



# MAX3812 Evaluation Kit

## General Description

The MAX3812 evaluation kit (EV kit) is a fully assembled demonstration board that provides easy evaluation of the MAX3812 multirate SMPTE HD/SD-SDI cable driver with selectable slew rate. The EV kit has SMA and BNC connectors for high-speed inputs and outputs to simplify connection to test equipment. The outputs are designed to interface with 75Ω and 50Ω test environments.

## Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C4	3	0.01μF ±10% ceramic capacitors (0402)
C3, C5, C6, C7	4	4.7μF ±10% ceramic capacitors (0603)
C20	1	33μF ±5% tantalum capacitor AVX TAJB336K010R
J1, J2, J3	3	SMA connectors (edge-mount, tab) EF Johnson 142-0701-851
J4	1	BNC connector (edge-mount) Trompeter Electronics UCBJE20-1
JU1, JU2	2	3-pin headers, 0.1in centers Digi-Key S1012E-36-ND
None	2	Shunts Digi-Key S9000-ND
L1, L2	2	6.8nH ±5% inductors Coilcraft 0402CS-6N8XJLW
L4	1	1μH ±5% inductor Coilcraft 1008CS-102XJLC
R1, R2	2	49.9Ω ±1% resistors (0402)
R3	1	549Ω ±1% resistor (0402)
R4	1	750Ω ±1% resistor (0603)
R5	1	500Ω variable resistor
R6–R9	4	75Ω ±1% resistors (0402)
R10	1	43.2Ω ±1% resistor (0402)
R11	1	86.6Ω ±1% resistor (0402)
TP2, TP3, J18, J19	4	Test points Digi-Key 5000K-ND
U1	1	MAX3812USA+ 8-pin SO
None	1	PCB: MAX3812 EV kit circuit board, Rev B

## Features

- ◆ Fully Assembled and Tested
- ◆ Easy Selection of Output Slew Rate
- ◆ Adjustable Output Voltage Swing
- ◆ Outputs Designed for 75Ω and 50Ω Test Environments

## Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX3812EVKIT+	0°C to +85°C	8 SO

+Denotes a lead-free package.

## Quick Start

- 1) Set the output voltage swing to the standard swing levels by moving the shunt on JU1 to the side marked STD.
- 2) Set the output slew rate to high definition by moving the shunt on JU2 to the side marked HD.
- 3) Connect a differential signal source (50Ω) to the data inputs (IN+, IN-). Set the signal amplitude to 1000mV<sub>P-P</sub> (differential) and the data rate to 1.485Gbps.
- 4) Use a 75Ω cable to connect OUT+ (J4) to the 75Ω input of a high-speed oscilloscope. Put a 50Ω termination on OUT- (J3).
- 5) Connect a +3.3V power supply to VCC (J18) and the power-supply ground to GND (J19).
- 6) The signal should appear on the oscilloscope with approximate amplitude of 800mV<sub>P-P</sub>.

Evaluates: MAX3812

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## **Detailed Description**

The MAX3812 EV kit simplifies evaluation of the MAX3812 cable driver. The EV kit provides the external components necessary to evaluate all the MAX3812 functions.

### **Setting the Output-Voltage Swing**

The external RSET resistor connected between VCC and the RSET pin controls the output-voltage swing. Typically the output voltage swing is set to 800mV<sub>P-P</sub> using the standard 750Ω. This is obtained by setting jumper JU1 to STD. For output-voltage swings other than 800mV<sub>P-P</sub>, set jumper JU1 to VAR and use the variable resistor R5 to set the desired output swing.

### **Selection of Output Slew Rate**

Jumper JU2 sets the output slew rate. Set jumper JU2 to SD for data rates up to 540Mbps, and HD for data rates greater than 540Mbps.

### **Data Input Terminations**

The EV kit has 50Ω input traces with a 100Ω differential termination. The data inputs are AC-coupled and can be directly connected to a 50Ω source. If the input is driven single-ended, terminate the other input with 50Ω.

If the signal source has 75Ω outputs, use a min-loss-pad (MLP) between the source and the data inputs. Increase the amplitude by approximately 7.5dB to compensate for the MLP.

### **Data Output Terminations**

The positive output (OUT+) is AC-coupled and can be directly connected to 75Ω test equipment. The negative output (OUT-) is also AC-coupled and includes an on-board MLP so that it can be directly connected to 50Ω test equipment. Output signals observed with OUT- are attenuated by approximately 7.5dB due to the impedance conversion through the MLP.

Typically the output is evaluated single-ended. For optimal performance the unused output should be properly terminated to keep the output loading balanced. Balance the loads by putting a 50Ω termination on OUT- when evaluating OUT+, and putting a 75Ω termination on OUT+ when evaluating OUT-.

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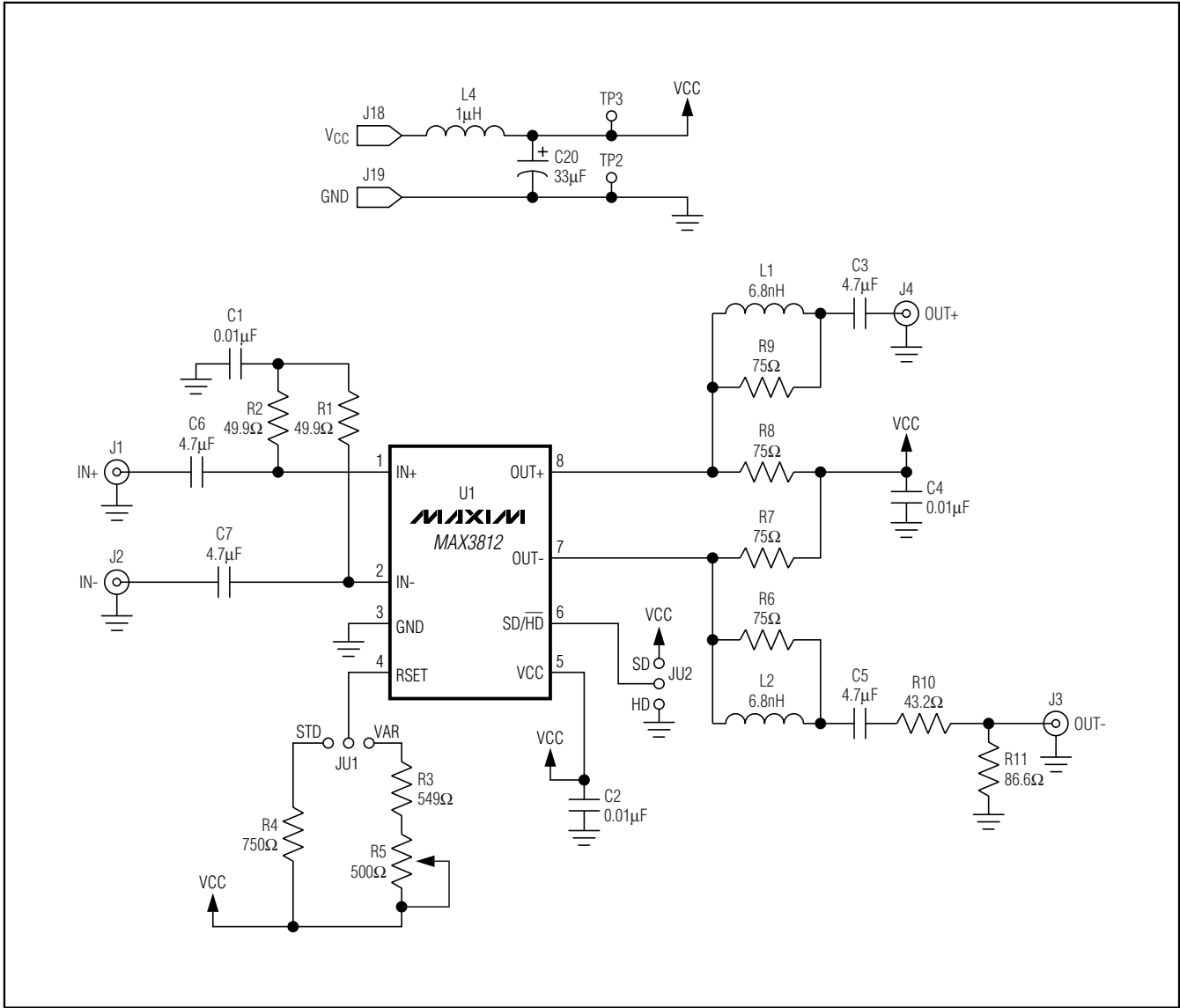


Figure 1. MAX3812 EV Kit Schematic

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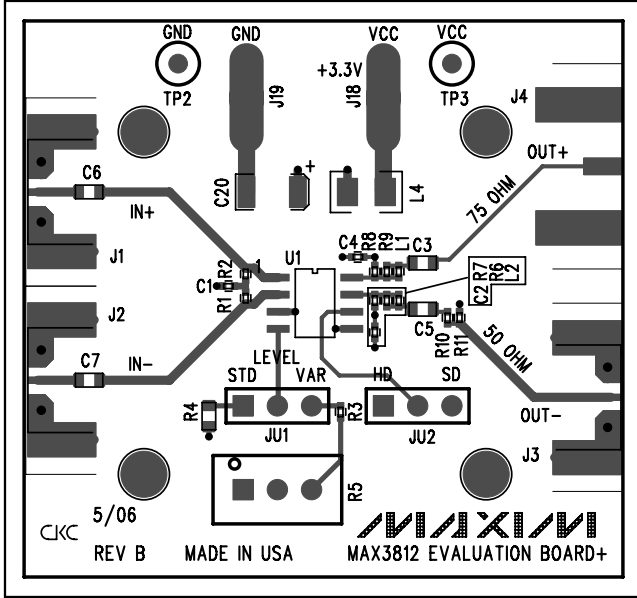


Figure 2. MAX3812 EV Kit Component Placement Guide—Component Side

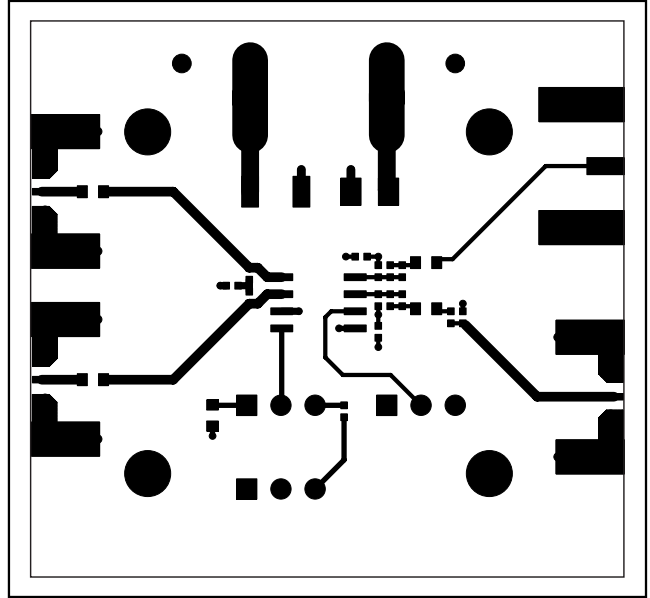


Figure 3. MAX3812 EV Kit PC Board Layout—Component Side

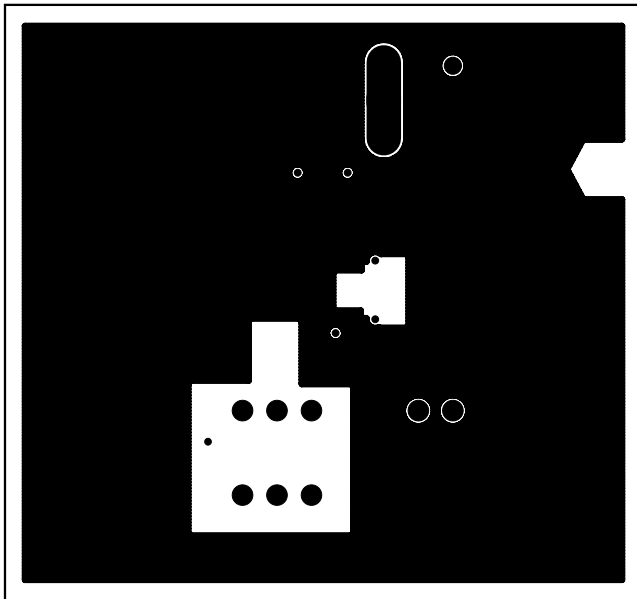


Figure 4. MAX3812 EV Kit PC Board Layout—Ground Plane

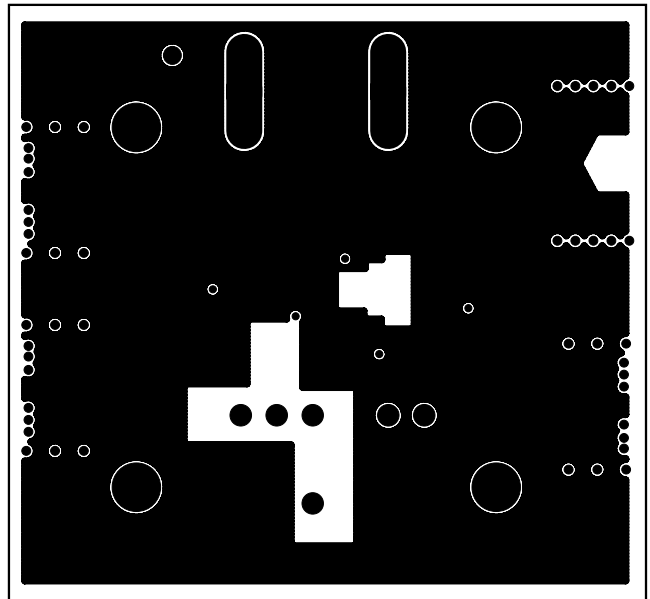


Figure 5. MAX3812 EV Kit PC Board Layout—Power Plane

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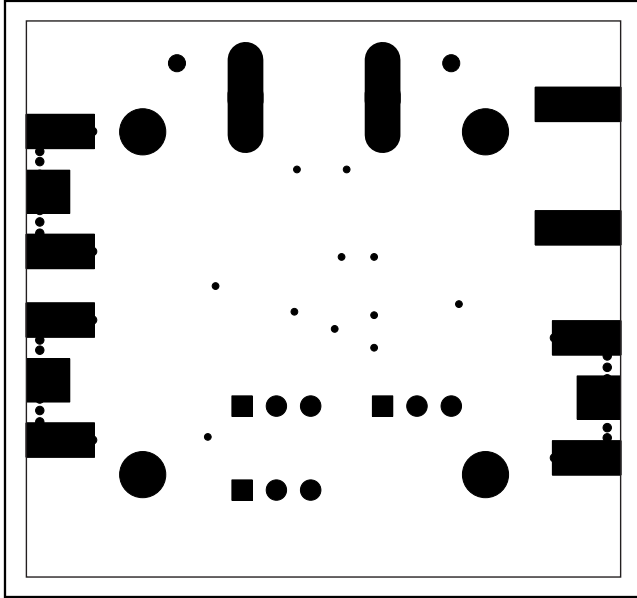


Figure 6. MAX3812 EV Kit PC Board Layout—Solder Side

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