

PRESIDENT



JAMES



MAINTENANCE MANUAL

COMMERCIAL CHARACTERISTICS

GENERAL:

Frequency Band:	26,965 MHz to 27,405 MHz
Number of channels:	40
Difference between channels:	10 KHz
Emission class:	A3E (AM),F3E (FM)
Power supply:	13,2 V (10,8 V to 15,6 V)
Temperature margin:	- 10° C to + 55 ° C
Antenna impedance:	50 Ohms

EMITTER:

Frequency difference:	less than +/- 600 Hz + 0,002 %
Output power:	4 W peak
Microphone impedance:	500 Ohms
Output power in adjacent channel:	less than 20 microwatts.

RECEIVER:

First I.F.:	10,695 MHz
Second I.F.:	455 KHz
Impedance of incorporated microphone:	8 Ohms
L.F. output power:	2W
Sensitivity:	better than 12 dB/microvolt



GENERAL USE



Phase locked-loop Circuit (PLL)

The PLL circuit consists essentially of:

- the voltage controlled oscillator (VCO) by the transistors Q403, Q402 and Q401
- the charge pump circuit Q405, Q406
- the integrated circuit IC401 which contains the reference frequency, the programmable generated frequency divider and the phase comparator.

The information necessary for the working of the integrated circuit is sent in series by the micro controller IC701.

The output signal of this oscillator is the frequency 38,100 MHz for channel 40 in emission mode.

The frequency difference between the two modes (reception and emission) is obtained by switching the coil L403.

EMITTER:

In AM the low frequency signal is preamplified by IC605, then amplified by IC201 and enters into the modulation transformer T201. This amplified low frequency signal is applied to the high frequency power supply stage Q502, Q501 by their collector so that the high frequency is modulated.

In FM the low frequency signal is limited and filtered by the stage IC606, D604 is applied to the diode Varicap D406 via the adjustable resistance VR400.

The signal delivered by the frequency modulated VCO by this low frequency signal, will be applied to the power supply stage which consists of the transistors Q201, Q502 et Q501.

In AM/FM, the amplified signal will be filtered before being sent to the antenna socket JK425.

RECEIVER:

The VCO signal is used as a first local oscillator. The mixing with the received frequency is carried out by the stage L7, D7, L8 which gives a first I.F. of 10,695 MHz. The signal reference of the PLL at 10,240 MHz is used as a second local oscillator by Q12 to obtain a second I.F. at 455 KHz.

In AM, the latter will be applied to the AM detector stage, composed of D12, and commanded by Q17.

In FM, the latter will be applied to the FM detector stage, composed of the integrated circuit IC1 (discriminator) and its loading coil L21.

In AM/FM, the low frequency signal is then applied to the transistor Q21, low frequency preamplifier and then to the low frequency amplifier IC 407 via the volume potentiometer.

ALIGNEMENT OF THE SYNTHESISER

1. Alignement Procedure

0	Channel 20, C band Reception in AM	L404	Frequency meter on pin 1 of the IC 401. Adjust L404 so as to obtain 10.240 MHz \pm 10 Hz
1	Channel 20, C band Reception in AM	L402	Connect the continued voltmeter to the point TP1 R423. Adjust L402 so as to obtain 2,8 V \pm 0,1
2	* Channel 40, F band Channel 1, A band		Check on TP1-R423 that: - 4,3 V \pm 0,1 channel 40 F band 1,8 V \pm 0,1 channel 1 A band
3	Channel 20, C band emission in AM	L403 TX 3V	Connect the TP1 voltmeter on R423. Adjust L403 so as to obtain 2,7 V \pm 0,1.
4	* Channel 40, F band Channel 1, A band	TX 5,2V TX 1,9V	Check on TP1-R423 that: 4,8 V \pm 0,1 channel 40 F band 1,5 V \pm 0,1 channel 1 A band
5	Channel 20, C band Reception in AM	L401	Connect the frequency meter to Pin 8 of the IC 401 so as to obtain 37.900 MHz.

* This check to be established on "Export Model" equipment only.

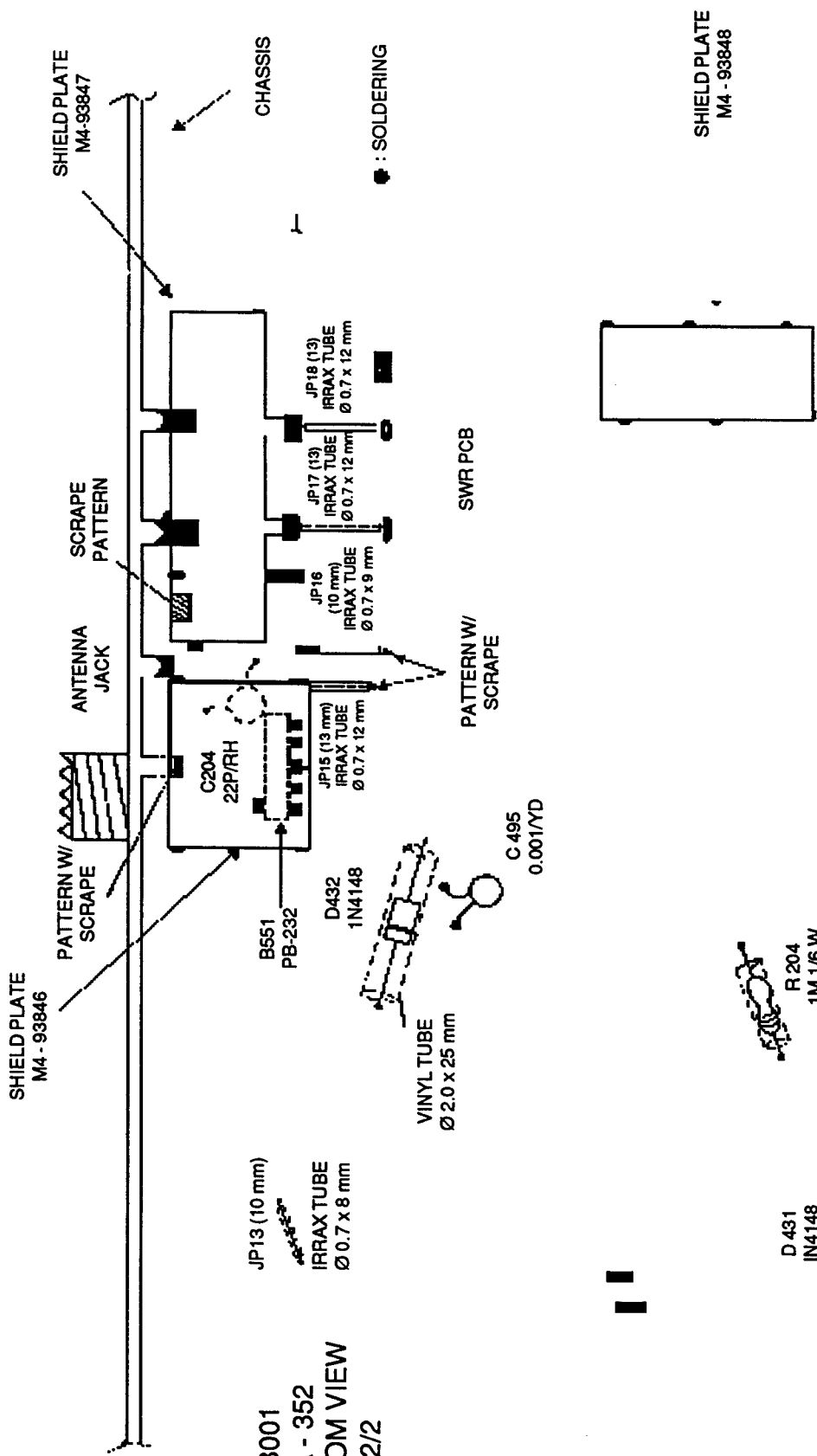
ALIGNEMENT OF THE RECEIVER

1	Channel 20, band C AM modulated 1 KHz 60% Level 1 μ V = -107 dBm	L2, L11, L12, L13, L16,L17, L18	Connect the HF voltmeter or an oscilloscope to the loud speaker. Readjust the coils in the given order so as to obtain a maximum reading.
2	Same as 1 except FM	L21	Readjust to obtain a maximum reading.
3	Same as 1 AM Level 100 μ V	VR2	Adjust so as to bring the LED to 9 in the display, position RF.
4	Same as 3	VR3	Connect an external V.U. meter. Adjust VR3 so as to obtain S.9. on the V.U-meter.
5	Channel 20 AM Maximum squelch Level 1000 μ V Modulated 1 KHz	VR1	Adjust VR1 so as to readjust the low frequency signals.

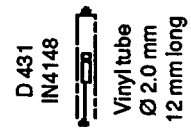
ALIGNEMENT OF THE EMITTER

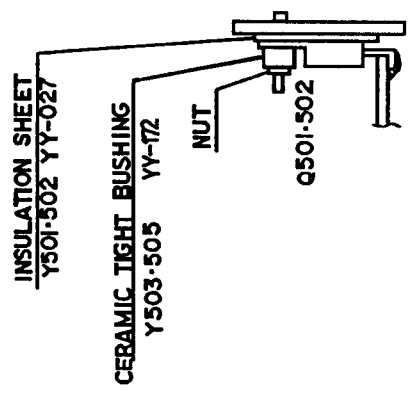
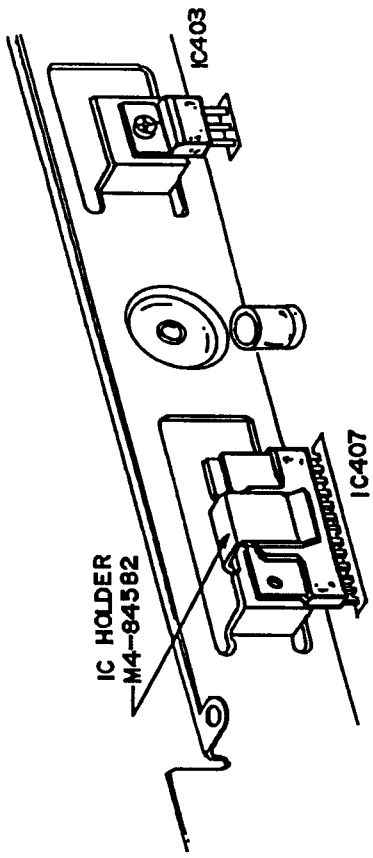
1	* Channel 20 AM emission Without modulation	VR406	Adjust VR 406 so as to obtain 4 W on the wattmeter (French model), 12 W (Export model).
2	Channel 20 AM emission Without modulation	VR401	Adjust VR401 so that the V.U.-meter indicator is at S9, position RF.
3	Channel 20 AM emission Modulation 1 KHz Level 10mV	VR201	Adjust VR201 to obtain 90% modulation.
4	* Same as 3 except FM	VR405	Adjust VR405 to get a watt meter reading of 4 W (French model), 15 W (Export model) .
5	Channel 20 AM FM emission Modulation 1 KHz Level 10 mV		Adjust VR400 so as to obtain an FM excursion of 1,5.

* Measurement for "Export Model" equipment only



B001
PA - 352
BOTTOM VIEW
2/2





LIST OF SPARE PARTS FOR JAMES

REF.	DESIGNATION	QTY/MOD
BC184	COIL LZ-041 0.47 μ H	1
BC185	COIL LZ-0670.068 μ H (CMS)	1
BR014	COIL LB-119	1
BR018	COIL LB-224	2
BR022	COIL LB-233	1
BR029	COIL LB-341	1
BR031	COIL LB-343	1
BR201	COIL LB-313	1
BR206	COIL LB-948	2
BR212	COIL LB-955	1
BR213	COIL LB-956	1
BR214	COIL LB-957	1
BR215	COIL LD-193	2
BR216	COIL LD-201	3
BR220	COIL LC-240	1
BT025	COIL LB-336	1
BT027	TRANSFORMER TF-453 MODUL	1
CF018	CAPA 0.047F 5.5 V	1
DC070	DIODE 1SS 226 (CMS)	1
DC071	DIODE DAN 235 K (CMS)	1
DC072	DIODE KV 1430 (CMS)	1
DC073	DIODE RLS 135 (CMS)	2
DC074	DIODE ND 434 G	1
DC076	DIODE MA 716 (CMS)	2
DV033	DIODE HSM 88 AS (CMS)	3
DV034	DIODE HSM 88 WA (CMS)	2
HM037	MICROPHONE MK-444	1

LIST OF SPARE PARTS FOR JAMES

REF.	DESIGNATION	QTY/MOD
HP028	LOUD SPEAKER SP-238	1
IL075	INTEGRATED CIRCUIT M 51951	1
IL076	INTEGRATED CIRCUIT TC 4S66F CMS	2
IL077	INTEGRATED CIRCUIT TL 750M08C	1
IL078	INTEGRATED CIRCUIT M 54995F CMS	2
IP022	INTEGRATED CIRCUIT MB 3735	1
IR027	INTEGRATED CIRCUIT 78L05	1
IR125	INTEGRATED CIRCUIT LA 4485	1
IR126	INTEGRATED CIRCUIT MN 3207	1
IR127	INTEGRATED CIRCUIT MN 3102	1
IS048	INTEGRATED CIRCUIT PLL 2002 A1	1
IS054	INTEGRATED CIRCUIT UC 1520	1
IS055	INTEGRATED CIRCUIT 93C46T CMS	1
IY439	PCB F/PANEL. FOR JAMES	1
IY441	PCB ECHO MODUL. JAMES	1
IY443	PCB VOLUME BUTTON JAMES	1
IY445	PCB MIKE FOR JAMES	1
JX003	JACK JK-068 (JK261/JK370/JK426)	1
JX077	JACK JK-423 EXT METER	1
JX080	JACK JK-729 MIC 6 BROCHES CHASSIS	1
OA030	DISPLAY CRIS. LIQ DL-071	1
OX028	DIODE CL 140YG (CMS)	12
OX029	DIODE CL 140D (CMS)	12
PF052	FILTER FL-566	1
PQ060	QUARTZ 4.190 M FK-007	1
QX341	CRADLE SCREW PRESIDENT S/MODEL	2

REF.	DESIGNATION	QTY/MOD
QX345	FRONT PANEL JAMES	1
QX347	LIGHT DIFFUSER (B) JAMES	1
QX348	LIGHT DIFFUSER (A) JAMES	1
QX349	DISPLAY PLATE JAMES	1
QX352	LIGHT DIFFUSER PMMA JAMES	1
QX353	LIGHT SUPPORT JAMES	1
QX355	SUPPORT (A) PMMA JAMES	1
QX356	SUPPORT (B) PMMA JAMES	1
QX357	CHANNEL BUTTON GEORGE	1
QX361	INT. DOUBLE BUTTON/GEORGE	1
QX362	EXT. DOUBLE BUTTON/GEORGE	1
QX363	PUSH BUTTON (A) JAMES	1
QX364	PUSH BUTTON (B) JAMES	1
QX365	PUSH BUTTON (C) JAMES	1
QX366	BUTTON GEORGE	4
QX367	CRADLE JAMES	1
QX368	LOWER CASING JAMES	1
QX370	UPPER CASING JAMES	1
RV098	POTENTIOM. RV-785 1KA/1KB R/MG	1
RV099	POTENTIOM. RV-786 10KA VOLUME	1
RV100	POTENTIOM. RV-787 50KB CAL/SWR	2
RV101	POTENTIOM. RV-788 10KB SQ/CLARI	1
SS035	SWITCH SR-421 CHANNELS	1
SX094	SWITCH SW-752 FUNCTIONS	18
TH001	TRANSISTOR 2SC 2166	1
TX003	TRANSISTOR 2SC 1674	1
TX010	TRANSISTOR 2SC 2086	1
TX117	TRANSISTOR 2SC 3242	1
TX300	TRANSISTOR 2SC 2814 (CMS)	8

TX301	TRANSISTOR 2SD 1048X (CMS)	5
TX306	TRANSISTOR 2SA 1179 (CMS)	5
TX307	TRANSISTOR 2SC 2812 (CMS)	10
TX352	TRANSISTOR 2SA 950	1
TX353	TRANSISTOR 2SB 1135	2
TX355	TRANSISTOR 2SC 3356 (CMS)	1
TX356	TRANSISTOR 2SC 3772 (CMS)	3
TX357	TRANSISTOR 2SD 1683S	2
TX358	TRANSISTOR DTA 144 EK (CMS)	5
TX359	TRANSISTOR DTA 143 XK (CMS)	1
TX360	TRANSISTOR DTA 114 TK (CMS)	4
TX361	TRANSISTOR 2SK 323 (CMS)	2
TY129	TRANSISTOR 2SC 1945	1
XV004	LIGHT V.U.-METER PZ-028	2
XV005	LIGHT V.U.-METER PZ-035	2

**SPARE PARTS SPECIFIC FOR EACH SET**

EMITTER/ RECEIVER	P.A. power amplifier	P.L.L. phase loop locked	L.F. Low Frequencies
JIMMY	2SC 2166	SM 5124	TDA 1905
JOHNNY	2SC 2166	SM 5124	TDA 1905
HARRY	2SC 2166	SM 5124	TDA 1905
TAYLOR	2SC 2029	TC 9106/SM 5126B	MB 3712
VALERY	2SC 2029	TC 9109/SM 5126A	MB 3712
WILSON	2SC 2166	SM 5124	UPC 1242
HERBERT	2SC 2166	TC 9106/SM 5126B	UPC 1242
ROBERT (SS-120)	2SC 1944	UPD 2816	TA 7222
JACK	2SC 2312	MB 8719	UPC 1242 *
GRANT	2SC 2312	MB 8719	UPC 1242 *
J.F.K.	2SC 1944	UPD 2816	MB 3712
RICHARD (SS-360)	2SC 2312	MC 145106	TA 7222
JACKSON	MRF 477	MC 145106	UPC 1242 *
LINCOLN	MRF 477	PLL 0305	TDA 1905
BENJAMIN	2SC 2312	UPD 2824	UPC 1242
WILLIAM	2SC 2166	SM 5125 A	TDA 2822
MC 6700	2SC 1946	MB 8789	MB 3713 (HP) TA 7066 (comb)
JAMES	2SC 1945	PLL 2002 A1	LA 4485
GEORGE	2SC 1969	PLL 2002 A1	LA 4485

* In older models of this type, UPC 1182 is used for LF



SPARE PARTS SPECIFIC FOR EACH SET



REF. LF CIRCUIT	EMITTER / RECEIVER	REF. P.A.	EMITTER/ RÉCEIVER
MB 3712	TAYLOR VALERY J.F.K. (2)	2SC 2166	JOHNNY HERBERT WILSON HARRY
TDA 1905	HARRY-JIMMY LINCOLN JOHNNY		
UPC 1242	GRANT JACKSON JACK HERBERT BENJAMIN	2SC 1969	GEORGE
TDA 2822	WILLIAM	2SC 2029	TAYLOR VALERY
TA 7222	SS-120/ROBERT SS-360/RICHARD RONALD FRANKLIN	2SC 1945	JAMES
LA 4485	GEORGE JAMES	2SC 1944	SS-120/ROBERT J.F.K.
MB 3713	MC-6700 (H.P.)	2SC 2312	SS-360/RICHARD GRANT JACK RONALD FRANKLIN BENJAMIN
UPC 1182	JACK old GRANT model JACKSON	MRF 477	JACKSON LINCOLN
DISPLAY	VALERY ROBERT J.F.K. RICHARD GRANT JACKSON JACK	MAINTENANCE MANUALS	ALL MODELS
UR 202		VU METER BULBS	

VU-METER

SWITCH

POTENTIOMETER

QUARTZ

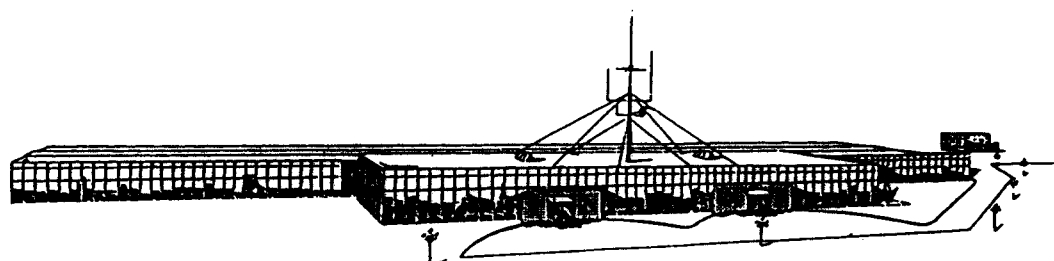
Specific to each type of equipment

SPARE PARTS COMMON TO SEVERAL SETS

REF. P.L.L.	ÉMITTER / RÉCEIVER	REF. LOUD SPEAKER	ÉMITTER/ RÉCEIVER
SM 5124A	HARRY - JIMMY JOHNNY WILSON	SP 227/SP 306	VALERY TAYLOR JACK PC 33X/43
TC 9106 SM 5126B	TAYLOR HERBERT		
TC 9109 SM 5126A	VALERY	SP 226/SP 323	SS-360 GRANT JACKSON
UPD 2816	SS-120/ROBERT J.F.K.	SP 244/SP 301	J.F.K. SS-120
MB 8719	GRANT JACK	SP169	HARRY JIMMY JOHNNY WILSON
MC 145106	SS-360/RICHARD JACKSON RONALD FRANKLIN	SP 149	HERBERT
PLL 0305	LINCOLN	SP 238	JAMES GEORGE
UPD 2824	BENJAMIN		
MB 8789	MC 6700		
SM 5125A	WILLIAM		
PLL 2002 A1	JAMES GEORGE		

PRESIDENT

ELECTRONICS EUROPE



SIEGE SOCIAL - FRANCE
Route de SETE - BP 100
34540 BALARUC - Tél : 67.46.27.27
Télex : 490534F - Fax : 67.48.48.49

SUCCURSALE "ILE DE FRANCE"
50/56, rue du Pré des Aulnes
Parc d'activités des Arpents
77340 PONTAULT-COMBAULT
Tél : (1) 60.29.28.27 - Fax : (1) 60.28.44.00



VENTE EXCLUSIVE AUX DISTRIBUTEURS - 2 SUCCURSALES A VOTRE SERVICE

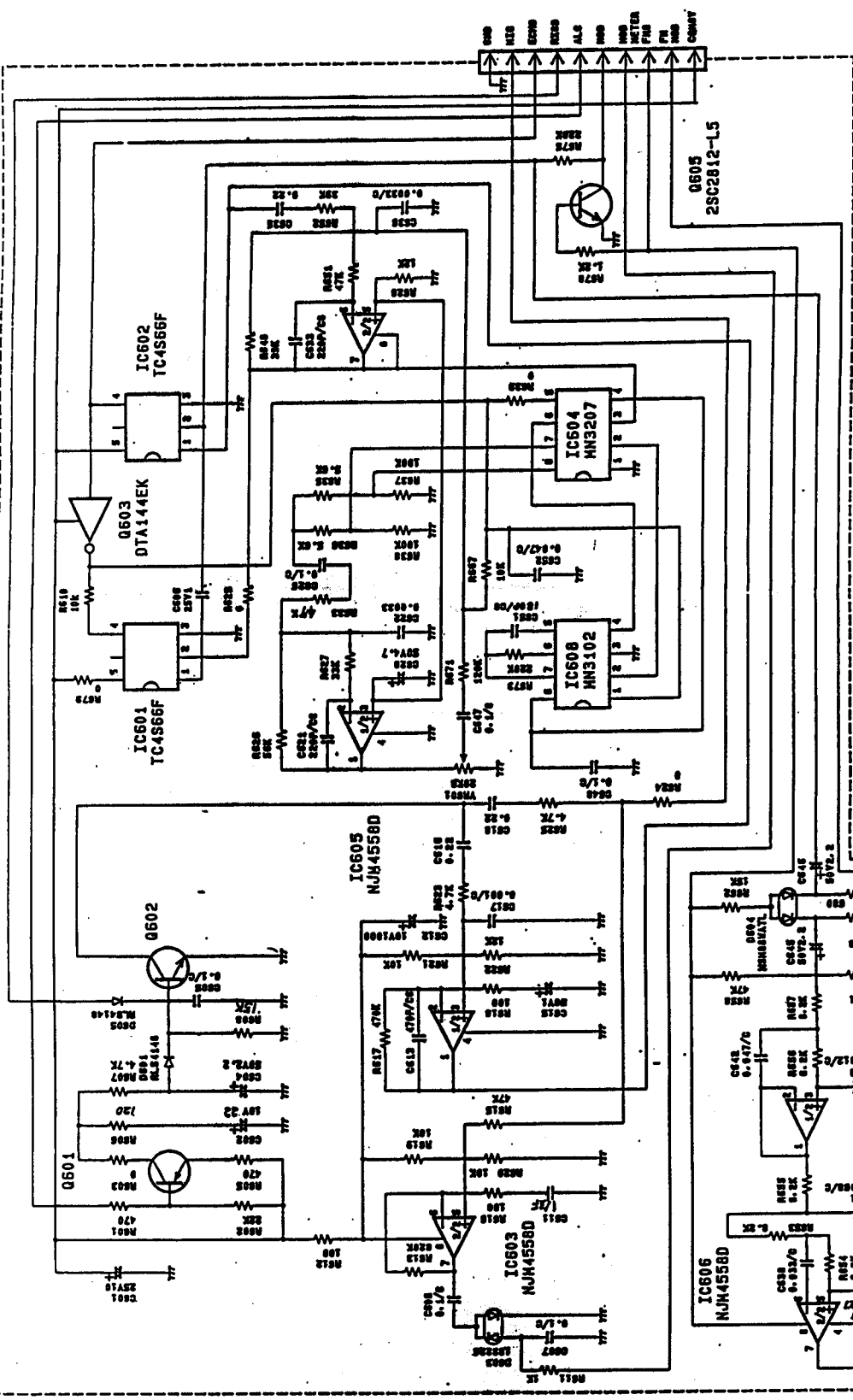
S.A. CAPITAL 20.000.000 F.F. - SIREN SETE 315 230 490

1B

1B

1A

PB601 PB-231AA

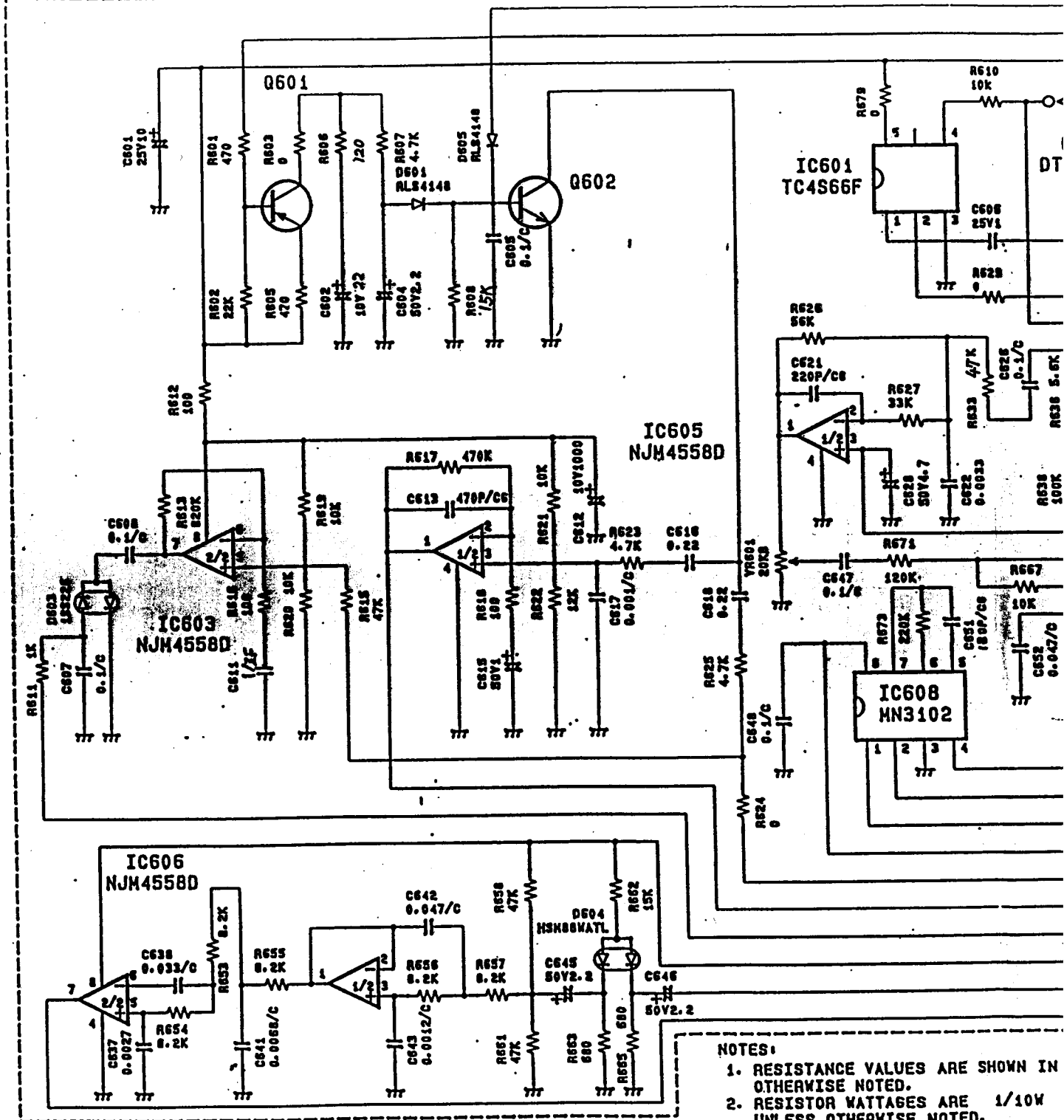


DESIGN	UT-3412	MODEL NO.	JAMES
DRAWN BY		TITLE	SCHEMATIC DIAGRAM
CHECKED BY		APPROV. BY	
DATE		DRAWING NO.	
REV. NO.			

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 2. RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-NANO-MICRO FARAD)
 4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE 2F UNLESS OTHERWISE NOTED.
 5. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

IA

PB601 PB-231AA

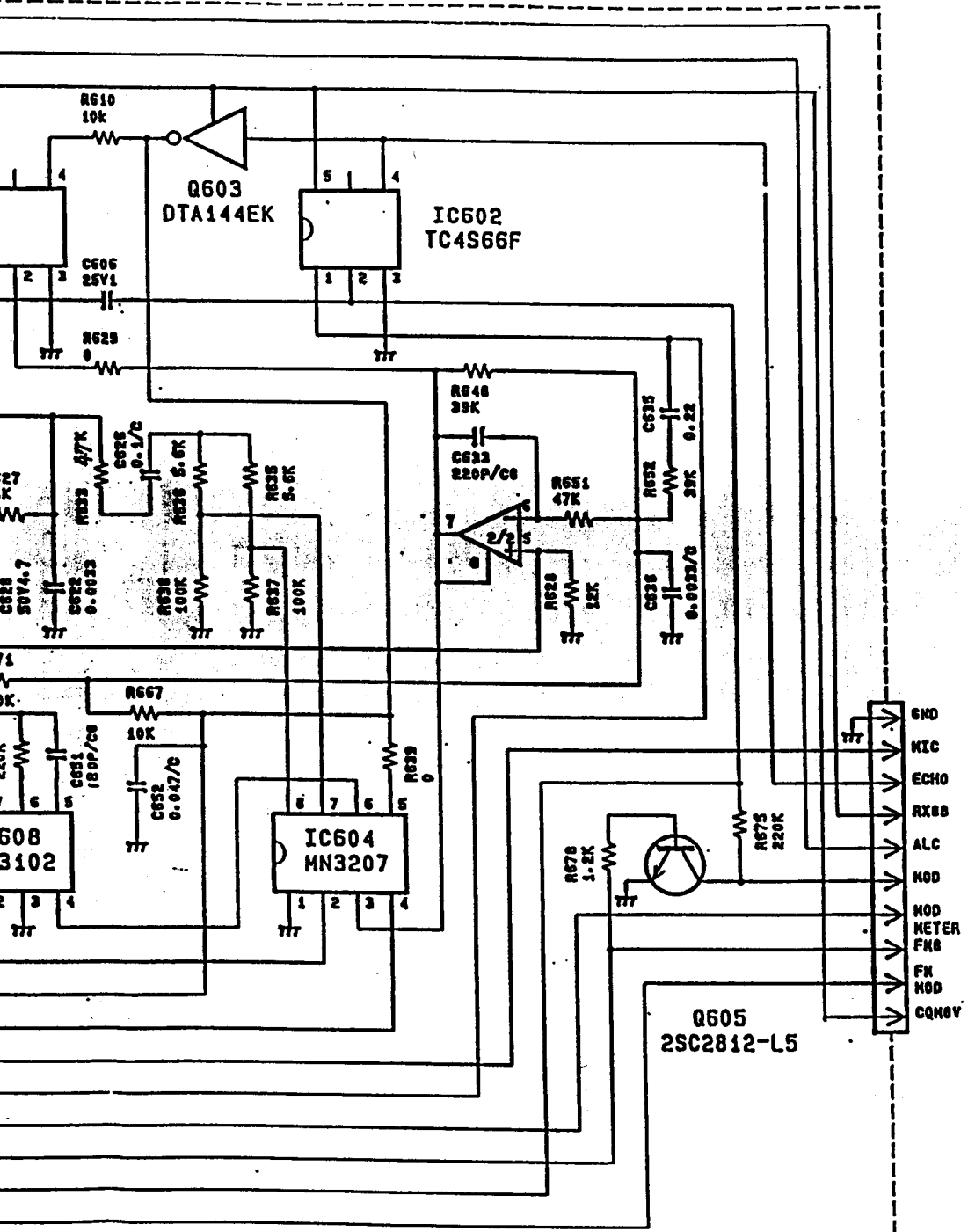


NOTES:

1. RESISTANCE VALUES ARE SHOWN IN OTHERWISE NOTED.
2. RESISTOR MATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)
4. ALL CAPACITORS TEMPERATURE CHR. ARE ZF UNLESS OTHERWISE NOTED.
5. CHIP PARTS ARE NOT SPECIFIED IN SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

1B

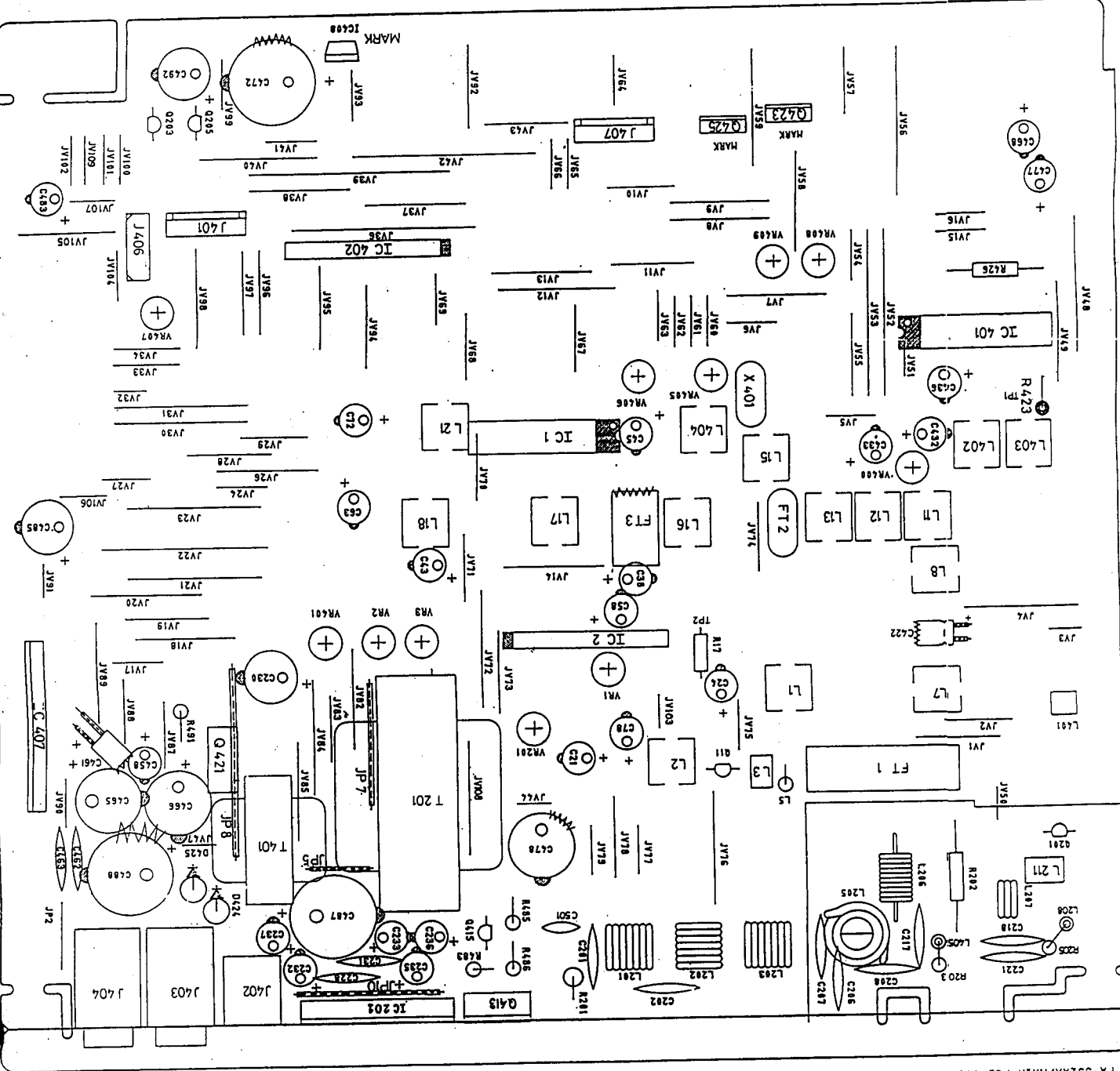
1



RESISTORS ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 CAPACITORS ARE 1/10W UNLESS OTHERWISE NOTED.
 VALUES ARE INDICATED IN MICRO (10^-6) UNLESS OTHERWISE NOTED.
 (10^-9 FARAD)
 TEMPERATURE CHARACTERISTICS ARE NOT SPECIFIED IN THIS SCHEMATIC UNLESS OTHERWISE NOTED.
 SEE THE PARTS LIST FOR

DESIGN	DRAWN BY	UT-341Z	MODEL NO.	JAMES
CHECK BY	APPROV BY	TITLE SCHEMATIC DIAGRAM		
REV. NO.		DRAWING NO.		

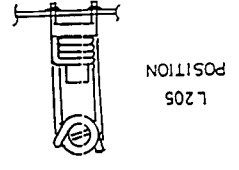
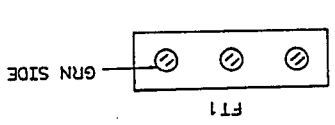
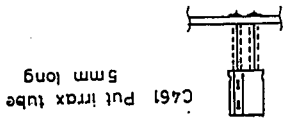
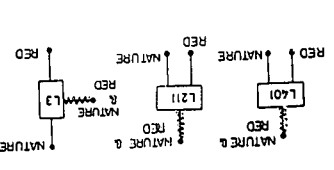
2A



PLATINE PRINCIPALE

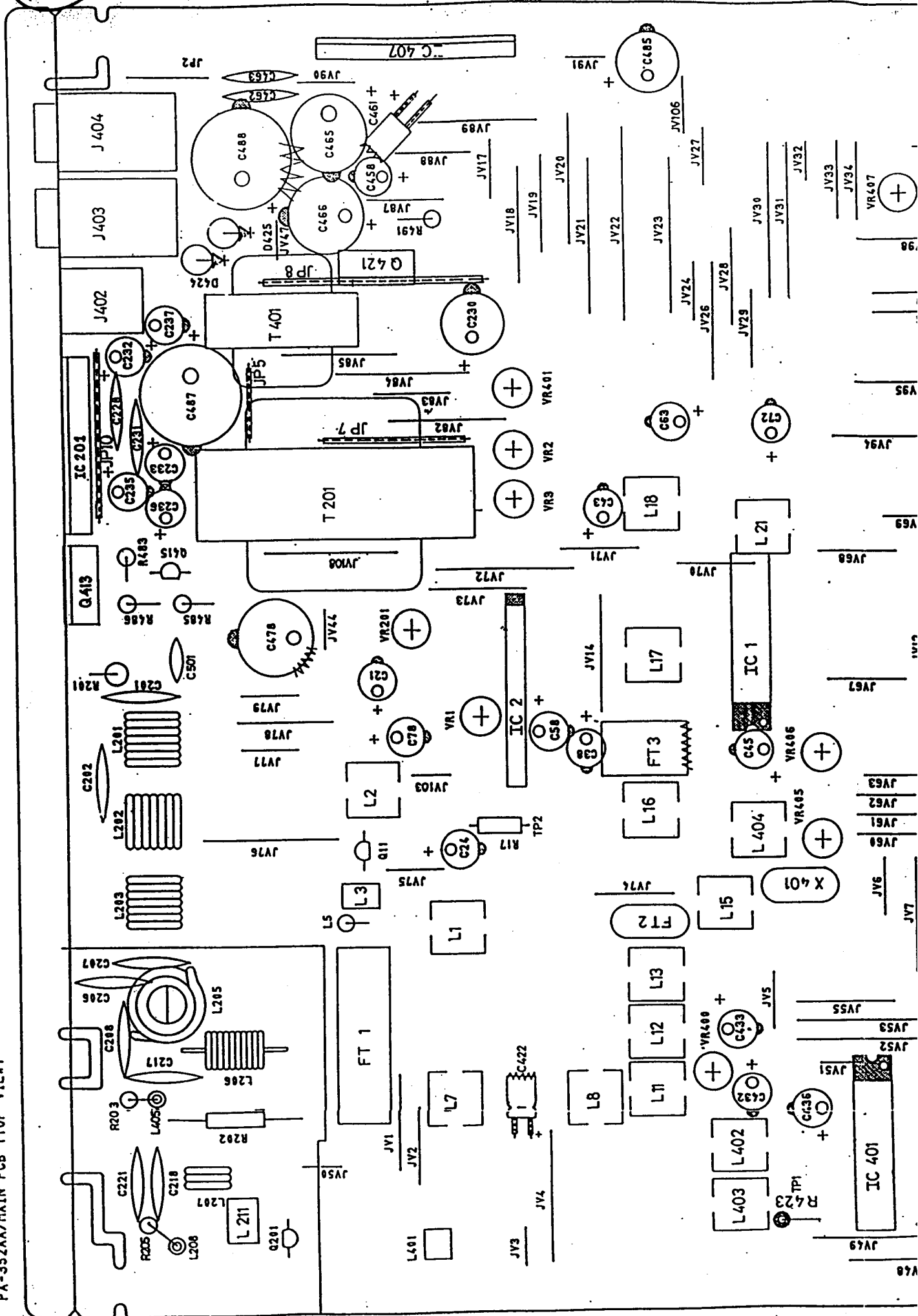
Côté composants

2B

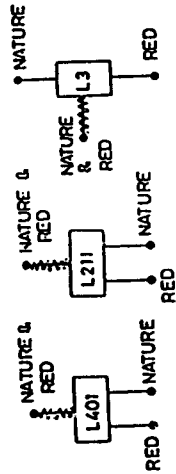
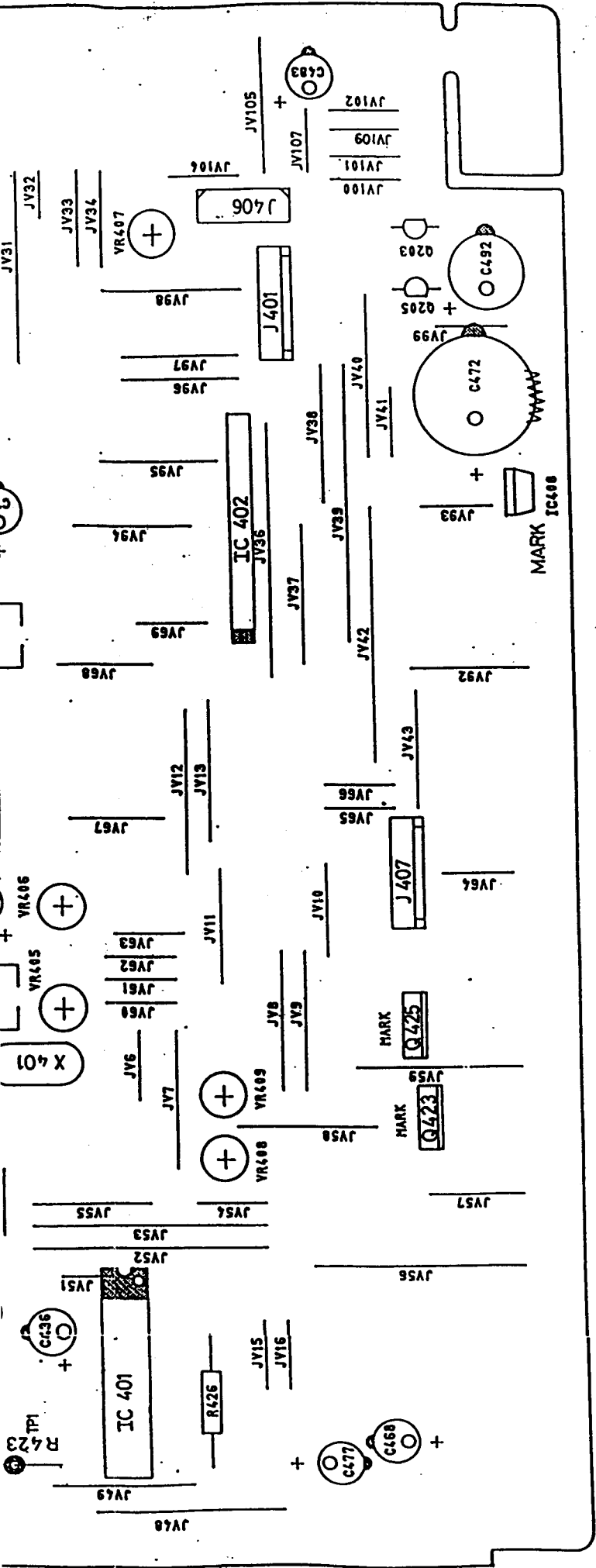


2A

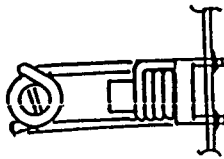
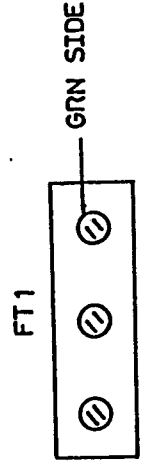
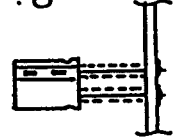
PA-352AA/MAIN PCB (TOP VIEW)



2B



C461 Put irrax tube
5 mm long



L205
POSITION

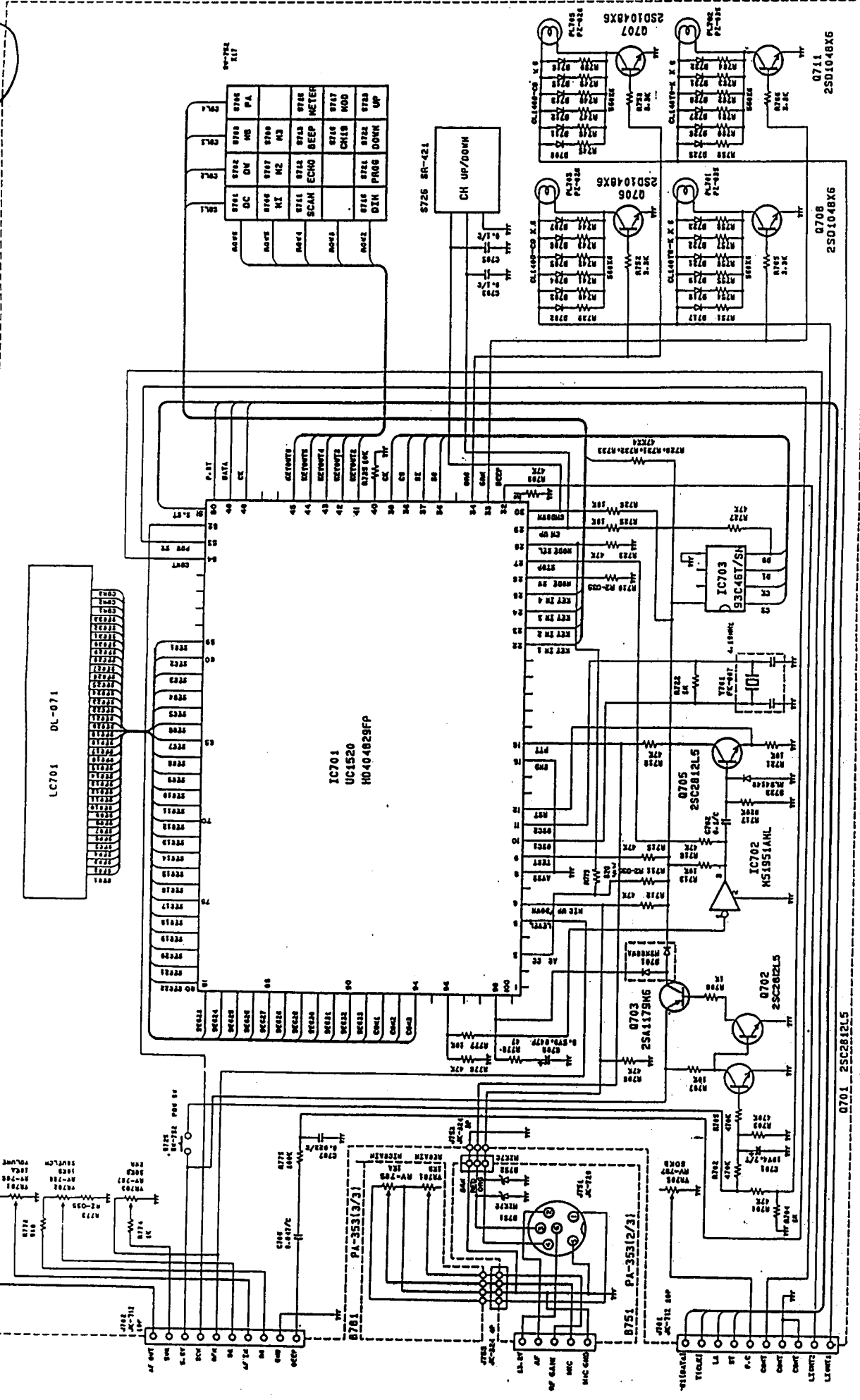
PLATINE PRINCIPALE

Côté composants

3A

PA-353(1/31)

3B



DESIGN	DATE	MODEL NO.
UT-3412	JAMES	
DESIGNED BY	TITLE	
CHECKED BY	SCHEMATIC DIAGRAM	
APPROVED BY	DATE	
	ES2-0325	
	P.E.E	

NOTES:

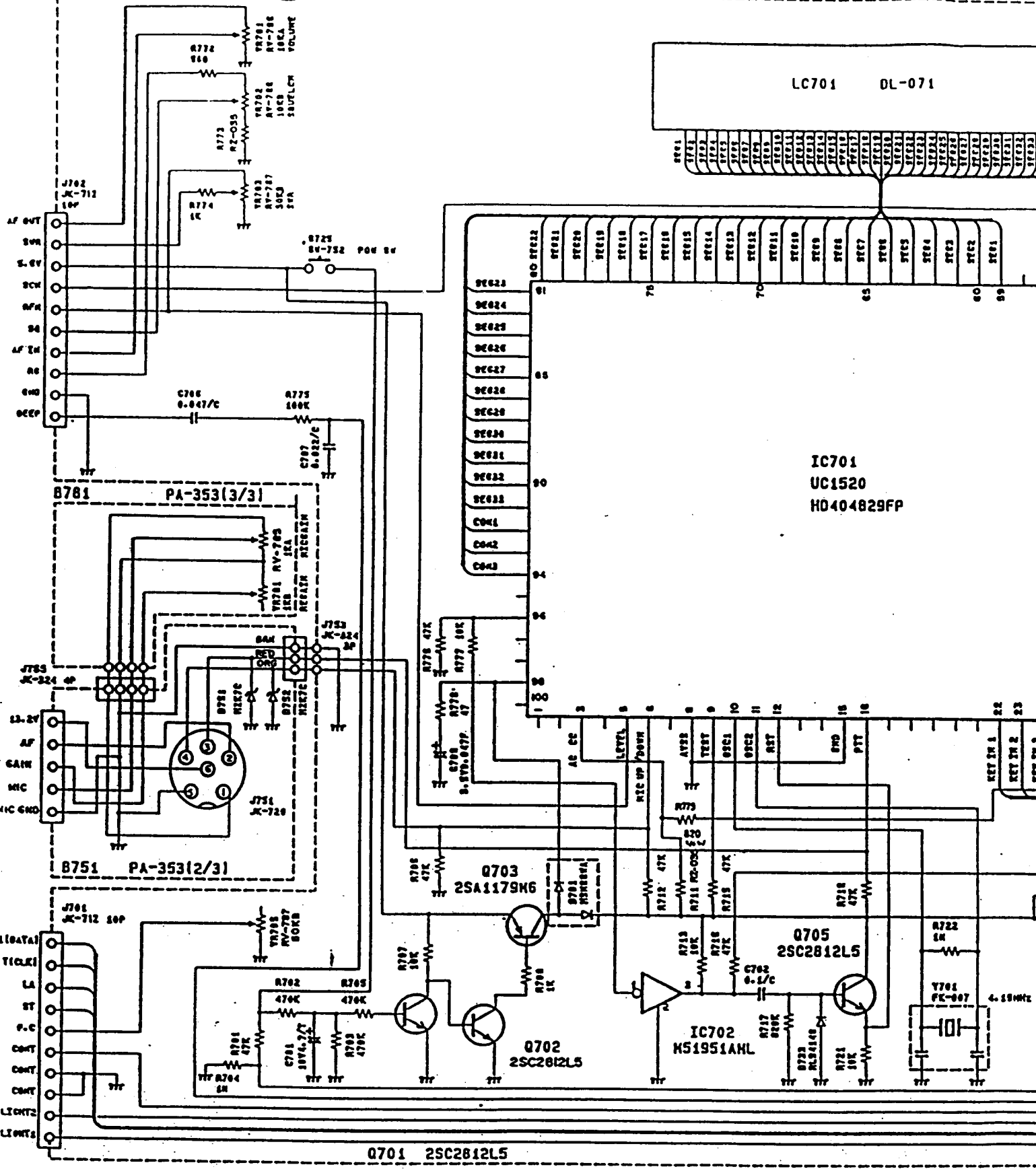
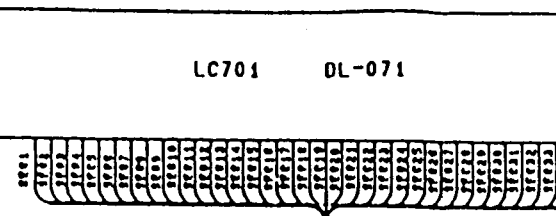
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. RESISTOR MESSAGES ARE 1/10W
2. RESISTOR MESSAGES ARE 1/10W
3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)
4. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. REFER TO THE PARTS LIST FOR THE CHIP PARTS.

0701 25C2812L5

3A

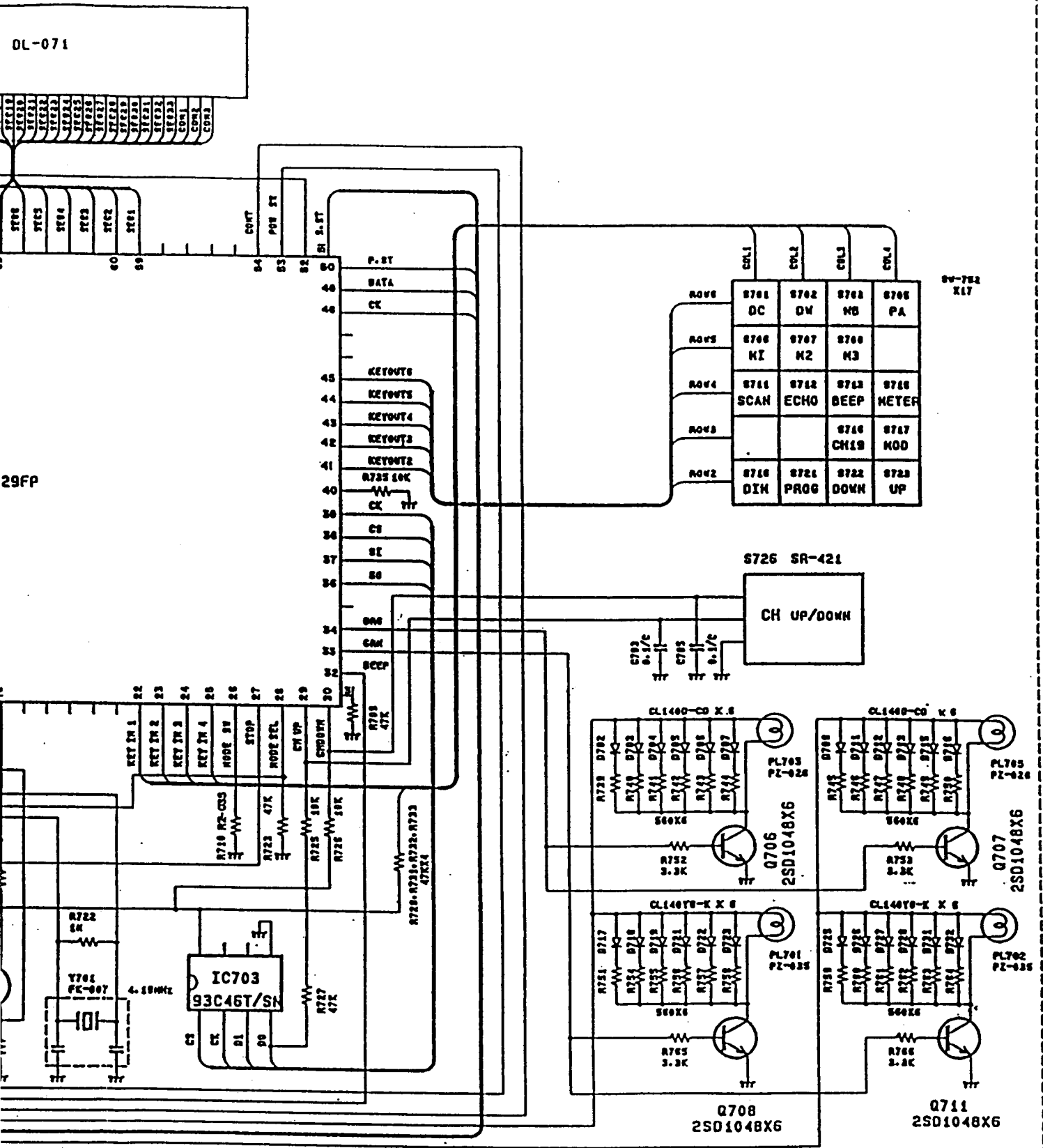
B701 PA-353(1/3)

LC701 DL-071



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 2. RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO-FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)

3B



ARE SHOWN IN OHMS UNLESS
 ARE 1/10W
 NOTED.
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 OTHERWISE NOTED.
 RADI

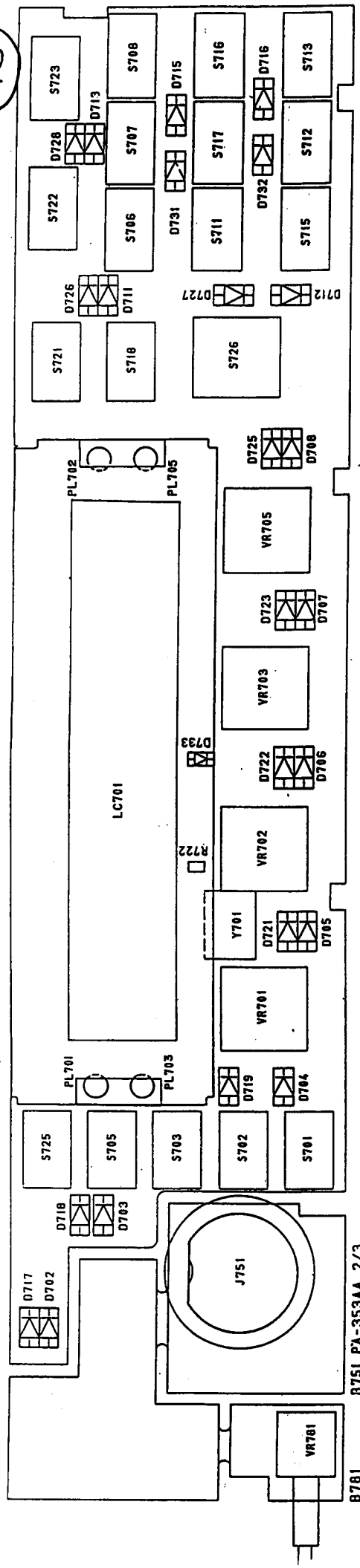
4. CHIP PARTS ARE NOT SPECIFIED IN THIS
 SCHEMATIC DIAGRAM.
 PLEASE REFER TO THE PARTS LIST FOR
 THE CHIP PARTS.

DESIGN	DRAWN BY	UT-341Z	MODEL NO.
			JAMES
CHECK BY	APPROV BY	TITLE	
		SCHEMATIC DIAGRAM	
		DRAWING NO.	
		ES2-0325	
		P.E.E	

PLATINE FACE AVANT

41B

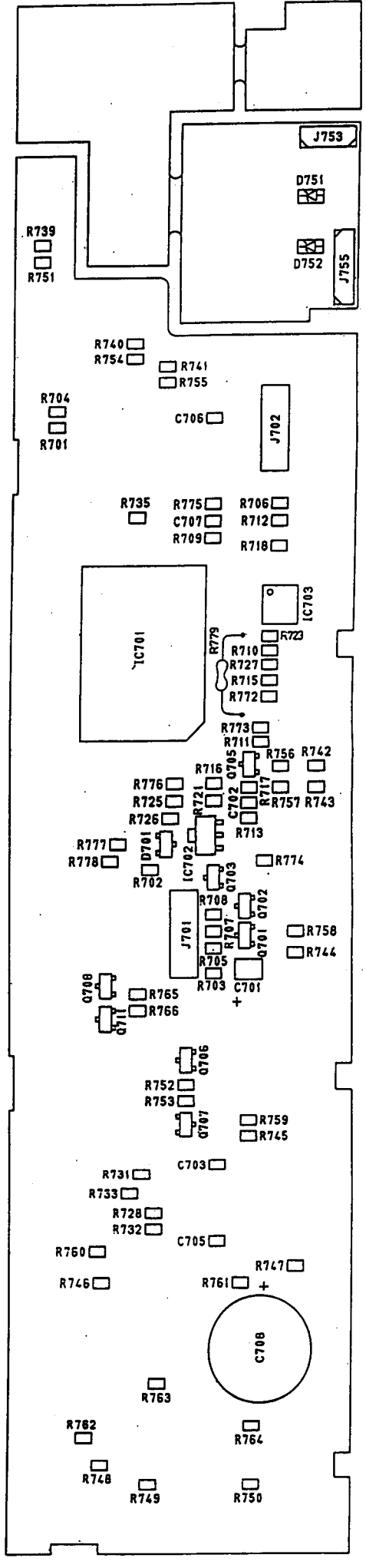
B701 PA-353AA 1/3 FRONT PCB (TOP VIEW)



B781 PA-353AA 3/3
B751 PA-353AA 2/3

4A

B701 PA-353AA 1/3 FRONT PCB (BOTTOM VIEW)

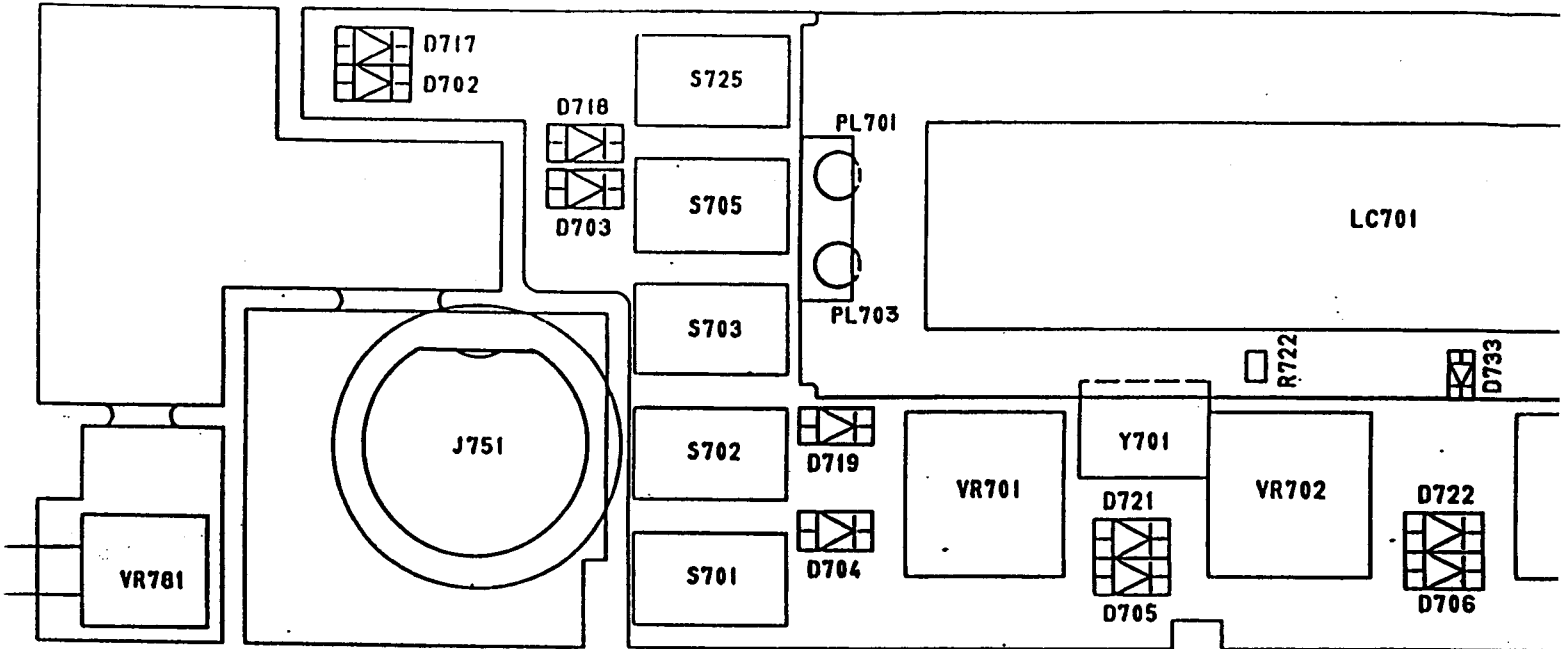


B781 PA-353AA 3/3
B751 PA-353AA 2/3

T

4A

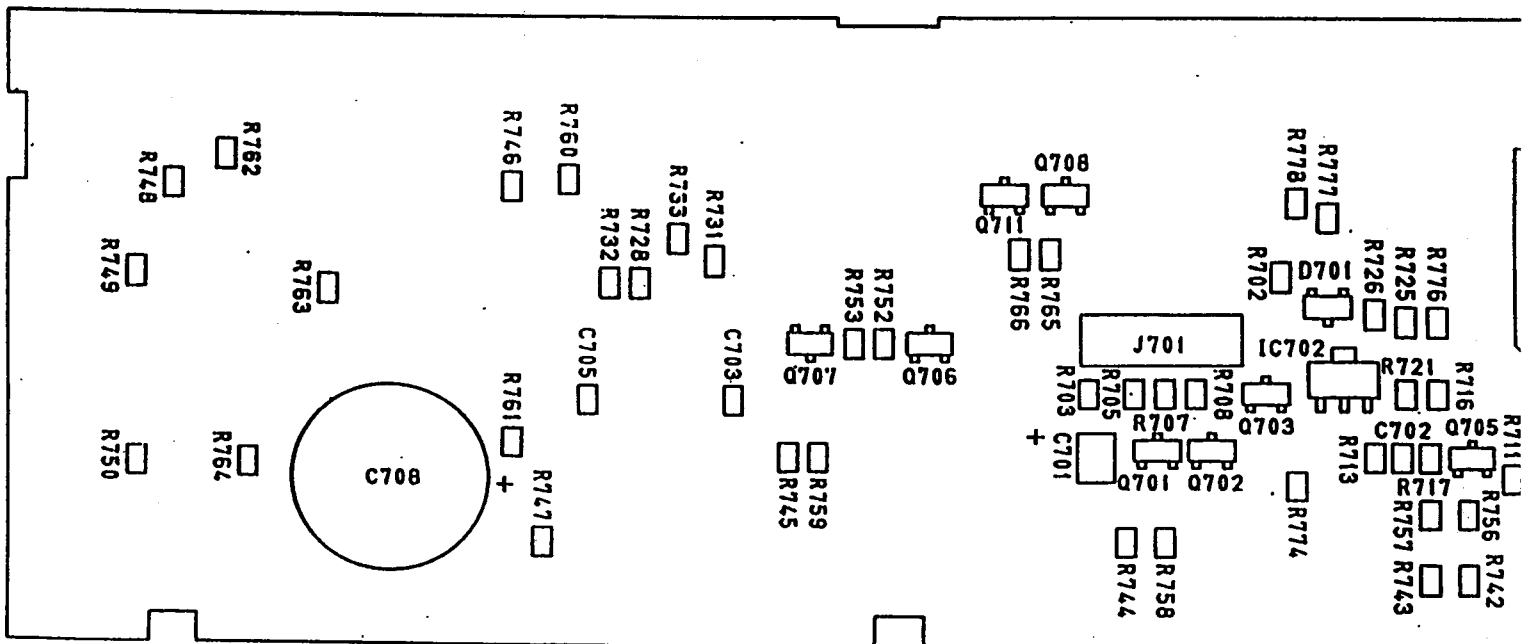
B701 PA-353AA 1/3 FRONT PCB (TOP VIEW)



B781
PA-353AA 3/3

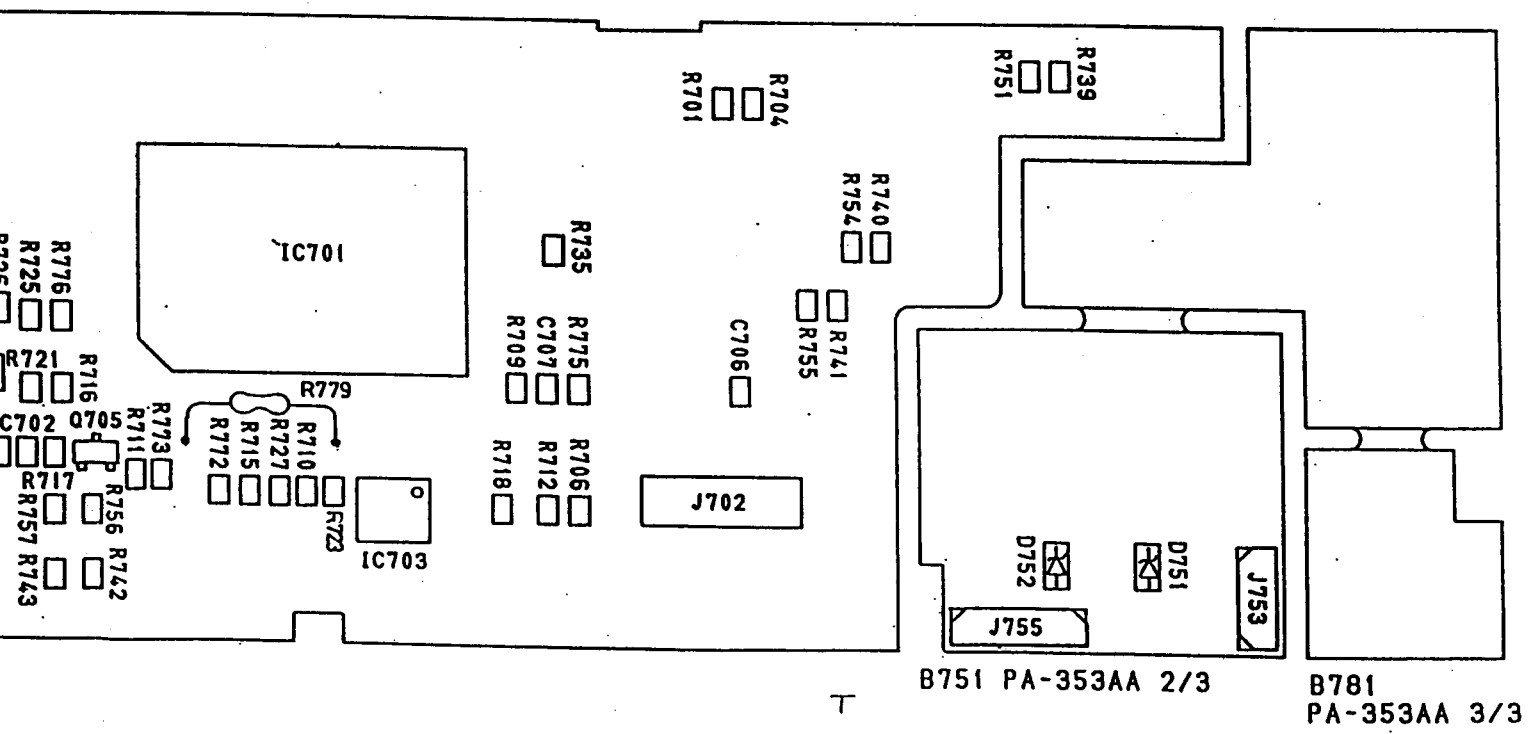
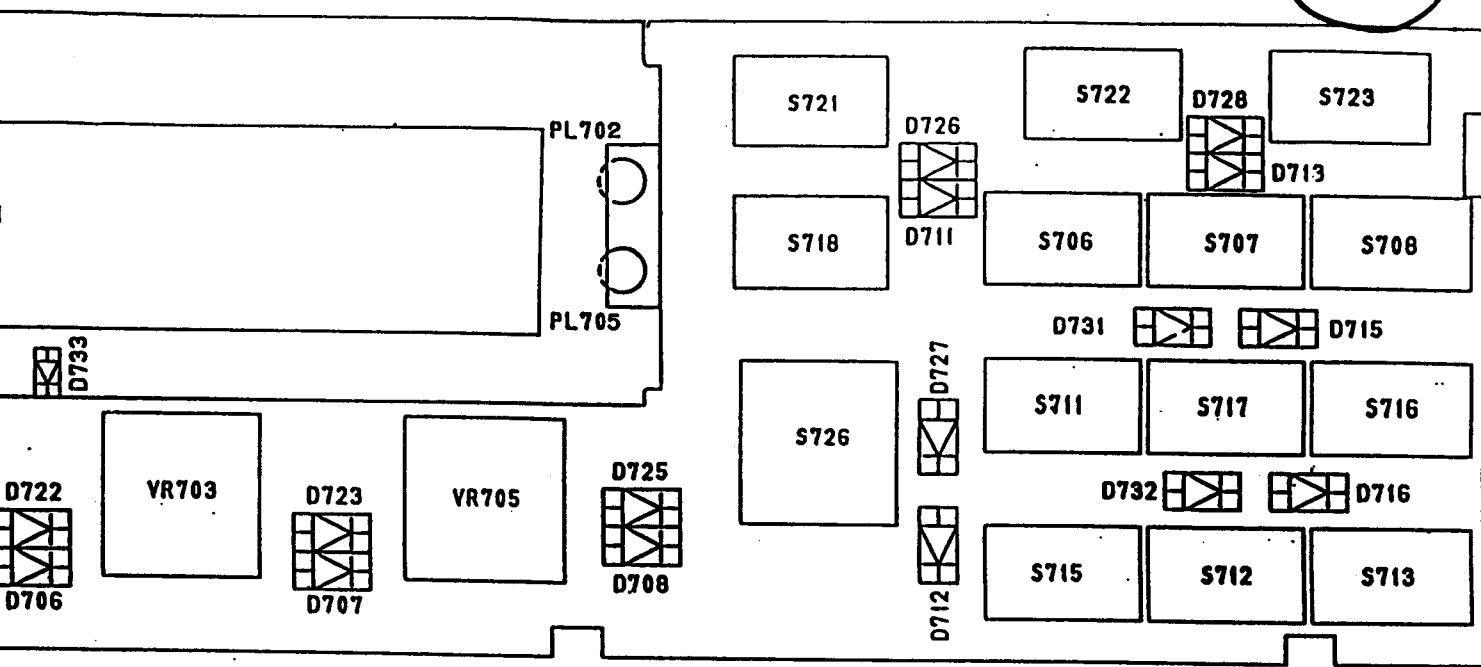
B751 PA-353AA 2/3

B701 PA-353AA 1/3 FRONT PCB (BOTTOM VIEW)



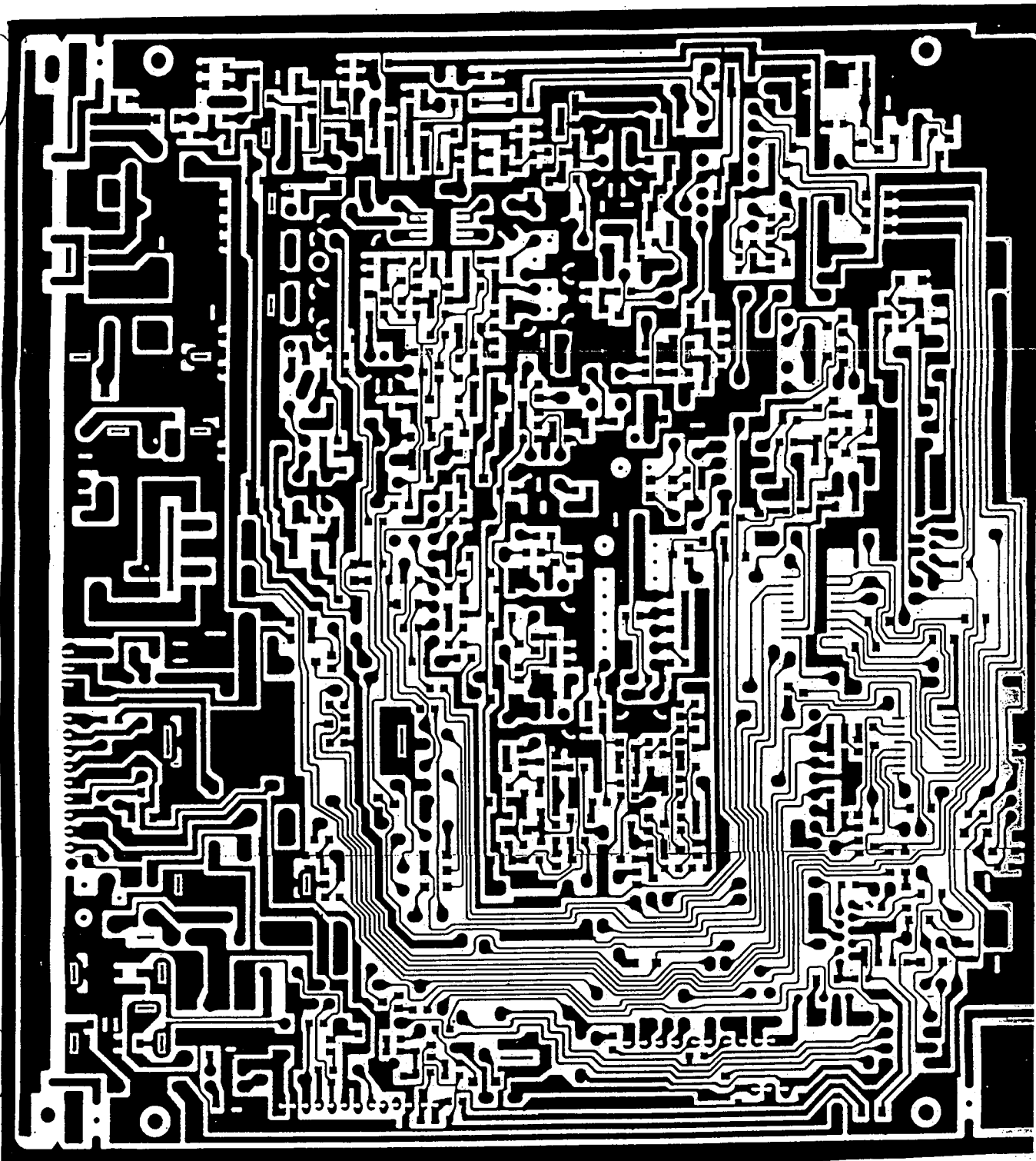
PLATINE FACE AVANT

4B



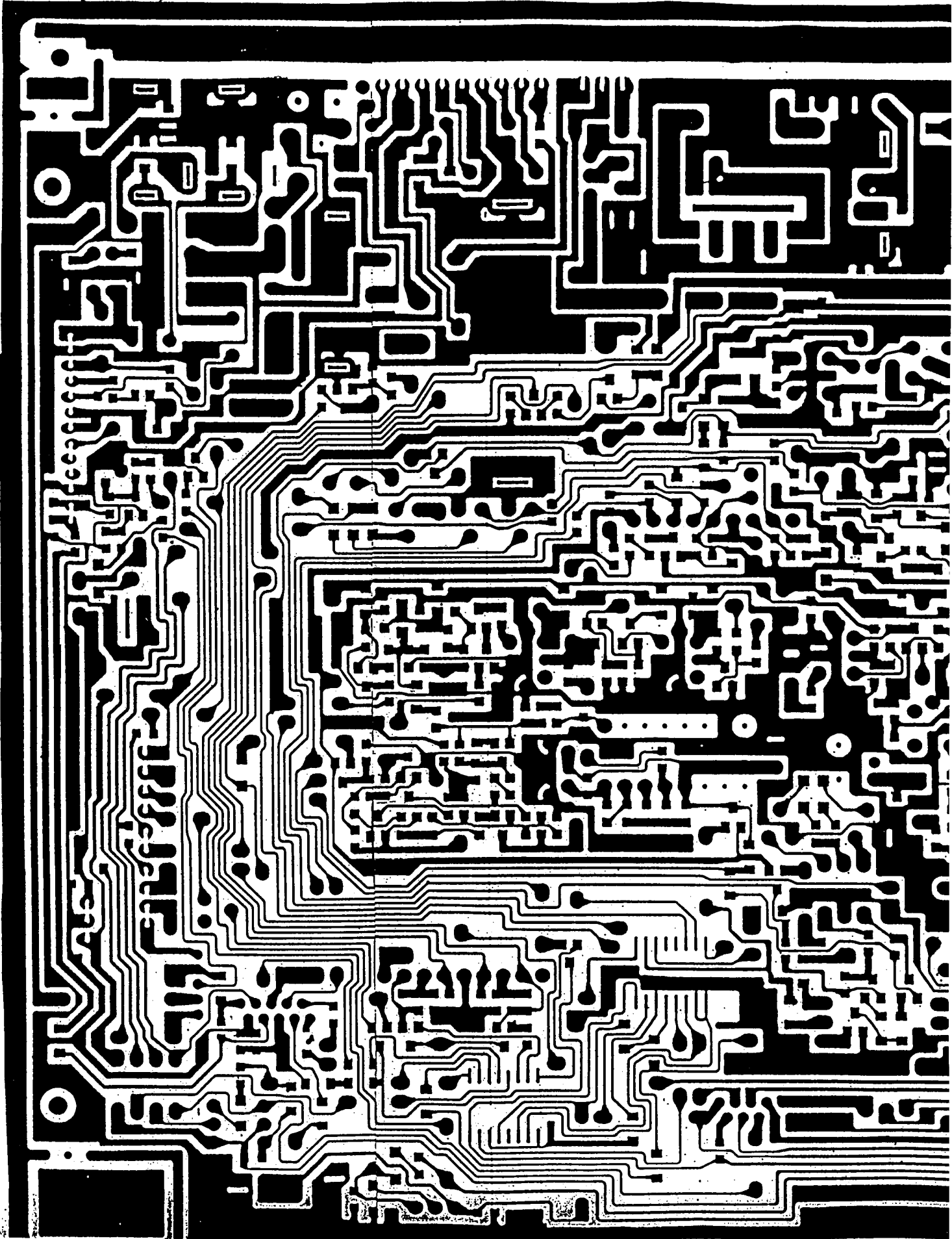
PLATINE PRINCIPALE

5B



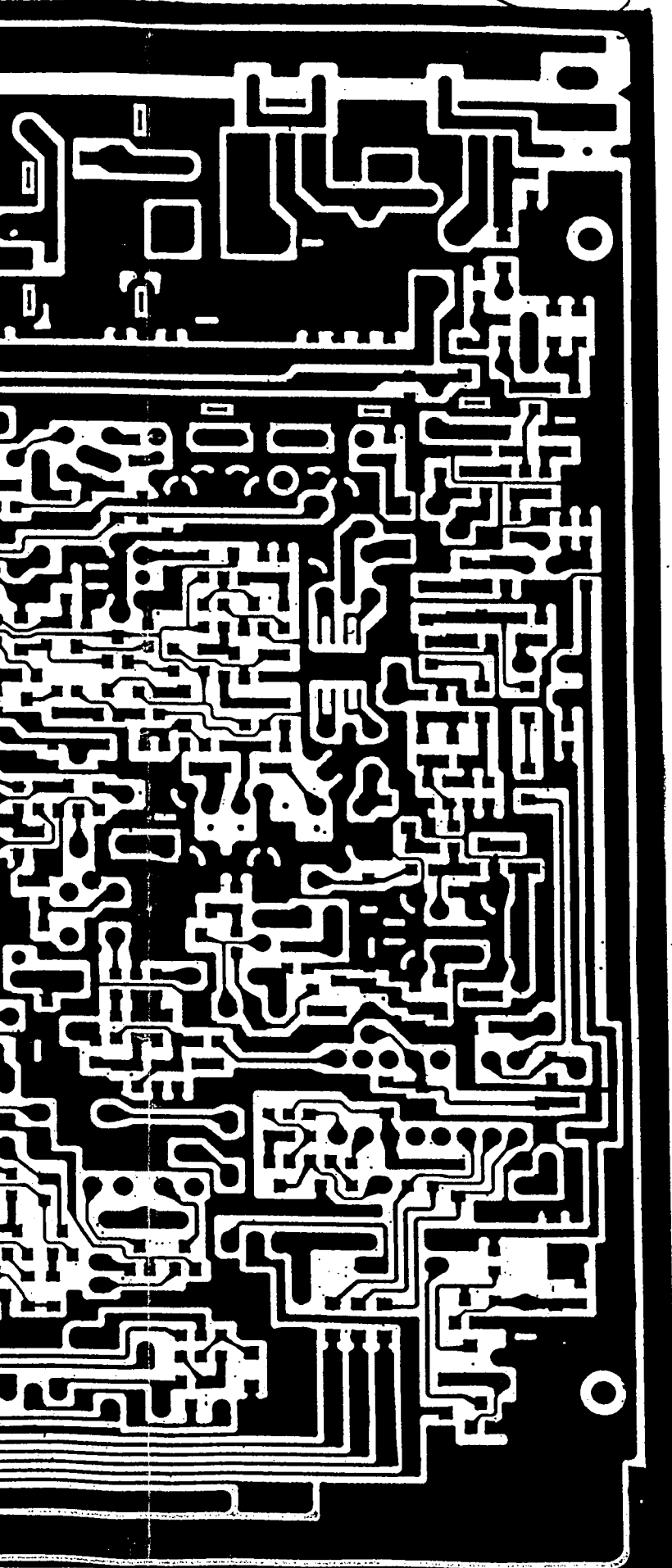
5A

5A



5B

PLATINE PRINCIPALE



PA-353(1/3)

6A

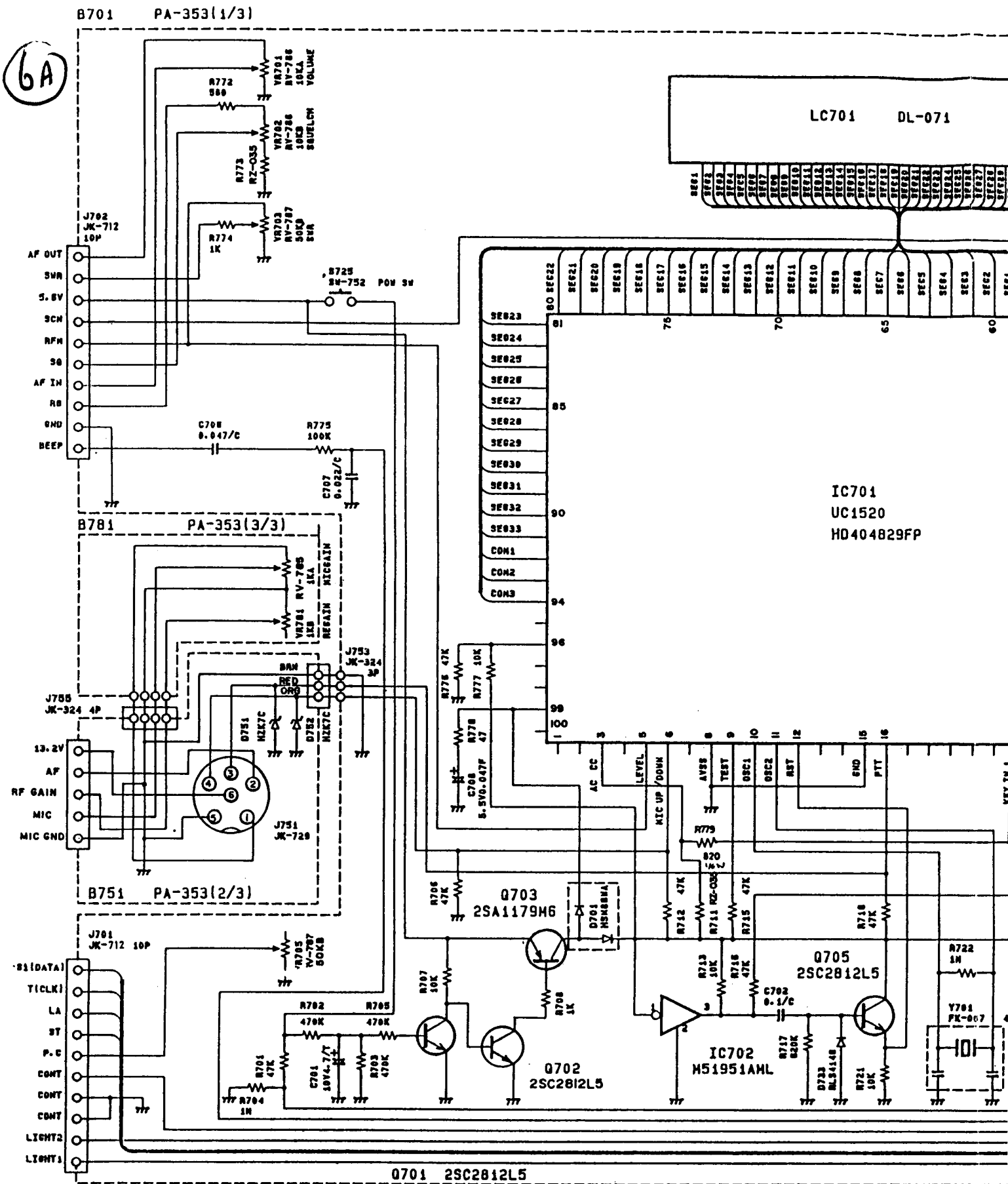
6B

DESIGN	DATE	BY	CHKD BY	DATE	REV.
UT-341Z	03-02-05	LORNA	APPROV BY	04-2-93	1
TITLE	SCHEMATIC DIAGRAM		DRAWING NO.		
ES2-0325		P.E.E.			

NOTES:

1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
2. RESISTOR RATINGS ARE 1/10W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICRO (P=MICRO-MICRO FARAD)
4. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

27

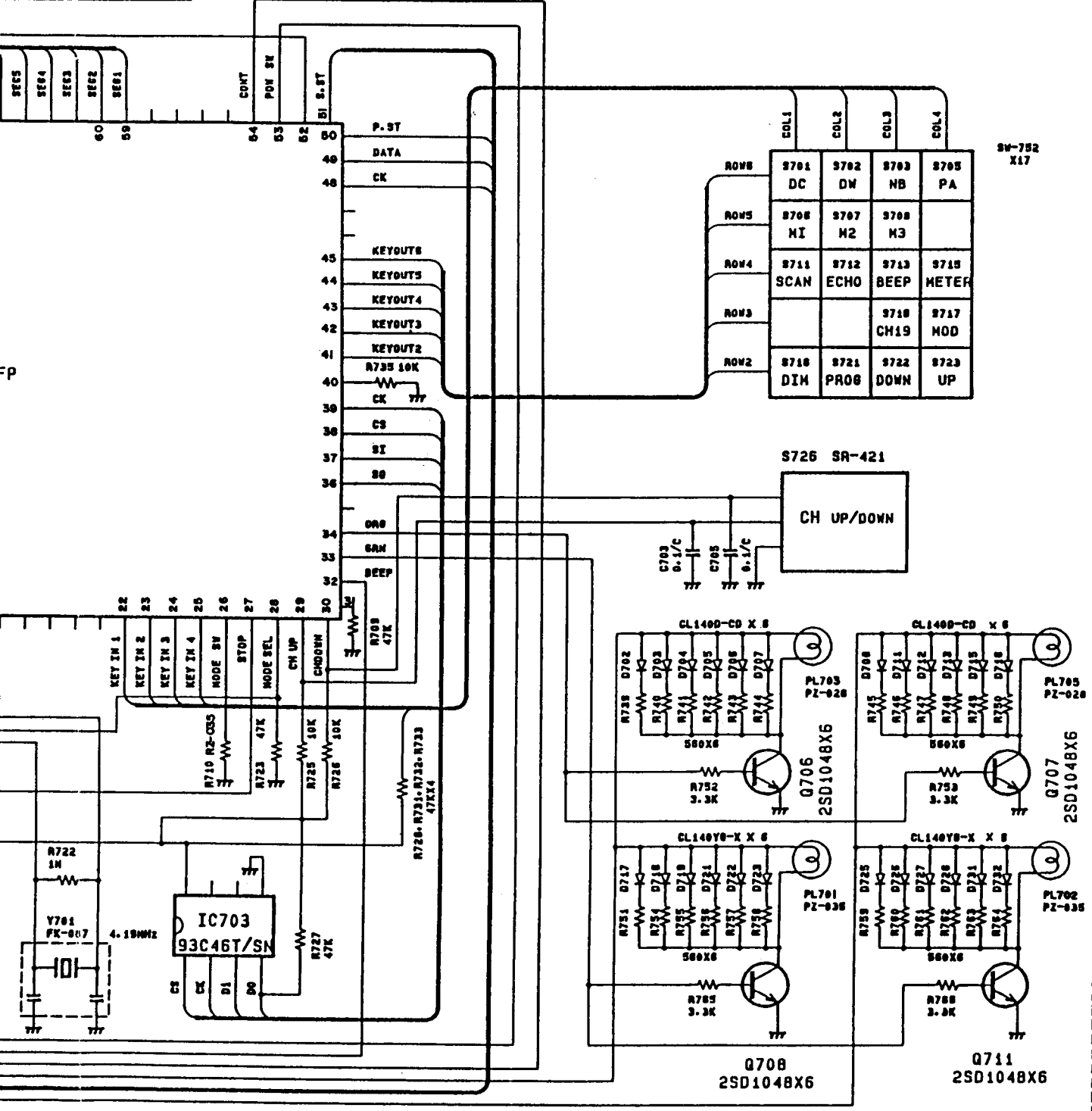


- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 2. RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)

6B

L-071

SEG21
SEG22
SEG23
SEG24
SEG25
SEG26
SEG27
SEG28
SEG29
SEG30
SEG31
SEG32
SEG33
COM1
COM2
COM3

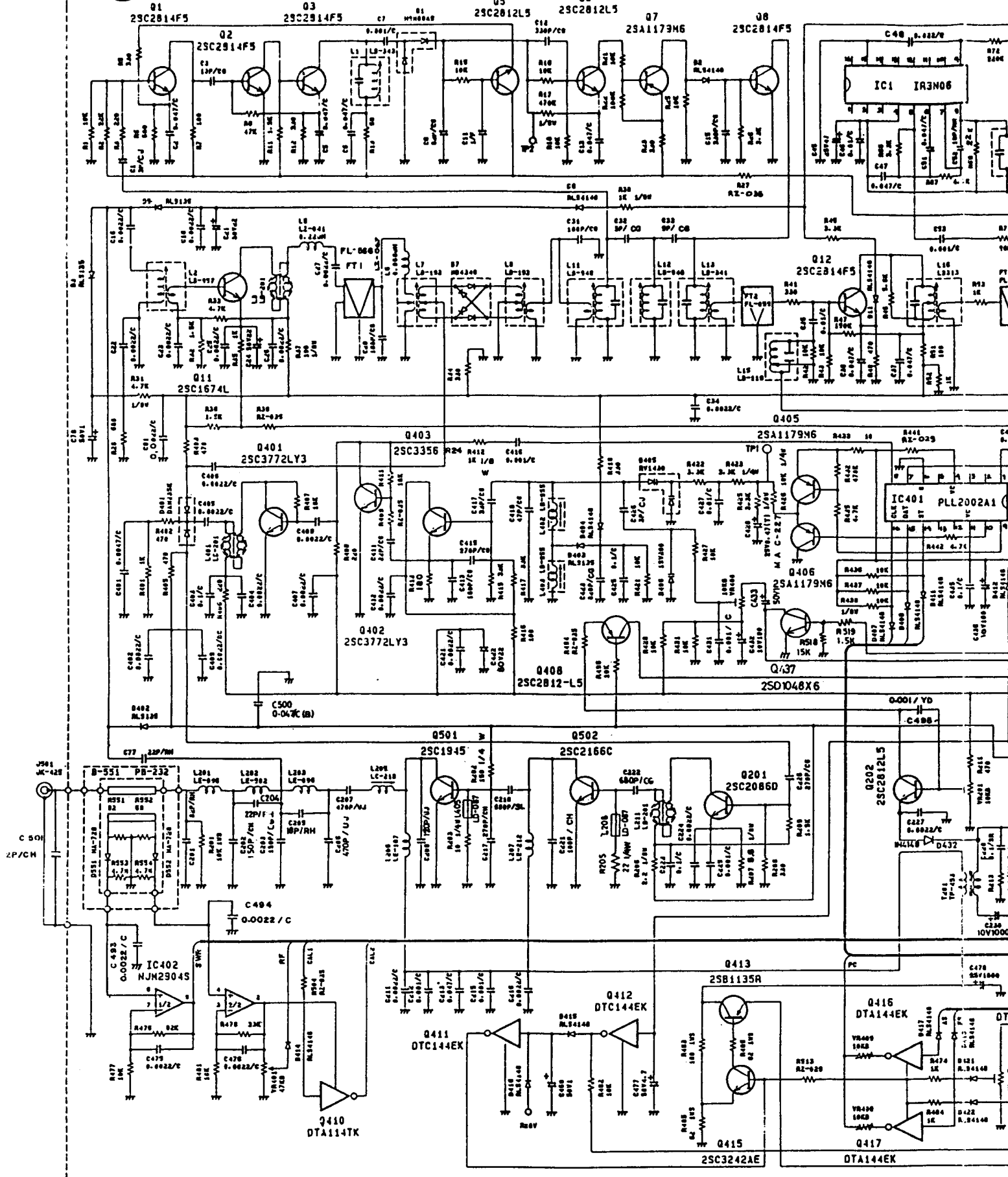


RESISTORS SHOWN IN OHMS UNLESS OTHERWISE NOTED.
RESISTORS INDICATED IN MICRO OHMS UNLESS NOTED.

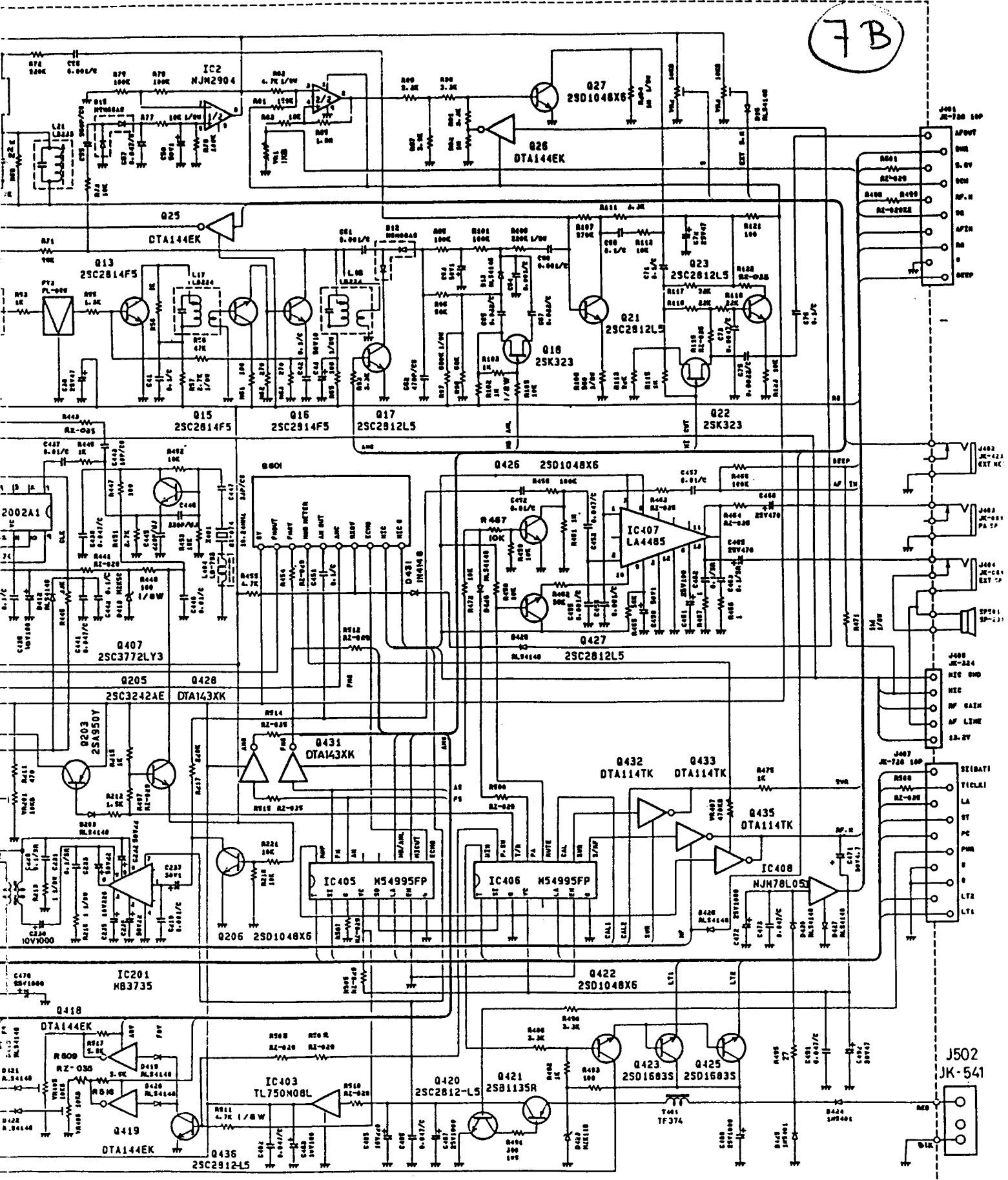
4. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

DESIGN	DRAWN BY	MODEL NO.
	93.02.05	UT-341Z
	LOFMA	JAMES
CHECK BY	APPROV BY	TITLE
		SCHEMATIC DIAGRAM
DATE	DATE	DRAWING NO.
02/04/93	Feb. 8, '93	ES2-0325
REV. NO.		P.E.E

7A



7B

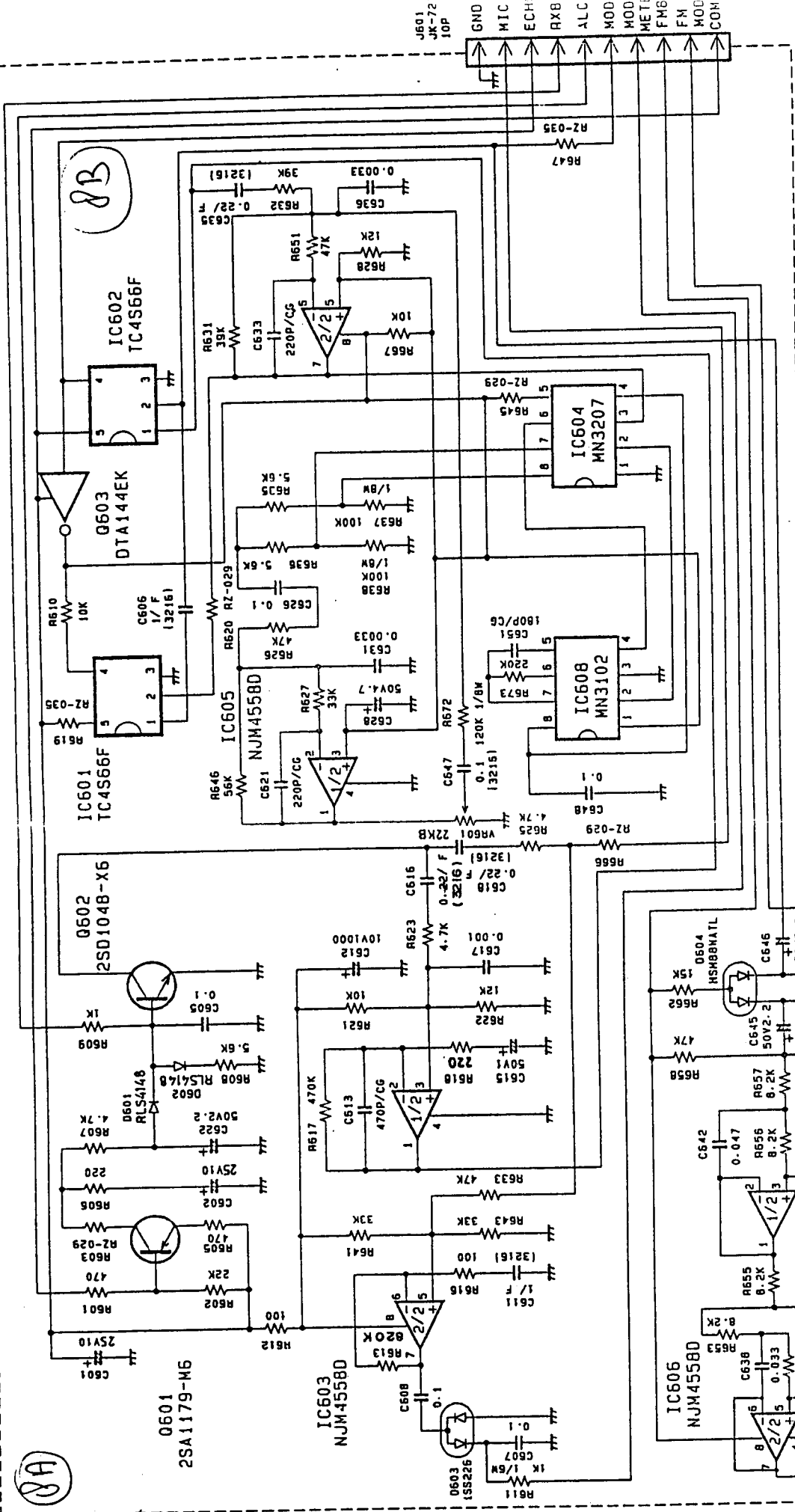


- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 2. RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)
 4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SR UNLESS OTHERWISE NOTED.
 5. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

DESIGN	DATE	UT-341	MODEL NO.
33-02-00			JAMES
LCRMA		TITLE	
		SCHEMATIC DIAGRAM	
CHECK BY	APPROV. BY	DRAWING NO.	
Robert A. [Signature]	[Signature]	ES2-0326	
REV. NO.		P.E.E	

(8A)

(8B)

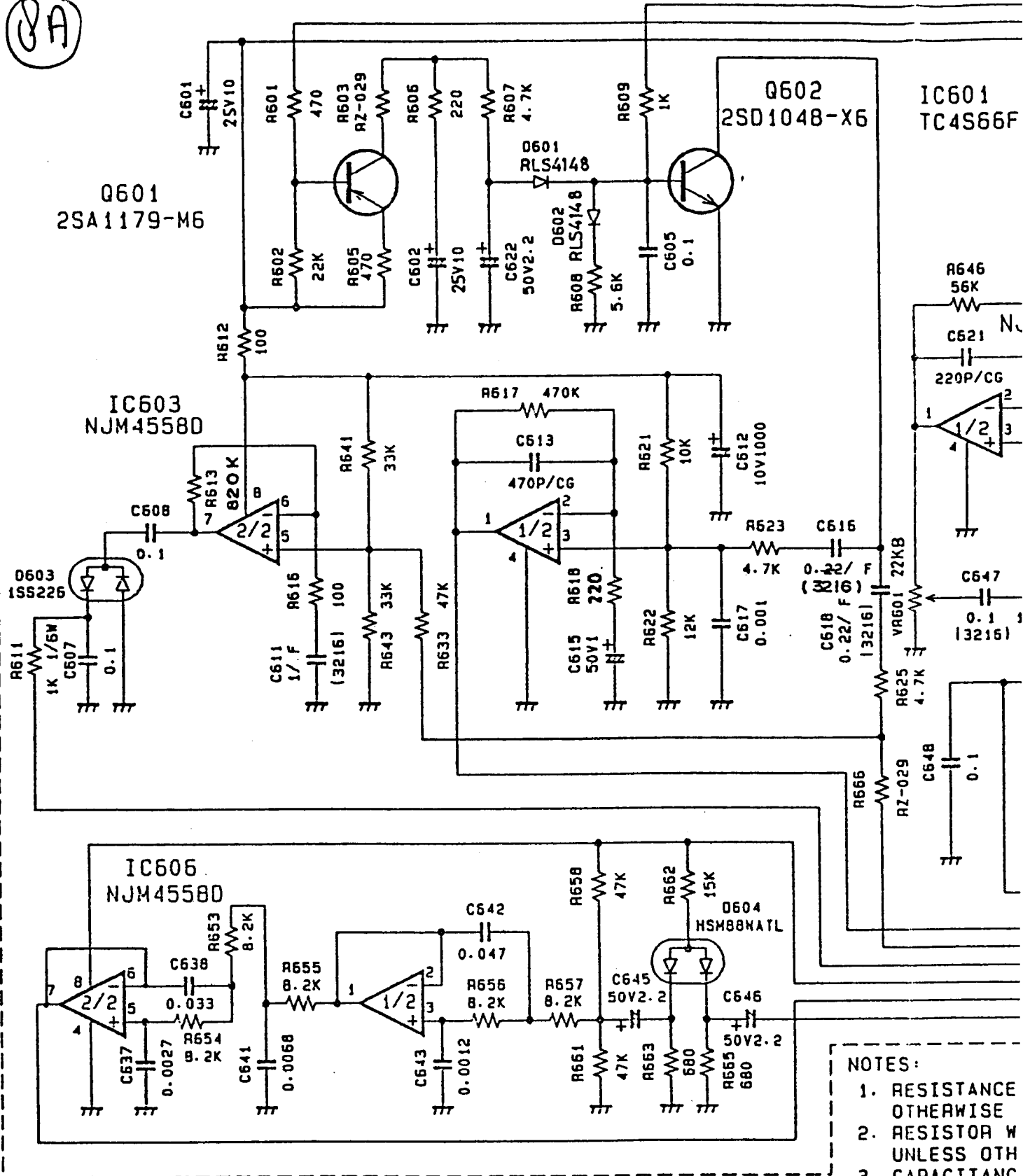


NOTES:

1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
2. RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)
4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE Q UNLESS OTHERWISE NOTED.
5. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

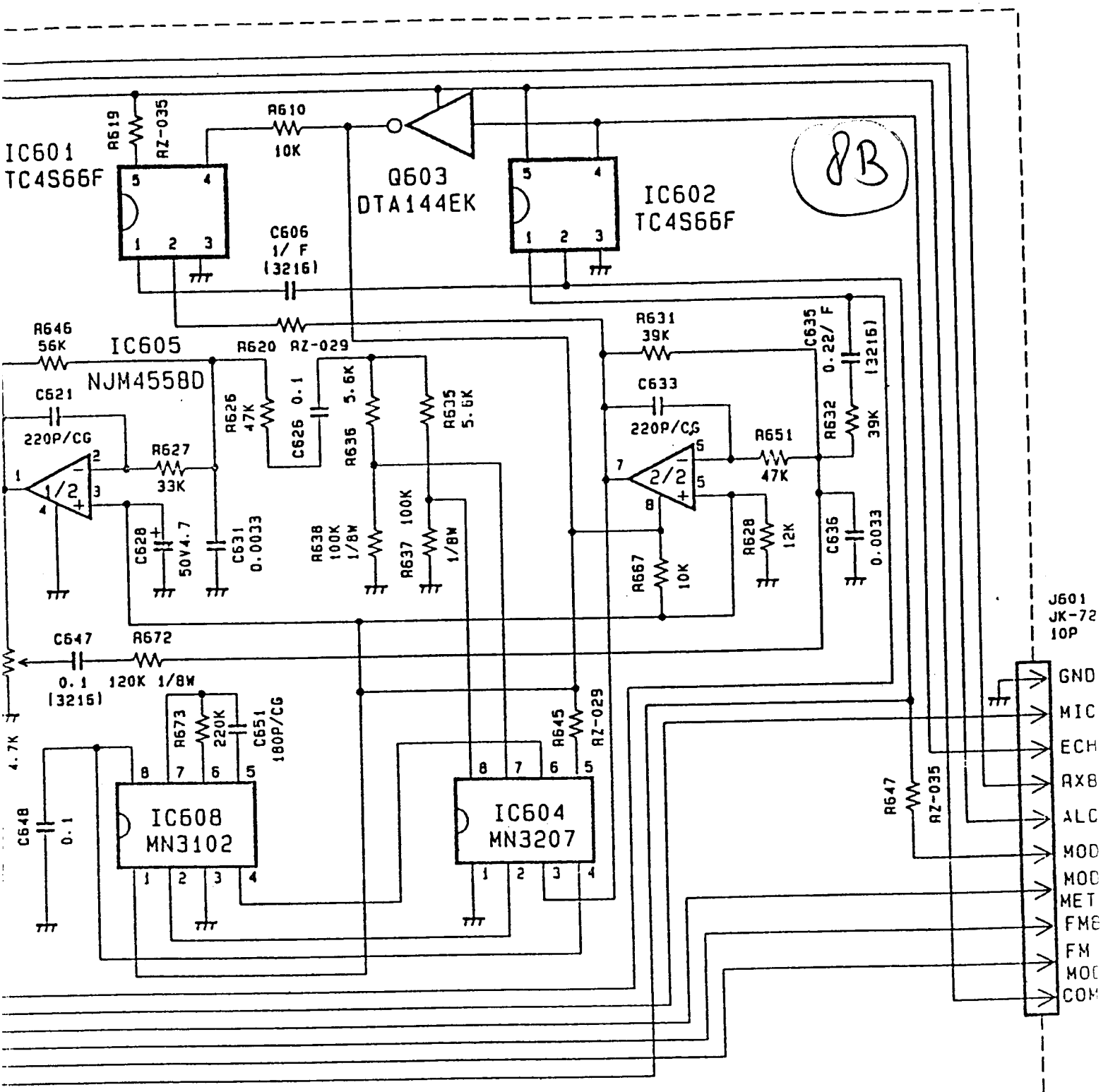
DESIGN	UT-557Z	MODEL NO.	JAMES
DRAWN BY	93-2-4	TITLE	ECHO MIC PCB
CHECK BY	YUI	APPRO. BY	SCHEMATIC DIAGRAM
REV. NO.	Feb. 23, 93	DRAWING NO.	ES4-0334
			P.E.E

(8A)



NOTES:

1. RESISTANCE OTHERWISE
2. RESISTOR W UNLESS OTH
3. CAPACITANC FARADS UNL (P=MICRO-M
4. ALL CAPACI ARE 8 UNL
5. CHIP PARTS SCHEMATIC PLEASE REF THE CHIP P



RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 RESISTOR WATTAGES ARE 1/10W UNLESS OTHERWISE NOTED.
 CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED.
 (P=MICRO-MICRO FARAD)
 ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE B UNLESS OTHERWISE NOTED.
 CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM.
 PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.

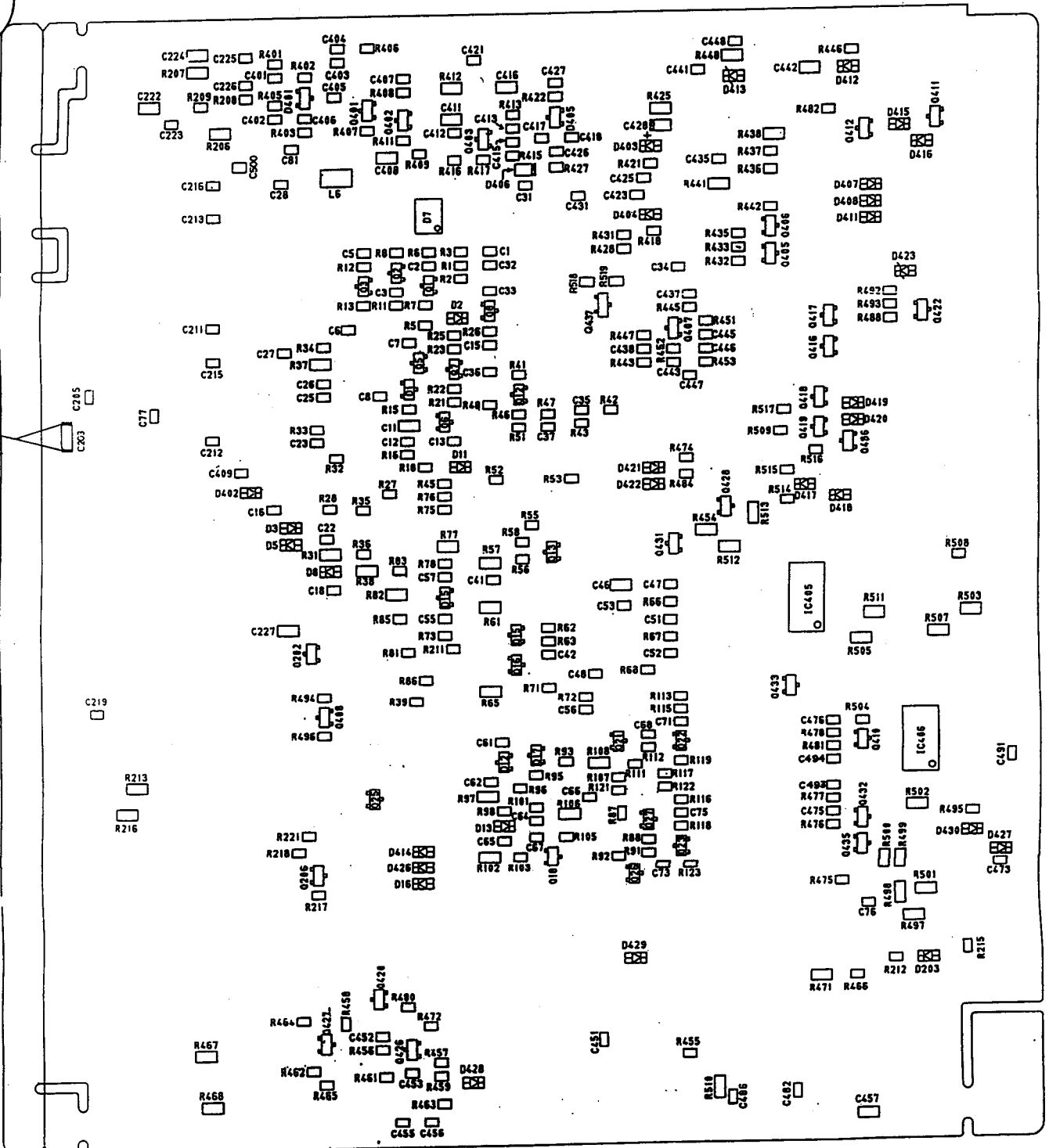
DESIGN	DRAWN BY	MODEL NO.
	93-2.4	UT-557Z
CHECK BY	APPRO BY	TITLE
	YUI	ECHO MIC PCB SCHEMATIC DIAGRAM
REV. NO.		DRAWING NO
	Feb. 23, '93	ES4-0334
		P.E.E

PLATINE PRINCIPALE

Côté soudure

JB

SOLDERING



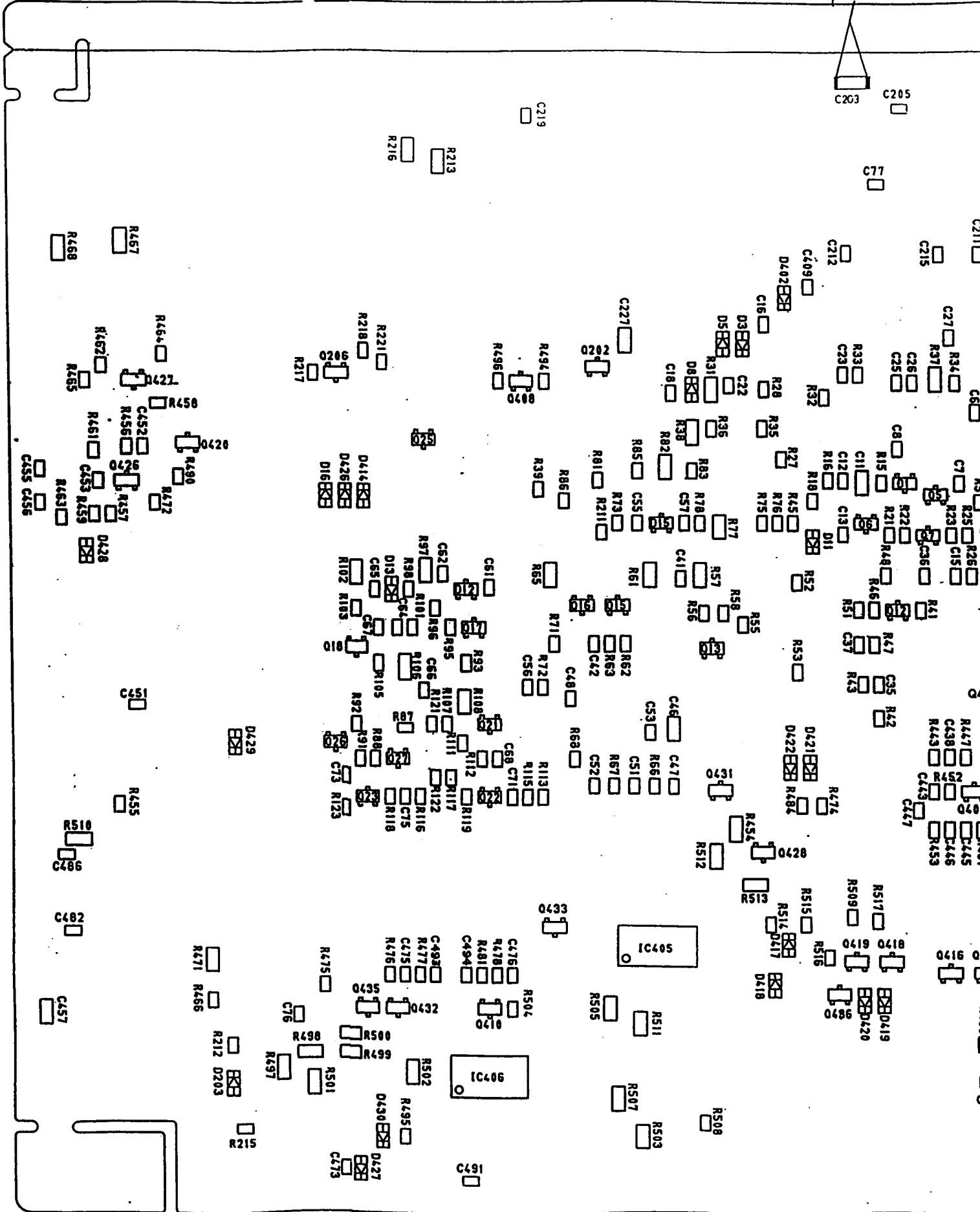
GA

PA-352AA/MAIN : : 93:02:01

9A

PA-352AA/MAIN. : : 93:02:01

SOLDERING



C21	50V22	C-130
C24	50V22	C-130
C38	25V47	C-130
C43	50V10	C-130
C45	25V47	C-130
C58	50V1	C-130
C63	50V1	C-130
C72	25V47	C-130
C78	50V1	C-130
C201	82P/RH	
C202	150P/CH	
C206	470P/UJ	
C207	470P/UJ	
C208	120P/RH	
C217	270P/CH	
C218	680P/SL	
C221	100P/CH	
C228	0.115R1	
C230	10V1000	C-130
C231	0.115R1	
C232	50V22	C-130
C233	50V22	C-130
C235	10V220	C-130
C236	50V22	C-130
C237	50V1	C-130
C422	50V22	C-130
C432	10V100	C-130
C433	50V1	C-130
C436	10V100	C-130
C458	50V1	C-130
C461	25V100	C-130
C462	0.115R1	
C463	0.115R1	
C465	25V470	C-130
C466	25V470	C-130
C468	50V1	C-130
C472	25V1000	C-130
C477	50V4.7	C-130
C478	25V1000	C-130
C483	10V100	C-130
C485	16V220	C-130
C487	25V1000	C-130
C488	25V1000	C-130
C492	50V47	C-130
C501	22P/CH	
D424	1N5401	
D425	1N5401	
Q11	25C1674-L	
Q201	25C2086-D	
Q203	25A950-Y	
Q205	25C3242A-E	
Q413	28B135R	
Q415	25C3242A-E	
Q421	25B1135R	
Q423	25D1683-S	
Q425	25D1683-S	
IC1	1R3N06	
IC2	NJM2904S	
IC201	MB3735	
IC401	PLL2002A1	
IC402	NJM2904S	
IC407	LA4485	
IC408	UPC78L05J	

J401	JK-728	10P
J402	JK-423	
J403	JK-089	
J404	JK-089	
J406	JK-924	5P
J407	JK-728	10P
L1	LB343	
L2	LB957	
L3	LD-201	
L5	LZ-041	0.22UH
L7	LD-193	
L8	LD-193	
L11	LB-948	
L12	LB-948	
L13	LB-341	
L15	LB-119	
L16	LB-313	
L17	LB-224	
L18	LB-224	
L21	LB293	
L201	LE-096	8 1/2T
L202	LE-502	9 1/2T
L203	LE-096	8 1/2T
L205	LC-218	
L206	LE-187	7T
L207	LE212	2 1/2T
L208	LD-087	
L211	LD-201	
L401	LD-201	
L402	LB-955	
L403	LB-955	
L404	LB-793	
L405	LD-087	
X491	QX-074	
	10.240	
R17	470K	1/6W
R201	10K	1W5
R202	150	
R203	10	
R423	3.9K	
R426	10K	
R483	180	1W5
R485	82	1W5
R486	82	1W5
R491	390	1W5
R205	22	
VR1	RT-528	1KB
VR2	RT-528	10KB
VR3	RT-528	10KB
VR201	RT-528	10KB
VR400	RT-528	10KB
VR401	RT-528	47KB
VR405	RT-528	10KB
VR406	RT-528	10KB
VR407	RT-528	470KB
VR408	RT-528	10KB
VR409	RT-528	10KB

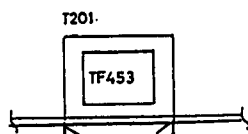
T201	TF-453	
T401	TF-374	
FT001	FL-566	
FT002	FL-055	
FT003	FL-066	
JV1	12.5	
JV2	10	
JV3	5	
JV4	17.5	
JV5	7.5	
JV6	7.5	
JV7	15	
JV8	15	
JV9	15	
JV10	10	
JV11	5	
JV12	17.5	
JV13	15	
JV14	15	
JV15	7.5	
JV16	7.5	
JV17	7.5	
JV18	15	
JV19	12.5	
JV20	17.5	
JV21	20	
JV22	25	
JV23	20	
JV24	7.5	
JV26	15	
JV27	7.5	
JV28	12.5	
JV29	10	
JV30	20	
JV31	20	
JV32	5	
JV33	10	
JV34	10	
JV36	27.5	
JV37	15	
JV38	15	
JV39	30	
JV40	17.5	
JV41	7.5	
JV42	27.5	
JV43	12.5	
JV44	5	
JV47	5	
JV48	20	
JV49	15	
JV50	5	
JV51	5	
JV52	25	
JV53	25	
JV54	7.5	
JV55	12.5	
JV56	22.5	
JV57	10	
JV58	15	
JV59	17.5	
JV60	7.5	
JV61	7.5	
JV62	7.5	
JV63	7.5	
JV64	5	
JV65	7.5	

JV66	7.5	
JV67	10	
JV68	10	
JV69	7.5	
JV70	10	
JV71	10	
JV72	17.5	
JV73	12.5	
JV74	10	
JV75	7.5	
JV76	17.5	
JV77	7.5	
JV78	12.5	
JV79	7.5	
JV82	15	
JV83	10	
JV84	17.5	
JV85	15	
JV87	10	
JV88	10	
JV89	15	
JV90	7.5	
JV91	5	
JV92	12.5	
JV93	7.5	
JV94	12.5	
JV95	12.5	
JV96	12.5	
JV97	12.5	
JV98	15	
JV99	7.5	
JV100	7.5	
JV101	7.5	
JV102	7.5	
JV103	5	
JV104	7.5	
JV105	15	
JV106	7.5	
JV107	7.5	
JV108	17.5	
JV109	7.5	
JP2	10	
JP3	10	
JP4	10	
JP5	10	
JP6	10	
JP7	20	
JP8	30	
JP9	10	
JP10	22.5	

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
 2. RESISTOR WATTAGES ARE 1/4 W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)

DESIGN	DRAWN BY	UT-341Z	MODEL NO.	JAMES
	NORIE R.	TITLE	MAIN PCB	
CHECK BY	APPROV BY	PARTS ASS'Y TOP VIEW		
		DRAWING NO.	EM2-0961	
REV. NO.			PHILS. IN	

~~~~~ - APPLY BOND LOCK

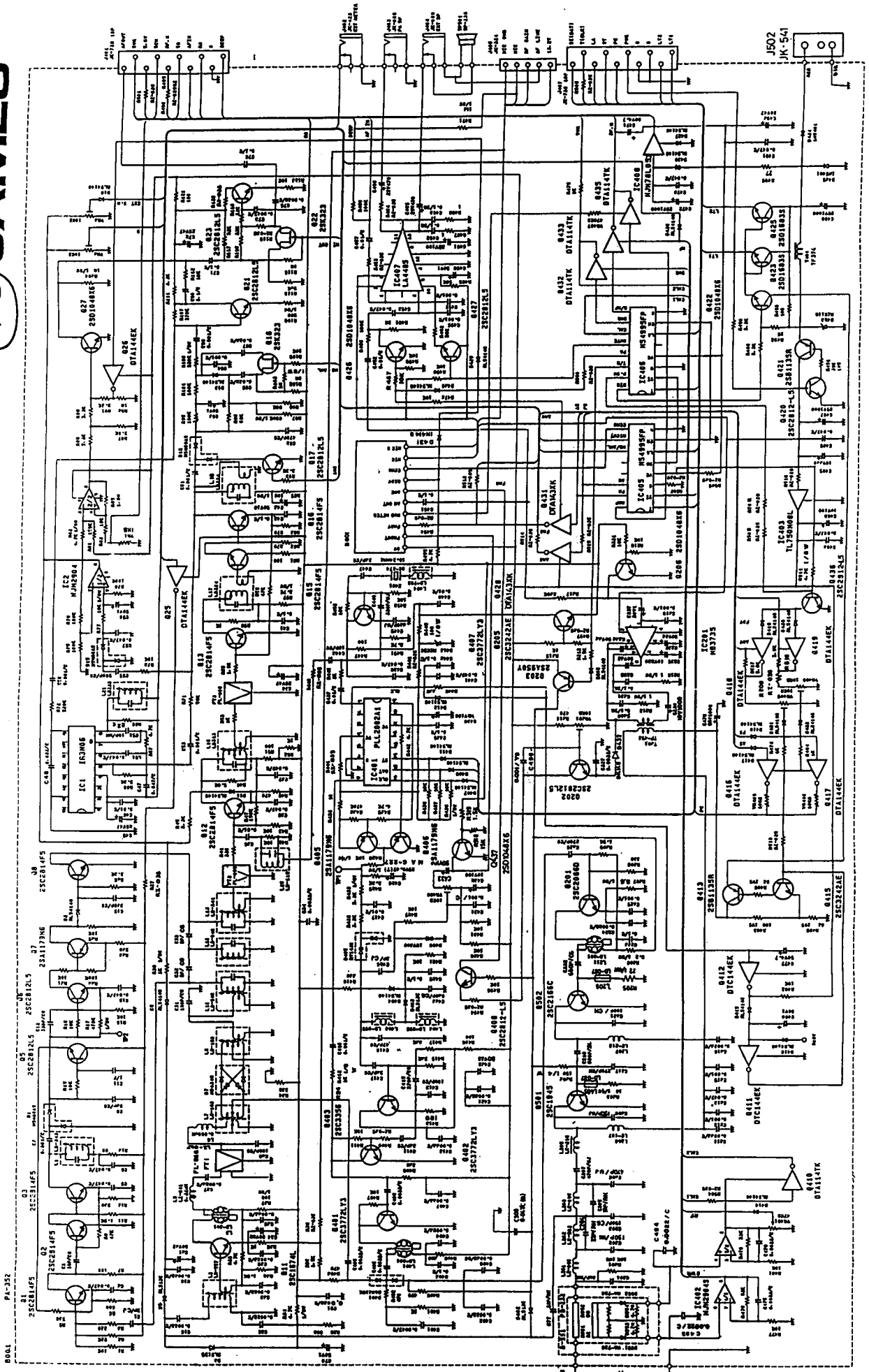


CUT LEGS OF T201 LEAVING 5mm. FROM PCB. EDGE THEN BEND.

**JAMES**

10B

10A

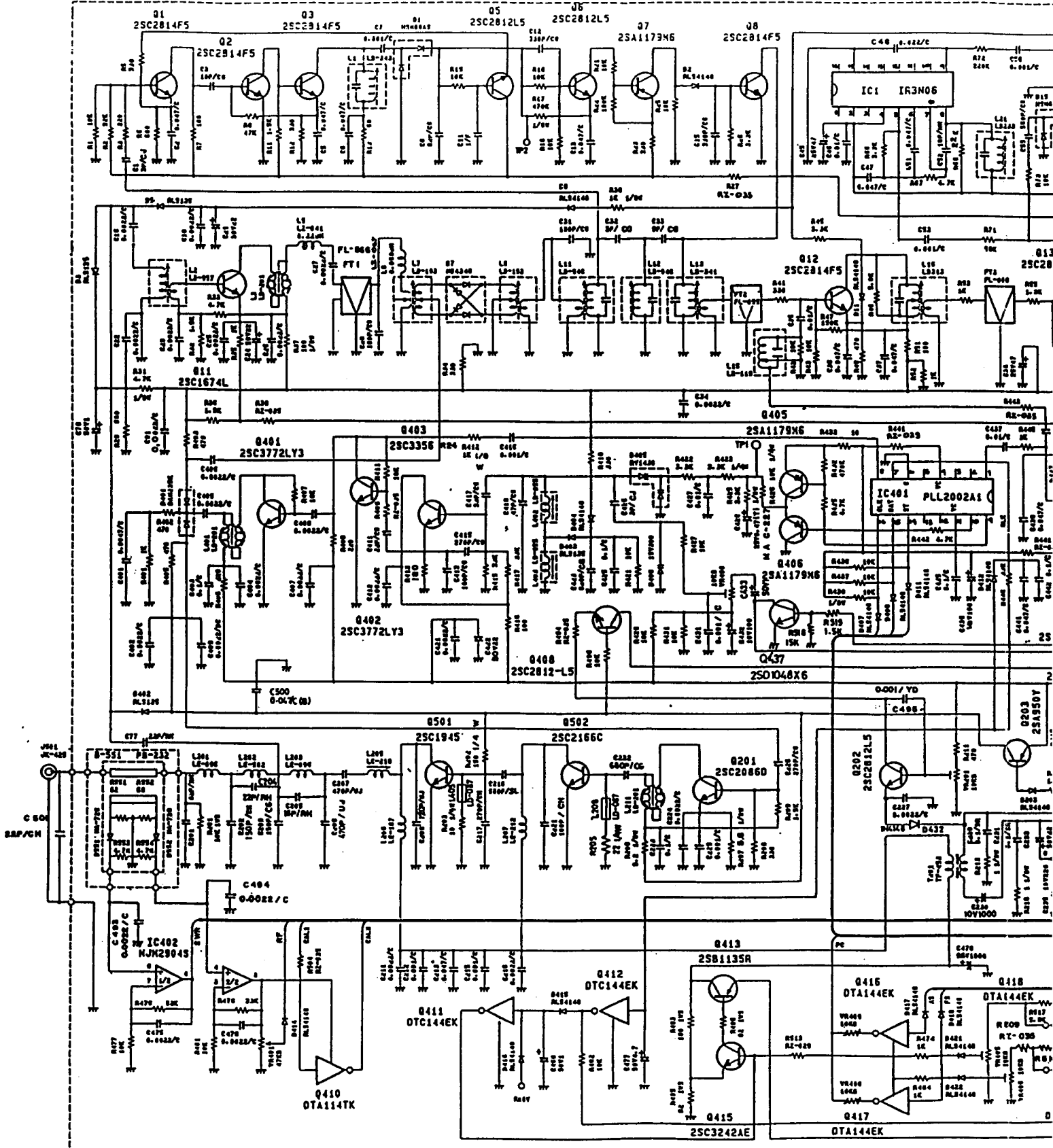


9041 PL-352

J502 JK-541

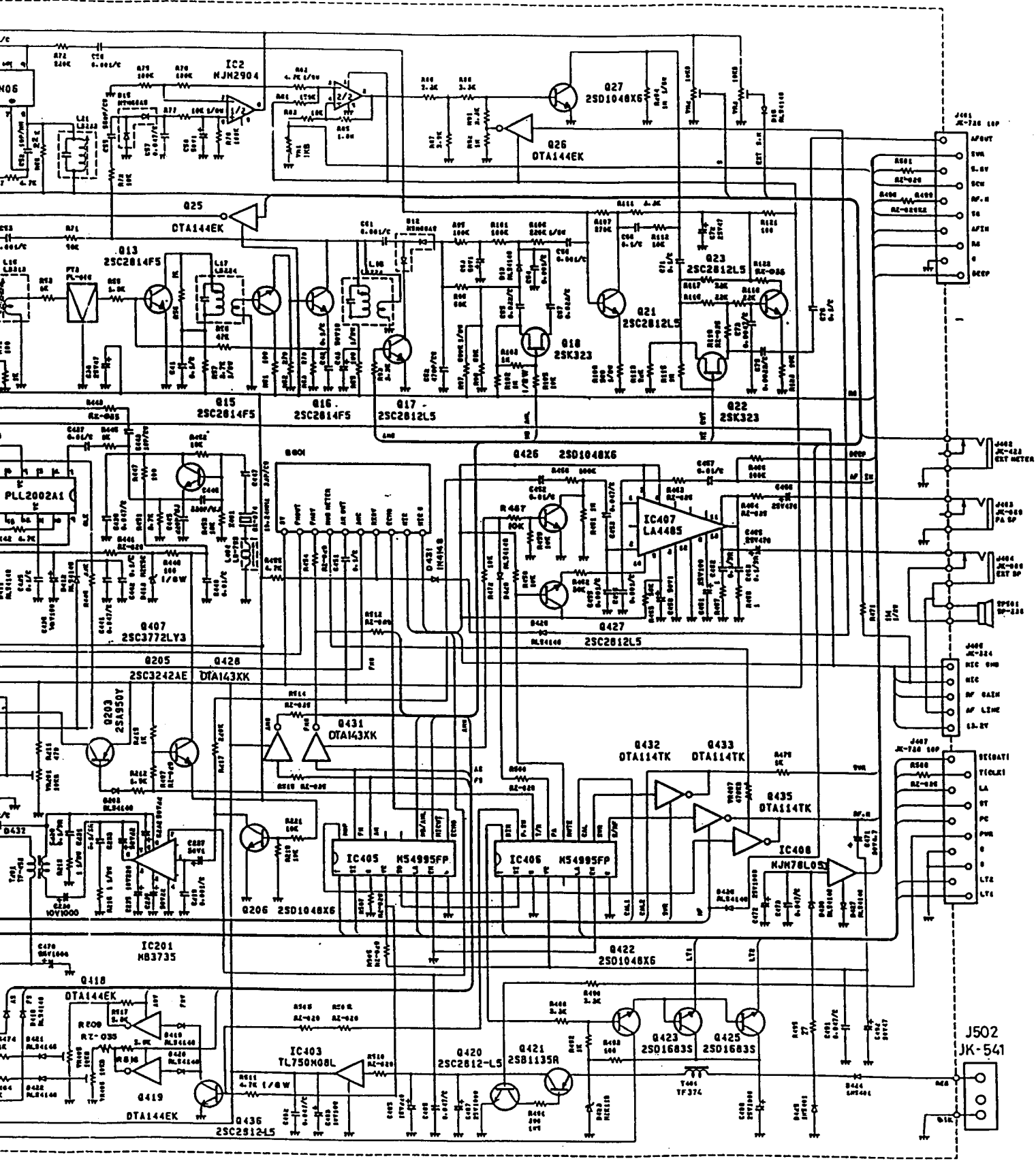
10A

8001 PA-352

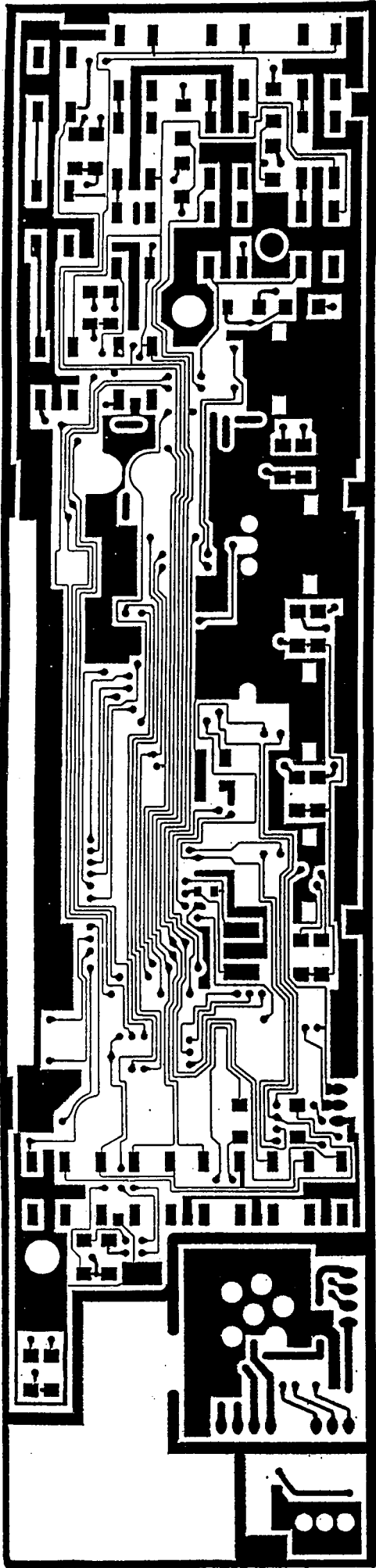




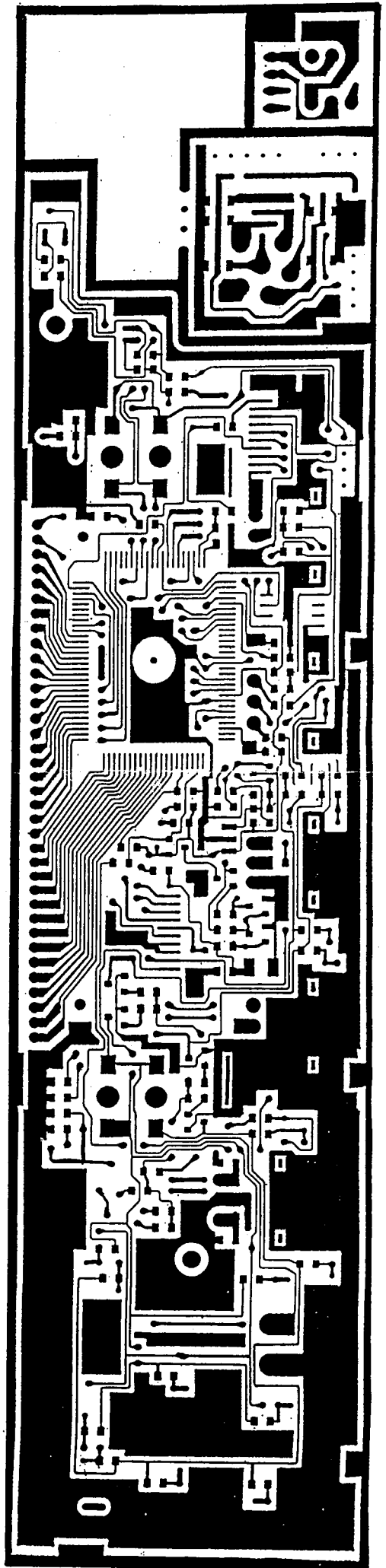
# 10B JAMES



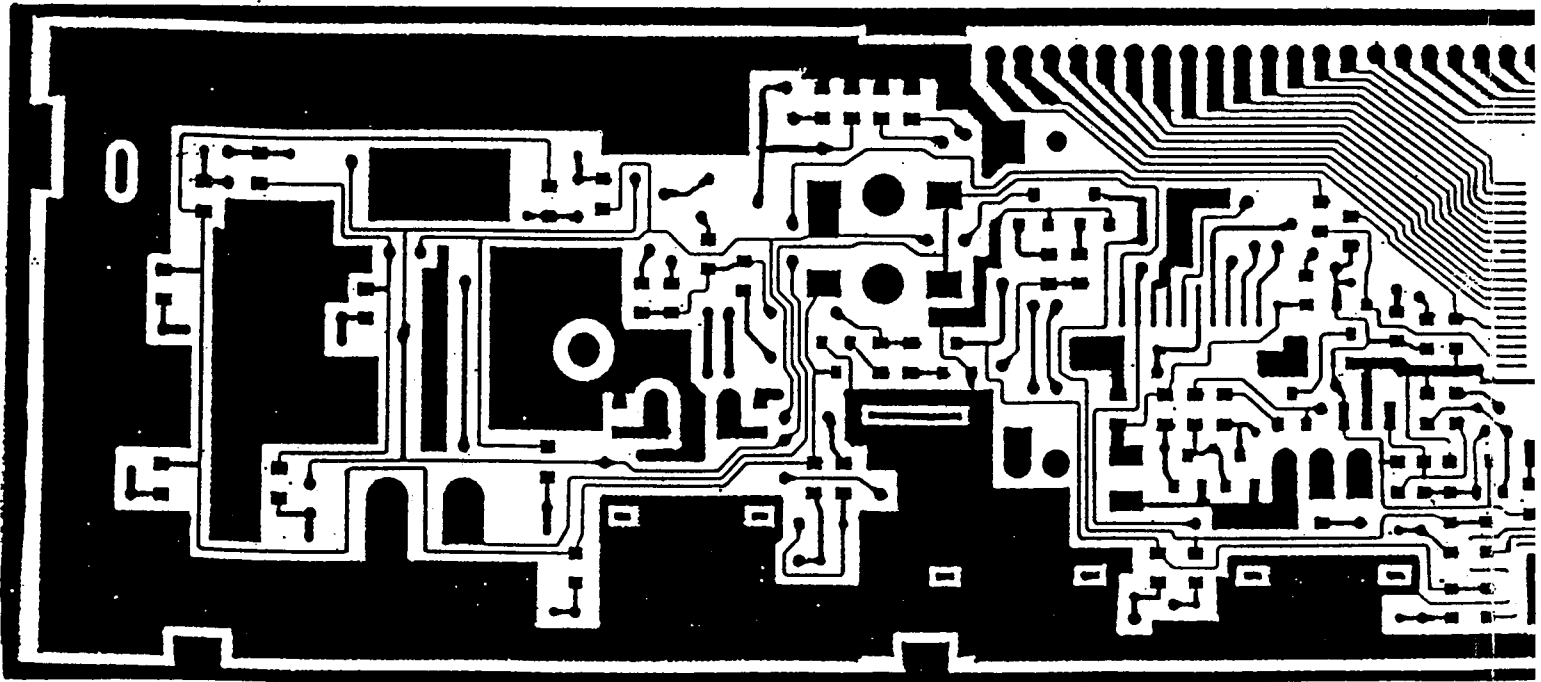
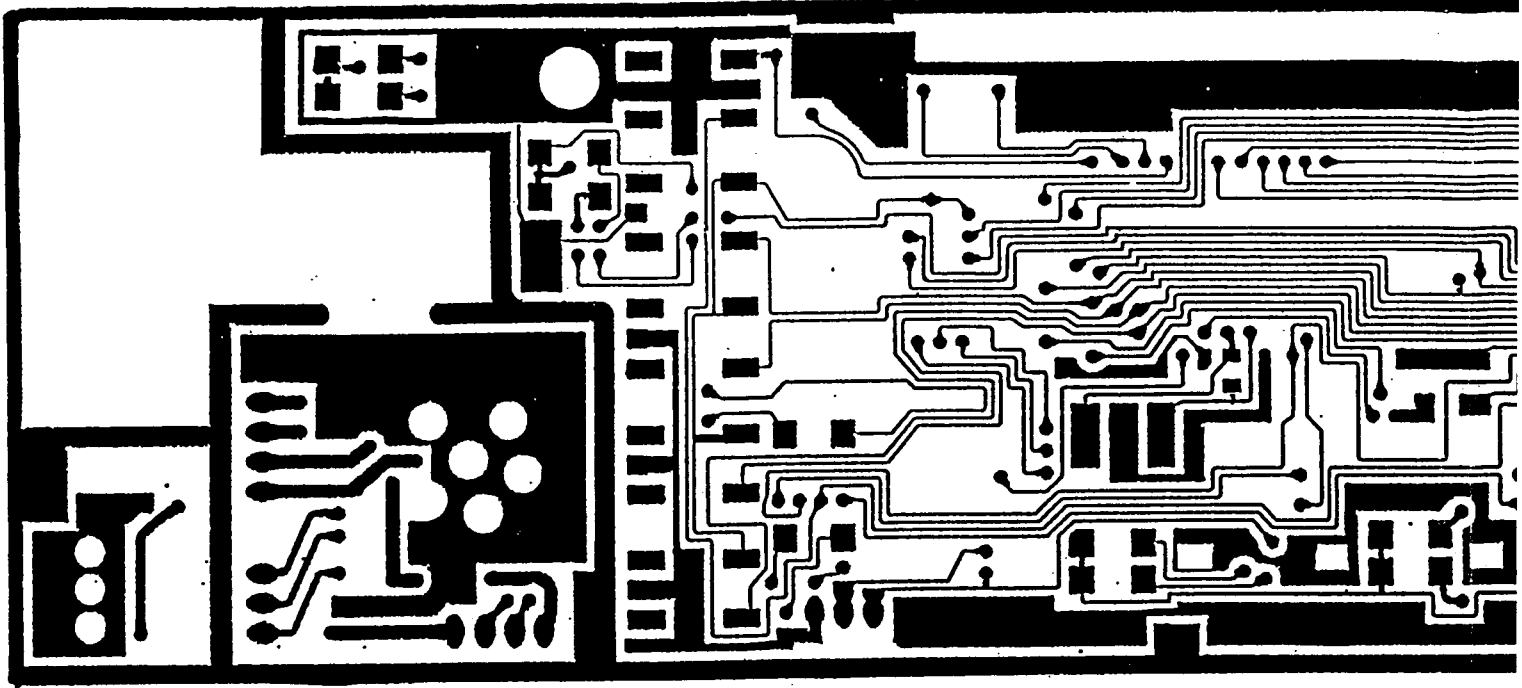
11B



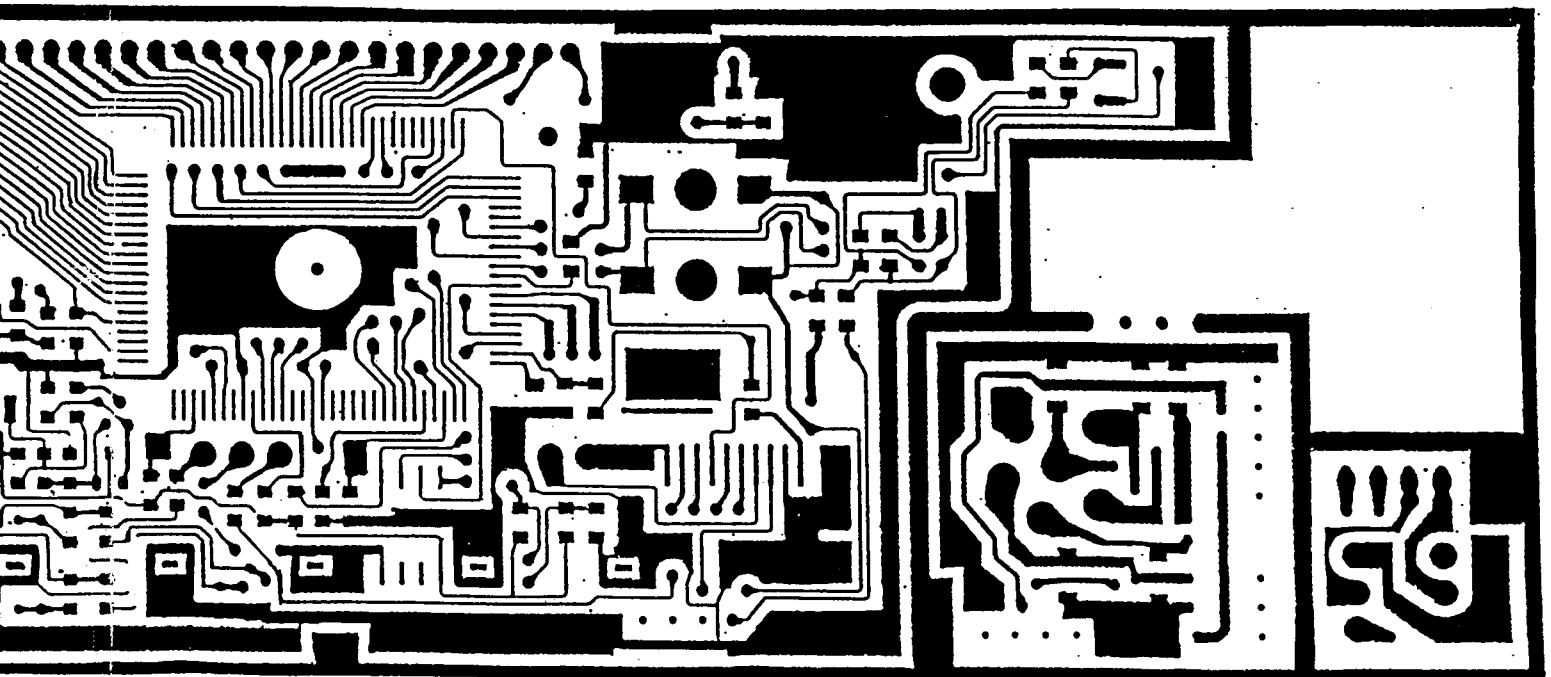
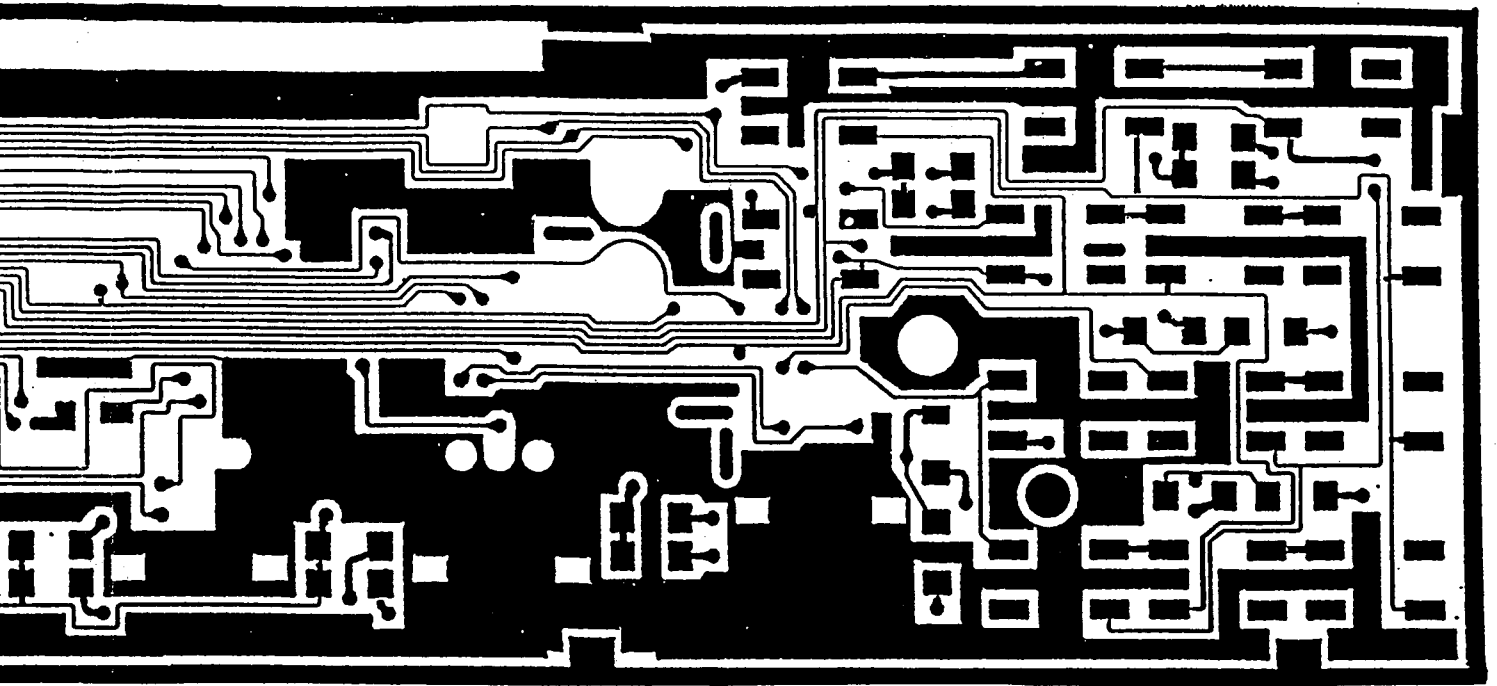
11A



11A

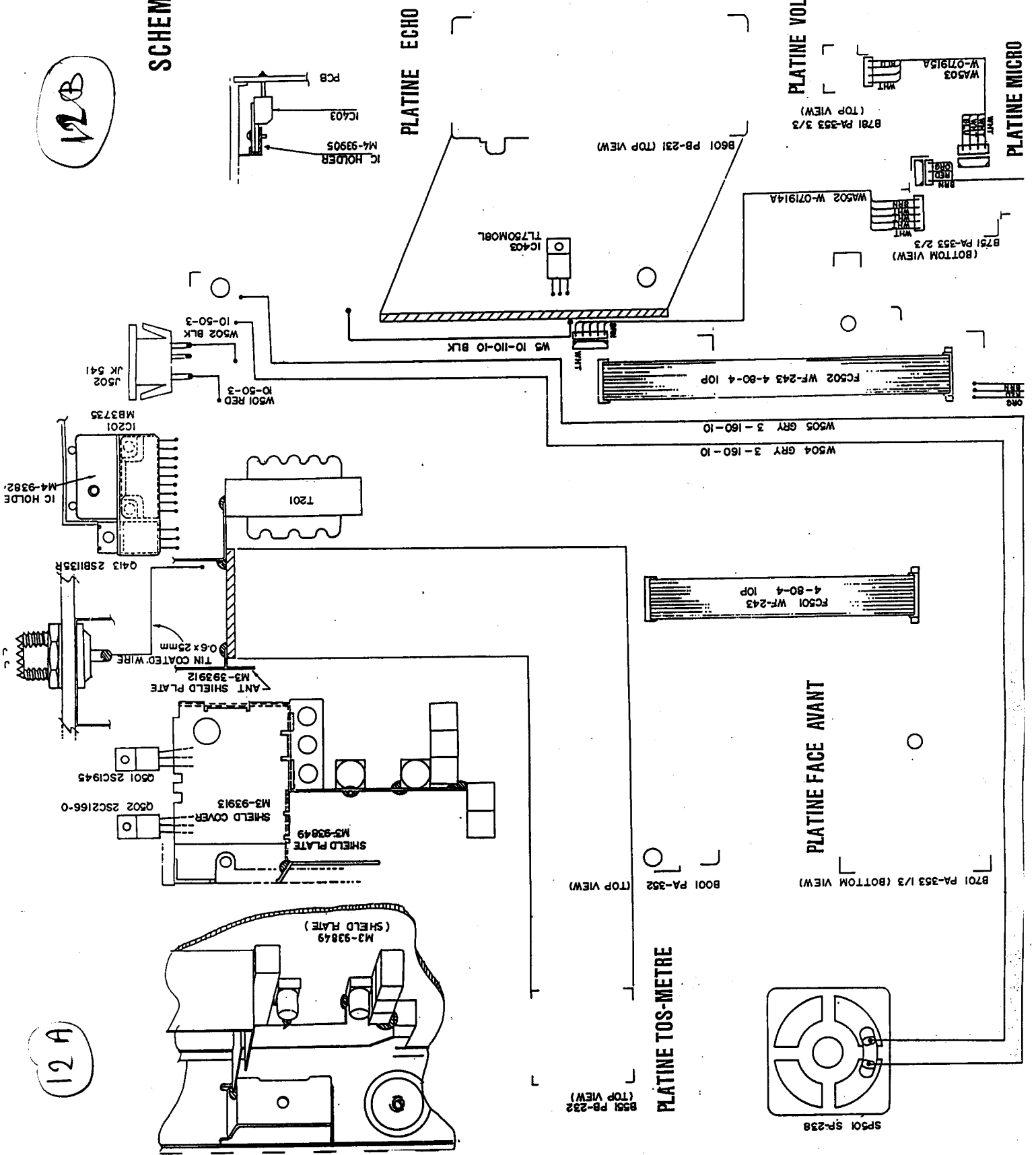


11B



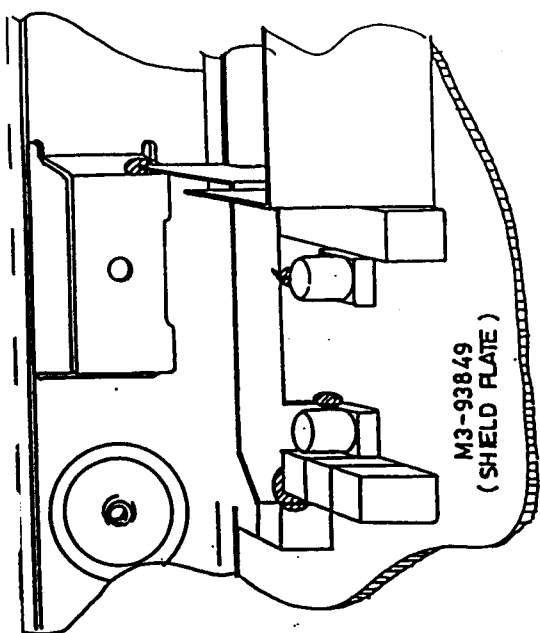
12B

# SCHEMA DE CABLAGE



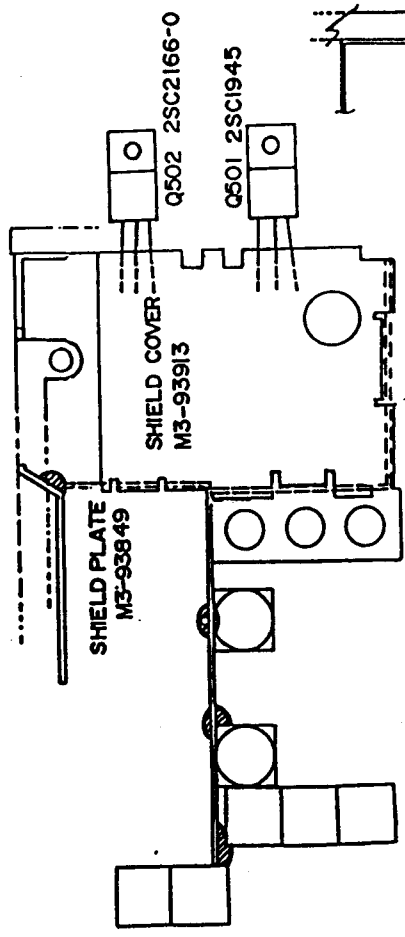
12A

12 A



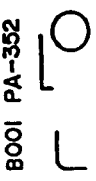
B551 PB-232  
(TOP VIEW)

### PLATINE TOS-METRE

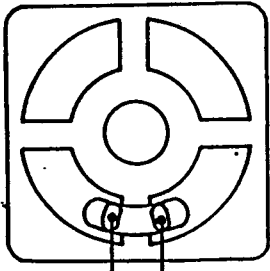


(TOP VIEW)

B001 PA-352

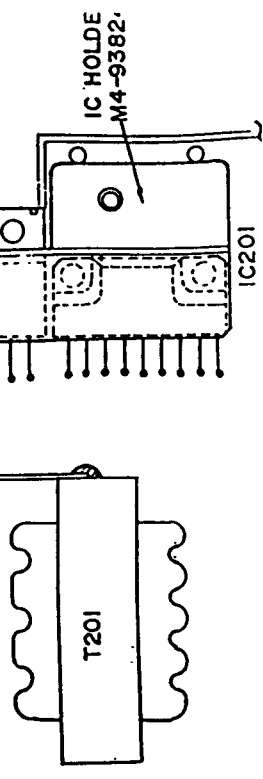
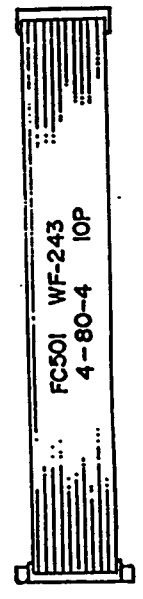


SP501 SP-238



B701 PA-353 1/3 (BOTTOM VIEW)

### PLATINE FACE AVANT



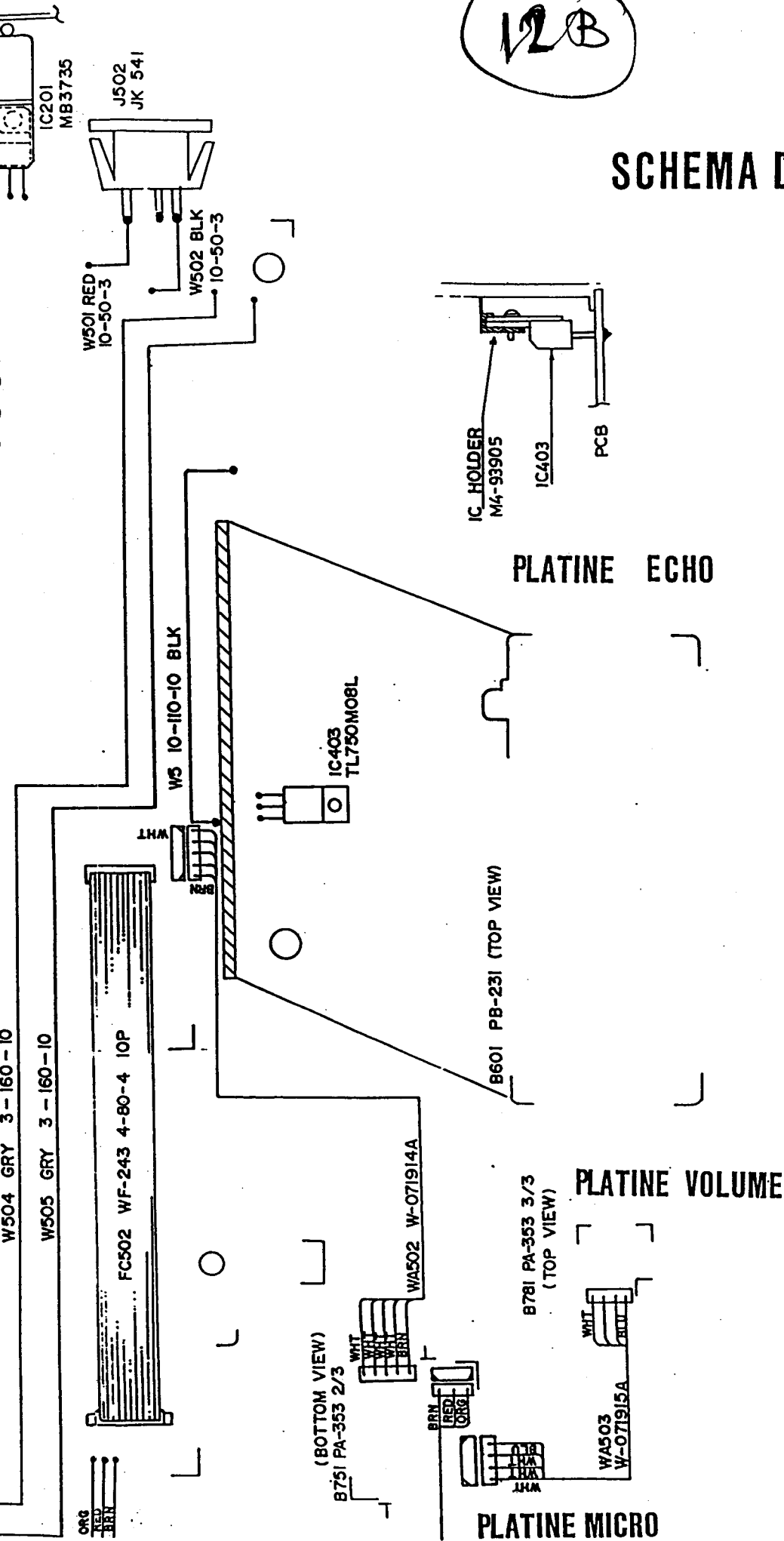
T201

W504 GRY 3-160-10

W505 GRY 3-160-10

12B

# SCHEMA DE CABLAGE



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 **JAMES MEASUREMENT READINGS** 

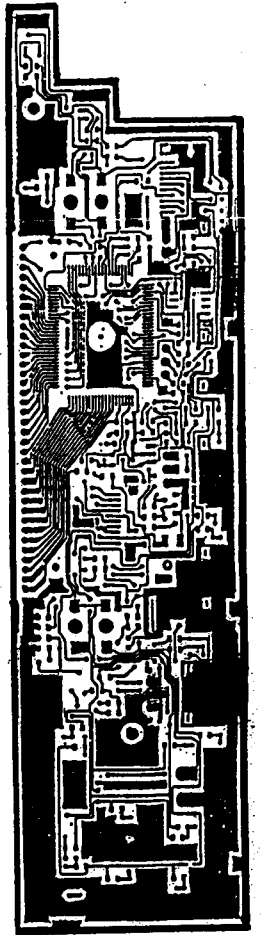
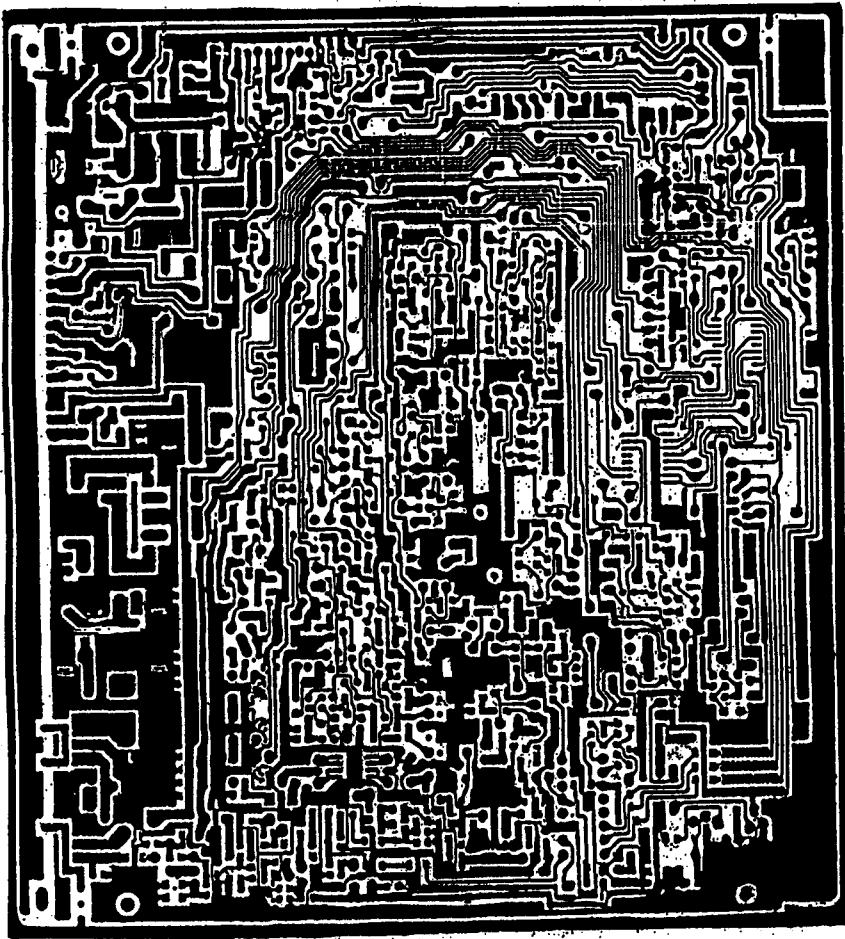
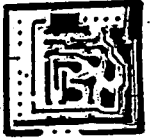
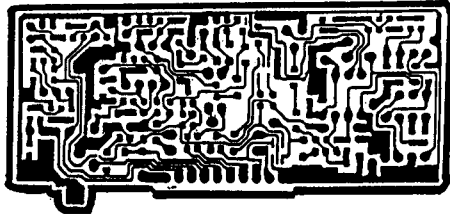
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**\* OSCILLOGRAMS**

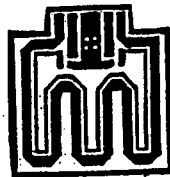
**\* VOLTAGE OF INTEGRATED CIRCUITS AND TRANSISTORS**



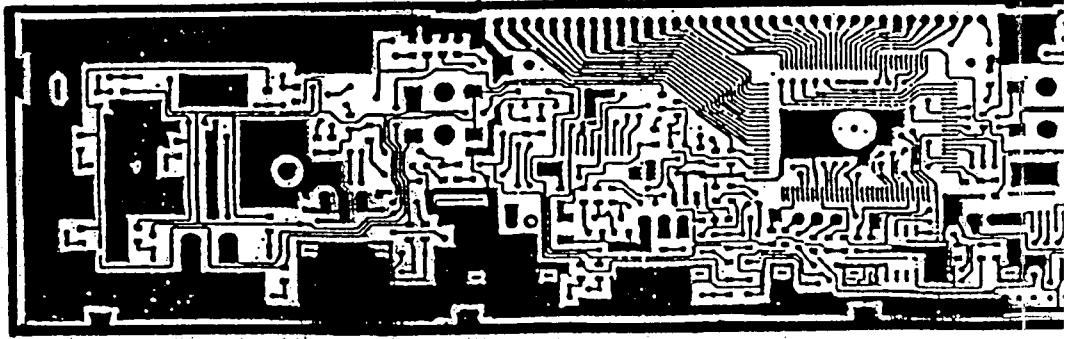
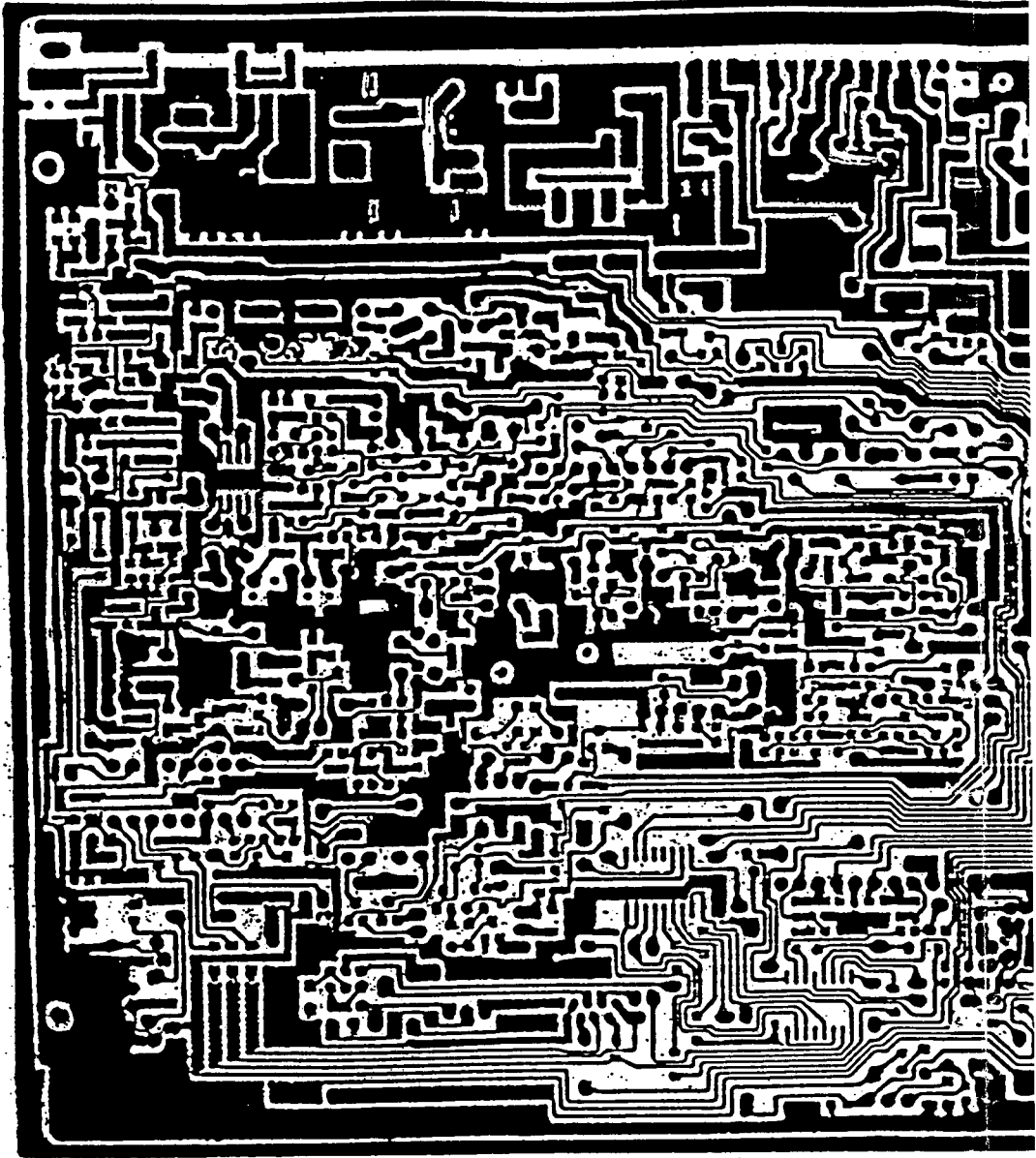
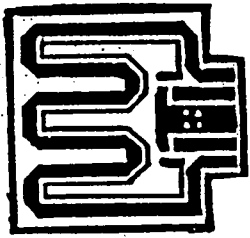
13B



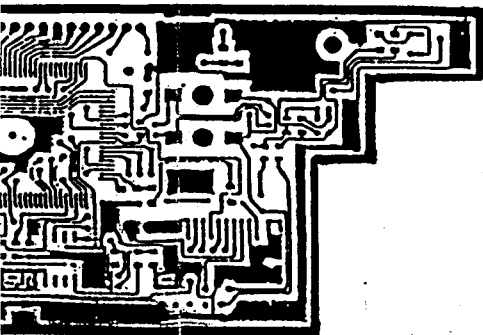
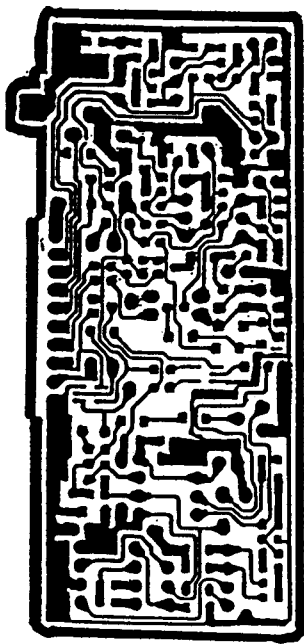
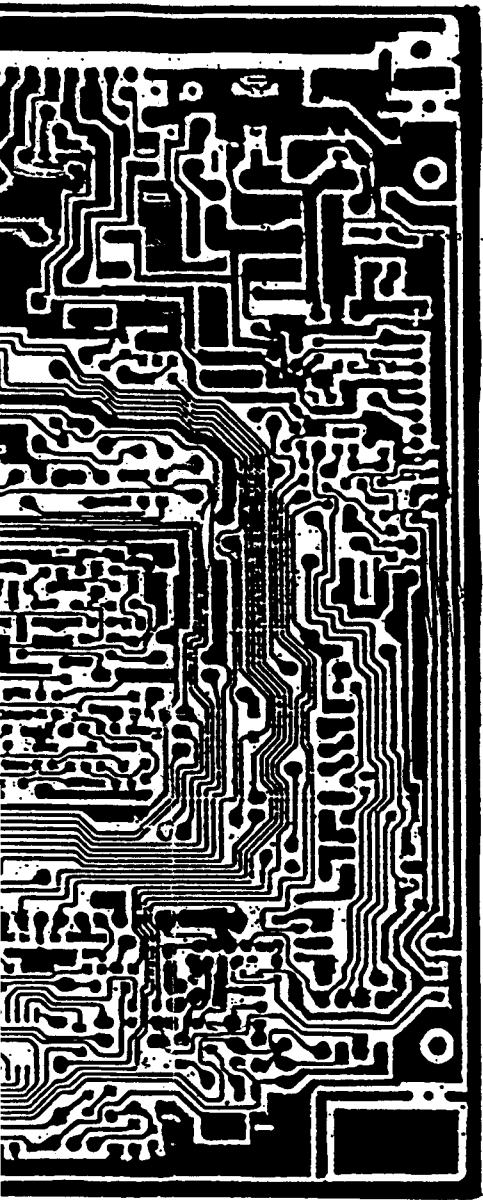
13A



13A

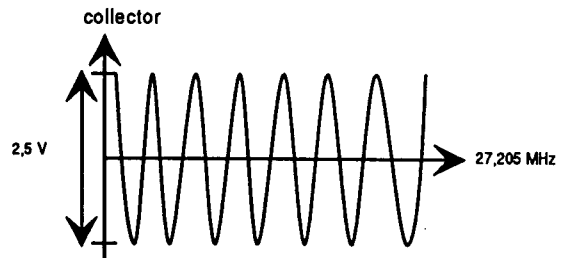
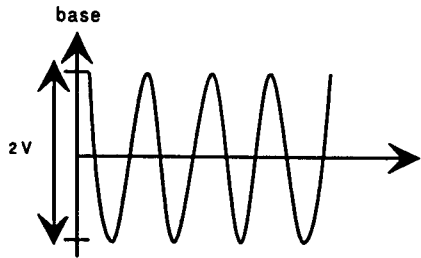


13B

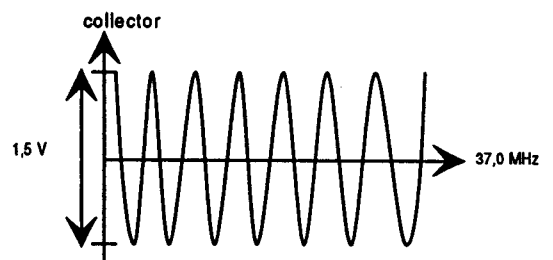
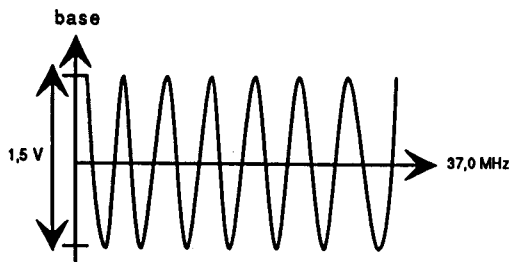


# OSCILLOGRAMS

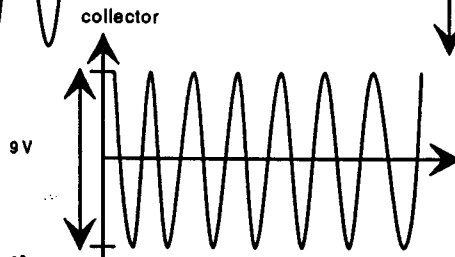
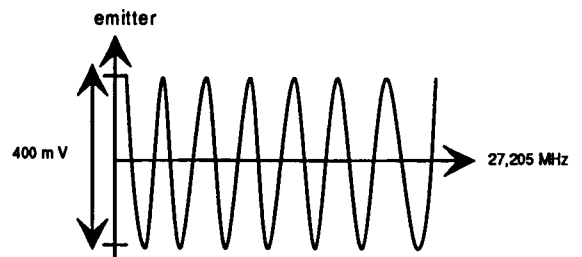
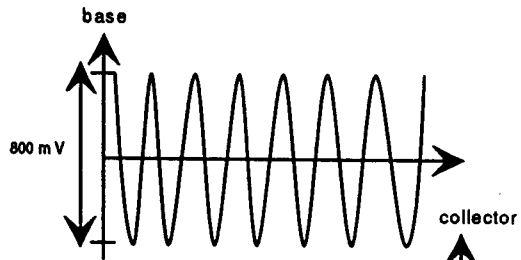
**Q 401 - AM without modulation - In TX channel 20**



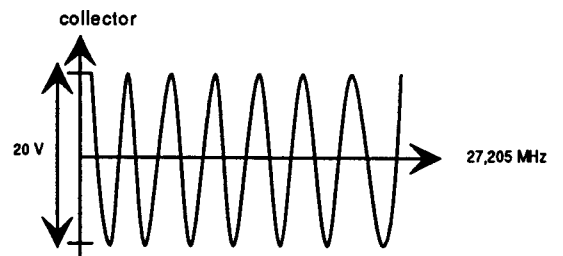
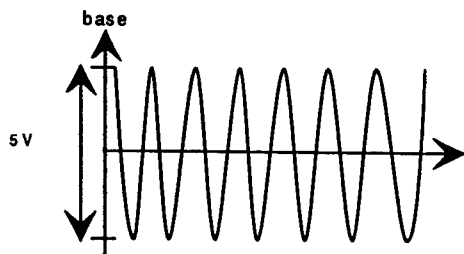
**Q 401 - AM without modulation - RX**



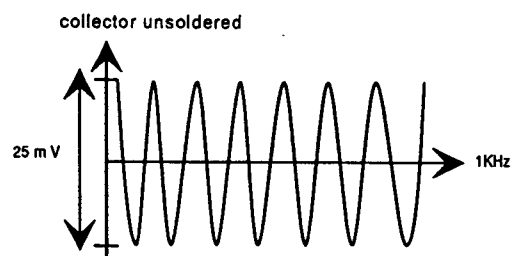
**Q 201 - AM without modulation - In TX channel 20**



**Q 502 - AM without modulation**



**Collector of Q 502 coil output L 26 - 1000 Hz in modulation**



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**INTEGRATED CIRCUIT VOLTAGES**

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**IR3N06 - MOD. FM.RX**

| PINS |        |
|------|--------|
| 1    | NC     |
| 2    | NC     |
| 3    | NC     |
| 4    | 8 V    |
| 5    | 1 V    |
| 6    | 1 V    |
| 7    | 1 V    |
| 8    | 8 V    |
| 9    | 4,40 V |
| 10   | -      |
| 11   | -      |
| 12   | -      |
| 13   | -      |
| 14   | -      |
| 15   | 0 V    |
| 16   | -      |

**IC2NJM2904**

|   | SQUELCH ON | SQUELCH OFF |
|---|------------|-------------|
| 1 | 8 V        | 8 V         |
| 2 | 6,71 V     | 0 V         |
| 3 | 0,362 V    | 0,362 V     |
| 4 | 3,8 V      | 0 V         |
| 5 | 0 V        | 0 V         |
| 6 | 0 V        | 0 V         |
| 7 | 0 V        | 0 V         |
| 8 | 0 V        | 0 V         |
| 9 | NC         | NC          |

|       | Name of the integrated circuits | Pins | Reception (V) | Emission (V) |
|-------|---------------------------------|------|---------------|--------------|
| IC201 | MB3735                          | 1    | 3,3           | 3,3          |
|       |                                 | 2    | 3,3           | 3,3          |
|       |                                 | 3    | 3,4           | 3,4          |
|       |                                 | 4    | 0             | 0            |
|       |                                 | 5    | 6,7           | 6,7          |
|       |                                 | 6    | 12,1          | 11,7         |
|       |                                 | 7    | 13,1          | 12,8         |
|       |                                 | 8    | 6,6           | 6,35         |
|       |                                 | 9    | 12            | 1,75         |

## LA 4485 - BF

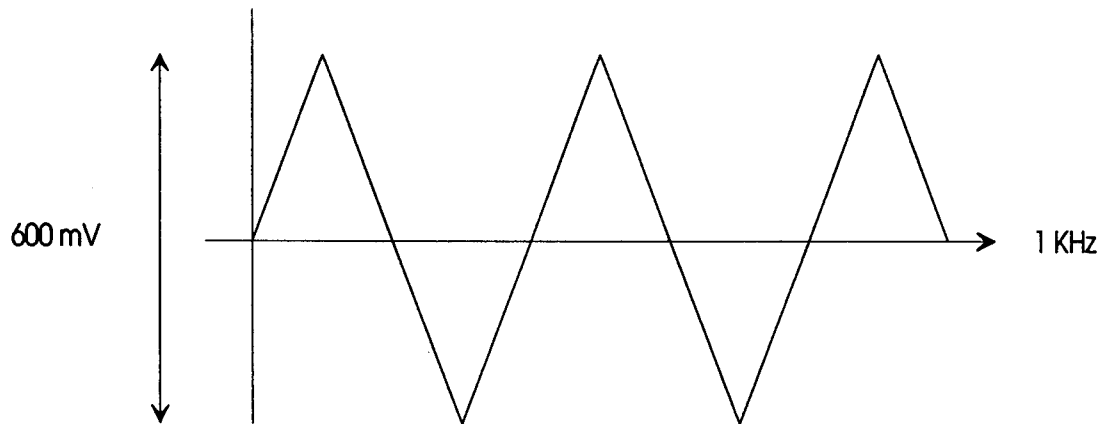
|    | Reception | Emission |
|----|-----------|----------|
| 1  | 6,82 V    | -0,163 V |
| 2  | 0         | 0        |
| 3  | 6,82 V    | -0,126 V |
| 4  | 0         | 2,342 V  |
| 5  | 1,014 V   | 0,745 V  |
| 6  | 13,2 V    | 13,2 V   |
| 7  | 13,2 V    | 13,2 V   |
| 8  | 6,53 V    | 0        |
| 9  | (NC)      | (NC)     |
| 10 | 0,7 V     | 0        |
| 11 | 0         | 0        |
| 12 | 1,27 V    | 0,5 V    |
| 13 | 1,27 V    | 0,3 V    |

## VOLTAGE OF THE PLL 2002

|    |         |
|----|---------|
| 1  | 2,6 V   |
| 2  | 5,25 V  |
| 3  | 0 V     |
| 4  | NC      |
| 5  | 5,28 V  |
| 6  | 0 V     |
| 7  | 2,874 V |
| 8  | 2,806 V |
| 9  | 5,26 V  |
| 10 | 5,28 V  |
| 11 | 5,27 V  |
| 12 | 0 V     |
| 13 | 0 V     |
| 14 | 0,6 V   |
| 15 | 0,603 V |
| 16 | 0,609 V |



## FM output of the mike/echo PCB10mV 1 KHz



### IC 601

|   | ECHO ON | ECHO OFF |
|---|---------|----------|
| 1 | 4,3 V   | 0 V      |
| 2 | 4,3 V   | 320 mV   |
| 3 | 0 V     | 0 V      |
| 4 | 8 V     | 0 V      |
| 5 | 8 V     | 0 V      |

### IC 602

|   | ECHO ON | ECHO OFF |
|---|---------|----------|
| 1 | 4,3 V   | 4,3 V    |
| 2 | 0 V     | 4,17 V   |
| 3 | 0 V     | 0 V      |
| 4 | 0 V     | 8 V      |
| 5 | 8 V     | 8 V      |

**Q 425**

**Lamp strongly lit**

| e    | b    | c       |
|------|------|---------|
| 13 V | 10 V | 10,63 V |

**Q 423**

**Lamp strongly lit**

| e    | b      | c     |
|------|--------|-------|
| 13 V | 7,46 V | 8,0 V |

**Lamp weakly lit**

| e    | b      | c       |
|------|--------|---------|
| 13 V | 7,41 V | 10,63 V |

**Lamp weakly lit**

| e    | b      | c       |
|------|--------|---------|
| 13 V | 7,41 V | 10,63 V |

**Q 121**

|     | e       | b       | c       |
|-----|---------|---------|---------|
| OFF | 13,30 V | 12,92 V | 0       |
| ON  | 13,30 V | 12,4 V  | 13,12 V |

**Q 413**

|    | e    | b      | c     |
|----|------|--------|-------|
| RX | 13 V | 12,7 V | 0,8 V |
| TX | 13 V | 12 V   | 11 V  |

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# **▨ DIODES - TRANSISTORS - INTEGRATED CIRCUITS ▨**

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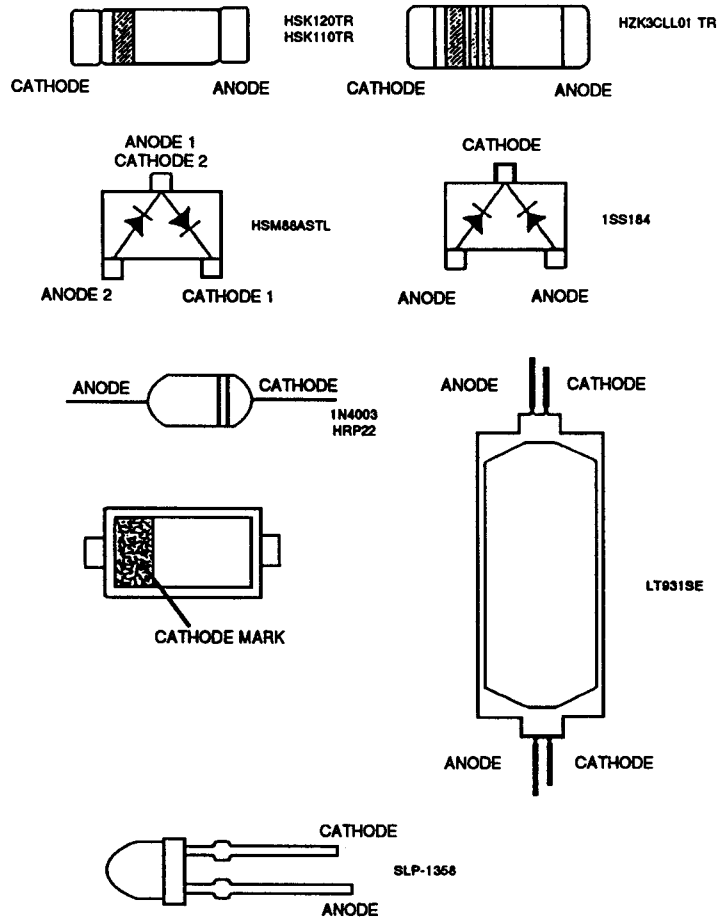
**\* PIN DIAGRAMS OF DIODES**

**\* PIN DIAGRAMS OF TRANSISTORS**

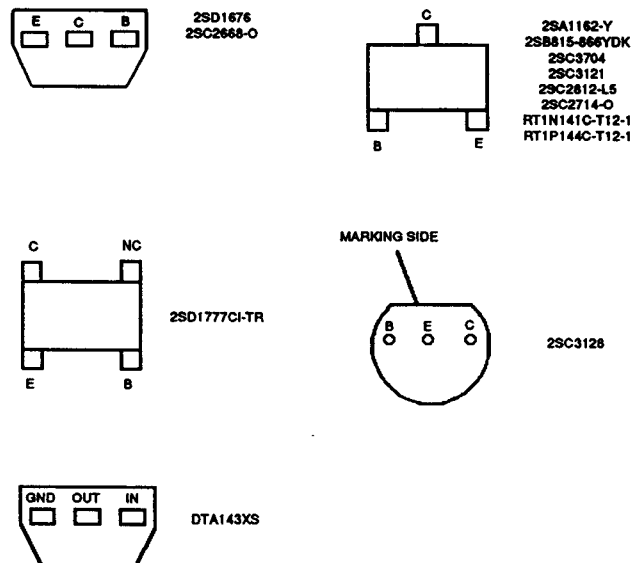
**\* PIN DIAGRAMS OF CIRCUITS INTEGRES**

# PIN DIAGRAM OF SEMI-CONDUCTORS

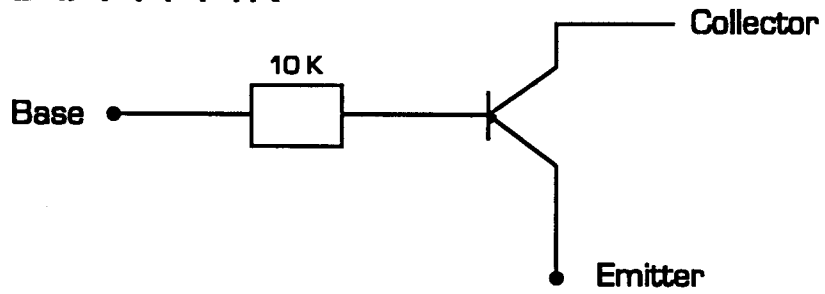
## DIODES



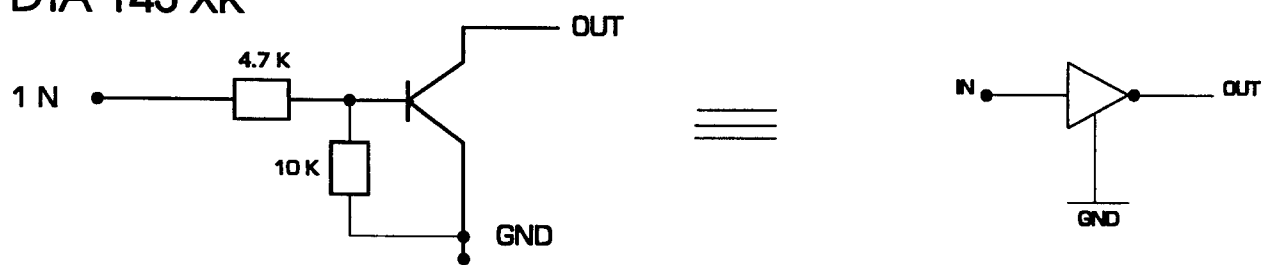
## TRANSISTOR



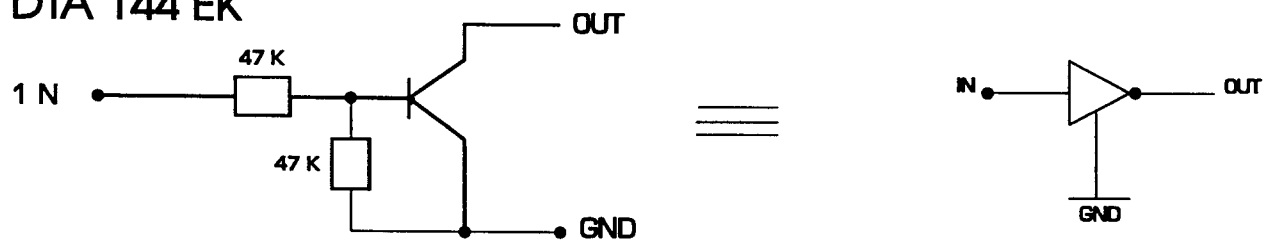
# DTA 114 TK



# DTA 143 XK

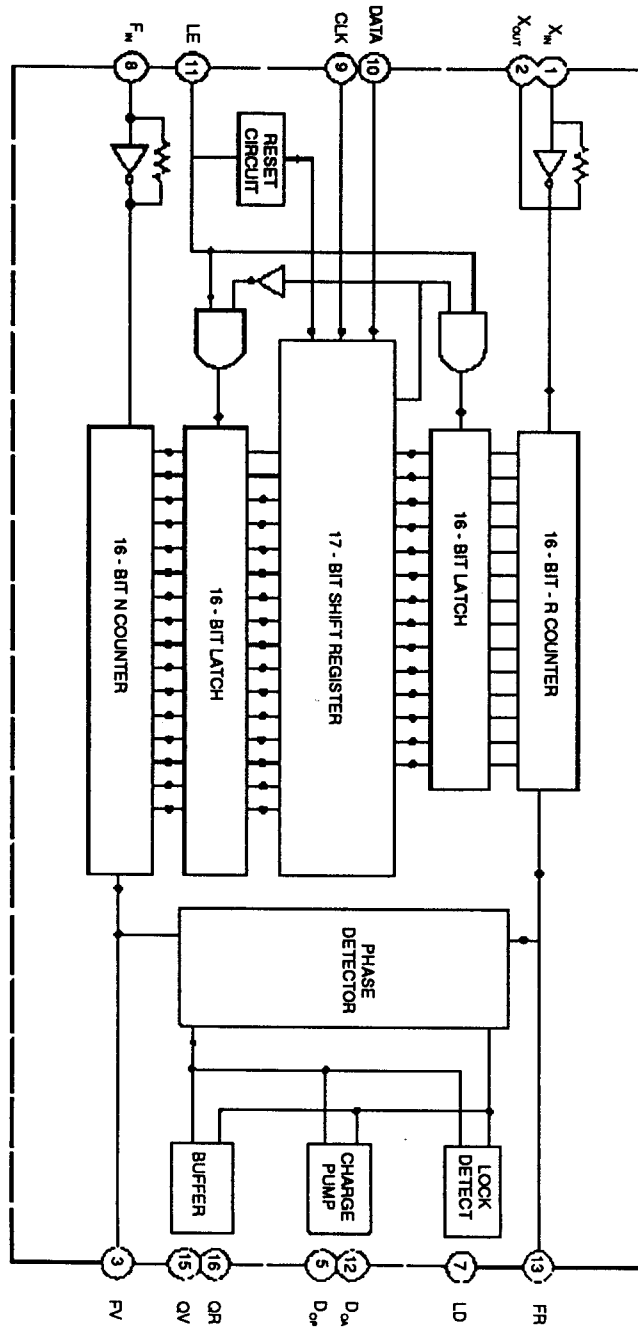
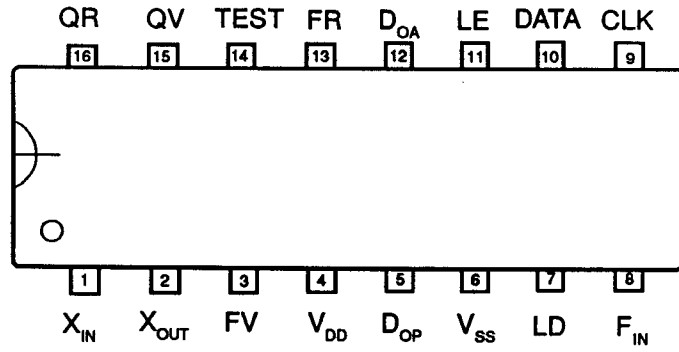


# DTA 144 EK

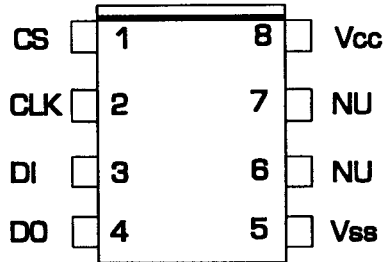


/// PIN DIAGRAM - INTERNAL SYNOPTICS - INTEGRATED CIRCUITS ///

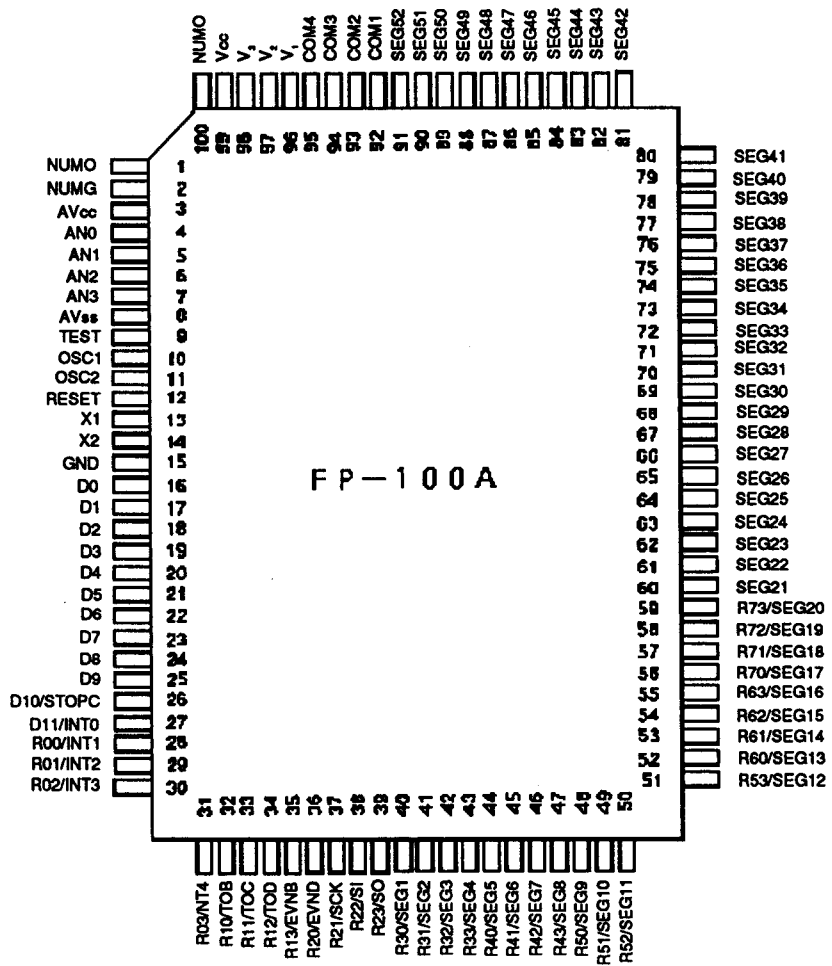
PLL2002A1 IC 401



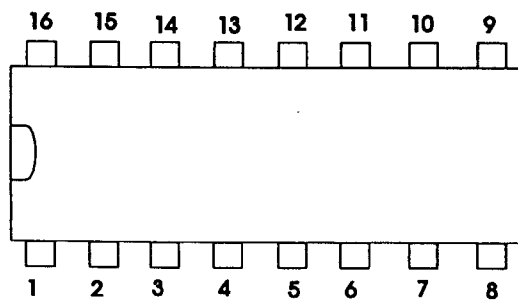
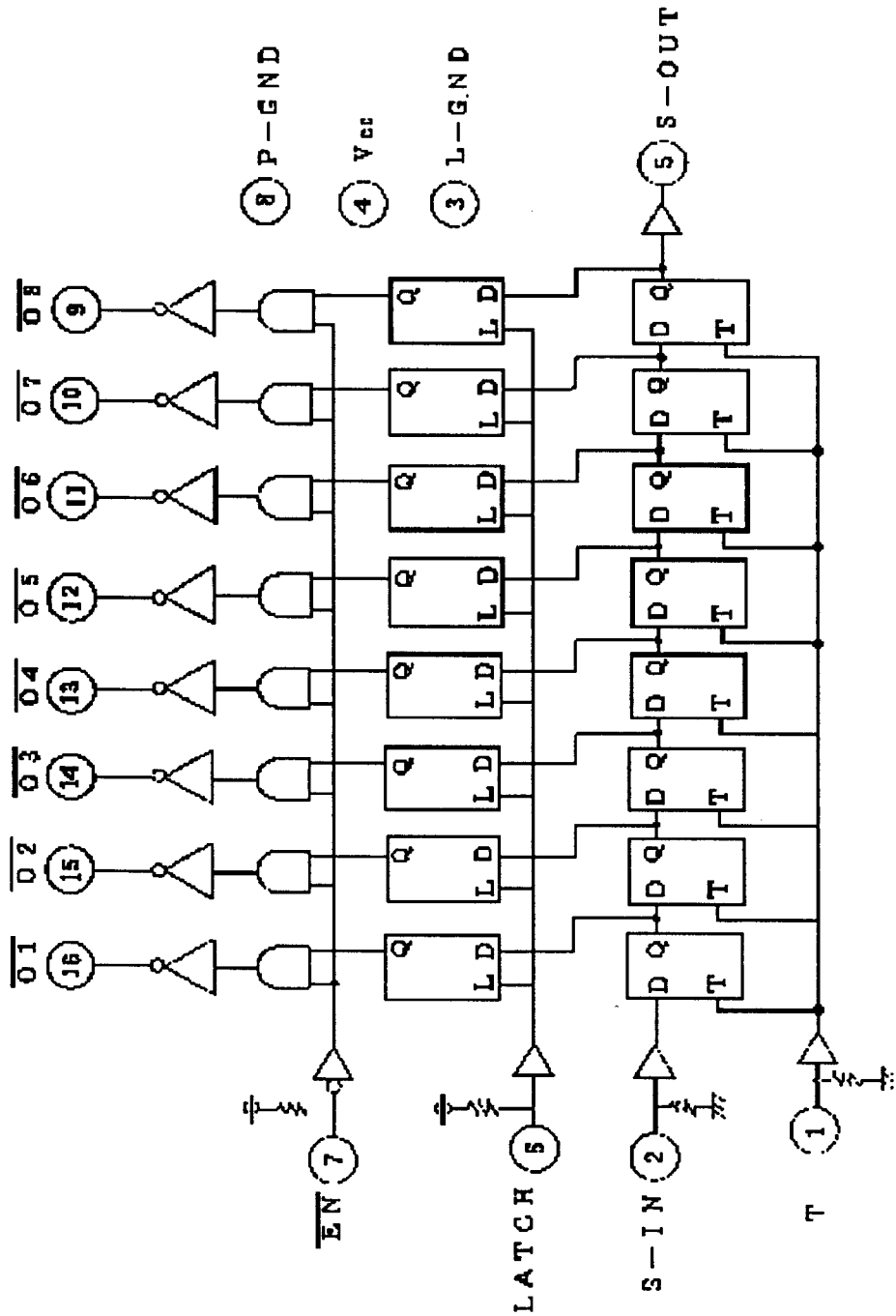
# 93C46 IC 703



# UC 1520 IC 701



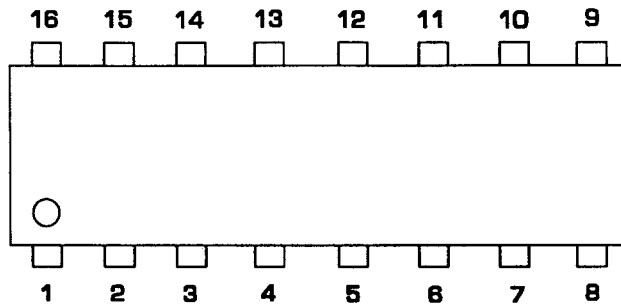
# 54995F IC 405 IC 406



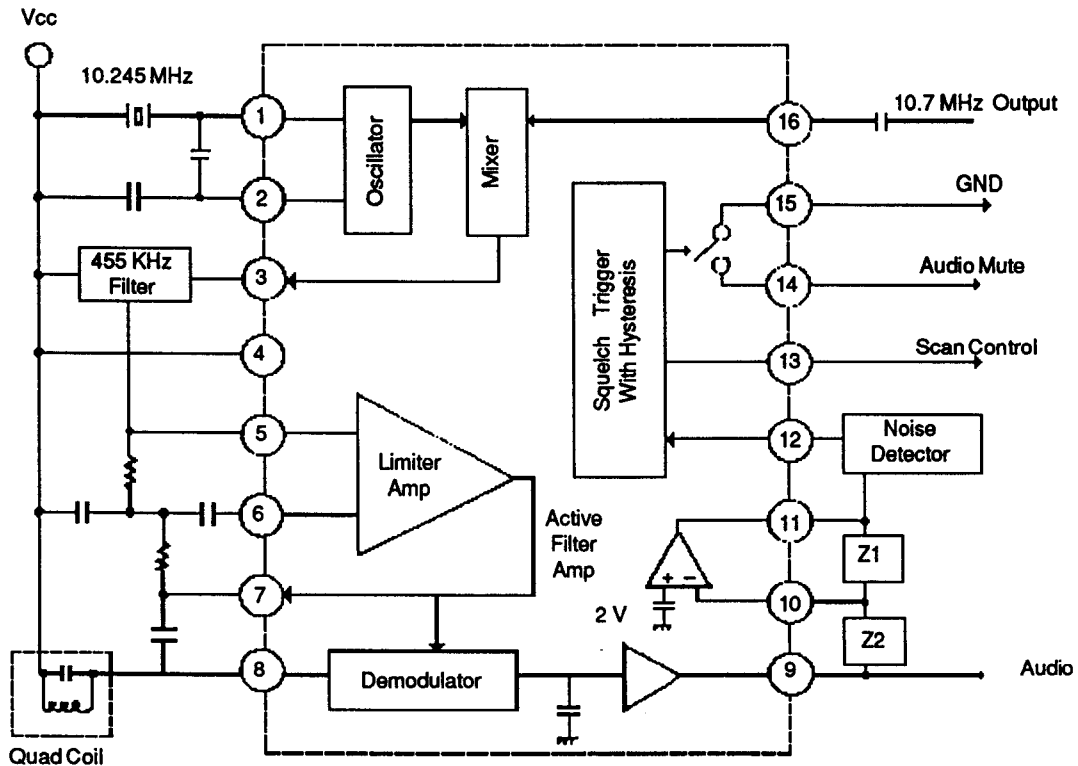


# IC 1 IR3N06

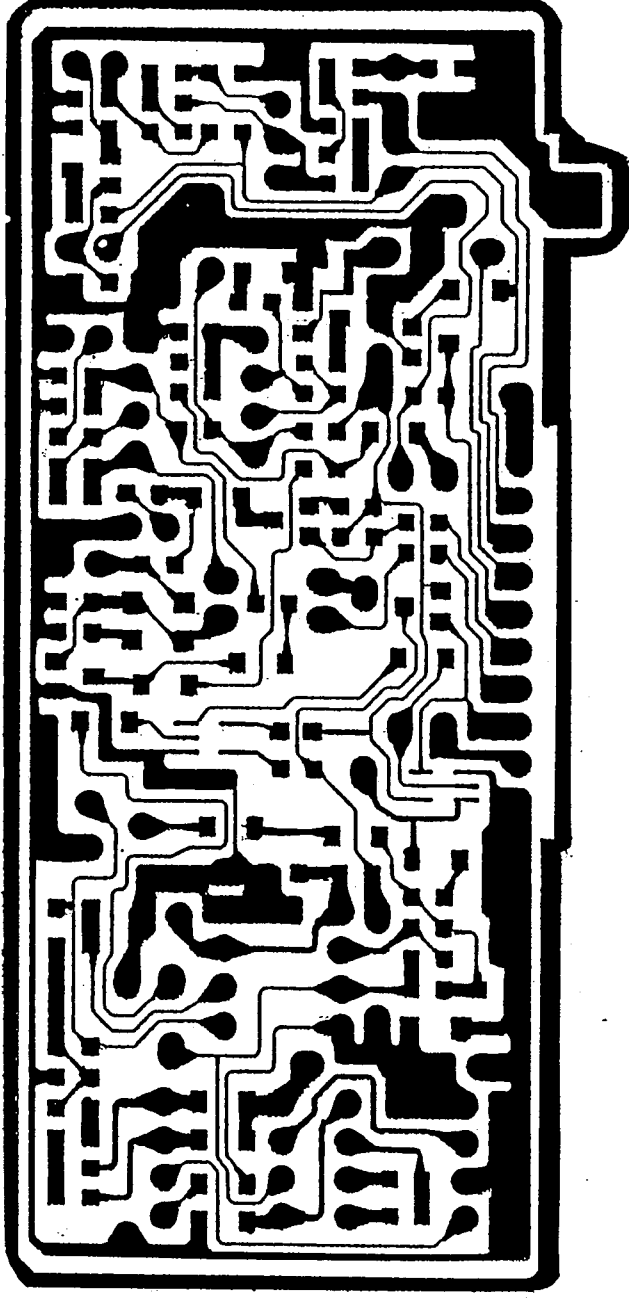
IR3N06



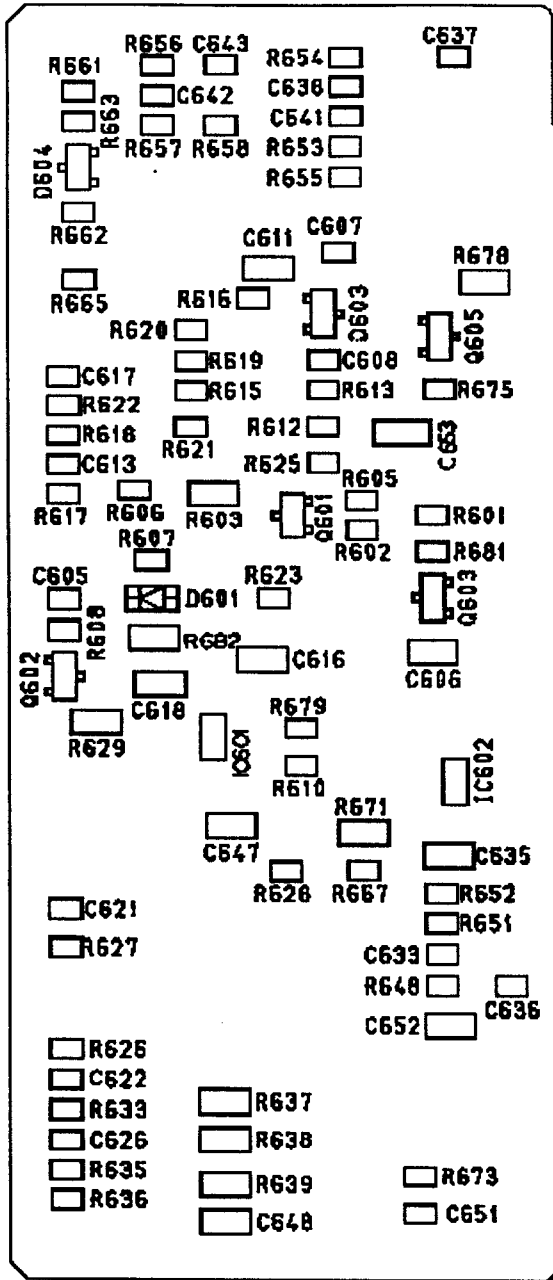
|   |                |    |                    |
|---|----------------|----|--------------------|
| 1 | Crystal OSC.   | 9  | Demodulator Output |
| 2 |                | 10 | Filter Input       |
| 3 | Mixer Output   | 11 | Filter Output      |
| 4 | Vcc            | 12 | Squelch Input      |
| 5 | Limiter Input  | 13 | Scan Control       |
| 6 | Decoupling     | 14 | Audio Mute         |
| 7 | Limiter Output | 15 | GND                |
| 8 | Quad Input     | 16 | RF Input           |



PLATINE MIC ECHO



# MIKE ECHO P.C.B. Soldered side



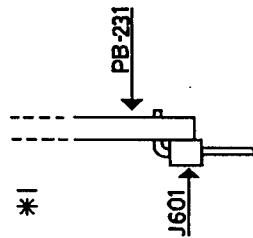
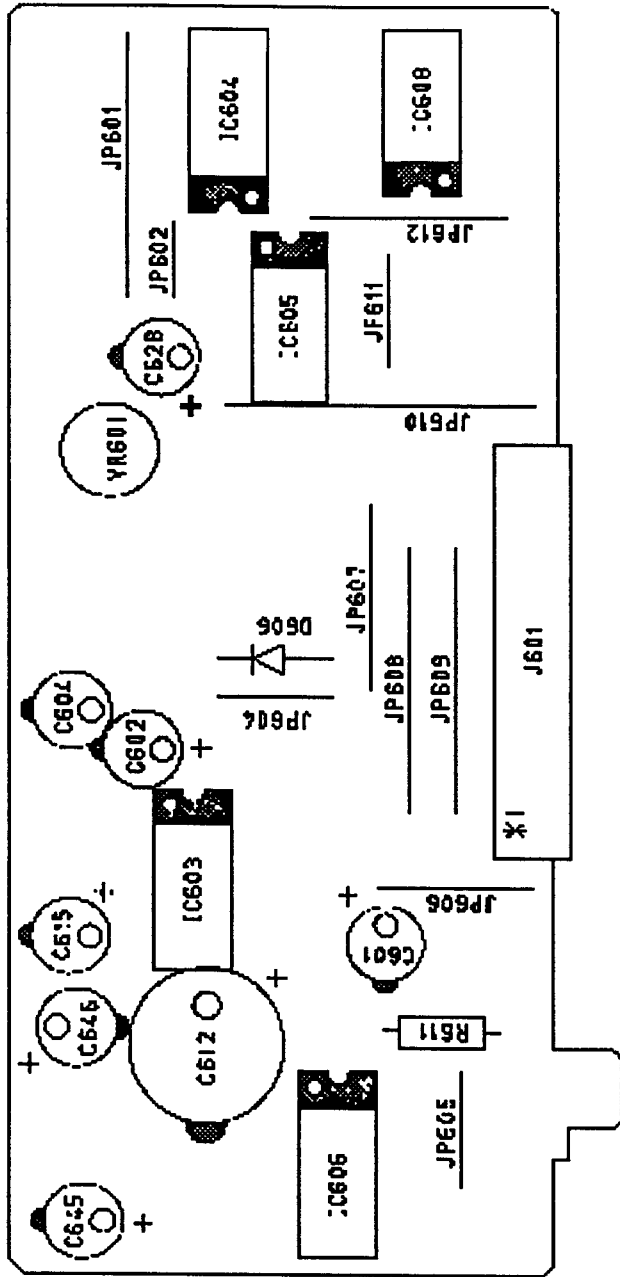
|      |           |
|------|-----------|
| R675 | 220K      |
| R679 | 1.2K 100W |
| R679 | RZ-005    |
| R681 | RZ-005    |
| R682 | RZ-009    |

|      |           |
|------|-----------|
| R622 | 12K       |
| R623 | 4.7K      |
| R625 | 4.7K      |
| R626 | 50K       |
| R627 | 20K       |
| R628 | 12K       |
| R629 | RZ-009    |
| R630 | 47K       |
| R635 | 5.6K      |
| R636 | 5.6K      |
| R637 | 100K 100W |
| R638 | 100K 100W |
| R639 | RZ-009    |
| R644 | 30K       |
| R651 | 47K       |
| R652 | 30K       |
| R653 | 8.2K      |
| R654 | 8.2K      |
| R655 | 8.2K      |
| R656 | 8.2K      |
| R657 | 8.2K      |
| R658 | 47K       |
| R681 | 47K       |
| R682 | 15K       |
| R683 | 600       |
| R685 | 600       |
| R687 | 10K       |
| R671 | 120K 100W |
| R673 | 220K      |

|      |            |
|------|------------|
| D601 | RLS4148    |
| D603 | 1SS226     |
| D604 | 1SM4870A   |
| C601 | 25A1179-AR |
| C602 | 2SD1044-3R |
| C603 | DTA144EK   |
| C605 | 2SC2811ALS |
| R601 | 470        |
| R602 | 22K        |
| R603 | RZ-009     |
| R605 | 470        |
| R606 | 120        |
| R607 | 4.7K       |
| R608 | 15K        |
| R610 | 10K        |
| R612 | 100        |
| R613 | 820K       |
| R615 | 47K        |
| R616 | 100        |
| R617 | 470K       |
| R618 | 100        |
| R619 | 10K        |
| R620 | 10K        |
| R621 | 10K        |

|      |          |
|------|----------|
| C605 | 0.1C     |
| C606 | 1/2F     |
| C607 | 0.1C     |
| C608 | 0.1C     |
| C611 | 1/2F     |
| C613 | 470P/0.3 |
| C618 | 0.22ZF   |
| C617 | 0.01C    |
| C618 | 0.22ZF   |
| C621 | 220P/0.3 |
| C622 | 0.0033C  |
| C628 | 0.1C     |
| C630 | 220P/0.3 |
| C635 | 0.22ZF   |
| C636 | 0.0033C  |
| C637 | 0.0027C  |
| C638 | 0.0033C  |
| C641 | 0.047C   |
| C642 | 0.015C   |
| C643 | 0.015C   |
| C647 | 0.1C     |
| C648 | 0.1C     |
| C651 | 100P/0.3 |
| C652 | 0.047C   |
| C653 | 0.22F    |
| C601 | TC4548F  |
| C602 | TC4548F  |

# MIKE ECHO P.C.B. Component side



## NOTES :

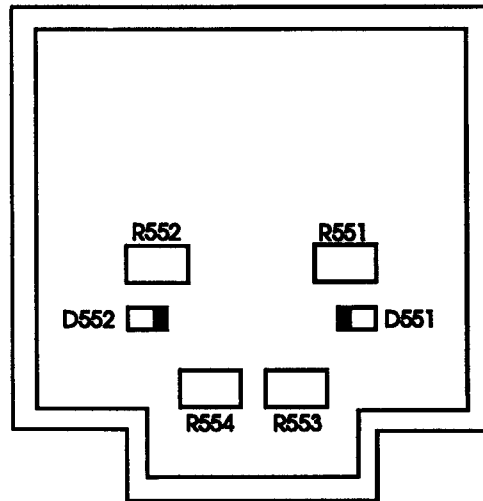
1. RESISTANCES VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED.
2. RESISTOR WATTAGES ARE 1/6 W UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)

|       |               |
|-------|---------------|
| IC603 | 50V10 C-130   |
| IC604 | 50V22 C-130   |
| IC605 | 50V2.2 C-130  |
| IC606 | 10V1000 C-130 |
| IC608 | 50V1 C-130    |
| J601  | JK-727 10P    |

|       |               |
|-------|---------------|
| C601  | 50V10 C-130   |
| C602  | 50V22 C-130   |
| C604  | 50V2.2 C-130  |
| C612  | 10V1000 C-130 |
| C615  | 50V1 C-130    |
| C628  | 50V4.7 C-130  |
| C645  | 50V2.2 C-130  |
| C646  | 50V2.2 C-130  |
| VR601 | RT-528 22KB   |
| R611  | 1K            |

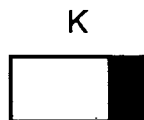
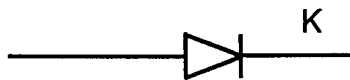
|       |               |
|-------|---------------|
| C601  | 50V10 C-130   |
| C602  | 50V22 C-130   |
| C604  | 50V2.2 C-130  |
| C612  | 10V1000 C-130 |
| C615  | 50V1 C-130    |
| C628  | 50V4.7 C-130  |
| C645  | 50V2.2 C-130  |
| C646  | 50V2.2 C-130  |
| VR601 | RT-528 22KB   |
| R611  | 1K            |

# TOS-METER PCB



|      |              |
|------|--------------|
| R551 | 82 1/10 W    |
| R552 | 68 1/10 W    |
| R554 | 4,7 M 1/10 W |
| R553 | 4,7 M 1/10 W |
|      |              |
|      |              |

|      |          |
|------|----------|
| D551 | MA728 TX |
| D552 | MA728 TX |
|      |          |
|      |          |
|      |          |
|      |          |



# PLATINE TOS-MÈTRE

