Atmel AT88CK9000 Kit

Features

- Single push-button triggers parallel programming
- Supports programming of up to 10 devices at a time for SOIC package
- Supports programming of up to 5 devices at a time for TSSOP, UDFN, or TSSOP
- Provides the following feedback:
    - Serial number
    - Programming count
    - Programming limitation count
    - Firmware version
    - Device and protocol
    - Verification cycle
    - Status lights for Pass/Fail per device
    - Visual feedback while programming (push button light is on)
- Embedded power controller
- Provides power to DUTs only when programming — load/unload safe
- Detects when devices are positioned backwards and cuts power to protect the board
- Standard micro-USB used for power and configuration

Contents

- Atmel® AT88CK9000 board
- Universal power supply adaptor
- 0.5M USB cable

Introduction

The Atmel AT88CK9000 secure personalization kit has been developed to securely personalize the Atmel CryptoAuthentication™ ATSHA204 device. Depending on the ordering code, the kit can securely personalize 8-lead SOIC, 8-lead TSSOP, 8-pad UDFN, and 3-lead SOT23 package types. The 8-lead SOIC kit has sockets that can accommodate two devices per socket making it capable of personalizing up to 10 devices at a time. Safety and security has been added to ensure secure high-reliability programming.
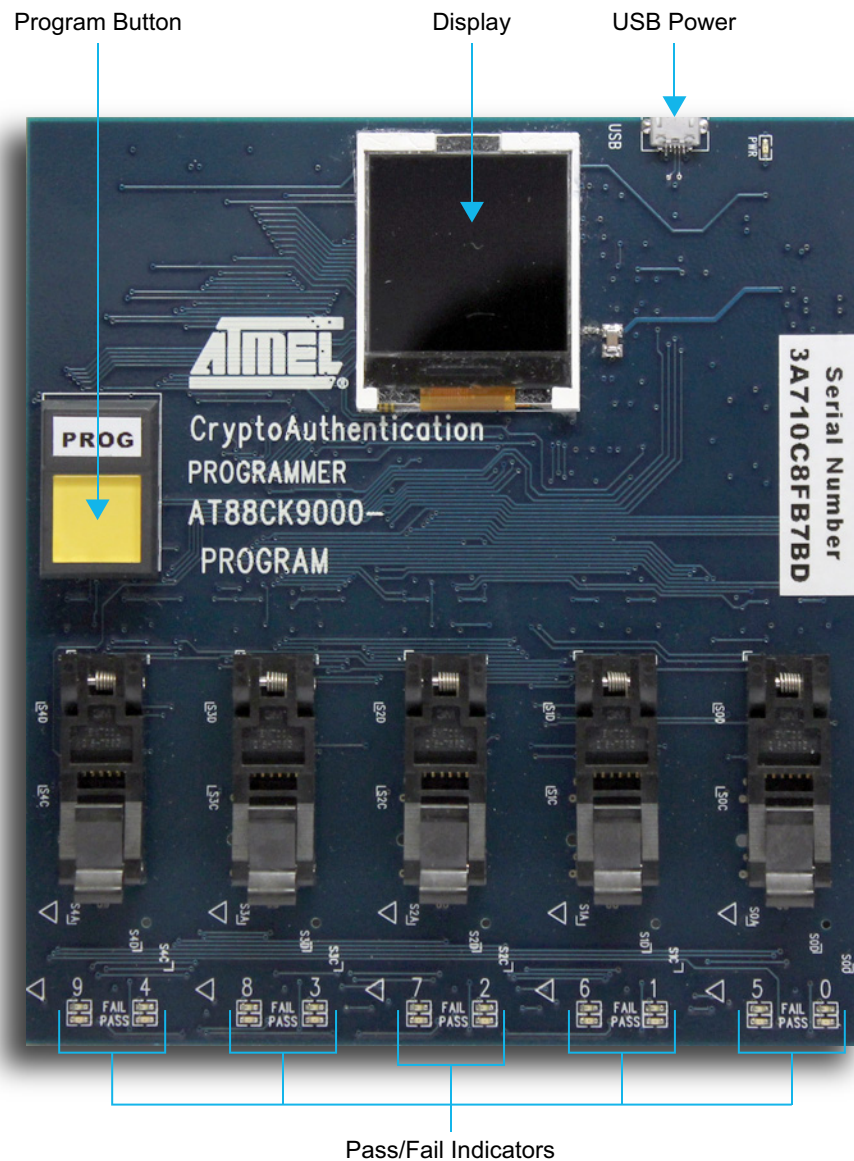
The AT88CK9000 kit interfaces to the Atmel Crypto Evaluation Studio (ACES) software suite to provide communication to a PC via a USB interface. This allows trusted users to program the board outside of the manufacturing environment. Once programmed, the board becomes a standalone board. As a standalone board, it only requires power, after which, will allow the programming of the ATSHA204 devices. In addition, this board has an internal counter to keep track of how many devices were programmed, both in total, as well as by session.
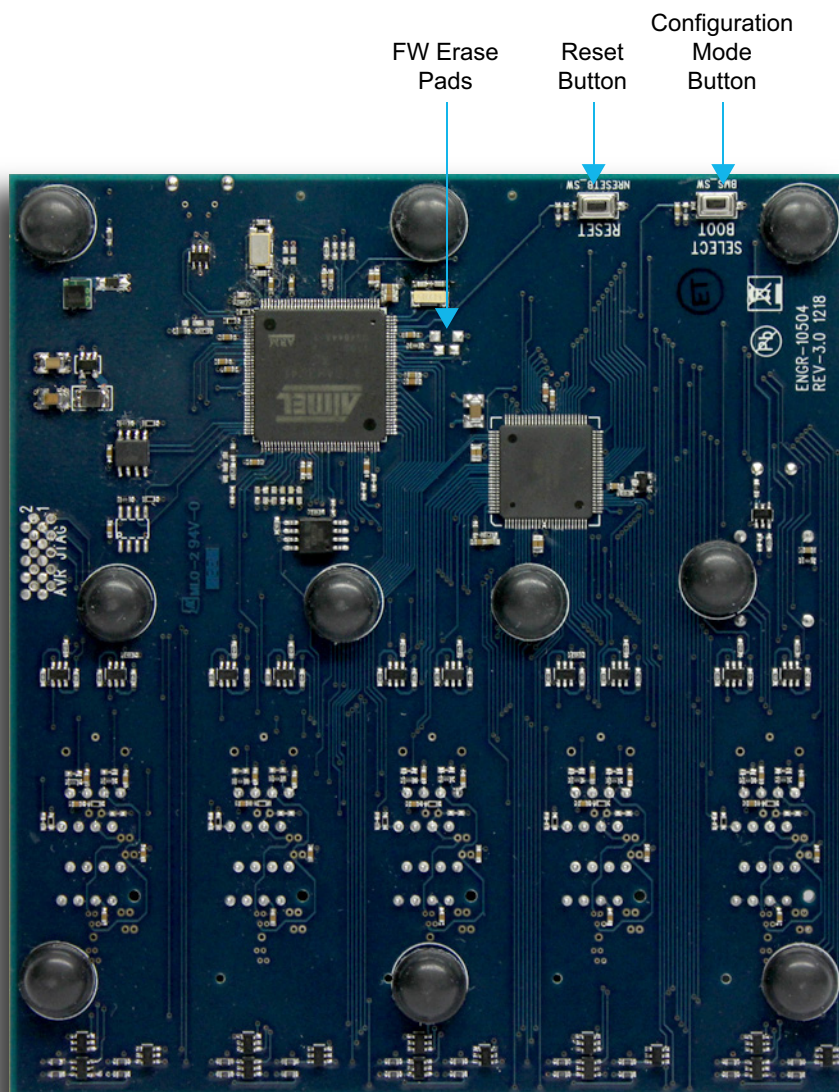
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Becoming Familiar with Atmel AT88CK9000

The AT88CK9000 has been designed to make secure personalization of the CryptoAuthentication ATSHA204 devices as easy as possible.

Program Button   Display   USB Power

Pass/Fail Indicators

FW Erase
Pads

Reset
Button

Configuration
Mode
Button

Install Atmel Crypto Evaluation Studio (ACES)

To download Atmel Crypto Evaluation Studio (ACES), visit:

http://www.atmel.com/tools/ATMELCRYPTOEVALUATIONSTUDIO_ACES_.aspx.

Note: The AT88CK9000 kit is compatible with Version 3.2.0 or later.

1. Launch the installer by executing the downloaded file (e.g. ACES_Setup.exe).
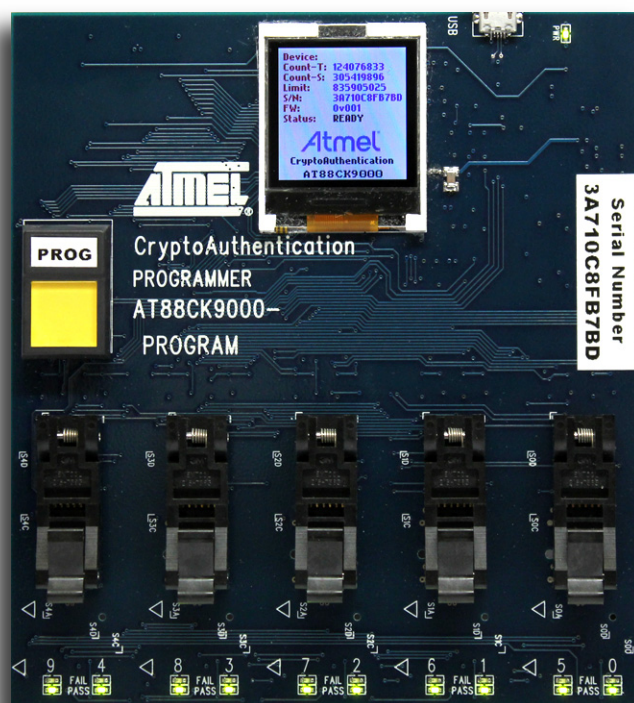2. Follow the installation instructions in the setup wizard.
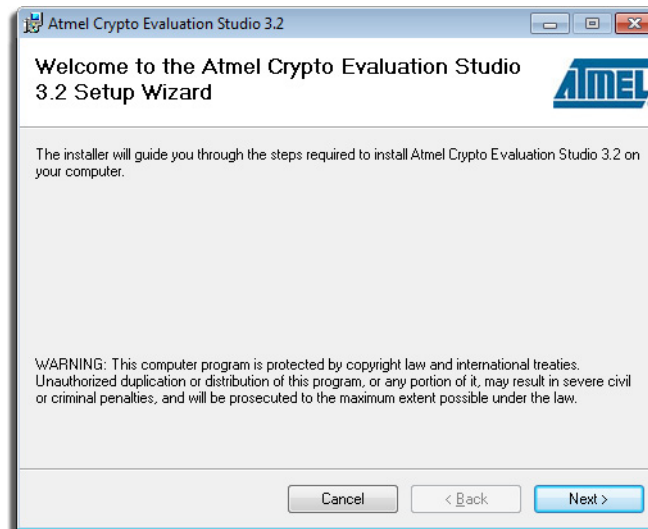
3. Once installed, three ACES icons should be located on your desktop. These icons include:
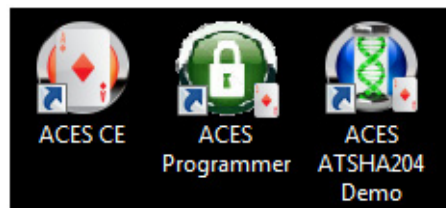
The ACES Programmer icon will launch the ACES Programmer. See "Configuring the Atmel AT88CK9000 Board" in the following section for AT88CK9000 board configuration steps.

Configuring the Atmel AT88CK9000 Board

Now that ACES has been installed, begin configuring the ATSHA204 to work in your system. The recommended method is to define and test your device configuration using the ACES Configuration Environment (CE). ACES CE can create a personalization file that is compatible with the AT88CK9000 kit.

Save the personalization file in ACES CE:

1. Launch ACES CE:
   - From your desktop, select the ACES CE icon *or*
   - From the Start Menu, select **Start** > **Atmel Crypto Solutions** > **ACES** > **ACES CE**.
2. Configure the working device to the desired configuration.
3. From ACES CE menu bar, select **File** > **Save Personalization File...**
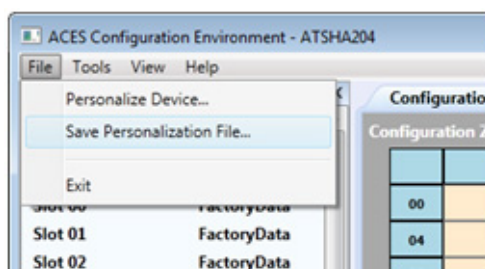
4. The File Save As dialog box will be displayed.
5. Name the personalization file and select **Save**.

Powering Up the Board

The AT88CK9000 board can be powered via the multi-voltage power supply which is supplied with the kit or via a USB port on a PC. Once powered, the green LED will illuminate next to the USB connector, and the green LEDs will illuminate below each socket.


LEDs are illuminated
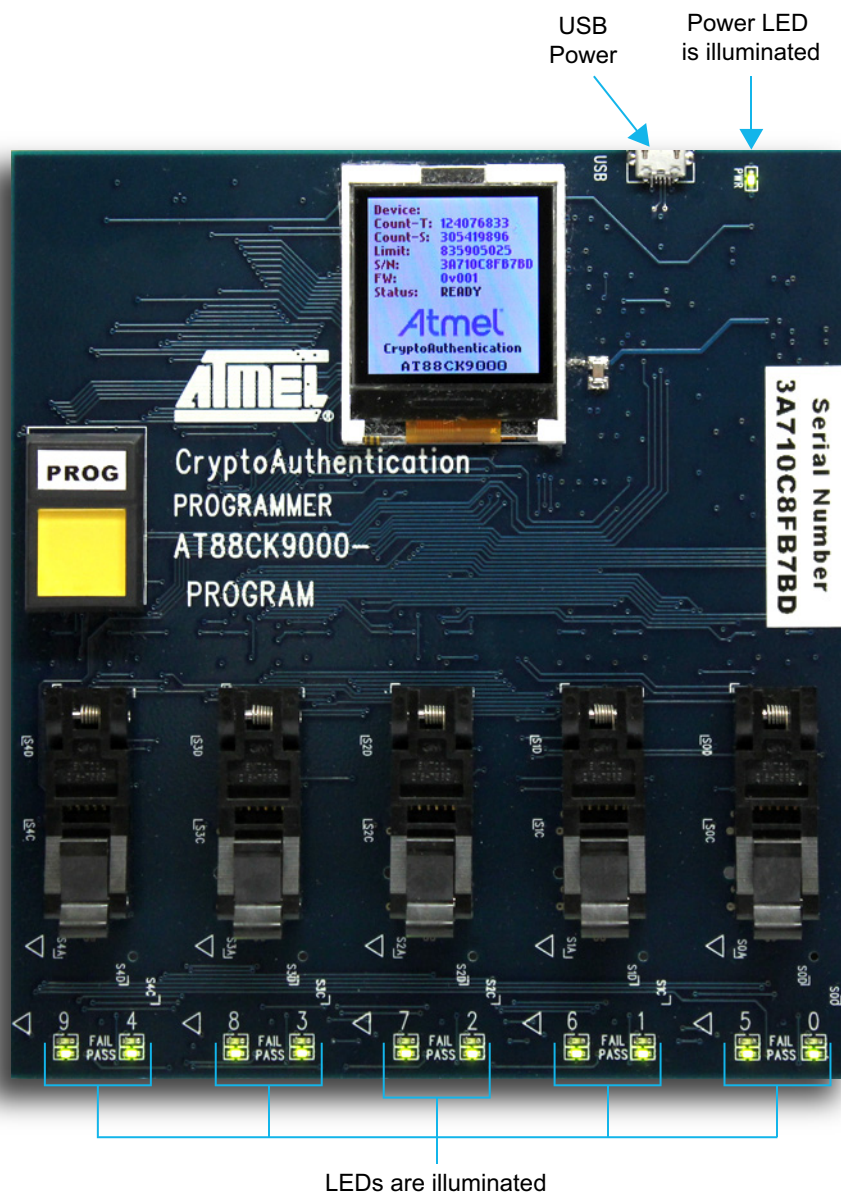
Putting the Board in the Program Mode

1. Plug in the secure personalization board while holding the Boot Select button.

    Holding the Boot Select button located on the back of the board while powering the board will put the board in the programming mode. The below image shows what should be shown on the display.


2. Download the file contents to the programmer board.
    ● Select the ACES Programmer desktop icon to launch the ACES Programmer.
    ● The Personalize Programmer Board dialog box will then be presented.

    Notes: 1.   The board is attached.
    2.   The file is *not* selected.
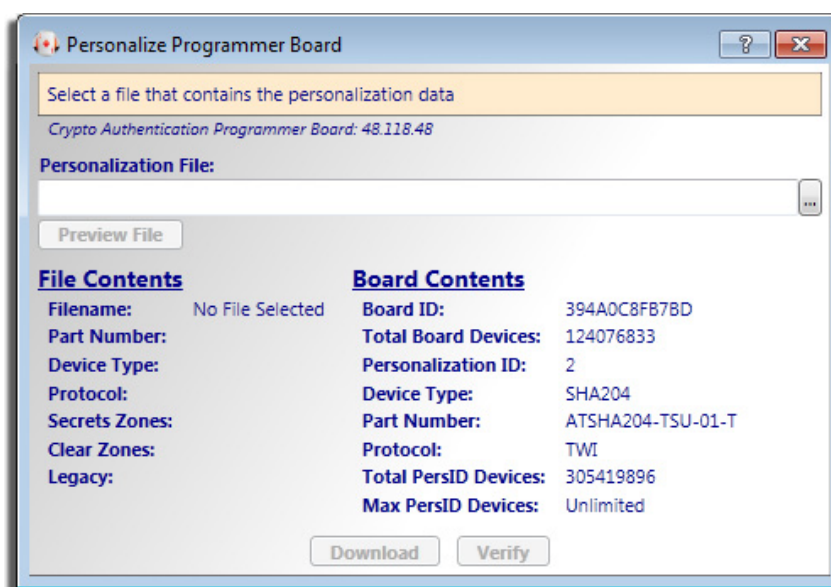
    ● Select the [...] button and select a personalization file.
   (Select the file that you have created using ACES CE)

3. To load the contents of the file in preparation to download to the programmer board, select **Preview File**. The Programmer User Interface should resemble the below dialog box.
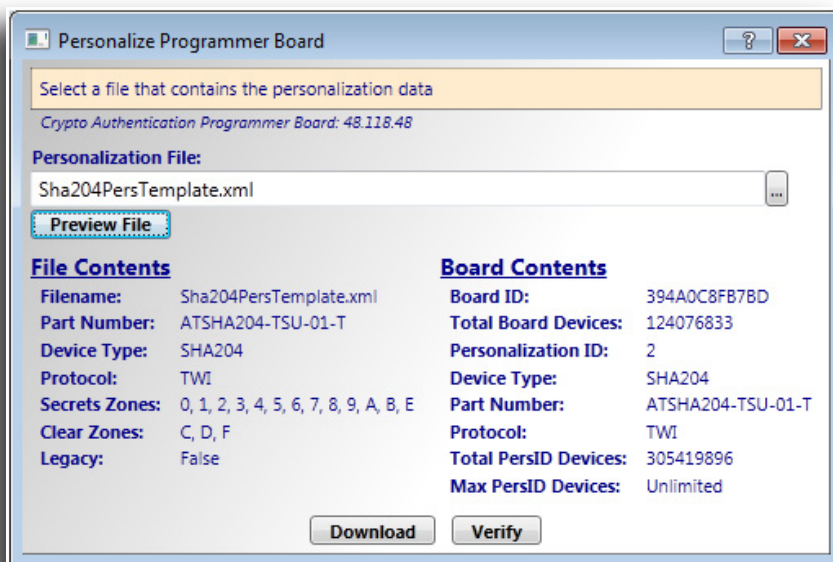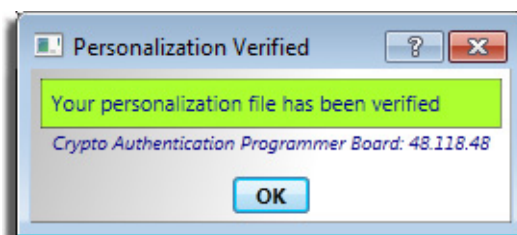

4. Select **Download**.
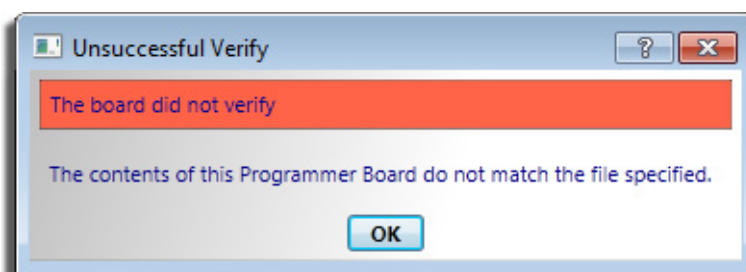   - If download is successful, the download confirmation dialog box will be displayed.
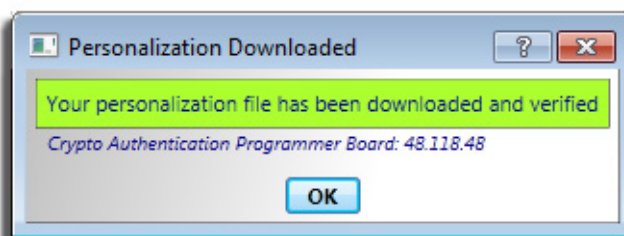
   - If download is *not* successful, the unsuccessful download dialog box will be displayed.
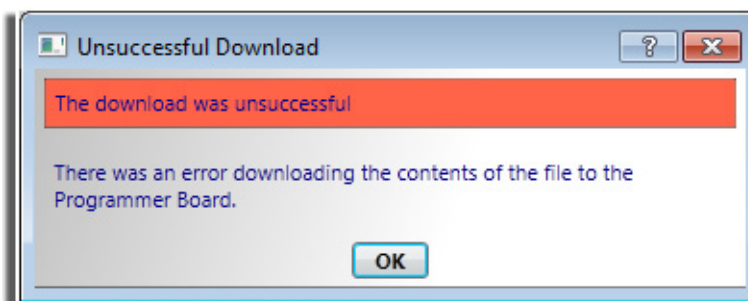
5. Select **Verify**.
   - If successful, the verified confirmation dialog box will be displayed.

   - If verify is *not* successful, the unsuccessful verified dialog box will be displayed.

6. Once the board has been successfully programmed, either:
   - Unplug the USB cable from the board *or*
   - Press the reset button located on the back of the board.

   The AT88CK9000 display should display the communication panel screen as shown below.

Device	= Device Type and Protocol
Count–T	= Lifetime Count of Programmed Devices
Count–S	= Session Count of Programmed Devices
Limit	= Configurable Limit Per Session
S/N	= Unique Serial Number
FW	= Firmware Revision
Status	= Board Status

7. Congratulations, your Atmel AT88CK9000 board is up and running.

Firmware Upgrade

To be determined.

Maintenance of the Atmel AT88CK9000 Kit

The sockets used in the AT88CK9000 kit are rated for 50,000 insertions per socket. Care must be taken to not bend or deform the leads of the socket.

If the sockets become damaged or worn, the following part numbers and suppliers should be used for replacement purchases. The sockets will need to be unsoldered and then resoldered onto the board.

Package Type	Part Number	Supplier
8-lead SOIC	216-7388-55-1902	Digikey 3M5078-ND
8-lead TSSOP	FP-8(24)-065-01A	Enplas
3-lead SOT23-3	499-P36-10	WellsCTI
8-pad UDFN	08QN50L43020	Plastronics

Troubleshooting the Atmel AT88CK9000 Kit

Issue: **No Power**

Resolution: Verify that the USB cable is plugged correctly to the board, and is plugged into an approved power source.
- If the cable is plugged into the correct power source, try unplugging the cable and then replug the cable into the AT88CK9000 board.

Issue: **One or More Sockets (Sites) Always Failing.**

Resolution: Visually inspect the socket for bent leads.
- If the leads are straight, clean the contacts on the socket.
- If the site is still failing, the socket may be worn and should be replaced.

Issue: **Board Fails to Enumerate to the PC for Configuration Mode**

Resolution: Be sure the board is in the configuration mode and is not in the programming mode.
- Try unplugging and then replug the USB cable into the board while pushing the boot select mode button on the back of the board.

Ordering Code Information

Ordering Code		Package Type
AT88CK9000-8SH	8S1	8-lead JEDEC SOIC
AT88CK9000-8TH	8X	8-lead TSSOP
AT88CK9000- TSU	3TS1	3-lead SOT23-3
AT88CK9000-8MA	8MA2	8-pad UDFN

⚠ EVALUATION BOARD/KIT IMPORTANT NOTICE

Revision History

Doc. Rev.	Date	Comments
8821A	06/2012	Initial document release

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