

MAXIM

MAX1236 Evaluation Kit

Evaluates: MAX1236

General Description

The MAX1236 evaluation kit (EV kit) is designed to evaluate the MAX1236. The MAX1236 is a 12-bit, four-channel (two differential-channel) ADC with a 2-wire serial interface. The MAX1236 EV kit board supports three standard 2-wire interface speeds: standard mode (S-Mode), fast mode (F-Mode), and high-speed mode (HS-Mode). The software provided with this EV kit only supports S-Mode.

The Windows® 95/98 software provided with the EV kit uses the parallel (printer) port of an IBM-compatible PC to emulate a processor with a 2-wire interface (S-Mode). The Windows software also provides a friendly graphical-user interface (GUI) to exercise the features of the MAX1236 with control buttons and menus.

Order the MAX1236EVKIT for comprehensive evaluation of the MAX1236 using a personal computer with an available parallel port.

Features

- ◆ Proven PC Board Layout
- ◆ Windows 95/98 Software
- ◆ 2-Wire Serial Interface
- ◆ Fully Assembled and Tested

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX1236EVKIT	0°C to +70°C	8 µMAX

MAX1236 EV Kit Files

FILE	DESCRIPTION
INSTALL.EXE	Installation program
MAX1236.EXE	Application program

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Diodes Inc.	805-446-4800	www.diodes.com
TDK	847-803-6100	www.component.tdk.com

Note: Please indicate you are using the MAX1236 when contacting these component suppliers.

Component List

DESIGNATION	QTY	DESCRIPTION
C1-C4	4	0.22µF ±10%, 16V X7R ceramic capacitors (0603) TDK C1608X7R1C224KT
C5	1	100pF ±5%, 50V COG ceramic capacitor (0603) TDK C1608C0G1H101JT
C6, C9	2	0.1µF ±10%, 16V X7R ceramic capacitors (0603) TDK C1608X7R1C104KT
C7, C8	2	10µF ±20%, 16V X5R ceramic capacitors (1210) TDK C3225X5R1C106M
D1-D4	4	Zener diodes, Vz = 5.1V (3-pin SOT23) Diodes Inc. BZX84C5V1 3-pin SOT23 top mark KZ2
FB1	1	Surface-mount ferrite bead (0603) TDK MMZ1608B601C

DESIGNATION	QTY	DESCRIPTION
J1	1	Male DB-25 right-angle plug Mouser 152-3325
R1-R4	4	14Ω ±1% resistors (0603)
R5, R7	2	Open (1206) (not installed)
R6, R8, R9, R13	4	47kΩ ±5% resistors (1206)
R10, R12, R14, R16	4	100Ω ±5% resistors (1206)
R11, R15	2	4.7kΩ ±5% resistors (0603)
U1	1	MAX1236EUA (8-µMAX)
U2	1	Open-collector logic inverter (14-pin SO) SN74HC05
None	1	PC board, MAX1236 evaluation kit
None	1	3.5in software disk, MAX1236 evaluation kit
None	1	MAX1236 data sheet

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Quick Start

Recommended Equipment

Before you begin, the following equipment is needed:

- A fixed +5VDC power supply
- An IBM-compatible PC with Windows 95/98
- An available parallel port (DB-25 female connector on back of PC)
- A standard 25-pin, straight-through male-to-female cable to connect the computer's parallel port to the MAX1236 EV kit board

Procedure

- 1) Connect a cable from the computer's parallel port to the MAX1236 EV kit board. Use a 25-pin straight-through, female-to-male cable.
- 2) Install the MAX1236 EV kit software on your computer by running the INSTALL.EXE program on the floppy disk. The program files are copied and icons are created in the **Programs** section within the **START** menu.
- 3) Connect a +5VDC power supply between the 5V and the GND pads of the MAX1236 EV kit board.
- 4) Start the MAX1236 EV kit program by clicking its icon in the **Programs** section within the **START** menu.
- 5) Apply an analog input voltage (0 to VREF) between the AIN0 and GND pads of the MAX1236 EV kit board.
- 6) The program automatically detects the MAX1236 EV kit board and displays **2-Wire Hardware Detected** in green. The **AIN0** label automatically displays the voltage applied to the pad labeled AIN0 on the MAX1236 EV kit board.

Detailed Description of Software

The evaluation software's main window (Figure 1) controls the setup byte. It also displays the voltage and output code of the input signal(s), depending on the configuration of the MAX1236.

Read ADC

The **Read ADC** button manually reads the MAX1236 while using the current setup and configuration byte settings. When the **AutoRead** checkbox is checked, the software automatically reads the MAX1236 approximately every 300ms. **AutoRead** allows users to modify the setup and configuration bytes on the fly without having to manually press the **Read ADC** button each time.

Setup Byte

The **Setup Byte** always begins with a start bit value of one. The **SEL2**, **SEL1**, and **SEL0** bits control the state

of the reference. The **CLK** bit selects either internal clock or external clock mode. The **UNI/BIP** bit selects either unipolar or bipolar mode. Setting **RST** to zero resets the configuration register. The setup register remains unchanged. The **X Don't Care** bit can be ignored. Refer to the MAX1236 data sheet for more information on the **SEL2**, **SEL1**, and **SEL0** bits within the Setup Byte.

Config Byte

The **Config Byte** always begins with a start bit value of zero. The **SCAN1** and **SCAN0** bits select the scanning mode. The CS1 and CS0 bits select one of the four analog input channels. The CS3 and CS2 bits are ignored by the MAX1236. The **SE/DIFF** bit selects either single-ended or differential mode. See the MAX1236 data sheet for more information on the **SCAN1**, **SCAN0**, **CS3**, **CS2**, **CS1**, and **CS0** bits within the Config Byte.

Reference Voltage

The evaluation software assumes a +4.096V reference voltage, unless otherwise specified. To override the internal 4.096V reference value, ensure bit **SEL2** equals zero and bit **SEL1** equals one within the **Setup Byte**. Then, apply the new reference voltage at the VREF pad on the board, type in the new reference voltage, without the volt unit, and press the **Set Vref** button. The EV kit software uses the value typed in the Vref field to translate the digital code to a voltage.

Keyboard Navigation

When you type on the keyboard, the system must know which control should receive the keystrokes. Press the **TAB** key to move the keyboard's focus from one control to the next. The focused control is indicated by a dotted outline. **SHIFT + TAB** moves the focus to the previously focused control. Buttons respond to the keyboard's **SPACE** bar. Some controls respond to the keyboard's **UP** and **DOWN** arrow keys. Activate the program's menu bar by pressing the **F10** key, and then press the letter of the menu item you want. Most menu items have one letter underlined, indicating their shortcut key.

MAX1236 Evaluation Kit

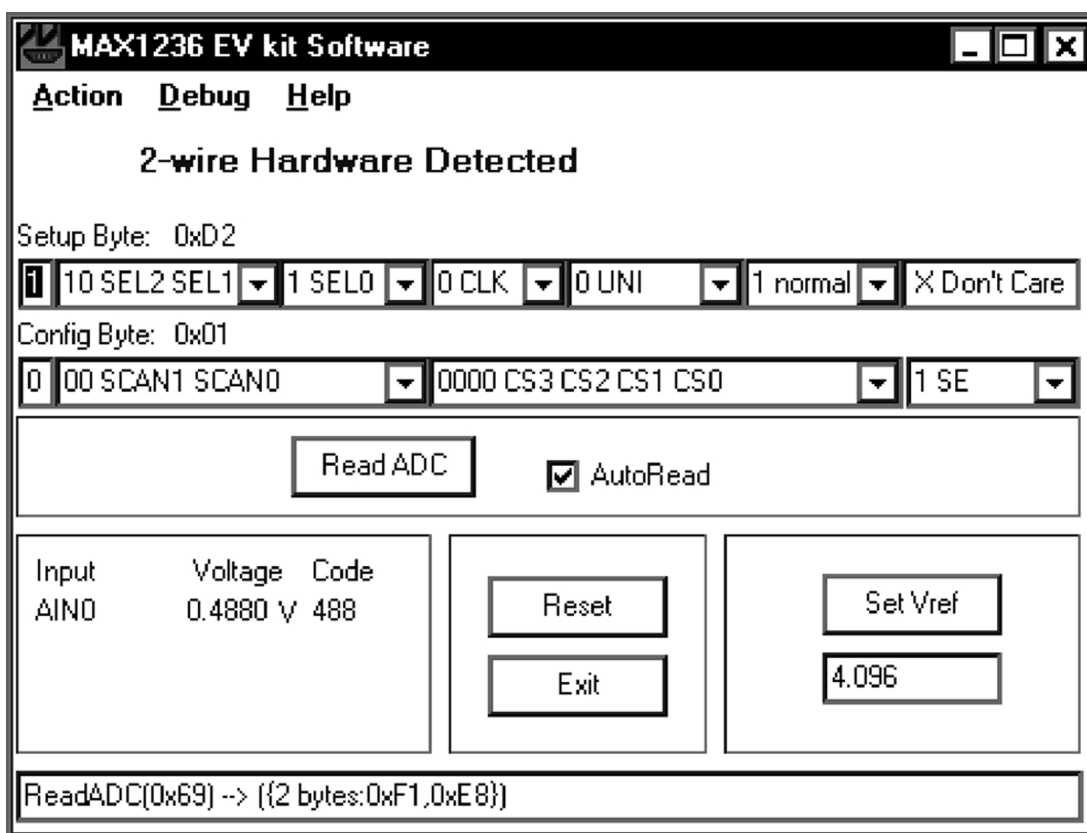
Detailed Description of Hardware

The MAX1236 is a four-channel (two differential-channel) 12-bit ADC with a 2-wire serial interface. The open-collector inverter (U2) interfaces the PC parallel port to the 2-wire serial interface. U2 and the associated circuitry are only required when interfacing to the parallel port. Power the MAX1236 EV kit from a 5VDC power supply. To prevent damage to the MAX1236 EV kit, do not exceed +5.5VDC on the supply.

User-Supplied 2-Wire Interface

The MAX1236 EV kit provides a proven PC board layout and software to evaluate the features of the MAX1236. The Windows software only supports a 2-wire serial interface in S-Mode. To evaluate the MAX1236 with a user-supplied 2-wire serial interface in F-Mode or HS-Mode, do the following:

- 1) Disconnect the MAX1236 EV kit from the PC parallel port.
- 2) Install 3k Ω resistors at locations R5 and R7. (This resistor value may require optimization for each system.)
- 3) Connect the user-supplied 2-wire bus to the SDA, SCL, and GND pads. (Connect to the GND pad nearest the 5V pad on the MAX1236 EV kit board.)
- 4) Refer to the MAX1236 data sheet to ensure all timing specifications are met.



NOTE: MAX1236 EVALUATION SOFTWARE'S MAIN WINDOW CONTROLS THE MAX1236 AND DISPLAYS CONVERSION RESULTS.

Figure 1. MAX1236 EV Kit Software Main Window

MAX1236 Evaluation Kit

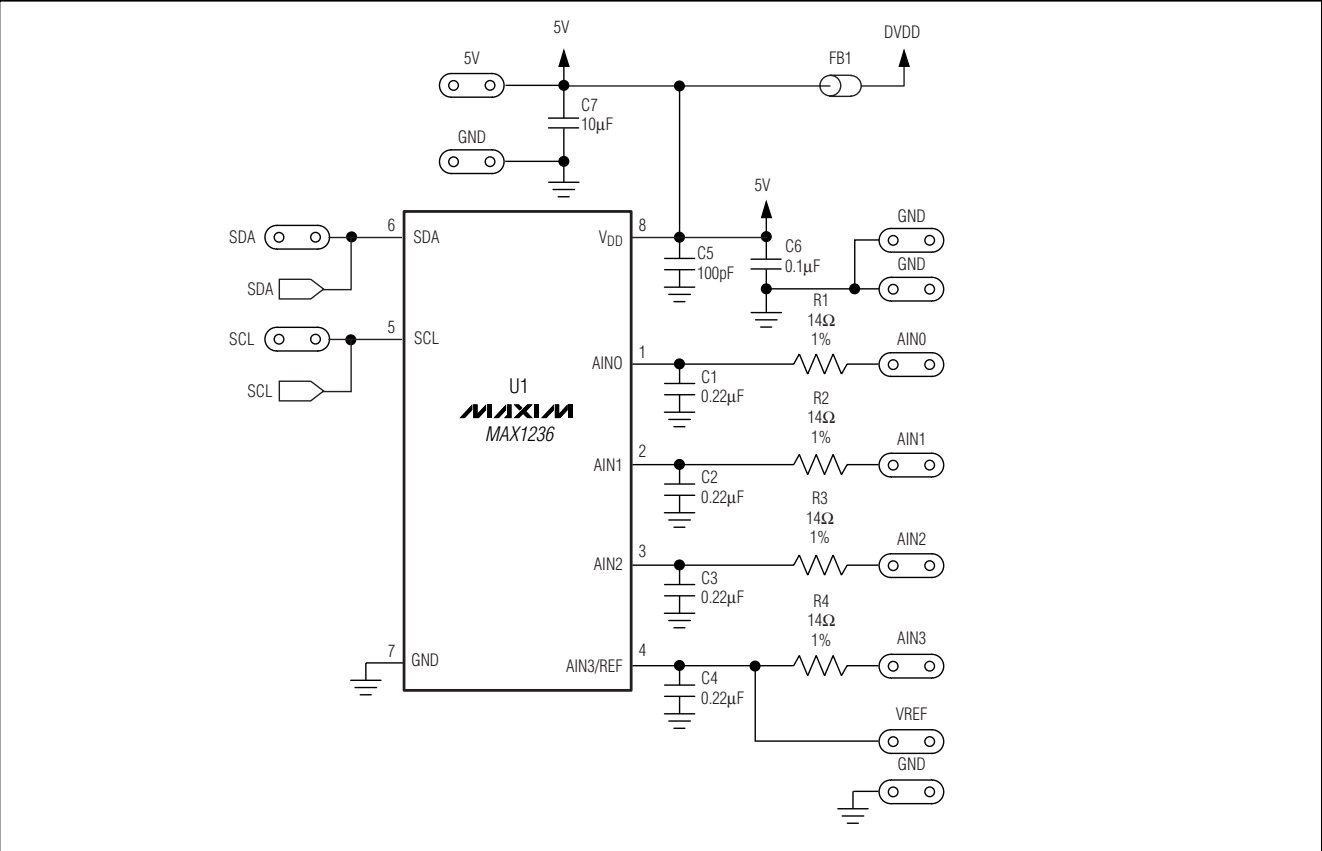


Figure 2. MAX1236 EV Kit Schematic (Sheet 1 of 2)

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Evaluates: MAX1236

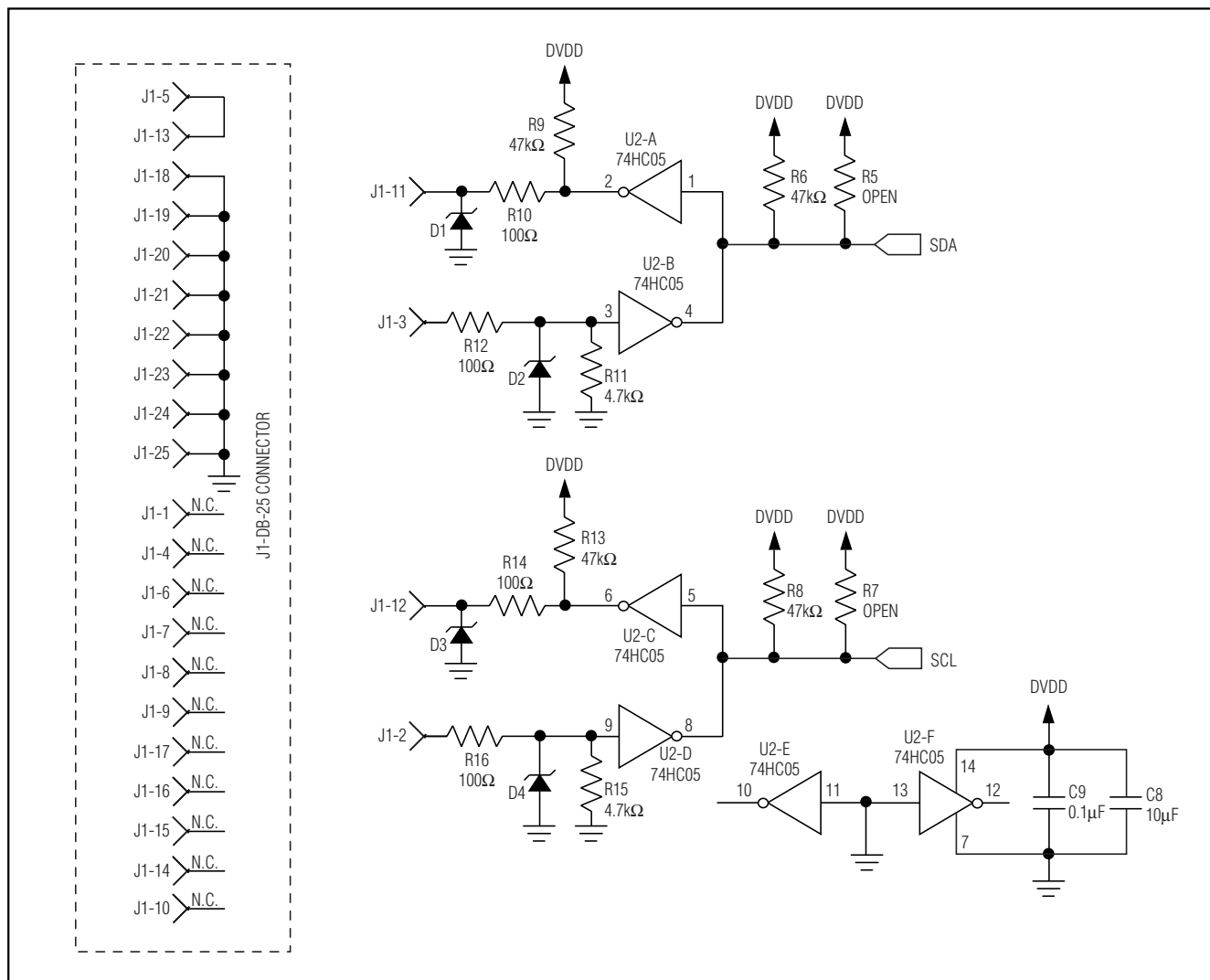


Figure 2. MAX1236 EV Kit Schematic (Sheet 2 of 2)

MAX1236 Evaluation Kit

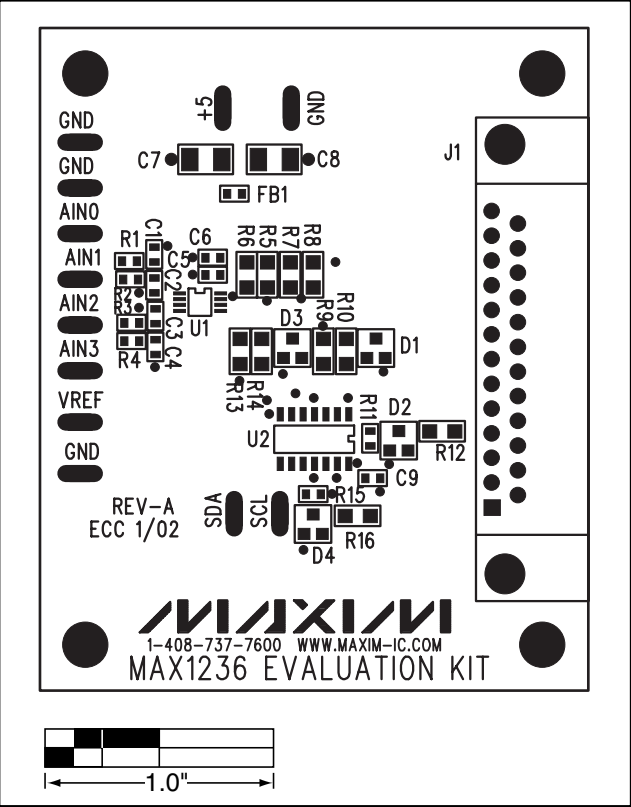


Figure 3. MAX1236 EV Kit Component Placement Guide—Component Side

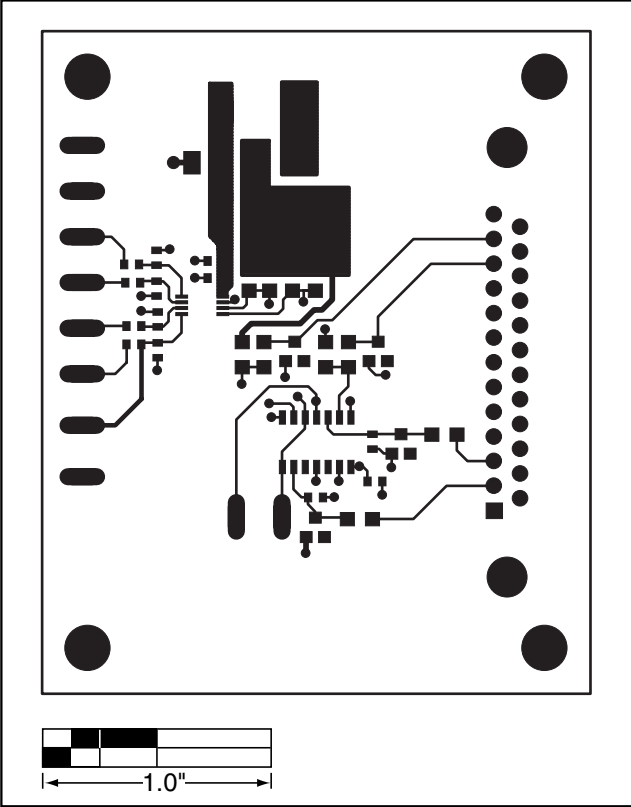


Figure 4. MAX1236 EV Kit PC Board Layout—Component Side

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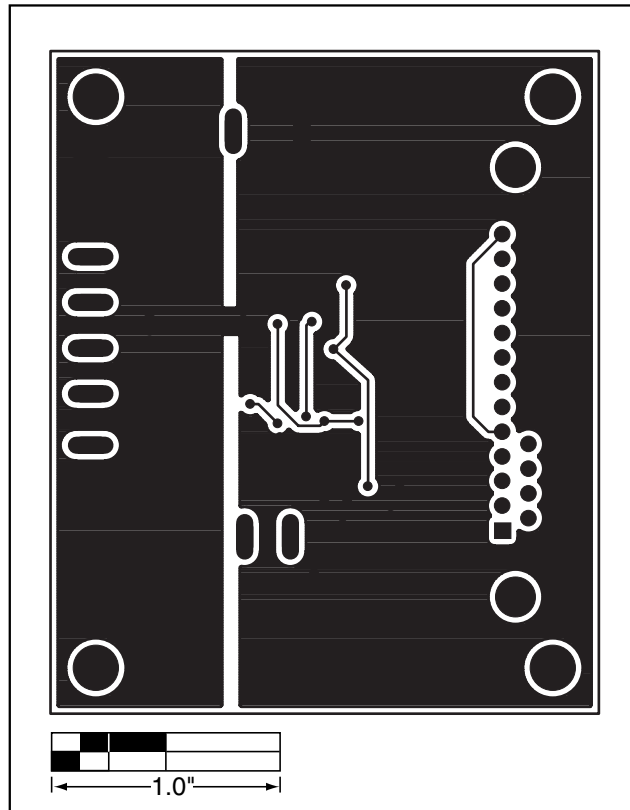


Figure 5. MAX1236 EV Kit PC Board Layout—Solder Side

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