# RADIO TEST SET

# MAINTENANCE MANUAL

# 2965, 2965A, 2966A, 2967 & 2968

## Volume Two



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Issue 6

21-Apr-99

# Chapter 7
# SERVICING DIAGRAMS

## Contents



## List of figures

# Circuit notes

## Component values

| | | | | | |
|---|---|---|---|---|---|
| Resistors : | R | = ohms, | k | = kilohms, | M = megohms. |
| Capacitor : | µ | = microfarads, | n | = nanofarads, | p = picofarads. |
| Inductors : | µ | = microhenries, | m | = millihenries. | |

SIC : value selected during test, nominal value shown. In some instances, no component may be fitted.

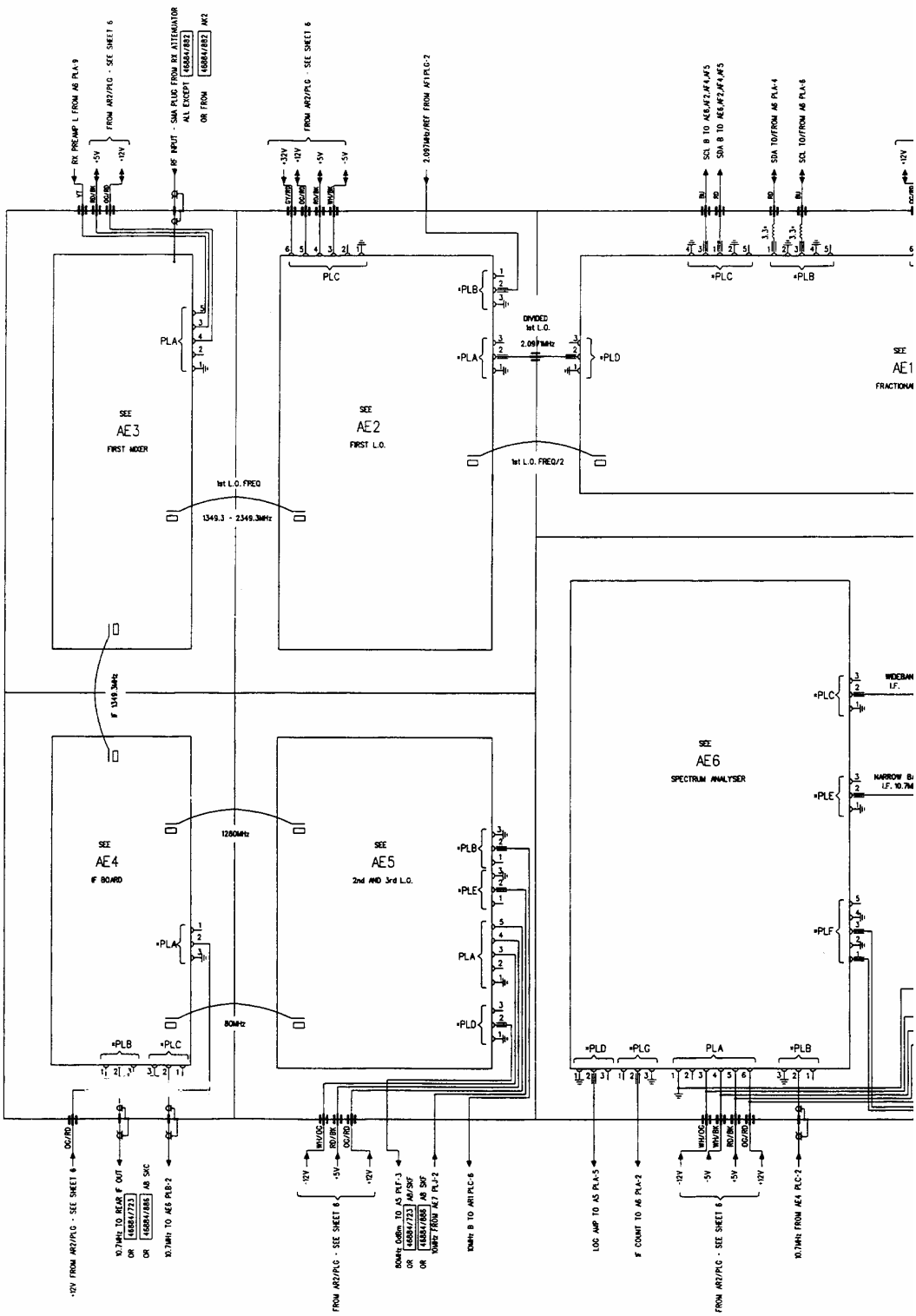
## Symbols

Symbols are to IEC617 (BS 3939) with the following additions :

Static sensitive component


Test point


Unit identification

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# Interconnections AE

1. *PL? - REVERSIBLE CONNECTORS
2. AE8 BOARD IS FITTED FOR OPTION 9 (SSB), AND/OR OPTION 21 (GSM).
3. IF AE8 IS FITTED, CABLE PREVIOUSLY ON AE7/PLJ IS FITTED TO AE8/PLJ.
4. NOTE CIRCUIT REFERENCES AE5 AND AE5/1 ARE INTERCHANGEABLE.

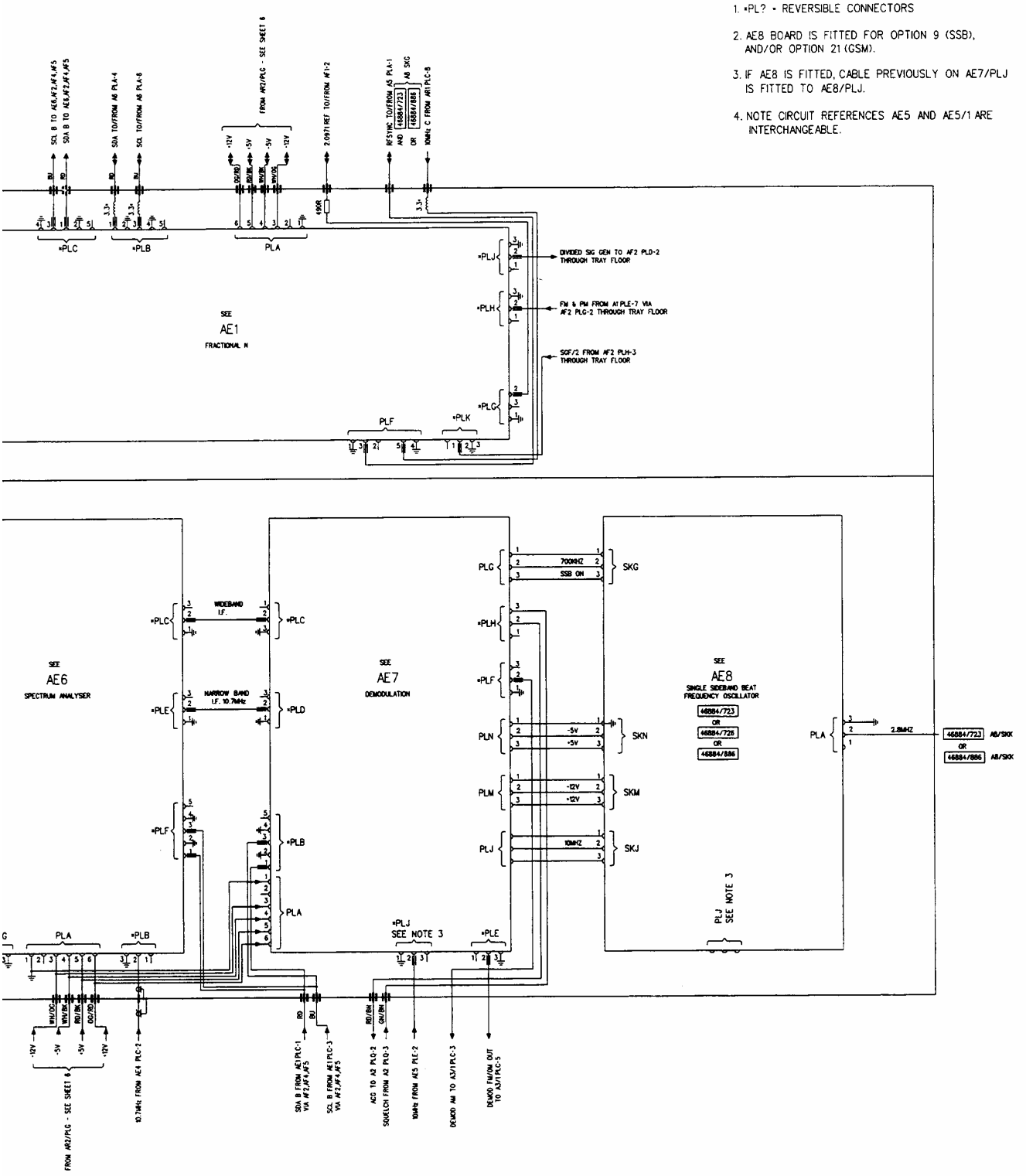
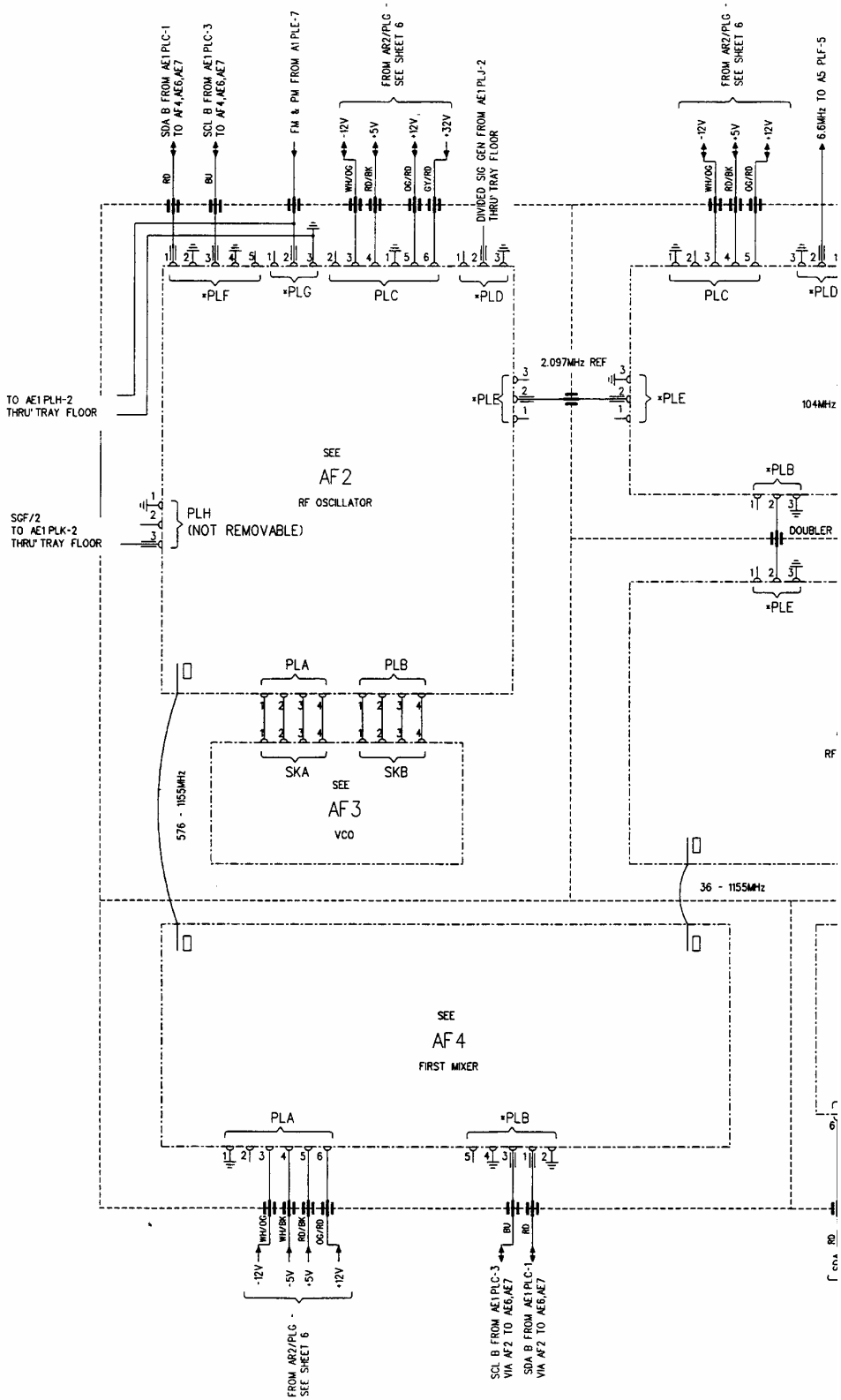



*Fig. 7-1 RF tray - interconnections AE*

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# Interconnections AF

NOTES:

1. *PL? = REVERSIBLE CONNECTORS

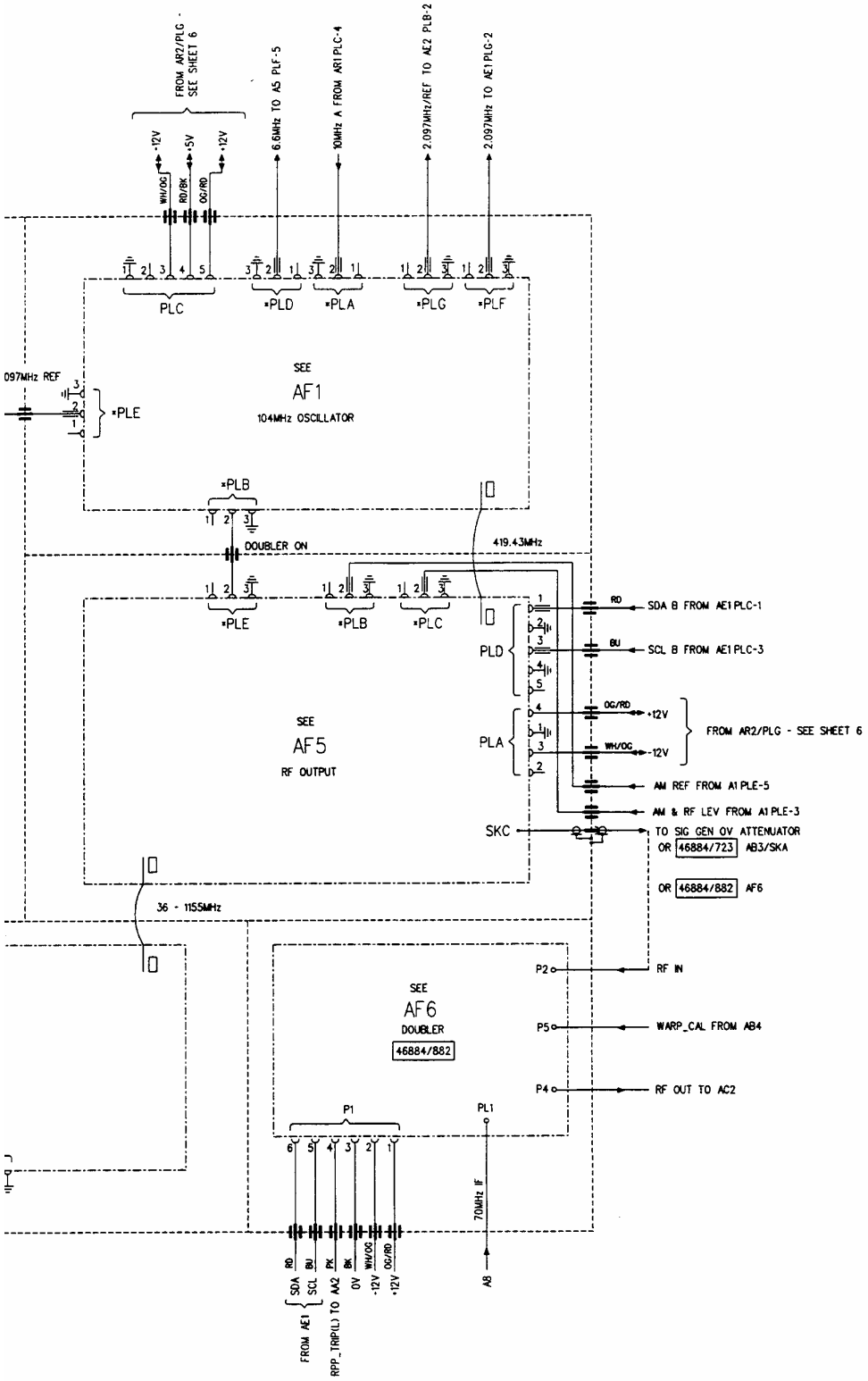
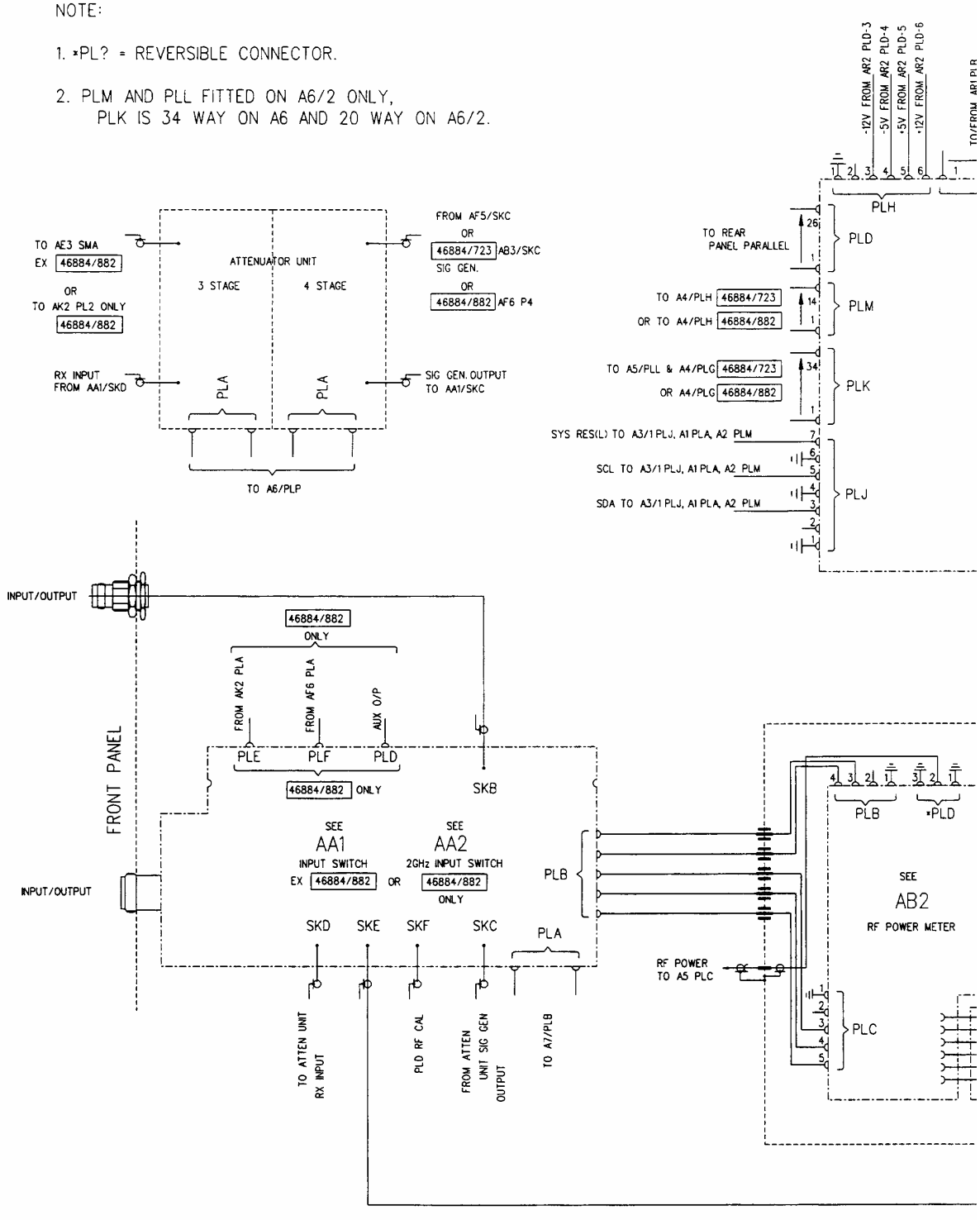



*Fig. 7-2 RF tray - interconnections AF*

NOTE:

1. *PL? = REVERSIBLE CONNECTOR.

2. PLM AND PLL FITTED ON A6/2 ONLY,
   PLK IS 34 WAY ON A6 AND 20 WAY ON A6/2.

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# Interconnections A6, A7, AB2, AA1, AA2

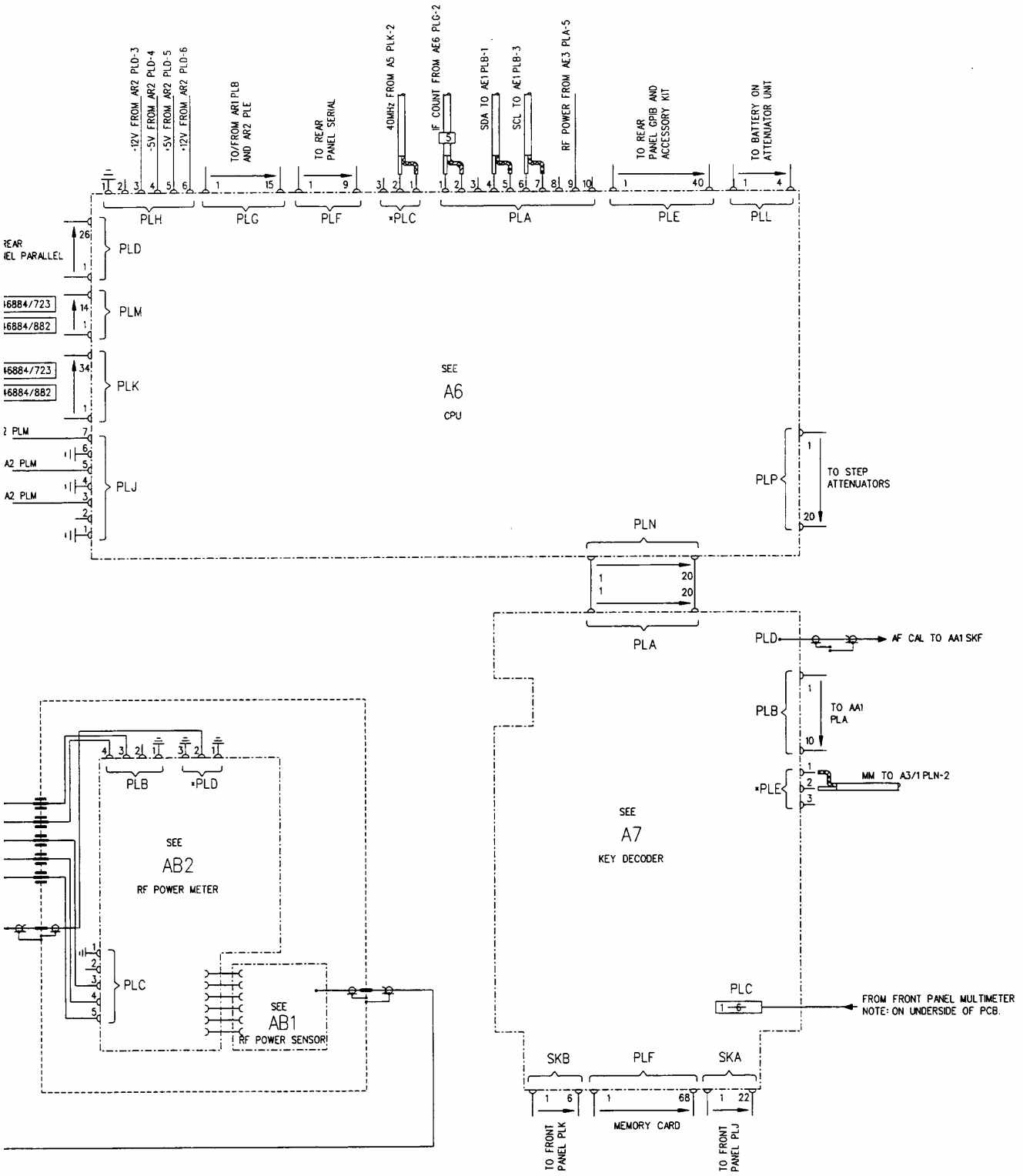
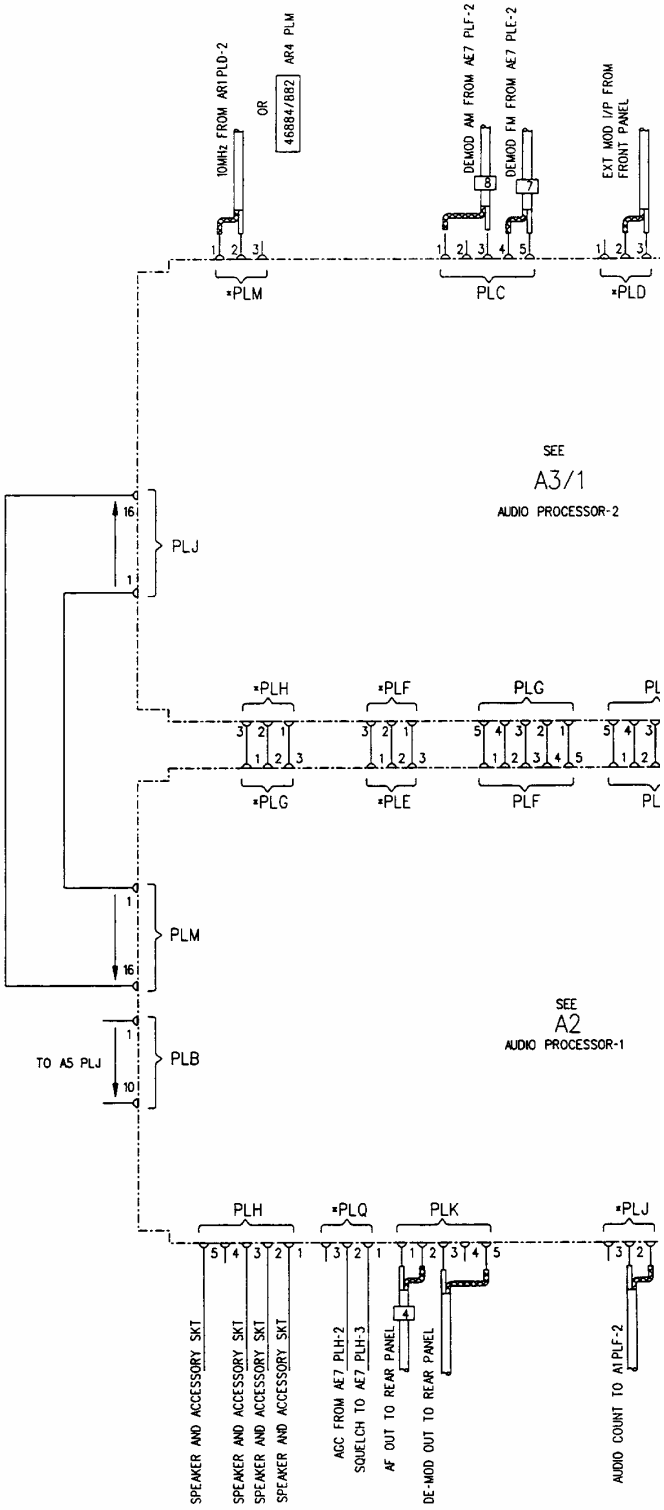



*Fig. 7-3 Interconnections A6, A7, AB2, AA1, AA2*

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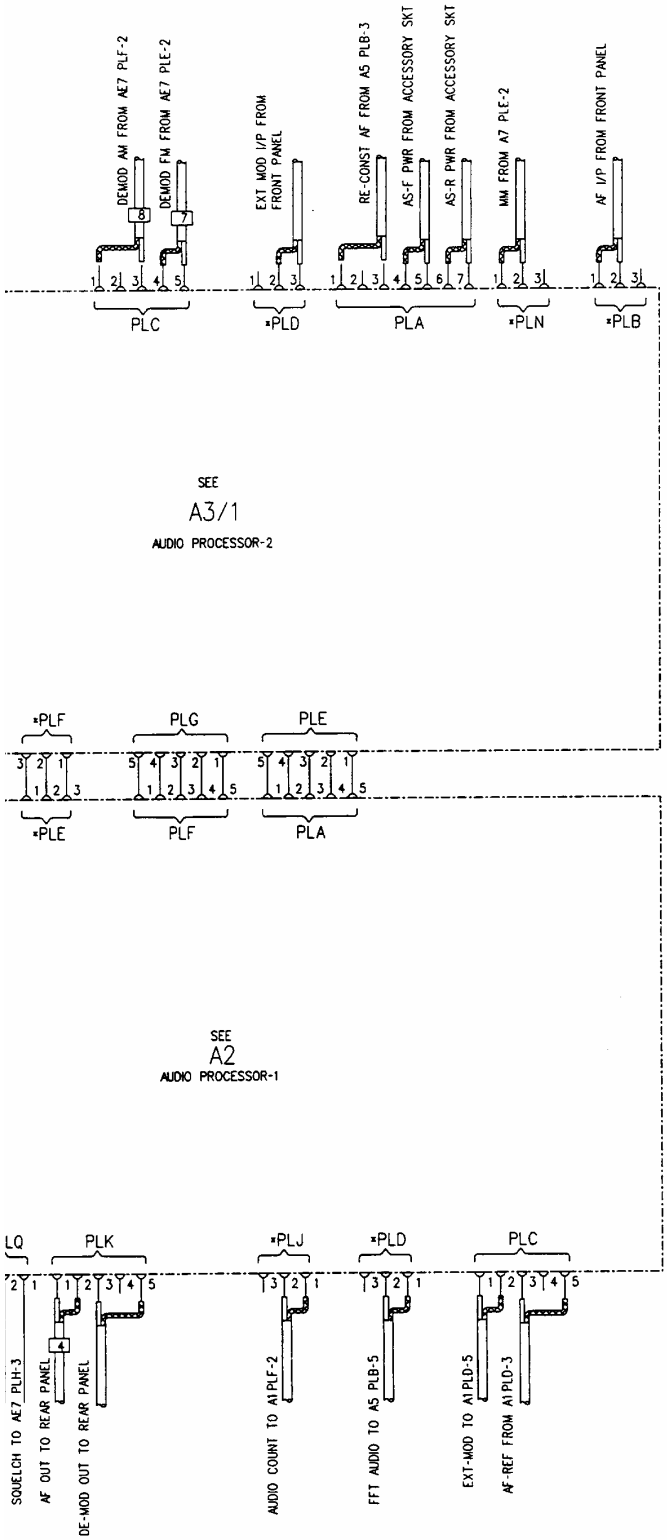
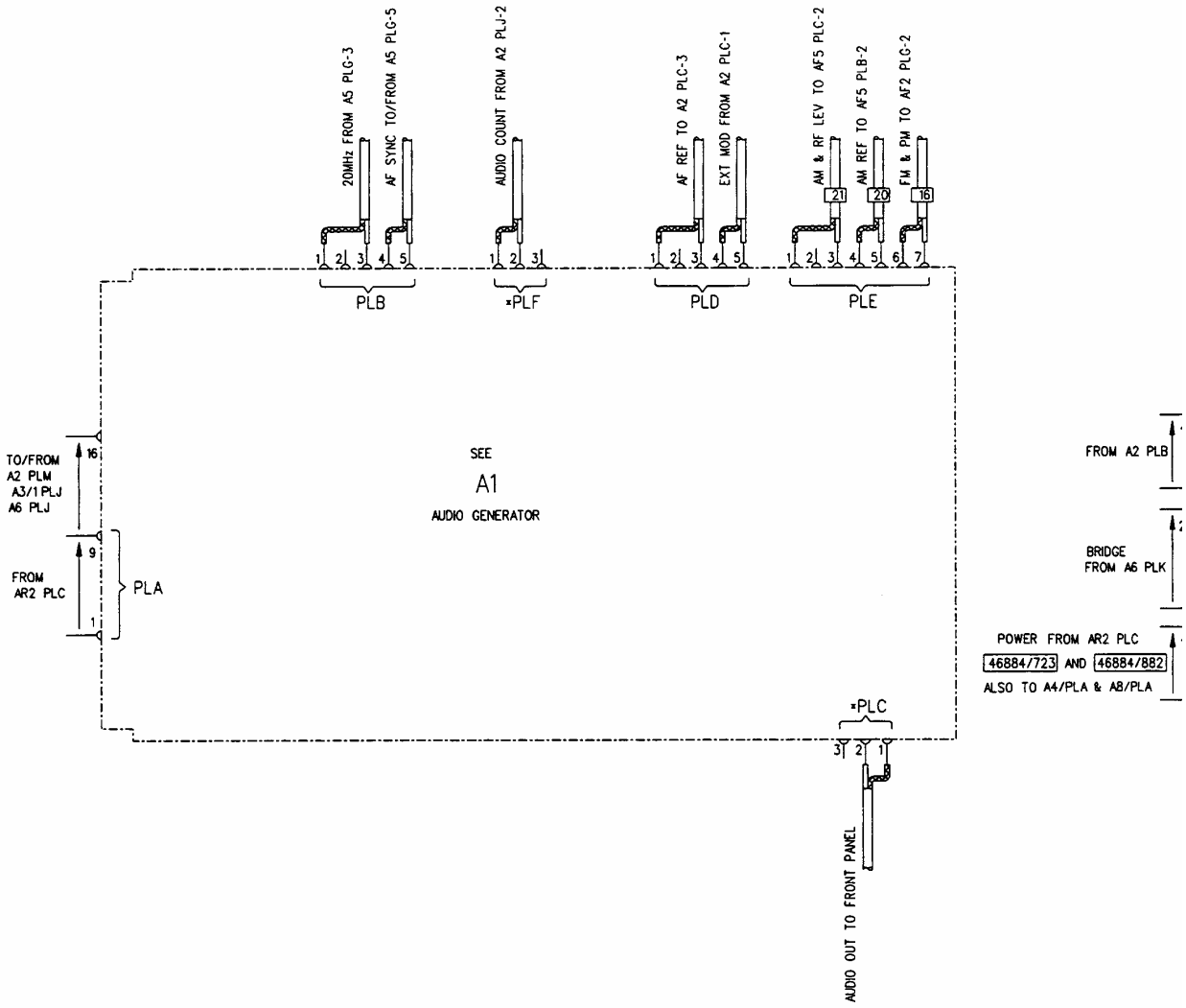
# Interconnections A2, A3/1




NOTES:

1. *PL? = REVERSIBLE CONNECTORS

*Fig. 7-4 Interconnections A2, A3/1*

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## Interconnections A1, A5

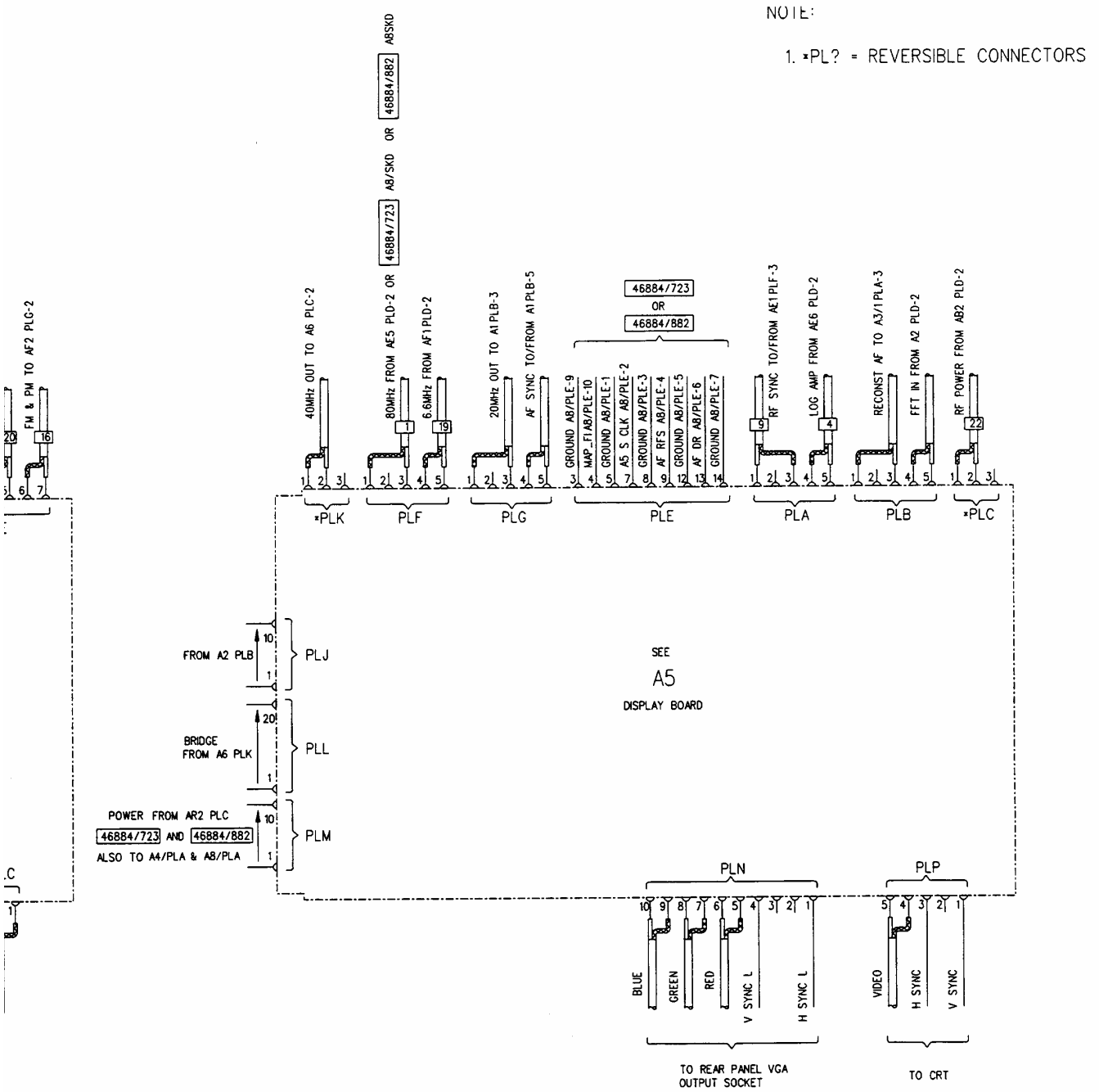
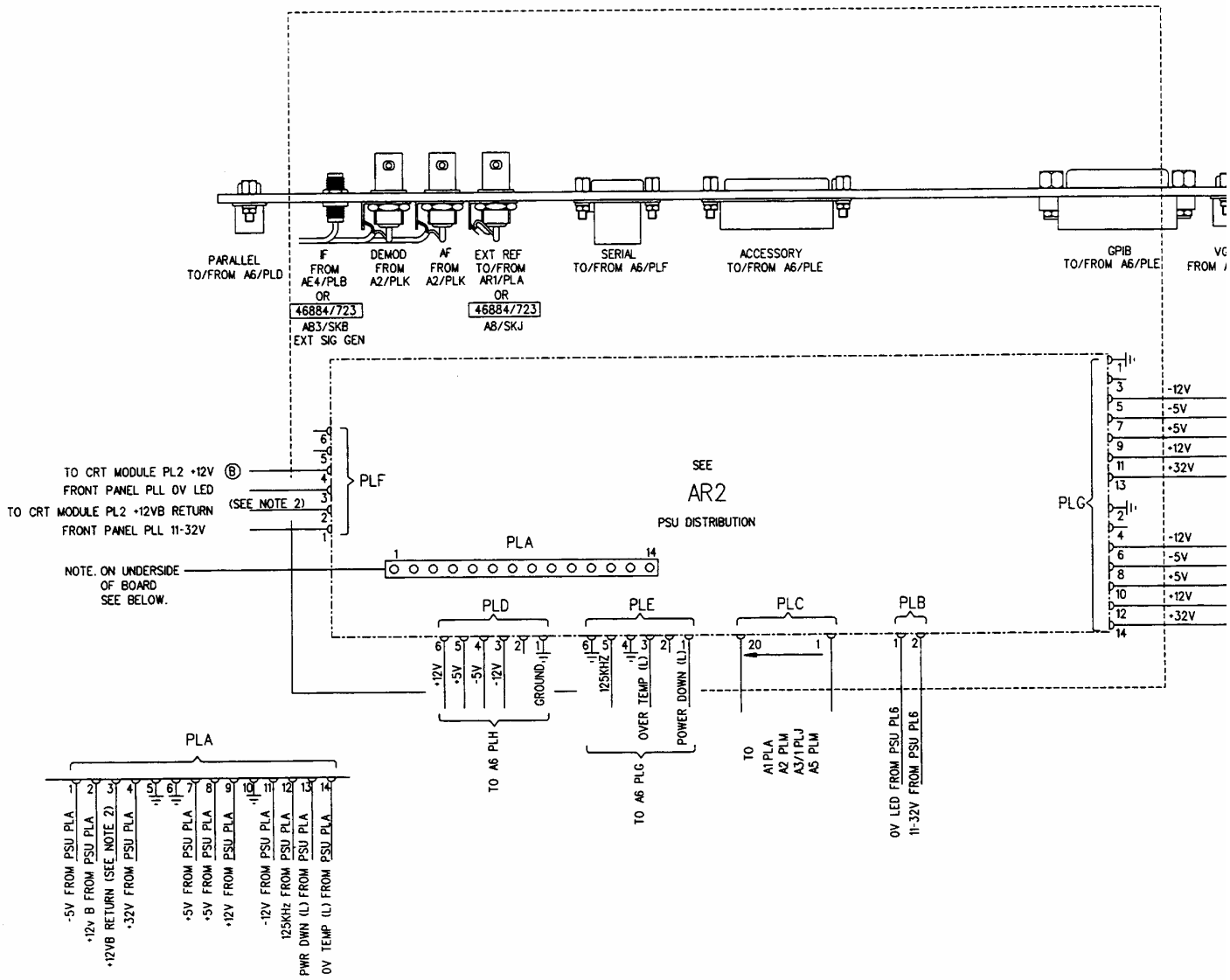



*Fig. 7-5 Interconnections A1, A5*

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# Interconnections AR1, AR2

NOTES:

1. *PL? = REVERSIBLE CONNECTORS
   ** = ON EARLY INSTRUMENTS ATTENTION MUST BE PAID TO CORRECT ORIENTATION OF THIS CONNECTOR.

2. +12VB RETURN ISOLATED FROM SYSTEM CHASSIS & EARTH.

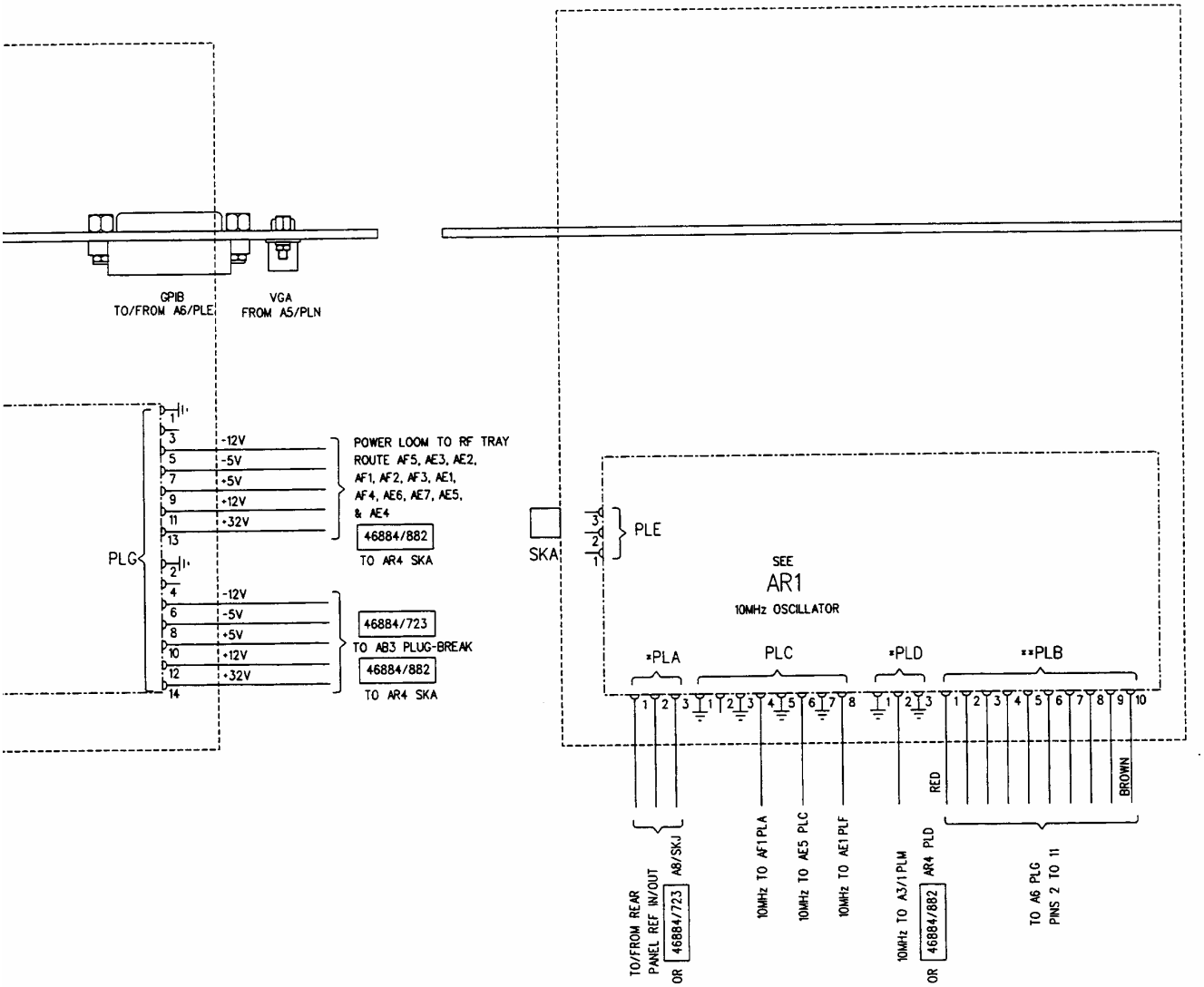
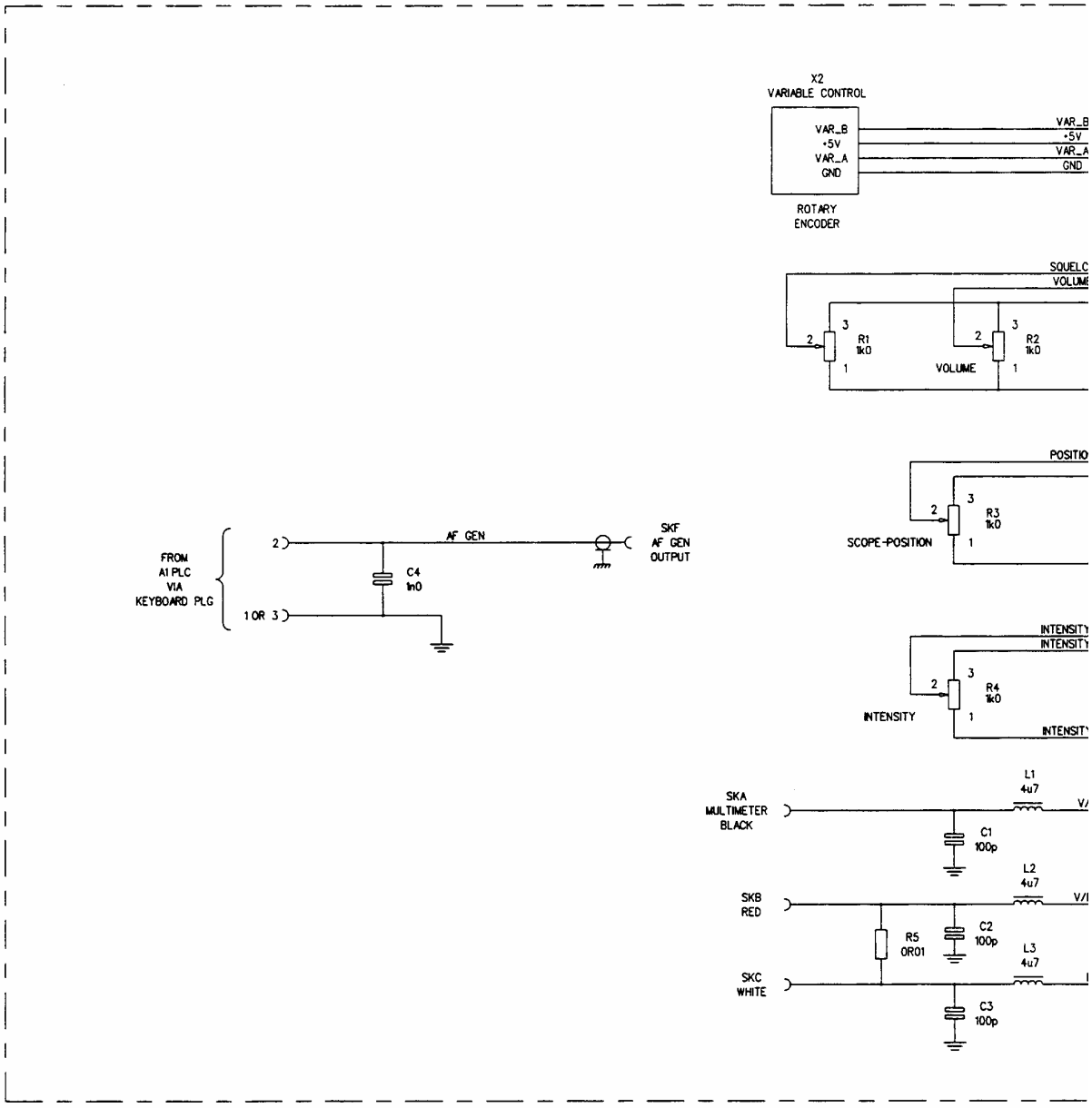



*Fig. 7-6 Interconnections AR1, AR2*


X2
VARIABLE CONTROL
VAR_B
+5V
VAR_A
GND
ROTARY
ENCODER
SQUELC
VOLUME
R1
1kO
R2
1kO
VOLUME
POSITIO
R3
1kO
SCOPE-POSITION
INTENSITY
INTENSITY
R4
1kO
INTENSITY
INTENSIT
FROM
A1 PLC
VIA
KEYBOARD PLG
2
1 OR 3
AF GEN
C4
1n0
SKF
AF GEN
OUTPUT
SKA
MULTIMETER
BLACK
L1
4u7
C1
100p
SKB
RED
L2
4u7
R5
0R01
C2
100p
L3
4u7
SKC
WHITE
C3
100p

# Interconnections - front panel

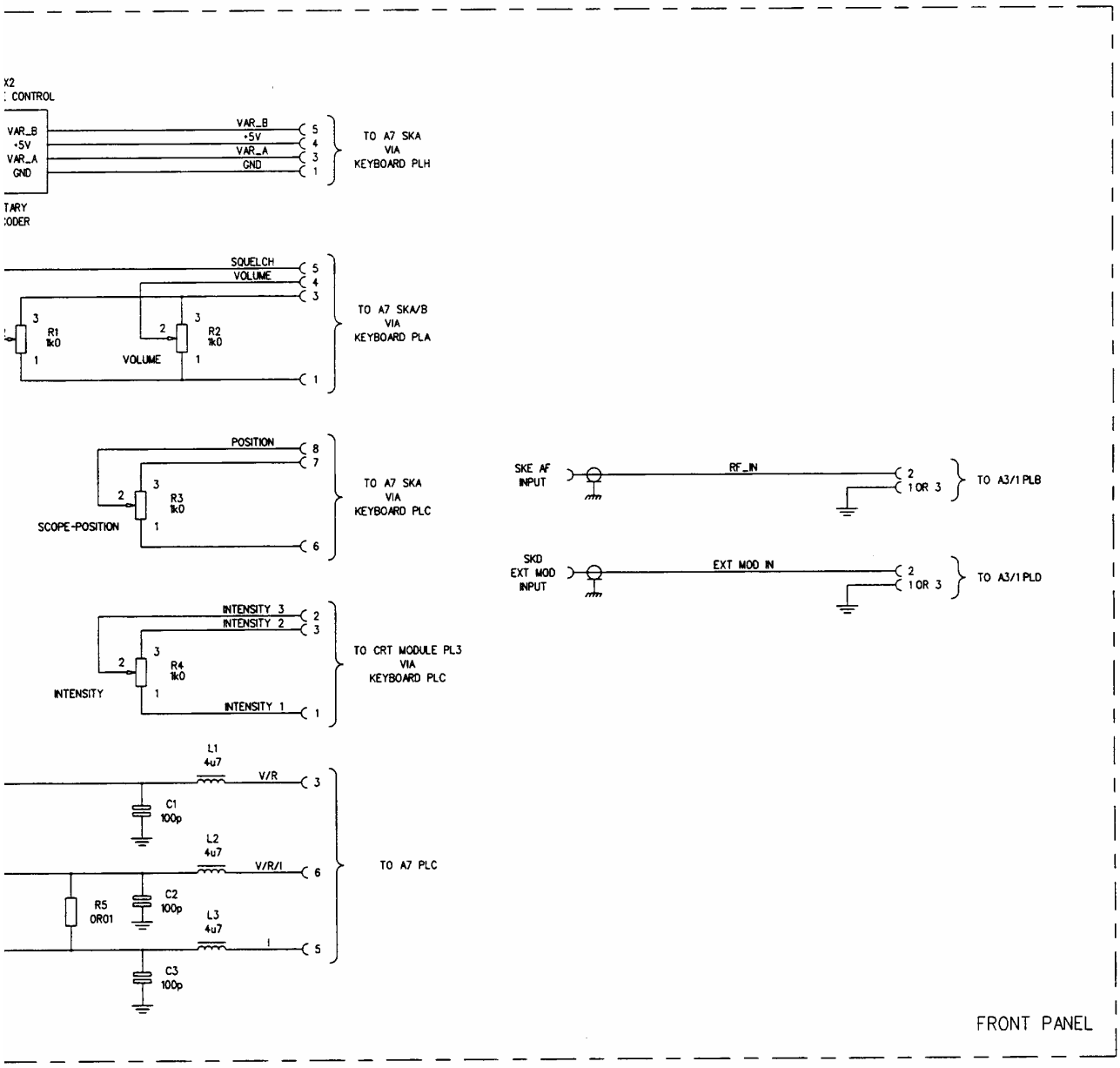
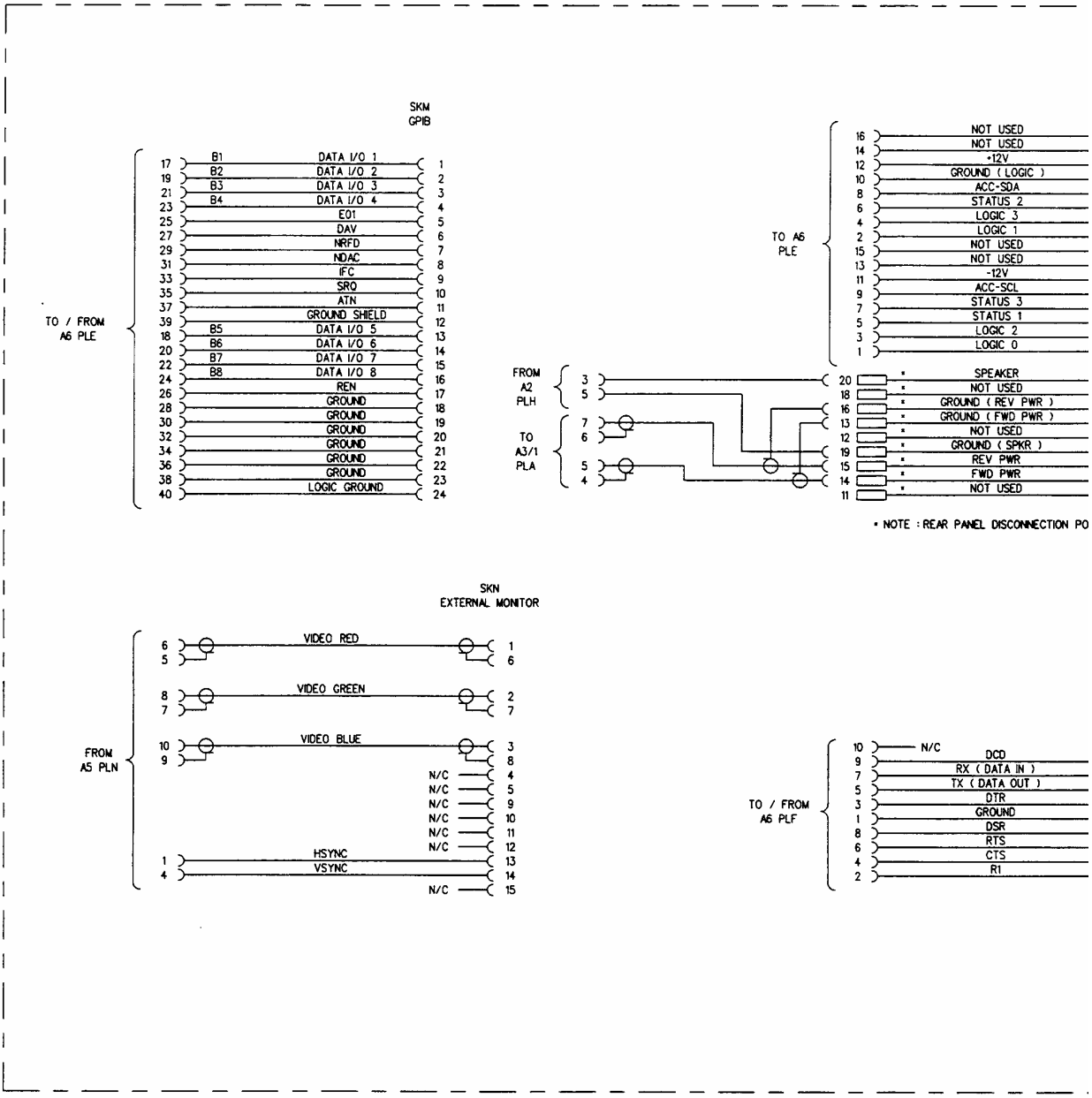



*Fig. 7-7 Interconnections - front panel*

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# Interconnections - rear panel

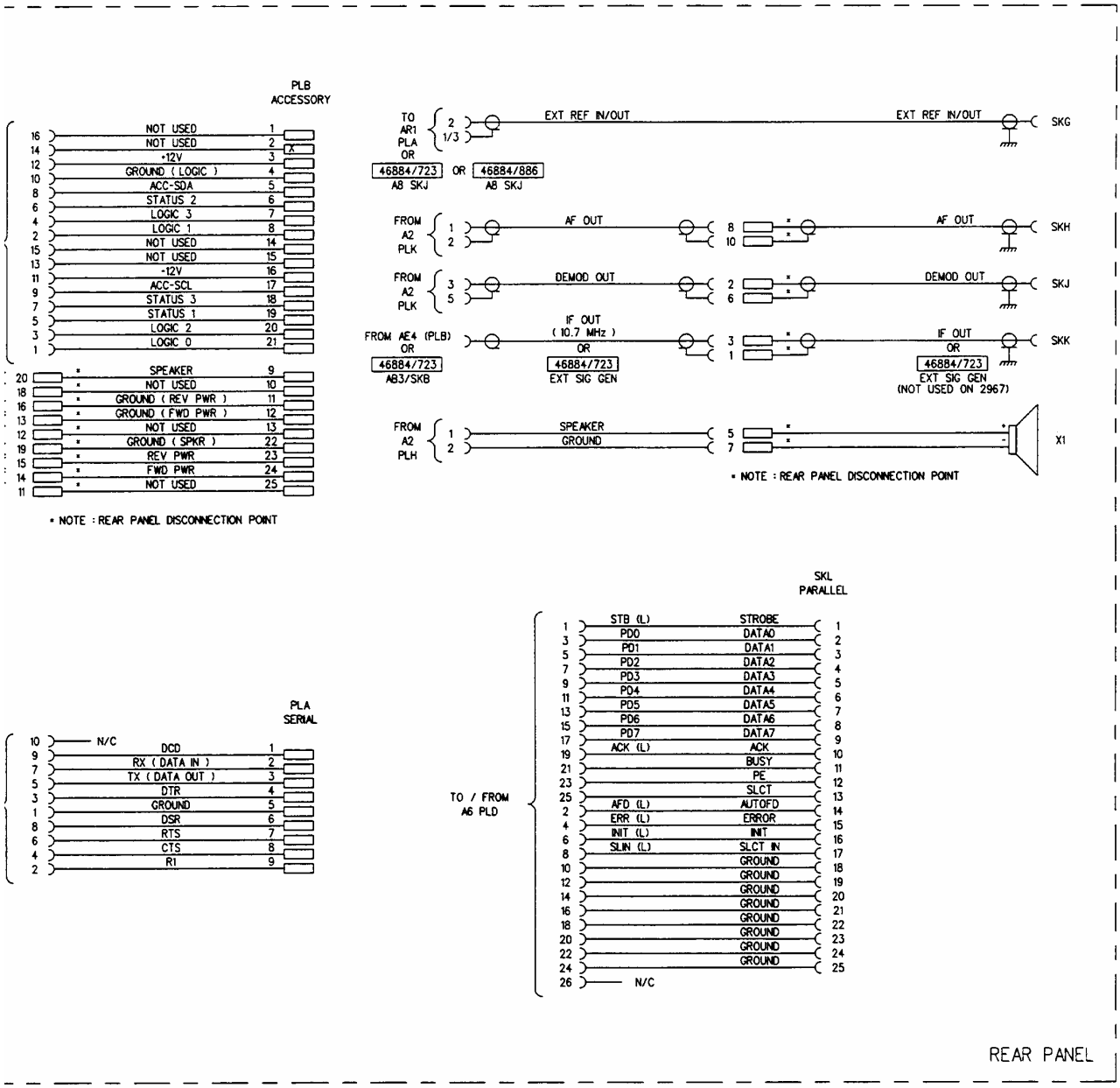
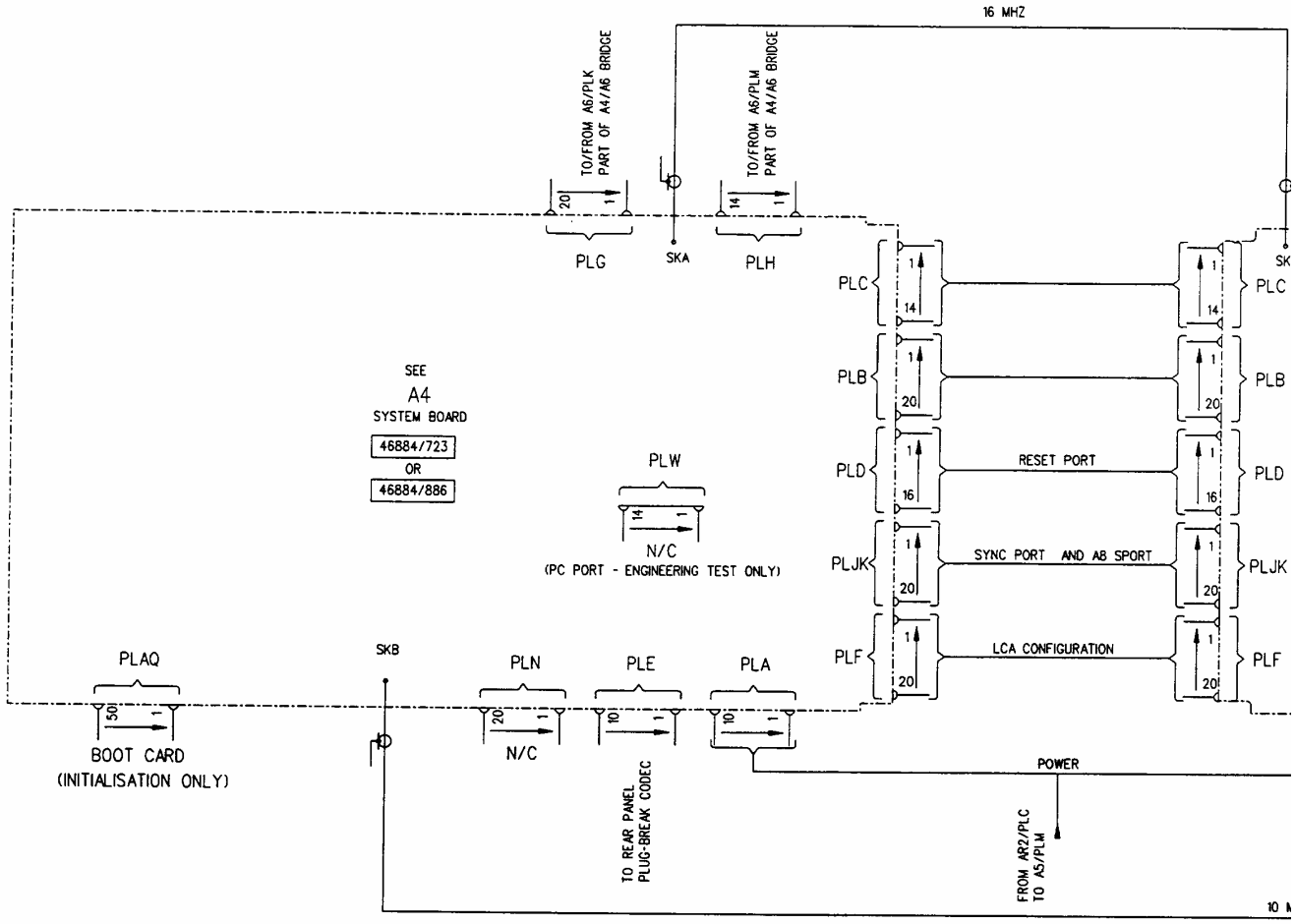
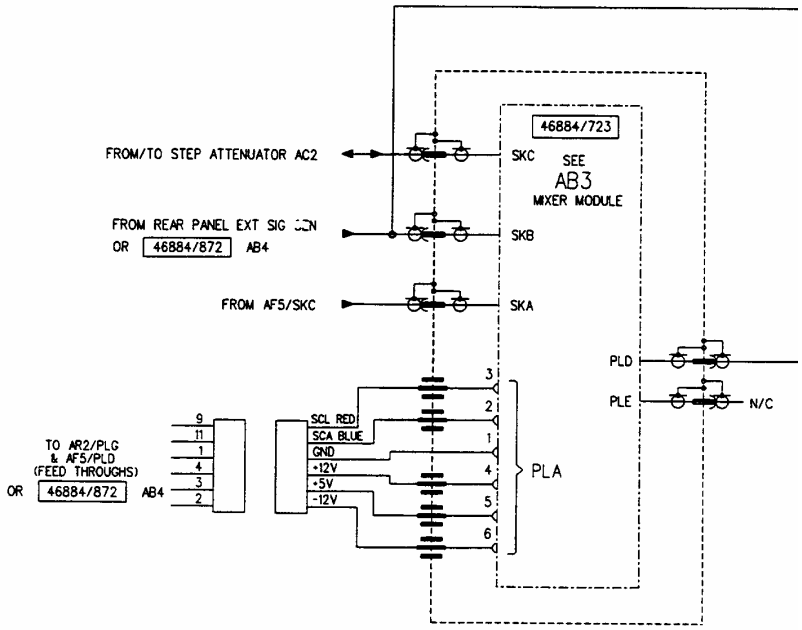



*Fig. 7-8 Interconnections - rear panel*




NOTES.

1. ON 2967 INSTRUMENTS BOTH 46884/882 AND 46884/886 ARE FITTED.
2. IF WARPING OPTION 46884/872 IS FITTED, THEN EITHER 46884/723 OR BOTH 46884/882 AND 46884/886 IS REQUIRED.

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# Interconnections A4, A8, AB3, AB4

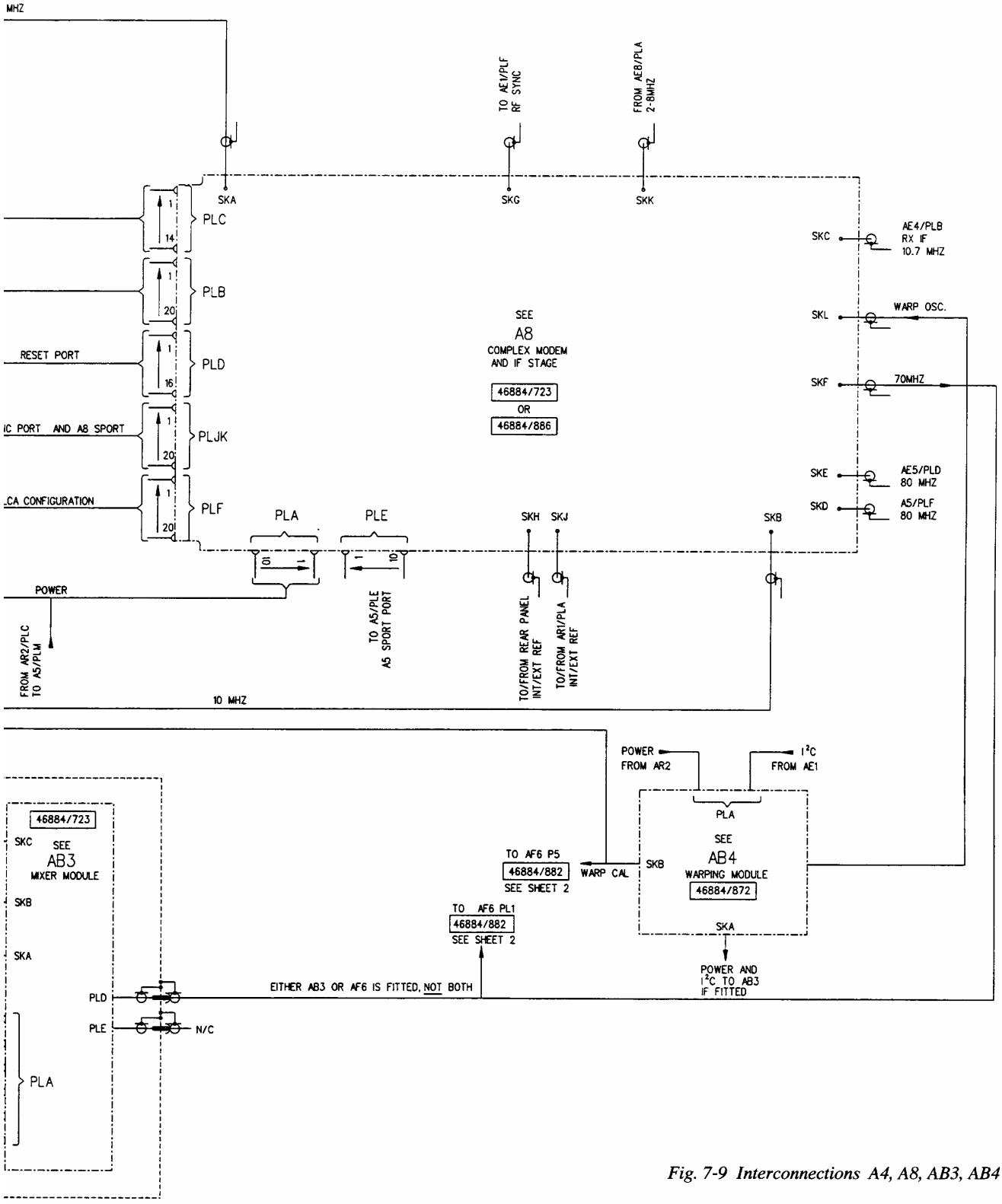
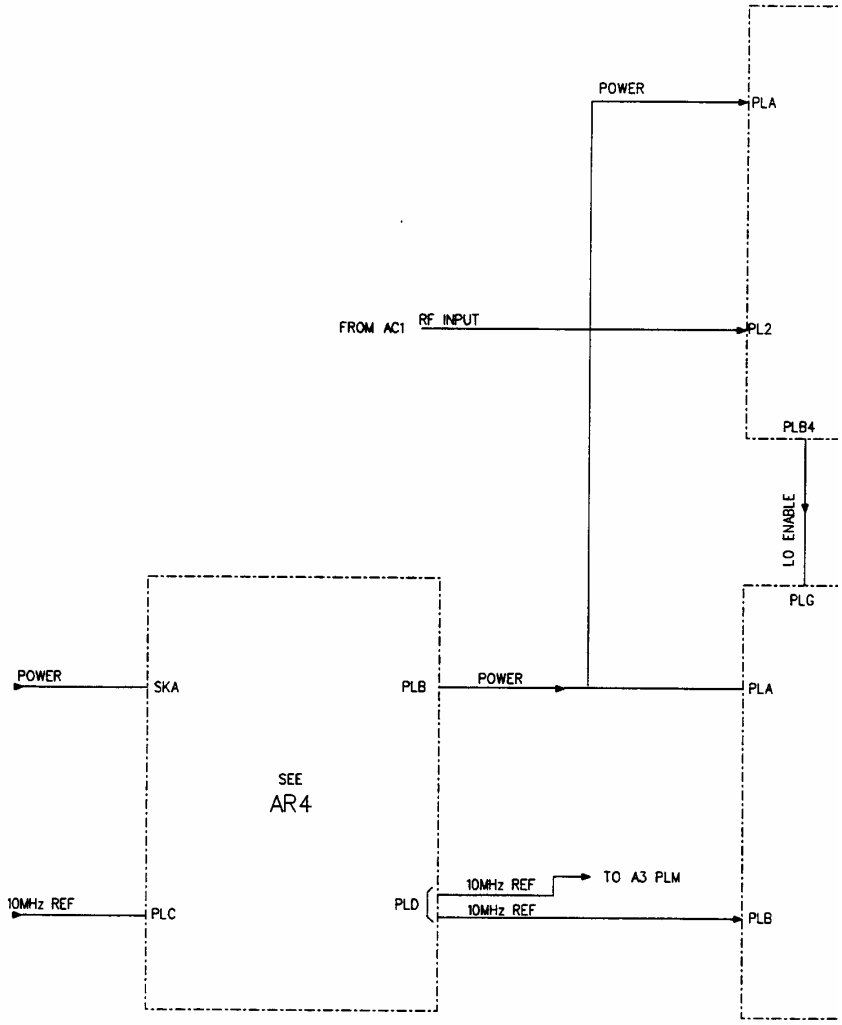



*Fig. 7-9 Interconnections A4, A8, AB3, AB4*

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# Interconnections AK1, AK2, AR4

NOTE.
1. AR4,AK1 AND AK2 ARE USED ONLY IN 46884/882

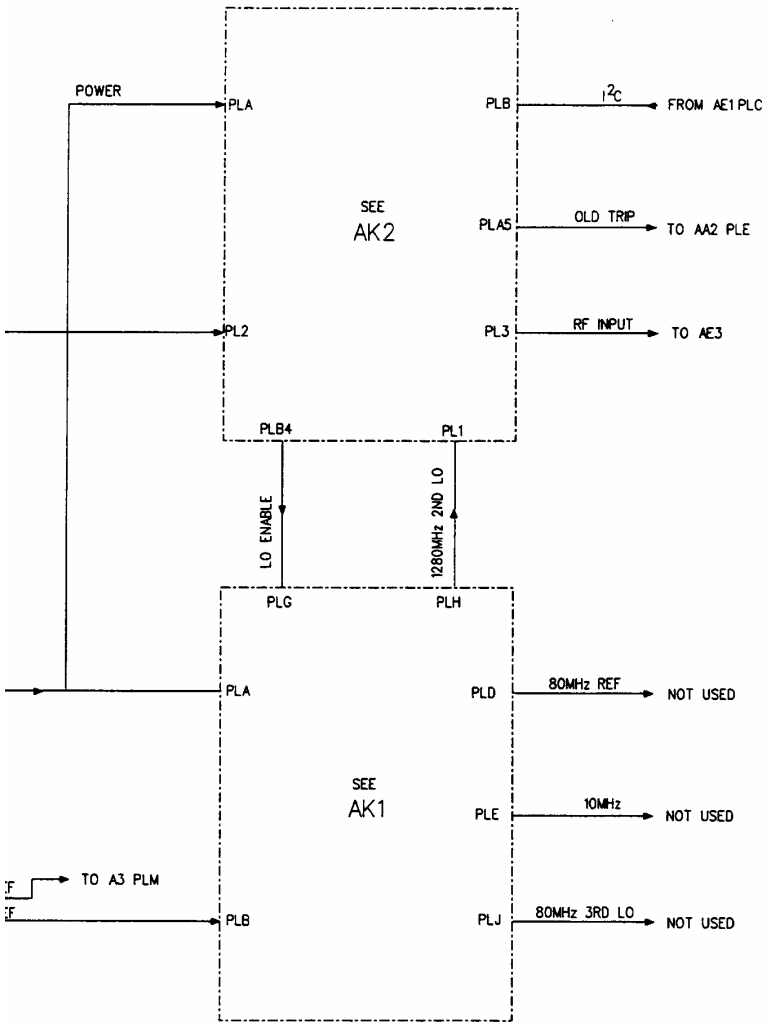
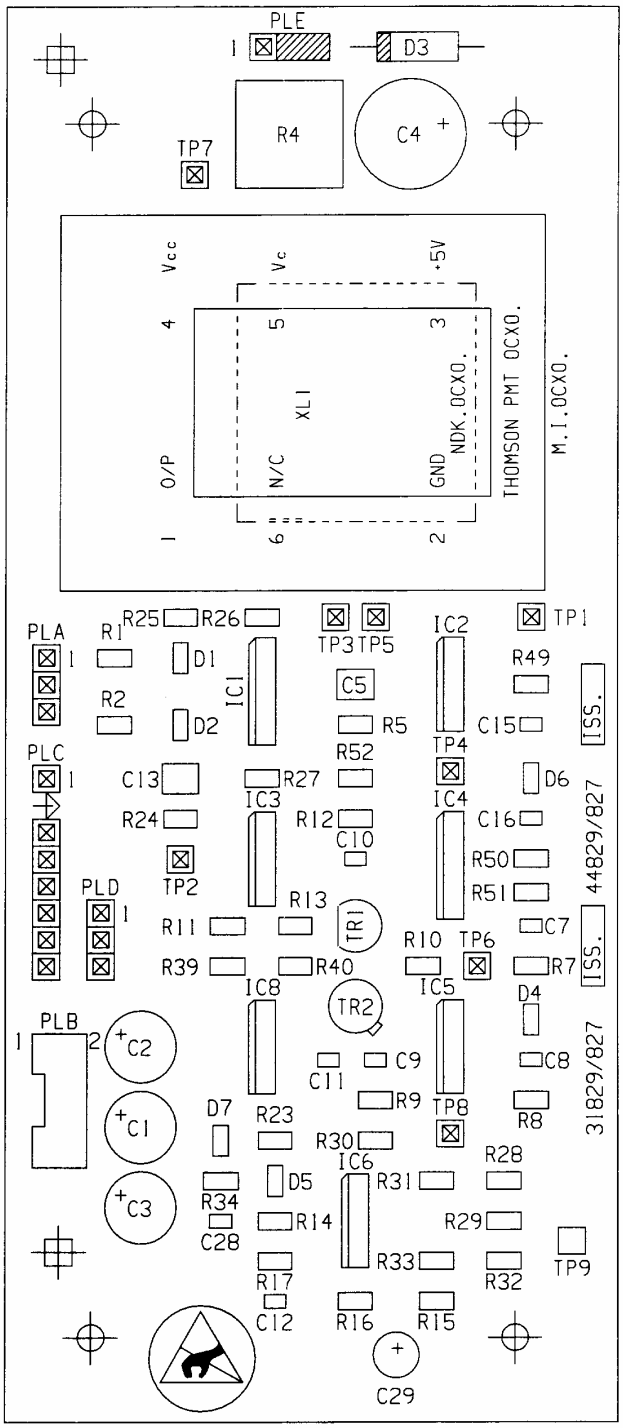



*Fig. 7-10 Interconnections AK1, AK2, AR4*




**Interconnections AK1, AK2, AR4**

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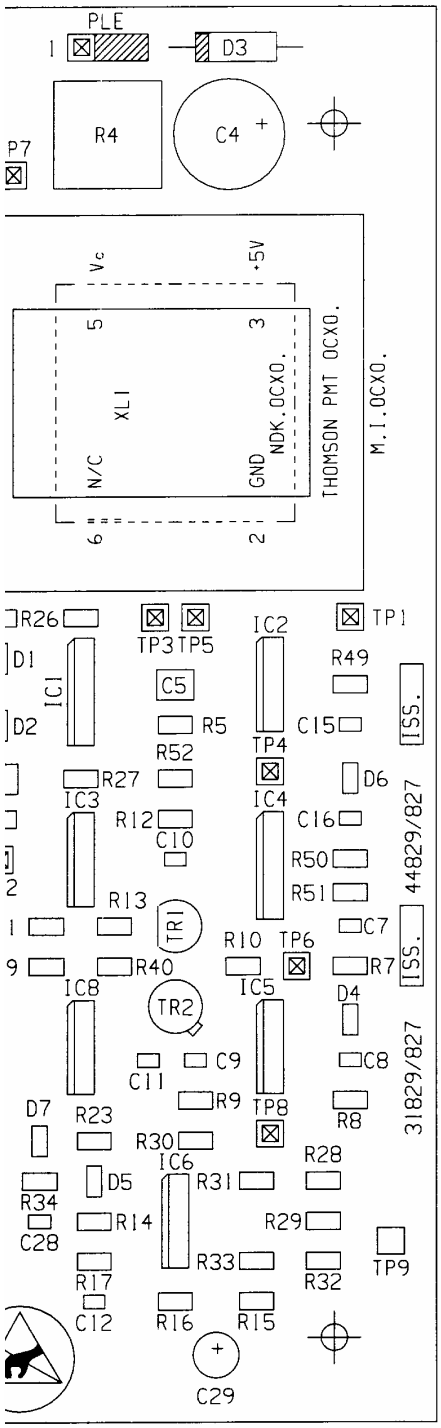
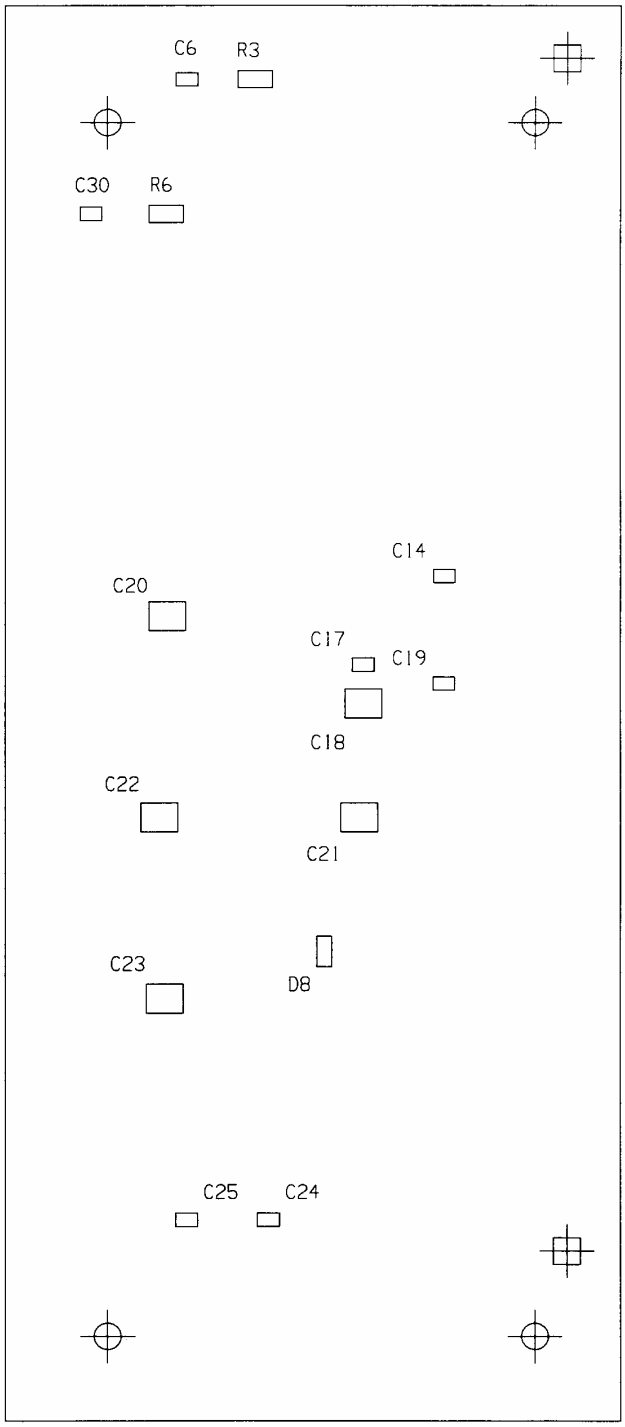
# Component layout **AR1**




R4

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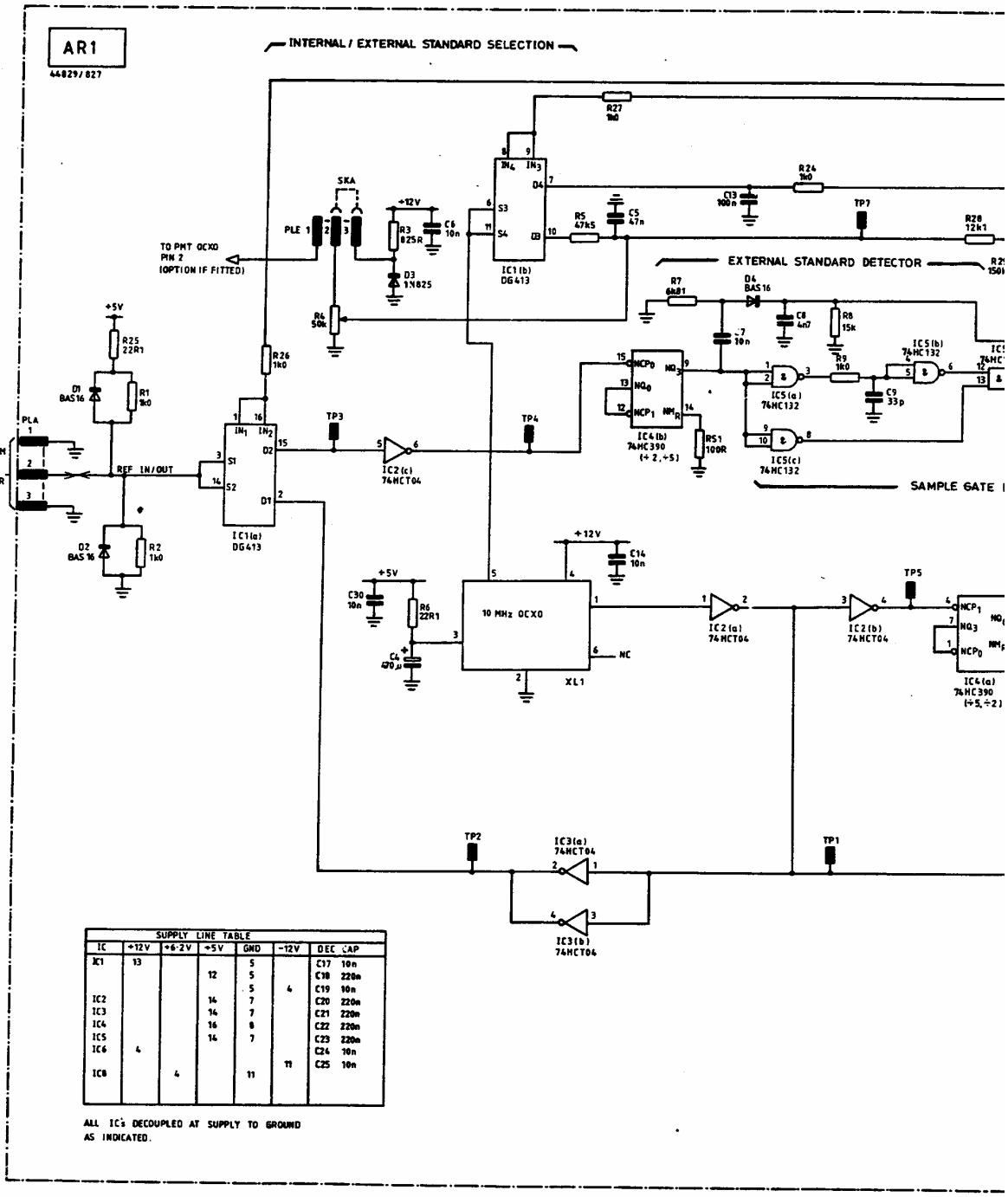
*Fig. 7-11 AR1 10 MHz OCXO - component layout*




| SUPPLY LINE TABLE | | | | | | |
|---|---|---|---|---|---|---|
| IC | +12V | +6·2V | +5V | GND | -12V | DEC CAP |
| IC1 | 13 | | | 5 | | C17 10n |
| | | | 12 | 5 | | C18 220n |
| | | | | 5 | 4 | C19 10n |
| IC2 | | | 14 | 7 | | C20 220n |
| IC3 | | | 14 | 7 | | C21 220n |
| IC4 | | | 16 | 8 | | C22 220n |
| IC5 | | | 14 | 7 | | C23 220n |
| IC6 | 4 | | | | | C24 10n |
| | | | | | 11 | C25 10n |
| IC8 | | 4 | | 11 | | |

ALL IC's DECOUPLED AT SUPPLY TO GROUND AS INDICATED.

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# Circuit diagram AR1

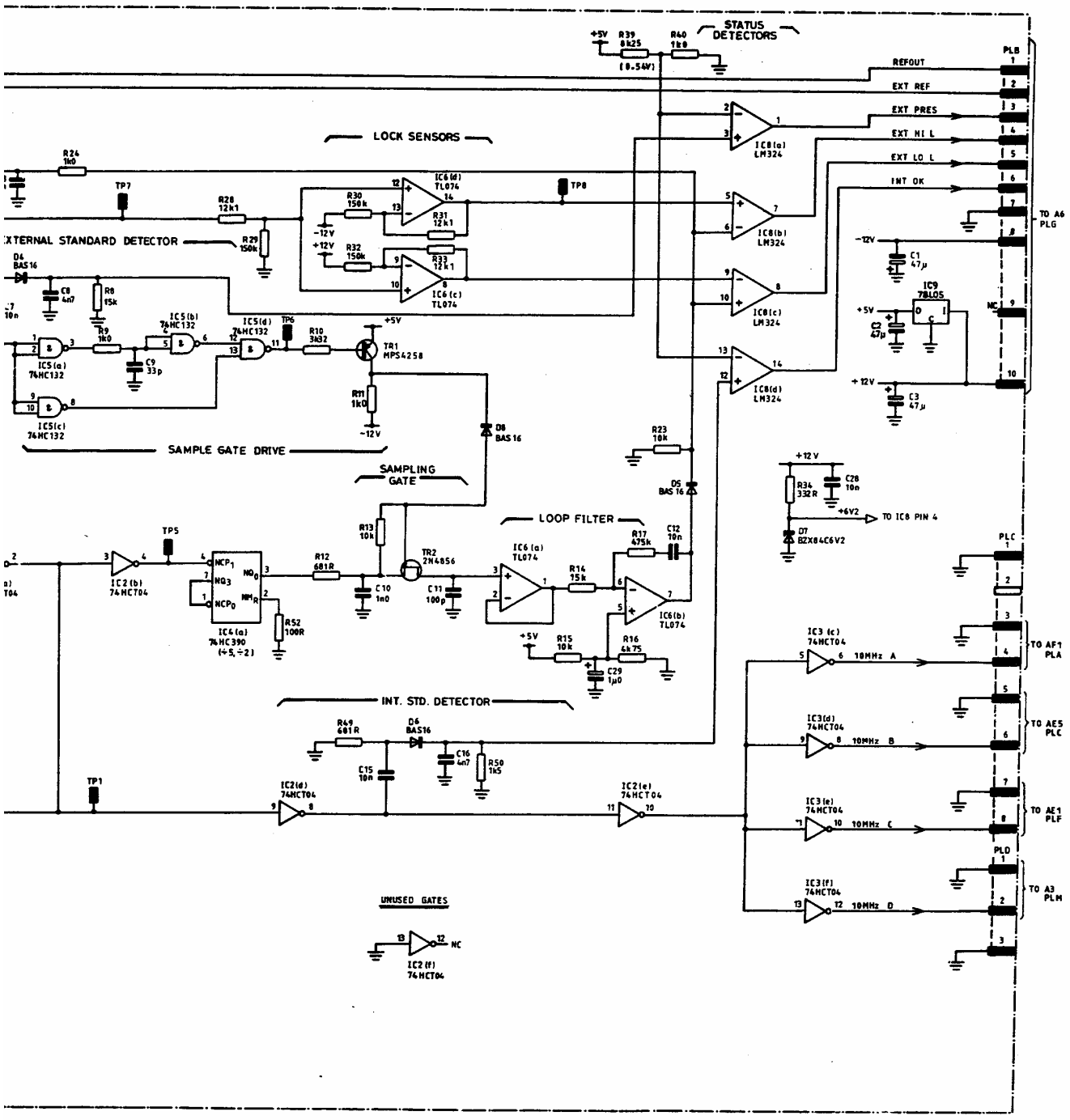
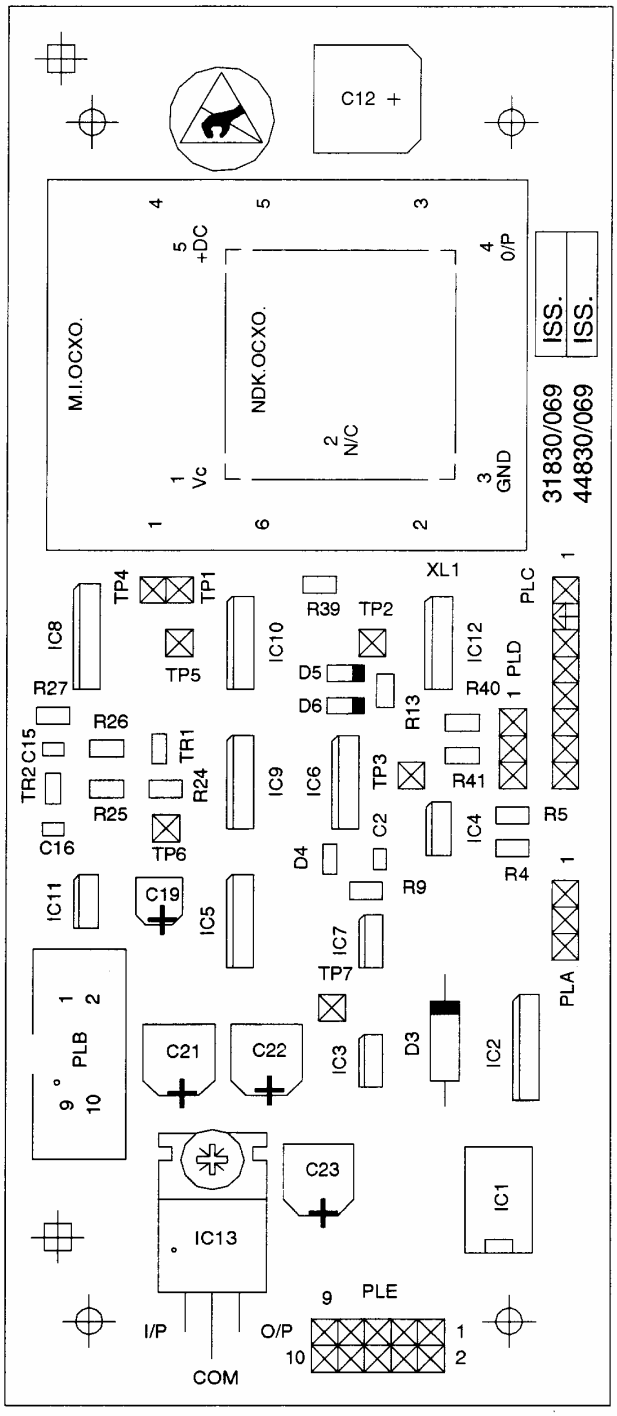



*Fig. 7-12 AR1 10 MHz OCXO - circuit*




**10 MHz OCXO AR1**

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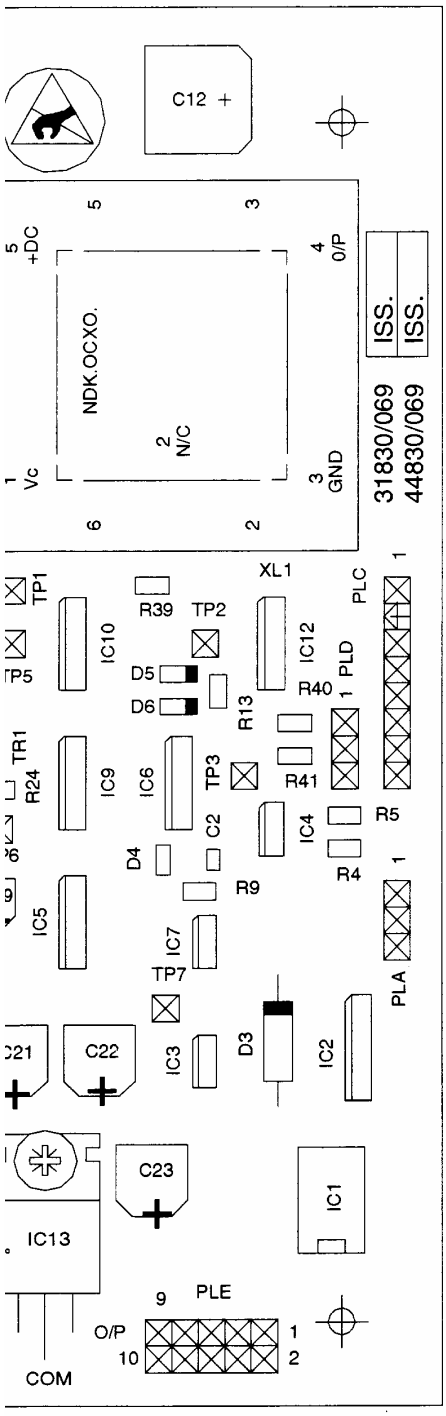
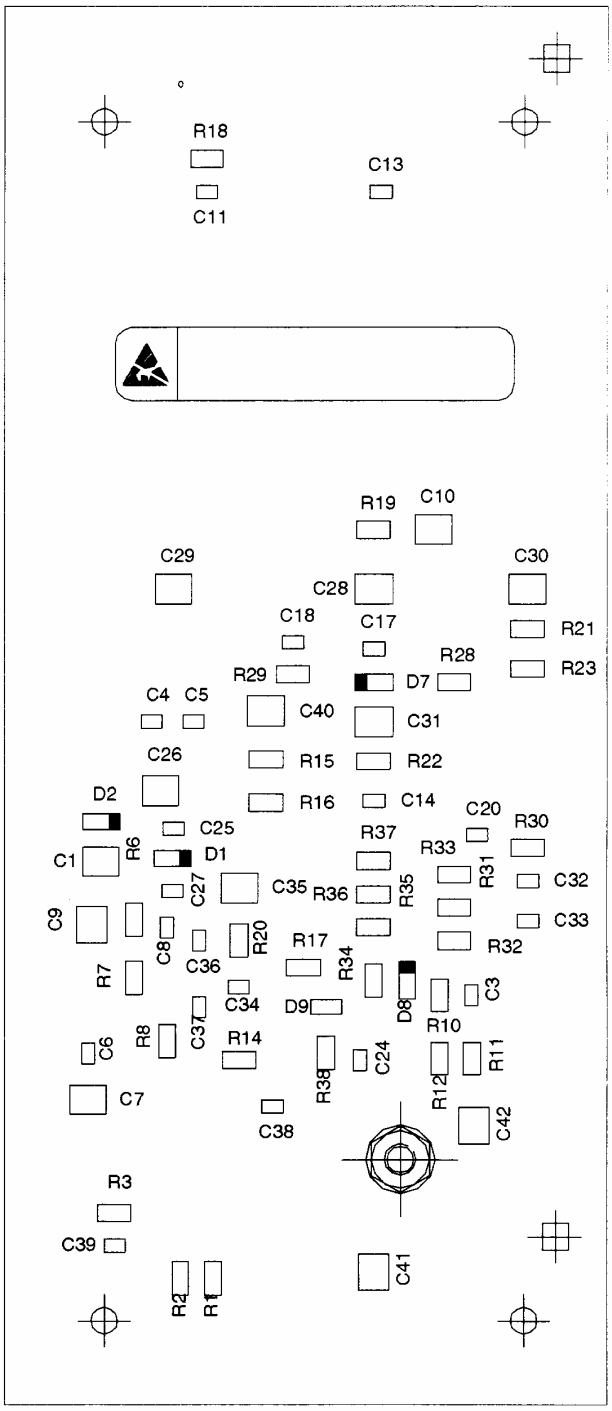
# Component layout AR1/2



R1

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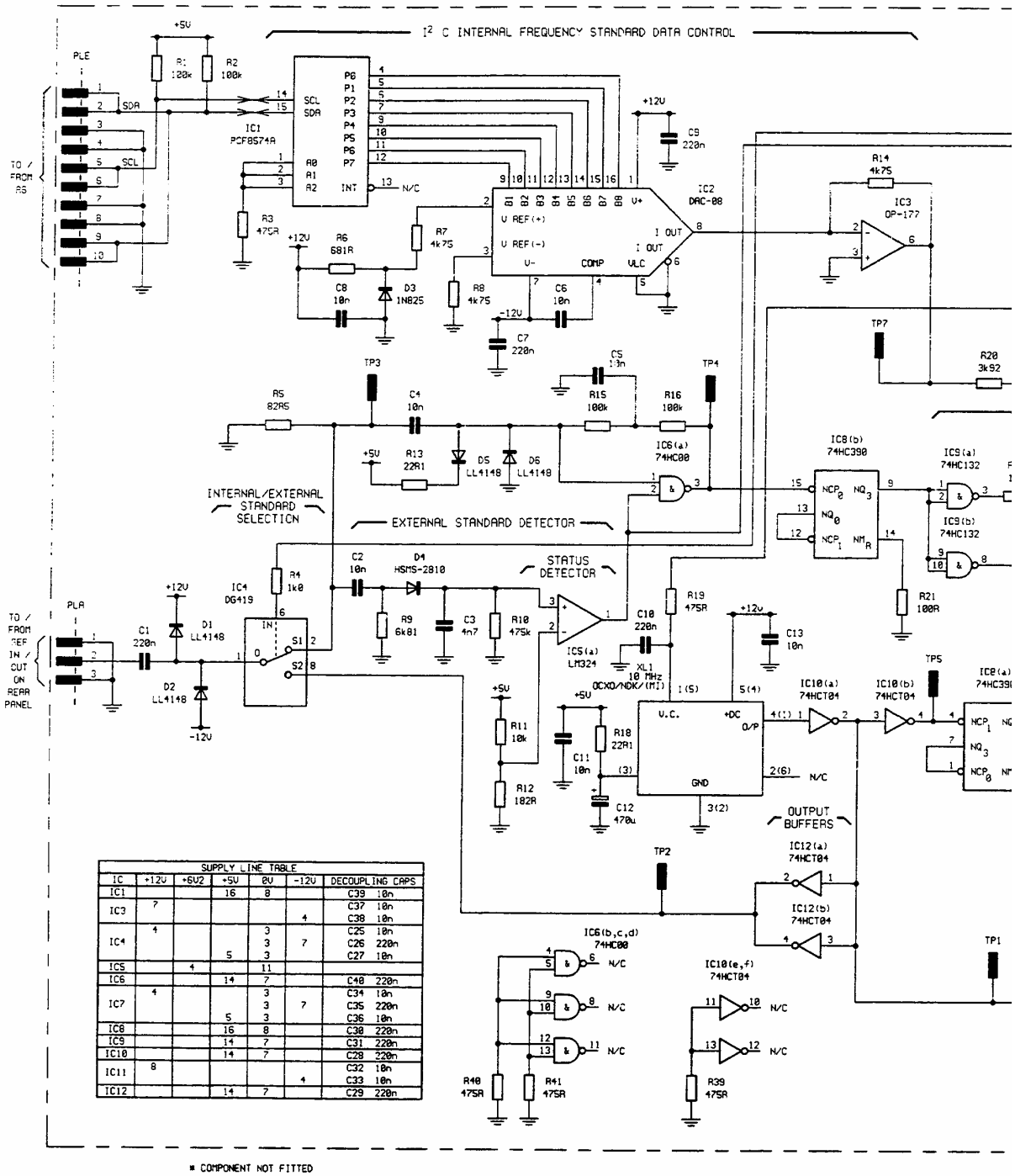
*Fig. 7-13 AR1/2 10 MHz OCXO - component layout*

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# Circuit diagram AR1/2

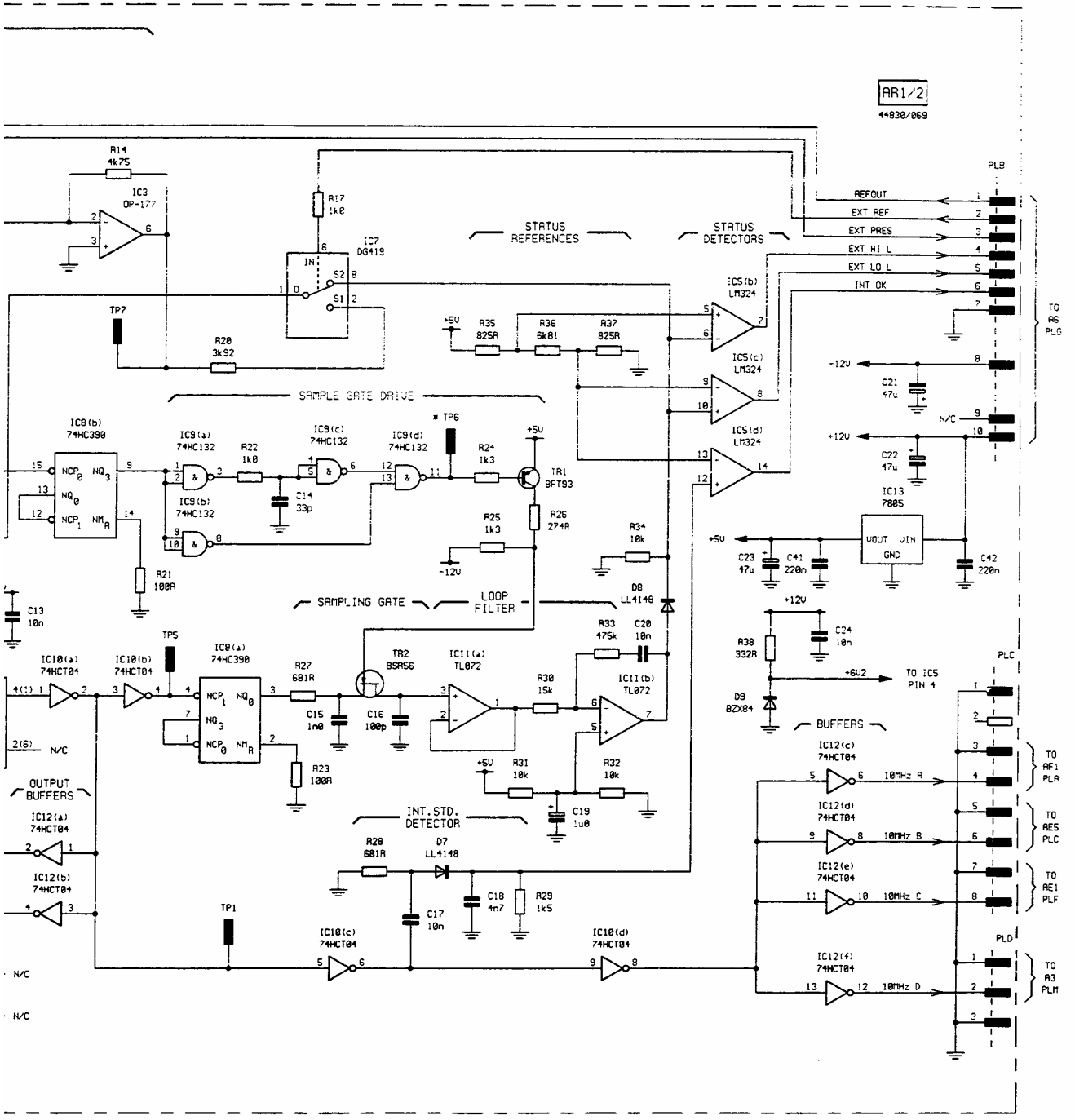
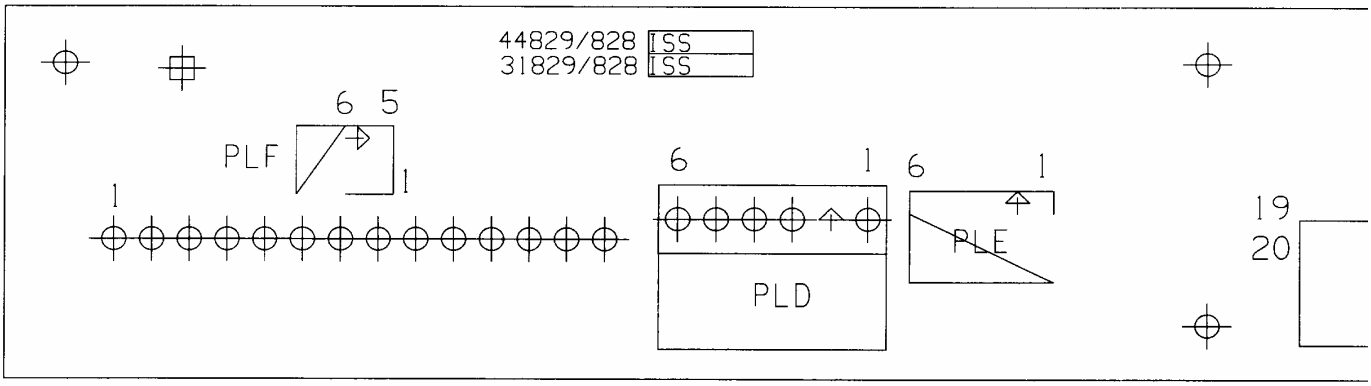



*Fig. 7-14 AR1/2 10 MHz OCXO - circuit*




**10 MHz OCXO AR1/2**

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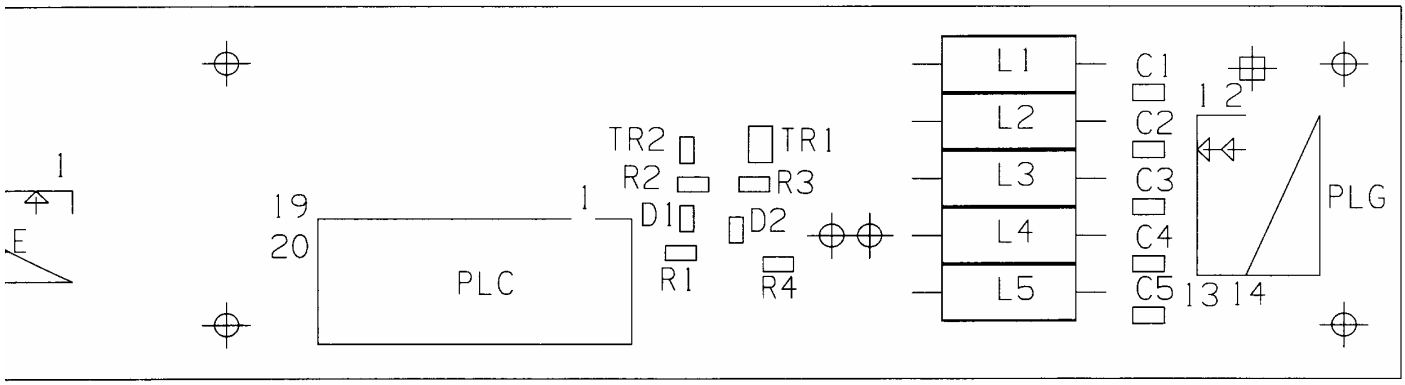
# Component layout **AR2**




**R1/2**

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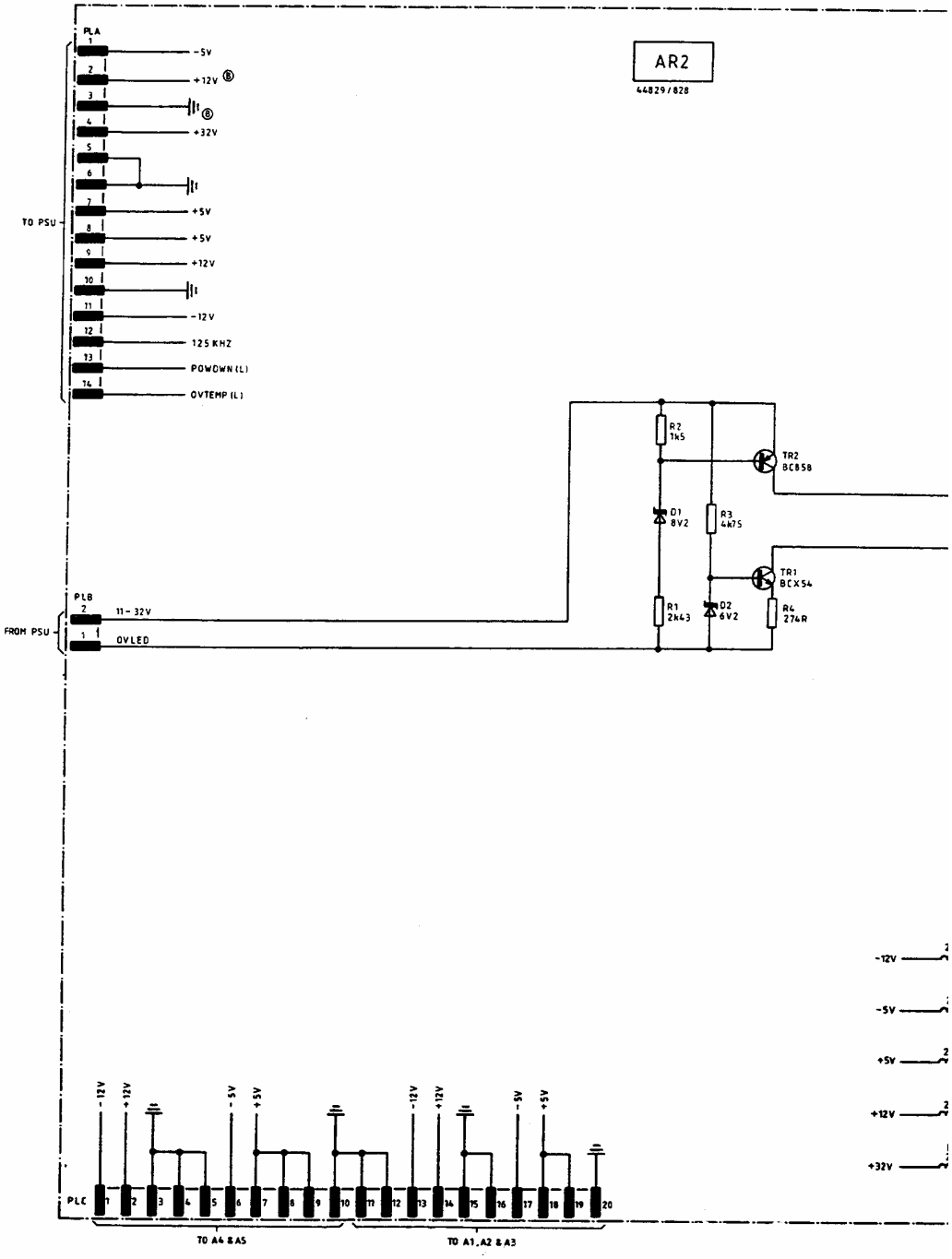
*Fig. 7-15 AR2 PSU distribution - component layout*


AR2
44829/828
PLA
-5V
+12V
+32V
TO PSU
+5V
+5V
+12V
-12V
125 KHZ
POWDWN (L)
OVTEMP (L)
R2
1k5
TR2
BC858
D1
8V2
R3
4k75
TR1
BCX54
R1
2k43
D2
6V2
R4
274R
PLB
11 - 32V
FROM PSU
OVLED
-12V
-5V
+5V
+12V
+32V
PLC
TO A4 & A5
TO A1, A2 & A3

# Circuit diagram AR2

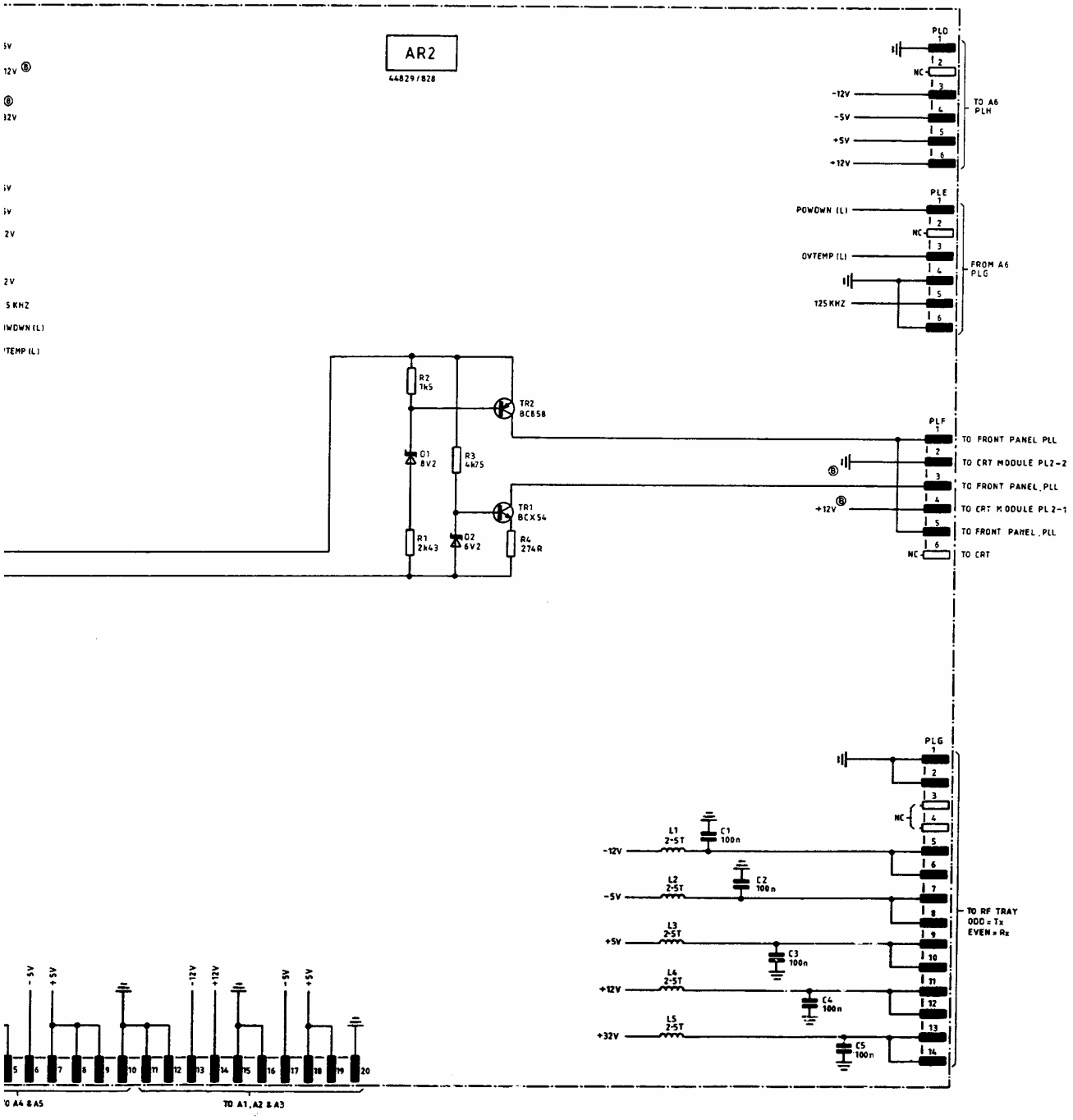
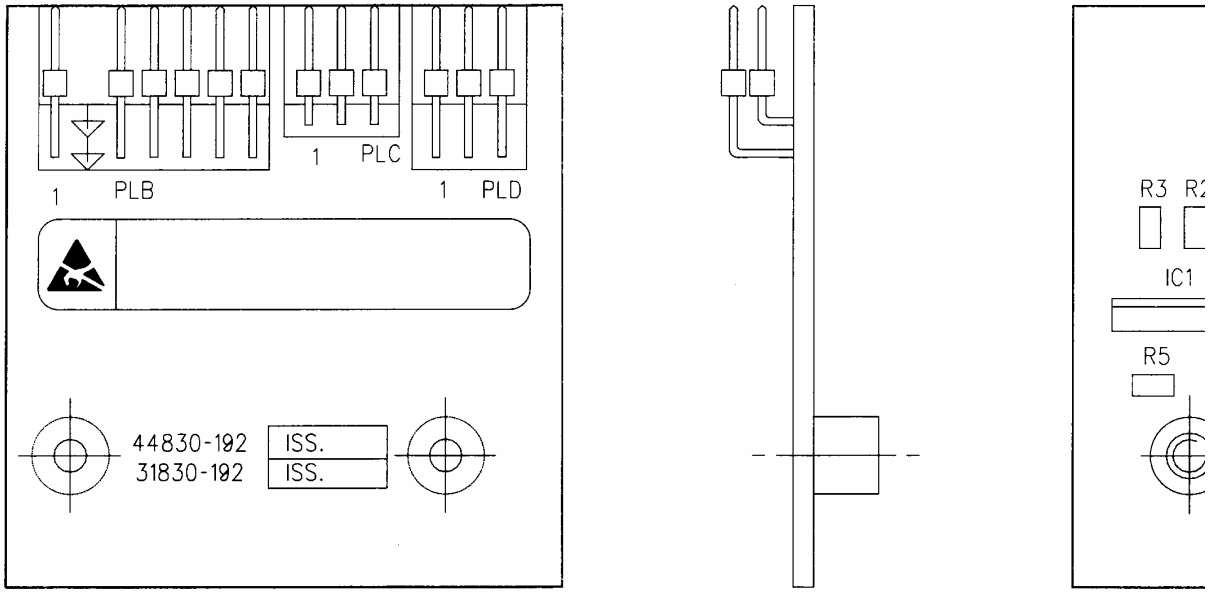



*Fig. 7-16 AR2 PSU distribution - circuit*




COMPONENT SIDE

**PSU distribution AR2**

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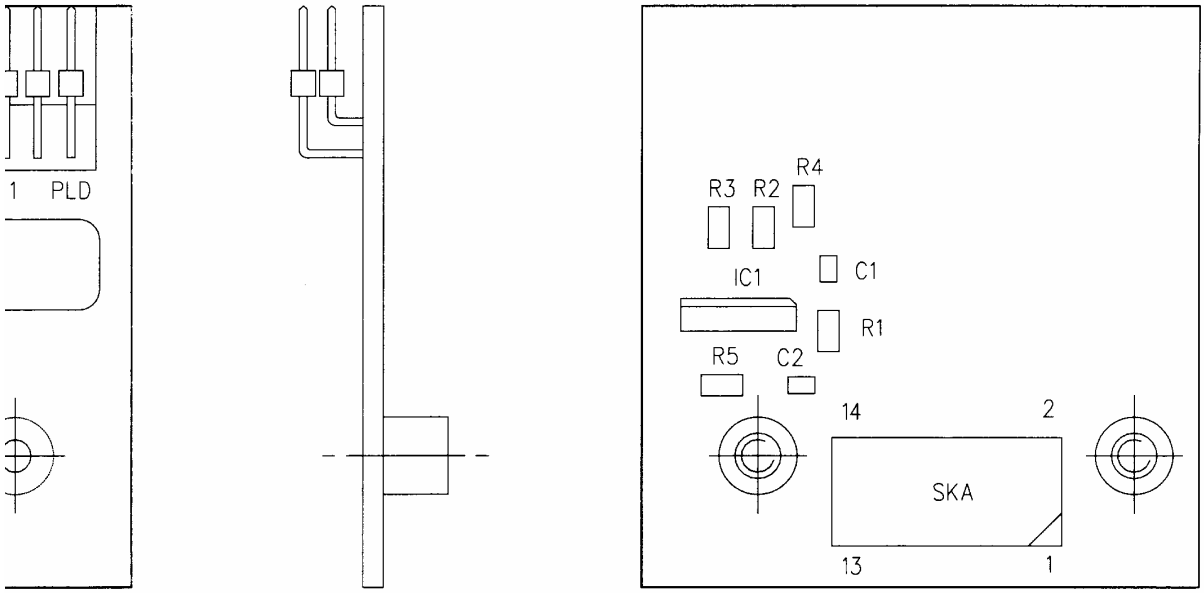
*Fi*

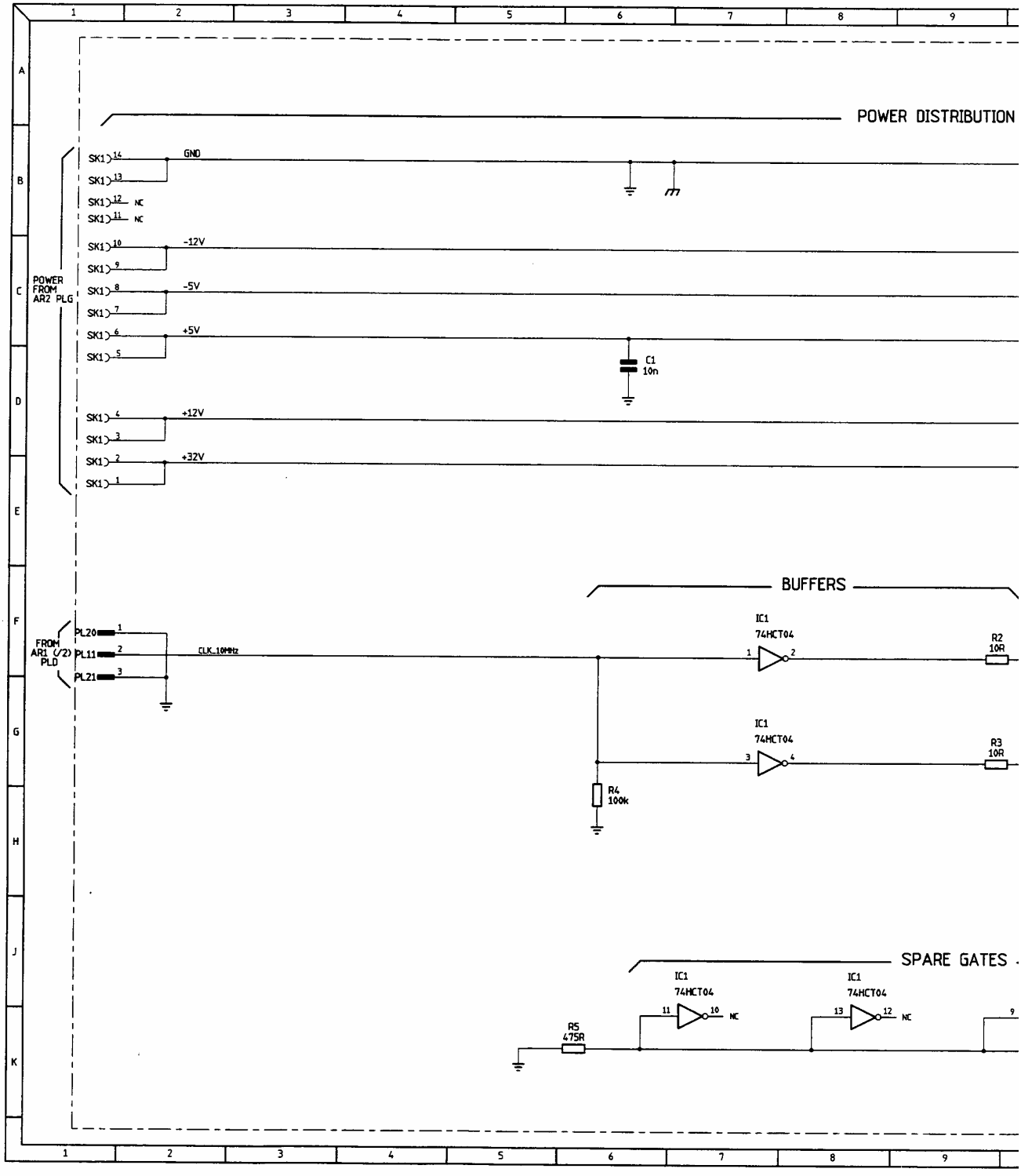
## Component layout **AR4**




SOLDER SIDE

**AR2** Drg. No. 44830/192 Sheet 1 of 1 Issue 2

*Fig. 7-17 AR4 10 MHz oscillator buffer - component layout*

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## Circuit diagram AR4

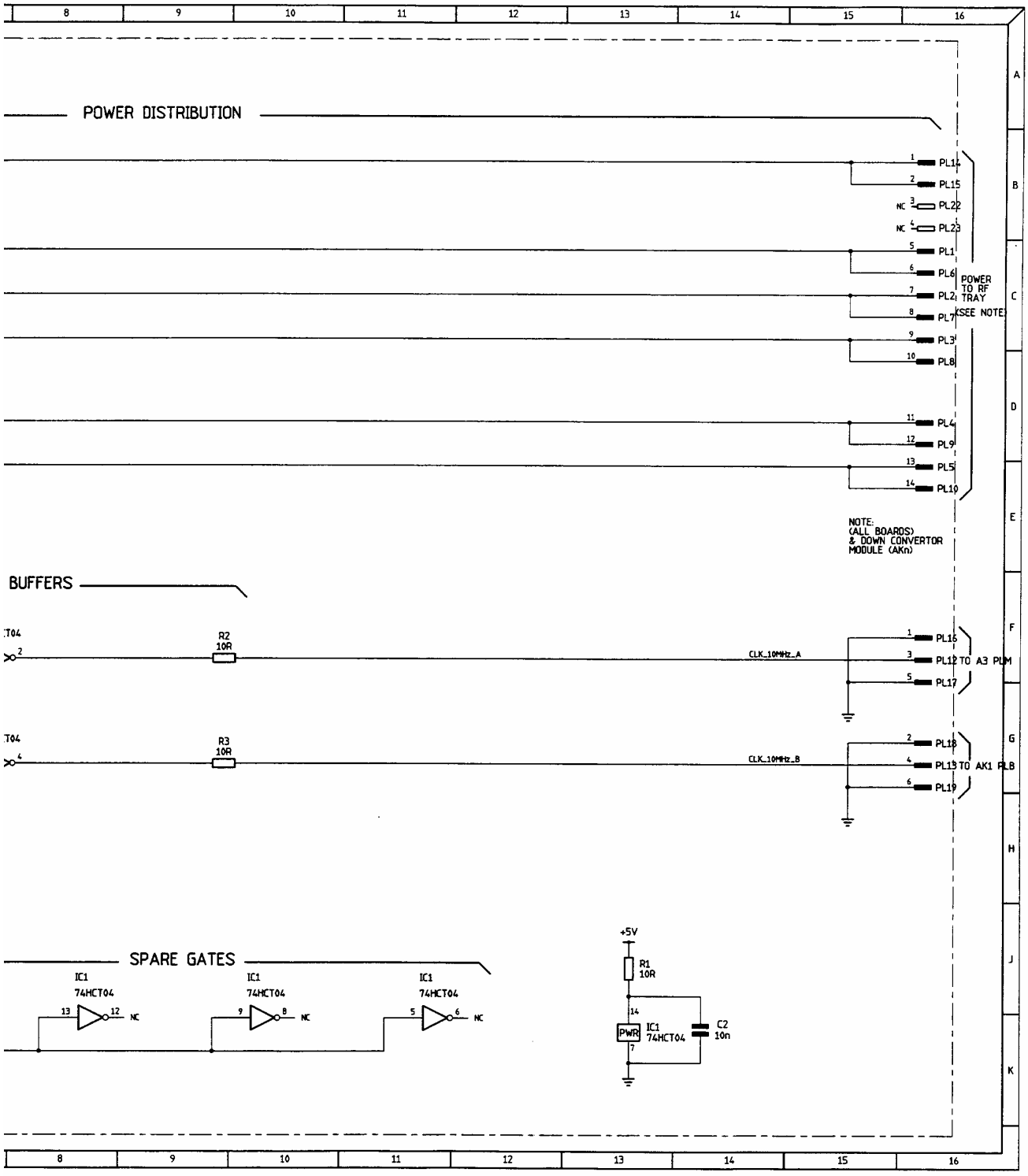
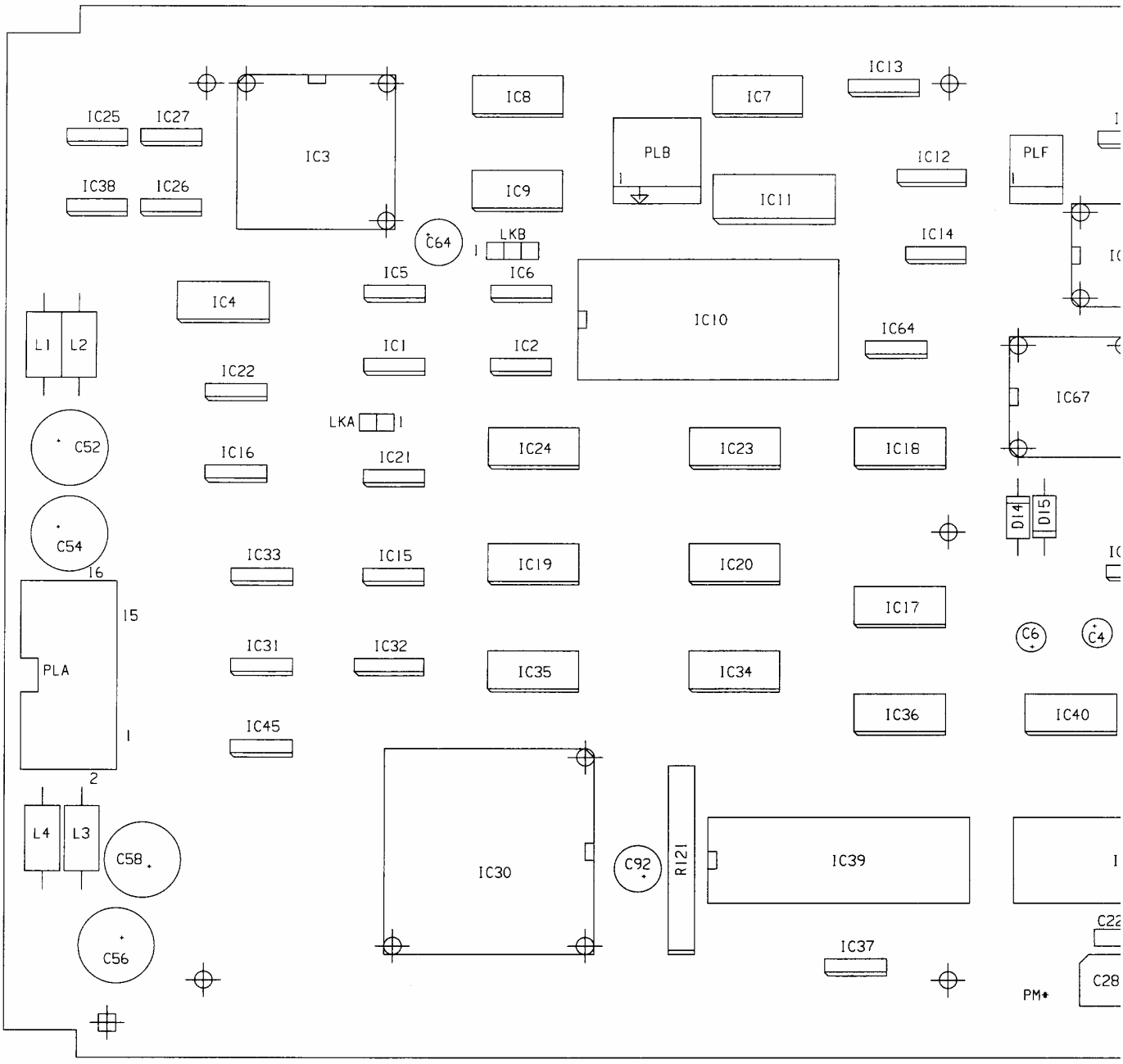



*Fig. 7-18 AR4 10 MHz oscillator buffer - circuit*




**10 MHz oscillator buffer AR4**

Drg. No. 44829/831 She

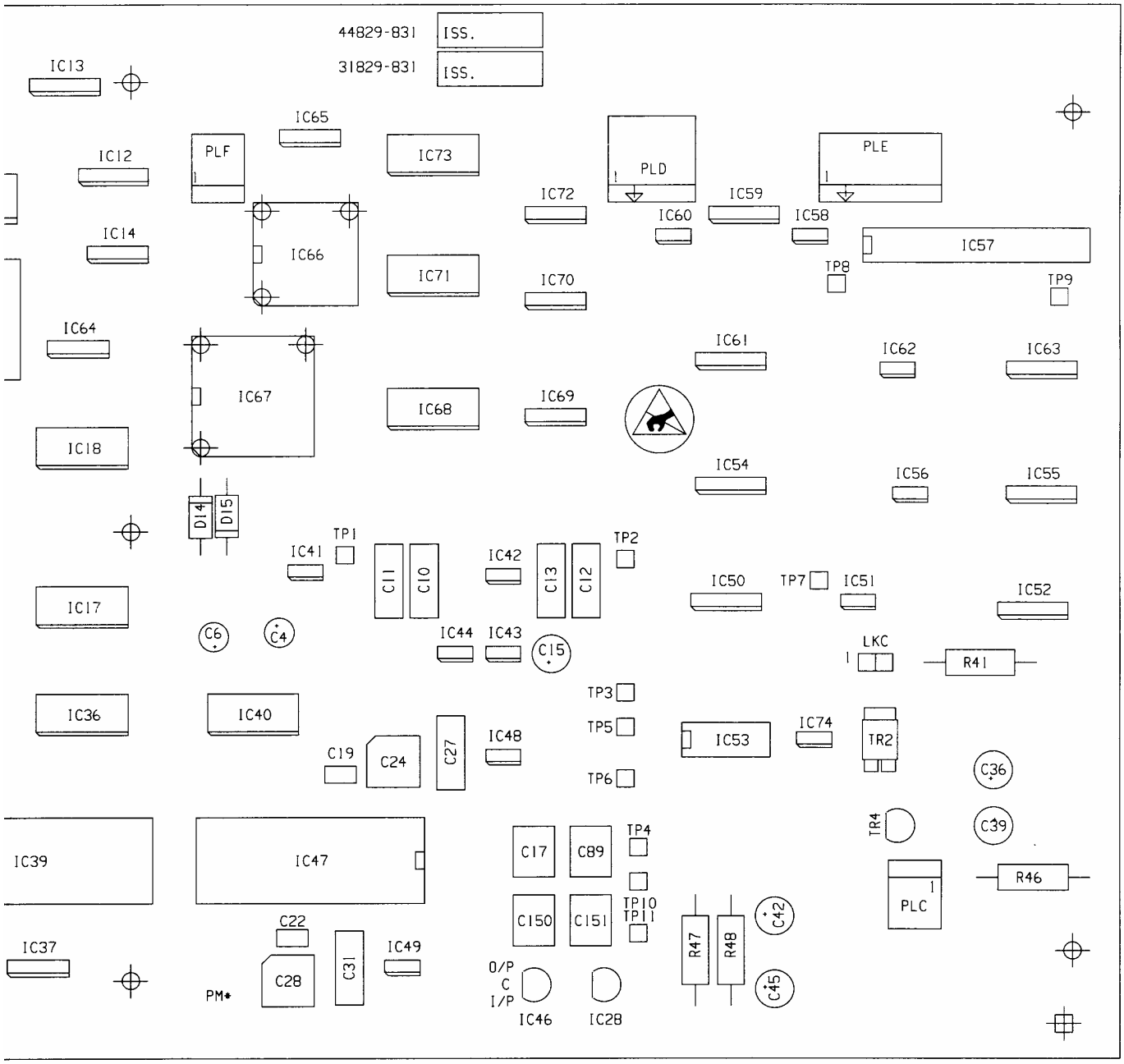
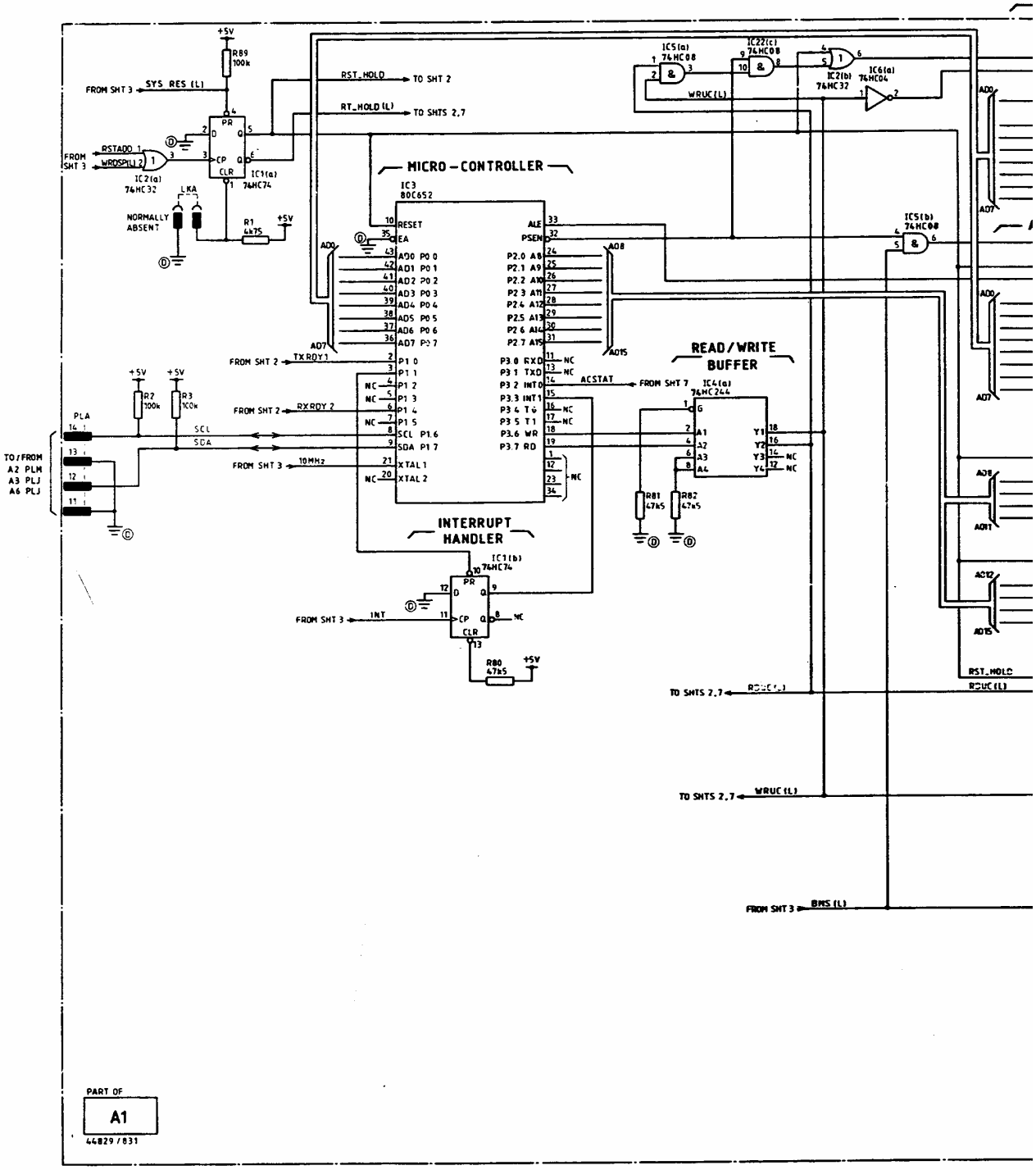





*Fig. 7-19 A1 Audio generator - component layout, component side*

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# Circuit diagrams A1

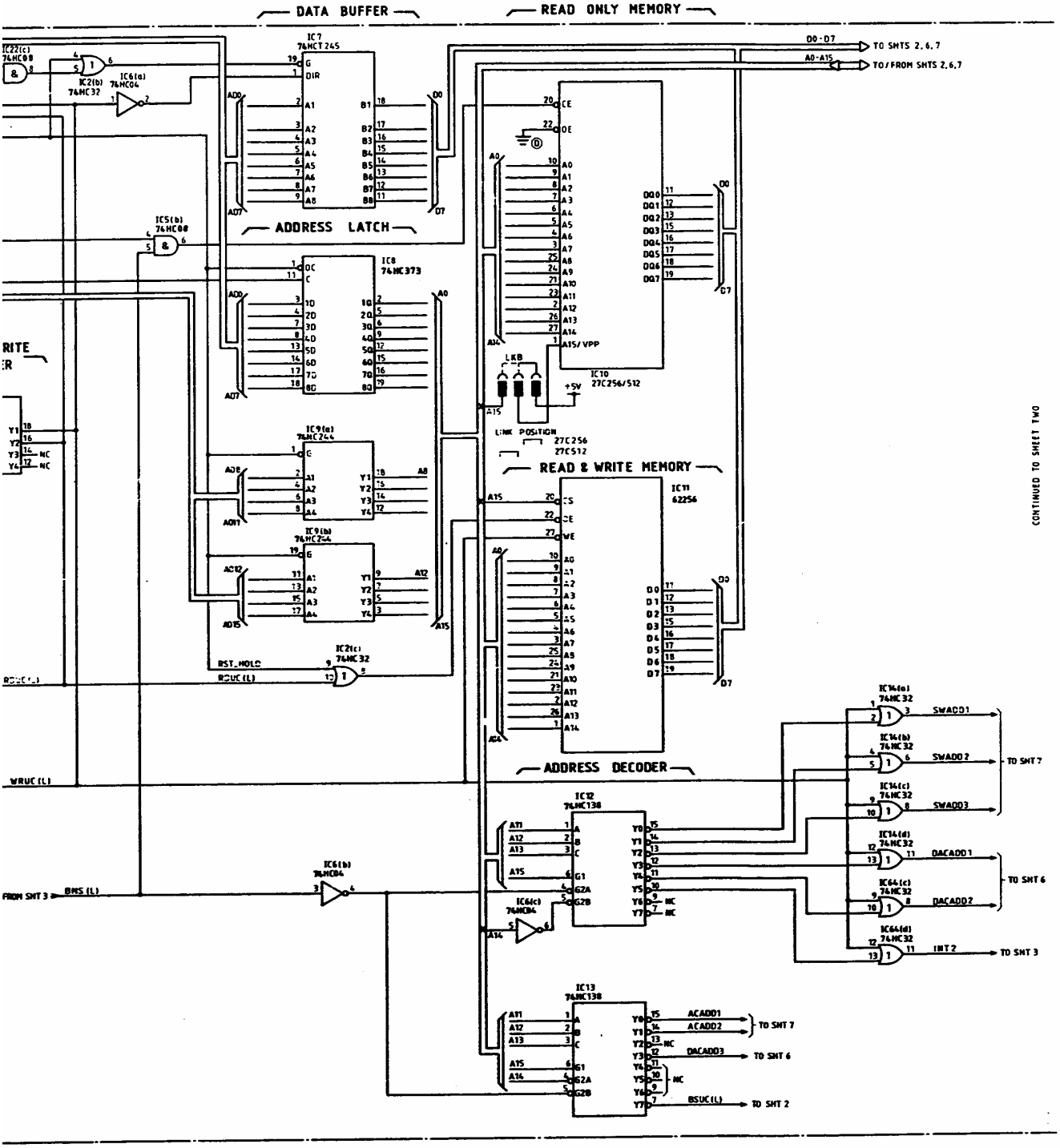
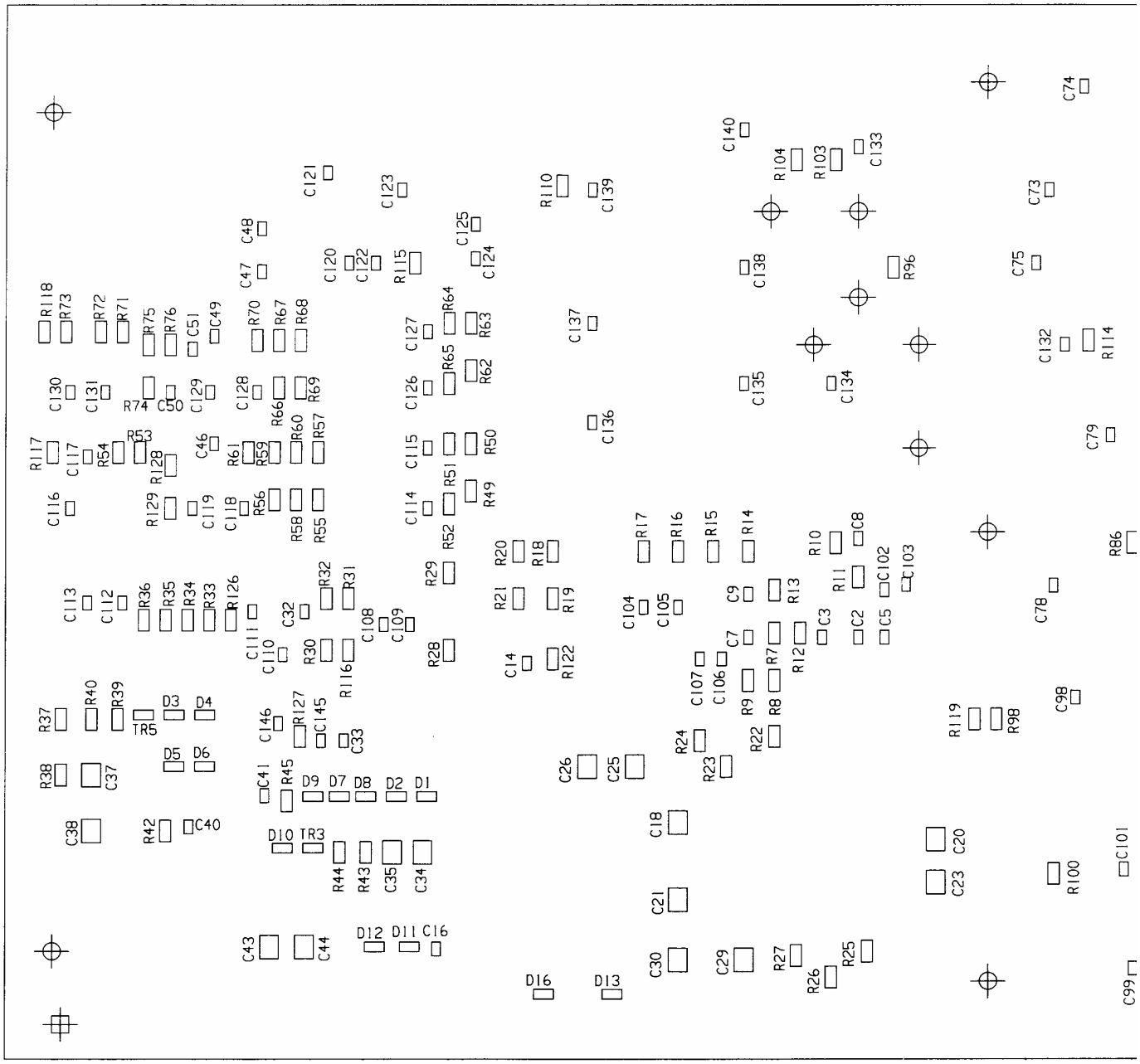


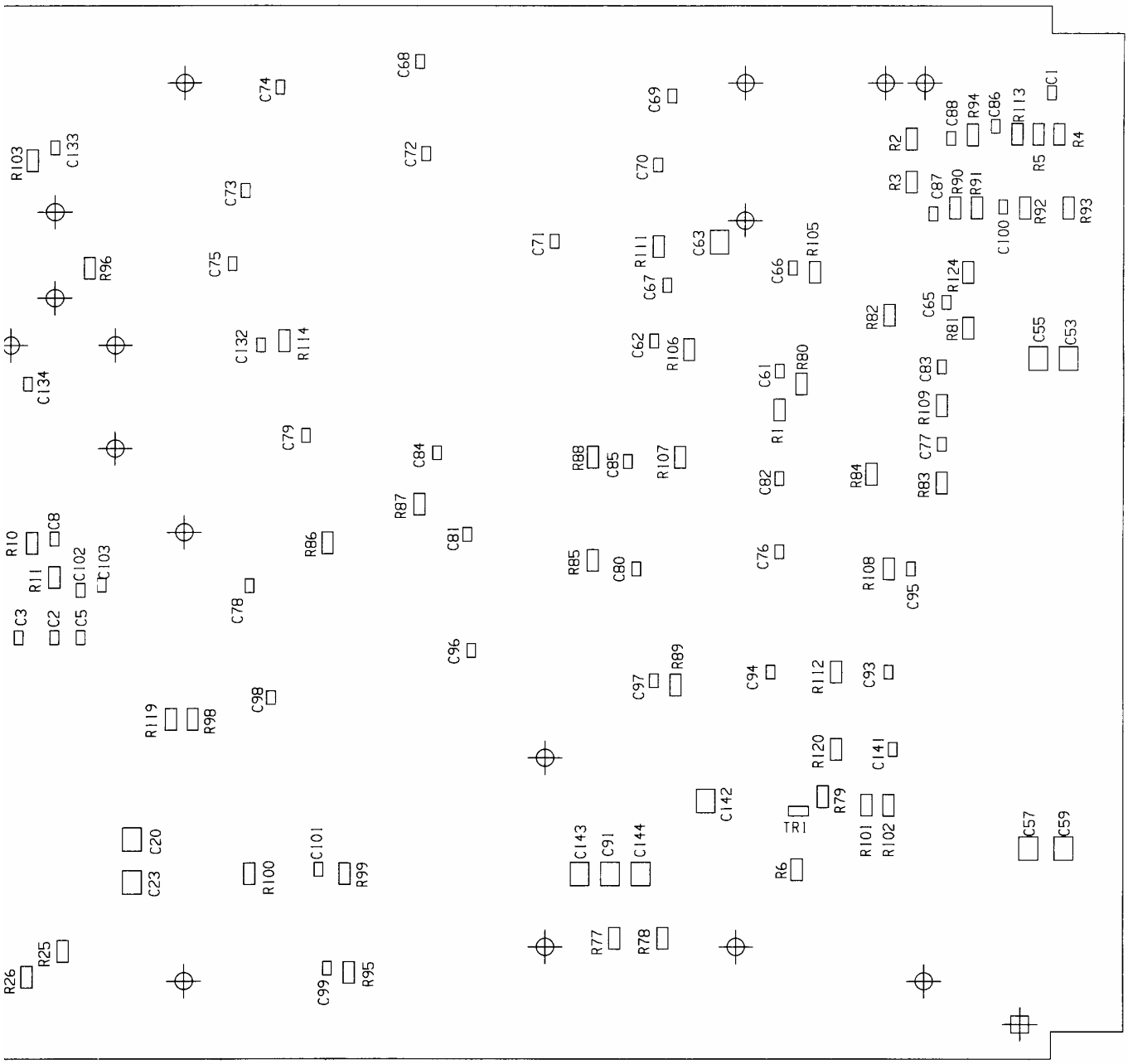

*Fig. 7-20 A1 Microprocessor memory and addressing - circuit*



**Microprocessor memory and addressing A1**

Drg. No. 44829/831 Sheet 2

# Component layout A1




A1

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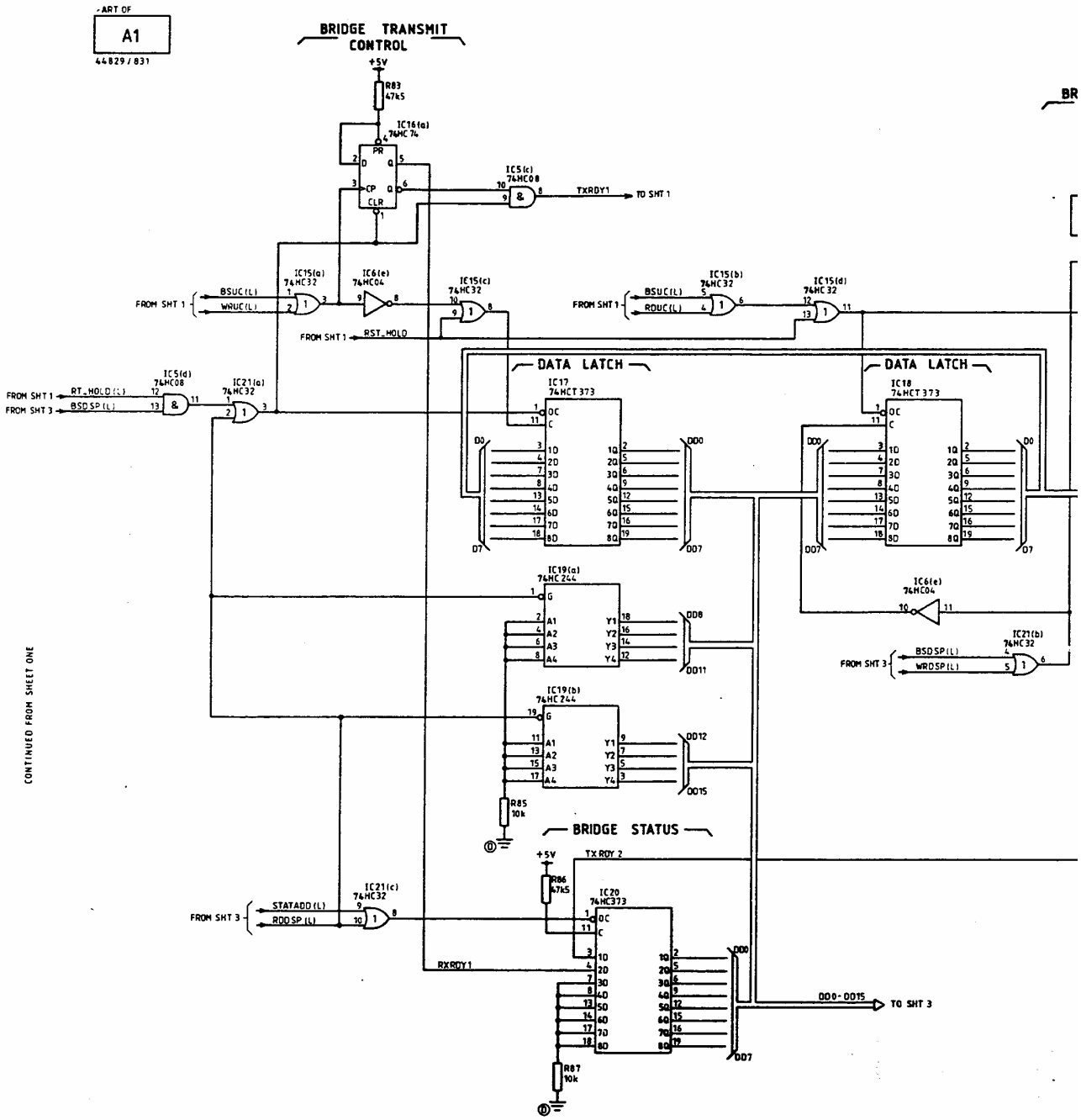
*Fig. 7-21 A1 Audio generator - component layout, solder side*


PART OF
A1
44829/831
BRIDGE TRANSMIT CONTROL
+5V
R83 47k5
IC16(a) 74HC74
PR
D
CP
CLR
Q
IC5(c) 74HC08
TXRDY1
TO SHT 1
IC15(a) 74HC32
IC6(e) 74HC04
IC15(c) 74HC32
FROM SHT 1
BSUC(L)
WRUC(L)
RST_HOLD
IC15(b) 74HC32
IC15(d) 74HC32
RDUC(L)
DATA LATCH
IC17 74HCT373
IC18 74HCT373
IC5(d) 74HC08
IC21(a) 74HC32
FROM SHT 3
RT_HOLD(L)
BSDSP(L)
IC19(a) 74HC244
IC19(b) 74HC244
IC6(e) 74HC04
IC21(b) 74HC32
WRDSP(L)
R85 10k
BRIDGE STATUS
TX RDY 2
R86 47k5
IC21(c) 74HC32
STATADD(L)
RDDSP(L)
IC20 74HC373
RXRDY1
D00-D015
TO SHT 3
R87 10k
CONTINUED FROM SHEET ONE

# Circuit diagrams A1

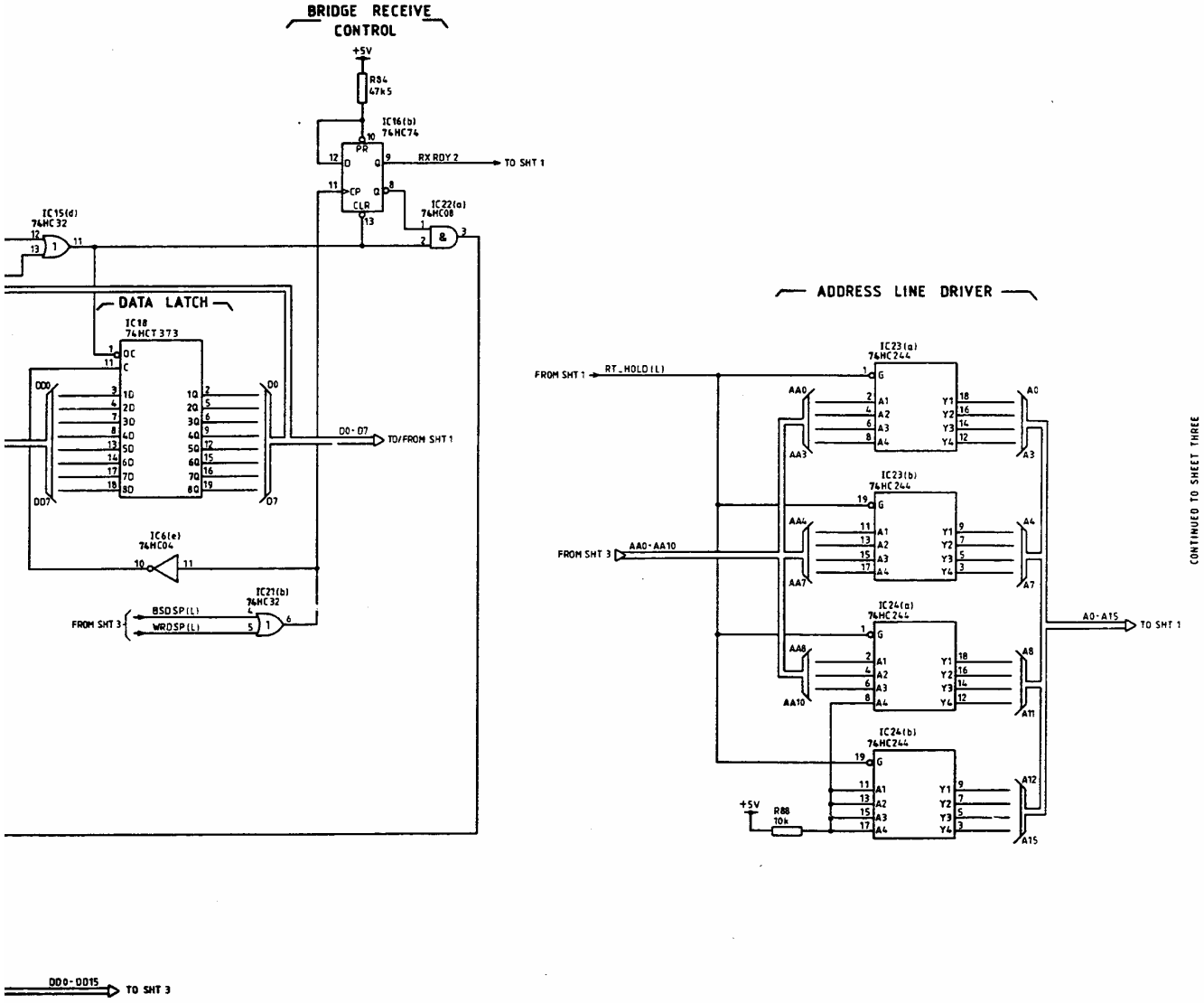
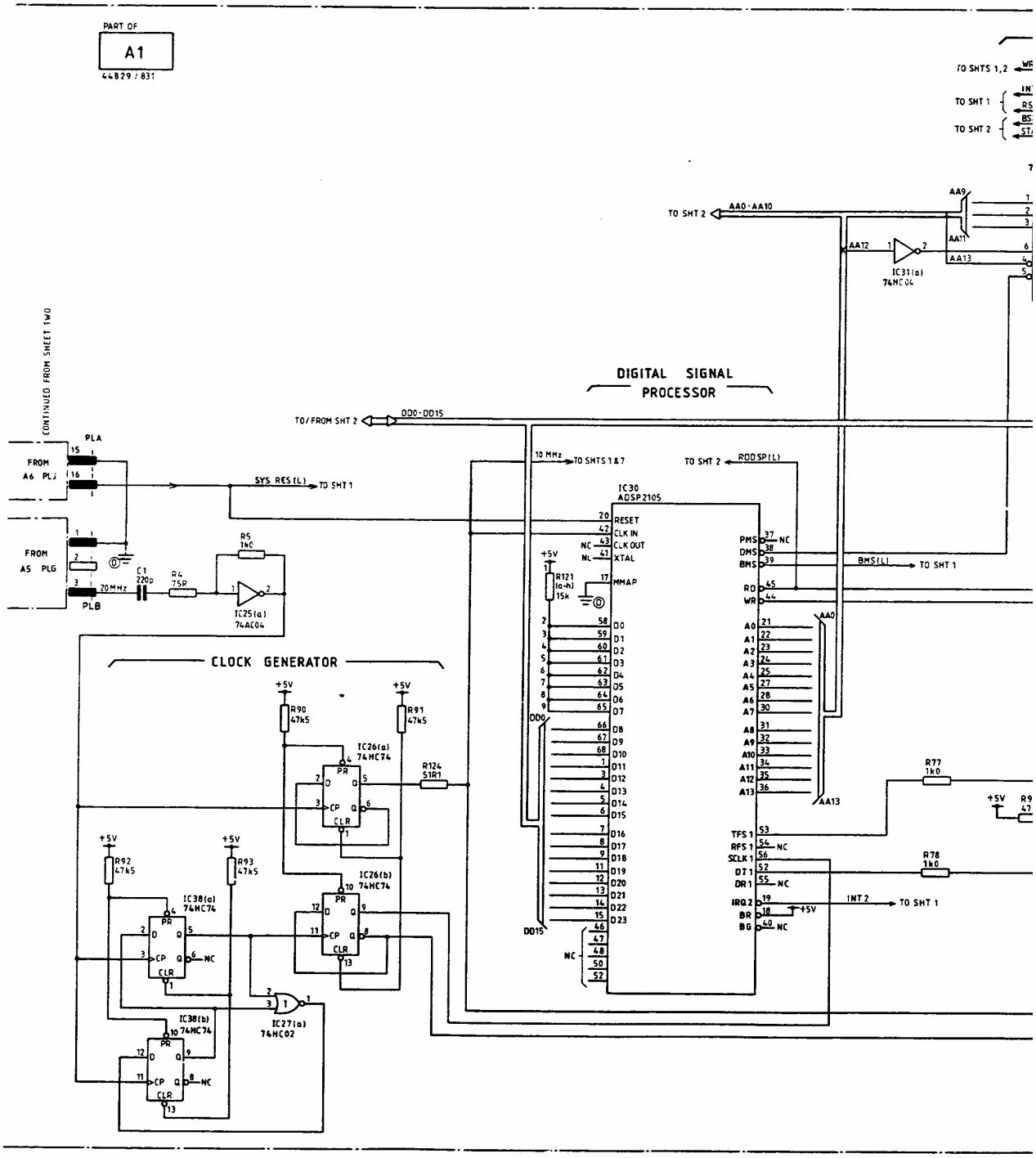



*Fig. 7-22 A1 Bridge and boot addressing - circuit*

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# Circuit diagrams A1

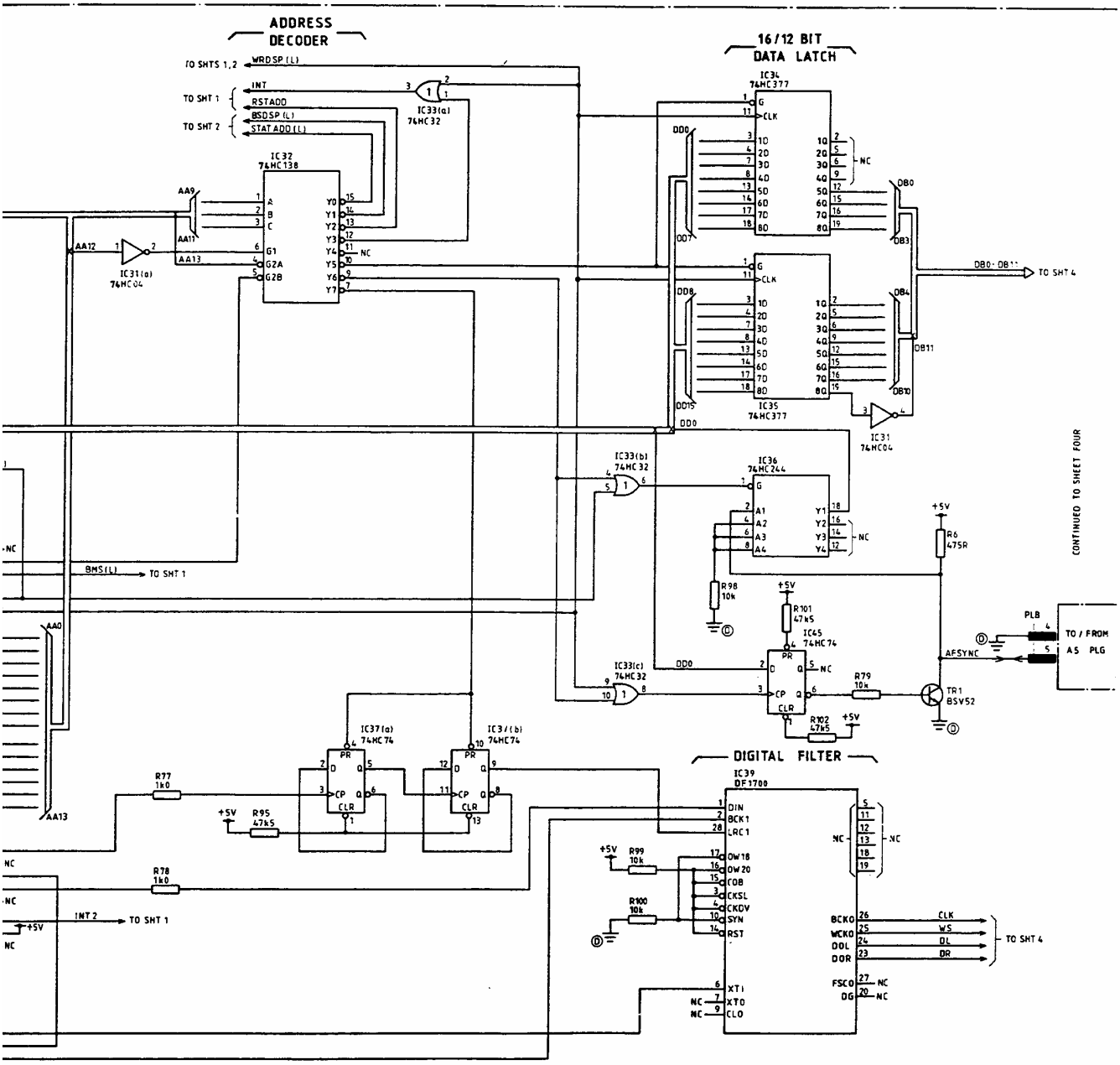
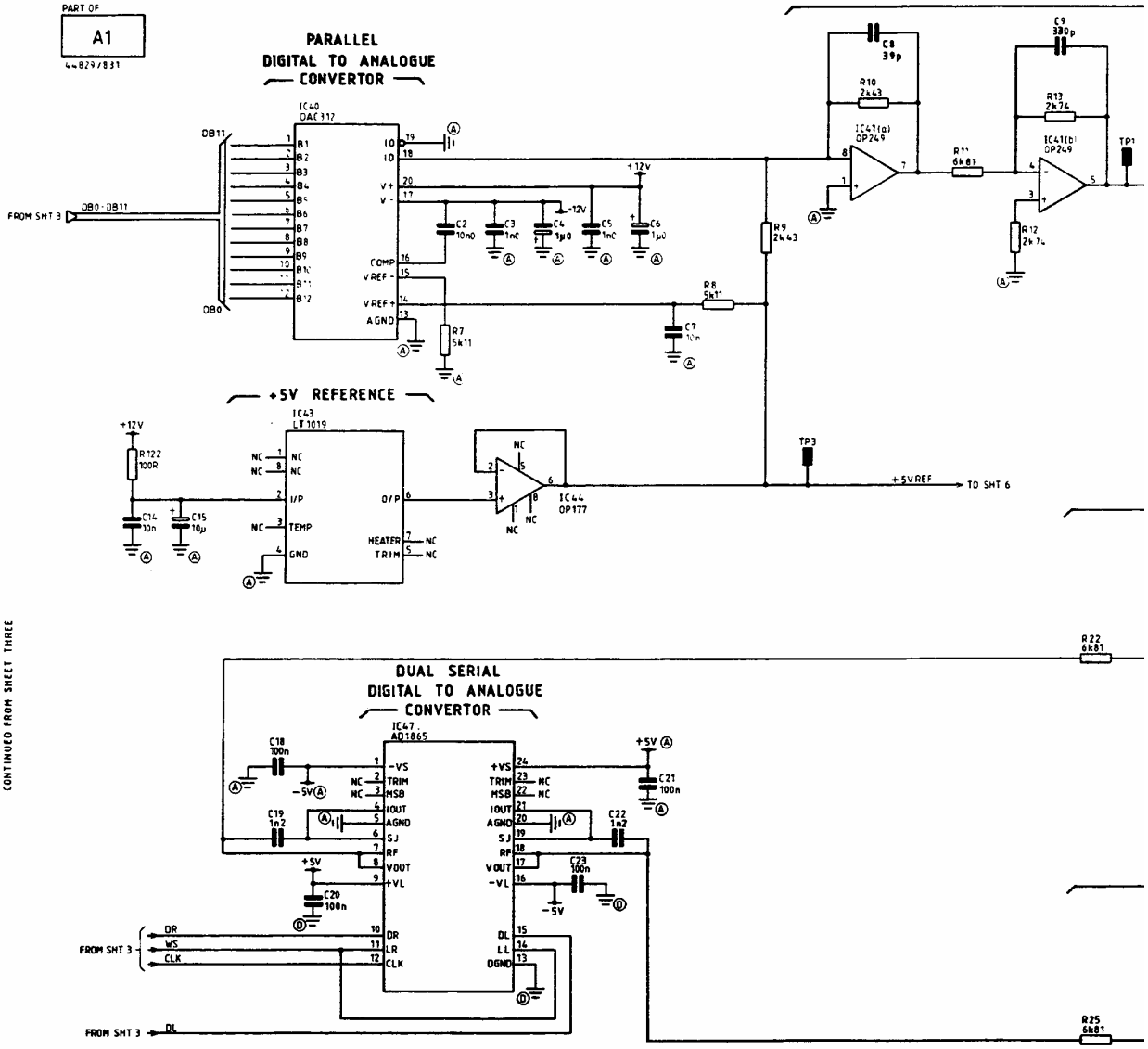



*Fig. 7-23 A1 DSP, dividers, and oversampling - circuit*

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# Circuit diagrams A1

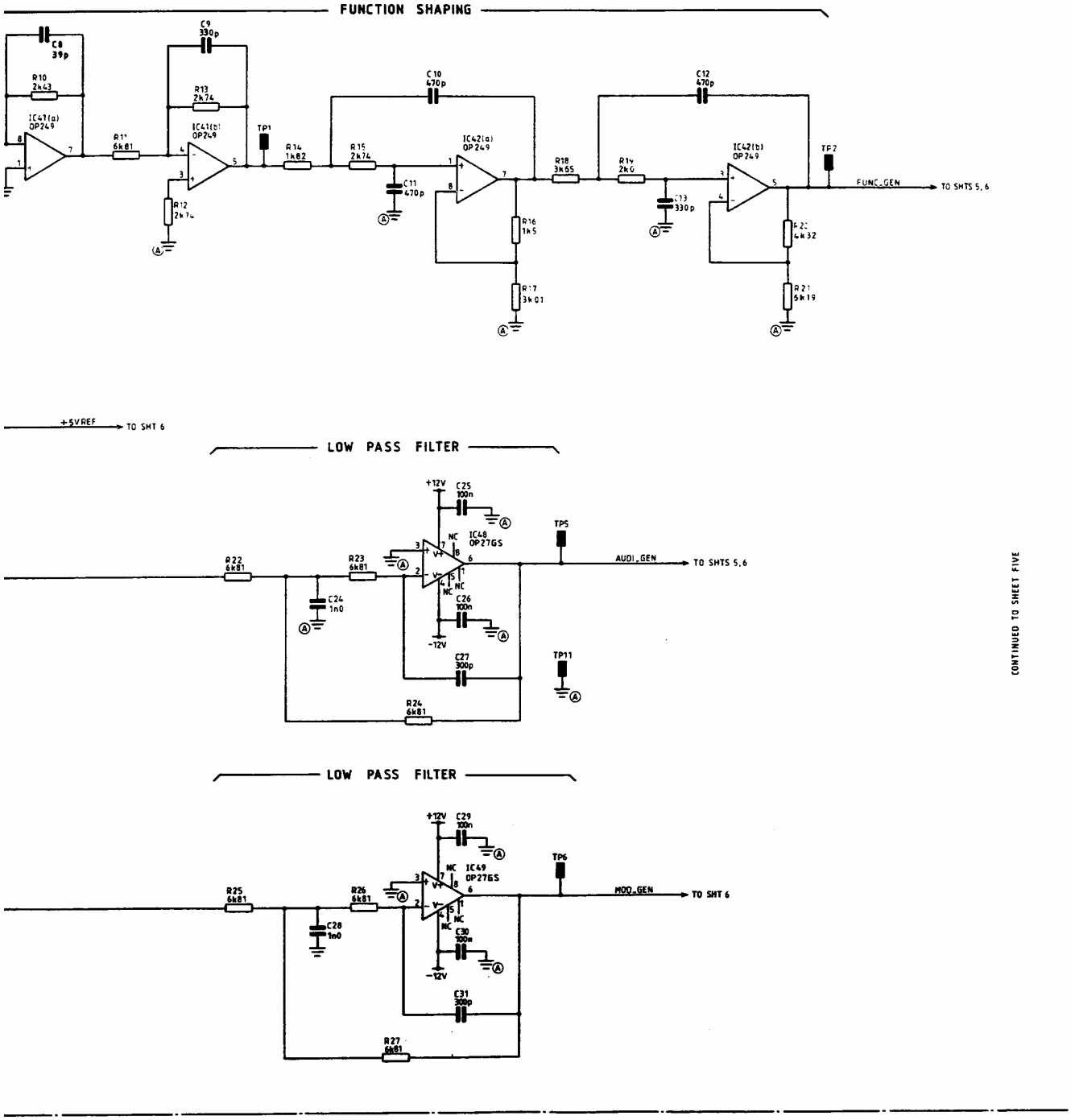
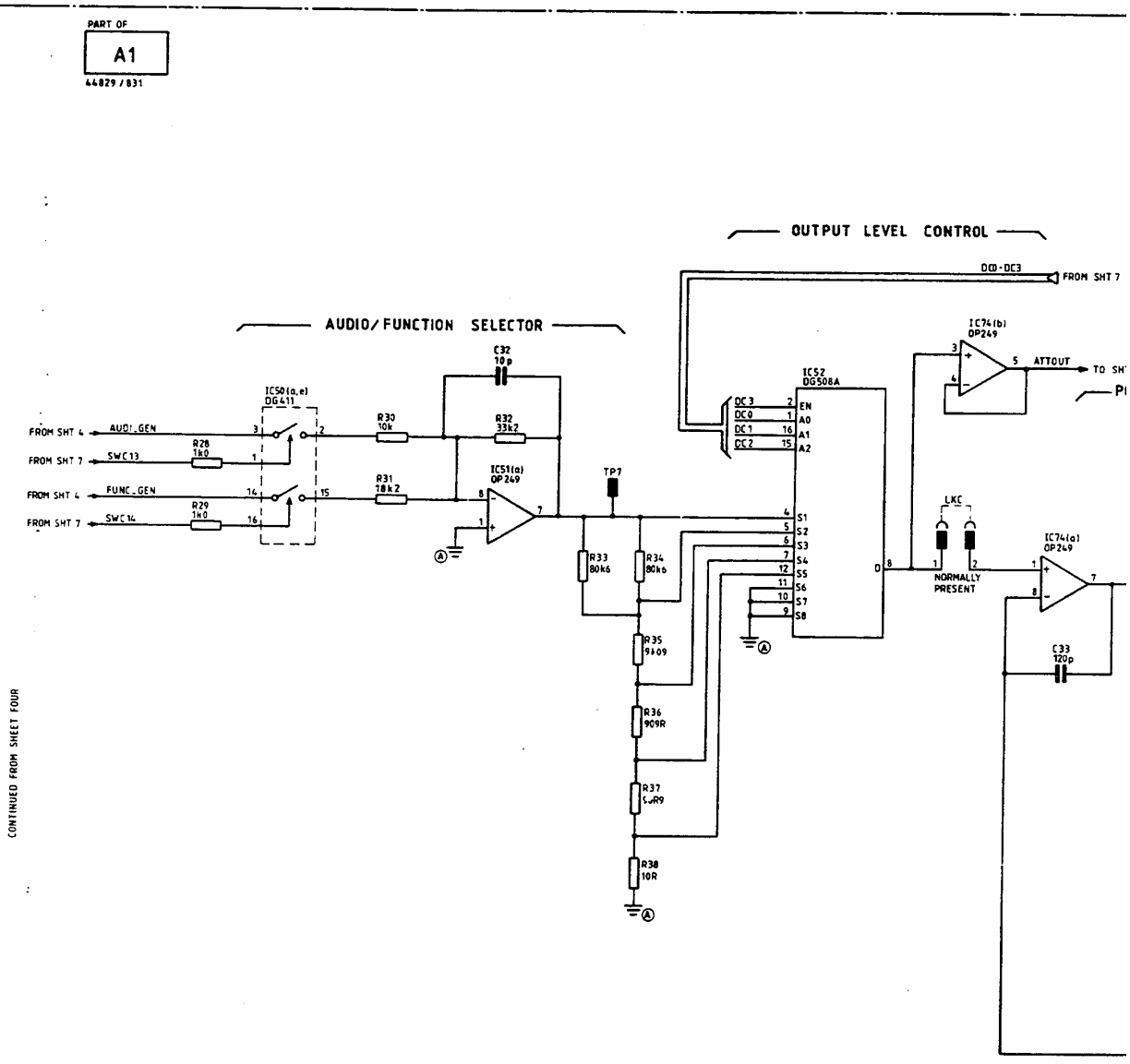



*Fig. 7-24 A1 DACs and analogue filters - circuit*


PART OF
A1
44829 / 831
OUTPUT LEVEL CONTROL
AUDIO/FUNCTION SELECTOR
D0-D3
FROM SHT 7
IC74(b)
OP249
ATTOUT
TO SH
IC52
DG508A
IC50(a,e)
DG411
C32
10p
R30
10k
R32
33k2
R31
18k2
IC51(a)
OP249
TP7
FROM SHT 4
AUDI.GEN
FROM SHT 7
SWC13
R28
1k0
FROM SHT 4
FUNC.GEN
FROM SHT 7
SWC14
R29
1k0
R33
80k6
R34
80k6
R35
9k09
R36
909R
R37
5.R9
R38
10R
LKC
NORMALLY
PRESENT
IC74(a)
OP249
C33
120p
CONTINUED FROM SHEET FOUR

# Circuit diagrams A1

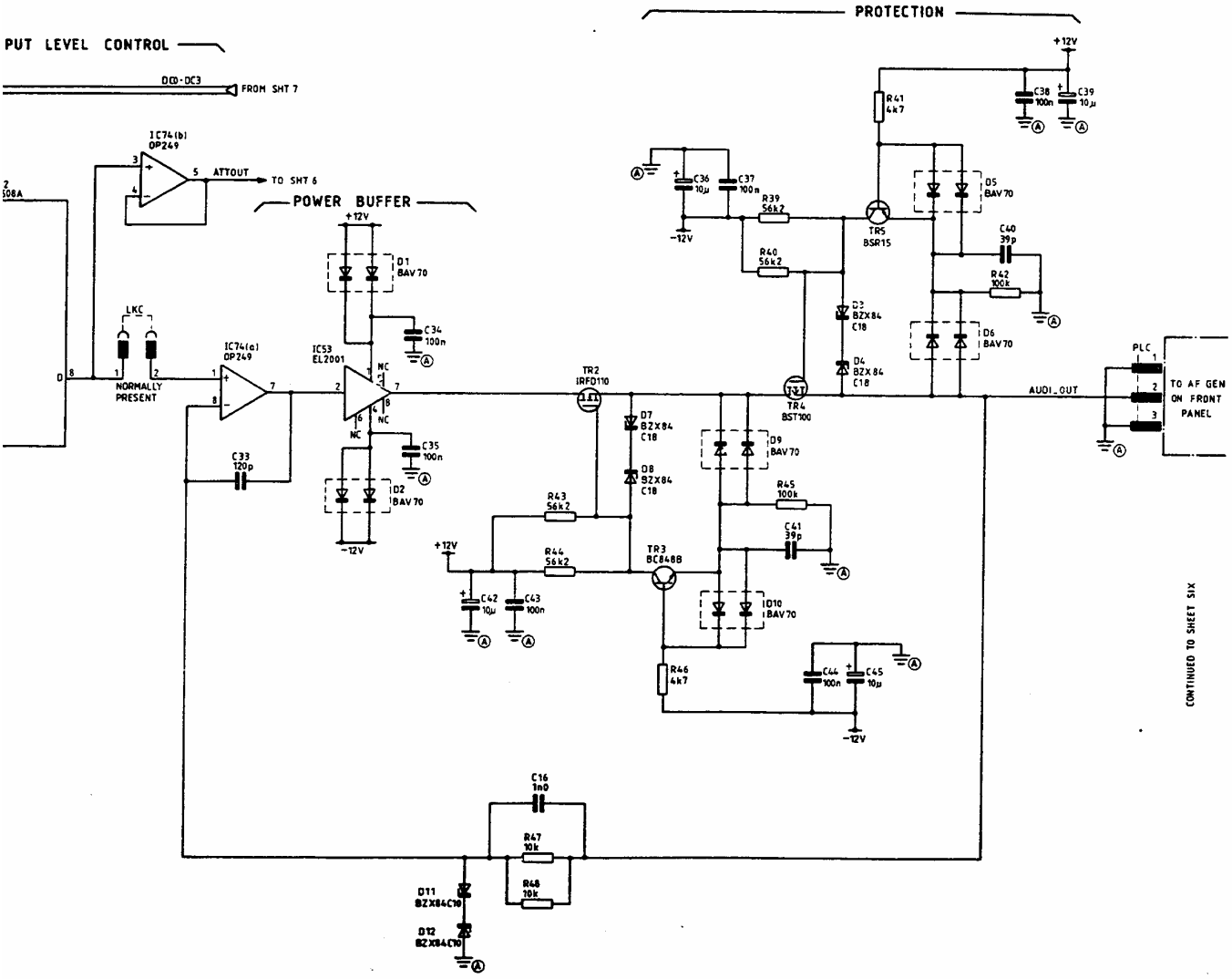
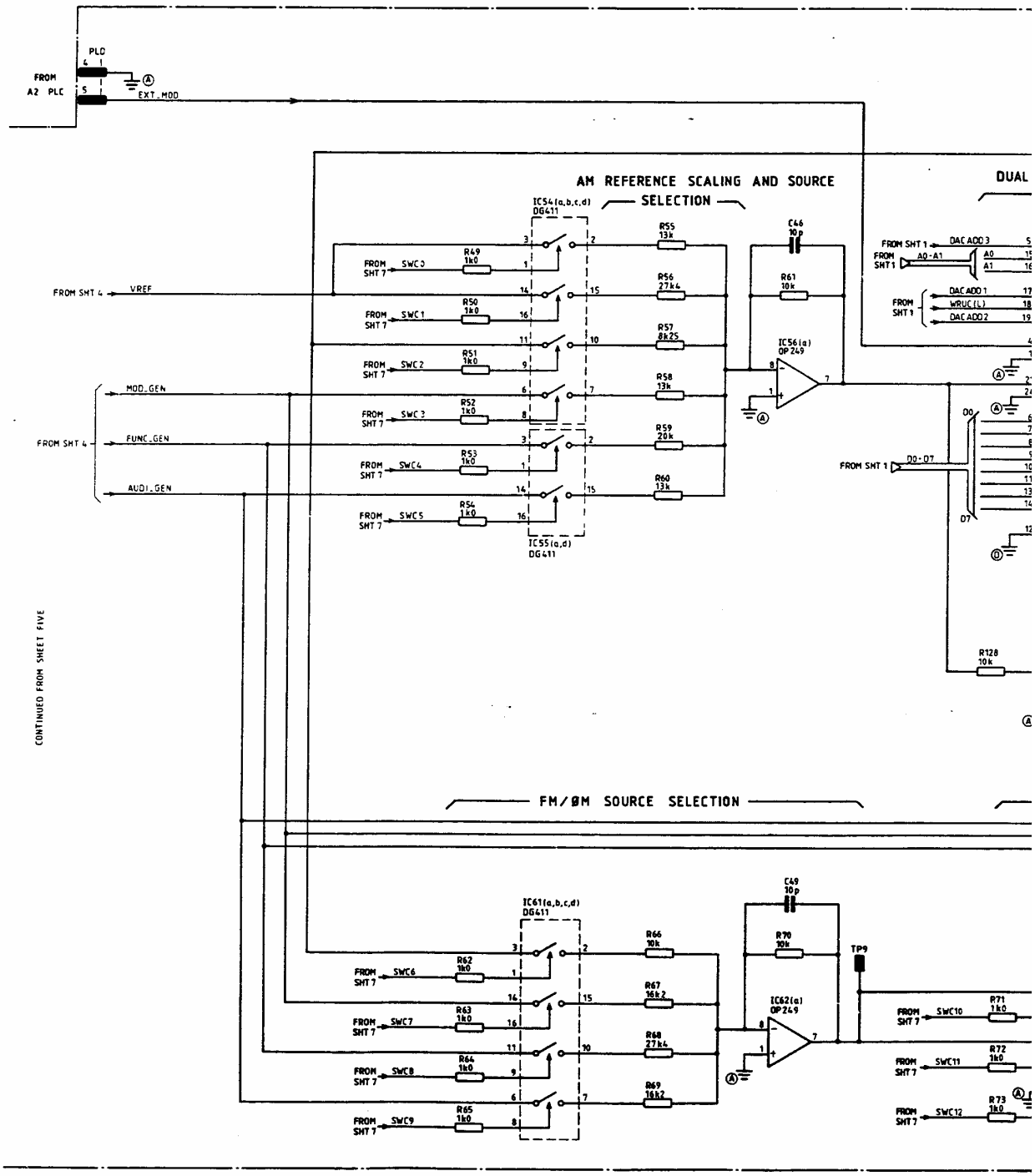



*Fig. 7-25 A1 Audio output path - circuit*

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# Circuit diagrams A1

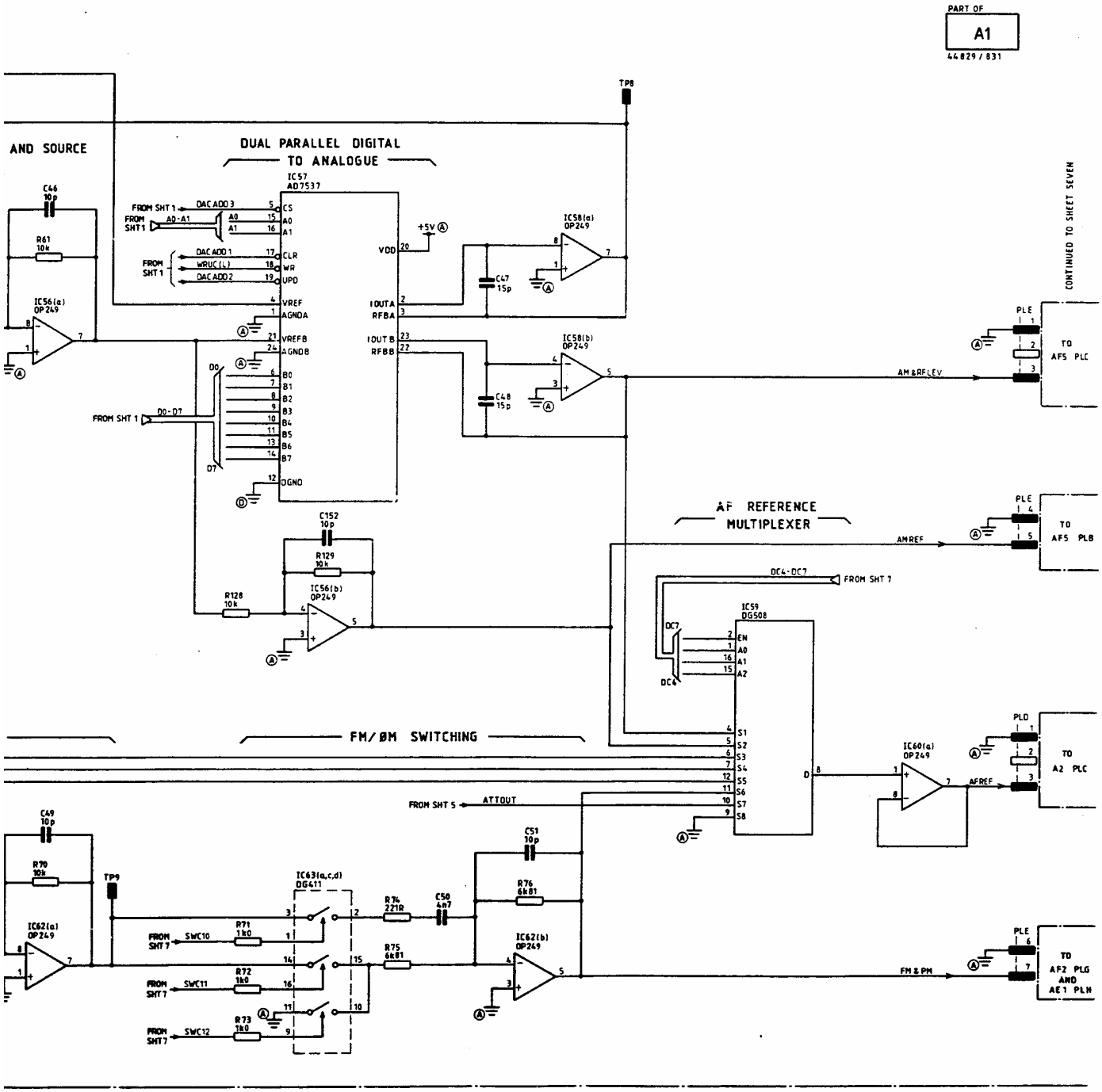
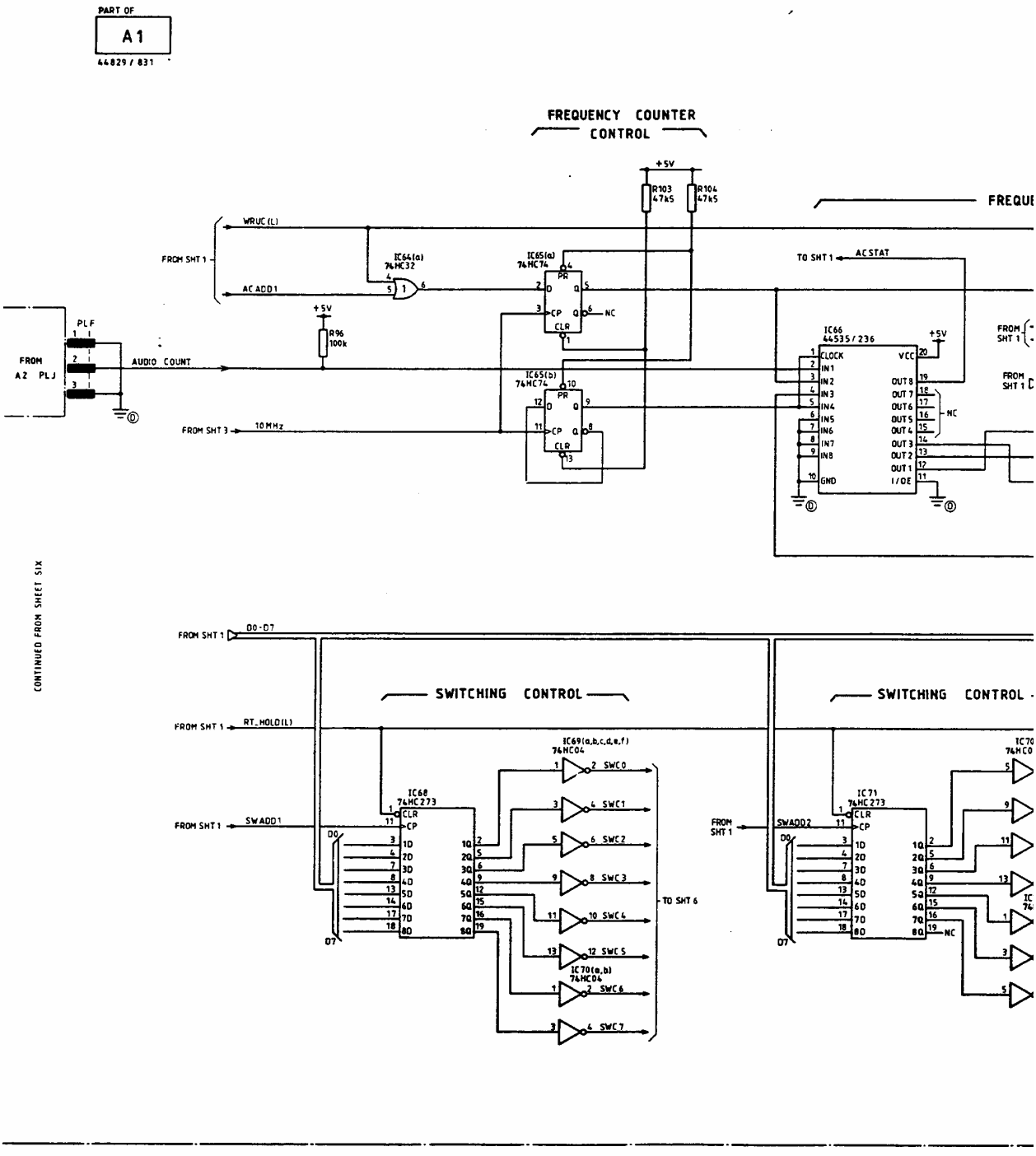



*Fig. 7-26 A1 Modulation and calibration paths - circuit*

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# Circuit diagrams A1

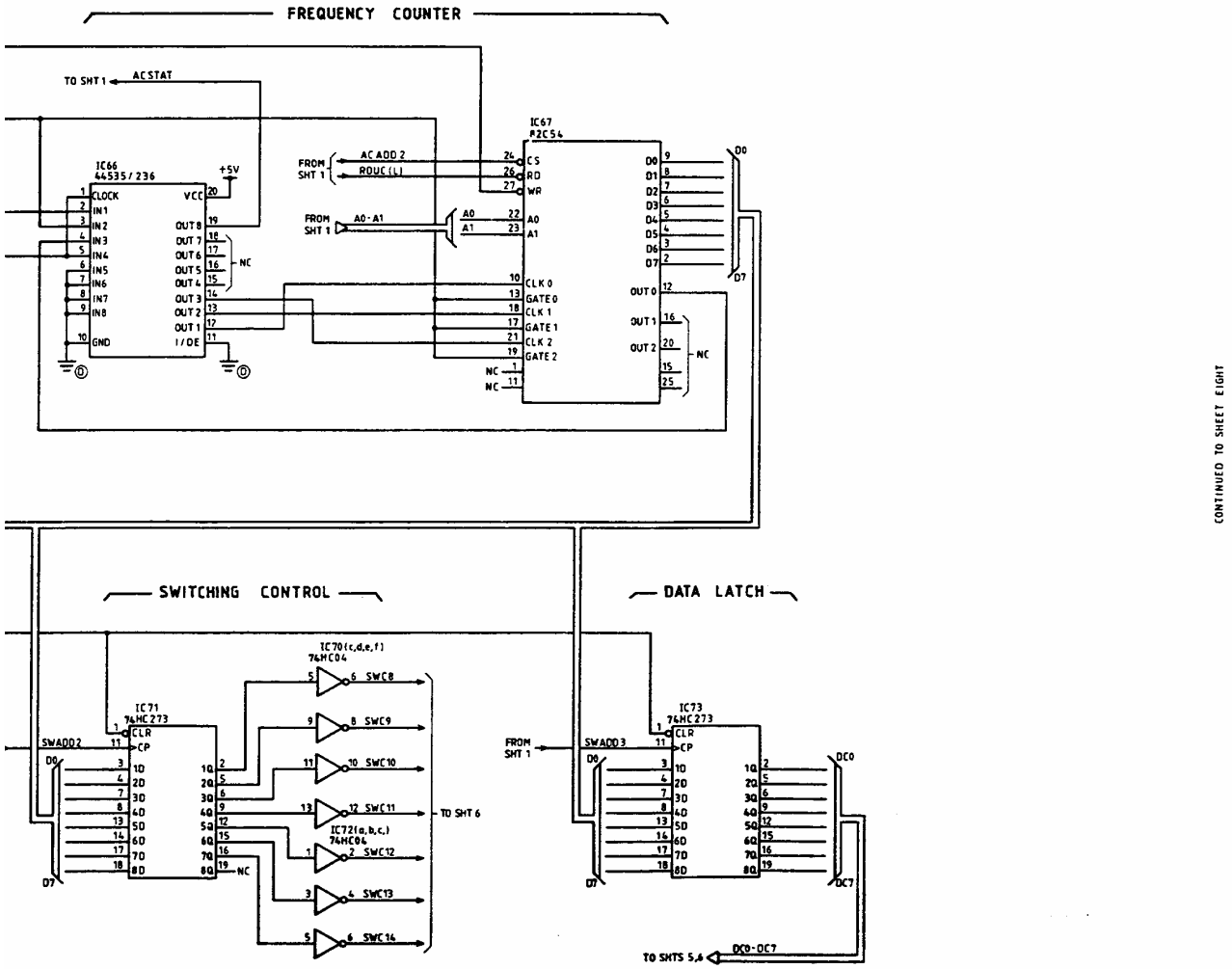
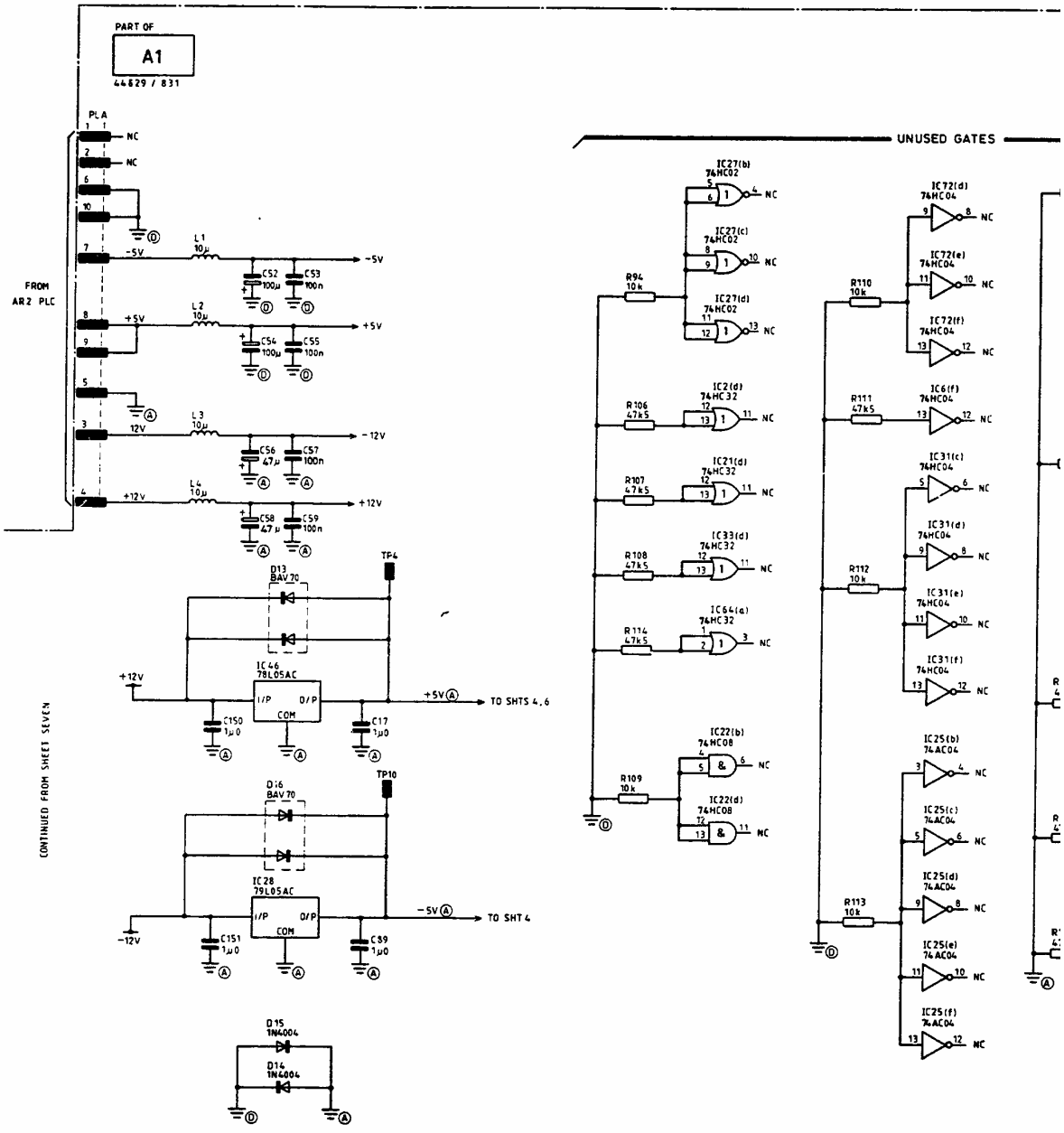



*Fig. 7-27 A1 Audio counter and switch control - circuit*

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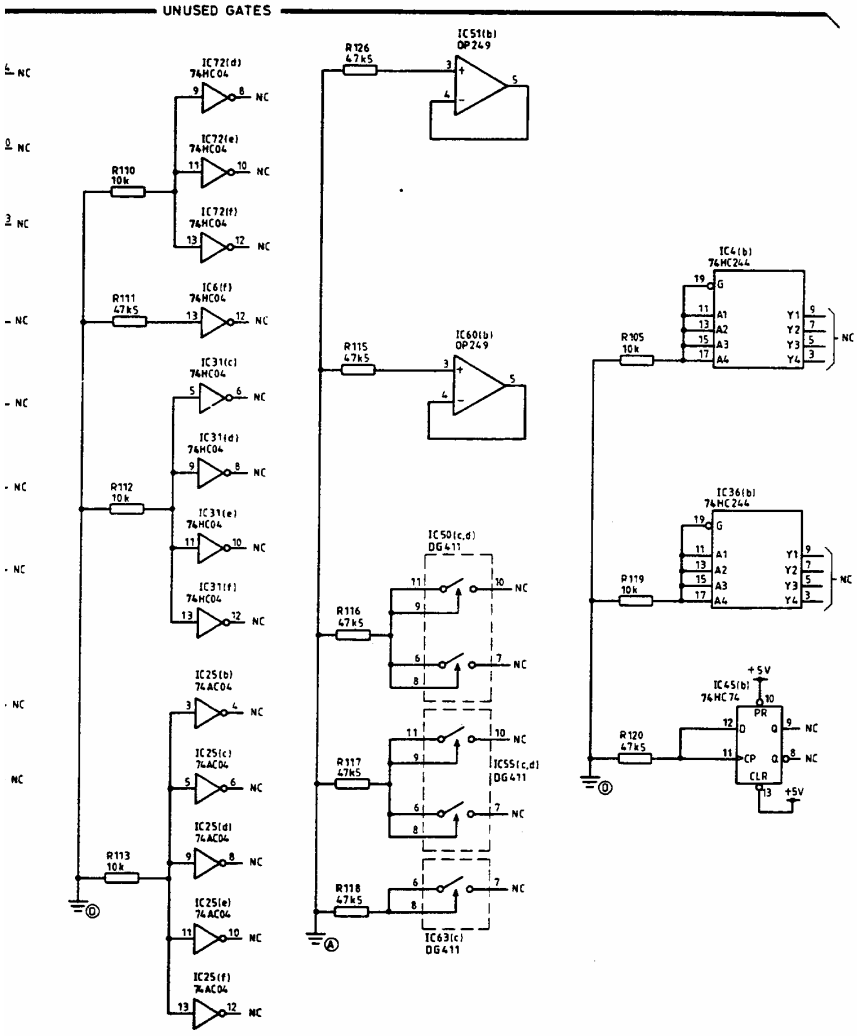
# Circuit diagrams A1

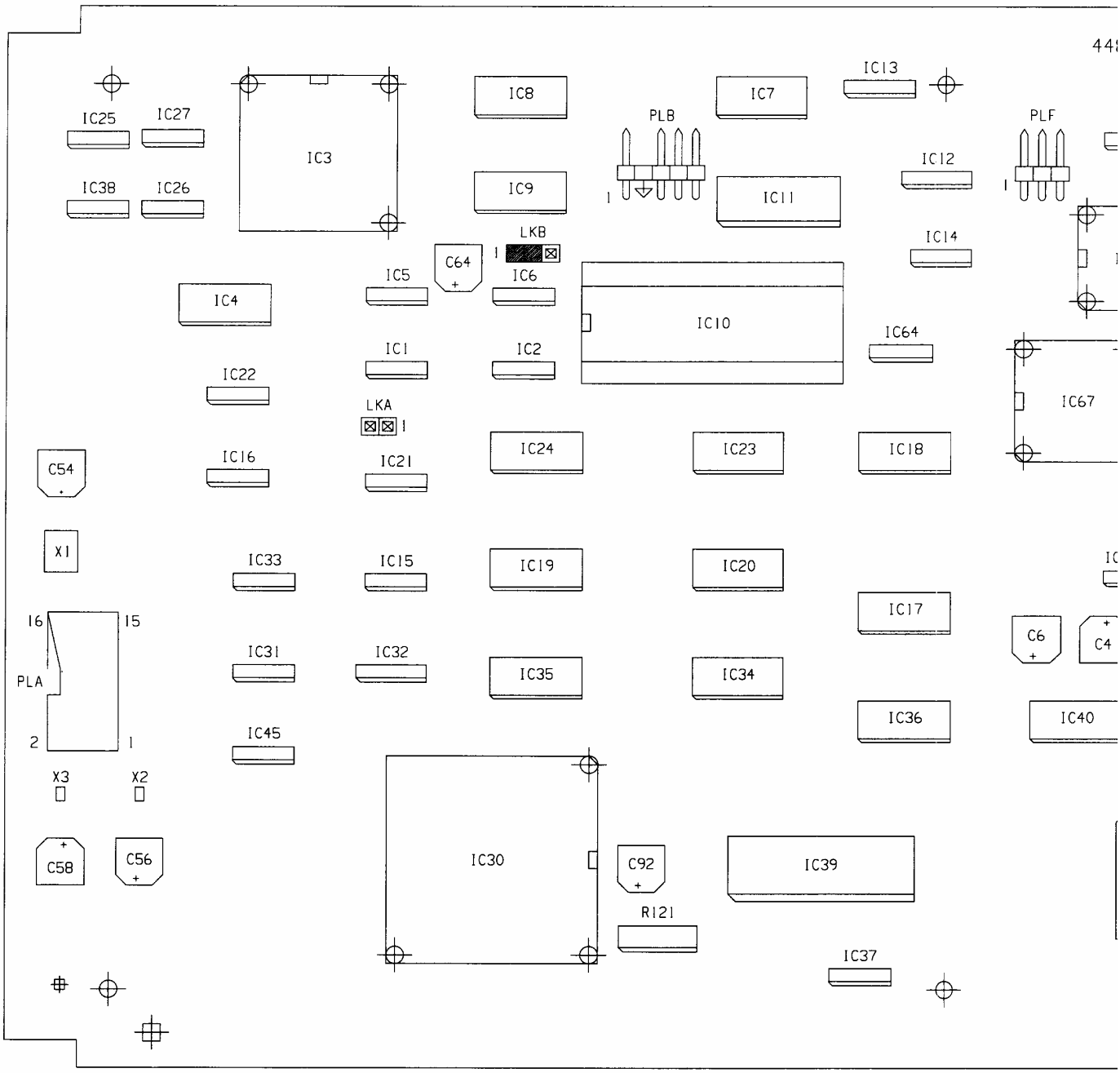



SUPPLY LINE TABLE

| IC | +12V | +5V | +5VA | GND A | GND D | -5V | -12V | DEC CAP |
|---|---|---|---|---|---|---|---|---|
| 1 | | 14 | | | 7 | | | C61 10n |
| 2 | | 14 | | | 7 | | | C62 10n |
| 3 | | 44 | | | 22 | | | C63 47n |
| | | | | | | | | C64 100µ |
| 4 | | 20 | | | 10 | | | C65 10n |
| 5 | | 14 | | | 7 | | | C66 10n |
| 6 | | 14 | | | 7 | | | C67 10n |
| 7 | | 20 | | | 10 | | | C68 10n |
| 8 | | 20 | | | 10 | | | C69 10n |
| 9 | | 20 | | | 10 | | | C70 10n |
| 10 | | 28 | | | 14 | | | C71 10n |
| 11 | | 28 | | | 14 | | | C72 10n |
| 12 | | 16 | | | 8 | | | C73 10n |
| 13 | | 16 | | | 8 | | | C74 10n |
| 14 | | 14 | | | 7 | | | C75 10n |
| 15 | | 14 | | | 7 | | | C76 10n |
| 16 | | 14 | | | 7 | | | C77 10n |
| 17 | | 20 | | | 10 | | | C78 10n |
| 18 | | 20 | | | 10 | | | C79 10n |
| 19 | | 20 | | | 10 | | | C80 10n |
| 20 | | 20 | | | 10 | | | C81 10n |
| 21 | | 14 | | | 7 | | | C82 10n |
| 22 | | 14 | | | 7 | | | C83 10n |
| 23 | | 20 | | | 10 | | | C84 10n |
| 24 | | 20 | | | 10 | | | C85 10n |
| 25 | | 14 | | | 7 | | | C86 10n |
| 26 | | 14 | | | 7 | | | C87 10n |
| 27 | | 14 | | | 7 | | | C88 10n |
| 30 | | 16,26, 57 | | | 2,10 29,49 | | | C91 47n<br>C142 47n<br>C143 47n<br>C144 47n<br>C92 100µ |
| 31 | | 14 | | | 7 | | | C93 10n |
| 32 | | 16 | | | 8 | | | C94 10n |
| 33 | | 14 | | | 7 | | | C95 10n |
| 34 | | 20 | | | 10 | | | C96 10n |
| 35 | | 20 | | | 10 | | | C97 10n |
| 36 | | 20 | | | 10 | | | C98 10n |
| 37 | | 14 | | | 7 | | | C99 10n |
| 38 | | 14 | | | 7 | | | C100 10n |
| 39 | | 22 | | | 8,21 | | | C101 10n |
| 41 | 6 | | | | | | 2 | C102 10n<br>C103 10n |
| 42 | 6 | | | | | | 2 | C104 10n<br>C105 10n |
| 44 | 7 | | | | | | 4 | C106 10n<br>C107 10n |
| 45 | | 14 | | | 7 | | | C141 10n |
| 50 | 13 | | 12 | 5 | | | 4 | C108 10n<br>C109 10n |
| 51 | 6 | | | | | | 2 | C110 10n<br>C111 10n |
| 52 | 13 | | | 14 | | | 3 | C112 10n<br>C113 10n |
| 54 | 13 | | 12 | 5 | | | 4 | C114 10n<br>C115 10n |
| 55 | 13 | | 12 | 5 | | | 4 | C116 10n<br>C117 10n |
| 56 | 6 | | | | | | 2 | C118 10n<br>C119 10n |
| 58 | 6 | | | | | | 2 | C120 10n<br>C121 10n |
| 59 | 13 | | | 14 | | | 3 | C122 10n<br>C123 10n |
| 60 | 6 | | | | | | 2 | C124 10n<br>C125 10n |
| 61 | 13 | | 12 | 5 | | | 4 | C126 10n<br>C127 10n |
| 62 | 6 | | | | | | 2 | C128 10n<br>C129 10n |
| 63 | 13 | | 12 | 5 | | | 4 | C130 10n<br>C131 10n |
| 64 | | 14 | | | 7 | | | C132 10n |
| 65 | | 14 | | | 7 | | | C133 10n |
| 67 | | 28 | | | 14 | | | C134 10n |
| 68 | | 20 | | | 10 | | | C135 10n |
| 69 | | 14 | | | 7 | | | C136 10n |
| 70 | | 14 | | | 7 | | | C137 10n |
| 71 | | 20 | | | 10 | | | C138 10n |
| 72 | | 14 | | | 7 | | | C139 10n |
| 73 | | 20 | | | 10 | | | C140 10n |
| 74 | 6 | | | | | | 2 | C145 10n<br>C146 10n |

ALL IC'S DECOUPLED AT SUPPLY TO GROUND AS INDICATED

*Fig. 7-28 A1 Power supplies - circuit*




**Power supplies A1**

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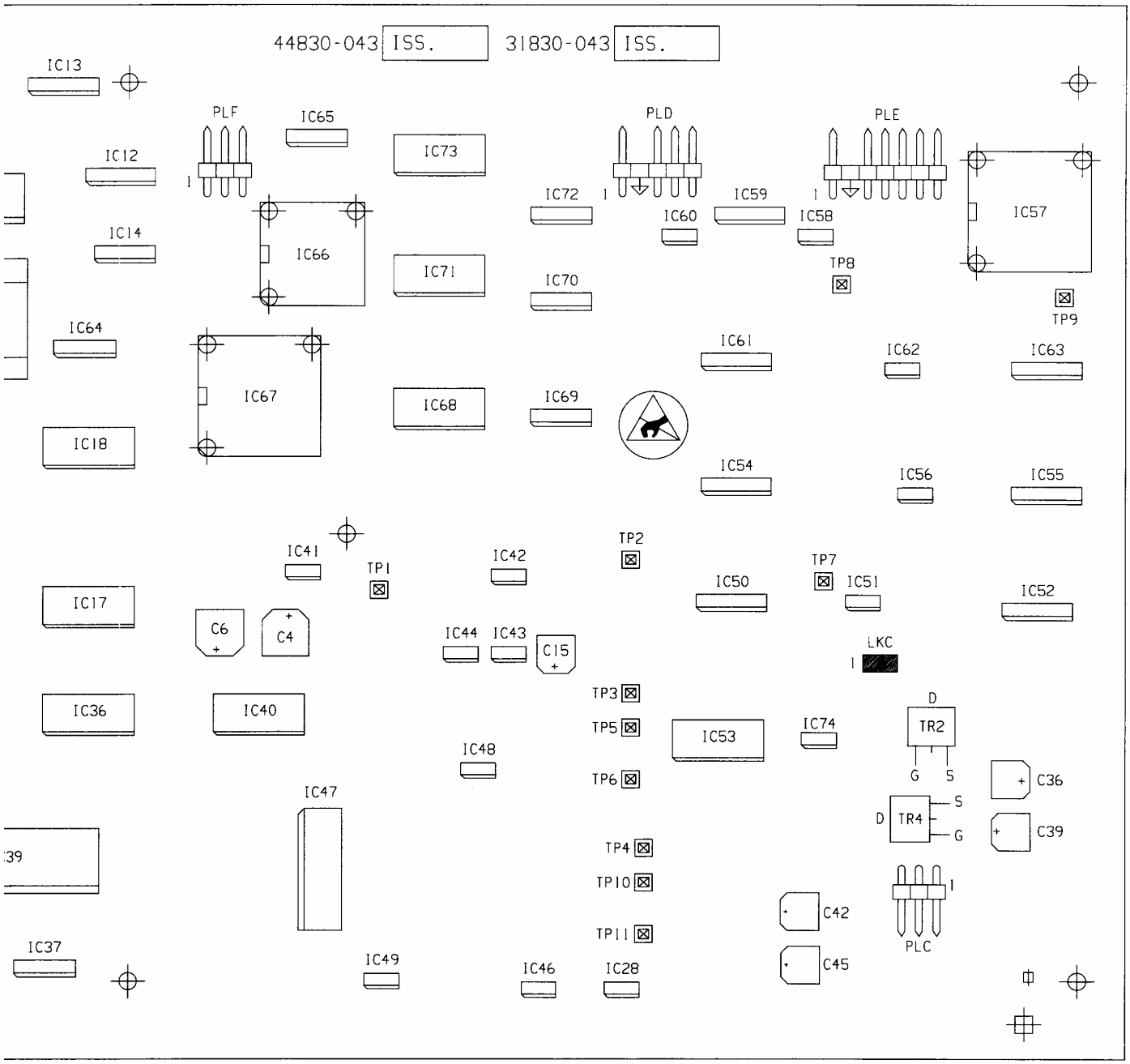
# Component layout A1/2




A1

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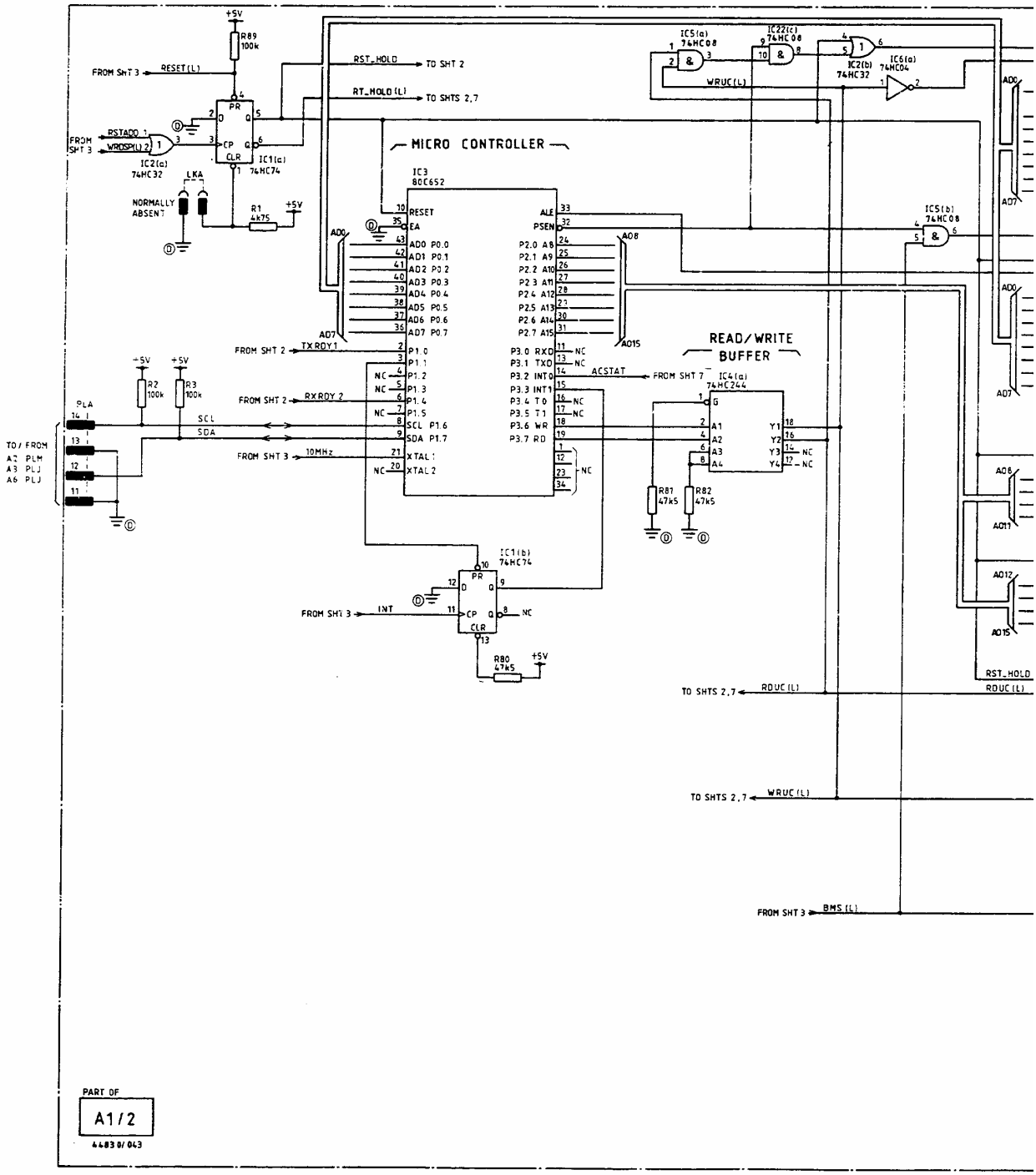
*Fig. 7-29 A1/2 Audio generator - component layout, component side*

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# Circuit diagrams A1/2

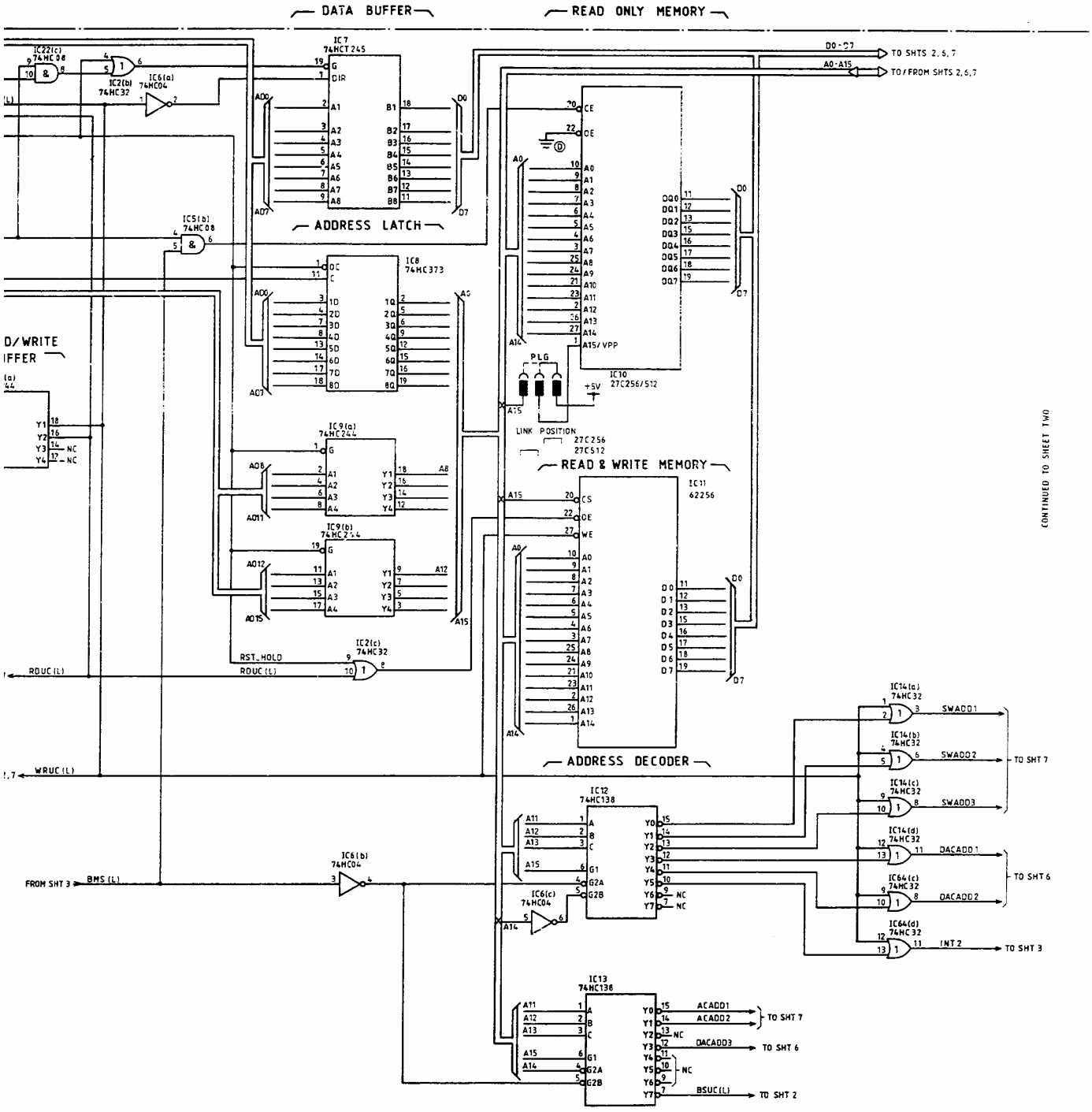
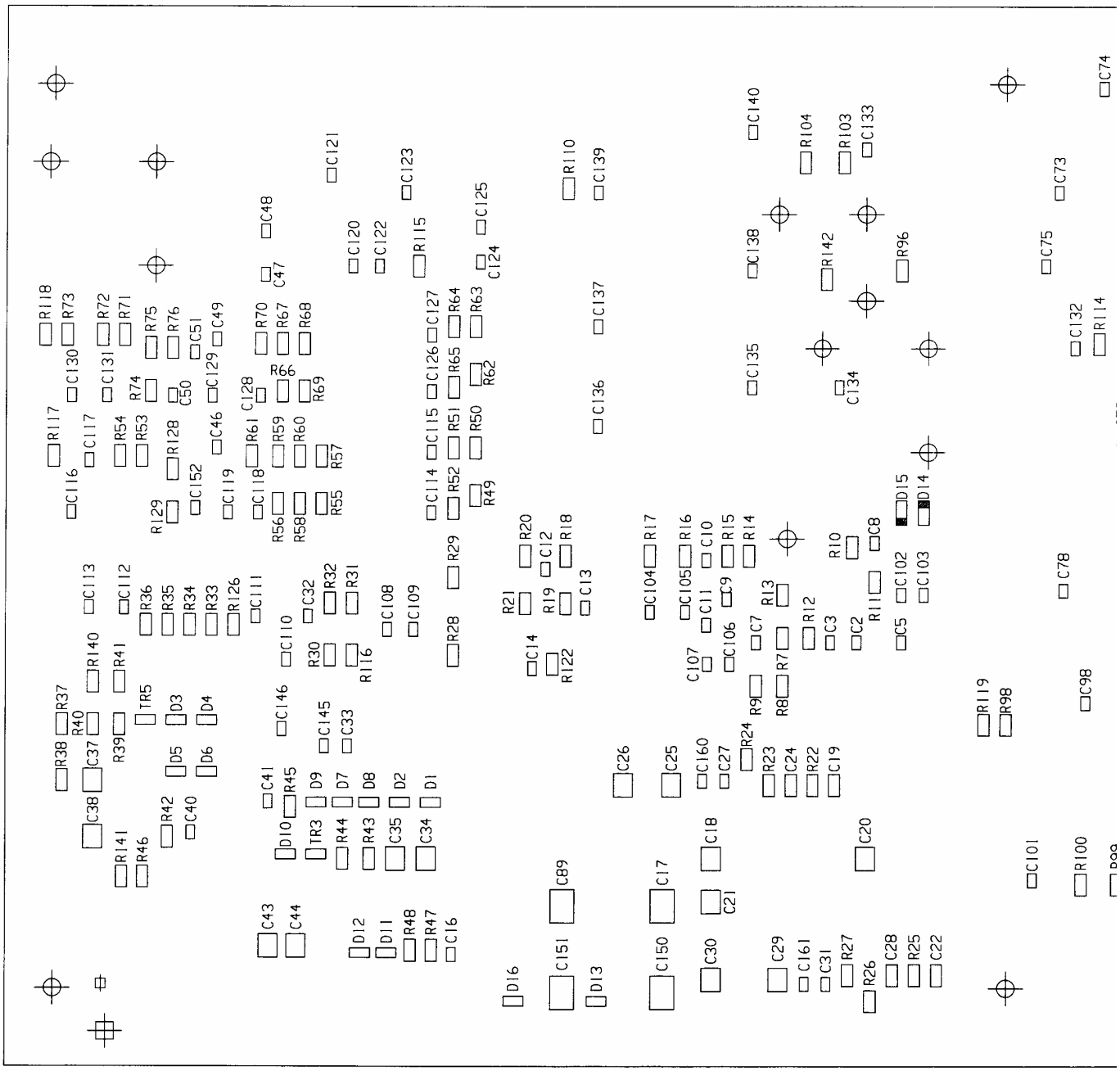
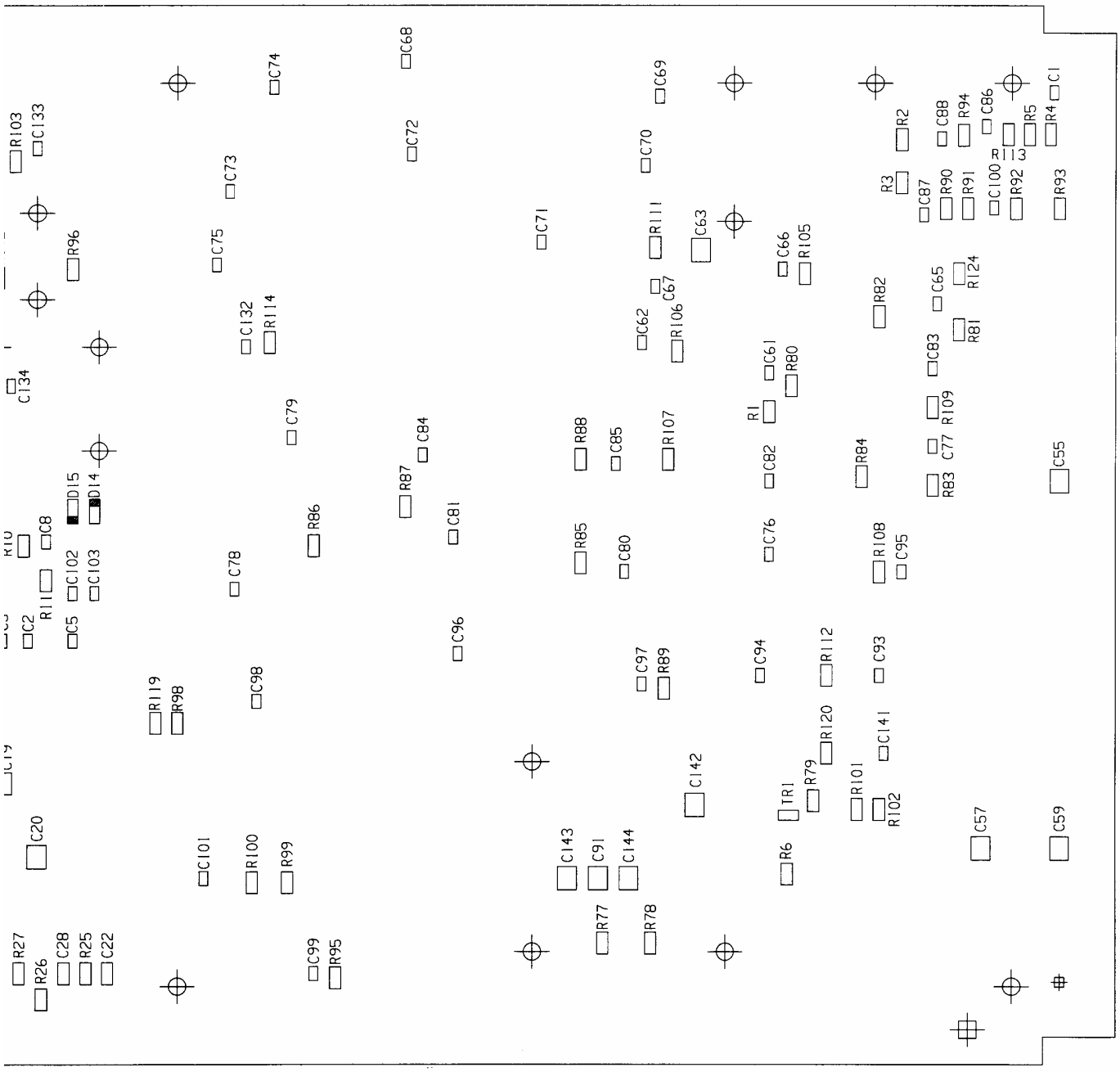



*Fig. 7-30 A1/2 Microprocessor memory and addressing - circuit*



**Microprocessor memory and addressing A1/2**

Drg. No. 44830/043




**A1/2**

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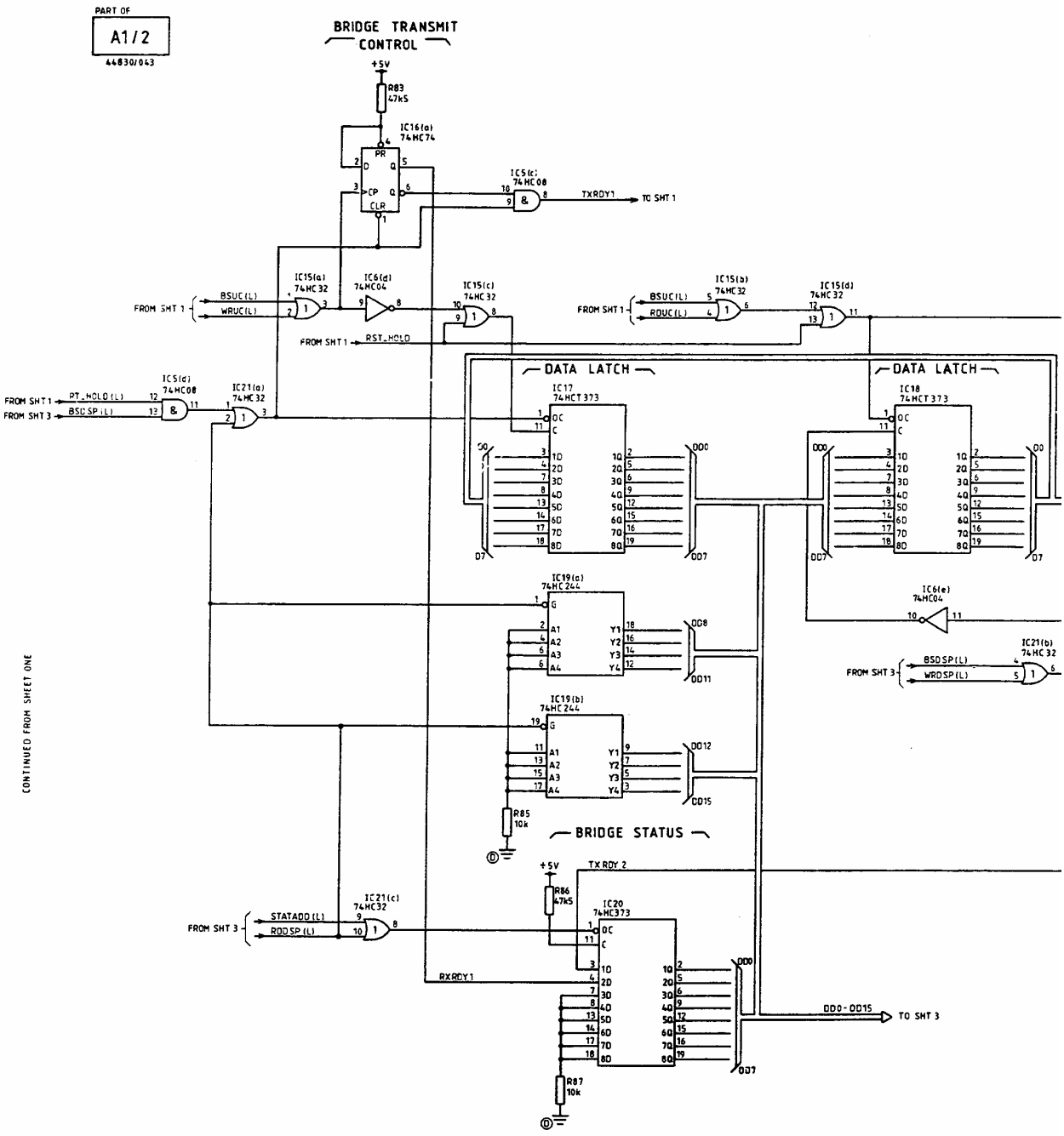
*Fig. 7-31 A1/2 Audio generator - component layout, solder side*


PART OF
A1/2
44830/043
BRIDGE TRANSMIT CONTROL
+5V
R83 47kS
IC16(a) 74HC74
PR
D
Q
CP
CLR
IC5(c) 74HC08
TXRDY1
TO SHT 1
IC15(a) 74HC32
IC6(d) 74HC04
IC15(c) 74HC32
IC15(b) 74HC32
IC15(d) 74HC32
FROM SHT 1
BSUC(L)
WRUC(L)
RDUC(L)
RST_HOLD
DATA LATCH
IC17 74HCT373
IC18 74HCT373
IC5(d) 74HC08
IC21(a) 74HC32
PT_HOLD(L)
BSDSP(L)
FROM SHT 3
IC19(a) 74HC244
IC19(b) 74HC244
IC6(e) 74HC04
IC21(b) 74HC32
WRDSP(L)
CONTINUED FROM SHEET ONE
R85 10k
BRIDGE STATUS
TX RDY 2
R86 47kS
IC21(c) 74HC32
STATADD(L)
RDDSP(L)
IC20 74HC373
RXRDY1
DD0-DD15
TO SHT 3
R87 10k

# Circuit diagrams A1/2

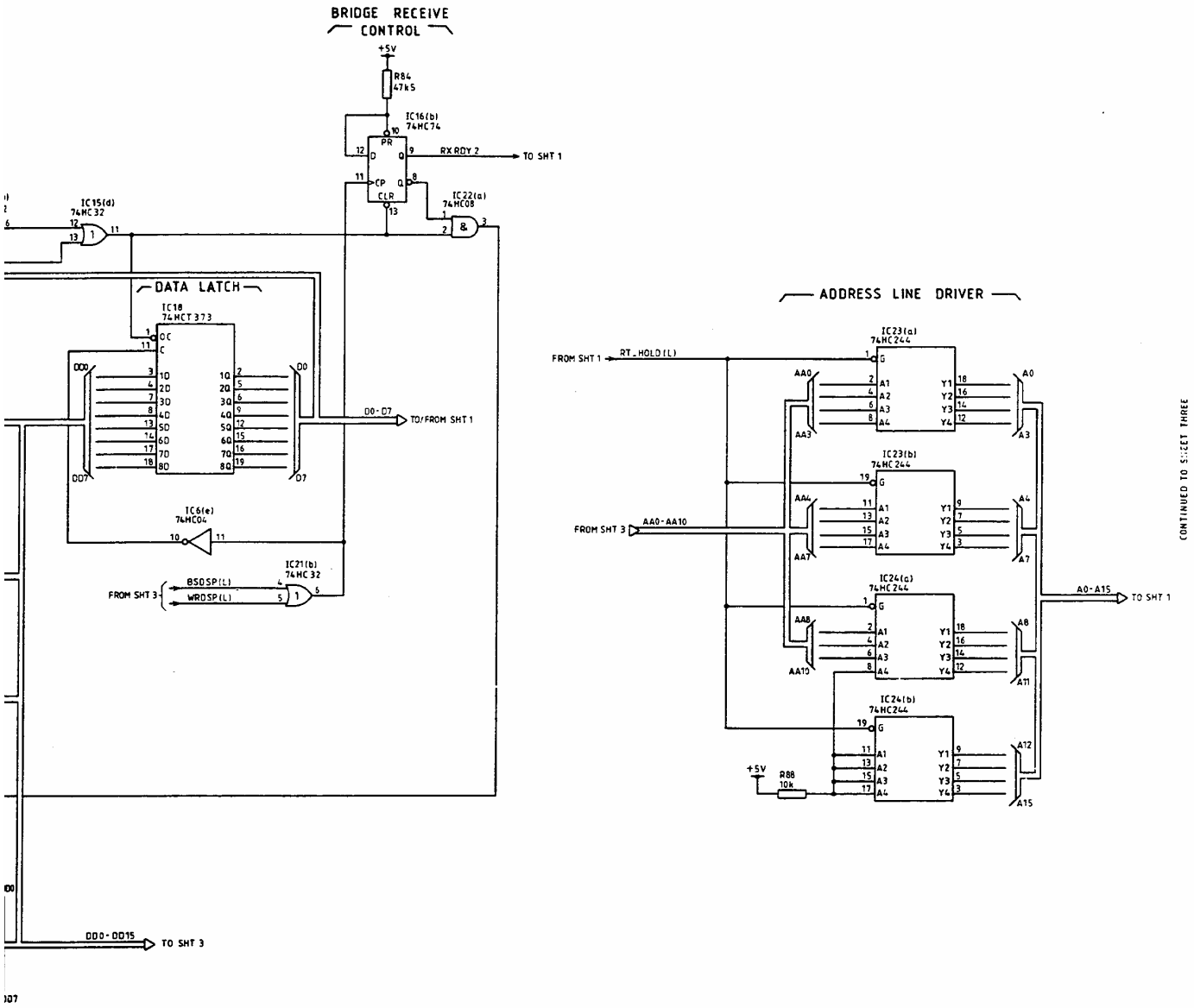
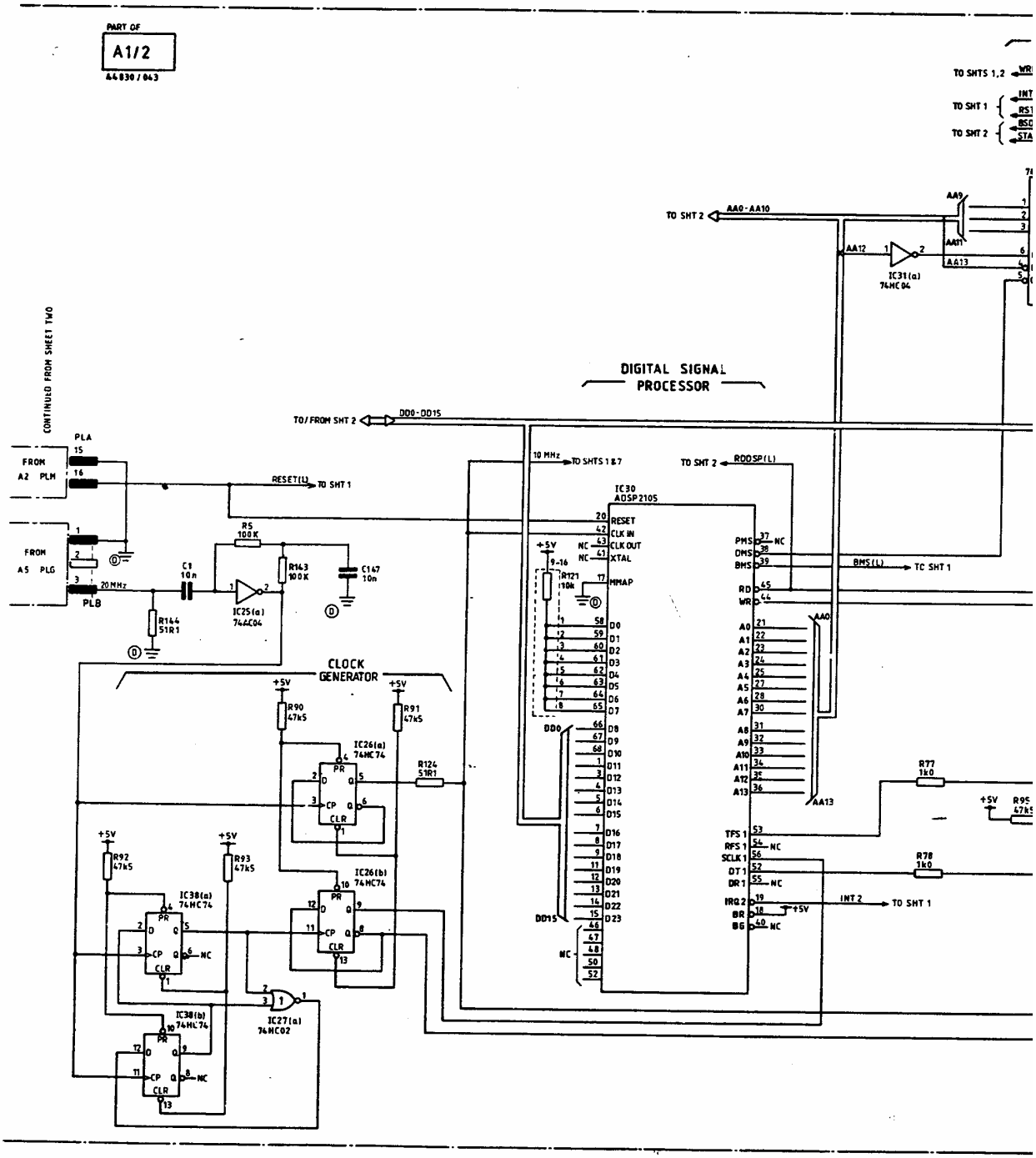



*Fig. 7-32 A1/2 Bridge and boot addressing - circuit*

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# Circuit diagrams A1/2

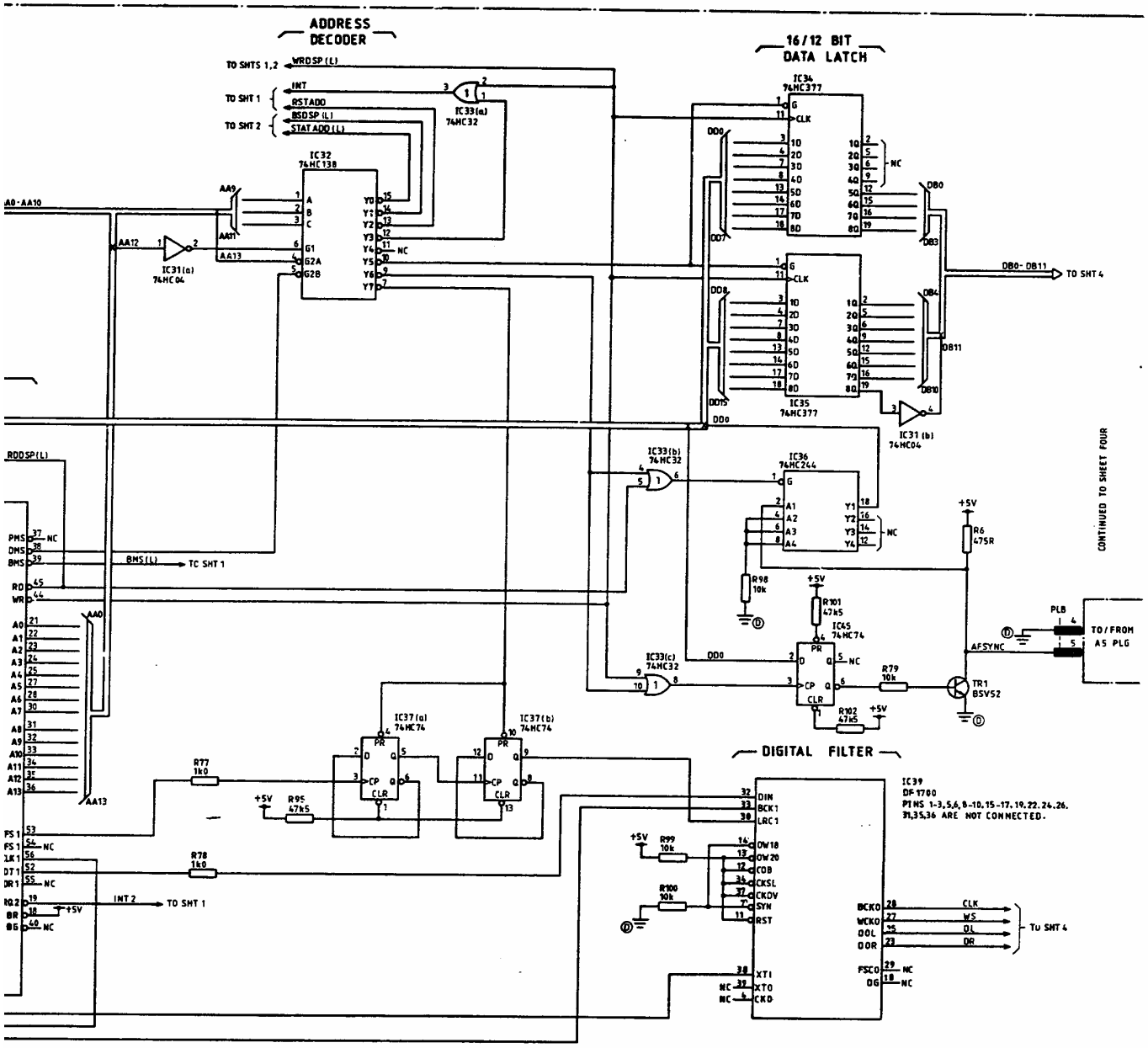
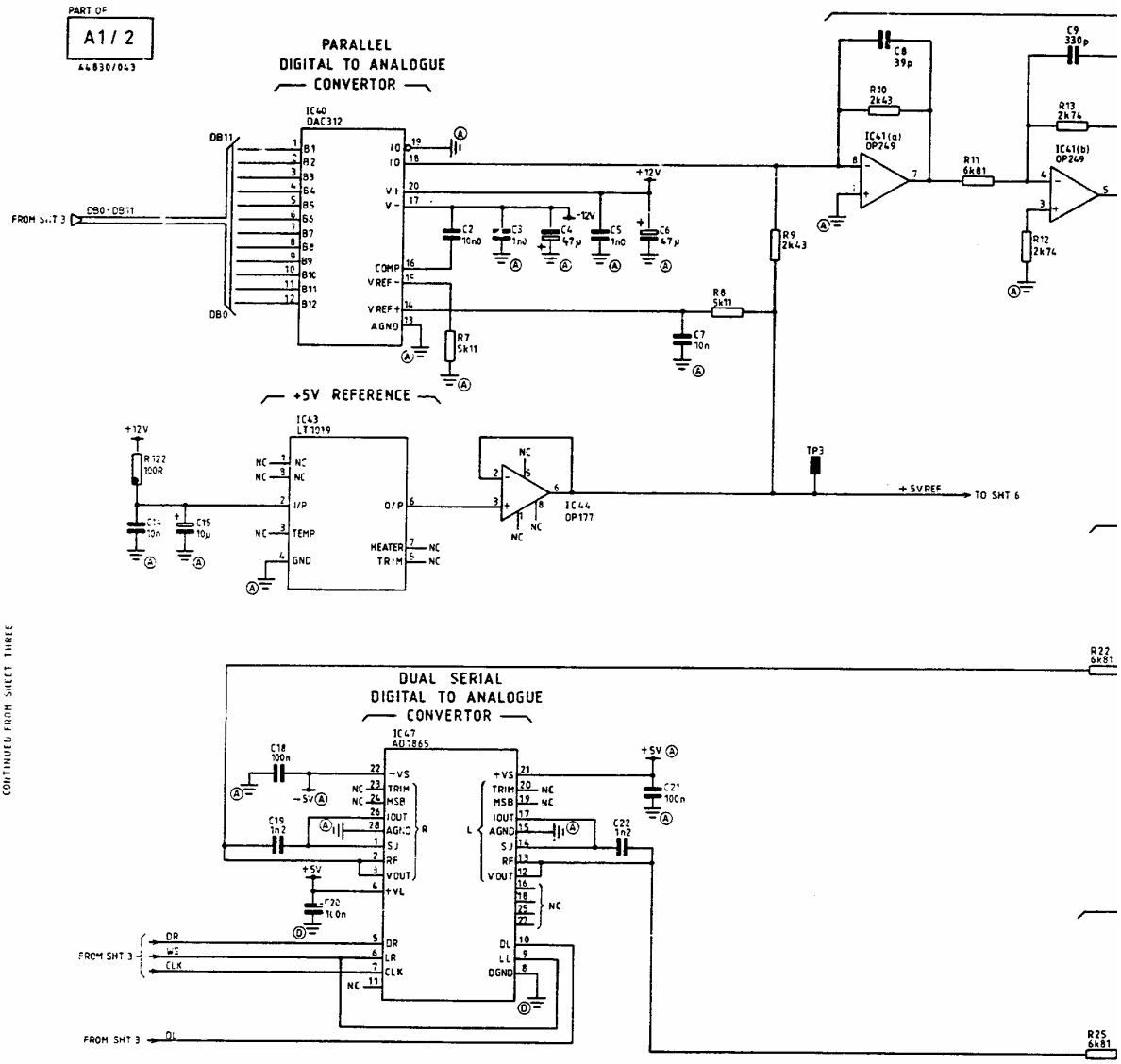



*Fig. 7-33 A1/2 DSP, dividers, and oversampling - circuit*

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# Circuit diagrams A1/2

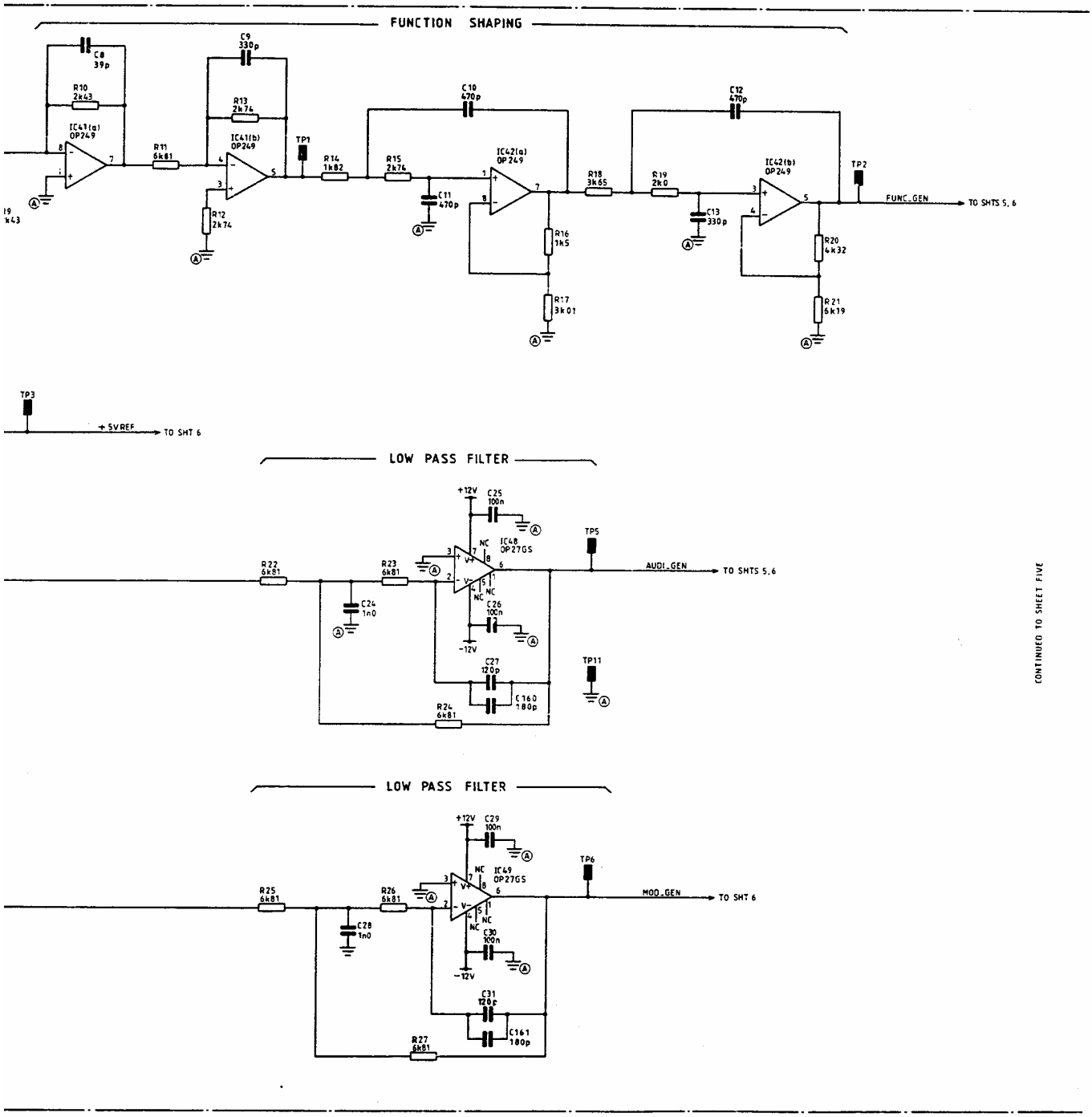
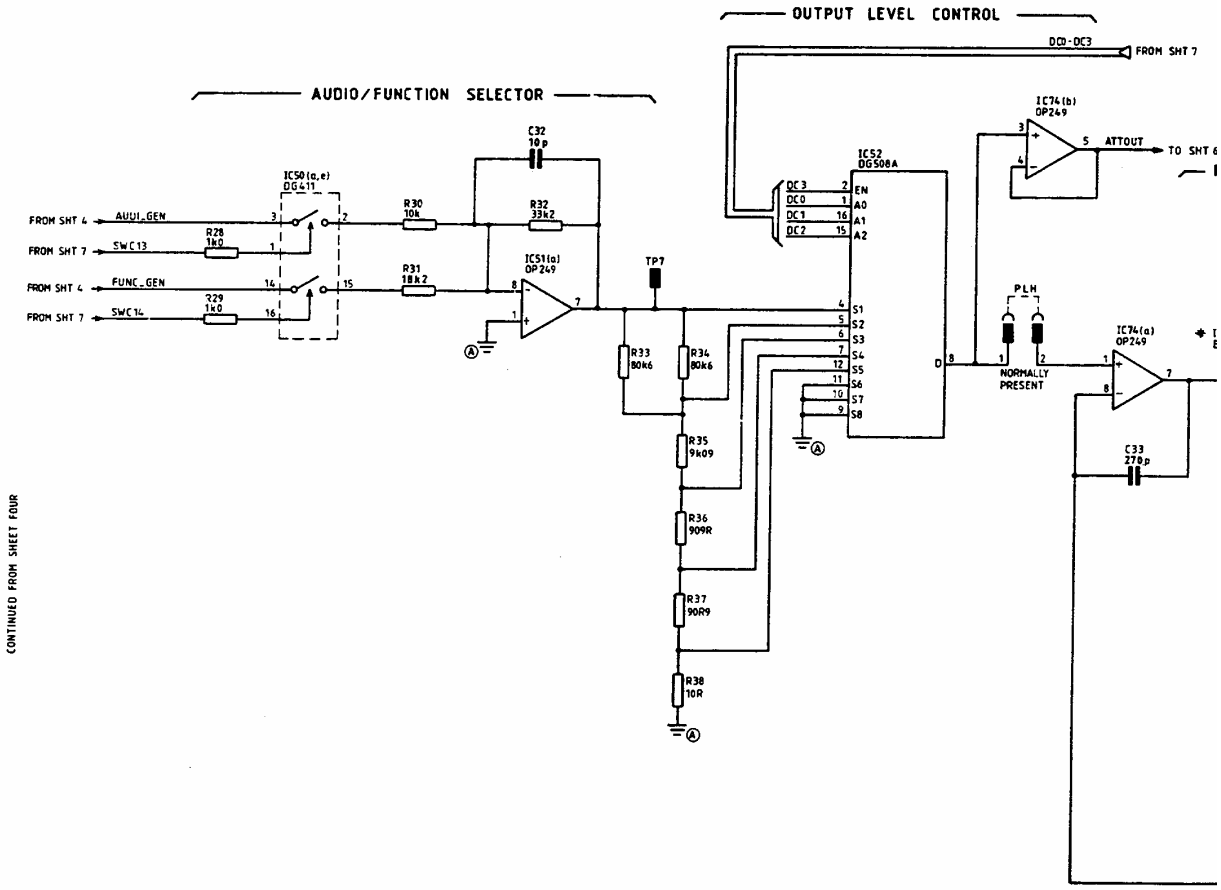



*Fig. 7-34 A1/2 DACs and analogue filters - circuit*

PART OF
A1/2
44830/063



# Circuit diagrams A1/2

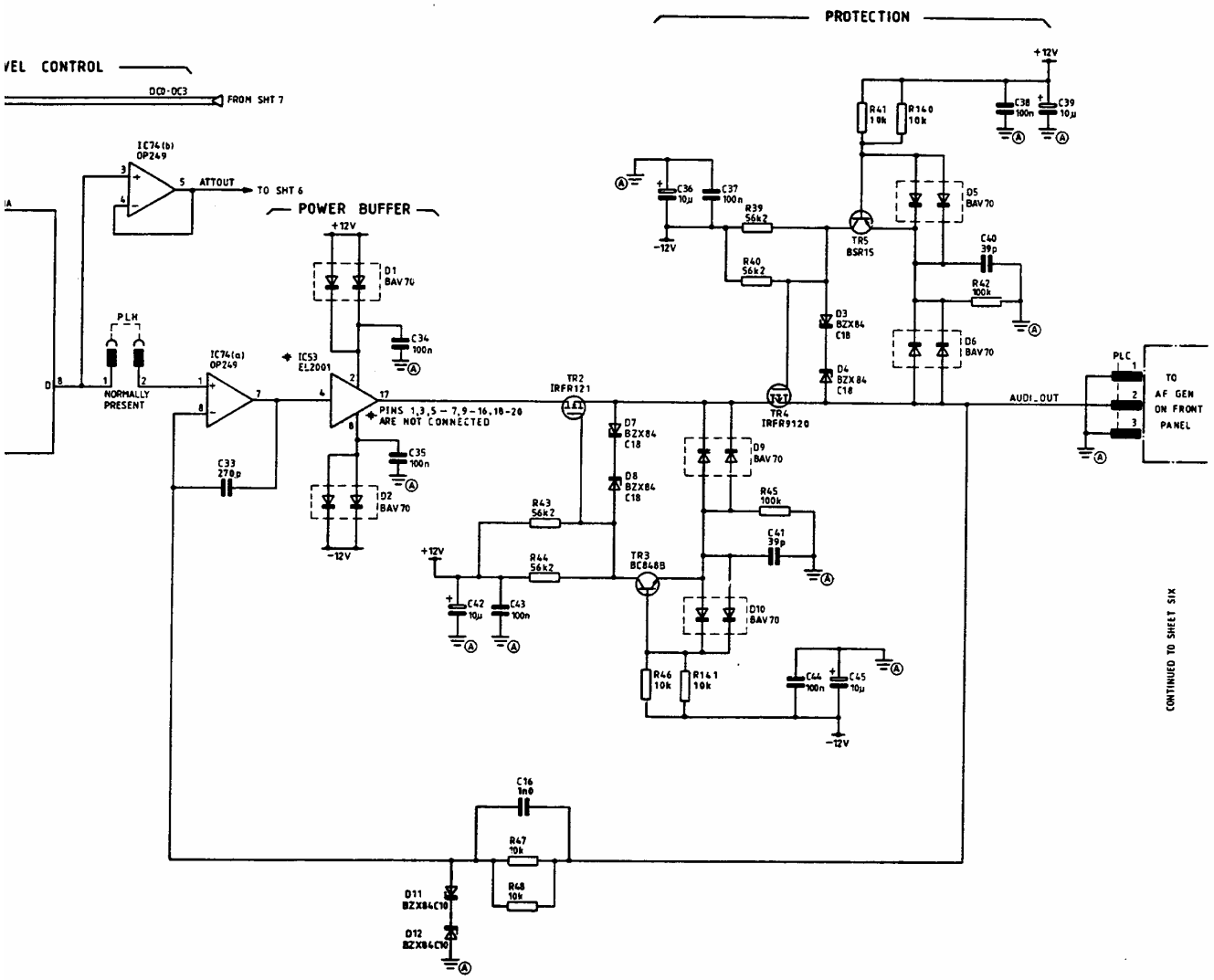
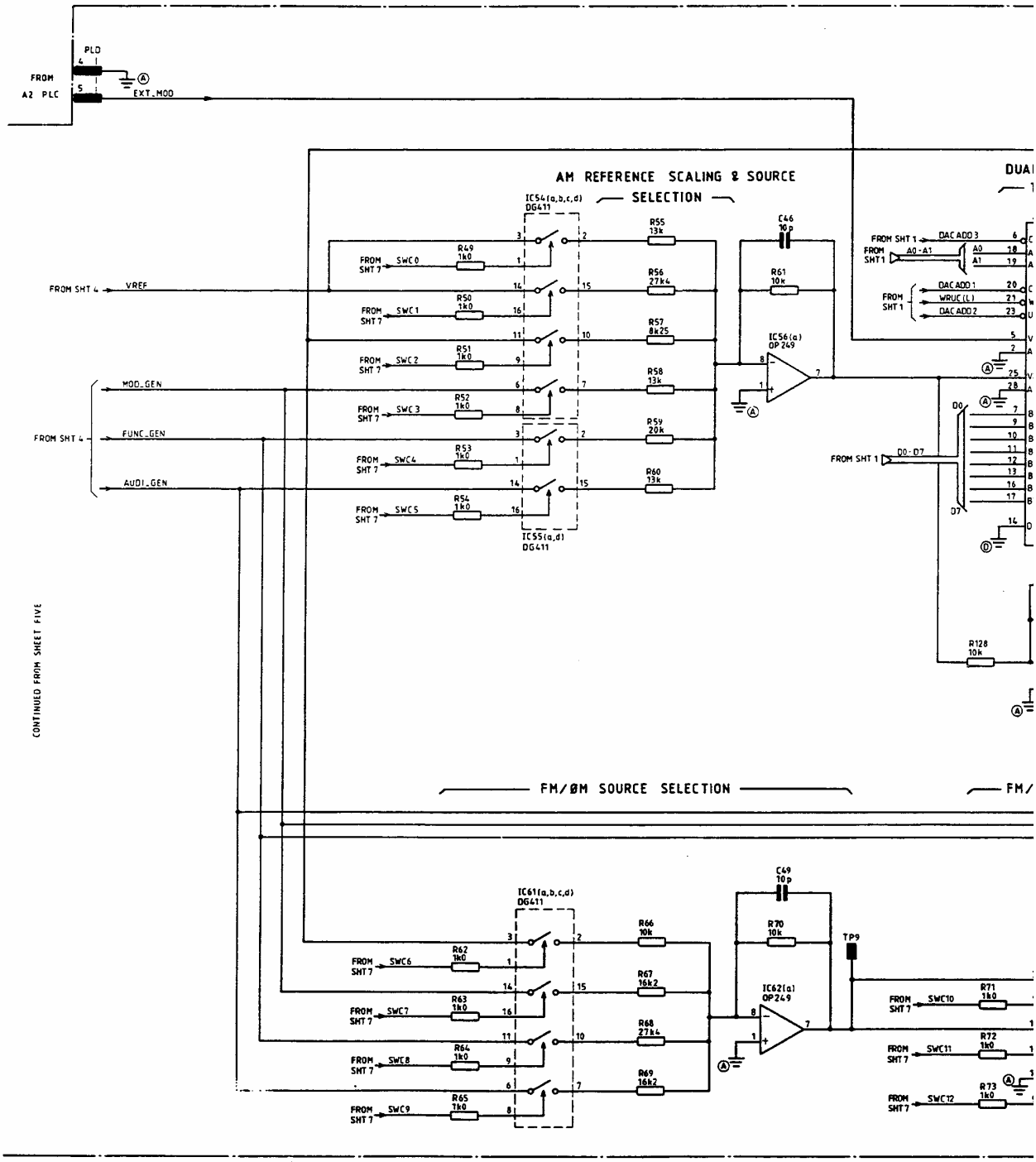



*Fig. 7-35 A1/2 Audio output path - circuit*

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# Circuit diagrams A1/2

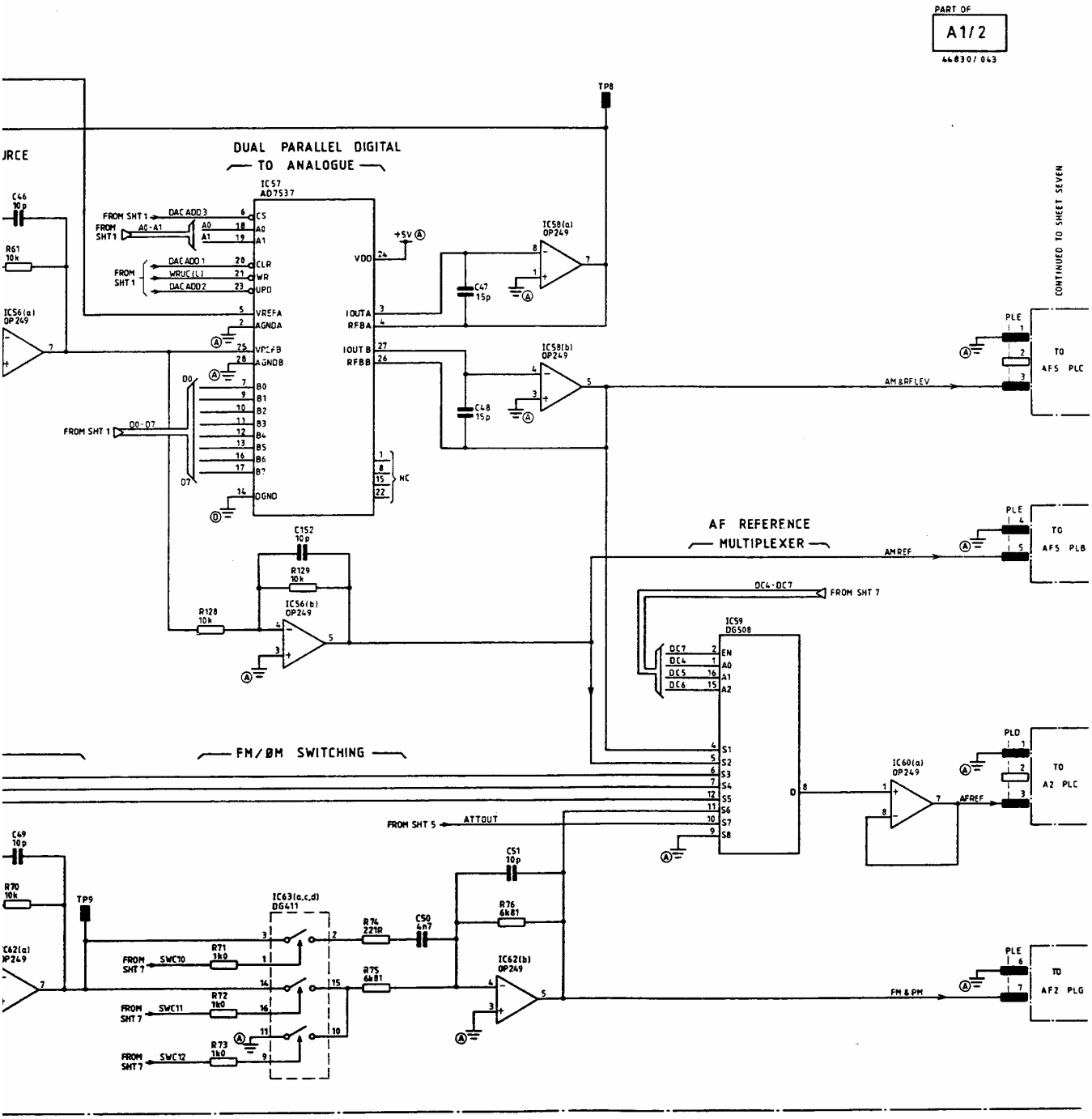
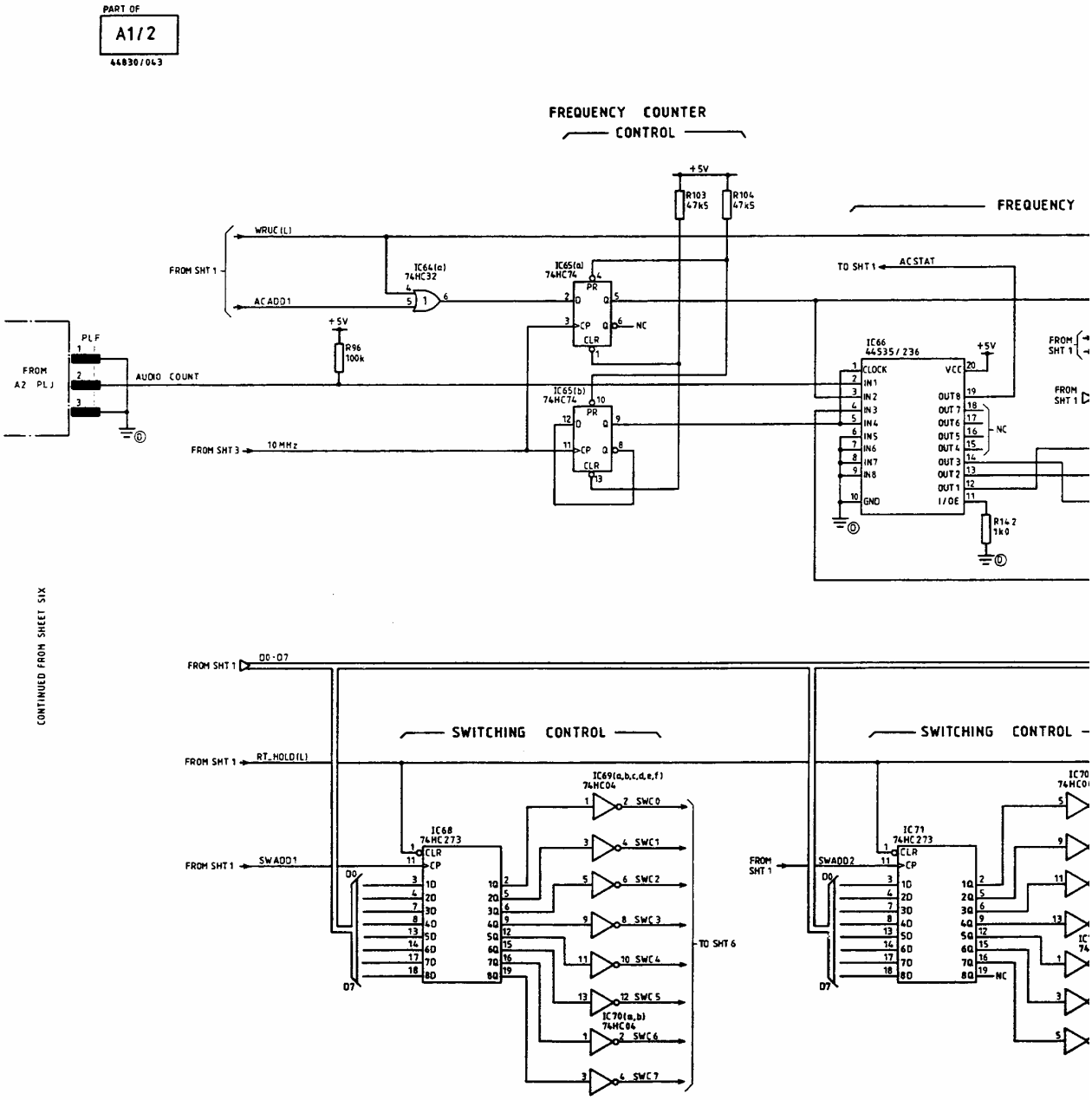



*Fig. 7-36 A1/2 Modulation and calibration paths - circuit*


PART OF
A1/2
44830/043
FREQUENCY COUNTER
CONTROL
FREQUENCY
+5V
R103 47k5
R104 47k5
WRUC(L)
FROM SHT 1
IC64(a) 74HC32
ACADD1
IC65(a) 74HC74
TO SHT 1
ACSTAT
PLF
FROM A2 PLJ
AUDIO COUNT
R96 100k
IC65(b) 74HC74
FROM SHT 3
10MHz
IC66 44535/236
CLOCK
VCC
IN1
IN2
IN3
IN4
IN5
IN6
IN7
IN8
GND
I/OE
OUT8
OUT7
OUT6
OUT5
OUT4
OUT3
OUT2
OUT1
NC
R142 1k0
FROM SHT 1
CONTINUED FROM SHEET SIX
D0-D7
SWITCHING CONTROL
RT_HOLD(L)
IC69(a,b,c,d,e,f) 74HC04
IC68 74HC273
SWADD1
SWC0
SWC1
SWC2
SWC3
SWC4
SWC5
IC70(a,b) 74HC04
SWC6
SWC7
TO SHT 6
IC71 74HC273
SWADD2
NC

# Circuit diagrams A1/2

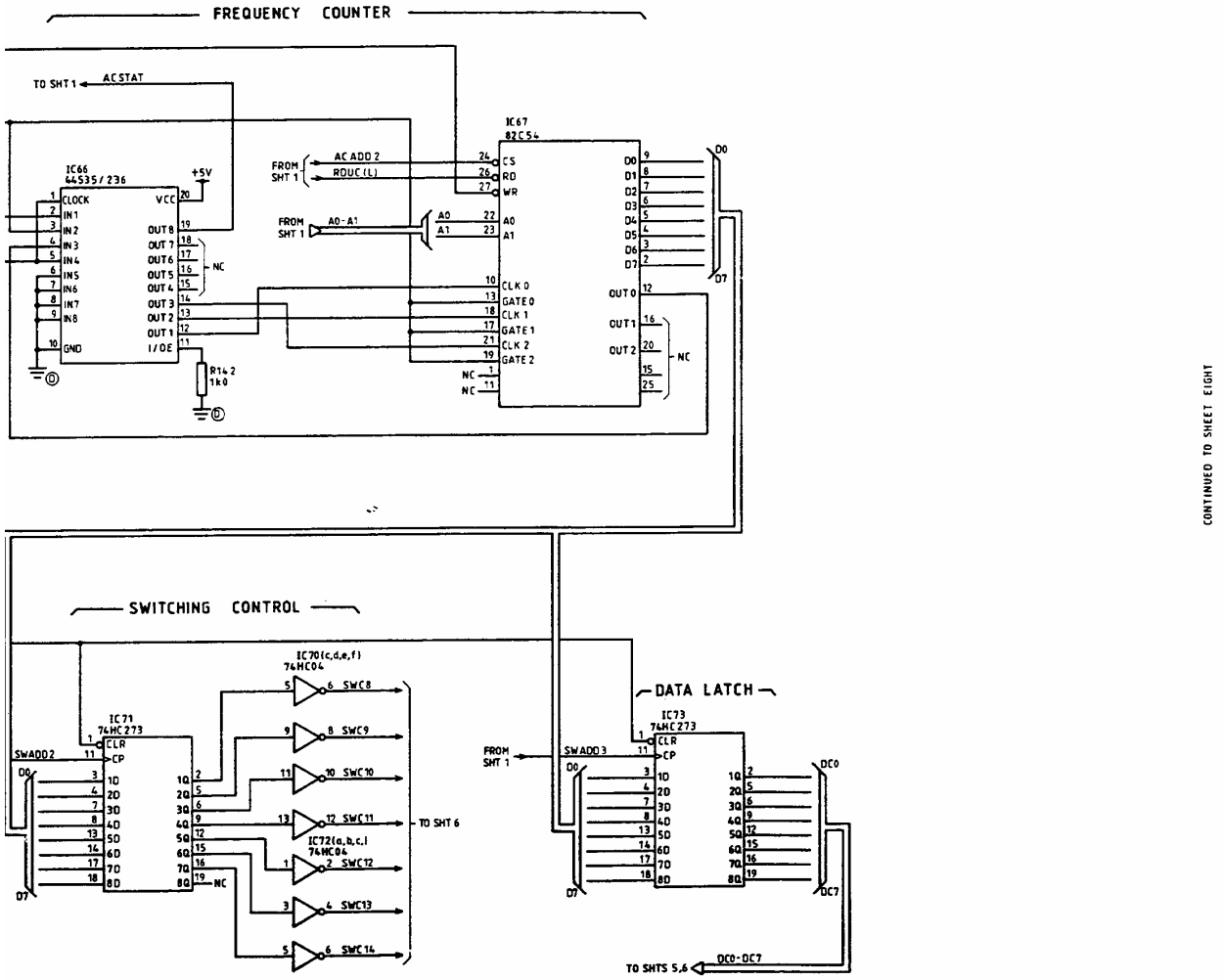
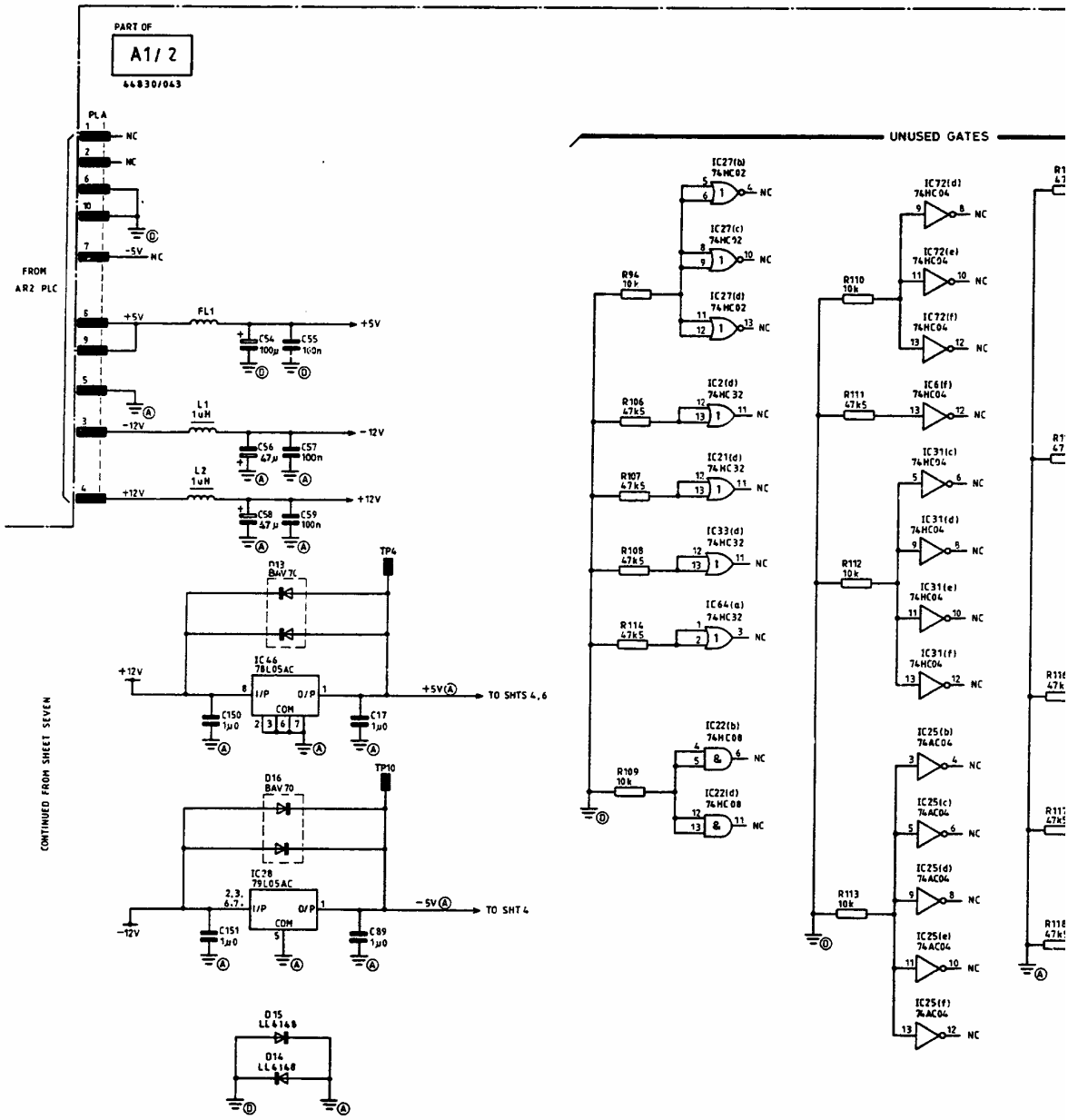



*Fig. 7-37 A1/2 Audio counter and switch control - circuit*

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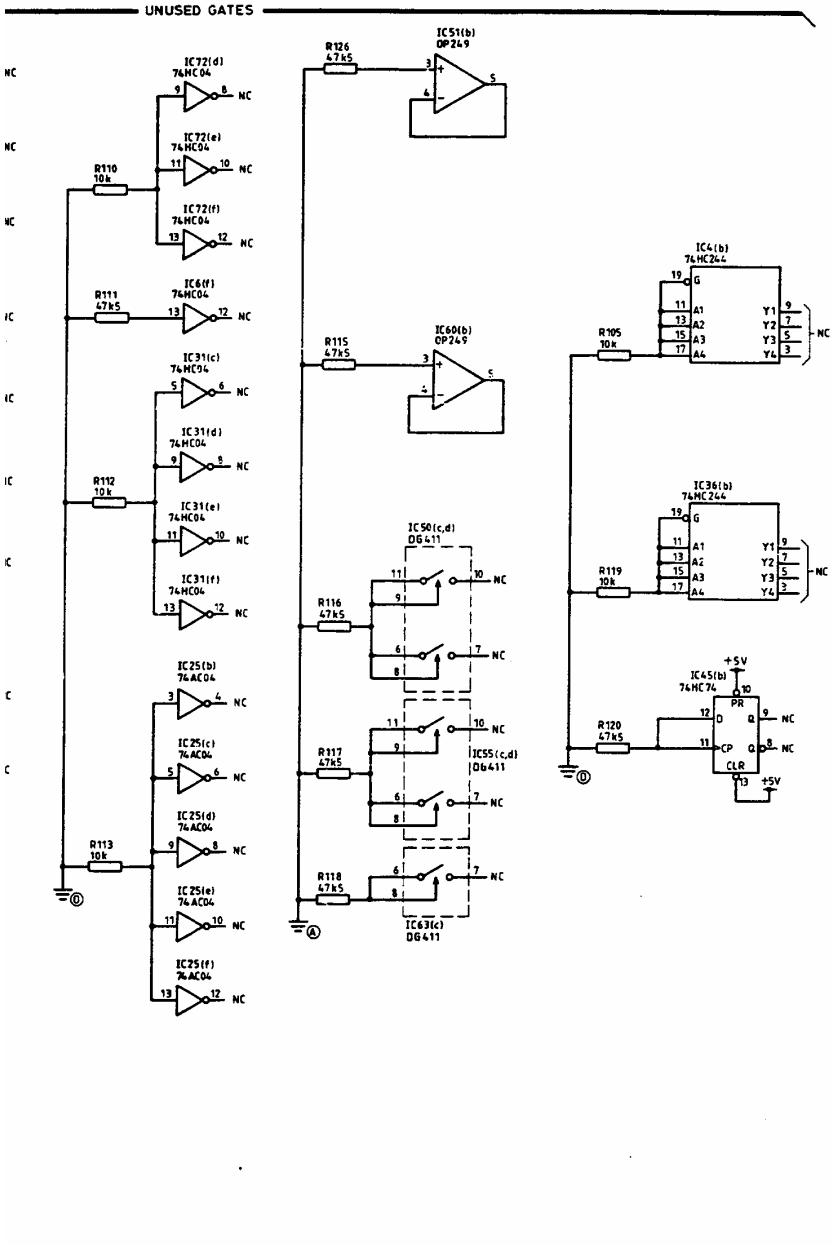
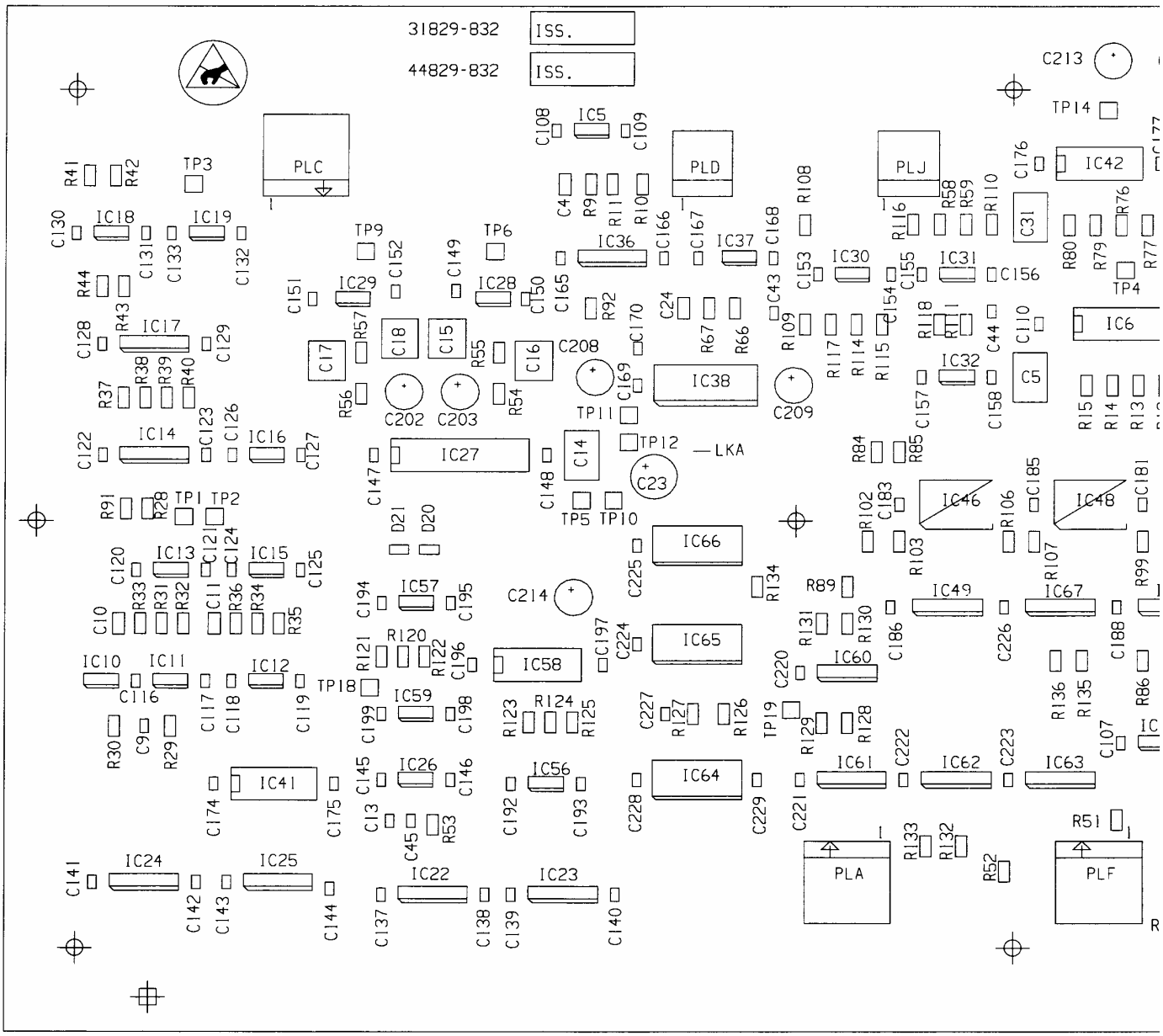
# Circuit diagrams A1/2




| SUPPLY LINE TABLE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| IC | +12V | +5V | +5VA | GND A | GND D | -5V | -12V | DEC CAP |
| 1 | | 14 | | | 7 | | | C61 10n |
| 2 | | 14 | | | 7 | | | C62 10n |
| 3 | | 44 | | | 22 | | | C63 47n |
| | | | | | | | | C64 100µ |
| 4 | | 20 | | | 10 | | | C65 10n |
| 5 | | 14 | | | 7 | | | C66 10n |
| 6 | | 14 | | | 7 | | | C67 10n |
| 7 | | 20 | | | 10 | | | C68 10n |
| 8 | | 20 | | | 10 | | | C69 10n |
| 9 | | 20 | | | 10 | | | C70 10n |
| 10 | | 28 | | | 14 | | | C71 10n |
| 11 | | 28 | | | 14 | | | C72 10n |
| 12 | | 16 | | | 8 | | | C73 10n |
| 13 | | 16 | | | 8 | | | C74 10n |
| 14 | | 14 | | | 7 | | | C75 10n |
| 15 | | 14 | | | 7 | | | C76 10n |
| 16 | | 14 | | | 7 | | | C77 10n |
| 17 | | 20 | | | 10 | | | C78 10n |
| 18 | | 20 | | | 10 | | | C79 10n |
| 19 | | 20 | | | 10 | | | C80 10n |
| 20 | | 20 | | | 10 | | | C81 10n |
| 21 | | 14 | | | 7 | | | C82 10n |
| 22 | | 14 | | | 7 | | | C83 10n |
| 23 | | 20 | | | 10 | | | C84 10n |
| 24 | | 20 | | | 10 | | | C85 10n |
| 25 | | 14 | | | 7 | | | C86 10n |
| 26 | | 14 | | | 7 | | | C87 10n |
| 27 | | 14 | | | 7 | | | C88 10n |
| 30 | | 16,26 | | | 2,10 | | | C91 47n |
| | | 57 | | | 29,49 | | | C142 47n |
| | | | | | | | | C143 47n |
| | | | | | | | | C144 47n |
| | | | | | | | | C92 100µ |
| 31 | | 14 | | | 7 | | | C93 10n |
| 32 | | 16 | | | 8 | | | C94 10n |
| 33 | | 14 | | | 7 | | | C95 10n |
| 34 | | 20 | | | 10 | | | C96 10n |
| 35 | | 20 | | | 10 | | | C97 10n |
| 36 | | 20 | | | 10 | | | C98 10n |
| 37 | | 14 | | | 7 | | | C99 10n |
| 38 | | 14 | | | 7 | | | C100 10n |
| 39 | | 21 | | | 40,20 | | | C101 10n |
| 41 | 6 | | | | | | 2 | C102 10n |
| | | | | | | | | C103 10n |
| 42 | 6 | | | | | | 2 | C104 10n |
| | | | | | | | | C105 10n |
| 44 | 7 | | | | | | 4 | C106 10n |
| | | | | | | | | C107 10n |
| 45 | | 14 | | | 7 | | | C141 10n |
| 50 | 13 | | 12 | 5 | | | 4 | C108 10n |
| | | | | | | | | C109 10n |
| 51 | 6 | | | | | | 2 | C110 10n |
| | | | | | | | | C111 10n |
| 52 | 13 | | | 14 | | | 3 | C112 10n |
| | | | | | | | | C113 10n |
| 54 | 13 | | 12 | 5 | | | 4 | C114 10n |
| | | | | | | | | C115 10n |
| 55 | 13 | | 12 | 5 | | | 4 | C116 10n |
| | | | | | | | | C117 10n |
| 56 | 6 | | | | | | 2 | C118 10n |
| | | | | | | | | C119 10n |
| 58 | 6 | | | | | | 2 | C120 10n |
| | | | | | | | | C121 10n |
| 59 | 13 | | | 14 | | | 3 | C122 10n |
| | | | | | | | | C123 10n |
| 60 | 6 | | | | | | 2 | C124 10n |
| | | | | | | | | C125 10n |
| 61 | 13 | | 12 | 5 | | | 4 | C126 10n |
| | | | | | | | | C127 10n |
| 62 | 6 | | | | | | 2 | C128 10n |
| | | | | | | | | C129 10n |
| 63 | 13 | | 12 | 5 | | | 4 | C130 10n |
| | | | | | | | | C131 10n |
| 64 | | 14 | | | 7 | | | C132 10n |
| 65 | | 14 | | | 7 | | | C133 10n |
| 67 | | 28 | | | 14 | | | C134 10n |
| 68 | | 20 | | | 10 | | | C135 10n |
| 69 | | 14 | | | 7 | | | C136 10n |
| 70 | | 14 | | | 7 | | | C137 10n |
| 71 | | 20 | | | 10 | | | C138 10n |
| 72 | | 14 | | | 7 | | | C139 10n |
| 73 | | 20 | | | 10 | | | C140 10n |
| 74 | 6 | | | | | | 2 | C145 10n |
| | | | | | | | | C146 10n |

ALL IC'S DECOUPLED AT SUPPLY TO GROUND AS INDICATED

*Fig. 7-38 A1/2 Power supplies - circuit*




**Power supplies A1/2**

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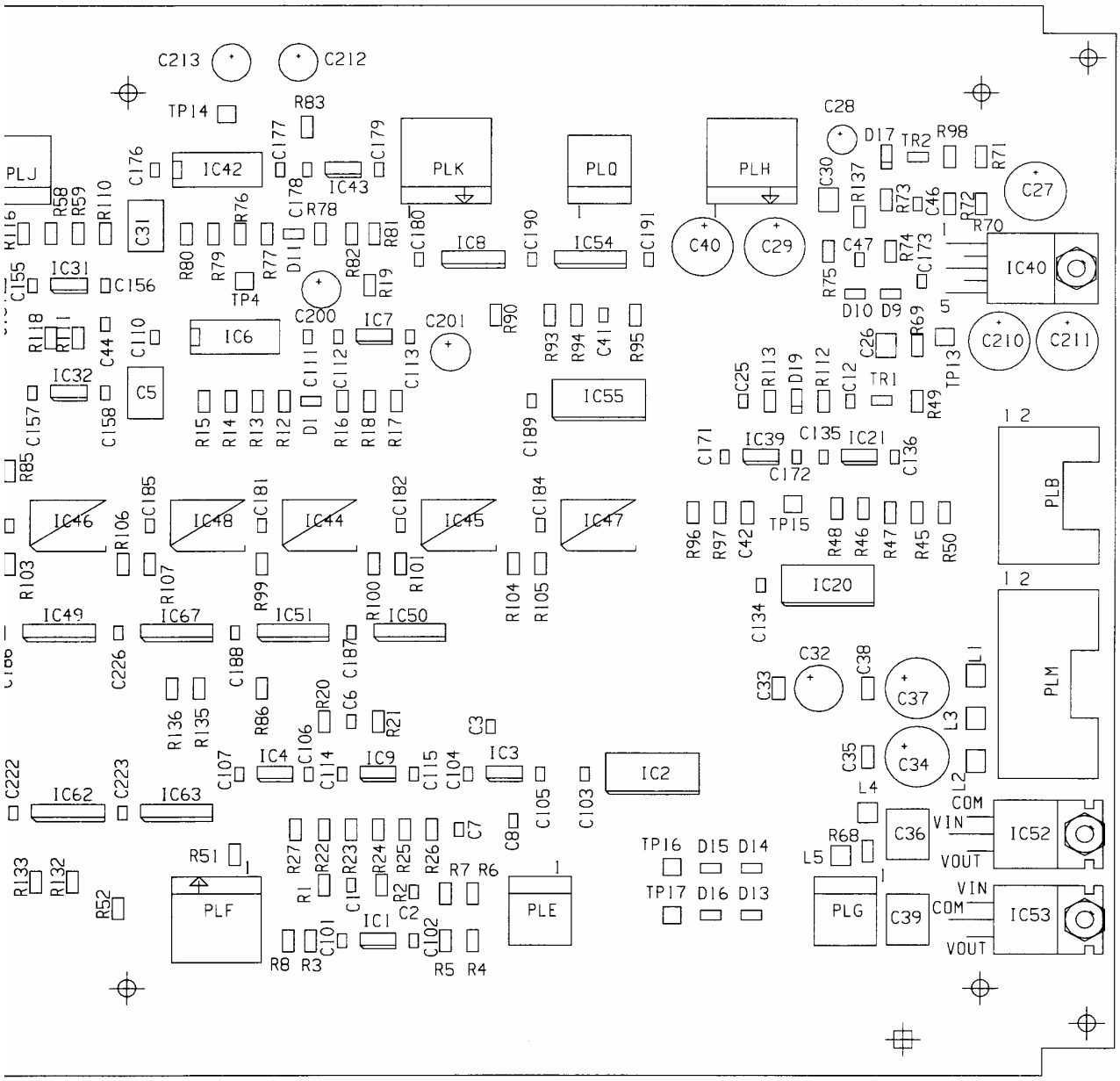


/2

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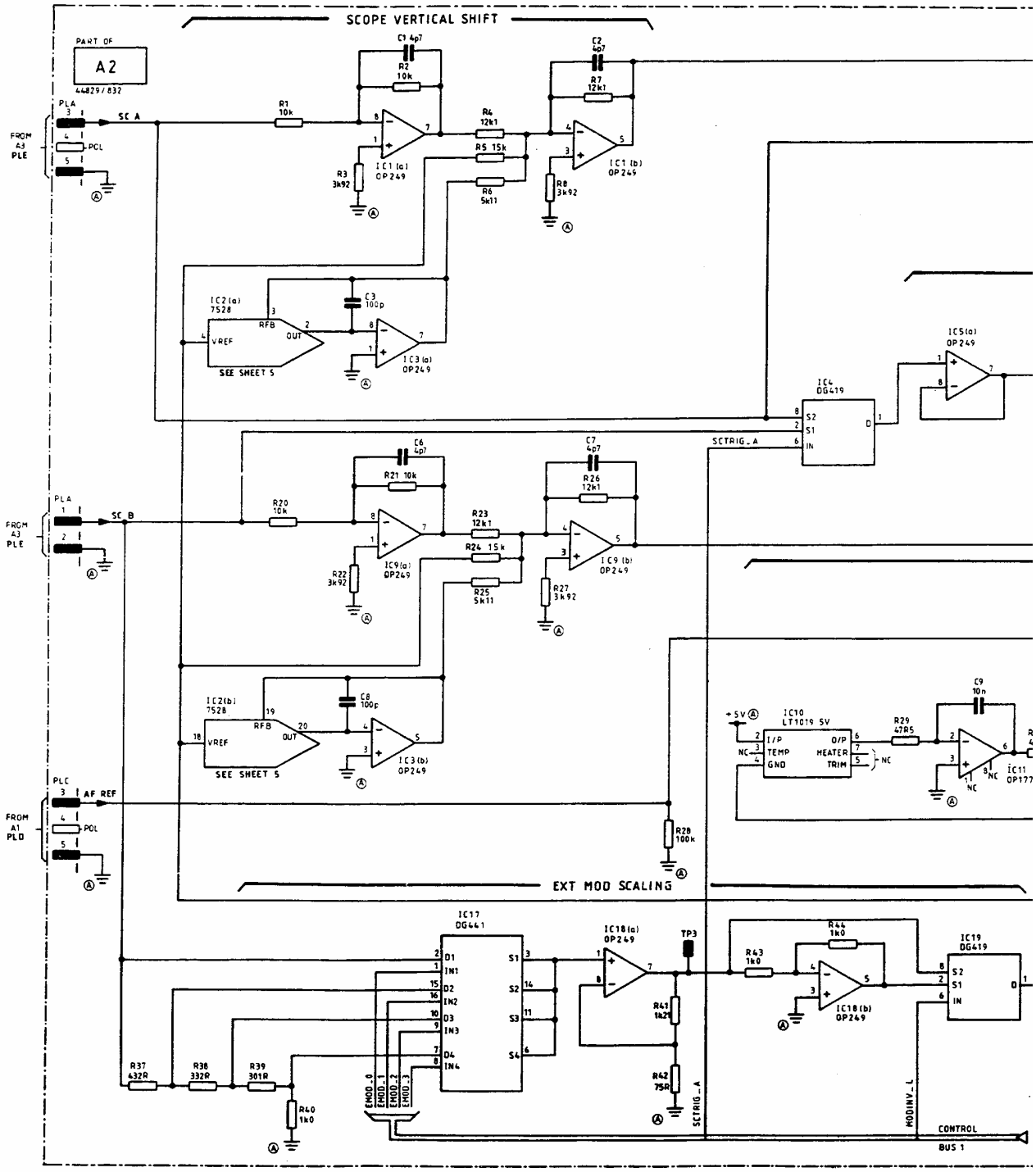
*Fig. 7-39 A2 Audio processor 2 - component layout*

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## Circuit diagrams **A2**

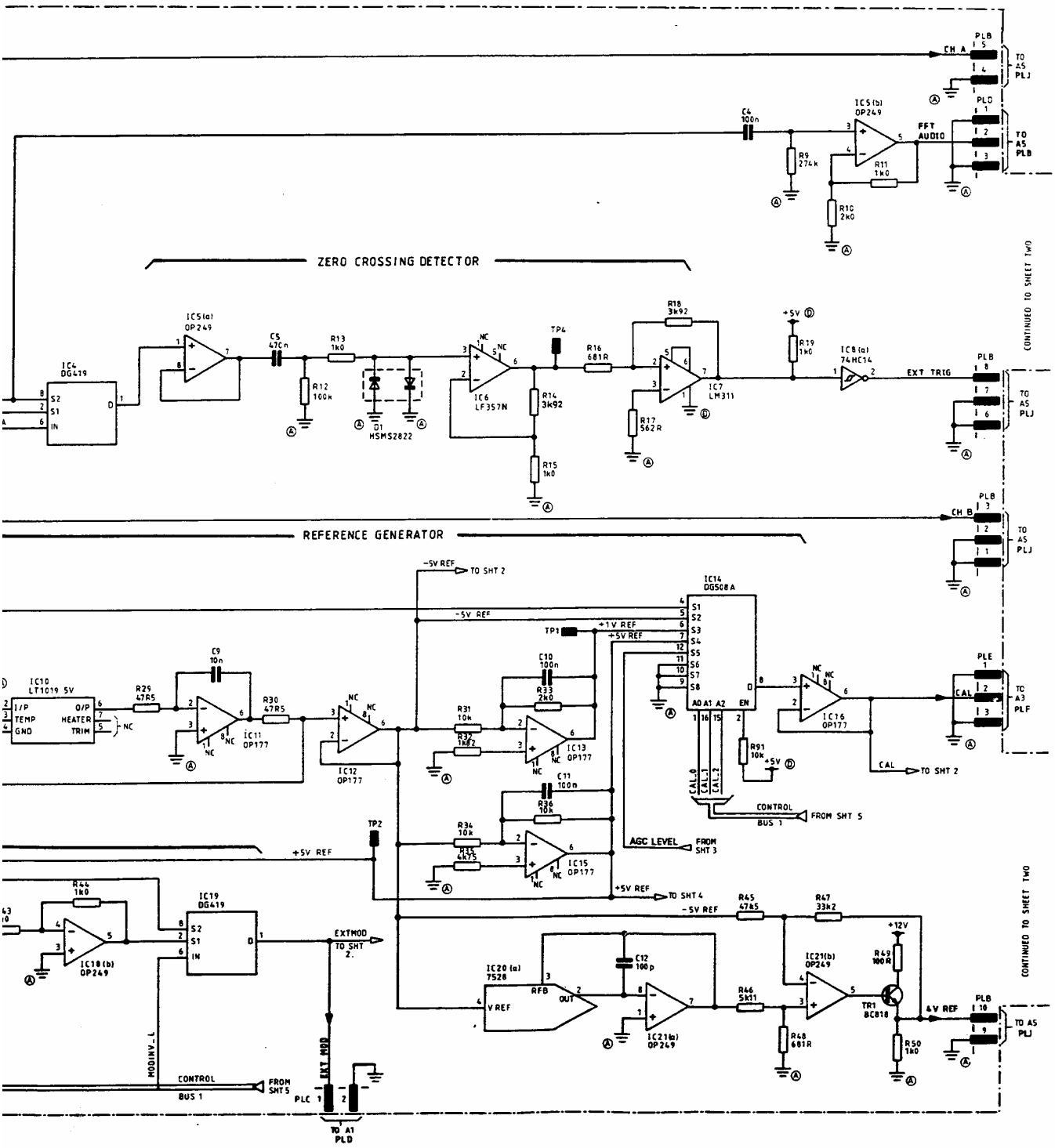
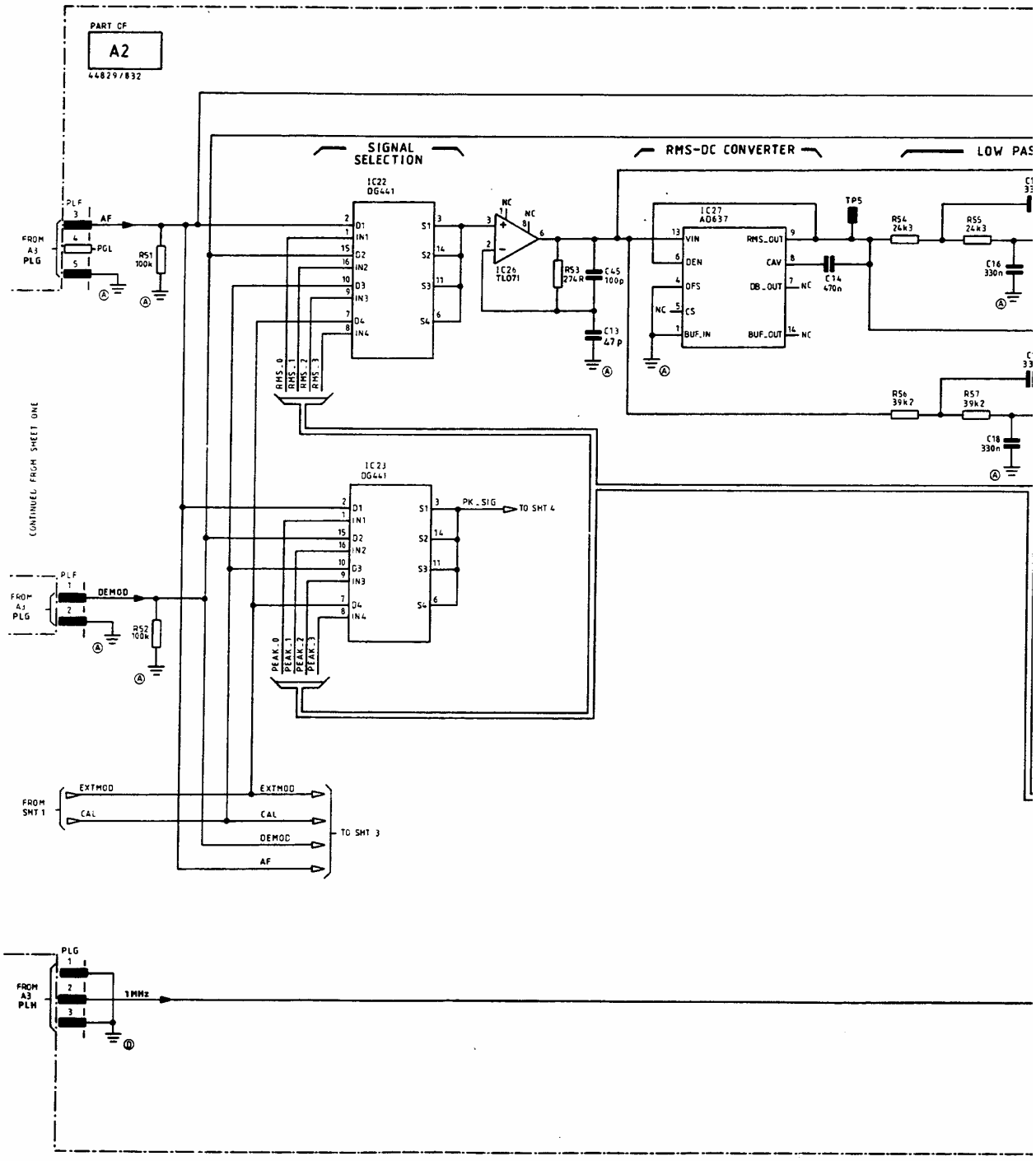



*Fig. 7-40 A2 Vertical shift, ext mod scaling, calibration ref gen - circuit*

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# Circuit diagrams A2

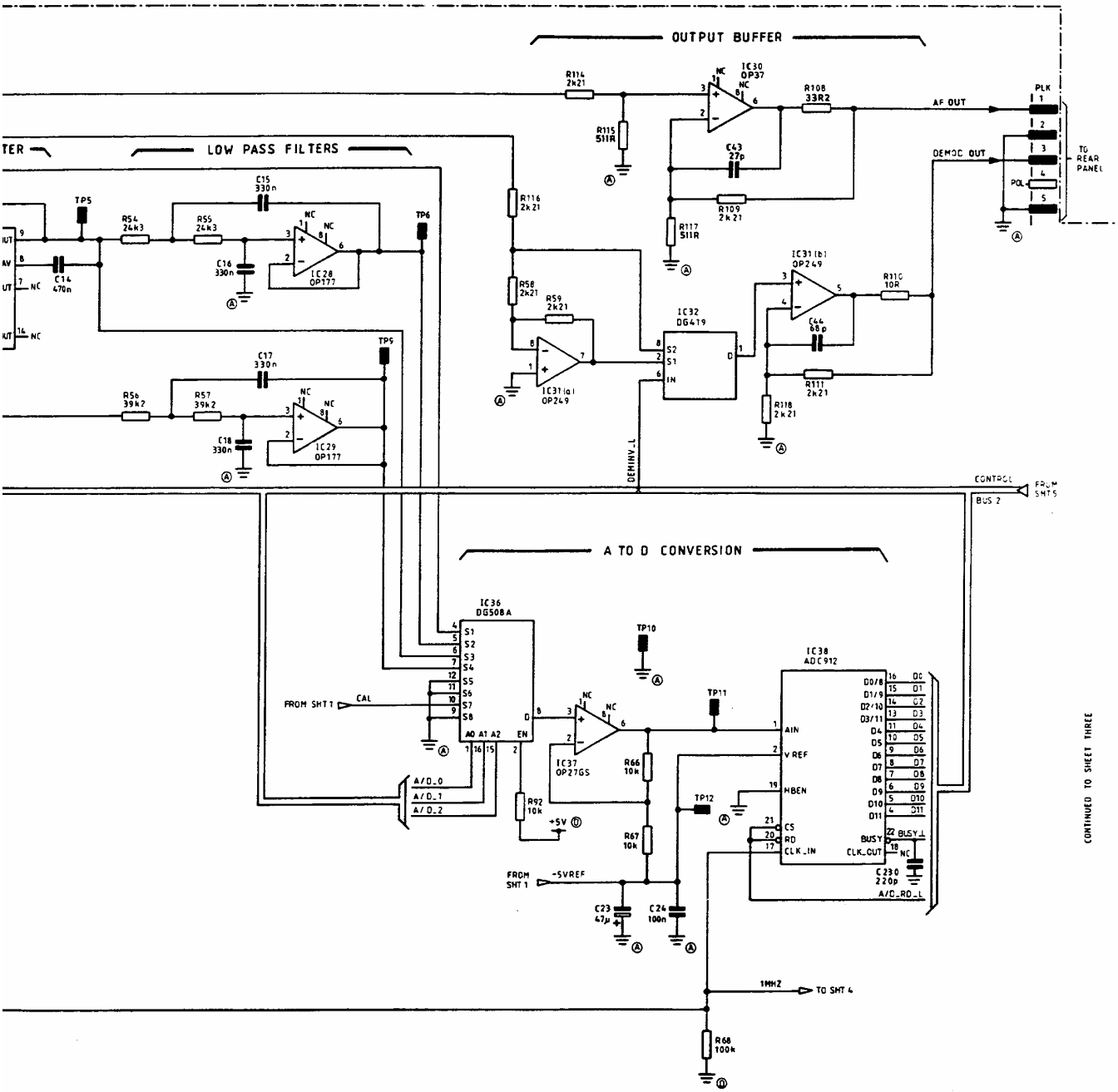
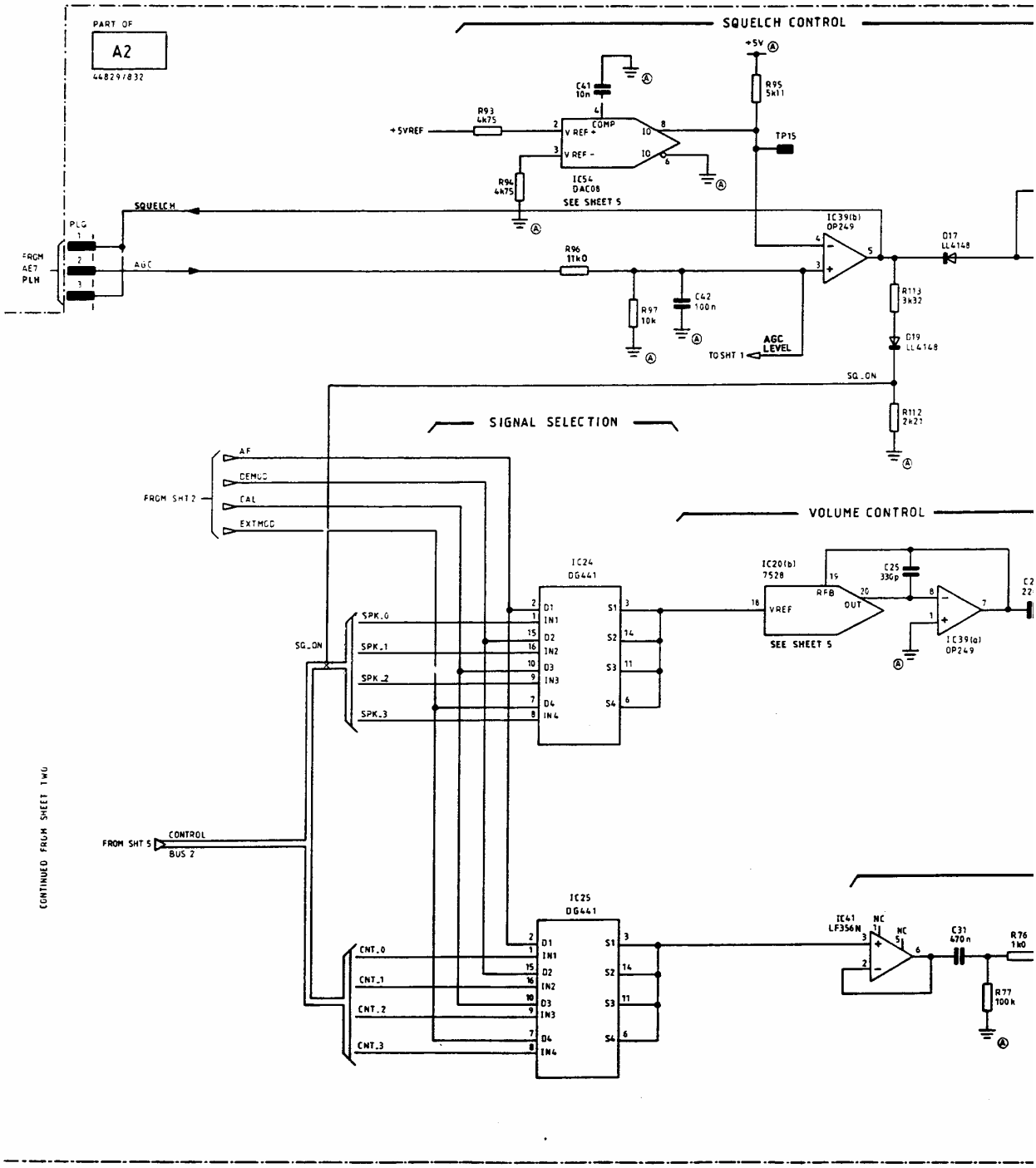



*Fig. 7-41 A2 Signal selection, RMS to DC converter, and ADC - circuit*

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# Circuit diagrams A2

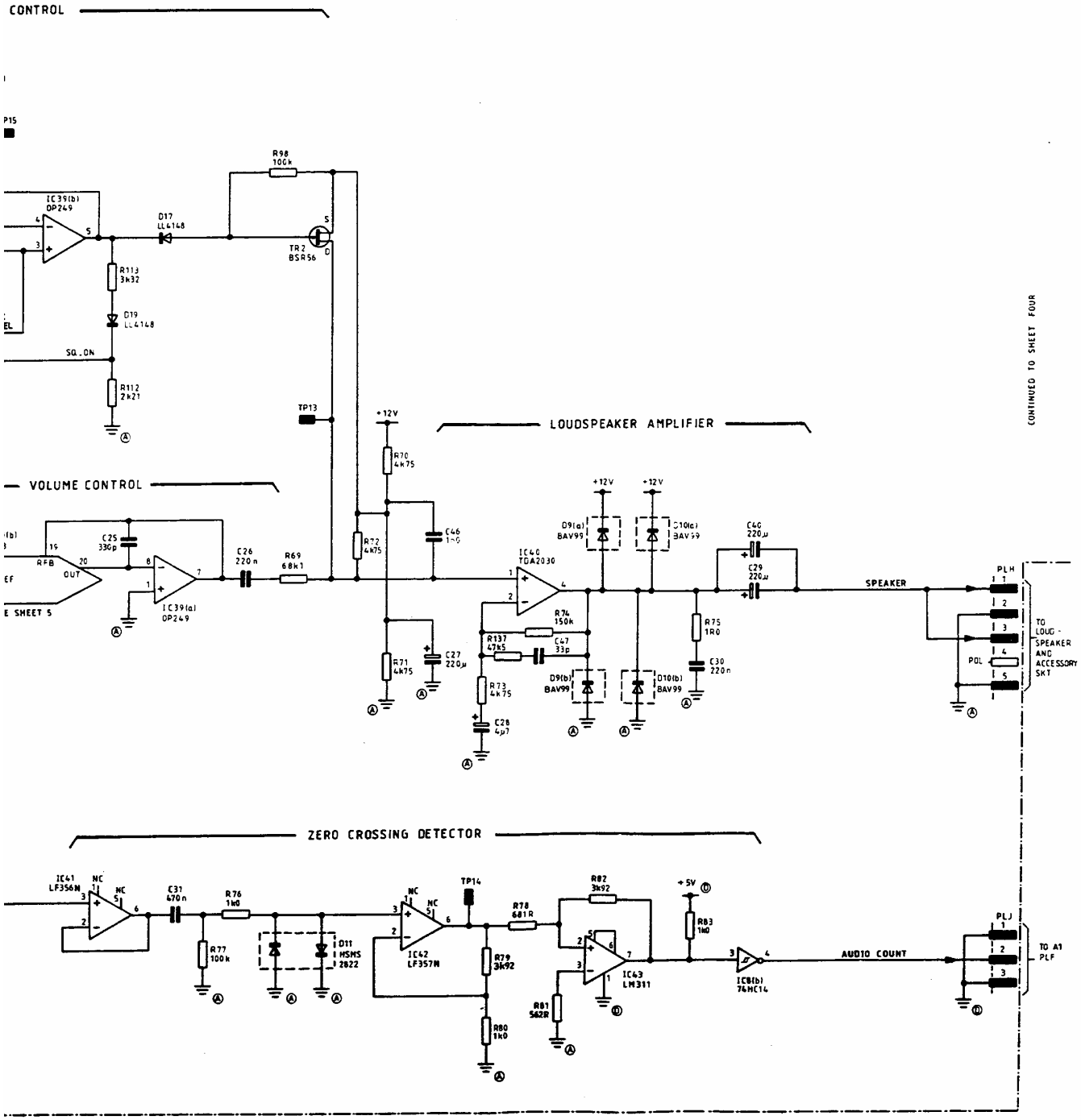
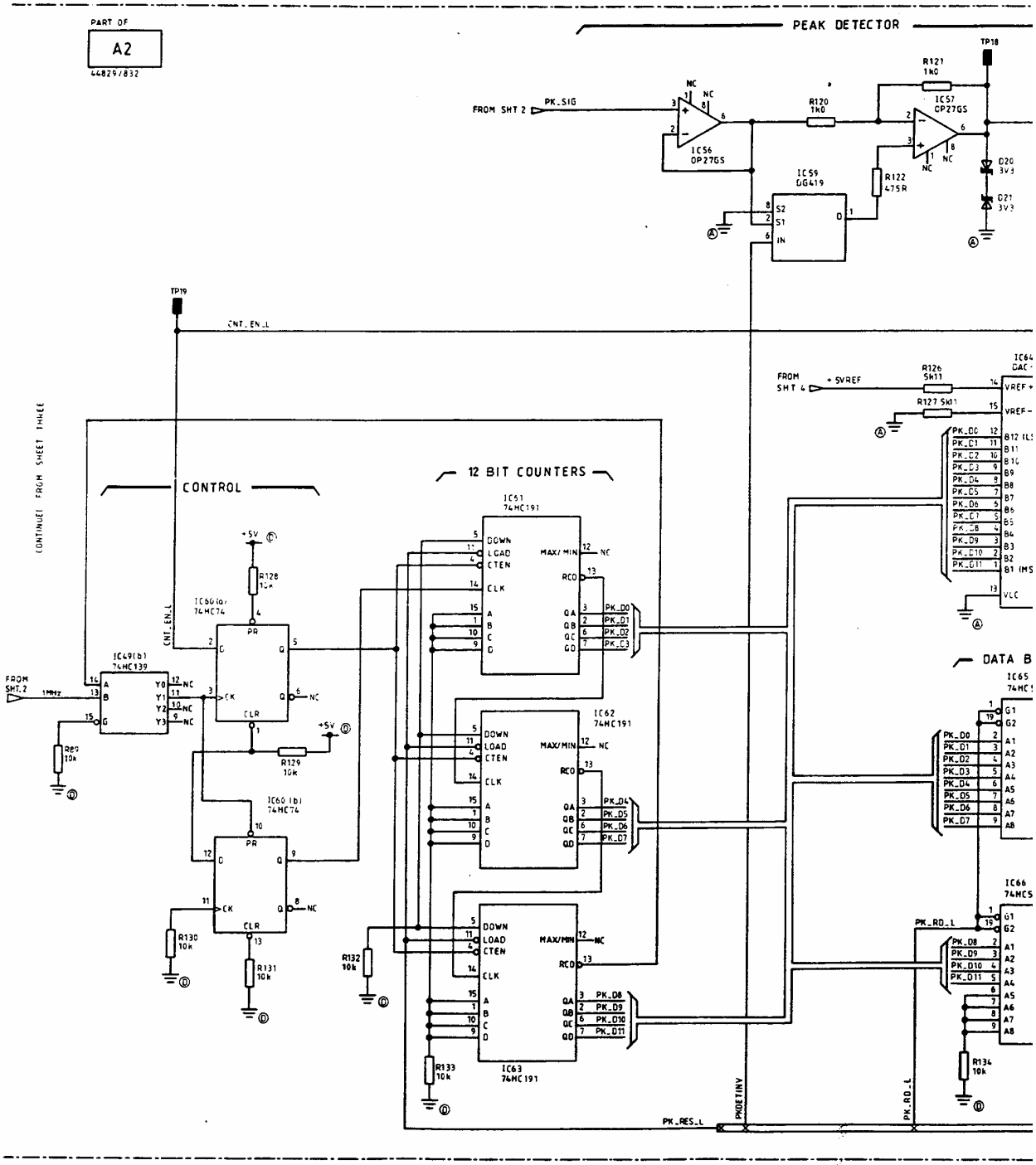



*Fig. 7-42 A2 Squelch control, loudspeaker, and audio count channels - circuit*

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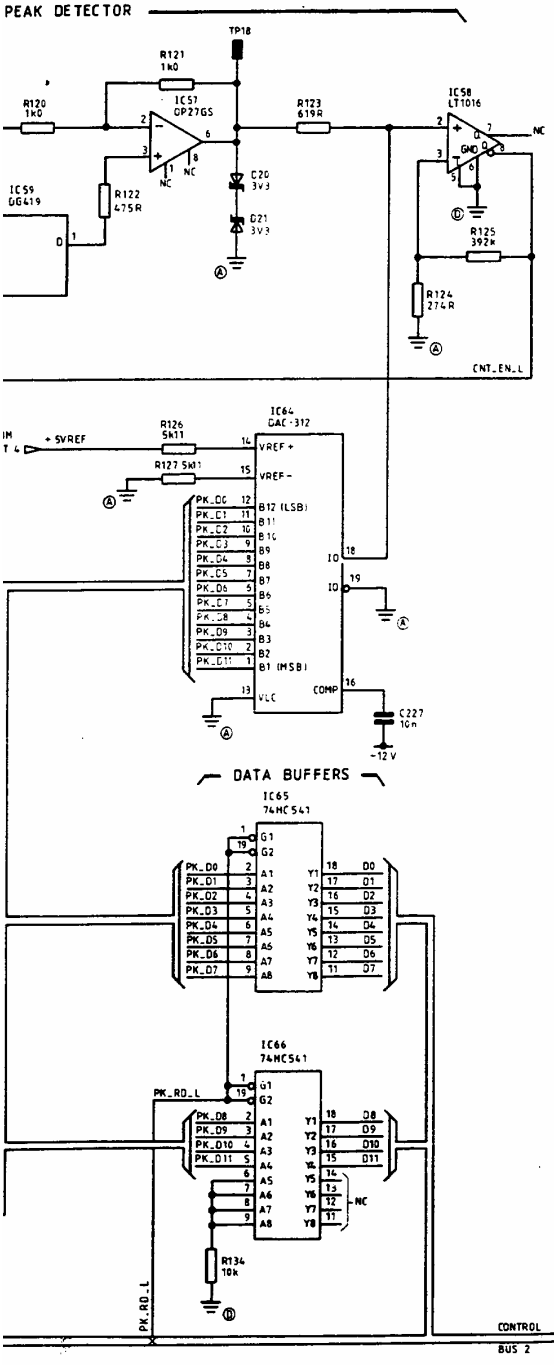
# Circuit diagrams A2




SUPPLY LINE TABLE

| IC | TYPE | +12V PIN | -12V PIN | +5VA PIN | -5VA PIN | OVA PIN | OVD PIN | DECOUPLING +12V TO OVA | DECOUPLING -12V TO OVA | DECOUPLING +5VA TO OVA | DECOUPLING -5VA TO OVA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | OP249 | 6 | 2 | | | | | C101 | C102 | | |
| 2 | 7528 | 17 | | | | 1 | 5 | C103 | | | |
| 3 | OP249 | 6 | 2 | | | | | C104 | C105 | | |
| 4 | DG419 | 4 | 7 | 5 | | 3 | | C106 | C107 | | |
| 5 | OP249 | 6 | 2 | | | | | C108 | C109 | | |
| 6 | LF357 | | | 7 | 4 | | | | | C110 | C111 |
| 7 | LM311 | | | 8 | 4 | | | | | C112 | C113 |
| 9 | OP249 | 6 | 2 | | | | | C114 | C115 | | |
| 11 | OP177 | 7 | 4 | | | | | C116 | C117 | | |
| 12 | OP177 | 7 | 4 | | | | | C118 | C119 | | |
| 13 | OP177 | 7 | 4 | | | | | C120 | C121 | | |
| 14 | DG508A | 13 | 3 | | | 14 | | C122 | C123 | | |
| 15 | OP177 | 7 | 4 | | | | | C124 | C125 | | |
| 16 | OP177 | 7 | 4 | | | | | C126 | C127 | | |
| 17 | DG441 | 13 | 4 | | | 5 | | C128 | C129 | | |
| 18 | OP249 | 6 | 2 | | | | | C130 | C131 | | |
| 19 | DG419 | 4 | 7 | 5 | | 3 | | C132 | C133 | | |
| 20 | 7528 | 17 | | | | 1 | 5 | C134 | | | |
| 21 | OP249 | 6 | 2 | | | | | C135 | C136 | | |
| 22 | DG441 | 13 | 4 | | | 5 | | C137 | C138 | | |
| 23 | DG441 | 13 | 4 | | | 5 | | C139 | C140 | | |
| 24 | DG441 | 13 | 4 | | | 5 | | C141 | C142 | | |
| 25 | DG441 | 13 | 4 | | | 5 | | C143 | C144 | | |
| 26 | OP27GS | 7 | 4 | | | | | C145 | C146 | | |
| 27 | AD637 | 11 | 10 | | | 3 | | C147 | C148 | | |
| 28 | OP177 | 7 | 4 | | | | | C149 | C150 | | |
| 29 | OP177 | 7 | 4 | | | | | C151 | C152 | | |
| 30 | OP27GS | 7 | 4 | | | | | C153 | C154 | | |
| 31 | OP249 | 6 | 2 | | | | | C155 | C156 | | |
| 32 | DG419 | 4 | 7 | 5 | | 3 | | C157 | C158 | | |
| 35 | DG508A | 13 | 3 | | | 14 | | C165 | C166 | | |
| 37 | OP27GS | 7 | 4 | | | | | C167 | C168 | | |
| 38 | ADC912 | | 23 | 24 | | 3 | 12 | | C170 | C169 | |
| 39 | OP249 | 6 | 2 | | | | | C171 | C172 | | |
| 40 | 2030 | 5 | | | | 3 | | C173 | | | |
| 41 | LF356 | 7 | 4 | | | | | C174 | C175 | | |
| 42 | LF357 | | | 7 | 4 | | | | | C176 | C177 |
| 43 | LM311 | | | 8 | 4 | | | | | C178 | C179 |
| 54 | DAC08 | 1 | 7 | | | | | C190 | C191 | | |
| 56 | OP27GS | 7 | 4 | | | | | C192 | C193 | | |
| 57 | OP27GS | 7 | 4 | | | | | C194 | C195 | | |
| 58 | LT1016 | | | 1 | 4 | | | | | C196 | C197 |
| 59 | DG419 | 4 | 7 | 5 | | 3 | | C198 | C199 | | |
| 64 | DAC312 | 20 | 17 | | | | | C228 | C229 | | |

| IC | TYPE | +5VD PIN | OVD PIN | DECOUPLING +5VD TO OVD |
|---|---|---|---|---|
| 8 | HC14 | 14 | 7 | C180 |
| 44 | 8574 | 16 | 8 | C181 |
| 45 | 8574 | 16 | 8 | C182 |
| 46 | 8574 | 16 | 8 | C183 |
| 47 | 8574 | 16 | 8 | C184 |
| 48 | 8574 | 16 | 8 | C185 |
| 49 | HC139 | 16 | 8 | C186 |
| 50 | HC139 | 16 | 8 | C187 |
| 51 | HC139 | 16 | 8 | C188 |
| 55 | HC374 | 20 | 10 | C189 |
| 60 | HC74 | 14 | 7 | C220 |
| 61 | HC191 | 16 | 8 | C221 |
| 62 | HC191 | 16 | 8 | C222 |
| 63 | HC191 | 16 | 8 | C223 |
| 65 | HC541 | 20 | 10 | C224 |
| 66 | HC541 | 20 | 10 | C225 |
| 67 | HC138 | 16 | 8 | C226 |

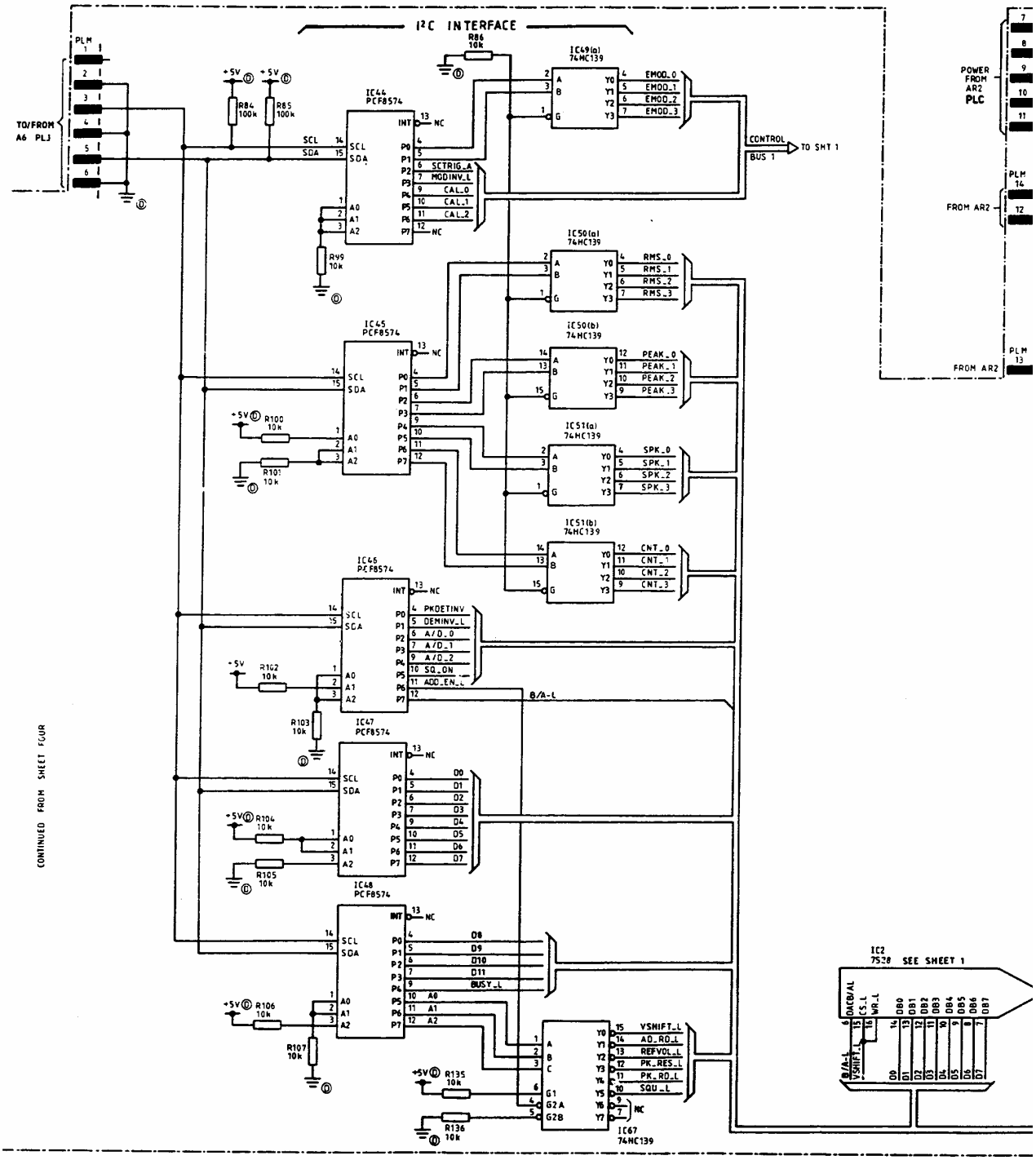
C101 TO C158, C165 TO C199, C220 TO C226, C228 TO C229 — ALL 10n

EXTRA ELECTROLYTIC DECOUPLING

| CAP | VALUE | NEAR IC | +VE PIN | -VE PIN |
|---|---|---|---|---|
| C200 | 10u | 7 | +5VA | OVA |
| C201 | 10u | 7 | OVA | -5VA |
| C202 | 10u | 27 | +12V | OVA |
| C203 | 10u | 27 | OVA | -12V |
| C208 | 10u | 38 | +5VA | OVA |
| C209 | 10u | 38 | OVA | -12V |
| C210 | 220u | 40 | +12V | OVA |
| C211 | 220u | 40 | +12V | OVA |
| C212 | 10u | 43 | +5VA | OVA |
| C213 | 10u | 43 | OVA | -5VA |
| C214 | 10u | 58 | +5VA | -5VA |

CONTINUED TO SHEET FIVE

*Fig. 7-43 A2 Peak detector - circuit*

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# Circuit diagrams A2

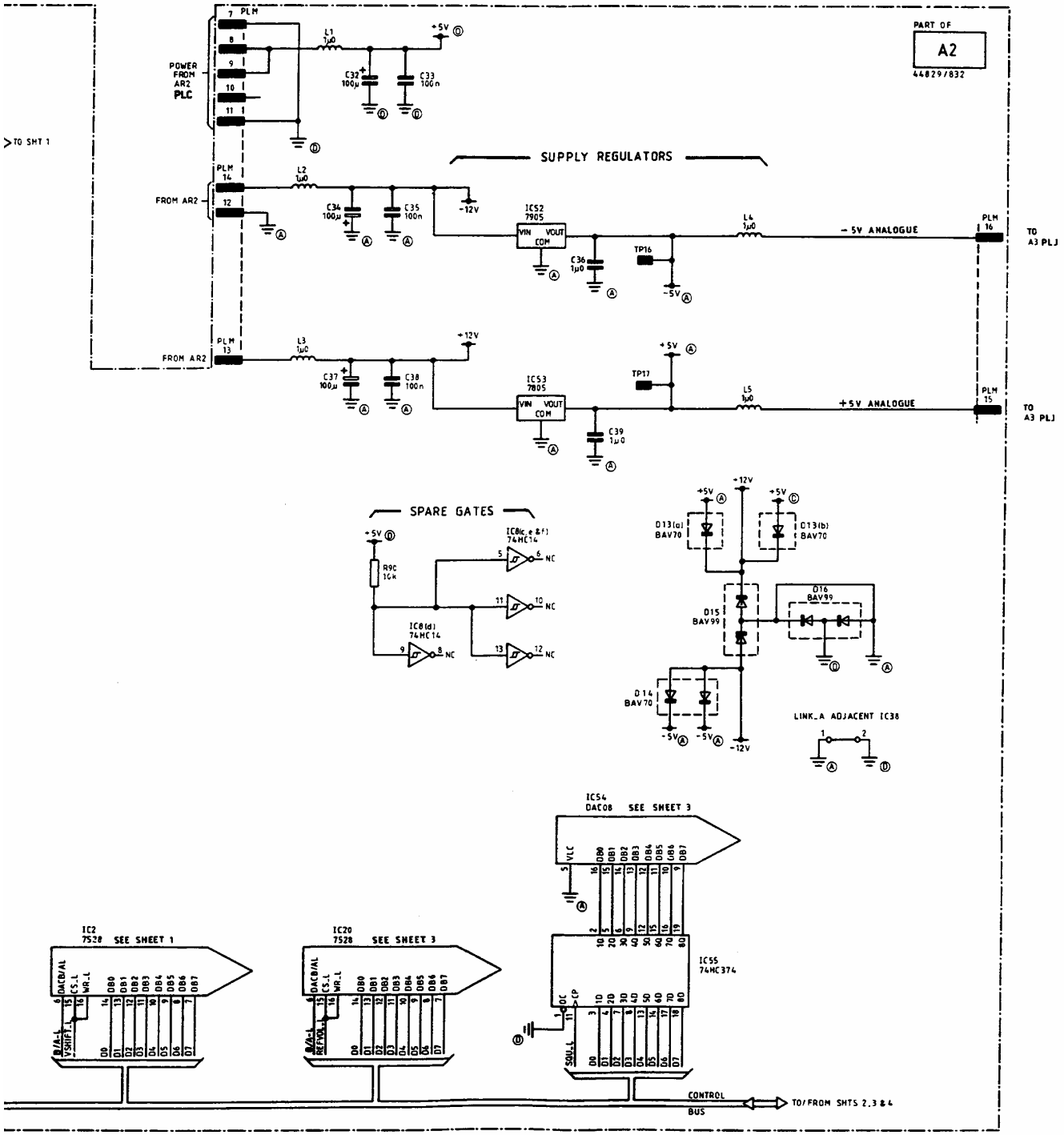
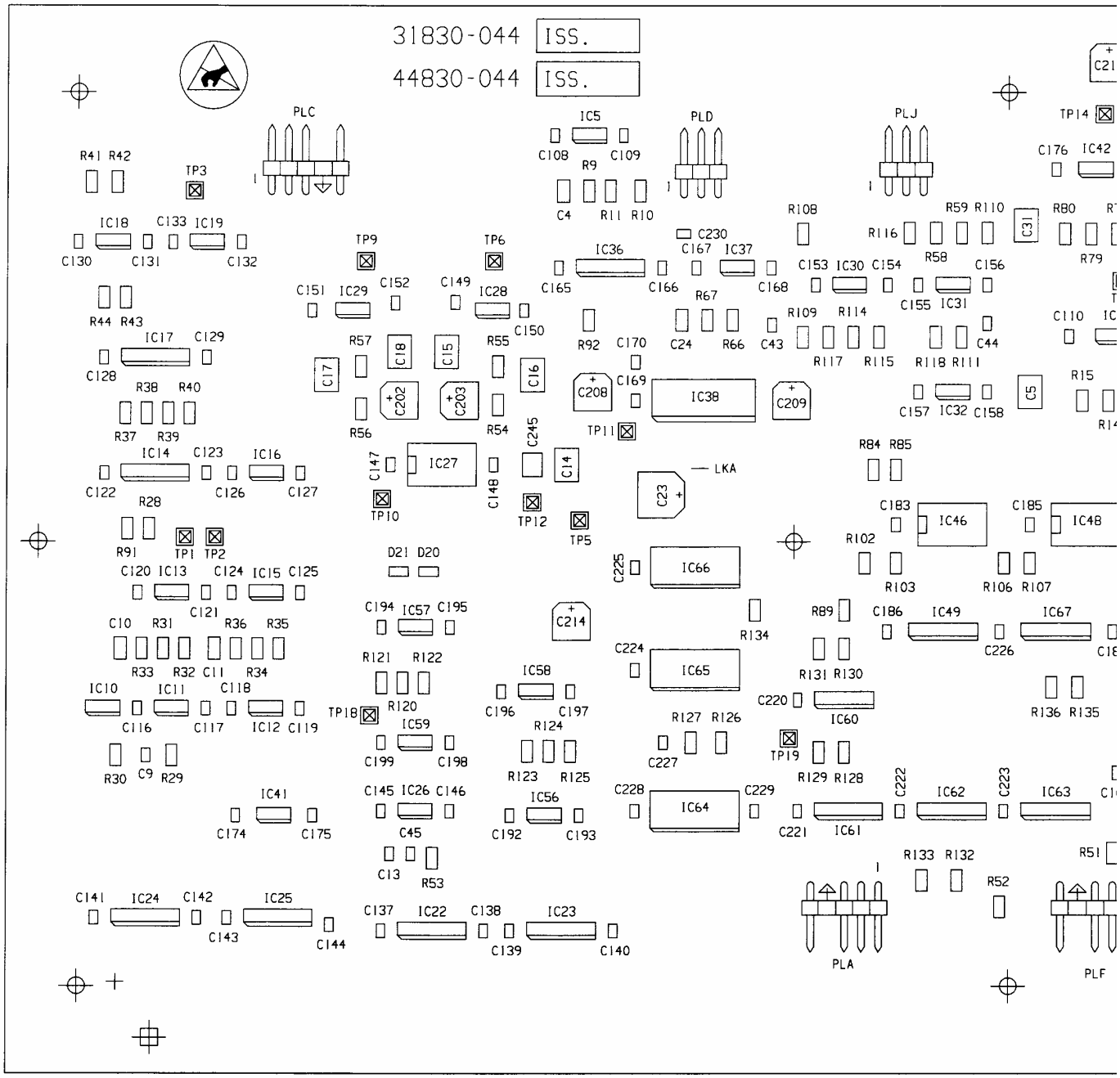
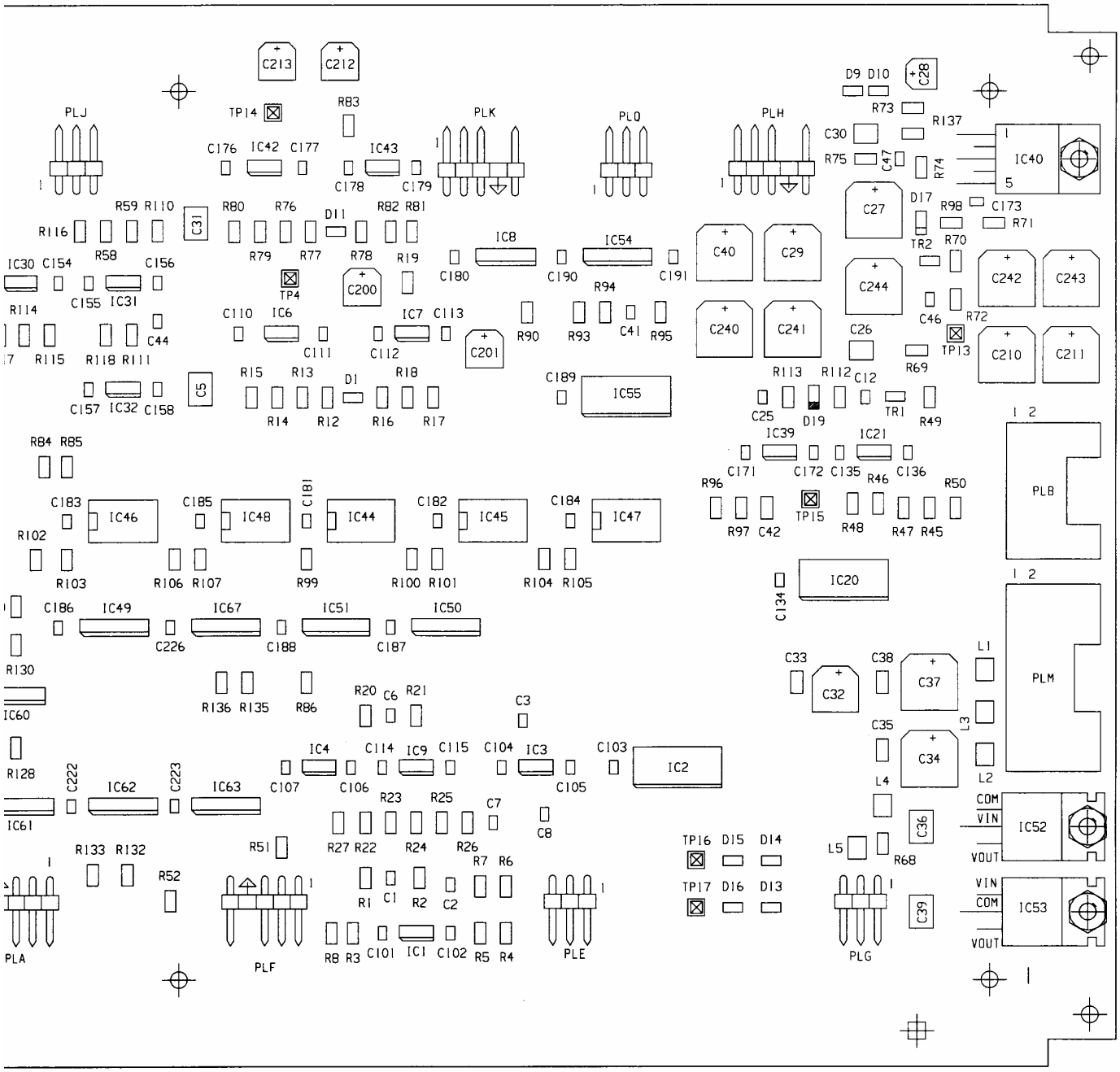



*Fig. 7-44 A2 I²C interface, supply regulators - circuit*



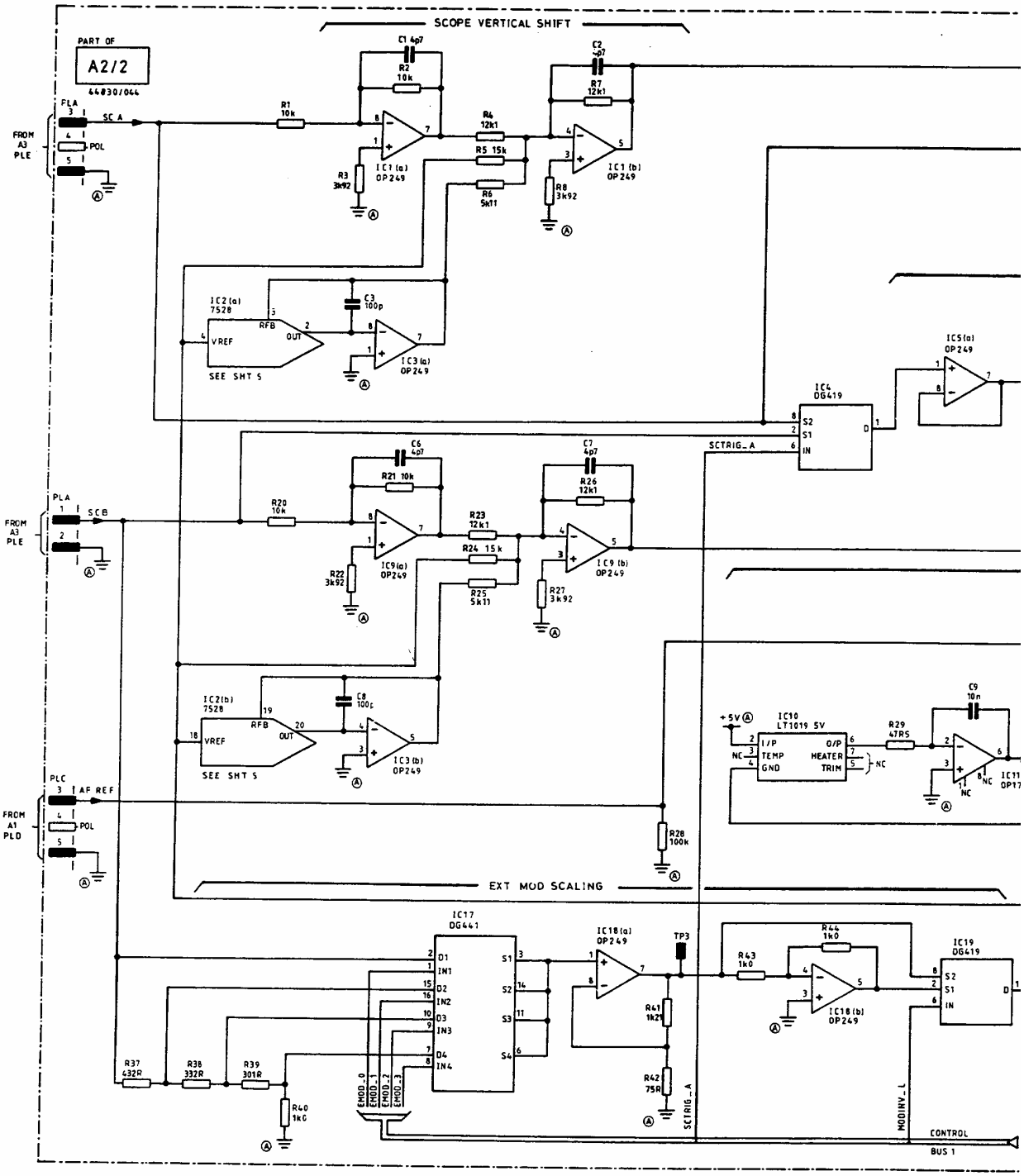

**I²C interface, supply regulators A2**

Drg. No. 44830/044




**A2** Drg. No. 44830/044 Sheet 1 of 1 Issue 3

*Fig. 7-45 A2/2 Audio processor 2 - component layout*

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# Circuit diagrams A2/2

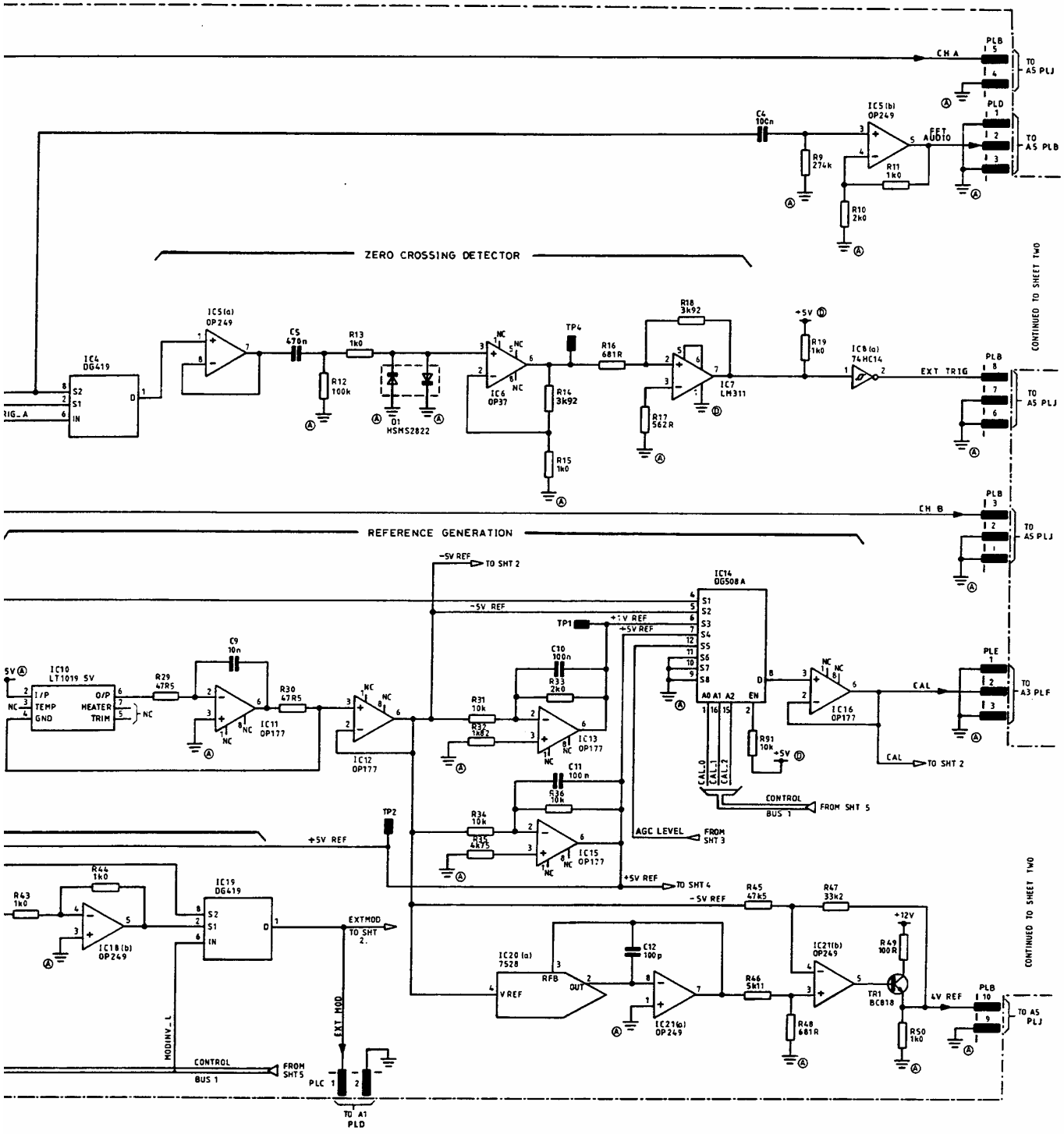
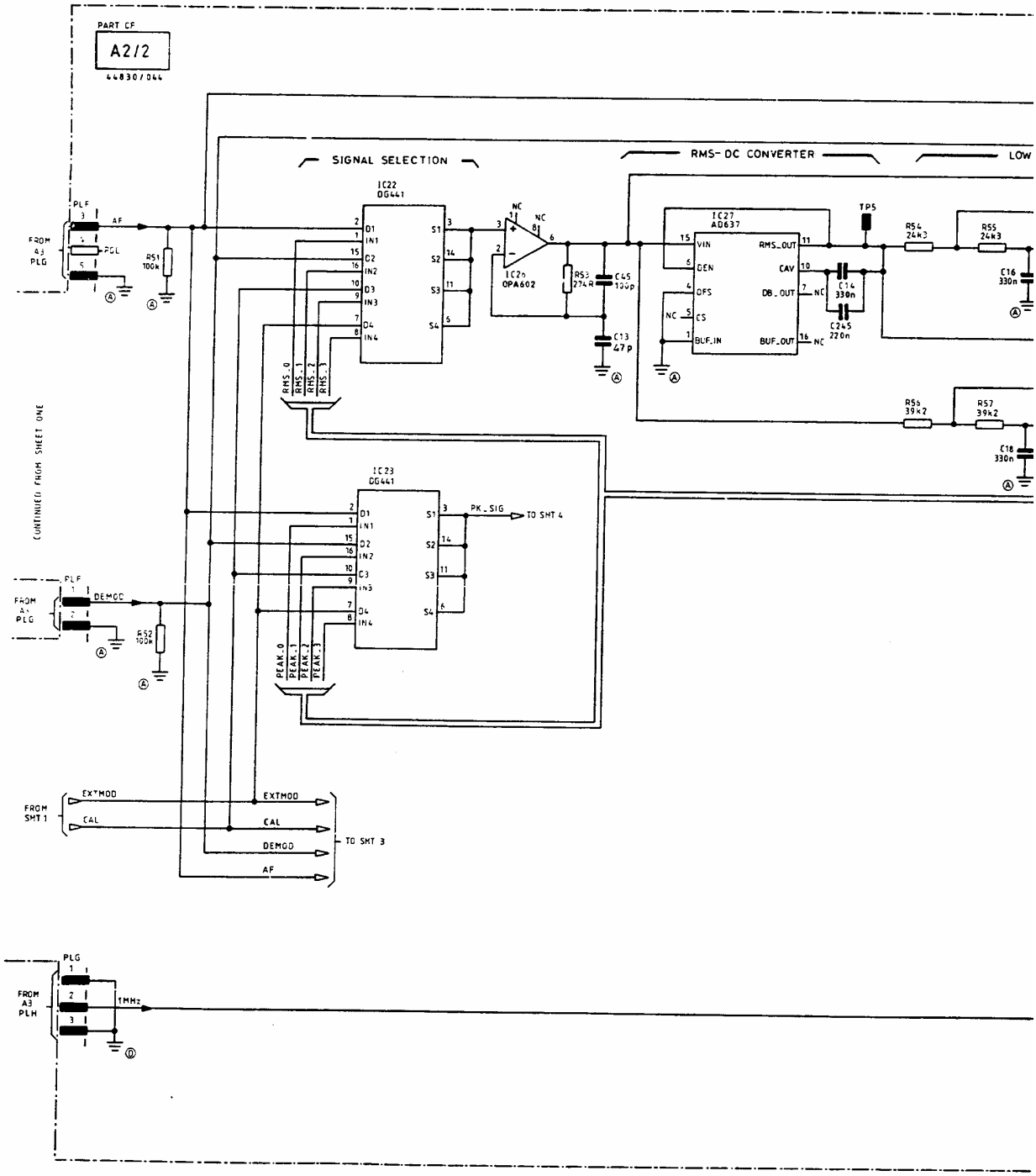



*Fig. 7-46 A2/2 Vertical shift, ext mod scaling, calibration ref gen - circuit*

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# Circuit diagrams A2/2

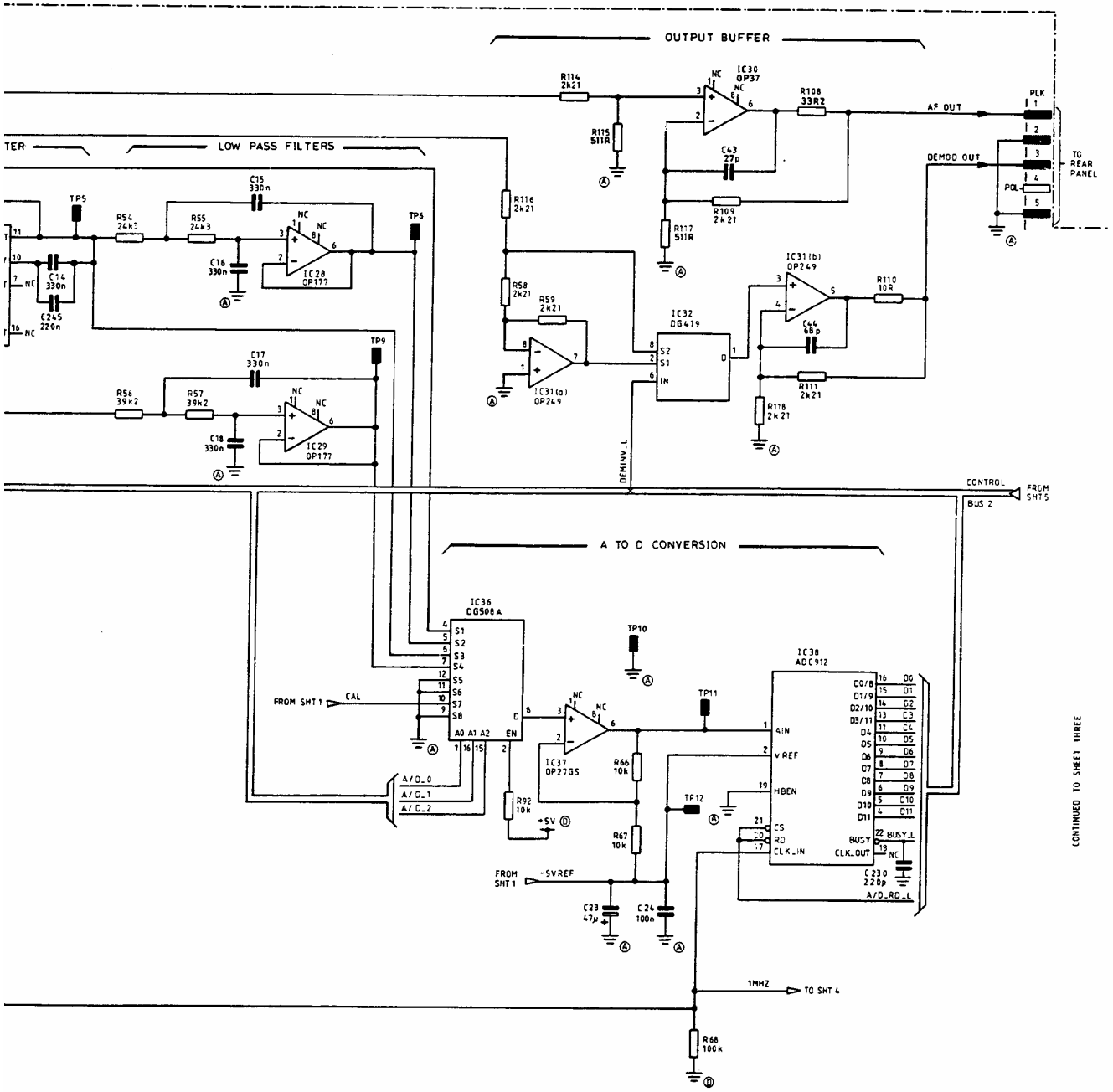
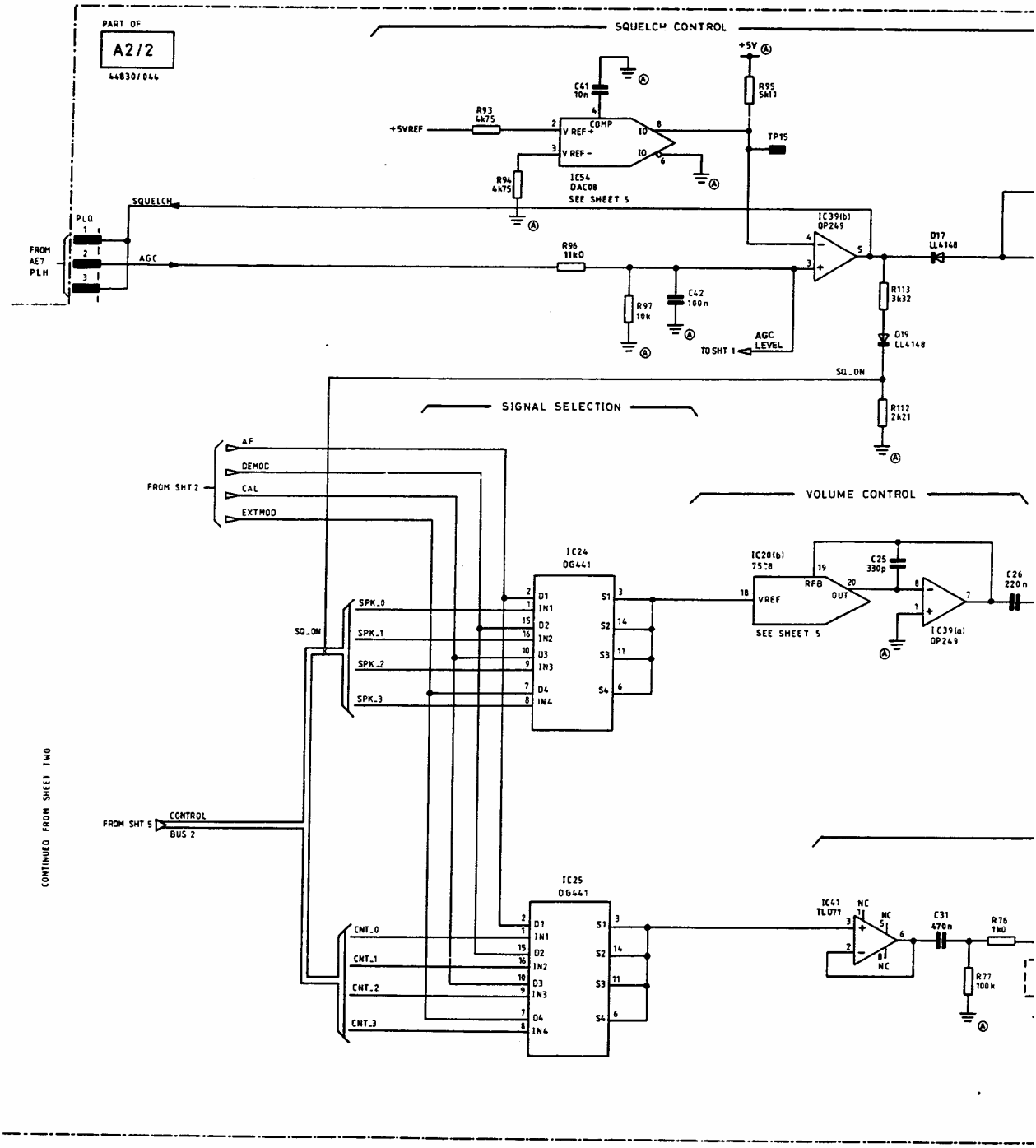



*Fig. 7-47 A2/2 Signal selection, RMS to DC converter and ADC - circuit*

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