

MAXIM

MAX3822 Evaluation Kit

Evaluates: MAX3822

General Description

The MAX3822 evaluation kit (EV kit) is a fully assembled demonstration board that simplifies evaluation of the MAX3822 quad limiting amplifier. The EV kit is shipped from the factory with all components needed to interface with standard 50Ω test equipment. The kit features on-board power-supply filtering and consumes approximately 240mA with a +3.3V supply. To facilitate evaluation of the MAX3822 at speed, the EV kit is laid out with 50Ω controlled impedance on all signal lines.

Component List

DESIGNATION	QTY	DESCRIPTION
C1–C16, 21, 25, 28	19	0.1μF ±10% 10V ceramic capacitors
C17–C20	4	0.033μF ±10% 10V ceramic capacitors
C26	1	33μF tantalum capacitor
C27	1	2.2μF ±10% 10V ceramic capacitor
J1–J8, J10–J17	16	SMA connectors (edge mount) EFJohnson 142-0701-801
J9, J18–J22	6	3-pin headers (0.1in centers)
J23, J24	2	Shunts
J23, J24	2	2-pin headers (0.1in centers)
L1, L2	2	56nH SMD inductors
LED1–LED5	5	Red T1 packages
R1–R5	5	150Ω ±1% resistors
R6	1	100Ω ±1% resistor
R7	1	1kΩ potentiometer
R8	1	200Ω potentiometer
U1	1	MAX3822ECM 48-pin TQFP
VCC, GND	2	Test points
None	1	MAX3822 evaluation circuit board, Rev C
None	1	MAX3822 data sheet
None	1	MAX3822 EV kit data sheet

Features

- ◆ Fully Assembled and Tested
- ◆ Easy Loss-of-Power (LOP) Threshold Programming
- ◆ LOP Indicators
- ◆ Channel-Select Configuration Pins

Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX3822EVKIT	0°C to +85°C	48 TQFP

*Exposed pad

Component Suppliers

SUPPLIER	PHONE	FAX
Coilcraft	847-639-6400	847-639-1469
Sprague	207-324-4140	603-224-1430

Note: Please indicate that you are using the MAX3822 EV kit when contacting these component suppliers.

Quick Start

- 1) Set the channel-select (CS) pin to enable channel 1 by removing the shunt from J9.
- 2) Set the threshold level to mid-range by adjusting threshold control potentiometers R7 and R8 for 650Ω measured between VTH and ground.
- 3) Enable the $\overline{\text{LOP}}$ and $\overline{\text{LOP1}}$ indicators by placing shunts across the LED side of J22 and J18.
- 4) Ensure shunts on J23 and J24 are in place.
- 5) Connect ground and a +3.3V supply to the proper terminals on the EV kit.
- 6) Connect the inputs of channel 1 to a 50Ω source using 50Ω SMA cables. Set the source to produce a differential 50mVp-p 2.5Gbps signal.
- 7) Connect the outputs of channel 1 to a 50Ω oscilloscope with 50Ω SMA cables.
- 8) Power up the EV kit.
- 9) Check that the amplified and limited input pattern is present on the output.

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Detailed Description

The MAX3822 EV kit contains all components necessary to evaluate the MAX3822 quad-limiting amplifier. The completely assembled and factory-tested EV kit features on-board power-supply filtering and operates from a single +3.3V supply. In quad-channel operation, the MAX3822 EV kit consumes approximately 240mA (current consumption drops to approximately 70mA for single-channel operation). The MAX3822 EV kit is shipped from the factory configured for interfacing with standard 50Ω test equipment.

Side-mount SMA connectors are used for the MAX3822's signal I/O ports. To simplify interfacing to 50Ω test equipment, the EV kit provides AC-coupling for the MAX3822's CML inputs and outputs. All differential input and output data paths are 50Ω controlled-impedance transmission lines.

The MAX3822 EV kit facilitates programming of the input signal level threshold with two potentiometers. Use R7 for coarse tuning and R8 for fine tuning. Test points and LEDs are provided for monitoring the MAX3822's LOP output. The LOP outputs are connected to the two pins on the OUT side of J18–J22.

Program the MAX3822's operational mode with J9. Single-, dual-, and quad-channel operation is accom-

plished by shunting (or removing the shunt from) the appropriate pins of J9. For single-channel operation, remove the shunt from J9 to enable channel 1. For dual-channel operation, shunt pins 1 and 2 on J9 to enable channels 1 and 2. For quad-channel operation, shunt pins 2 and 3 on J9 to enable all four channels. When in single- or dual-channel operation, the unused amplifiers are shut down and overall current consumption is reduced. If desired, current consumption can be further reduced by disabling the LOP diodes' drive current. Current is delivered to the LEDs through J18–J22. For example, to conserve current while in dual-channel operation, disable LEDs for channels 1 and 2 by removing the shunts from J18 and J19.

Connections, Adjustments, and Controls

Layout Considerations

The MAX3822 quad limiting amplifier is a high-gain, high-frequency device whose performance can be affected by poor board layout. The MAX3822 EV kit is fabricated on a four-layer board with controlled impedance transmission lines and separate power and ground planes. Supply noise filtering is done with inductive filtering and decoupling capacitors placed close to the IC's VCC pins.

Table 1. Jumpers, Test Points, and Indicators

NAME	TYPE	FUNCTION
J9	3-pin header	Channel-Select Input. Leave all pins open to enable channel 1. Short pins 1 and 2 to activate channels 1 and 2. Short pins 2 and 3 to enable all four channels.
J18	3-pin header	Connects LOP LED Indicator to the LOP Output of Channel 1. Shunting pins on the LED side causes the LOP output to be connected to the LED and removing the shunt opens the LOP LED.
J19	3-pin header	Connects LOP LED Indicator to the LOP Output of Channel 2. Shunting pins on the LED side causes the LOP output to be connected to the LED and removing the shunt opens the LOP LED.
J20	3-pin header	Connects LOP LED Indicator to the LOP Output of Channel 3. Shunting pins on the LED side causes the LOP output to be connected to the LED and removing the shunt opens the LOP LED.

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Table 1. Jumpers, Test Points, and Indicators (continued)

NAME	TYPE	FUNCTION
J21	3-pin header	Connects LOP LED Indicator to the LOP Output of Channel 4. Shunting pins on the LED side causes the LOP output to be connected to the LED and removing the shunt opens the LOP LED.
J22	3-pin header	Connects the General LOP LED Indicator to the General LOP Output of Quad Limiting Amplifier. Shunting on the LED side causes the LOP output to be connected to the LED and removing the shunt opens the LOP LED.
J23	2-pin header	Jumper from Power Supply to the Device V _{CC}
J24	2-pin header	Jumper from Power Supply to the LEDs
LED1	LED	LOP Indicator for Channel 1. Lights when limiting amplifier 1 is in the LOP state.
LED2	LED	LOP Indicator for Channel 2. Lights when limiting amplifier 2 is in the LOP state.
LED3	LED	LOP Indicator for Channel 3. Lights when limiting amplifier 3 is in the LOP state.
LED4	LED	LOP Indicator for Channel 4. Lights when limiting amplifier 4 is in the LOP state.
LOP LED5	LED	General LOP Indicator. Lights when any of the four limiting amplifiers is in the LOP state.
VCC	Test point	Power-Supply Connection
GND	Test point	Ground Connection
R7	Potentiometer	Coarse Power-Detection Threshold Adjustment
R8	Potentiometer	Fine Power-Detection Threshold Adjustment

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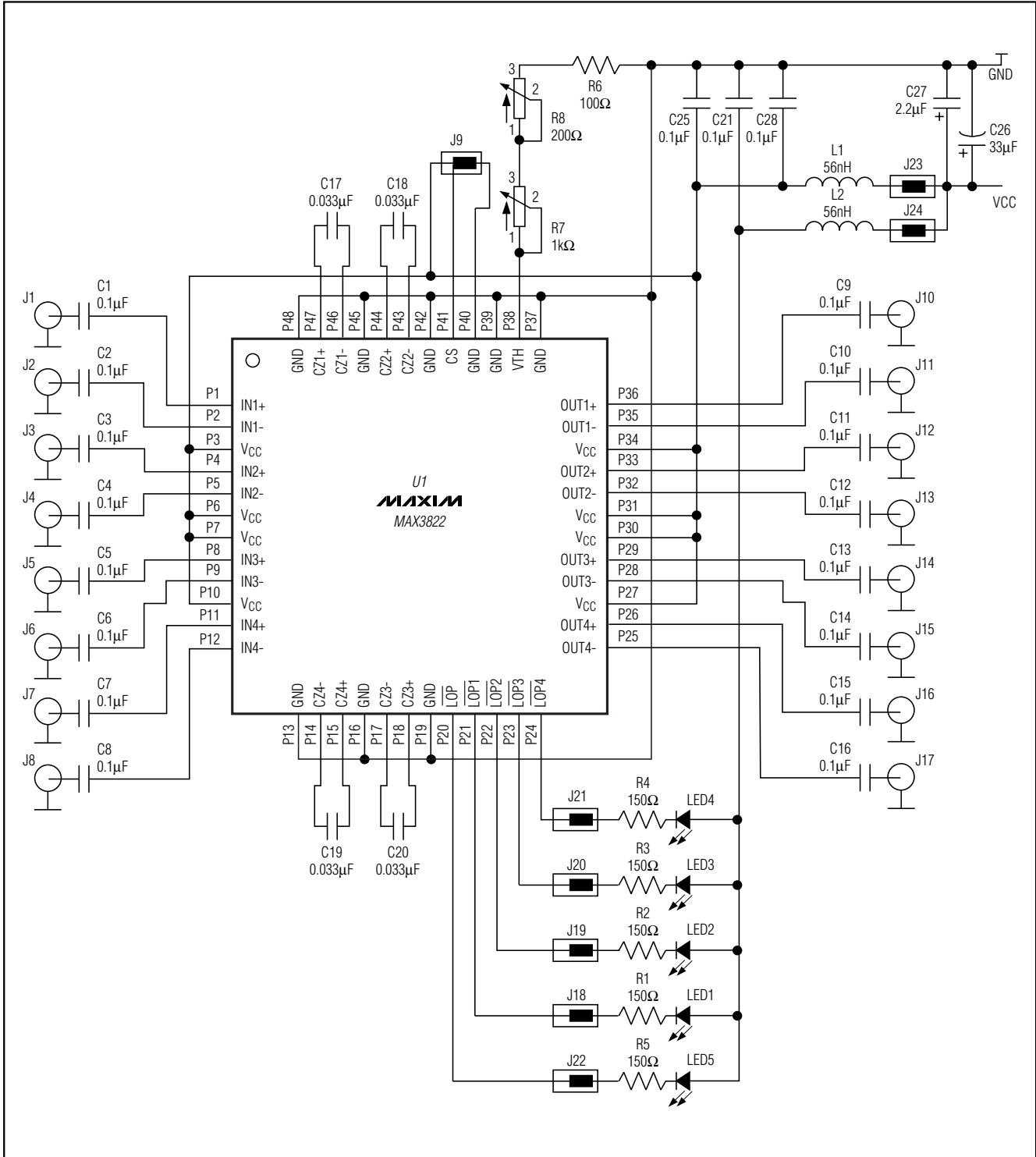


Figure 1. MAX3822 EV Kit Schematic

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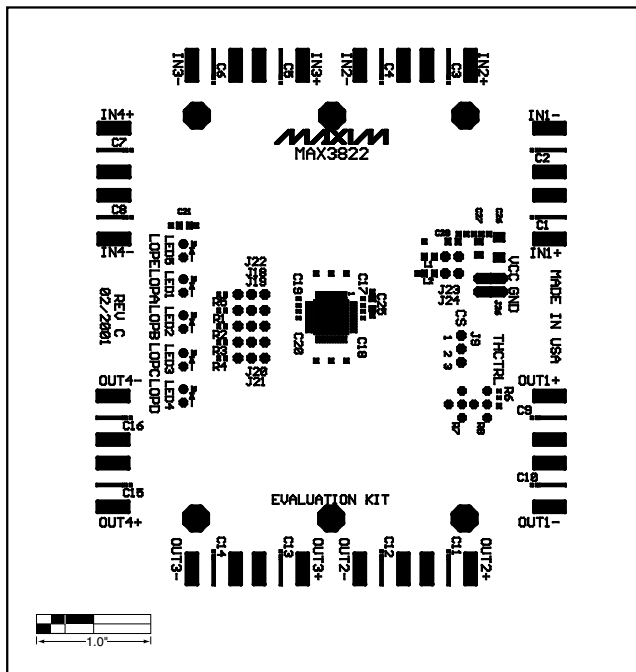


Figure 2. MAX3822 EV Kit Component Placement Guide—Component Side

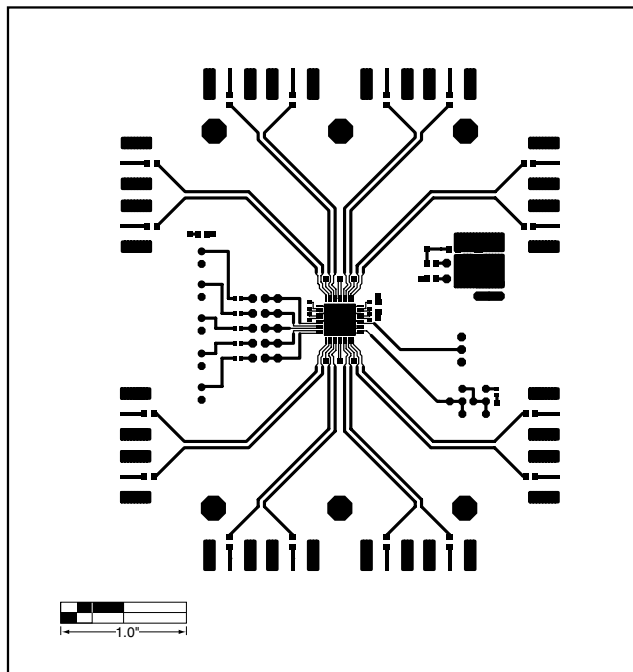


Figure 3. MAX3822 EV Kit PC Board Layout—Component Side

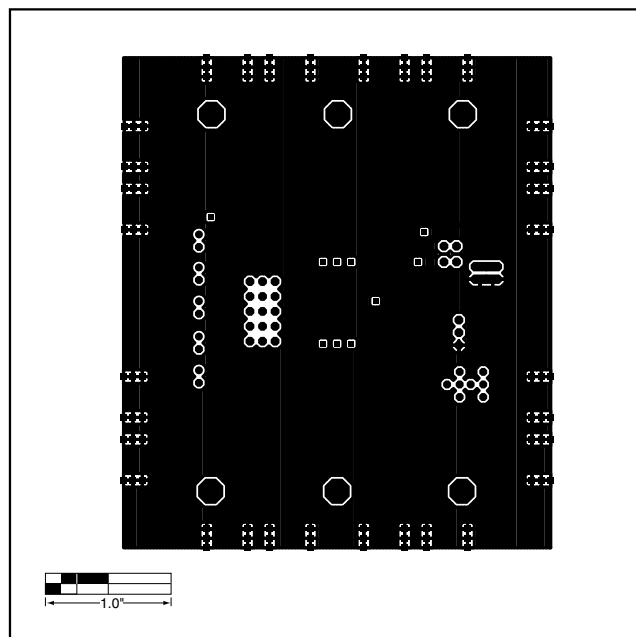


Figure 4. MAX3822 EV Kit PC Board Layout—Ground Plane

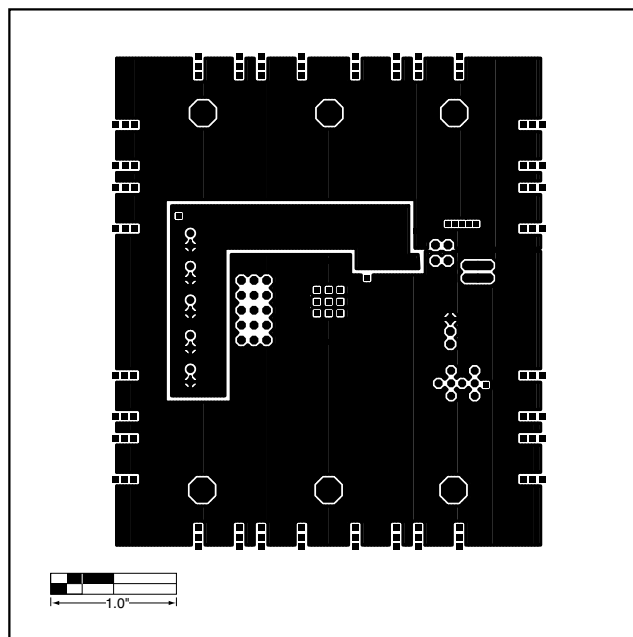


Figure 5. MAX3822 EV Kit PC Board Layout—Power Plane

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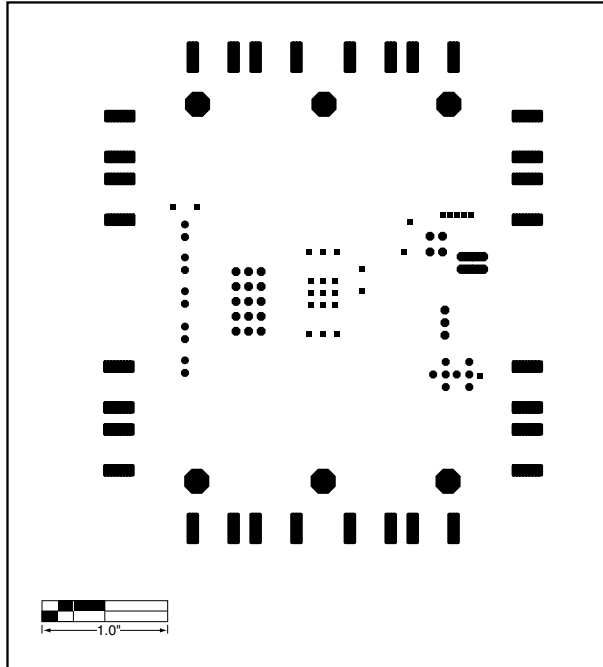


Figure 6. MAX3822 EV Kit PC Board Layout—Solder Side

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