

DS2488 Evaluation Kit

Evaluates: DS2488

General Description

The DS2488 evaluation kit (EV kit) provides the hardware and software necessary to exercise the features of the DS2488. The EV system consists of two boards: the DS9401 and DS2488 EV kit boards. The DS2488 board contains two DS2488 parts. The evaluation software runs on Windows® 10, 8, and 7 operating systems. It provides a handy user interface to exercise the features of the DS2488.

Features

- Demonstrates the Features of the DS2488
- Fully Compliant with USB Specification v2.0
- Software Runs on Windows 10, 8, and 7
- Convenient On-Board Test Points

DS2488 EV Kit Contents

QTY	DESCRIPTION
1	DS9401 1-Wire® master with 5V charging board
1	DS2488 EV kit evaluation board with two DS2488 parts
2	USB Type-A to Micro-USB Type-B Cable

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

Windows is a registered trademark and service mark of Microsoft Corporation.

1-Wire is a registered trademark of Maxim Integrated Products, Inc.

Quick Start

Required Equipment

This section includes a list of recommended equipment and instructions on how to set up the Windows-based PC for the evaluation software.

- DS9401 (included)
- DS2488 EV kit (included)
- 2 USB Type A to Micro-USB Type B cable (included)
- PC with a Windows 10, 8, or 7 operating system and two spare USB 2.0 or higher ports
- Download DS2488 EV kit software

Software and Hardware Installation and Setup

- 1) Unplug any Maxim adapters before installing software.
- 2) Install Prolific drivers from http://www.prolific.com.tw/US/ShowProduct.aspx?p_id=225&pcid=41 if not already installed.
- 3) Unzip the EV kit software folder.
- 4) Run **setup.exe** to run installer.
- 5) Click the **Install** button on the **Application Install - Security Warning** notification to install the EV kit software (see [Figure 1](#)).
- 6) Connect JB1 on DS9401 board (see [Figure 2](#)).

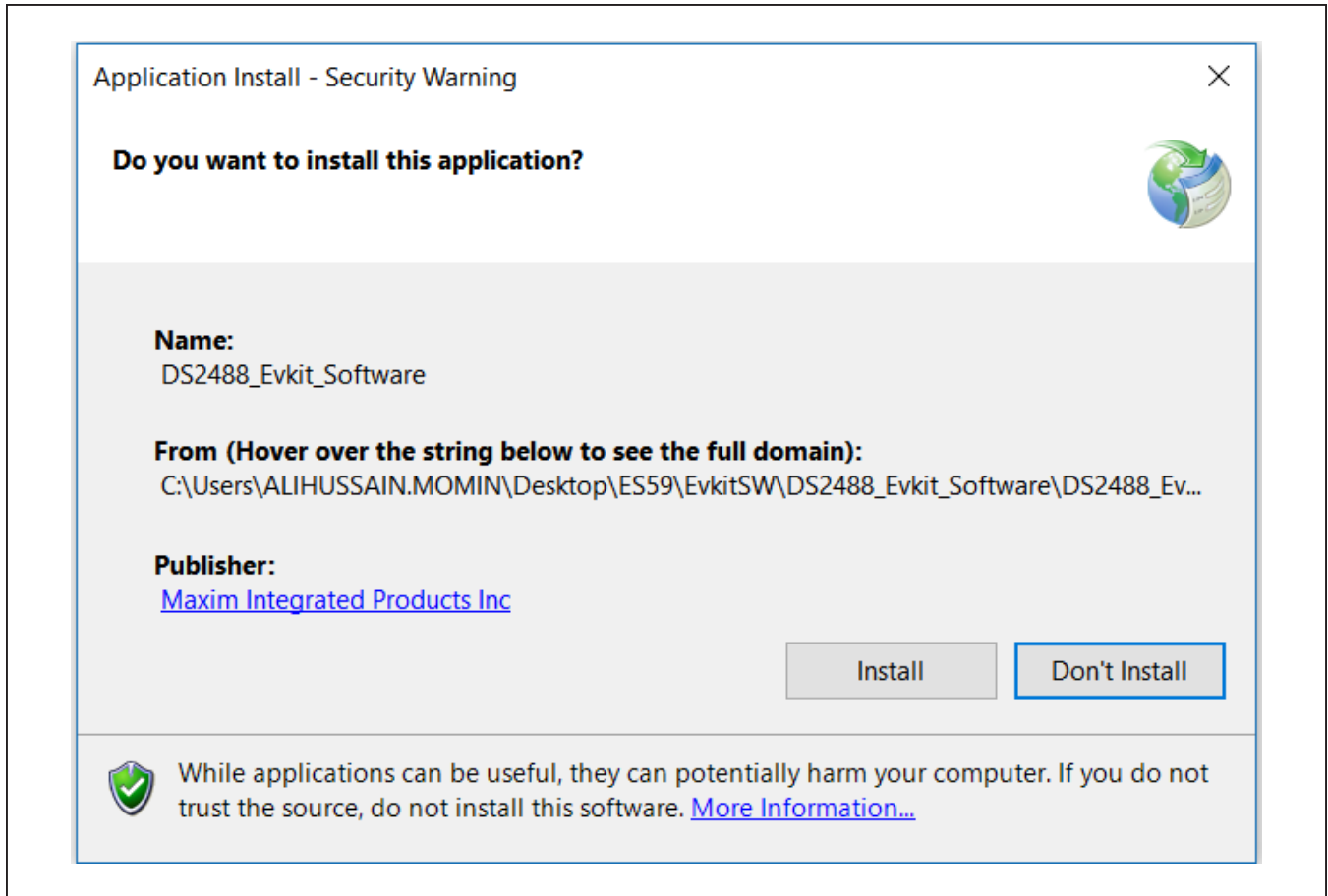


Figure 1. Install Warning

- 7) Connect JB1, JB2, JB3, JB5, JB6 and the VL row on JB4 on the DS2488 EV kit board (see [Figure 3](#)).
- 8) Connect the DS9401 and DS2488 EV kit boards to the PC using the USB cables. Ensure no other prolific devices are connected to the PC.
- 9) Connect the DS9401 to the DS2488 EV kit board.
- 10) Launch the DS2488 EV kit software.

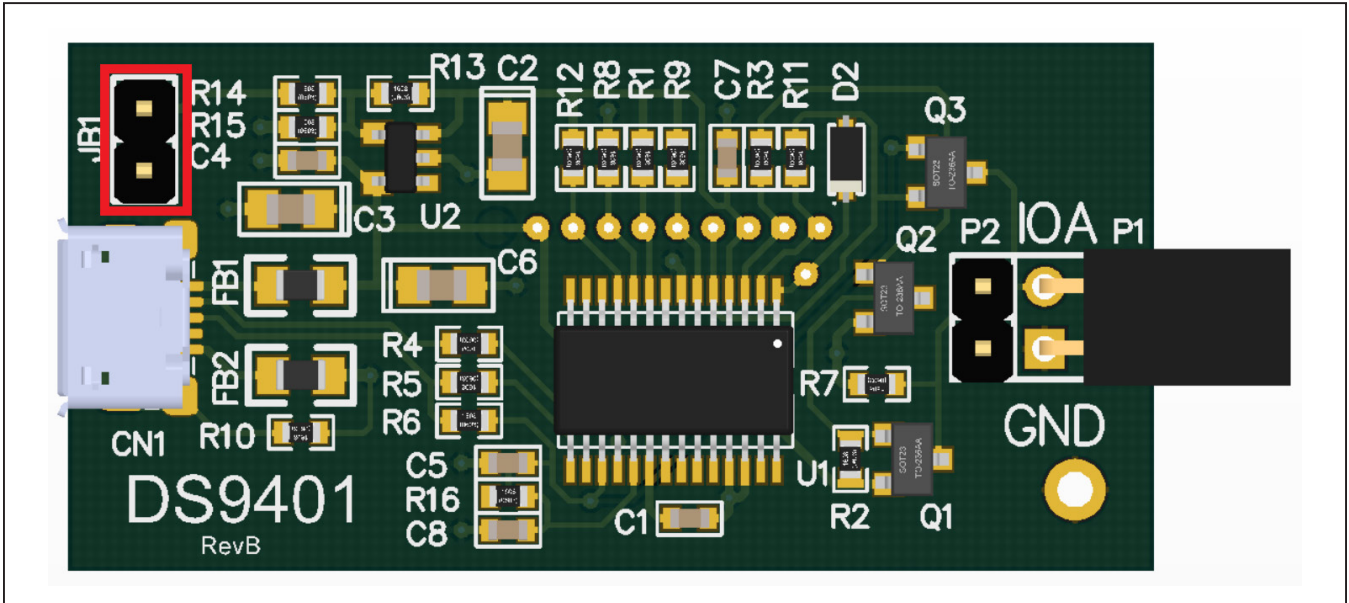


Figure 2. DS9401 Board

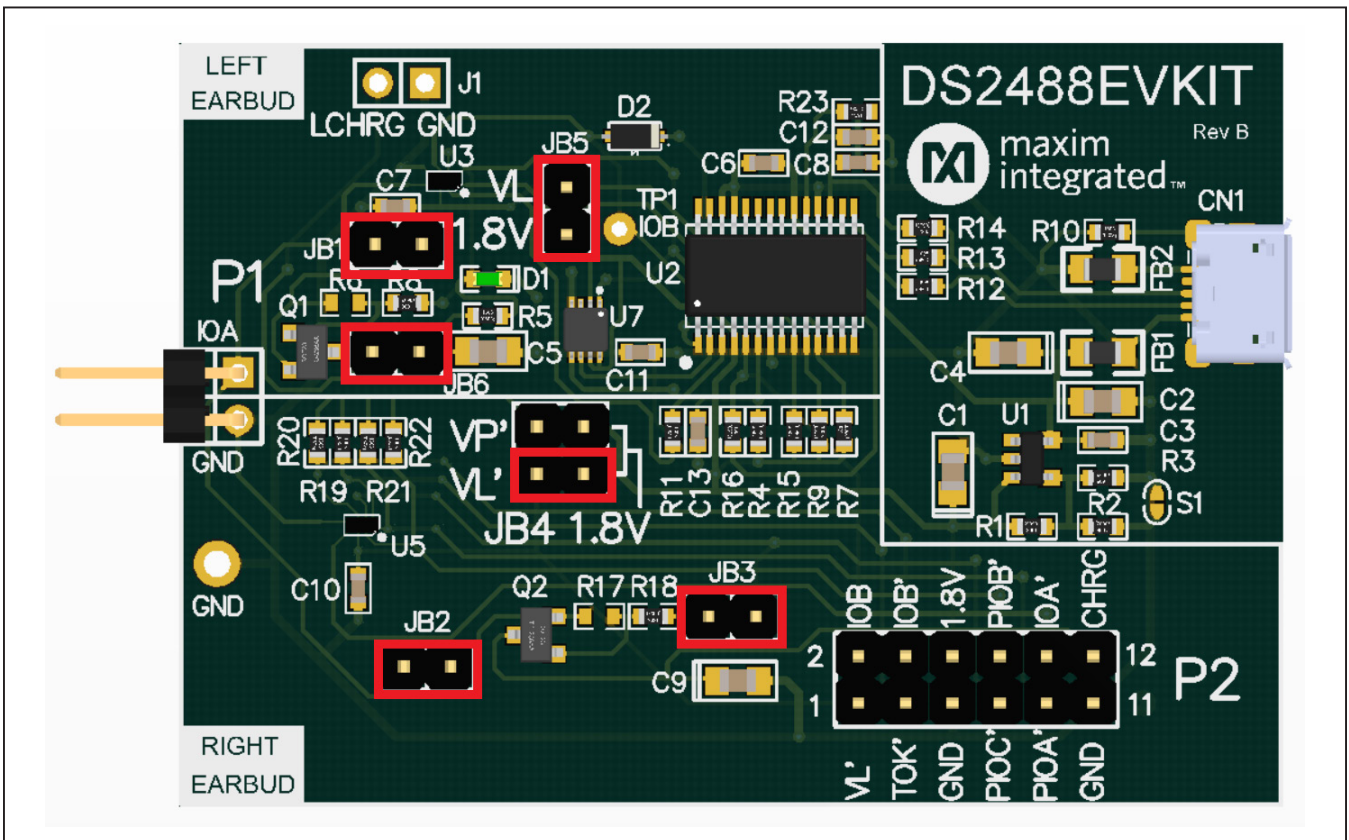


Figure 3. DS2488 EV Kit Board

- 11) Click on **Auto Detect** (see [Figure 4](#)).
- 12) Click on **Connect** (see [Figure 4](#)) and the window automatically changes to the **TWS Demo** tab if a connection to the hardware is successful (see [Figure 5](#)).

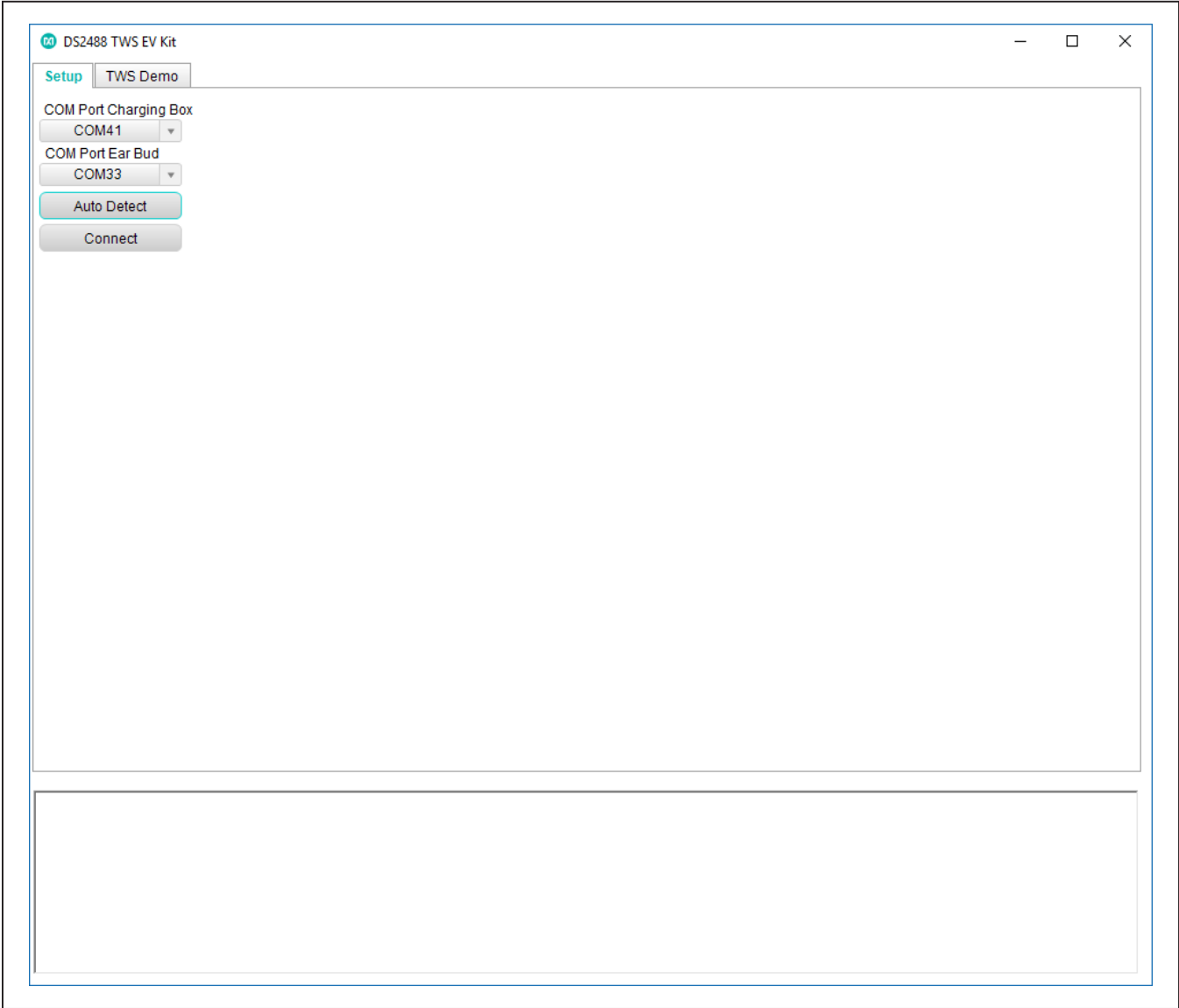


Figure 4. EV Kit Setup Tab

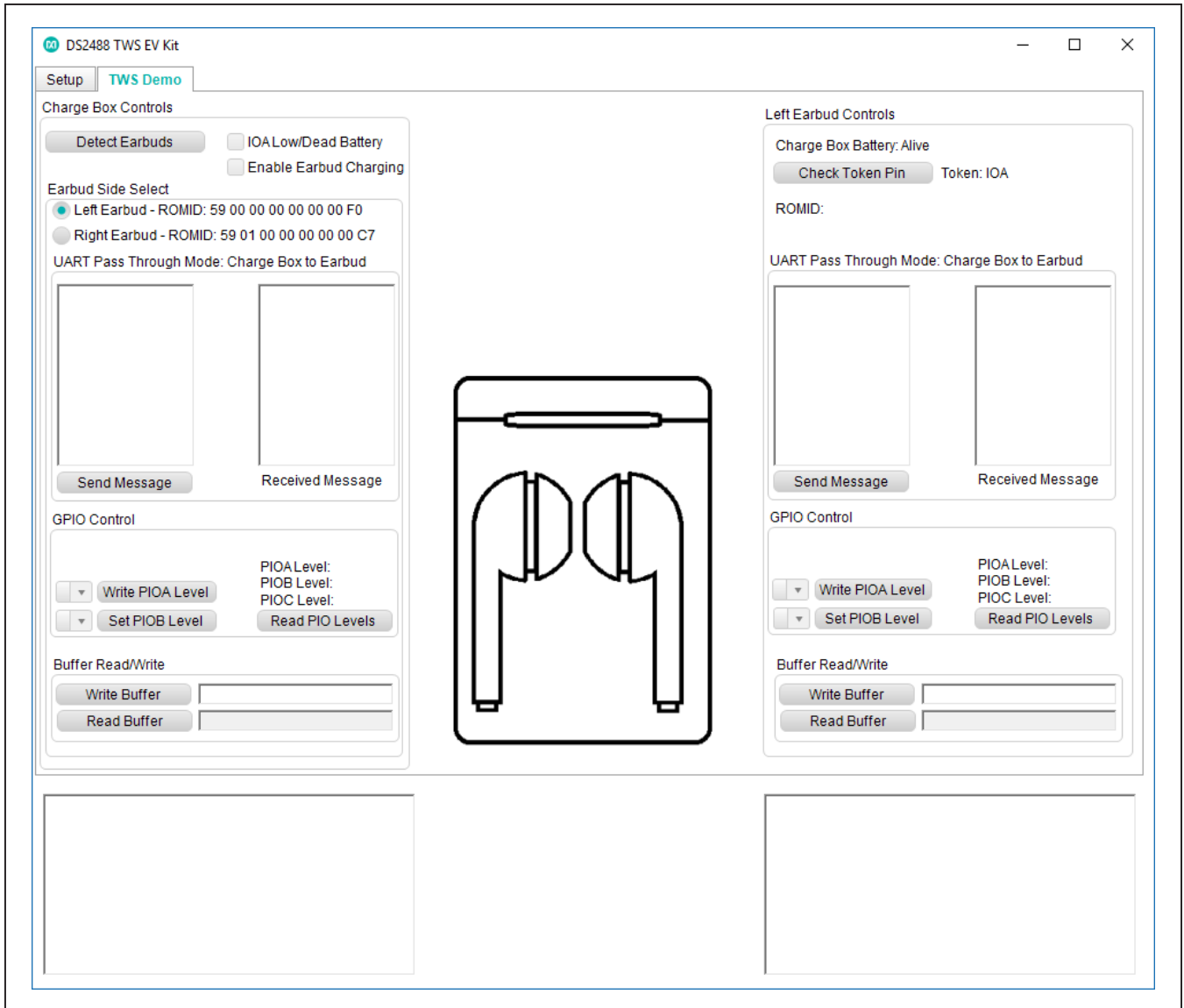


Figure 5. EV Kit Software Demo Tab

EV Kit Supported Functions

The DS2488 EV kit program is designed as a usage example.

Use the software to evaluate the DS2488 and the GUI displays the 1-Wire sequences for each step to assist the firmware engineer.

Table 1. Usage Flows

FLOW	DESCRIPTION
Detect Earbuds	Does a 1-Wire, Search ROM to determine which earbuds are connected to the charge box.
IOA Low/Dead Battery	Set IOA to logic-low to simulate dead battery, or to pass token to IOB
Send Message	Uses UART to send message between charge box and ear bud
Write PIOA Level	Use 1-Wire commands to set the PIOA level
Set PIOB Level	Set PIOB level using pin from the prolific chip
Read PIO Levels	Uses 1-Wire commands to read the levels of the PIO pin
Write buffer	Writes specified hex data to 8-byte buffer
Read buffer	Reads written data in 8-byte buffer

Ordering Information

PART	TYPE
DS2488EVKIT#	EV Kit

#Denotes RoHS compliance.

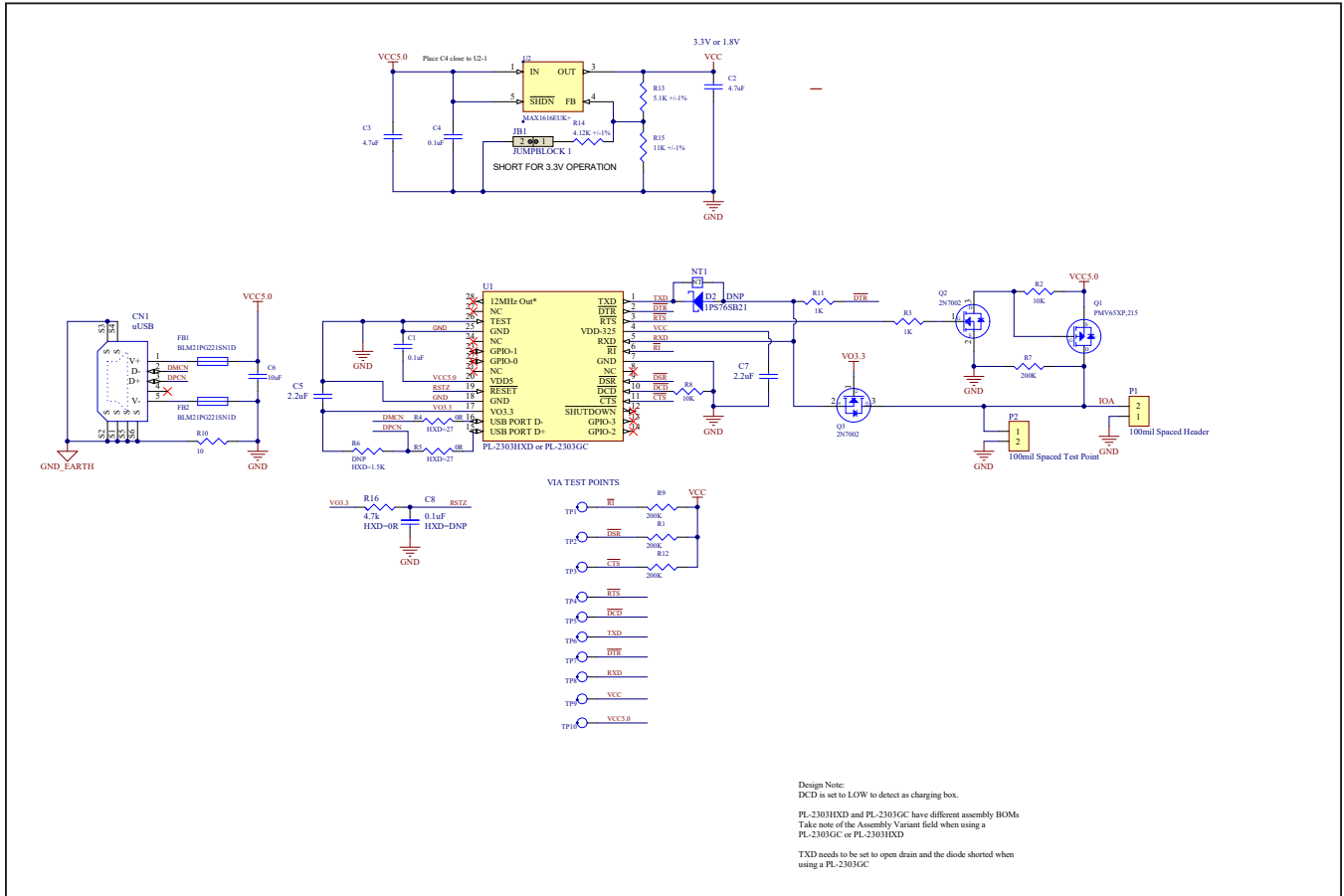
DS9401 Bill of Materials

DESIGNATOR	QTY	DESCRIPTION	MANUFACTURER	PART NO.
C1, C4, C8	3	CAP CER 0.1UF 16V X7R 0603	Kemet	C0603C104K4RACTU
C2, C3	2	CAP CER 4.7UF 16V Y5V 0805	Samsung Electro-Mechanics	CL21F475ZOFNNNE
C6	1	CAP CER 10UF 10V Y5V 0805	Yageo	C2012Y5V1A106Z
C7,C5	2	CAP CER 2.2UF 6.3V 10% X5R 0603	Yageo	CC0603KRX5R5BB225
CN1	1	CONN RCPT USB2.0 MICRO B SMD R/A	Amphenol ICC (FCI)	10118193-0001LF
D2	1	DIODE SCHOTTKY 40V 200MA SOD323 (DNP)	Nexperia USA Inc.	1PS76SB21,115
FB1, FB2	2	FERRITE BEAD 220 OHM 0805 1LN	Murata Electronics North America	BLM21PG221SN1D
JB1	1	CONN HEADER VERT 2POS 2.54MM	Amphenol ICC (FCI)	68000-102HLF
P1	1	CONN HDR 2POS 0.1 GOLD PCB R/A	Sullins Connector Solutions	PPPC021LGBN-RC
P2	1	CONN HEADER VERT 2POS 2.54MM	Amphenol ICC (FCI)	68000-102HLF
Q1	1	MOSFET P-CH 20V 2.8A SOT-23	PMV65XP,215	PMV65XP,215
Q2, Q3	2	MOSFET N-CH 60V 115MA SOT23-3	Diodes Incorporated	2N7002-7-F
R1, R7, R9, R12	4	RES SMD 200K OHM 1% 1/10W 0603	Yageo	RC0603FR-07200KL
R2, R8	2	RES SMD 1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1002V
R3, R11	2	RES SMD 1K OHM 1% 1/10W 0603	Yageo	RC0603FR-071KL
R4, R5	2	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
R6	1	DNP		
R10	1	RES SMD 10 OHM 1% 1/10W 0603	Yageo	RC0603FR-0710RL
R13	1	RES SMD 5.1K OHM 1% 1/10W 0603	Bourns Inc.	CR0603-FX-5101ELF
R14	1	RES 4.12K OHM 1% 1/10W 0603	Stackpole Electronics Inc	RMCF0603FT4K12
R15	1	RES 11K OHM 1% 1/10W 0603	Stackpole Electronics Inc	RMCF0603FT11K0
R16	1	RES SMD 4.7K OHM 1% 1/10W 0603	Rohm Semiconductor	MCR03ERTF4701
U1	1	USB to Serial Bridge	Prolific	PL-2303GC
U2	1	High-Voltage, Low-Power Linear Regulator	Maxim Integrated Products	MAX1616EUK+

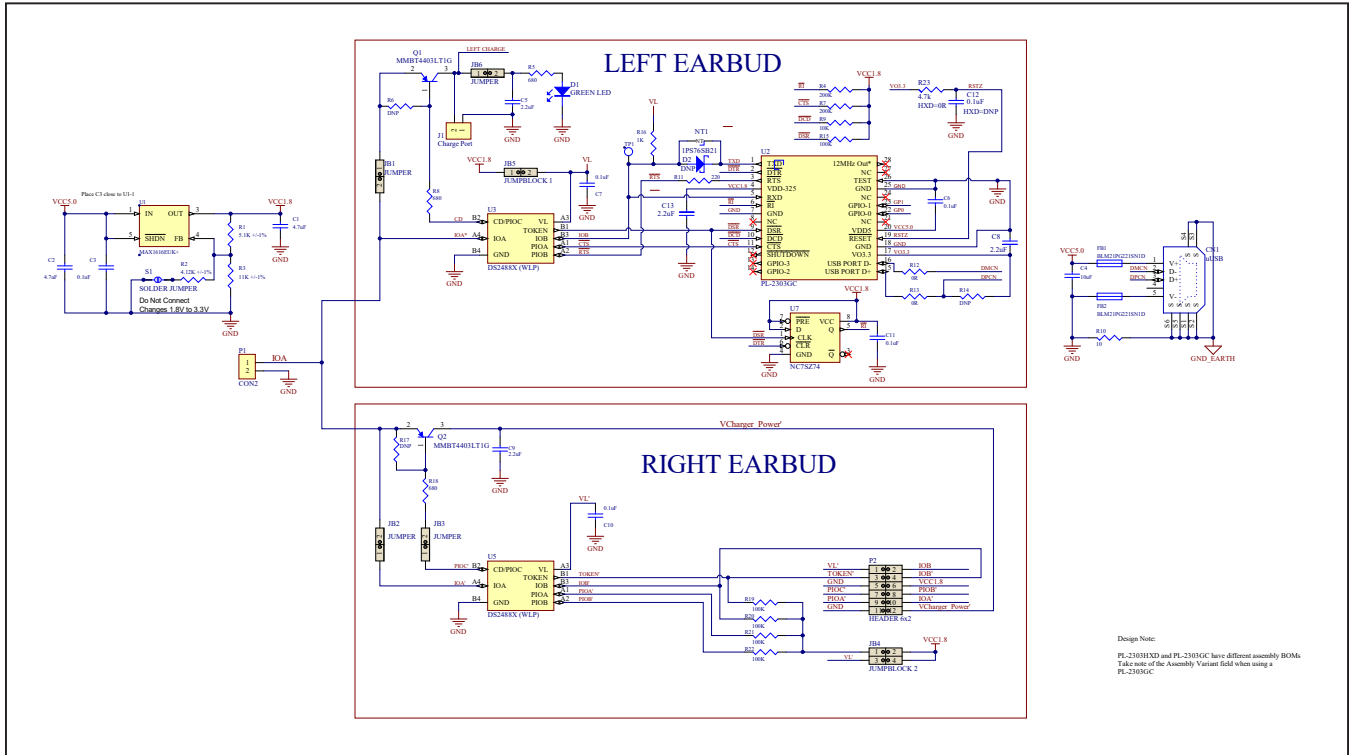
DS2488EVKIT Bill of Materials

DESIGNATOR	QTY	DESCRIPTION	MANUFACTURER	PART NO.
C1, C2	2	CAP CER 4.7UF 16V Y5V 0805	Samsung Electro-Mechanics	CL21F475ZOFNNNE
C3, C6, C7, C10, C11, C12	6	CAP CER 0.1UF 16V X7R 0603	Kemet	C0603C104K4RACTU
C4	1	CAP CER 10UF 10V Y5V 0805	Yageo	C2012Y5V1A106Z
C5, C9	2	CAP CER 2.2UF 16V Y5V 0805	Yageo	CC0805ZRY5V7BB225
C8, C13	2	CAP CER 2.2UF 6.3V X5R 0603	Taiyo Yuden	JMK107BJ225KA-T
CN1	1	CONN RCPT USB2.0 MICRO B SMD R/A	Amphenol ICC (FCI)	10118193-0001LF
D1	1	Green 523nm LED Indication - Discrete 3.2V 0603	Dialight	5988081107F
D2	1	DIODE SCHOTTKY 40V 200MA SOD323	Nexperia USA Inc.	1PS76SB21,115
FB1, FB2	2	FERRITE BEAD 220 OHM 0805 1LN	Murata Electronics North America	BLM21PG221SN1D
JB1, JB2, JB3, JB5, JB6, J1	6	CONN HEADER VERT 2POS 2.54MM	Amphenol ICC (FCI)	68000-102HLF
JB4	1	CONN HEADER VERT 4POS 2.54MM	Amphenol ICC (FCI)	67996-104HLF
P1	1	CONN HEADER R/A 2POS 2.54MM	Sullins Connector Solutions	PRPC002SBAN-M71RC
P2	1	CONN HEADER VERT 12POS 2.54MM	Amphenol	67996-212HLF
Q1, Q2	2	TRANS PNP 40V 0.6A SOT23	On Semiconductor	MMBT4403LT1G
R1	1	RES SMD 5.1K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF5101V
R2	1	RES SMD 4.12K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF4121V
R3	1	RES SMD 11K OHM 0.1% 1/10W 0603	Panasonic Electronic Components	ERA-3AEB113V
R4, R7	2	RES SMD 200K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF2003V
R5, R8, R18	3	RES SMD 680 OHM 1% 1/10W 0603	Vishay Dale	CRCW0603680RFKEA
R6, R17	2	100K/0603	Yageo	RC0603FR-07100KL
R9	1	RES SMD 10K OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF1002V
R10	1	RES SMD 10 OHM 1% 1/10W 0603	Yageo	RC0603FR-0710RL
R11	1	RES SMD 220 OHM 1% 1/10W 0603	Panasonic Electronic Components	ERJ-3EKF2200V
R12, R13	2	RES SMD 0.0 OHM JUMPER 1/10W	Panasonic Electronic Components	ERJ-3GEY0R00V
R14	1	DNP		
R15, R19, R20, R21, R22	5	RES SMD 100K OHM 1% 1/10W 0603	Vishay Dale	CRCW0603100KFKEA
R16	1	RES SMD 1K OHM 1% 1/10W 0603	Yageo	RC0603FR-071KL
R23	1	RES SMD 4.7K OHM 1% 1/10W 0603	Vishay Dale	CRCW06034K70FKEA
U1	1	Linear Voltage Regulator	Maxim Integrated Products	MAX1616EUK+
U2	1	USB to Serial Bridge	Prolific/Techtonica	PL-2303GC
U3, U5	2	1-Wire Dual Port Link	Maxim Integrated	DS2488X+U
U7	1	IC FF D-TYPE SNGL 1BIT US8	ON Semiconductor	NC7SZ74K8X

DS9401 Schematic



DS2488 EV Kit Schematic



Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	9/20	Initial release	—

For pricing, delivery, and ordering information, please visit Maxim Integrated's online storefront at <https://www.maximintegrated.com/en/storefront/storefront.html>.

Maxim Integrated cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim Integrated product. No circuit patent licenses are implied. Maxim Integrated reserves the right to change the circuitry and specifications without notice at any time.