

MAXIM

MAX4180 Evaluation Kit

Evaluates: MAX4180/MAX4181

General Description

The MAX4180 evaluation kit (EV kit) simplifies evaluation of the MAX4180 low-power, current-feedback amplifier. The EV kit circuit demonstrates the MAX4180 in the noninverting, gain-of-two configuration in either single- or dual-supply mode. RF-style SMA connectors and 50Ω terminating resistors are included for test equipment compatibility.

The MAX4180 EV kit uses a PC board design optimized for high-frequency amplifiers. This board can also be used to evaluate the MAX4181 and other Maxim amplifiers that share the same pinout.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2	2	0.1μF, 10% ceramic capacitors
C3, C4	2	10μF, 10V, 20% tantalum capacitors AVX TAJB106M010 or Sprague 293D106X0010B
IN, OUT	2	SMA connectors
JU1	1	3-pin header
R1, R2	2	49.9Ω, 1% resistors
RF	1	680Ω, 5% resistor
RG	1	680Ω, 5% resistor
U1	1	MAX4180ESA
None	1	Shunt for JU1
None	1	Single SO-8 HF amp PC board
None	1	MAX4180 data sheet

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	(803) 946-0690	(803) 626-3123
Sprague	(603) 224-1961	(603) 224-1430

Note: Please indicate that you are using the MAX4180 when contacting these component suppliers.

Features

- ◆ 190MHz -3dB Bandwidth ($R_L = 100\Omega$)
- ◆ 400V/μs Slew Rate
- ◆ Single +5V or Dual ±5V Supply Operation
- ◆ Adjustable Gain
- ◆ High-Impedance Shutdown Mode
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX4180EVKIT-SO	-40°C to +85°C	Surface Mount

Note: To evaluate the MAX4181, request a MAX4181ESA free sample.

Quick Start

The MAX4180 EV kit is fully assembled and tested. Follow these steps to verify board operation.

- 1) For dual-supply operation, connect a +5V supply to the pad labeled VCC. Connect a -5V supply to the pad labeled VEE. Connect power-supply ground to the pad labeled GND.
- 2) Verify that the shunt is across pins 1 and 2 of jumper JU1.
- 3) Connect the output labeled OUT to an oscilloscope input.
- 4) Turn on the power supply. Apply a ±1.0V signal to the SMA connector labeled IN. The 100Ω load (chosen for ease of evaluation) limits the output voltage range. Wider output voltage swings are achievable with lighter loads. See the MAX4180 data sheet.
- 5) Verify the output signal on the oscilloscope.

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Detailed Description

Supply Voltage

The MAX4180 EV kit can be used in either single- or dual-supply mode. Power-supply filter capacitors (C1, C3) can be eliminated in your final single-supply design.

Shutdown Control

The MAX4180 provides a shutdown pin ($\overline{\text{SHDN}}$) to enable or disable the output. Table 1 lists the options available for the shutdown control jumper, JU1. An external controller may be used by removing the shunt on JU1 completely and connecting the external controller to the pad labeled SHDN. $\overline{\text{SHDN}}$ is a TTL/CMOS logic-level input.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	$\overline{\text{SHDN}}$ PIN	OUTPUT
1 and 2	Connected to VCC	Enabled
2 and 3	Connected to GND	Disabled

Voltage-Gain Adjustment

The MAX4180 gain can be set by changing the feedback (RF) and gain-set (RG) resistors. Refer to the MAX4180 data sheet for recommended values. The MAX4180 is compensated for applications with a closed-loop gain of +2 (6dB) or greater. For applications requiring a closed-loop gain of +1 (0dB), replace the MAX4180 with a MAX4181 and change RG and RF as outlined in Table 1 of the MAX4180 data sheet.

Layout Considerations

The PC board layout has been optimized for high-speed signals and low distortion, with careful attention given to grounding, power-supply bypassing, and signal-path layout. The small, surface-mount, ceramic bypass capacitors (C1, C2) have been placed as close to the amplifier's supply pins as possible. The ground plane has been removed around and under the amplifier to reduce stray capacitance. Capacitance at the inverting input pins has been minimized by reducing the length and width of the input and feedback traces and by using 0805-size feedback and gain-set resistors.

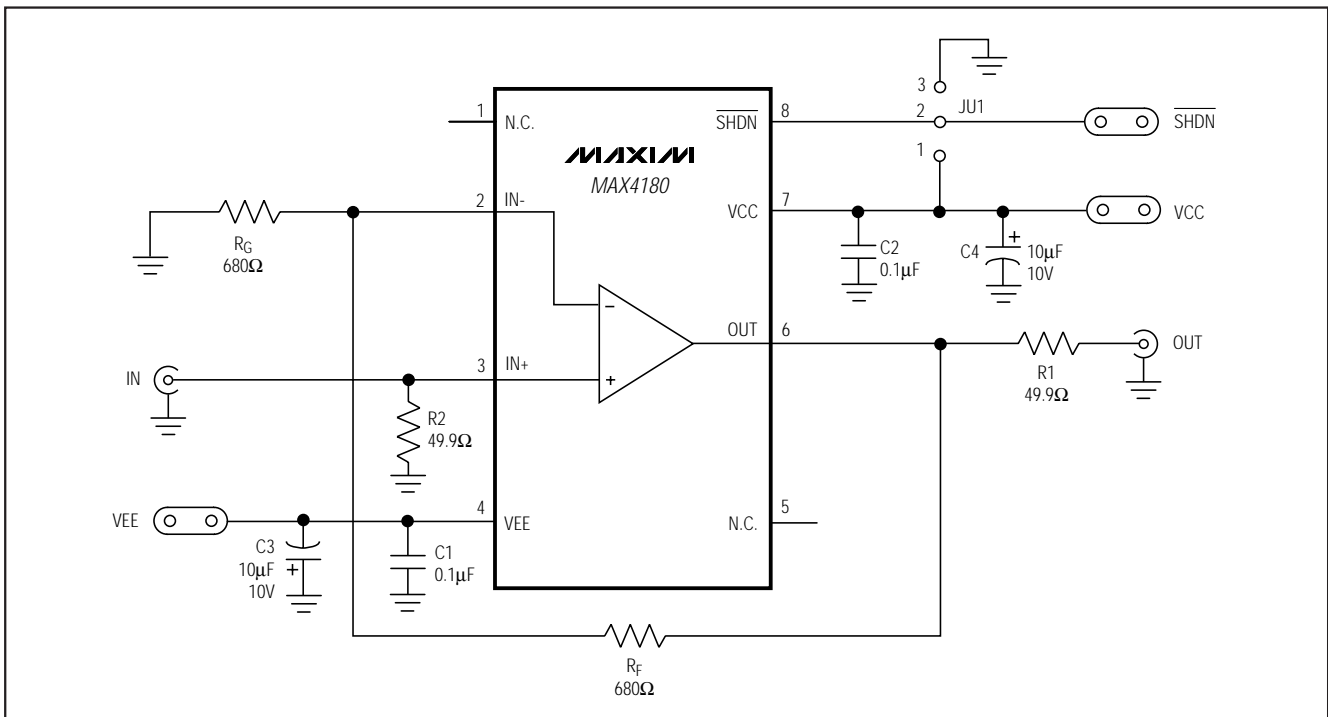


Figure 1. MAX4180 EV Kit Schematic

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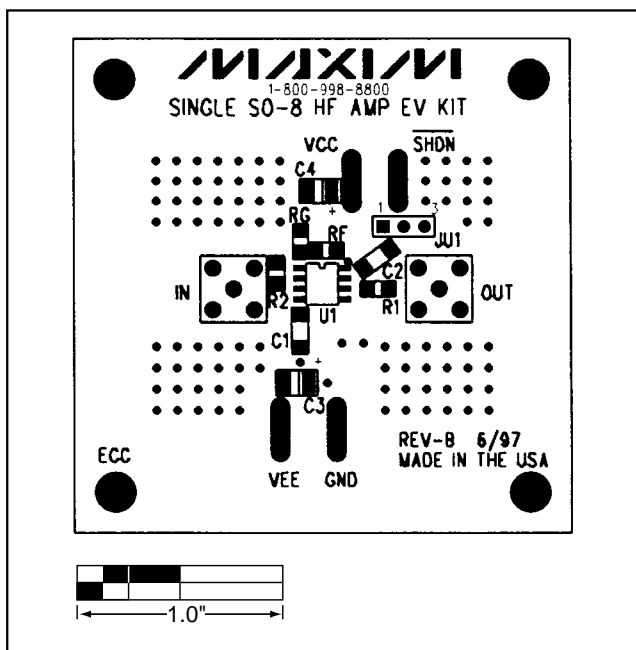


Figure 2. MAX4180 EV Kit Component Placement Guide—Component Side

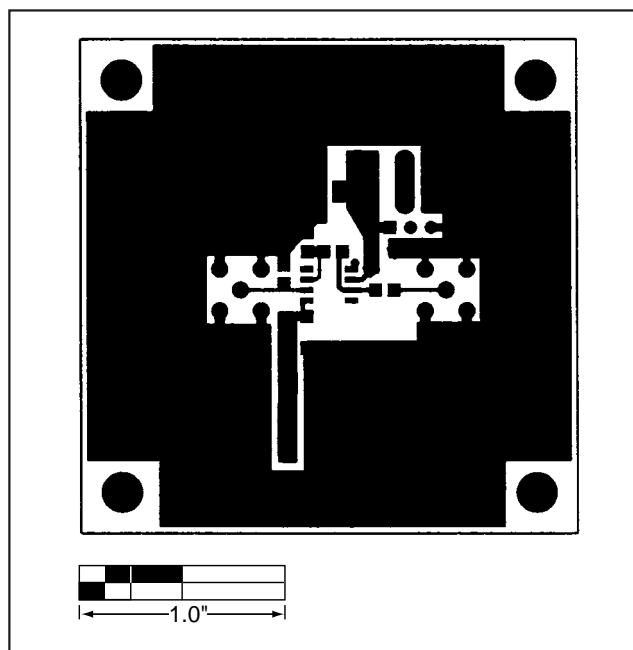


Figure 3. MAX4180 EV Kit PC Board Layout—Component Side

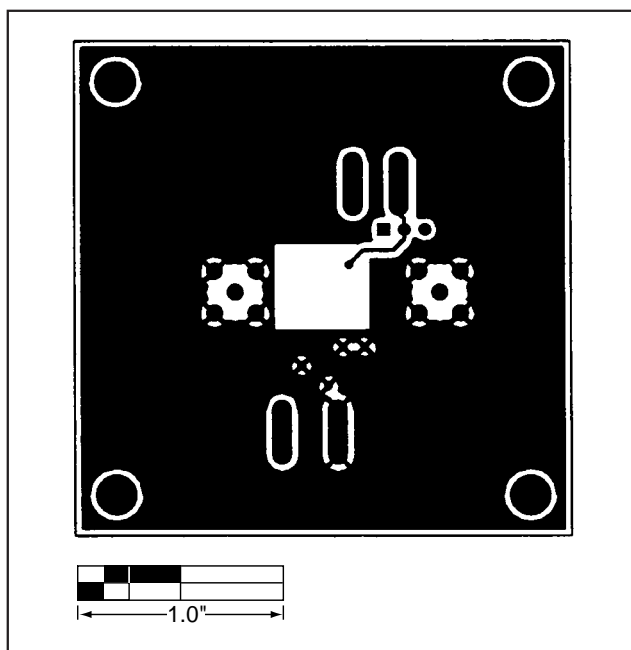


Figure 4. MAX4180 EV Kit PC Board Layout—Solder Side

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NOTES

Maxim cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim product. No circuit patent licenses are implied. Maxim reserves the right to change the circuitry and specifications without notice at any time.

4 _____ Maxim Integrated Products, 120 San Gabriel Drive, Sunnyvale, CA 94086 408-737-7600