

19-2789; Rev 1; 6/03

MAXIM MAX3803 Evaluation Kit

General Description

The MAX3803 dc-coupled evaluation kit (EV kit) simplifies evaluation of the MAX3803 2.488Gbps to 3.125Gbps equalizer. The EV kit enables full testing of all the device's functions. SMA connectors with 50Ω controlled-impedance transmission lines to the MAX3803 are provided for all CML input and output ports.

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX3803EVKIT	0°C to +85°C	5X4 UCSP

Component List

DESIGNATION	QTY	DESCRIPTION
C2-C7, C9, C12-C14	10	0.1μF 10% Ceramic Capacitor (0402)
C1, C8, C10, C11	4	33μF 10% Electrolytic Capacitor (B CASE)
J1, J2, J9-J11, TP1, TP4-TP6	9	Test Point
TP2, TP3	2	Not Installed
J3-J8	6	SMA Connector EDGE MOUNT (TAB CONTACT)
J15-J17	3	1X2 Pin Header (0.1" centers)
J18, J19	2	1X3 Pin Header (0.1" centers)
L1-L4	4	1μH Chip Inductor (0805)
U1	1	MAX3803 5X4UCSP

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 MAX3803 when ordering from these suppliers.

Features

- ◆ Independent Input and Output Voltage Terminations
- ◆ SMA Connectors for All High-Speed Inputs and Outputs
- ◆ Fully Assembled and Tested

Quick Start

Note: The MAX3803 EV kit is a dc-coupled evaluation board with 50Ω input and output terminations to VTI and VTO, respectively. Care must be taken to ensure that no direct short exists between the supply voltage and supply ground. Normal dc-coupled operation with all positive supplies causes permanent damage to laboratory test equipment because a dc path exists from the power supply to the ports of the oscilloscope or BERT. The MAX3803 EV kit must be operated from a negative VEE supply when DC-coupled to standard lab equipment. External ac-coupling capacitors should be used when connecting to standard lab equipment and when VEE (J11) and the EV kit's GND (J2) are at the same potential.

- 1) Do not turn on the power supply until step 6.
- 2) Connect a -3.3V power supply to J11 (VEE). Connect the power supply ground to J2 (GND) and J1 (VCC). Remove shunt on J15; install shunts on J16, 17, and center pin to VCC on J18.
- 3) Apply a differential 1Gbps to 3.2Gbps input signal (400mV_{P-P} to 1000mV_{P-P}) between SMA connectors to FR4 board with length between 10in and 40in.
- 4) Connect the output of the FR4 board to the J3 and J4 (IN_±) inputs.
- 5) Attach a differential high-speed oscilloscope with a 50Ω input to SMA connectors J5 and J6 (OUT_±) to observe the output of the equalizer.
- 6) Turn on power supply.

Evaluates: MAX3803



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Alternative

Supply Configurations

DC-Coupled Chip-to-Chip Operation

This setup allows testing of the MAX3803 in the final system. Remove shunts on J16 and J17; install a shunt on J15 and center pin to VCC on J18. Connect the VTI (J10) pin to the CML supply voltage output termination of the previous chip (transmitter). Connect the VTO (J9) pin to the CML supply voltage input termination of the following chip (receiver). Connect a 3.3V power supply on the VCC (J1) pin. Connect the supply ground to GND (J2). Insure that VCC, VTI, and VTO share a common ground. VTI and VTO can be at different voltages.

DC-Coupled Operation with Laboratory Equipment

This setup allows testing of the MAX3803 with standard lab equipment (BERT, oscilloscope, etc.). Remove shunt on J15; install shunts on J16, J17, and center pin to VCC on J18. Connect VCC (J1) pin to +2.2V power supply. Connect a -1.1V supply to VEE (J11). This setup forces the VTI and VTO voltages to be the same at 1.1V with respect to VEE. The VTI and VTO voltages must remain the same in this configuration, but the level can change by varying VCC and VEE. Insure that the difference between VCC and VEE is between 3.0V and 3.6V.

AC-Coupled Operation

This setup allows testing of the MAX3803 in ac-coupled operation. Remove shunts on J16 and J17; install shunts on J15 and center pin to VCC on J18. Install external AC-coupling capacitors to IN_± (J3, J4) and OUT_± (J5, J6). Connect VCC (J1), VTI (J10), and VTO (J9) to the same power supply between 3.0V and 3.6V. Connect the ground to GND (J2).

Jumper J18

When the inputs to the MAX3803 are AC-coupled, or when V_{EE} is connected to GND connect the center pin to V_{CC} to enable the output stage. Connect the center pin to GND to disable the output stage.

For all other cases, connect the center pin to V_{CC} to enable the output stage. Connect the center pin to V_{EE} using a wire to disable the output stage.

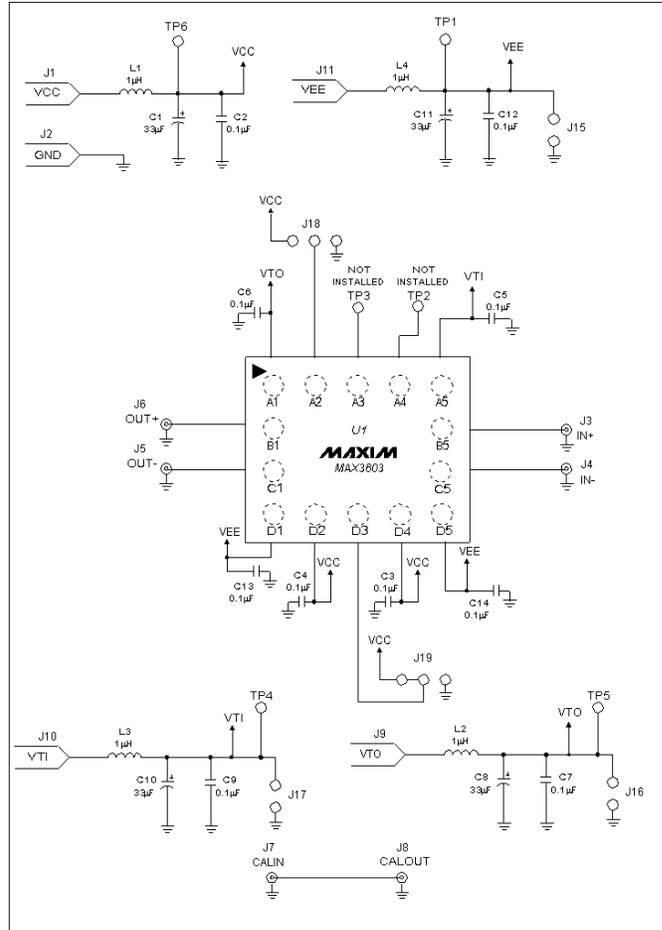


Figure 1. MAX3803 EV Kit Schematic

MAX3803 Evaluation Kit

Evaluates: MAX3803

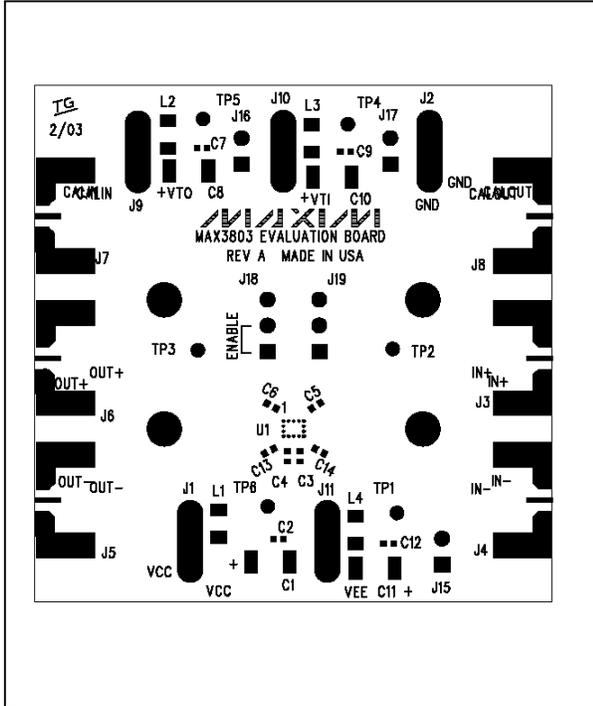


Figure 2. MAX3803 Component Placement Guide

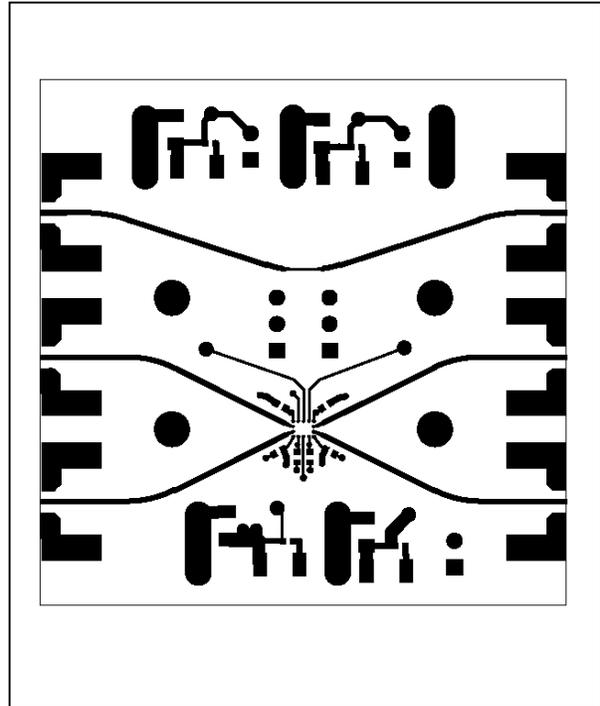


Figure 3. MAX3803 PC Board Layout - Component Side

MAX3803 Evaluation Kit

Evaluates: MAX3803

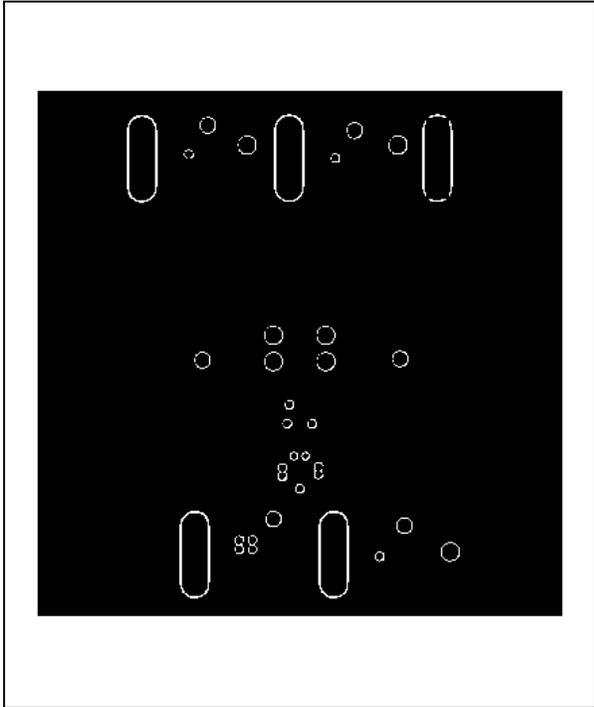


Figure 4. MAX3803 PC Board Layout – Ground Plane

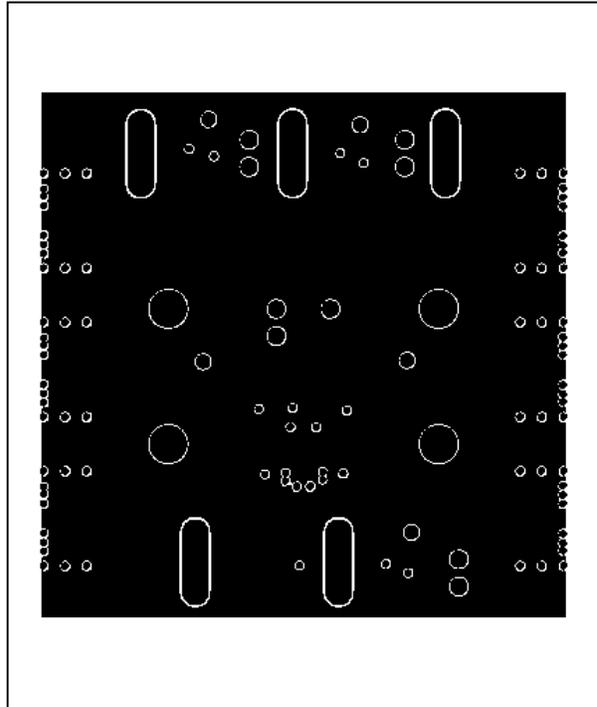


Figure 5. MAX3803 PC Board Layout – Power Plane

MAX3803 Evaluation Kit

Evaluates: MAX3803

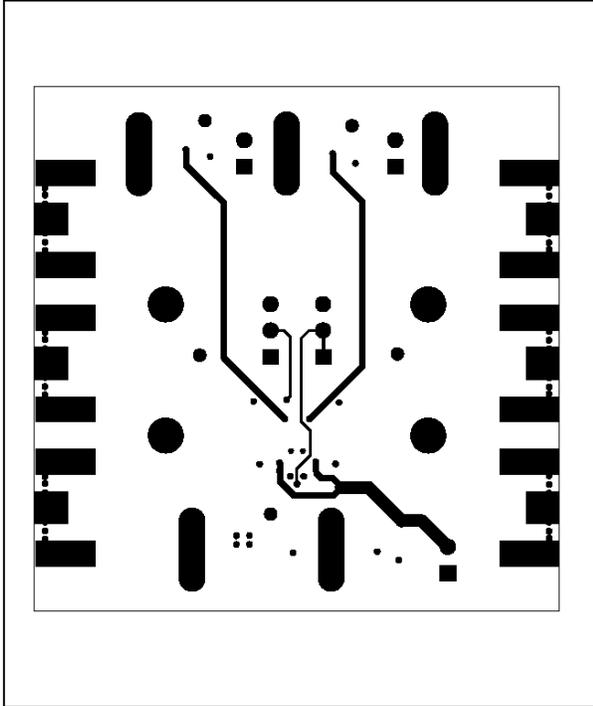


Figure 6. MAX3803 PC Board Layout – Solder Side

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