FSCM	DWG NO.	SH	REV

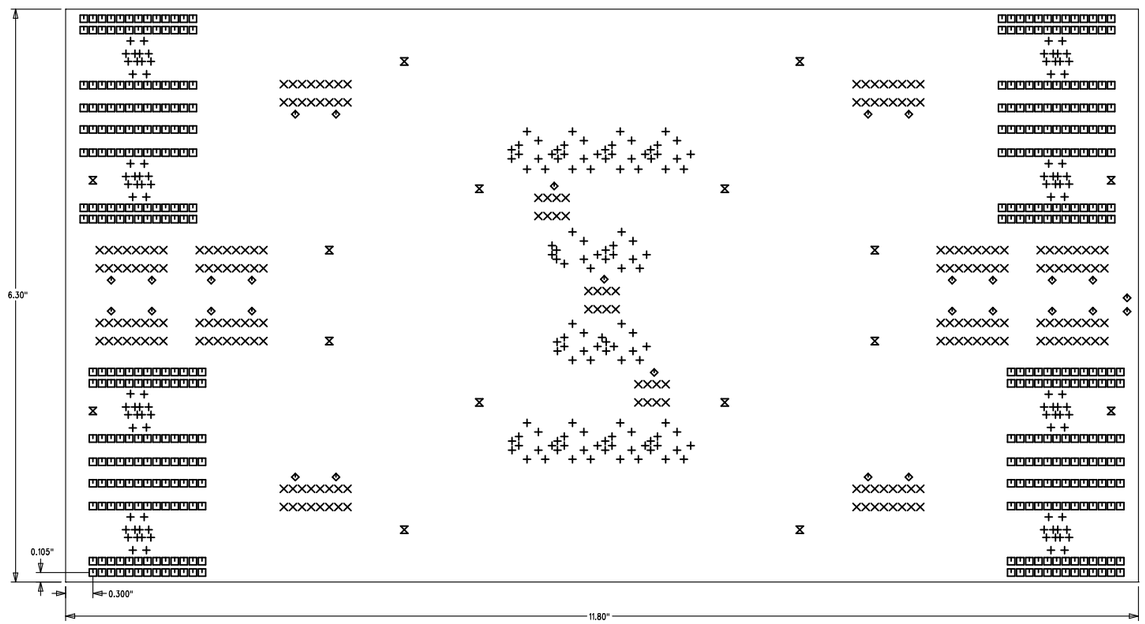
REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED

CONTROLLED IMPEDANCE REQUIREMENTS ARE 50 +/- 5 OHMS

FINISHED CONDUCTOR WIDTH IS .008" ON OUTER LAYERS AND .010" ON INNER LAYERS.
DIELECTRIC SEPERATION BETWEEN LAYERS IS SPECIFIED ON LAYER STACK-UP.

BROOKHAVEN NATIONAL LABORATORY
10-961-1 REV - 7/21/99
BACK MOTHERBOARD 4



FABRICATION NOTES (REV 1.0)

1) FINISHED TRACE LINE WIDTHS SHOULD MATCH SUPPLIED GERBER FILES, WITHIN +/-.001.

2) MATERIAL :
☒ FR4 (GF per MIL-P-13949) ☐ CPY (CI per MIL-P-13949) ☐ OTHER

3) COPPER WEIGHT:
OUTER LAYERS : ☐ 1/4 oz. ☐ 1/2 oz. ☒ 1 oz. ☐ 2 oz.
INNER LAYERS : ☐ 1/4 oz. ☐ 1/2 oz. ☒ 1 oz. ☐ 2 oz. ☐ NONE

4) SOLDER MASK
☒ LIQUID PHOTOIMAGEABLE ☐ DRY FILM ☐ NONE
☒ OVER BARE COPPER ☐ OVER TIN LEAD ☐ OVER FULL BODY GOLD
☒ GREEN ☐ RED ☐ BLUE

5) OVERALL BOARD THICKNESS:
☐ 0.062" ☐ 0.093" ☐ 0.125" ☒ 0.168"
☐ +/- 0.005" ☒ +/- 0.007" ☐ +/- 0.010" ☐ OTHER

6) BARE BOARD ELECTRICAL TEST:
☐ TESTED TO GERBER DATA ☒ NO TEST REQUIRED

7) HOLE DIAMETER TOLERANCES ARE: (EXCEPT WHERE NOTED)
PLATED HOLES : +/- 0.003". NON PLATED HOLES : +/- 0.002".

8) SILK SCREEN USING EPOXY BASED INK.
☐ BOTH SIDES ☐ PRIMARY SIDE ☐ SECONDARY SIDE ☒ NONE
☐ WHITE ☐ YELLOW ☐ BLACK

9) MINIMUM ANNULAR RING:
☒ .003" FOR EXTERNAL LAYERS
☒ .002" FOR INTERNAL LAYERS

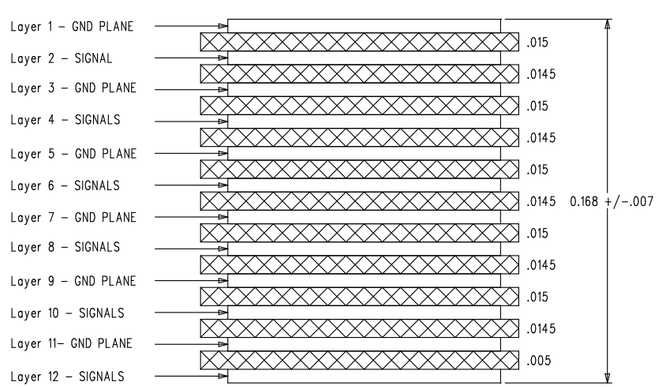
10) PLANE REGISTRATION:
+/- .005" TO TOP PLANE FOR ALL PLANES

11) MINIMUM PLATING THROUGH ALL HOLES IS:
.001" THICK COPPER

12) WARP AND TWIST:
NOT TO EXCEED .007" PER INCH ACROSS THE DIAGONAL

13) ACCEPTABILITY: (PER LATEST REVISION)
☒ IPC-A-600 ☐ IPC-RB-276 ☐ MIL-P-55110

14) SURFACE MOUNT PADS:
TOP LAYER: 0
BOTTOM LAYER: 360
TOTAL: 360



HOLE SIZE CHART

	SYM	SIZE (AFTER PLATING)	QTY	PLATED
	+	.022 +.003 -.003	216	YES
*	×	.053 +.002 -.002	216	YES
*	□	.057 +.001 -.001	416	YES
	◇	.060 +.003 -.003	29	YES
*	⧖	.213 +.003 -.000	16	NO

QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX= ± .010 .XXX= ± .005 ANGLES ± 1° ½

MATERIAL

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN K WOLNIEWICZ	7-21-99
CHECKED	
ISSUED	

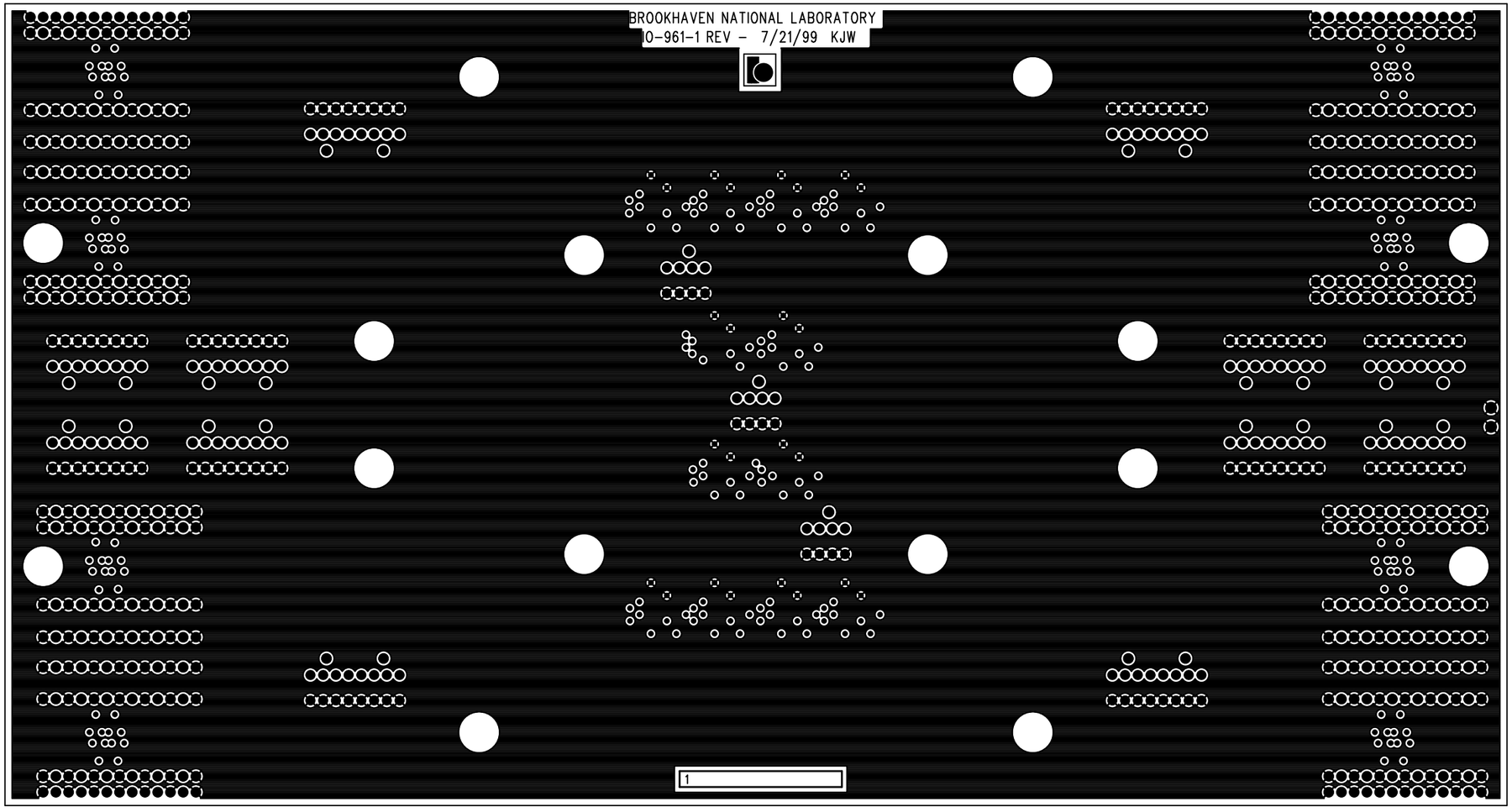
CUSTOMER
BROOKHAVEN NATIONAL LABORATORY
INSTRUMENTATION DIVISION
UPTON, NEW YORK

TITLE
ATLAS MIDDLE/BACK MOTHERBOARD 4
(FORMERLY 10-806-4)

SIZE	TICKET NO.	DWG NO.	REV.
C	T-1999-106	10-961-1	-

SCALE 1 : 1 SHEET 1 OF 1

BROOKHAVEN NATIONAL LABORATORY
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 1 - GND PLANE



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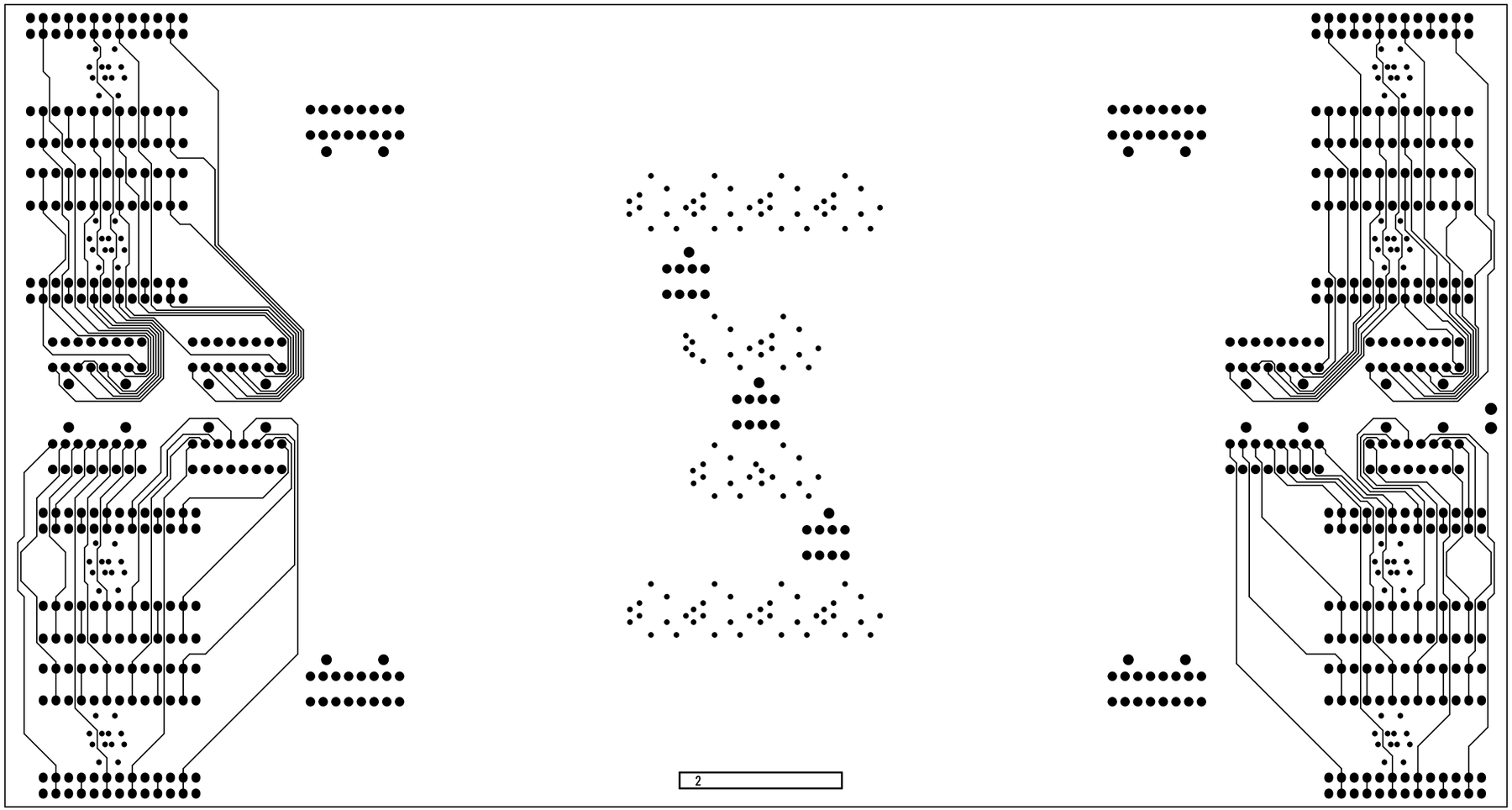
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 2 - SIGNALS



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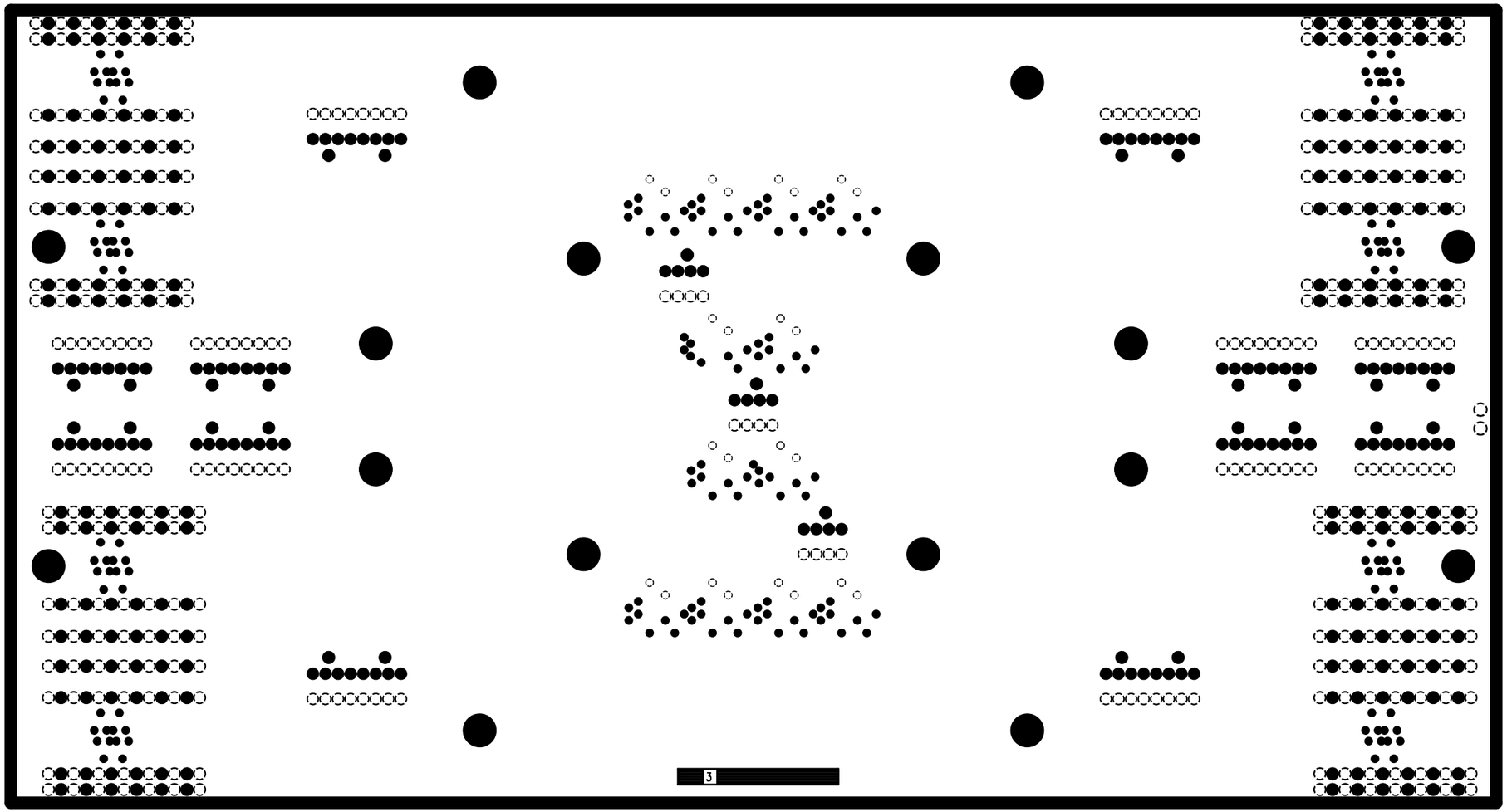
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 3 - GROUND PLANE



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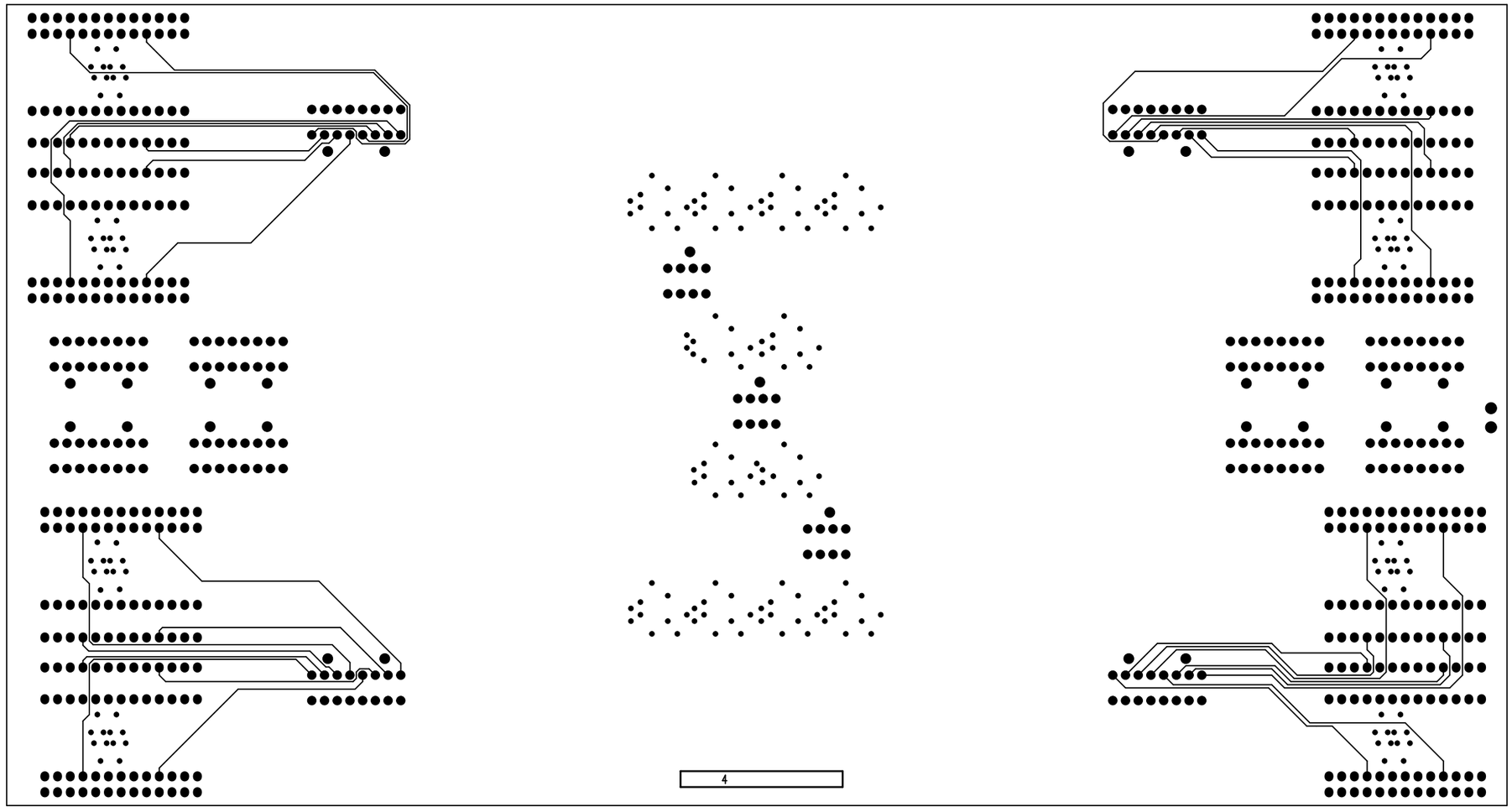
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 4 - SIGNALS



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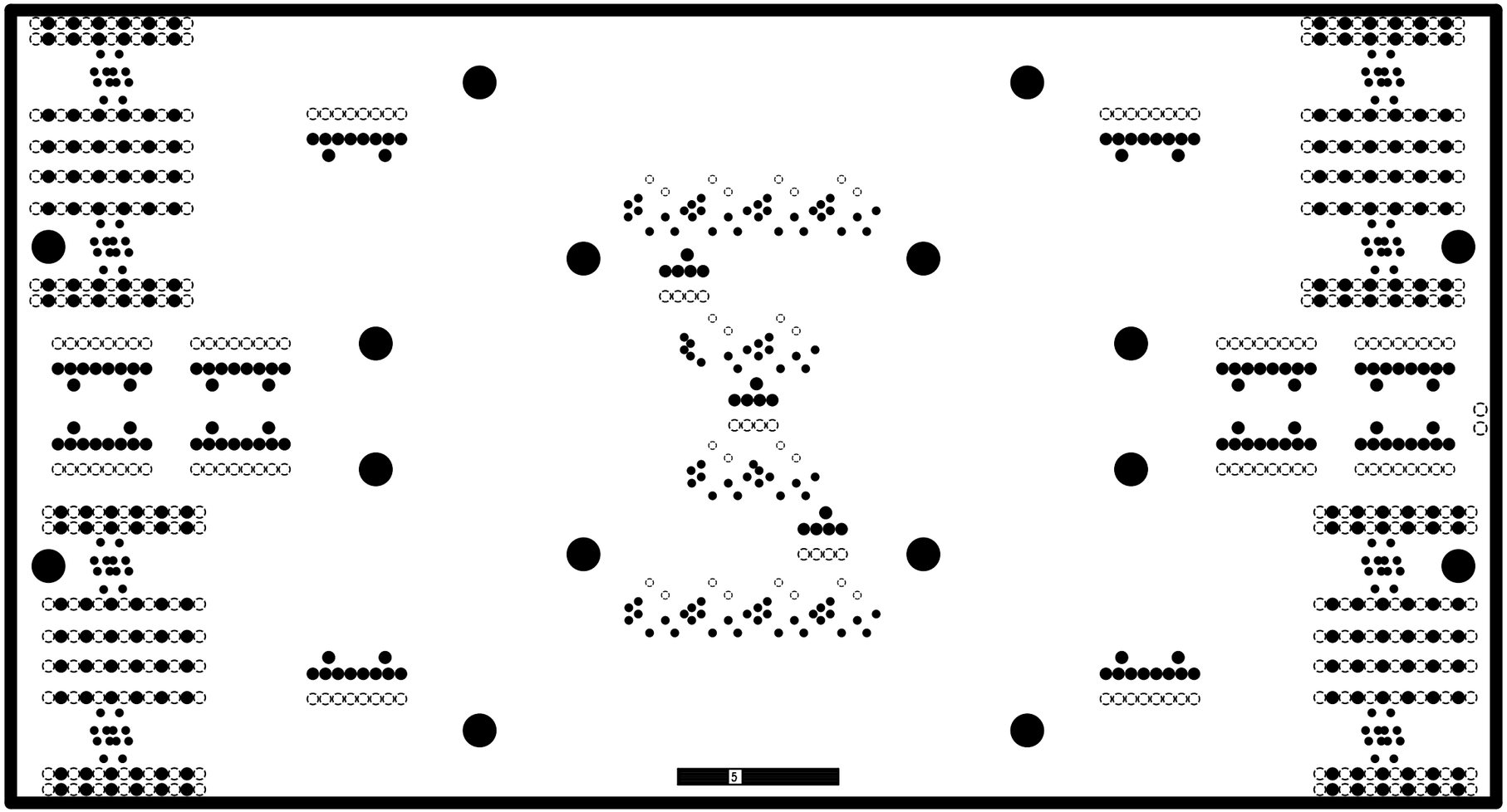
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 5 - GROUND PLANE



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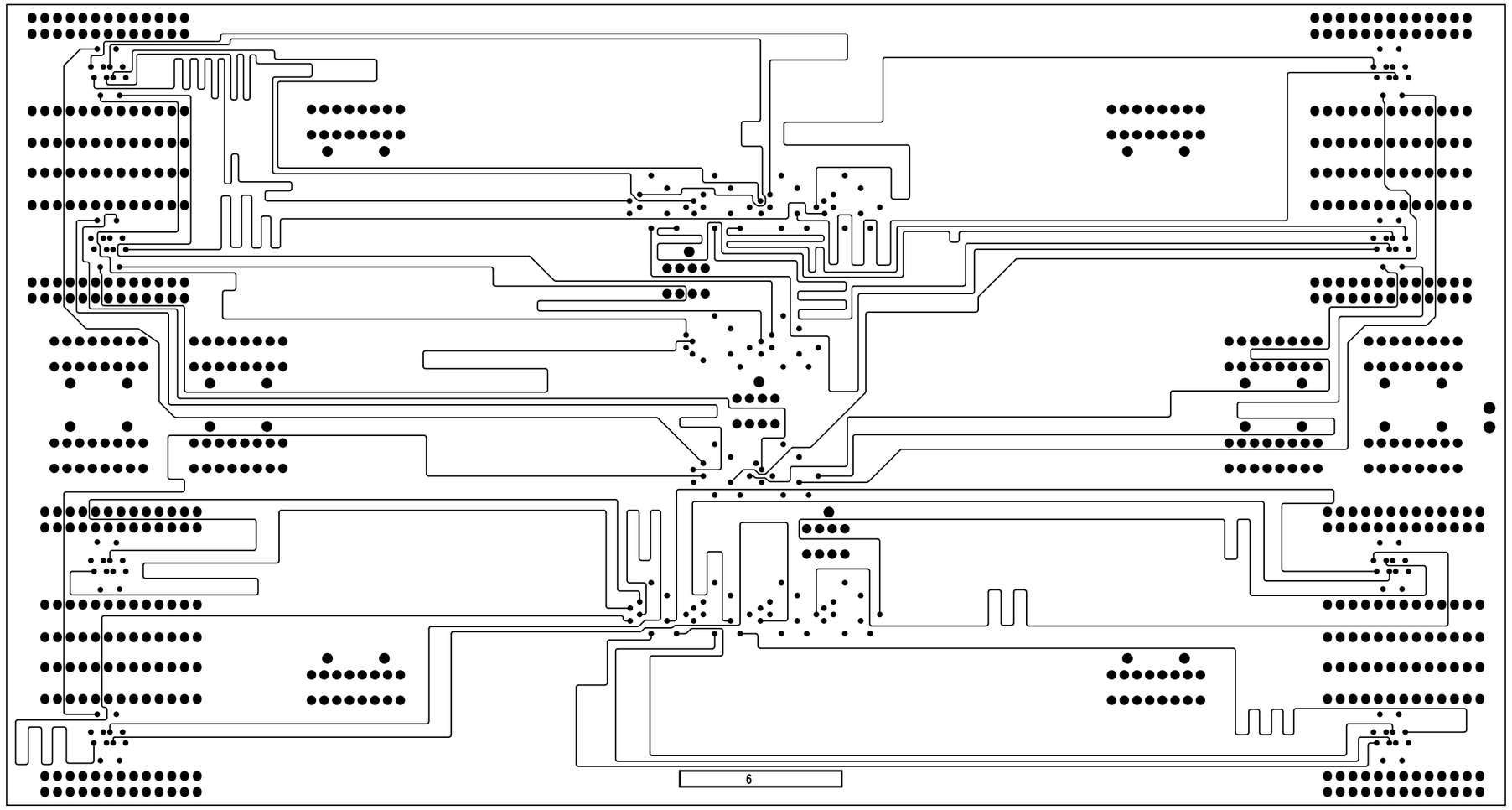
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 6 - SIGNALS



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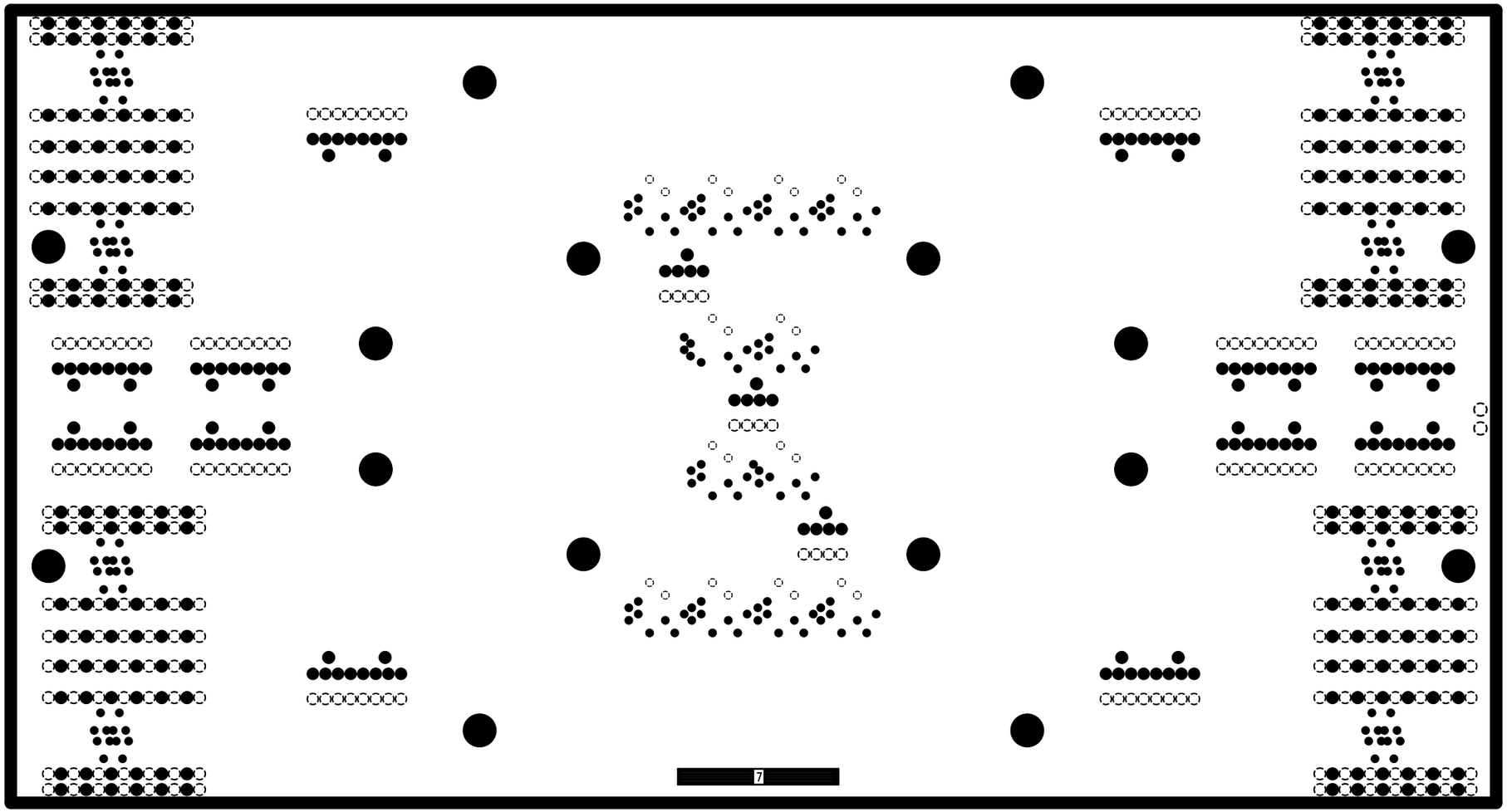
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 7 - GROUND PLANE



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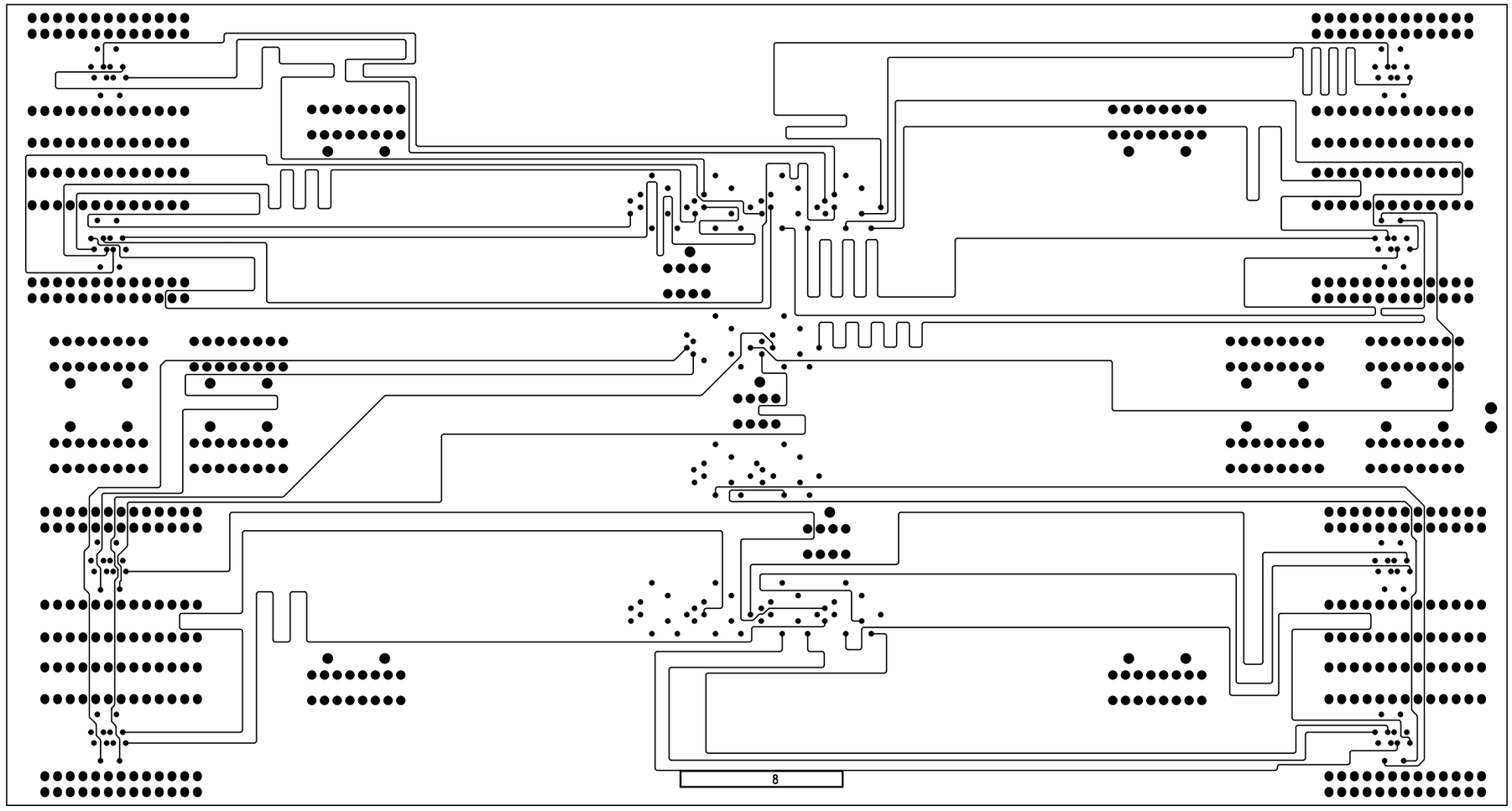
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 8 - SIGNALS



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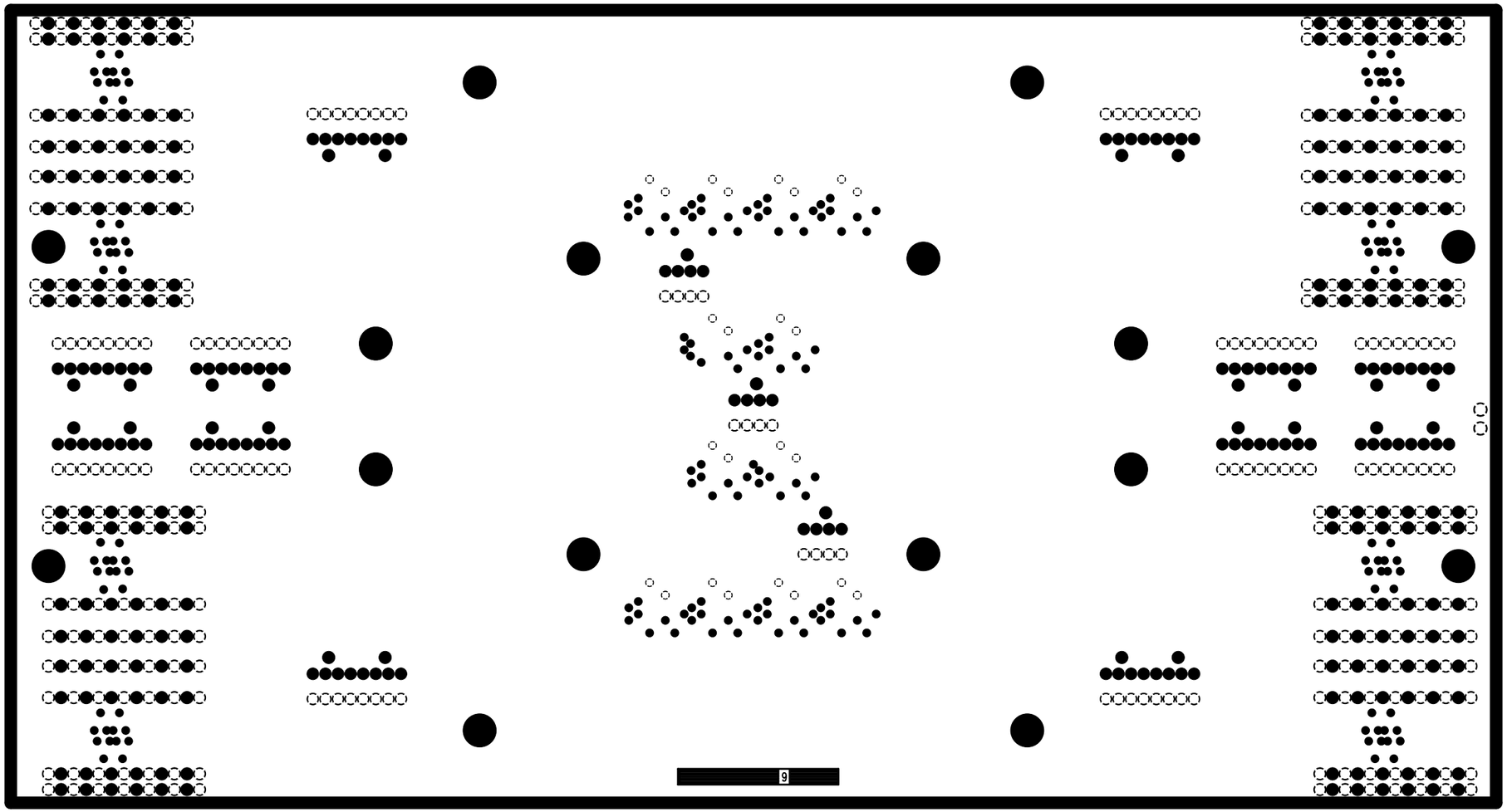
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 9 - GROUND PLANE



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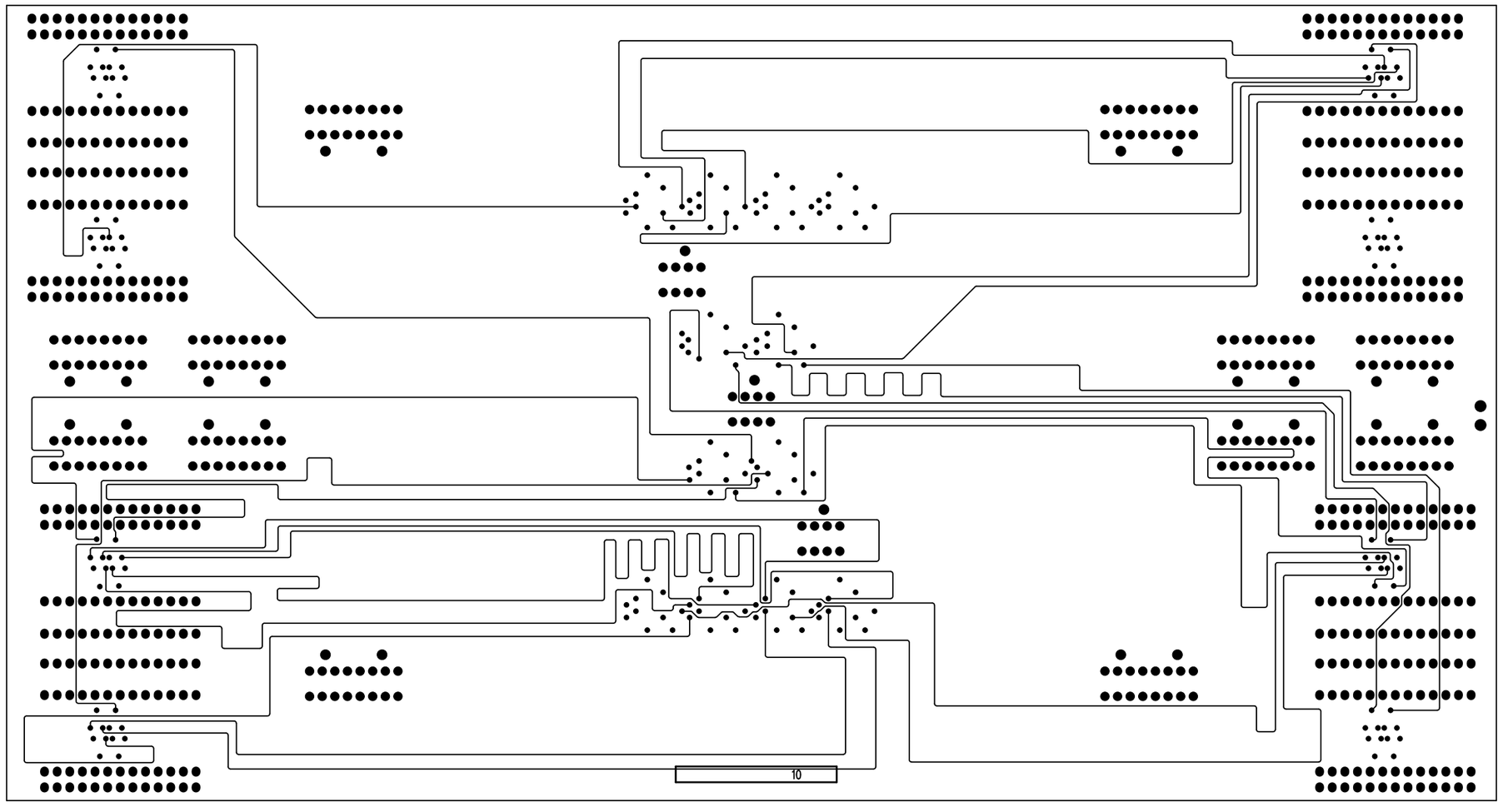
10-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 10 - SIGNALS



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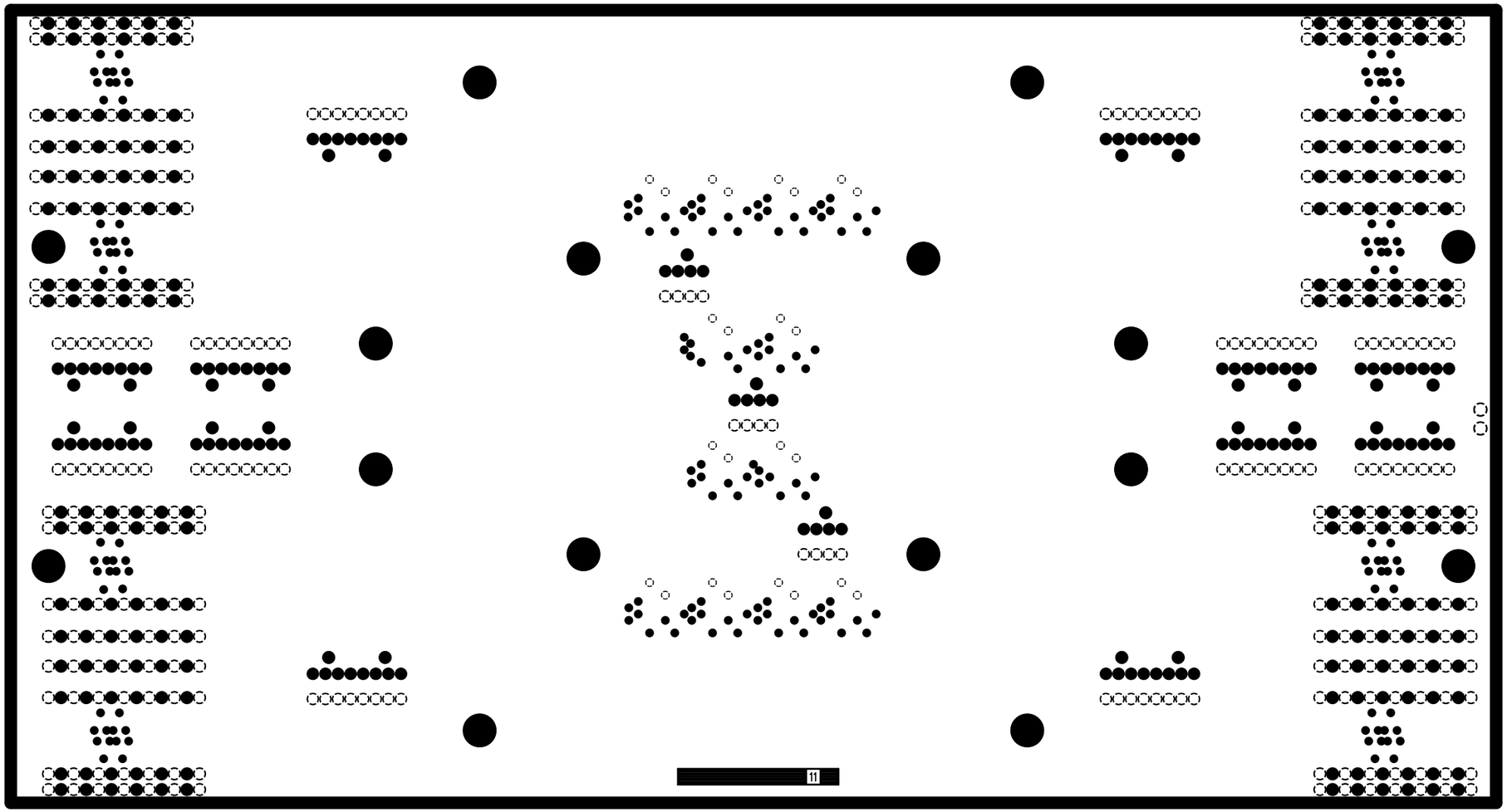
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 11 - GROUND PLANE



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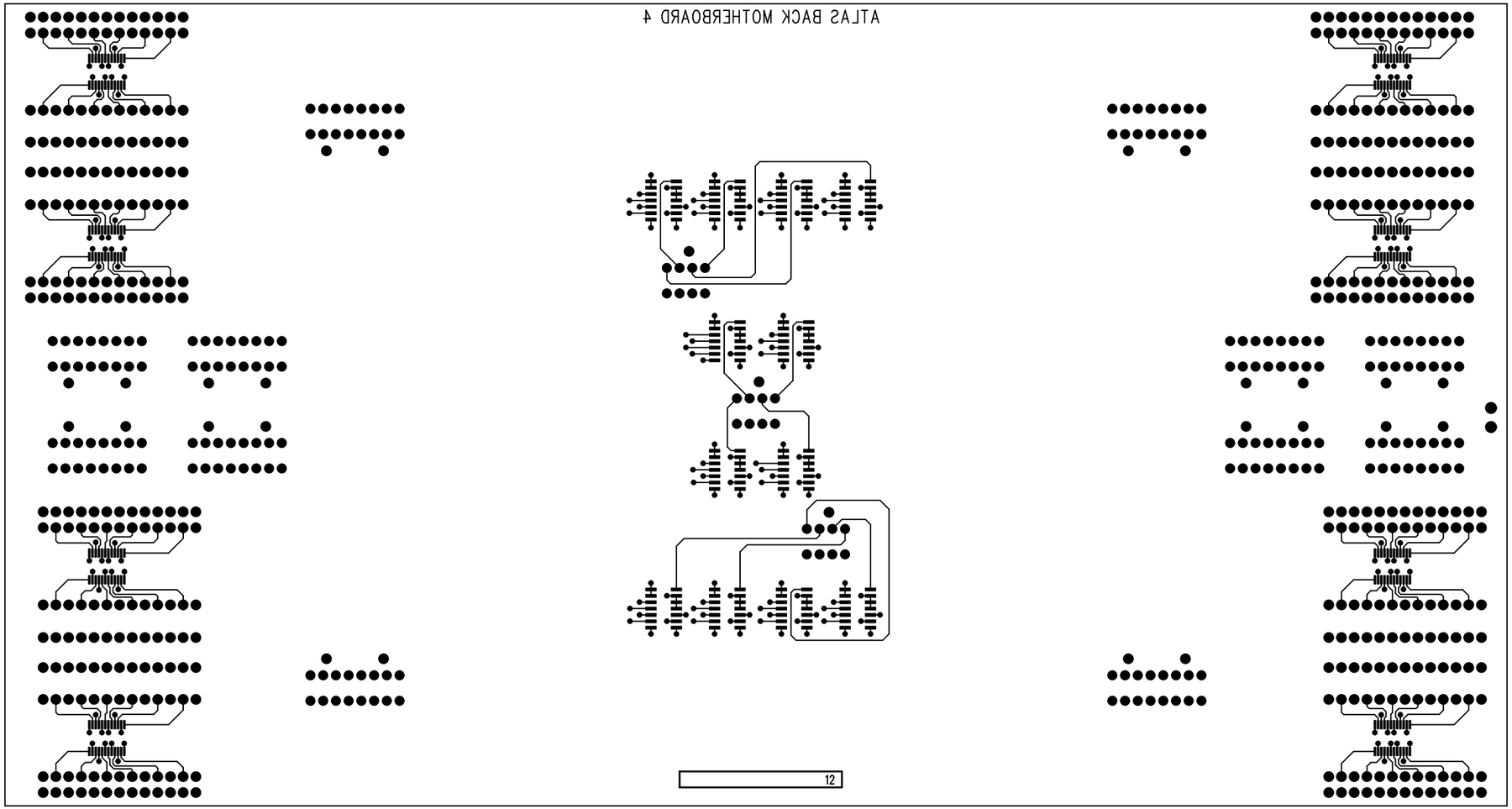
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
LAYER 12 - SIGNALS



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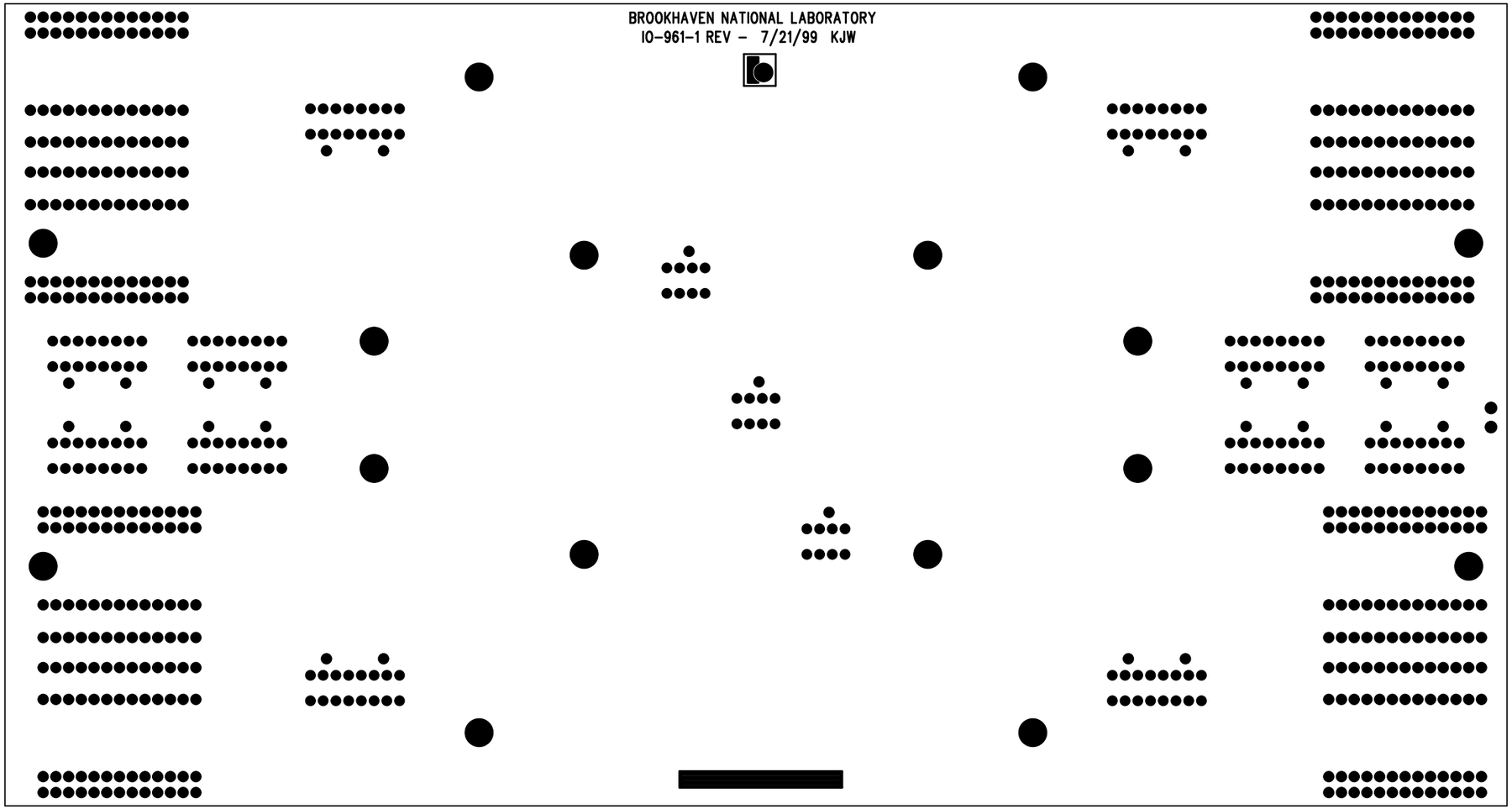
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4



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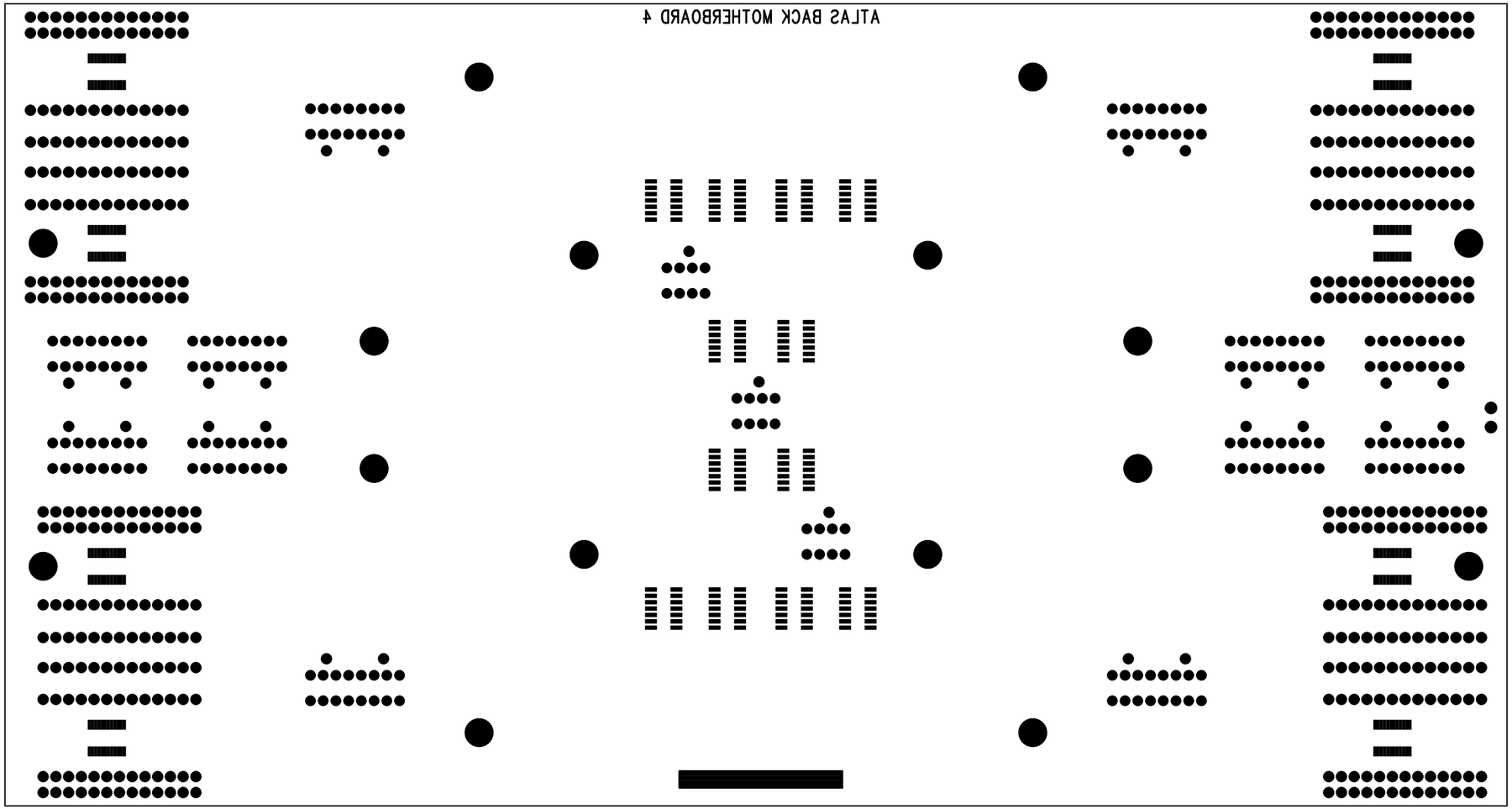
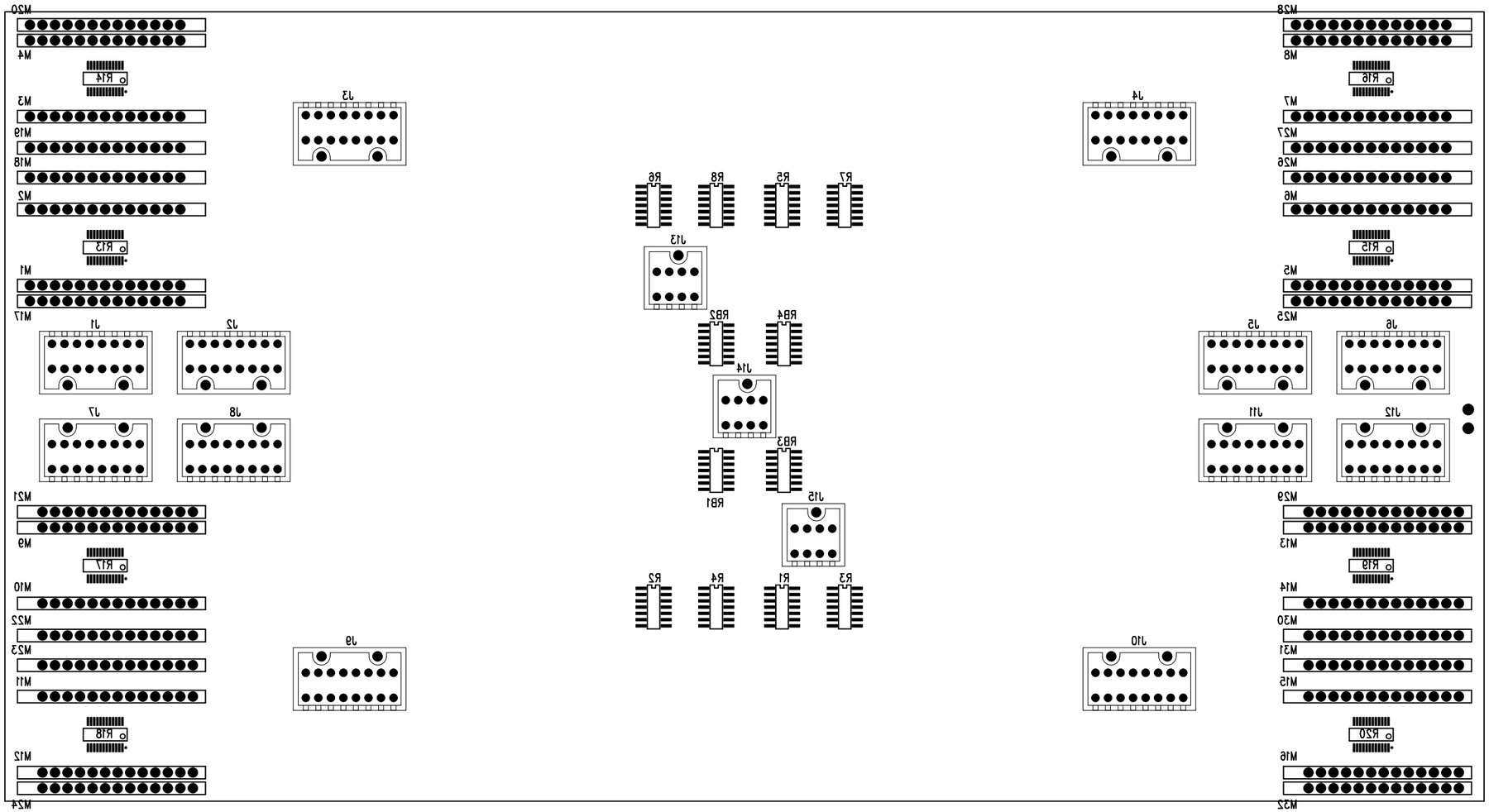
IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4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IO-961-1 REV - 7/21/99
BACK MOTHERBOARD 4
COMPONENT PLACEMENT - BOTTOM