



## MAX3660 Evaluation Kit

### General Description

The MAX3660 evaluation kit (EV kit) is a factory-assembled PCB that provides an optical input with an electrical output. The optical circuit includes the photodiode bias circuitry, an op amp for feed-forward AGC operation, and a balun for single-ended 75Ω output. Through-hole pads are provided to attach a triplexer analog photodiode. It is important to select a photodiode with capacitance and inductance in the anode and cathode connections as symmetric as possible for optimum linearity.

### Features

- ◆ Fully Assembled and Tested
- ◆ Optical Input
- ◆ Automatic Gain Control
- ◆ Component List

### Ordering Information

PART	TYPE
MAX3660EVKIT	EV Kit

### Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C4, C5	4	0.001μF ceramic capacitors (0402) Murata GRP155R71H102K
C3, C7, C8, C9	4	0.1μF ceramic capacitors (0603) AVX 0603ZC104KAT
C6, C10, C11	3	1.0μF ceramic capacitors (0402) Murata GRM155R60J105K
C13, C14	2	33μF tantalum capacitors (B case) AVX TAJB336K010R
J2	1	BNC connector Trompeter Electronics UCBJE20-1
JP1, JP2, JP3	3	3-pin, 0.1in spacing jumper blocks Digi-Key S1012-36-ND
JU1, JU2, JU3	3	Jumpers Digi-Key S9000-ND
L1, L5	2	1.8kΩ, 10μH beads (0402) Murata BLM15HD182SN1
L2, L6	2	10μH inductors TDK MLF1608E100J

DESIGNATION	QTY	DESCRIPTION
R1, R6, R8, R21	4	1kΩ resistors (0402)
R3, R4, R5	3	100kΩ resistors (0402)
R7, R22	0	Open
R9	1	20kΩ resistors (0402)
TP1-TP6, TP13	7	Test points Digi-Key 5000K-ND
U1	1	Analog CATV transimpedance amplifier (16 TQFN) Maxim MAX3660ETE+
U2	1	Single, +1.8V/10μA, SOT23, Beyond-the-Rails™ op amp (5 SOT23) Maxim MAX4240EUK-T
U5	0	Open (user-supplied photodiode)
U8	1	Pulse transformer (CX2038)

Evaluates: MAX3660

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## Quick Start

- 1) Attach the triplexer photodiode to IN+ and IN- of the MAX3660. The cathode normally connects to IN+. The photodiode case should be grounded to the most convenient ground via. Make certain that the anode and cathode leads are symmetric in length and orientation. Lead lengths should normally be approximately 5mm.
- 2) Set JU2 to R4 on jumper block JP2 to manually adjust the gain with an input from 0 to 1.4V on TP6. Monitor the gain control on TP3.
- 3) Leave JU3 open on jumper block JP3 for minimum hysteresis.
- 4) Set JU1 to R8 on jumper block JP1 to enable the output signal.
- 5) Connect the signal output at J2 to a 75Ω spectrum-analyzer input. A minimum loss pad can also be used to connect J2 to 50Ω test equipment.
- 6) Connect a +5V supply to the VCC terminal, TP1, and ground to the GND terminal, TP2.
- 7) Connect the photodiode bias supply to TP13. Typically use a +12V bias supply, or one as required by the photodiode.

## Input and Output Signal Levels

When used in the optical input configuration shown in Figure 1, JU2 can be connected to R3 on jumper block JP2 to configure the MAX3660 for AGC operation based on the average optical power level. In this case, the MAX3660 transimpedance is controlled by the average optical power level, as measured by the voltage across R21. The values of R1, R21, and R22 shown in

Figure 1 provide an output level of 15dBmV/ch (+1dB) for optical input signals ranging from -6dBm to +2dBm (OMI = 3.3%, N = 132) using a typical triplexer photodiode. The total output signal level in this case is 15dBmV/ch + 10 log(132 channels) = 36dBmV, which is the maximum operating level at which the specified linearity is achieved. Operating at higher outputs can reduce MAX3660 performance.

Operating conditions (OMI, number of channels, responsivity, etc.) change the VAGC setting required for a given output voltage. The EV kit AGC circuit gain can be increased by adding a voltage-divider, R22, to the op amp. To reduce gain, the R1 and R21 values should both be increased. Remember to keep the total output at 36dBmV or less to maintain the desired MAX3660 performance.

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

JUMPER	NAME	FUNCTION
JU1	$\overline{\text{MUTE}}$	TTL high enables output. Low mutes output.
JU2	VAGC	Set JU2 to R4 for manual gain control. Set JU2 to R3 to allow feed-forward AGC operation.
JU3	HYST	Leave open for (minimum) $\pm 0.13$ dB hysteresis between gain switch points. Connect 20kΩ to ground for $\pm 0.3$ dB and short to GND for (maximum) $\pm 0.65$ dB hysteresis.



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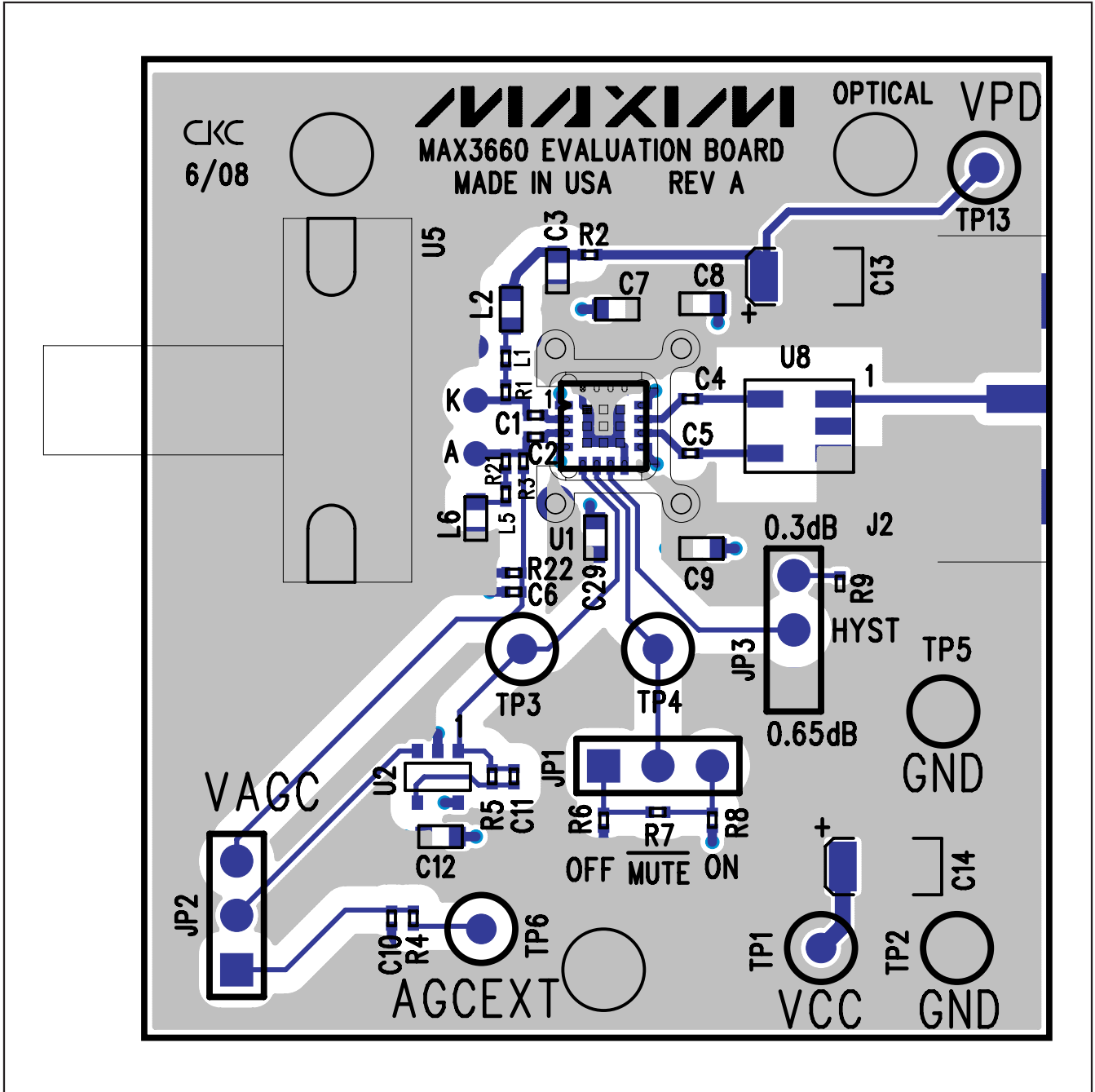


Figure 2. MAX3660 EV Kit Component Placement Guide—Component Side

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Evaluates: MAX3660

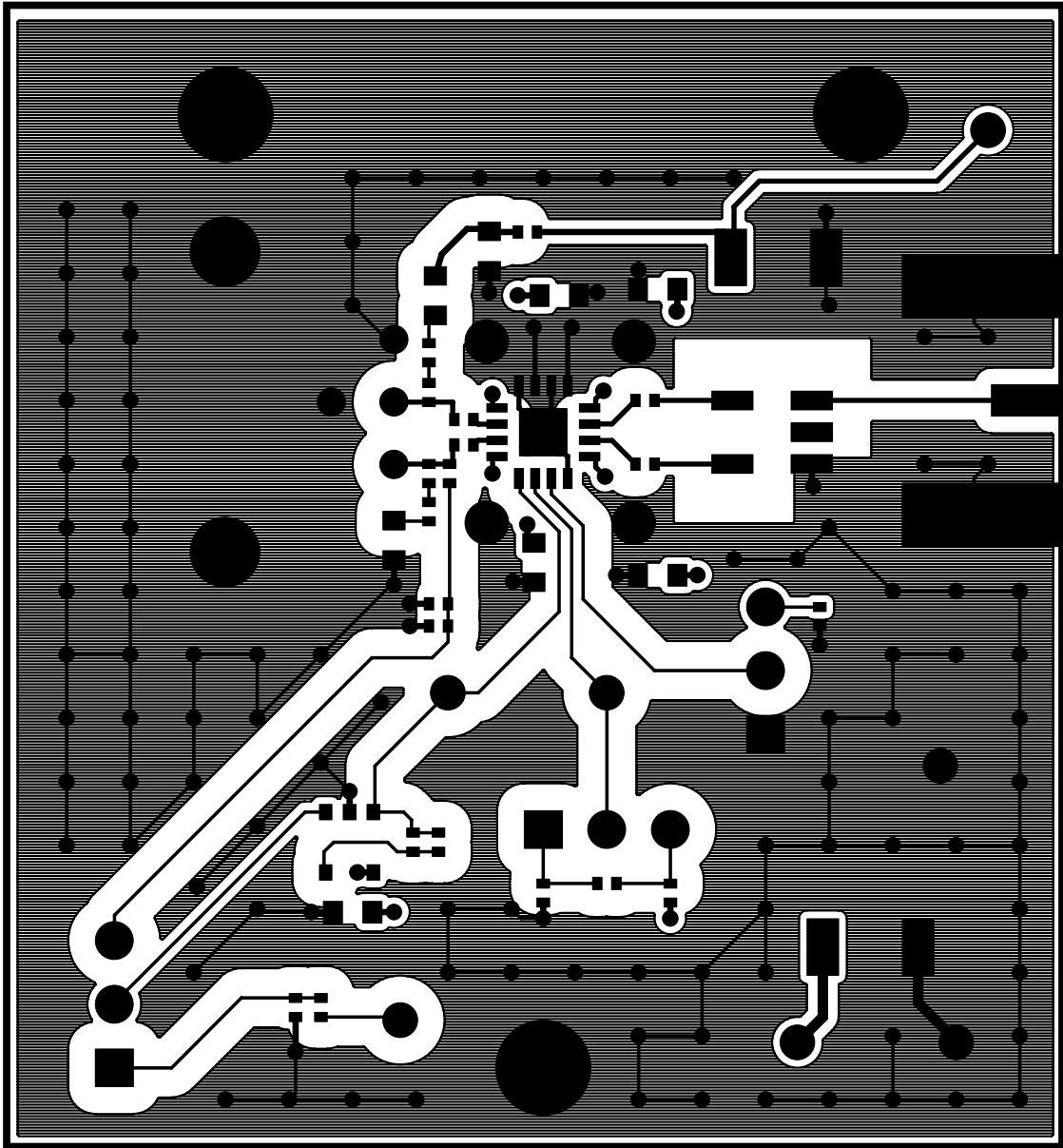


Figure 3. MAX3660 EV Kit Layer 1

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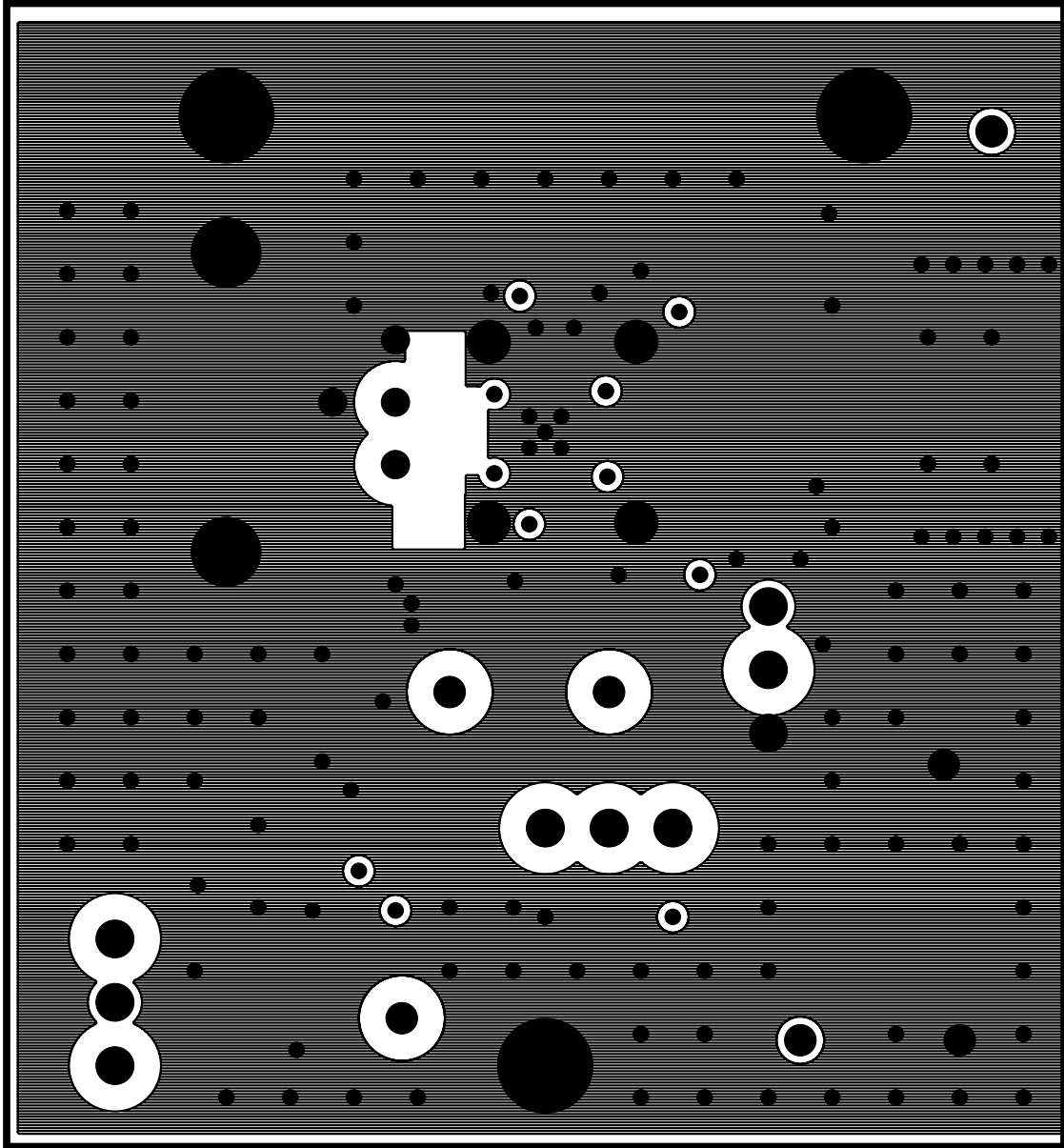


Figure 4. MAX3660 EV Kit Layer 2

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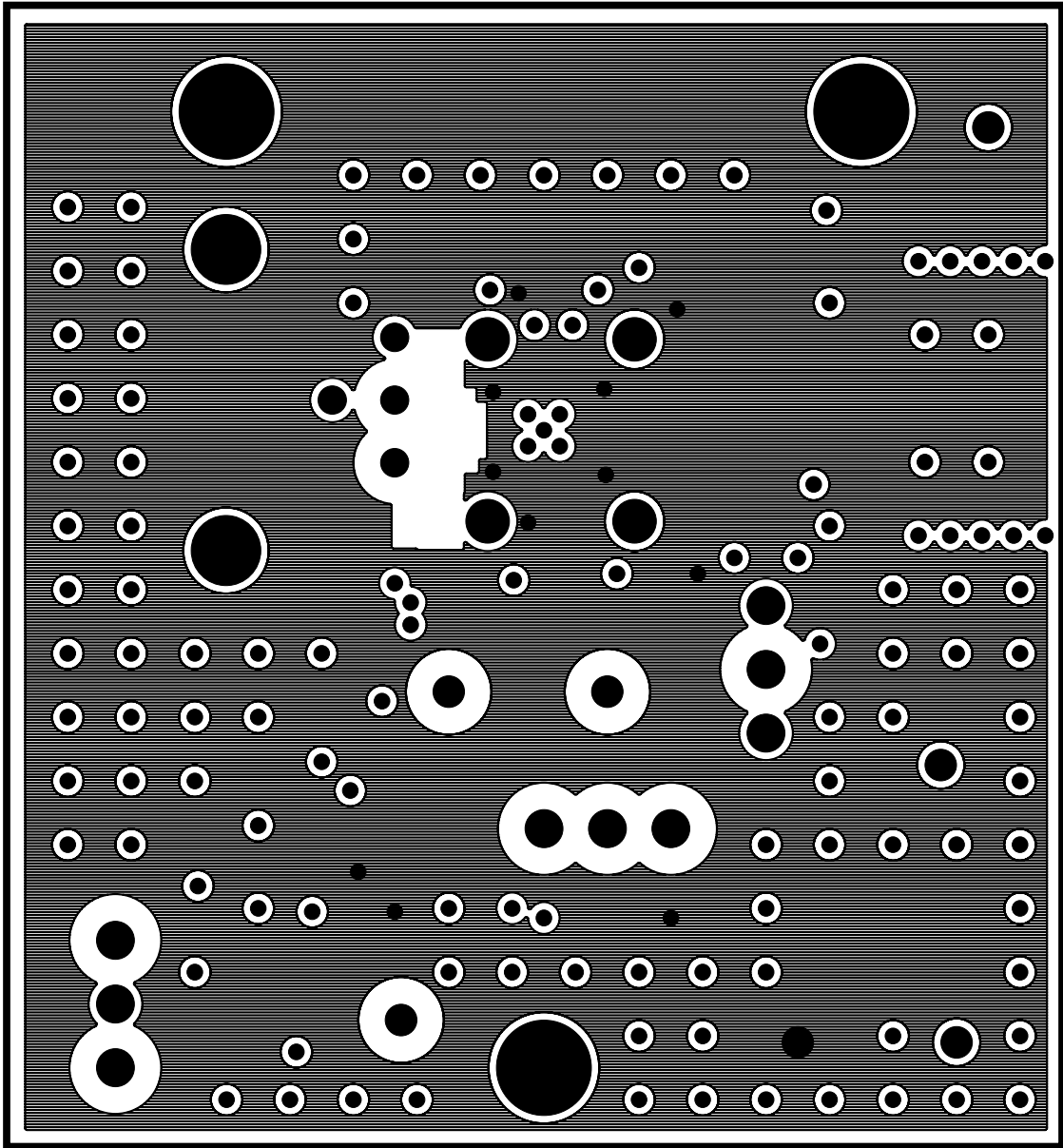


Figure 5. MAX3660 EV Kit Layer 3

# MAX3660 Evaluation Kit

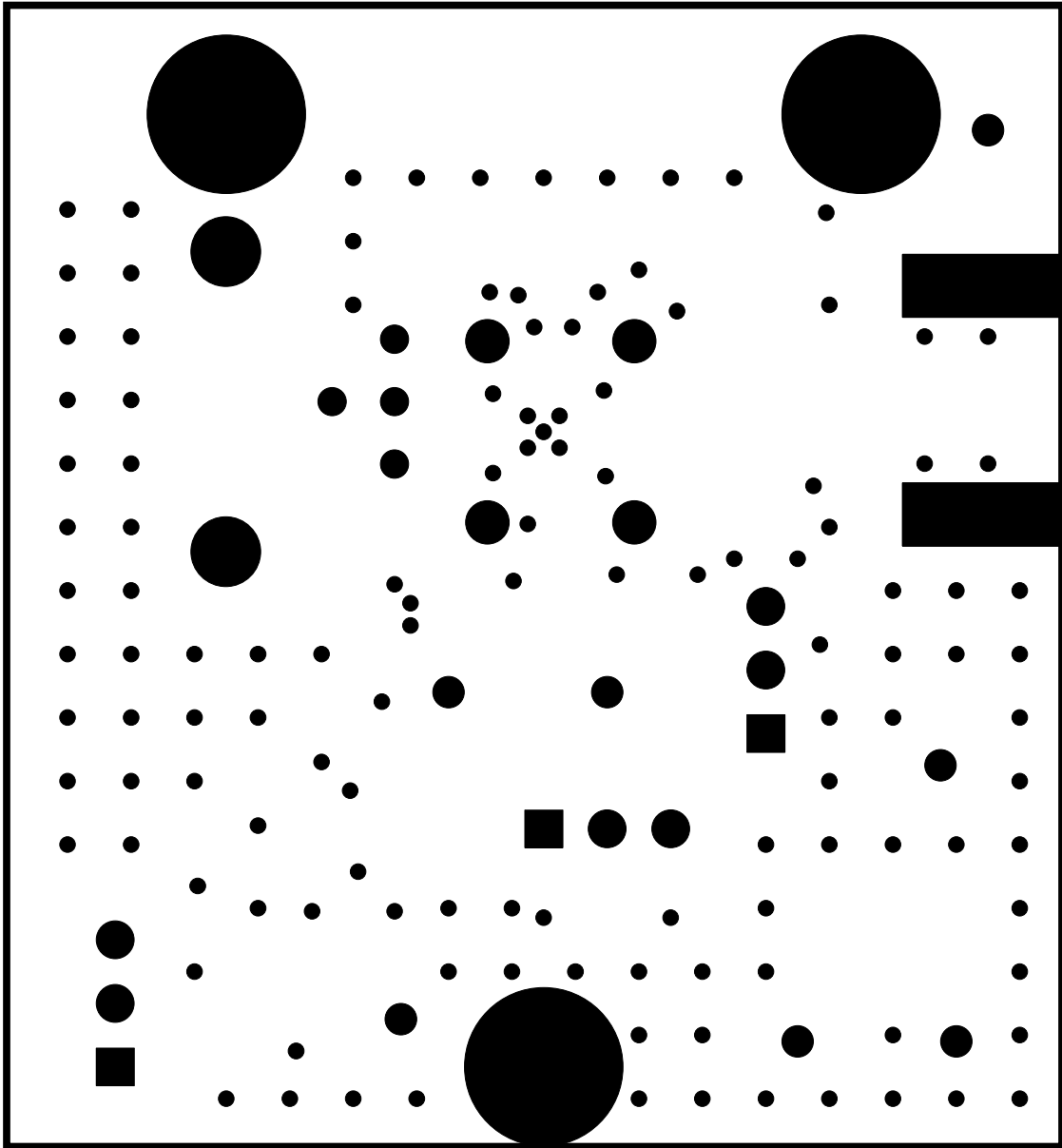


Figure 6. MAX3660 EV Kit Layer 4

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