Technical Article

SigCon Architect: the Keys to Your High-speed Design

Michael Lu

When you walk into a car dealer's showroom, it's hard not to be impressed by the new cars, spotless and gleaming under flattering lights. Yet no amount of fancy showmanship substitutes for the experience of sitting behind the wheel and driving the car yourself. Only then will you feel comfortable making a purchasing decision.

TI's high-speed signal conditioning products are in some ways just like new cars. Our high-speed redrivers and retimers offer advanced signal conditioning and support for many standard protocols. Many of these products require SMBus communication to unlock the full potential of the device's performance controls. But without a graphical user interface (GUI) to evaluate integrated circuit (IC) functionality, the first impression of TI's high-speed conditioning products may feel like being in a car showroom where the dealer can't find the keys for a test drive.

SigCon Architect

SigCon Architect is an easy-to-use software interface that can control TI's high-speed signal conditioning products. This LabVIEW-based GUI features several levels of pages for each device that allow efficient IC evaluation and testing.

- **High Level Page:** The main device controls are available on a simplified block diagram of the channel design. You can modify key signal-conditioning parameters and monitor important status indicators. Figure 1 and Figure 2 are examples of the high-level control page.

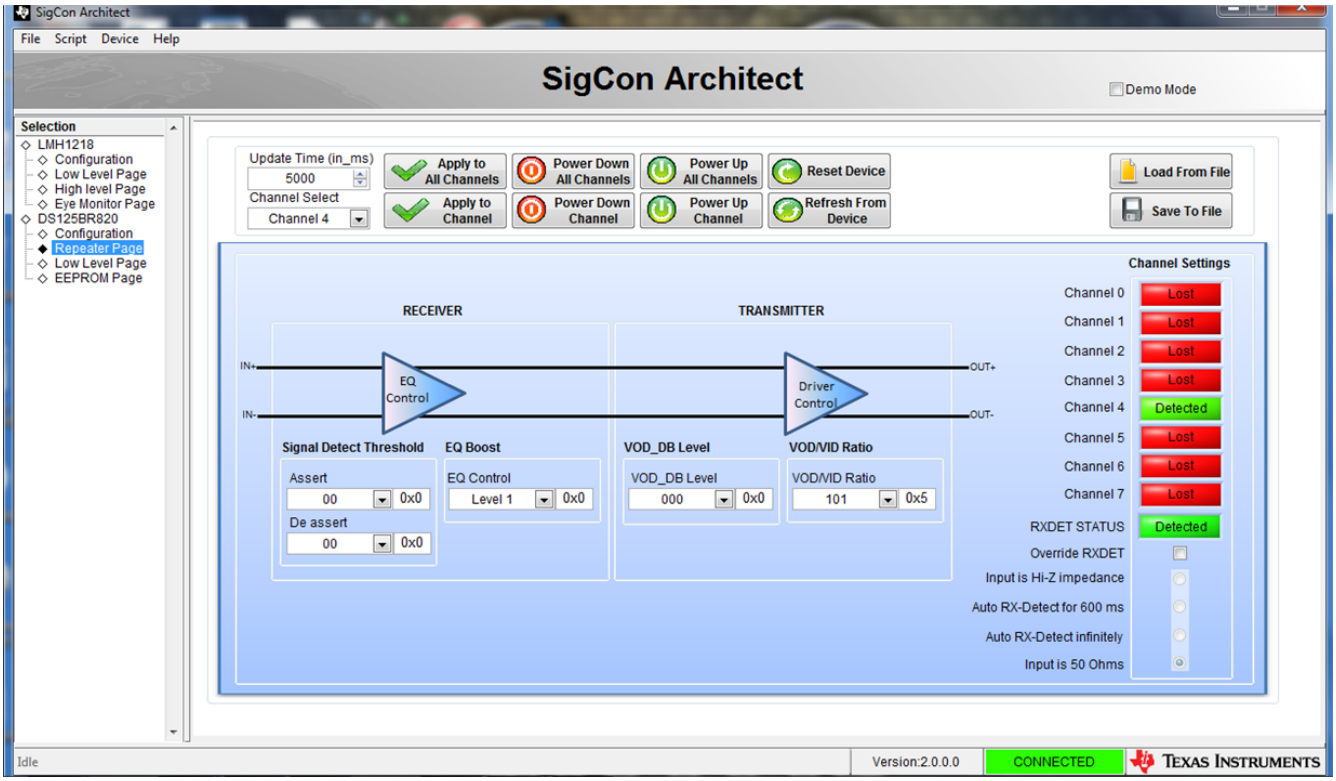

Figure 1. DS125BR820 **Repeater High Level Page**

Copyright © 2023 Texas Instruments Incorporated

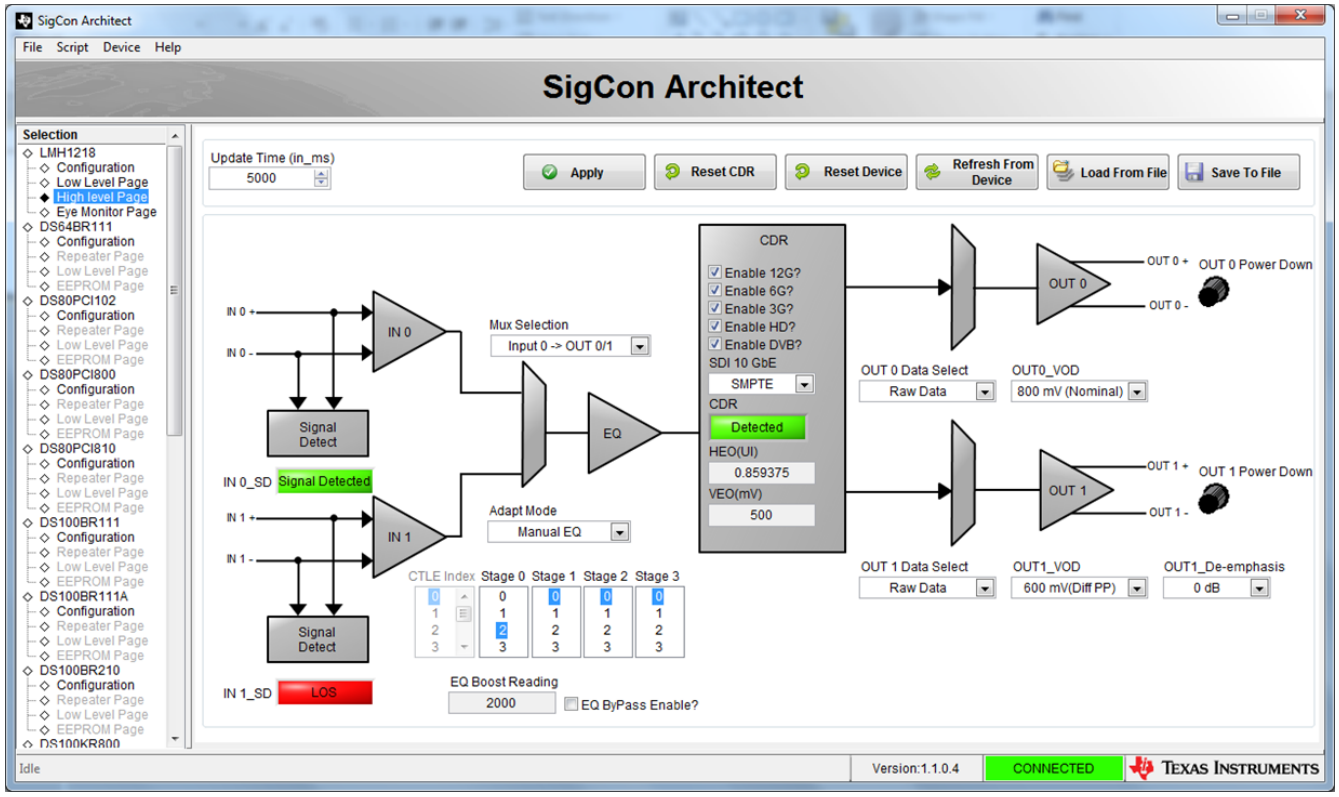

Figure 2. LMH1218 **Cable Driver High Level Page**

- **Low-Level Page:** You can engage in more advanced bit-by-bit register device control, as shown in Figure 3.

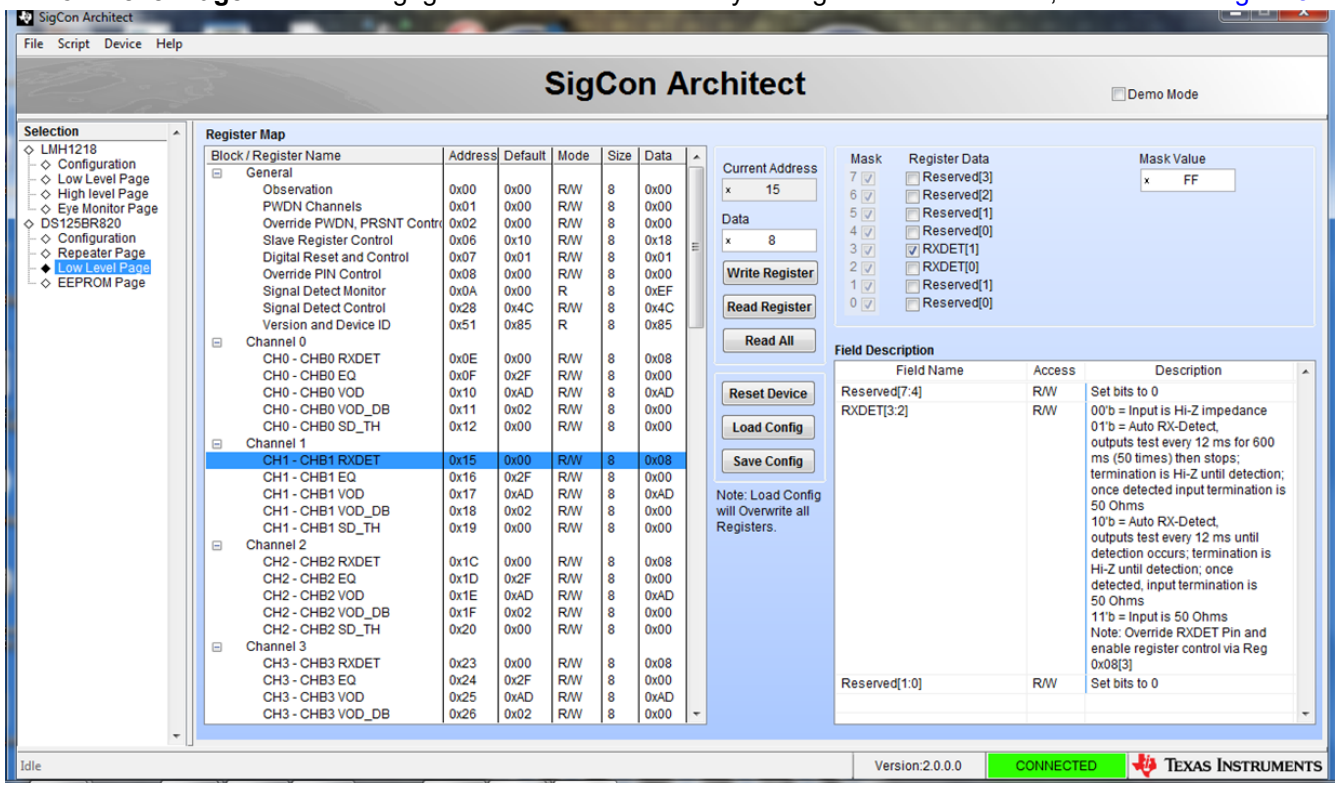

Figure 3. DS125BR820 **Low Level Page**

- **Additional pages (may vary):** You can access device-specific functions such as an Eye Monitor Page to view an internal eye diagram in real time or an electrically erasable programmable read-only memory (EEPROM) Page to generate EEPROM hex files. See Figure 4 and Figure 5.

Copyright © 2023 Texas Instruments Incorporated

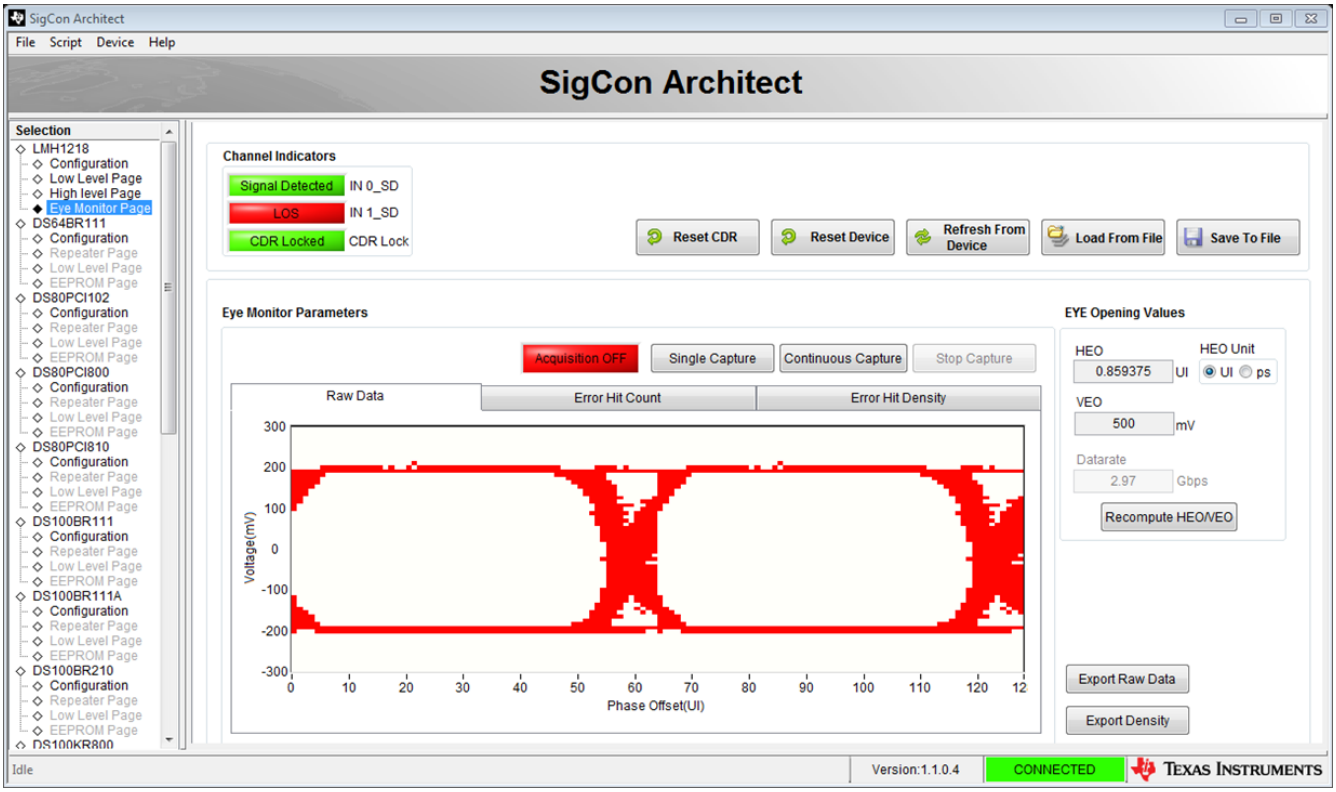

Figure 4. LMH1218 **Eye Monitor Page**

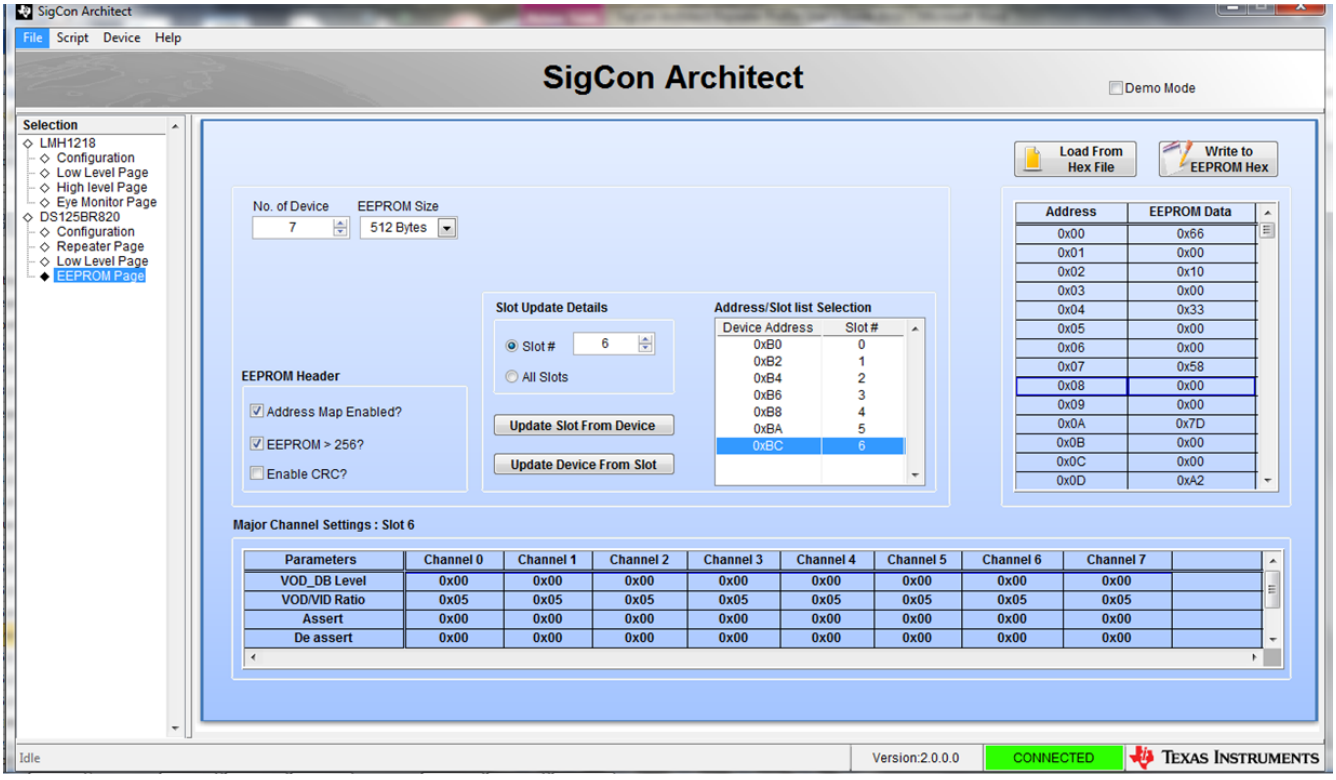

Figure 5. DS125BR820 **Eeprom Page**

Copyright © 2023 Texas Instruments Incorporated

How to Get Started

SigCon Architect can control many high-speed signal conditioning devices and is available for download on TI.com. The software is free and installs on Windows 7 platforms. The required supporting software (LabVIEW Run-Time Engine, USB2ANY firmware and Python) is self-contained in the installer.

To use SigCon Architect with TI redrivers and retimers, connect either a DPS-DONGLE-EVM or USB2ANY dongle [i] (please see the SigCon Architect Installation and Starter's Guide, page 14, for more information) to your PC, and use jumper wires to connect the SDA, SCL and GND pins to the IC pins, as shown in Figure 6, Figure 7 and Figure 8.

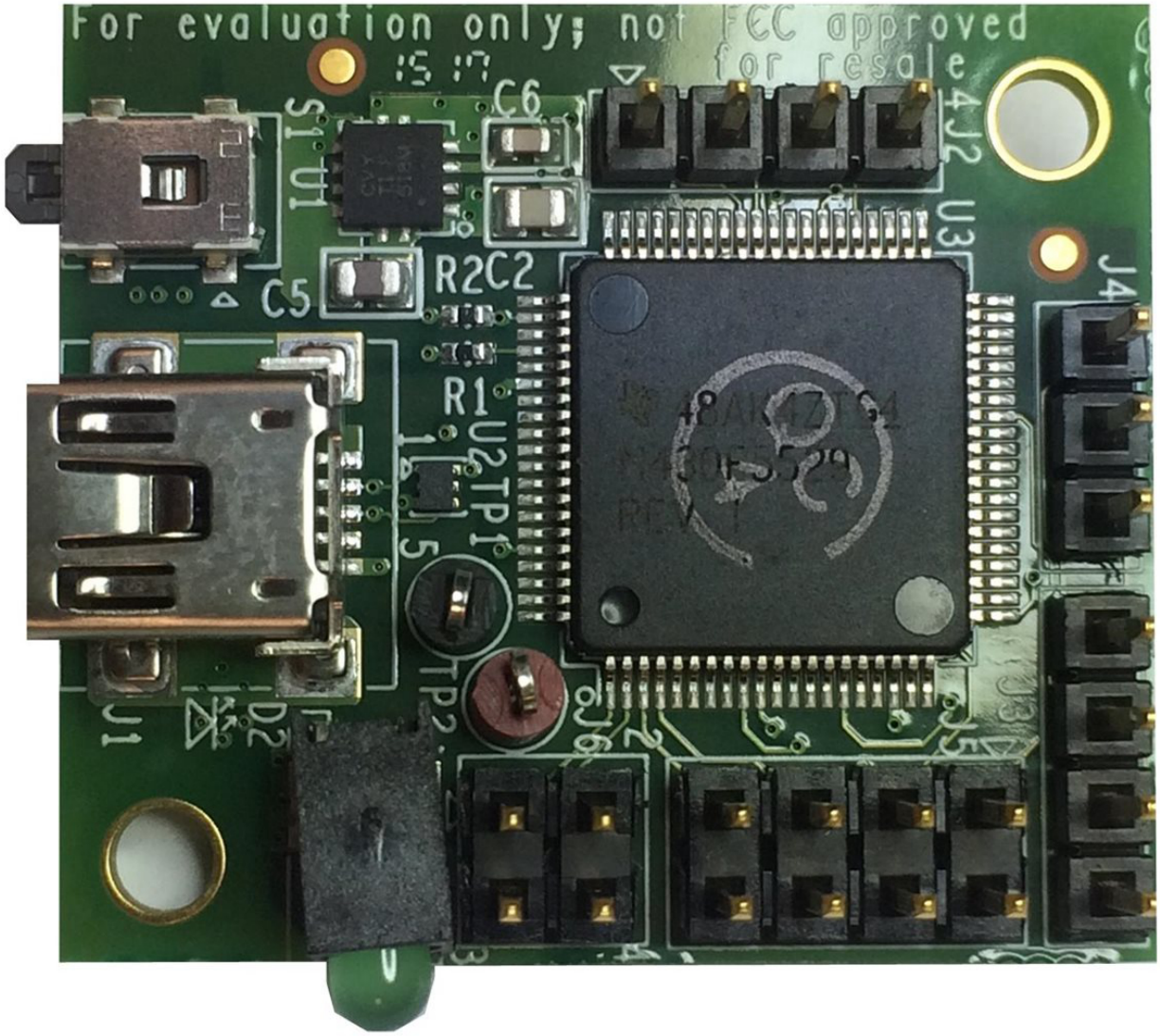

Figure 6. DPS-DONGLE-EVM Controller Board

Copyright © 2023 Texas Instruments Incorporated

Figure 7. USB2ANY Bundle with miniUSB Cable Connection to a PC

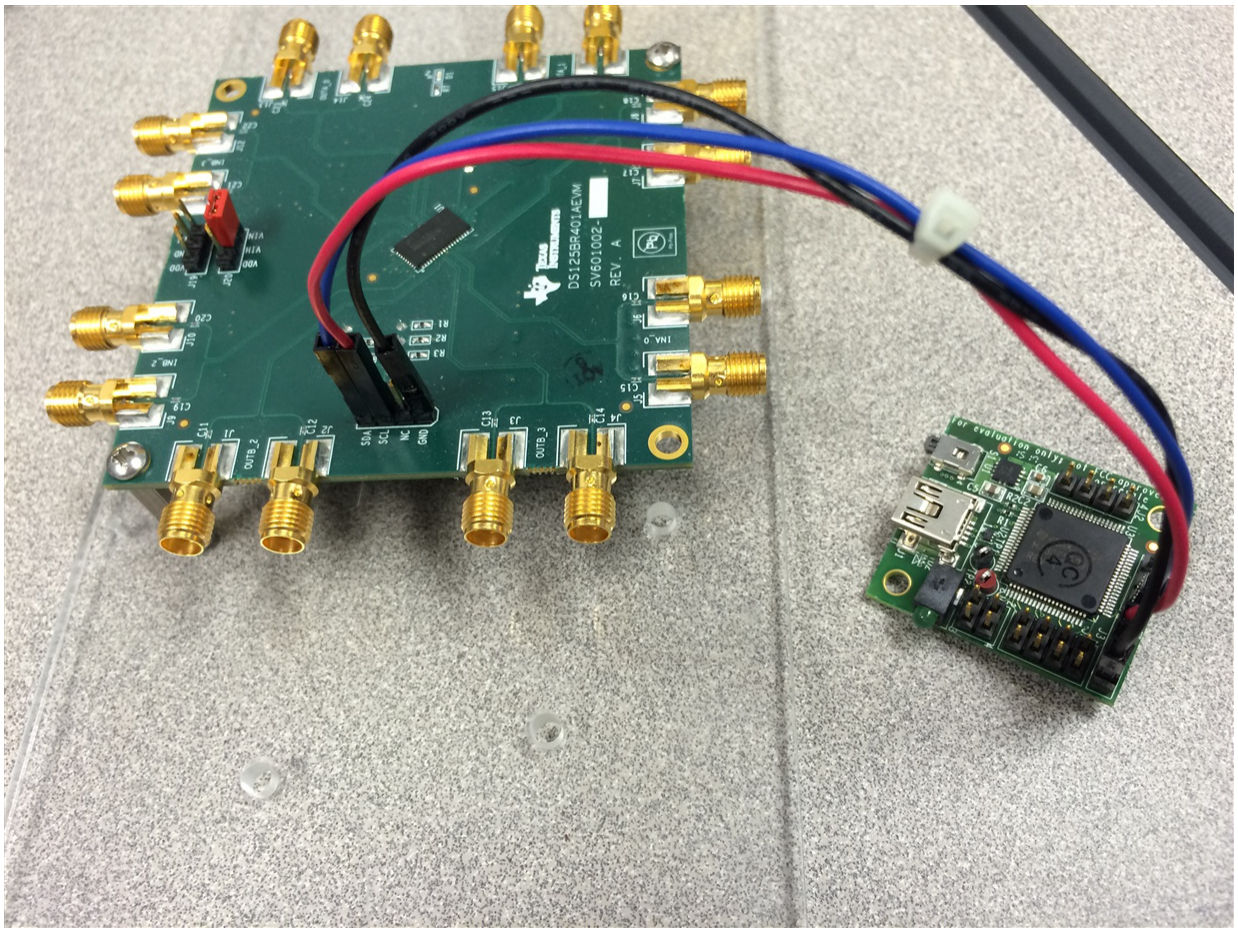

Figure 8. Example of SMBus Connections to the DS125BR401AEVM

With SigCon Architect, getting started with TI's high-speed signal conditioning products has never been easier. The software enables you to configure TI devices in real time, thereby improving device optimization and expediting overall system bring-up. The keys are here. Why not give a few of our devices a test drive?

Copyright © 2023 Texas Instruments Incorporated

Additional Resources

- Find out about TI's signal-conditioning portfolio.
- Read more about EEPROM hex file generation with "Understanding EEPROM Programming for High Speed Repeaters and Mux Buffers."
- Get started with the "SigCon Architect Installation and Starter's Guide."
- Design and simulate redriver and retimer performance with WEBENCH® Interface Designer.

[i] Contact your local TI sales representative to get more information or to purchase these dongles.

Copyright © 2023 Texas Instruments Incorporated

IMPORTANT NOTICE AND DISCLAIMER

TI PROVIDES TECHNICAL AND RELIABILITY DATA (INCLUDING DATA SHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES “AS IS” AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS AND IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for skilled developers designing with TI products. You are solely responsible for (1) selecting the appropriate TI products for your application, (2) designing, validating and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, regulatory or other requirements.

These resources are subject to change without notice. TI grants you permission to use these resources only for development of an application that uses the TI products described in the resource. Other reproduction and display of these resources is prohibited. No license is granted to any other TI intellectual property right or to any third party intellectual property right. TI disclaims responsibility for, and you will fully indemnify TI and its representatives against, any claims, damages, costs, losses, and liabilities arising out of your use of these resources.

TI’s products are provided subject to TI’s Terms of Sale or other applicable terms available either on ti.com or provided in conjunction with such TI products. TI’s provision of these resources does not expand or otherwise alter TI’s applicable warranties or warranty disclaimers for TI products.

TI objects to and rejects any additional or different terms you may have proposed.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2023, Texas Instruments Incorporated