General Description

The DS28E17 evaluation system (EV system) provides the special hardware and software system to exercise the features of the DS28E17 1-Wire®-to-I²C master bridge IC. The EV system consists of a DS28E17 EV kit board and a DS9481P-300# USB-to-1-Wire adapter for PC connectivity. The EV kit is compatible with Windows® operating systems.

EV System Contents

- DS28E17 EV Kit Board (Figure 1)
- DS9481P-300# USB-to-1-Wire Adapter (Figure 2)

Benefits and Features

- Driver Support for Windows 8 and Windows 7
- Fully Compliant with USB Specification v2.0
- USB Powered with No External Power Supply Required
- On-Board DS7505 Digital Thermometer I²C Slave Peripheral
- Extended I²C Peripheral Module Connector for Rapid Prototyping of I²C Slaves
- Proven PCB Layout

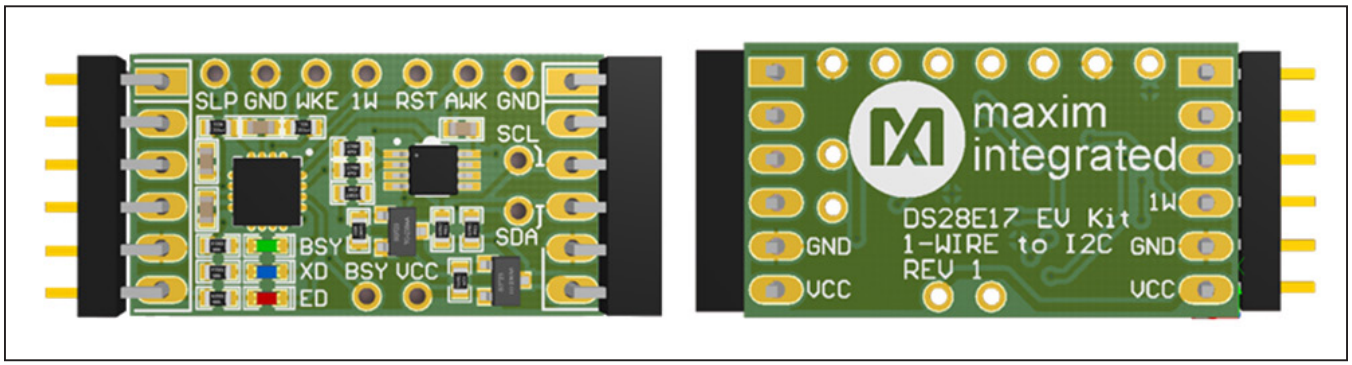

Figure 1. DS28E17 EV Kit Board

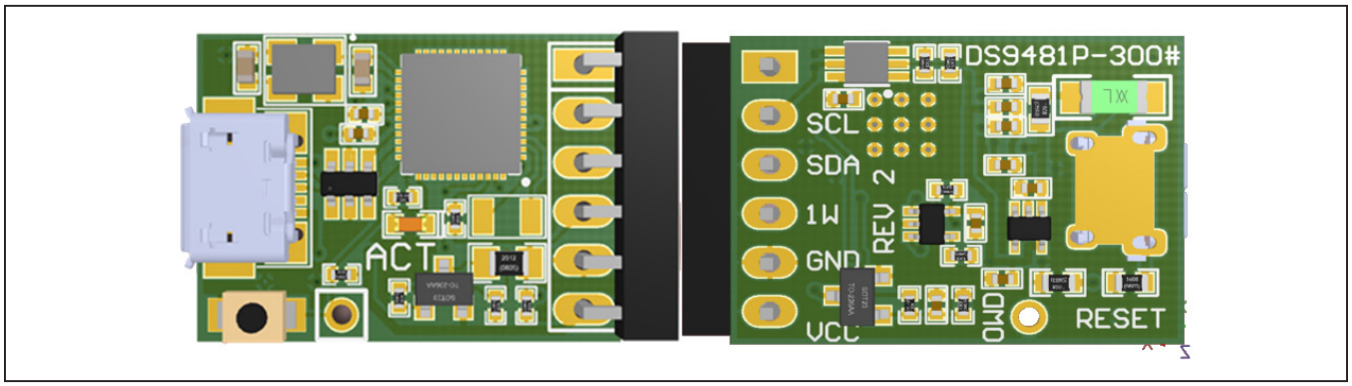

Figure 2. DS9481P-300# USB-to-1-Wire Adapter

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

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

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

maxim integrated™

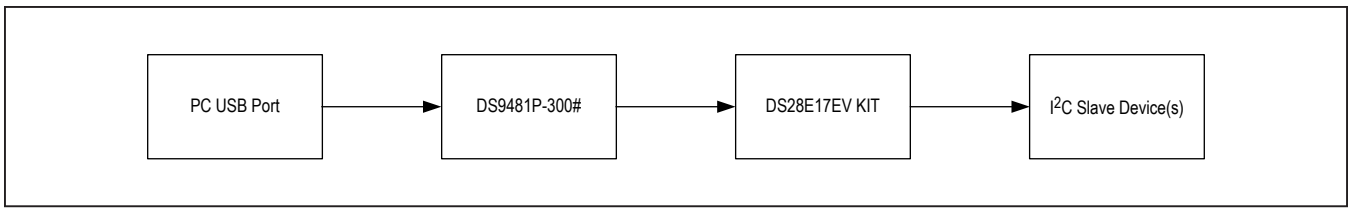

Figure 3. Typical Setup

DS28E17EVKIT Files

FILE	DESCRIPTION
DS28E17 EV Kit	EV Kit Software

Quick Start

Required Equipment

- DS28E17 EV kit (included)
- DS9481P-300# USB-to-1-Wire adapter (included)
- PC with a Windows 8 or Windows 7 (32-bit or 64-bit) operating system and a spare USB 2.0 or higher port
- 1-Wire drivers
- DS28E17 evaluation software

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items directly from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

Procedure

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

1) Install the 1-Wire drivers (see the *Installing DS9481P-300# and 1-Wire Drivers* section for instructions).
2) Attach the DS9481P-300# adapter to the DS28E17 EV kit (Figure 4).
3) Visit **http://content.maximintegrated.com/en/design/tools/applications/evkit-software/** to download the latest version of the DS28E17 EV kit software.
4) Unzip and save the EV kit software to a known location.
5) Open the **DeviceDriver** folder.
6) Right-click on **install.bat** and then choose **Run as administrator** (Figure 5).
7) A command window opens with a prompt asking to install the device driver (Figure 6). Click **Install**.
8) Open the folder where the DS28E17 EV kit software was extracted and double-click the **Setup.exe** file.
9) Plug the USB cable to the DS9481P-300# adapter.
10) Insert the DS9481P-300# into a spare USB port on the PC.
11) The device will automatically search and install the driver (Figure 7).
12) Click on the **Install** button to start installation (Figure 9).
13) To start the evaluation software, ensure that the DS9481P-300# has been properly installed and the DS28E17 board and DS9481P-300# adapter are connected.
    a. Run the DS28E17 EV kit software: **Start→ Programs → Maxim Integrated → DS28E17EV Kit**
14) If the DS9481P-300# is not detected or connected to the USB port, the software displays an error message (Figure 10). Close the program window, reconnect the DS9481P-300# adapter and restart the program again.
15) Once properly installed, the initial screen graphical user interface (GUI) should appear (Figure 11).

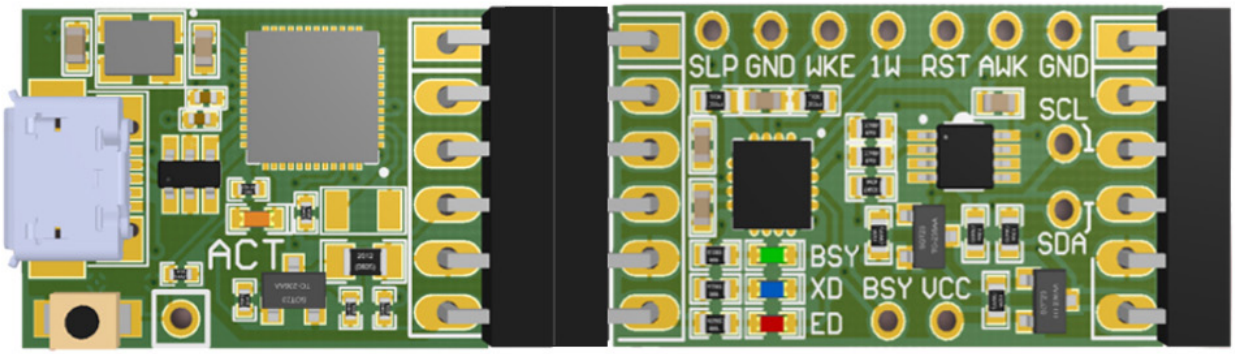

Figure 4. DS9481P-300 Attached with DS28E17 EV Kit

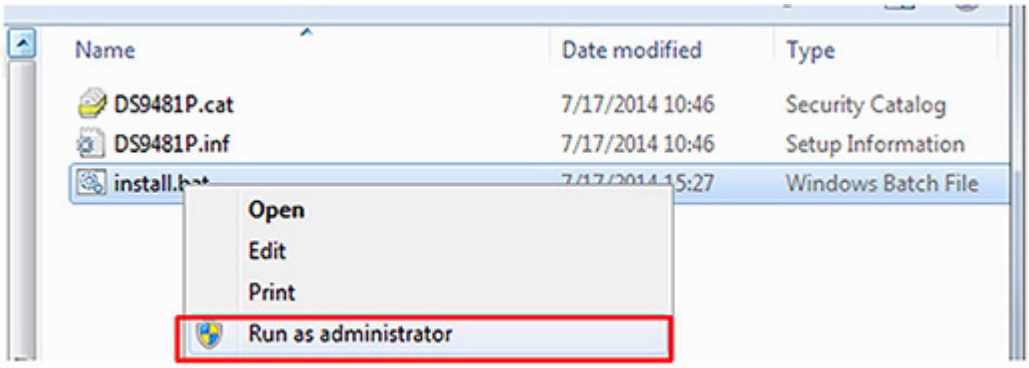

Figure 5. Device Driver Installation

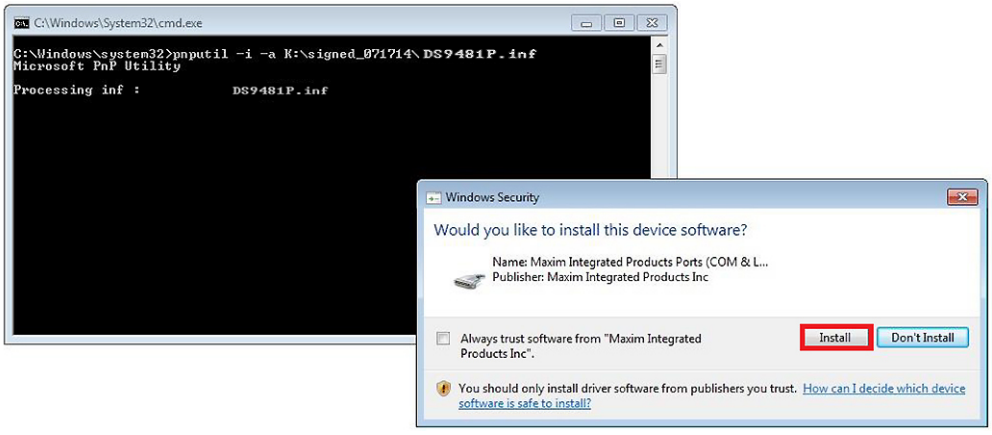

Figure 6. Device Driver (Install Device Software)

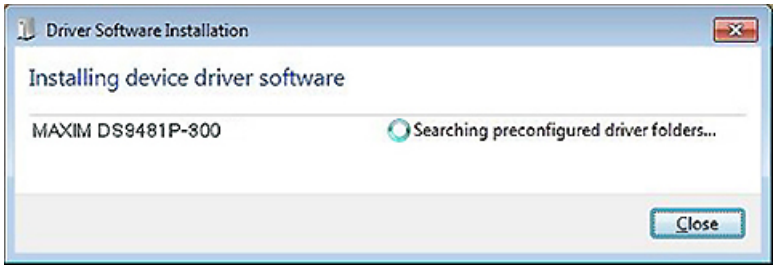

Figure 7. Device Driver Successfully Installed

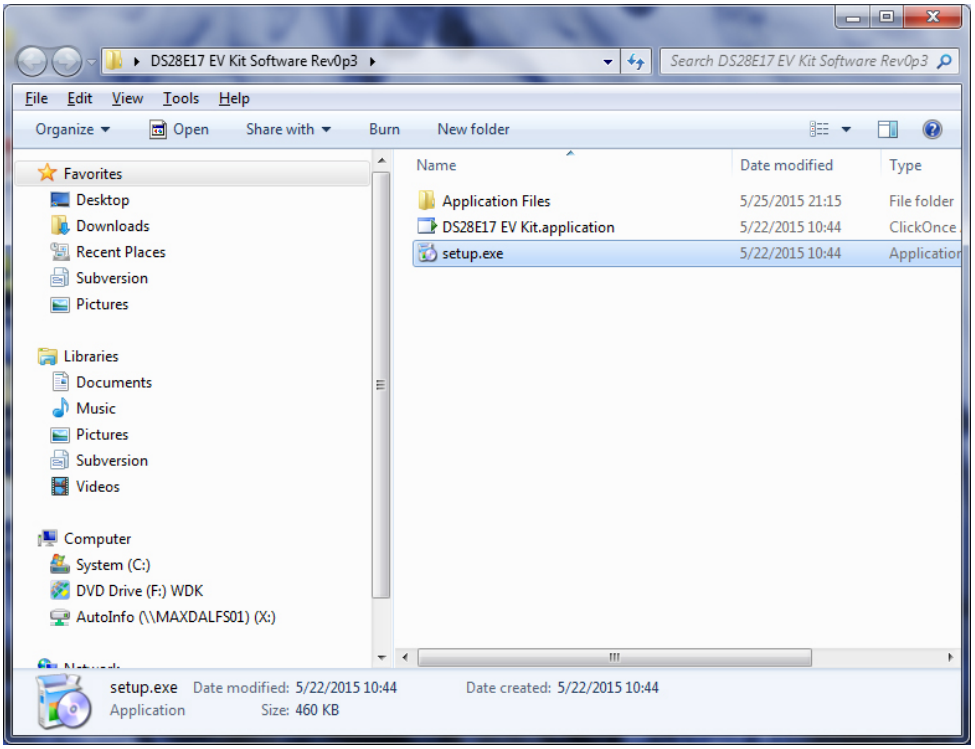

Figure 8. Opening the DS28E17 Evaluation Program Setup

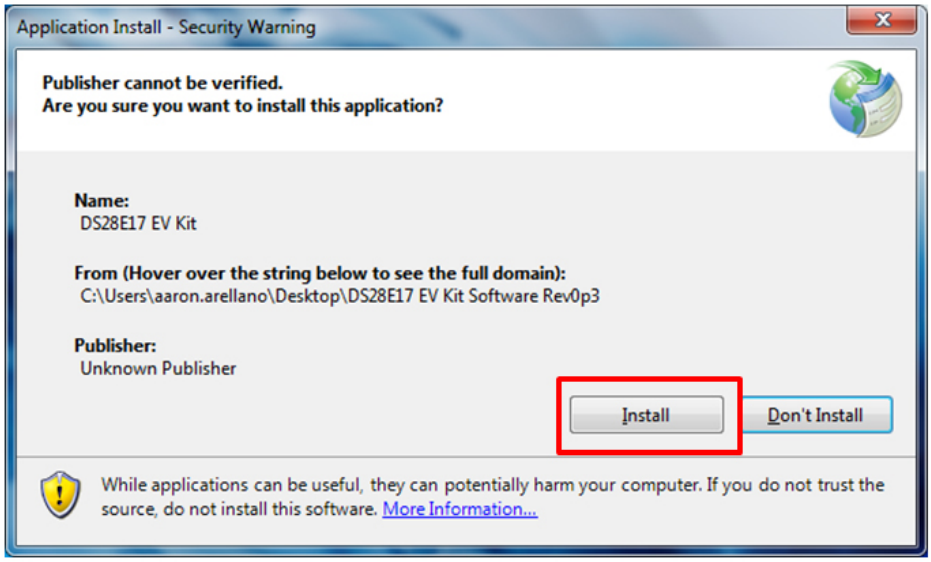

Figure 9. DS28E17 EV Kit Application Install

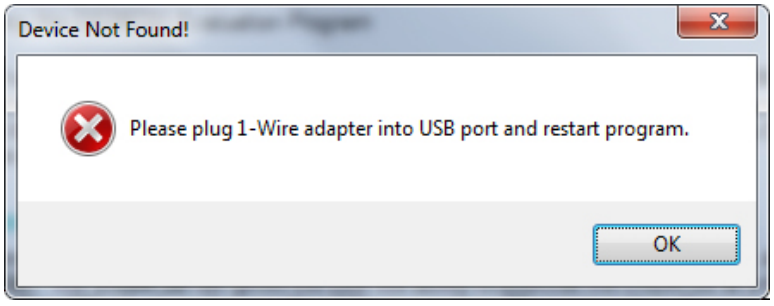

Figure 10. DS9481P-300# (Device Not Found!)

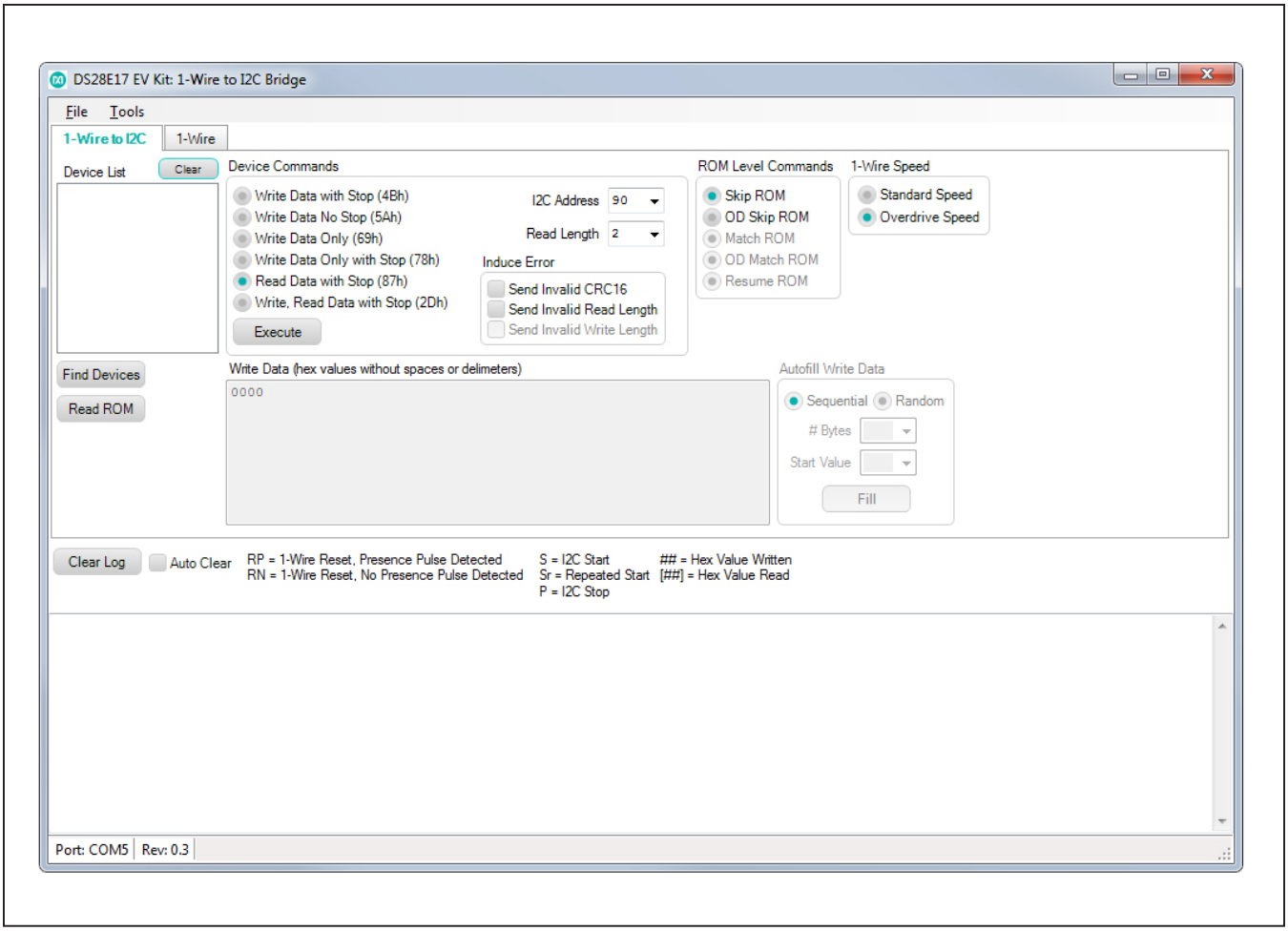

Figure 11. DS28E17 EV Kit Software Initial Screen GUI

Detailed Description of Software

The DS28E17 evaluation program user interface (Figure 12) has two tabs: **1-Wire to I2C** and **1-Wire**. The **1-Wire to I2C** tab (Figure 15) is the main tool to evaluate specific functions of the DS28E17. The **1-Wire** tab (Figure 16) provides 1-Wire communication functions down to the bit level. These functions allow manual creation of communication sequences beyond those found on the **1-Wire to I2C** tab.

File Menu Section

Exit closes the 1-Wire connection and exits the applications.

Tools Menu Section

The **Tools** menu provides all the connection information and settings required for 1-Wire transactions (Figure 13).

- **Read Device Revision** returns the DS28E17 revision.
- The **Set I2C Speed** selection sets the device's I2C communication speed. The DS28E17 supports three different I2C speeds: 100kHz, 400kHz, and 900kHz
- **Read I2C Speed** reads the current I2C communication speed set on the device registry.
- **Sleep:** This selection makes the device go into sleep mode. After selecting this option, the device no longer responds to any command until a high-level signal is detected on the WAKEUP pin. See Figure 14 for example log returns after **Sleep** condition.

The WAKEUP pin (shown as WKE) is located at the top of the EV kit board (Figure 1).

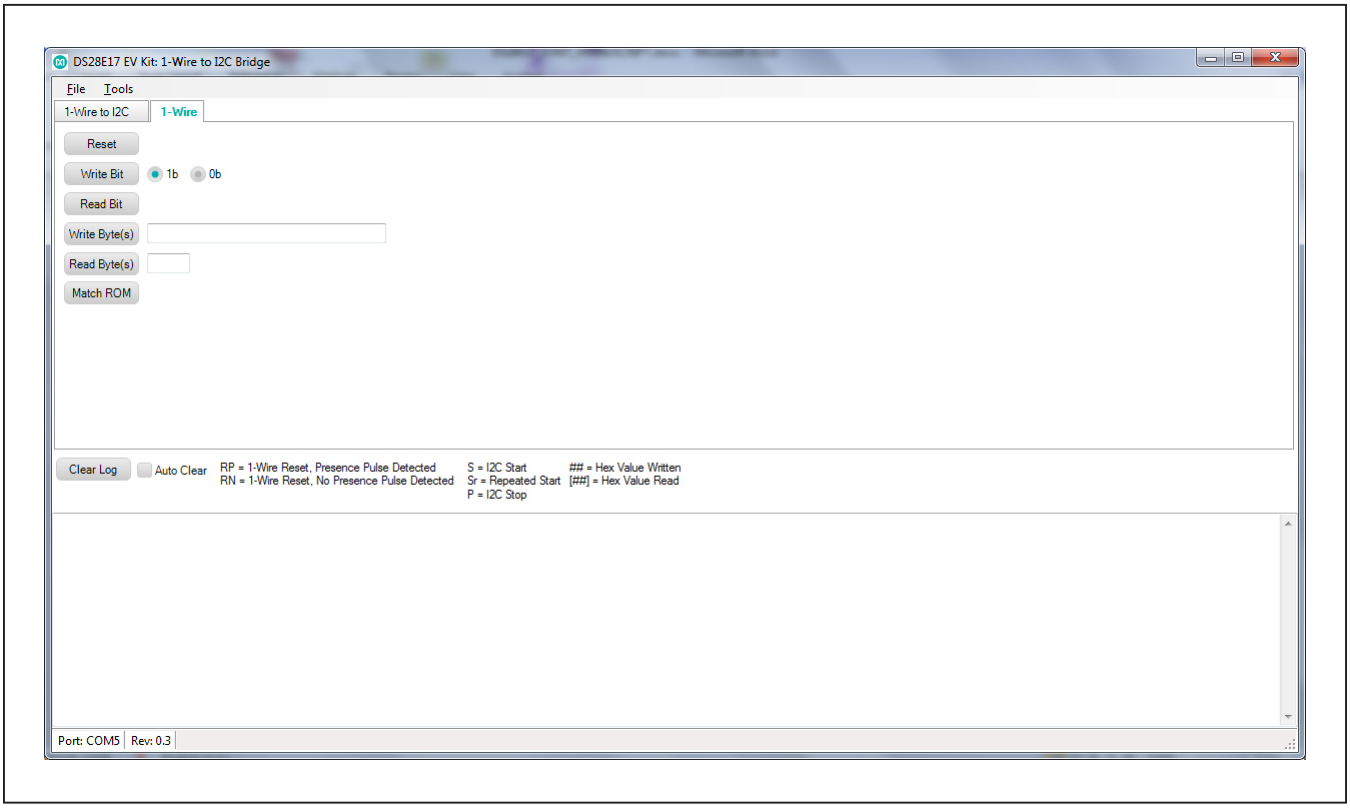

Figure 12. DS28E17 EV Kit Software, Main GUI Interface

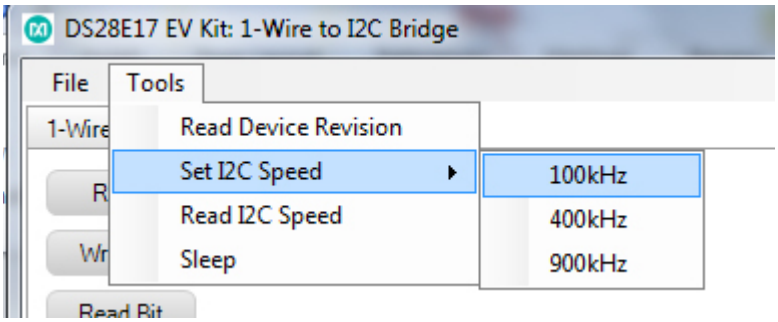

Figure 13. DS28E17 EV Kit Software GUI, Tools Menu

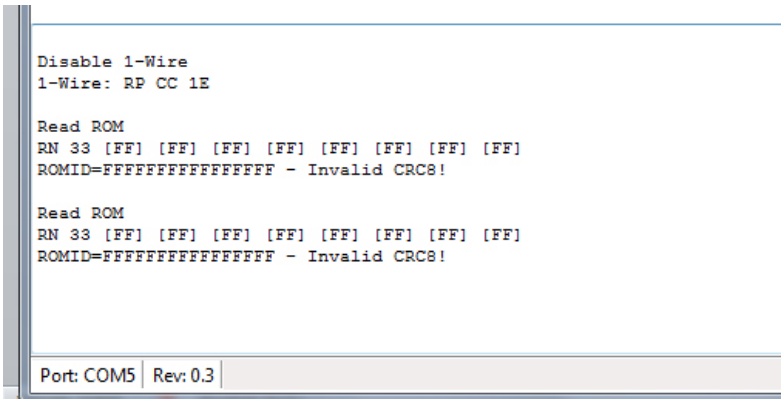

Figure 14. DS28E17 EV Kit Software GUI, Tools Menu (Sleep Condition Log Results)

1-Wire to I2C Tab

The **1-Wire to I2C** tab (Figure 15) provides the following elements: **Device List** text box, **Device Commands** group box, **ROM Level Commands** group box, **1-Wire Speed** group box, **Find Devices** and **Read ROM** buttons, **Write Data** edit box, **Autofill Write Data** group box, and **Log** section. Details for each element are explained next. The **Log** section displays the 1-Wire and 1-Wire-to-I2C communication commands. See Table 1 and Table 2.

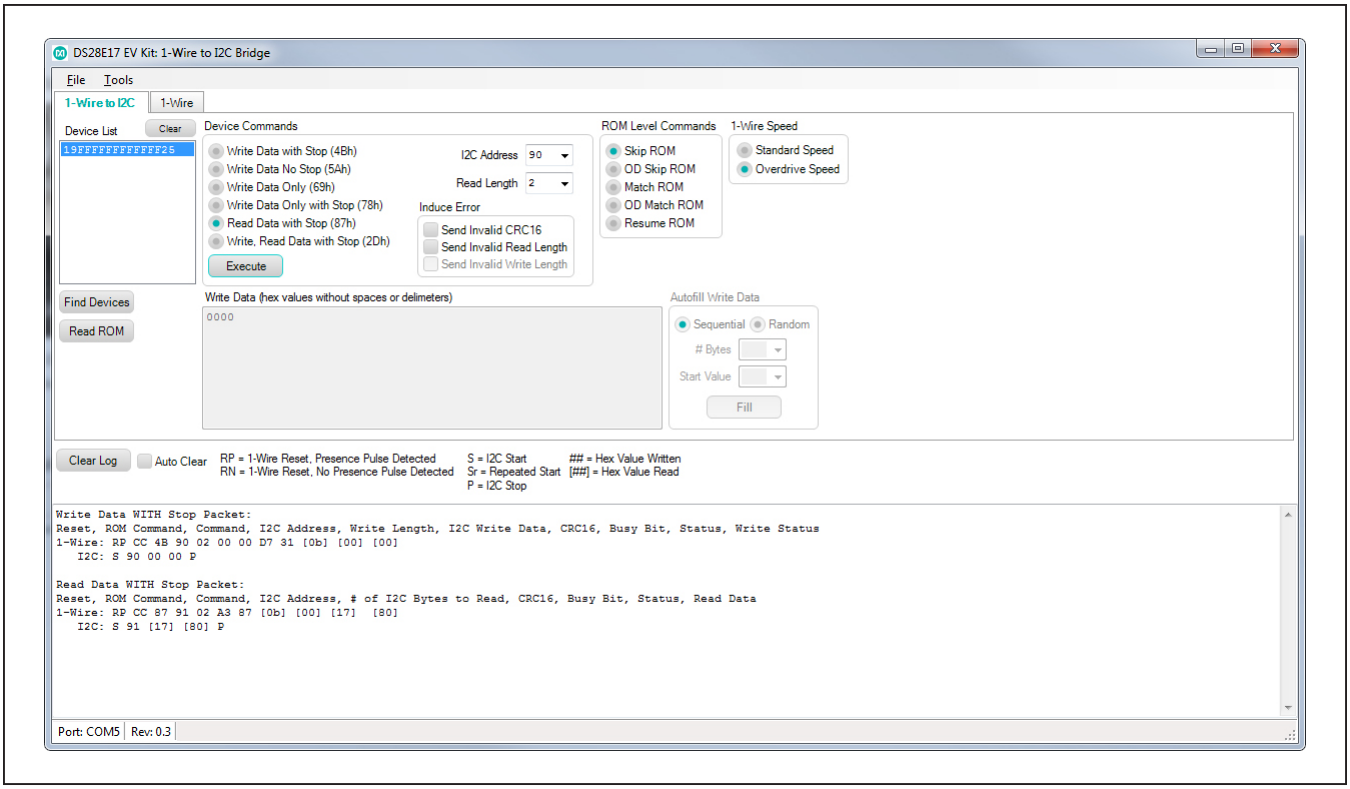

Figure 15. DS28E17 EV Kit Software GUI (1-Wire to I2C Tab)

Table 1. 1-Wire to I²C Options

ELEMENT NAME (TYPE)	PURPOSE	USAGE/SETTINGS
Device List (Text Box)	Display 1-Wire devices found	Displays the ROM ID for the attached devices on the 1-Wire bus. Used for **Match ROM** commands. **Match ROM** commands use the selected device under the **Device List** text box The data in this field is used with the ROM function action buttons to select a particular 1-Wire slave device. It is automatically filled when using the **Find Devices** button.
Find Devices (Action button)	Search for available devices attached to the 1-Wire line	Triggers the search command and adds discovered devices to the **Device List** text box.
Clear Log (Action button)	Clears the Log box	Clears all contents under the **Log** section.
Read ROM (Action button)	1-Wire command	Sends the 1-Wire reset followed by the **Read ROM** command (33h) and then reads the 64-bit ROM ID of the 1-Wire slave device. The CRC8 within the number is checked to validate the ROM IDs. A warning is logged if the CRC8 is not valid. The ROM ID is also loaded into the **Device List** text box to use with ROM commands.
Auto Clear (Checkbox)	Select if Log should be cleared each time a command is executed	This keeps a clean log, with only the last command executed displayed under the **Log** section.
Execute (button)	Executes the selected command	Issues the selected command to the DS28E17.

Table 2. Device Commands

ELEMENT NAME (TYPE)	PURPOSE	USAGE,SETTINGS
Write Data With Stop (4Bh) (Radio button)	I²C Write command	Sends an I²C packet command containing data and the stop command at the end of the data.
Write Data No Stop (5Ah) (Radio button)	I²C Write command	Addresses and writes 1 to 255 bytes to an I²C slave without completing the transaction with a stop. This command allows writing large amounts of data at one time when used in conjunction with the **Write Data Only** or **Write Data Only with Stop** device commands.
Write Data Only (69h) (Radio button)	I²C Write command	Used when a start and I²C address has previously been issued with a **Write Data No Stop** device command. This command writes 1 to 255 bytes to an I²C slave without completing the transaction with a stop and enables writing large amounts of data at one time when used with the **Write Data Only** or a last **Write Data Only with Stop** device commands.
Write Data Only with Stop (78h) (Radio button)	I²C Write command	Used when a start and I²C address has previously been issued with a **Write Data No Stop** device command. This command writes 1 to 255 bytes to an I²C slave, completing the transaction with a stop.
Read Data with Stop (87h) (Radio button)	I²C Write command	This is used to address and read 1 to 255 bytes from an I²C slave in one transaction.
Write, Read Data with Stop (2Dh) (Radio button)	I²C Write command	This is used to first address and write 1 to 255 bytes to an I²C slave. Secondly, it addresses and reads 1 to 255 bytes from an I²C slave and issues a stop.
I²C Address (Combo box)	I²C Slave address selection	To select the address of the I²C slave device for each transaction.
Read Length (Combo box)	Selection of bytes to read	Provides the total number of bytes desired to read. Option is disabled until a **Read Data** option is selected.
Induce Error	To test DS28E17 I/O states	This option includes three different error states to help monitor the device I/O pin states for each error (**Invalid CRC16**, **Invalid byte length**, and **Invalid Write length**). This selection helps the user understand the DS28E17 behavior after each error. For I/O states for each error, refer to the DS28E17 IC data sheet.

Table 3. 1-Wire Speed

ELEMENT NAME (TYPE)	PURPOSE	USAGE/SETTINGS
Standard Speed (Radio button)	1-Wire Speed	Indicates 1-Wire communication speed. The selected speed is also applicable when user selects the **1-Wire** tab.
Overdrive Speed (Radio button)	1-Wire Speed	Indicates 1-Wire communication speed. The selected speed is also applicable when user selects the **1-Wire** tab.

Table 4. Autofill Write Data

ELEMENT NAME (TYPE)	PURPOSE	USAGE/SETTINGS
Sequential (Radio button)	Write Data fill selection	Fills the **Write Data** edit box with bytes in a sequential order. Requires user to select the **# Bytes** to be written and the **Start Value**.
Random (Radio button)	Write Data fill selection	Fills the **Write Data** edit box with bytes in a random order. Requires user to select the **# Bytes** to be written and the **Start Value**.

Table 5. ROM Level Commands

ELEMENT NAME (TYPE)	USAGE/SETTINGS
Skip ROM (Radio button)	Sends a 1-Wire reset followed by the CCh Skip ROM command. This selects all devices on the 1-Wire bus.
OD Skip ROM (Radio button)	Sends a 1-Wire reset followed by the 3Ch Overdrive Skip ROM command. This sets all devices on the 1-Wire bus to Overdrive speed. The **1-Wire Speed** section will display the current device's speed. The **ROM Level commands** will display the next available command. To bring back device to standard speed under the **1-Wire Speed**, select **Standard Speed**.
Match ROM (Radio button)	Sends the 1-Wire reset followed by the Match ROM command 55h followed by the 8 bytes of the ROM ID in the ROM to use with ROM commands. Requires to previously use the **Find Devices** button to read device ROM ID and use the selected ROM ID for the match rom sequence.
OD Match ROM (Radio button)	Sends the 1-Wire reset followed by the Overdrive Match ROM command (69h), followed by the 8 bytes of the ROM ID in the ROM to use with ROM commands. Requires to previously use the **Find Devices** button to read device ROM ID and use the selected ROM ID for the match ROM sequence. The initial selection will set the device in overdrive speed. The **1-Wire Speed** section displays the current device's speed. The **ROM Level Commands** displays the next available command. To bring back device to standard speed under the **1-Wire Speed**, select **Standard Speed**.
Resume ROM (Radio button)	Sends a 1-Wire reset followed by the Resume command A5 (hex).

1-Wire Tab

The **1-Wire** tab (Figure 16) provides the low-level 1-Wire primitives that can be used to construct any 1-Wire communication sequence. Choices made in the **1-Wire Speed** group box under the **1-Wire to I2C** tab (**Standard Speed** and **Overdrive Speed** only) also apply to ROM-level functions. The **ROM Level** section has functions that implement the 1-Wire ROM function commands, which use the 64-bit ROM ID selected under the **Device List** in the **1-Wire to I2C** tab.

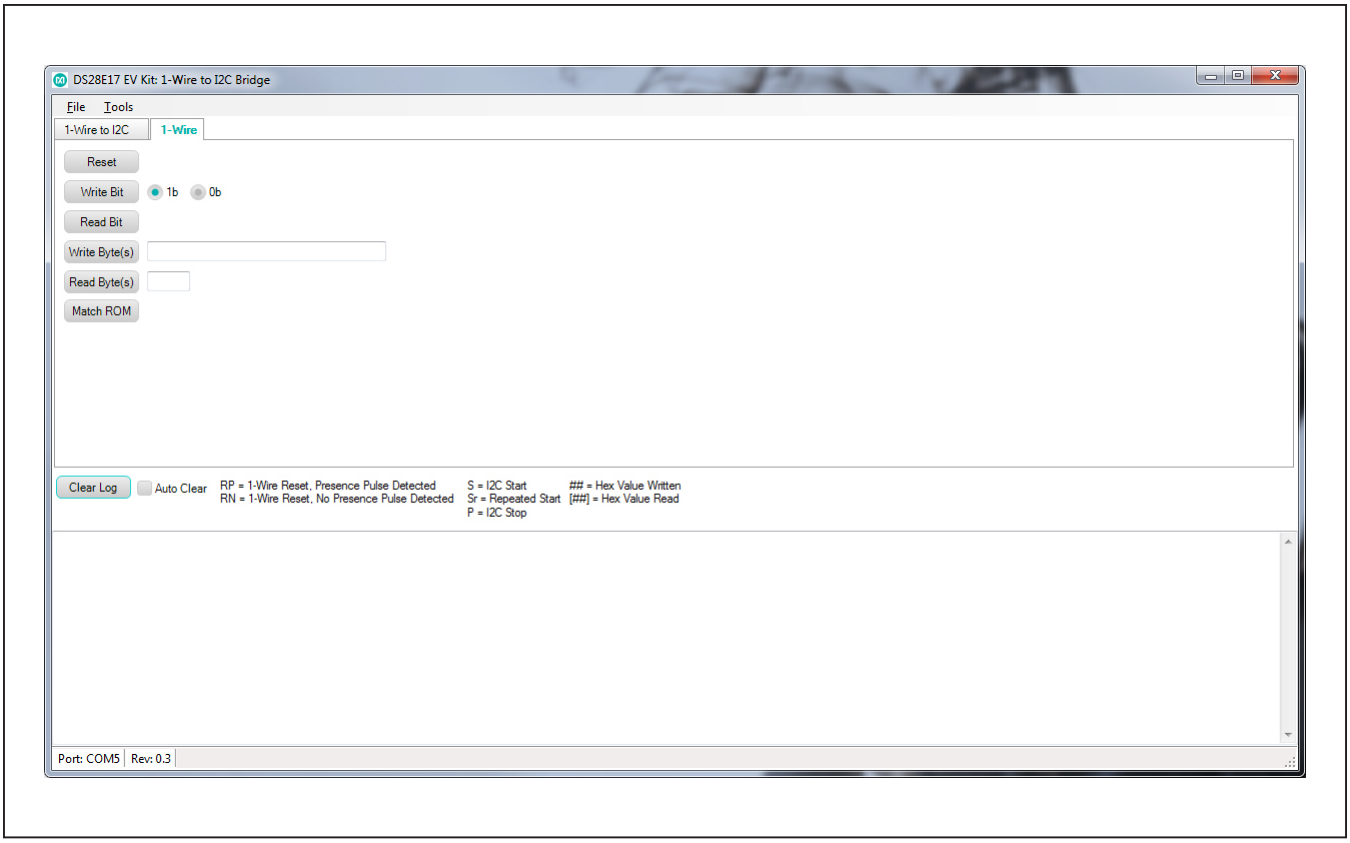

Figure 16. DS28E17 EV Kit Software GUI (1-Wire Tab Functions)

Table 6. 1-Wire Tab

ELEMENT NAME (TYPE)	DESCRIPTION
Reset (Action button)	Generates a 1-Wire reset at the speed specified in the toggle button.
Write Bit (Action button)	Generates a write time slot on the 1-Wire bus. Bit sent is specified in the logic 1 **(1b)** or logic 0 **(0b)** toggle button.
Read Bit (Action button)	Generates a read-data time slot on the 1-Wire bus.
Write Byte(s) (Action button)	Transmits the bytes displayed in the Write Bytes data input box on the 1-Wire bus.
Read Byte(s) (Action button)	Reads as many bytes from the 1-Wire bus as specified by the Number of Bytes to Read counter.
Standard Speed/ Overdrive Speed (Toggle button)	Defines the speed to be used for 1-Wire communication.

Table 7. Communication Log Decoder

CODE	1-WIRE ACTIVITY	DESCRIPTION
RP	Presence Pulse Detected	The 1-Wire master generates a Reset pulse and receives a Presence pulse.
RN	No Presence Pulse Detected	The 1-Wire master generates a Reset pulse and does not receive a Presence pulse.
S	None	I²C Start
Sr	None	Repeated Start
P	None	I²C Stop
##	None	Hex value written
[##]	None	Hex value read

DS7505 I²C Temperature Sensor Example

The EV kit board includes a DS7505 I²C sensor for demo purposes. Additional I²C devices can also be attached to the end of the DS28E17 board.

The DS7505 IC data sheet is available for download at **www.maximintegrated.com**.

Reading Temperature from DS505

Follow the steps below to read temperature from the DS505:

1) Click the **Find Devices** button.
2) In the **Device Commands** group box, click the **Write Data with Stop (4Bh)** radio button.
3) In the **I2C Address** combo box, type or select **90** to set the I²C slave address to 90h.
4) Inside the **Write Data** edit box, type **0000**.
5) Click the **Execute** button.
6) The **Log** section will display the 1-Wire and I²C transaction.
7) In the **Device Commands** group box, click the **Read Data with Stop (87h)** radio button.
8) The **Read Length** combo box is enabled.
9) Type or select 2 to set the read length to 2 bytes.
10) For more information regarding temperature readings, refer to the *Operation—Measuring Temperature* section in the DS2705 IC data sheet.

Temperature Readings Results

- Four bytes are returned on the 1-Wire line. These bytes represent the Status byte, Write Status, and two I²C bytes from the device. Refer to the DS28E17 IC data sheet for more details.
- The two I²C bytes received ([17] [80]) denote the device temperature, 23.5°C (see Figure 15).
- The DS7505 power-up default is configured for 9-bit resolution.
- 1780h in binary represents 0001 0111 1000 0000. Following Figure 17, the temperature can be calculated.

The DS7505 IC data sheet provides exact temperature calculation procedures and device-specific operation.

Other I²C devices can be read using the extension port on the DS28E17 EV kit boards. See Figure 1 for pin selection.

	Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit 9	Bit 8
MS Byte	S	2^6	2^5	2^4	2^3	2^2	2^1	2^0
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
LS Byte	2^{-1}	2^{-2}	2^{-3}	2^{-4}	0	0	0	0

Figure 17. Temperature Reading Registry

Detailed Description of Hardware

DS28E17 EV Kit Component List, PCB Layout, and Schematic

See the following links for component information, schematic diagrams, and PCB layouts:

- **DS28E17 EV kit BOM**
- **DS28E17 schematic**
- **DS28E17 PCB**
- **DS9481P-300 BOM**
- **DS9481P-300 schematic**
- **DS9481P-300 PCB**

Table 8. DS28E17 EV Kit Pinout

SIGNAL NAME	DESCRIPTION
SLP	Input pin to place the device into sleep mode
GND	Ground
WKE	Input pin to wake the device after the sleep command
1W	1-Wire I/O pin
RST	Input reset device
AWK	Output pin to enable the external I^2C device
BSY	I^2C busy pin
SDA	I^2C data output pin
SCL	I^2C clock output pin
VCC	I^2C V_{CC} Output

Table 9. PCB Layout Diagrams (Color Legend)

COLOR	DESCRIPTION
Red	Top metal layer
Green	Top silkscreen
Brown	Bottom silkscreen
Blue	Bottom metal layer
Grey	All metal layers
Purple	Board outline

Ordering Information

PART	TYPE
DS28E17K#	EV System

#Denotes RoHS compliant.

Troubleshooting Guide

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Cannot communicate through the 1-Wire adapter	PC port hardware is not functioning properly.	Does the port work with other applications, such as a keyboard or mouse? If not, contact the motherboard vendor for BIOS updates or new drivers.
	1-Wire adapter is not functioning.	Try the 1-Wire adapter on another PC. If the problem persists, use a different 1-Wire adapter or order a new adapter of this type.
	Adapter type selected is not what is connected.	Run the Default 1-Wire Net application and select the correct adapter type and/or port number.

Appendix A: Extended Setup Guide

Installing the DS9481P-300# and 1-Wire Drivers

The DS9481P-300# adapter also requires 1-Wire drivers to operate the 1-Wire port. Unless you have been using 1-Wire devices before (e.g., with a different adapter), the drivers need to be installed before this EV kit can function. Follow the steps below to install the 1-Wire Drivers software package. For installation details, refer to Tutorial 4373: *OneWireViewer and iButton Quick Start Guide, available at* **www.maximintegrated.com/en/app-notes/index.mvp/id/4373**.

1) To download the 1-Wire Drivers software package, visit **www.maximintegrated.com/en/products/comms/one-wire/software-tools/drivers.html**. Click the button that takes you to the **Download Page**. Select the applicable version of the Windows operating system and select the file that corresponds to your PC's configuration (e.g., 32-Bit 1-Wire Drivers or 64-Bit 1-Wire Drivers) and then click the **Download** button. The web page provides assistance on how to detect whether your PC runs a 32-bit or 64-bit operating system.
2) Select **Run** when prompted with the question **Do you want to run or save this file?**
3) Select **Run** when you get a security warning that reads **Do you want to run the software?**
4) Read and check the box if you accept the license agreement. Click **Install**.
5) Click the **Finish** button to exit the **Setup Wizard**.
6) Now return to the Procedure section and execute Step 2.

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	6/15	Initial release	—

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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.

DS28E17 EV Bill of Materials (BOM) (Rev 0, 6/15)

Color legend -->	
	Do Not Populate
	0805 capacitor
	1206 capacitor
	TBD

25 characters	35 characters		35 characters	35 characters	QA	20						Leave Blank		60 characters	This section will be deleted prior to Data Base upload					
Parent Number	Parent Description	Item	Component Part	Component Description	Part Status	QTY Per	TTL	KITTED	DELTA	Eff Start Date	Eff Close Date	To Sec	Issuing Store	Remarks Designators)	# of Char	Manufacturer Part Number	Comments- Assembly Notes	RoHS/L Y =	* = Sampled Component	Datasheet URL
DS28E17EVKIT#	DS28E17 EV Kit	0001		DS28E17 EV Kit PCB		1	20		(20)					DS28E17EVKIT#	OK	DS28E17EVKIT#	Batangas to procure			
		0001	Internal Part Number	Description		Quantity								Designator		Part Number	Vendor Part Number			Datasheet URL
		0003		Do Not Populate		1	20		(20)					C2	OK					
		0004		LED INGAN GREEN CLEAR 0603 SMD		1	20		(20)					D1	OK	598-8081-107F	350-2036-1-ND			http://media.digikey.com/pdf/Data%20Sheets/Dialight%20PDFs/598_Series_0603_Pkg.pdf
		0005		LED CHIPLED BLUE 470NM 0603 SMD		1	20		(20)					D2	OK	LB Q39G-L2N2-35-1	475-2816-1-ND			http://media.digikey.com/pdf/Data%20Sheets/Osram%20PDFs/LB_LT%20Q39G.pdf
		0006		LED RED RECT CLEAR 0603		1	20		(20)					D3	OK	LTST-C193KRKT-5A	160-1830-1-ND			http://optoelectronics.liteon.com/upload/download/DS22-2005-077/S_110_LTST-C193KRKT-5A.pdf
		0007	EH0277	CONN HEADER .100 SINGL R/A 6POS		1	20		(20)					J1	OK	PBC36SBAN	S1111E-36-ND			http://www.sullinscorp.com/catalogs/77_PAGE108-109_.100_MALE_HDR.pdf
		0008		CONN RCPT .100" 6POS R/A SGL TIN		1	20		(20)					J2	OK	SSW-106-02-T-S-RA	82P3428			http://www.farnell.com/datasheets/1596304.pdf
		0009	EQ1054	P-MOSFET - PMV65XP		1	20		(20)					Q1	OK	PMV65XP,215				http://www.nxp.com/documents/data_sheet/PMV65XP.pdf
		0010	EQ0745	MOSFET N-CH 50V 200MA SOT-23		1	20		(20)					Q2	OK	BSS138LT1G				http://www.onsemi.com/pub_link/Collateral/BSS138LT1-D.PDF
		0011	ER1077	RES SMD 0.0 OHM JUMPER 1/10W		3	60		(60)					R1, R4, R5	OK	ERJ-3GEY0R00V	P0.0GTR-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ3GEY0R00V+7+WW
		0012	ER0506033301	RES SMD 3.3K OHM 5% 1/10W 0603		4	80		(80)					R2, R3, R8, R9	OK	ERJ-3GEYJ332V	P3.3KGTR-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ3GEYJ332V+7+WW
		0013	ER0506036801	RES SMD 6.8K OHM 5% 1/10W 0603		1	20		(20)					R6	OK	ERJ-3GEYJ682V	P6.8KGTR-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ3GEYJ682V+7+WW
		0014	ER0506031003	RES SMD 100K OHM 5% 1/10W 0603		2	40		(40)					R7, R11	OK	CRCW0603100KJNEA	541-100KGCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0015	ER0506031001	RES SMD 1K OHM 5% 1/10W 0603		2	40		(40)					R10, R12	OK	CRCW06031K00JNEA	541-1.0KGCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0016	EH0072	CONN HEADER 1POS .100 VERT GOLD		11	220		(220)					TP1 - TP11	OK	0022284363	WM50016-36-ND			http://www.molex.com/pdm_docs/sd/022284363_sd.pdf
		0017		1-Wire to I2C Master Bridge		1	20		(20)					U1	OK		Dallas will supply			
		0018		Digital Thermometer and Thermostat		1	20		(20)					U2	OK	DS7505U+				
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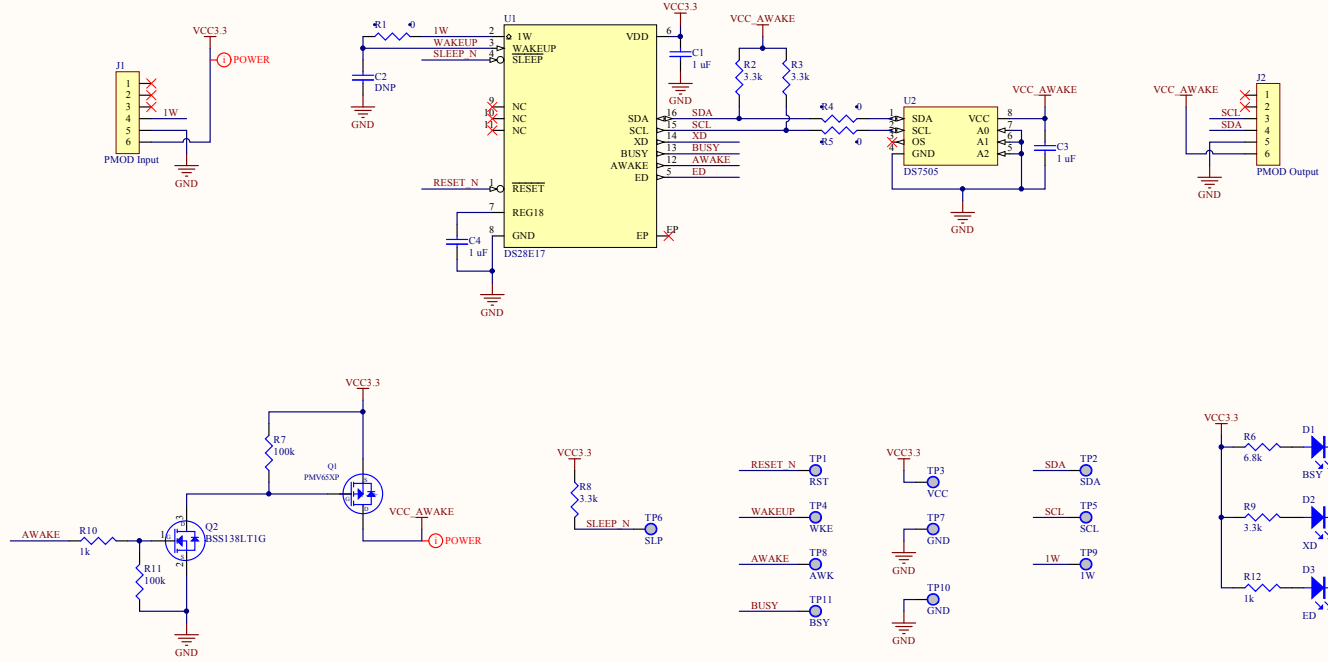

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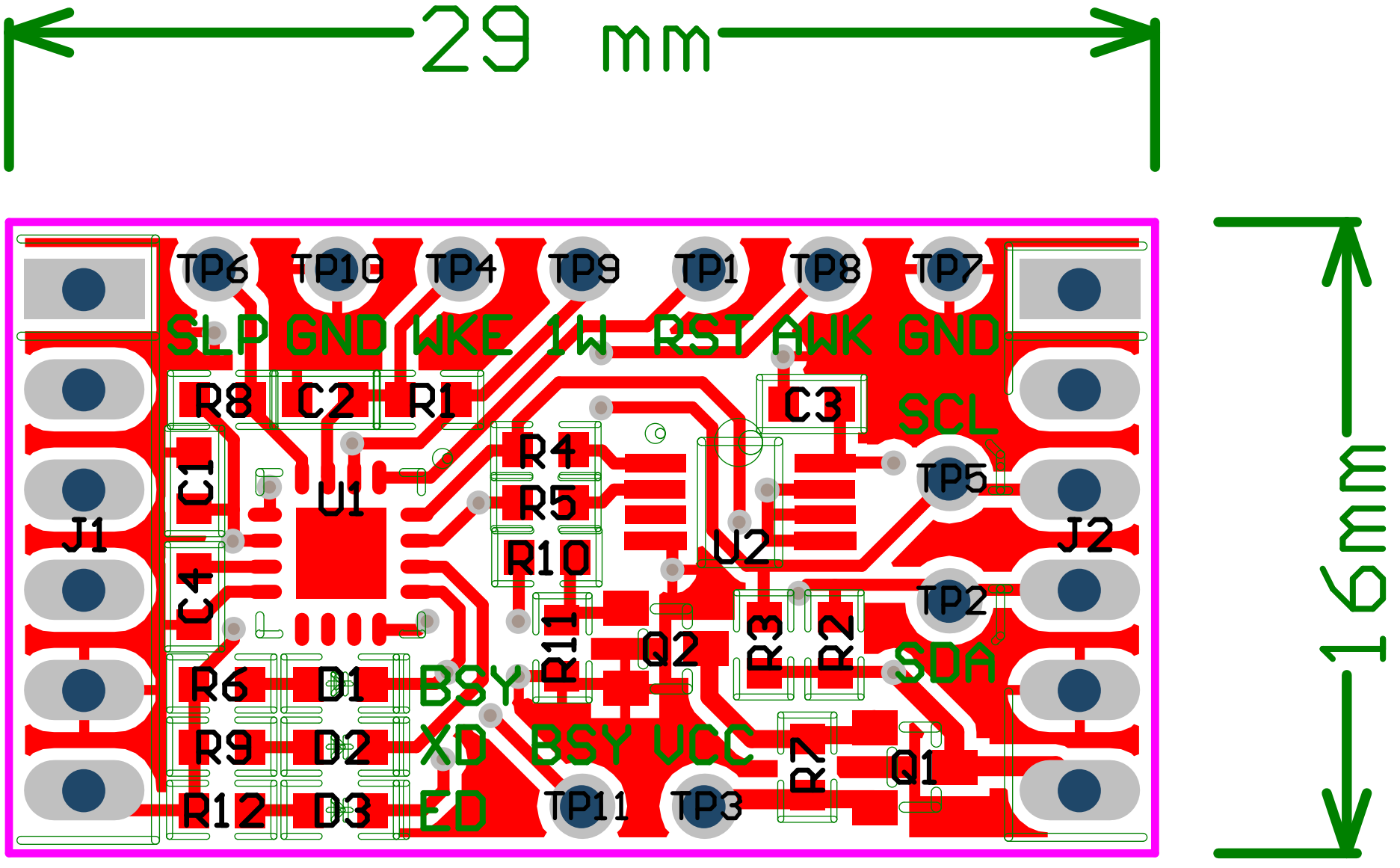
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TP5
J1
R10
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J2
C4
TP2
R11
Q2
R3
R2
SDA
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D1
BSY
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DS9481P-300# - Rev2

Prepared by:

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	Do Not Populate
	0805 capacitor
	1206 capacitor
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Parent Number	Parent Description	Item	Component Part	Component Description	Part Status	QTY Per	TTL	KITTED	DELTA	Eff Start Date (Primary Part)	Eff Close Date (Alternate Part)	To Seq	Issuing Store	Remarks (Reference Designators)	# of Char	Manufacturer Part Number	Comments- Assembly Notes	RoHS/L Y = Lead-free & RoHS Compliant	* = Sampled Component	Datasheet URL
DS9481P-300#		0001		DS9481P-300# PCB		1	20		(20)					DS9481P-300#	OK	DS9481P-300#	Batangas to procure			
		0002	EC1065	CAP CER 1UF 6.3V 20% X5R 0402		7	140		(140)					C1, C2, C4, C7, C9, C11, C12	OK	C1005X5R0J105M050BB	445-1415-1-ND			http://product.tdk.com/en/catalog/datasheets/mlcc_commercial_general_en.pdf
		0003	EC1458B	CAP CER 0.1UF 6.3V 10% X5R 0402		4	80		(80)					C3, C8, C10, C13	OK	C0603C104K4RACTU, C1005X5R0J1	445-1266-2-ND			http://product.tdk.com/en/catalog/datasheets/mlcc_commercial_general_en.pdf
		0004	EC0976	CAP CER 10PF 50V C0G 0603		2	40		(40)					C5, C6	OK	C1608C0G1H100D080AA	445-1269-1-ND			http://product.tdk.com/en/catalog/datasheets/mlcc_commercial_general_en.pdf
		0005	EH1498	CONN RCPT STD MICRO USB TYPE B		1	20		(20)					CN1	OK	10103594-0001LF	609-4050-1-ND			http://portal.fciconnect.com/Comergent//fci/drawing/10103594.pdf
		0006	ED1021	LED ORANGE HIGH BRIGHT USS 0603		1	20		(20)					D1	OK	LNJ826W83RA	P13487CT-ND			http://www.semicon.panasonic.co.jp/ds4/LNJ826W83RA_E.pdf
		0007		FERRITE CHIP 220 OHM 2200MA 0603		2	40		(40)					FB1, FB2	OK	BLM18KG221SN1D	490-5255-1-ND			http://search.murata.co.jp/Ceramy/image/img/PDF/ENG/L0110S0100BLM18K.pdf
		0008		CONN RCPT .100" 6POS R/A SGL TIN		1	20		(20)					J1	OK	SSW-106-02-T-S-RA	82P3428			http://www.farnell.com/datasheets/1596304.pdf
		0009	EQ0219	N MOSFET - 2N7002		1	20		(20)					Q1	OK	2N7002-7				http://www.diodes.com/datasheets/ds11303.pdf
		0010	EQ1054	P-MOSFET - PMV65XP		1	20		(20)					Q2	OK	PMV65XP,215				http://www.nxp.com/documents/data_sheet/PMV65XP.pdf
		0011	ER05060310R0	RES SMD 10 OHM 5% 1/10W 0603		1	20		(20)					R1	OK					
		0012	ER0504021501	RES SMD 1.5K OHM 5% 1/16W 0402		1	20		(20)					R2	OK	CRCW04021K50JNED	541-1.5KJCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0013	ER0104021003	RES SMD 100K OHM 1% 1/16W 0402		3	60		(60)					R3, R6, R7	OK	CRCW0402100KFKED	541-100KLCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0014	ER0104023242	RES SMD 32.4K OHM 1% 1/16W 0402		1	20		(20)					R4	OK	CRCW040232K4FKED	541-32.4KLCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0015	ER0504024701	RES SMD 4.7K OHM 5% 1/10W 0402		1	20		(20)					R5	OK	ERJ-2GEJ472X	P4.7KJTR-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ2GEJ472X+7+WW
		0016	ER0504021001	RES SMD 1K OHM 5% 1/16W 0402		1	20		(20)					R8	OK	CRCW04021K00JNED	541-1.0KJCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0017	ER0504022201	RES SMD 2.2K OHM 5% 1/10W 0402		1	20		(20)					R9	OK	ERJ-2GEJ222X	P2.2KJTR-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ2GEJ222X+7+WW
		0018	ER0104024990	RES SMD 499 OHM 1% 1/16W 0402		1	20		(20)					R10	OK	CRCW0402499RFKED	541-499LCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0019	ER0108054R99	RES SMD 4.99 OHM 1% 1/8W 0805		1	20		(20)					R11	OK	CRCW08054R99FKEA	541-4.99CCCT-ND			http://www.vishay.com/docs/20035/dcrcwe3.pdf
		0020	ER0504026800	RES SMD 680 OHM 5% 1/10W 0402		1	20		(20)					R12	OK	ERJ-2GEJ681X	P680JCT-ND			http://industrial.panasonic.com/www-cgi/jvcr13pz.cgi?E+PZ+3+AOA0001+ERJ2GEJ681X+7+WW
		0021		Do Not Populate		2	40		(40)					R13, R14	OK					
		0022	EH1032	PTC Fuse 1206		1	20		(20)					RT1	OK	MF-NSMF012-2				http://www.bourns.com/data/global/PDFs/MFNSMF.pdf
		0023	EH1359	SWITCH TACTILE SPST-NO 0.05A 12V		1	20		(20)					S1	OK	B3U-1000P	SW1020CT-ND			http://www.components.omron.com/components/web/PDFLIB.nsf/0/2DD3893C7DD33E9E862572900079E9D6/$file/B3U_1110.pdf
		0024		Security Token Microcontroller with RTC and USB		1	20		(20)					U1	OK	MAXQ1010-A01+				
		0025		High PSRR, Low-Dropout, 150mA Linear Regulator		1	20		(20)					U2	OK	MAX8891EXK33+				http://datasheets.maximintegrated.com/en/ds/MAX8891-MAX8892.pdf
		0026		Dual High-Speed Differential ESD-Protection IC		1	20		(20)					U3	OK	MAX3207EAUT+				http://datasheets.maximintegrated.com/en/ds/MAX3205E-MAX3208E.pdf
		0027		40ns Single-Supply Comparator		1	20		(20)					U4	OK	MAX9140AAXK+				http://datasheets.maximintegrated.com/en/ds/MAX9140-MAX9144.pdf
		0028		4 Channel +/- 30kv ESD Protector		1	20		(20)					U5	OK	MAX13204EALT+				http://datasheets.maximintegrated.com/en/ds/MAX13202E-MAX13208E.pdf
		0029		CRYSTAL 12MHZ 10PF SMD		1	20		(20)					X1	OK	FA-238V 12.0000MB-K3	SER3682TR-ND			http://www.eea.epson.com/portal/pls/portal/docs/1/1729491.PDF
		0030		Do Not Populate		1	20		(20)					X2	OK					
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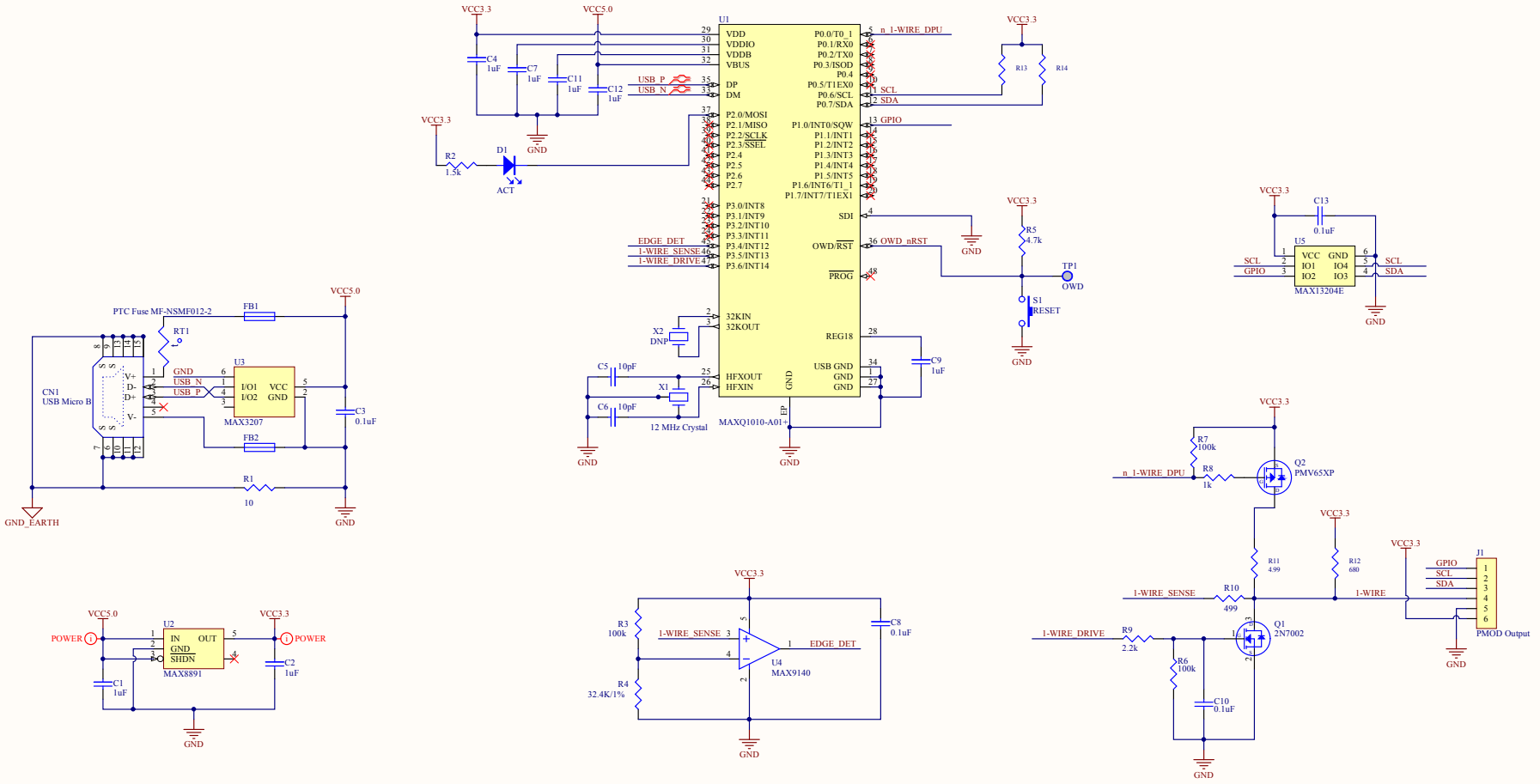

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Date: 6/19/2015		Sheet **1** of **1**	
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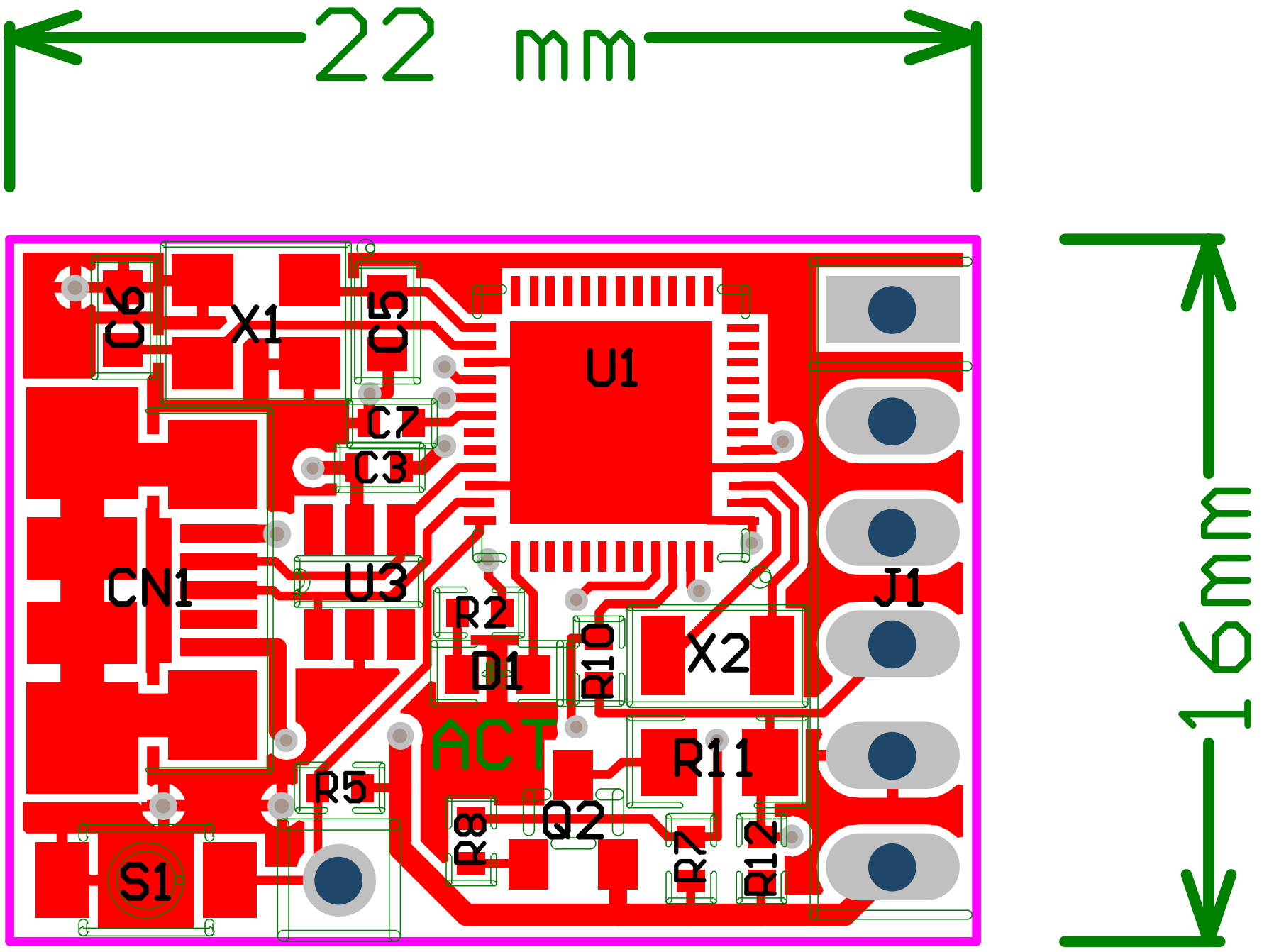
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Q2
R7
R12
S1

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

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Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

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ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

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FORSTAR®

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Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А