



# MAX4103 Evaluation Kit

## General Description

The MAX4103 evaluation kit (EV kit) simplifies evaluation of the MAX4103 high-speed, low-power, broadcast-quality video amplifier. The EV kit circuit demonstrates the MAX4103 in the noninverting configuration, set to a gain of 2V/V.

The EV kit comes with the MAX4103 installed, but it can also be used to evaluate the MAX4102. Simply order a MAX4102 free sample, replace the MAX4103 with the MAX4102 on the EV board, and change the gain-setting resistors for the desired gain.

## Component List

| DESIGNATION                     | QTY | DESCRIPTION   |
|---------------------------------|-----|---|
| U1                              | 1   | MAX4103ESA  |
| C1, C2                          | 2   | 0.1 $\mu$ F, 10% ceramic capacitors<br>Vitramon VJ1206Y104KXX                           |
| C3, C4                          | 2   | 10 $\mu$ F, 10V, 20% tantalum capacitors<br>AVX TAJB106M010 or<br>Sprague 293D106X0010B |
| R1, R2                          | 2   | 75 $\Omega$ , 5% resistors  |
| R <sub>F</sub> , R <sub>G</sub> | 2   | 390 $\Omega$ , 5% resistors   |
| IN, OUT                         | 2   | SMA connectors  |
| None                            | 1   | MAX4102/MAX4103 data sheet  |

## Component Suppliers

| SUPPLIER        | PHONE          | FAX            |
|-----------------|----------------|----------------|
| AVX             | (803) 946-0690 | (803) 626-3123 |
| Sprague         | (603) 224-1961 | (603) 224-1430 |
| Vishay/Vitramon | (203) 268-6261 | (203) 452-5670 |

## Features

- ◆ 180MHz -3dB Bandwidth
- ◆ Optional Adjustable Gain
- ◆ Fully Assembled and Tested

## Ordering Information

| PART            | TEMP. RANGE | BOARD TYPE    |
|-----------------|-------------|---------------|
| MAX4103EVKIT-SO | +25°C       | Surface Mount |

Note: To evaluate the MAX4102, request a MAX4102ESA free sample.

## Quick Start

The MAX4103 EV kit is fully assembled and tested. Follow these steps to verify board operation.

- 1) The circuit requires supply voltages of  $\pm 5$ V. Connect these supplies to the corresponding pads marked V<sub>CC</sub> and V<sub>EE</sub>. Connect the power-supply ground to the pad marked GND.
- 2) Connect the output marked OUT to an oscilloscope through a terminated 75 $\Omega$  cable.
- 3) Turn on the power supplies.
- 4) Apply a signal of  $\pm 1.7$ V<sub>pk</sub> maximum to the SMA connector marked IN.
- 5) Verify the output signal on the oscilloscope.

Evaluates: MAX4102/MAX4103

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## Detailed Description

### Voltage-Gain Adjustment

The MAX4103 gain can be adjusted with minor modifications to the evaluation board.

- 1) Referring to the section *Choosing Resistor Values* in the MAX4102/MAX4103 data sheet, select the feedback ( $R_F$ ) and gain-setting ( $R_G$ ) resistors for the desired gain.
- 2) Install  $R_F$  and  $R_G$ .

### Layout Considerations

The MAX4103 EV kit layout has been optimized for high-speed signals, with careful attention given to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass

capacitors C1 and C2 have been placed as close to the MAX4103 supply pins as possible. The unused pins have been grounded to prevent unwanted noise from coupling into the circuit.

To reduce harmonic distortion, the input connector (IN), input termination resistor ( $R_1$ ), and gain-setting resistor ( $R_G$ ) meet the PC board ground plane at a single point. As a result, input current (through  $R_1$ ) and feedback current (through  $R_G$ ) will flow back to the source rather than mix with the output current and cause distortion.

Refer to the *Grounding, Bypassing, and PC Board Layout* section of the MAX4102/MAX4103 data sheet for more information.

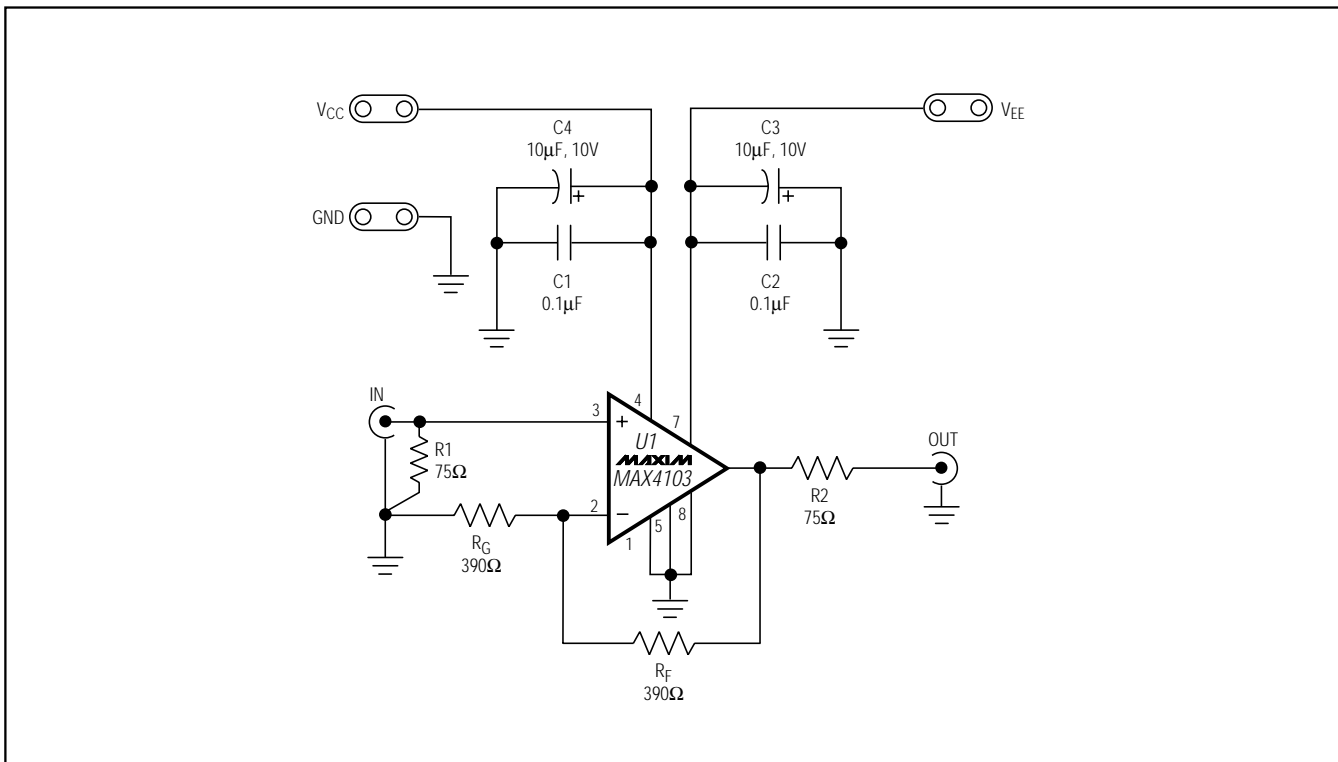


Figure 1. MAX4103 EV Kit Schematic

# MAX4103 Evaluation Kit

Evaluates: MAX4102/MAX4103

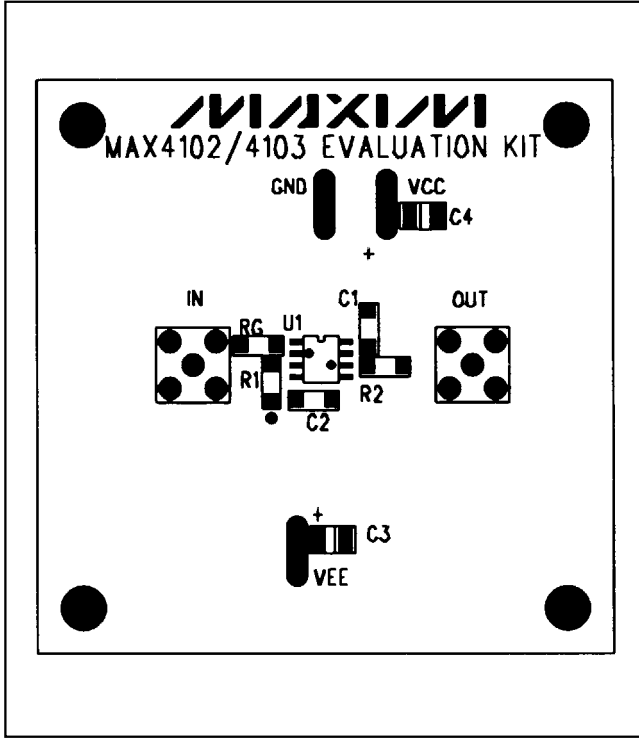


Figure 2. MAX4103 EV Kit Component Placement Guide—Component Side

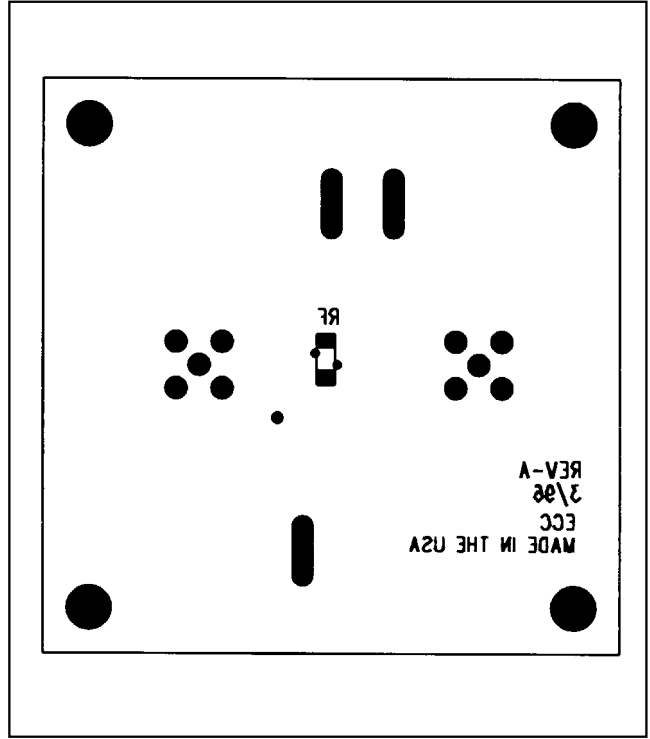


Figure 3. MAX4103 EV Kit Component Placement Guide—Solder Side

# MAX4103 Evaluation Kit

Evaluates: MAX4102/MAX4103

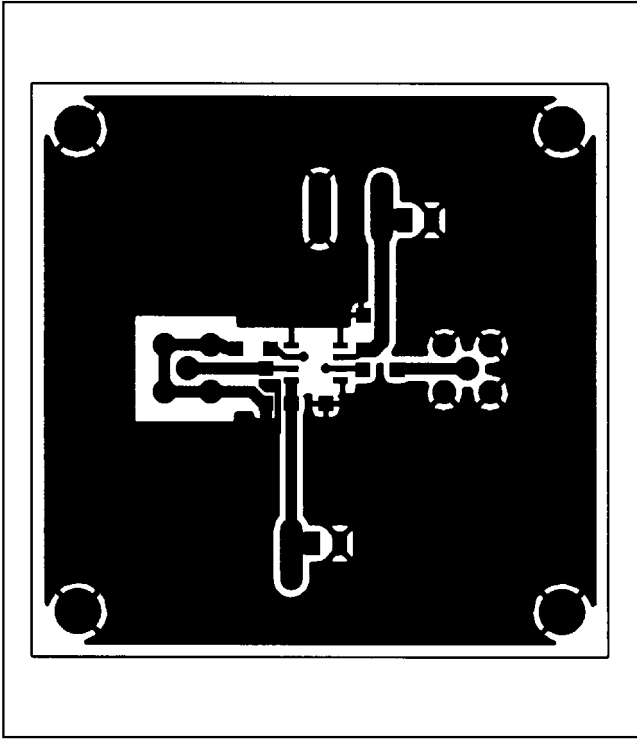


Figure 4. MAX4103 EV Kit PC Board Layout—Component Side

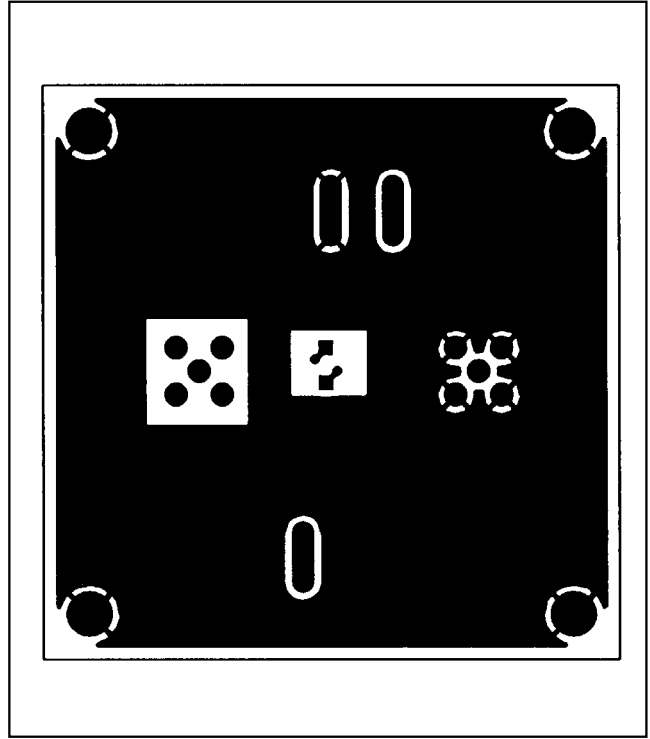


Figure 5. MAX4103 EV Kit PC Board Layout—Solder Side

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