General Description

The MAX22501E evaluation kit (EV kit) is a fully assembled and tested PCB that demonstrates the functionality of the MAX22501E half-duplex, high speed RS-485/RS-422 transceiver. The EV kit operates from a single 3V to 5V supply and includes selectable on-board termination.

Features

- Operates From a Single 3V to 5V Supply
- Terminal Block and RJ45 Connectors for Easy RS-485/RS-422 Evaluation
- Fully Assembled and Tested

Quick Start

Required Equipment

- MAX22501E EV kit
- 3.3V, 500mA DC power supply
- 80MHz Signal/function generator
- Oscilloscope

Startup Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation.

1) Ensure that all jumpers are in their default positions (see Table 1).
2) Set the DC power supply to 3.3V and connect the DC power supply between VCC (TP1) and GND (TP2) test points on the EV kit.
3) Connect the oscilloscope probes to the DI input (TP7), A (TP8), B(TP9), and RO (TP4).
4) Turn on the power supply.
5) Set the signal/function generator to output a 30MHz 0-to-3V square wave.
6) Connect the signal/function generator to the DI test point.
7) Using the oscilloscope, verify that the A, B, and RO- outputs switch as the DI signal toggles.

***Ordering Information** appears at end of data sheet.*

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Detailed Description of Hardware

The MAX22501E EV kit is a fully assembled and tested circuit board for evaluating the MAX22501E high-speed, half-duplex RS-485/RS-422 transceiver (U1). The EV kit can be used for standalone evaluation or can be connected (using the on-board terminal block) to an RS-485/RS-422 network for easy in-system evaluation.

Driver and Receiver Enable Selection

The EV kit features three jumpers (J2, J4, and J5) to enable/disable the driver and receiver outputs. Set J2 to low (2-3) to enable the receiver. Set J4 to high (1-2) to enable the driver.

To actively control both enables, remove the J2 and J4 shunts and close J5, which connects DE and $\overline{RE}$ together.

Termination for an End-of-Line Transceiver

The MAX22501E EV kit includes a 120Ω termination resistor (R2) between the A and B RS-485 driver outputs/receiver inputs on the MAX22501E.

Table 1. Jumper Table (J2, J4, J5, J6)

JUMPER	SHUNT POSITION	DESCRIPTION
J2	1-2	$\overline{RE}$ is high. The RS-485 receiver is disabled.
	2-3*	$\overline{RE}$ is low. The RS-485 receiver is enabled.
J4	1-2*	DE is high. The RS-485 driver outputs are enabled.
	2-3	DE is low. The RS-485 driver outputs are disabled.
J5	Open	DE and $\overline{RE}$ are not connected together.
	Closed*	DE and $\overline{RE}$ are connected together.

**Default position.*

Ordering Information

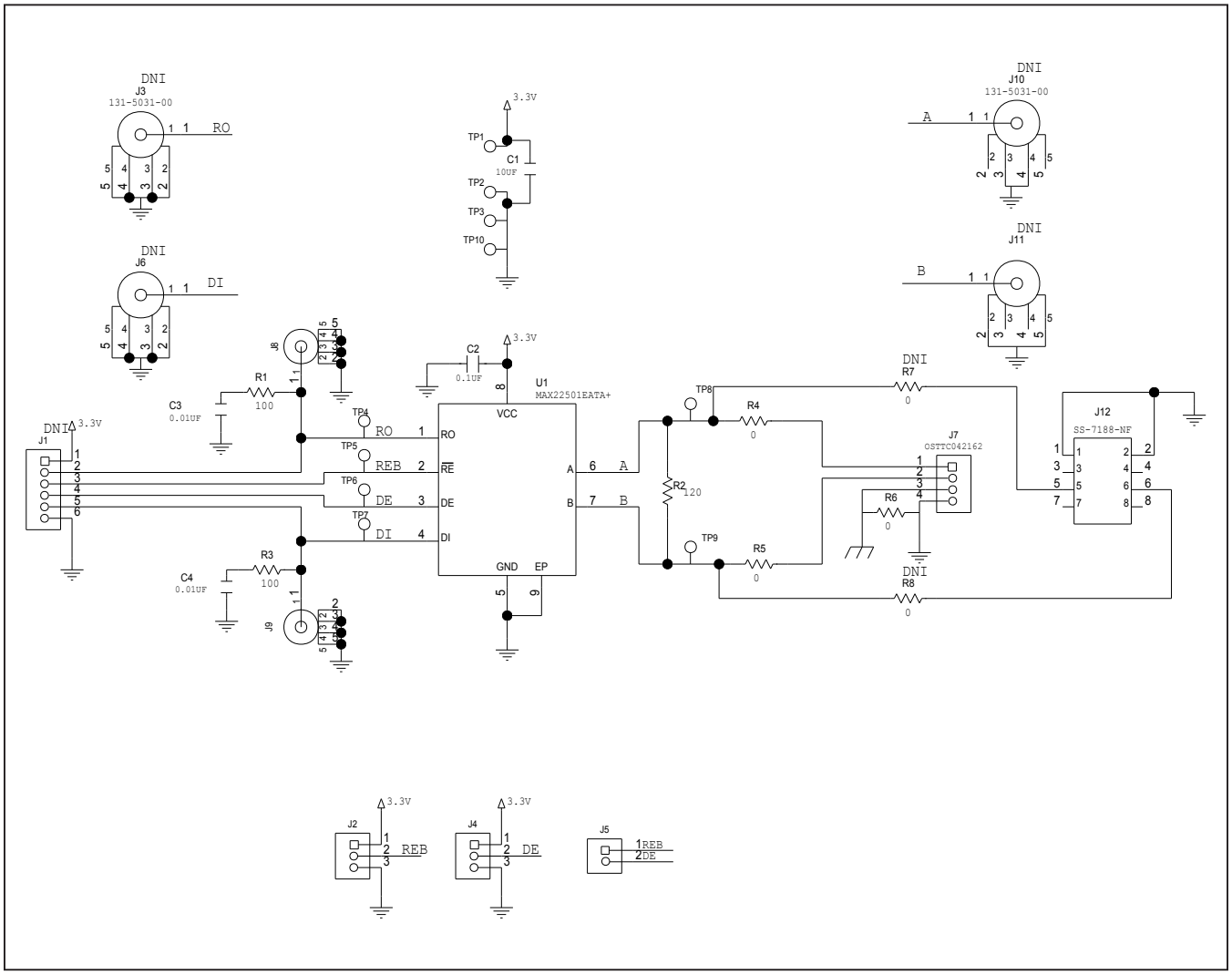
PART	TYPE
MAX22501EEVKIT#	EV Kit

#Denotes RoHS compliant.

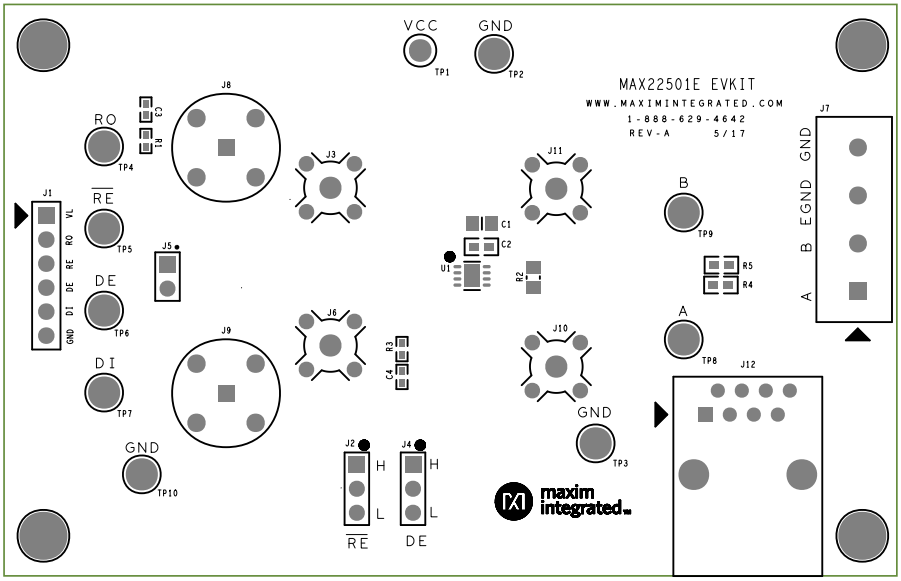
MAX22501E EV Kit Bill of Materials

ITEM	REF_DES		QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1		1	GRM21BR61A106KE19L; ECJ-2FB1A1; CL21A106KPCLQNC; GRM219R61A106KE4	MURATA; PANASONIC; SAMSUNG ELECTRONICS	10UF	CAPACITOR; SMT (0805); CERAMIC CHIP; 10UF; 10V; TOL=10%; MODEL=; TG=-55 DEGC TO +85 DEGC; TC=X5R	
2	C2		1	C0603C104K5RAC; C1608X7R1H104K	KEMET; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R;	
3	C3, C4		2	C0402C103K5RAC; GRM155R71H103KA88	KEMET/MURATA	0.01UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R	
4	J1	DNI	0	PBC06SAAN	SULLINS ELECTRONICS CORP.	PBC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC	
5	J2, J4		2	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC	
6	J3, J6, J10, J11	DNI	0	131-5031-00	TEKTRONIX	131-5031-00	CONNECTOR; WIREMOUNT; 3 GHZ 20X LOW CAPACITANCE PROBE; STRAIGHT; 5PINS	
7	J5	DNI	0	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC	
8	J7		1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS	
9	J8, J9		2	5-1634503-1	TE CONNECTIVITY	5-1634503-1	CONNECTOR; FEMALE; THROUGH HOLE; LOW PROFILE BNC PCB SOCKET; STRAIGHT; 5PINS	
10	J12		1	SS-7188-NF	STEWART CONNECTOR	SS-7188-NF	CONNECTOR; FEMALE; THROUGH HOLE; UNSHIELDED CAT 5/5E NON-FLANGE JACK; RIGHT ANGLE; 8PINS	
11	R1, R3		2	CRCW0402100RFK; 9C04021A1000FL; RC0402FR-07100RL	VISHAY DALE; PANASONIC; YAGEO PHYCOMP	100	RESISTOR; 0402; 100 OHM; 1%; 100PPM; 0.063W; THICK FILM	
12	R2		1	CRCW0805120RFK	VISHAY DALE	120	RESISTOR; 0805; 120 OHM; 1%; 100PPM; 0.125W; THICK FILM	
13	R4-R6		3	CRCW06030000ZS; MCR03EZPJ000; ERJ-3GEY0R00	VISHAY DALE/ROHM/PANASONIC	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM	
14	R7, R8	DNI	0	CRCW06030000ZS; MCR03EZPJ000; ERJ-3GEY0R00	VISHAY DALE/ROHM/PANASONIC	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM	
15	TP1		1	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;	
16	TP2, TP3, TP10		3	5011	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
17	TP4-TP9		6	5014	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; YELLOW; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
18	U1		1	MAX22501EATA+	MAXIM	MAX22501EATA+	EVKIT PART-IC; TDFN8-EP; HIGH SPEED HALF-DUPLEX RS-485 TRANSCEIVER FOR LONG CABLE LENGTH; PACKAGKE CODE: T833+2; PACKAGE OUTLINE: 21-0137	
19	PCB		1	MAX22501E	MAXIM	PCB	PCB:MAX22501E	-
TOTAL			36					

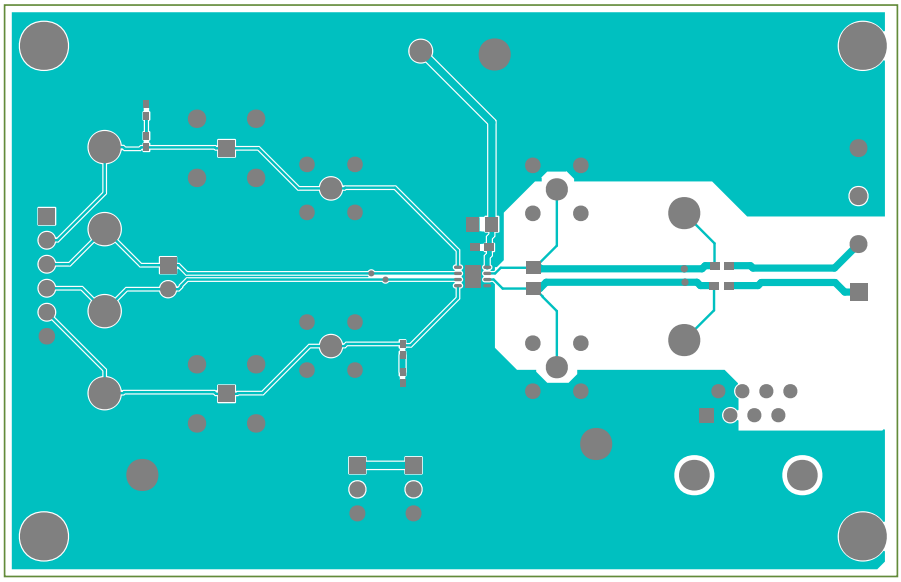
MAX22501E EV Kit Schematic



MAX22501E EV Kit PCB Layout Diagrams

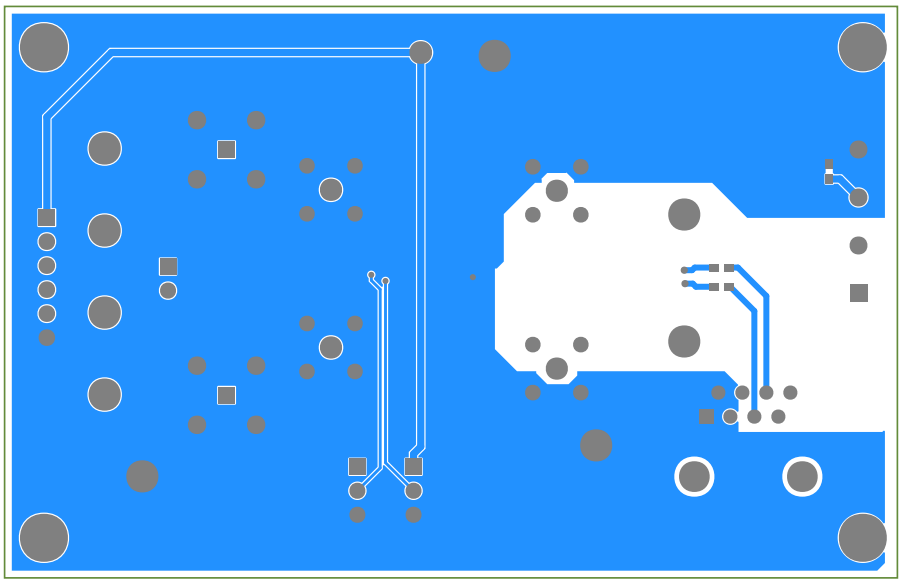


MAX22501E EV Kit—Top Silkscreen

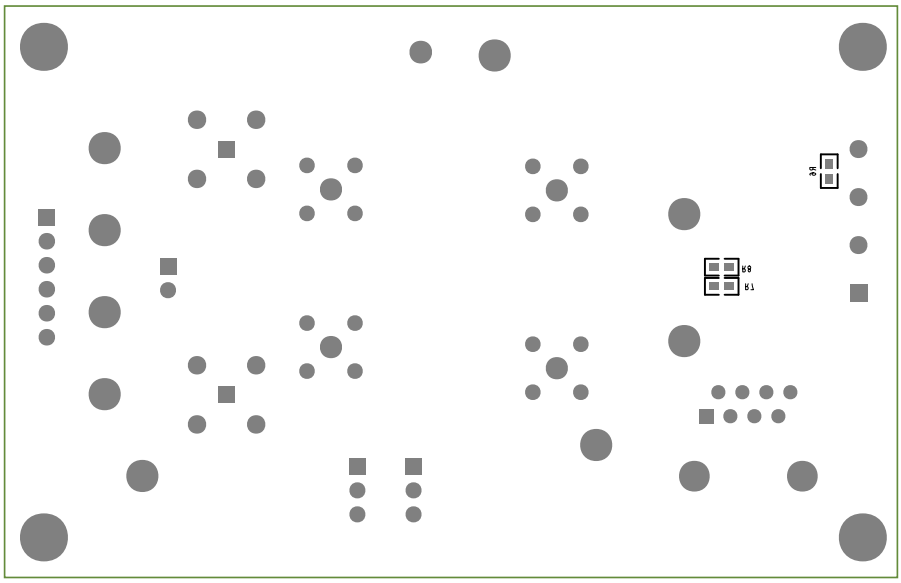


MAX22501E EV Kit—Top

MAX22501E EV Kit PCB Layout Diagrams (continued)



MAX22501E EV Kit—Bottom



MAX22501E EV Kit—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	8/17	Initial release	—

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