

General Description

The MAX22500E evaluation kit (EV kit) is a fully assembled and tested PCB that demonstrates the functionality of the MAX22500E half-duplex high speed RS-485/RS-422 transceiver with preemphasis functionality. The EV kit operates from a single 5V supply and includes on-board termination.

Features

- Operates From a Single 5V Supply
- Terminal Block and RJ45 Connectors for Easy RS-485/RS-422 Evaluation
- On-board Selectable Preemphasis Setting
- Fully Assembled and Tested

Quick Start

Required Equipment

- MAX22500E EV kit
- 5V, 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 5V and connect the DC power supply to the VCC test point. Connect the ground terminal of the 5V supply to the GND test point.
- 3) Turn on the power supply.
- 4) Set the signal/function generator to output a 30MHz 0-to-5V square wave.
- 5) Connect the signal/function generator to the DI test point.
- 6) Using the oscilloscope, verify that the A, B, and RO outputs switch as expected with the signal on DI.

[Ordering Information](#) appears at end of data sheet.

Detailed Description of Hardware

The MAX22500E EV kit is a fully assembled and tested circuit board for evaluating the MAX22500E high-speed, half-duplex RS-485/RS-422 transceiver (U1). The EV kit is powered from a single 5V power supply and 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.

Powering the Board

The MAX22500E operates from a 5V voltage supply. The device also includes a separate logic supply input (VL) to interface with logic signal as low as 1.6V.

Close the J4 jumper to connect VL to VCC (VL = 5V), to operate the EV kit with a single supply.

Open the J4 jumper and connect a separate logic supply to the VL test point (TP6) to operate with a supply logic lower than 5V.

Driver and Receiver Enable

The EV kit features three jumpers (J3, J5, and J8) to enable/disable the driver and receiver outputs. Set J3 to low (2-3) to enable the receiver. Set J3 to high (1-2) to enable the driver.

To actively control both enables, remove the J2 and J3 jumpers and close J4, which connects DE and RE together.

Setting the Preemphasis

The MAX22500E features integrated driver preemphasis circuitry for reliable communication higher data rates over longer distances. Preemphasis is set with by connecting a resistor between PSET and ground.

The MAX22500E EV kit includes a 15k Ω to set the preemphasis for a 30Mbps data rate. Set the switch (SW1) to the on position to enable preemphasis. To disable preemphasis, set SW1 to the off position.

Termination for an End-of-Line Transceiver

The MAX22500E EV kit includes a 120 Ω termination resistor (R7) between the A and B RS-485 receiver inputs on the MAX22500E.

Table 1. Jumper Table (J1–J9)

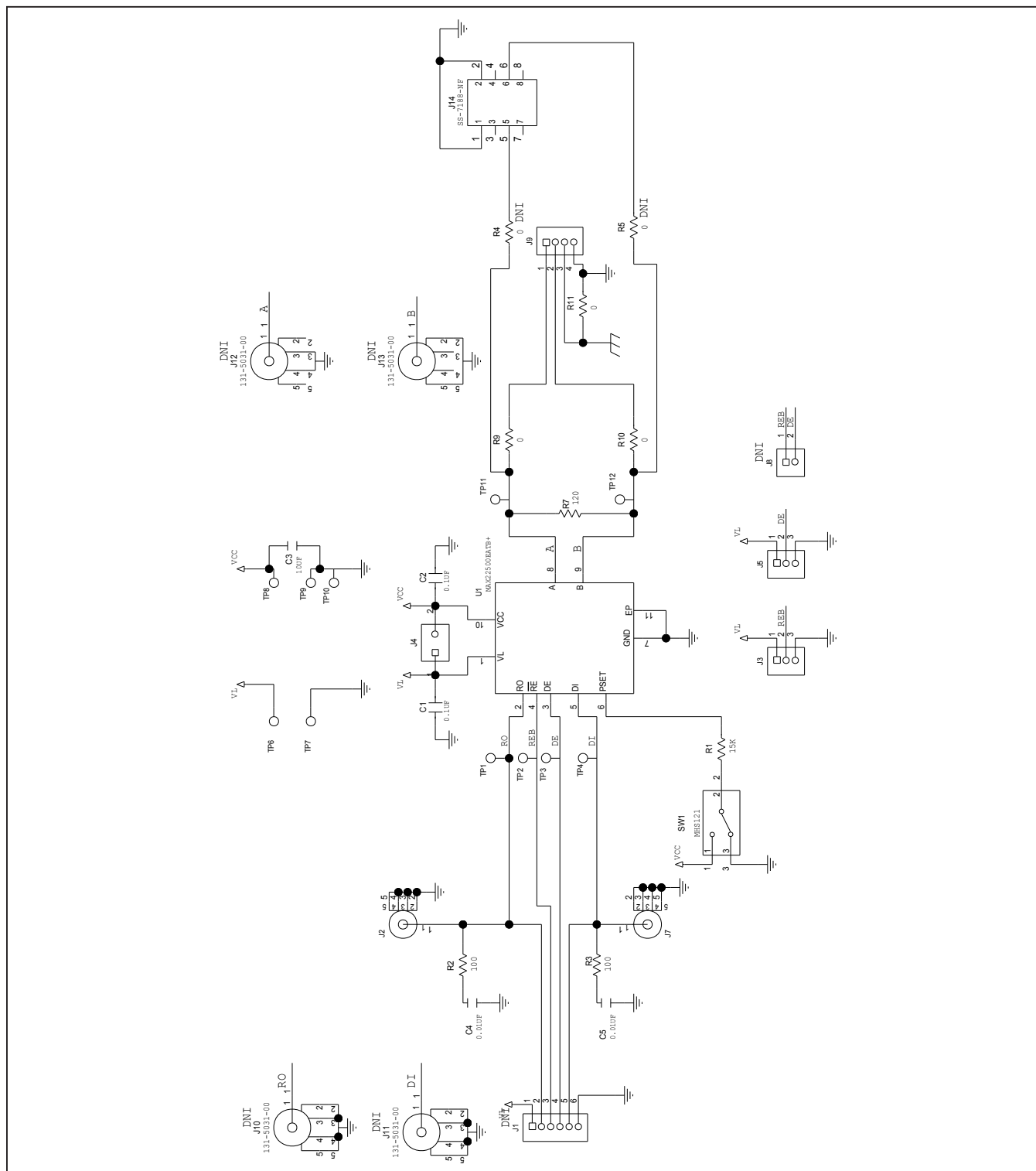
JUMPER	SHUNT POSITION	DESCRIPTION
J3	1-2	Receiver is disabled.
	2-3*	Receiver is enabled.
J4	Open	VL is not connected to VCC. Apply an external voltage to power VL.
	Closed*	VL is connected to VCC.
J5	1-2*	Driver is enabled.
	2-3	Driver is disabled.
J8	Open*	DE and $\overline{\text{RE}}$ are not connected together.
	Closed	DE and $\overline{\text{RE}}$ are connected together.

*Default position.

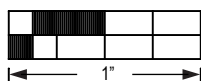
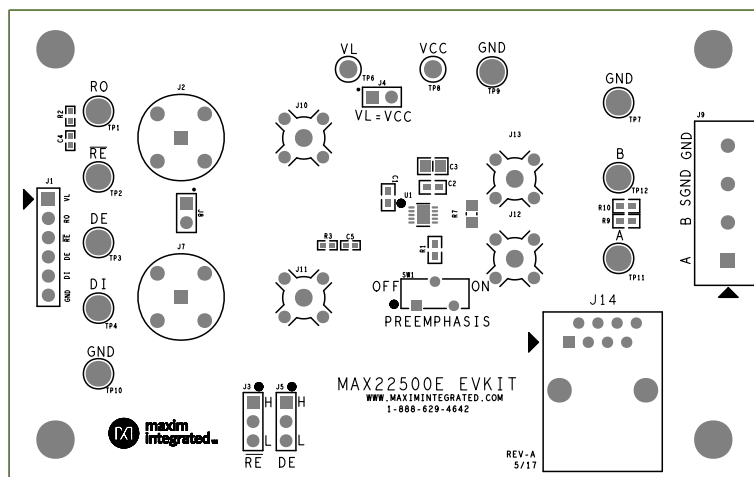
MAX22500E EV Kit Bill of Materials

ITEM	REF_DES	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1, C2	2	C0603C104K5RAC; C1608X7R1H104K	KEMET; TDK	0.1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 0.1UF; 50V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R;	
2	C3	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	
3	C4, C5	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	1	PBC06SAAN	SULLINS ELECTRONICS CORP.	PBC06SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 6PINS; -65 DEGC TO +125 DEGC	
5	J2, J7	2	5-1634503-1	TE CONNECTIVITY	5-1634503-1	CONNECTOR; FEMALE; THROUGH HOLE; LOW PROFILE BNC PCB SOCKET; STRAIGHT; 5PINS	
6	J3, J5	2	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC	
7	J4, J8	2	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC	
8	J9	1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS	
9	J10-J13	4	131-5031-00	TEKTRONIX	131-5031-00	CONNECTOR; WIREMOUNT; 3 GHZ 20X LOW CAPACITANCE PROBE; STRAIGHT; 5PINS	
10	J14	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	1	CRCW060315K0FK	VISHAY DALE	15K	RESISTOR; 0603, 15K OHM, 1%, 100PPM, 0.10W, THICK FILM	
12	R2, R3	2	CRCW0402100RFF; 9C04021A1000FL; RC0402FR-07100RL	VISHAY DALE; PANASONIC; YAGEO PHYCOMP	100	RESISTOR; 0402; 100 OHM; 1%; 100PPM; 0.063W; THICK FILM	
13	R4, R5, R9-R11	5	CRCW06030000ZS; MCR03EZPJ000; ERJ-3GEY0R00	VISHAY DALE/ROHM/PANASONIC	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM	
14	R7	1	CRCW0805120RFF	VISHAY DALE	120	RESISTOR; 0805; 120 OHM; 1%; 100PPM; 0.125W; THICK FILM	
15	SW1	1	MHS121	COPAL ELECTRONICS INC	MHS121	SWITCH; SPDT; THROUGH HOLE; STRAIGHT; 12V; 0.2A; MHS SERIES; RCOIL=500 OHM; RINSULATION=100M OHM	
16	TP1-TP4, TP11, TP12	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;	
17	TP6, TP8	2	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;	
18	TP7, TP9, 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;	
19	U1	1	MAX22500EATB+	MAXIM	MAX22500EATB+	EVKIT PART-IC; TDFN10-EP; HIGH SPEED HALF-DUPLEX RS-485 TRANSCIVER FOR LONG CABLE LENGTH; PACKAGE CODE: T1033+2; PACKAGE OUTLINE: 21-0137	
20	PCB	1	MAX22500E	MAXIM	PCB	PCB:MAX22500E	-
TOTAL		41					

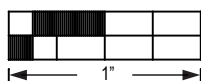
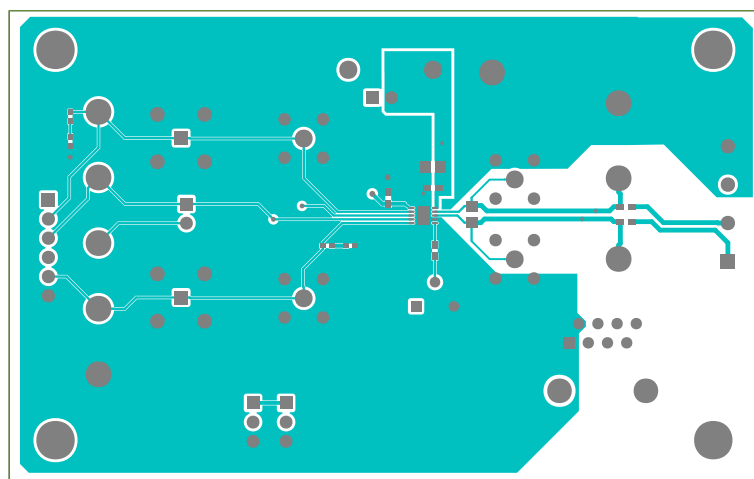
MAX22500E EV Kit Schematic



MAX22500E EV Kit PCB Layout Diagrams

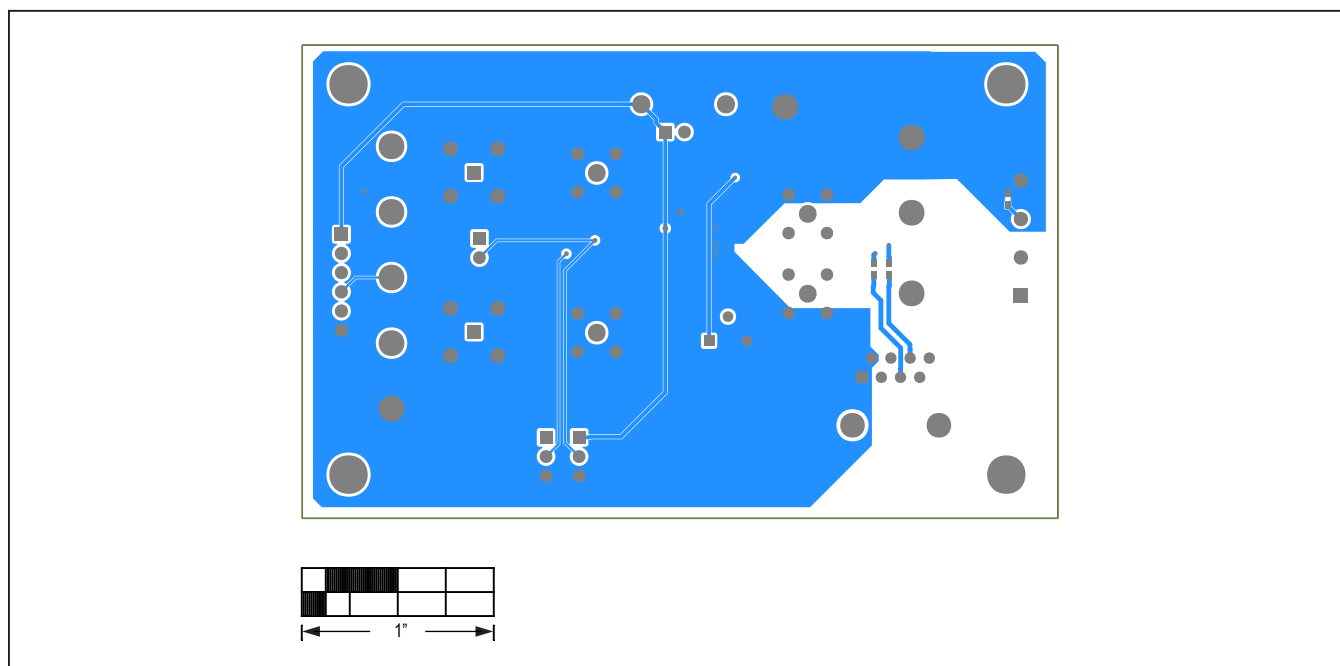


MAX22500E EV Kit—Top Silkscreen

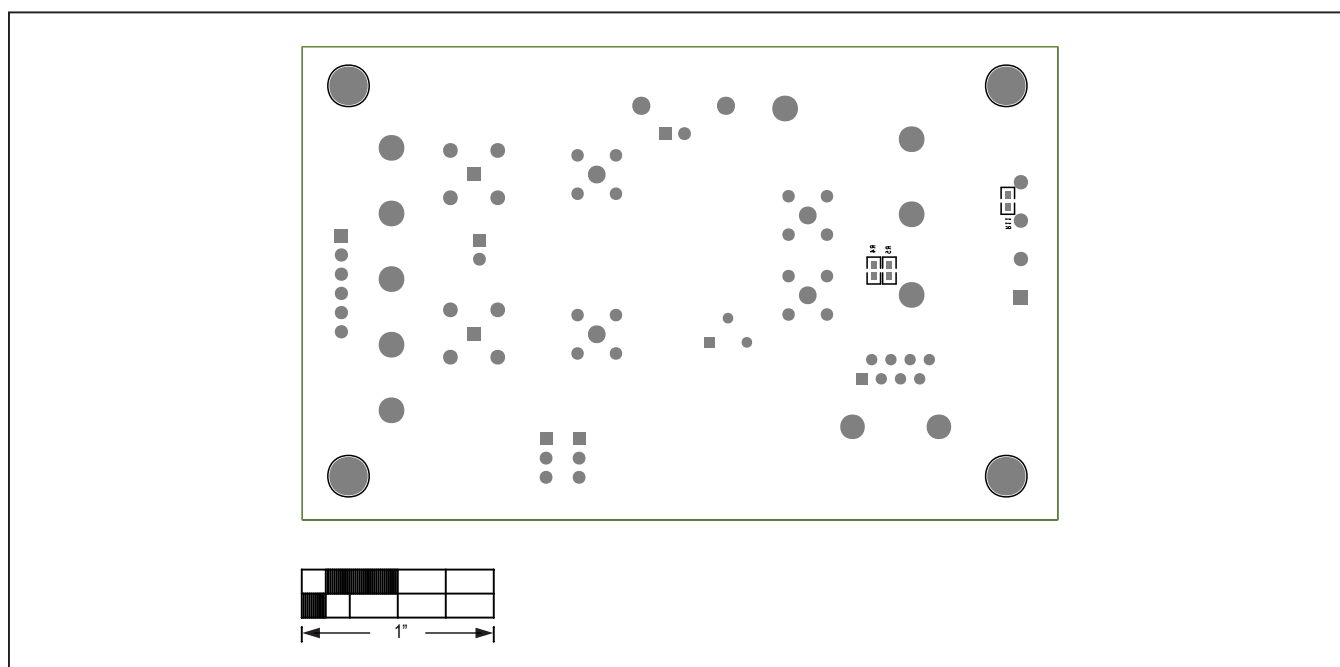


MAX22500E EV Kit—Top

MAX22500E EV Kit PCB Layout Diagrams (continued)



MAX22500E EV Kit—Bottom



MAX22500E EV Kit—Bottom Silkscreen

Ordering Information

PART	TYPE
MAX22500EEVKIT#	EV Kit

#Denotes RoHS compliant.

Revision History

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

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