	IRQO	BU	I	Backup signal input	Normal	Backup	
19	P17	RE1	I	Rotary encoder up input	OFF	ON	
20	P16	RE2	I	Rotary encoder down input	OFF	ON	
21	P15	PSW	I	Power switch input	OFF	ON	
22	P14	OPEN					
23	P13	OPEN					
24	TMOFH	BEEP	O	Beep sound output	Pulse	Pulse	Normal
25	TMOFL	1750	O	Tone burst output	Pulse	Pulse	Normal
26	P10	XBR	O	Cross band repeater ON/OFF	Normal	Repeater	
27	VSS	GND	/	Ground			
28	V3	OPEN					
29	V2	OPEN					
30	V1	OPEN					
31	VCC	VDD	/	Power supply terminal			
32	PA3	LBSY	I	LCD driver data input ON/OFF	Permitted	Inhibited	
33	PA2	LCLK	O	LCD driver clock	Normal	Pulse	
34	PA1	LDATA	O	LCD driver serial data	Normal	Pulse	
35	PA0	LSTB	O	LCD driver strobe	Inhibited	Permitted	
36	P50	PT5/PTT	I	PTT input	ON	OFF	
37	P51	MONt	I	Monitor key input	OFF	ON	
38	P52	TBST	I	TX(toneburst)input	OFF	ON	
39	P53	FUNC	I	Function key input	OFF	ON	
40	P54	BP3	I	Band plan (TX/RX expansion)	Expanded	Normal	
41	P55	UHF	I	UHF key input	OFF	ON	
42	P56	VOLU	I	VOL up key input	OFF	ON	
43	P57	SQLD	I	SQL down key input	OFF	ON	
44	P60	SQLU	I	SQL up key input	OFF	ON	
45	P6I	SRCH	I	Search key input	OFF	ON	
46	P62	VHF	I	VHF key input	OFF	ON	
47	P63	VOLD	I	VOL down key input	OFF	ON	
48	P64	KIN1	I	Key matrix input1	OFF	ON	
49	P65	KIN2	I	Key matrix input2	OFF	ON	
50	P66	KIN3	I	Key matrix input3	OFF	ON	

No.	Name	Pin Name	I/O	Description	H	L	HiZ
51	P67	KIN4	I	Key matrix input4	OFF	ON	
52	P70	KOT1	O	Key matrix output1	OFF	ON	
53	P71	KOT2	O	Key matrix output2	OFF	ON	
54	P72	KOT3	O	Key matrix output3	OFF	ON	
55	P73	KOT4	O	Key matrix output4	OFF	ON	
56	P74	PRST	O	PLL reset pulse input judgement	Normal	Pulse	
57	P75	SDA	I/O	EEPROM data	PL	SE	Normal
58	P76	SCL	O	EEPROM clock	PL	SE	Normal
59	P77	50SW	O	5V ON/OFF	ON	OFF	
60	P80	OPEN	/				
61	P81	TFD	O	Full duplex ON/OFF when transmitting	Full duplex	Normal	
62	P82	UTBST	O	Right side TX lamp ON/OFF	ON	OFF	
63	P83	VTBST	O	Left side TX lamp ON/OFF	ON	OFF	
64	P84	VTXCV	O	VHF TX circuit for power supply		ON	OFF
65	P85	UTXCV	O	UHF TX circuit for power supply		ON	OFF
66	P86	VBSY	O	VHF RX busy lamp ON/OFF		ON	OFF
67	P87	UBSY	O	UHF RX busy lamp ON/OFF		ON	OFF
68	P90	LAMPC	O	LAMP ON/OFF	ON	OFF	
69	P91	PCNT	O	Vcc ON/OFF	ON	OFF	
70	P92	MUTE	O	Microphone mute	Muted	Normal	
71	P93	RFD	O	Full duplex ON/OFF when receiving	Full duplex	Normal	
72	P94	DSW	O	DTMF band selection	VHF	UHF	
73	P95	TSW	O	Tone band selection	VHF	UHF	
74	P96	TSQD	I	Tone detection signal input	None	Tone	
75	P97	TSTB	O	Tone IC strobe	Pulse	Normal	
76	VCC	VDD	/	Power supply			
77	PD0	AM	O	AM circuit ON/OFF	AM	FM	
78	PD1	AFPC	O	Audio amplifier power supply ON/OFF	ON	OFF	
79	PD2	VAFS	O	VHF AF mute	Muted	ON	
80	PD3	UAFS	O	UHF AF mute	Muted	ON	
81	PD4	OPEN					
82	PD5	IFPC	O	IF power supply ON/OFF	ON	OFF	
83	PD6	VRXC	O	VHF IF circuit power supply	OFF	ON	
84	PD7	URXC	O	UHF IF circuit power supply	OFF	ON	
85	PE0	DSD	I	DTMF 4-bit data	Normal	Pulse	
86	PE1	ACK	O	DTMF clock	Pulse	Normal	
87	PE2	DSTD	I	DTMF detection signal	Signal	None	
88	PE3	DPD	O	DTMF operation ON/OFF	isstopped	Operation	
89	AVCC	AVCC	/	A/D converter power supply			
90	TONEM	TRAC	O	VHF trucking voltage output			
91	TONED	DTON	O	DTMF signal output			Normal
92	VTref	VDD	/	Power supply for DTMF reference level			
93	AVref	AVCC	/	Power supply for A/D reference level			
94	AN7	BP2	I	Band plan2			
95	AN6	BP1	I	Band plan1 (destination)			
96	AN5	VSD	I	VHF SD signal input	No signal	Analog in	
97	AN4	USD	I	UHF SD signal input	No signal	Analog in	
98	AN3	VSMT	I	VHF S meter signal input	Analog in		
99	AN2	USMT	I	UHF S meter signal input	Analog in		
100	AN1	MRC	I	Microphone remote control input	Analog in		

6) Terminal function of 4094

4094 pin	Port Name	Function	Logic	Description	VHF 145 MHz	VHF 433 MHz	UHF 433 MHz	UHF 145 MHz	BS OFF TIME
Q11	UHI	UHF high power control	Active Low	Low power	H	H	H	H	H
Q12	UMID	UHF middle power control	Active Low	UHF middle=H	H	H	H	H	H
Q13	VHI	VHF high power control	Active Low	Low power	H	H	H	H	H
Q14	VMID	VHF middle power control	Active Low	VHF middle=H	H	H	H	H	H
Q15	VATTC	VHF RX attenuater control	Active Low	ATT ON	H/L	H/L	H/L	H/L	H
Q16	UATTC	UHF RX attenuater control	Active Low	ATT ON	H/L	H/L	H/L	H/L	H
Q17	VCO4SW	UHF VCO switch	Active Low		H/L	H/L	L	H	H
Q18	VCO1SW	VHF VCO switch	Active Low		L	H	H/L	H/L	H
Q21									
Q22	USUBC	UHF 145MHz power control	Active Low		H/L	H/L	H	L	H
Q23	UMAINC	UHF 435MHz power control	Active Low		H/L	H/L	L	H	H
Q24									
Q25	VSUBC	VHF 435MHz power control	Active Low		H	L	H/L	H/L	H
Q26	VMAINC	VHF 145MHz power control	Active Low		L	H	H/L	H/L	H
Q27	UPLLC	UHF VCO power control	Active Low		H/L	H/L	L	L	H
Q28	VPLLC	VHF VCO power control	Active Low		L	L	H/L	H/L	H

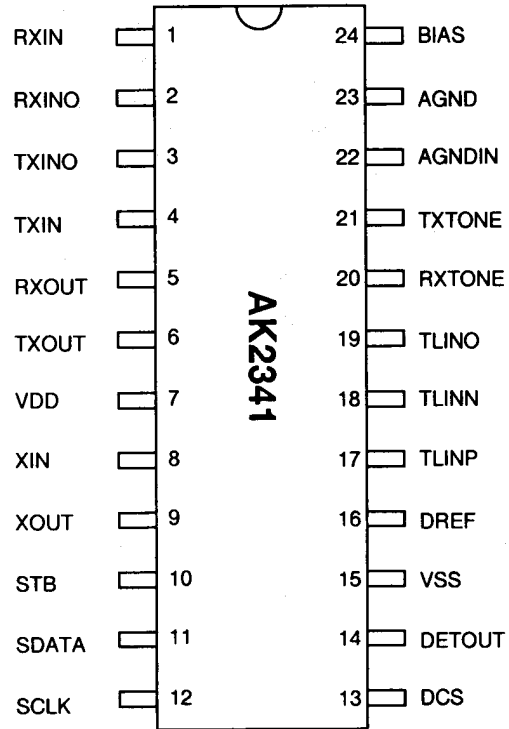
7) Frequency Table

Band	IF Frequency	Display frequency	UP/LOW	Oscillation frequency	Mode
VHF	38.9MHz	108.000~173.995MHz	UP	146.900~212.895MHz	FM/AM
		420.000~511.995MHz	Low	381.100~473.095MHz	FM/AM
UHF	45.1MHz	130.000~173.995MHz	UP	175.100~219.095MHz	FM
		420.000~511.995MHz	Low	374.900~466.895MHz	FM

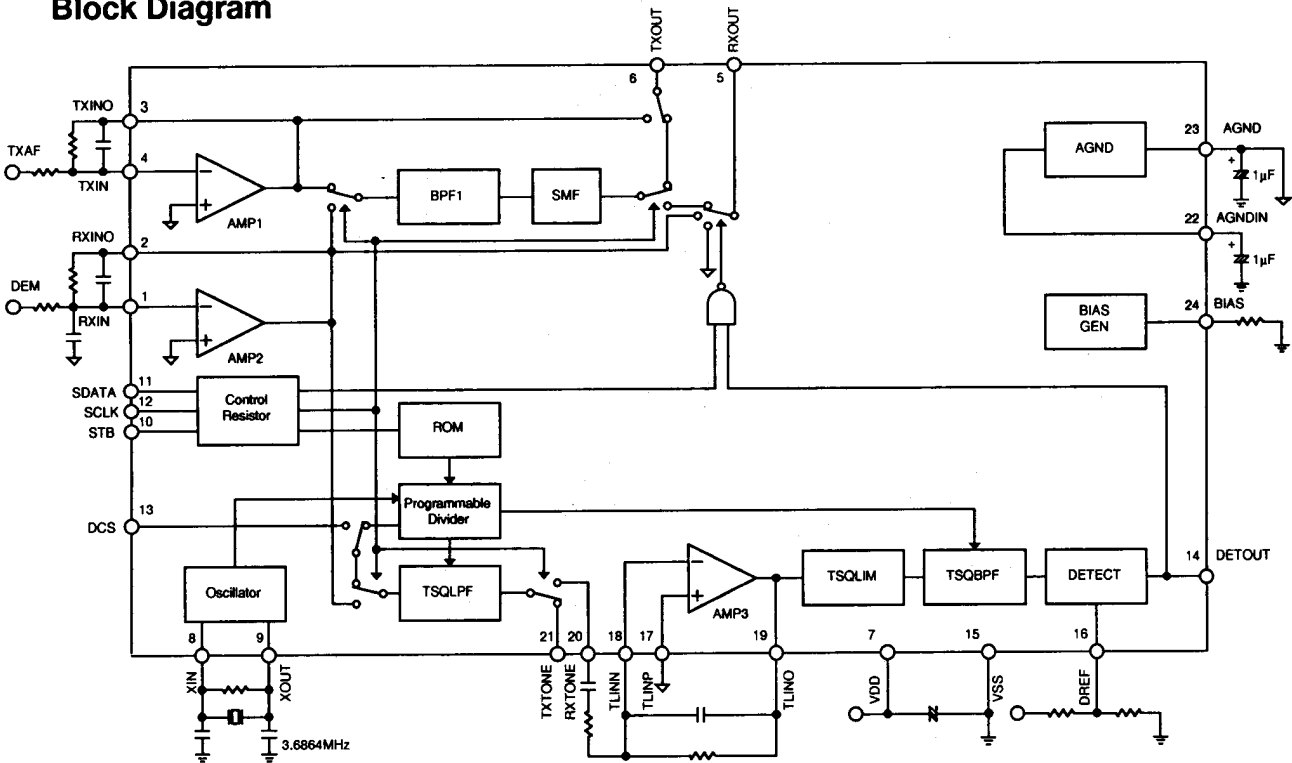
SEMICONDUCTOR DATA

1) AK2341 (XA0239) CTCSS Encoder/Decoder

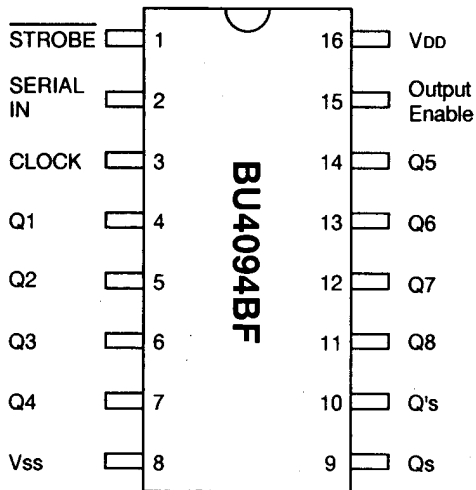
Pin No.	Pin Name	I/O	Function
1	RXIN	I	RX Signal Input
2	RXINO	O	AMP2 Output
3	TXINO	O	AMP1 Output
4	TXIN	I	TX Audio Input
5	RXOUT	O	RX Audio Output
6	TXOUT	O	TX Audio Output
7	VDD	-	Power Supply (1.8 ~ 5.5V)
8	XIN	I	Crystal Terminal (3.6864MHz)
9	XOUT	O	Crystal Terminal (3.6864MHz)
10	STB	I	Strobe for Serial Data
11	SDATA	I	Serial Data
12	SCLK	I	Serial Clock
13	DCS	I	DCS Input
14	DETOUT	O	Tone Detection Output (Detect: Low)
15	VSS	-	Ground
16	DREF	I	Tone Detection Level Adjust Input
17	TLINP	I	RX Tone Signal Reference Input
18	TLINN	I	RX Tone Signal Input
19	TLINO	O	AMP3 Output
20	RXTONE	O	RX Tone Signal Output
21	TXTONE	O	TX Tone Signal Output
22	AGNDIN	I	Analog Ground Input
23	AGND	O	Analog Ground Output
24	BIAS	I	Bias Input



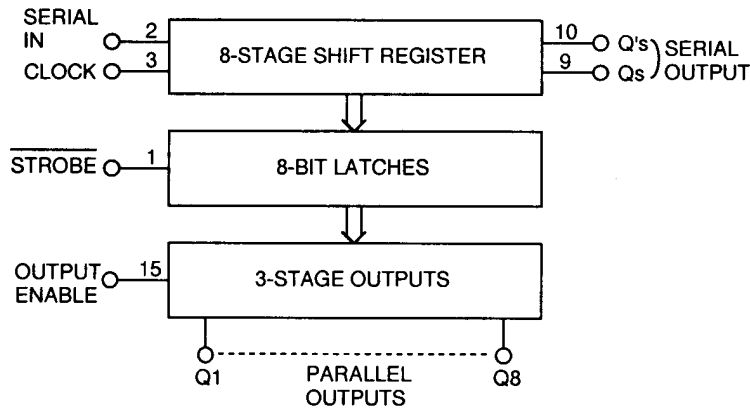
Block Diagram



2) BU4094BF (XA0246) 8-Stage Shift Register



Block Diagram

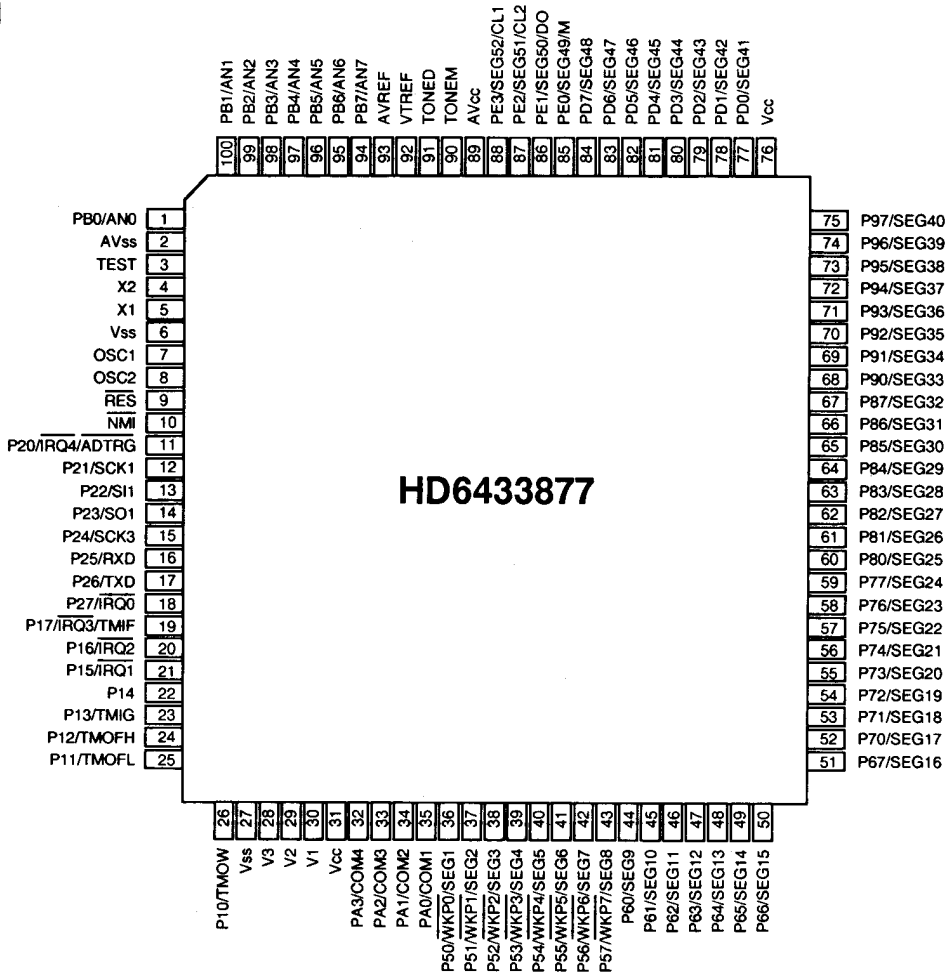


Truth Table

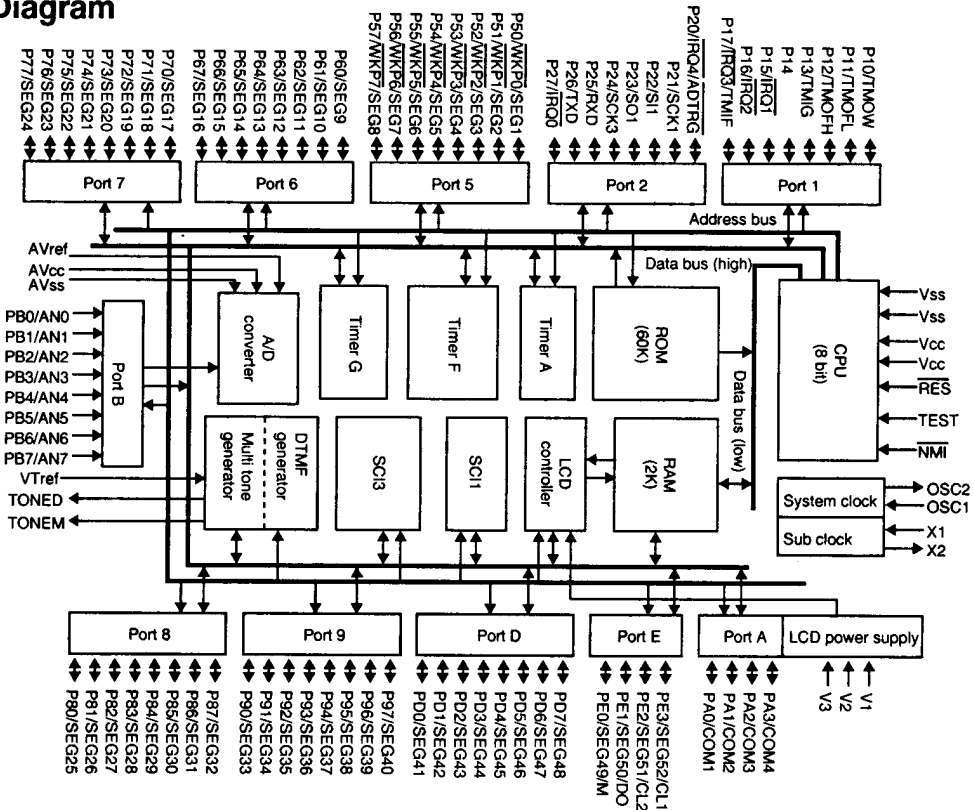
Clock	Output enable	Strobe	Data	Parallel outputs		Serial outputs	
				Q1	Qn	Qs	Q's
	L	X	X	Z	Z	Q7	No Chg.
	L	X	X	Z	Z	No Chg.	Qs
	H	L	X	No Chg.	No Chg.	Q7	No Chg.
	H	H	L	L	Qn-1	Q7	No Chg.
	H	H	H	H	Qn-1	Q7	No Chg.
	H	X	X	No Chg.	No Chg.	No Chg.	Qs

Z=High Impedance
X=Don't Care

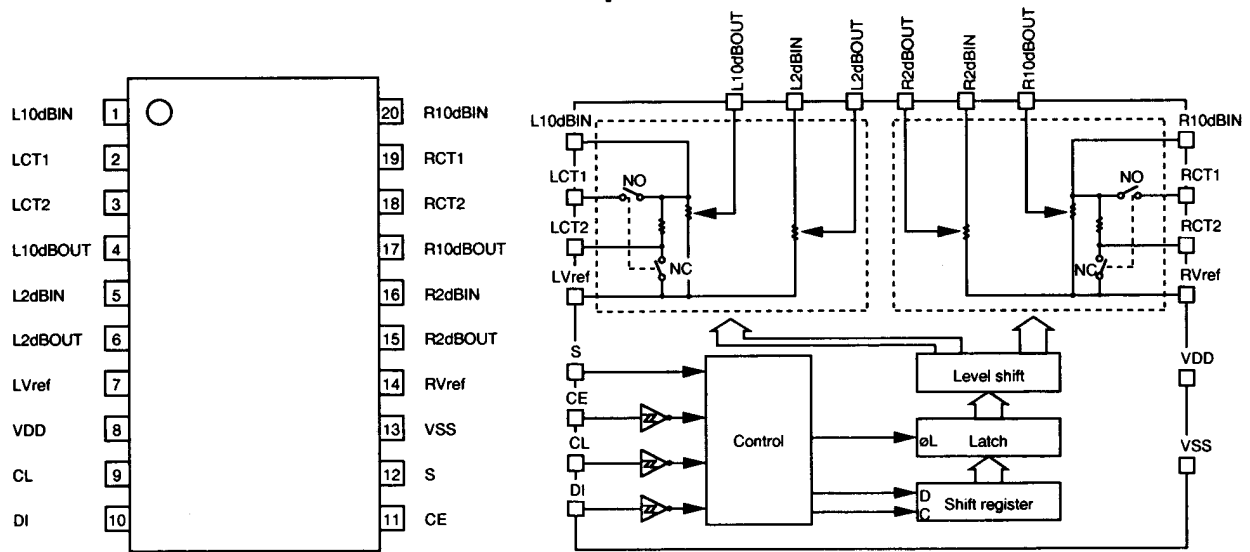
3) HD6433877 (XA0505) CPU



Block Diagram



4) LC75366M (XA0345) Electric Volume



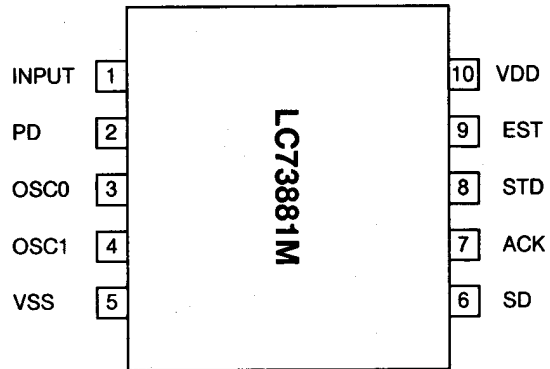
Ta=25°C, Vss=0V

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
THD	THD(1)	VIN=1Vrms, f=1kHz, flat over all, VDD=9V		0.006		%
	THD(2)	VIN=1Vrms, f=20kHz, flat over all, VDD=9V		0.015		%
Cross talk	CT	VIN=1Vrms, f=20kHz, flat over all, Rg=1kΩ		85		dB
Volume min. output	V0 min	VIN=1Vrms, f=20kHz, Volume=∞, L/R Vref~Vss: C=470μF		80		dB
All resistance value	RVOL(1)	10dB step	28.2	47	68.5	kΩ
	RVOL(2)	2B step	12	20	28	kΩ
Output off leak current	I off	L10dBIN, R10dBIN, LCT1 L2dBIN, R2dBIN, RCT1 L10dBOUT, R10dBOUT, LCT2 L2dBOUT, R2dBOUT, RCT2 LVREF, RVref	-10		+10	μA
Input "H" level current	I IH	VI=VDD (CL, CE, DI terminal)			+10	μA
Input "L" level current	I IL	VI=VSS (CL, CE, DI terminal)	-10			μA
Noise output voltage	VN	flat over all (IHF-A), VDD=9V, Rg=1kΩ		2	10	μA
Consumption current	IDD	VDD-VSS=11V			1	mA
Analog ON resistance	R ON	CT1	180	300	420	Ω
		CT2 between Vref	90	150	210	
		0dB, ∞	0.6	1.0	1.4	kΩ
		Others	6.0	10.0	14.0	

5) LC73881M (XA0344) DTMF Receiver

Frequency Table

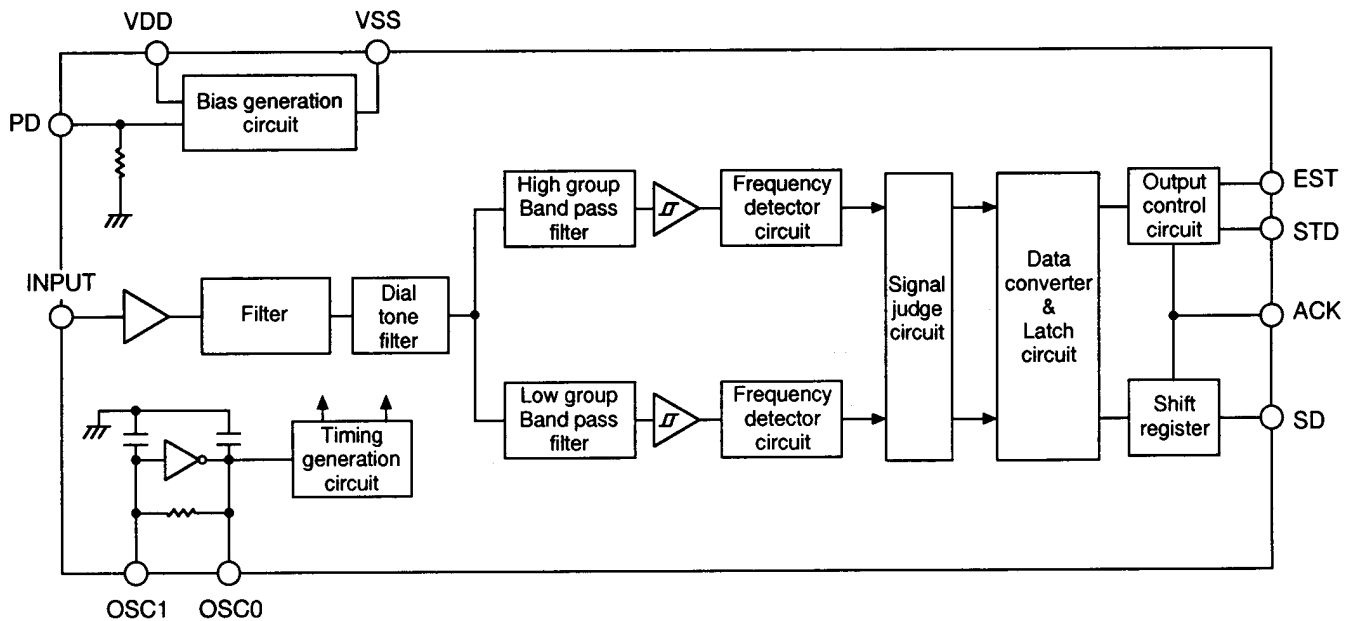
FL	FH	Key	b3	b2	b1	b0
697	1209	1	L	L	L	H
697	1336	2	L	L	H	L
697	1477	3	L	L	H	H
770	1209	4	L	H	L	L
770	1336	5	L	H	L	H
770	1477	6	L	H	H	L
852	1209	7	L	H	H	H
852	1336	8	H	L	L	L
852	1477	9	H	L	L	H
941	1336	0	H	L	H	L
941	1209	*	H	L	H	H
941	1477	#	H	H	L	L
697	1633	A	H	H	L	H
770	1633	B	H	H	H	L
852	1633	C	H	H	H	H
941	1633	D	L	L	L	L



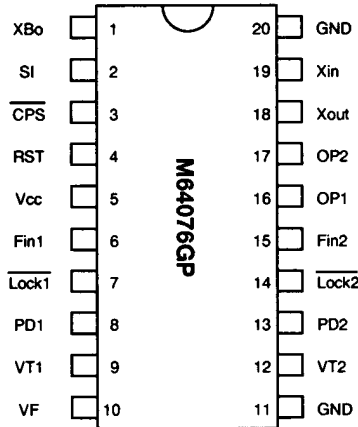
Function Table

No.	Name	I/O	Description
1	INPUT	I	Signal input terminal
2	PD	I	Set to "H" to enter into the standby mode.
3	OSC0	O	Crystal terminal (4.194304MHz)
4	OSC1	I	Crystal terminal (4.194304MHz)
5	VSS		Ground terminal: 0V
6	SD	O	Decoded serial 4-bit data output terminal LSB is supplied first.
7	ACK	I	Data shift terminal for SD
8	STD	O	DTMF signal is existed when STD is "H".
9	EST	O	DTMF signal is existed when EST is "H".
10	VDD		Power Supply: 2.7~5.5V

Block Diagram

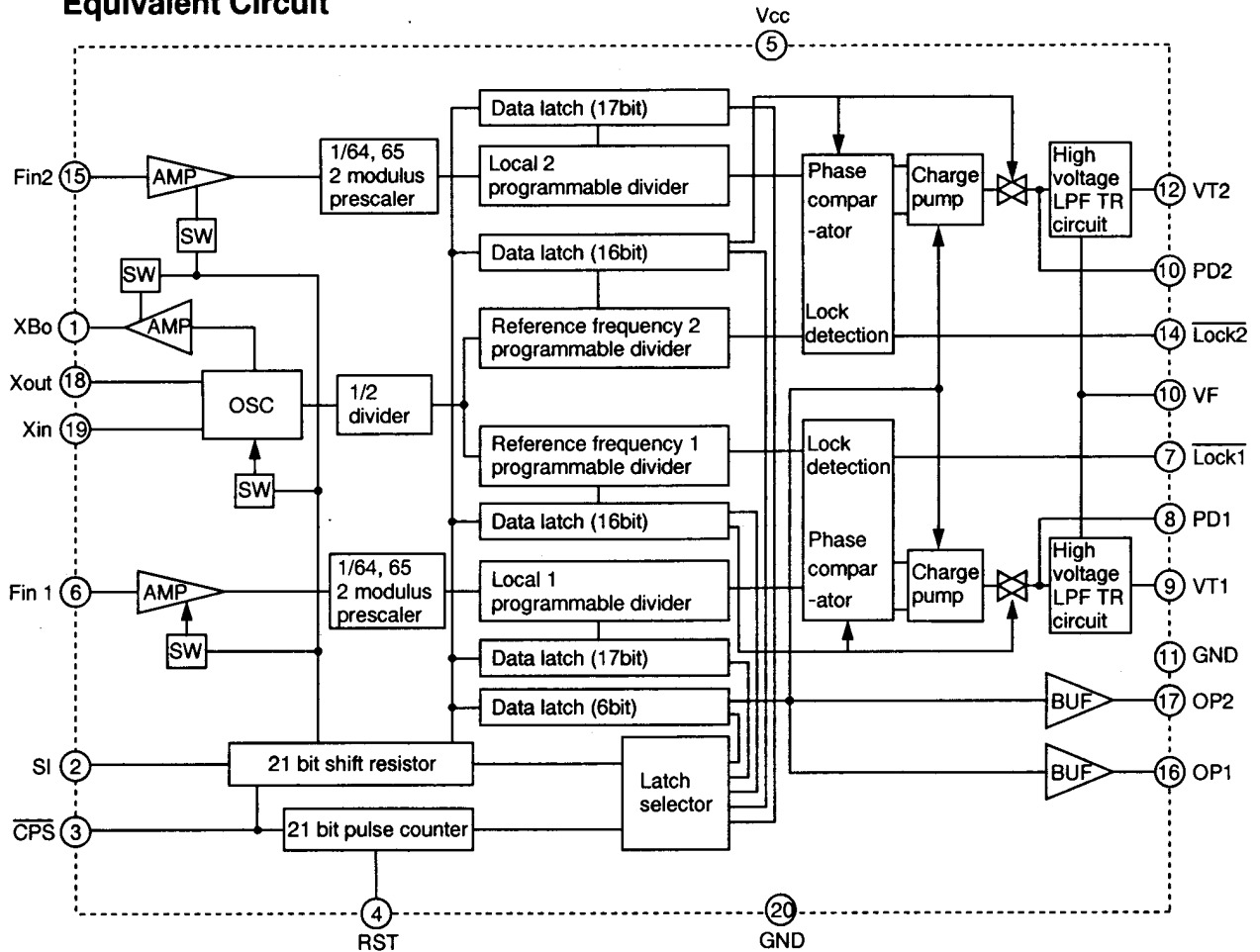


6) M64076GP (XA0352) Dual PLL Synthesizer



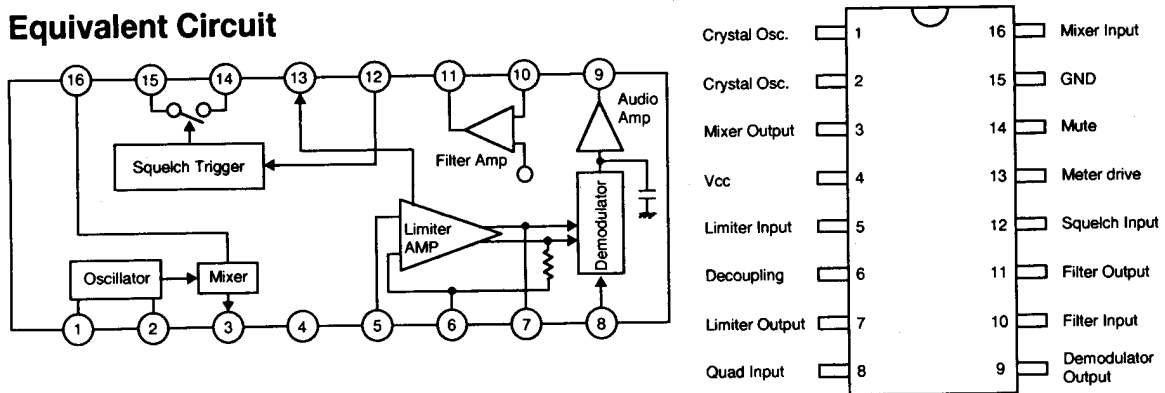
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply voltage	Vcc	Fin=80~520MHz Vin=-10dBm	2.7	-	5.5	V
LPF supply voltage	VF		-	9	12	V
Local oscillator input level	Vin	Fin=80~520MHz Vcc=2.7~5.5V	-20	-	-4	dBm
Local oscillator input frequency	Fin	Vin=-20~-4dBm Vcc=2.7~5.5V	80	-	520	MHz
Xin input level	Vxin	Vcc=2.7~5.5V Fxin=10~25MHz Sine wave	0.4	-	1.4	Vp-p
Xin input frequency	Fxin	Vcc=2.7~5.5V Vxin=0.4~1.4Vp-p	10	-	25	MHz

Equivalent Circuit



7) MC3372VM (XA0343) Low Power FM IF

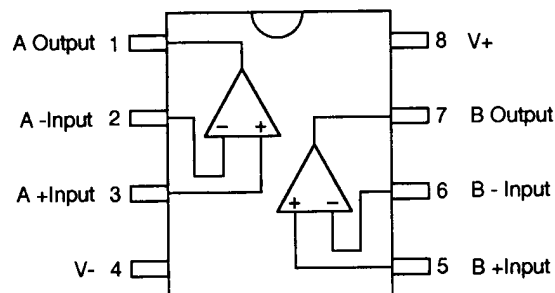
Equivalent Circuit



Ta=25°C

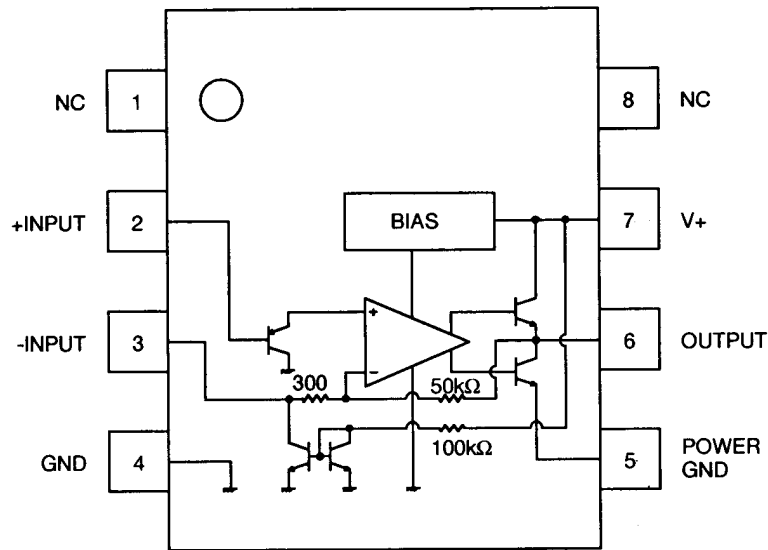
Parameter	Pin No.	Symbol	Ratings	Unit
Max. supply voltage	4	Vcc	2.4~9.0	Vdc
RF input voltage	16	Vrf	0.005~10	mVrms
RF input frequency	16	Frf	0.1~100	MHz
Oscillator input voltage	1	Vlocal	80~400	mVrms
IF frequency	-	Fif	455	kHz
Limiter amplifier input voltage	5	Vif	0~400	mVrms
Filter amplifier input voltage	10	Vfa	0.1~300	mVrms
Squelch input voltage	12	Vsq	0 or 2	Vdc
Mute sink current	14	Isq	0.1~30	mA
Temperature range	-	TA	-30~+75	°C

8) NJM2100V (XA0342) Dual Operational Amplifiers



9) NJM2070M (XA0210) Low Voltage Power Amplifier

Equivalent Circuit



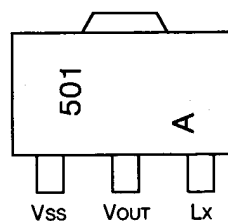
$V_+ = 6V, T_a = 25 \pm 2^\circ C$

Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	
Supply voltage		V_+	1.8	-	15	V	
Idle current	$R_L = \infty$	I_Q	-	4	7	mA	
Output voltage		V_o	-	2.7	-	V	
Input bias current		I_b	-	200	-	nA	
Output power	THD=10%, $f=1kHz$	$V_+ = 6V, R_L = 4\Omega$	0.5	0.6	-	W	
		$V_+ = 4.5V, R_L = 4\Omega$	-	0.32	-	W	
		$V_+ = 3V, R_L = 4\Omega$	-	120	-	mW	
		$V_+ = 2V, R_L = 4\Omega$	-	30	-	mW	
	THD=1%, $f=1kHz$	$V_+ = 6V, R_L = 4\Omega$	-	500	-	mW	
		$V_+ = 4.5V, R_L = 4\Omega$	-	250	-	mW	
Distortion	$P_o = 0.4W, R_L = 4\Omega, f = 1kHz$	THD	-	0.25	-	%	
Voltage gain	$f = 1kHz$	A_v	41	44	47	dB	
Input impedance	$f = 1kHz$	Z_{IN}	100	-	-	k Ω	
Equivalent input noise voltage	$R_s = 10k\Omega$	A curve	V_{n1}	-	2.5	-	μV
		B=22Hz to 22kHz	V_{n2}	-	3	-	μV
Power supply voltage rejection ratio	$f = 100Hz, C_x = 100\mu F$	SVR	24	30	-	dB	
Power gain band width (-3dB)	$R_L = 8\Omega, P_o = 250mW$	P.B	-	200	-	kHz	

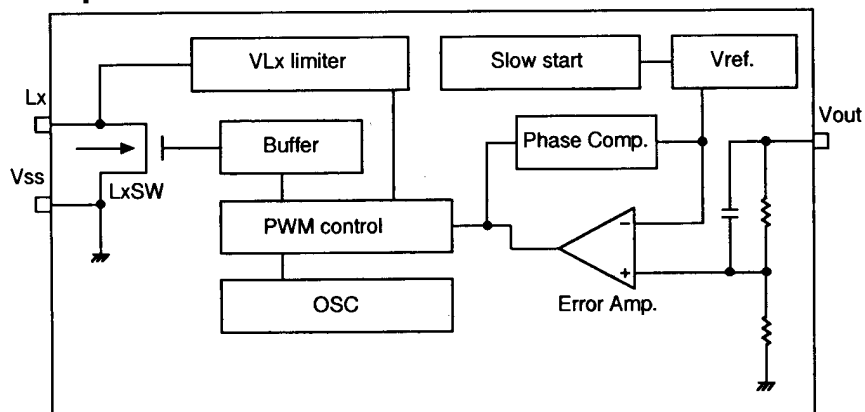
10) RH5RH501A (XA0219)

V_{SS}=0V

Parameter	Symbol	Ratings	Unit
V out terminal voltage	V _{out}	12	V
Lx terminal voltage	V _{Lx}	12	V
Lx terminal current	I _{Lx}	250	mA
Power dissipation	P _d	500	mW



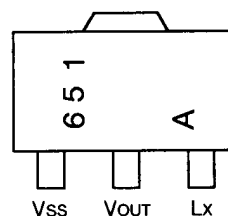
Equivalent Circuit



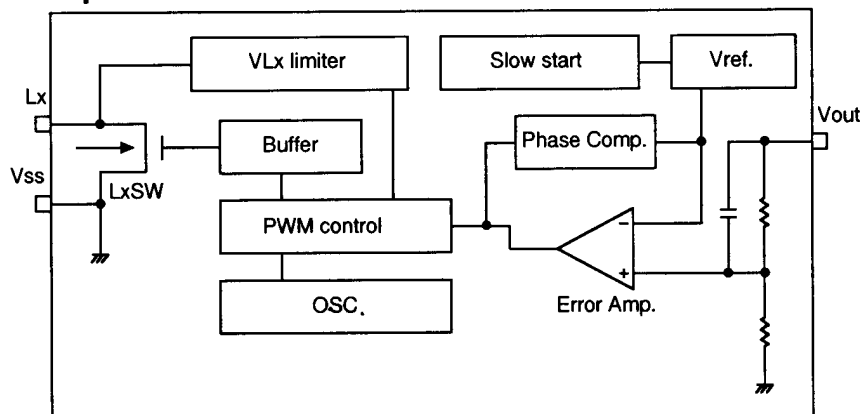
11) RH5RH651A (XA0341)

V_{SS}=0V

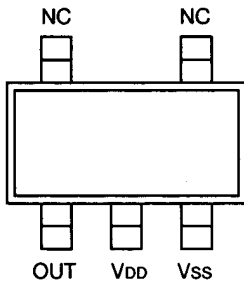
Parameter	Symbol	Ratings	Unit
V out terminal voltage	V _{out}	12	V
Lx terminal voltage	V _{Lx}	12	V
Lx terminal current	I _{Lx}	250	mA
Power dissipation	P _d	500	mW



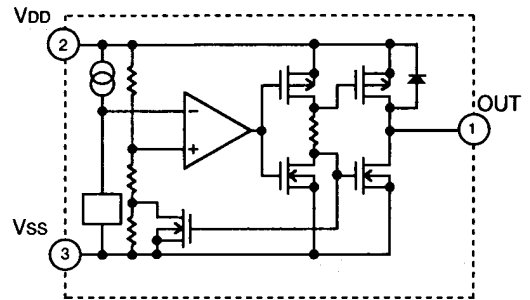
Equivalent Circuit



12) S-80730SL-AT (XA0356)
3.0V Voltage Detector



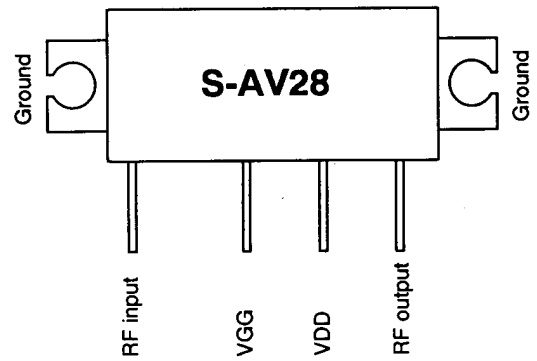
Equivalent Circuit



Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Detection voltage	-V _{DET}		2.928	3.000	3.072	V	
Hysteresis width	V _{HYS}		V _{DET} x0.02	V _{DET} x0.05	V _{DET} x0.08	V	
Consumption current	I _{SS}	V _{DD} =4.5V	-	1.0	3.0	μA	
Operation voltage	V _{DD}		1.0	-	15.0	V	
Output current	I _{OUT}	Nch V _{DS} =0.5V	V _{DD} =1.2V	0.23	0.50	-	mA
			V _{DD} =2.4V	1.60	3.70	-	
		Pch V _{DS} =0.5V	V _{DD} =4.8V	0.36	0.62	-	
Temperature factor of detection output voltage	$\frac{\Delta-V_{DET}}{\Delta T_a}$	T _a =-30°C~80°C	-	+/-0.38	-	mV/°C	

13) S-AV28 (XA0381) VHF Band FM Power Module

Parameter	Symbol	Ratings	Unit
Max. supply voltage	VDD	17	V
Control voltage	VGG	6	V
RF input power	Pi	50	mW
RF output power	Po	12	W
Total current	I _T	3	A
Operating case temperature	Tc(opr)	-30~+100	°C
Storage temperature	Tstg	-40~+110	°C

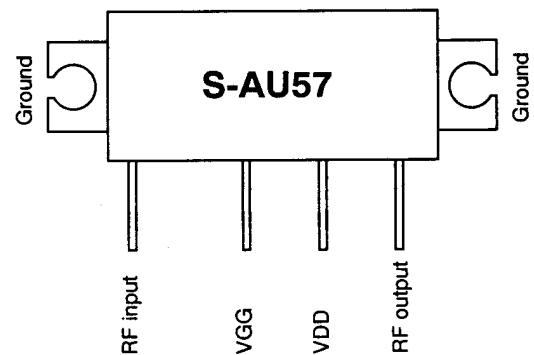


Tc=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Frequency range	Frang		144	-	148	MHz
Output power	Po	VDD=9.6V	7	-	-	W
Power gain	Gp	VGG=4V	25.4	-	-	dB
Total efficiency	η _T	Pi=20mW	50	-	-	%
Input VSWR	VSWR _{in}	ZG=ZL=50Ω	-	-	2.5	-
Harmonics	HRM		-	-	-15	dB
Load mismatch	-	VDD=15V, VGG=Adjustment Pi=20mW, Po=7W VSWR load 20:1 all phase	No trouble			-
Stability	-	VDD=7.5~11.5V VGG=0~4V Pi=20mW VSWR load 6:1 all phase	No trouble			-

14) S-AU57 (XA0382) UHF Band FM Power Module

Parameter	Symbol	Ratings	Unit
Max. supply voltage	VDD	17	V
Control voltage	VGG	6	V
RF input power	Pi	50	mW
RF output power	Po	12	W
Total current	I _T	3	A
Operating case temperature	Tc(opr)	-30~+100	°C
Storage temperature	Tstg	-40~+110	°C

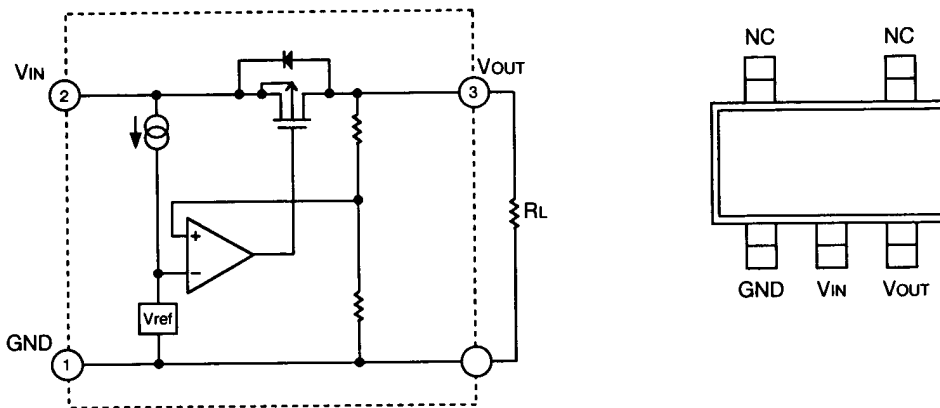


Tc=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Frequency range	Frang		430	-	450	MHz
Output power	Po	VDD=9.6V	7	-	-	W
Power gain	Gp	VGG=4V	25.4	-	-	dB
Total efficiency	η _T	Pi=20mW	40	-	-	%
Input VSWR	VSWR _{in}	ZG=ZL=50Ω	-	-	2.5	-
Harmonics	HRM		-	-	-25	dBc
Load mismatch	-	VDD=15V, VGG=Adjustment Pi=20mW, Po=7W VSWR load 20:1 all phase	No trouble			-
Stability	-	VDD=7.5~11.5V VGG=0~4V Pi=20mW VSWR load 3:1 all phase	No trouble			-

15) S-81237SG-QE (XA0358)
Voltage Regulator

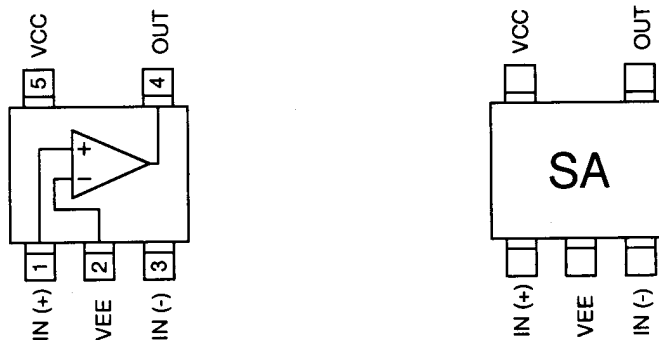
Equivalent Circuit



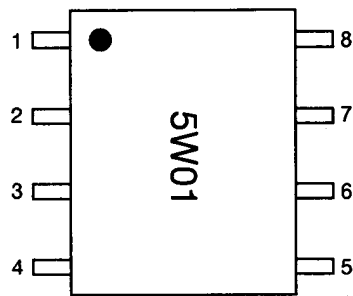
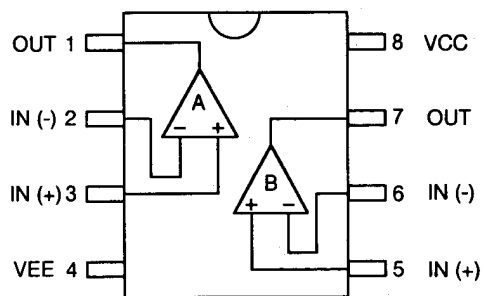
Ta=25°C

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Output voltage	V _{OUT}	V _{IN} =5.7V, I _{OUT} =10mA	3.626	3.700	3.774	V
Input/output voltage difference	V _{dif}	I _{OUT} =10mA	-	0.31	0.78	V
Input stability 1	ΔV _{OUT1}	V _{IN} =4.6~16V, I _{OUT} =1mA	-	46	92	mV
Input stability 2	ΔV _{OUT2}	V _{IN} =4.6~16V, I _{OUT} =1μA	-	46	259	mV
Load stability	ΔV _{OUT3}	V _{IN} =5.7V, I _{OUT} =1μA~30mA	-	60	100	mV
Consumption current	I _{SS}	V _{IN} =5.7V, No Load	-	1.2	2.5	μA
Input voltage	V _{IN}		-	-	16	V
Temperature factor of output voltage	$\frac{\Delta V_{OUT}}{\Delta T_a}$	V _{IN} =5.7V, I _{OUT} =10mA T _a =-40°C~85°C	-	+/- 0.463	-	mV/°C

16) TA75S01F (XA0332)
Single Operational Amplifiers



17) TA75W01FU (XA0349)
Dual Operational Amplifiers

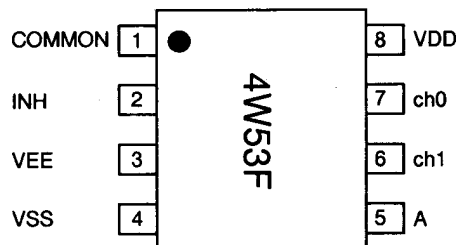


18) TC4W53F (XA0348)
2-Channel Multiplexer/Demultiplexer

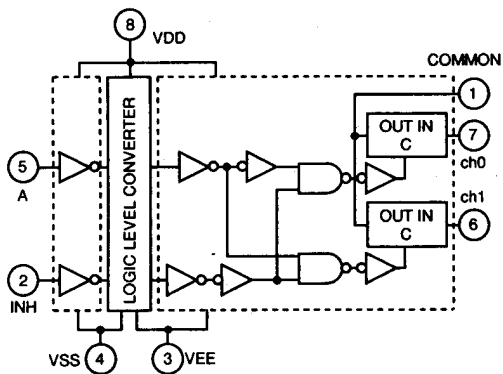
Function Table

Control input		ON channel
INH	A	
L	L	ch 0
L	H	ch 1
H	*	NONE

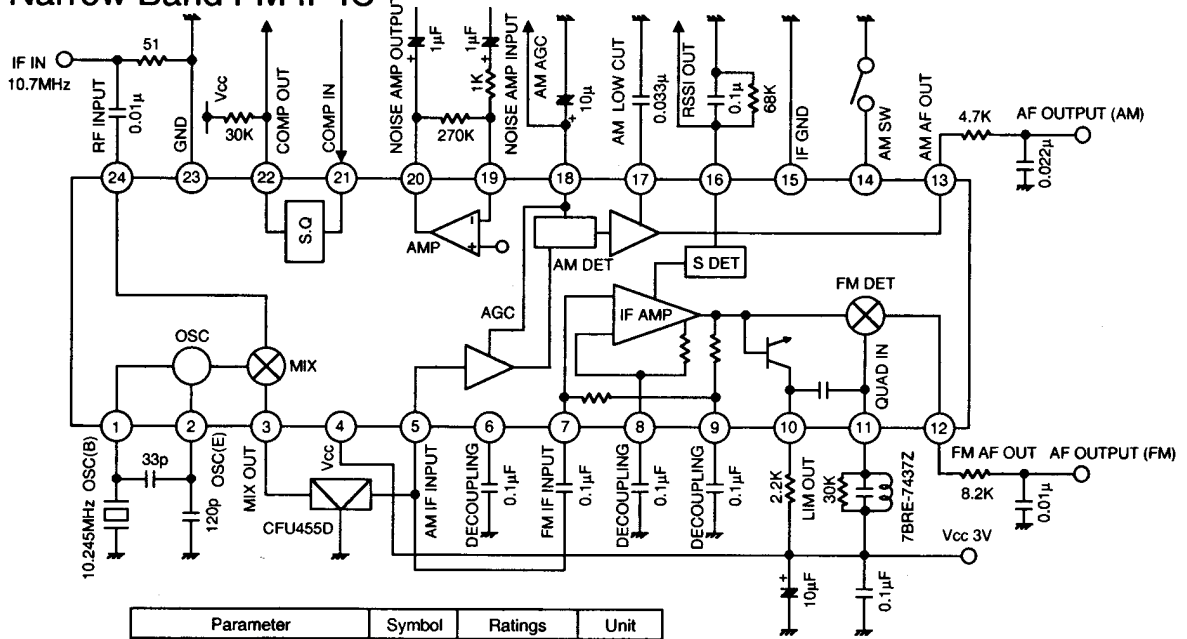
* Don't Care



Block Diagram



19) TK10930VTL (XA0223) Narrow Band FM IF IC

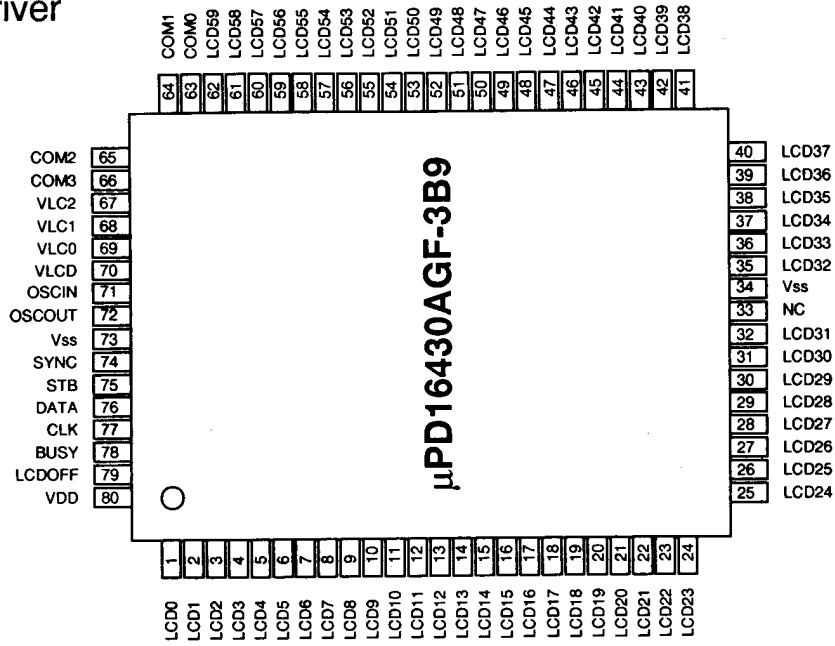


Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc max	10.0	V
Power dissipation	Pd	400	mW
Storage temperature	Tstg	-55~+150	°C
Operating temperature	Top	-30~+75	°C
Operating voltage	Vop	2.5~8.5	V
Operating frequency	fop	-60	MHz

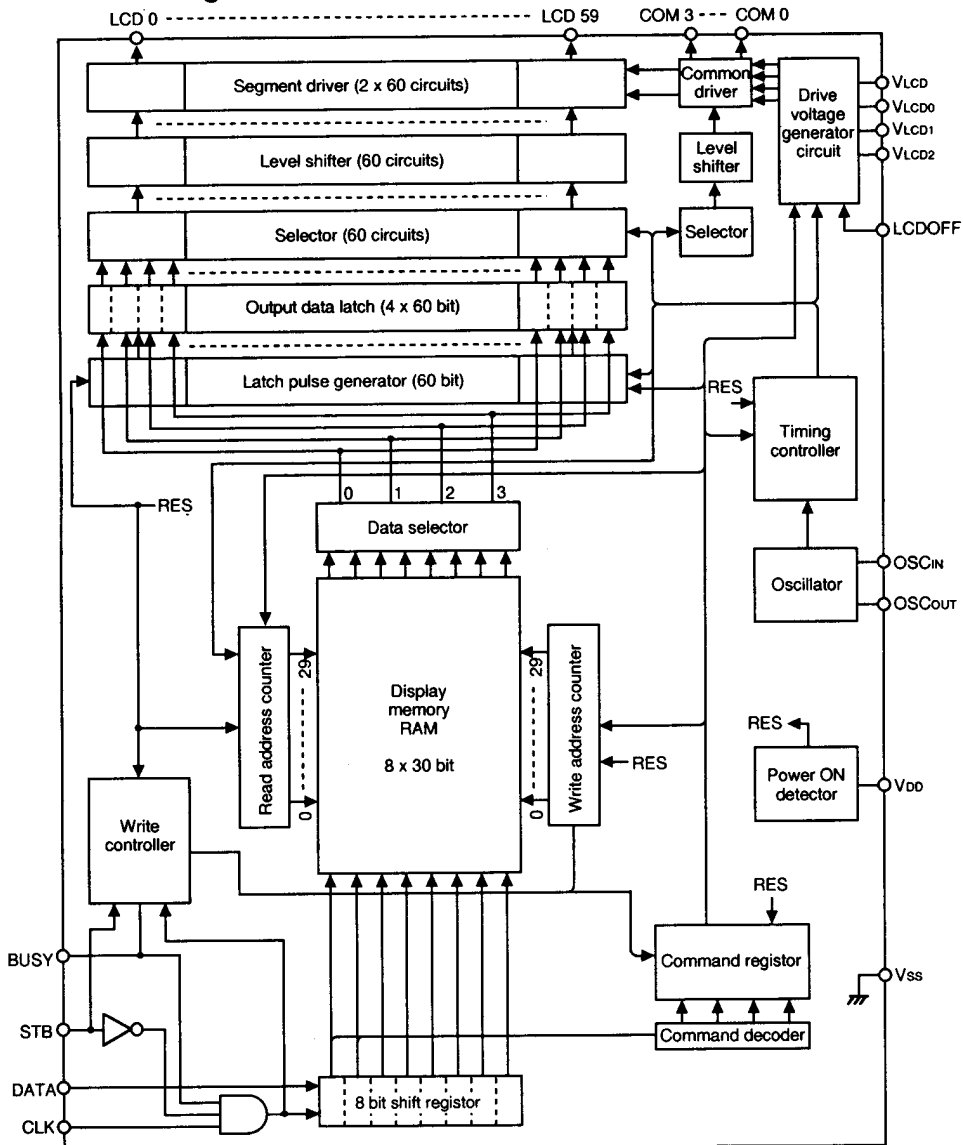
Ta=25°C Vcc=3V

Parameter	Symbol	Ratings			Unit	Condition
		Min	Typical	Max		
Supply Current 1	Icc1		6.8	8.9	mA	No signal, AM ON
Supply Current 2	Icc2		3.9	5.3	mA	No signal, AM OFF
Mixer Conversion Gain	Mg		20		dB	
Mixer Input Impedance	Mz		3.6		KΩ	DC Test
FM						
Limiting Sensitivity	Limit		2.0	8.0	μV	-3.0dB
Output Voltage	Vo1	85	150	230	mVrms	10mVin +/-3kHz DEV
Distortion	THD1		1.0	2.0	%	10mVin +/-3kHz DEV
Output Impedance	Zo		800		Ω	10mVin
Filter Gain	Gf	30	38		dB	Fin=30kHz, Vo=100mV
Scan Control Hi Voltage	SH	2.3			V	Squelch input=2.5V
Scan Control Low Voltage	SL			0.3	V	Squelch input=0V
Squelch Hysteresis	Hys		30		mV	
S meter Output Voltage	S0		0.05	0.5	V	Vin=0mV, RS=68kΩ
S meter Output Voltage	S1	0.05	0.5	0.9	V	Vin=0.01mV, RS=68kΩ
S meter Output Voltage	S2	0.7	1.2	1.7	V	Vin=0.1mV, RS=68kΩ
S meter Output Voltage	S3	1.2	1.8	2.5	V	Vin=1mV, RS=68kΩ
S meter Output Voltage	S4	1.6	2.3	2.9	V	Vin=10mV, RS=68kΩ
S meter Output Voltage	S5	1.8	2.4	2.9	V	Vin=100mV, RS=68kΩ
AM						
Sensitivity	US	20	15		μV	required input level to get 20mV rms output
Output Voltage	Vo2	60	120	160	mVrms	1kHz, 30%, Vin=1mV
Distortion-1	THD2		1.0	2.0	%	1kHz, 30%, Vin=1mV
Distortion-2	THD3		2.0	4.0	%	1kHz, 30%, Vin=1mV
S/N	S/N	40	48		dB	1kHz, 30%, Vin=1mV
AM OFF	Vo	-0.3		0.3	%	

20) μ PD16430AGF-3B9 (XA0355) LCD Driver

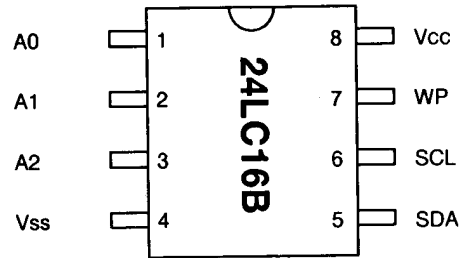
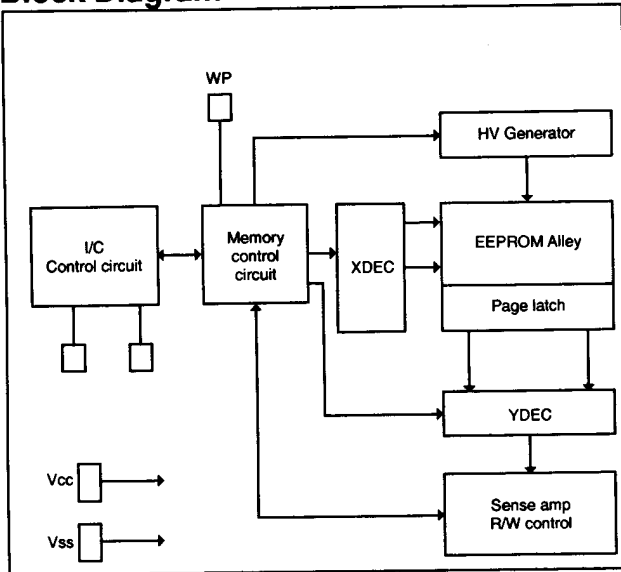


Block Diagram



21) 24LC16B (XA0351)
16K bits CMOS Serial EEPROM

Block Diagram



Pin Name	Description
Vss	GND terminal
SDA	Serial address/data I/O
SCL	Serial clock
WP	Write protect
Vcc	+2.5V~5.5V power supply
A0, A1, A2	No connection

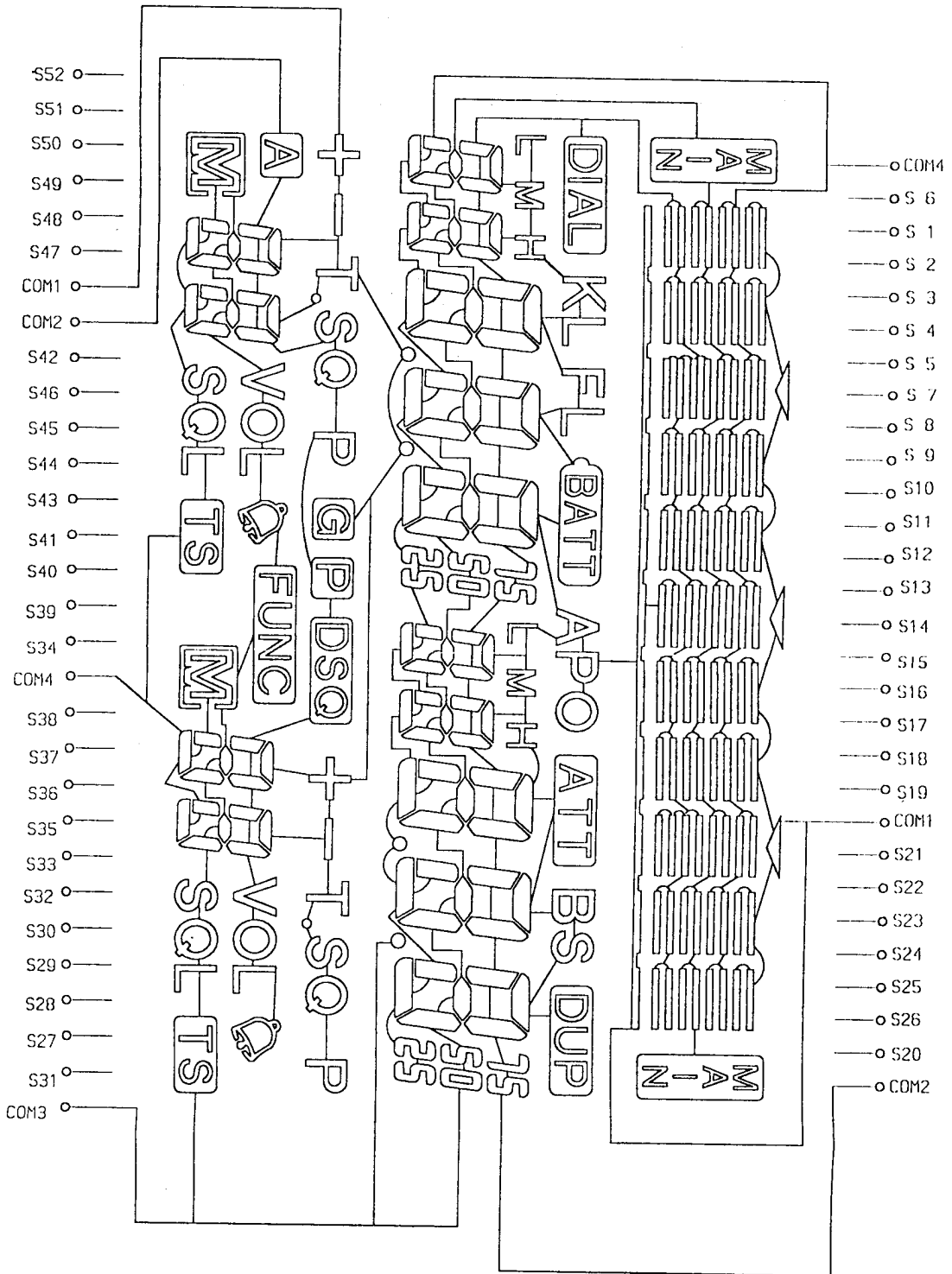
22) Transistor, Diode and LED Outline Drawings

Top View

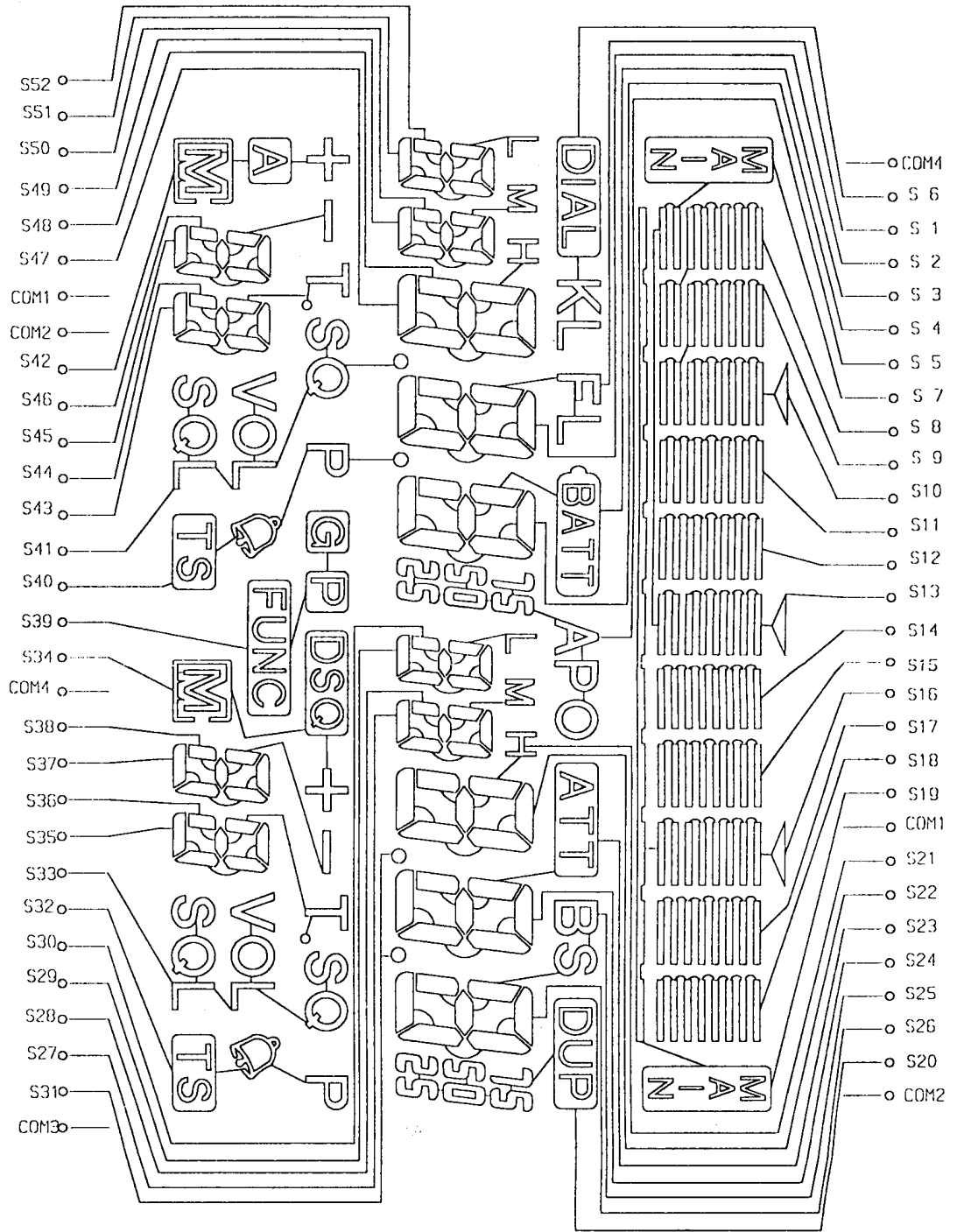
1SS356 XD0272	1SV217 XD0233	1SV255 XD0292	1SV257 XD0293	DA204U XD0130	DA227 XD0238	DAN235U XD0246	DTZ3.6B XD0156
DTZ5.1B XD0165	MA111 XD0290	MA142WA XD0239	MA729 XD0291	MA741WA XD0251	MA742 XD0250	RLS135 XD0066	RN711H XD0257
U2FWJ44N XD0294	BRPG1201W XL0028	SML-310MT XL0036	PG1101F XL0045				
2SA1213 XT0088	2SA1774 XT0139	2SB1181 XT0140	2SC3356 XT0030	2SC4649 XT0108	2SC5065 XT0137	2SC5066 XT0138	2SD2216 XT0135
2SJ144 XE0019	UN9111 XU0062	UN9211 XU0063	UN9216 XU0099				
UMC3 XU0047		XP1111 XU0171		XP1501 XU0172		XP1216 XU0177	

23) LCD Unit

Common

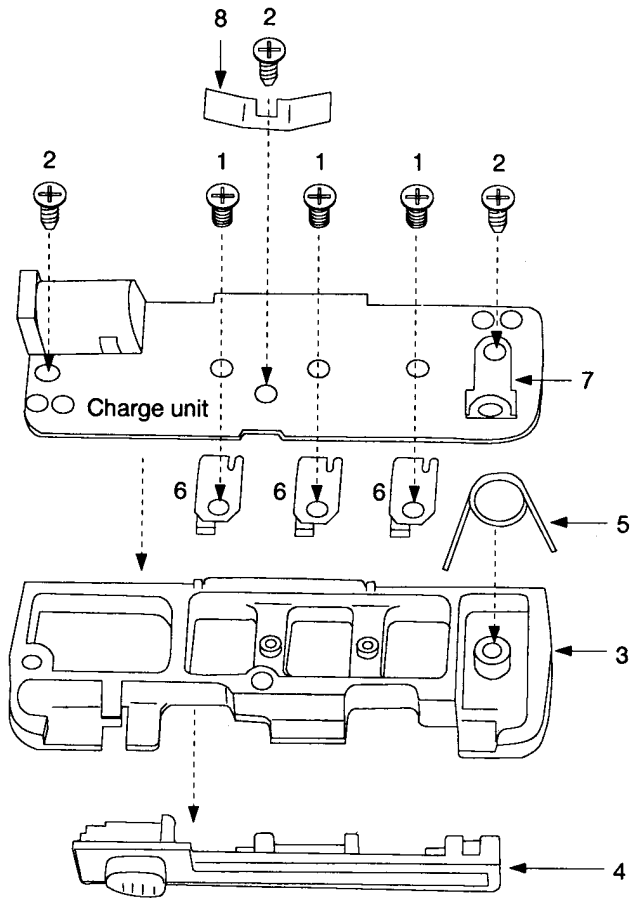


Segment



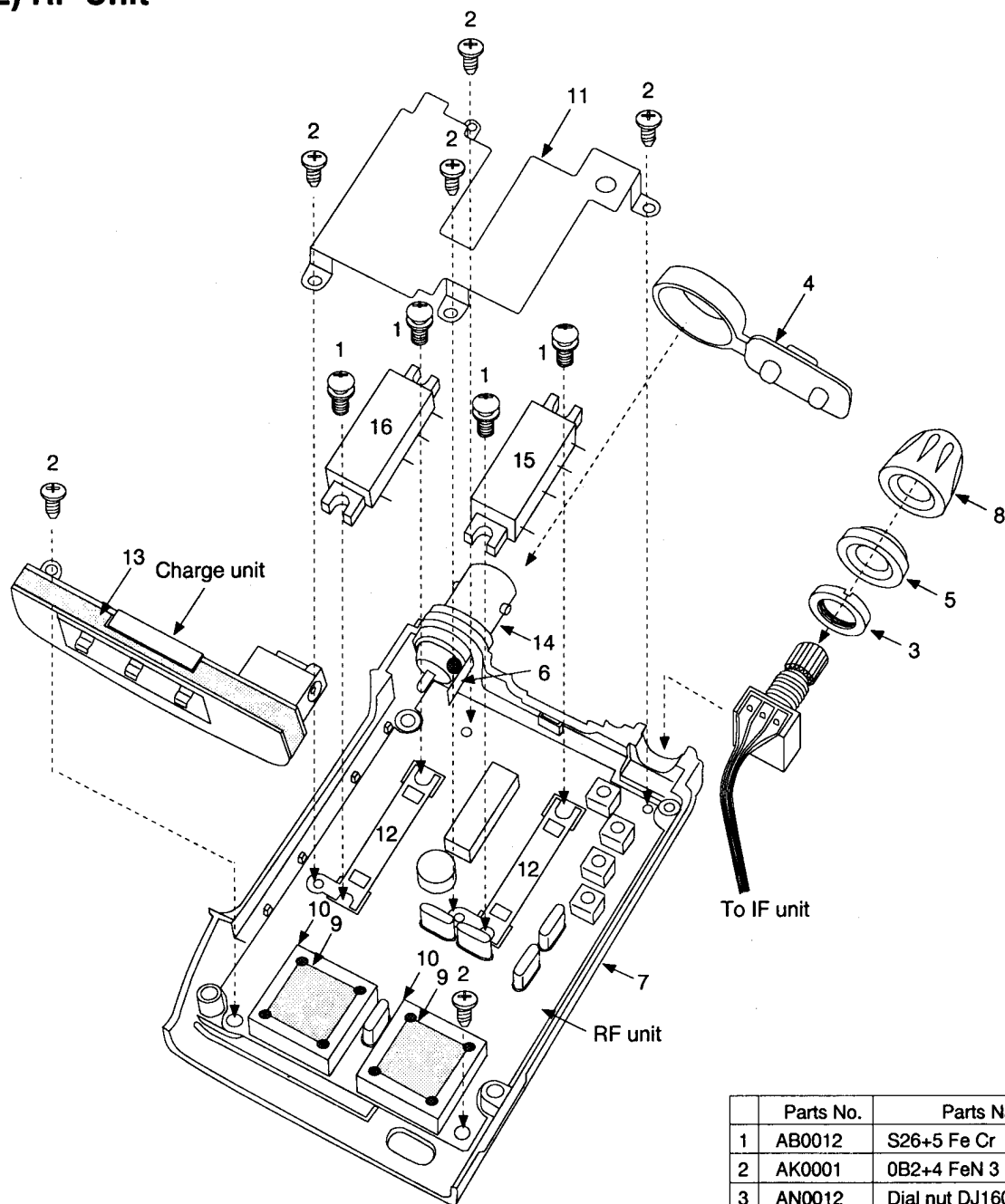
EXPLODED VIEW

1) Charge Unit



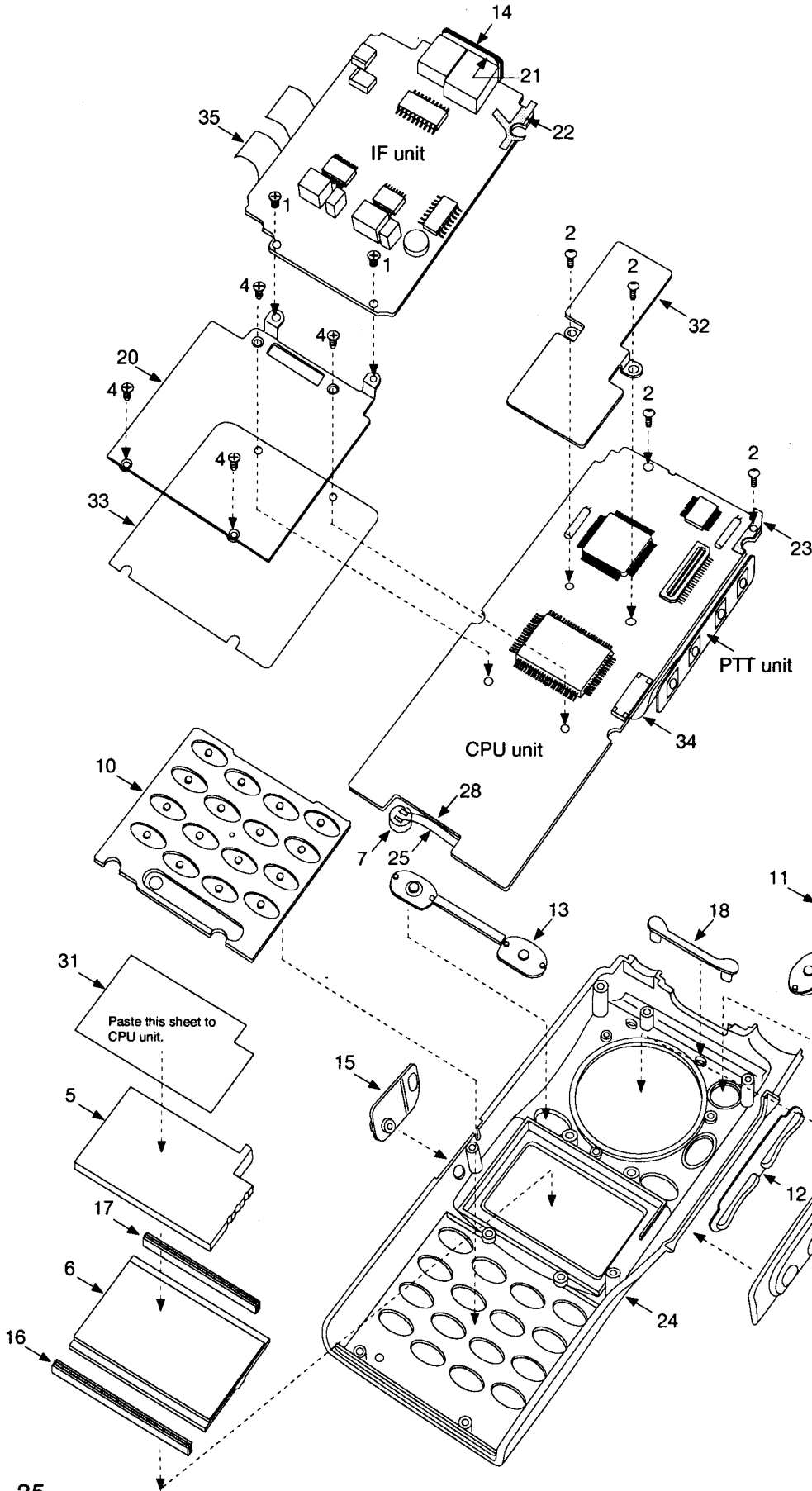
	Parts No.	Parts Name
1	AF0020	02+3Fe Ni 1
2	AX0001	OP2+4 Fe BC1
3	FP0093A	Terminal frame DJG5
4	FP0094	Release knob DJG5
5	SC0008A	Release spring DJG5
6	SD0045	Battery terminal DJF5
7	TS0100	Earth metal fittings DJG5
8	TS0109	VCO earth DJG5

2) RF Unit

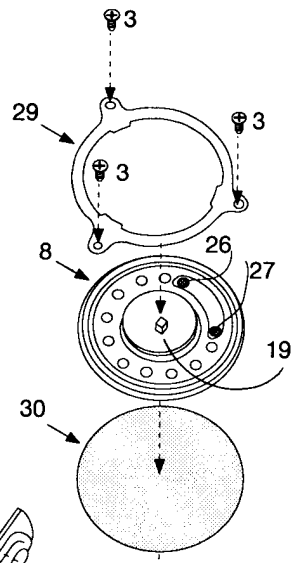


	Parts No.	Parts Name
1	AB0012	S26+5 Fe Cr
2	AK0001	0B2+4 FeN 3
3	AN0012	Dial nut DJ160
4	FG0179Z	Jack cap
5	FG0181Z	Dial cap
6	FM0112	BNC earth DJG5
7	KB0058	Rear case DJG5
8	NK0042	Dial knob DJG5
9	TN0002	VCO shield
10	TS0097	VCO case
11	TS0098	RF shield DJG5
12	TS0101	Module earth
13	TS0110	Charge earth
14	UE0193	BNC antenna connector
15	XA0381	S-AV28
16	XA0382	S-AU57

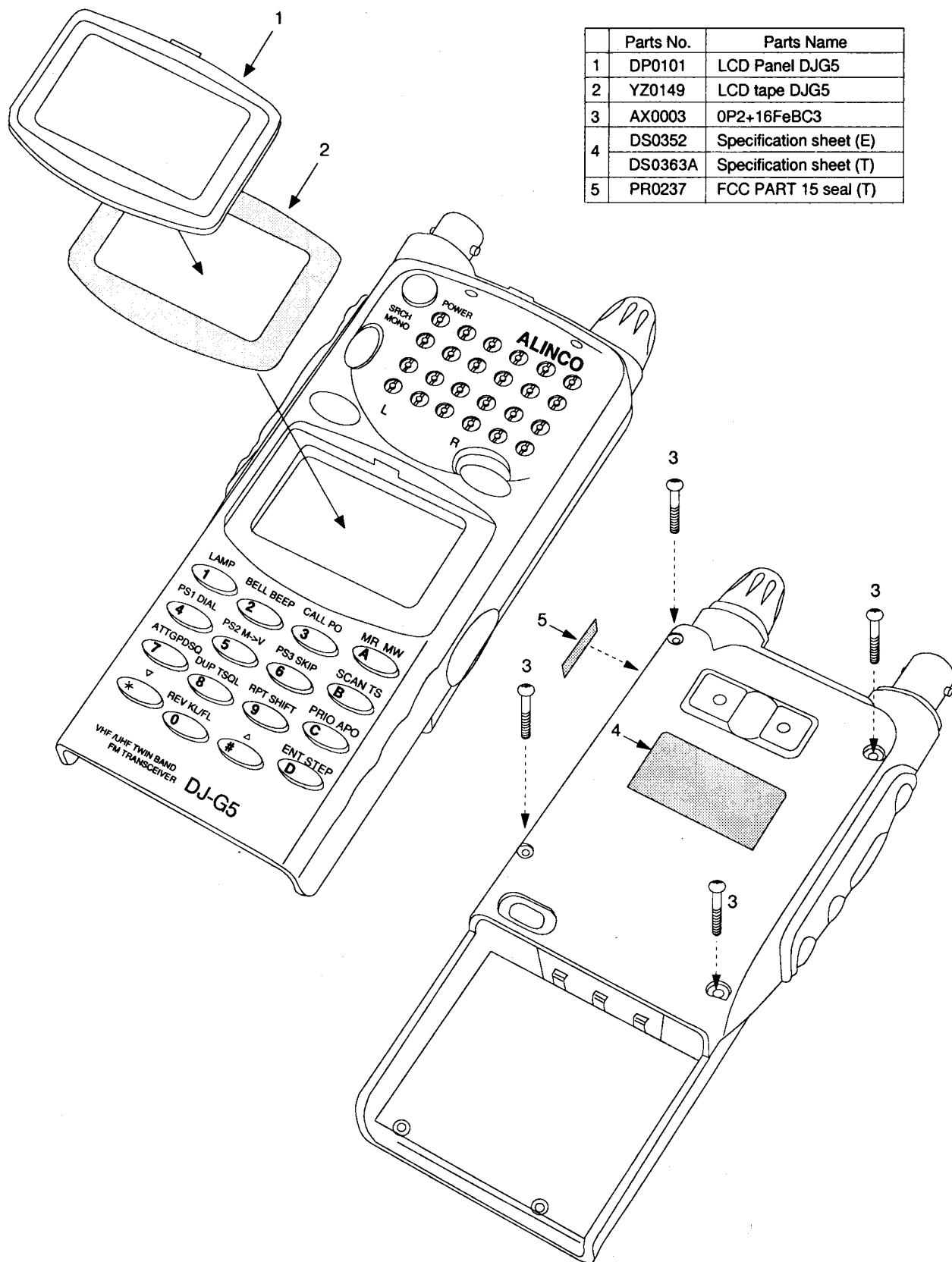
3) IF Unit/CPU Unit



Parts No.	Parts Name
1	AF0020 02+3Fe Ni 1
2	AP0004 P2+5Fe Cr
3	AX0001 OP2+4 Fe BC1
4	AX0002 OP2+5 Fe N 1
5	DG0021 LCD light DJG5
6	EL0028 XH606
7	EY0014 Mic
8	ES0011 SU-36W0824
9	FG0173 PTT rubber DJG5
10	FG0174 16 key rubber DJG5
11	FG0175 Power key DJG5
12	FG0176 VOL rubber DJG5
13	FG0177 V/U key DJG5
14	FG0178Z Jack rubber DJG5
15	FG0180Z DC cap DJG5
16	FG0182 LCD rubber A DJG5
17	FG0183 LCD rubber B JDG5
18	FG0184 ON AIR rubber DJG5
19	FG0218 Cushion G5
20	FM0098 Rear panel DJG5
21	FM0100 Jack metal fixture DJG5
22	FM0111A IF earth
23	FM0113 CPU earth DJG5
24	KM0191 Front case DJG5
25	MBCL02AA #30B02-020-02
26	MKCLH2AA #30K02-025-02
27	MNCL03AA #30N02-030-02
28	MRCL02AA #30R02-020-02
29	ST0052 SP metal fittings DJG5
30	TG0023 SP Cloth DJG5
31	TL0016 Sheet DJG5
32	TS0099 CPU Shield DJG5
33	TZ0064 Panel sheet DJG5
34	uP0281 CPU-PTT Flexible P.C.B.
35	uP0282 IF-RF Flexible P.C.B.



4) Front/Rear View



	Parts No.	Parts Name
1	DP0101	LCD Panel DJG5
2	YZ0149	LCD tape DJG5
3	AX0003	0P2+16FeBC3
4	DS0352	Specification sheet (E)
	DS0363A	Specification sheet (T)
5	PR0237	FCC PART 15 seal (T)

PARTS LIST

RF unit			RF unit			RF unit			RF unit			RF unit		
Ref N	Parts No.	Description	Ref N	Parts No.	Description	Ref N	Parts No.	Description	Ref N	Parts No.	Description	Ref N	Parts No.	Description
C51	CJ3031	Chip C.	C117	CS0376	Chip Tantal	C192	CJ3035	Chip C.	C198	CJ3017	Chip C.	C247	CS0049	Chip Tantal
C52	CE0373	Electrolytic C.	C120	CJ3031	Chip C.	C193	CJ3001	Chip C.	C199	CJ3016	Chip C.	C248	CJ3035	Chip C.
C53	CJ3031	Chip C.	C121	CS0213	Chip Tantal	C194	CJ3035	Chip C.	C201	CJ3011	Chip C.	C249	CJ3035	Chip C.
C56	CJ3031	Chip C.	C122	CS0213	Chip Tantal	C195	CJ3035	Chip C.	C202	CJ3025	Chip C.	C250	CJ3031	Chip C.
C57	CS0210	Chip Tantal	C123	CJ3051	Chip C.	C196	CJ3001	Chip C.	C203	CJ3020	Chip C.	C251	CJ3035	Chip C.
			C124	CJ3002	Chip C.	C197	CJ3014	Chip C.	C204	CJ3013	Chip C.	C252	CS0366	Chip Tantal
			C125	CJ3003	Chip C.				C205	CJ3035	Chip C.	D51	XD0251	Diode
			C126	CJ3003	Chip C.				C206	CS0366	Chip Tantal	D52	XD0066	Diode
			C127	CS0063	Chip Tantal				C207	CJ3047	Chip C.	D53	XD0251	Diode
			C129	CS0063	Chip Tantal				C208	CJ3022	Chip C.	D55	XD0066	Diode
			C130	CJ3019	Chip C.				C209	CJ3022	Chip C.	D56	XD0251	Diode
			C131	CJ3031	Chip C.				C210	CJ3019	Chip C.	D57	XD0246	Diode
			C132	CJ3031	Chip C.				C211	CJ3003	Chip C.	D58	XD0272	Diode
			C133	CS0377	Chip Tantal				C212	CJ3035	Chip C.	D59	XD0246	Diode
			C138	CJ3035	Chip C.				C213	CJ3011	Chip C.	D60	XD0272	Diode
			C139	CJ3031	Chip C.				C214	CJ3017	Chip C.	D61	XD0246	Diode
			C140	CJ3003	Chip C.				C215	CJ3024	Chip C.	D62	XD0272	Diode
			C141	CJ3035	Chip C.				C216	CJ3024	Chip C.	D63	XD0246	Diode
			C142	CJ3035	Chip C.				C217	CJ3035	Chip C.	D64	XD0246	Diode
			C143	CJ3047	Chip C.				C218	CJ3035	Chip C.	D65	XD0272	Diode
			C144	CS0049	Chip Tantal				C219	CJ3035	Chip C.	D66	XD0233	Diode
			C145	CJ3013	Chip C.				C220	CJ3007	Chip C.	D67	XD0233	Diode
			C146	CJ3013	Chip C.				C221	CJ3005	Chip C.	D68	XD0233	Diode
			C147	CJ3035	Chip C.				C222	CJ3015	Chip C.	D69	XD0233	Diode
			C149	CJ3023	Chip C.				C223	CJ3015	Chip C.	D70	XD0272	Diode
			C150	CJ3031	Chip C.				C224	CJ3035	Chip C.	D71	XD0066	Diode
			C152	CJ3011	Chip C.				C225	CJ3020	Chip C.	D72	XD0066	Diode
			C153	CJ3019	Chip C.				C226	CJ3015	Chip C.	D73	XD0251	Diode
			C154	CJ3013	Chip C.				C227	CJ3004	Chip C.	D74	XD0251	Diode
			C154	CJ3035	Chip C.				C228	CJ3011	Chip C.	D75	XD0272	Diode
			C156	CJ3019	Chip C.				C229	CJ3016	Chip C.	D76	XD0272	Diode
			C158	CJ3021	Chip C.				C230	CJ3018	Chip C.	D77	XD0272	Diode
			C159	CS0213	Chip Tantal				C231	CJ3018	Chip C.	FL51	QA0083	Helical Filter
			C160	CS0213	Chip Tantal				C232	CJ3035	Chip C.	FL51	QA0099	Helical Filter
			C161	CJ3051	Chip C.				C233	CJ3035	Chip C.	IC51	XA0382	IC
			C163	CJ3002	Chip C.				C234	CJ3035	Chip C.	IC52	XA0246	IC
			C165	CJ3035	Chip C.				C235	CS0049	Chip Tantal	IC53	XA0352	IC
			C166	CJ3018	Chip C.				C236	CJ3007	Chip C.	IC54	XA0381	IC
			C166	CJ3018	Chip C.				C237	CJ3002	Chip C.	L51	QC0288	Chip L.
			C167	CJ3017	Chip C.				C238	CJ3035	Chip C.	L52	QC0423	Chip L.
			C168	CS0063	Chip Tantal				C239	CJ3035	Chip C.	L53	QKA35A	Coil
			C169	CJ3031	Chip C.				C240	CS0210	Chip Tantal	L54	QKA45A	Coil
			C170	CJ3031	Chip C.				C241	CJ3005	Chip C.	L55	QKA45A	Coil
			C171	CJ3031	Chip C.				C242	CJ3002	Chip C.	L56	QC0423	Chip L.
			C171	CJ3031	Chip C.				C243	CJ3035	Chip C.	L57	QKA35A	Coil
			C174	CJ3035	Chip C.				C244	CJ3035	Chip C.	L58	QKA35A	Coil
			C174	CJ3035	Chip C.				C245	CS0049	Chip Tantal	L59	QKA45A	Coil
			C175	CJ3006	Chip C.				C246	CJ3035	Chip C.	L60	QC0421	Chip L.
			C176	CJ3004	Chip C.				C247	CJ3035	Chip C.	L61	QC0288	Chip L.
			C178	CJ3031	Chip C.				C248	CJ3035	Chip C.	L62	QC0422	Chip L.
			C179	CJ3035	Chip C.				C249	CJ3035	Chip C.	L63	QC0422	Chip L.
			C180	CS0377	Chip Tantal				C250	CJ3035	Chip C.	L64	QC0422	Chip L.
			C184	CJ3004	Chip C.				C251	CJ3035	Chip C.	L65	QC0430	Chip L.
			C185	CJ3031	Chip C.				C252	CJ3035	Chip C.	L66	QC0424	Chip L.
			C186	CJ3006	Chip C.							L67	QC0422	Chip L.
			C187	CJ3006	Chip C.							L68	QC0395	Chip L.
			C188	CJ3006	Chip C.									
			C189	CJ3019	Chip C.									
			C189	CJ3035	Chip C.									
			C190	CJ3003	Chip C.									

IF unit				IF unit				IF unit				IF unit							
Ref N	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.
C301	CU3047	Chip C.	C1608JB1H103KTA		C354	CU3035	Chip C.	C1608JB1H102KTA		C409	CS0366	Chip Tant	TMCMA0G106MTR		IC308	XA0341	IC	RH5RH651A-T1	
C302	CE0037A	Electrolytic C	C16CV100B5		C355	CU3059	Chip C.	C1608JF1E104ZTA		C410	CU8042	Chip C.	C2012JB1C104KTA		IC309	XA0332	IC	TA75501F(TE85L)	
C303	CU3035	Chip C.	C1608JB1H102KTA		C356	CU8042	Chip C.	C2012JB1C104KTA		C411	CU3051	Chip C.	C1608JB1E223KTA		IC310	XA0342	IC	NJM2100V-TE1	
C304	CU3069	Chip C.	C1608JF1E104ZTA		C357	CS0060	Chip Tant	TMCSA1E474MTR		C412	CU3035	Chip C.	C1608JB1H102KTA		IC311	XA0246	IC	BU4094BFT1	
C305	CS0378	Chip Tant	TMCMAOG107MTR		C358	CU3047	Chip C.	C1608JB1H103KTA		C413	CU3027	Chip C.	C1608CH1H221JTA		JK301	UJ0022	Jack	HSJ1102-01-640	
C306	CU3035	Chip C.	C1608JB1H102KTA		C359	CS0366	Chip Tant	TMCMAOG106MTR		C414	CU3039	Chip C.	C1608JB1H102KTA		JK302	UJ0019	Jack	HSJ1493-01-010	
C307	CU3047	Chip C.	C1608JB1H103KTA		C360	CU3051	Chip C.	C1608JB1E223KTA		C415	CU8042	Chip C.	C2012JB1C104KTA		L301	QC0086	Coil	NL32252T101J	
C308	CU3047	Chip C.	C1608JB1H103KTA		C362	CU3035	Chip C.	C1608JB1H102KTA		C416	CU3021	Chip C.	C1608CH1H680JTA		Q301	XT0088	Transistor	2SA1213YTE12L	
C309	CU3047	Chip C.	C1608JB1H103KTA		C363	CS0063	Chip Tant	TMCSA1V104MTR		Q302	XU0172	Transistor	XP1501-TX						
C310	CS0376	Chip Tant	TMCMAOG226MTR		C364	CU3047	Chip C.	C1608JB1H103KTA		Q303	XT0135	Transistor	2SD2216R-TX						
C311	CU3006	Chip C.	C1608CH1H060CTA		C365	CU3047	Chip C.	C1608JB1H103KTA		Q304	XU0062	Transistor	UN9111TX						
C312	CU3008	Chip C.	C1608CH1H070CTA		C366	CU3047	Chip C.	C1608JB1H103KTA		Q306	XT0135	Transistor	2SD2216R-TX						
C313	CU3059	Chip C.	C1608JF1E104ZTA		C367	CU3047	Chip C.	C1608JB1H103KTA		Q307	XE0019	Transistor	2SU144YTE85R						
C314	CU3059	Chip C.	C1608JF1E104ZTA		C368	CU8042	Chip C.	C2012JB1C104KTA		Q308	XU0062	Transistor	UN9111TX						
C315	CU3021	Chip C.	C1608JB1H103KTA		C369	CU3047	Chip C.	C1608JB1H103KTA		Q309	XT0135	Transistor	2SD2216R-TX						
C316	CU3051	Chip C.	C1608JB1E223KTA		C370	CU3051	Chip C.	C1608JB1E223KTA		Q310	XU0062	Transistor	UN9111TX						
C317	CU3047	Chip C.	C1608JB1H103KTA		C371	CS0376	Chip Tant	TMCMAOG226MTR		Q312	XU0063	Transistor	UN9211TX						
C318	CU3035	Chip C.	C1608JB1H102KTA		C372	CS0376	Chip Tant	TMCMAOG226MTR		Q313	XT0135	Transistor	2SD2216R-TX						
C319	CU3023	Chip C.	C1608CH1H101JTA		C373	CU3047	Chip C.	C1608JB1H103KTA		Q315	XT0135	Transistor	2SD2216R-TX						
C320	CU3023	Chip C.	C1608CH1H101JTA		C374	CS0216	Chip Tant	TMCMB1A106MTR	E/EH	Q316	XU0062	Transistor	UN9111TX						
C321	CU3035	Chip C.	C1608JB1H102KTA		C375	CS0377	Chip Tant	TMCMB0G476MTR		Q317	XT0135	Transistor	2SD2216R-TX						
C322	CU3069	Chip C.	C1608JF1E104ZTA		C376	CS0376	Chip Tant	TMCMAOG226MTR		Q318	XT0088	Transistor	2SA1213YTE12L						
C323	CU8042	Chip C.	C2012JB1C104KTA		C377	CS0049	Chip Tant	TMCSA1C105MTR		Q319	XU0172	Transistor	XP1501-TX						
C324	CS0060	Chip Tant	TMCSA1E474MTR		C378	CS0376	Chip Tant	TMCMAOG226MTR		Q320	XU0063	Transistor	UN9211TX						
C325	CU3047	Chip C.	C1608JB1H103KTA		C379	CS0376	Chip Tant	TMCMAOG226MTR		Q321	XU0063	Transistor	UN9211TX						
C326	CU3035	Chip C.	C1608JB1H102KTA		C380	CS0049	Chip Tant	TMCSA1C105MTR		Q322	XT0135	Transistor	2SD2216R-TX						
C327	CS0063	Chip Tant	TMCSA1V104MTR		C381	CS0376	Chip Tant	TMCMAOG226MTR		Q323	XU0099	Transistor	2SD2216R-TX						
C328	CU3047	Chip C.	C1608JB1H103KTA		C382	CU3035	Chip C.	C1608JB1H102KTA		Q326	XU0062	Transistor	UN9111TX	E/EH					
C329	CU3047	Chip C.	C1608JB1H103KTA		C383	CU3023	Chip C.	C1608CH1H101JTA		Q327	XU0062	Transistor	UN9111TX						
C330	CU3047	Chip C.	C1608JB1H103KTA		C384	CU3023	Chip C.	C1608CH1H101JTA		Q328	XU0171	Transistor	XP1111-TX						
C331	CU8042	Chip C.	C2012JB1C104KTA		C385	CS0049	Chip Tant	TMCSA1C105MTR		Q329	XU0171	Transistor	XP1111-TX						
C332	CU3047	Chip C.	C2012JB1C104KTA		C386	CS0049	Chip Tant	TMCSA1C105MTR		R301	RK0114	Chip R.	ERJ6GEVJ010V						
C333	CU3035	Chip C.	C1608JB1H102KTA		C387	CU3035	Chip C.	C1608JB1H102KTA		R302	RK3058	Chip R.	ERJ3GSYJ473V						
C334	CS0366	Chip Tant	TMCMAOG106MTR		C388	CS0049	Chip Tant	TMCSA1C105MTR		R303	RK3040	Chip R.	ERJ3GSYJ152V						
C335	CU3047	Chip C.	C1608JB1H103KTA		C389	CU3035	Chip C.	C1608JB1H102KTA		R304	RK3055	Chip R.	ERJ3GSYJ273V						
C336	CS0366	Chip Tant	TMCMAOG106MTR		C390	CU3059	Chip C.	C1608JF1E104ZTA		R305	RK3042	Chip R.	ERJ3GSYJ222V						
C337	CU3047	Chip C.	C1608JB1H103KTA		C391	CS0049	Chip Tant	TMCSA1C105MTR		R306	RK3055	Chip R.	ERJ3GSYJ273V						
C338	CU3047	Chip C.	C1608JB1H103KTA		C392	CS0369	Chip Tant	TMCMD0J107MTR		R307	RK3047	Chip R.	ERJ3GSYJ562V						
C339	CU3047	Chip C.	C1608JB1H103KTA		C393	CU3035	Chip C.	C1608JD0107MTR		R308	RK3038	Chip R.	ERJ3GSYJ102V						
C340	CS0376	Chip Tant	TMCMAOG226MTR		C394	CU8042	Chip C.	C2012JB1C104KTA		R309	RK3026	Chip R.	ERJ3GSYJ010V						
C341	CU3007	Chip C.	C1608CH1H060CTA		C395	CS0369	Chip Tant	TMCMD0J107MTR		R310	RK3050	Chip R.	ERJ3GSYJ103V						
C342	CU3012	Chip C.	C1608CH1H120JTA		C396	CU3035	Chip C.	C1608JB1H102KTA		R311	RK3041	Chip R.	ERJ3GSYJ182V						
C343	CU3059	Chip C.	C1608JF1E104ZTA		C397	CS0376	Chip Tant	TMCMAOG226MTR		R312	RK3058	Chip R.	ERJ3GSYJ473V						
C344	CU3059	Chip C.	C1608JF1E104ZTA		C398	CU3047	Chip C.	C1608JB1H103KTA		R313	RK3042	Chip R.	ERJ3GSYJ222V						
C345	CU3059	Chip C.	C1608JF1E104ZTA		C399	CS0379	Chip Tant	TMCMC1A476MTR		R314	RK3062	Chip R.	ERJ3GSYJ104V						
C346	CU3059	Chip C.	C1608JF1E104ZTA		C400	CU3047	Chip C.	C1608JB1H103KTA		R315	RK3038	Chip R.	ERJ3GSYJ102V						
C347	CU3021	Chip C.	C1608CH1H680JTA		C401	CU3035	Chip C.	C1608JB1H103KTA		R316	RK3066	Chip R.	ERJ3GSYJ224V						
C348	CU3063	Chip C.	C1608CH1H680JTA		C402	CU3047	Chip C.	C1608JB1H103KTA		R317	RK3046	Chip R.	ERJ3GSYJ472V						
C349	CU3051	Chip C.	C1608JF1E332JTA		C403	CU3047	Chip C.	C1608JB1H103KTA		R318	RK3038	Chip R.	ERJ3GSYJ102V						
C350	CU3047	Chip C.	C1608JB1H103KTA		C404	CU3047	Chip C.	C1608JB1H103KTA		R319	RK3050	Chip R.	ERJ3GSYJ103V						
C351	CU3035	Chip C.	C1608JB1H102KTA		C405	CU3035	Chip C.	C1608JB1H102KTA		R320	RK3050	Chip R.	ERJ3GSYJ103V						
C352	CU3023	Chip C.	C1608CH1H101JTA		C406	CU3047	Chip C.	C1608JB1H103KTA		R321	RK3056	Chip R.	ERJ3GSYJ333V						
C353	CU3023	Chip C.	C1608CH1H101JTA		C407	CU3035	Chip C.	C1608JB1H102KTA		R322	RK3042	Chip R.	ERJ3GSYJ222V						
C354	CU3023	Chip C.	C1608JB1H102KTA		C408	CU3035	Chip C.	C1608JB1H102KTA		R323	RK3038	Chip R.	ERJ3GSYJ102V						

IF unit				IF unit				IF unit				CPU unit			
Ref N	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.	
R324	RK3040	Chip R.	ERJ3G5YJ152V		RE301	UR0012	Encoder	ECO9P20-89		C501	CU3047	Chip C.	C1608JB1H103KTA		
R326	RK3061	Chip R.	ERJ3G5YJ823V		R301	RH0142	Trim.pot	MVR22HXBRN103		C502	CU3047	Chip C.	C1608JB1H103KTA		
R328	RK3050	Chip R.	ERJ3G5YJ103V		VR302	RH0148	Trim.pot	MVR22HXBRN104		C503	CU3047	Chip C.	C1608JB1H103KTA		
R329	RK3042	Chip R.	ERJ3G5YJ222V		VR303	RH0142	Trim.pot	MVR22HXBRN103		C504	CU3035	Chip C.	C1608JB1H102KTA		
R330	RK3046	Chip R.	ERJ3G5YJ472V		VR304	RH0148	Trim.pot	MVR22HXBRN104		C505	CU3035	Chip C.	C1608JB1H102KTA		
R331	RK3046	Chip R.	ERJ3G5YJ472V		VR305	RH0142	Trim.pot	MVR22HXBRN103		C506	CU3047	Chip C.	C1608JB1H103KTA		
R332	RK3067	Chip R.	ERJ3G5YJ274V		VR306	RH0142	Trim.pot	MVR22HXBRN103		C508	CU3023	Chip C.	C1608JB1H103KTA		
R333	RK3051	Chip R.	ERJ3G5YJ123V		VR307	RH0146	Trim.pot	MVR22HXBRN473		C509	CU3047	Chip C.	C1608JB1H103KTA		
R334	RK3066	Chip R.	ERJ3G5YJ224V		VR308	RH0146	Trim.pot	MVR22HXBRN473		C510	CU3047	Chip C.	C1608JB1H103KTA		
R335	RK3042	Chip R.	ERJ3G5YJ222V		VR309	RH0146	Trim.pot	MVR22HXBRN473		C511	CS0208	Chip Tantal	TMCMA0J475MTR		
R336	RK3060	Chip R.	ERJ3G5YJ683V		W301	MPCK06GQ	Wire	#28PH1-060-H1		C512	CU3035	Chip C.	C1608JB1H102KTA		
R338	RK3050	Chip R.	ERJ3G5YJ103V		W302	MACK02GG	Wire	#28AH1-020-H1		C513	CS0208	Chip C.	C1608JB1H103KTA		
R339	RK3038	Chip R.	ERJ3G5YJ102V		X301	XQ0069	Crystal	UM545.555MHZ		C514	CU3101	Chip C.	C1608JB1C473KTA		
R340	RK3062	Chip R.	ERJ3G5YJ104V		X302	XK0002	Discriminator	CDBM455C7		C515	CS0049	Chip Tantal	TMCSA1C105MTR		
R341	RK3074	Chip R.	ERJ3G5YJ105V		X303	XK0073	Crystal	UM538.445MHZ		C516	CU3035	Chip C.	C1608JB1H102KTA		
R342	RK3042	Chip R.	ERJ3G5YJ222V		X304	XK0002	Discriminator	CDBM455C7		C517	CU3023	Chip C.	C1608CH1H101JTA		
R343	RK3038	Chip R.	ERJ3G5YJ102V		TZ0049			Silicon dumper UM1		C518	CU3019	Chip C.	C1608CH1H470JTA		
R344	RK3026	Chip R.	ERJ3G5YJ101V		FM0111			IF earth DJG5		C519	CU3047	Chip C.	C1608JB1H103KTA		
R345	RK3050	Chip R.	ERJ3G5YJ103V							C520	CU3018	Chip C.	C1608CH1H390JTA		
R346	RK3042	Chip R.	ERJ3G5YJ222V							C521	CU3085	Chip C.	C1608CH1H300JT-A		
R347	RK3045	Chip R.	ERJ3G5YJ392V							C522	CS0084	Chip Tantal	TMCSA1A155MTR		
R348	RK3072	Chip R.	ERJ3G5YJ684V							C523	CU3014	Chip C.	C1608CH1H180JTA		
R349	RK3038	Chip R.	ERJ3G5YJ102V							C524	CU3014	Chip C.	C1608CH1H180JTA		
R350	RK3066	Chip R.	ERJ3G5YJ224V							C525	CU3085	Chip C.	C1608CH1H300JT-A		
R351	RK3046	Chip R.	ERJ3G5YJ103V							C526	CU3018	Chip C.	C1608CH1H390JTA		
R352	RK3038	Chip R.	ERJ3G5YJ102V							C527	CU3035	Chip C.	C1608JB1H102KTA		
R353	RK3050	Chip R.	ERJ3G5YJ103V							C528	CS0380	Chip Tantal	TMCMDOG157MTR		
R354	RK3050	Chip R.	ERJ3G5YJ103V							C529	CU3047	Chip C.	C1608JB1H103KTA		
R355	RK3056	Chip R.	ERJ3G5YJ224V							C530	CU3035	Chip C.	C1608JB1H102KTA		
R356	RK3042	Chip R.	ERJ3G5YJ222V							C532	CU3051	Chip C.	C1608JB1E223KTA		
R357	RK3038	Chip R.	ERJ3G5YJ102V							C533	CS0049	Chip Tantal	TMCSA1C105MTR		
R358	RK3040	Chip R.	ERJ3G5YJ152V							C534	CS0060	Chip Tantal	TMCSA1E474MTR		
R360	RK3061	Chip R.	ERJ3G5YJ823V							C535	CU3035	Chip C.	C1608JB1H102KTA		
R362	RK3049	Chip R.	ERJ3G5YJ822V							C536	CS0381	Chip Tantal	TMCMBOJ36MTR		
R364	RK3067	Chip R.	ERJ3G5YJ274V							C537	CS0378	Chip Tantal	TMCMCOG107MTR		
R365	RK3042	Chip R.	ERJ3G5YJ222V							C538	CU3059	Chip C.	C1608JF1E104ZTA		
R366	RK3046	Chip R.	ERJ3G5YJ472V							C539	CU3035	Chip C.	C1608JB1H102KTA		
R367	RK3050	Chip R.	ERJ3G5YJ103V							C540	CU3031	Chip C.	C1608JB1H471KTA		
R368	RK3046	Chip R.	ERJ3G5YJ472V							C541	CU3035	Chip C.	C1608JB1H102KTA		
R369	RK3067	Chip R.	ERJ3G5YJ274V							CN50	UE0256	Connector	CFF0508-0201		
R370	RK3051	Chip R.	ERJ3G5YJ123V							CN50	UE0241	Connector	AXN340C038P		
R371	RK3066	Chip R.	ERJ3G5YJ224V							D501	XL0028	LED	BRPG1201W		
R372	RK3042	Chip R.	ERJ3G5YJ222V							D502	XL0028	LED	BRPG1201W		
R373	RK3060	Chip R.	ERJ3G5YJ472V							D503	XL0045	LED	PG1101F-TR		
R375	RK3062	Chip R.	ERJ3G5YJ104V							D504	XL0045	LED	PG1101F-TR		
R376	RK3038	Chip R.	ERJ3G5YJ102V							D505	XL0045	LED	PG1101F-TR		
R377	RK3062	Chip R.	ERJ3G5YJ104V							D506	XL0045	LED	PG1101F-TR		
R378	RK3066	Chip R.	ERJ3G5YJ224V							D507	XD0290	Diode	MA111-TX		
R379	RK3066	Chip R.	ERJ3G5YJ224V							D508	XD0291	Diode	MAT29-TX		
R380	RK3058	Chip R.	ERJ3G5YJ473V							D509	XL0036	LED	SML-310MTT86		
R381	RK3058	Chip R.	ERJ3G5YJ473V							D510	XD0238	Diode	DA227TL		
R382	RK3074	Chip R.	ERJ3G5YJ105V							D511	XL0036	LED	SML-310MTT86		
R383	RK3074	Chip R.	ERJ3G5YJ105V							D512	XD0238	Diode	DA227TL		
R384	RK3074	Chip R.	ERJ3G5YJ105V												

CPU unit				CPU unit				CPU unit/SW unit				UVCU unit			
Ref N	Parts No.	Description	Parts Name	Ver.	Ref No	Parts No.	Description	Parts Name	Ver.	Ref N	Parts No.	Description	Parts Name	Ver.	
D513	XL0036	LED	SML-310M1T86		R526	RK3066	Chip R.	ERJ3GSYJ224V		R579	RK3038	Chip R.	ERJ3GSYJ102V		
D514	XL0036	LED	SML-310M1T86		R527	RK3027	Chip R.	ERJ3GSYJ121V		R580	RA0009	Chip R.	EXBV8V102JV		
D515	XD0156	Diode	DLT23.6B1TT11		R528	RK3066	Chip R.	ERJ3GSYJ103V		R581	RK3062	Chip R.	ERJ3GSYJ104V		
D516	XD0251	Diode	MA741WATX		R529	RK3066	Chip R.	ERJ3GSYJ224V		R582	RK3062	Chip R.	ERJ3GSYJ104V		
D517	XD0291	Diode	MA729-TX		R530	RK3027	Chip R.	ERJ3GSYJ121V		R583	RK3024	Chip R.	ERJ3GSYJ680V		
D518	XD0165	Diode	DTZ5.1BT11		R531	RA0008	Chip R.	EXBV4V102JV		R584	RK3024	Chip R.	ERJ3GSYJ680V		
IC501	XA0348	IC	TC4W53FU(TE12)		R532	RA0009	Chip R.	EXBV8V102JV		R585	RK3024	Chip R.	ERJ3GSYJ680V		
IC502	XA0344	IC	LC73881M-TLM		R533	RA0009	Chip R.	EXBV8V102JV		R586	RK3024	Chip R.	ERJ3GSYJ680V		
IC503	XA0355	IC	UPD2341		R534	RK3054	Chip R.	ERJ3GSYJ223V		SW501	UU0019	Switch	SKQLLC		
IC504	XA0239	IC	AK2341		R535	RK3027	Chip R.	ERJ3GSYJ121V		SW502	UU0019	Switch	SKQLLC		
IC505	XA0348	IC	TC4W53FU(TE12)		R536	RK3061	Chip R.	ERJ3GSYJ823V	T	SW503	UU0019	Switch	SKQLLC		
IC506	XA0356	IC	S-80730SL-AT-T2		R537	RK3055	Chip R.	ERJ3GSYJ273V		SW504	UU0019	Switch	SKQLLC		
IC507	XA0358	IC	S-81237SG-QE-T2		R538	RK3092	Chip R.	ERJ3EKF7502V		SW505	UU0018	Switch	SOP-112HST		
IC508	XA0505	IC	HD6433877A35H		R540	RA0008	Chip R.	EXBV4V102JV		SW506	UU0018	Switch	SOP-112HST		
IC509	XA0219	IC	RH5RH501AT1	E	R541	RK3058	Chip R.	ERJ3GSYJ473V		SW507	UU0018	Switch	SOP-112HST		
IC510	QC0049	Coil	NL322522T221J	T	R542	RK3091	Chip R.	ERJ3EKF3902V		SW508	UU0018	Switch	SOP-112HST		
Q501	XU0171	Transistor	XP1111-TX		R543	RK3054	Chip R.	ERJ3GSYJ223V		SW510	UU0018	Switch	SOP-112HST		
Q502	XU0171	Transistor	XP1111-TX		R544	RK3074	Chip R.	ERJ3GSYJ05V		SW511	UU0018	Switch	SOP-112HST		
Q503	XU0063	Transistor	UN9211TX		R545	RK3027	Chip R.	ERJ3GSYJ121V		SW512	UU0018	Switch	SOP-112HST		
Q504	XU0063	Transistor	UN9211TX		R546	RA0009	Chip R.	EXBV8V102JV		SW513	UU0018	Switch	SOP-112HST		
Q505	XT0140	Transistor	2SB1181-TLQ		R547	RK3074	Chip R.	ERJ3GSYJ105V		SW514	UU0018	Switch	SOP-112HST		
Q506	XT0139	Transistor	2SA1774TLR		R548	RK3038	Chip R.	ERJ3GSYJ102V		SW515	UU0018	Switch	SOP-112HST		
Q507	XT0139	Transistor	2SD2216R-TX		R549	RK3038	Chip R.	ERJ3GSYJ102V		SW516	UU0018	Switch	SOP-112HST		
Q508	XT0088	Transistor	2SA1213YTE12L		R550	RA0009	Chip R.	EXBV8V102JV		SW517	UU0018	Switch	SOP-112HST		
Q509	XU0172	Transistor	XP1501-TX		R551	RA0008	Chip R.	EXBV4V102JV		SW518	UU0018	Switch	SOP-112HST		
Q510	XU0177	Transistor	XP1216-TX		R552	RA0009	Chip R.	EXBV8V102JV		SW519	UU0018	Switch	SOP-112HST		
Q511	XU0047	Transistor	UMC3TR		R553	RA0009	Chip R.	EXBV8V102JV		SW520	UU0018	Switch	SOP-112HST		
Q512	XU0047	Transistor	UMC3TR		R554	RK3055	Chip R.	ERJ3GSYJ273V		SW521	UU0018	Switch	SOP-112HST		
R501	RA0009	Chip R.	EXBV8V102JV		R555	RA0008	Chip R.	EXBV4V102JV		SW522	UU0018	Switch	SOP-112HST		
R502	RK3038	Chip R.	ERJ3GSYJ102V		R556	RK3031	Chip R.	ERJ3GSYJ271V		X501	XB0020	Cerailock	CSAC4.19MGC-TC		
R503	RK3038	Chip R.	ERJ3GSYJ102V		R557	RK3062	Chip R.	ERJ3GSYJ153V		X502	XQ0072	Cerailock	38C4.0000MHZ		
R504	RK3062	Chip R.	ERJ3GSYJ104V		R558	RK3052	Chip R.	ERJ3GSYJ153V		X503	XQ0077	Cerailock	38C3.686400MHZ		
R505	RK3046	Chip R.	ERJ3GSYJ472V		R559	RK3031	Chip R.	ERJ3GSYJ271V		MIC50	EY0014	Mic	EM-123A		
R506	RK3062	Chip R.	ERJ3GSYJ104V		R560	RA0009	Chip R.	EXBV8V102JV		W503	MRCL02A	Wire	#30R02-20-02		
R507	RK3046	Chip R.	ERJ3GSYJ472V		R561	RK3038	Chip R.	ERJ3GSYJ102V		W504	MBCL02A	Wire	#30B02-20-02		
R508	RK3050	Chip R.	ERJ3GSYJ103V		R562	RK3052	Chip R.	ERJ3GSYJ153V		TL0016		SheetDJG5			
R509	RK3030	Chip R.	ERJ3GSYJ221V		R563	RK3031	Chip R.	ERJ3GSYJ271V		TN0003		Front shield DJG5			
R510	RK3054	Chip R.	ERJ3GSYJ223V		R564	RK3031	Chip R.	EXBV8V102JV		YX0004		Tape DJG5			
R511	RK3042	Chip R.	ERJ3GSYJ222V		R565	RA0009	Chip R.	EXBV8V102JV		YX0004		Tape DJG5			
R512	RK3062	Chip R.	ERJ3GSYJ104V		R566	RA0010	Chip R.	EXBV8V102JV		R587	RK3062	Chip R.	ERJ3GSYJ104V		
R513	RK3050	Chip R.	ERJ3GSYJ103V		R567	RA0010	Chip R.	EXBV8V102JV		UP0280D					
R514	RK3032	Chip R.	ERJ3GSYJ331V		R568	RK3038	Chip R.	ERJ3GSYJ102V		SW Unit					
R515	RK3031	Chip R.	ERJ3GSYJ271V		R569	RK3058	Chip R.	ERJ3GSYJ103V		SW59	UU0018	Switch	SOP-112HST		
R516	RK3031	Chip R.	ERJ3GSYJ271V		R570	RK3089	Chip R.	ERJ3GSYJ912V	T	SW59	UU0018	Switch	SOP-112HST		
R517	RK3032	Chip R.	ERJ3GSYJ331V		R571	RK3058	Chip R.	ERJ3GSYJ473V		CN501	UE0255	Connector	6027B-03Z003		
R518	RK3058	Chip R.	ERJ3GSYJ473V		R572	RK3061	Chip R.	ERJ3GSYJ823V	E						
R519	RA0008	Chip R.	EXBV4V102JV		R573	RK3058	Chip R.	ERJ3GSYJ473V							
R520	RK3050	Chip R.	ERJ3GSYJ103V		R573	RK3038	Chip R.	ERJ3GSYJ102V							
R521	RK3067	Chip R.	ERJ3GSYJ274V		R574	RK3055	Chip R.	ERJ3GSYJ273V							
R522	RK3089	Chip R.	ERJ3GSYJ912V		R575	RK3001	Chip R.	ERJ3GSY0R00V							
R523	RK3051	Chip R.	ERJ3GSYJ123V		R576	RK3038	Chip R.	ERJ3GSYJ102V							
R524	RK3047	Chip R.	ERJ3GSYJ562V		R577	RK3038	Chip R.	ERJ3GSYJ102V							
R525	RK3048	Chip R.	ERJ3GSYJ682V		R578	RK3038	Chip R.	ERJ3GSYJ102V							

ADJUSTMENT

1) Required Test Equipment

1. Regulated Power Supply

Supply voltage: DC 13.8V
Current: 3A or more

2. Digital Multimeter

Voltage range: FS =20V or so
Input resistance: High Impedance

3. Oscilloscope

Measurable frequency: Audio Frequency

4. Audio Dummy Load

Impedance: 8 ohm
Dissipation: 1W or more
Jack: 3.5 mm

5. SSG

Output frequency: 1GHz or more
Output level: -20dB/0.1 uV to 120dB/1V
Modulation: AM/FM

6. Spectrum Analyzer

Measuring range: Up to 2GHz or more

7. Power Meter

Measurable frequency: Up to 500MHz
Impedance: 50 ohm, unbalanced
Measuring range: -10W

8. Audio Voltmeter

Measurable frequency: ~100kHz
Sensitivity: 1mV~10V

9. Audio Generator

Output frequency: 67Hz~10kHz
Output impedance: 600 ohm , unbalanced

10. Distortion Meter/SINAD Meter

Measurable frequency: 1kHz
Input level: Up to 40dB
Distortion level: 1 % ~1 00%

11. Frequency Counter

Measurable frequency: Up to 500MHz
Measurements stability: +/-0.1 ppm or so

12. Linear Detector

Measurable frequency: Up to 500MHz
Characteristics: Flat
CN: 60dB or more

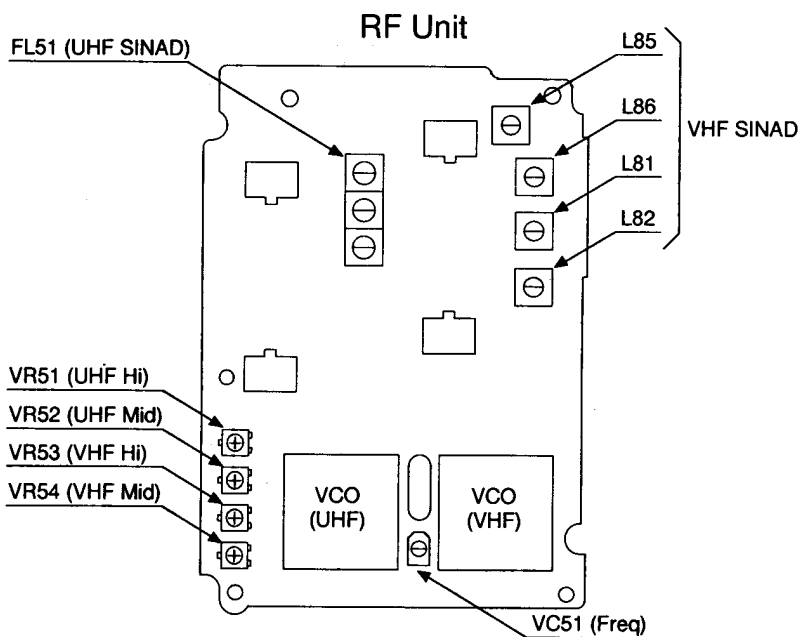
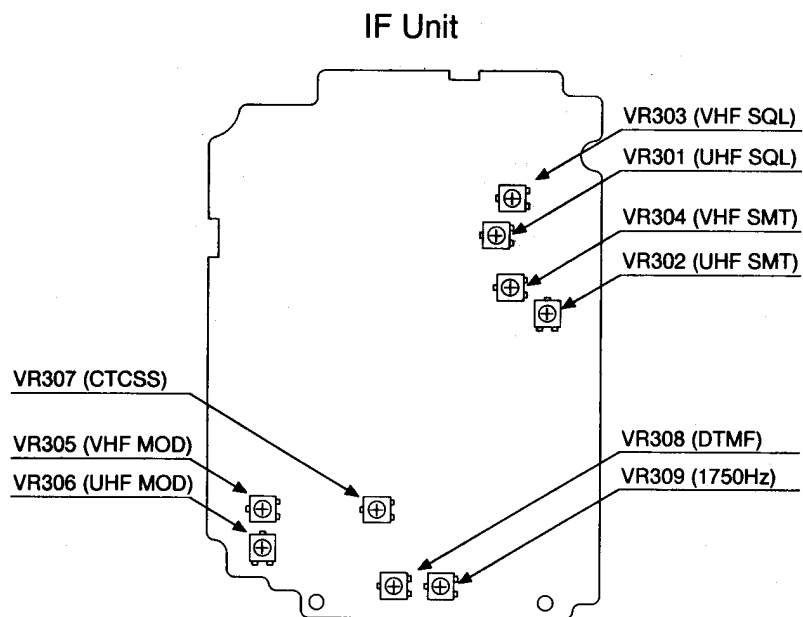
Note

1. Standard Modulation: 1kHz +/- 3.5kHz/DEV
2. Reference Sensitivity: 12dB SINAD
3. Attach the fuse to the RF test equipment.
4. All SSG output is indicated by EMF.

2) Adjustment for DJ-G5TIE

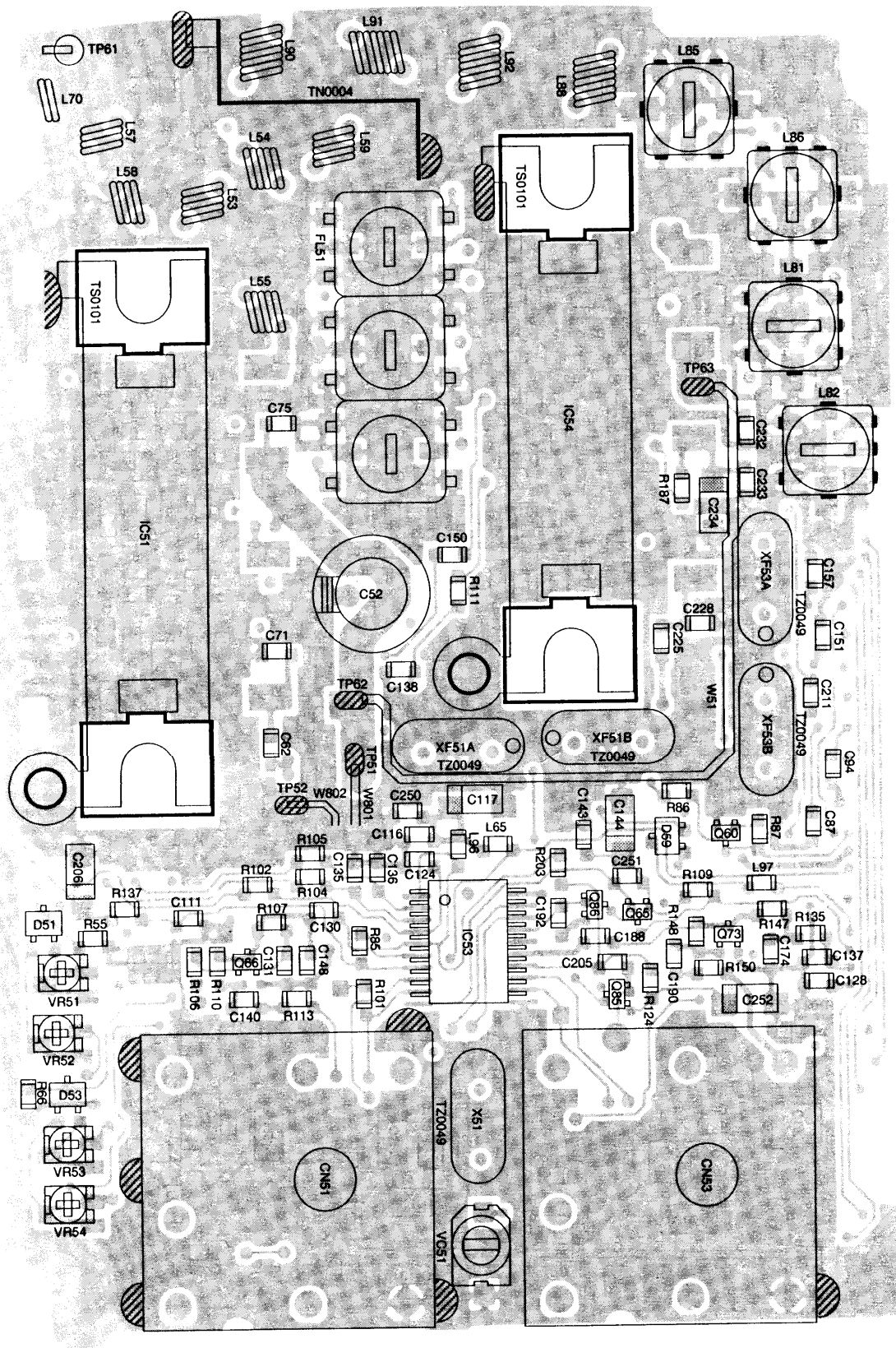
Item	Condition	TX/RX	Measurement		Adjustment			Specifications
			Equipment	Unit	Unit	Pans	Method	
Reference Voltage	L band f=145.05MHz	RX	Digital Multimeter	V-VCO P/D	V-VCO	L701	3.7V	3.7V+/-0.1V
	R band f=435.05MHz	RX	Digital Multimeter	U-VCO P/D	U-VCO	L601	1.2V	1.2V+/-0.1V
Reference Frequency	R band f=435.05MHz (E) f=445.05MHz (T)	TX Low	Freq. Counter Power Meter		RF	VC51	435.05MHz (E) 445.05MHz (T)	+/-50Hz
Sensitivity	L band f=144.95MHzSSG out: -10dBu	RX	SSG Dist. Meter		RF	L81L82	Turn the coils to the max.	SINAD is12dBor more
S Meter	L band f=144.95MHz Mod: 3.5kHz/dev SSG out: 3dBu	RX	SSG	S Meter	IF	VR304	3digits should be turned ON.	
	R band f=434.95MHz Mod: 3.5kHz/dev SSG out: 3dBu					VR302	3digits should be turned ON.	
HiPower 13.8VDC	f=435.05MHz (E) f=445.05MHz (T)	TX High	Power Meter		RF	VR51	5.0W	5.0W+/-0.1W
Mid Power		TX Mid				VR52	1.0W	1.0W+/-0.1W
Low Power		TX Low					Check	100-400mW
High Power 13.8VDC	f=145.05MHz	TX High	Power Meter		RF	VR53	5.0W	5.0W+/-0.1W
Mid Power		TX Mid				VR54	1.0W	1.0W+/-0.1W
Low Power		TX Low					Check	100-400mW
Deviation	f=435.05MHz (E) f=445.05MHz (T) Mod: 1kHz,50mV	TX Low	Linear Det Oscilloscope Power Meter		IF	VR306	4.5kHz/DEV	4.5kHz+/-0.1kHz/DEV
	f=145.05MHz Mod: 1kHz,50mV					VR305	4.5kHz/DEV	4.5kHz+/-0.1kHz/DEV
DTMF	f=145.05MHz Push1"key"					VR308	3.1kHz/DEV	3.1kHz+/-0.1kHz/DEV
Subaudible Tone	f=145.05MHz 88.5Hz					VR307	800Hz/DEV	800Hz+/-50Hz/DEV
Tone Burst	f=145.05MHz PushPTT2"key"					VR309	3.0kHz/DEV	3.0kHz+/-0.1kHz/DEV

3) Adjustment Points

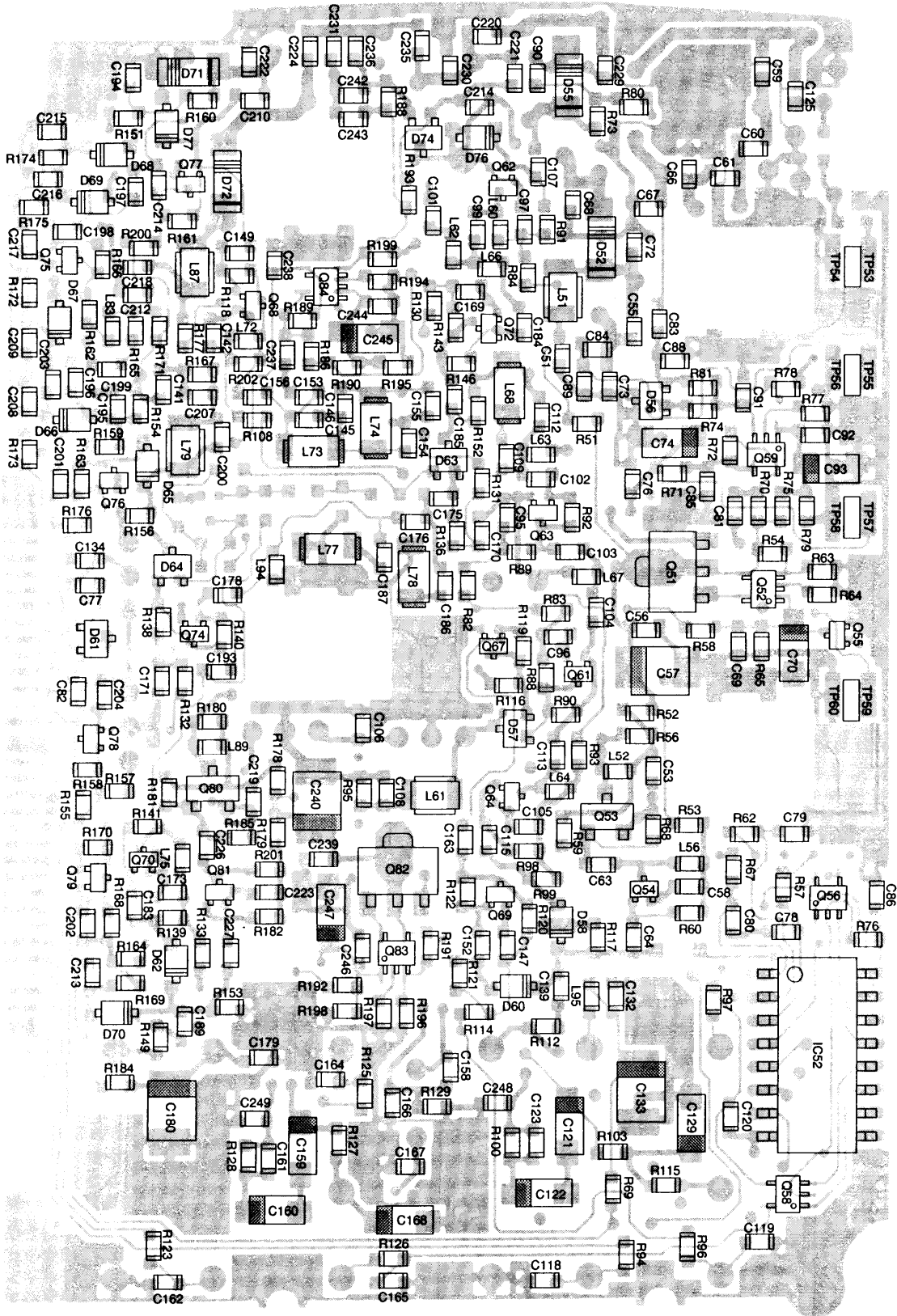


PC BOARD VIEW

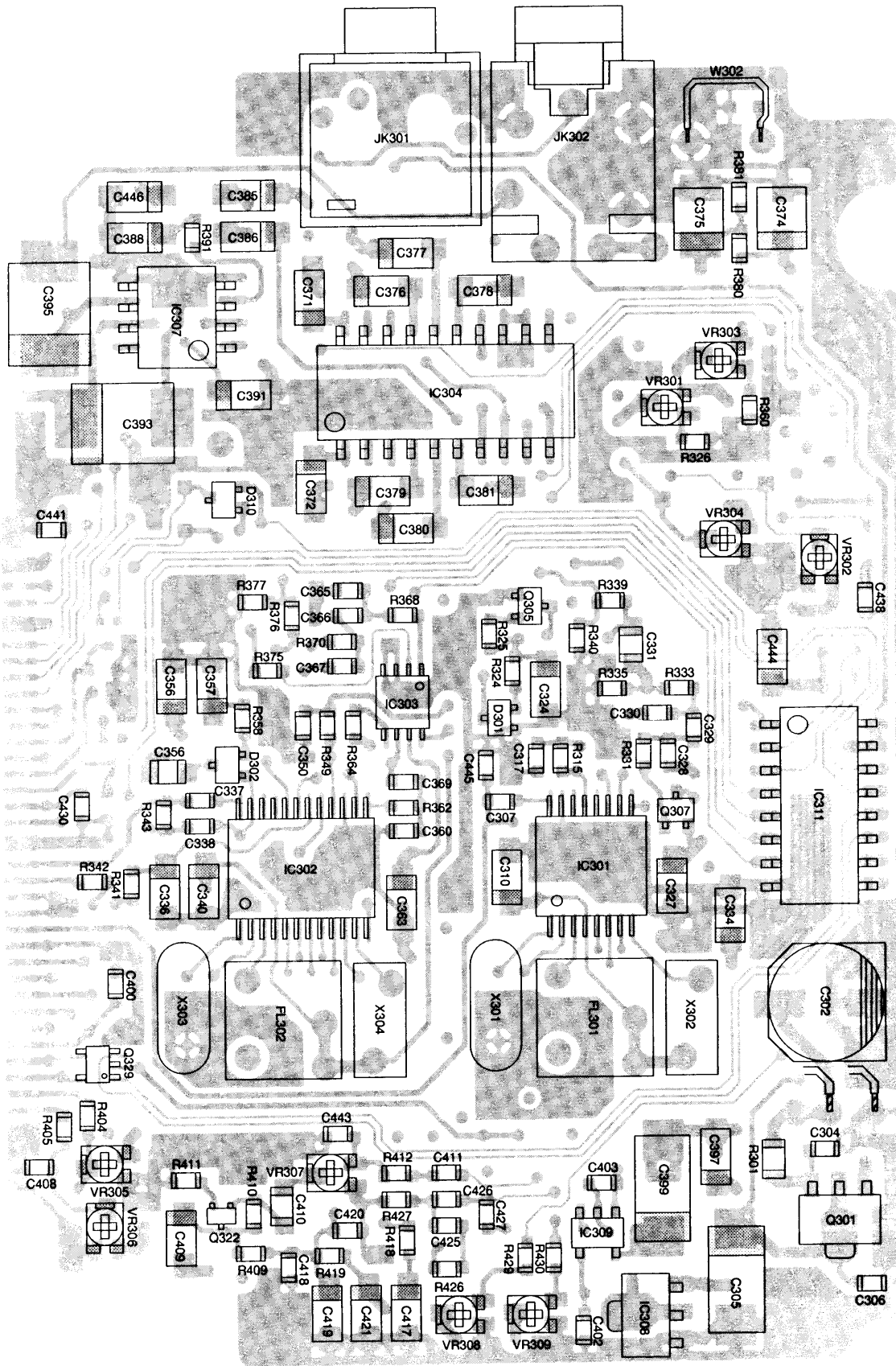
1) RF Unit Side A

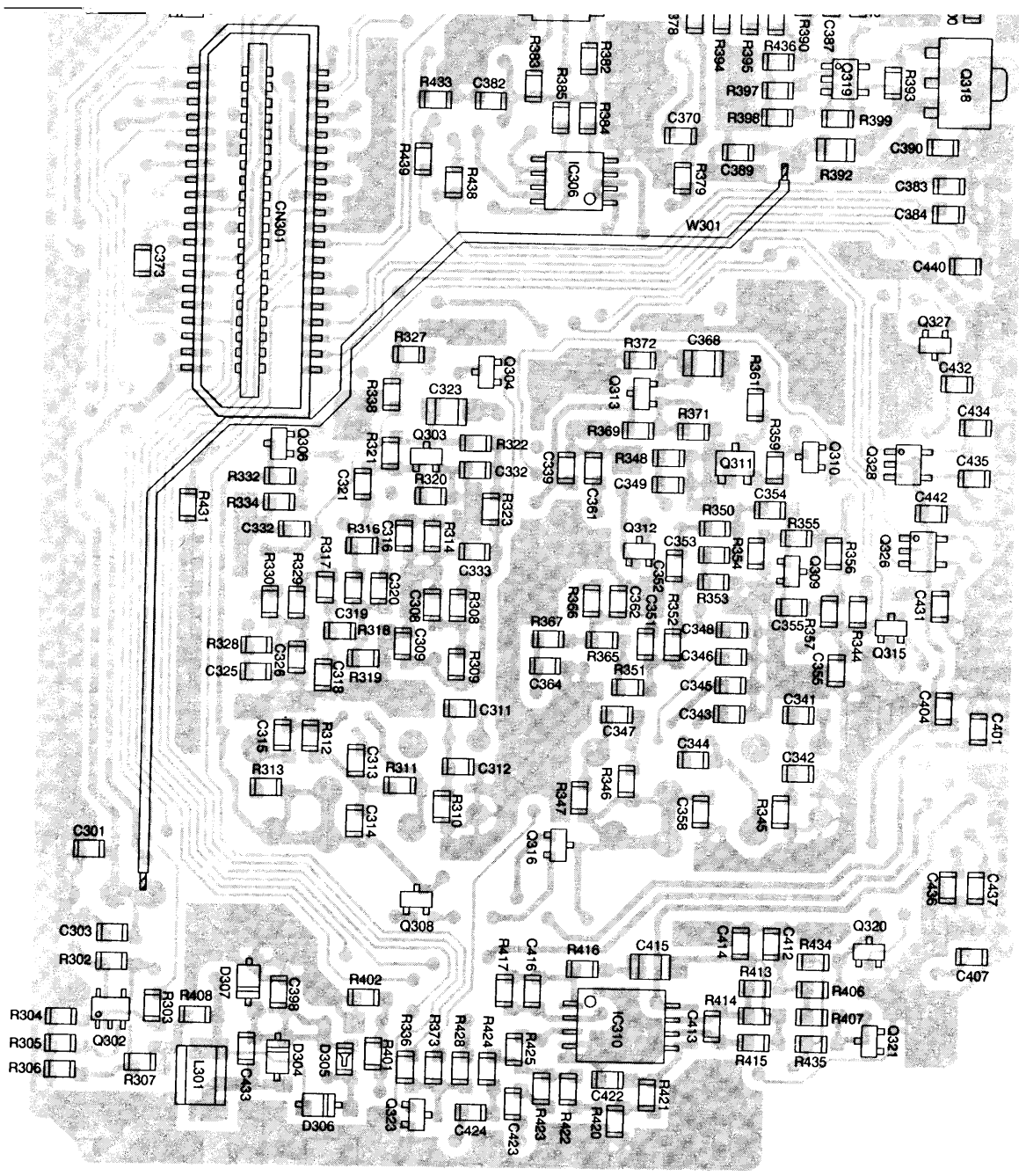


2) RF Unit Side B

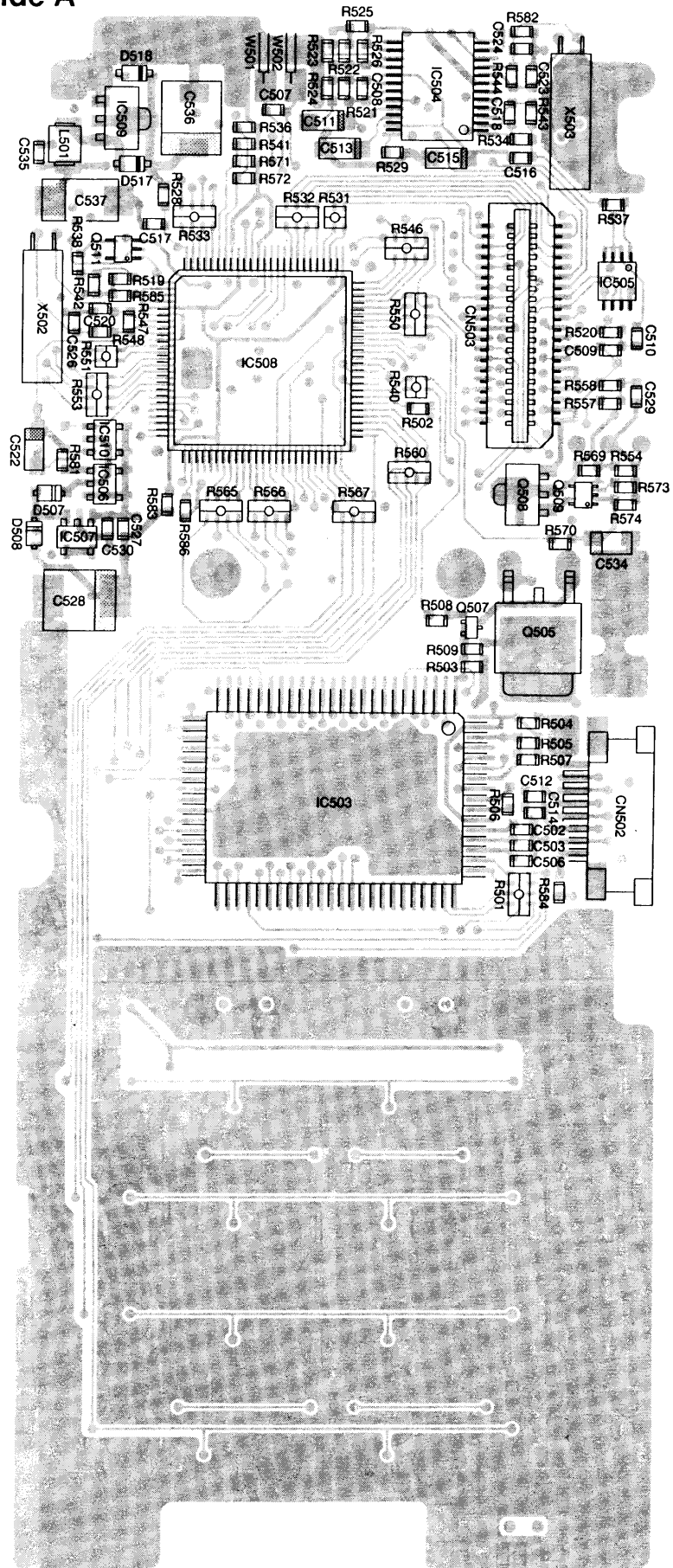


3) IF Unit Side A

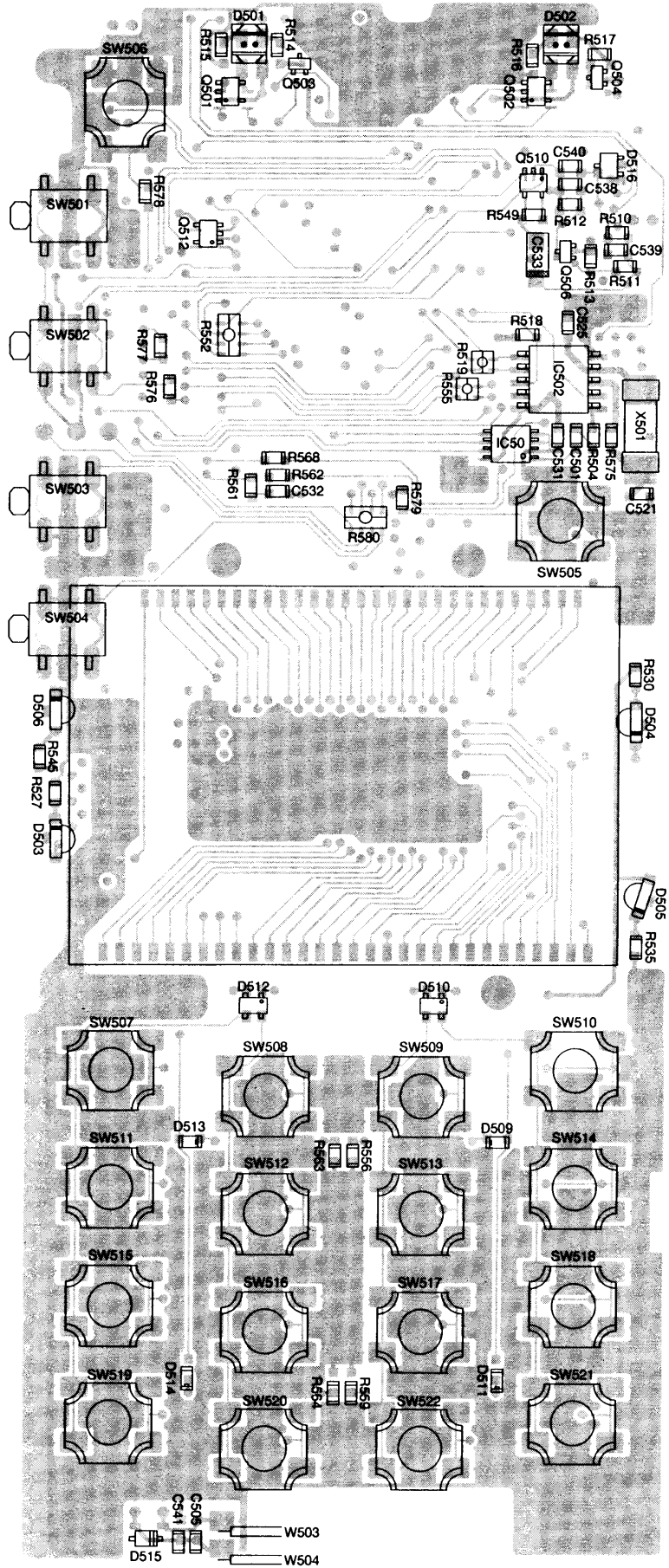




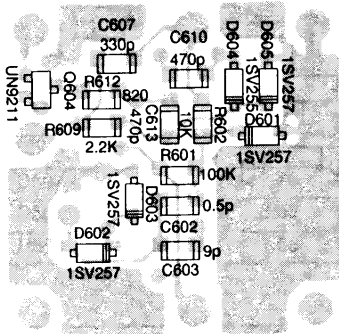
5) CPU Unit Side A



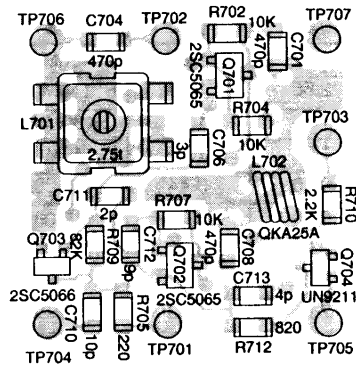
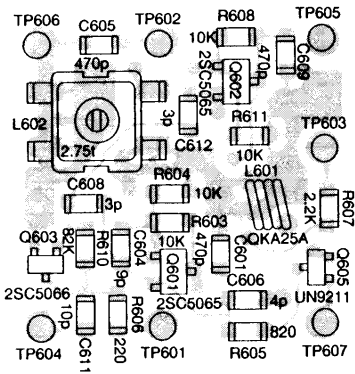
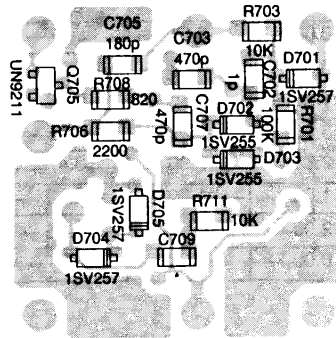
6) CPU Unit Side B



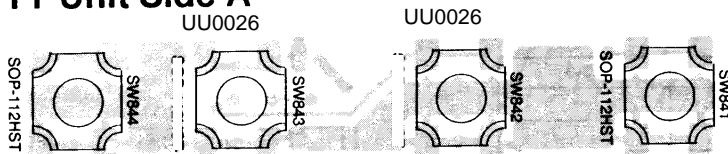
7) UVCO Unit



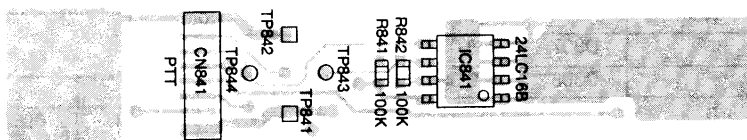
8) VVCO Unit



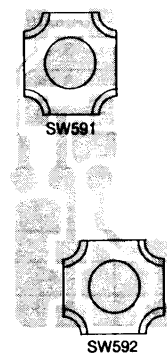
9) PTT Unit Side A



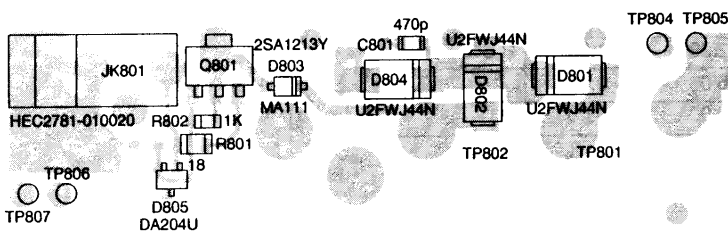
10) PTT Unit Side B



12) SW Unit Side A



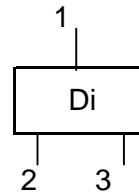
11) CHARGE Unit



VOLTAGE TABLE

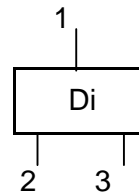
1) Diode

	1	2	3	Note
D51	0	3.57	3.57	UHF LOW TX
D53	0	3.57	3.57	VHF LOW TX
D56	0	0.03	0.03	UHF LOW TX
D57	1.21	1.85	0	R:433.00MHz
D59	3.36	0	4.14	VHF TX
D61	2.66	0	3.47	L:433.00MHz
D64	1.04	1.86	0	L:433.00MHz
D63	2	0	2.76	L:144,00MHz
D74	0	0.91	0.91	VHF LOW TX



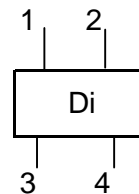
	Anode	Cathode	Note
D52	1.69	0.84	UHF TX
D55	0.84	0	UHF TX
D58	2.57	1.82	R:430M RX
D60	2.65	1.9	R:140M RX
D62	1.89	1.15	L:430M RX
D65	1.84	1.1	L:140M RX
D66	0	3.44	L: 145.00MHz when receiving
D67	0	3.41	L: 145.00MHz when receiving
D68	0	3.43	L: 145.00MHz when receiving
D69	0	3.43	L: 145.00MHz when receiving
D70	2.65	1.89	L:140M RX
D71	0	0.85	VHF TX
D72	1.7	0.85	VHF TX
D76	0	0.76	R:140M RX
D77	0	0.75	L:140M RX

	1	2	3	Note
D301	1.98	0	2.14	
D302	1.95	0	2.18	
D310	0.76	0.2	0.2	L:UHF,R:UHF



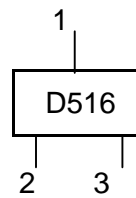
	Anode	Cathode	Note		Anode	Cathode	Note
D303	3.44	3.42		D307	8.03	3.18	
D304	3.19	8.03		D308	0	0	
D305	8.03	6.44					
D306	3.24	6.44					

	1	2	3	4	Note
D501	3.45	3.39	2.23	1.41	L SQL:OFF
D502	3.46	3.38	2.29	1.39	R SQL:OFF
D510	0	0	0	0	
D512	0	0	0	0	



	Anode	Cathode	Note		Anode	Cathode	Note
D503	3.54	1.51	LAMP:ON	D511	3.54	1.54	LAMP:ON
D504	3.54	2.07	LAMP:ON	D513	3.54	1.53	LAMP:ON
D505	3.54	1.5	LAMP:ON	D514	3.54	1.53	LAMP:ON
D506	3.54	2.06	LAMP:ON	D515	0.24	2.27	TX:ON
D507	3.76	3.73		D517	3.46	5.03	
D508	3.76	3.53		D518	0	5.03	
D509	3.54	1.58	LAMP:ON				

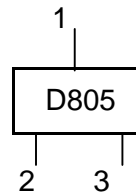
	1	2	3	Note
D516	0.24	0	3.46	PTT:ON
D516				



	Anode	Cathode	Note
D601	0	1.25	
D602	0	1.68	
D603	0	1.68	
D604	0	3.11	R:SUB
D605	0	3.11	R:SUB

	Anode	Cathode	Note
D701	0	1.22	
D702	0	4.34	
D703	0	4.34	
D704	0	2.2	L:SUB
D705	0	2.2	L:SUB

	Anode	Cathode
D801	13.57	13.57
D802	13.57	13.56
D803	13.56	13.55
D804	13.56	13.56



	1	2	3	Note
D805	13.38	13.26	13.56	PTT:ON

2) IC
IC301

PinNo.	Voltage	PinNo.	Voltage
1	3.31	9	1.13
2	2.64	10	0.63
3	2.58	11	1.29
4	3.47	12	0.00
5	2.48	13	0.18
6	2.47	14	0.00
7	2.53	15	0.00
8	3.46	16	1.70

IC305

PinNo.	Voltage	PinNo.	Voltage
1	2.47	5	2.48
2	2.48	6	2.49
3	2.45	7	2.51
4	0.00	8	5.00

IC302

PnNo.	Voltage	Note	PinNo.	Voltage	Note
1	3.26		13	1.57	AM
2	2.70		14	0.00	AM
3	2.80		15	0.00	
4	3.47		16	0.37	
5	1.21	AM	17	0.69	
6	1.20	AM	18	0.52	
7	1.22		19	1.60	
8	1.26		20	1.55	
9	1.26		21	0.00	
10	3.39		22	0.00	
11	3.45		23	0.00	
12	0.87		24	1.36	

IC303

PinNo.	Voltage	Note	PinNo.	Voltage	Note
1	0.86		5	3.39	AM
2	0.01		6	0.00	
3	0.00		7	0.86	
4	0.00		8	3.56	

IC304

PinNo.	Voltage	PinNo.	Voltage
1	2.50	11	2.51
2	0.00	12	0.00
3	2.50	13	2.48
4	2.50	14	2.50
5	2.50	15	2.40
6	2.50	16	2.36
7	2.45	17	2.49
8	5.00	18	0.00
9	0.00	19	0.00
10	0.00	20	0.00

IC306

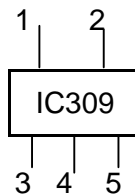
PinNo.	Voltage	PinNo.	Voltage
1	2.52	5	2.48
2	2.51	6	2.50
3	2.36	7	2.50
4	0.00	8	5.00

IC307 When receiving

PinNo.	Voltage	PinNo.	Voltage
1	0.0	5	0.0
2	0.0	6	2.7
3	0.6	7	6.2
4	0.0	8	0.0

IC309

Pin No.	Voltage
1	8.03
2	3.48
3	1.57
4	0
5	1.54



IC503

PinNo.	Voltage	PinNo.	Voltage
67	0	74	3.52
68	1.22	75	3.53
69	2.38	76	3.52
70	3.45	77	3.52
71	1.9	78	3.46
72	2.34	79	3.46
73	0	80	3.45

IC310

PinNo.	Voltage	PinNo.	Voltage
1	1.62	5	1.71
2	1.7	6	1.71
3	1.69	7	1.68
4	0	8	3.34

IC311

PtnNo.	Voltage	Note	PinNo.	Voltage	Note
1	0		9	0	
2	0		10	0	
3	0		11	0.11	R:ON
4	0.11		12	0.1	L:ON
5	0.11	USUB:ON	13	0.1	VMAIN:ON
6	0.11	UMAIN:O	14	0.1	VSUB:ON
7			15	3.57	
8	0		16	3.57	

IC501

PinNo.	Voltage	PinNo.	Voltage
1	0.95	5	3.45
2	0	5	1.16
3	0	7	0.98
4	0	8	3.53

IC502 DSQ:ON

PinNo.	Voltage	Pin No.	Voltage
1	1.71	6	3.5
2	0	7	0
3	1.72	8	0
4	1.33	9	0
5	0	10	3.51

IC504 TSQ..ON

PinNo.	Voltage	Pin No.	Voltage
1	1.72	13	1.48
2	2.16	14	3.4
3	3.41	15	0
4	1.25	16	1.88
5	1.72	17	1.72
6	1.72	18	1.72
7	3.45	19	1.72
8	1.68	20	2.22
9	1.73	21	1.72
10	0	22	1.72
11	0	23	1.72
12	0	24	2.33

IC505

PinNo.	Voltage	Pin No.	Voltage
1	1.17	5	3.45
2	0	5	1.16
3	0	7	0.98
4	0	8	3.53

IC506, IC507, IC510

	1	2	3	4	5
IC506	0	0	3.73	3.73	0
IC507	0	0	0	13.54	3.76
IC510	0	0	3.73	3.73	0

IC508 (CPU. PCB)

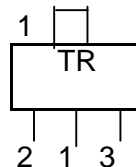
DC IN: I3.8V

PinNo.	Voltage	PinNo.	Voltage	PinNo.	Voltage	PinNo.	Voltage	PinNo.	Voltage
1	4.2	21	3.52	41	3.52	61	0.01	81	3.53
2	0	22	3.52	42	3.52	62	0.01	82	3.52
3	0	23	3.52	43	3.52	63	0.01	83	0.05
4		24	0	44	3.52	64	3.52	84	0.05
5	3.52	25	0	45	3.52	65	3.52	85	0
6	0	26	3.45	46	3.52	66	0.05	86	0
7	1.66	27	0	47	3.52	67	0.05	87	0
8	1.68	28	0.01	48	3.52	68	0	88	3.53
9	3.68	29	0.01	49	3.52	69	3.51	89	5.03
10	0	30	0.11	50	3.52	70	0	90	1.55
11	0	31	3.53	51	3.52	71	0	91	0
12	0	32	3.53	52	0	72	3.53	92	3.52
13	0	33	3.53	53	0	73	0.01	93	5.03
14	0	34	3.53	54	0	74	0.03	94	0
15	0	35	3.52	55	0	75	0.05	95	0
16	3.52	36	0	56	3.52	76	3.52	96	2
17	3.23	37	3.52	57	3.48	77	0	97	1.975
18	3.73	38	3.52	58	0	78	3.52	98	0.17
19	3.52	39	3.52	59	3.5	79	0	99	0.4
20	3.52	40	0	60	3.53	80	0	100	0

VOL: I (V/U), SQL: OPEN (V/U), BS: OFF

IC509

PinNo.	1	2	3
Voltage	5.04	0	3.39



IC52

PinNo.	Voltage	PinNo.	Voltage
1	0	9	0
2	0	10	0
3	0	11	0.09
4	3.57	12	0.09
5	3.57	13	3.57
6	3.57	14	3.57
7	3.57	15	3.57
8	0	16	3.57

IC841

PinNo.	Voltage	PinNo.	Voltage
1	0	5	3.49
2	0	6	0
3	0	7	0
4	0	8	3.52

L: 145.00MHz LOW POWER
R: 433.00MHz LOW POWER

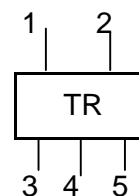
IC53

PinNo.	Voltage	PinNo.	Voltage	PinNo.	Voltage	PinNo.	Voltage
1	3.56	6	1.65	11	0	16	1.72
2	0	7	0	12	3.53	17	0
3	0	8	2.05	13	3.53	18	2
4	3.52	9	1.24	14	0	19	3.79
5	3.56	10	7.35	15	0	20	0

3) Transistor

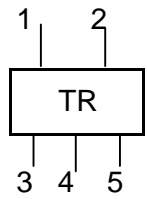
	Emitter	Base	Collector	Note		Emitter	Base	Collector	Note
Q51	13.57	13.05	4.02	UHF:TX	Q72	0.00	0.75	2.56	R:144
Q53	0.00	0.76	2.08	UHF:TX	Q73	0.00	0.72	2.17	L:RX
Q54	0.00	0.77	3.04	UHF:TX	Q74	0.00	0.73	1.85	L:430M
Q55	0.00	0.00	0.00	When locke	Q75	0.00	0.74	3.22	L:144M
Q60	0.00	0.72	1.60	R:RX	Q76	0.00	0.74	1.84	L:144M
Q61	0.00	0.71	1.84	R:430M	Q77	0.00	0.75	2.47	L:144M
Q62	0.00	0.76	2.98	R:430M	Q78	0.00	0.73	1.58	L:RX
Q63	0.00	0.75	3.01	R:430M	Q79	0.00	0.67	2.92	L:144M
Q64	0.00	0.72	3.14	R:430M	Q80	0.00	0.73	1.97	VHF:TX
Q65	7.35	7.97	8.03		Q81	0.00	0.74	2.72	VHF:TX
Q66	0.00	0.74	2.17	R:RX	Q82	13.57	13.07	4.12	VHF:TX
Q67	0.00	0.73	1.95	R:144M	Q85	0.00	0.00	0.00	When locked
Q68	0.00	0.76	3.04	R:144M	Q86	0.00	0.00	7.97	
Q69	0.00	0.69	2.91	R:144M					
Q70	0.00	0.75	2.28	R:144M					

	1	2	3	4	5	Note
Q52	13.05	4.11	1.53	1.01	1.60	UHF TX
Q56	3.56	3.56	0.09	3.57	0.09	ATT ON
Q58	3.57	3.57	0.09	3.57	0.09	L:VHF ,R:UHF
Q59	4.00	4.18	0.83	0.25	0.03	UHF TX
Q83	13.07	4.14	1.55	1.01	1.62	VHF TX
Q84	4.05	4.17	0.86	0.26	0.02	VHF TX

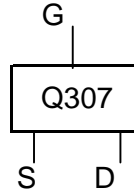


	Emitter	Base	Collector	Note		Emitter	Base	Collector	Note
Q301	13.51	12.97	3.57		Q316	3.58	0.53	3.47	L:RX
Q303	0.00	0.52	2.33	R:RX	Q317	0.00	0.59	0.00	FD
Q304	3.58	3.47	0.00	R:RX	Q318	13.58	13.00	6.23	AFPC:ON
Q306	0.80	1.38	3.47	R:RX	Q320	0.00	3.46	0.00	TX
Q308	3.58	0.53	3.47	R:RX	Q321	0.00	3.46	0.00	TX
Q309	0.00	0.53	2.33	L:RX	Q322	0.21	0.82	1.62	TX
Q310	3.57	3.47	3.47	L:RX	Q323	0.00	2.93	0.00	XBR
Q312	0.00	3.44	0.00	AM	Q327	3.58	0.00	3.47	UPRI:ON
Q313	0.80	1.38	3.47	L:RX					
Q315	1.20	0.73	3.45	L:RX					

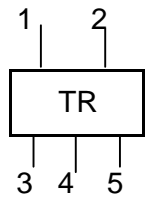
	1.00	2	3.00	4	5	Note
Q302	12.98	13.53	3.24	2.70	3.25	
Q319	13.01	13.58	3.39	2.91	3.52	When receiving
Q326	3.46	0.00	0.20	3.57	3.58	L:VHF,R:UHF
Q328	3.47	0.00	0.10	3.57	3.58	L:VHF,R:UHF
Q329	3.50	3.50	0.00	3.57	0.00	



	Drain	Gate	Source
Q307	1.03	3.52	0.02



	1	2	3	4	5	Note
Q501	3.45	0	0.28	3.46	3.46	VHF SQL:OFF
Q502	3.38	0	0.31	3.46	3.45	UHF SQL:OFF
Q509	13.01	3.52	1.66	1.12	1.74	
Q510	0	0	2.54	0	0	F.D:ON
Q511	0	13.54	0	3.24	13.47	
Q512	0	5.01	0	3.5	5.04	



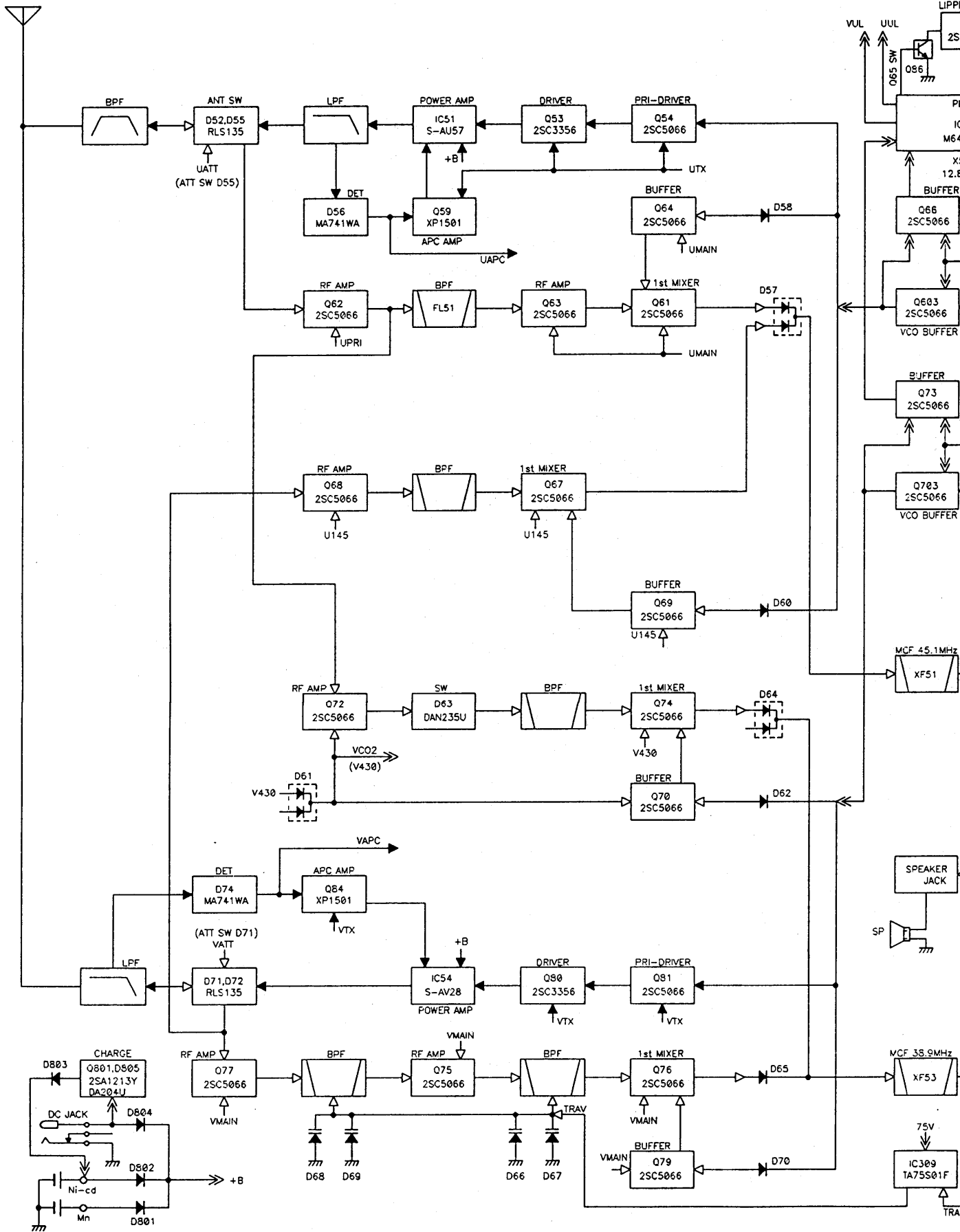
	Emitter	Base	Collector	Note		Emitter	Base	Collector	Note
Q503	0	3.48	0.05	VHF TX:Q506		3.51	2.83	3.44	TX:ON
Q504	0	3.48	0.05	UHF TX:Q507		2.96	3.52	12.92	LAMP:ON
Q505	13.55	12.88	3.51	LAMP:ON	Q508	13.61	13.01	3.52	

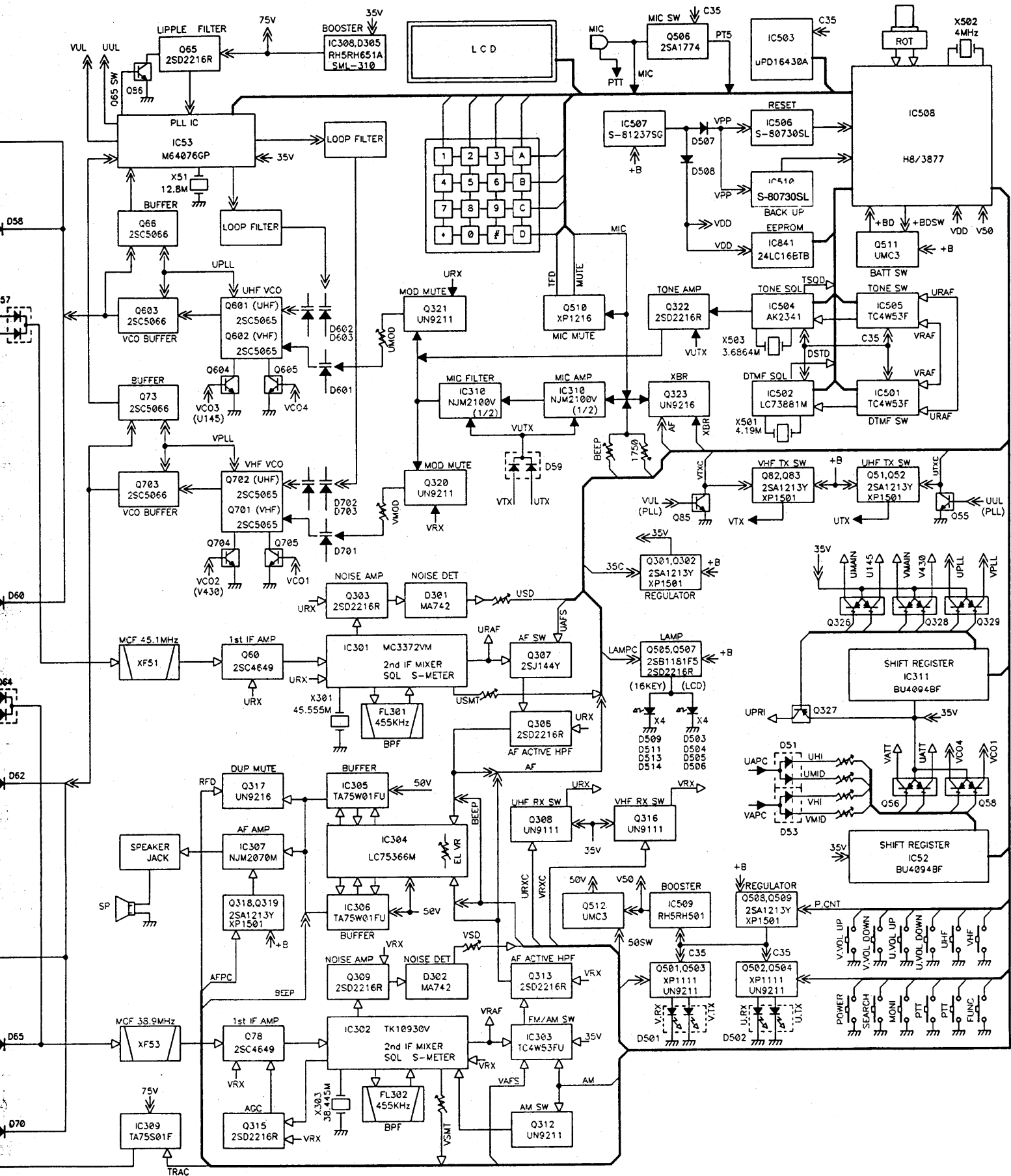
	Emitter	Base	Collector	Note
Q601	1.49	0.76	3.09	
Q602	1.48	0.86	3.06	R:SUB
Q603	0	0.74	2.48	
Q604	0	1.95	0.3	R:SUB
Q605	0	2.06	0.03	

	Emitter	Base	Collector	Note
Q701	1.48	0.97	3.04	
Q702	1.48	0.77	3.08	L:SUB
Q703	0	0.67	2.44	
Q704	0	1.62	0.04	L:SUB
Q705	0	2.56	0.03	

	Emitter	Base	Collector
Q801	13.76	13.38	13.36

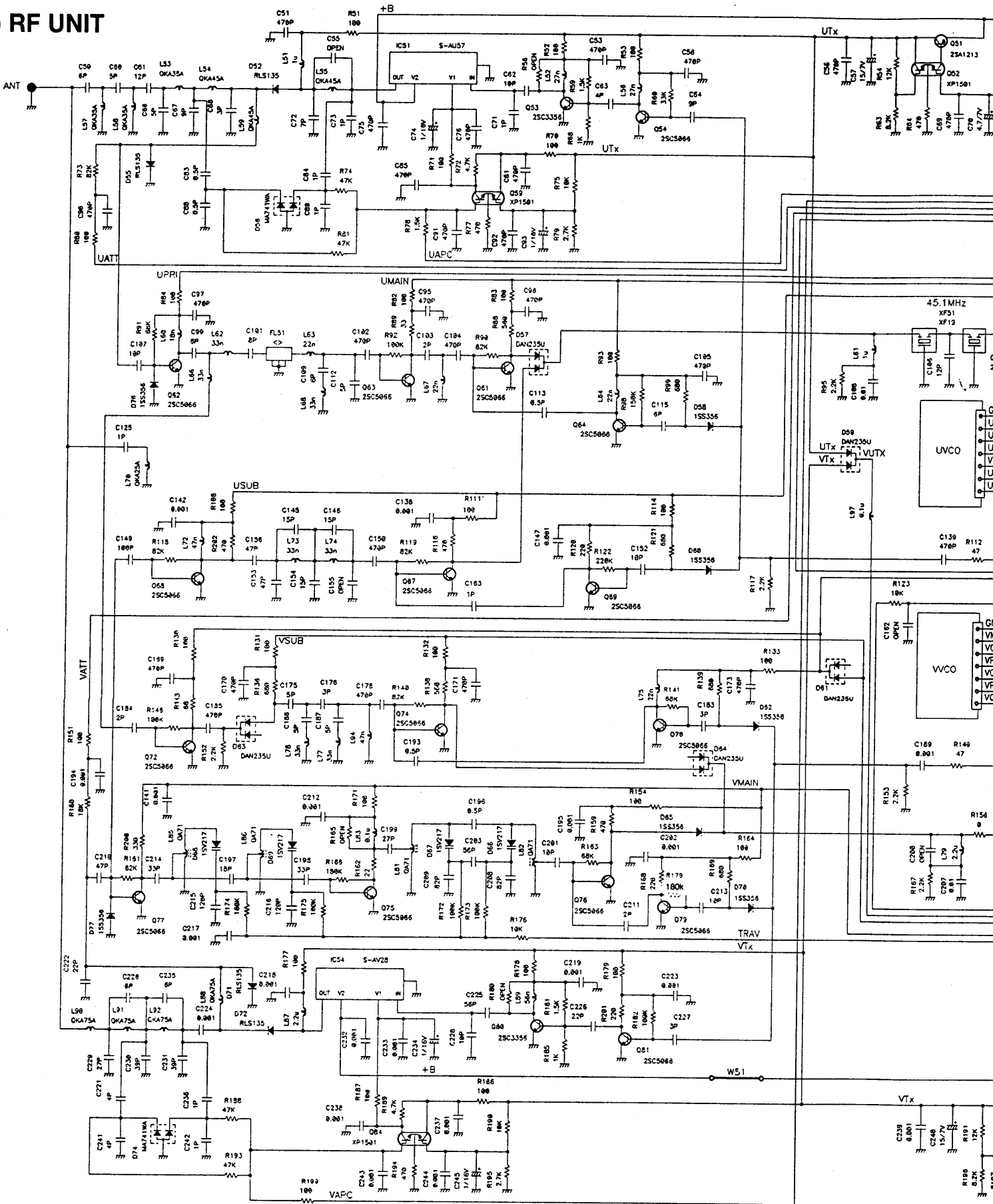
BLOCK DIAGRAM

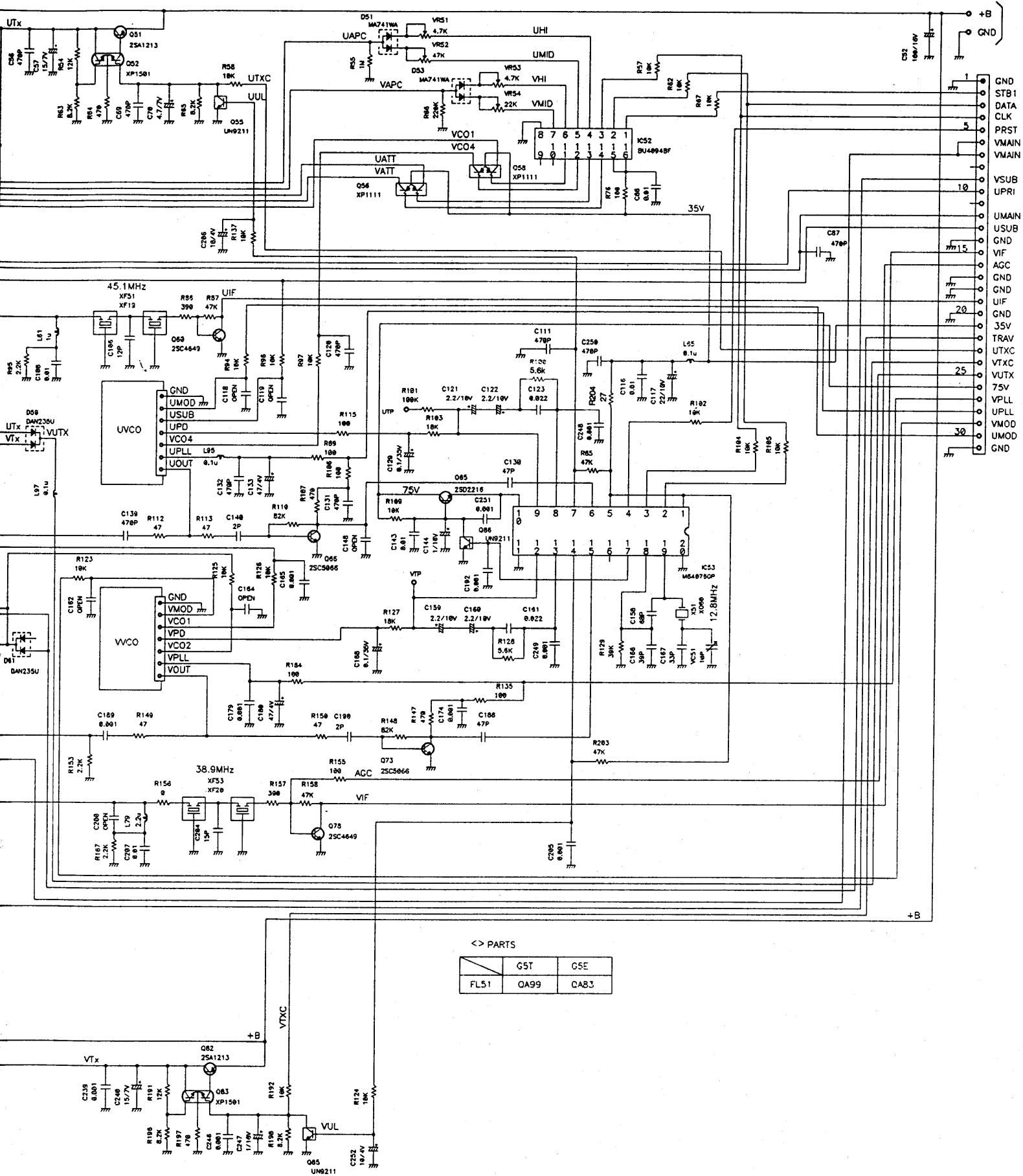




SCHEMATIC DIAGRAM

1) RF UNIT

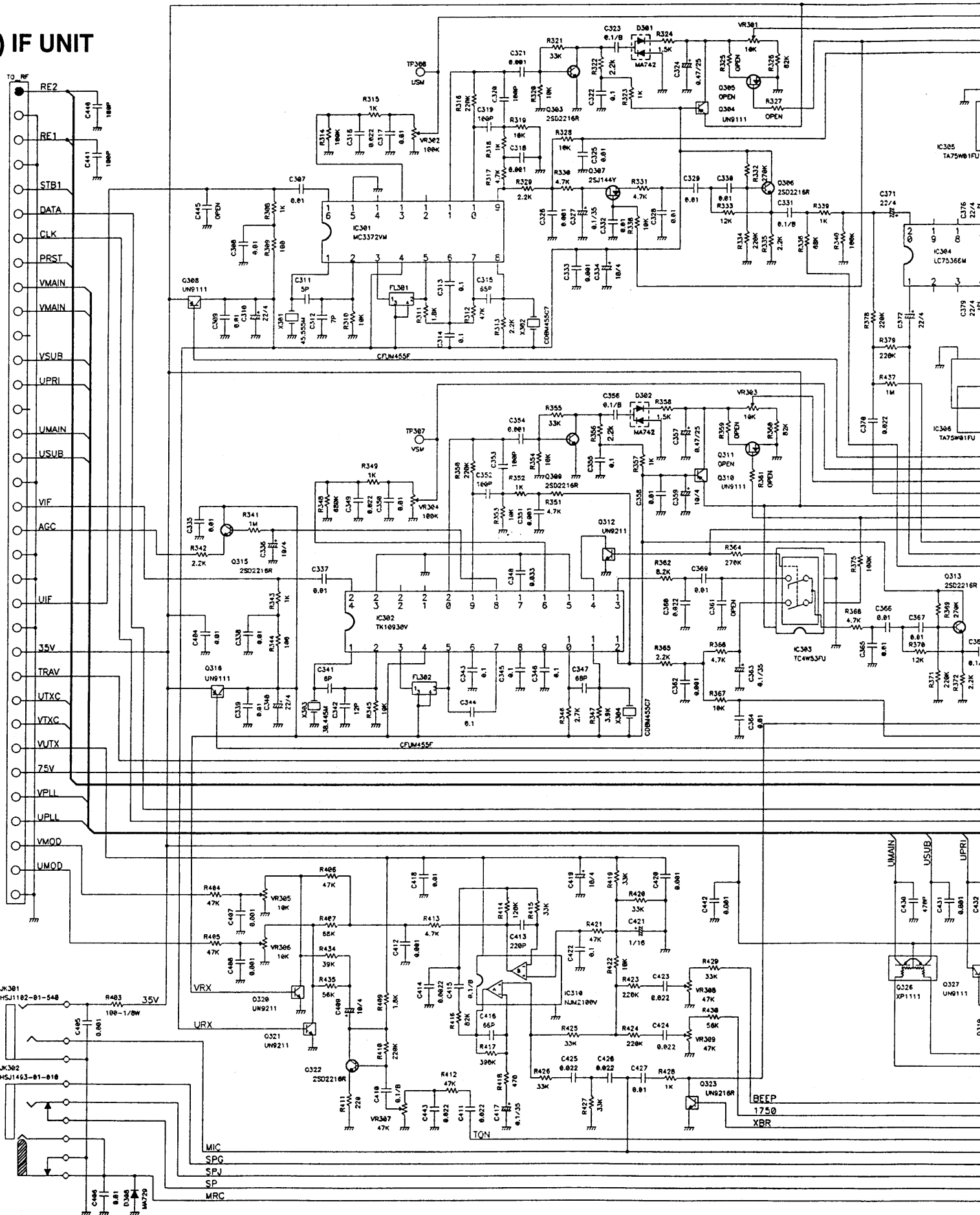


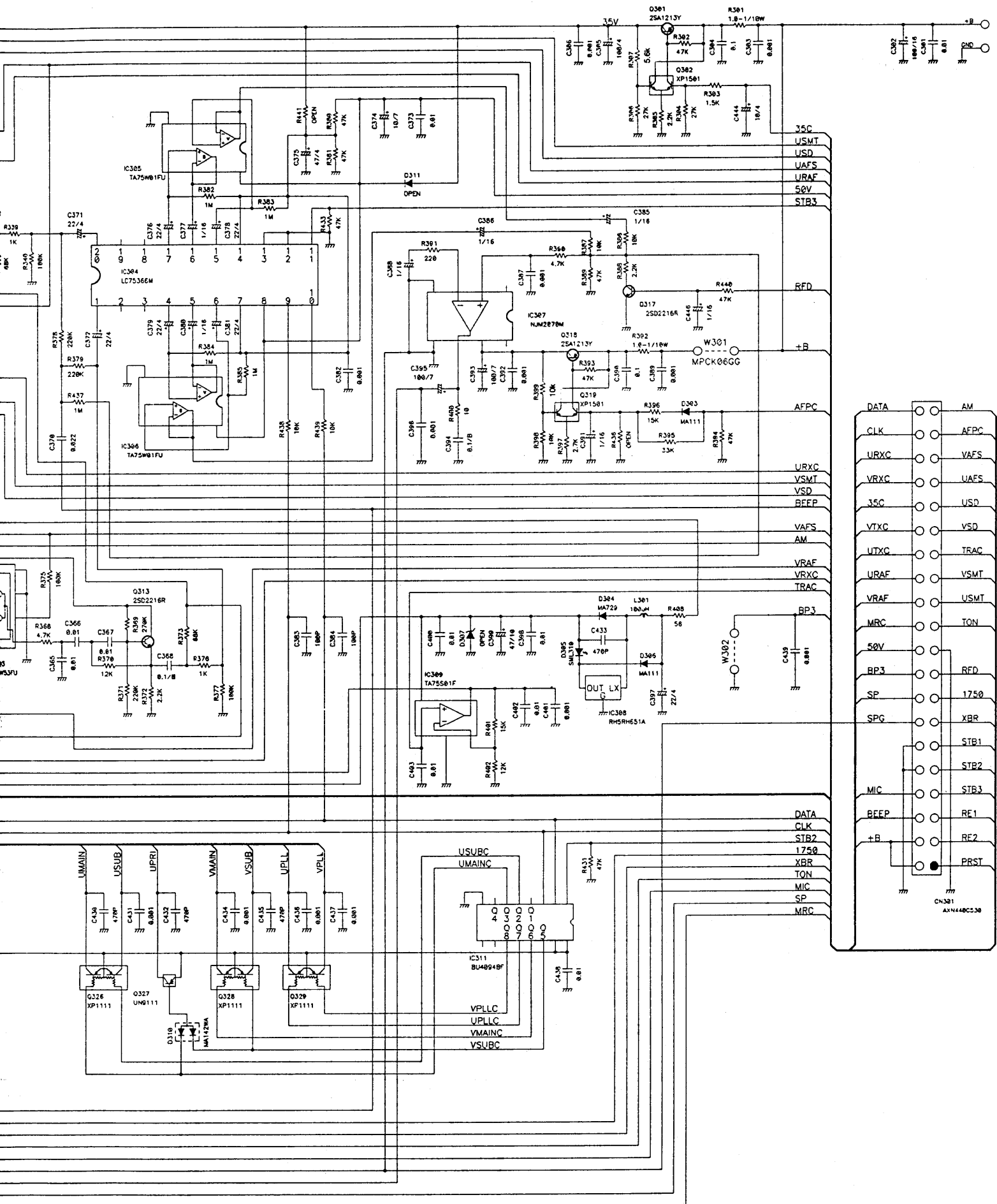


<> PARTS

FLS1	G5T	G5E
	OA99	OA83

2) IF UNIT

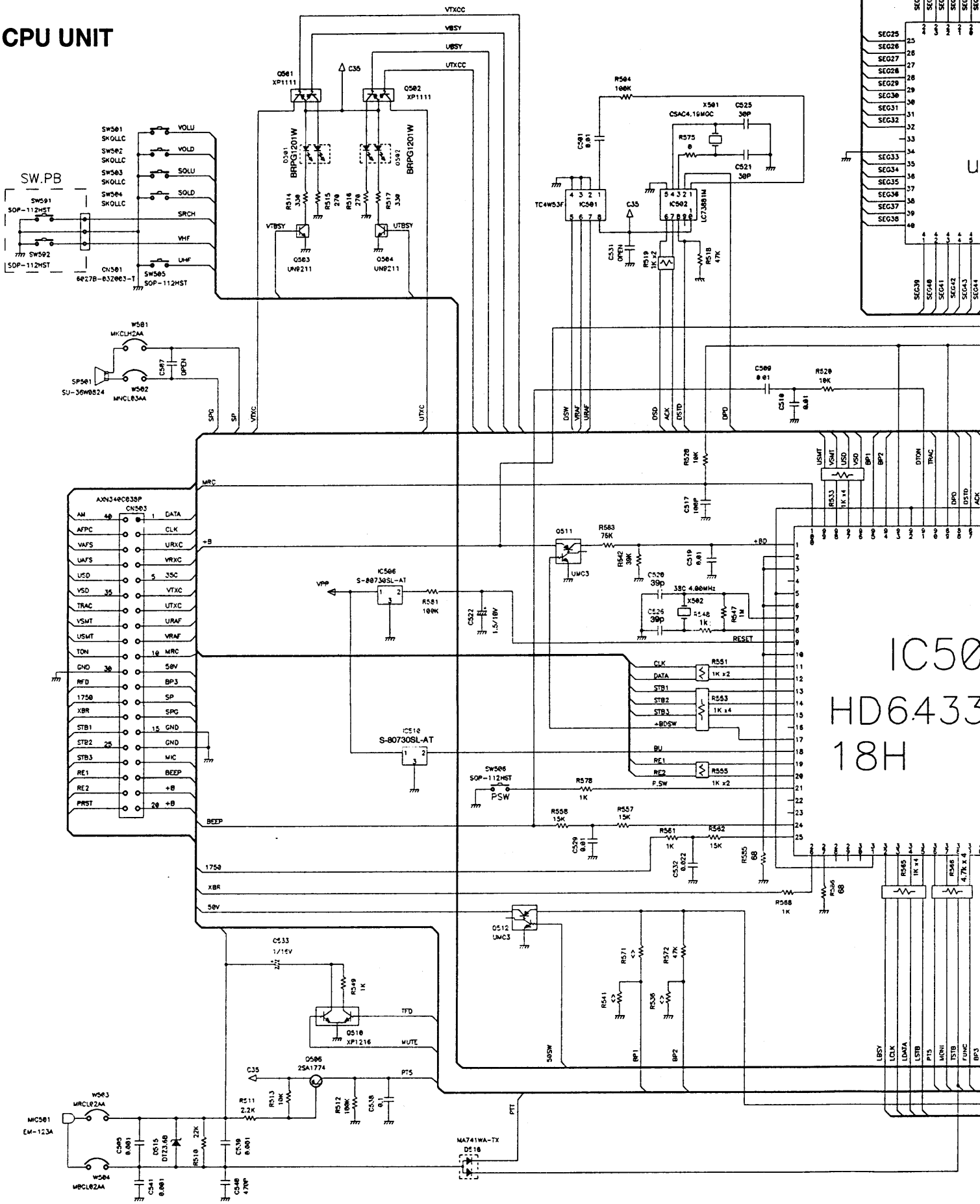




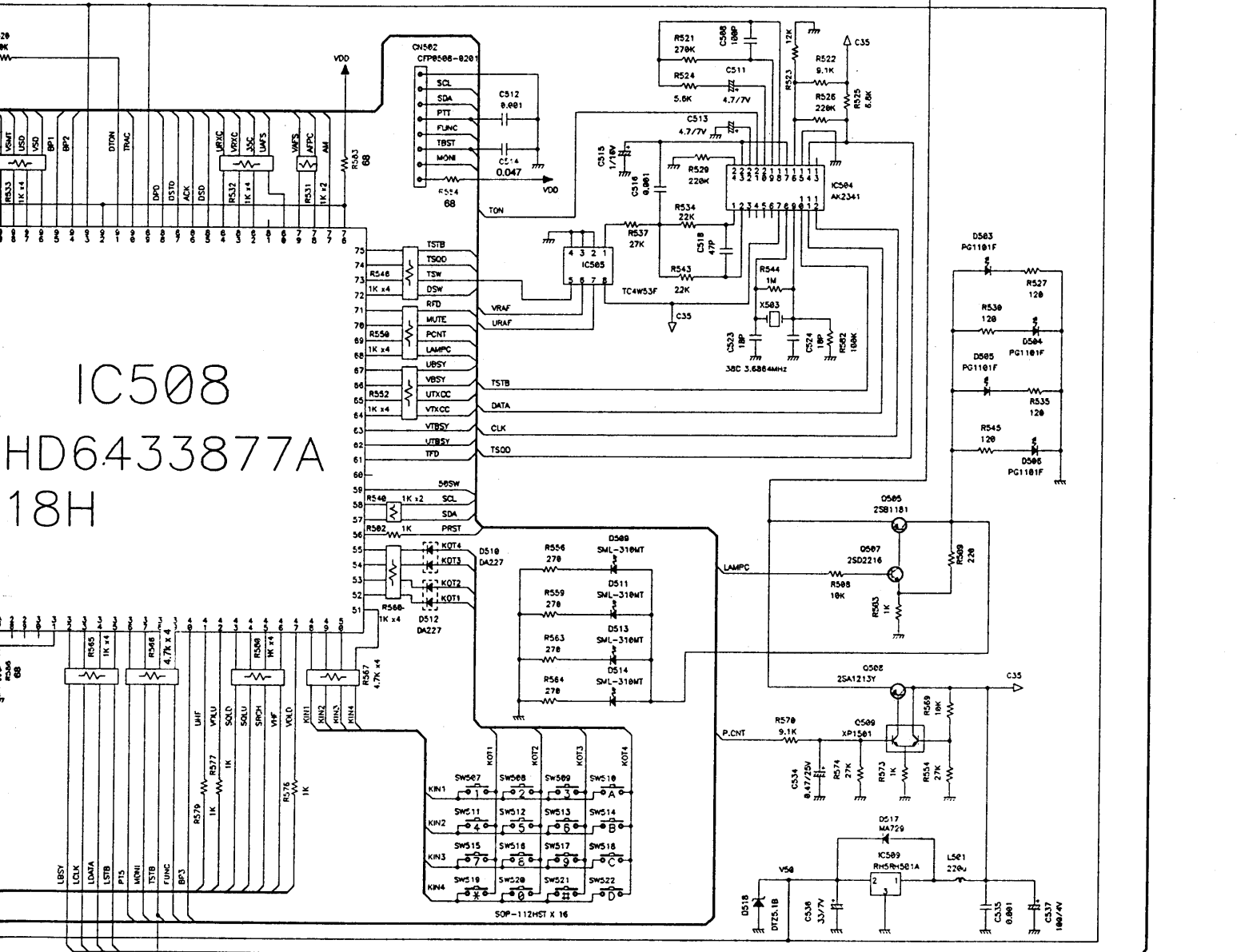
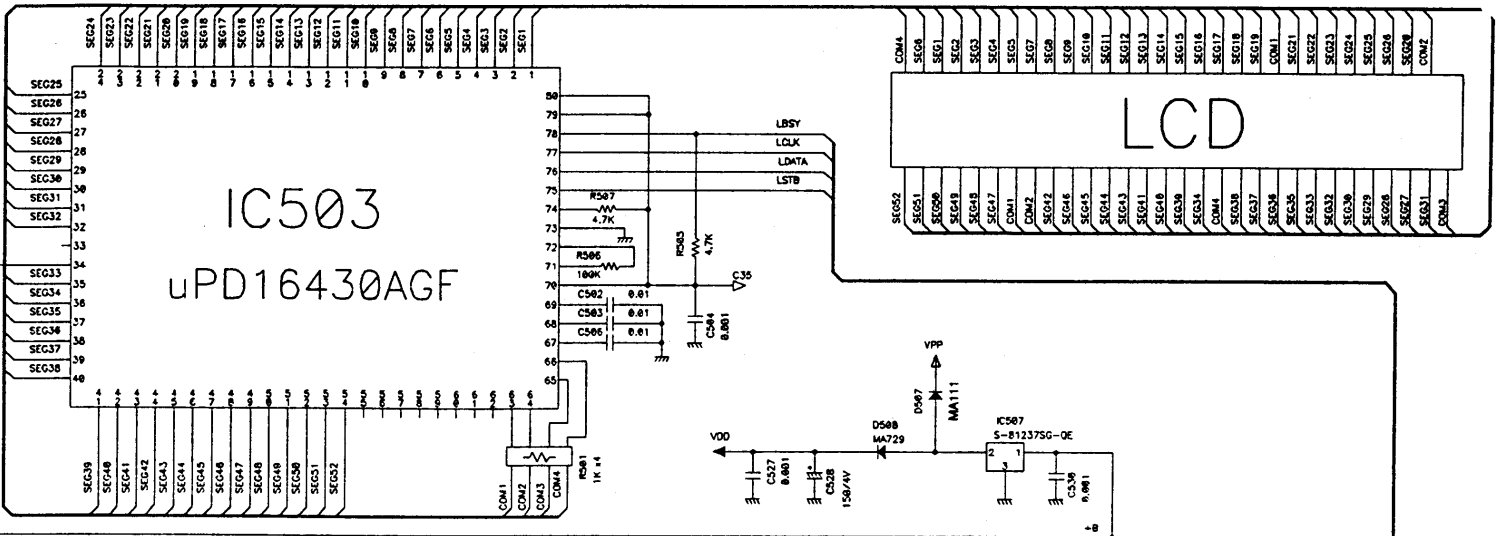
DATA	AM
CLK	AFPC
URXC	VAFS
VRXC	UAFS
35C	USD
VTXC	VSD
UTXC	TRAC
URAF	VSMT
VRAF	USMT
MRC	TON
50V	
BP3	REFD
SP	1750
SPG	XBR
	STB1
	STB2
MIC	STB3
BEEP	RE1
+B	RE2
	PRST

CN301
AXN448C2.38

3) CPU UNIT

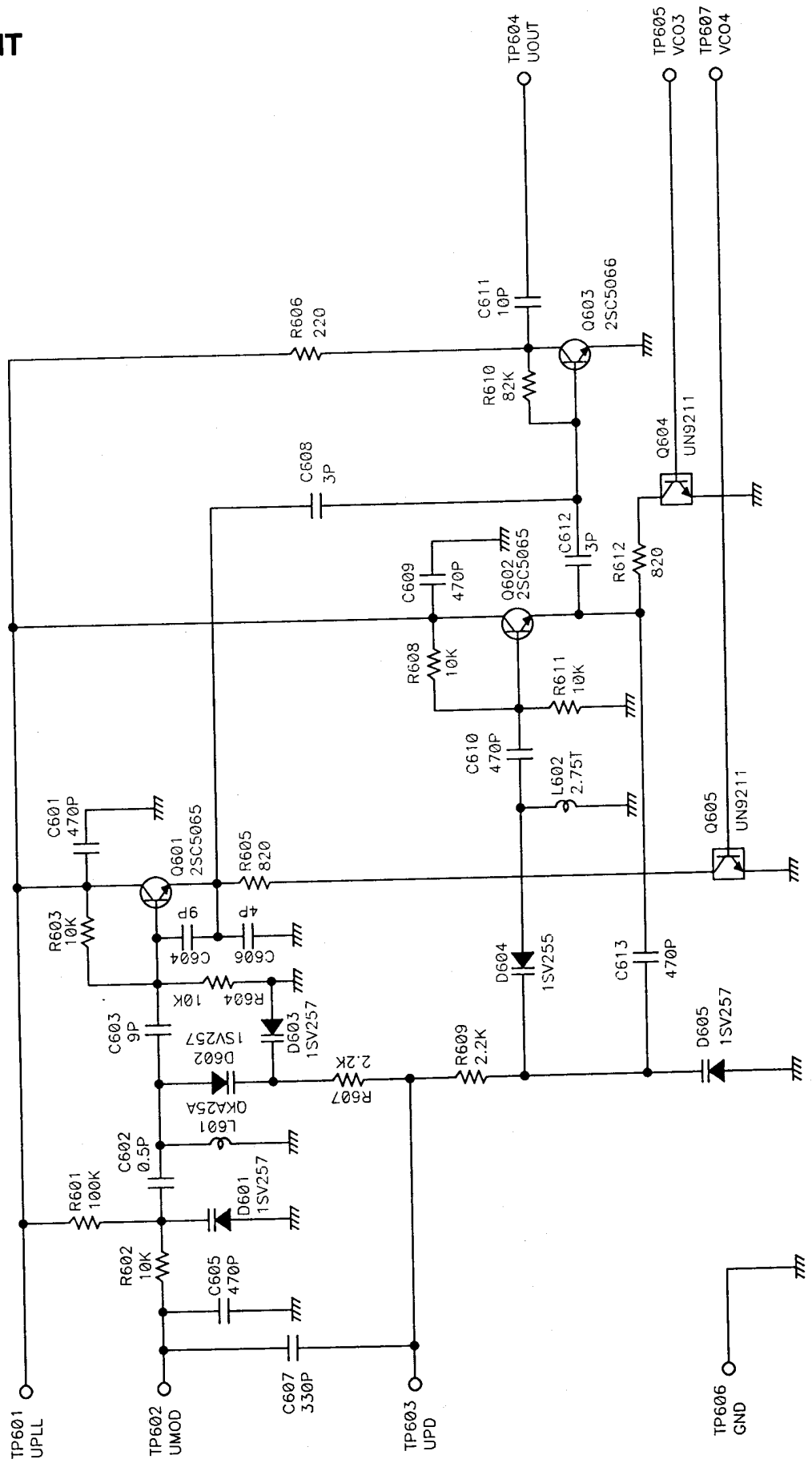


IC501
HD643318H

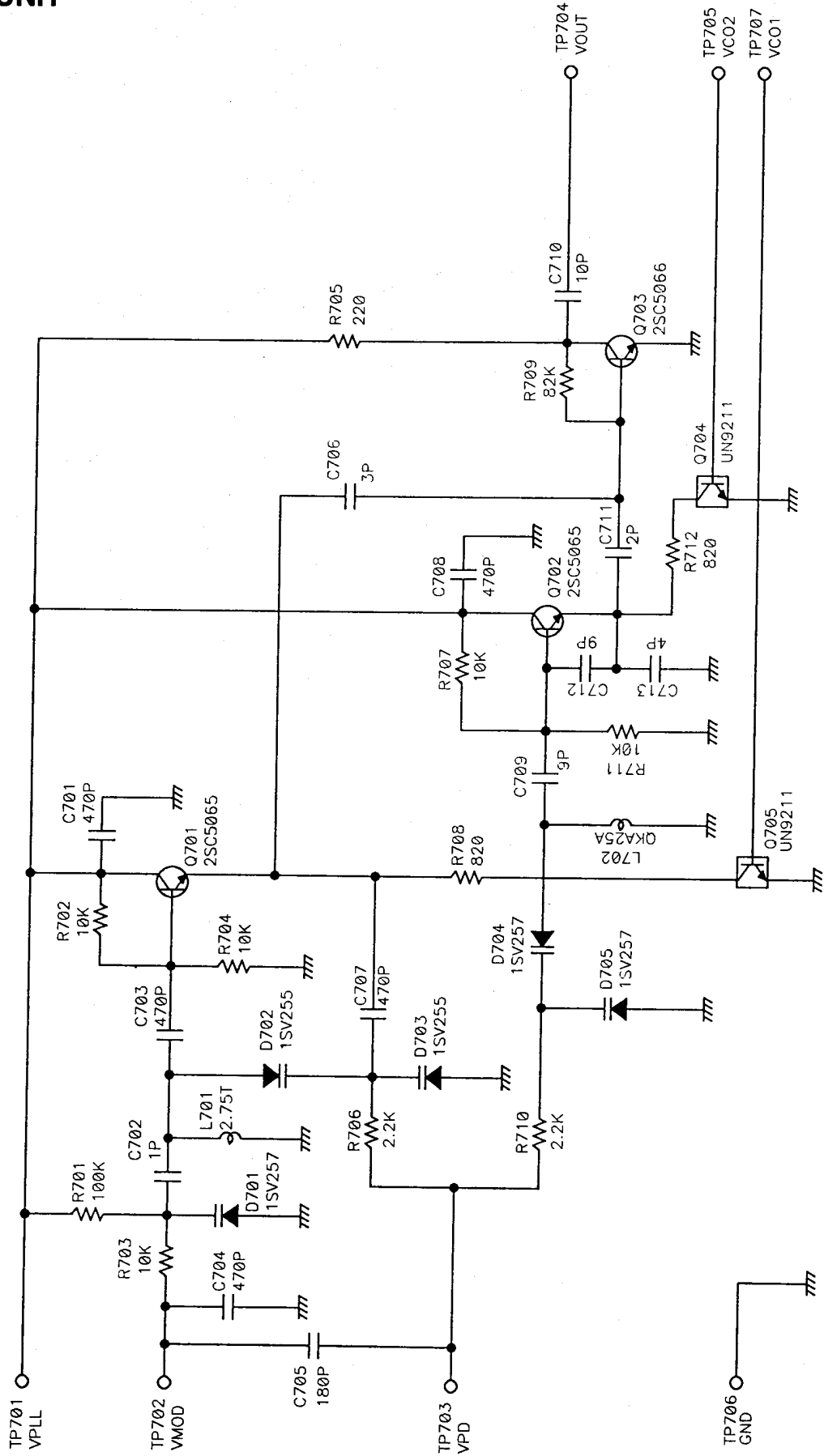


<>	R536	R541	R571
G5T	82K	82K	47K
G5E	—	47K	82K

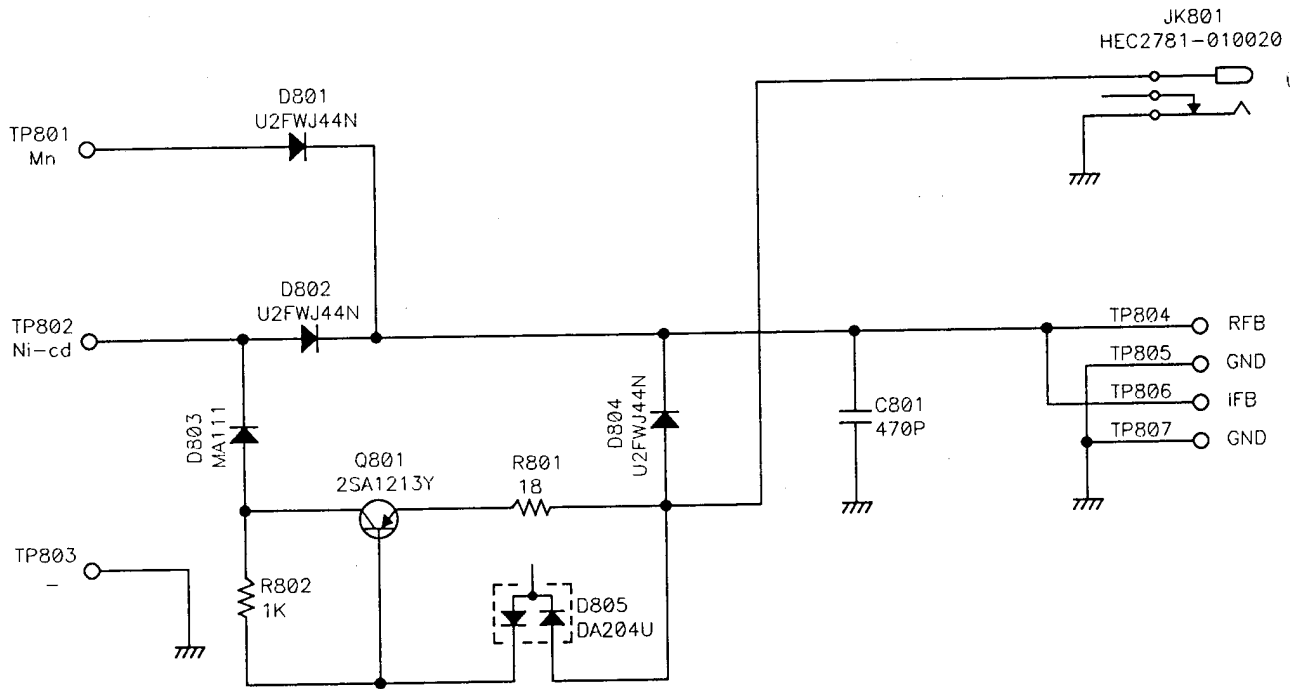
4) UVCO UNIT



5) VVCO UNIT



6) CHARGE UNIT



7) PTT UNIT

