

# **DJ-CRX5**

## **Service Manual**

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- \* Circuit Description**
- \* Parts list**
- \* Schematic Diagram**
- \* Block Diagram**
- \* PC Board View**

***ALINCO, INC.***

## SPECIFICATIONS

<b>General</b>		
Frequency Range	Band A & B	RX: 136~174MHz 400~480MHz
		TX: 136~174MHz 400~480MHz
Number of channels		Max. 200
Channel Stepping		Wide : 25kHz, Narrow : 12.5kHz
Operating Voltage		7.4 V DC $\pm$ 20%
Battery Life		More than 16 hours at 4 watts (5-5-90 duty cycle with 1750mAh Li battery)
Operating Temperature range		-20°C to +60°C
Frequency Stability		$\pm$ 2.5ppm
Dimensions and Weight		
With EBP-92 (1750mAh Li-ion battery)		61W x 115H x 41D mm 230g
<b>Receiver</b> (Measurements made per TIA/EIA-603)		
RF Input Impedance		50 $\Omega$
Sensitivity		
EIA 12dB SINAD		Wide : 0.2 $\mu$ V      Narrow : 0.25 $\mu$ V
Selectivity .		Wide : 65dB      Narrow : 60dB
Intermodulation		Wide : 60dB      Narrow : 55dB
Spurious response		65dB
Audio Power Output		500mW at 16 $\Omega$ less than 10% distortion
<b>Transmitter</b> (Measurements made per TIA/EIA-603)		
RF Output Impedance		50 $\Omega$
RF Power Output		HI: 5W    Mid: 2W    Lo: 1W    VHF HI: 4W    Mid: 2W    Lo: 1W    UHF
Spurious and Harmonics		60dB
Modulation		Wide: 16K $\phi$ F3E      Narrow :11K $\phi$ F3E
FM Noise		Wide : 45dB      Narrow : 40dB
Audio Distortion		Less than 5%

# CIRCUIT DESCRIPTION

## 1. Overview

This transceiver is VHF and UHF portable transceiver designed to operate in the frequency range of VHF: 136 to 174MHz and UHF: 400 to 480MHz.

The unit consists of RF module, transmitter, power supply, APC circuit, LCD display circuit and control circuits.

## 2. Frequency Configuration

The frequency configuration is shown in Figure 1 and Table 1.

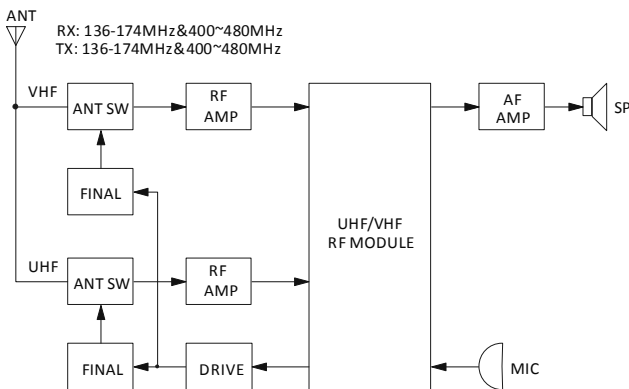


Fig. 1 Frequency configuration

## 3. Receiver System

### 3-1. VHF Receiver Circuit

The received signal from the antenna passes through a low-pass filter and then through a transmission/reception switching circuit (antenna switch) and RF amplified (Q807) and is demodulated by the RF module U205 (LNA, MIX, IF, RSSI, CTCSS/DCS, VCO, AFC, MOD, PLL, LOOP FILTER, VOX, DTMF and PRE/DE-EMPHASIS). The demodulated signal is routed to the audio circuit.

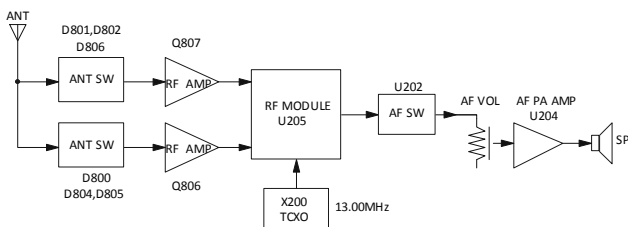


Fig.2

### 3-2. UHF Receiver Circuit

The received signal from the antenna passes through a low-pass filter and then through a transmission/reception switching circuit (antenna switch) and RF amplified (Q806) and is demodulated by the RF module U205 (LNA, MIX, IF, RSSI, CTCSS/DCS, VCO, AFC, MOD, PLL, LOOP FILTER, VOX, DTMF and PRE/DE-EMPHASIS). The demodulated signal is routed to the audio circuit.

### 3-3. Audio Amplifier Circuit

The Audio signal from U205 goes to AF switch (U202).

The signal then goes through an AF volume control, and is routed to an audio power amplifier (U204) where it is amplified and output to the speaker. (See Fig. 3)

### 3-4. Squelch

And the noise component is amplified and rectified by a filter and an amplifier to produce a DC voltage corresponding to the noise level.

The DC signal from the RF module goes to the analog port of the microprocessor (U401). U401 determines whether to output sounds from the speaker by checking whether the input voltage is higher or lower than the preset value.

To output sounds from the speaker, U401 sends a high signal to the P75 line and turns U204.

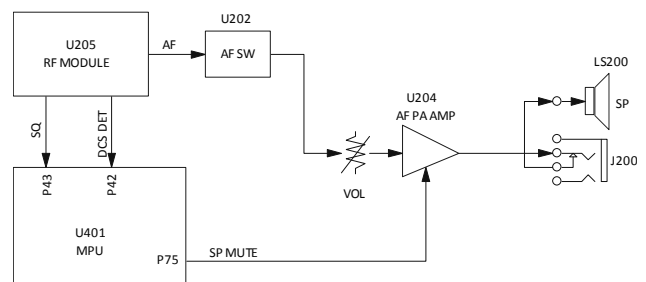


Fig.3

### 3-5. Low-speed data (CTCSS/DCS)

The output signal from RF module (U205) enters the microprocessor (U401). U401 determines whether the CTCSS or DCS matches the preset value, and controls the P75 and the speaker output sounds according to the squelch results.

# CIRCUIT DESCRIPTION

## 4. Transmission signal system

### 4-1. Microphone Amplifier Circuit

The signal from the microphone goes to the RF module (U205) modulation.

### 4-2. Low-speed data (CTCSS/DCS)

CTCSS/DCS signal transmit through RF module (U205) inter generator, mixes with the audio signal, then input into inter modem.

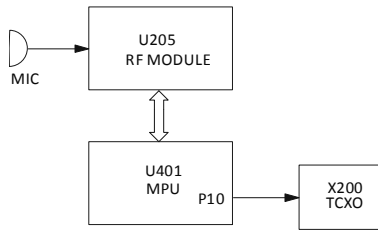


Fig.4

### 4-4. VHF Drive and Final Amplifier Circuit

The signal from the RF module (U205) is amplified by the pre-drive (Q805) and drive amplifier (Q801) to 40mW. The output of the drive amplifier is amplified by the RF power amplifier (Q804) to 5W (1W when the power is low).

The RF power amplifier consists of two MOS FET stages. The output of the RF power amplifier is then passed through the harmonic filter (LPF) and antenna switch (D806) and applied to the antenna terminal.

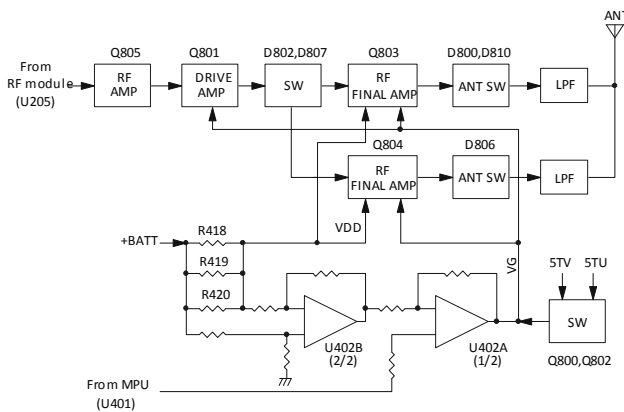


Fig.5

### 4-5. UHF Drive and Final Amplifier Circuit

The signal from the RF module (U205) is amplified by the pre-drive (Q805) and drive amplifier (Q801) to 40mW. The output of the drive amplifier is amplified by the RF power amplifier (Q803) to 4W (1W when the power is low).

The RF power amplifier consists of two MOS FET stages. The output of the RF power amplifier is then

passed through the harmonic filter (LPF) and antenna switch (D800 and D810) and applied to the antenna terminal.

### 4-6. APC Circuit

The APC circuit always monitors the current flowing through the RF power amplifier (Q803 and Q804 ) and keeps a constant current. The voltage drop at R418, R419 and R420 is caused by the current flowing through the RF power amplifier and this voltage is applied to the differential amplifier U402B (2/2). U402A (1/2) compares the output voltage of U402 (2/2) with the reference voltage from U401. The output of U402A (1/2) controls the VG of the Drive amplifier and RF power amplifier to make both voltages the same.

The change of power high/low is carried out by the change of the reference voltage. Q400, Q401, Q402 and U402 are turned on in transmit and the APC circuit is active.

### 4-7. VHF/UHF RF power amplifier Switching Circuit

The 5TV and 5TU of the power is used to switch between RF power amplifier.

When a 5TU (low level) power is VHF RF power amplifier, U/V switch Q800 turn off and Q802 turn on.

When a 5TV (low level) data is UHF RF power amplifier, U/V switch Q800 turn on and Q802 turn off.

## 5 Control Circuit

The microprocessor (U401) operates at a clock of 13.000MHz.

The control circuit consists of a microprocessor (U401) and its peripheral circuits. It controls the TX-RX unit. U401 mainly performs the following:

- (1) Switching between transmission and reception by the PTT signal input.
- (2) Reading system, tone, frequency, and program data from the memory circuit.
- (3) Controlling the LCD display circuit.
- (4) Controlling squelch on/off by the DC voltage from the squelch circuit.
- (5) Controlling the audio mute circuit by the decode data input.
- (6) Transmitting tone and encode data
- (7) Controls the UHF/VHF TX/RX unit.

# CIRCUIT DESCRIPTION

## 5-1. Low battery warning

The battery voltage is monitored by the microprocessor (U401). When the battery voltage falls below the voltage set by the Low Battery Warning adjustment, the red LED flashes to notify the operator that it is time to replace the battery. If the battery voltage falls even more (approx. 6.0V), a beep sounds and transmission is stopped.

Low battery warning	Battery condition
The red LED flashes during transmission	The battery voltage is low but the transceiver is still usable.
The red LED flashes and a continuous beep sounds while PTT pressed.	The battery voltage is low and the transceiver is not usable to make calls.

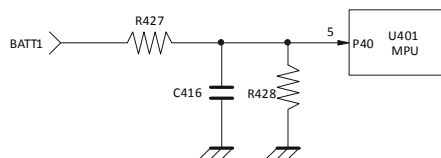


Fig.6

## 5-2. Memory Circuit

Memory circuit consists of the MPU (U401 and an EEPROM (U403). An EEPROM has a capacity of 128k bits that contains the transceiver control program for the MPU and data such as transceiver channels and operating features.

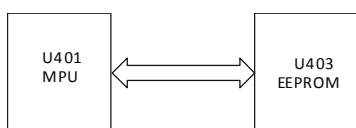


Fig.7

## 6. Display Circuit

The MPU (U401) controls the display LCD and LEDs.

When power is on, the LCD driver will use the P66, P67 lines to control the LCD illumination (D700) and key backlight LEDs (D702~D705).

The LCD driver (U700) and MPU (U401) communicate through the P14, P15, P16, P17, P70, P71 lines.

When the reception is busy, P64 (B-RX: P65) line becomes high impedance, and the green LED (D401 B-RX: blue) lights, in transmit mode, the P63 line becomes high

impedance, and the red LED (D401) lights.

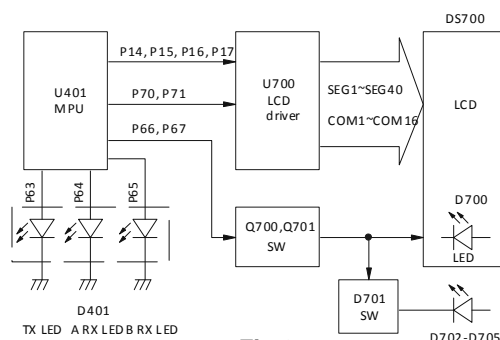


Fig.8

## 7. Power Supply

The power supply voltage is maintained to 3.3V and 5.0V by the series regulator (U400 and U404). It is used as MCU power 3RV, 3RU, 5TV and 5TU.

The Batt (battery voltage) is supplied to the RF power amplifier Q803 and Q804.

U400 supplies +3.3V (3.3V) to the common circuits

U209 supplies 3M3 (3.3V) to the RF model circuits.

The transmission power 5T is supplied to the transmission output circuit when the MCU turns Q204 and Q206 on only in transmit mode. During VHF transmission, P74 becomes high and U201 is turned ON to supply 5TV (5.0V) to the VHF TX circuit. During UHF transmission, P74 becomes low and U201 is turned ON to supply 5TU (5.0V) to the UHF TX circuit.

The reception power 3R is provided to the receive circuits when the MCU turns Q202 and Q203 on only in receive mode. During VHF reception, P61 becomes high and Q203 is turned ON to supply 3RV (3.3V) to the VHF RX circuit. During UHF transmission, P62 becomes high and Q202 is turned ON to supply 3RU (3.3V) to the UHF RX circuit.

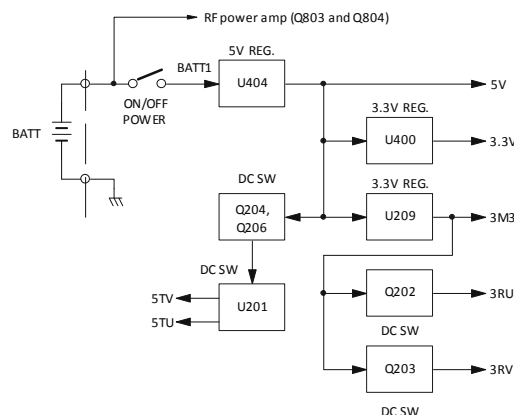


Fig.9

PARTS LIST			
NO.	Designators	Comment	Footprint
1	BT400	BATT(7.4V/LI-ion)	BATT
2	C100	102P	,0402
3	C101	102P	,0402
4	C102	15P	,0402
5	C103	103P	,0402
6	C200	102P	,0402
7	C201	102P	,0402
8	C202	103P	,0402
9	C203	104P	,0402
10	C204	103P	,0402
11	C206	103P	,0402
12	C207	103P	,0402
13	C208	103P	,0402
14	C209	103P	,0402
15	C210	103P	,0402
16	C211	103P	,0402
17	C212	103P	,0402
18	C213	103P	,0402
19	C214	103P	,0402
20	C215	103P	,0402
21	C216	103P	,0402
22	C217	103P	,0603
23	C219	103P	,0402
24	C220	103P	,0402
25	C221	101P	,0402
26	C223	103P	,0402
27	C224	225P/16V	,0603
28	C227	104P	,0402
29	C228	104P	,0402
30	C229	104P	,0402
31	C230	104P	,0402
32	C231	104P	,0402
33	C232	103P	,0402
34	C233	104P	,0402
35	C236	472P	,0402
36	C237	104P	,0603
37	C239	104P	,0402
38	C248	102P	,0402
39	C250	NOUSE	,0402
40	C253	10P(C)	,0402
41	C254	104P	,0603
42	C255	564P	,0603
43	C256	47P	,0402
44	C257	105P	,0603
45	C262	101P	,0402
46	C264	101P	,0402
47	C265	101P	,0402
48	C267	22P	,0402
49	C268	471P	,0402
50	C269	471P	,0402
51	C270	471P	,0402
52	C272	471P	,0402
53	C274	10P	,0402
54	C282	475P/16V	,0805
55	C283	475P/16V	,0805
56	C401	102P	,0402
57	C402	102P	,0402
58	C403	102P	,0402
59	C404	102P	,0603

PARTS LIST			
NO.	Designators	Comment	Footprint
60	C405	102P	,0402
61	C407	102P	,0603
62	C408	103P	,0603
63	C409	102P	,0402
64	C410	103P	,0402
65	C411	NOUSE	,0402
66	C412	103P	,0402
67	C413	103P	,0402
68	C414	105P	,0603
69	C415	104P	,0402
70	C416	104P	,0402
71	C417	104P	,0402
72	C418	22P	,0402
73	C419	471P	,0603
74	C422	471P	,0402
75	C423	105P	,0603
76	C424	102P	,0402
77	C425	105P	,0603
78	C426	102P	,0402
79	C427	471P	,0402
80	C428	471P	,0402
81	C429	471P	,0402
82	C430	101P	,0402
83	C431	471P	,0402
84	C432	475P/16V	,0805
85	C433	475P/16V	,0805
86	C434	104P	,0402
87	C435	475P/16V	,0805
88	C436	103P	,0402
89	C437	104P	,0402
90	C438	103P	,0402
91	C439	102P	,0402
92	C440	225P/16V	,0805
93	C441	104P	,0402
94	C442	104P	,0402
95	C443	273P	,0402
96	C444	273P	,0402
97	C700	103P	,0402
98	C701	104P	,0402
99	C702	104P	,0402
100	C703	104P	,0402
101	C704	102P	,0402
102	C705	102P	,0402
103	C706	102P	,0402
104	C707	102P	,0402
105	C800	102P	,0402
106	C801	102P	,0402
107	C802	102P	,0402
108	C803	101P	,0603
109	C804	102P	,0402
110	C805	101P	,0603
111	C806	102P	,0402
112	C807	102P	,0603
113	C808	102P	,0402
114	C809	102P	,0603
115	C810	102P	,0402
116	C811	102P	,0402
117	C812	102P	,0402
118	C813	102P	,0402

PARTS LIST			
NO.	Designators	Comment	Footprint
119	C814	102P	,0402
120	C815	102P	,0402
121	C816	103P	,0402
122	C817	15P	,0603
123	C818	471P	,0402
124	C819	102P	,0402
125	C820	30P	,0603
126	C821	103P	,0402
127	C822	103P	,0402
128	C823	103P	,0402
129	C824	103P	,0603
130	C825	103P	,0402
131	C826	103P	,0402
132	C827	103P	,0402
133	C828	103P	,0402
134	C829	103P	,0603
135	C830	103P	,0603
136	C831	471P	,0603
137	C832	NOUSE	,0603
138	C833	NOUSE	,0603
139	C834	3P(B)	,0402
140	C835	20P	,0603
141	C836	103P	,0402
142	C837	103P	,0603
143	C838	103P	,0603
144	C839	103P	,0402
145	C840	103P	,0402
146	C841	NOUSE	,0402
147	C842	30P	,0603
148	C843	NOUSE	,0603
149	C844	47P	,0603
150	C845	12P	,0603
151	C846	9P(C)	,0603
152	C847	8P(C)	,0603
153	C848	NOUSE	,0402
154	C849	NOUSE	,0603
155	C850	NOUSE	,0402
156	C851	12P	,0603
157	C853	10P	,0402
158	C854	3P(B)	,0402
159	C855	43P	,0603
160	C856	10P(C)	,0402
161	C857	10P	,0402
162	C858	101P	,0603
163	C859	24P	,0603
164	C860	4P(B)	,0603
165	C861	471P	,0402
166	C862	NOUSE	,0603
167	C863	471P	,0603
168	C864	NOUSE	,0402
169	C865	NOUSE	,0402
170	C866	471P	,0402
171	C867	471P	,0402
172	C868	12P	,0402
173	C869	471P	,0402
174	C870	5P(B)	,0603
175	C871	10P(C)	,0603
176	C872	NOUSE	,0603
177	C873	5P(B)	,0603



PARTS LIST			
NO.	Designators	Comment	Footprint
178	C874	36P	,0603
179	C876	1P(B)	,0603
180	C877	22P	,0603
181	C880	20P	,0603
182	C882	2P(B)	,0603
183	C886	27P	,0603
184	C887	471P	,0402
185	C888	15P	,0402
186	C890	BA892	,0603
187	C891	101P	,0402
188	C892	8P(C)	,0402
189	C893	7P(B)	,0603
190	C894	6P(B)	,0603
191	C895	2P5(B)	,0603
192	C896	2P5(B)	,0402
193	C897	1P5(B)	,0402
194	C898	3P5(B)	,0402
195	C899	2P(B)	,0603
196	C900	6P(B)	,0603
197	C901	5P(B)	,0603
198	C902	4P(B)	,0603
199	C903	R0	,0402
200	C904	3P(B)	,0603
201	C905	4P(B)	,0603
202	C906	102P	,0603
203	D200	DA221	SOT523-123
204	D201	WHITE-LED	LED0.1
205	D202	1SS372	sc70-123
206	D401	R6GHBHC	R6GHBHC
207	D701	DAP222	SOT523-123
208	D702	LED(WHITE)	0630AK
209	D703	LED(WHITE)	0630AK
210	D704	LED(WHITE)	0630AK
211	D705	LED(WHITE)	0630AK
212	D706	NOUSE	0734AK
213	D707	LED(WHITE)	0630AK
214	D708	LED(WHITE)	0630AK
215	D800	BA592	0734AK
216	D801	BA892	0630AK
217	D802	BA892	0630AK
218	D803	BA892	0630AK
219	D804	BA892	0630AK
220	D805	BA892	0630AK
221	D806	BA592	0734AK
222	D807	BA892	0630AK
223	D808	BA892	0630AK
224	D809	BA892	0630AK
225	D810	471P	0630AK
226	D811	BA892	0630AK
227	D812	BA892	0630AK
228	DS700	WMZS2587W	LCD-3318
229	E200	100uF/10V(C,M)	RBM6.3X5.5
230	E201	10uF/6.3V	RBM1
231	E400	22uF/16V	RBM1
232	E401	22uF/10V	RBM1
233	J200	PJ-208B	SK-2.5(PJ-208B)
234	J201	PJ-328A	PJ-328A
235	J400	QX318UV-sk3.pcb(CON8)	CON_8
236	J401	NOUSE	SIPS4

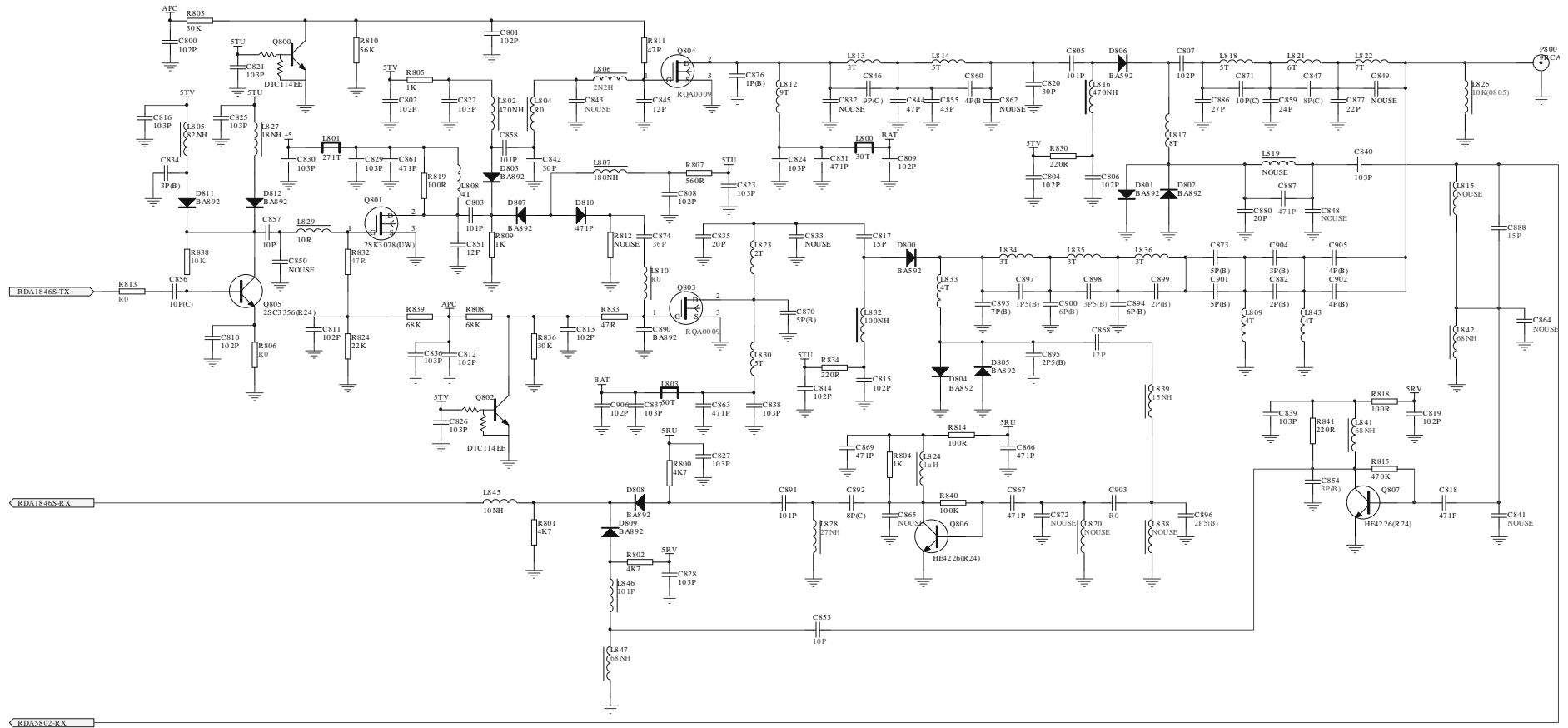
PARTS LIST			
NO.	Designators	Comment	Footprint
237	L100	150NH	,0603
238	L200	271T	,0603
239	L201	271T	,0603
240	L202	271T	,0603
241	L203	271T	,0603
242	L204	271T	,0603
243	L205	271T	,0603
244	L206	271T	,0603
245	L210	6.8uH	,0603
246	L400	6.8uH	,0603
247	L401	30T	,0805
248	L402	271T	,0603
249	L403	271T	,0603
250	L404	NOUSE	,0603
251	L700	271T	,0603
252	L800	30T	,0805
253	L801	271T	,0603
254	L802	470NH	,0603
255	L803	30T	,0805
256	L804	R0	,0603
257	L805	82NH	,0603
258	L806	2N2H	,0603
259	L807	180NH	,0603
260	L808	4T	
261	L809	4T	
262	L810	R0	,0603
263	L812	9T	
264	L813	3T	
265	L814	5T	
266	L815	NOUSE	,0603
267	L816	470NH	,0603
268	L817	8T	
269	L818	5T	
270	L819	NOUSE	,0603
271	L820	NOUSE	,0603
272	L821	6T	
273	L822	7T	
274	L823	2T	
275	L824	1uH	,0603
276	L825	10K(0805)	2025
277	L827	18NH	,0603
278	L828	27NH	,0603
279	L829	10R	,0603
280	L830	5T	
281	L832	100NH	,0603
282	L833	4T	
283	L834	3T	
284	L835	3T	
285	L836	3T	
286	L838	NOUSE	,0603
287	L839	15NH	,0603
288	L841	68NH	,0603
289	L842	68NH	,0603
290	L843	4T	
291	L845	10NH	,0603
292	L846	101P	,0603
293	L847	68NH	,0603
294	LS200	# F32(16R1W)	SPK32D
295	MK200	6035P-37DB	MICSM

PARTS LIST			
NO.	Designators	Comment	Footprint
296	P800	#RCA	ANT-Q9
297	Q200	DTA114EE	EMT3
298	Q201	NOUSE	sot523
299	Q202	DTA114EE	EMT3
300	Q203	DTA114EE	EMT3
301	Q204	DTA123JE	sot523
302	Q205	2SC1623	SOT23
303	Q206	DTC114EE	EMT3
304	Q207	DTC114EE	EMT3
305	Q210	DTA144EE	EMT3
306	Q211	DTA123JE	EMT3
307	Q400	DTA144EE	EMT3
308	Q401	DTC114EE	EMT3
309	Q402	DTC144EE	EMT3
310	Q700	DTC114EE	EMT3
311	Q701	DTC114EE	EMT3
312	Q800	DTC114EE	EMT3
313	Q801	2SK3078(UW)	SOT89-132
314	Q802	DTC114EE	EMT3
315	Q803	RQA0009	SOT89-132
316	Q804	RQA0009	SOT89-132
317	Q805	2SC3356(R24)	SOT23
318	Q806	HE4226(R24)	SC70
319	Q807	HE4226(R24)	SC70
320	R100	4K7	,0402
321	R101	4K7	,0402
322	R200	10K	,0402
323	R201	1K	,0402
324	R202	100R	,0603
325	R203	10K	,0402
326	R204	8K2	,0402
327	R205	NOUSE	,0402
328	R206	R0	,0402
329	R207	22R	,0402
330	R208	10K	,0402
331	R209	10K	,0402
332	R210	1K	,0402
333	R211	22K	,0402
334	R212	3K9	,0402
335	R213	NOUSE	,0402
336	R215	10K	,0402
337	R217	470K	,0402
338	R218	10K	,0402
339	R219	100R	,0805
340	R220	100R	,0402
341	R221	1K	,0402
342	R226	1K	,0402
343	R229	10K	,0402
344	R230	470R	,0402
345	R232	3K9	,0402
346	R233	1K	,0402
347	R236	R0	,0402
348	R237	82K	,0402
349	R238	100K	,0402
350	R242	100K	,0402
351	R400	100K	,0402
352	R401	4K7	,0402
353	R402	100R	,0402
354	R404	220R	,0402

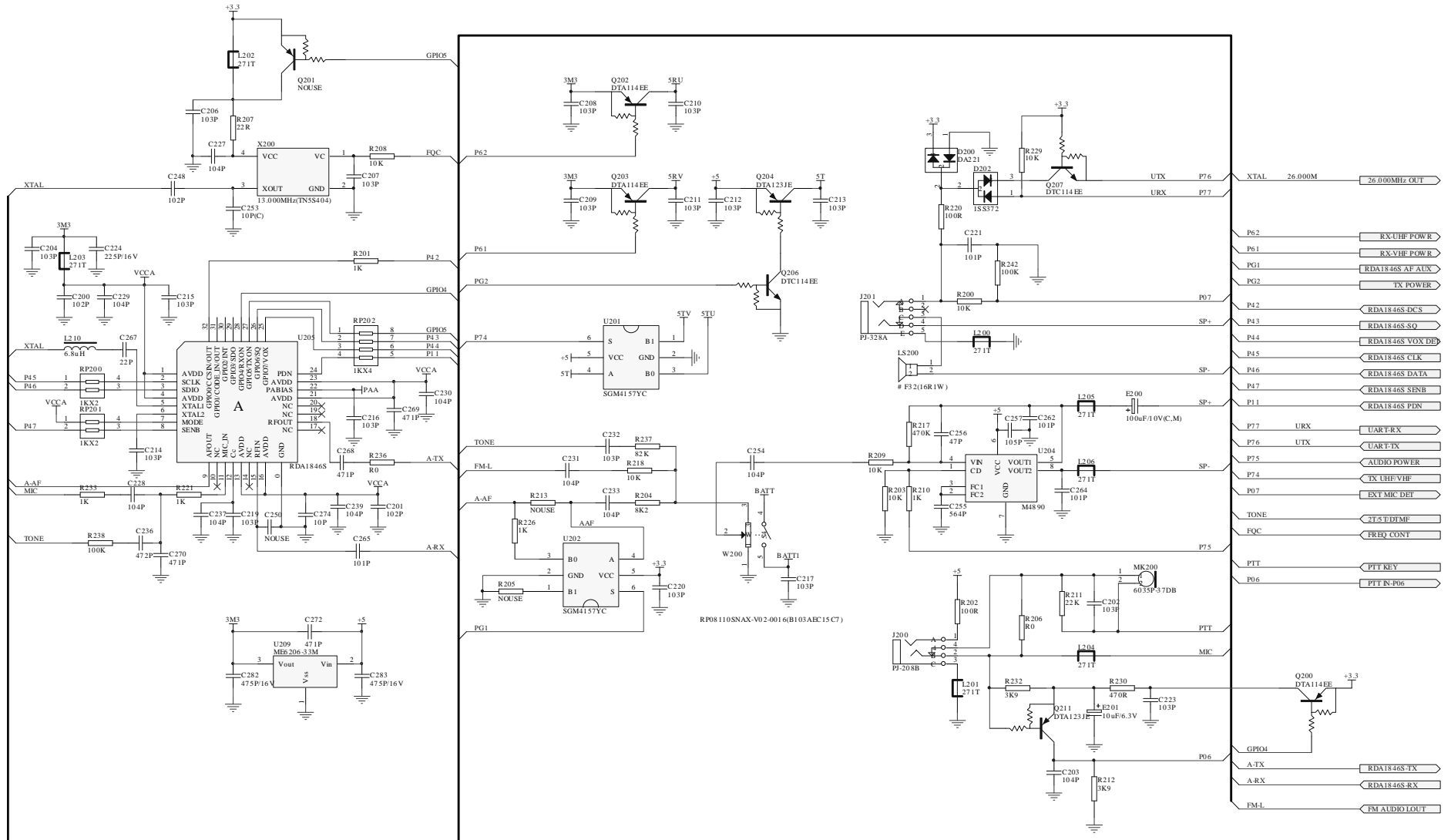
PARTS LIST			
NO.	Designators	Comment	Footprint
355	R405	220R	,0402
356	R406	4K7	,0402
357	R407	4K7	,0402
358	R408	100K	,0402
359	R409	10K	,0402
360	R411	4K7	,0402
361	R412	100R	,0402
362	R415	10K	,0402
363	R416	10K	,0402
364	R418	R36	1060
365	R419	R36	1060
366	R420	NOUSE	1060
367	R421	150K-1%	,0402
368	R422	150K-1%	,0402
369	R423	150K-1%	,0402
370	R424	150K-1%	,0402
371	R425	150K-1%	,0402
372	R426	150K-1%	,0402
373	R427	150k-1%	,0402
374	R428	51k-1%	,0402
375	R429	10K	,0402
376	R430	1M	,0402
377	R431	2K2	,0402
378	R432	NOUSE	,0402
379	R433	47K	,0402
380	R434	NOUSE	,0402
381	R435	220K	,0402
382	R700	390R	,0402
383	R701	150R	,0402
384	R702	1K	,0402
385	R703	1K	,0402
386	R704	100K	,0402
387	R705	4.7K	,0402
388	R706	4.7K	,0402
389	R707	4.7K	,0402
390	R708	4.7K	,0402
391	R709	4.7K	,0402
392	R712	470R	,0402
393	R713	470R	,0402
394	R714	4.7K	,0402
395	R715	470R	,0402
396	R800	4K7	,0402
397	R801	4K7	,0402
398	R802	4K7	,0402
399	R803	30K	,0402
400	R804	1K	,0402
401	R805	1K	,0603
402	R806	R0	,0402
403	R807	560R	,0402
404	R808	68K	,0402
405	R809	1K	,0402
406	R810	56K	,0402
407	R811	47R	,0603
408	R812	NOUSE	,0402
409	R813	R0	,0402
410	R814	100R	,0402
411	R815	470K	,0402
412	R818	100R	,0402
413	R819	100R	,0603

PARTS LIST			
NO.	Designators	Comment	Footprint
414	R824	22K	,0402
415	R830	220R	,0603
416	R832	47R	,0402
417	R833	47R	,0603
418	R834	220R	,0603
419	R836	30K	,0402
420	R838	10K	,0402
421	R839	68K	,0402
422	R840	100K	,0402
423	R841	220R	,0402
424	RP200	1KX2	SRP4
425	RP201	1KX2	SRP4
426	RP202	1KX4	SRP8(1608)
427	RP400	1K	SRP8(1608)
428	RP700	1K	SRP8(1608)
429	RP702	1K	SRP8(1608)
430	RP703	10K	SRP8(1608)
431	RT400	100K-NTC	,0603
432	S700	1	KEY5
433	S701	2	KEY5
434	S702	3	KEY5
435	S703	MENU/A	KEY5
436	S704	4	KEY5
437	S705	7	KEY5
438	S706	5	KEY5
439	S707	8	KEY5
440	S708	6	KEY5
441	S709	9	KEY5
442	S710	ENTER/B	KEY5
443	S711	VFO/C	KEY5
444	S712	*	KEY5
445	S713	0	KEY5
446	S714	#	KEY5
447	S715	MR/D	KEY5
448	U100	RDA5802	QFN24-4*4
449	U201	SGM4157YC	SOT363
450	U202	SGM4157YC	SOT363
451	U204	M4890	MSOP-8
452	U205	RDA1846S	QFN32-5*5
453	U209	ME6206-33M	SOT23-123
454	U400	ME6206-33M	SOT23-123
455	U401	MB95F698KPMC-G-SNE2	LQFP7X7-48
456	U402	LM2904V	SSOP8
457	U403	AT24C128RM(8)	SOP8
458	U404	ME6118A50B3G	SOT223-123
459	U700	HD44780A00	MSK80Y
460	W200	RP08110SNAX-V02-0016(B103A)	VRHKM
461	X200	13.000MHz(TN5S404)	XTAL3.2*2.5
462	Y100	32.768KHz	XTALMM

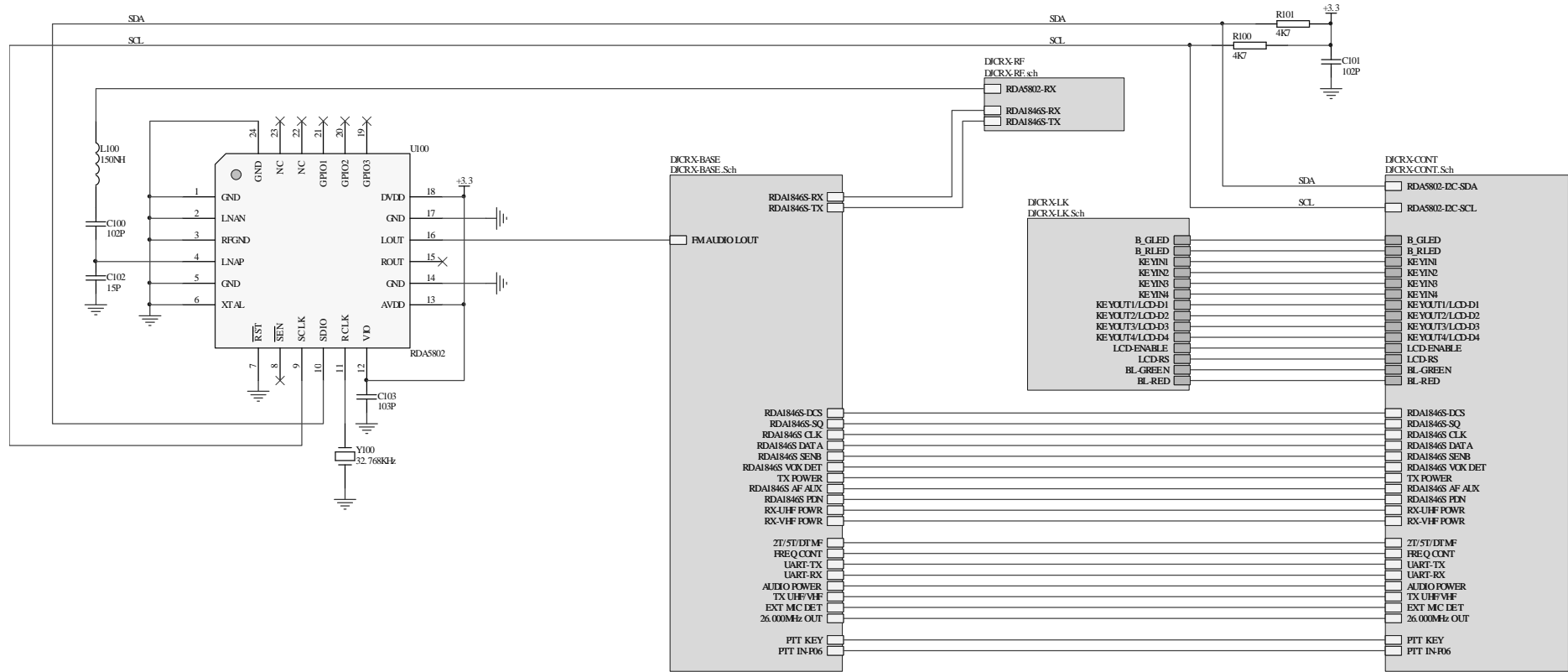
## SCHEMATIC DIAGRAM



## SCHEMATIC DIAGRAM

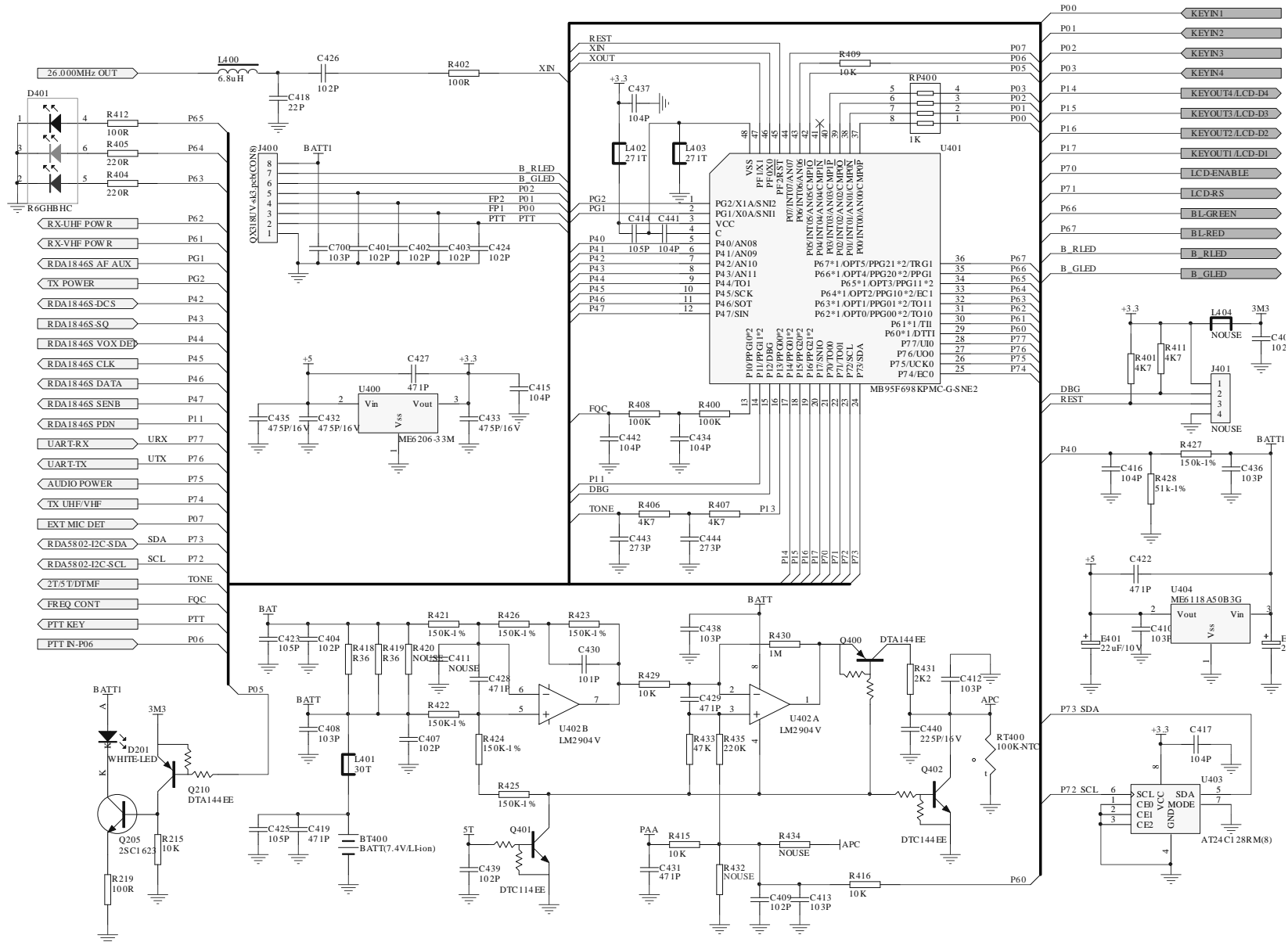


## SCHEMATIC DIAGRAM

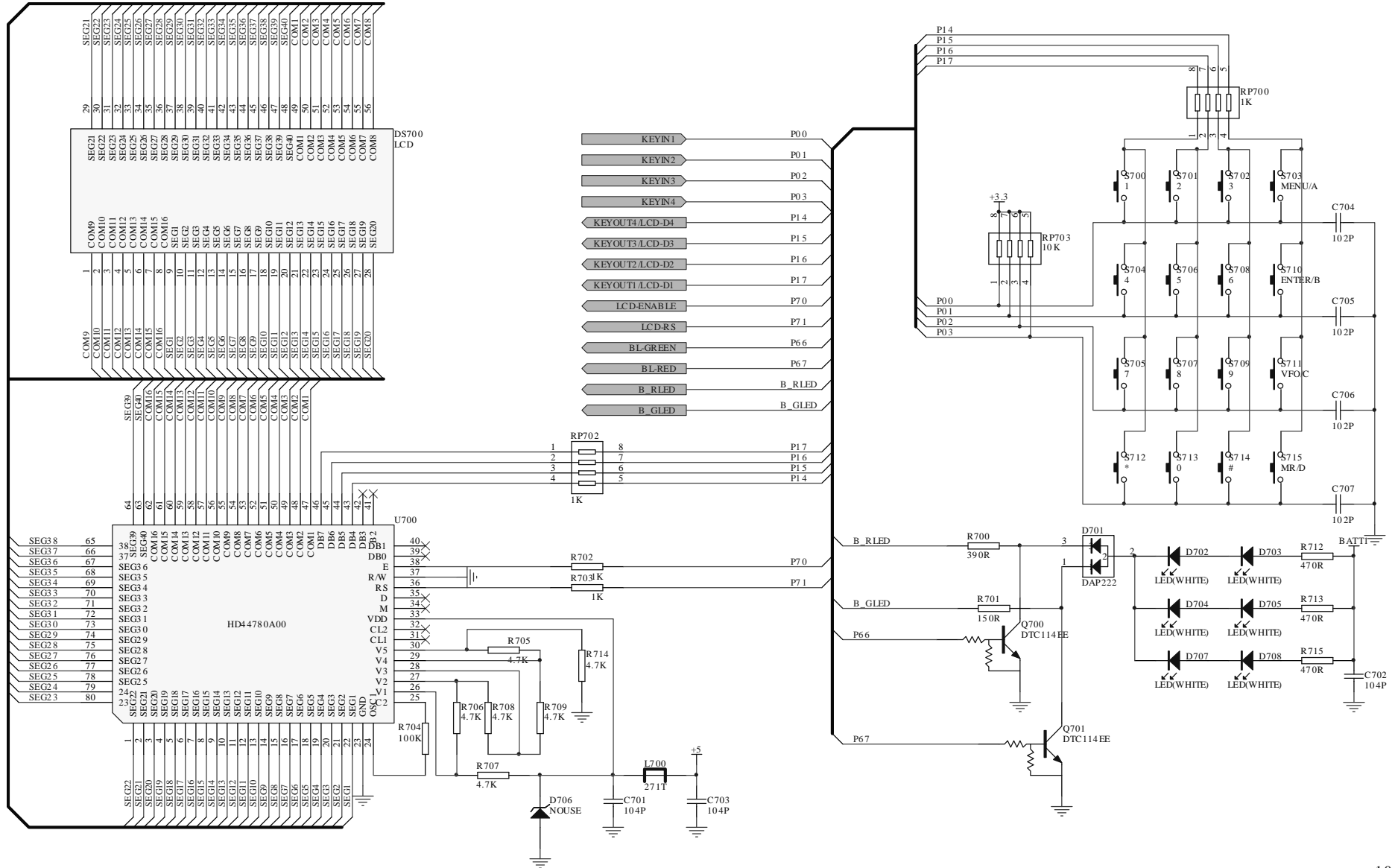




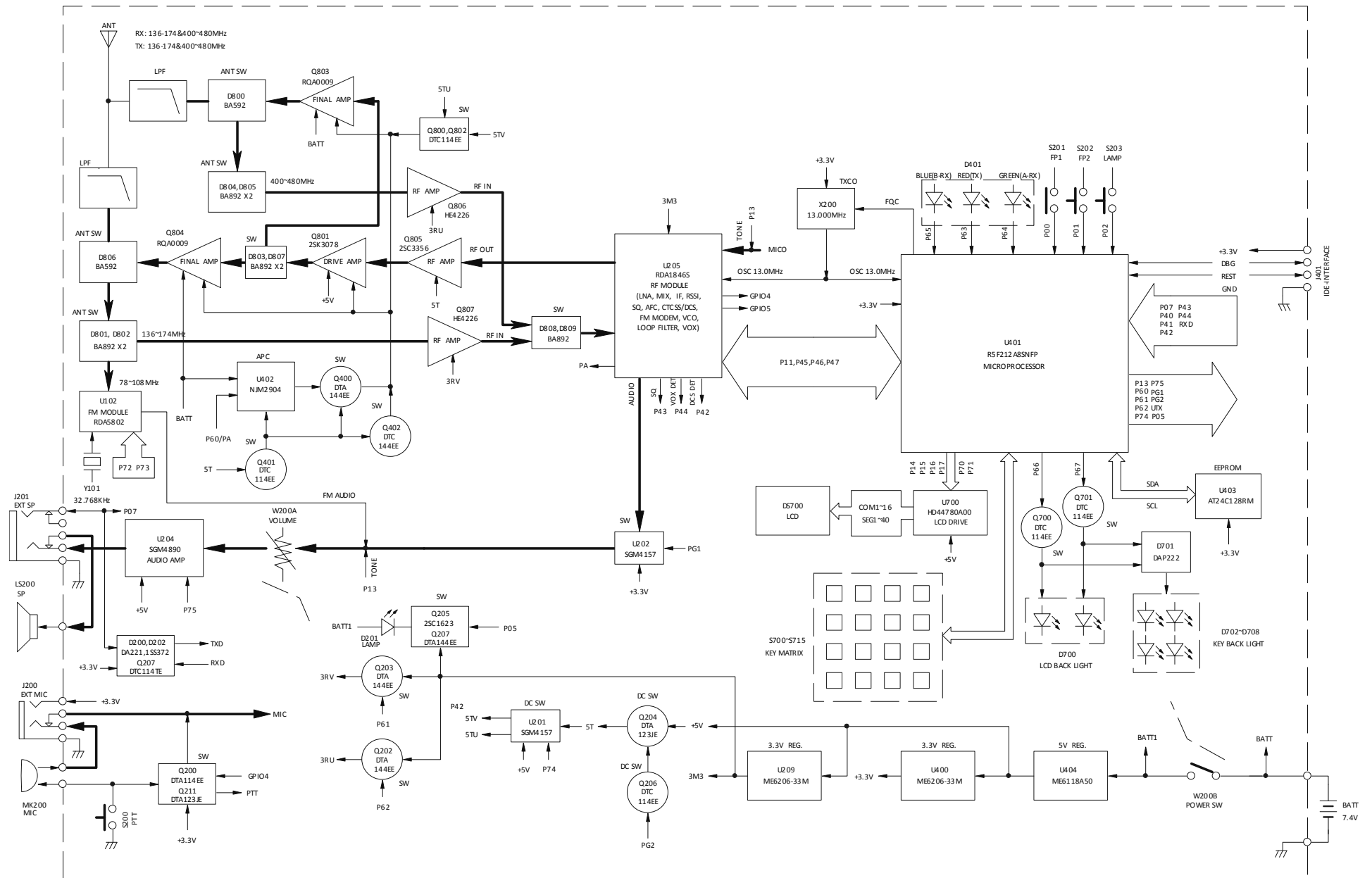
## SCHEMATIC DIAGRAM



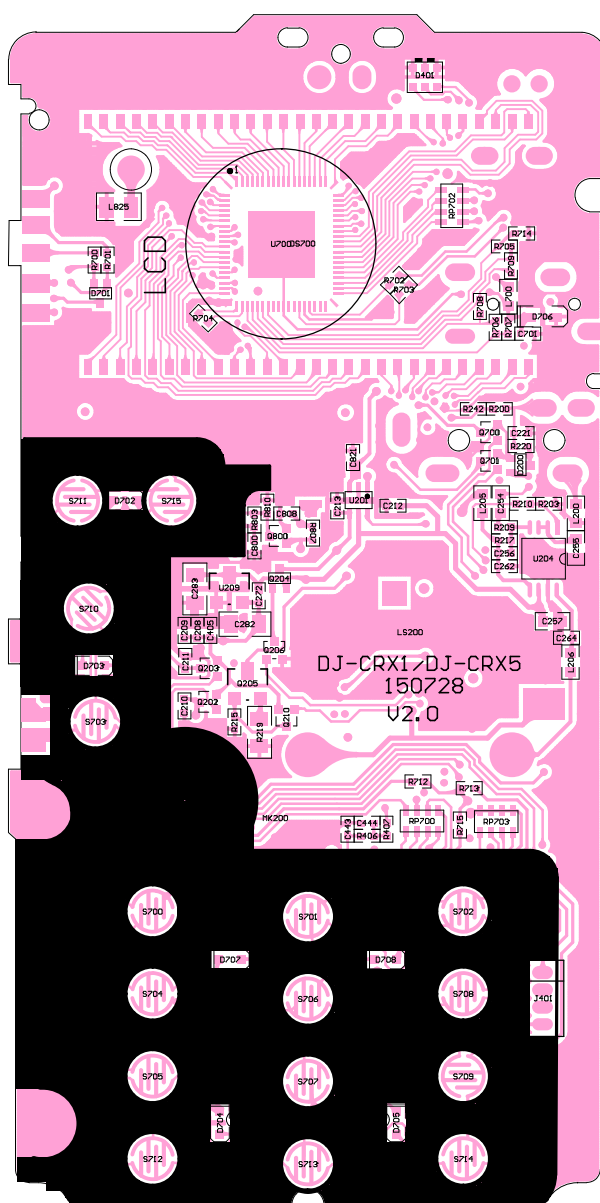
## SCHEMATIC DIAGRAM



## BLOCK DIAGRAM



## PC board views



## PC board views

