



# MAX3984 Evaluation Kit

**Evaluates: MAX3984**

## General Description

The MAX3984 evaluation kit (EV kit) is a fully assembled and tested demonstration board that provides complete evaluation of the MAX3984 1Gbps to 10Gbps preemphasis driver with receive equalizer.

## Features

- ◆ Fully Assembled and Tested
- ◆ Allows Full Electrical Evaluation

## Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX3984EVKIT+	0°C to +85°C	16 TQFN-EP

+Denotes a lead-free/RoHS-compliant package.

## Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	33 $\mu$ F $\pm$ 10% tantalum capacitor (B case)
C2, C3, C8	3	0.1 $\mu$ F $\pm$ 10% ceramic capacitors (0402)
C4–C7, C9, C10	6	0.01 $\mu$ F $\pm$ 5% ceramic capacitors (0402)
J1–J4	4	SMA connectors (edge-mount, tab-contact)
J6, J10, TP1, TP2, TP3, TP5	6	Test points

DESIGNATION	QTY	DESCRIPTION
JU1, JU2 JU4–JU7	6	3-pin headers (0.1in centers)
JU3	1	2-pin header (0.1in centers)
None	6	Shunts
L1	1	4.7 $\mu$ H $\pm$ 10% inductor (1008)
R1	1	4.7k $\Omega$ $\pm$ 5% resistor (0402)
U1	1	MAX3984UTE+ 16-pin TQFN-EP
None	1	PCB: MAX3984 EV kit circuit board, Rev A

## Quick Start

See Figure 1 for quick reference.

- 1) Remove shunt from JU2.
- 2) Install shunt on JU3. This disables the squelch. To enable squelch connect JU2 between VCC and center pin and remove JU3.
- 3) Install shunt on TX\_DISABLE (JU4) between GND (logic 0) and the center pin. This enables the output of the chip.
- 4) Install shunt on IN\_LEV (JU1) between GND (logic 0) and center pin. This disables the equalization at the input of the chip.
- 5) Install shunts on PE0 (JU5) and PE1 (JU6) between GND (logic 0) and the center pin. This sets the output preemphasis to a minimum. See Table 1 for a complete list of settings.
- 6) Install shunt on OUT\_LEV (JU7) between GND (logic 0) and the center pin. This sets the output swing to a reduced level.
- 7) Connect at +3.3V power supply to the +3.3V (J6) and GND (J10) terminals. Set the current limit to 150mA. Monitor the supply voltage at VCC (TP2). This is the supply that powers the chip.
- 8) Apply a 500mV<sub>P-P</sub> differential signal to IN+ (J1) and IN- (J2).
- 9) Using 50 $\Omega$  cables, connect OUT+ (J3) and OUT- (J4) to an oscilloscope with a 50 $\Omega$  input terminations.



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## Adjustment and Control Descriptions (see Quick Start first)

COMPONENT	NAME	FUNCTION
J1, J2	IN+, IN-	Data Input. CML input that is internally terminated with 50Ω to VCC - 1.5V.
J3, J4	OUT+, OUT-	Data Output. CML output that is internally terminated with 50Ω to VCC.
J6, J10	+3.3V, GND	Connection for a +3.3V or +3.6V Power Supply. Set the current limit to 150mA.
JU1	IN_LEV	Receive Equalization Control Input. Set to VCC (logic 1) for higher LOS assert/deassert levels and 10in FR-4 compensation. Set to GND (logic 0) for lower LOS assert/deassert levels and to bypass the FR-4 equalization.
JU2	—	LOS Pullup Termination. Connected to VCC terminates the LOS through a 4.7kΩ resistor to VCC. Connected to TP5 terminates the LOS through a 4.7kΩ resistor to +5.5V.
JU3	—	LOS Disable. Intalling jumper disable the LOS. Remove jumper for normal LOS operation.
JU4	TX_DISABLE	Tramsitter Disable. Set to GND (logic 0) for normal operation. Set to VCC (logic 1) or open to reduce the differential output to less than 10mVp-p.
JU5	PE0	Preemphasis Control Least Significant Bit. See Table 1 for controls.
JU6	PE1	Preemphasis Control Most Significant Bit. See Table 1 for controls.
JU7	OUT_LEV	Output-Swing Control. Set to VCC (logic 1) or open for maximum output swing. Set to GND (logic 0) for reduced swing.
TP1	LOS	Loss-of-Signal Output. Monitor with high-impedance probe.
TP2, TP3	VCC, GND	Connection for Monitoring VCC and GND
TP5	+5.5V	Connection for Alternate Pullup Voltage for LOS

**Table 1. Preemphasis Settings**

PE1	PE0	PREEMPHASIS (dB)
0	0	3.5
0	1	6.5
1	0	9.5
1	1	13

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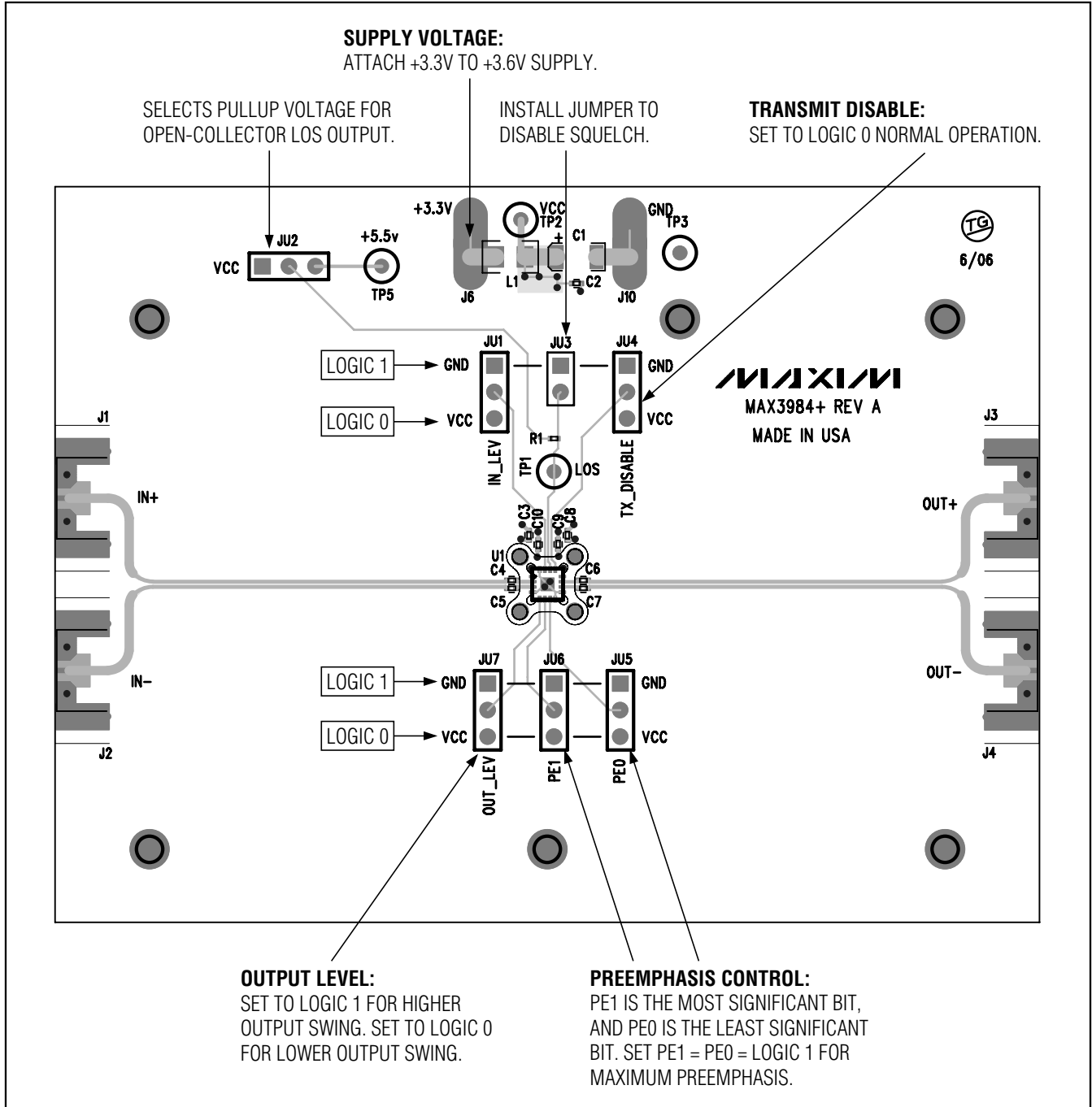


Figure 1. MAX3984 EV Kit Quick Reference

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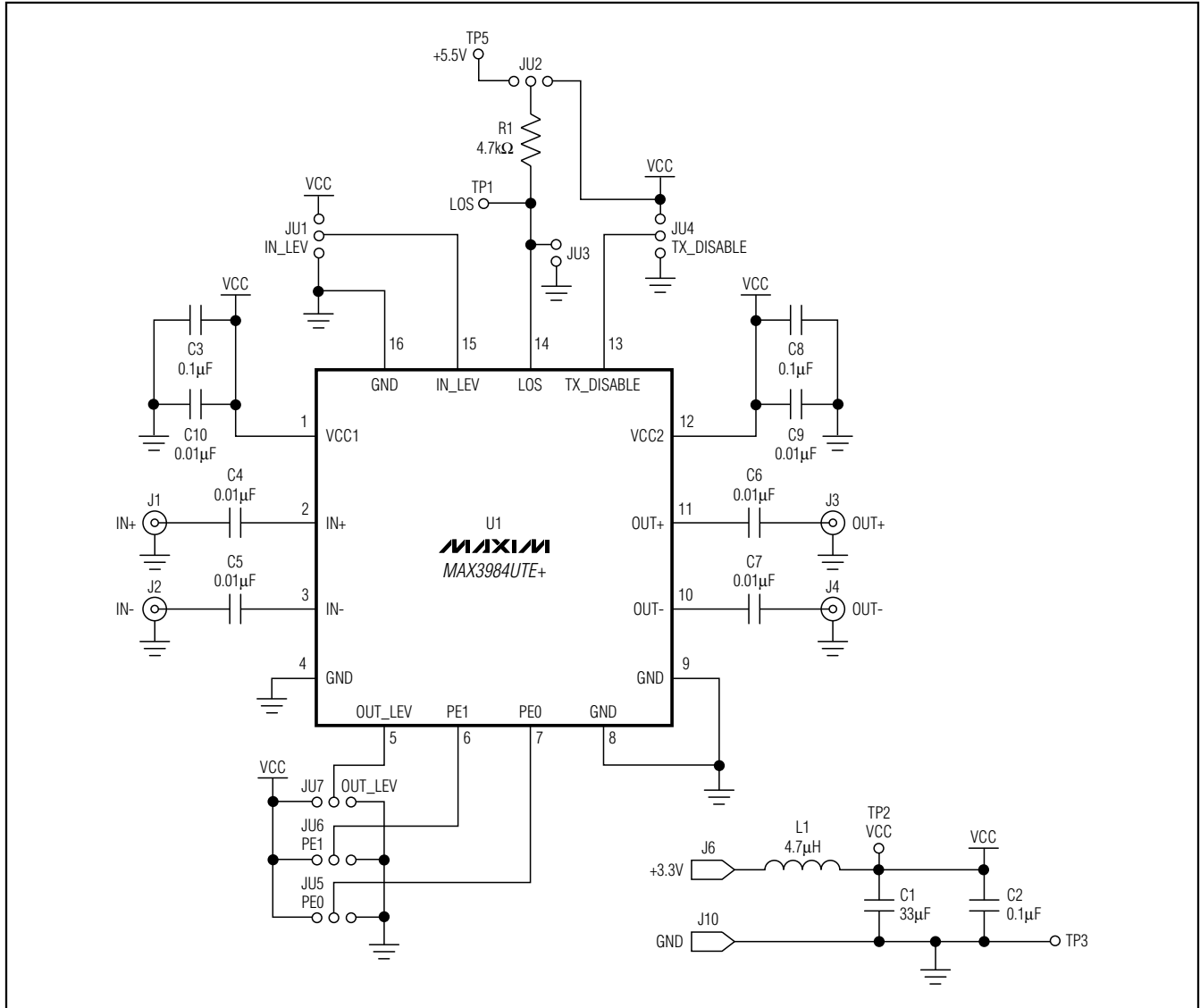


Figure 2. MAX3984 EV Kit Schematic

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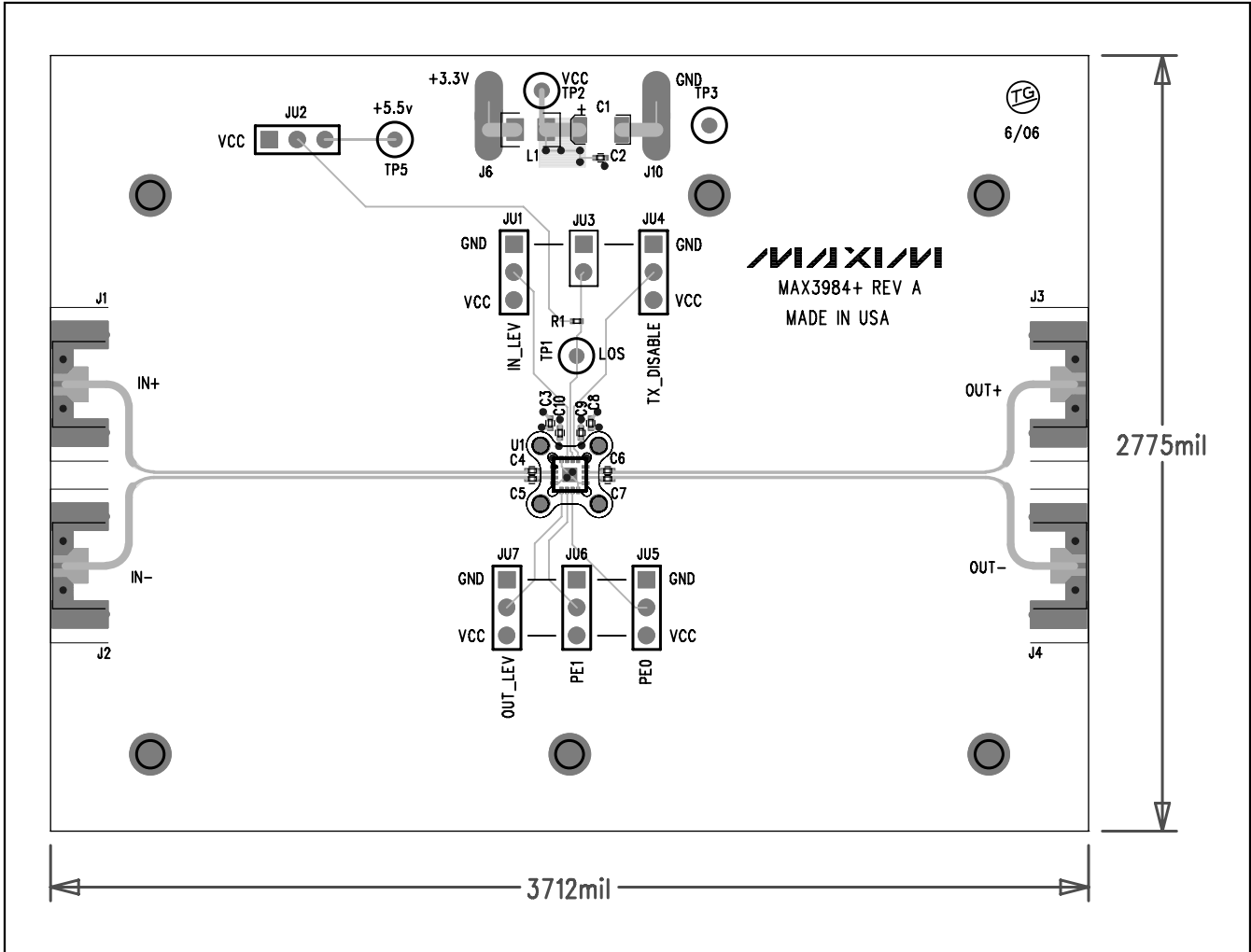


Figure 3. MAX3984 EV Kit Component Placement Guide—Component Side

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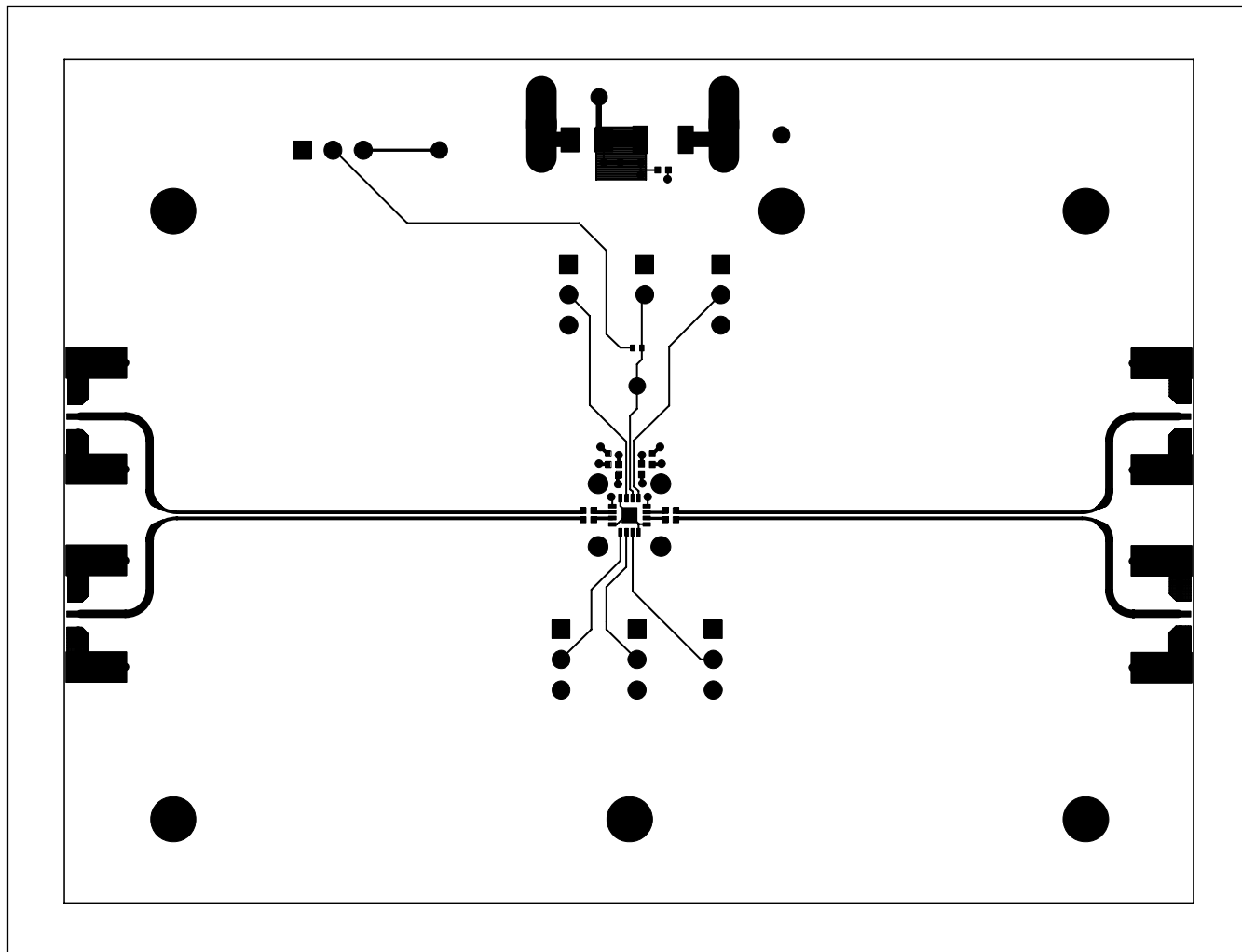


Figure 4. MAX3984 EV Kit PCB Layout—Component Side, Layer 1

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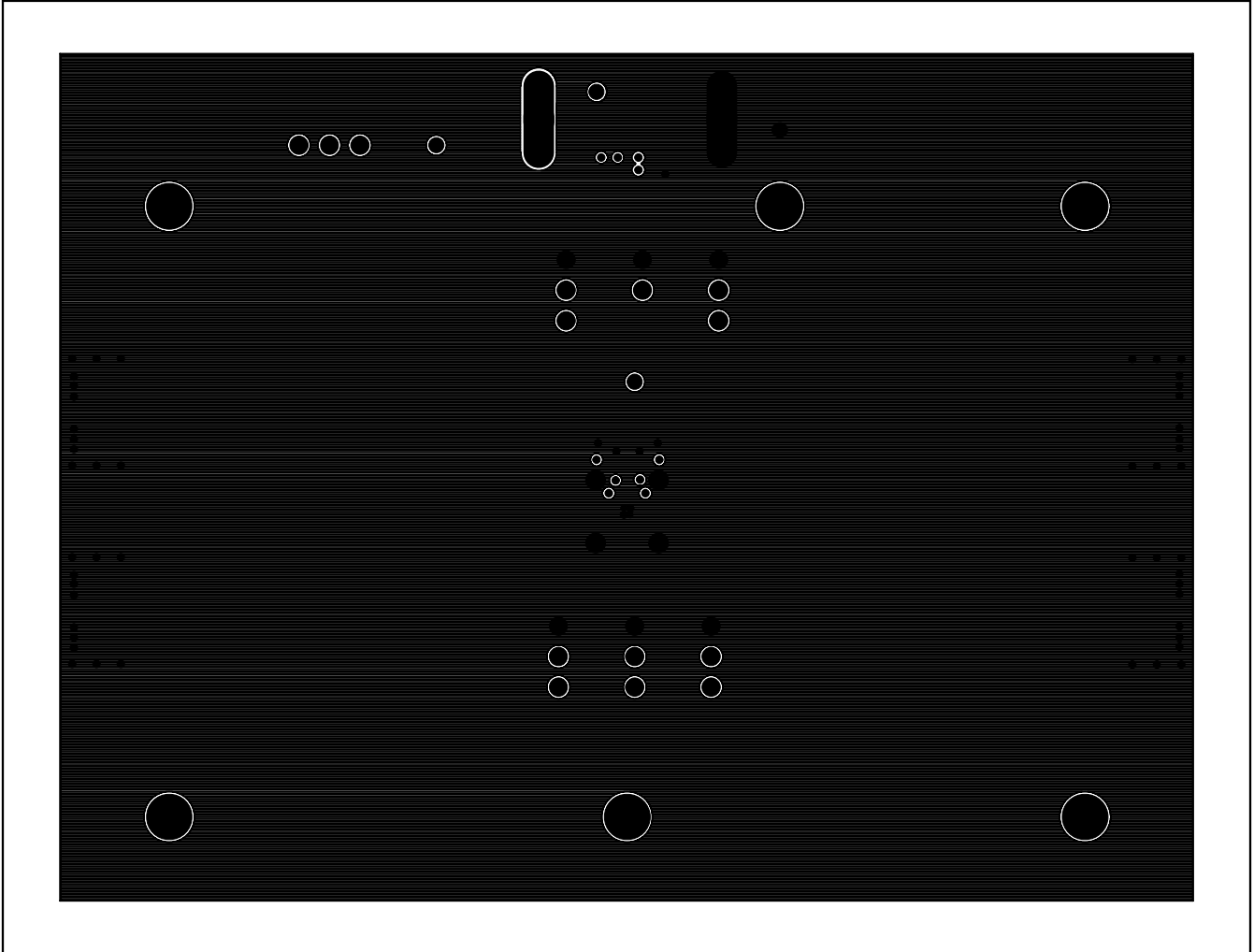


Figure 5. MAX3984 EV Kit PCB Layout—Ground Plane, Layer 2

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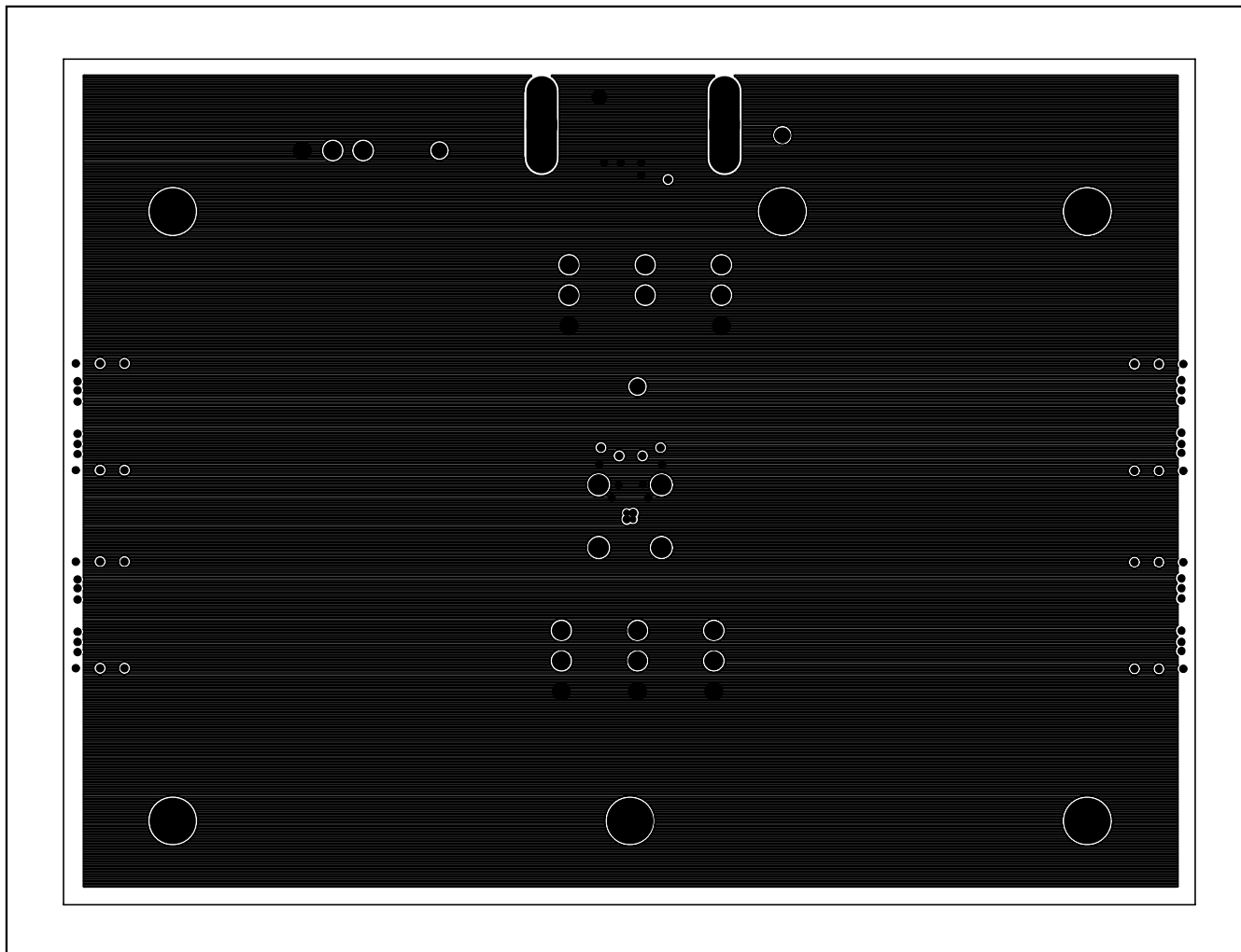


Figure 6. MAX3984 EV Kit PCB Layout—Power Plane, Layer 3

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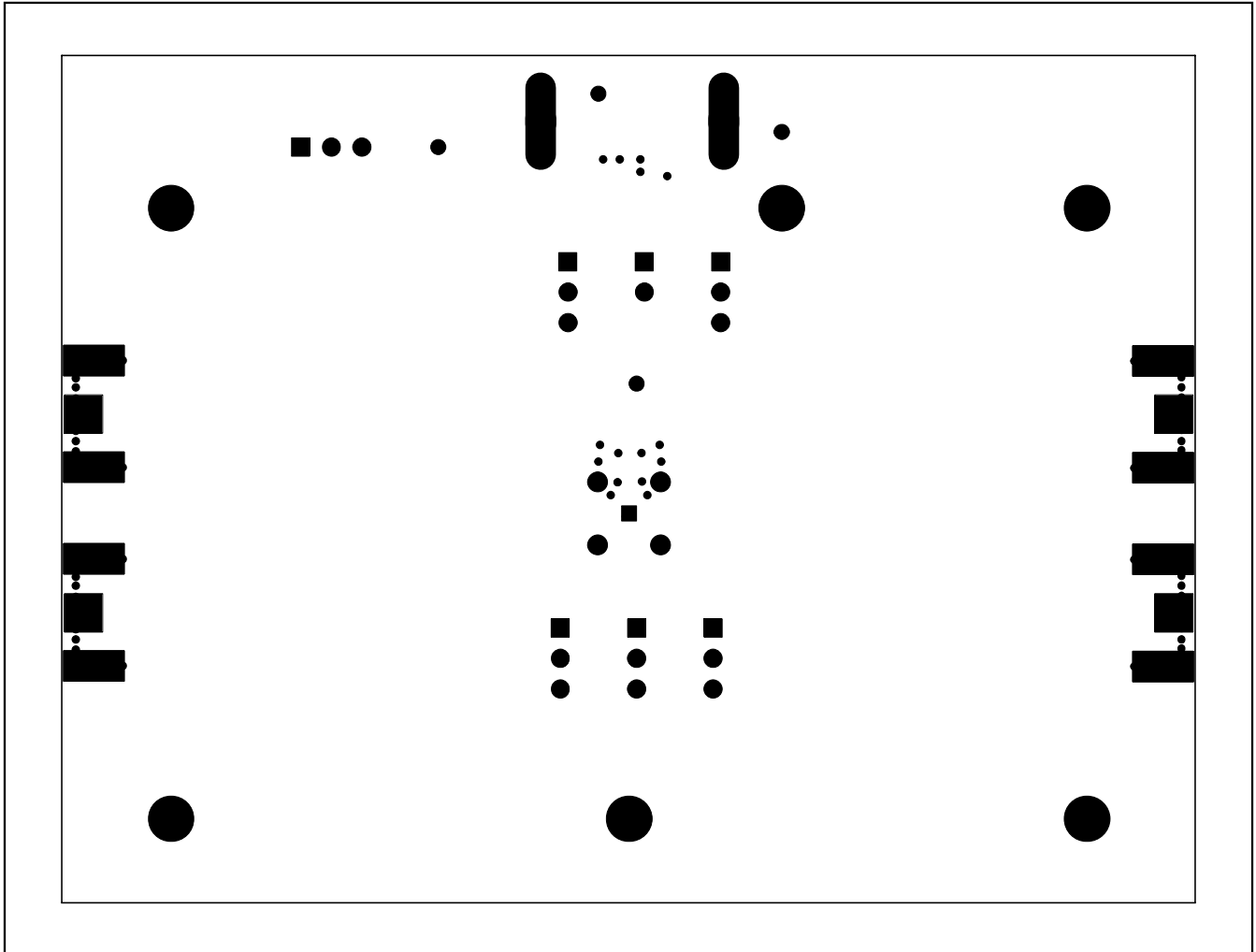


Figure 7. MAX3984 EV Kit PCB Layout—Bottom Side, Layer 4

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