

## SECTION 7

## DIAGRAMS

This section contains schematic diagrams for the MMX( )-2. Table 7-1 lists the figure numbers contained herein and the corresponding TMC schematic drawing numbers.

TABLE 7-1. LIST OF DIAGRAMS

Figure No.	Title	TMC Dwg. No.
7-1	Overall Wiring Diagram, MMX( )-2	CK1333 C
7-2	Spectrum Generator Z101, Schematic Diagram	CK1396 C
7-3	Comb Filter Z102, Schematic Diagram	CK1313 F
7-4	Comb Filter Z103, Schematic Diagram	CK1314 A
7-5	Single Mixer-Divider Z104, Schematic Diagram	CK1318 C
7-6	Dual Mixer-Divider Z105, Schematic Diagram	CK1393 C
7-7	Final Mixer Z106, Schematic Diagram	CK1319 C
7-8	Step Generator Z110, Schematic Diagram	CK1322 D
7-9	Step Generator Z111, Schematic Diagram	CK1323 C
7-10	Step Generator Z113, Schematic Diagram	CK1325 D
7-11	Carrier Generator Z109, Schematic Diagram	CK1311 F
7-12	Sideband Generator Z107, Schematic Diagram	CK1309 D
7-13	Frequency Shift Generator Z108, Schematic Diagram	CK1310 C
7-14	Translator Z112, Schematic Diagram	CK1324 F
7-15	RF Output Z115, Schematic Diagram	CK1327 F
7-16	Output Filter Z114, Schematic Diagram	CK1326 A
7-17	Power Supply Wiring Diagram	CK1330 B
7-18	Power Supply Z304, Schematic Diagram	CK1328 A
7-19	Regulator Supply Z303, Schematic Diagram	CK1291 A

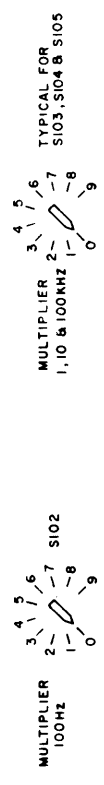
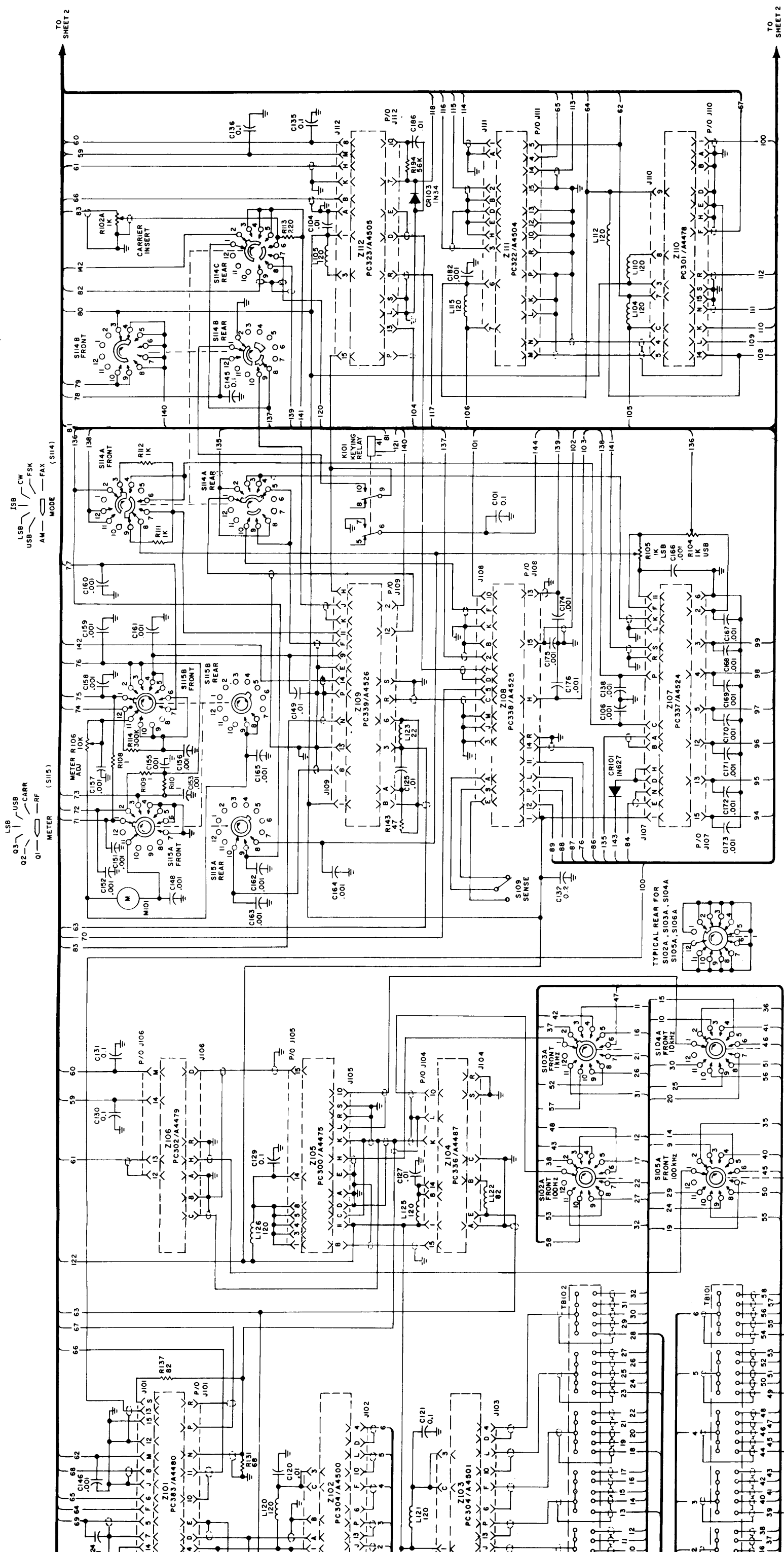
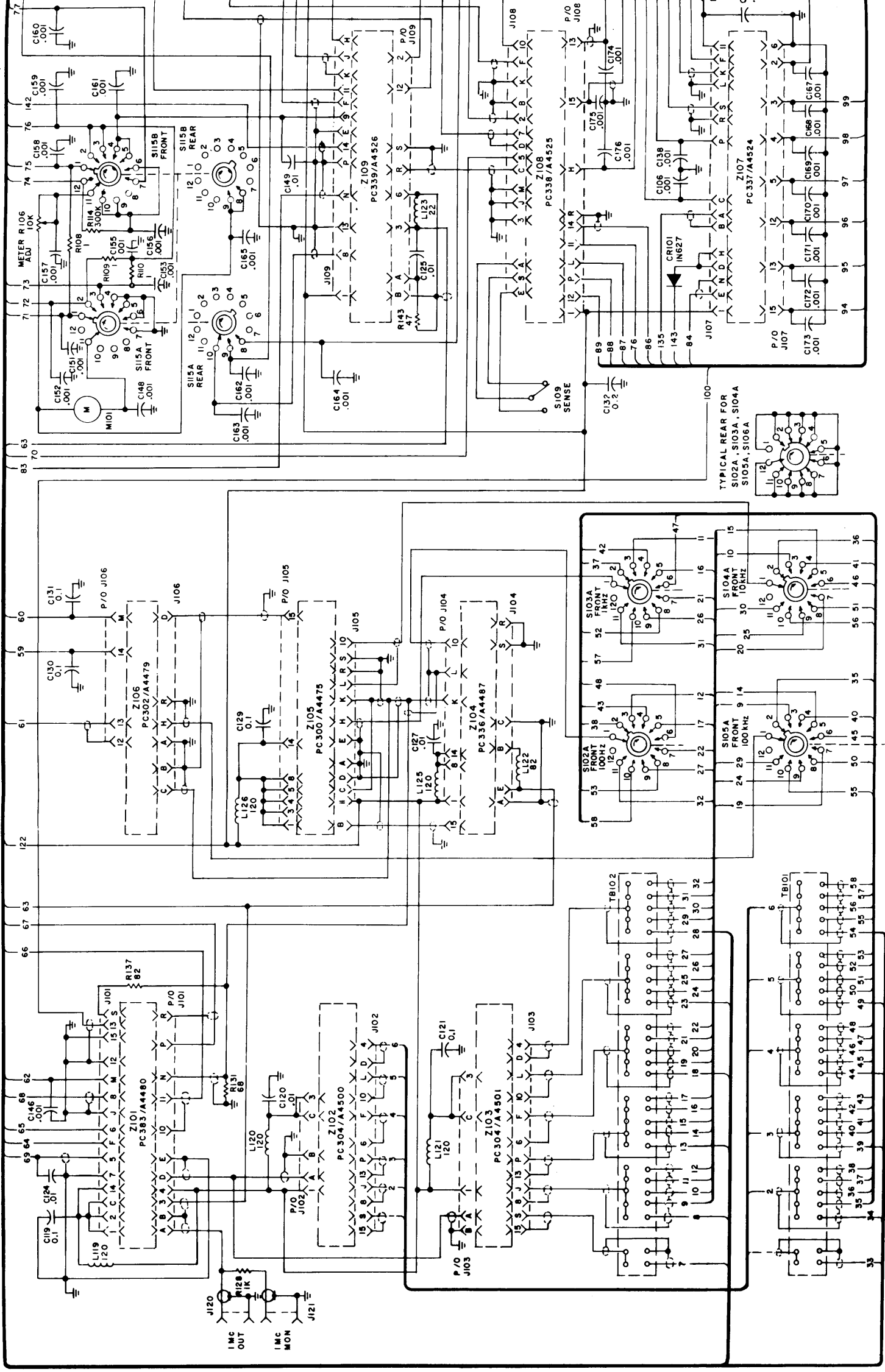
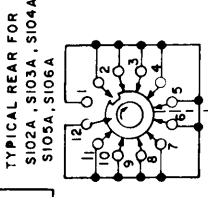


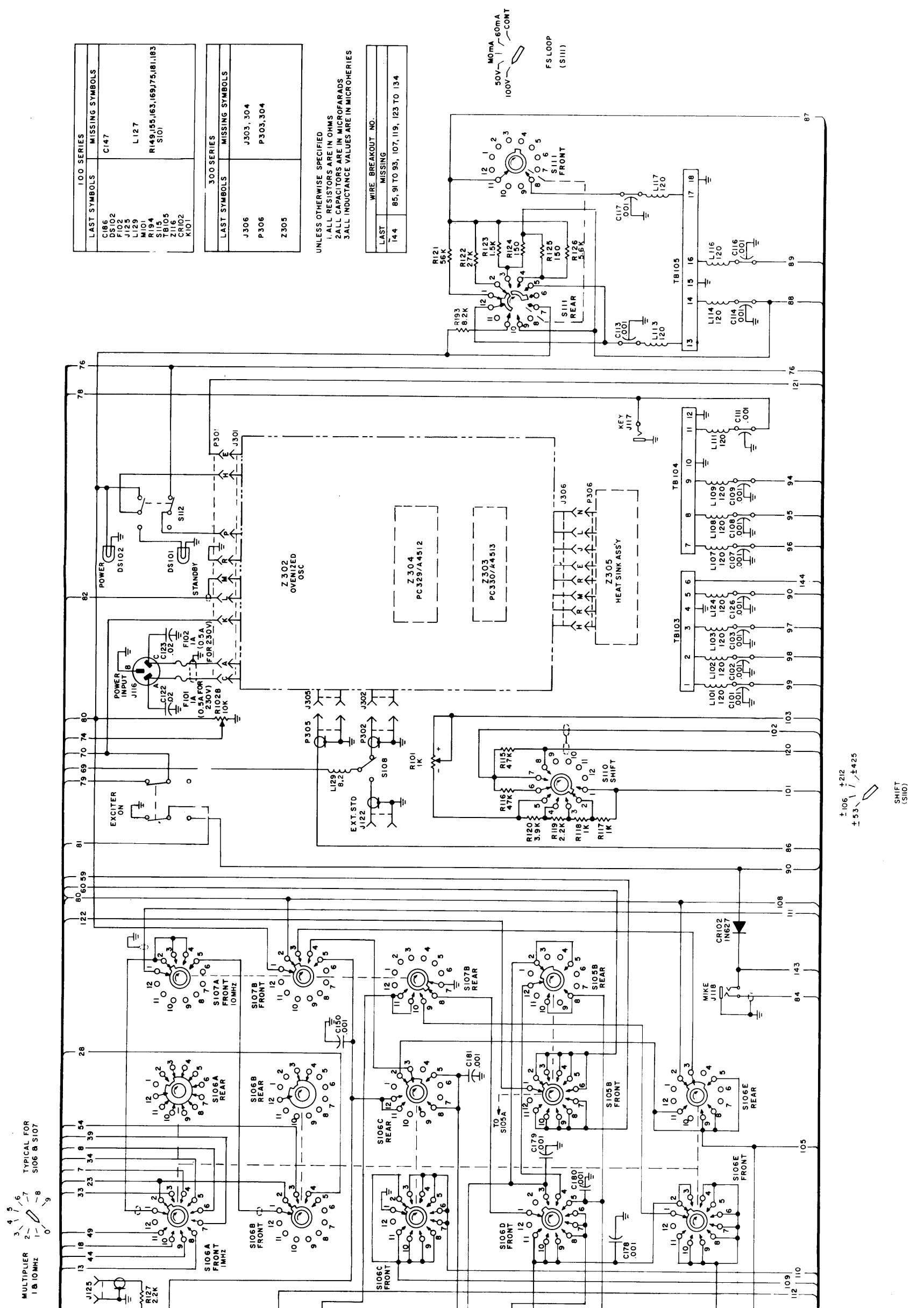
Figure 7-1. Overall Wiring Diagram, MMX ( )-2 (Sheet 1 of 2)

LSB  
0.3  
CARR  
01  
METER (S115)



MULTIPLIER 100HZ  
MULTIPLIER 1,10 & 100KHZ  
MULTIPLIER 1,10 & 100KHZ 2  
TYPICAL FOR S102  
TYPICAL FOR S103, S104 & S105





MULTIPLIER  
1 @ 10MHZ  
TYPICAL FOR  
SIO6 B SIO7

100 SERIES	
LAST SYMBOLS	MISSING SYMBOLS
C186	C147
DS102	L127
F102	R149,155,163,169,175,181,183
J125	S101
L129	
M104	
N104	
TB105	
Z116	
CR102	
K101	

300 SERIES	
LAST SYMBOLS	MISSING SYMBOLS
J306	J303, 304
P306	P303, 304
Z305	

UNLESS OTHERWISE SPECIFIED  
 1 ALL RESISTORS ARE IN OHMS  
 2 ALL CAPACITORS ARE IN MICROFARADS  
 3 ALL INDUCTANCE VALUES ARE IN MICROHERRIES

WIRE BREAKOUT NO.	
LAST	MISSING
144	85, 91 TO 93, 107, 119, 123 TO 134

50V-100MA 60MA  
100V-100V CONT

FS LOOP  
(S111)

+106 +212  
+53 / +425

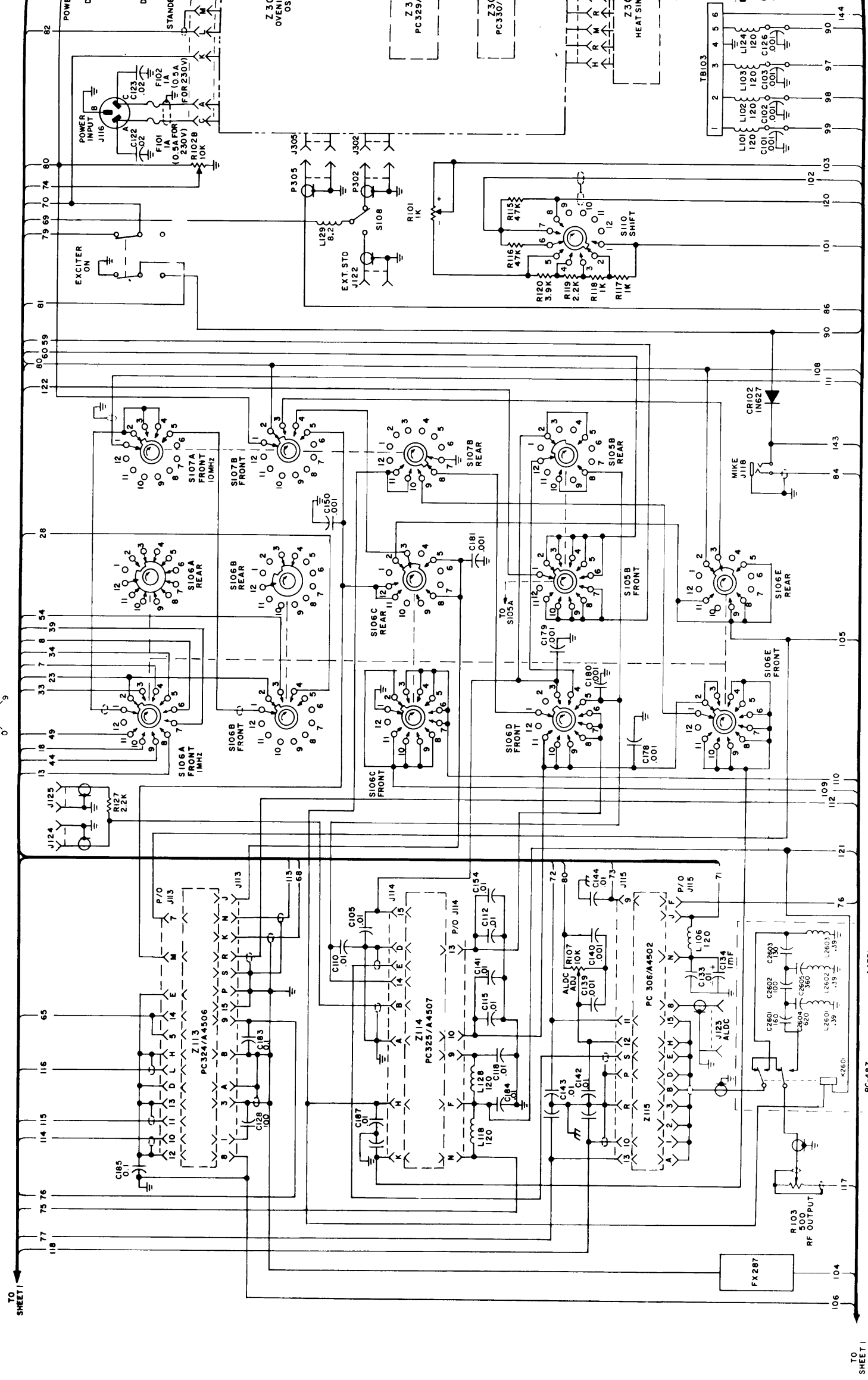
SHIFT  
(S102)

Figure 7-1. Overall Wiring Diagram, MMX ( )-2 (Sheet 2 of 2)

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MULTIPLIER  
18 10MHZ

TYPICAL FOR  
S106 & S107



$\pm 10\%$   
 $\pm 5\%$

SHIFT  
(S110)

004692044

TO SHEET 1

TO SHEET 1

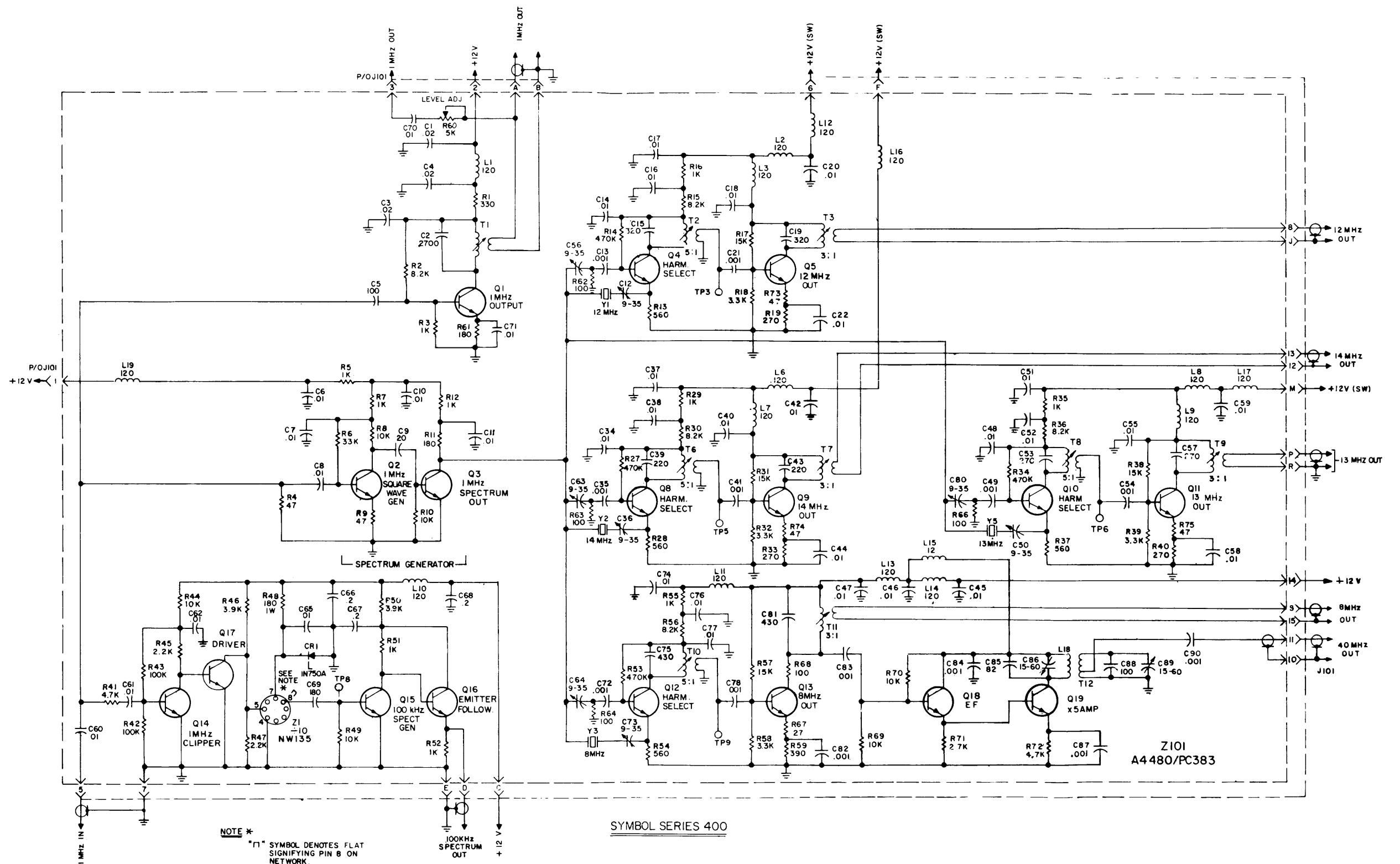


Figure 7-2. Spectrum Generator Z101, Schematic Diagram

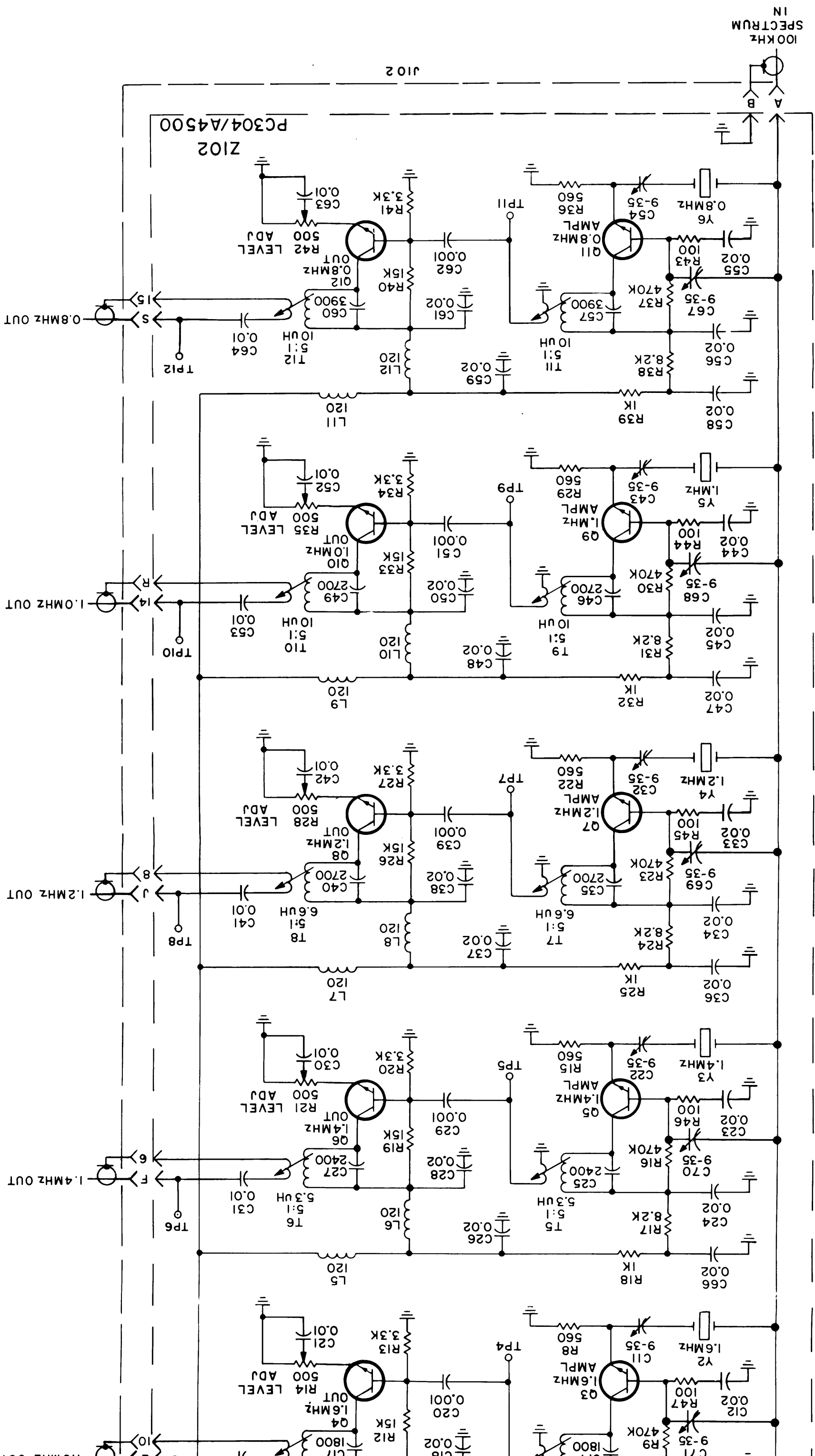


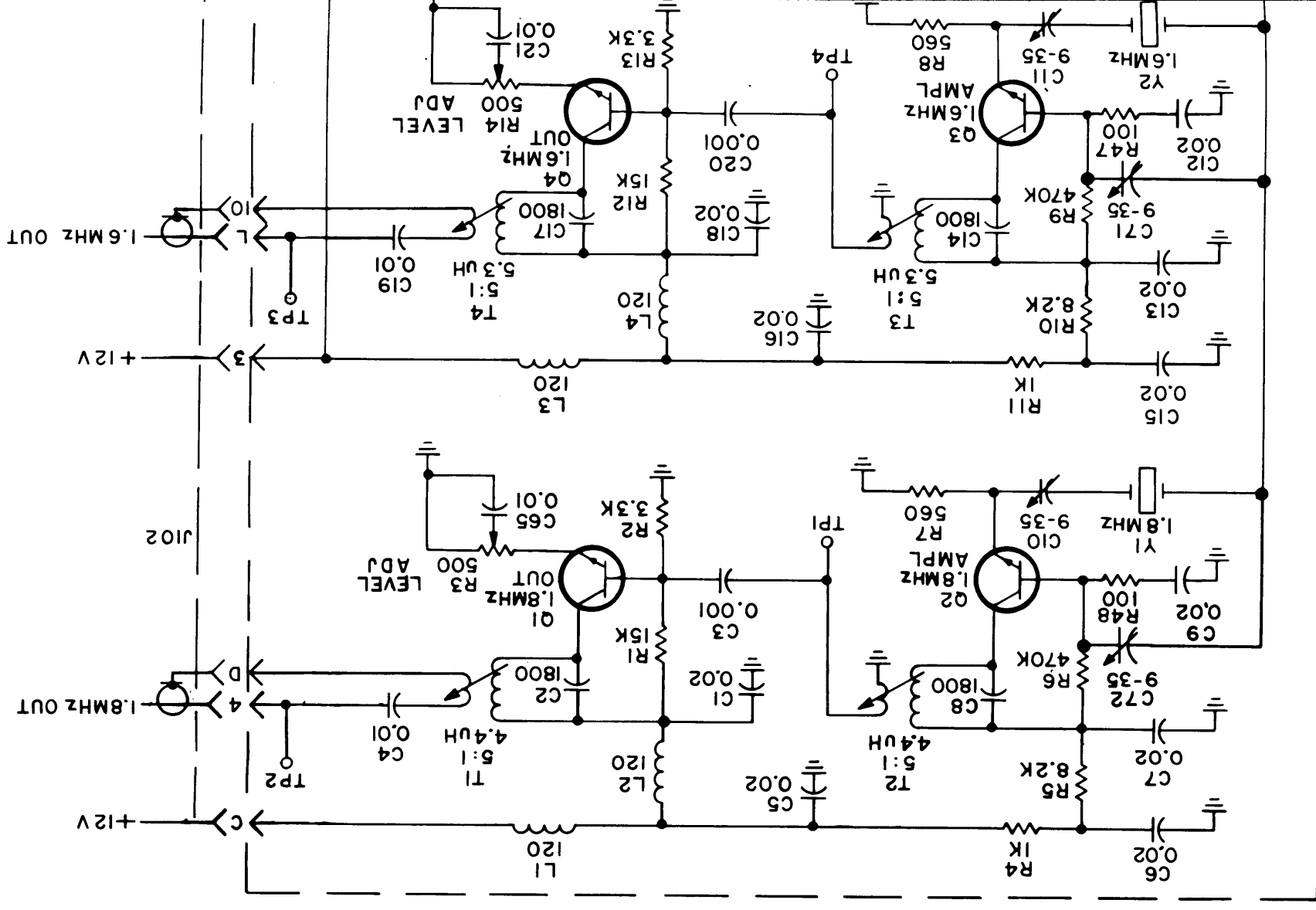
Figure 7-3. Comb Filter Z102, Schematic Diagram

# SYMBOL SERIES 500

UNLESS OTHERWISE SPECIFIED

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2- ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS, (.001)  
ALL WHOLE NUMBER VALUES ARE IN PICOFARADS, (1800).
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- ALL TRANSISTORS ARE TYPE "2N3646".

LAST SYMBOL	MISSING SYMBOL
C72	
L12	
Q12	
R48	
T12	
TP12	
Y6	





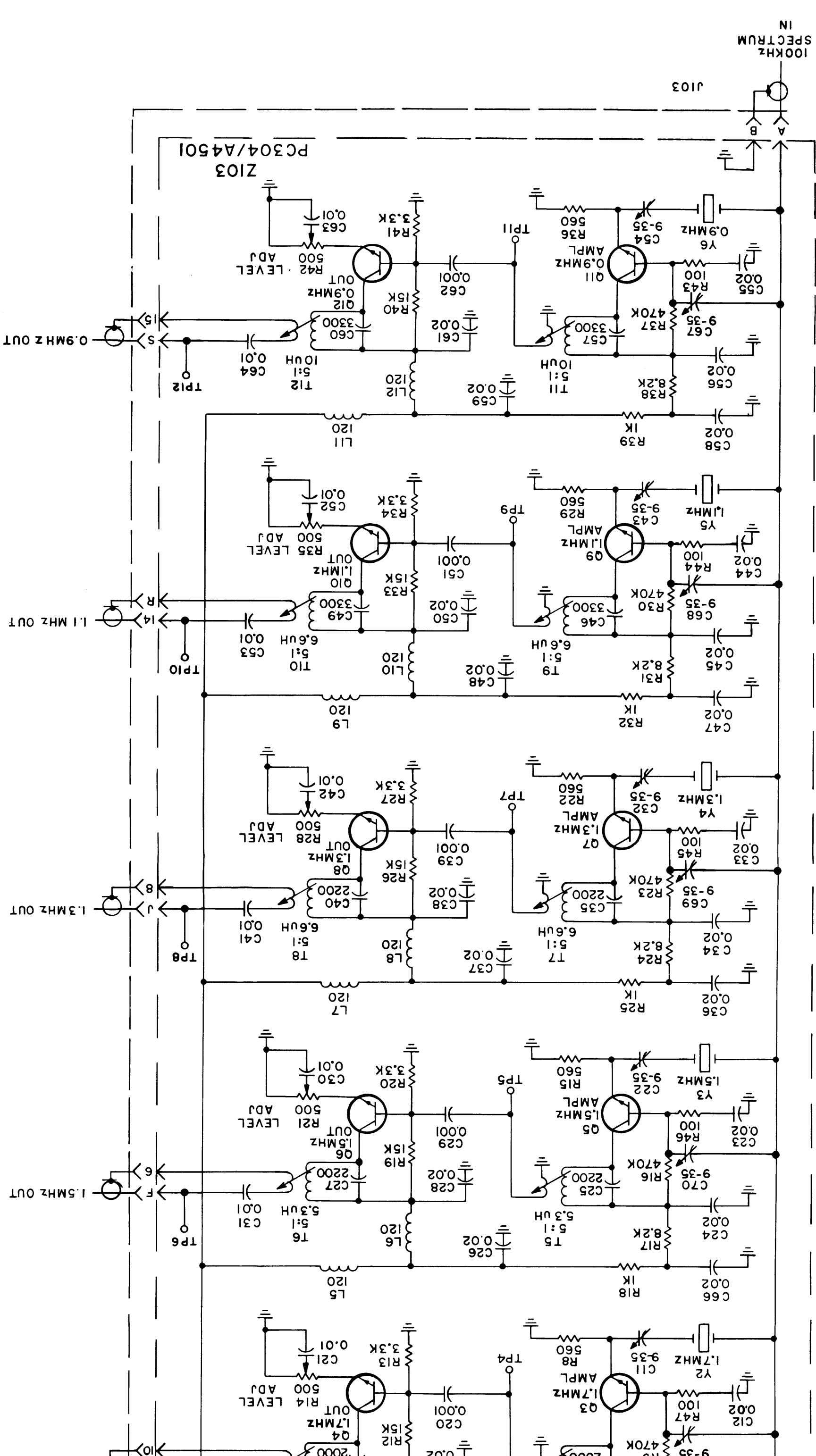
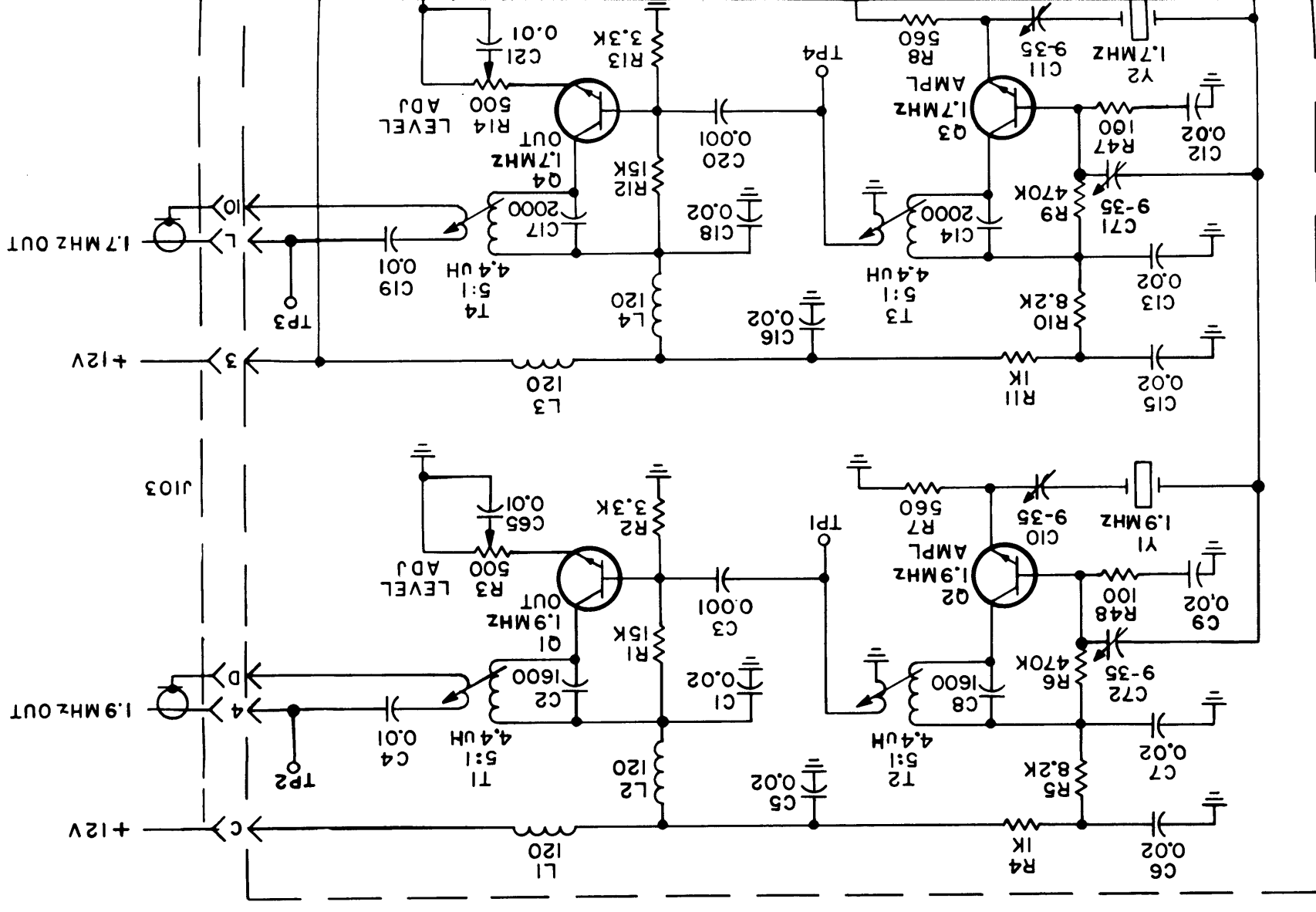


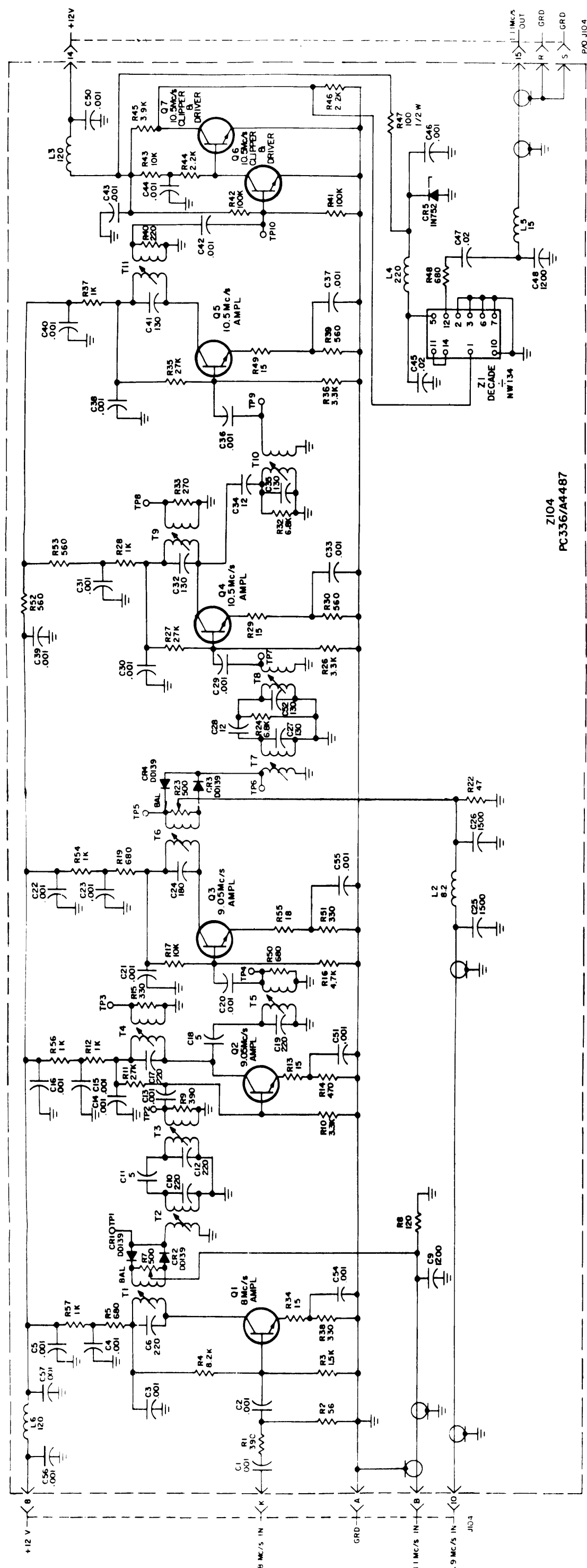
Figure 7-4. Comb Filter Z103, Schematic Diagram

# SYMBOL SERIES 600

- UNLESS OTHERWISE SPECIFIED
- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
  - 2- ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS, (.001).
  - 3- ALL TRANSISTORS ARE TYPE "2N3646".
  - 4- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- ALL WHOLE NUMBER VALUES ARE IN PICO FARADS, (1600),  
 ALL WHOLE NUMBER VALUES ARE IN MICROFARADS, (.001).



LAST SYMBOL	MISSING SYMBOL
C72	
L12	
Q12	
R48	
T12	
TP12	
Y6	



2039-37

SYMBOL SERIES 700

- UNLESS OTHERWISE SPECIFIED
- 1-ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
  - 2-ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS,(.001).
  - 3-ALL WHOLE NUMBER VALUES ARE IN MICROFARADS,(150).
  - 4-ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
  - 5-ALL TRANSISTORS ARE TYPE 2N3646.

LAST SYMBOLS	MISSING SYMBOLS
C38	C33,C45,C36,C7,C8
C39	
L6	L1
Q7	R18, R20, R6
R57	R21, R25, R31
T11	
TP40	
Z1	

Figure 7-5. Single Mixer-Divider, Schematic Diagram

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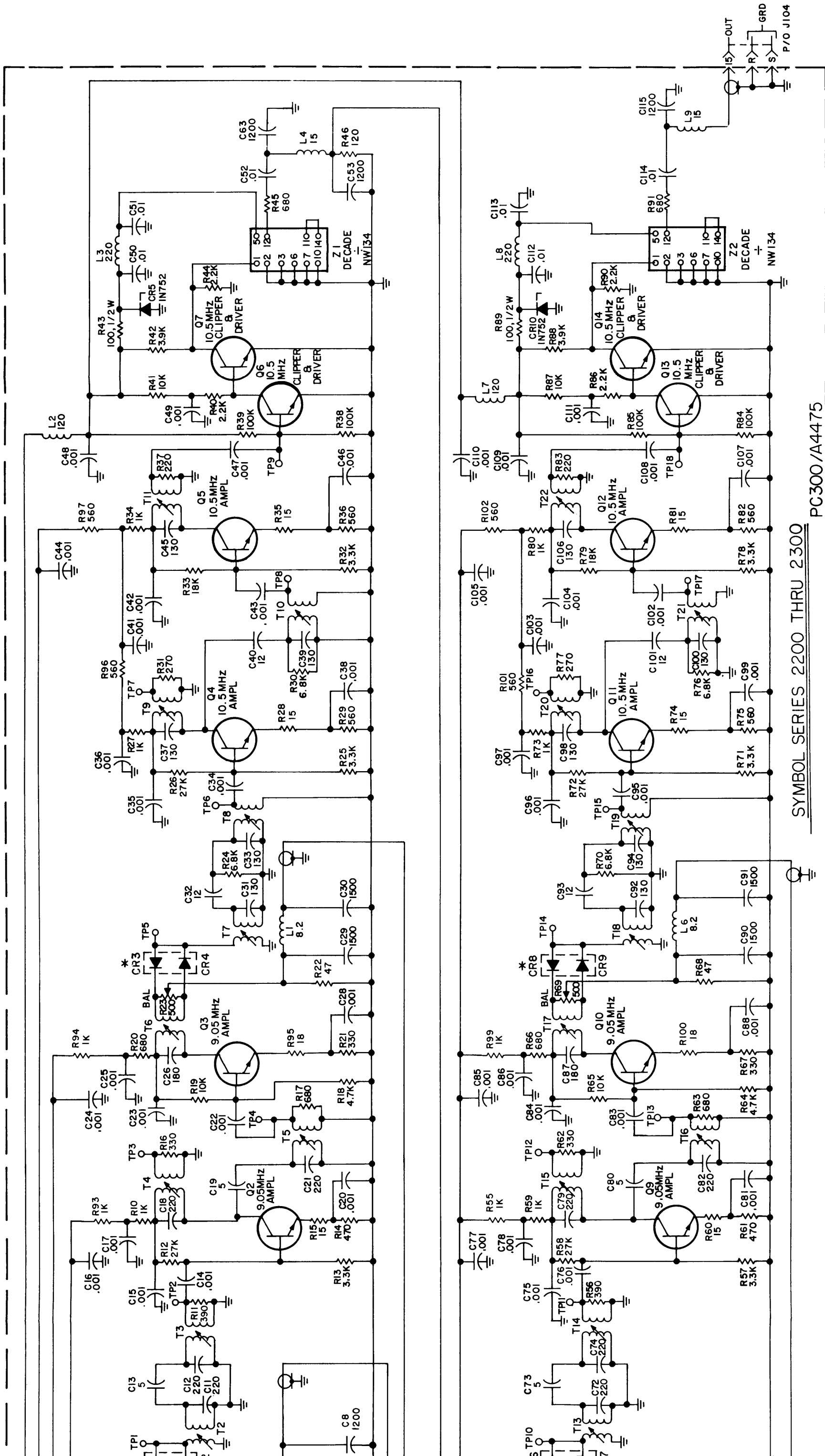


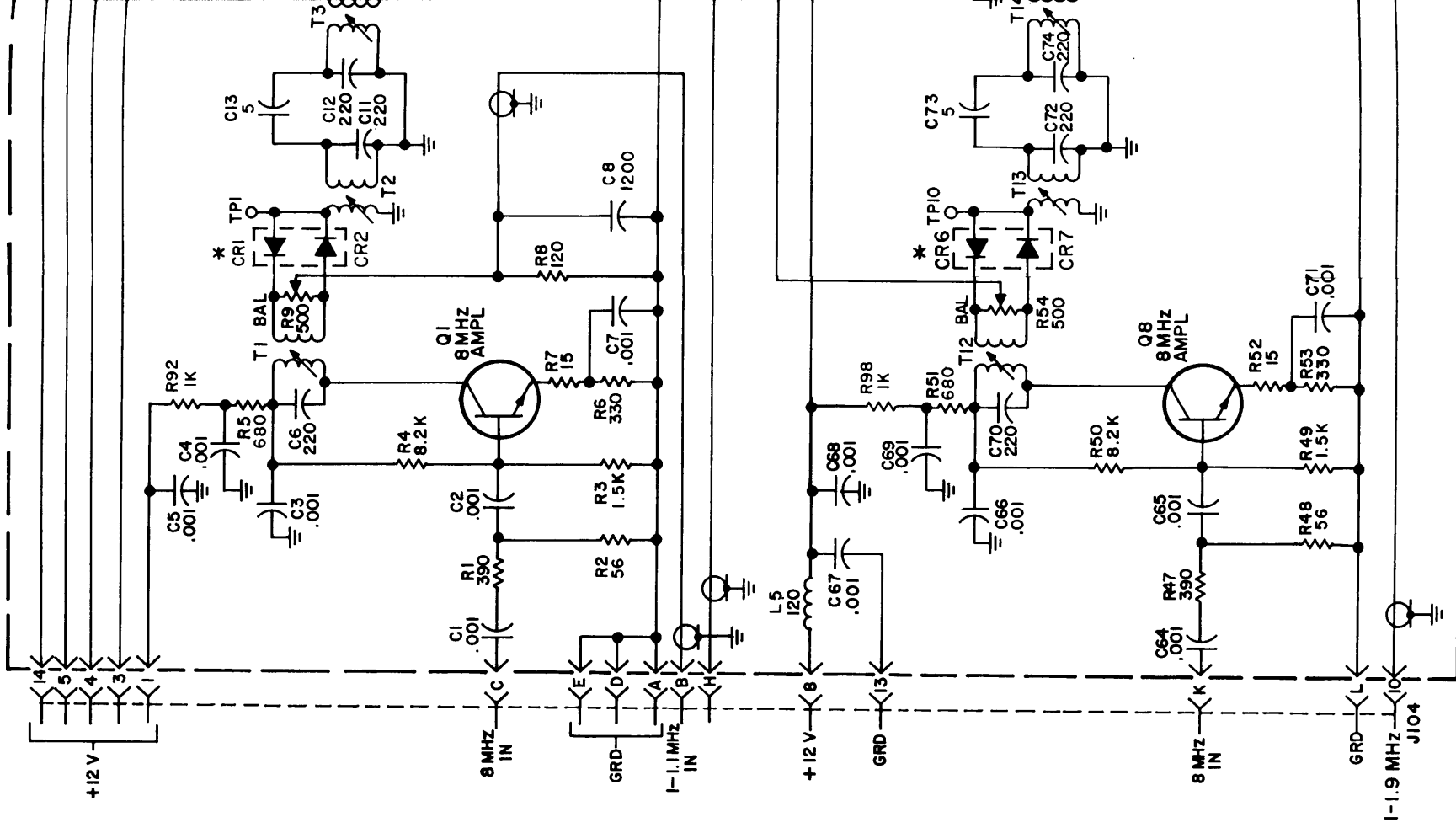
Figure 7-6. Dual Mixer-Divider Z105, Schematic Diagram

UNLESS OTHERWISE SPECIFIED

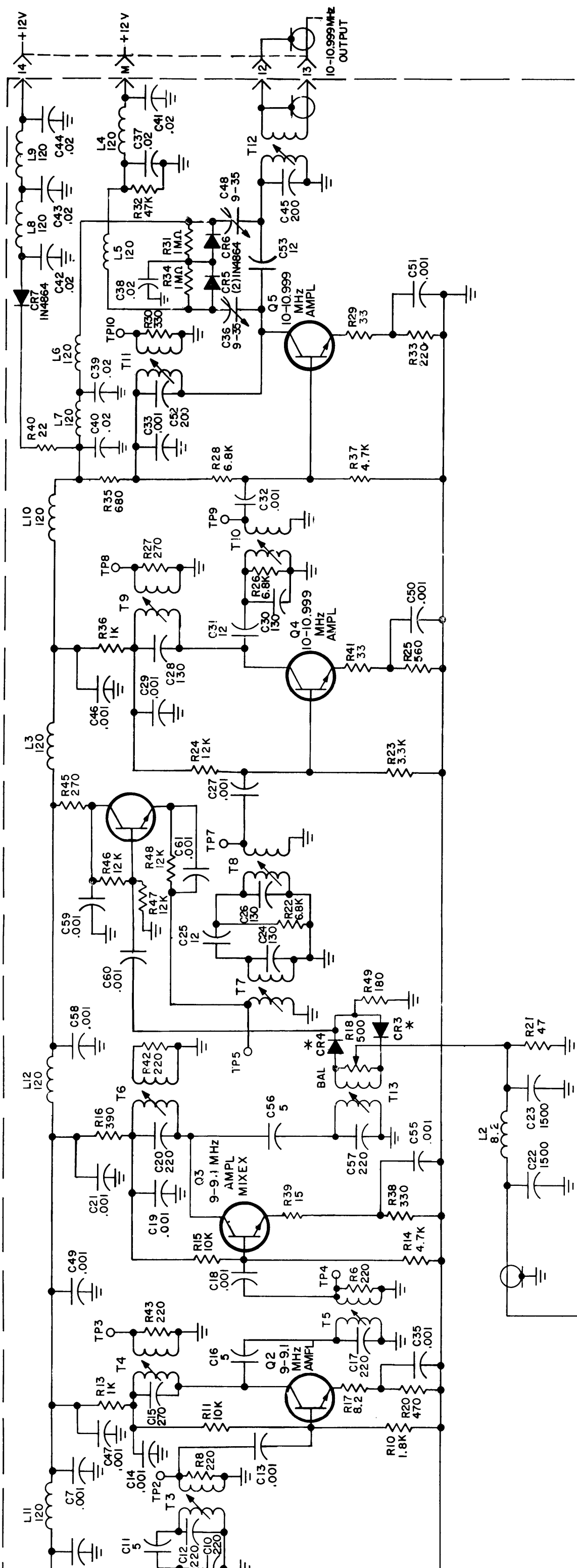
- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2- ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS.
- ALL WHOLE NUMBER VALUES ARE IN PICOFARADS.
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- ALL TRANSISTORS ARE TYPE "2N3646".

\* NOTE

CR1 & CR2, CR3 & CR4, CONSIST OF MATCHED PAIRS OF IN995 DIODES



LAST SYMBOLS	MISSING SYMBOLS
C115	C9, C10, C27
CR10	C53 THRU C62, C89
L9	CR6, 7, 8, 9
Q14	
R102	
T22	
TP18	
Z2	



**SYMBOL SERIES 800**

PC302/A4479  
(SEE CHART)

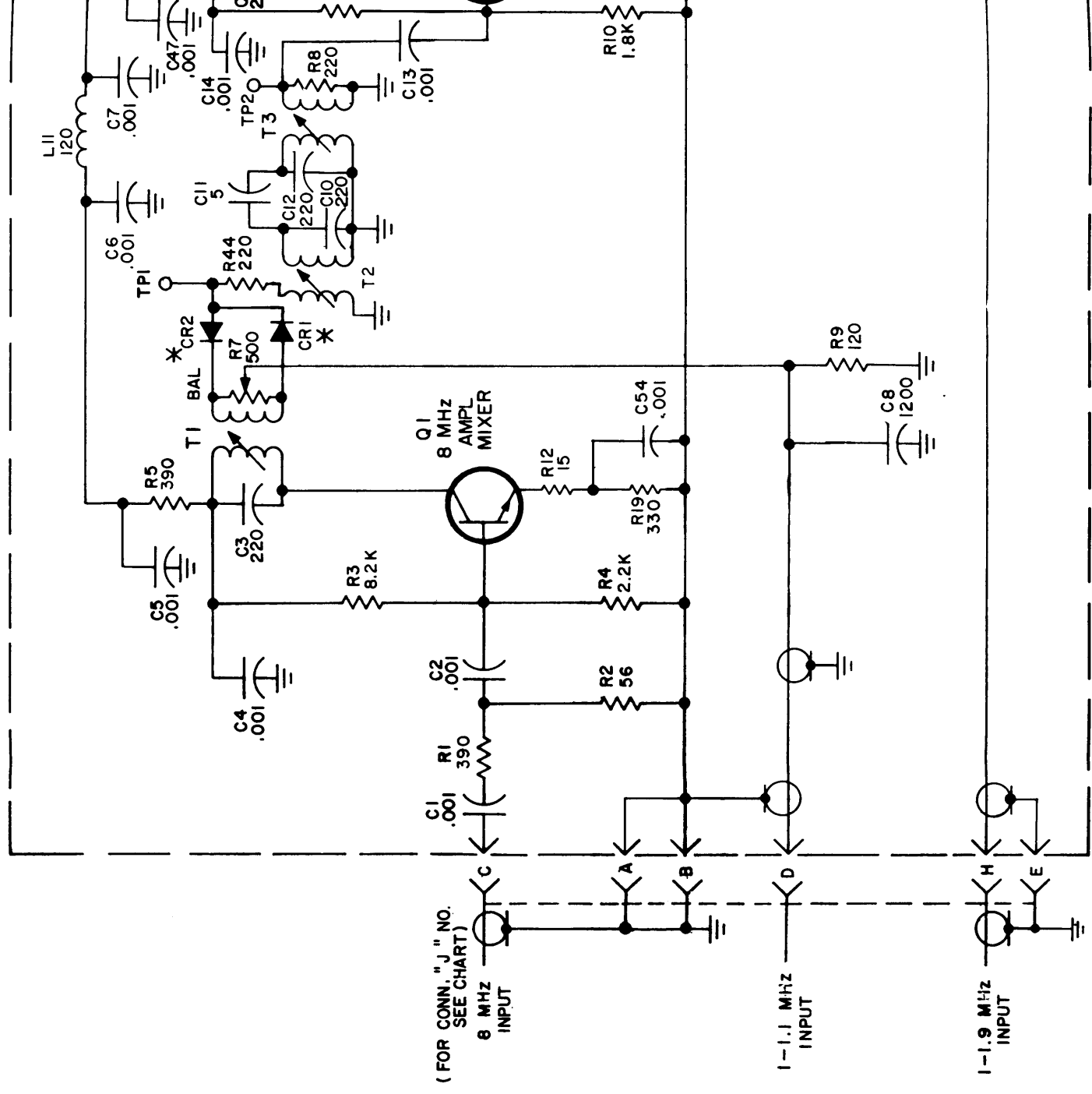
Figure 7-7. Mixer-Final Z106, Schematic Diagram

**UNLESS OTHERWISE SPECIFIED**

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2- ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS, (.001).
- ALL WHOLE NUMBER VALUES ARE IN PICO FARADS, (130).
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- ALL TRANSISTORS ARE TYPE "2N3646".

**\* NOTE**

CRI & CR2, CR3 & CR4 ARE "IN95'S" MATCHED PAIRS.



LAST SYMBOLS	MISSING SYMBOLS
C61	C9,C34
CR7	L1
L12	
Q6	TP6
R49	
T13	
TP10	

MODEL	"Z" NO.	CONN. "J" NO.
MMX-1)	Z106	J106
VOX-7	Z106	J106
LFE-1	Z107	J107

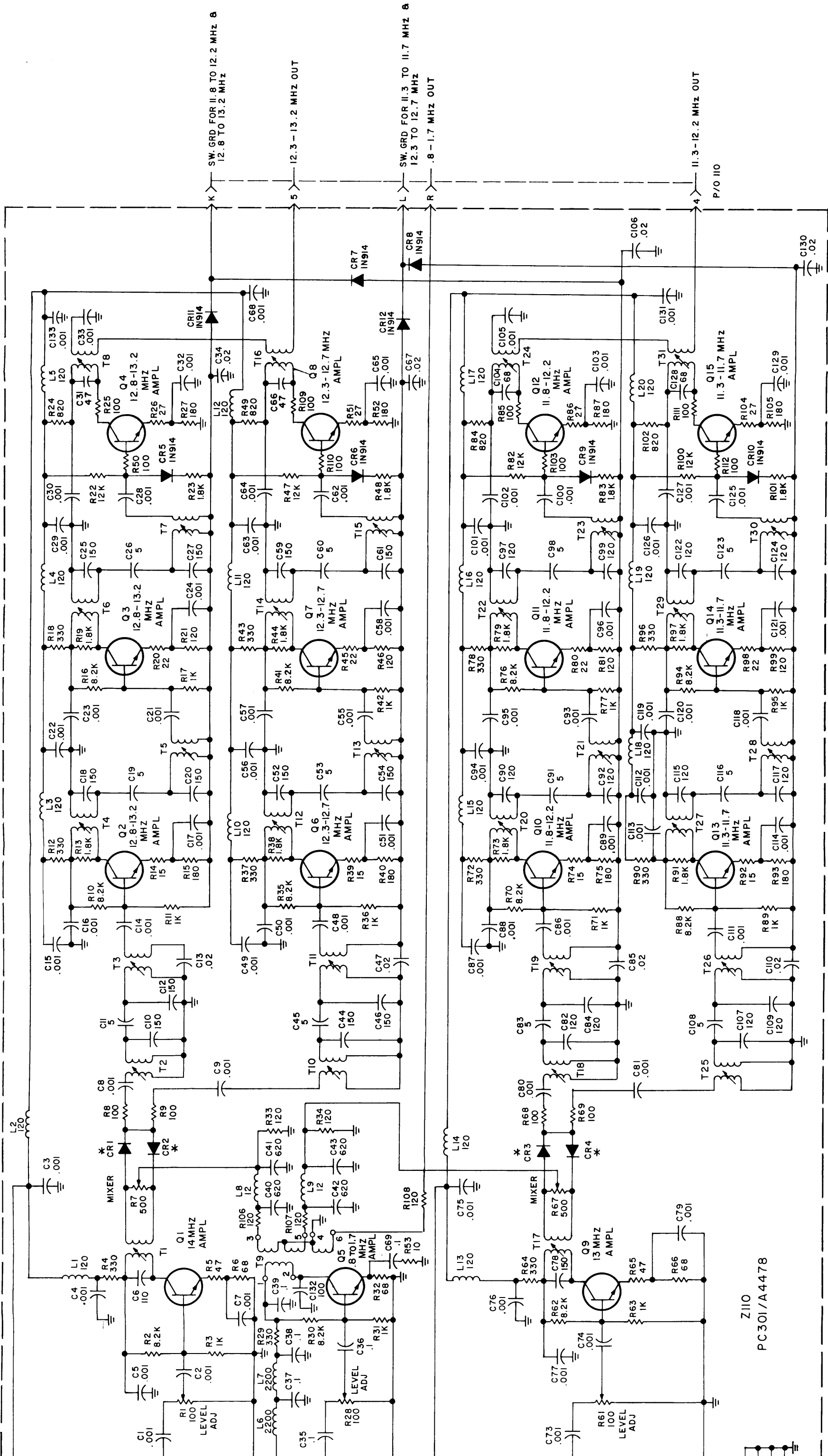


Figure 7-8. Step Generator Z110, Schematic Diagram



UNLESS OTHERWISE SPECIFIED

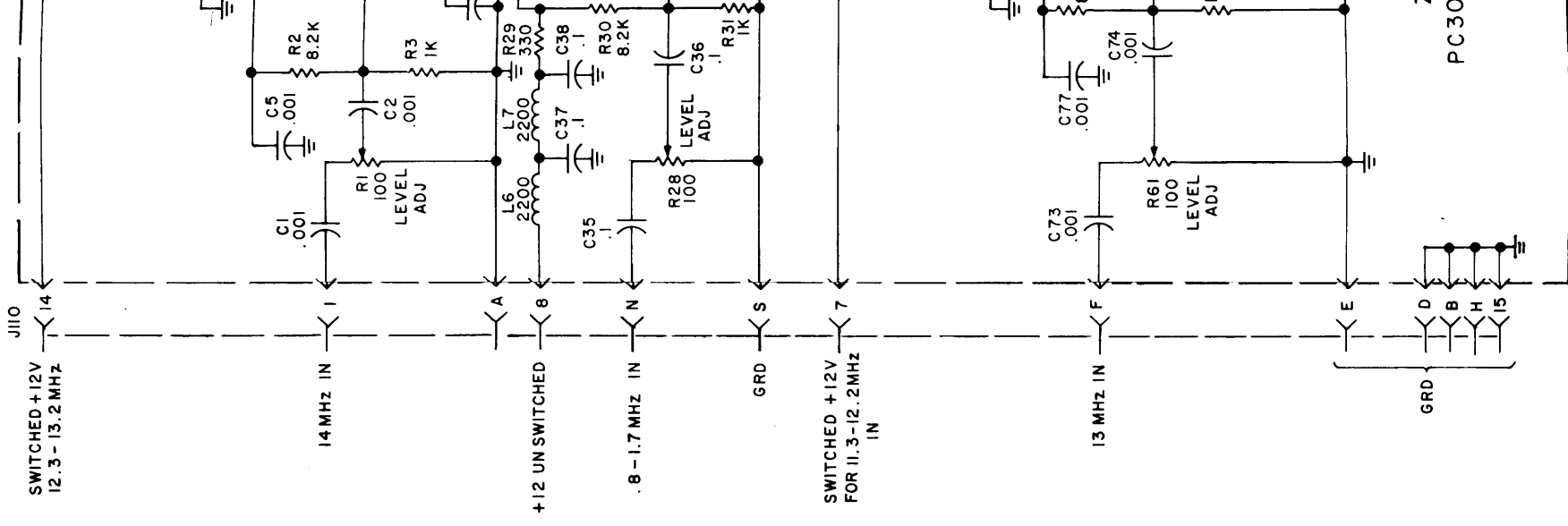
- 1-ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2-ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS, (.001).  
ALL WHOLE NUMBER VALUES ARE IN PICO FARADS, (130).
- 3-ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4-ALL TRANSISTORS ARE TYPE 2N3646.

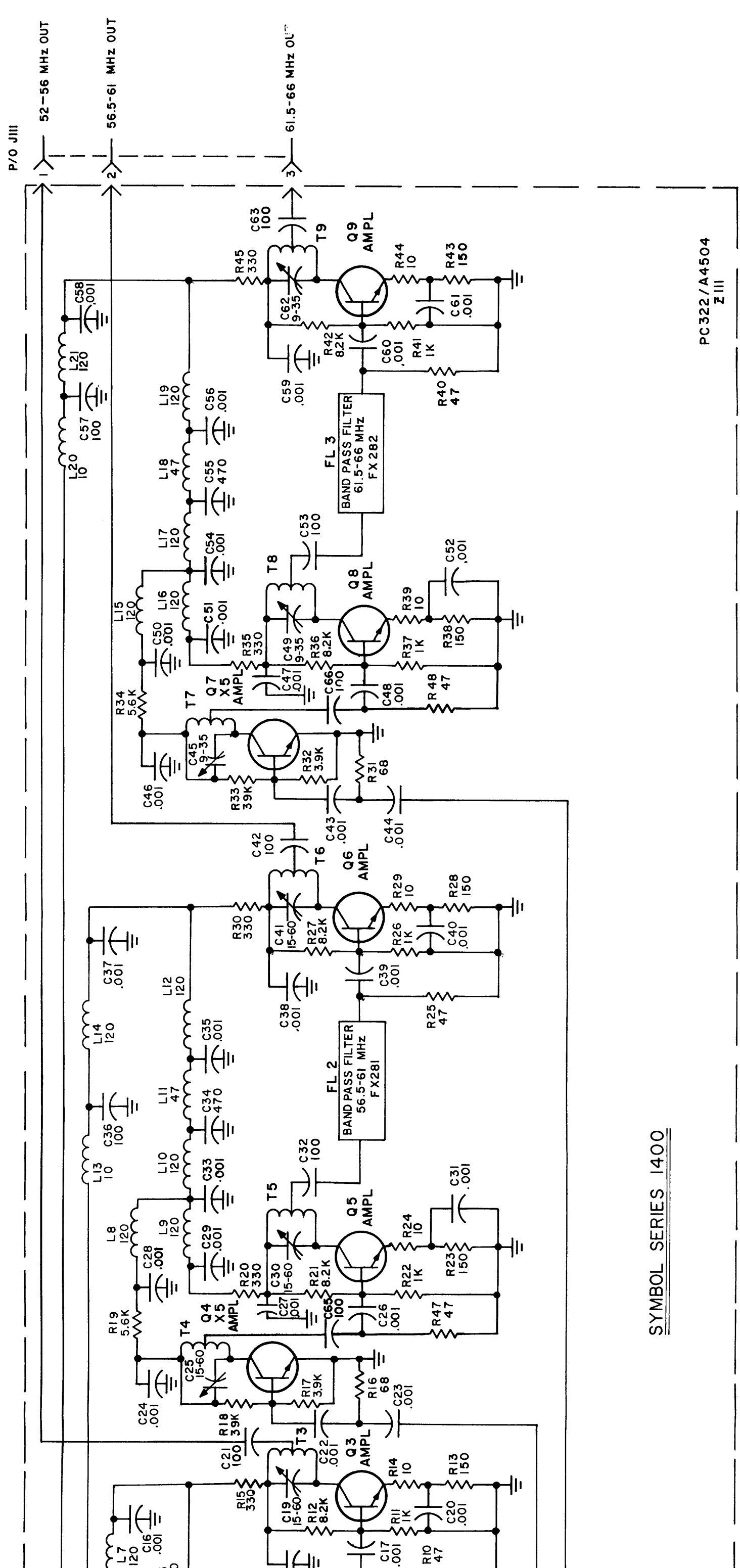
\* NOTE

CR1 & CR2, CR3 & CR4 (DD139) MUST BE MATCHED PAIRS.

LAST SYMBOLS	MISSING SYMBOLS
C133 CR12 L20 Q15 RI12 T31	C70 THRU C72  R54 THRU R60

SYMBOL SERIES 1200 - THRU 1300



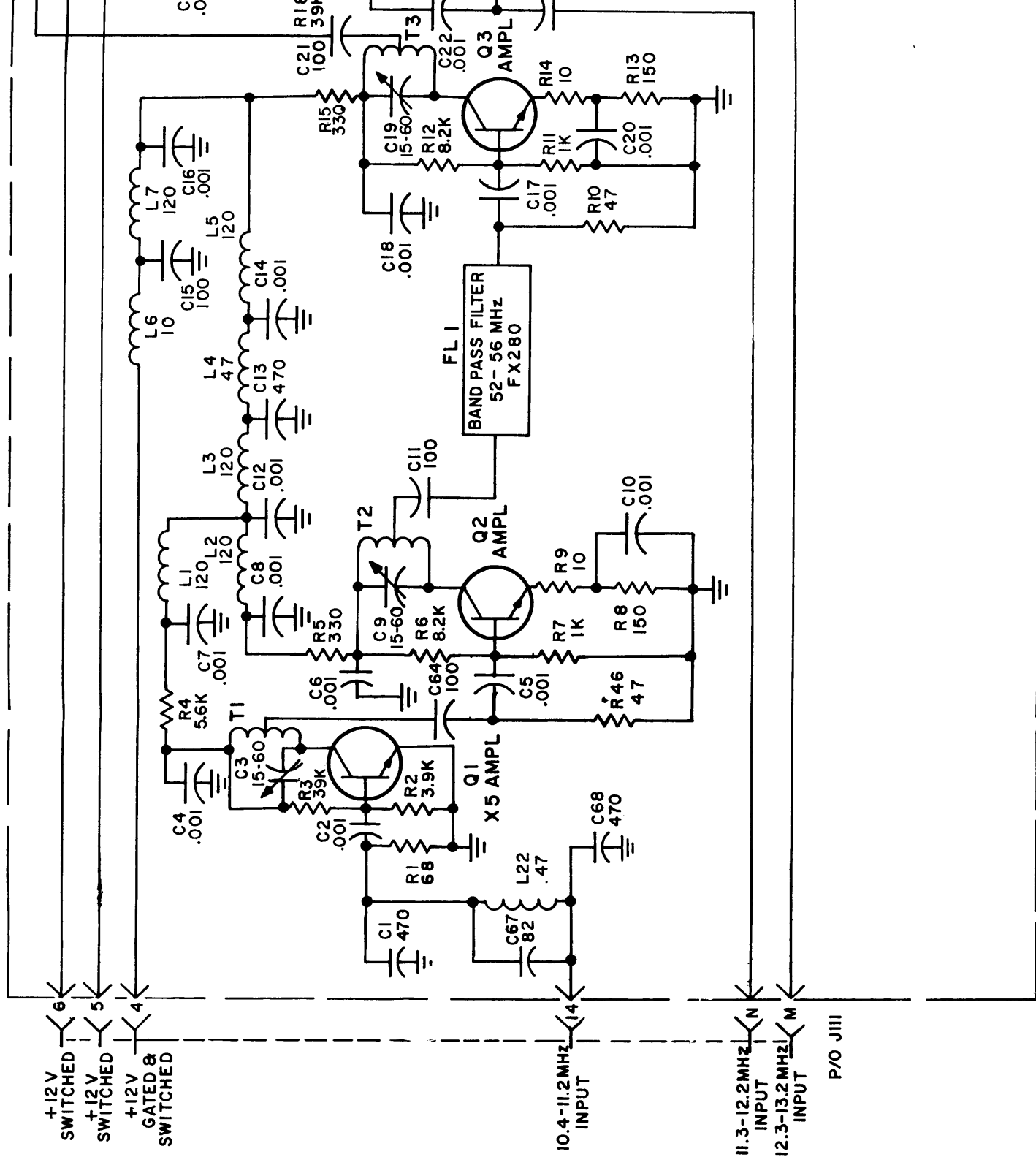


SYMBOL SERIES 1400

PC322/A4504  
Z 111

Figure 7-9. Step Generator Z111, Schematic Diagram

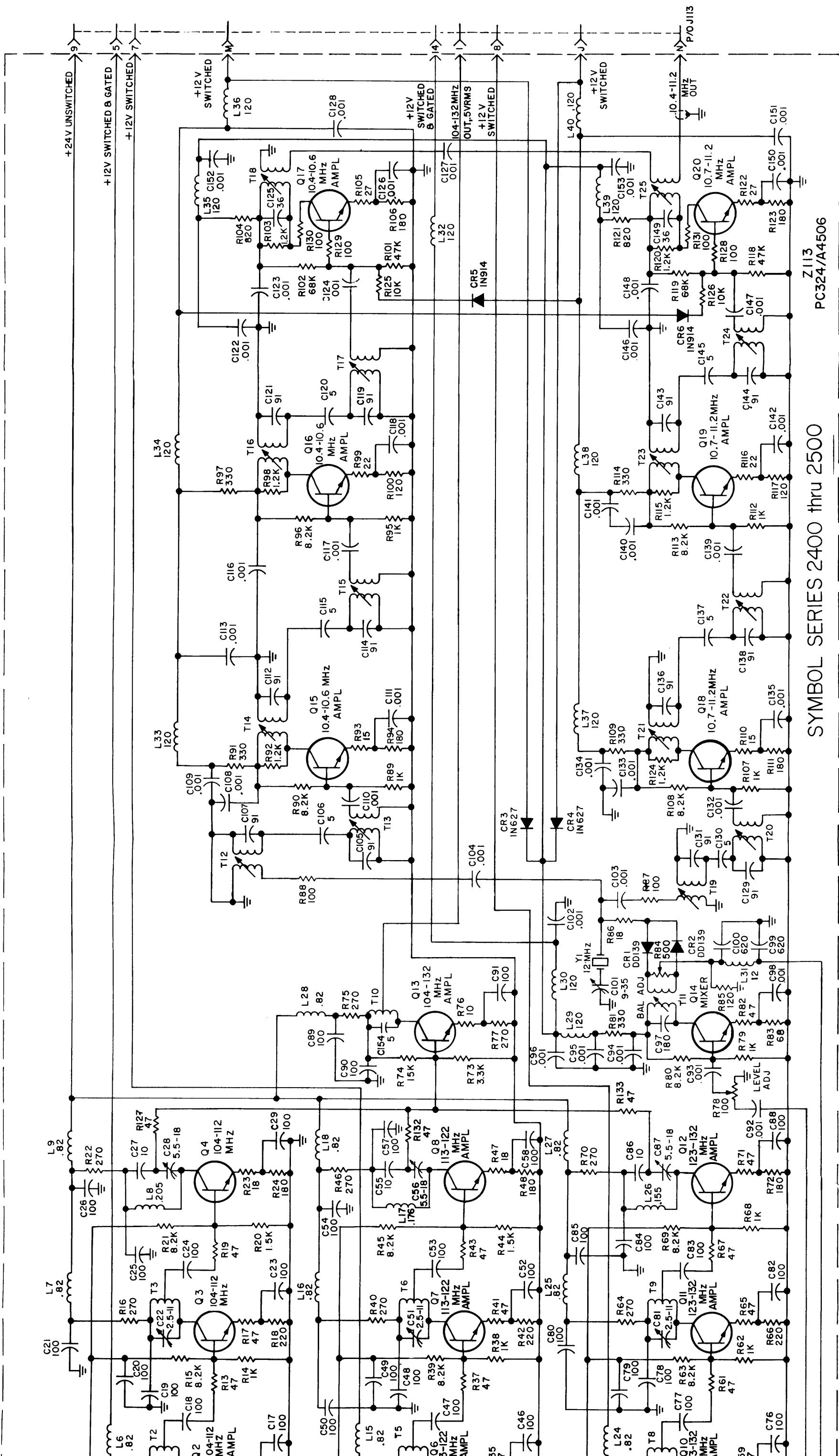
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**NOTE: UNLESS OTHERWISE SPECIFIED**

- 1-ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2-ALL DECIMAL CAPACITANCE VALUES ARE IN MICROFARADS.
- ALL WHOLE NUMBER VALUES ARE IN PICOFARADS.
- 3-ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4-ALL TRANSISTORS ARE TYPE "2N3646".

LAST SYMBOLS	MISSING SYMBOLS
C68	
L22	
Q9	
R48	
T9	
FL3	



Z113  
PC324/A4506  
SYMBOL SERIES 2400 thru 2500

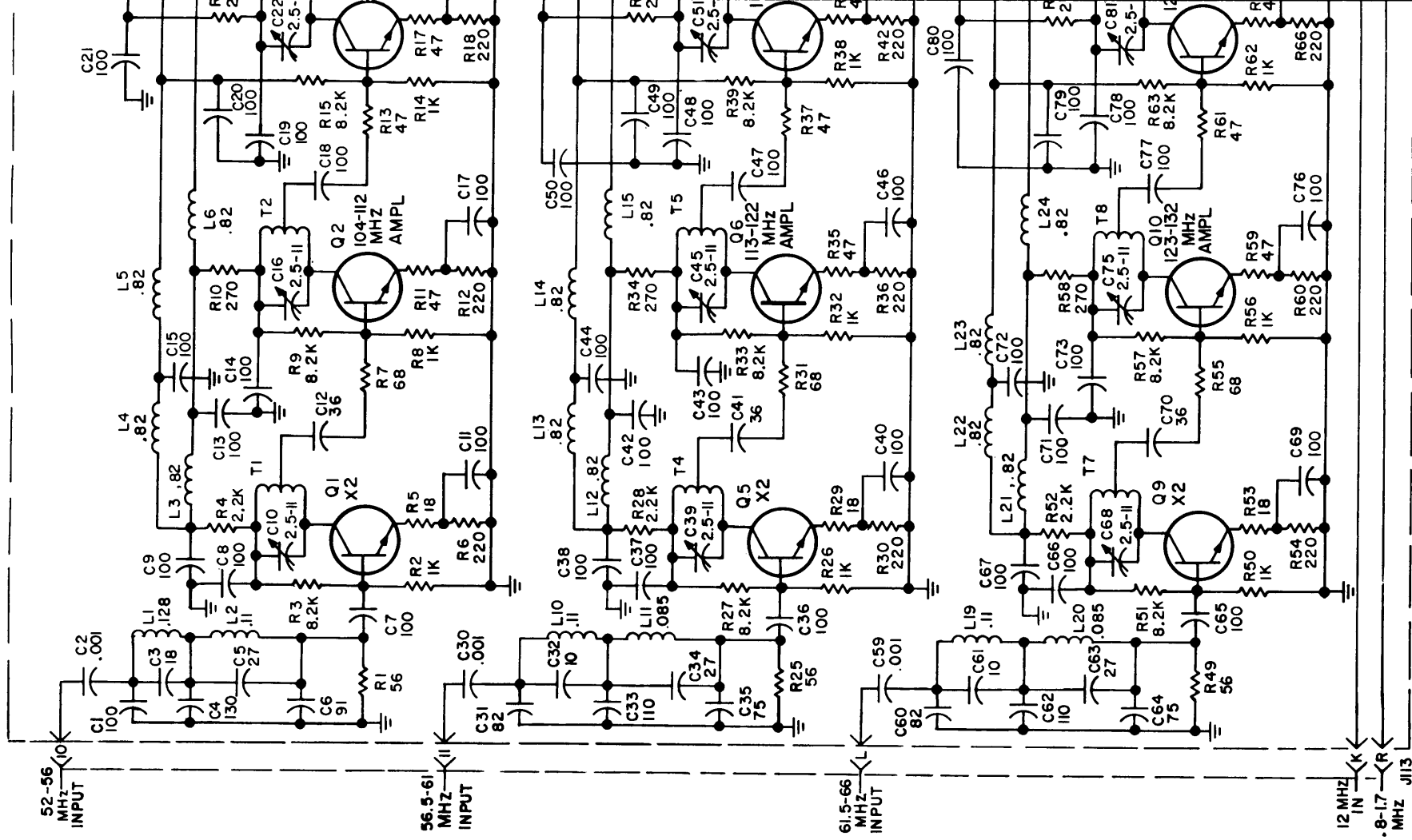
Figure 7-10. Step Generator Z113, Schematic Diagram

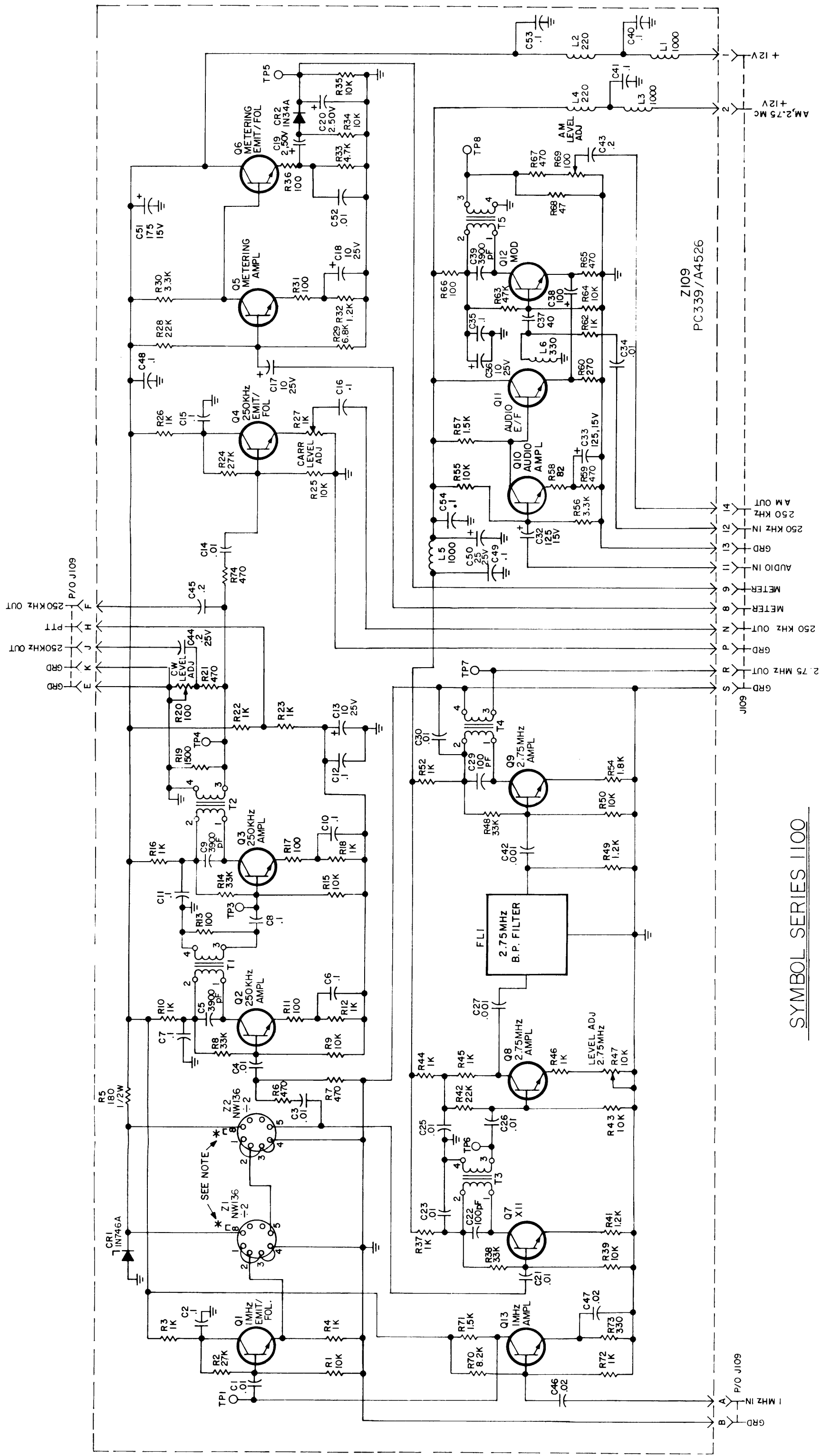
**UNLESS OTHERWISE SPECIFIED**

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2- ALL DECIMAL NUMBER CAPACITANCE VALUES ARE IN MICROFARADS.  
ALL WHOLE NUMBER VALUES ARE IN PICOFARADS.
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- TRANSISTORS Q1 THRU Q13 ARE TYPE 2N5179  
TRANSISTORS Q14 THRU Q20 ARE TYPE 2N3646.

**NOTE:** CR1 & CR2 MUST BE MATCHED PAIR.

LAST SYMBOLS	MISSING SYMBOLS
C153 CR6 L40 Q20 R133 T25 Y1	C74

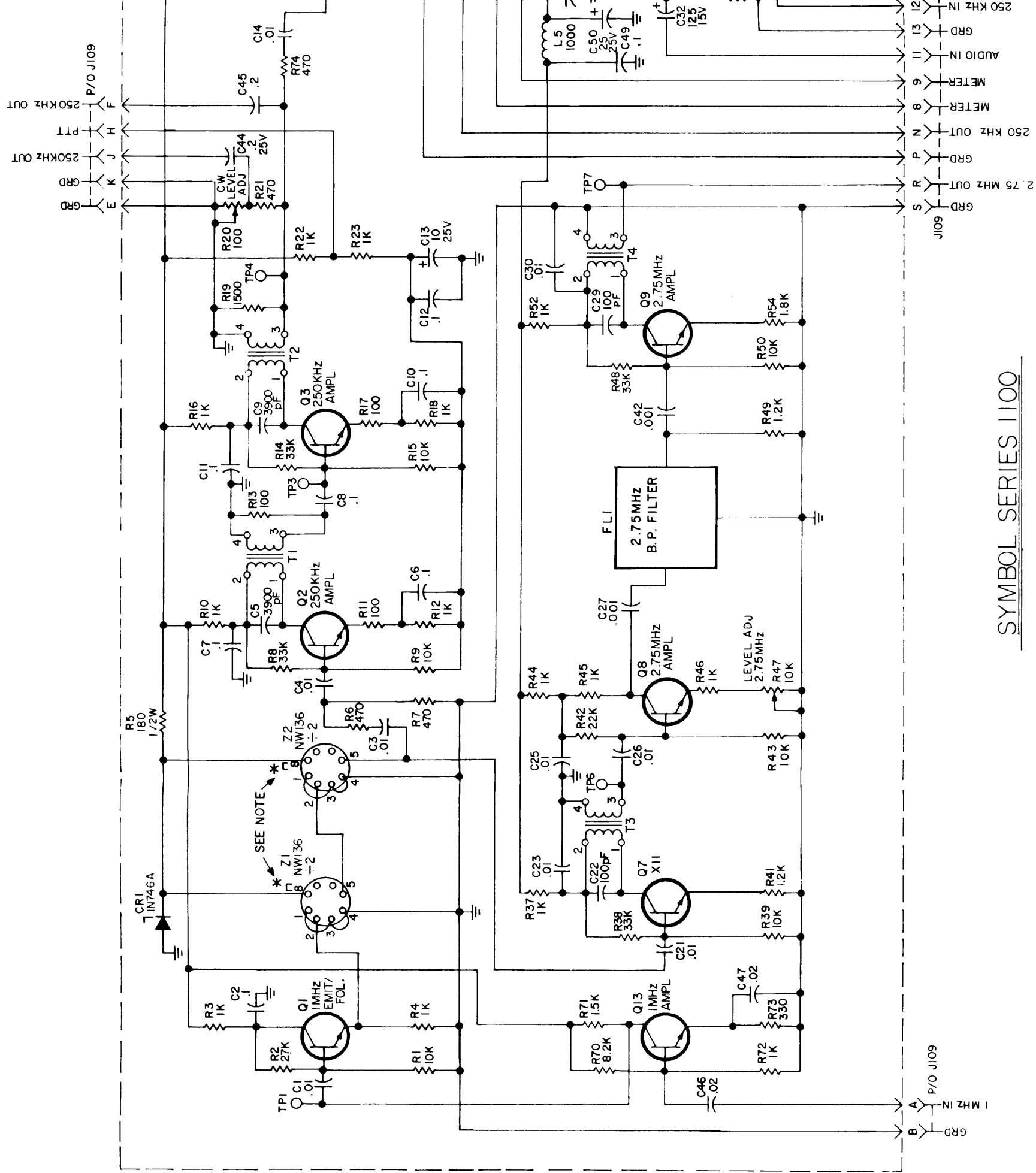




SYMBOL SERIES 1100

Z109  
PC339/A4526

Figure 7-11. Carrier Generator Z109, Schematic Diagram



SYMBOL SERIES 1100

NOTES - UNLESS OTHERWISE SPECIFIED

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 WATT.
- 2- ALL CAPACITANCE VALUES ARE IN MICROFARADS.
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- ALL TRANSISTORS ARE TYPE 2N3646.

\* "r" SYMBOL DENOTES FLAT SIGNIFYING PIN 8 ON NETWORK.

LAST SYMBOLS	MISSING SYMBOLS
C54	C24, C28, C31
CR2	
FL1	
L6	
Q13	
R74	R51, R61, R40R53
T5	
TP8	TP2
Z2	

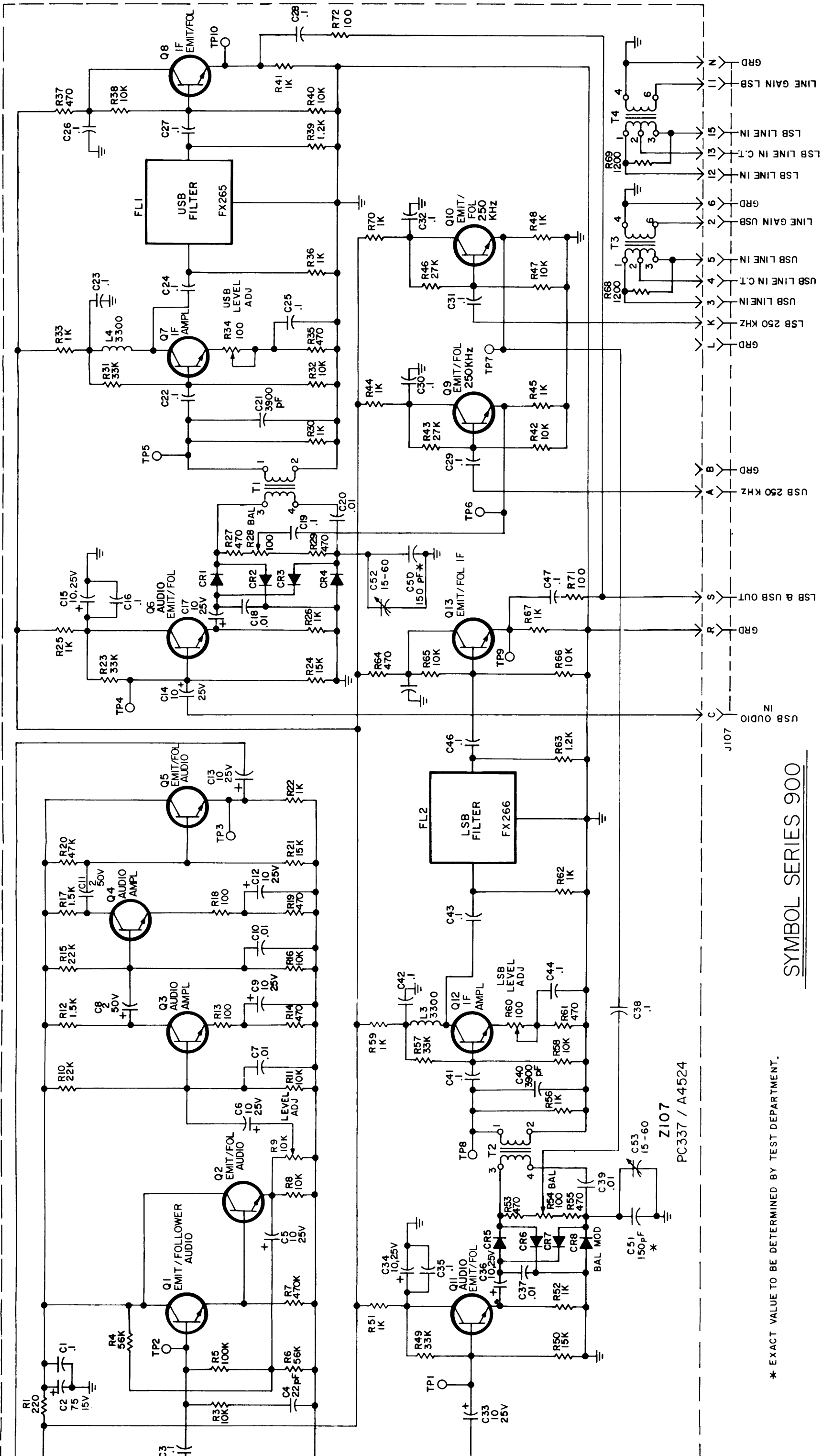
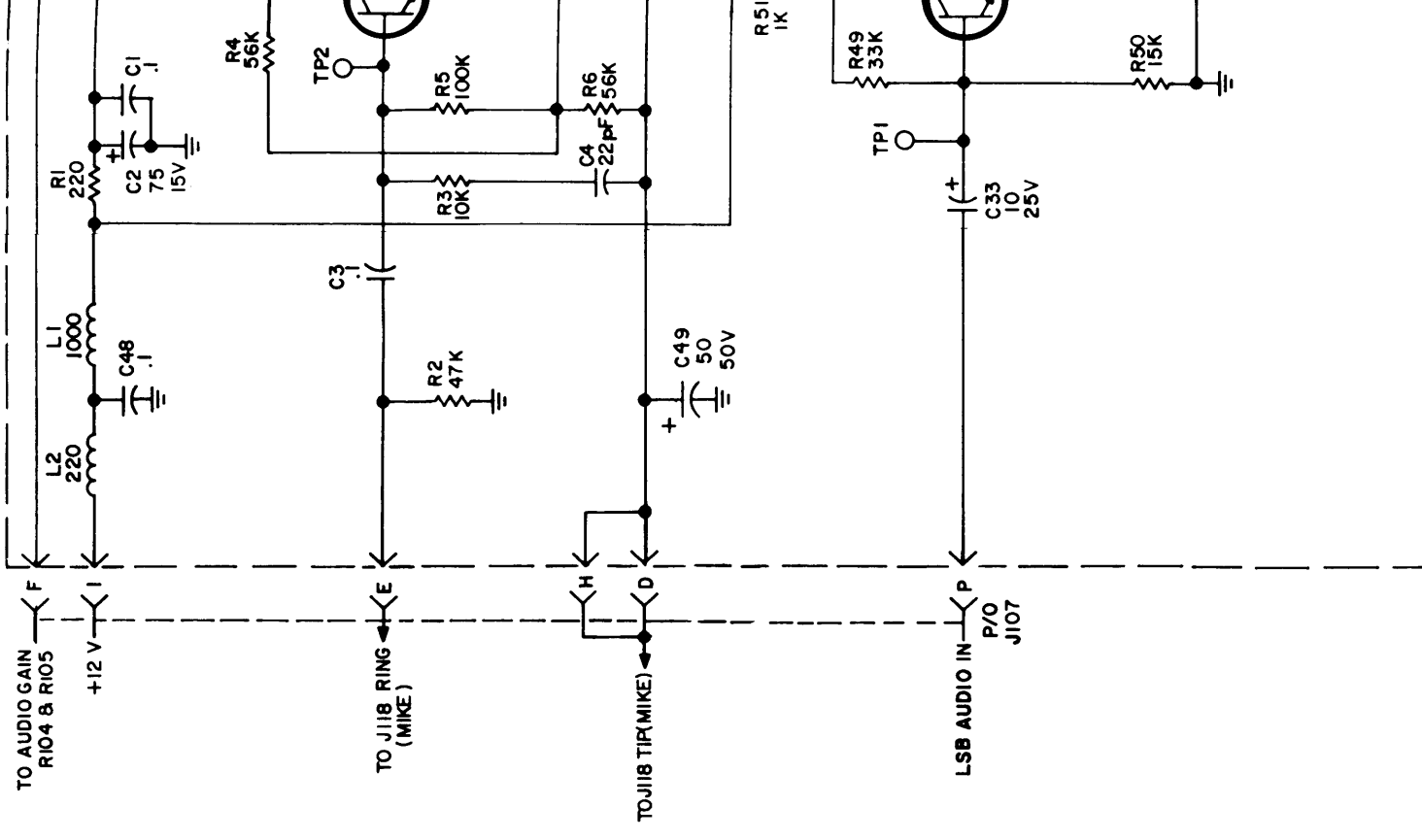


Figure 7-12. Sideband Generator Z107, Schematic Diagram

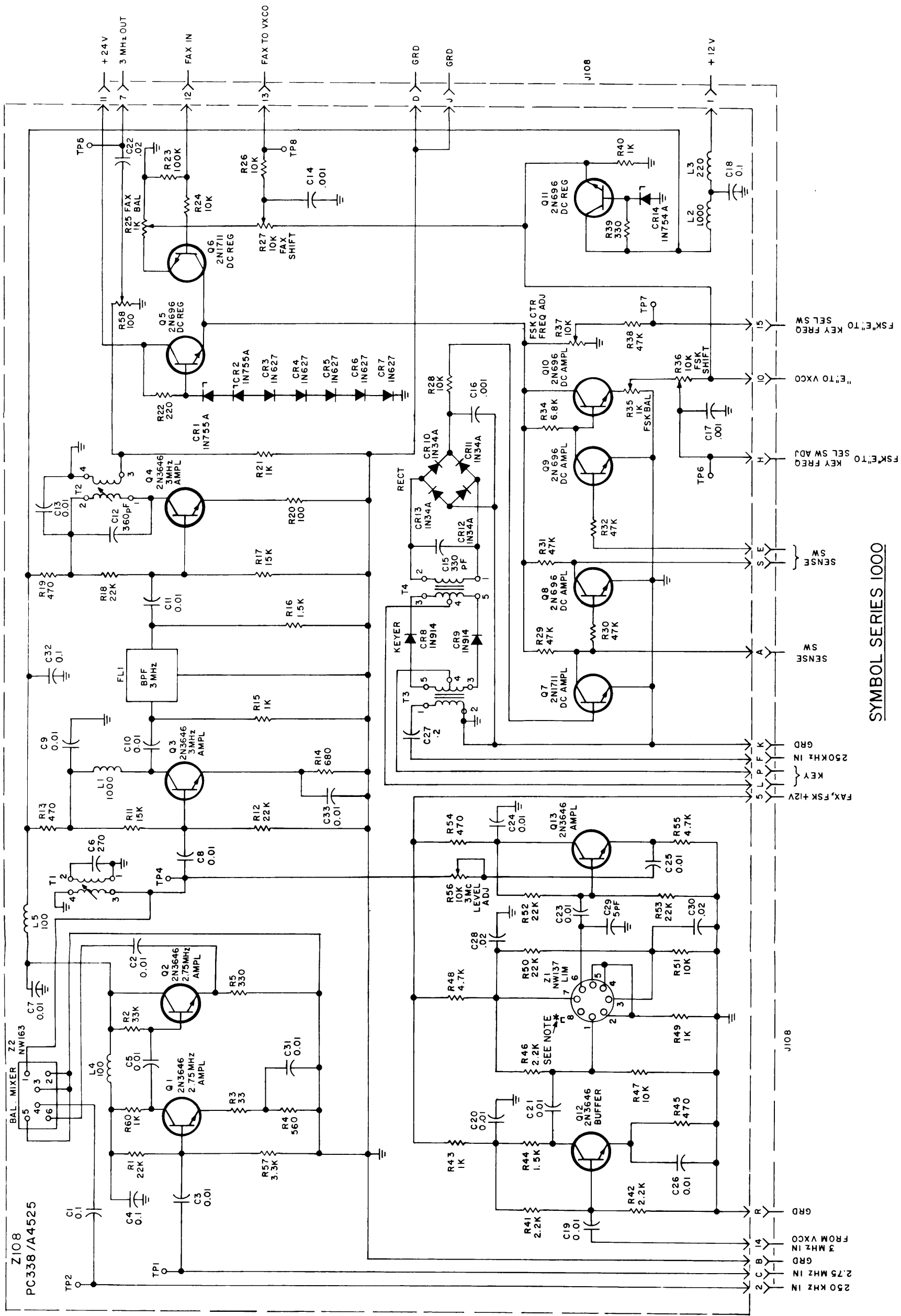




**UNLESS OTHERWISE SPECIFIED**

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 WATT.
- 2- ALL CAPACITANCE VALUES ARE IN MICROFARADS.
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.
- 4- ALL TRANSISTORS ARE 2N3646.
- 5- ALL DIODES ARE 1N541.

LAST SYMBOLS	MISSING SYMBOLS
C53	
CR8	
FL2	
L4	
Q13	
R72	
T4	
TP10	



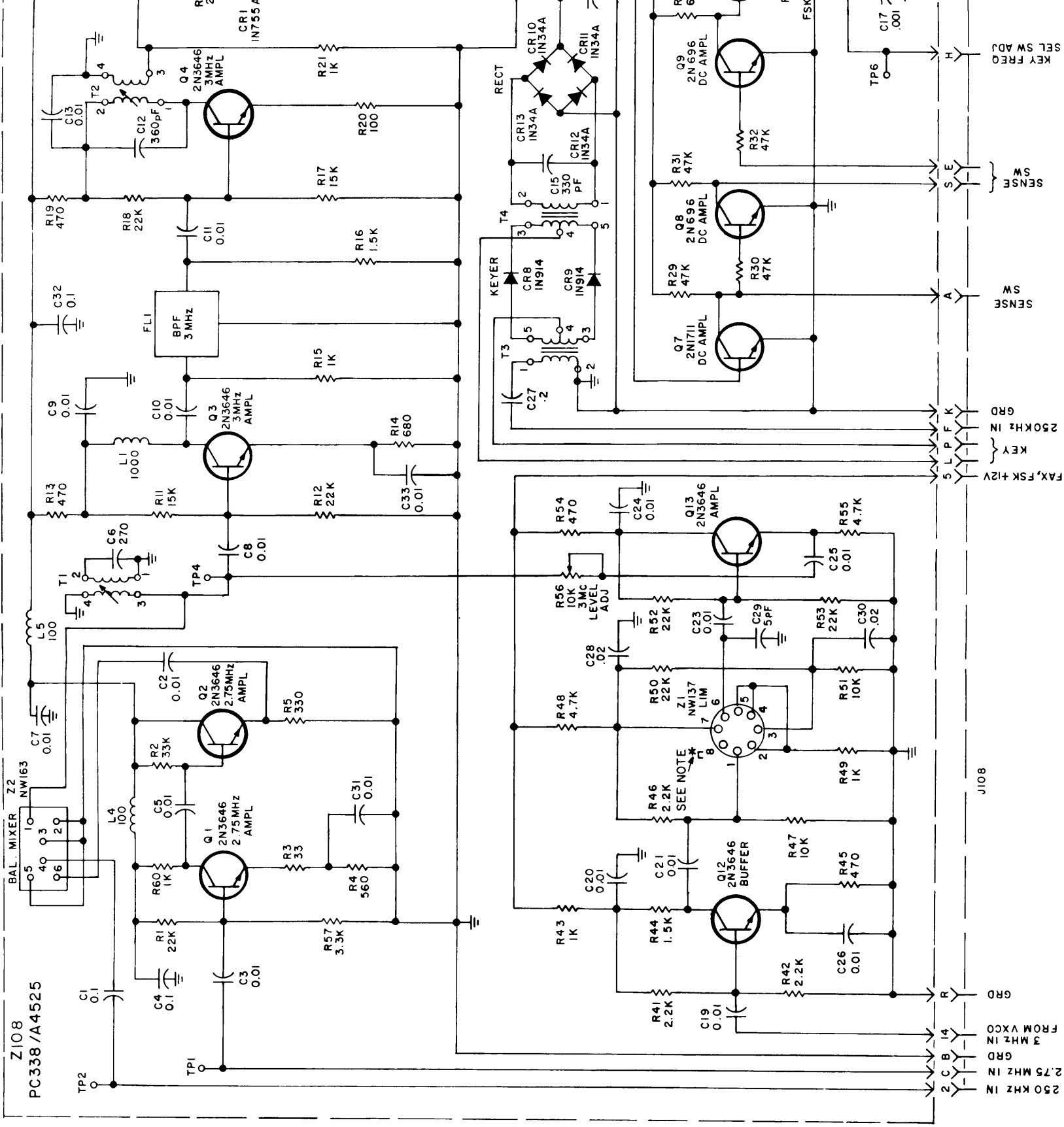
UNLESS OTHERWISE SPECIFIED,  
 RESISTANCE VALUES ARE IN OHMS, 1/4 W.  
 CAPACITANCE VALUES ARE IN MICROFARADS.  
 INDUCTANCE VALUES ARE IN MICROHENRIES.  
 SYMBOL DENOTES FLAT SIGNIFYING PIN 8 ON NETWORK.

LAST SYMBOL	MISSING SYMBOL
C33	
CR14	
FL1	
L3	
Q13	
R60	R6, 8, 33, 59
T4	
TP8	TP3
Z2	

SYMBOL SERIES 1000

Figure 7-13. Frequency Shift Generator Z108, Schematic Diagram

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UNLESS OTHERWISE SPECIED

- 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/4 W.
- 2- ALL CAPACITANCE VALUES ARE IN MICROFARADS.
- 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.

\*  $\overline{\text{H}}$  SYMBOL DENOTES FLAT SIGNIFYING PIN 8 ON NETWORK.

LAST SYMBOL	MISSING SYMBOL
C35	
CR14	
FL1	
L3	
Q13	
R60	R6, 8, 33, 59
T4	
TP8	TP3
Z2	

SYMBOL SERIES 1000

Figure 7-13. Frequency

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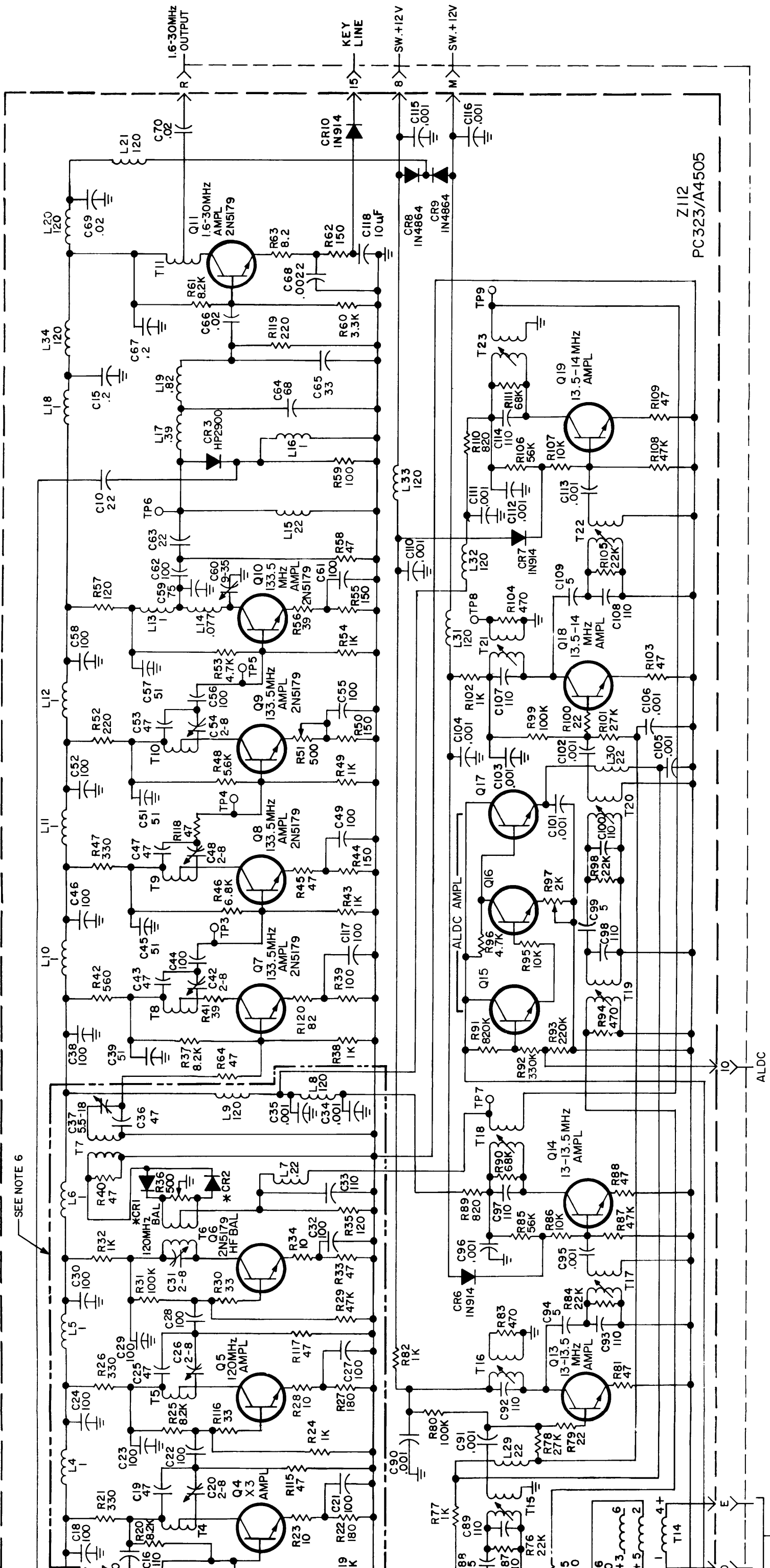


Figure 7-14. Translator Z112, Schematic Diagram



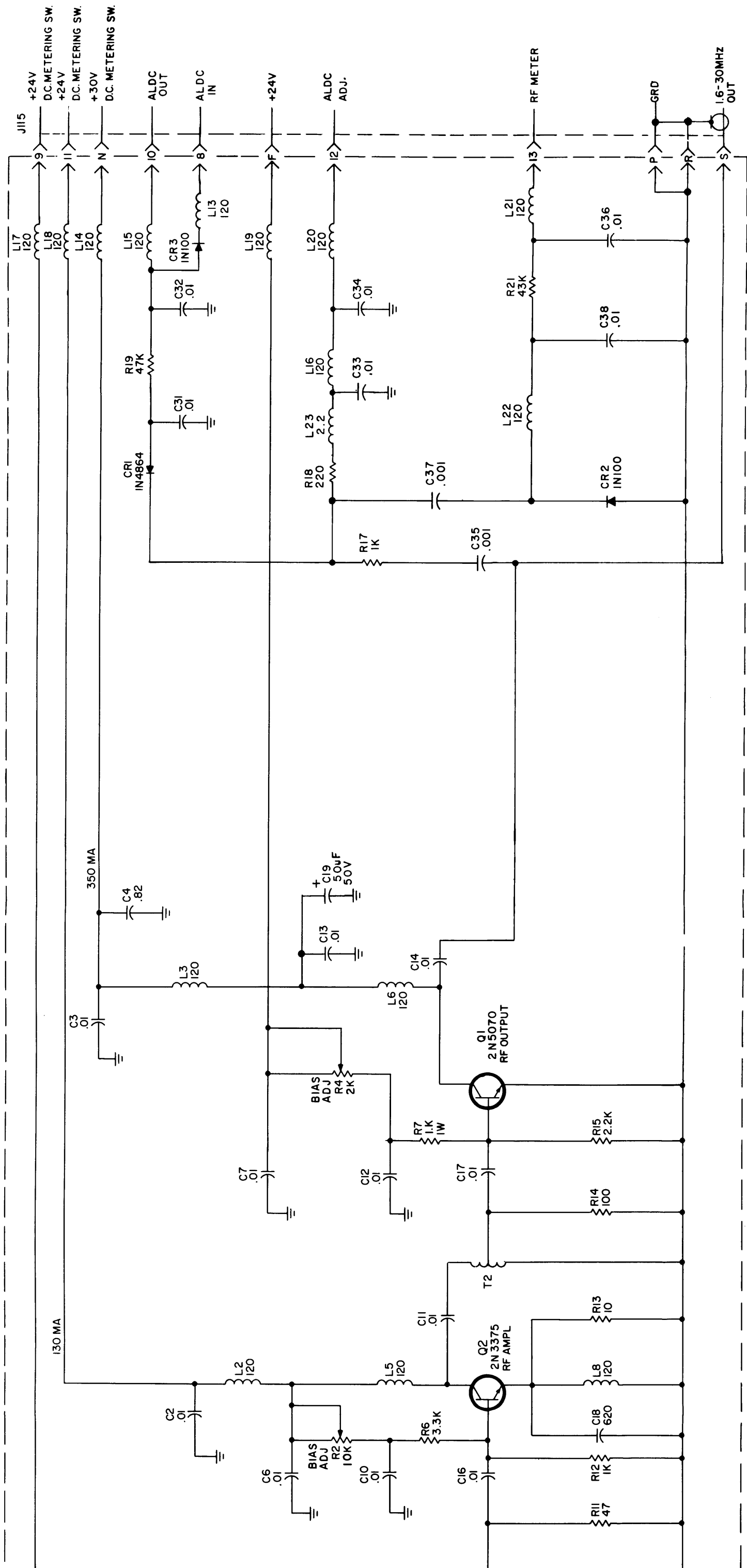
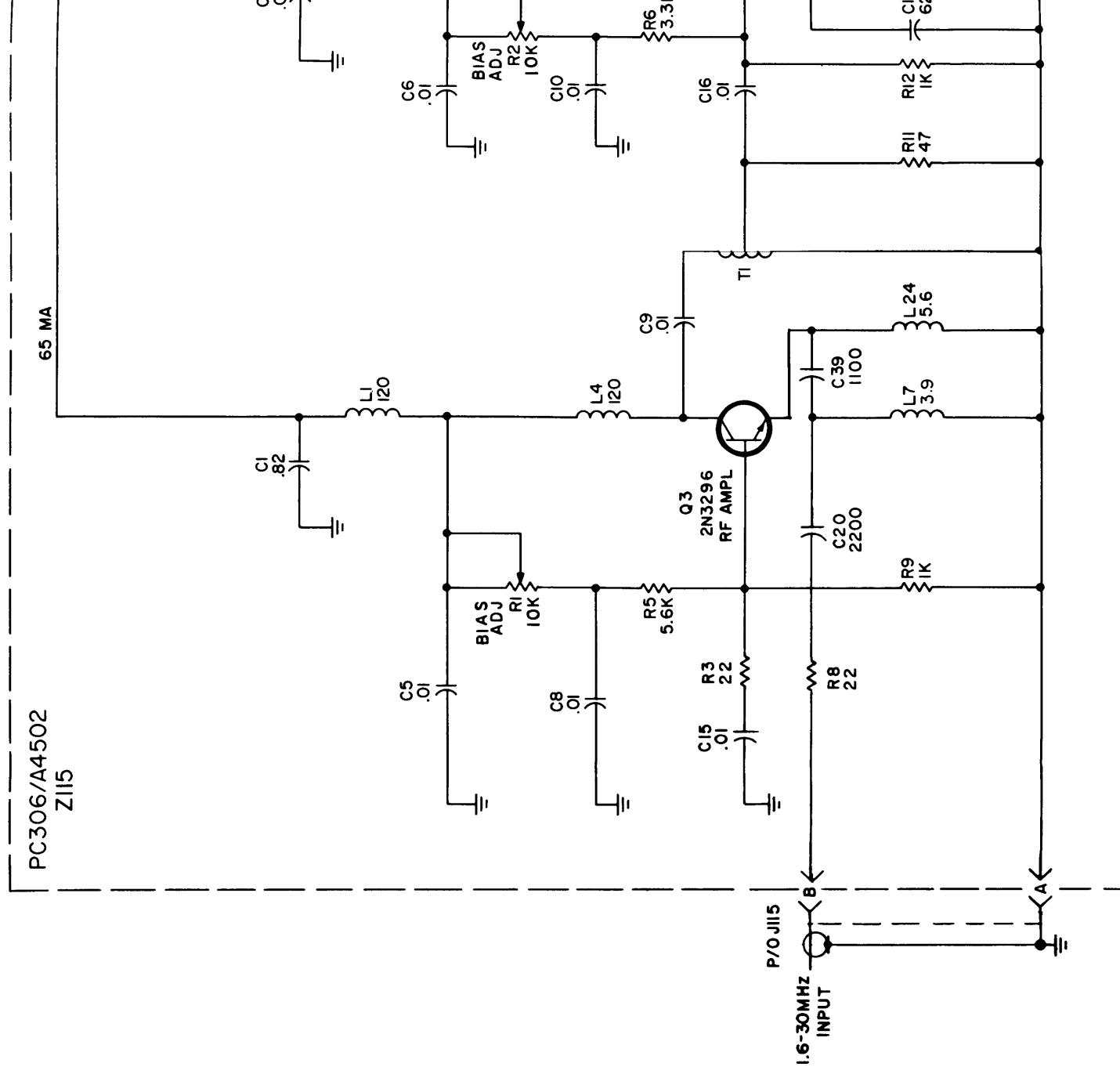


Figure 7-15. RF Output Z115, Schematic Diagram

- NOTES:  
 UNLESS OTHERWISE SPECIFIED  
 1- ALL RESISTANCE VALUES ARE IN OHMS, 1/2 W.  
 2- ALL DECIMAL CAPACITANCE VALUES (.001) ARE IN MICROFARADS.  
 ALL WHOLE NUMBER CAPACITANCE VALUES (47) ARE IN PICOFARADS.  
 3- ALL INDUCTANCE VALUES ARE IN MICROHENRIES.

SYMBOL SERIES I700	
LAST SYMBOL	MISSING SYMBOL
C39	C21 THRU C30
CR3	L9 THRU L12
L24	Q3
Q3	R16, R20, R10
R21	T2



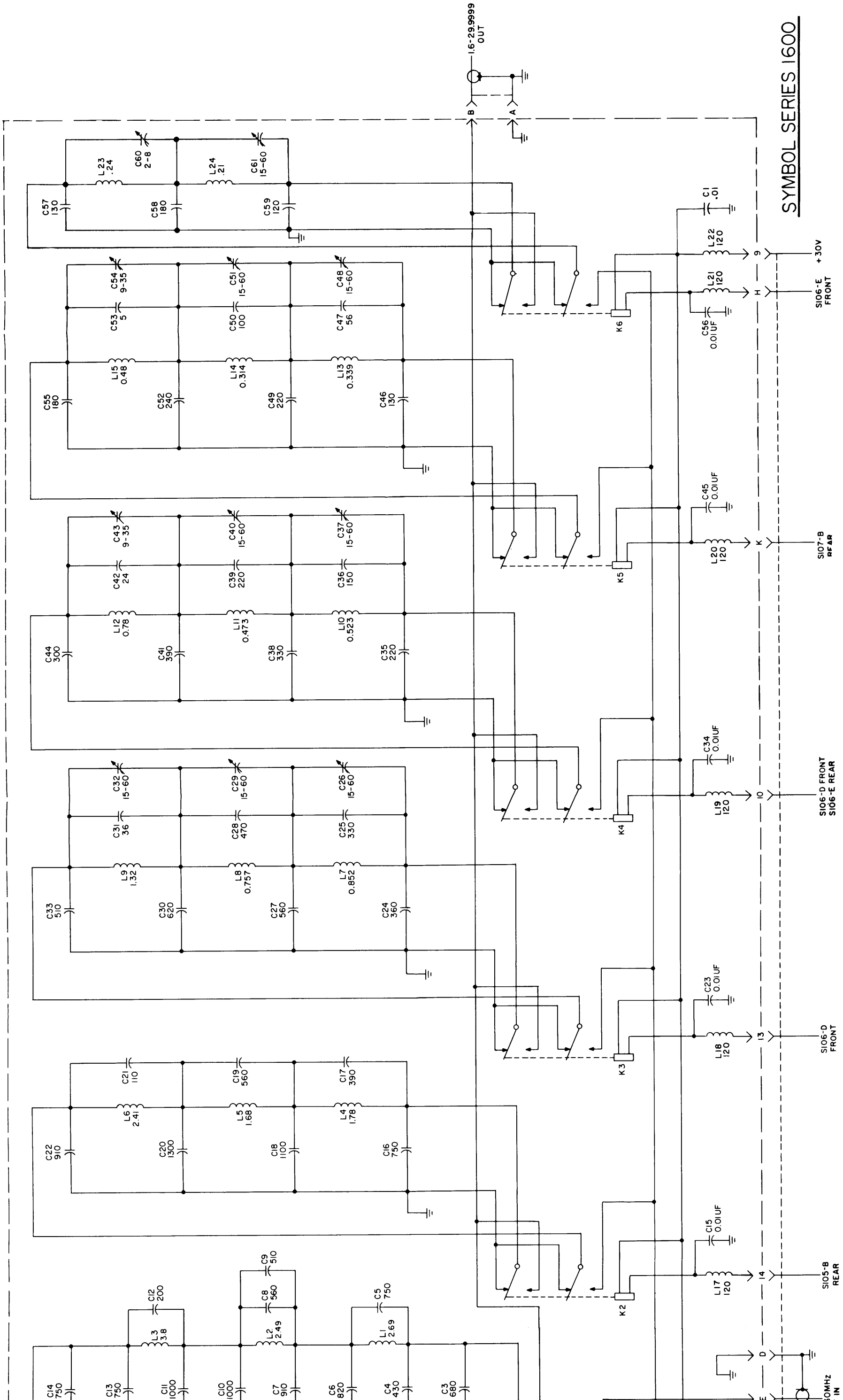
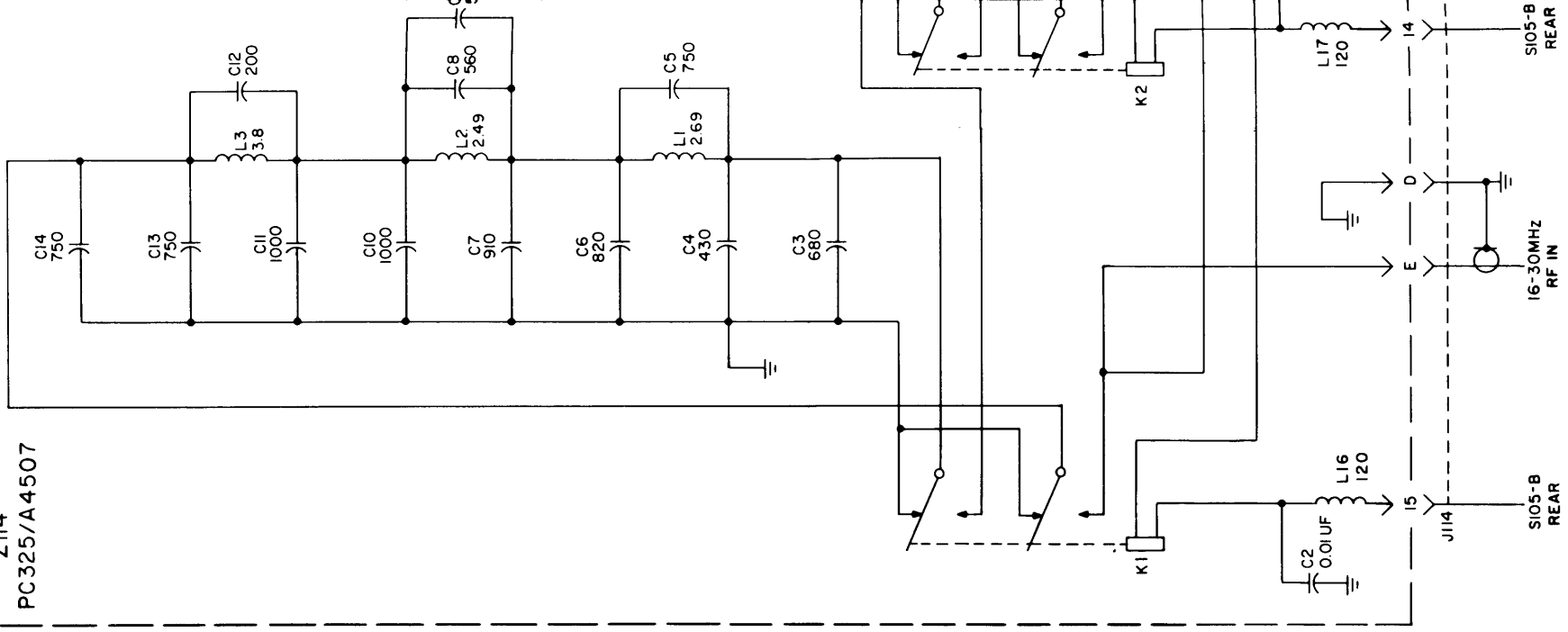


Figure 7-16. RF Output Filter Z114, Schematic Diagram

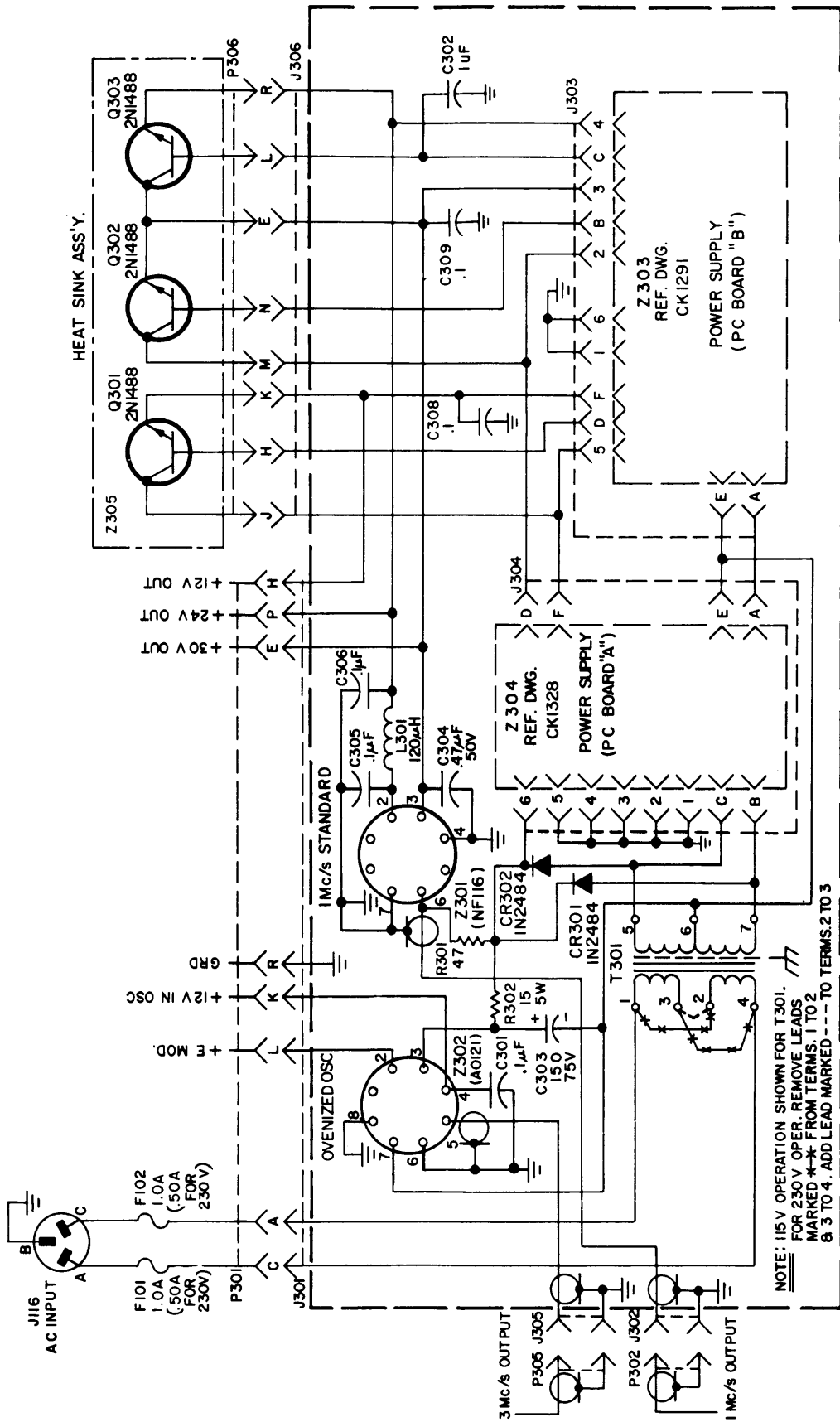


Z114  
PC325/A4507



NOTE:  
UNLESS OTHERWISE SPECIFIED  
1- ALL DECIMAL CAPACITANCE VALUES (.001) ARE IN MICROFARADS.  
ALL WHOLE NUMBER CAPACITANCE VALUES (47) ARE IN PICOFARADS.  
2- ALL INDUCTANCE VALUES ARE IN MICRONHENRIES.

SYMBOL SERIES 1600	
LAST SYMBOL	MISSING SYMBOL
C61	
K6	
L24	



NOTE: 115V OPERATION SHOWN FOR T301.  
 FOR 230V OPER. REMOVE LEADS  
 MARKED \* FROM TERMS. 1 TO 2  
 & 3 TO 4. ADD LEAD MARKED --- TO TERMS. 2 TO 3

LAST SYMBOLS	MISSING SYMBOLS
C309 CR302 J306 L301 P306 Q303 R302 T301 Z305	C307  P303, P304

Figure 7-17. Power Supply Wiring Diagram

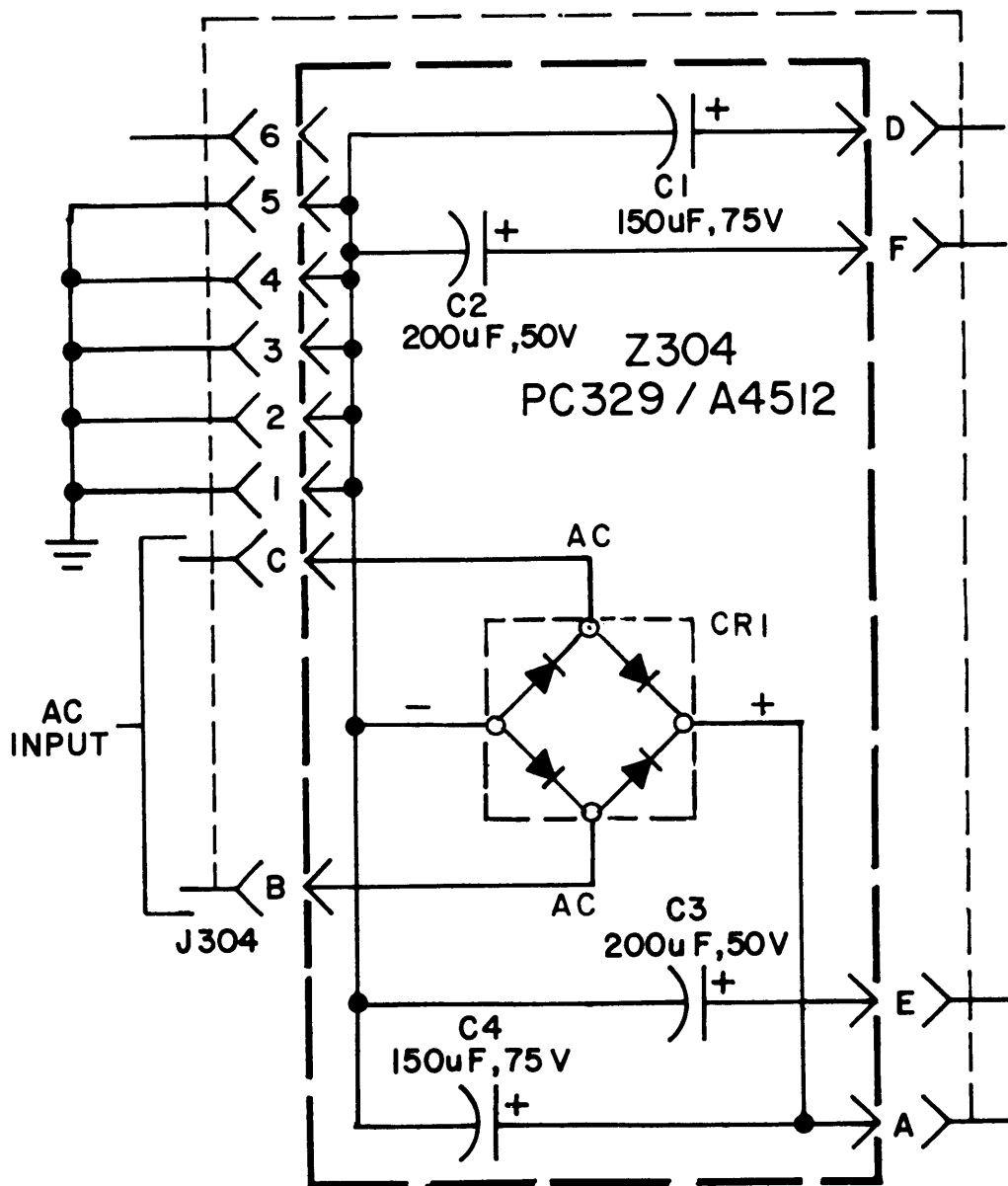


Figure 7-18. Power Supply Z304, Schematic Diagram

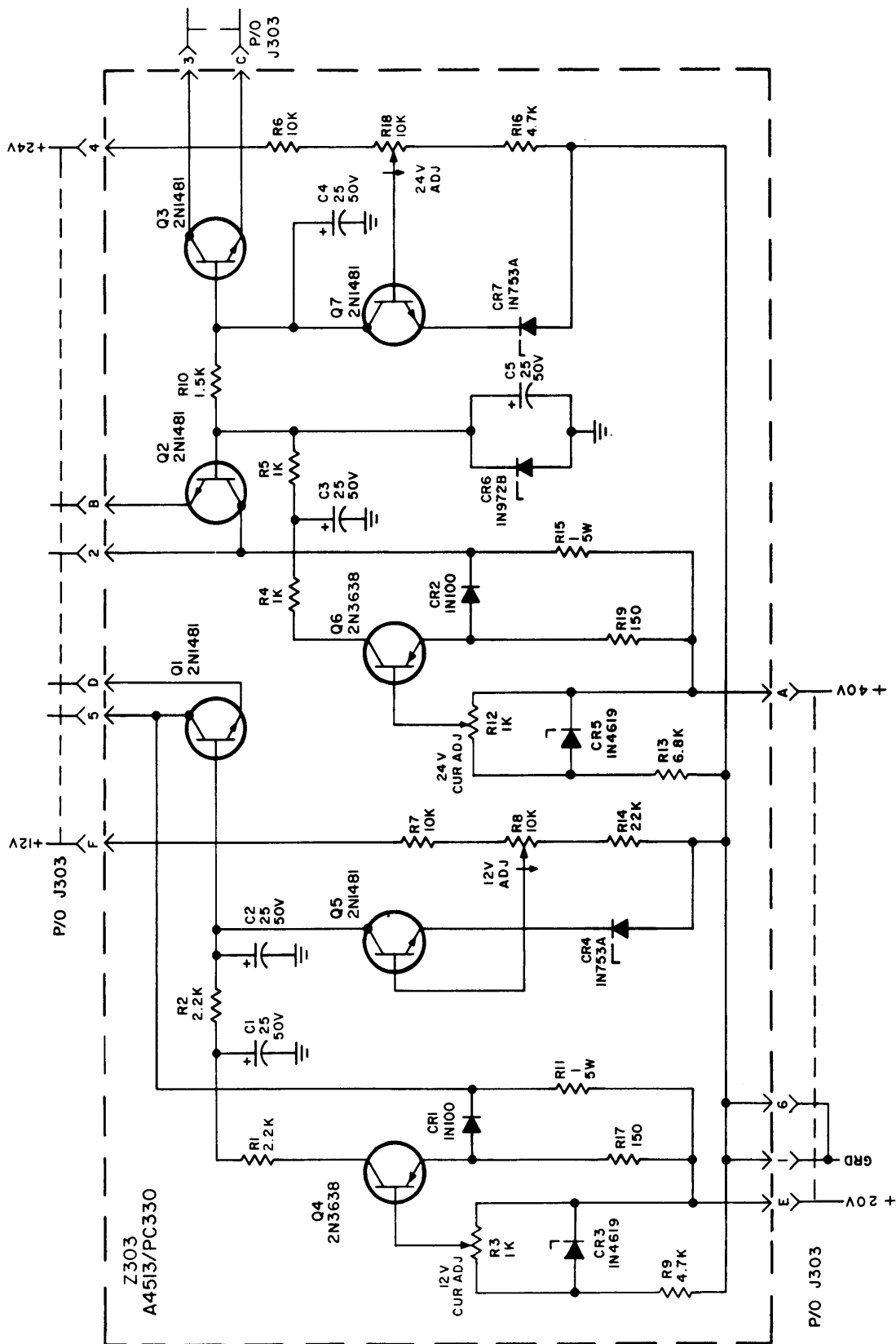


Figure 7-19. Regulator Z303, Schematic Diagram.