

# MAXIM

## MAX3805 Evaluation Kit

**Evaluates: MAX3805**

### General Description

The MAX3805 DC-coupled evaluation kit (EV kit) simplifies evaluation of the MAX3805 10.7Gbps adaptive equalizer. The EV kit enables full testing of device functions. SMA connectors with 50Ω controlled-impedance transmission lines to the MAX3805 are provided for all CML input and output ports.

### Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX3805EVKIT	-40°C to +85°C	16 QFN

### Component List

DESIGNATION	QTY	DESCRIPTION
C1-C5	5	0.1μF ±10% ceramic capacitor (0402)
C6	1	0.1μF ±10% ceramic capacitor (0603)
C7-C10	4	33μF ±10% tantalum capacitors (case-B)
J1-J4	4	SMA connectors, tab contact
JP1-JP5	5	2-pin headers, 0.1in centers
GND, V <sub>CC</sub> , V <sub>CC1</sub> , V <sub>CC2</sub> , V <sub>EE</sub> , TP4, TP5, TP9, TP10	9	Test points Digi-Key 5000K-ND
R7	1	500kΩ Variable resistor
U1	1	MAX3805 ETE
None	3	Shunts
None	1	MAX3805 EV board
None	1	MAX3805 data sheet

### Component Suppliers

SUPPLIER	PHONE	FAX
Digi-Key	218-681-6674	218-681-3380
Murata	814-237-1431	814-238-0490
Coilcraft	847-639-6400	847-639-1469
AVX	803-946-0690	803-626-3123

**Note:** Please indicate that you are using the MAX3805 when ordering from these suppliers.

### Features

- ◆ DC-Coupled Evaluation Kit
- ◆ SMA Connectors for All High-Speed Inputs and Outputs
- ◆ Fully Assembled and Tested

### Quick Start

**Note:** The MAX3805 EV kit is a DC-coupled evaluation board. Use external coupling capacitors on the input and output when AC-coupling is desired. DC-coupled operation with positive V<sub>CC</sub> supplies can cause permanent damage to laboratory test equipment (oscilloscope, BERT). The MAX3805 EV kit must be operated from a negative V<sub>EE</sub> supply when DC-coupled to normal laboratory equipment.

- 1) Connect a -3.3V power supply to V<sub>EE</sub>. Connect the power supply ground to GND and V<sub>CC</sub>. Remove shunt on JP1; install shunts on JP2 and JP3.
- 2) Connect TP9 to TP10.
- 3) Apply a differential 9.953Gbps input signal (400mV<sub>P-P</sub> to 1200mV<sub>P-P</sub>) between SMA connectors J1 and J2, (SDI+ and SDI-)
- 4) Attach a differential high-speed oscilloscope with a 50Ω input to SMA connectors J4 and J3 (SDO+ and SDO-) to observe the output of the equalizer.

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## Alternative Supply Configurations

### AC-Coupled Operation with

$$V_{CC1} = V_{CC2} = +1.8V$$

Connect a +3.3V power supply to  $V_{CC}$ . Connect a +1.8V power supply to  $V_{CC1}$  and  $V_{CC2}$ . Connect the power-supply ground to GND. Remove shunts JP2 and JP3. Install shunt JP1. Use external AC-coupling capacitors for connecting to external laboratory equipment (oscilloscope, BERT).

### DC-Coupled Operation with Laboratory Equipment

Connect a +1.5V power supply to  $V_{CC}$ . Connect a -1.8V power supply to  $V_{EE}$ . Connect the power-supply ground to GND. Install shunts on JP2 and JP3. Remove shunt on JP1. With this setup the part can be DC-coupled to external laboratory equipment (oscilloscope, BERT)

## DC-Coupled Operation

### with Oscilloscope and BERTs

The MAX3805 is designed with DC-coupled inputs and outputs, implemented with internal  $50\Omega$  terminations to  $V_{CC1}$  ( $SDI_{\pm}$ ) and  $V_{CC2}$  ( $SDO_{\pm}$ ). Laboratory oscilloscopes and BERTs normally terminate their inputs and outputs with  $50\Omega$  to ground. When the MAX3805  $V_{CC}$ s are connected to positive supply, a DC path exists from the power supply to the ports of the oscilloscope or BERT. This configuration can cause permanent damage to the oscilloscope or BERT.

When the MAX3805 EV kit is being used with normal oscilloscopes or BERTs, either external AC-coupling must be provided or  $V_{CC1}$  and  $V_{CC2}$  must be connected to ground (i.e., using a negative  $V_{EE}$  supply). Failure to do so may permanently damage laboratory equipment.

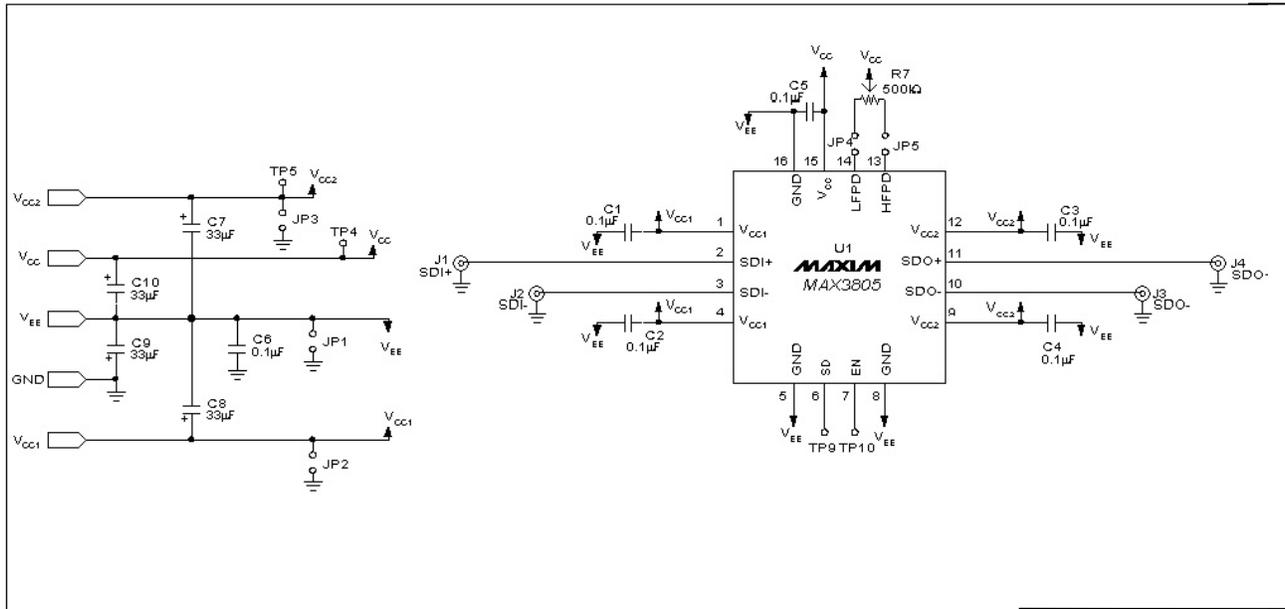


Figure 1. MAX3805 EV kit Schematic

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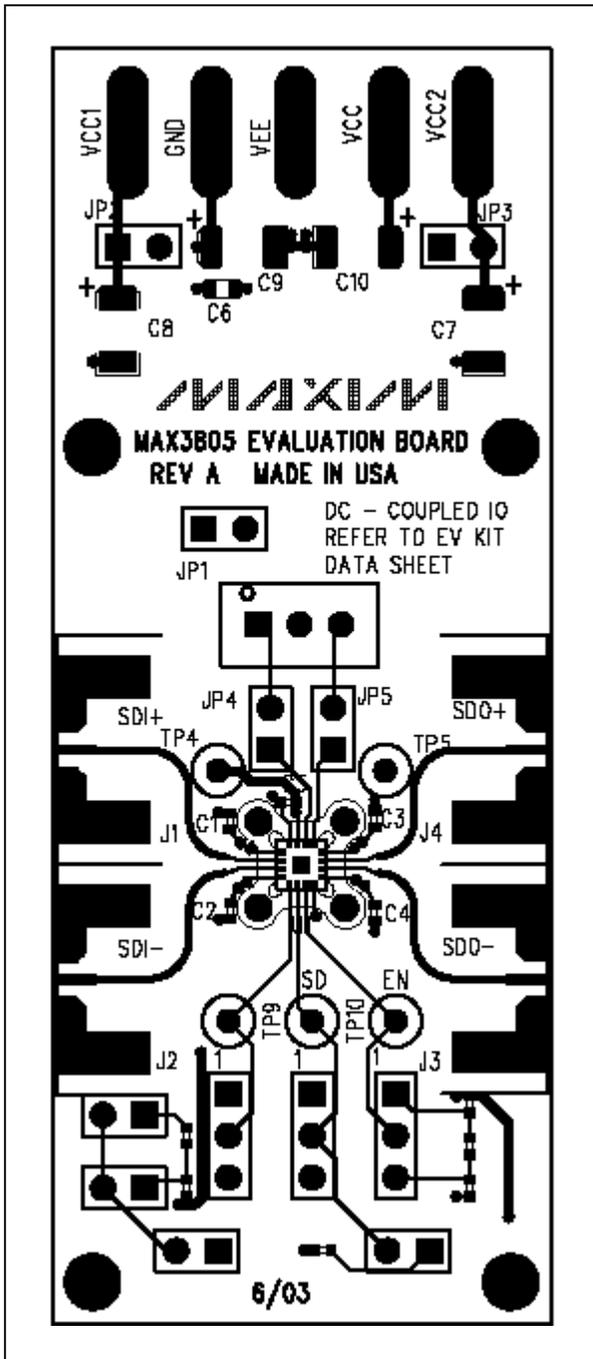


Figure 2. MAX3805 Component Placement Guide

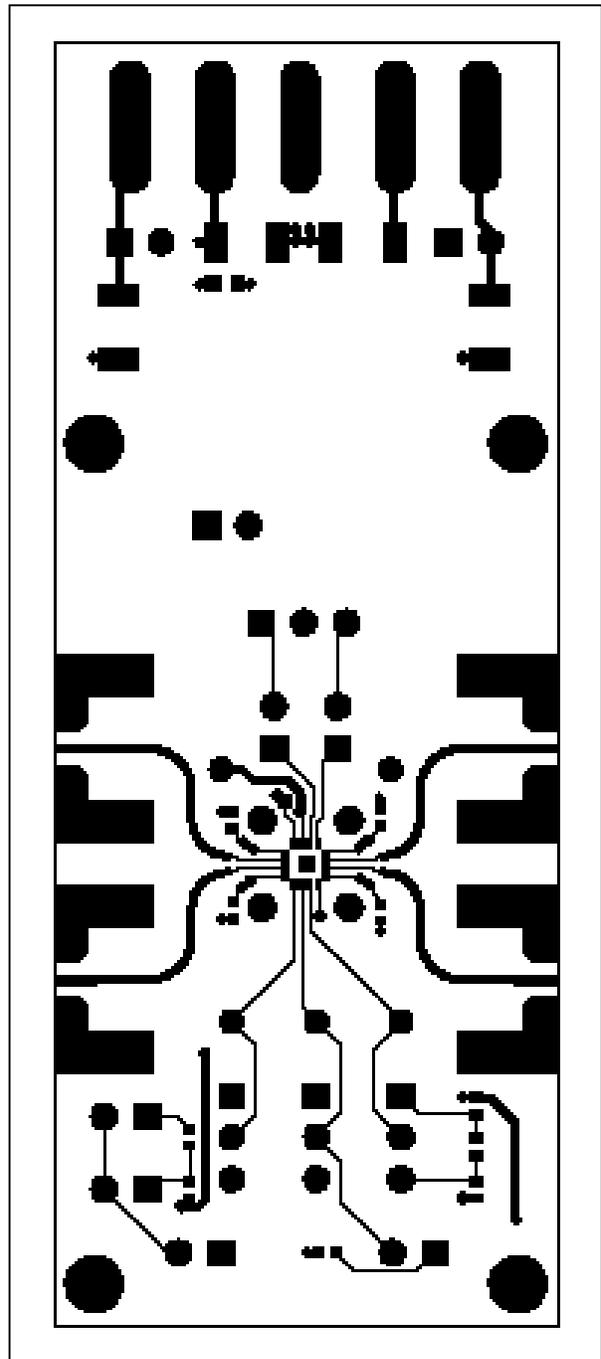


Figure 3. MAX3805 PC Board Layout – Component Side

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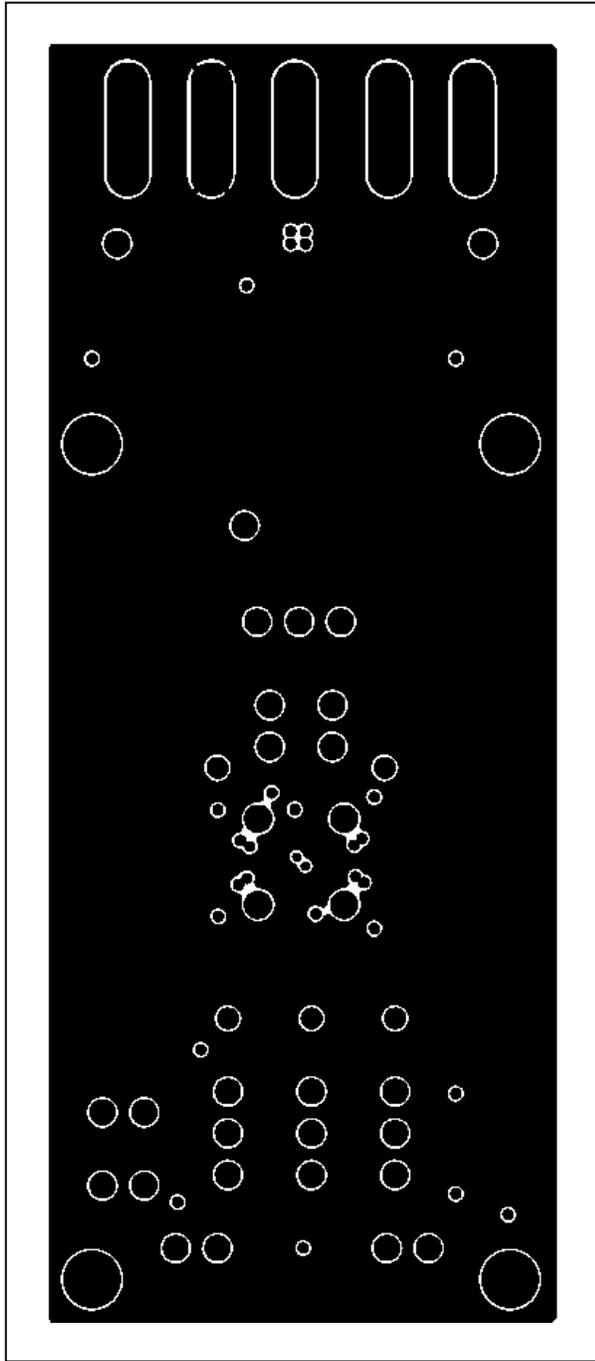


Figure 4. MAX3805 PC Board Layout – Ground Plane

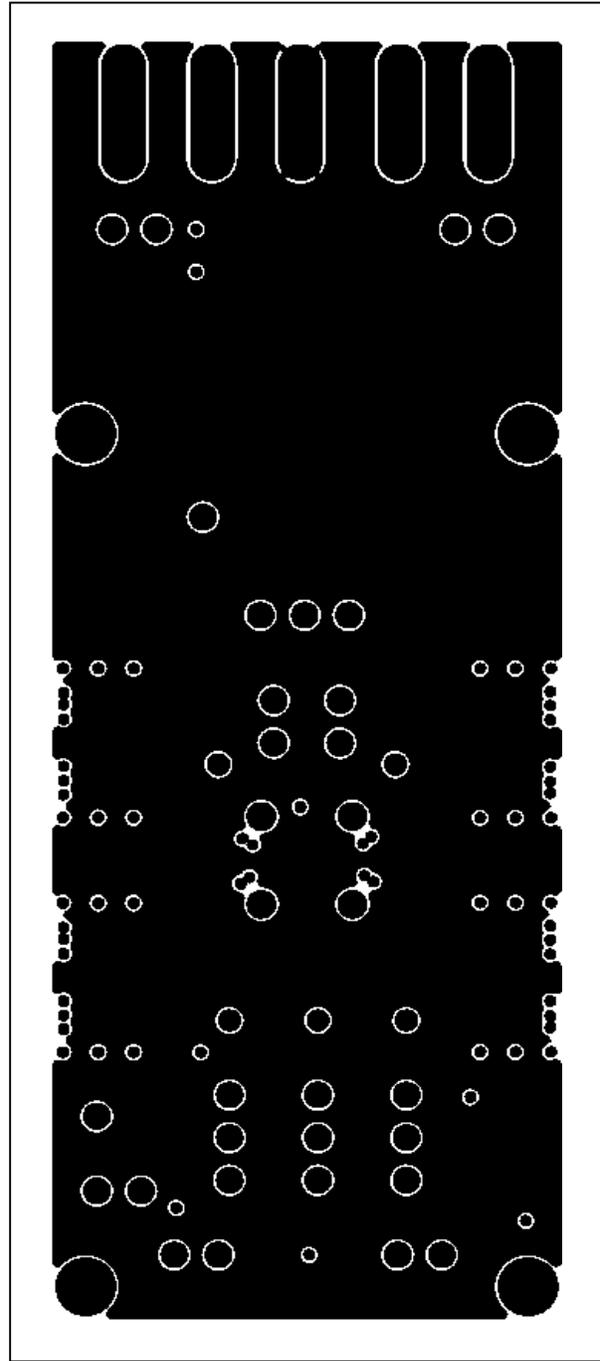


Figure 5. MAX3805 PC Board Layout – Power Plane

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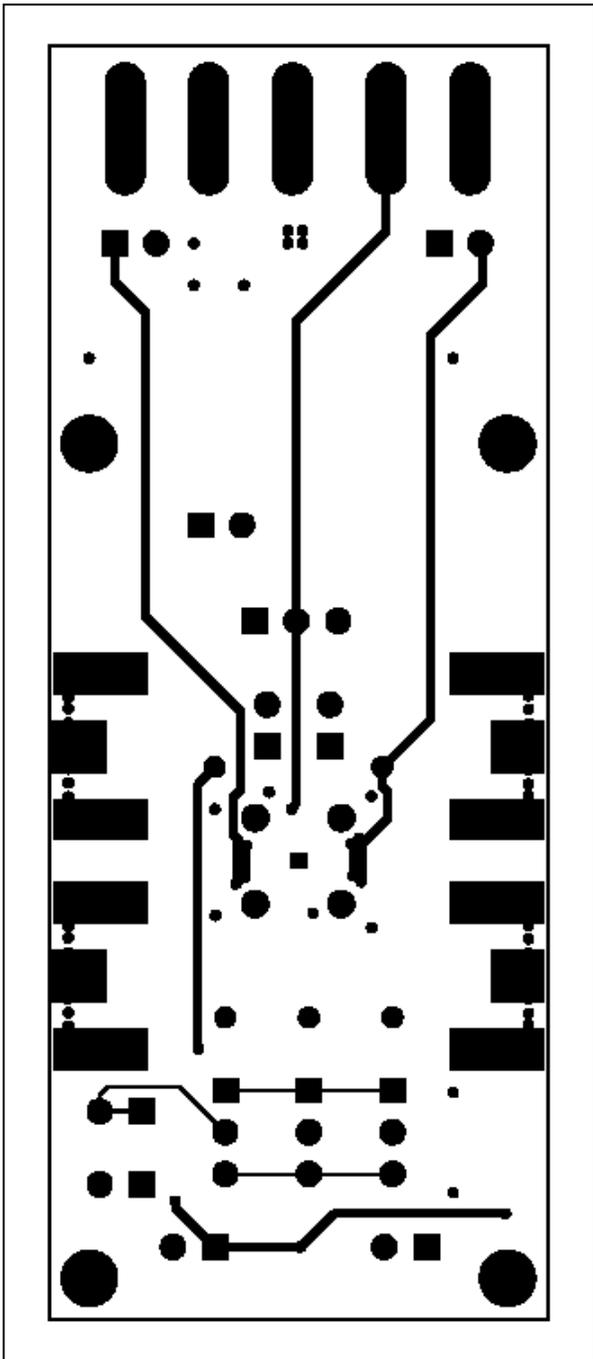


Figure 6. MAX3805 PC Board Layout – Solder Side

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