MAX22506E Evaluation Kit

Evaluates: MAX22506E

General Description

The MAX22506E evaluation kit (EV kit) is a fully assembled and tested PCB that demonstrates the functionality of the MAX22506E half-duplex, high speed RS-485/RS-422 transceiver. The EV kit operates from a single 3V to 5.5V supply and includes selectable on-board termination.

Features

- Operates From a Single 3V to 5.5V Supply
- Terminal Block Connectors for Easy RS-485/RS-422 Evaluation
- Fully Assembled and Tested

Quick Start

Required Equipment

- MAX22506E EV kit
- 3.3V, 500mA DC power supply
- 50MHz 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 25MHz 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 MAX22506E EV kit is a fully assembled and tested circuit board for evaluating the MAX22506E 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. J5 is DNI, by default. Install a 2-pin header to use the J5 jumper.

Termination for an End-of-Line Transceiver

The MAX22506E EV kit includes a 120Ω termination resistor (R2) between the A and B RS-485 driver outputs/ receiver inputs on the MAX22506E.

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

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

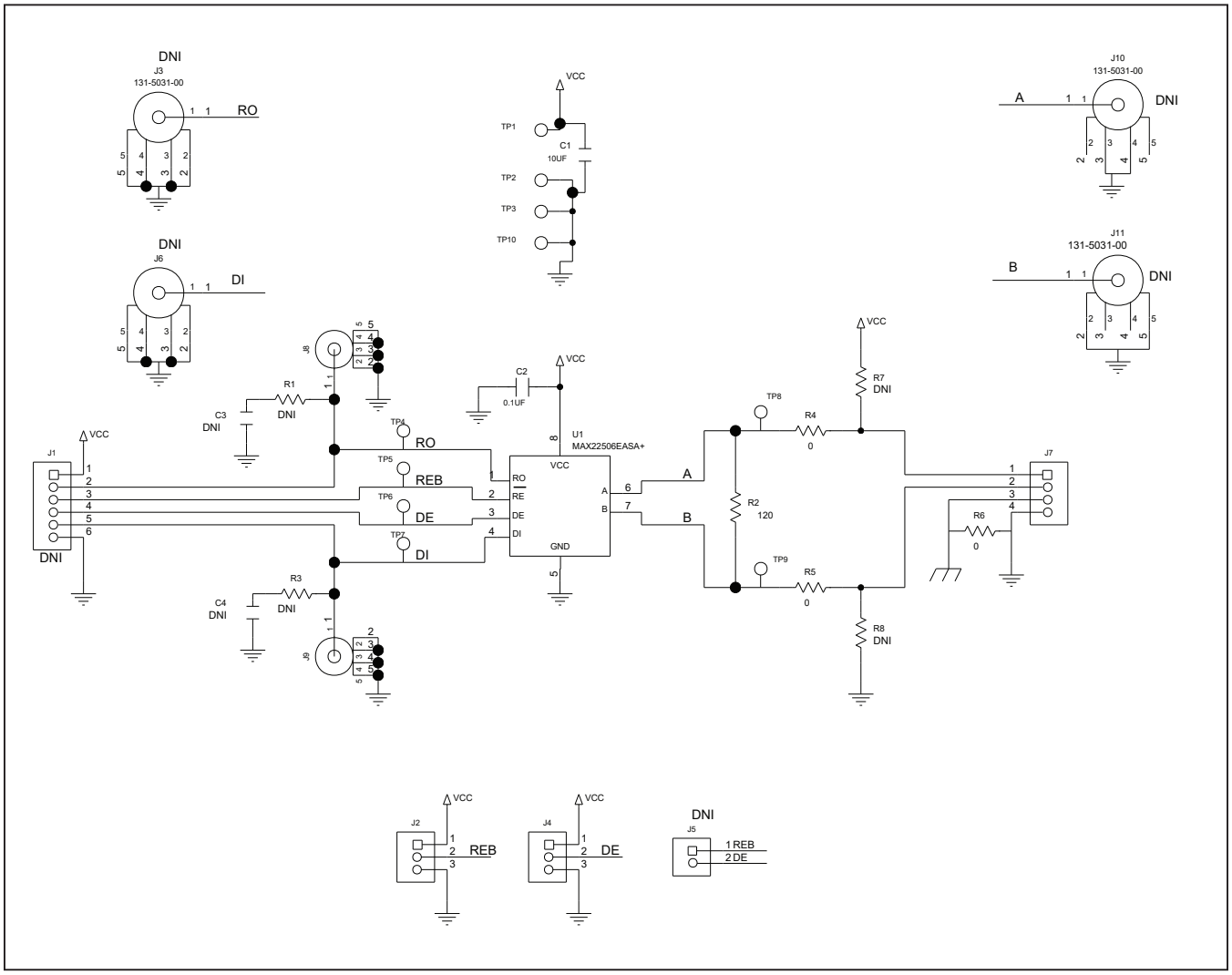
PART	TYPE
MAX22506EEVKIT#	EV Kit

#Denotes RoHS compliance.

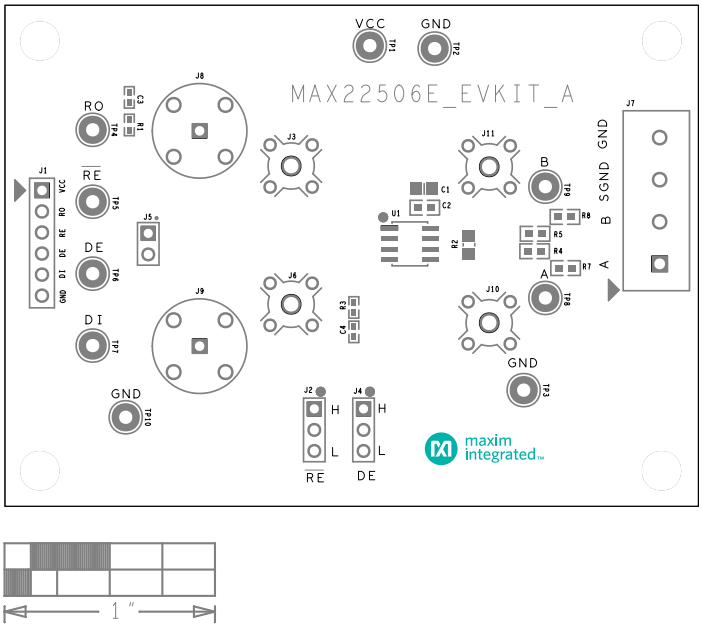
MAX22506E EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1	-	1	GRM21BR61A106KE19;ECJ-2FB1A106; CL21A106KPCLQNC;GRM219R61A106KE44	MURATA;PANASONIC; SAMSUNG ELECTRONICS;MURATA	10UF	CAPACITOR; SMT (0805); CERAMIC CHIP; 10UF; 10V; TOL=10%; MODEL=; TG=-55 DEGC TO +85 DEGC; TC=X5R
2	C2	-	1	C0603C104K5RAC;C1608X7R1H104K; ECJ-1VB1H104K;GRM188R71H104KA93; CGJ3E2X7R1H104K080AA; C1608X7R1H104K080AA;CL10B104KB8NNN; CL10B104KB8NFN	KEMET;TDK;PANASONIC;MURATA; TDK;TDK;SAMSUNG ELECTRO-MECHANICS; SAMSUNG ELECTRONICS	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF;50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R;
3	J2, J4	-	2	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC
4	J7	-	1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS
5	J8, J9	-	2	5-1634503-1	TE CONNECTIVITY	5-1634503-1	CONNECTOR; FEMALE; THROUGH HOLE; LOW PROFILE BNC PCB SOCKET; STRAIGHT; 5PINS
6	R2	-	1	CRCW0805120RFK	VISHAY DALE	120	RESISTOR; 0805; 120 OHM; 1%; 100PPM; 0.125W; THICK FILM
7	R4-R6	-	3	CRCW06030000ZS;MCR03EZPJ000; ERJ-3GEY0R00	VISHAY DALE;ROHM; PANASONIC	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM
8	SPACER1-SPACER4	-	4	9032	KEYSTONE	9032	MACHINE FABRICATED; ROUND-THRU HOLE SPACER; NO THREAD; M3.5; 5/8IN; NYLON
9	TP1	-	1	5010	KEYSTONE	N/A	TEST POINT; PIN DIA=0.125IN; TOTAL LENGTH=0.445IN; BOARD HOLE=0.063IN; RED; PHOSPHOR BRONZE WIRE SIL;
10	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;
11	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;
12	U1	-	1	MAX22506EASA+	MAXIM	MAX22506EASA+	EVKIT PART - IC; 50MBPS HALF-DUPLEX RS-485/RS-422 TRANSCEIVERS WITH HIGH EFT IMMUNITY; PACKAGE OUTLINE DRAWING: 21-0041; PACKAGE CODE: S8+2C; PACKAGE LAND PATTERN: 90-0096
13	PCB	-	1	MAX22506E	MAXIM	PCB	PCB:MAX22506E
14	C3, C4	DNP	0	C0402C103K5RAC;GRM155R71H103KA88; C1005X7R1H103K050BE;CL05B103KB5NNN; UMK105B7103KV	KEMET;MURATA;TDK; SAMSUNG ELECTRONIC; TAIYO YUDEN	0.01UF	CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R
15	J1	DNP	0	PBC06SAAN	SULLINS ELECTRONICS CORP.	PBC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC
16	J3, J6, J10, J11	DNP	0	131-5031-00	TEKTRONIX	131-5031-00	CONNECTOR; WIREMOUNT; 3 GHZ 20X LOW CAPACITANCE PROBE; STRAIGHT; 5PINS
17	J5	DNP	0	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC
18	R1, R3	DNP	0	CRCW0402100RFK; 9C04021A1000FL; RC0402FR-07100RL	VISHAY DALE;PANASONIC; YAGEO PHYCOMP	100	RESISTOR; 0402; 100 OHM; 1%; 100PPM; 0.063W; THICK FILM
19	R7, R8	DNP	0	CRCW06031K00FK;ERJ-3EKF1001	VISHAY DALE;PANASONIC	1K	RESISTOR; 0603; 1K; 1%; 100PPM; 0.10W; THICK FILM
TOTAL			27				

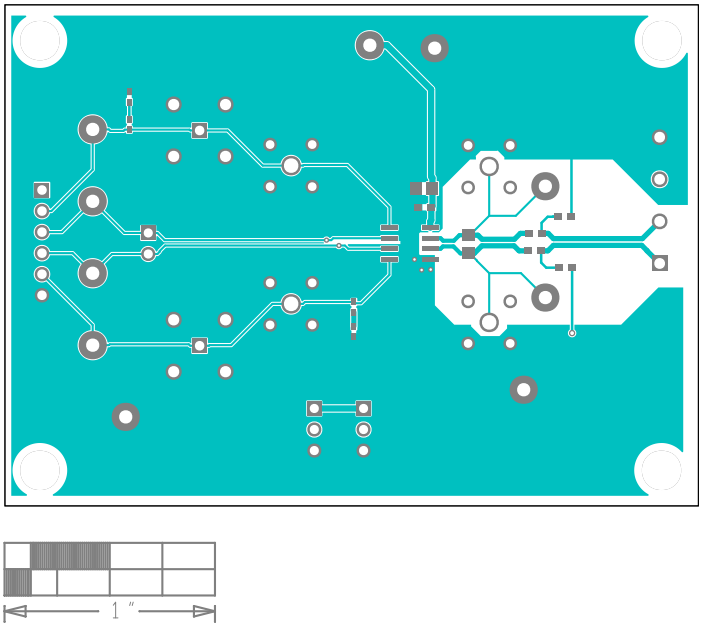
MAX22506E EV Kit Schematic



MAX22506E EV Kit PCB Layout Diagrams

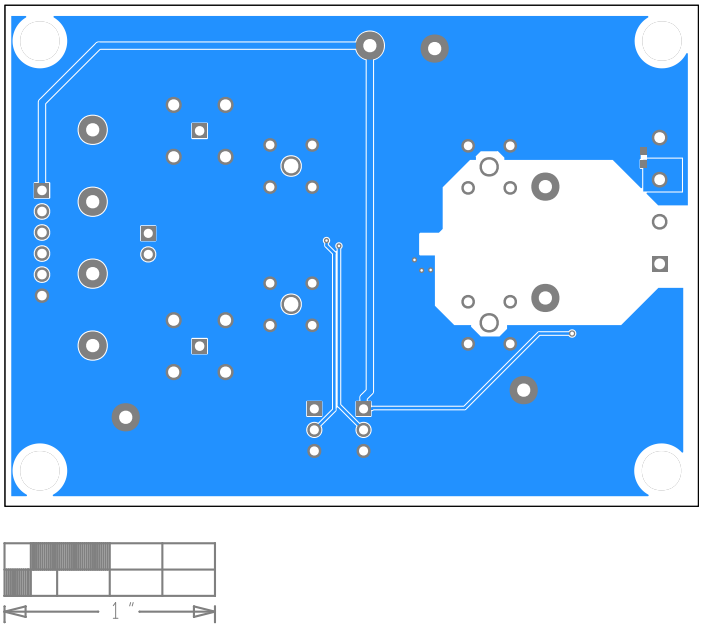


MAX22506E EV Kit—Top Silkscreen

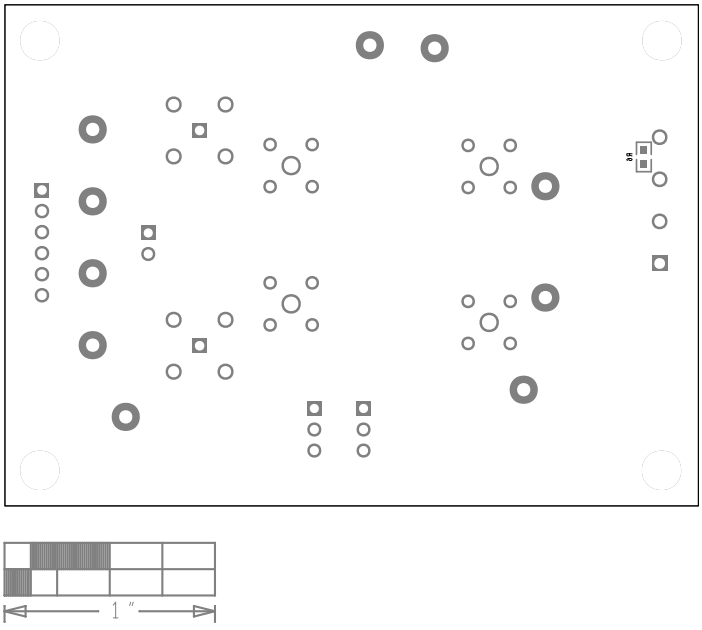


MAX22506E EV Kit—Top

MAX22506E EV Kit PCB Layout Diagrams (continued)



MAX22506E EV Kit—Bottom



MAX22506E EV Kit—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	2/21	Initial release	—

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