



MAX3815A Evaluation Kit for HDMI Cables

General Description

The MAX3815A evaluation kit (EV kit) is an assembled demonstration board that allows in-system evaluation of the MAX3815A TMD^S cable equalizer and the MAX3816A DDC extender. The input and output connections are made through Molex HDMI™ connectors for direct connection to HDMI cables.

The DDC signals SDA and SCL are assisted by the MAX3816A. Hot-plug detect, +5V, DDC/CEC ground, and CEC simply pass through the board.

Power is delivered to the board through an external wall-plug transformer, which is included with this EV kit.

Ordering Information

PART	TYPE
MAX3815AEVKIT-HDMI	EV Kit

Features

- ◆ 2.25Gbps, HDMI 1.3 Deep Color Operation
- ◆ Extends 2.25Gbps TMD^S Interface Length
 - 0 to 35 Meters Over HDMI Cable, 24 AWG
 - 0 to 22 Meters Over HDMI Cable, 28 AWG
- ◆ Extends 1.65Gbps TMD^S Interface Length
 - 0 to 40 Meters Over HDMI Cable, 24 AWG
 - 0 to 28 Meters Over HDMI Cable, 28 AWG
- ◆ +3.3V Power-Supply Operation
- ◆ Includes Wall-Plug Power Supply
- ◆ Molex HDMI Connectors
- ◆ Fully Assembled and Tested

Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	0.033μF ±10% ceramic capacitor (0402)
C2–C9	8	0.1μF ±10% ceramic capacitors (0402)
C11, C12	2	2.2μF ±20% tantalum capacitors (B case)
C13, C14	2	10μF ±10% ceramic capacitors (0805)
D1, D2	2	Red LEDs
J1, J2	2	HDMI connectors Molex 500254-1927
J3	1	2.5mm power jack CUI PJ-002B
J4, J5	2	Test points
L1	1	Ferrite bead (0603) Murata BLM18HG102
P1	1	5kΩ dial potentiometer
Q1	1	pnp transistor (SOT23) Zetex FMMT591A
R1, R10, R11, R18	0	Not installed, resistors
R2, R3, R4, R20, R21	5	4.7kΩ ±5% resistors (0402)

DESIGNATION	QTY	DESCRIPTION
R7, R8	2	200Ω ±5% resistors (0402)
R12	1	4.99kΩ ±1% resistor (0402)
R13–R16	4	267Ω ±1% resistors (0402)
R17, R19	2	10kΩ ±5% resistors (0402)
R22, R23	2	3.3kΩ ±5% resistors (0402)
SW1, SW2, SW4	3	SPDT switches
U1	1	TMD ^S digital video equalizer for DVI/HDMI cables (48 TQFP-EP*) Maxim MAX3815ACCM+
U2	1	I ² C 2-wire extender for DDC in DVI, HDMI, and VGA interfaces Maxim MAX3816ACUE+ (16 TSSOP)
U3	1	20Ω, 300MHz bandwidth, dual SPDT analog switch (10 μMAX®) Maxim MAX4719EUB+
U4	1	Low-dropout, 300mA linear regulator (8 μMAX) Maxim MAX8860EUA33+
—	1	PCB: MAX3815A-HDMI EVKIT+ REV A

*EP = Exposed pad.

+Denotes lead (Pb)-free and RoHS compliant.

TMD^S is a registered trademark of Silicon Image, Inc.

HDMI is a trademark of HDMI Licensing, LLC.

μMAX is a registered trademark of Maxim Integrated Products, Inc.



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Component Suppliers

SUPPLIER	PHONE	WEBSITE
AVX Corporation	843-946-0238	www.avxcorp.com
Zetex Semiconductors	631-543-7100	www.zetex.com

Note: Indicate that you are using the MAX3815A when contacting these component suppliers.

Quick Start

For evaluation of the MAX3815A and MAX3816A, configure the EV kit as follows:

- 1) Connect the included wall-plug power supply to the power jack at J3. Supply requirements: +5VDC, 300mA or greater, 2.5mm plug.
- 2) If no cable is attached at J2 (CABLE INPUT), the red LED at D1 should be illuminated (CLK LOSS). This indicates that no TMDS clock signal is detected by the MAX3815A.
- 3) Set the equalizer to automatic equalization by setting SW4 (EQ CONTROL) to the rightmost position (AUTO).
- 4) Enable the MAX3816A by setting SW1 to the leftmost position (EN).
- 5) Set the MAX3816A to parallel mode (PAR) by setting SW2 to the leftmost position. Refer to the MAX3816A IC data sheet for more information on operational modes.
- 6) Connect an HDMI source to J1 (CABLE INPUT) and an HDMI monitor or HDMI receiver to J2 (OUTPUT).
- 7) Once the HDMI source has begun transmitting, the red LED (CLK LOSS) is no longer illuminated. This indicates that the MAX3815A is sensing an active TMDS clock signal.
- 8) To manually set equalization boost on the MAX3815A, set switch SW4 to the leftmost position. Use potentiometer P1 to adjust the boost level. Turn the potentiometer clockwise to increase boost for long cables and counter clockwise to decrease boost for short cables.

Table 1. Adjustment and Control Descriptions (see the Quick Start section first)

COMPONENT	NAME	FUNCTION
D1	CLK LOSS	This LED turns on when the MAX3815A does not detect a TMDS clock signal.
D2	POWER	This LED turns on when power is supplied to the EV kit.
J3	—	2.5mm power supply jack for wall-plug AC-DC transformer.
J4	+5V	If the plug-in DC power supply is not used, a +5V power supply can be connected at J4 (+5V) and J5 (GND).
J5	GND	See above.
P1	MANUAL EQ SET	When manual control of the equalizer has been selected using SW4, the level of equalization can be controlled using P1. Turning the potentiometer clockwise increases the amount of high-frequency boost applied to the input signal. Turning the potentiometer counterclockwise reduces the high-frequency boost applied to the input signal.
SW1	MAX3816A ENABLE	This switch enables/disables the MAX3816A. If the MAX3816A is disabled, SW2 (MAX3816A CONFIG) should be set to parallel mode (PAR) in order for the DDC signals to pass through the board.
SW2	MAX3816A CONFIG	This switch configures the MAX3816A's MODE pin and the routing of the SDA and SCL signals through the board. In parallel mode (PAR), the signals pass through the board as well as connect to the MAX3816A. Refer to the MAX3816A IC data sheet for more information on parallel (PAR) and series (SER) modes.
SW4	EQ CONTROL	Slide the switch to the left (MANUAL) to manually control the level of equalization of the MAX3815A. Slide it to the right (AUTO) to have the MAX3815A automatically control the level of equalization.

MAX3815A Evaluation Kit for HDMI Cables

Evaluates: MAX3815A and MAX3816A

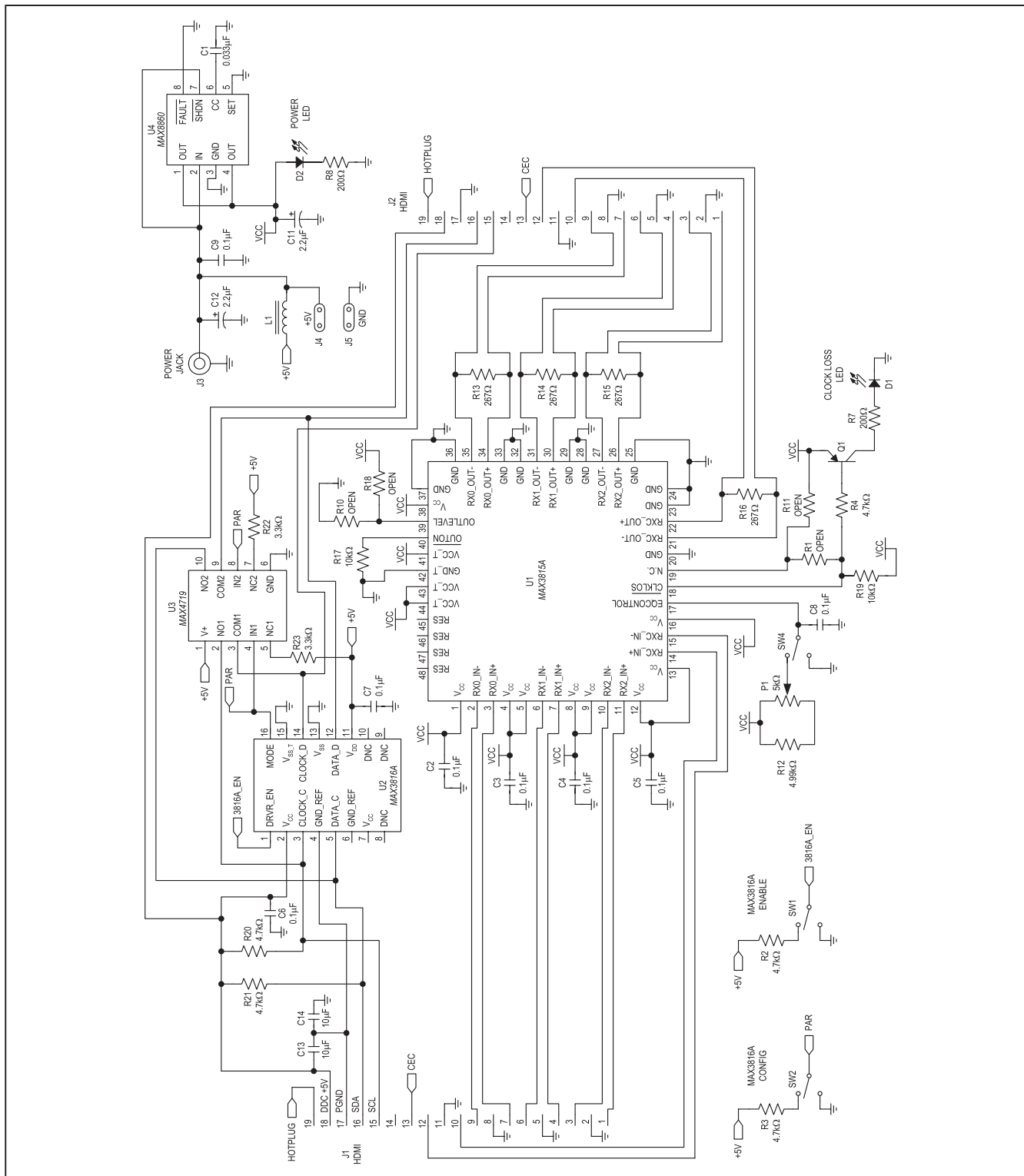


Figure 1. MAX3815A EV Kit Schematic

MAX3815A Evaluation Kit for HDMI Cables

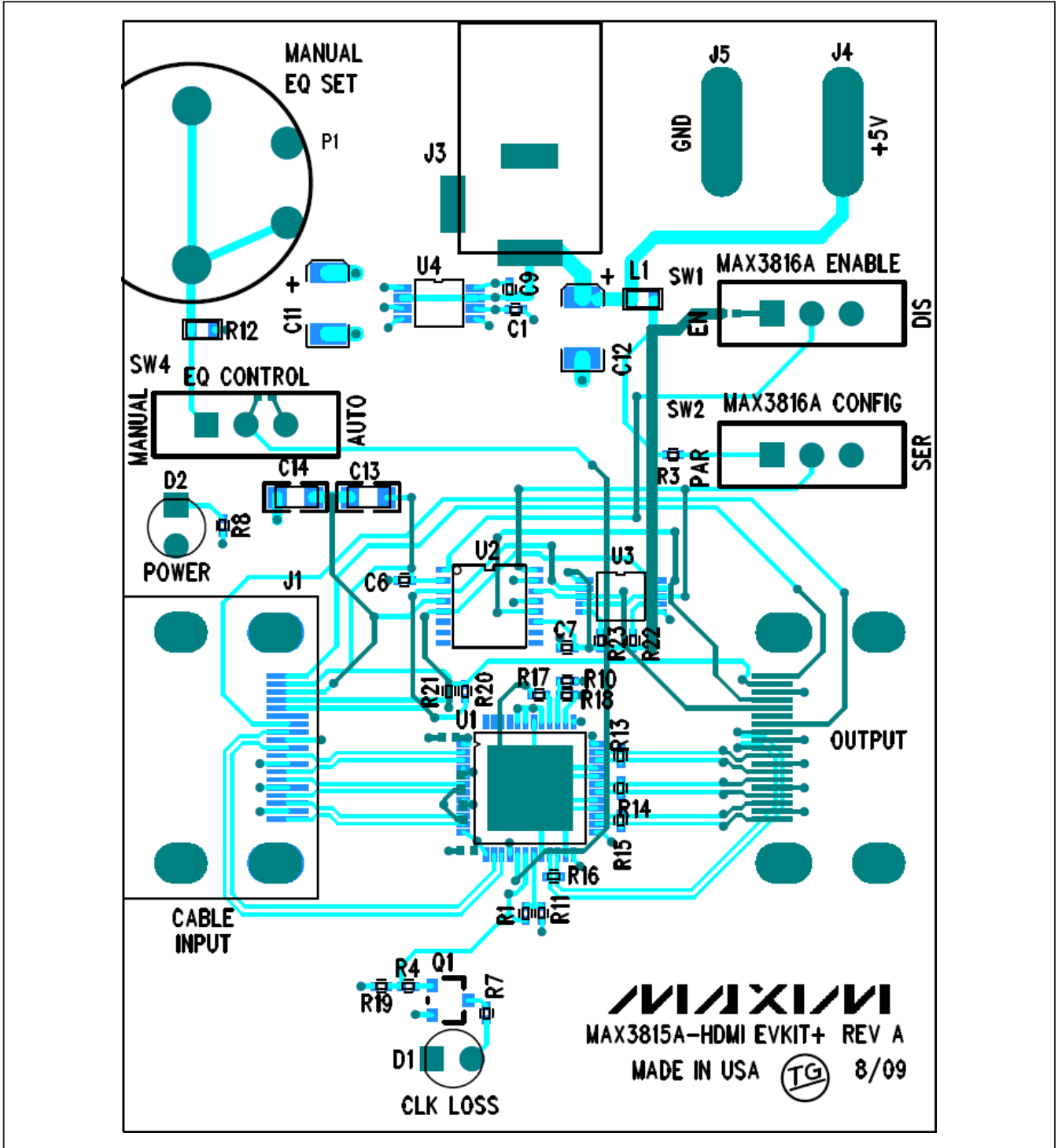


Figure 2. MAX3815A EV Kit Component Placement Guide—Component Side

MAX3815A Evaluation Kit for HDMI Cables

Evaluates: MAX3815A and MAX3816A

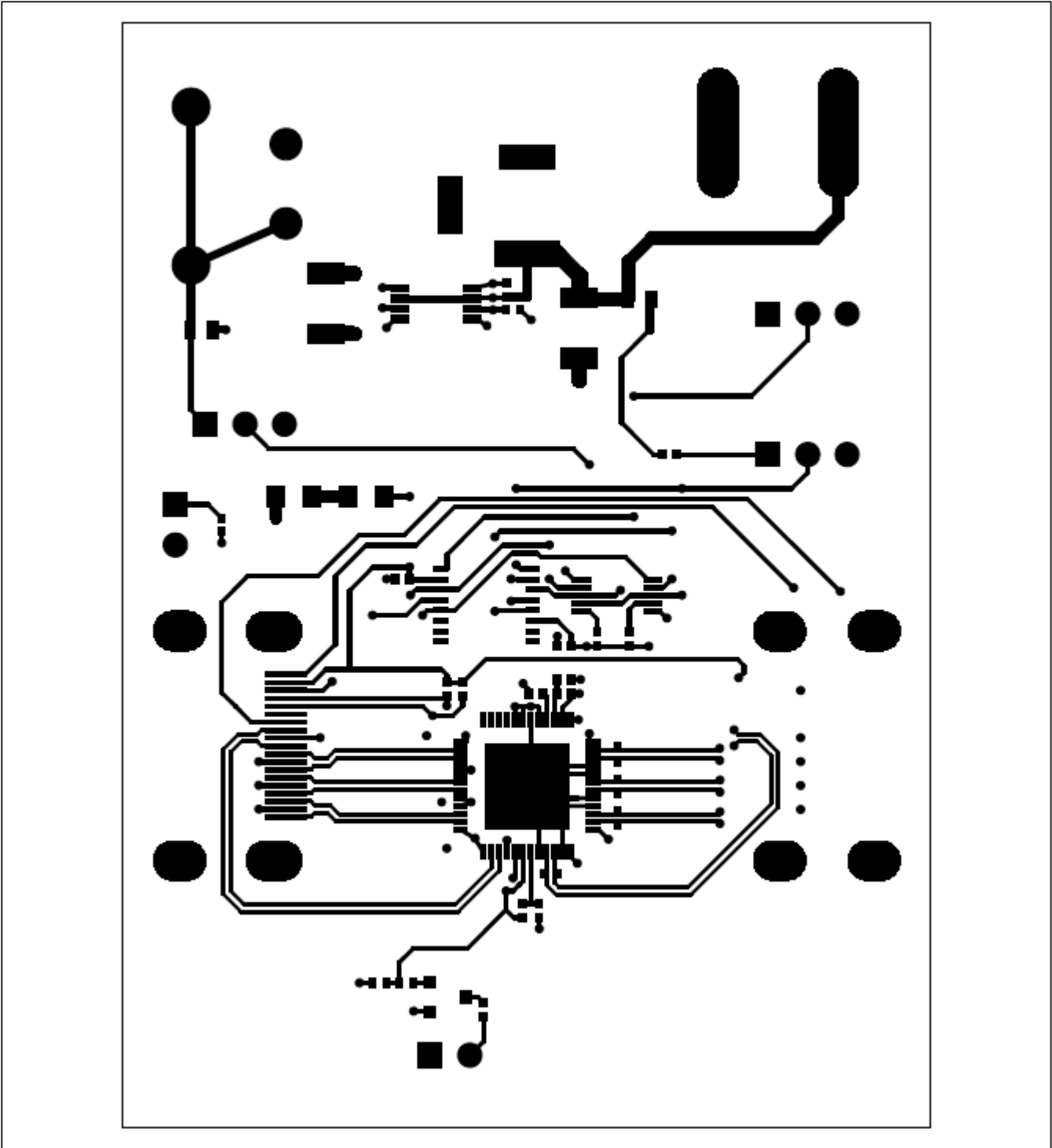


Figure 3. MAX3815A EV Kit PCB Layout—Top Side

MAX3815A Evaluation Kit for HDMI Cables

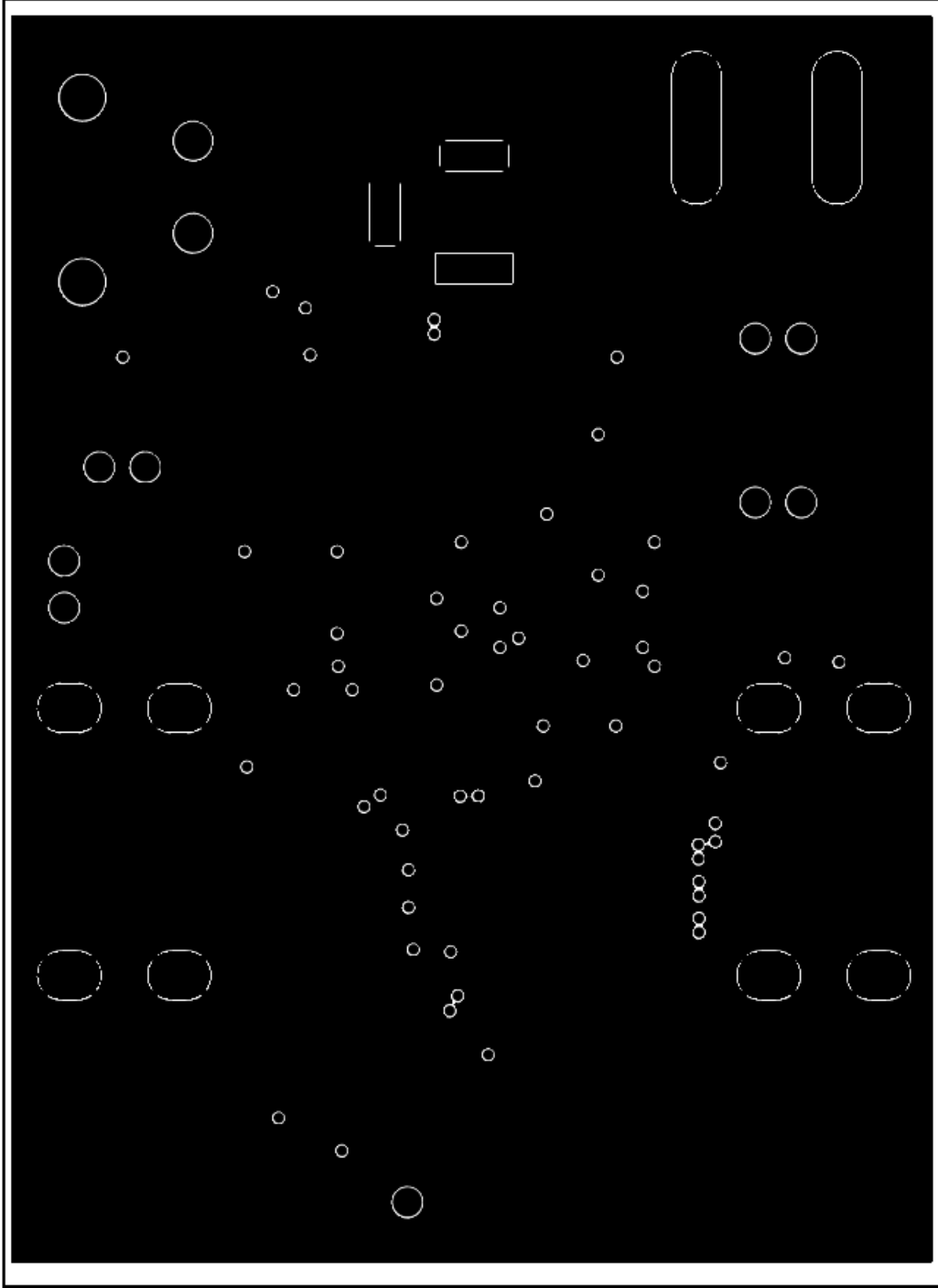


Figure 4. MAX3815A EV Kit PCB Layout—Ground Plane

MAX3815A Evaluation Kit for HDMI Cables

Evaluates: MAX3815A and MAX3816A

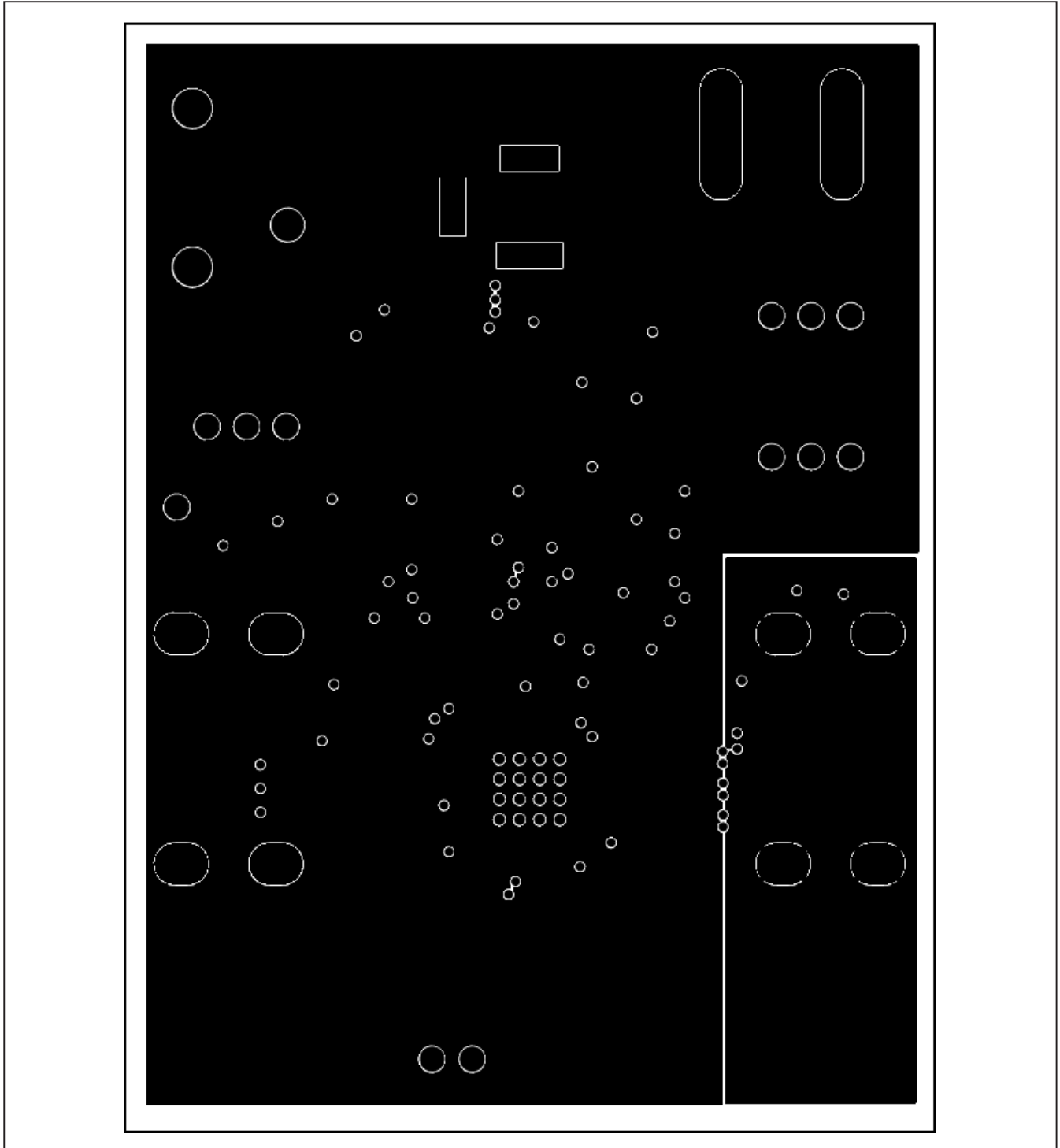


Figure 5. MAX3815A EV Kit PCB Layout—Power Plane

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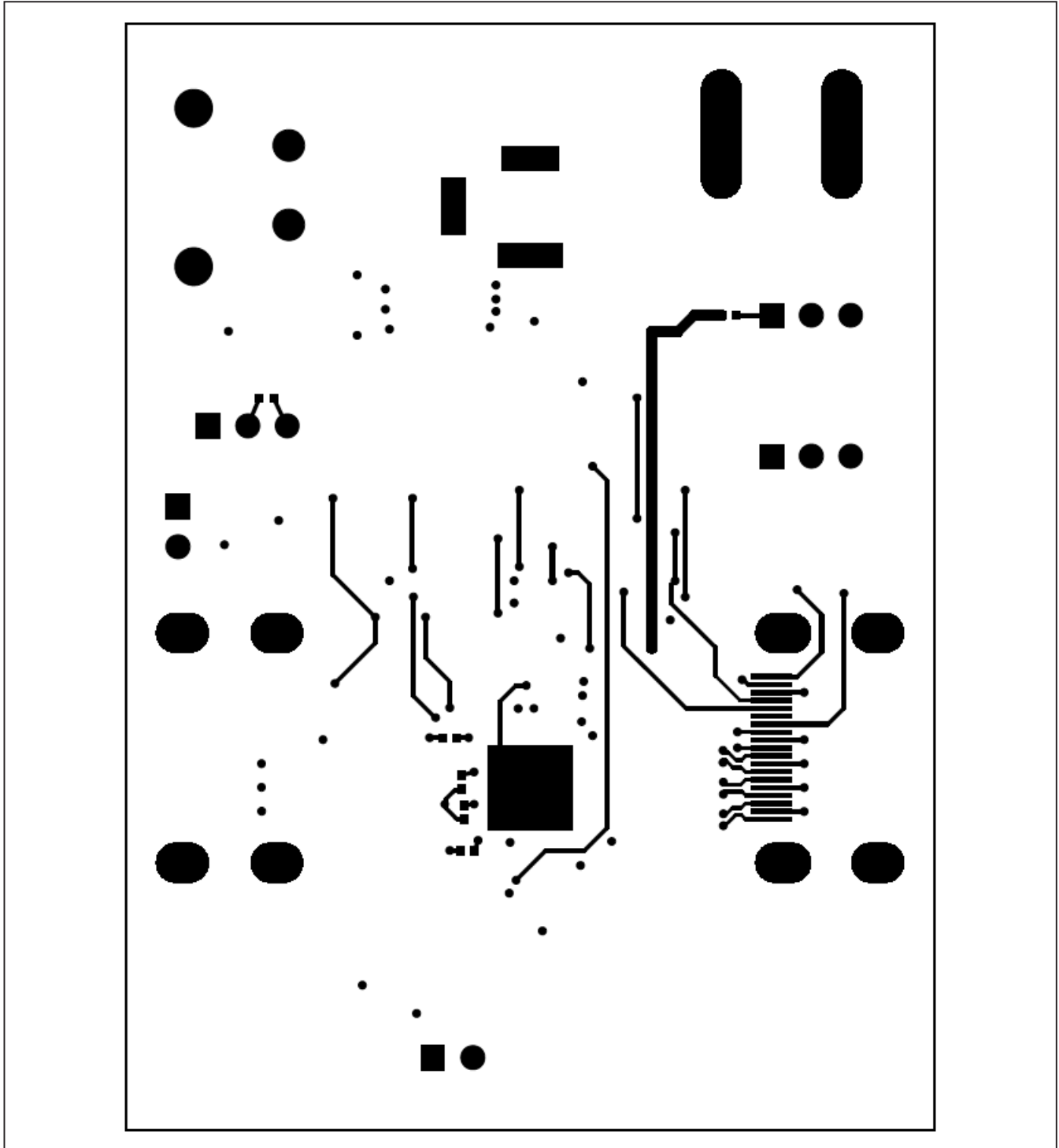


Figure 6. MAX3815A EV Kit PCB Layout—Solder Side

MAX3815A Evaluation Kit for HDMI Cables

Evaluates: MAX3815A and MAX3816A

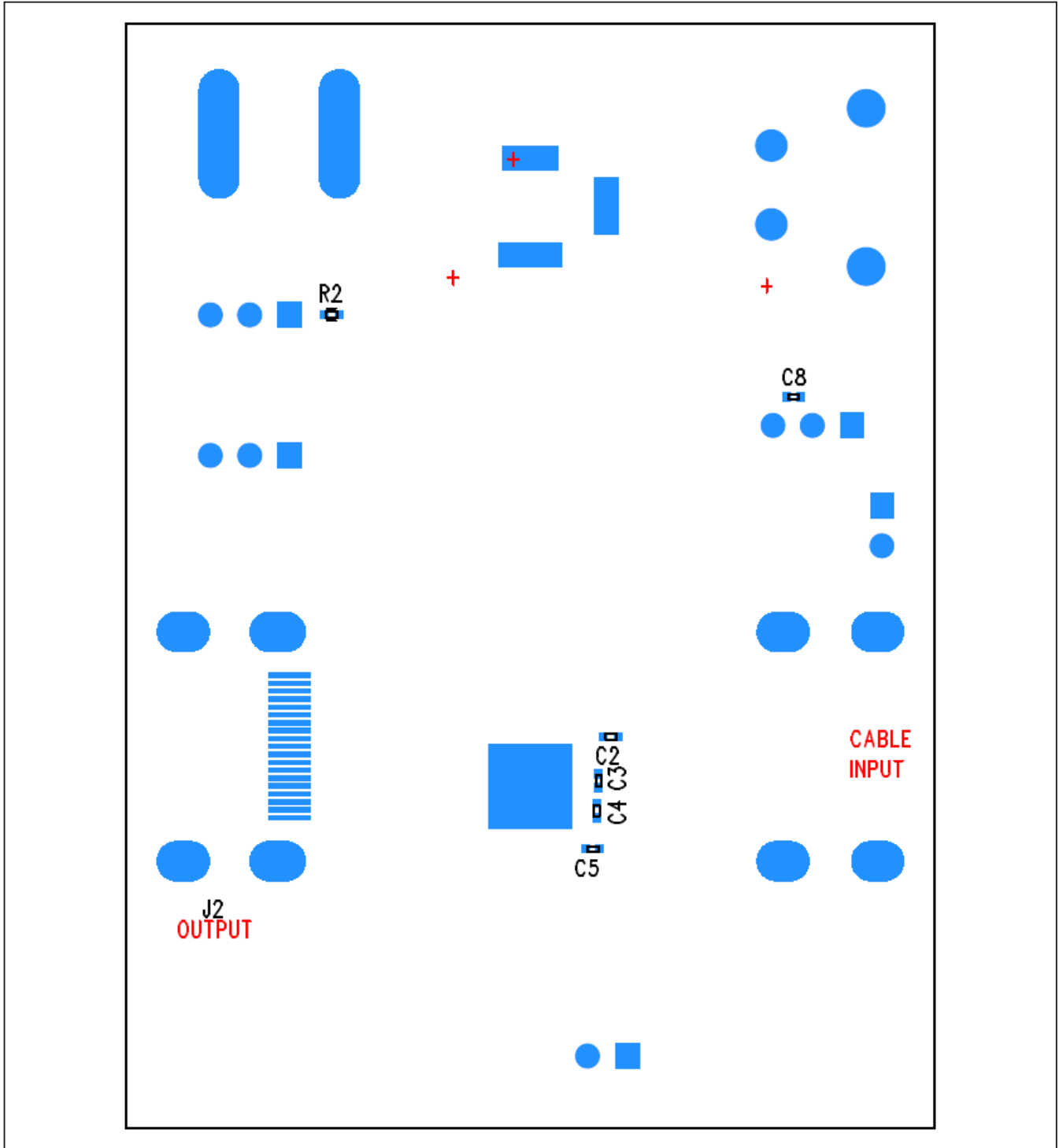


Figure 7. MAX3815A EV Kit Component Placement Guide—Solder Side

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