

138F MAINTENANCE MANUAL

SECTION 3

SCHEMATIC DIAGRAMS

3.1 ASSEMBLY AND COMPONENT NUMBERS

Schematic components are shown in this section according to assembly, see Figure 3.1-1. Assembly numbers are as follows:

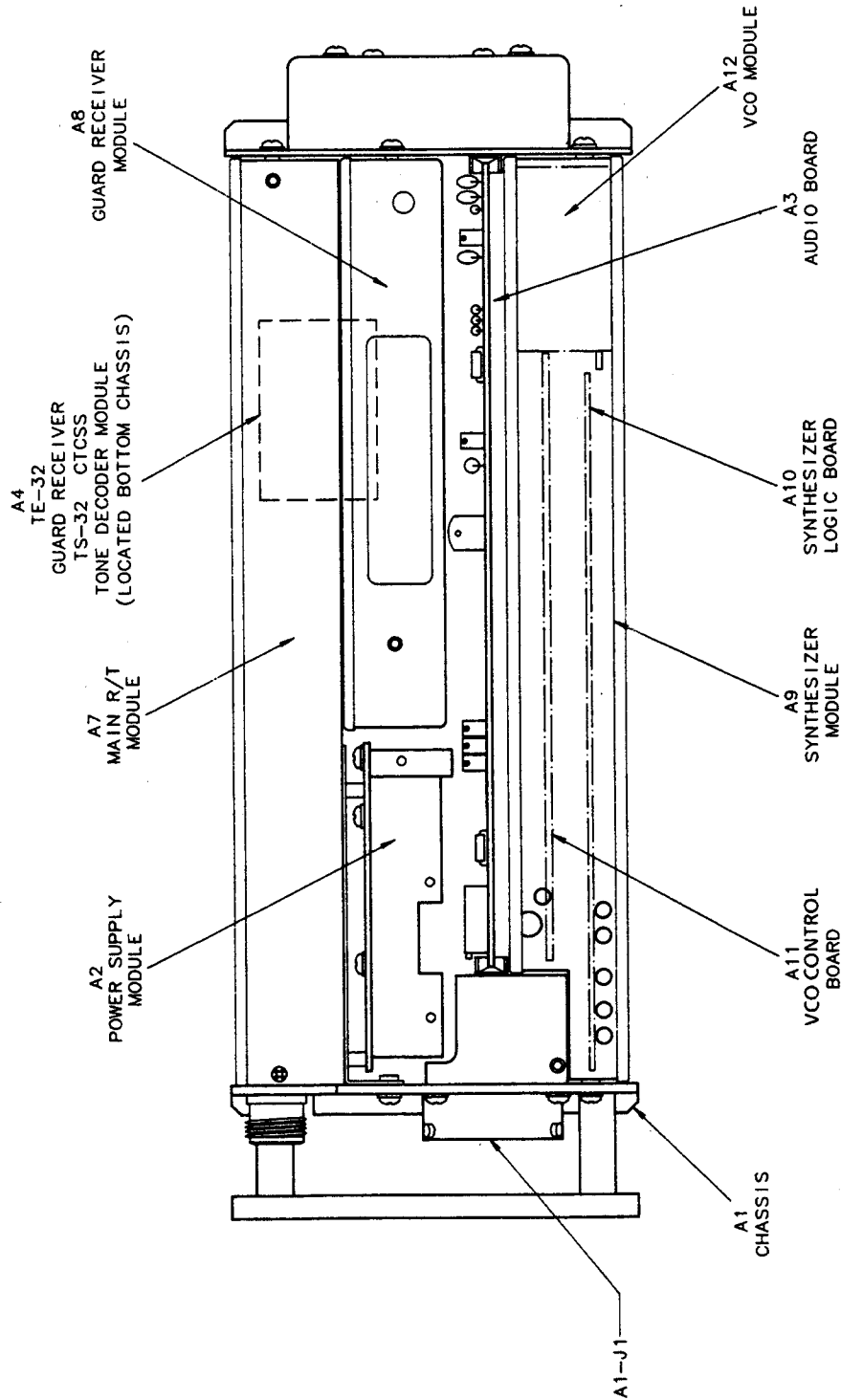
<u>ASSEMBLY NUMBER</u>	<u>COMPONENT</u>
A1	Chassis
A2	Power Supply
A3	Audio Board
**A4	TS-32 Guard Tone Module
A5	Not Used
A6	Not Used
A7	R/T Assembly
A8	Guard Receiver
A9	Synthesizer Assembly
A10	Synthesizer Logic Board
A11	VCO Control Board
*A12	VCO Assembly

Parts are numbered according to component assembly numbers within the RT-138F. For example, C1 on the Power Supply Board is referred to as A2C1 while C1 on the Audio Board is referred to as A3C1.

*The VCO Board is shown on the VCO Control Board Schematic.

**All information on the TS-32 Guard Tone Module may be found in Section 5.2 of this manual. Included in Section 5.2 is the TS-32 Text, Block Diagram, Component Locator, Schematic, and Parts List.

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300-014525a.2d

RT-138F Module Locator
Figure 3.1-1

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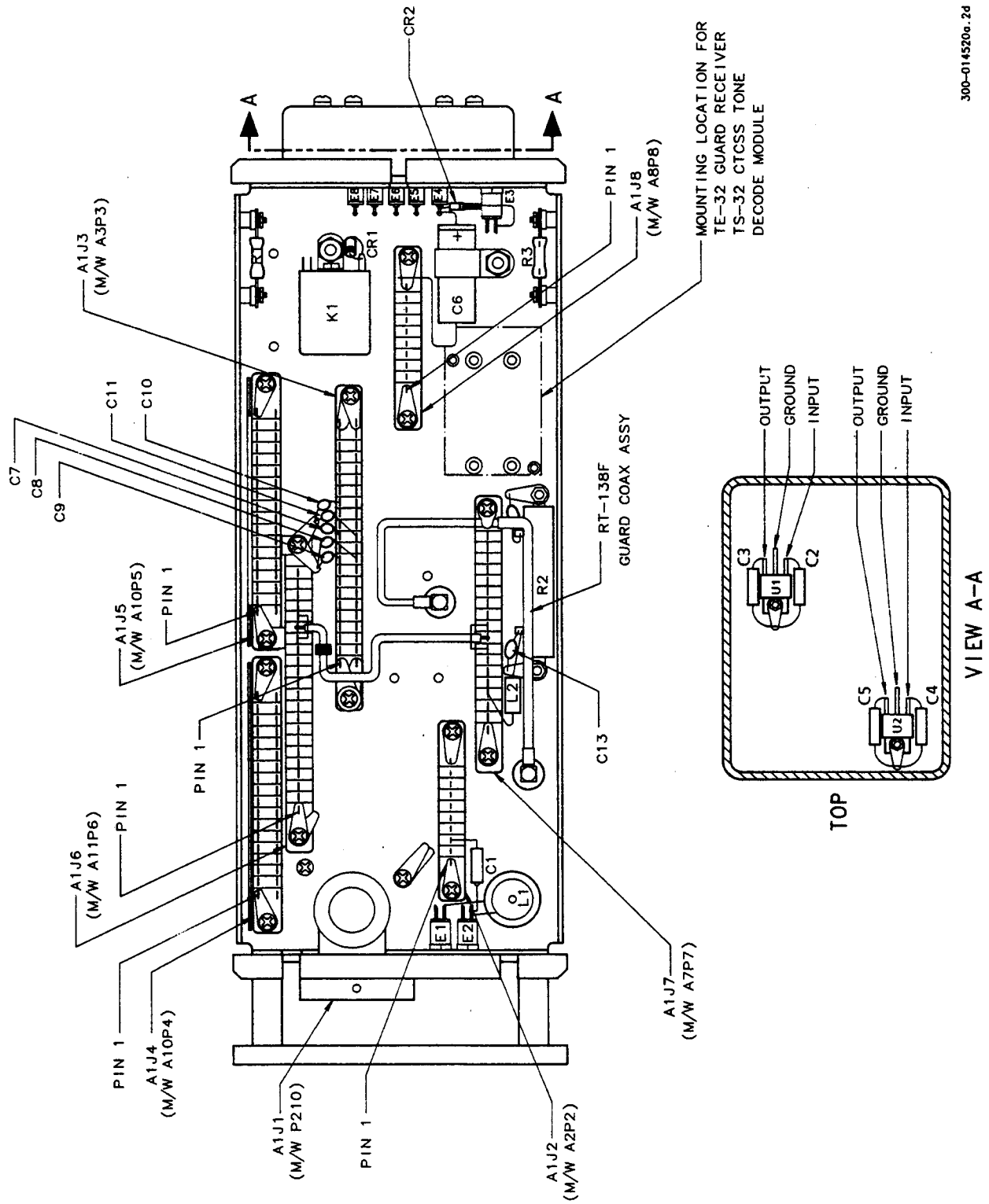
SUMMARY OF SCHEMATIC CHANGES

RT-138F CHASSIS

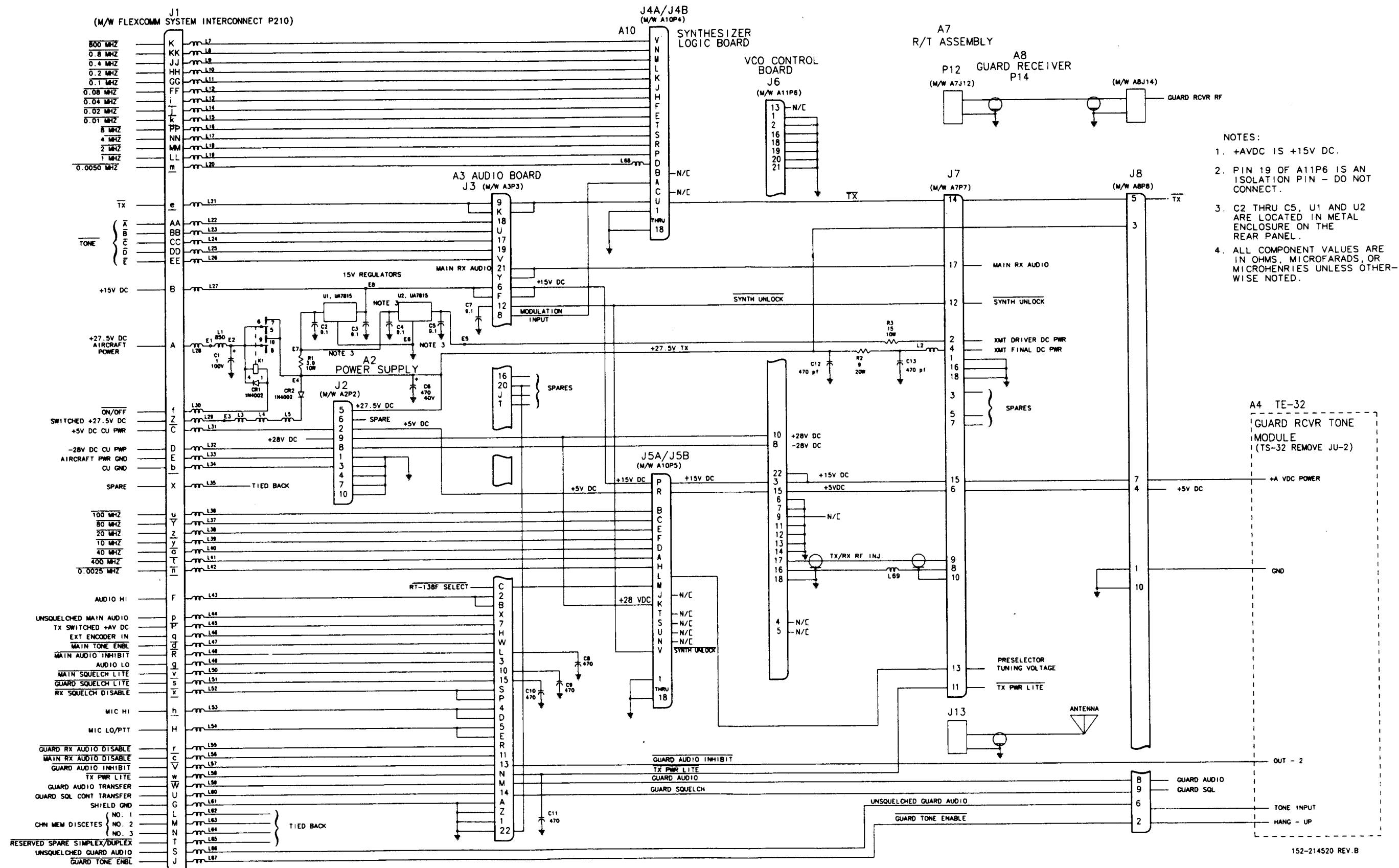
R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	B U L E T I N	M O D S T A T U S * M F G C O N T R O L N U M B E R M C N E F F E C T I V I T Y
A B	INITIAL RELEASE			

*MCN is a four or five digit number stamped on the wiring side of the Chassis.

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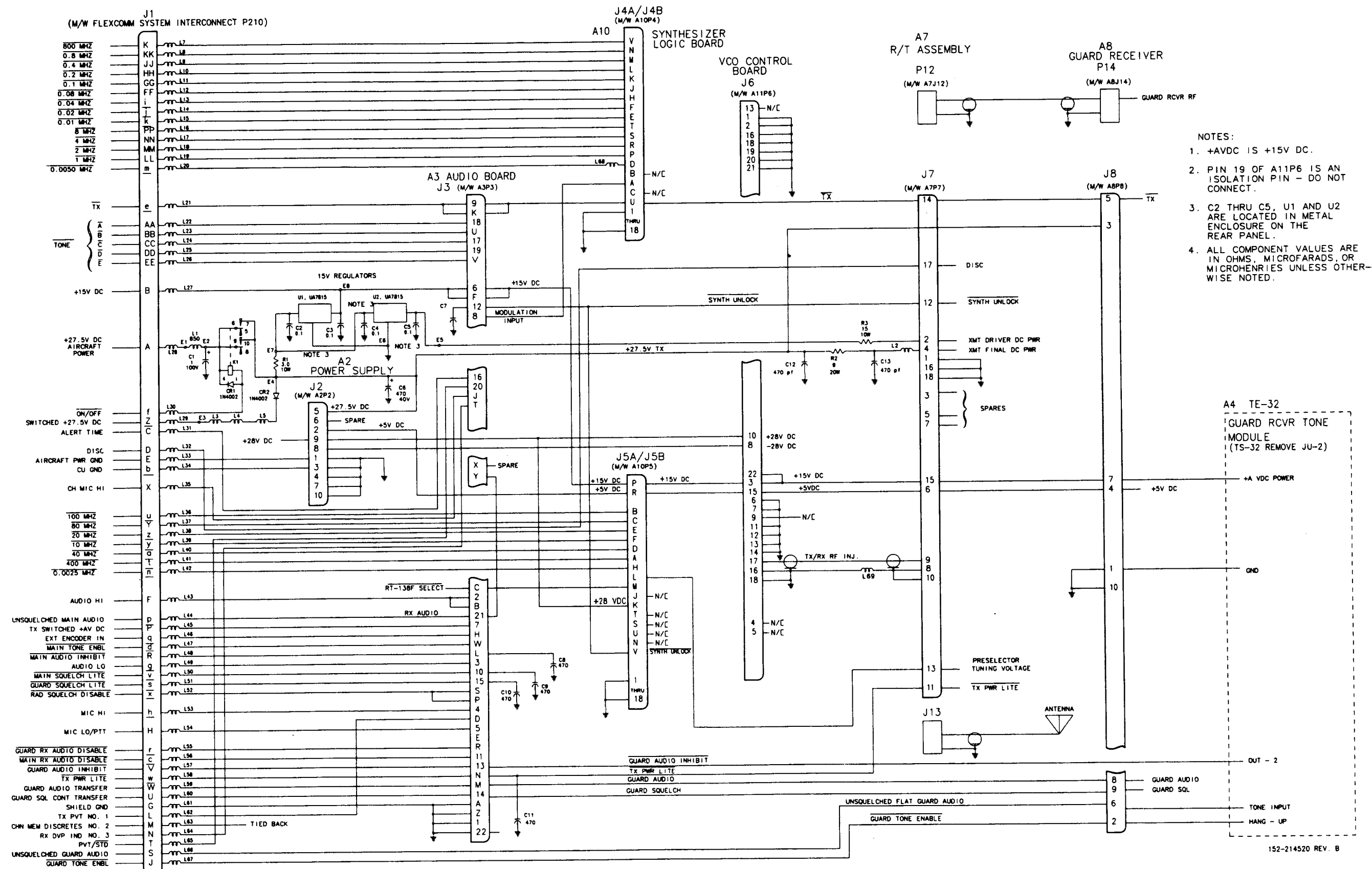
RT-138F Chassis (A1) Component Locator
Figure 3.1-2



RT-138F Chassis (A1) Schematic PN 300-014520-0X
Figure 3.1-3 (Sheet 1 of 2)

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RT-138F Chassis (A1) Schematic PN 300-014520-5X
Figure 3.1-3 (Sheet 2 of 2)

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152-214520 REV. B

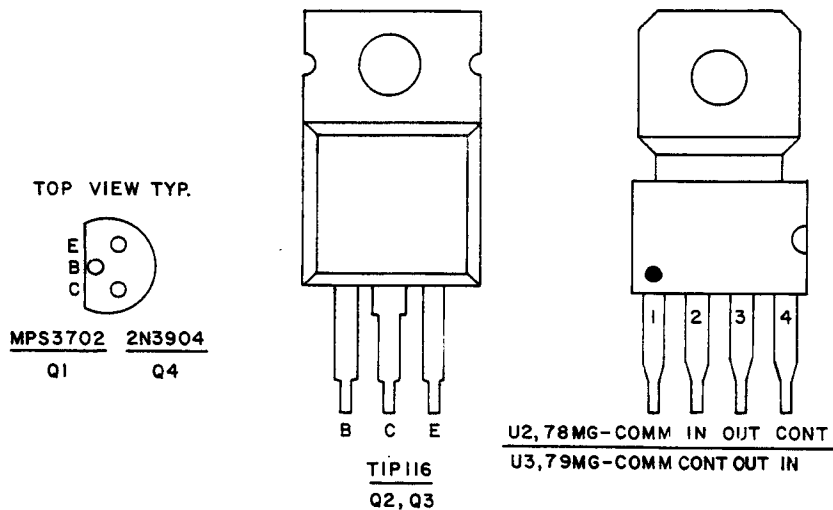
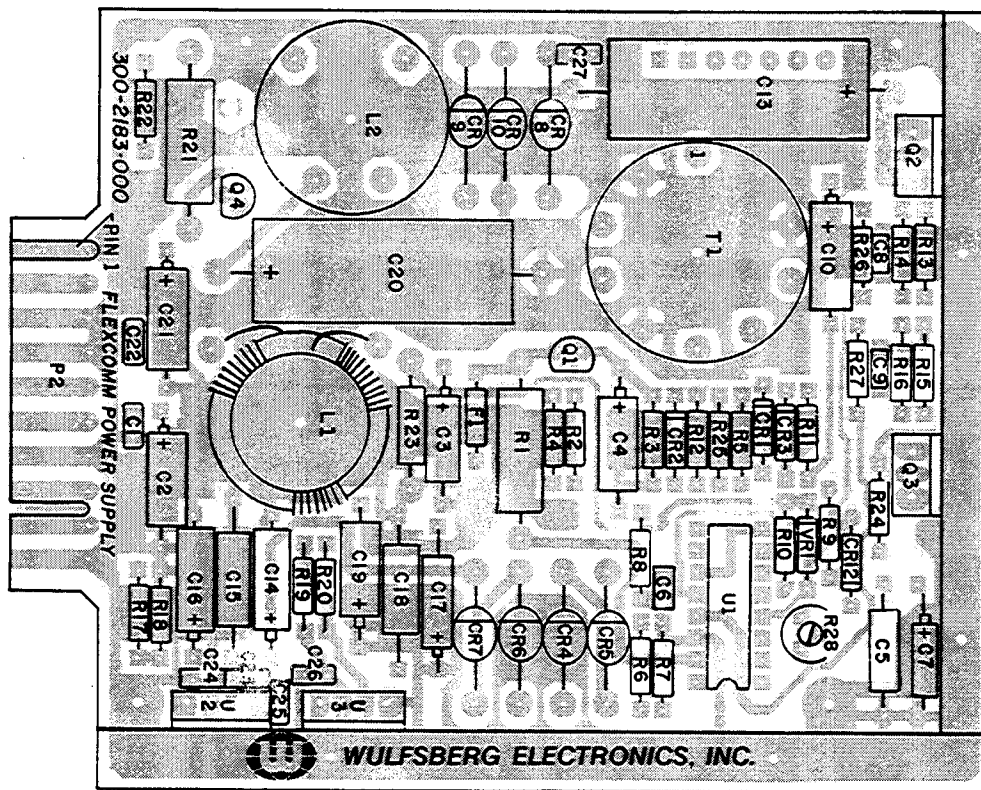
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SUMMARY OF SCHEMATIC CHANGES

FLEXCOMM POWER SUPPLY

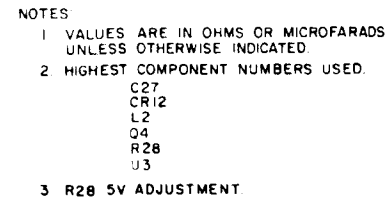
R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	B U L E T I N	M O D S T A T U S * M F G C O N T R O L N U M B E R C O N T R O L E F F E C T I V I T Y
A B C D E F G H	INITIAL RELEASE DCN 1631 DCN 1775 DCN 1926 DCN 2098 DCN 2115 DCN 2314 DCN 2868			

*MCN is a four or five digit number stamped on the component side of the printed circuit board.



FLEXCOMM Power Supply (A2) Component Locator
Figure 3.1-4

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FLEXCOMM Power Supply (A2) Schematic

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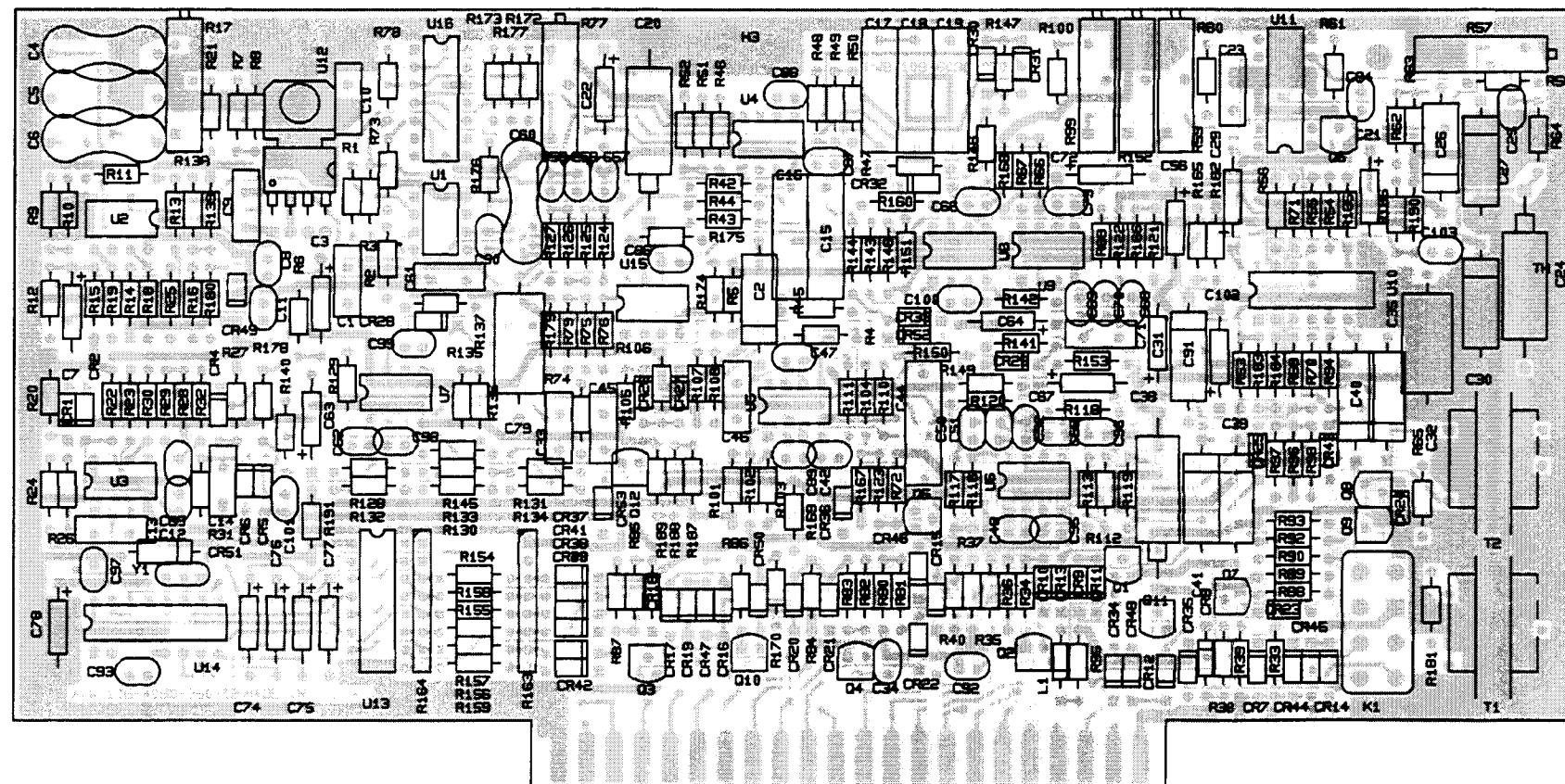
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SUMMARY OF SCHEMATIC CHANGES

FLEXCOMM AUDIO BOARD

R E V I S I O N	DESCRIPTION OF CHANGE	S E R V I C E B U L E T I N	M O D S T A T U S	* M F G C O N T R O L N U M B E R C O N T R O L E F F E C T I V I T Y
A B C D	INITIAL RELEASE DCN 5233 DCN 5755 DCN 5939			

*MCN is a four or five digit number stamped on the component side of the printed circuit board.

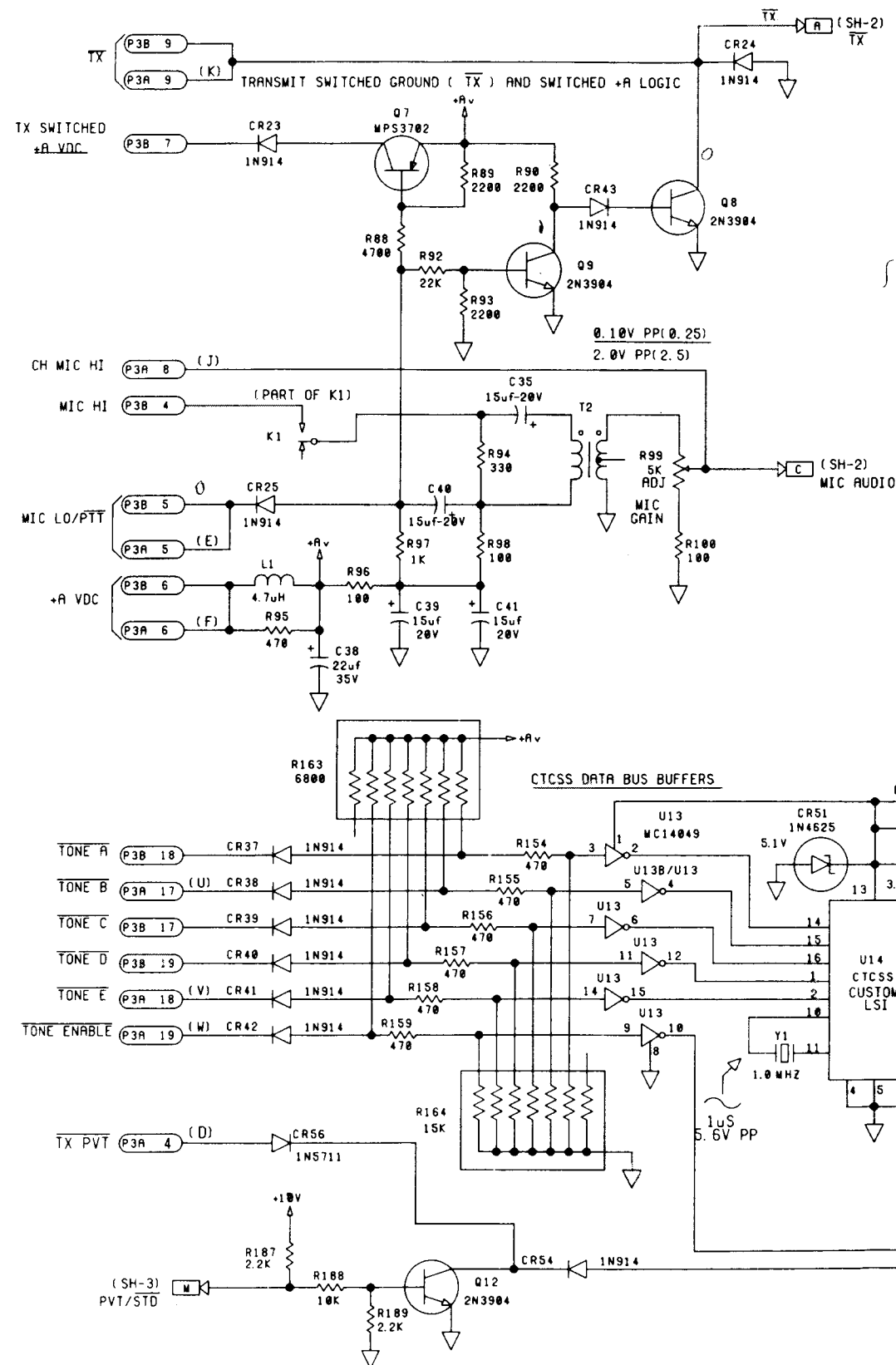


FLEXCOMM Audio Board (A3) Component Locator
Figure 3.1-6

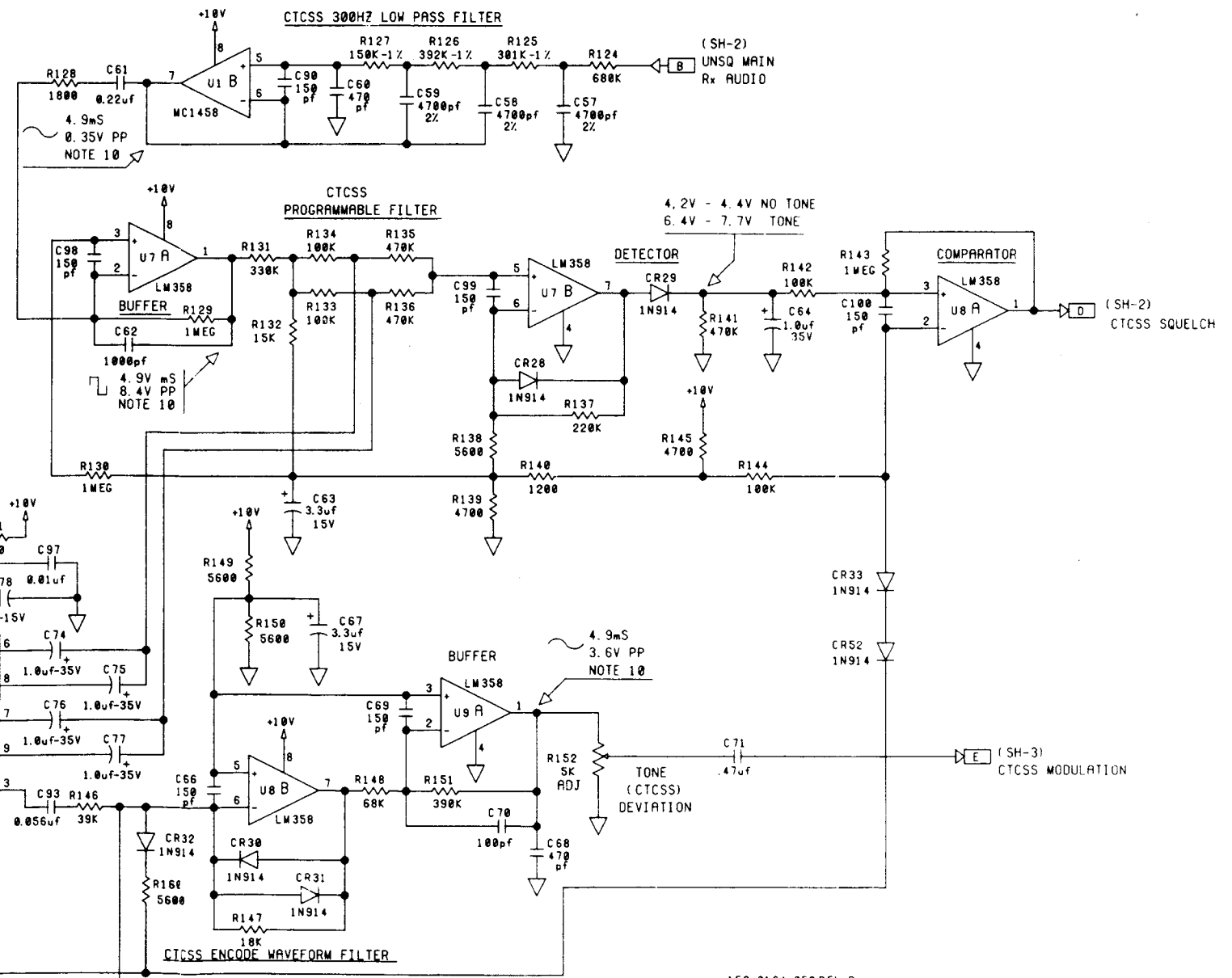
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- NOTES:
- VALUES ARE IN OHMS OR MICROFARADS UNLESS OTHERWISE INDICATED.
 - P3A IS THE LETTER (TOP) SIDE, P3B IS THE NUMBER (BOTTOM) SIDE.
 - +A VDC IS +13 TO +16 VDC.
 - HIGHEST COMPONENT NUMBERS USED: C103, CR53, Q12, R191, U16, T2
COMPONENT NUMBERS NOT USED: C28, C36, C37, C43, C53, C54, C80, C81, C82, C83, C84, CR3, R41, R91, R109, R161, R162, R171
 - ALL VOLTAGES ARE APPROXIMATE AND SUBJECT TO VARIATION DUE TO TOLERANCES.
 - WAVEFORMS ARE MEASURED WITH A 100MHZ BANDWIDTH OSCILLOSCOPE.
 - DC VOLTAGES ARE MEASURED WITH A 10 MEGOHM INPUT IMPEDANCE VOLTMETER.
 - AMPLITUDE OF AC SYMBOLS IS IN VOLTS PEAK TO PEAK. TIME IS PERIOD OF ONE CYCLE.
 - SPECIAL MEASUREMENT CONDITIONS:
(0.25) = 0.25V RMS APPLIED TO MIC INPUT AT 1KHZ
(2.5) = 2.5V RMS APPLIED TO MIC INPUT AT 1KHZ
 - RECEIVE AUDIO WAVEFORMS MEASURED WITH A 1mV RF SIGNAL APPLIED, +/- 3 KHZ DEVIATION, 1 KHZ AUDIO.
 - CTCSS WAVEFORMS MEASURED WITH A 203.5KHZ TONE, 750HZ DEVIATION, 1mV RF INPUT.
 - SIDETONE WAVEFORM MEASURED WITH 0.25V RMS, 1 KHZ APPLIED TO MIC INPUT.
 - WHEN USING THIS DVP AUDIO BOARD (300-0164-050) IN A NON-DVP CHASSIS (300-012785-0X), YOU MUST TIE J3B-20 TO GND J3B-22.

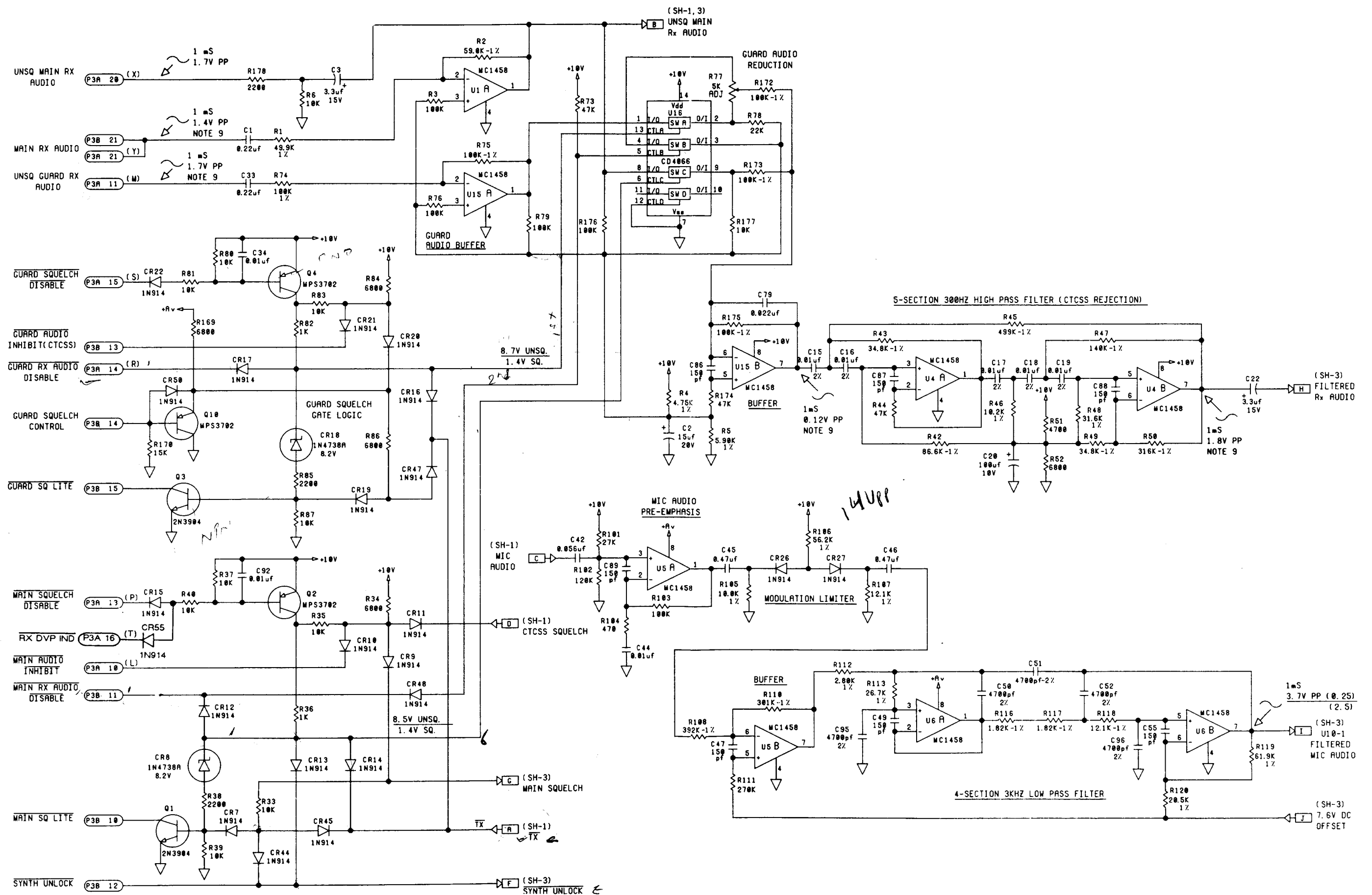


FLEXCOMM Audio Board (A3) Schematic
Figure 3.1-7 (Sheet 1 of 3)

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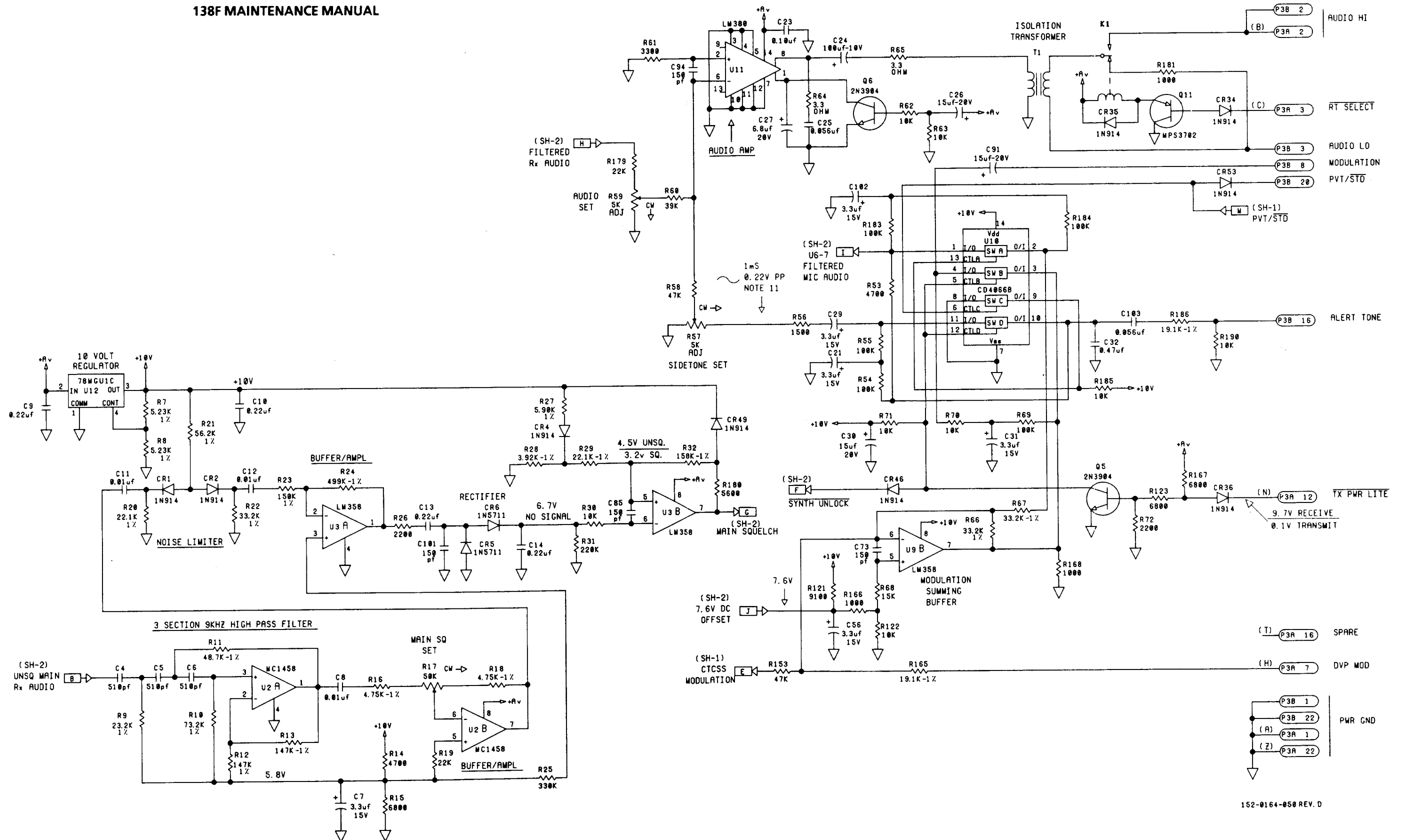
152-0164-050 REV. D



FLEXCOMM Audio Board (A3) Schematic
Figure 3.1-7 (Sheet 2 of 3)

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FLEXCOMM Audio Board (A3) Schematic
Figure 3.1-7 (Sheet 3 of 3)

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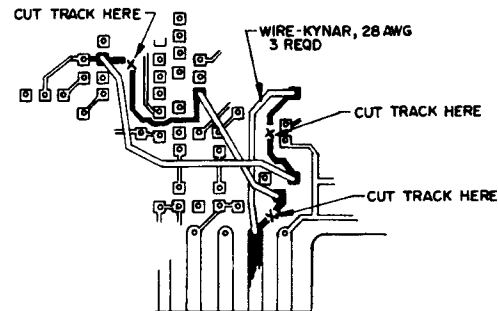
SUMMARY OF SCHEMATIC CHANGES

RT-138F R/T ASSEMBLY

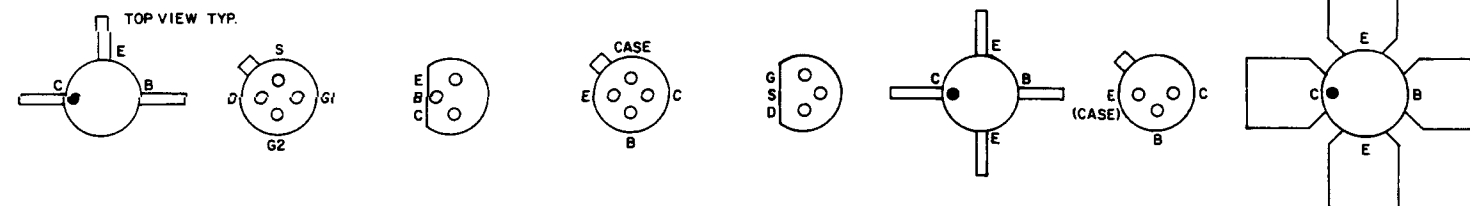
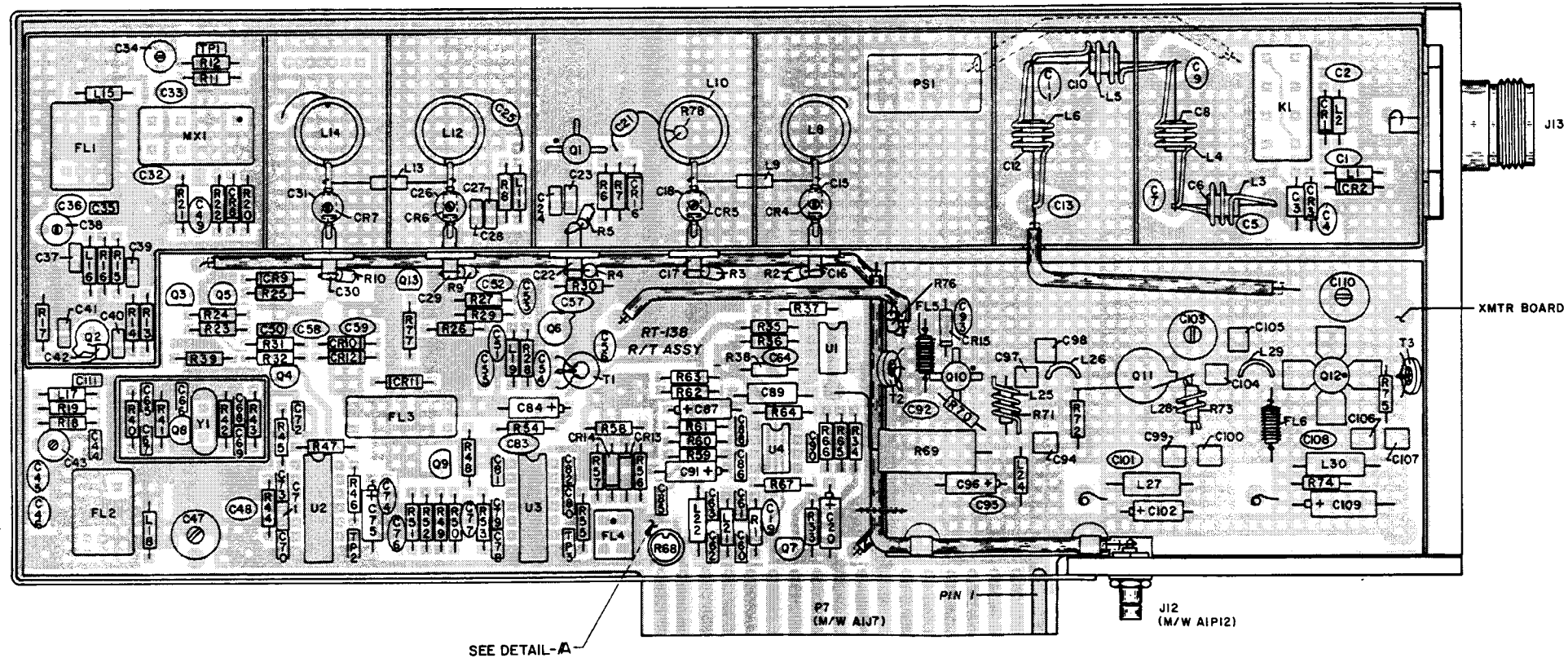
R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	B U L E T I N	M O D S T A T U S	* M F G C O N T R O L	N U M B E R O F C O N T R O L	E F F E C T I V I T Y
A B C D E F G H J K L M N	ORIGINAL RELEASE DCN 2021 DCN 2099 DCN 2122 DCN 2184A DCN 2233 DCN 2292 DCN 2404 DCN 2432 DCN 2468 DCN 2653 DCN 2687 DCN 5818			1 2			

*MCN is a four or five digit number stamped on the component side of the printed circuit board.

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DETAIL-A
SOLDER SIDE

[illegible]

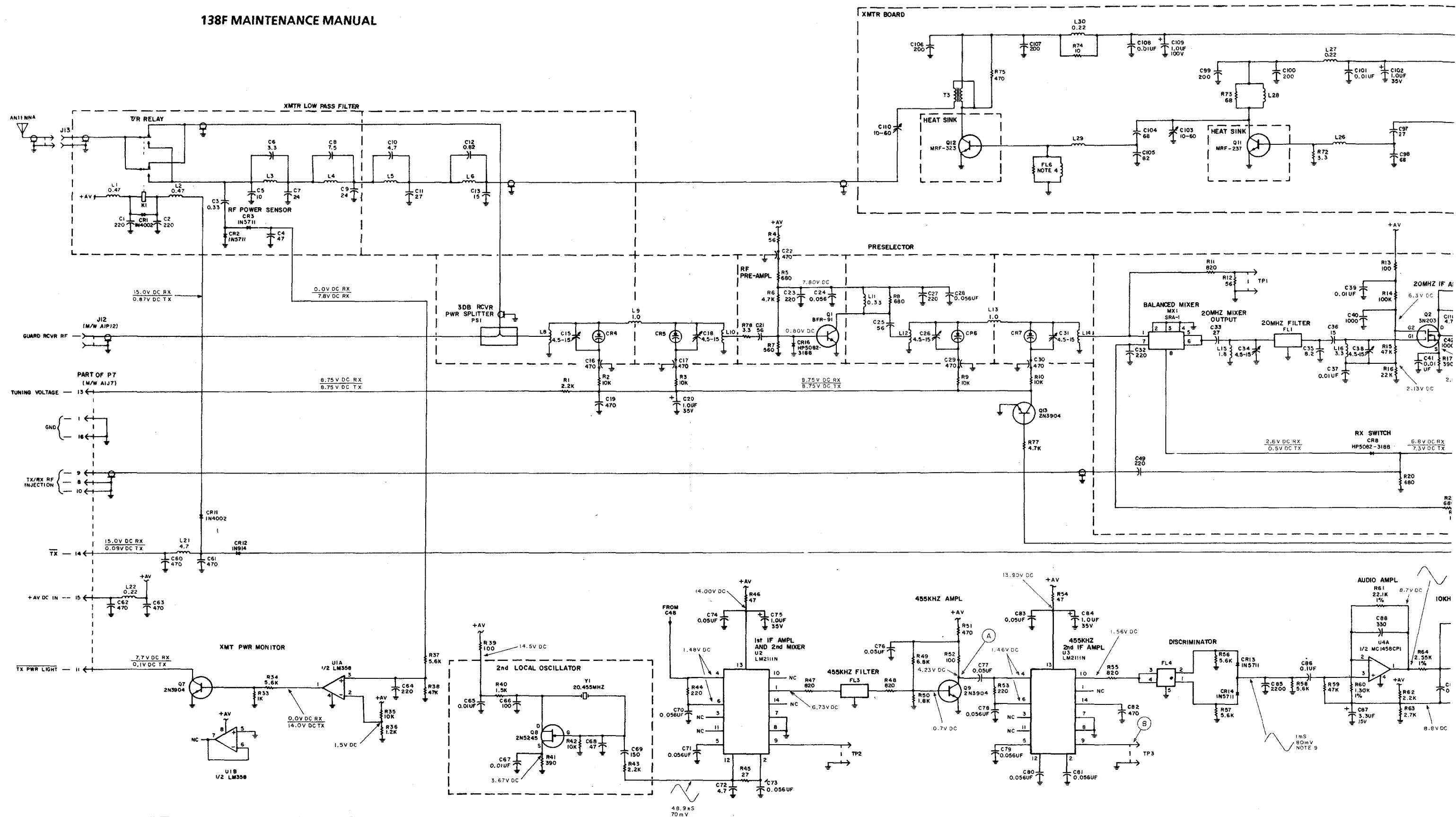
RT-138F R/T Assembly (A7) Component Locator
Figure 3.1-8

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RT-138F R/T Assembly (A7) Schematic
Figure 3.1-9 A

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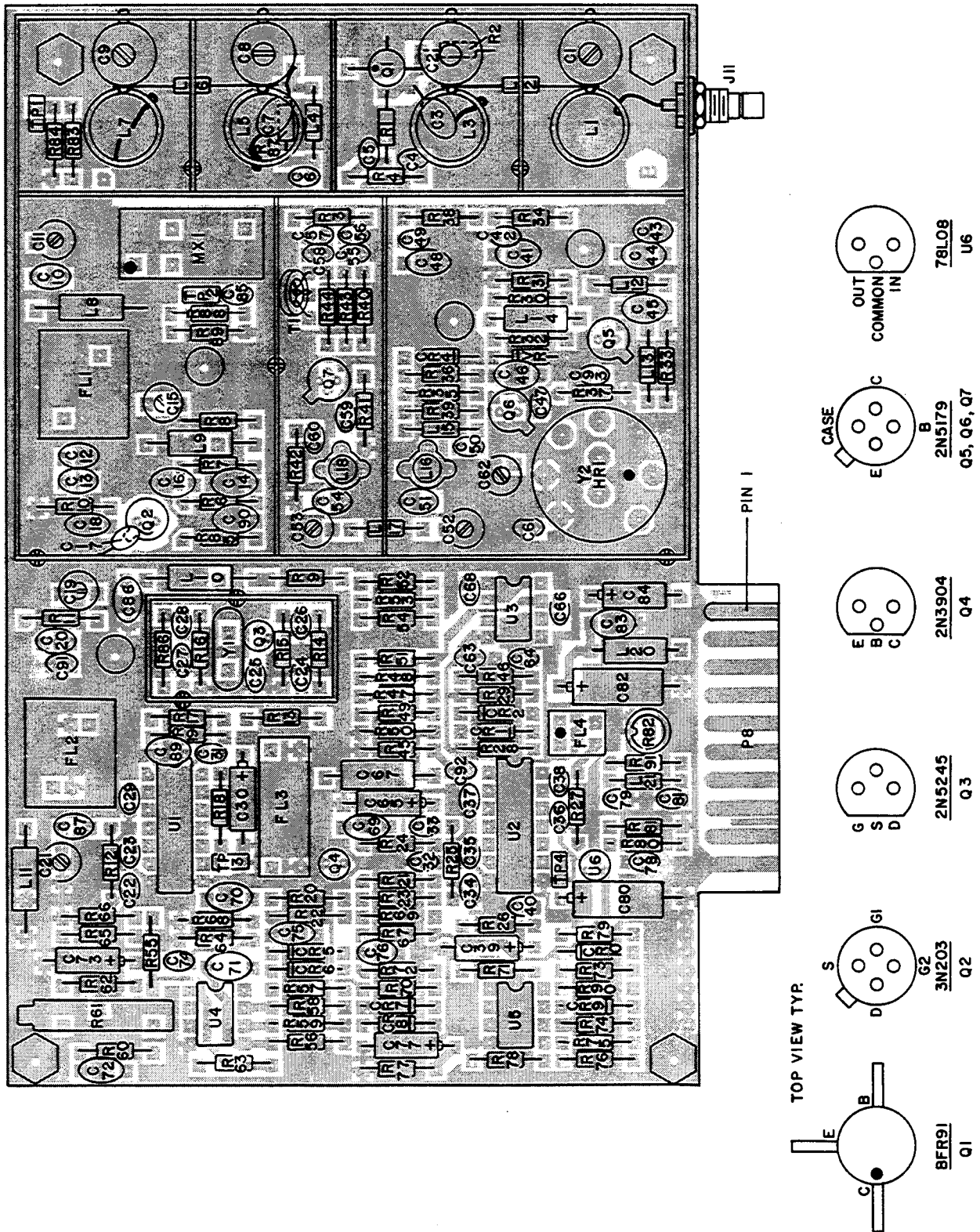
SUMMARY OF SCHEMATIC CHANGES

RT-138F GUARD RECEIVER

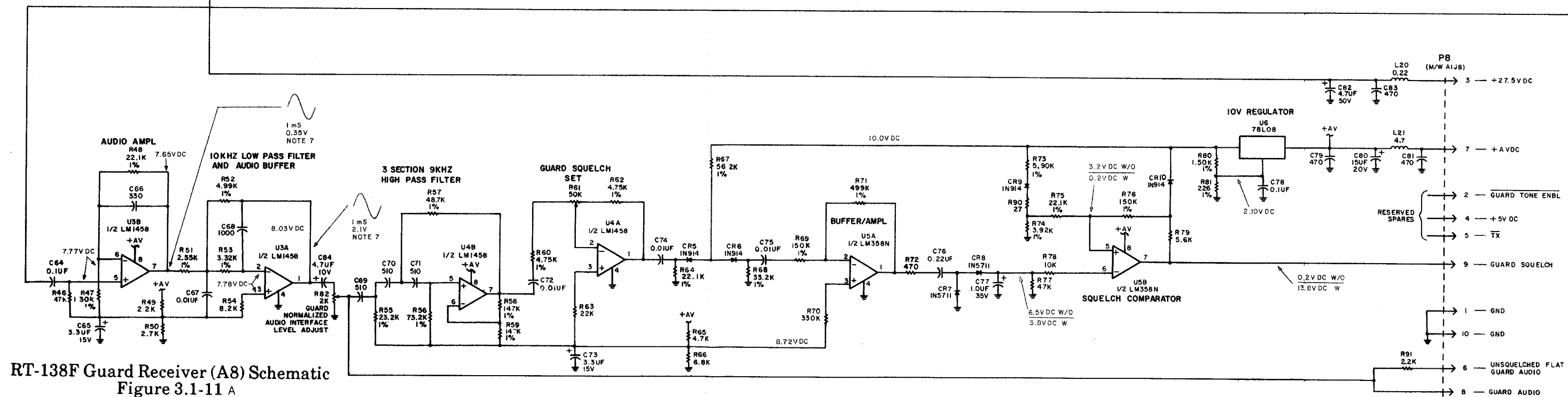
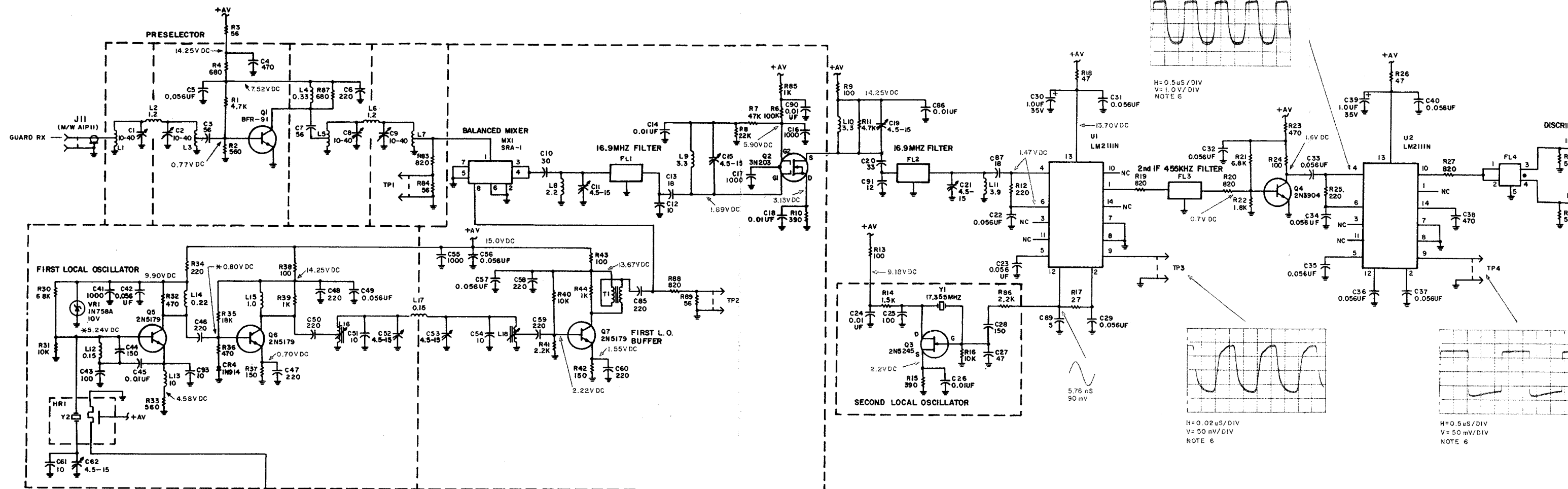
R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	S T A T U S	* M F G C O N T R O L
A B C D E F	ORIGINAL RELEASE DCN 2022 DCN 2122 DCN 2363 DCN 2468 DCN 2578			

*MCN is a four or five digit number stamped on the component side of the printed circuit board and/or the Guard Receiver Module Chassis.

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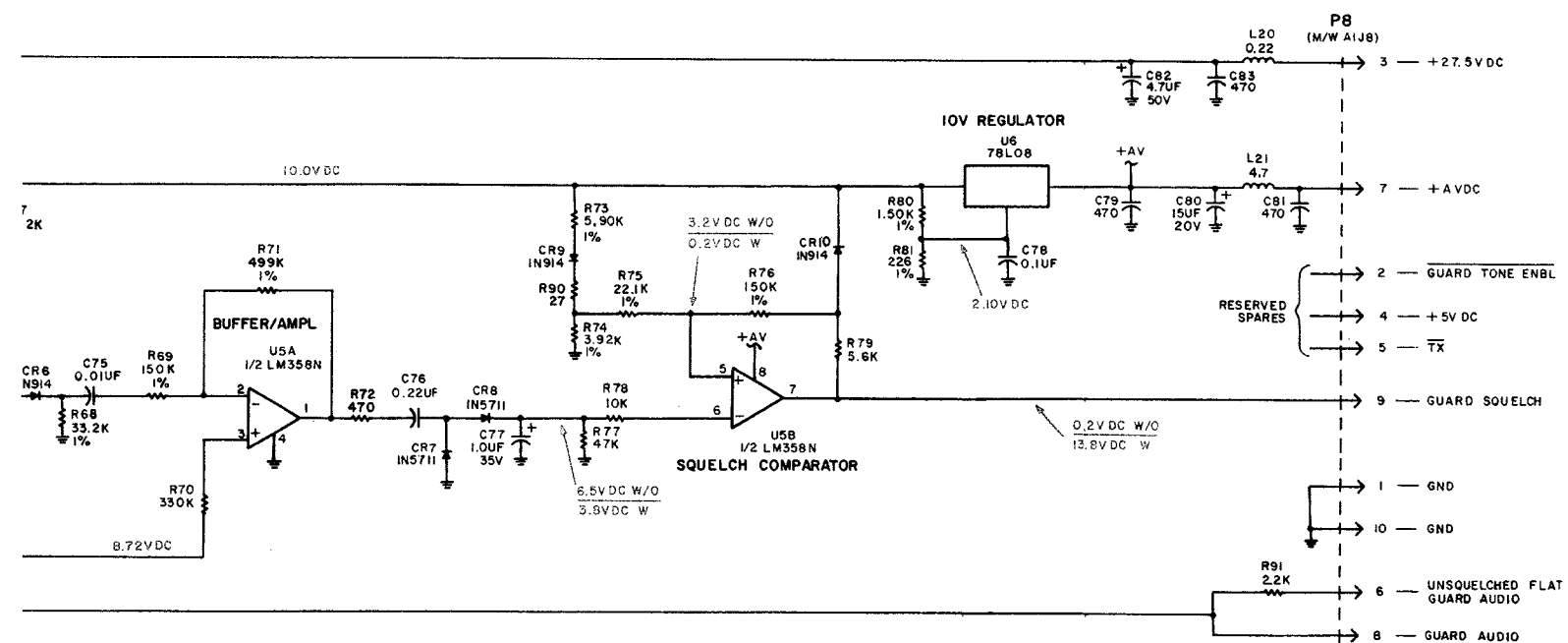
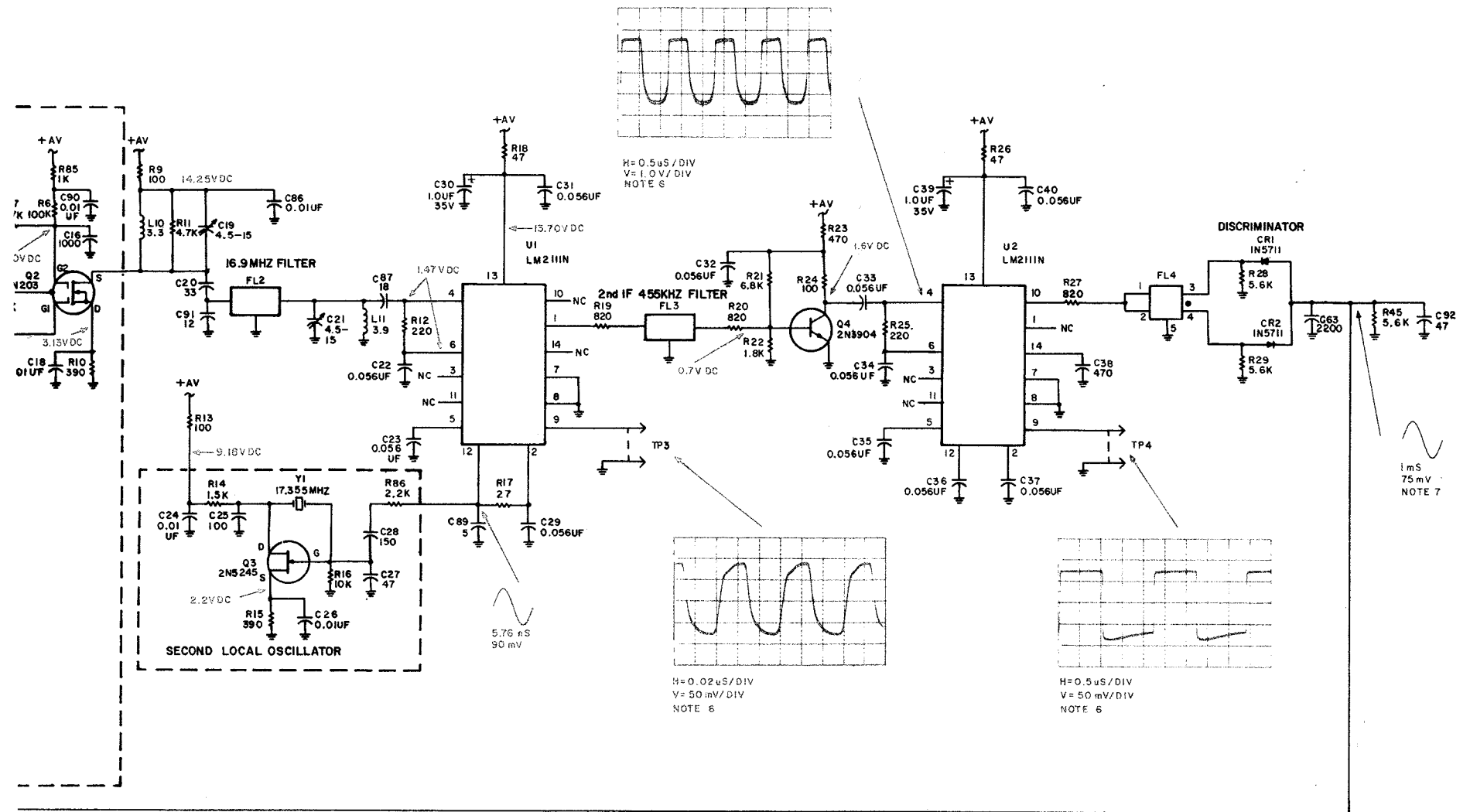


RT-138F Guard Receiver Assy (A8) Component Locator
Figure 3.1-10



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- NOTES:
- VALUES ARE IN OHMS, PICOFARADS, OR MICROHENRYS UNLESS OTHERWISE INDICATED.
 - HIGHEST COMPONENT NUMBERS USED:
C93
CR10
L21
Q7
R91
T1
TP2
U6
Y2
 - ALL VOLTAGES ARE APPROXIMATE AND SUBJECT TO VARIATION DUE TO TOLERANCES.
 - WAVEFORMS ARE MEASURED WITH A 100 MHZ BANDWIDTH OSCILLOSCOPE. DC VOLTAGES ARE MEASURED WITH A 10 MEGOHM INPUT IMPEDANCE METER.
 - AMPLITUDE OF AC SYMBOLS IS IN V P-P. TIME IS PERIOD OF ONE CYCLE.
 - PHOTOGRAPHS ARE TAKEN WITH AN UNMODULATED 1mV RF INPUT.
 - MEASUREMENTS TAKEN WITH A 1mV RF INPUT, MODULATED TO 3KHZ DEVIATION BY A 1KHZ TONE.
 - SPECIAL MEASUREMENT CONDITIONS:
* VOLTAGE MEASURED WITH A 10KOHM RESISTOR ON THE POSITIVE VOLTAGE PROBE TO PREVENT DETUNING.
W/O NO RF INPUT SIGNAL.
W WITH 1mV RF INPUT.

Figure 3.1-11B

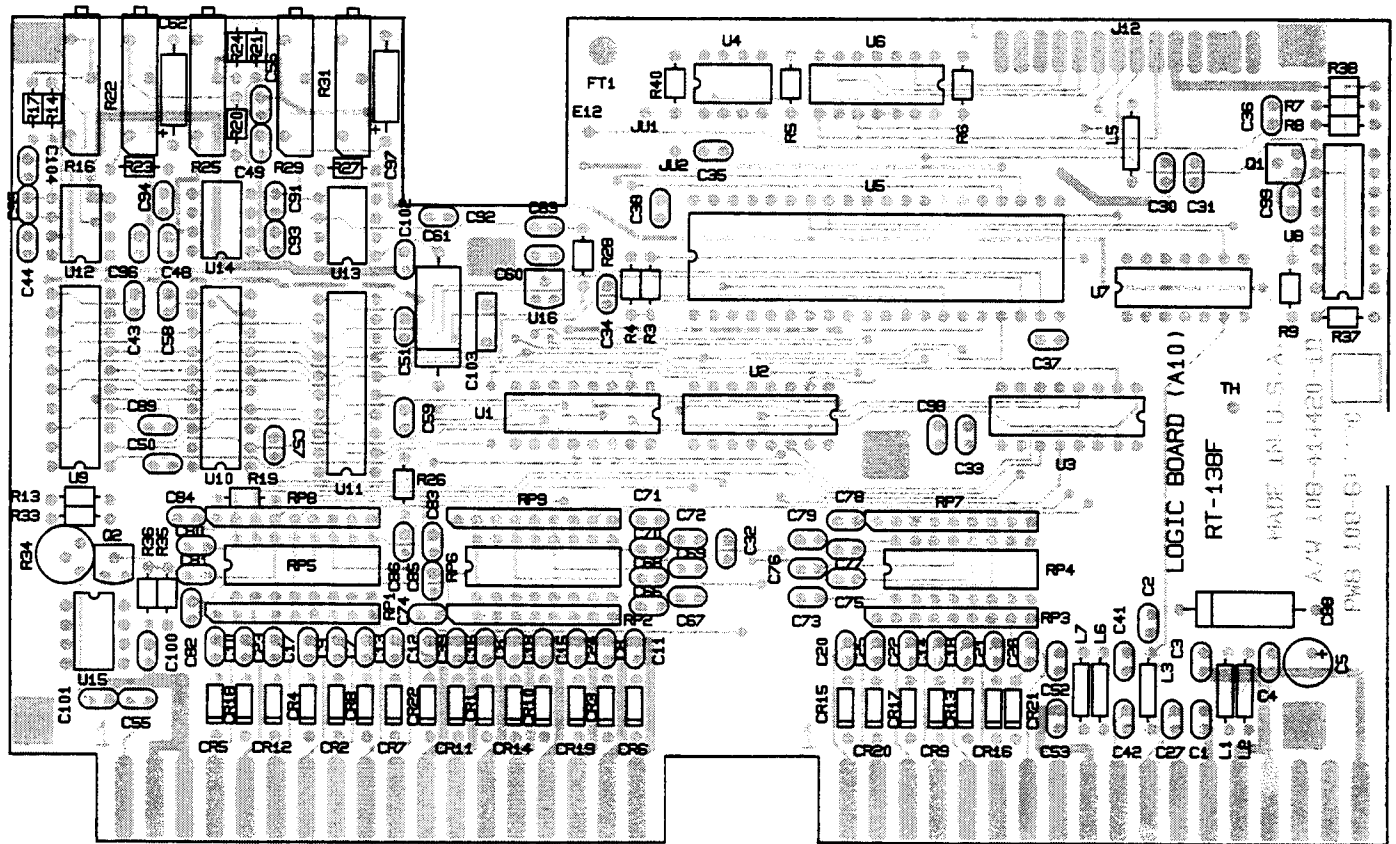
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SUMMARY OF SCHEMATIC CHANGES

RT-138F SYNTHESIZER LOGIC BOARD

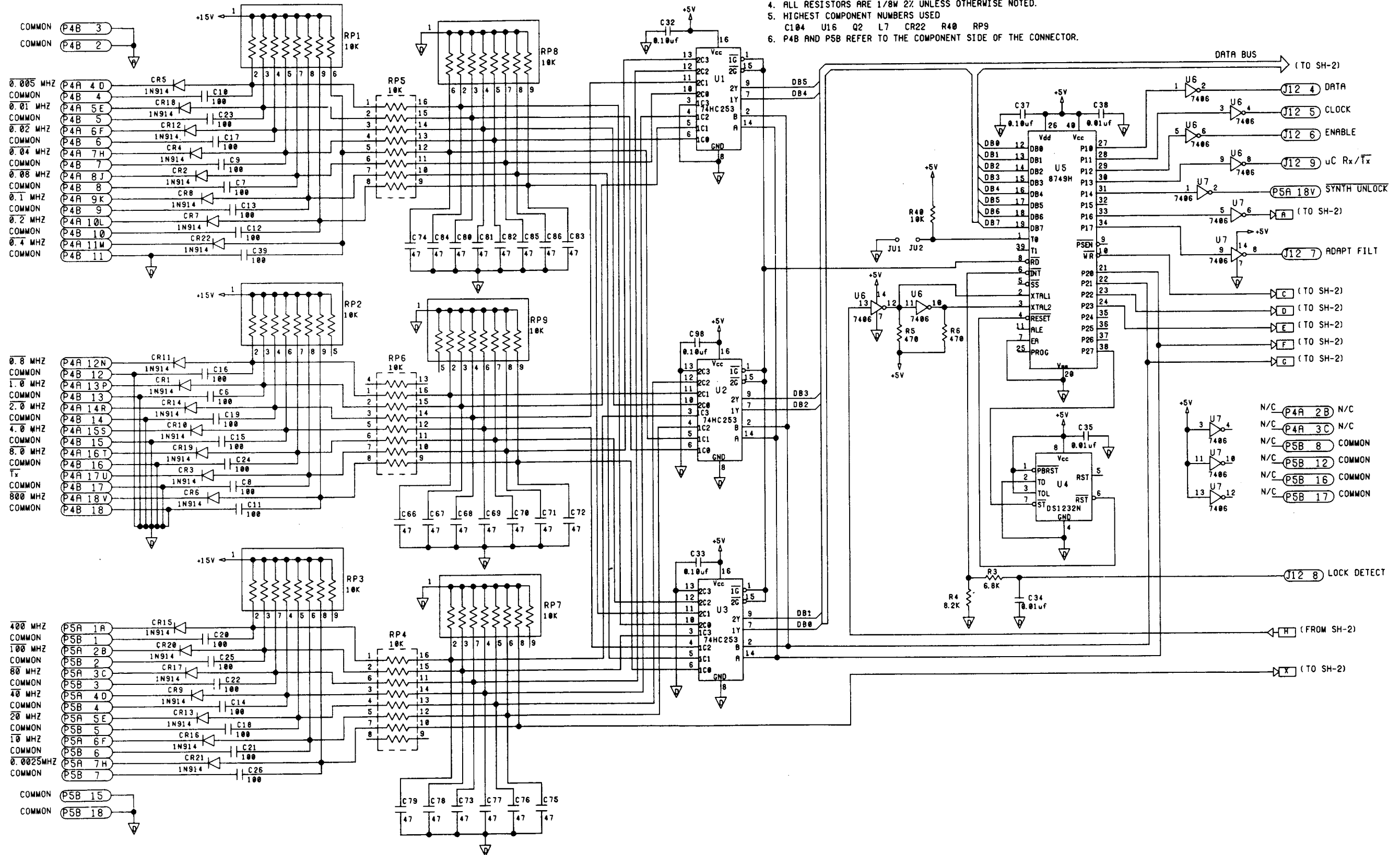
R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	B U L E T I N	M O D S T A T U S * M F G C O N T R O L N U M B E R C O N T R O L I D E N T I F I C A T I O N
A	INITIAL RELEASE			

*MCN is a four or five digit number stamped on the component side of the printed circuit board and/or the Synthesizer Module Chassis.



RT-138F Synthesizer Logic Board (A10) Component Locator
Figure 3.1-12

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RT-138F Synthesizer Logic Board (A10) Schematic
Figure 3.1-13 (Sheet 1 of 2)

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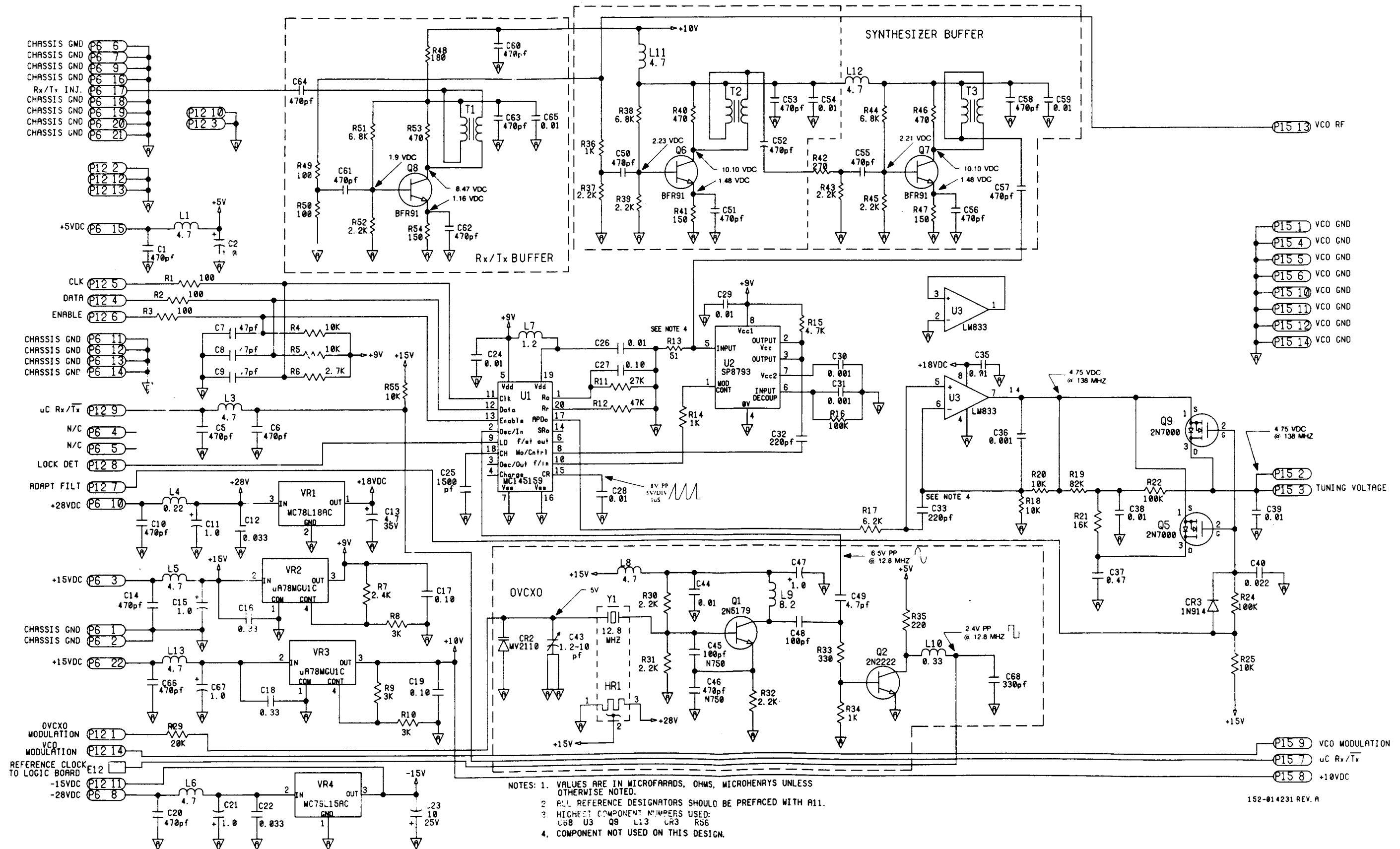
SUMMARY OF SCHEMATIC CHANGES

RT-138F VCO CONTROL BOARD

R E V I S I O N	D E S C R I P T I O N O F C H A N G E	S E R V I C E	B U L L E T I N	M O D E L S T A T U S	* M F G C O N T R O L	N U M B E R O F C O N T R O L	E F F E C T I V I T Y
A	INITIAL RELEASE						

*MCN is a four or five digit number stamped on the component side of the printed circuit board and/or the Synthesizer Module Chassis.

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RT-138F VCO Control Board (A11) Schematic
Figure 3.1-15

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