DALLAS *SEMICONDUCTOR* **MAXIM**

DS9090K
1-Wire Memory Evaluation Kit

www.maxim-ic.com

GENERAL DESCRIPTION

The DS9090K provides the HW and SW necessary to evaluate and operate 1-Wire® memory products in an easy to use PC environment. All 1-Wire EEPROM, EPROM, and ROM devices are supported. Memory contents can be read or written as necessary for device evaluation purposes or to support end product development activity. Kit operation requires a host PC and the SW defaults to a Win32 platform (Windows® XP, 2000, ME, 98, or 95). Other operating systems are supported through a Java™ API, see details under *Software Installation*.

EVALUATION KIT CONTENTS

1 pc. 1-Wire Memory Device Evaluation Board
1 pc. DS9097U-E25 1-Wire Universal Serial Adapter
        with EPROM Programming
1 pc. DS2430A 256-bit 1-Wire EEPROM (T092
        Package)
1 pc. DS2431 1024-bit 1-Wire EEPROM (T092
        Package)
1 pc. DS2432 1-kbit Protected 1-Wire EEPROM with
        SHA-1 Secure Authentication (TSOC Package)
1 pc. DS2433 4-kbit 1-Wire EEPROM (PR35
        Package)
1 pc. DS2502 1-kbit EPROM (T092 Package)
1 pc. DS2505 16-kbit EPROM (T092 Package)
1 pc. DS2506 64-kbit EPROM (PR35 Package)
1 pc. DS2401 64-bit Silicon Serial Number (T092
        Package)
1 pc. RJ11 Male to RJ11 Male Cable 7 ft.

ORDERING INFORMATION

Part Number: DS9090K

EQUIPMENT NEEDED

1. IBM compatible PC running Windows XP, 2000, ME, 98, or 95
2. 25-pin to 9-pin serial port adapter (if necessary)
3. +12V power source to program EPROM devices

TYPICAL SETUP

1-Wire is a registered trademark of Dallas Semiconductor.
Windows is a restered trademark of Microsoft Corp.
Java is a trademark of Sun Microsystems.

SETUP AND INSTALLATION

Hardware Installation

Connect the DS9097U-E25 1-Wire adapter to the computer's serial port. If the computer does not have a 25-pin serial port, a 9-pin to 25-pin serial port converter may be necessary. These are typically available at computer or electronic stores.

To program DS250x EPROM devices a 12V DC power adapter or other +12V supply is needed. This is plugged into the 2.1mm power jack on the DS9097U-E25 adapter. These are available at most electronic supply stores. See the DS9097U-E25's Data Sheet for power-supply specifications, recommended power supply models and the polarity requirements of the 2.1mm power jack. Note that non-EPROM devices cannot be inserted in the evaluation board when programming EPROM devices. The 12-volt programming pulse that is seen on the 1-Wire bus during programming of EPROM devices will damage non-EPROM devices.

Insert the 1-Wire chip of interest into one of the evaluation board sockets. See pictures below showing proper chip insertion/orientation.

TO92/PR35 Package Insertion
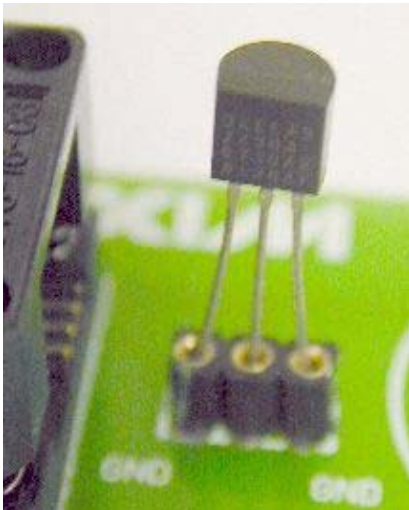
TSOC Package Insertion

Connect the evaluation board to the PC with the supplied RJ-11 to RJ-11 cable. To do this, one end of the cable should be plugged into the evaluation board and the other end into the DS9097U-E25.

Software Installation

Install the latest 1-Wire Drivers package (http://www.ibutton.com/software/tmex/). These drivers require a Win32 platform such as Windows XP, 2000, ME, 98, or 95. The installation program will prompt the user to select a default 1-Wire network adapter. Choose the DS9097U tab and the COM port number correlating to that being used (usually 1, 2, or 3). This also can be chosen after installation by running the "Default 1-Wire Net" program that gets installed with the drivers. For Linux and other operating system platforms, support for the DS9097U-E25 1-Wire adapter can be installed through RXTX (or other equivalent software packages compliant with the Java Communications API). See the OneWireViewer page for pre-built RXTX libraries for Linux.

Click on "Start->Programs->1-Wire Drivers". Then click on the OneWireViewer icon. This will bring up a webpage with information on how to install the OneWireViewer.

Run the OneWireViewer. Once running the 64-bit ROM ID value of the 1-Wire chip should be displayed on your PC in the Viewer. Select the address of the chip and other tabs should be made available that contain functionality to exercise the chip (i.e., read and write data, files, etc.).

KIT OPERATION

Connect the evaluation board to the PC, making sure it contains the 1-Wire memory device of choice properly oriented and inserted. See "Hardware Installation" above for help.

Run the OneWireViewer. If you have any difficulty, see the "Troubleshooting Guide" at the bottom of this page. Another helpful resource is the OneWireViewer User's Guide. It can be downloaded from the following link: http://www.maxim-ic.com/appnotes.cfm/appnote_number/3358.

The OneWireViewer contains a "Device List" window located on the left-hand side of the main screen. It shows a list of the different 1-Wire devices it finds connected to the DS9097U-E25. The 1-Wire device type inserted into the socket or header of the eval board should be shown in "Device List" window along with the 64-bit ROM ID lasered into the device. The screenshot below shows the DS2433 in the "Device List" window, along with its 64-bit ROM ID value of "890000002548B023". From the "Device List" window select the part by clicking on it.

Read from or write to the 1-Wire memory: Once the 1-Wire device has been selected, the right-hand side of the main OneWireViewer screen will be populated with different tabs. There will be at least three tabs for each device contained in the DS9090K kit: Description, Memory, and File. Click on the "Memory" tab. It will bring up the "Memory Viewer" shown in the screenshot below. You will have the choice of reading/writing any of the memory banks listed in the "Banks" section of the "Memory Viewer". Select the "Main Memory" bank It should bring up the "Info" and "Contents" similar to that of the screenshot below. The "Info" section of the "Memory Viewer" shows the different attributes of the memory bank being exercised. The "Contents" section shows the actual contents of the memory. To edit the 1-Wire memory, just click in the appropriate box (labeled with Page 0, Page 1, Page 2, etc) and start typing in the appropriate hexadecimal characters.

When finished editing, click on the "Commit Changes" button to write the changes to memory. To have the OneWireViewer re-read the contents of the 1-Wire memory, click on the "Refresh" button.

OneWireViewer Screen Example
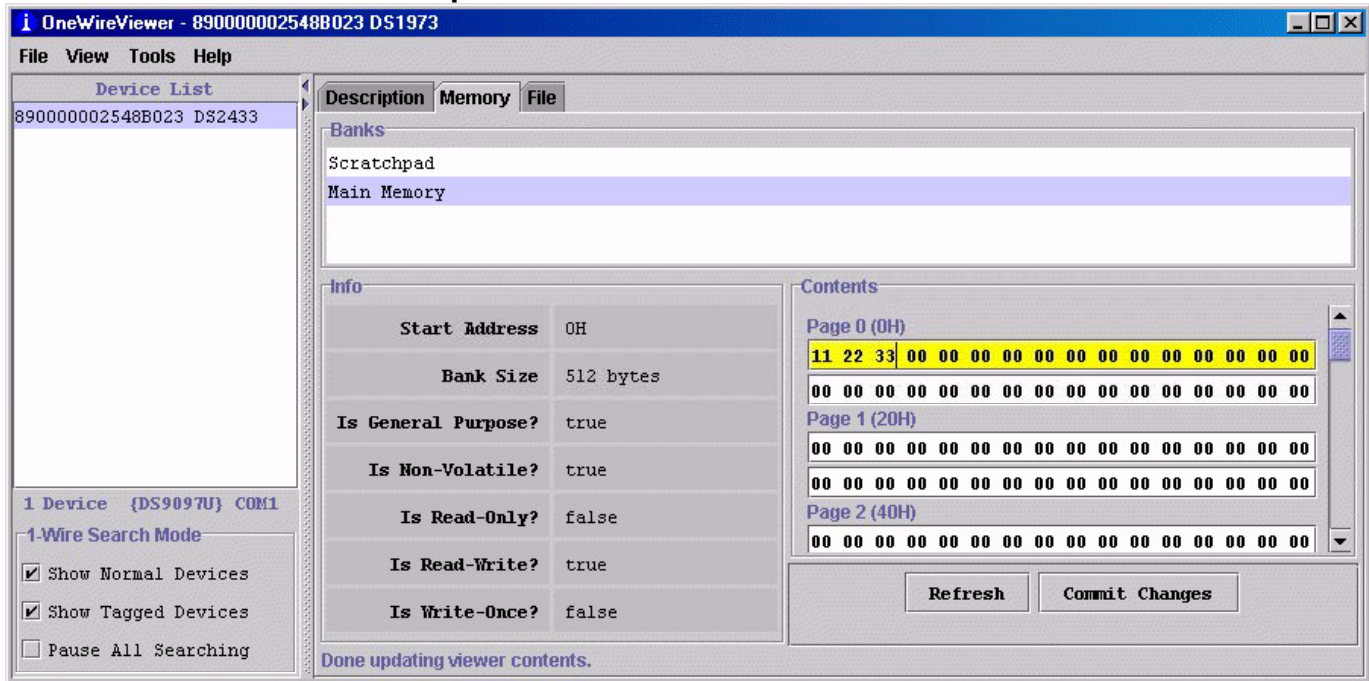
EVALUATION BOARD SCHEMATIC
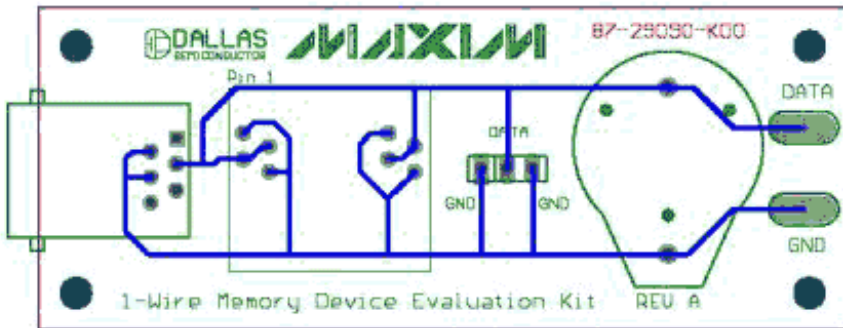
SOFTWARE DEVELOPMENT

Software Development Tools & SDK's: http://db.maxim-ic.com/ibutton/example/

Product Data Sheets: http://para.maxim-ic.com/1Wire.htm

Application Notes: http://www.maxim-ic.com/appnotes10.cfm/ac_pk/1

ONEWIREVIEWER TROUBLESHOOTING GUIDE

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Message Figure A or similar	Cause 1: The port is in use by another application.	Verify no application has the port open or is sharing an interrupt with the port. Look at modem and synchronization software for hand held computers.
(same as above)	Cause 2: The PC port hardware is not functioning properly.	Does the port work with other applications, such as terminal or mouse? If using the DS9097E (legacy adapter), try an adapter in the DS9097U series of adapters.
(same as above)	Cause 3: The 1-Wire adapter is not functioning.	Try 1-Wire adapter on another PC. If the problem persists, use a different 1-Wire adapter or order a new adapter of this type.
(same as above)	Cause 4:	The adapter type selected is not what is connected. Try the 'Auto-detect'. Similar adapters may have different part numbers (i.e. DS9097U-009 similar to DS1411).
Message Figure B	See Cause 1 to 3 above	See above
Message Figure C	Cause 1: The 1-Wire adapter does not write to EPROM devices.	Use the DS9097U-E25 1-Wire adapter with a regulated 12V power-supply. See Data Sheet for power-supply specifications.
Software finds COM port adapter, but won't read a 1-Wire device.	A broken wire in the RJ-11 cable or the port is occupied by a modem.	Check the cable for broken wires and make sure that the port chosen is not occupied by other computer peripherals. Alternative: obtain a DS9490R USB 1-Wire network adapter.

Errors during Installation or from 'Default 1-Wire Net

Figure A

Figure B

Error when trying to program an EPROM device in OneWireViewer

Figure C