

General Description

The MAX14880 evaluation kit (EV kit) is a fully assembled and tested PCB that demonstrates the functionality of the MAX14880 isolated CAN transceiver. The EV kit operates from a single 3.3V supply and features an on-board isolated power supply to power the secondary side of the circuit.

The MAX14880EVKIT may also be used to evaluate the MAX14878 and the MAX14879.

Features

- Operates from a Single 3.3V Supply
- Terminal Block Connectors for Easy RS-485/RS-422 Evaluation
- 5000V_{RMS} Isolation for 60s
- Fully Assembled and Tested

Quick Start

Required Equipment

- MAX14880 EV kit
- 3.3V, 500mA DC power supply
- Signal/function generator
- Oscilloscope

Startup Procedure

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

- 1) Set the DC power supply to 3.3V.
- 2) Connect the DC power supply to the 3.3V test point (TP4). Connect the ground terminal to the GND testpoint (TP5).
- 3) Ensure that the jumpers are in their default positions (see [Table 1](#)).
- 4) Turn on the power supply.
- 5) Connect the oscilloscope to the CANH and CANL test points (TP2 and TP10).
- 6) Set the signal/function generator to output a 500kHz 0-to-3.3V square wave.
- 7) Connect the signal/function generator to the TXD test point (TP1).
- 8) Verify that the CANH and CANL outputs switch as the signal toggles.

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

Detailed Description of Hardware

The MAX14880 EV kit is a fully assembled and tested circuit board for evaluating the MAX14880 isolated CAN transceiver (U1). The EV kit is powered from a single 3.3V power supply.

External Power Supply

The power on the EV kit is derived from a single 3.3V source. Connect an external supply to the +3.3V test point (TP4) to supply the 3.3V to the logic-side (A) of the circuit. The on-board MAX258 transformer driver and external transformer, T1, generate an isolated supply for powering the isolated side (B) of the board. The MAX1818 generates a regulated 5V for the B-side of the board.

To use an external supply on the isolated side of the board, remove the shunt on the J6 jumper and apply the voltage to the +5V test point (TP9).

Evaluating the Isolated CAN Interface

The MAX14880 EV kit includes test points to access CANH (TP2) and CANL (TP10) for easy evaluation. To verify operation in a CAN system, connect the transceiver to the network using the J7 terminal block and use the test points (TP1 and TP3) or the J2 jumper pad to connect the device to a logic controller.

External Protection

For harsh industrial environments, external protection may be necessary to protect the CAN transceiver during normal operation. The MAX14880 EV kit includes on-board protection that can be used when evaluating the device in a CAN network. Close the J4 and J5 jumpers to connect the protection diodes to the CANH and CANL lines.

Table 1. Jumper Table (J1-J10)

JUMPER	SHUNT POSITION	DESCRIPTION
J1	Open*	STB input is connected to GND. MAX14880 operates normally.
	Closed	STB input is connected to 5V. MAX14880 is in standby mode.
J3	1-2	MAX258 circuit is disabled. Connect 5V to ISO_V5 test point (TP9).
	2-3*	MAX258 circuit is enabled.
J4	Open	External protection diodes are not connected to CANH.
	Closed*	External protection diodes are connected to CANH.
J5	Open	External protection diodes are not connected to CANL.
	Closed*	External protection diodes are connected to CANL.
J6	Open	VDDDB is not powered by the on-board isolated power circuit.
	Closed*	VDDDB is powered by the on-board isolated power circuit.
J8	Open	On-board termination is not connected to CANH. Open J8 and J9 to disabled on-board termination between CANH and CANL.
	Closed*	On-board termination is connected between CANH and CANL.
J9	Open	Split termination capacitance is connected to GND.
	Closed*	Split termination capacitor is not connected to GND. Open J8 and J9 to disabled on-board termination between CANH and CANL.
J10	Open	The MAX258 transformer driver is powered by the VDDA supply.
	Closed*	The MAX258 transformer driver is not powered by the VDDA supply.

*Default position.

MAX14880 Evaluation Kit

Evaluates: MAX14878/MAX14879/
MAX14880

MAX14880 EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	C1, C6	-	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	C2	-	1	GRM188R71A105K; C0603X7R100-105; C1608X7R1A105K080A C; LMK107B7105KA; CL10B105KP8NFN	MURATA; VENKEL LTD; TDK; TAIYO YUDEN; SAMSUNG ELECTRONICS	1UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 1UF; 10V; TOL=10%; TG=-55 DEGC TO +125 DEGC; TC=X7R;
3	C3	-	1	C0805C473J1RAC	KEMET	0.047UF	CAPACITOR; SMT; 0805; CERAMIC; 0.047uF;100V; 5%; X7R; -55degC to + 125degC
4	C5, C7	-	2	C1608X5R1A106K	TDK	10UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10UF; 10V; TOL=10%; MODEL=; TG=-55 DEGC TO +85 DEGC; TC=X5R
5	C8	-	1	GRM188R61A335KE15; C1608X5R1A335K	MURATA/TKD	3.3UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 3.3UF; 10V; TOL=10%; MODEL=; TG=-55 DEGC TO +85 DEGC; TC=X5R
6	D1, D2	-	2	SMAJ30A	LITTELFUSE	30V	DIODE; TVS; SMA (DO-214AC); VRM=30V; IF=8.3A
7	D3-D6	-	4	1N4001	N/A	1N4001	DIODE, RECTIFIER, DO-41, PIV=50V, If(ave)=1A, Vf=1.1V@If=1A
8	D7, D8	-	2	B230A-13-F	DIODES INCORPORATED	B230A-13-F	DIODE; SCH; SMA; PIV=30V; IF=2.0A
9	J1, J8, J10	-	3	PBC02SAAN	SULLINS ELECTRONICS CORP.	PBC02SAAN	EVKIT PART-CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS; -65 DEGC TO +125 DEGC;
10	J3	-	1	PCC03SAAN	SULLINS	PCC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 3PINS; -65 DEGC TO +125 DEGC
11	J4-J6, J9	-	4	PCC02SAAN	SULLINS	PCC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT THROUGH; 2PINS; -65 DEGC TO +125 DEGC
12	J7	-	1	OSTTC042162	ON-SHORE TECHNOLOGY INC	OSTTC042162	CONNECTOR; FEMALE; THROUGH HOLE; TERMINAL BLOCK ONE PIECE WIRE PROTECTOR; COLOR BLUE; RIGHT ANGLE; 4PINS
13	R1, R2	-	2	CRCW060360R4FK	VISHAY DALE	60.4	RESISTOR; 0603; 60.4 OHM; 1%; 100PPM; 0.10W; THICK FILM
14	R3	-	1	CRCW060310K0FK; ERJ-3EKF1002	VISHAY DALE; PANASONIC	10K	RESISTOR; 0603; 10K; 1%; 100PPM; 0.10W; THICK FILM
15	R5	-	1	CRCW06030000ZS; MCR03EZPJ000; ERJ- 3GEY0R00	VISHAY DALE/ROHM/PANASONIC	0	RESISTOR; 0603; 0 OHM; 0%; JUMPER; 0.10W; THICK FILM
16	R6	-	1	ERJ-3EKF1473V	PANASONIC	147K	RESISTOR; 0603; 147K OHM; 1%; 100PPM; 0.10W; THICK FILM

MAX14880 Evaluation Kit

Evaluates: MAX14878/MAX14879/
MAX14880

MAX14880 EV Kit Bill of Materials (continued)

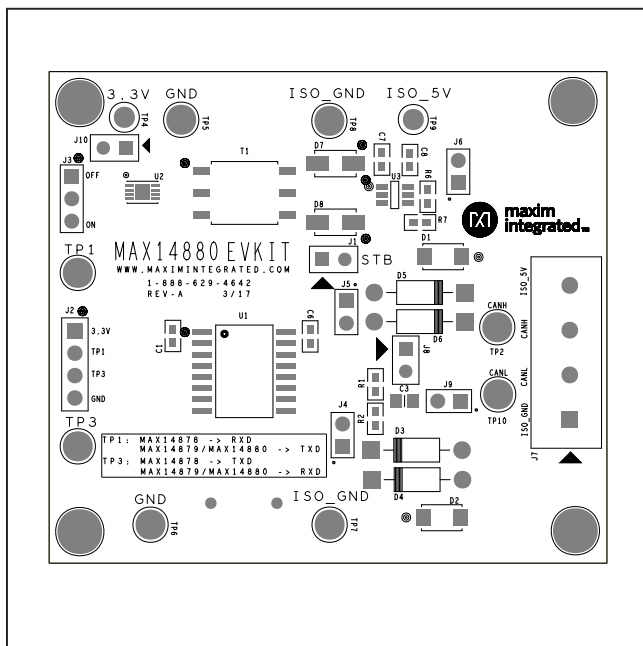
ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
17	R7	-	1	CRCW060347K0FK	VISHAY DALE	47K	RESISTOR; 0603; 47K; 1%; 100PPM; 0.10W; THICK FILM
18	T1	-	1	750315228	WURTH ELECTRONICS INC	750315228	TRANSFORMER; SMT; 2:1; VERY LOW LEAKAGE INDUCTANCE; ROUNDED SELF-SHIELDING CORE;
19	TP1-TP3, TP10	-	4	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;
20	TP4, TP9	-	2	5010	KEYSTONE	N/A	TESTPOINT WITH 1.80MM HOLE DIA, RED, MULTIPURPOSE;
21	TP5-TP8	-	4	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;
22	U1	-	1	MAX14880AWE+	MAXIM	MAX14880AWE+	EVKIT PART - IC; TXRX; 5KV ISOLATED CAN TRANSCEIVER WITH +/- 8KV CONTACT ESD PROTECTION; WSOIC16
23	U2	-	1	MAX258ATA+	MAXIM	MAX258ATA+	IC; DRV; 0.5A; PUSH-PULL TRANSFORMER DRIVER FOR ISOLATED POWER SUPPLY; TDFN8-EP 2X3
24	U3	-	1	MAX1818EUT50+	MAXIM	MAX1818EUT50+	IC; VREG; 0.5A LOW-DROPOUT LINEAR REGULATOR; SOT23-6
25	PCB	-	1	MAX14880	MAXIM	PCB	PCB:MAX14880
26	C4	DNP	0	B32620A0472J	EPCOS	4700PF	CAPACITOR; THROUGH HOLE-RADIAL LEAD; POLYPROPYLENE; 4700pF; 1000V; TOL=5%; TG=-55degC TO +105degC
27	C9	DNP	0	C1608X5R1E106M080A C; CL10A106MA8NRNC	TDK/SAMSUNG ELECTRONICS	10UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10UF; 25V; TOL=20%; TG=-55 DEGC TO +85 DEGC; TC=X5R
28	J2	DNP	0	PBC04SAAN	SULLINS ELECTRONICS CORP.	PBC04SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS; -65 DEGC TO +125 DEGC

TOTAL 45

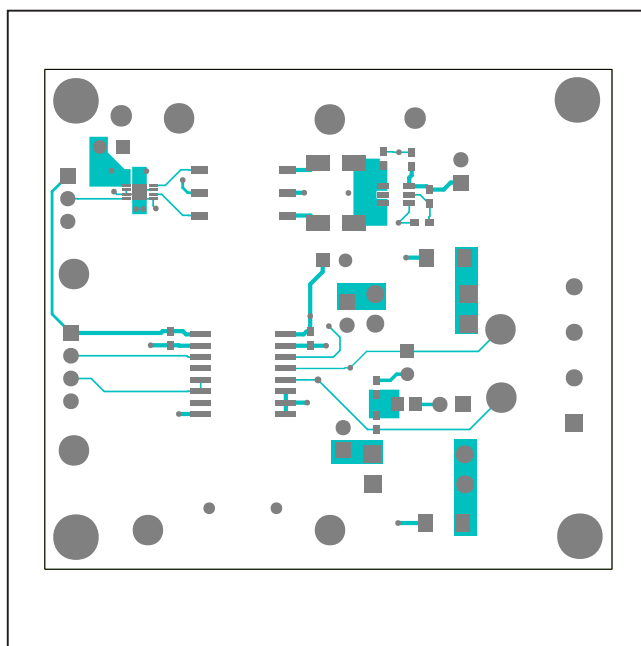
MAX14880 Evaluation Kit

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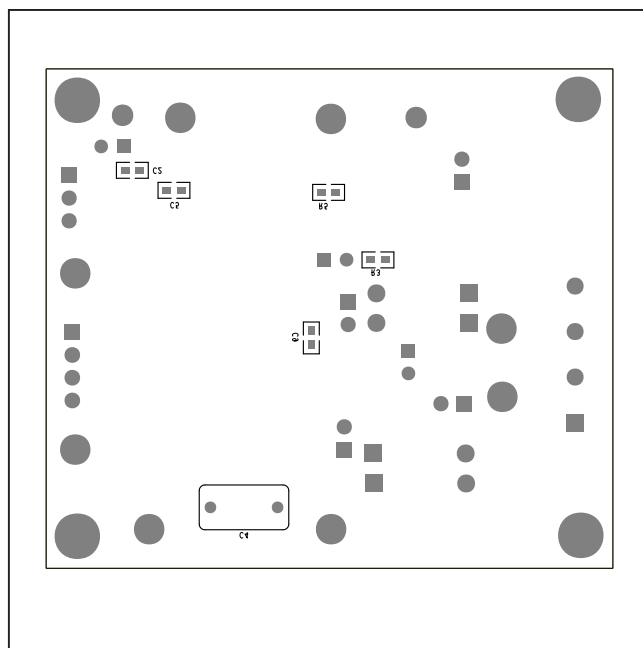
MAX14880 EV Kit PCB Layout Diagrams



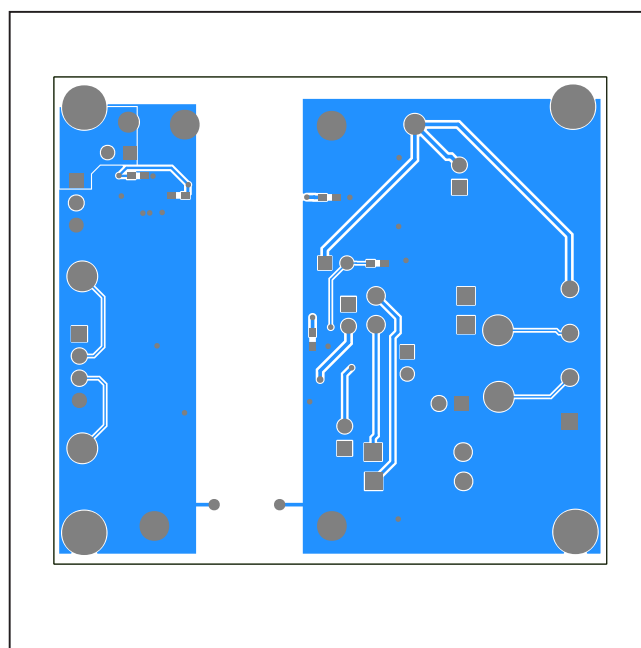
MAX14880 EV Kit—Top Silkscreen



MAX14880 EV Kit—Top

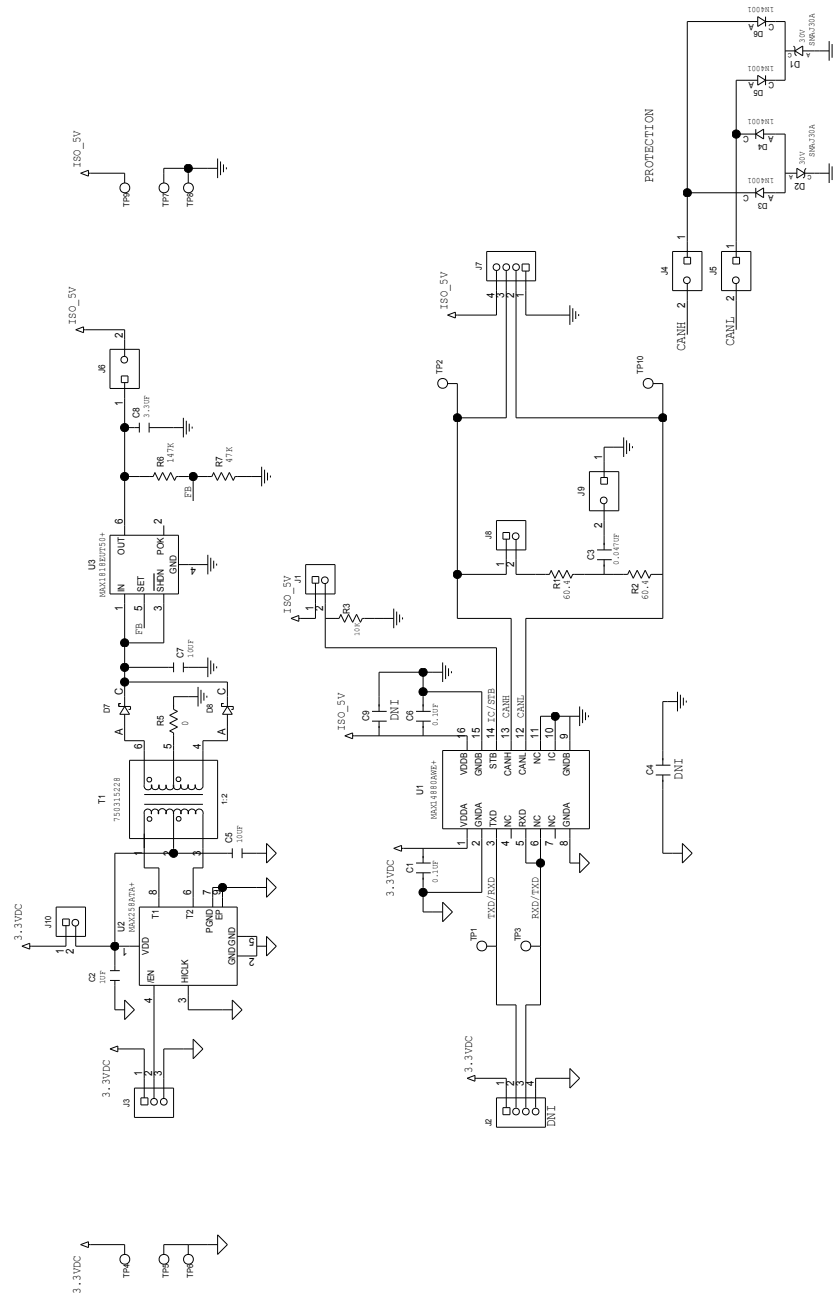


MAX14880 EV Kit—Bottom Silkscreen



MAX14880 EV Kit—Bottom

MAX14880 EV Kit PCB Layout Diagrams



MAX14880 Evaluation Kit

Evaluates: MAX14878/MAX14879/
MAX14880

Ordering Information

PART	TYPE
MAX14880EVKIT#	EV Kit

#Denotes RoHS compliant.

MAX14880 Evaluation Kit

Evaluates: MAX14878/MAX14879/
MAX14880

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	5/17	Initial release	—

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[MAX14880EVKIT#](#)