Peregrine Semiconductor

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PE43X0X Digital Step Attenuator Evaluation Kit User's Guide

Introduction

The Digital Step Attenuator (DSA) Evaluation Kit is designed to evaluate Peregrine Semiconductor DSA products using the parallel (LPT1) port on PC. The DSA Evaluation Software enables flexible evaluation in parallel, serial and serial-addressable programming modes.

Hardware Setup

1. Verify contents of the Evaluation Kit. The shipped EVK should contain the following:
    a. One (1) PE43X0X Evaluation Board
    b. One (1) Ribbon Cable Harness

The EVB setup and hardware programming settings are described below:

Supported Products:
- PE43501
- PE43502
- PE43503
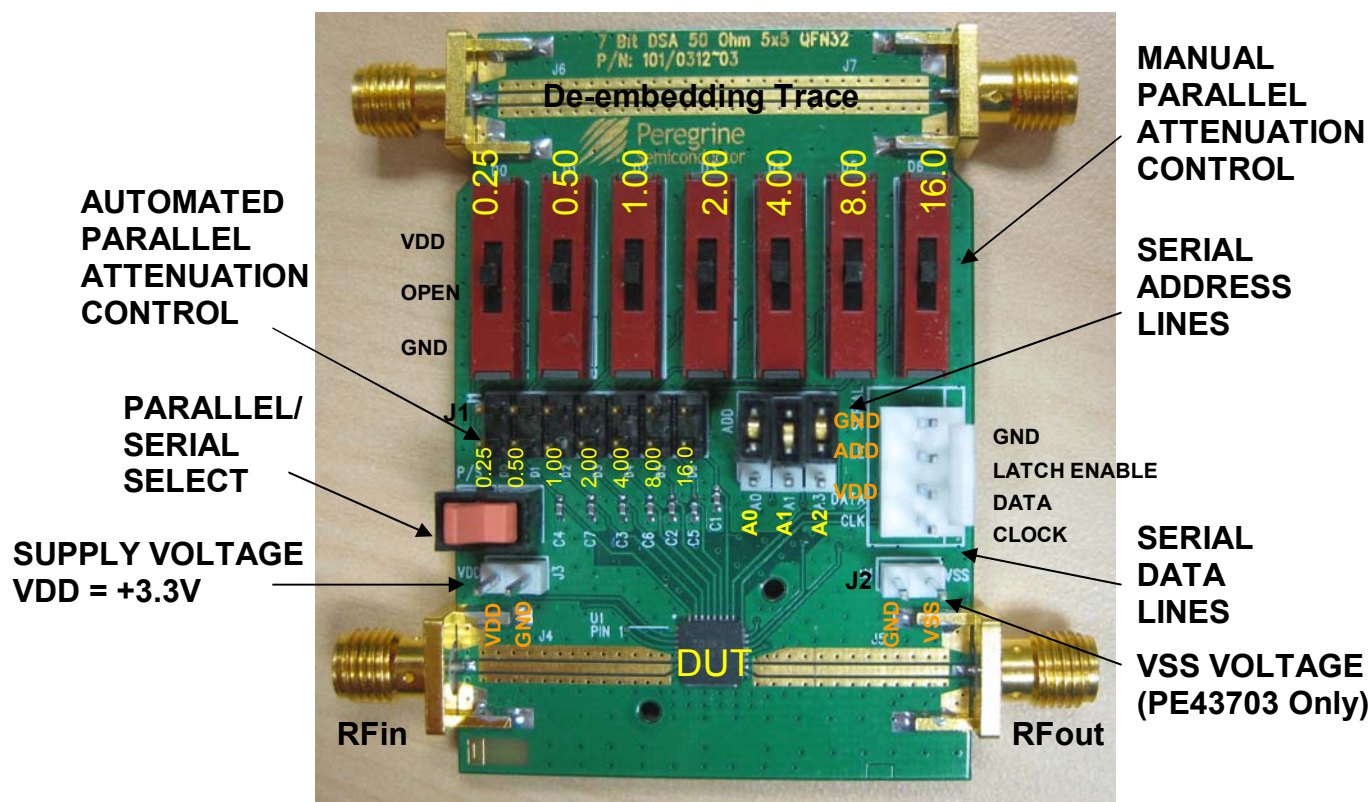- PE43601
- PE43602
- PE43701
- PE43702
- PE43703
- PE43204

Supported Platforms:
- PC

Supported Operating Systems:
- Windows

Figure 1. DSA Evaluation Board

Hardware Setup, continued

2. Connect the cable harness to J1 and the 4-pin Serial Header on the Evaluation Board as seen below, with the other end of the cable connected to the PC printer (LPT1) port (see Figure 2).

3. Set J3 to +3.3V. For the PE43703, set J2 to -2.7V or GND. Turn off all power supplies prior to connecting cables to EVB.

4. Refer to applications information in datasheet for desired programming mode.

5. Ensure Network Analyzer is properly calibrated prior to measurement.

**Figure 2. Connecting the Ribbon Cable Harness to the EVB**
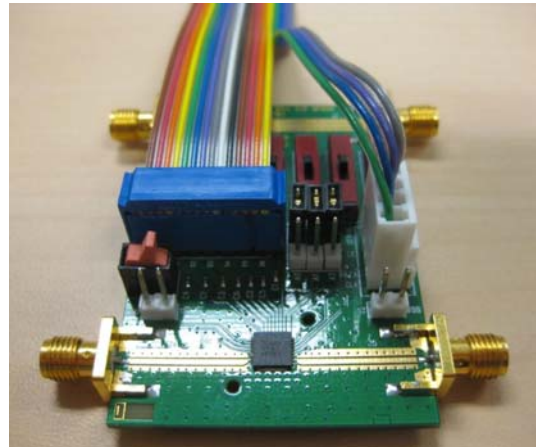
Instructions to use the DSA Evaluation Software

Software Setup

1. Download the installation file from the Peregrine Semiconductor website (www.psemi.com).
2. Unzip the package and double click setup.exe.
3. Restart your computer once installation is complete.
4. Verify default location as: C:\Program Files\DSA Evaluation Software.

Open the installed software as shown below.

Figure 3. DSA Evaluation Software Location
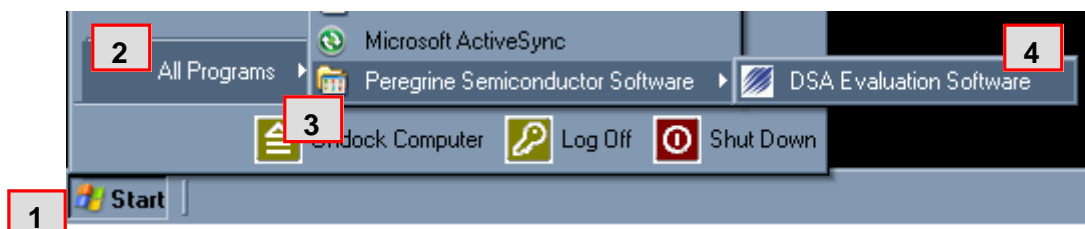
1. On your PC, go to the Start menu
2. Select All Programs
3. Select the Peregrine Semiconductor Software folder
4. Select the DSA Evaluation Software software

For applications support, please email help@psemi.com

Supporting Document for 78-0012-01 | UltraCMOS™ RFIC Solutions

Software User Interface

When the software is first opened, the default user interface will be displayed as shown below.

Figure 4. DSA Evaluation Software User Interface
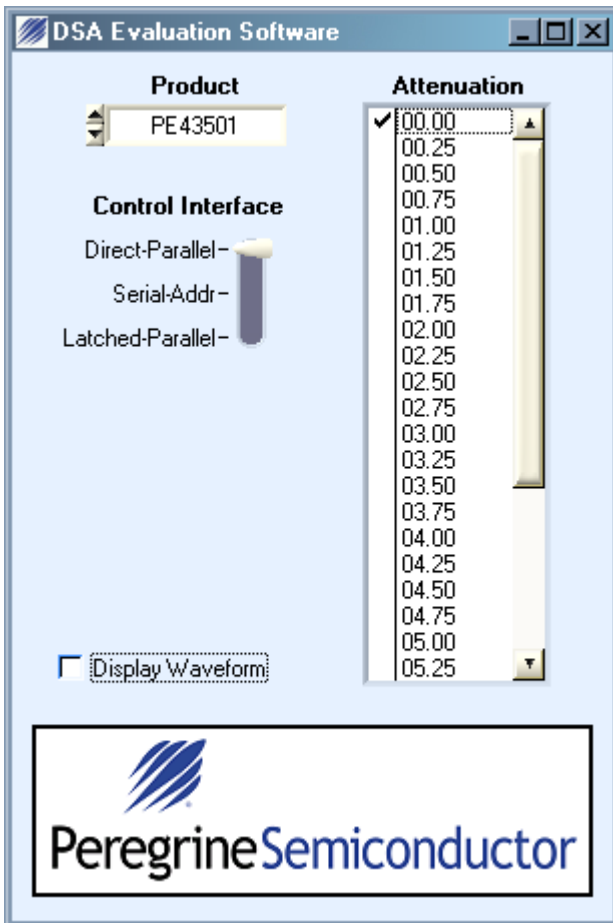
The Control Interface options are dependant on the Programming Modes available for each individual product. See datasheet for supported control interfaces.

Figure 9 (page 6) shows an example of the appearance of the programming window when the "Display Waveform" box is checked.

Control Functions

The control functions are described as follows:

Product: A pull-down list of supported DSA part numbers. Select the correct part number as per the shipped EVK.

Control Interface: Select the desired control interface from Direct-Parallel, Serial, Serial-Addressable, and Latched-Parallel options.

> **Direct-Parallel:** When this mode is selected, multiple parallel control lines are used to program attenuation states. This is the recommended evaluation interface.

> **Serial:** When this mode is selected, Serial Peripheral Interface (SPI) is used to program attenuation states.

> **Serial-Addr:** When this mode is selected, Serial Peripheral Interface (SPI) is used to program attenuation states to a specific address. Address is assigned in the **Address** window.

> **Latched-Parallel:** When this mode is selected, multiple parallel control lines are used to program attenuation states only when LE is pulsed logic high to logic low. The "Send Latch" button performs this function.

Address: A pull-down list of available addresses, active only when **Serial-Addr** control interface is enabled. Prior to programming, the user must define an address setting before selecting the desired attenuation in the **Attenuation** window. See datasheet for details.

Attenuation: A pull-down list of all attenuation states available for the selected part number. Highlight the desired attenuation value to program the attenuation state. With the exception of Latched-Parallel mode, the software automatically programs the DSA each time an attenuation state is selected.
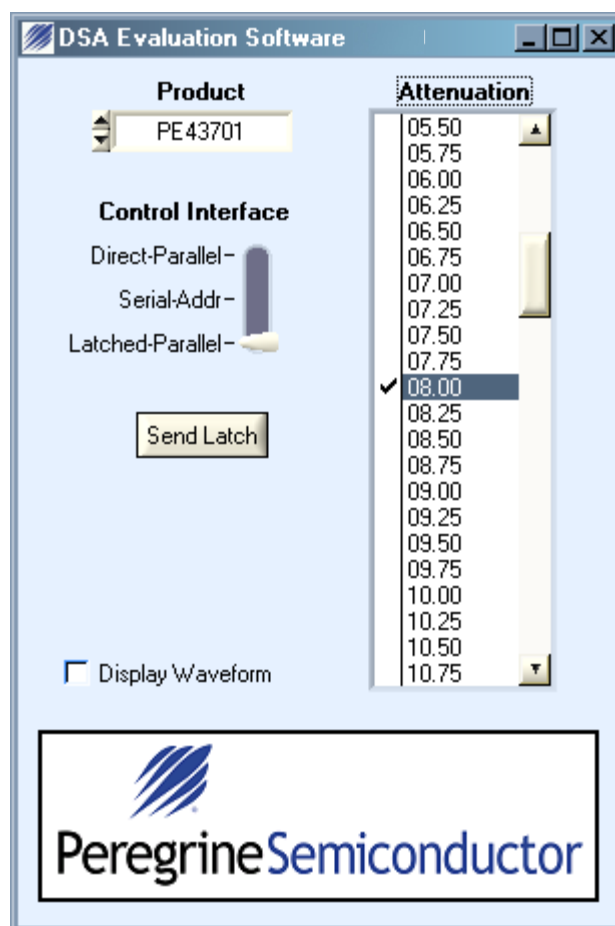
Programming Examples

Parallel mode programming

Parallel mode programming is enabled by positioning the Parallel/Serial (P/S) select switch on the EVK board to the *left* position. Program 8.00dB of Attenuation to the PE43701 as shown below:

Figure 5. Direct-Parallel Programming Window
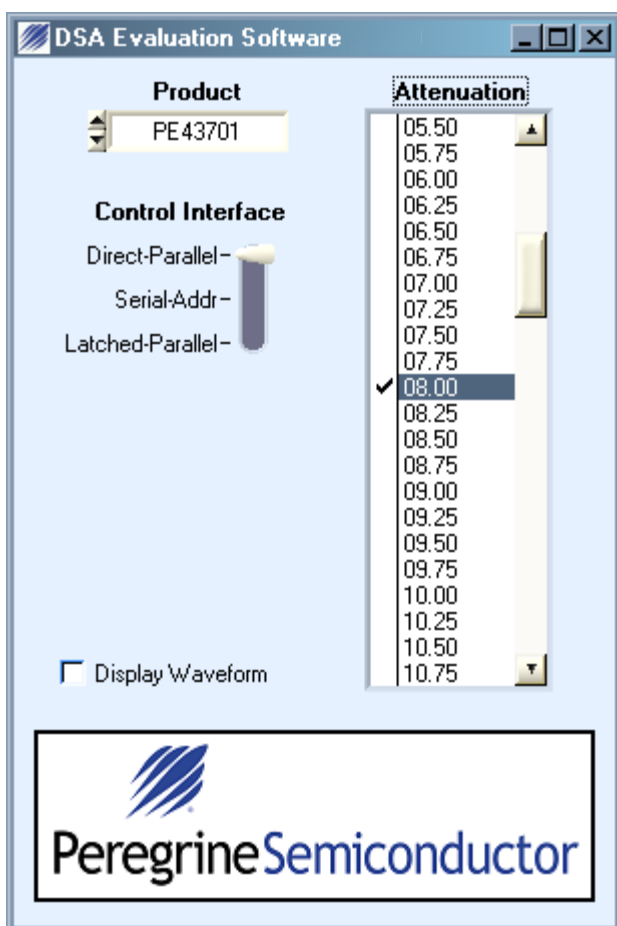
Figure 6. Latched-Parallel Programming Window

Serial and Serial-Addressable Mode Programming

Serial and Serial-Addressable Mode programming is enabled by positioning the Parallel/Serial (P/S) select switch on the EVK board to the *right* position. Program 8.00dB of Attenuation to the PE43602 and PE43701 as shown below:
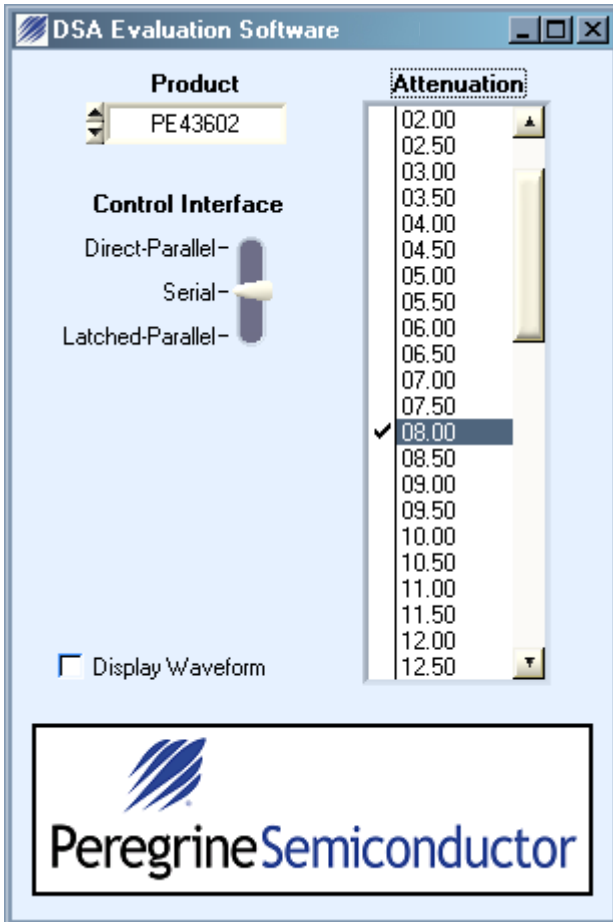
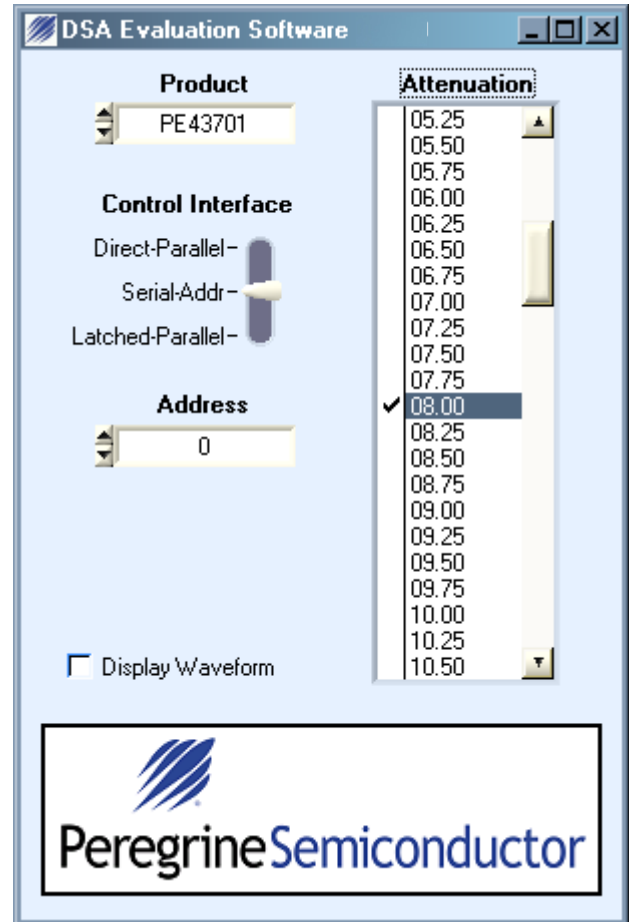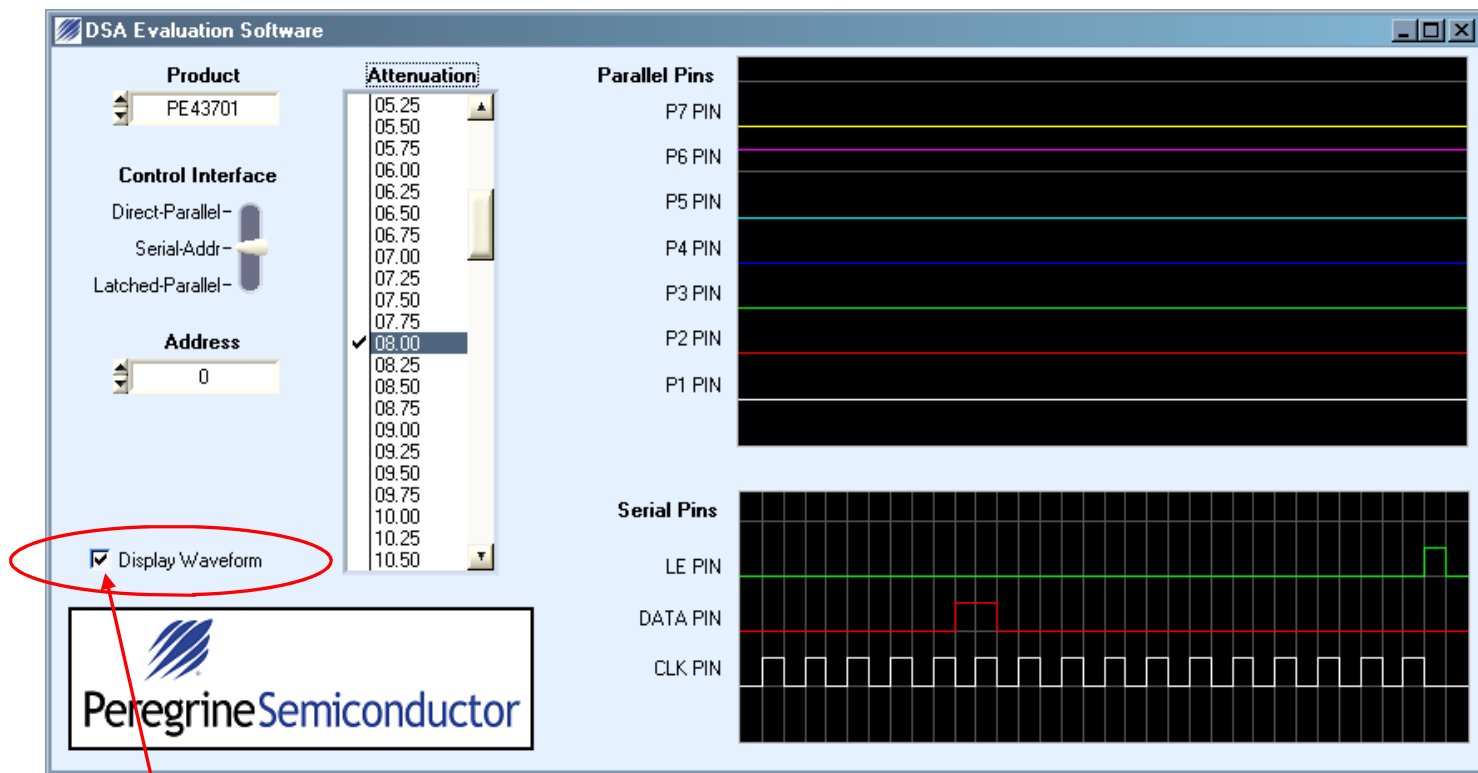**Figure 7. Serial Programming Window**

Figure 8. Serial-Addressable Programming Window

Display Waveform

The Display Waveform option is an extension of the default window that displays the Parallel, Serial or Serial-Addressable interface timing diagrams.

Figure 9. Display Waveform Option

"Display Waveform" box selected