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MAX3162 Evaluation Kit

Evaluates: MAX3162

_____General Description

The MAX3162 evaluation kit (EV kit) provides a proven design to evaluate the MAX3162 programmable RS-232/RS-485/422 multiprotocol transceiver. The MAX3162 EV kit can be used as an RS-232 to RS-485/RS-422 converter and/or an RS-485/RS-422 to RS-232 converter.

The MAX3162 EV kit PCB comes with a MAX3162CAI+ installed.

_____Features

♦ **3.0V to 5.5V Single-Supply Operation**

♦ **Converts RS-232 to RS-485/RS-422**

♦ **Converts RS-485/RS-422 to RS-232**

♦ **RS-485 Loopback**

♦ **Proven PCB Layout**

♦ **Fully Assembled and Tested**

_____Component List

DESIGNATION	QTY	DESCRIPTION
C1, C4, C5, C6	4	0.1µF ±10%, 16V X7R ceramic capacitors (0603) TDK C1608X7R1C104K
C2	1	10µF ±20%, 6.3V X5R ceramic capacitor (0603) Murata GRM188R60J106M
C3	1	4.7µF ±10%, 6.3V X5R ceramic capacitor (0603) Murata GRM188R60J475K
GTP1–GTP5	5	Test points, black
J1	1	DB9 female right-angle receptacle, 0.318in D-sub
J2	1	4-position terminal block
JU1–JU6, JU9	7	3-pin headers
JU7, JU8, JU10, JU11	4	2-pin headers
R1, R3, R4, R6	0	Not installed, resistors (0603)
R2, R5	2	120Ω ±5% resistors (0603)
TP1+, TP1-, TP2, TP3, TP4+, TP4-, TP5, TP6	8	Test points, white
VCC	1	Test point, red
U1	1	Multiprotocol transceiver (28 SSOP) Maxim MAX3162CAI+
—	1	DB9 I/O extension cable
—	11	Shunts
—	1	PCB: MAX3162 EVALUATION KIT+

_____Ordering Information

PART	TYPE
MAX3162EVKIT+	EV Kit

+Denotes lead(Pb)-free and RoHS compliant.

_____Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
TDK Corp.	847-803-6100	www.component.tdk.com

Note: *Indicate that you are using the MAX3162 when contacting these component suppliers.*

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Quick Start

Recommended Equipment

- MAX3162 EV kit
- DB9 I/O extension cable (included)
- 5.0V/250mA DC power supply
- User-supplied Windows® 2000, Windows XP®, or Windows Vista® PC with a spare RS-232 serial port

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

Procedure

The MAX3162 EV kit is fully assembled and tested. Follow the steps below to verify board operation. **Caution: Do not turn on power supply until all connections are completed.**

1) Visit **www.maxim-ic.com/evkitsoftware** to download the latest version of the EV kit software, 3162Rxx.ZIP. Save the EV kit software to a temporary folder and uncompress the ZIP file. The EV kit software consists of the free, open-source terminal emulator, RealTerm (also available from http://realterm.sourceforge.net).

2) Verify that all jumpers (JU1–JU11) are in their default positions, as shown in Table 1.

3) Move the shunts of jumpers JU7 and JU8 to the 1-2 position to enable RS-485 loopback.

4) Connect the positive terminal of the 5.0V supply to VCC on the EV kit and connect the negative terminal of the 5.0V supply to GND.

5) Connect the DB9 I/O extension cable between the EV kit and the computer's serial port.

6) Start the RealTerm software by opening its icon in the **Start | Programs** menu. The RealTerm software main window appears, as shown in Figure 1. **Note:** If the serial cable is connected to a serial port other than COM1, bring up the **Port** tab and open the corresponding serial port.

7) In the RealTerm window, click in the display area and type on the keyboard. The digital loopback connection immediately relays each character from the receiver to the transmitter, so each character typed on the keyboard appears in the display area.

8) Move the shunt of jumper JU3 to the 2-3 position to disable the RS-232 transmitter.

9) In the RealTerm window, click in the display area and type on the keyboard. With the RS-232 transmitter disabled, characters typed on the keyboard do not appear in the display area.

_Detailed Description of Hardware

The MAX3162 evaluation kit (EV kit) provides a proven design to evaluate the MAX3162 programmable RS-232/RS-485/RS-422 multiprotocol transceiver. The MAX3162 EV kit is configured to bidirectionally convert between the RS-232 and RS-485/RS-422 signals. The DB9 connector (J1) provides the RS-232 connection to the MAX3162 and the terminal block (J2) provides the RS-485 connections to the MAX3162.

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/////XI/VI
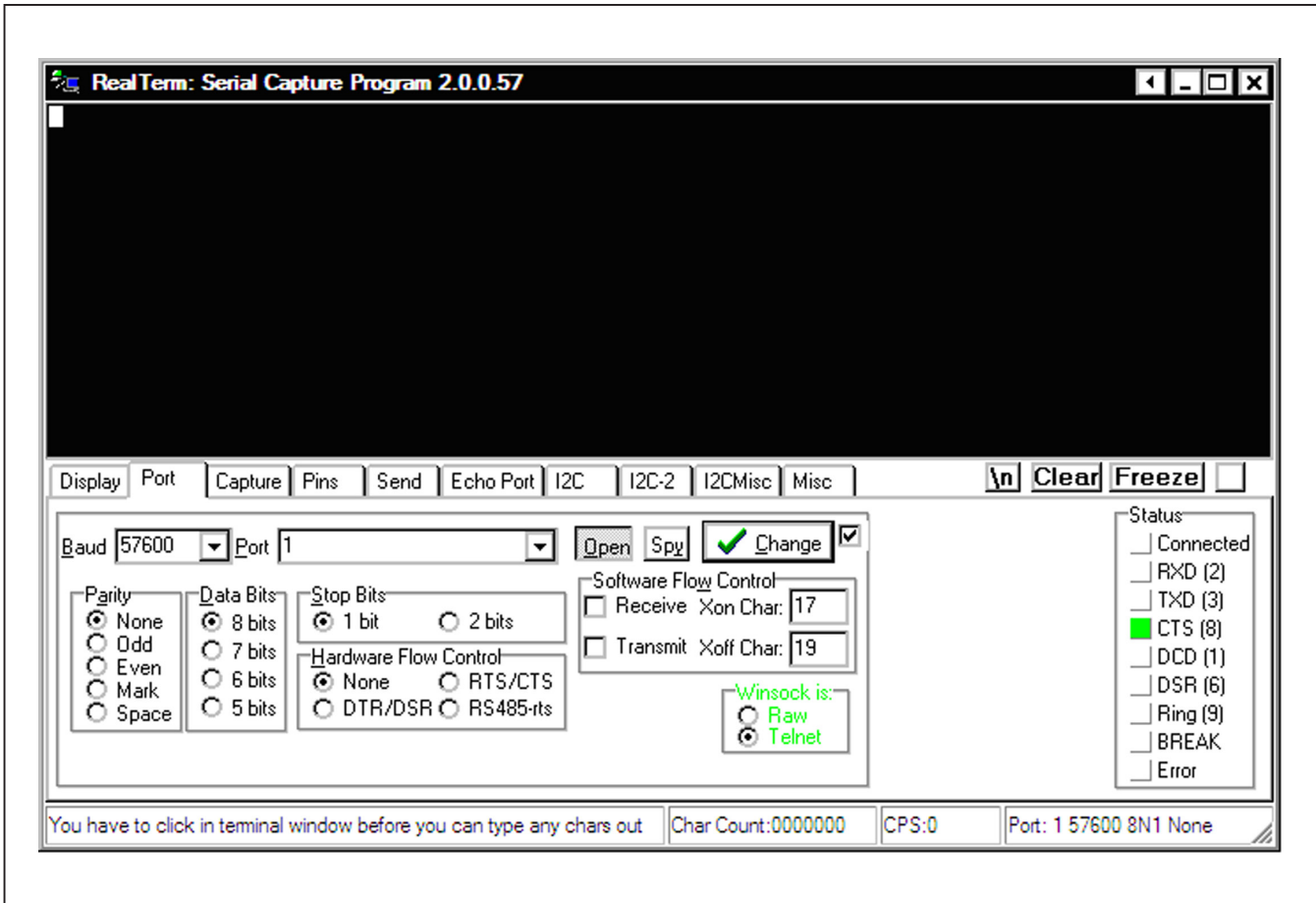
Figure 1. RealTerm Software Main Window (Port Tab)

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Table 1. MAX3162 EV Kit Jumper Descriptions

| JUMPER	SHUNT POSITION	DESCRIPTION
JU1	1-2*	$\overline{\text{SHDN}}$ = VCC (enables the MAX3162)
	2-3	$\overline{\text{SHDN}}$ = GND (shuts down the MAX3162)
JU2	1-2*	FAST = VCC (enables maximum data rate)
	2-3	FAST = GND (the RS-232 transmitters and the RS-485/RS-422 driver are slew-rate limited to reduce EMI)
JU3	1-2*	TE232 = VCC (enables RS-232 transmitter output)
	2-3	TE232 = GND (disables RS-232 transmitter output)
JU4	1-2*	DE485 = VCC (enables the RS-485 driver)
	2-3	DE485 = GND (disables the RS-485 driver)
JU5	1-2*	$\overline{\text{RE485}}$ = GND (enables the RS-485 receiver)
	2-3	$\overline{\text{RE485}}$ = VCC (disables the RS-485 receiver)
JU6	1-2*	$\overline{\text{RE232}}$ = GND (enables the RS-232 receiver)
	2-3	$\overline{\text{RE232}}$ = VCC (disables the RS-232 receiver)
JU7	1-2	RS-485 noninverting receiver input A is driven by the noninverting driver output Y (RS-485 loopback)
	Open*	RS-485 noninverting receiver input A is not connected to the noninverting driver output Y (RS-485 loopback)
JU8	1-2	RS-485 inverting receiver input A is driven by the inverting driver output Y (RS-485 loopback)
	Open*	RS-485 inverting receiver input B is not connected to the inverting driver output Z (RS-485 loopback)
JU9	1-2*	T2IN = GND
	2-3	T2IN = VCC
JU10	1-2	Connects the 120Ω termination resistor between the RS-485 inverting and noninverting receiver inputs
	Open*	Disconnects the 120Ω termination resistor between the RS-485 inverting and noninverting receiver inputs
JU11	1-2	Connects the 120Ω termination resistor between the RS-485 inverting and noninverting driver outputs
	Open*	Disconnects the 120Ω termination resistor between the RS-485 inverting and noninverting driver outputs

*Default position.

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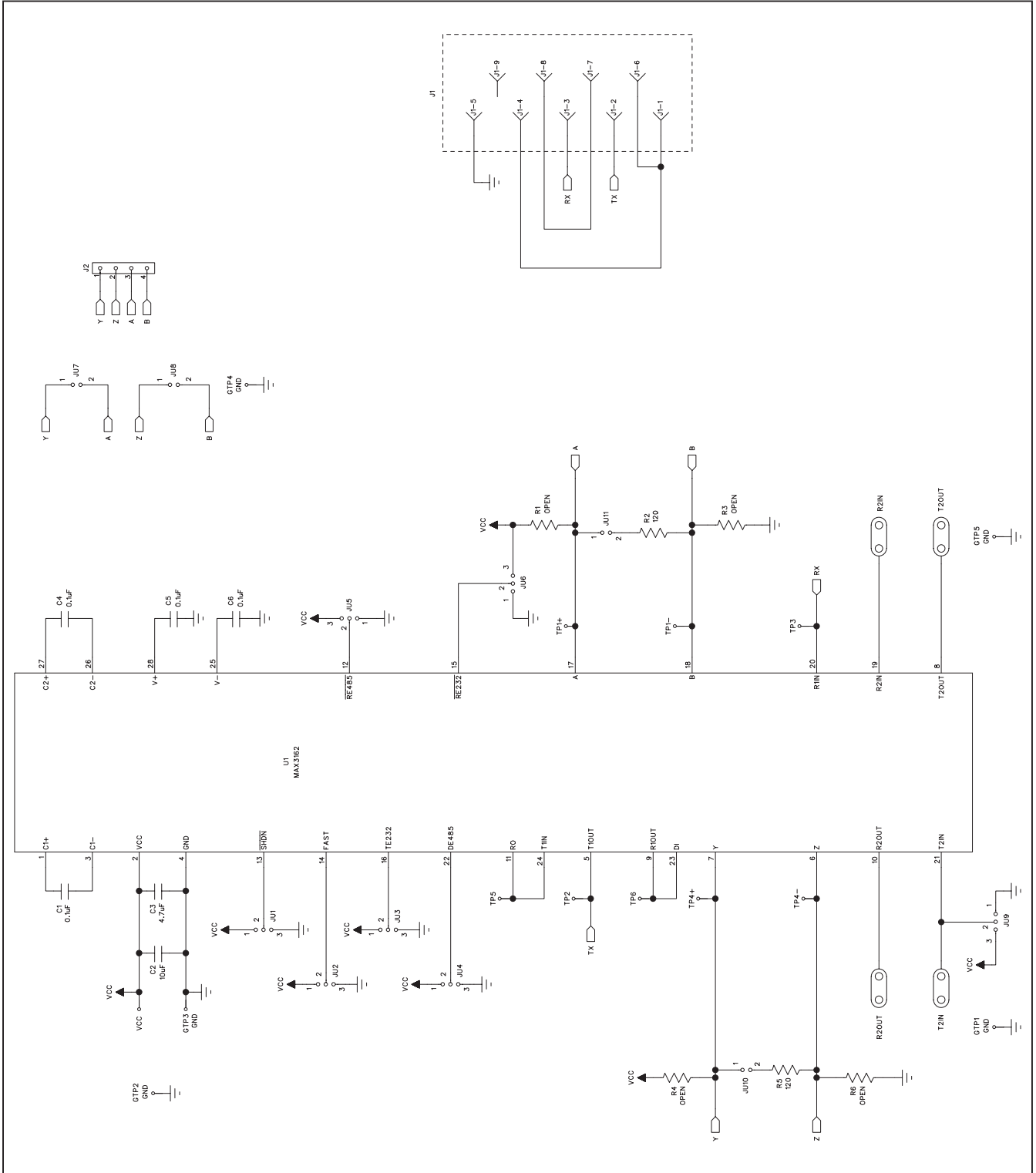
Figure 2. MAX3162 EV Kit Schematic
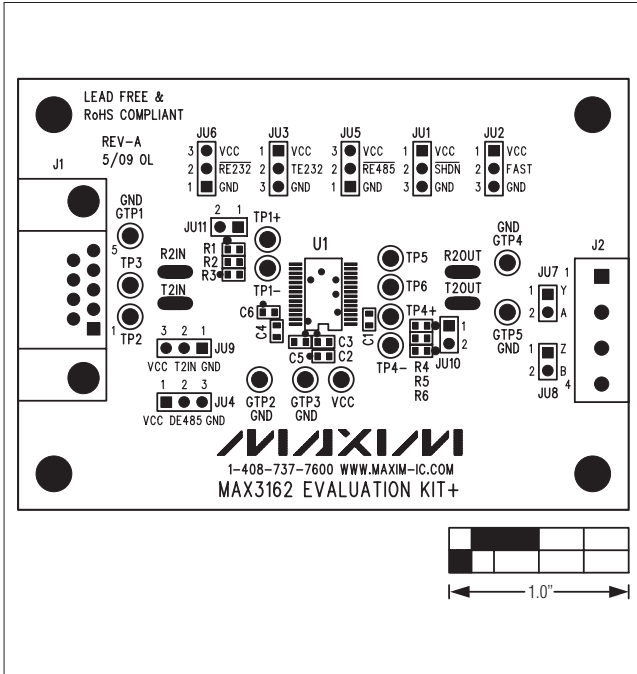
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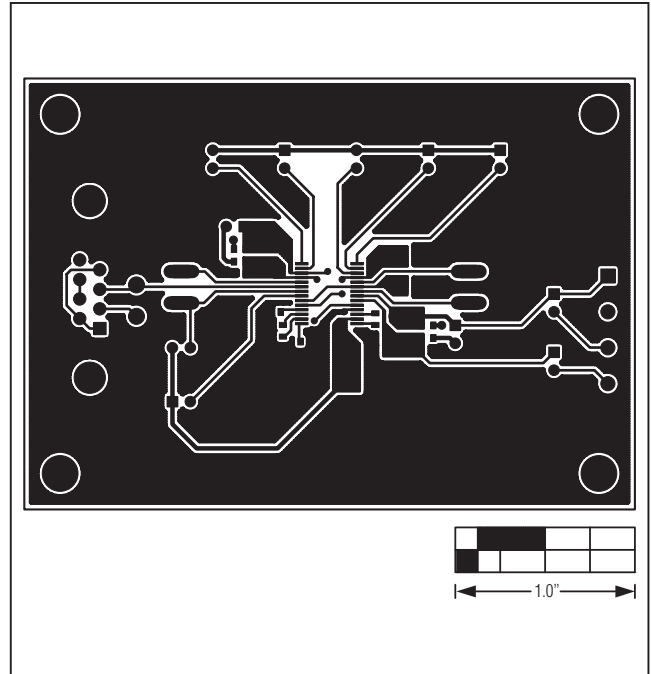Figure 3. MAX3162 EV Kit Component Placement Guide

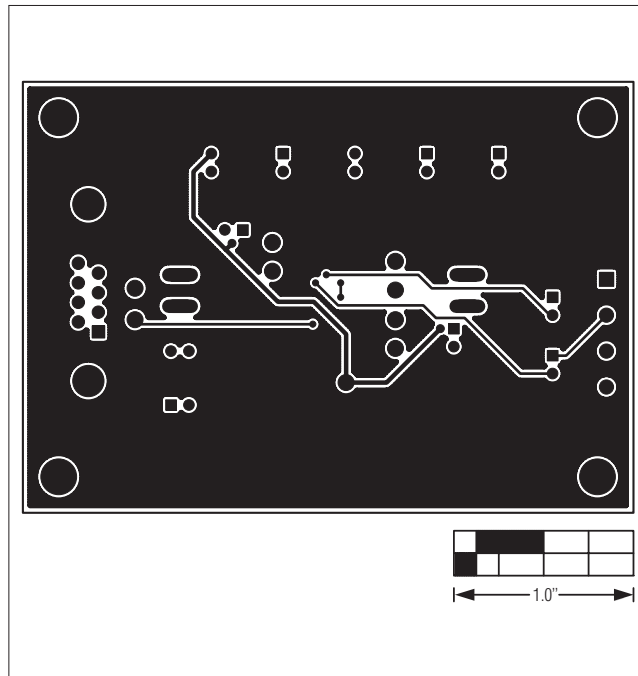Figure 4. MAX3162 EV Kit PCB Layout—Component Side

Figure 5. MAX3162 EV Kit PCB Layout—Solder Side

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