Midland

70-066 & 70-076

Service

Manual

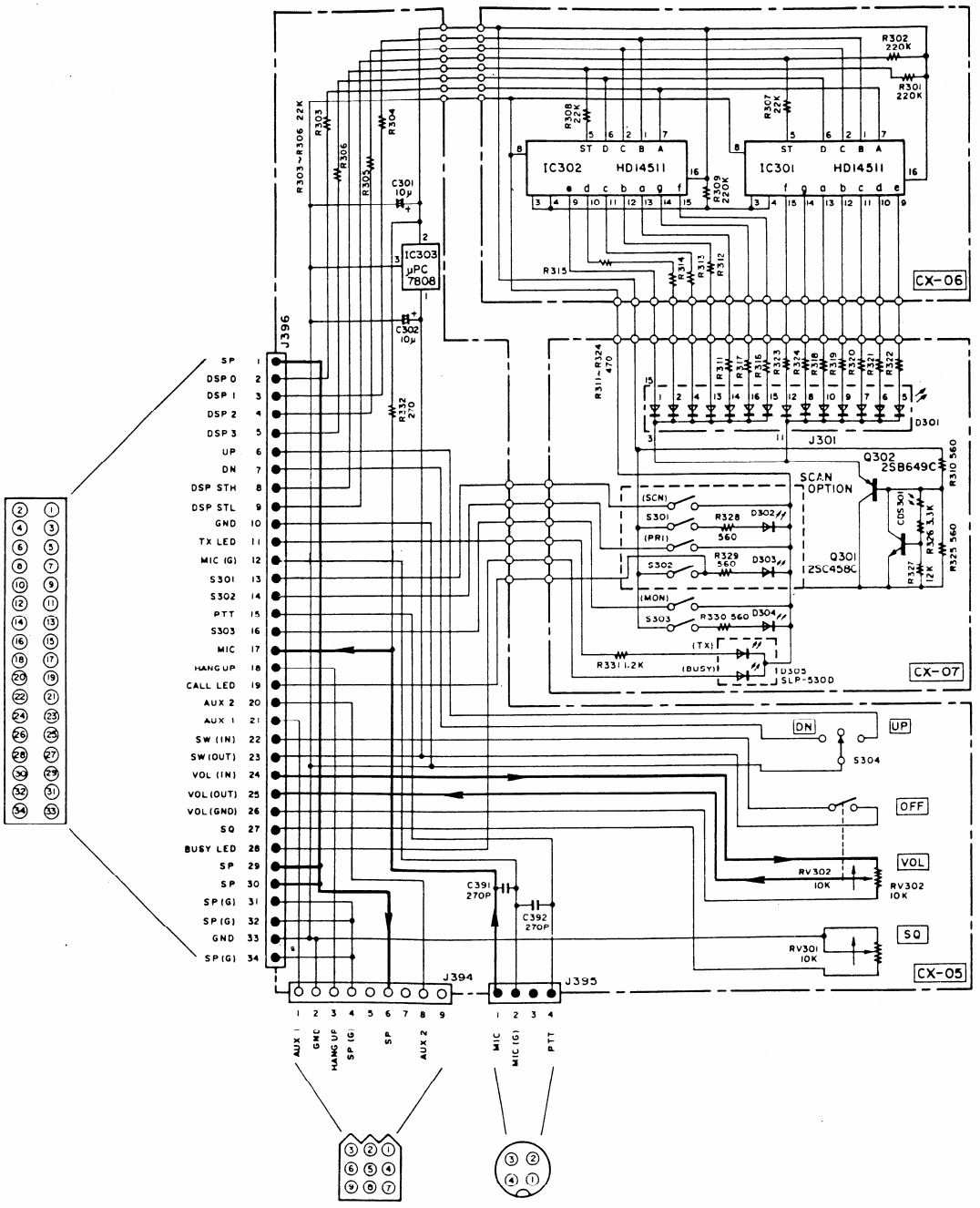
Low Band

Midland 70-066 70-076 Service Manual

Part 2

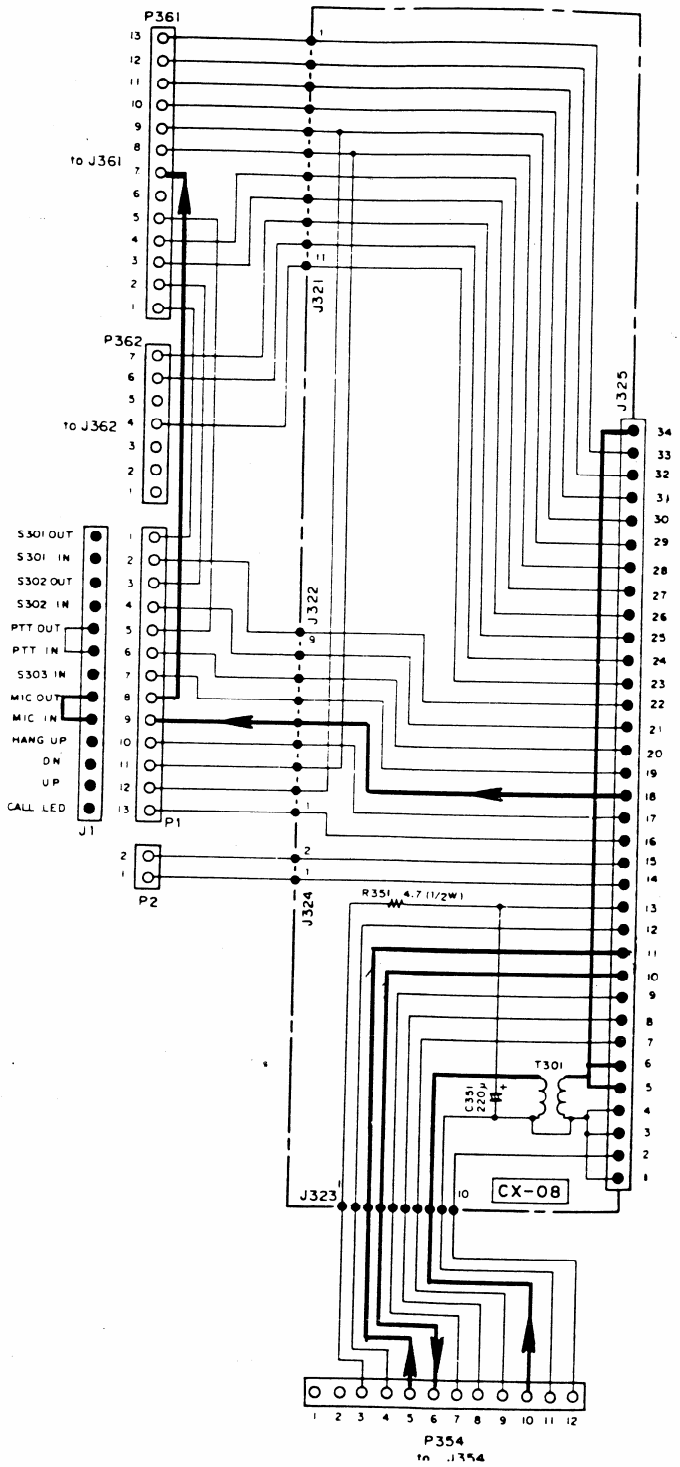
CONTROL HEAD SCHEMATIC DIAGRAM

70-076A/

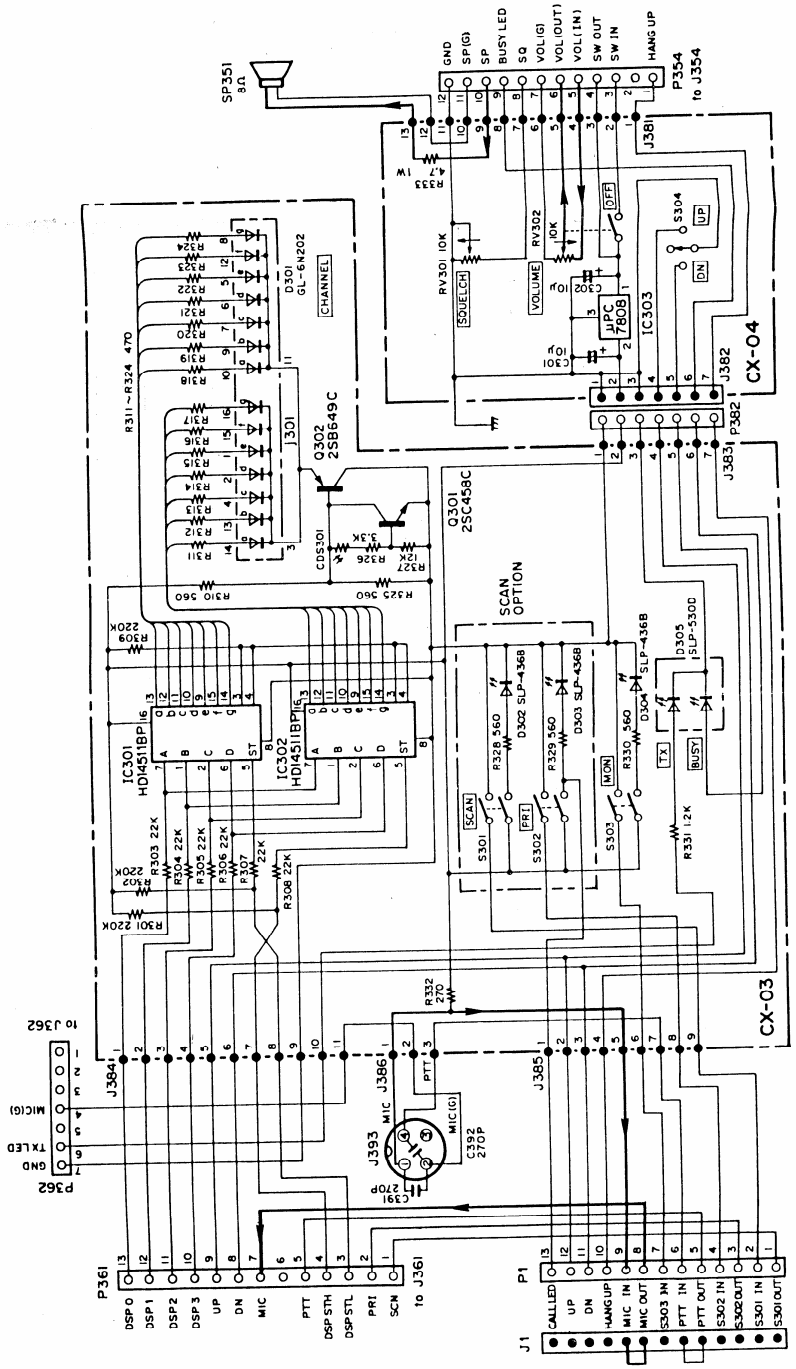


CONTROL INTERFACE SCHEMATIC DIAGRAM

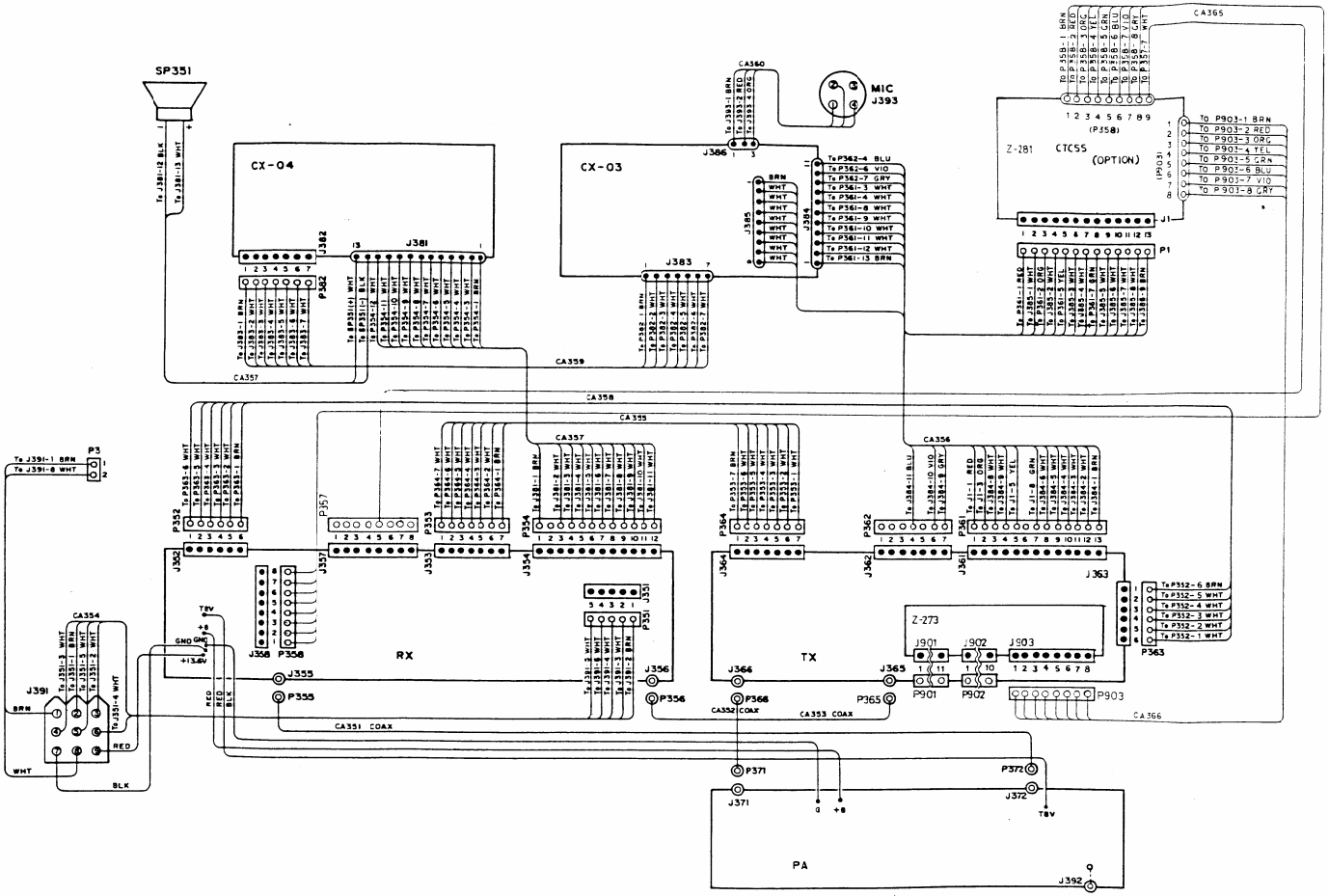
70-076



CONTROL PANEL SCHEMATIC DIAGRAM



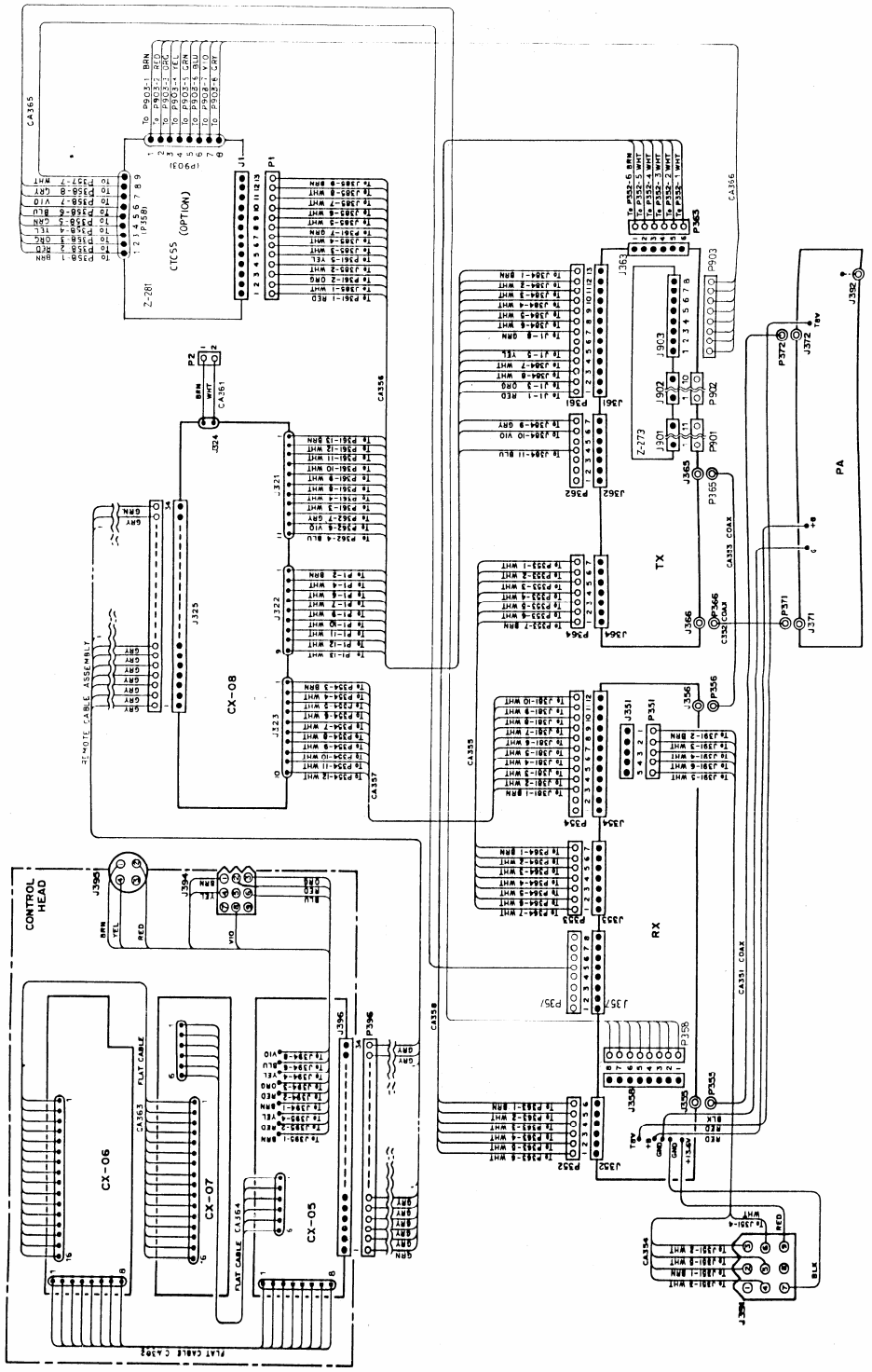
PC BOARD INTER-CONNECT DIAGRAM



Fold Out

70-076A/B

PC BOARD INTER-CONNECT DIAGRAM



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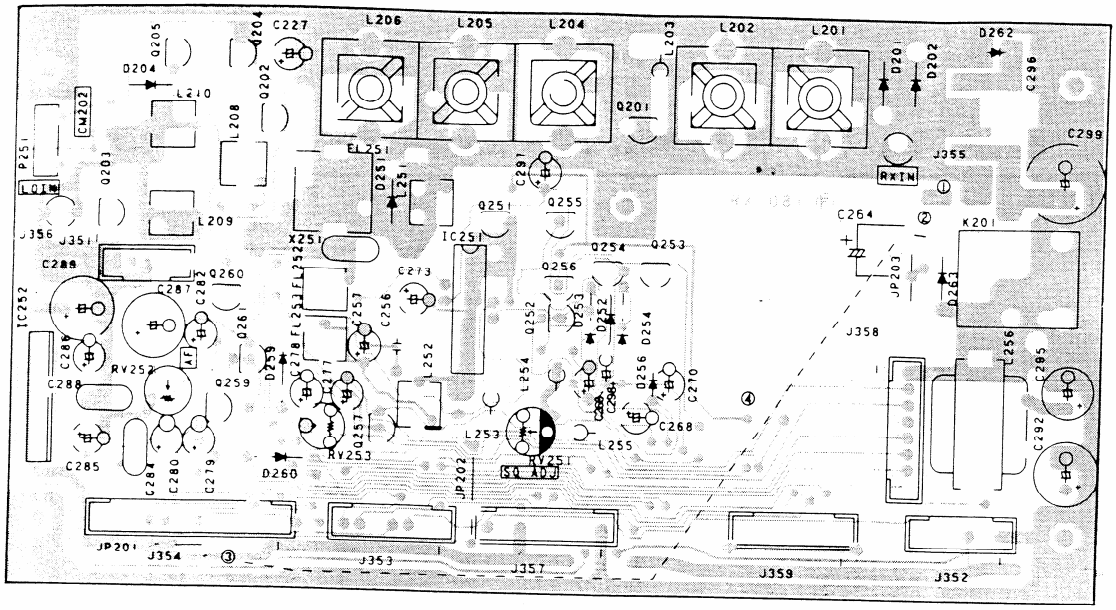
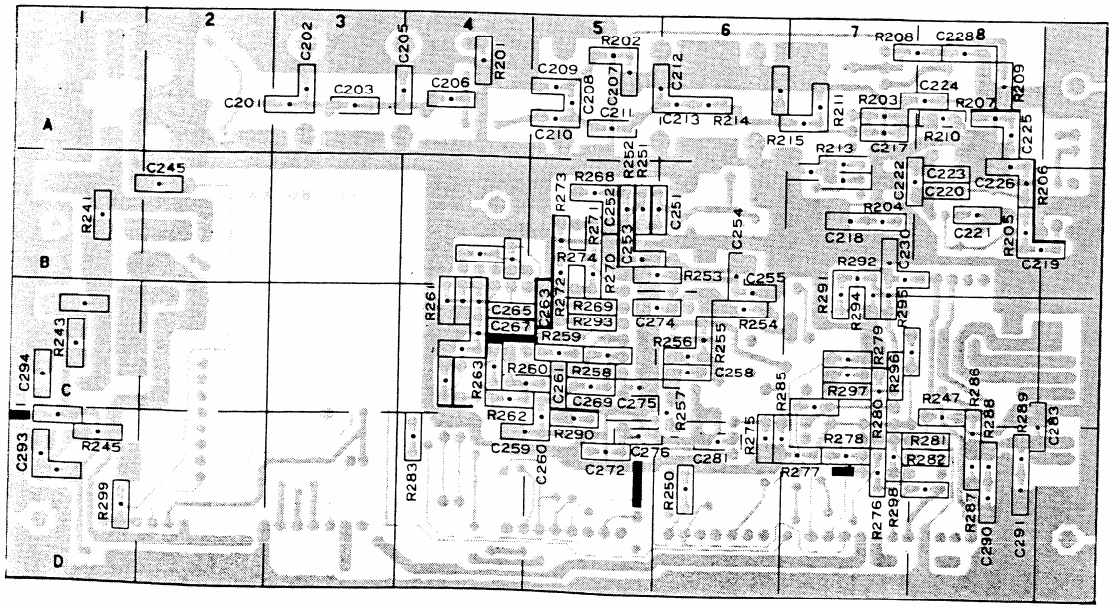
RECEIVER PC BOARD (TOP VIEW)

70-066/076



RECEIVER PC BOARD (BOTTOM VIEW)

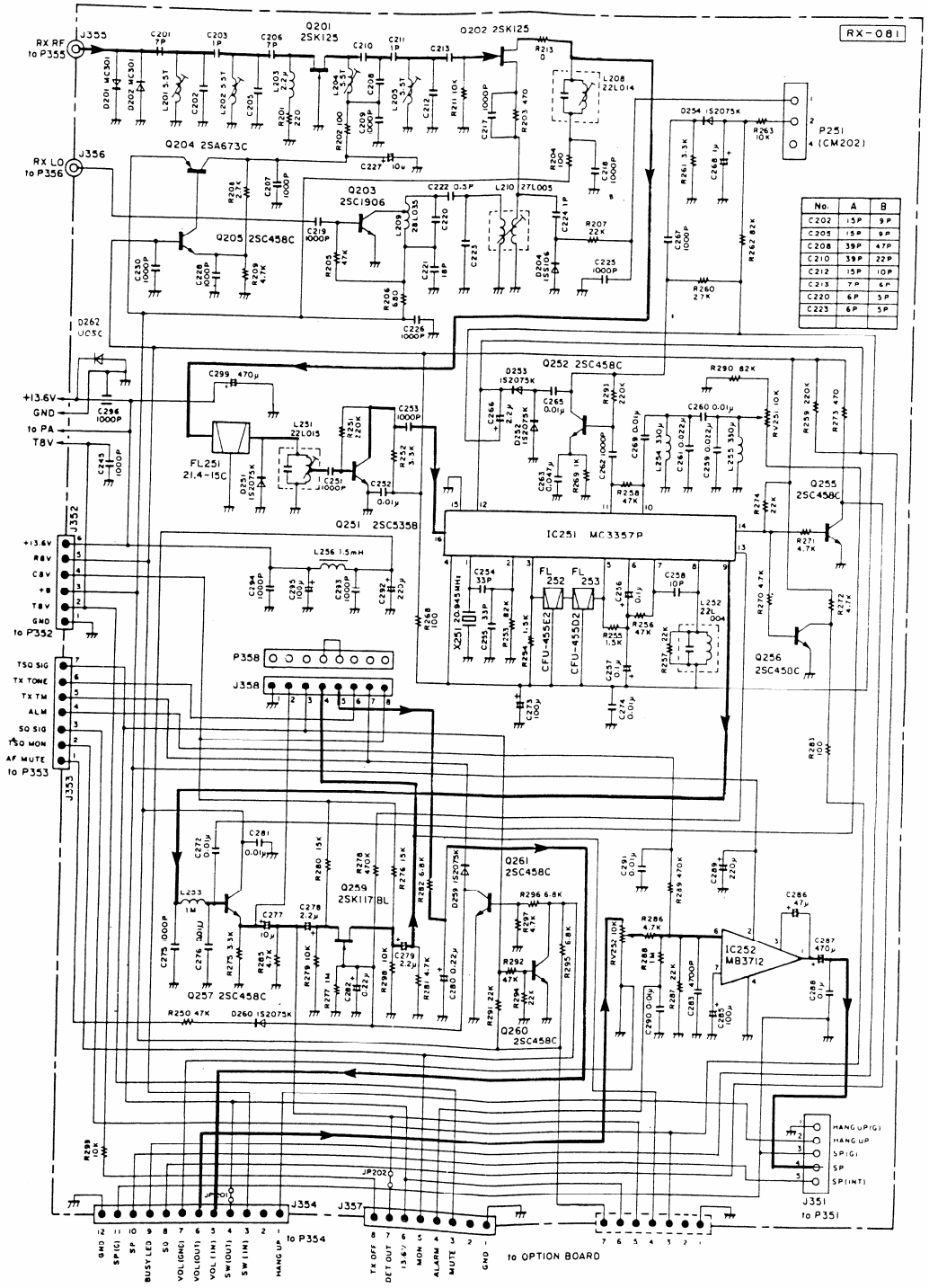
70-066/076



Fold Out

RECEIVER BOARD SCHEMATIC DIAGRAM

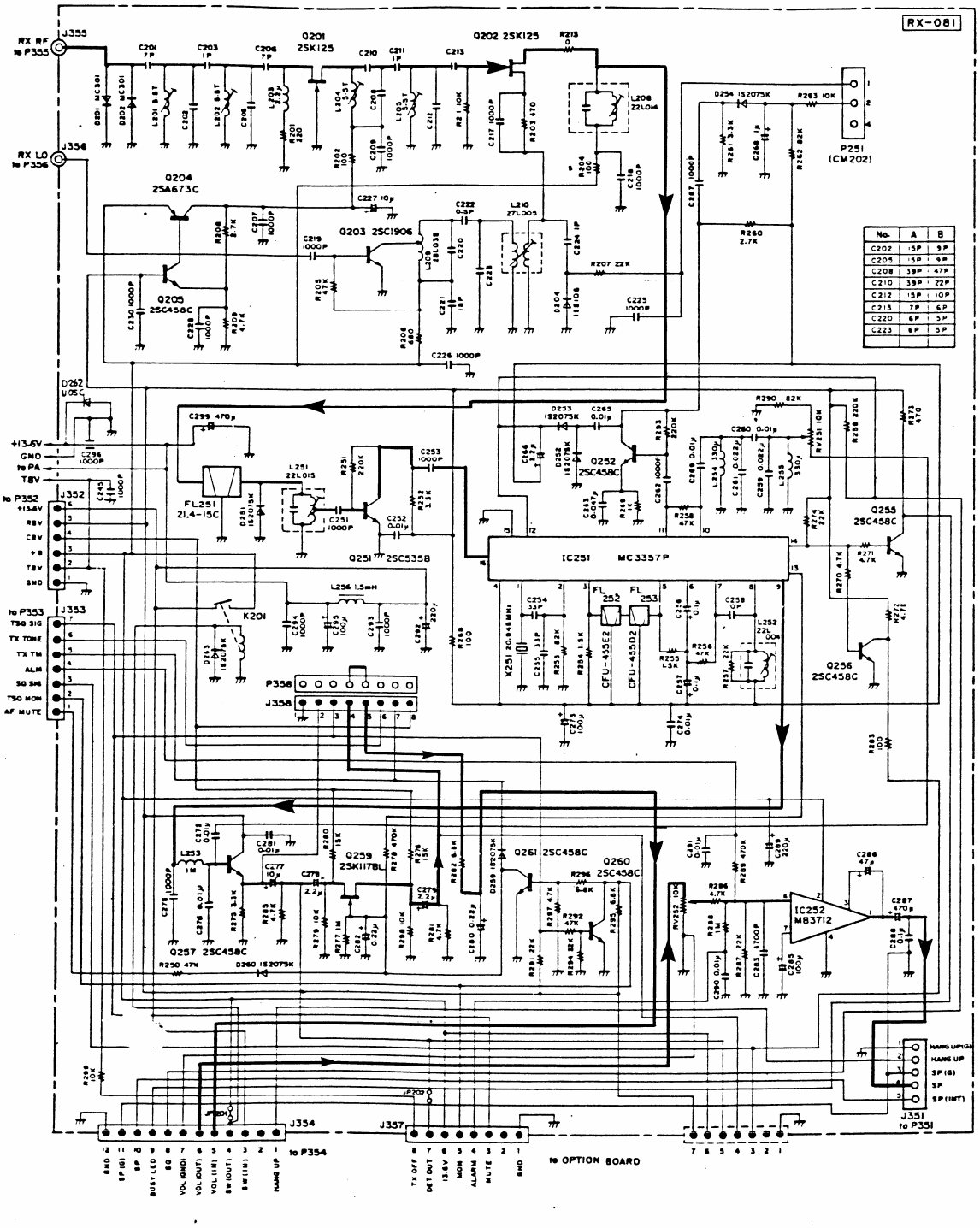
70-066A/B



No.	A	B
C202	15P	9P
C205	15P	9P
C208	39P	47P
C210	39P	22P
C212	15P	10P
C213	7P	6P
C220	6P	5P
C223	6P	5P

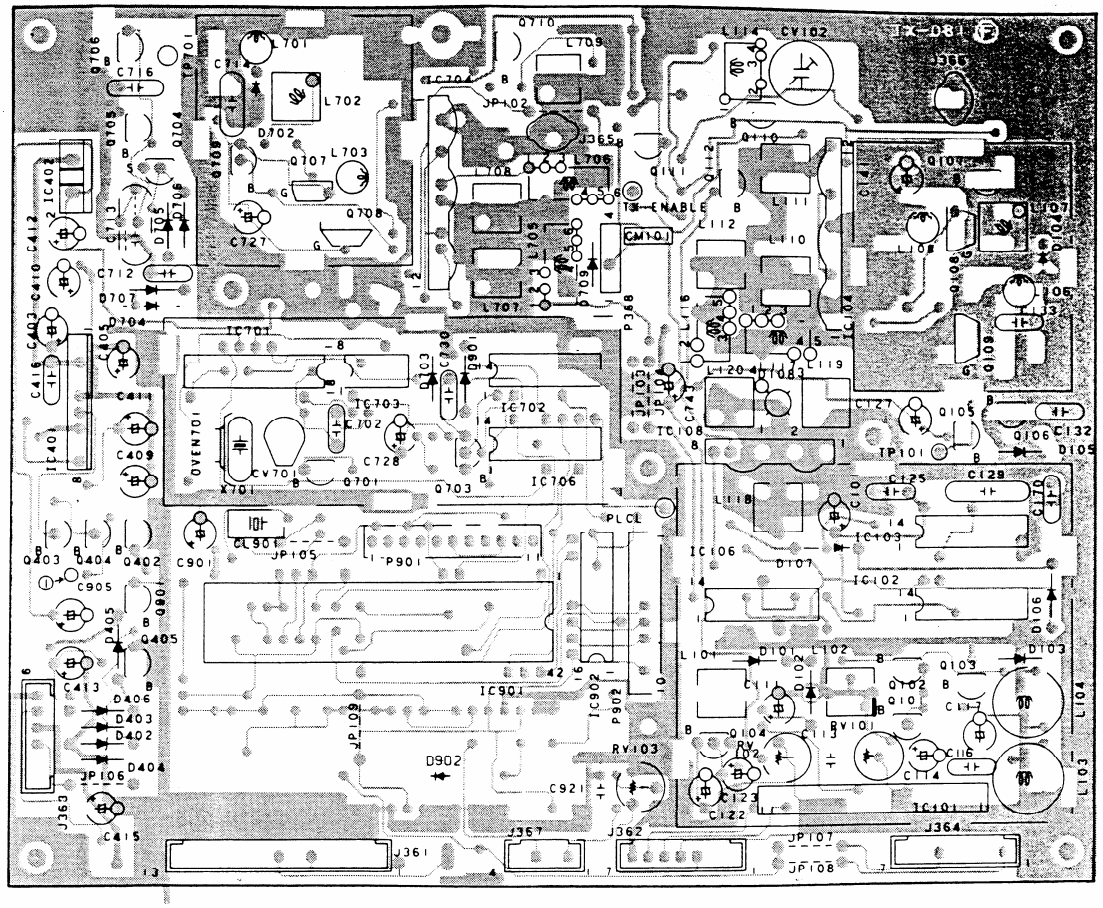
RECEIVER BOARD SCHEMATIC DIAGRAM

70-076A/B



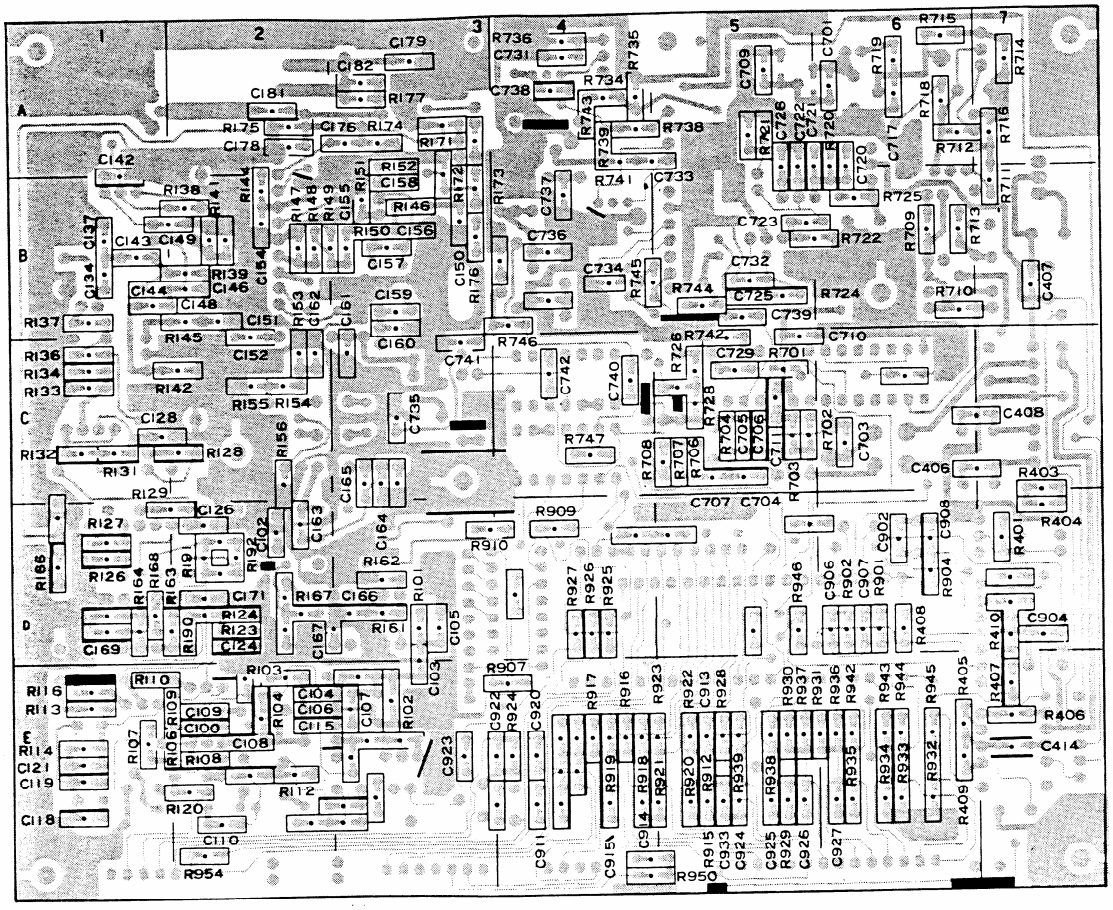
TRANSMITTER PC BOARD (TOP VIEW)

70-066/076



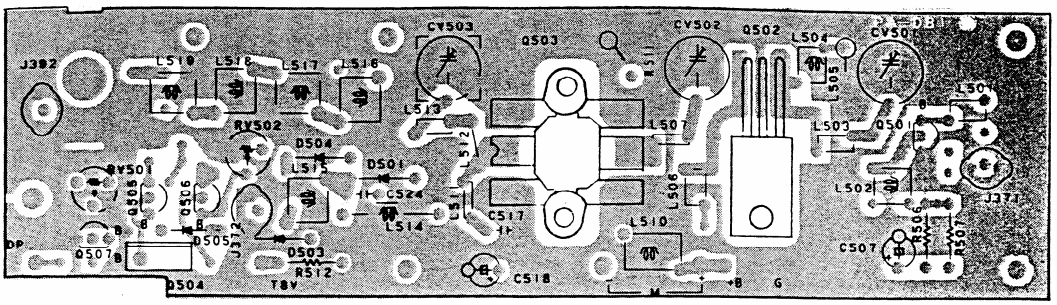
TRANSMITTER PC BOARD (BOTTOM VIEW)

70-066/076



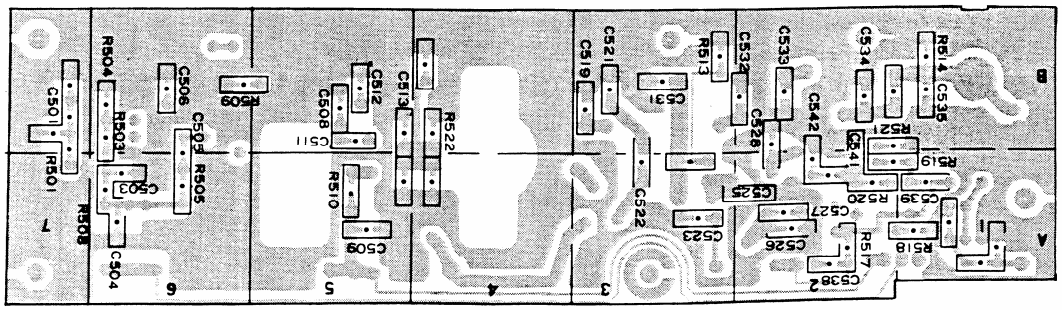
PA PC BOARD (TOP VIEW)

70-066/076

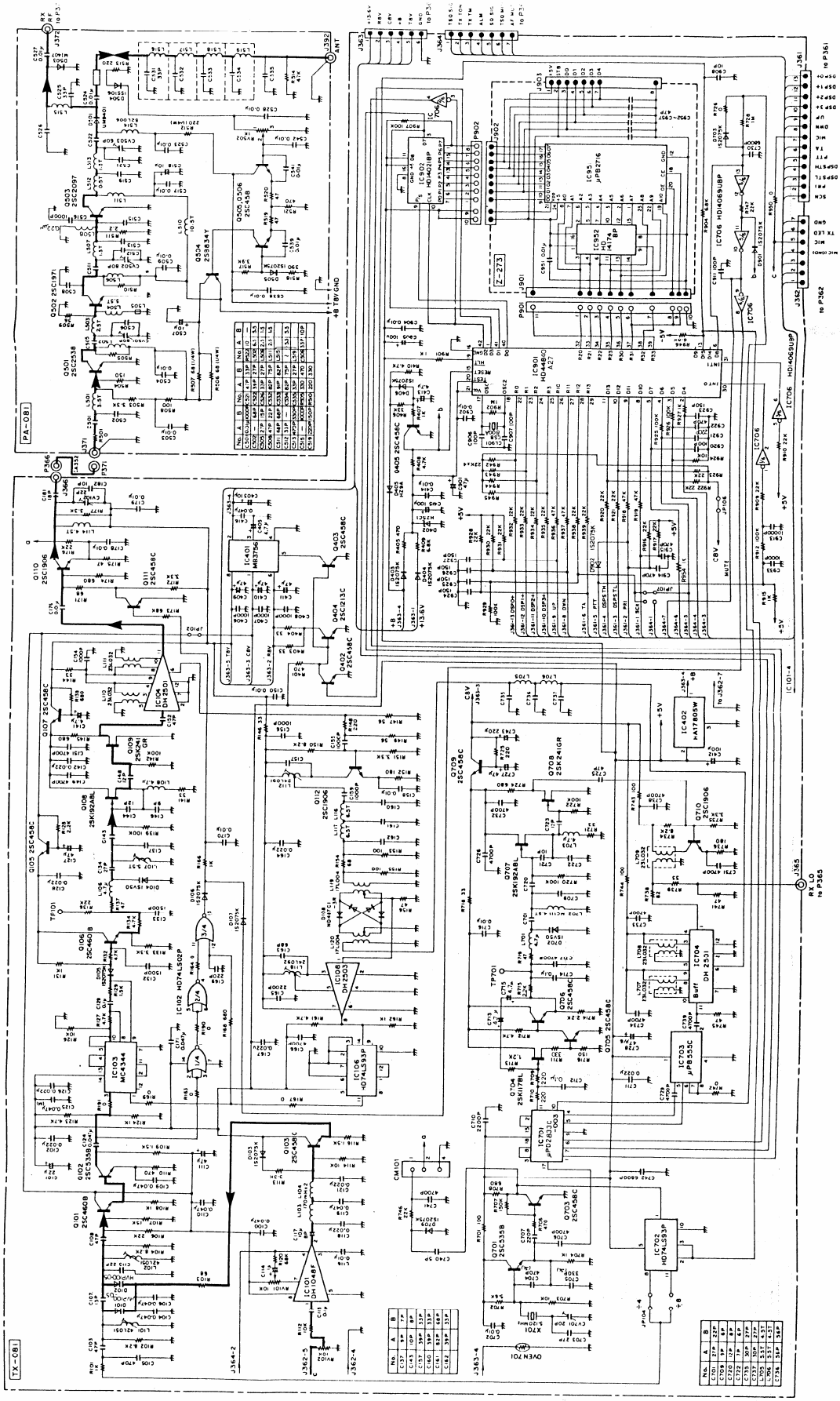


PA PC BOARD (BOTTOM VIEW)

70-066/076



TRANSMITTER SCHEMATIC DIAGRAM



TRANSISTORS

REF. NO.	DESCRIPTION	MODE	BASE	COLLECTOR	EMITTER	FUNCTION
Q101	2SC460B	TX	3.2	8.0	2.5	Buffer
Q102	2SC535B	TX	2.5	2.97	1.8	Buffer
Q103	2SC458C	TX	3.2	5.0	2.5	AF Buffer
Q105	2SC458C	TX	7.9	8.0	7.3	Power Line Filter
Q106	2SC460B	TX	2.3--7.0	7.3	1.6--6.3	Buffer
Q107	2SC458C	TX	7.9	8.0	7.3	Power Line Filter
Q110	2SC1906	TX	1.2	8.0	0.5	Pre Driver
Q111	2SC458C	TX	.143	1.35	0	Pre Driver Control
Q112	2SC1906	TX	1.9	7.6	1.2	Buffer
Q203	2SC1906	RX	0.6	6.0	0	1st Local Amplifier
Q204	2SA673C	RX	13.0	11.5	13.6	Power Regulator
Q205	2SC458C	RX	8.0	13.0	7.4	Power Control
Q251	2SC535B	RX	0.7	3.8	0	1st IF Amplifier
Q252	2SC458C SQ ON 2SC458C SQ OFF	RX RX	.9 .9	4.6 4.2	1.1 1.2	Noise Amplifier
Q255	2SC458C	RX	0	2.0	0	Sq. Switch
Q256	2SC458C	RX	0	7.4	0	Sq. Switch
Q257	2SC458C	RX	3.9	8.0	3.2	AF Pre Amplifier
Q260	2SC458C	RX	0.6	0.06	0	Sq. Switch
Q261	2SC458C SQ ON 2SC458C SQ OFF	RX RX	0.02 0	0 3.9	0 0	Sq. Switch
Q301	2SC458C 2SC458C	TX RX	.1 .1	4.0 4.0	0 0	Dimmer Control
Q302	2SB649C 2SB649C	TX RX	4.0 4.0	0 0	4.6 4.6	Dimmer Control
Q402	2SC458C	TX RX	.112 0.7	0.7 0	0 0	Power Control
Q403	2SC458C	TX RX	0.7 0	0 2.0	0 0	Power Switch
Q404	2SC1213C	TX RX	0.7 0	0 8	0 0	Power Control
Q405	2SC458C	TX RX	0.6 0.6	0 0	0 0	Reset (MCPU)
Q501	2SC2438	TX	0.1	3--8	0	Pre Driver
Q502	2SC2539	TX	---	13.6	0	Driver
Q503	2SC2630	TX	---	13.6	0	RF Power Amp.
Q504	2SB834Y	TX	12.9	3--8	13.6	APC
Q505	2SC458C	TX	1.6	12.9	1.1	APC Amp.
Q506	2SC458C	TX	1.6--1.9	8.0	1.2	APC Amp.

Fold Out →

Q701	2SC535B	TX RX	2.9 2.9	4.5 4.5	2.4 2.4	OSC (RX SYN)
Q703	2SC1971	TX RX	0.7 0.7	2.8 2.8	0 0	Buffer
Q705	2SC2097	TX RX	0.6 0.6	2.6 2.6	0 0	Loop Filter (RX Syn.)
Q706	2SC458C	TX RX	2.6 2.6	7.3 7.3	2.0 2.0	Loop Filter (RX Syn.)
Q709	2SC458C	TX RX	8.2 8.2	8.2 8.2	7.4 7.4	Power Line Filter
Q710	2SC1906	TX RX	1.9 1.9	7.3 7.3	1.4 1.4	Buffer

F.E.T'S

REF. NO.	DESCRIPTION	MODE	GATE	DRAIN	SOURCE	FUNCTION
Q108	2SK192A BL	TX	0	7.3	0.3	VCO (TX PLL)
Q109	2SK241GR	TX	0	2.9	0	Buffer

Q201	2SK125	RX	0	10.5	2.5	Front End Amp.
Q202	2SK125	RX	0	12.6	2.5	1st Mixer
Q259	2SK117BL SQ.OPN. 2SK117BL SQ.CLS.	RX RX	3.05 0	3.2 3.2	3.3 3.3	AF Switch

Q704	2SK117BL	TX RX	3.3 3.3	7.3 7.3	3.5 3.5	Loop Filter (RX Syn)
Q707	2SK192ABL	TX RX	0 0	7.4 7.4	0.8 0.8	VCO (RX Syn)
Q708	2SK241GR	TX RX	0 0	1.7 1.7	0.6 0.6	Buffer

DIGITAL IC

REF. NO.	DESCRIPTION	PIN NO.	+ V VOLTAGE	GND PIN NO.	FUNCTION:
IC 102	HD74LS02P	14	5	7	Nor Gates
IC 103	MC4344	14	5	7	Phase Detector
IC 106	HD74LS93P	5	5	10	4 Bit Binary Counter
IC 301	HD14511BP	16	8	8	Led Driver
IC 302	HD14511BP	16	8	8	Led Driver
IC 701	uPD3805C	18	5	9	PLL
IC 702	HD74LS93P	5	5	10	4 Bit Binary Counter
IC 703	uPB555C	1	5	4	Pre Scaler (Rx Syn)
IC 706	HD1406uPB	14	5	7	Buffer
IC 901	HD44840A27	20/21	5	16	CPU
IC 902	HD14021BP	16	5	8	Date Shifter (Rx Syn)
IC 951	uPD2716	24	5	12	Read Only Memory
IC 952	HD14174BP	16	5	8	Data Buffer

VOLTAGE CHARTS

ANALOG IC

REF.NO.	DESCRIPTION	MODE	PIN No.1	PIN No.2	PIN No.3	PIN No.4	PIN No.5	PIN No.6	PIN No.7	PIN No.8	PIN No.9	PIN No.10	PIN No.11	PIN No.12	PIN 13	PIN 14	PIN 15	PIN 16	FUNCTION
IC 101	DH 1048	TX	--	3.8	4.5	3.8	0	--	4.5	8	--	--	4.5	--					IDC
IC 104	DH 2501	TX	0	0	0	7.5	7.5	0	0	0	7.5	7.5	0	0					BUFFER
IC 108	DH 2503	TX	0	0	7.5	0	7.5	0	7.5	1.4	--	--	--	--					BUFFER
IC 251	MC3357P	SQUELCH CLSD. RX	7.1	7.1	7.9	7.6	1.0	1.0	1.0	7.7	4.2	1.9	1.9	1.4	0	1.4	0	2.0	
		OPEN RX	7.1	7.1	7.9	7.6	1.0	1.0	1.0	7.7	4.2	1.9	1.9	0.2	7.0	0	0	2.0	2nd IF AMP
IC 252	MB 3712	RX	7.0	13.8	13.0	0	--	--	0.6	--	--	--	--	--					AF PWR AMP
IC 303	uPC7808H	TX	13.8	8.0	0	--	--	--	--	--	--	--	--	--					
		RX	13.8	8.0	0	--	--	--	--	--	--	--	--	--					POWER REGULATOR
IC 401	MB 3756	TX	8.0	13.6	8.0	0	0	0	0	8	--	--	--	--					
		RX	8.0	13.6	8.0	0	1.7	8	0	0	--	--	--	--					POWER REGULATOR
IC 402	uPC7805H		13.8	5.0	0														POWER REGULATOR
IC 704	DH2501	RX	0	0	6.8	6.8	0	0	0	6.8	6.8	0	0	0					BUFFER

MICROCOMPUTER (IC 901) PIN OUT DESCRIPTION

PIN NO.	PIN NAME	INPUT OUTPUT	SIGNAL NAME	FUNCTION
1	D3	OUT	DSTB+	Strobe for serial data to synthesizer
2	D4	OUT	TXTM-	Signalling option control (TX: LOW, RX: HIGH)
3	D5	OUT	ALM-	Alert (2KHz Tone)
4	D6	IN	SQSIC+	Squelch Signal (Busy; High)
5	D7	IN	TSQMON-	Tone/Monitor detect (low)
		OUT	TSQMON-	Scan hold status (NSQ Hold; Low)
6	D8	IN	PLCL-	Synthesizer Unlock: LOW (input)
		OUT	PLCL-	Audiomute & TX Inhibit: LOW (output)
7	D9	OUT	VCOCNT	VCO Band Switch High Frequency Range:LOW
8	D10	IN	SCN-	Scan Switch (on:LOW)
9	D11	IN	PRI-	Pri Switch (on: LOW)
10	D12	OUT	DSPSTL-	Display Data Ones Digit Strobe
11	D13	OUT	DSPSTH-	Display Data Tens Digit Strobe
12	D14	IN	ALBH-	Band Select (A:LOW, B:HIGH)
13	D15	OUT	TXDL	TX/RX Control (Tx:LOW Rx:HIGH)
14	NC	-	- - -	No Connection
15	RESET	-	- - -	General Reset (Reset: HIGH)
16	GND	-	- - -	Ground
17	OSC1			Clock Oscillator (800 KHZ ±5%)
18	OSC2			Clock Oscillator (800 KHZ ±5%)
19	HLT	-	- - -	Standby Mode Control (Standby: LOW)
20	TEST	-	- - -	Not Used (HIGH)
21	Vcc	-	- - -	Power Supply (+5V±10%
22	R00	OUT	DSP0+	LED Display Data (HIGH: 6 to 8V, LOW: 0 to 2V)
23	R01	OUT	DSP1+	LED Display Data (HIGH: 6 to 8V, LOW: 0 to 2V)
24	R02	OUT	DSP2+	LED Display Data (HIGH: 6 to 8V, LOW: 0 to 2V)
25	R03	OUT	DSP3+	LED Display Data (HIGH: 6 to 8V, LOW: 0 to 2V)
26	R10	IN	UP-	Channel Up Switch (ON:LOW)
27	R11	IN	DWN-	Channel Down Switch (ON:LOW)
28	R12	IN	INH+	PTT Inhibit (Inhibit: HIGH)
29	R13	IN	TA-	Wideband/Standard Select (WIDE:LOW)
30	INT0	IN	PTT INT+	PTT Switch (PTT: HIGH)
31	INT1	IN	- - -	Not Used
32	R20	OUT	RMA0+	E/PROM ADDRESS DATA
33	R21	OUT	RMA1+	RMA5+ is also used as the E/PROM ENABLE SIGNAL
34	R22	OUT	RMA2+	" " " " " " " " "
35	R23	OUT	RMA3+	" " " " " " " " "
36	R30	OUT	RMA4+	" " " " " " " " "
37	R31	OUT	RMA5+	" " " " " " " " "
38	R32	OUT	ASTB+	Strobe for E/PROM address data latch
39	R33	OUT	AUXSTB+	Strobe for AUX.DATA (Signalling Option Board)
40	D0	OUT	PSST+	Strobe for E/PROM DATA OUTPUT TO SHIFT REGISTER
41	D1	IN	CHDT+	Serial data from Shift Register
42	D2	OUT	DCLK	Clock for CHDT+

HIGH: 3.5 to 5V, LOW: 0 to 1.5V

Measure with high input impedance meter or oscilloscope