# bq26100 Evaluation Software

The bq26100 provides a method to authenticate battery packs and other peripherals. The bq26100 uses a 128 bit unique device key and a 160 bit SHA-1/HMAC response to provide authentication. The device key is stored securely in each bq26100 device, allowing the host to authenticate each pack or peripheral.

The purpose of the evaluation software (EVSW) is to demonstrate the functionality of the bq26100. This user's guide is intended for the operation of the software and does not necessarily explain in detail the operation of the bq26100. Refer to datasheet for any detailed information regarding operation of the device.

### Contents

### List of Figures

### List of Tables

Windows is a registered trademark of Microsoft Corporation.

# 1    Kit Contents

1. bq26100, HPA170 board
2. CD-ROM including Windows®-based PC software and support documentation
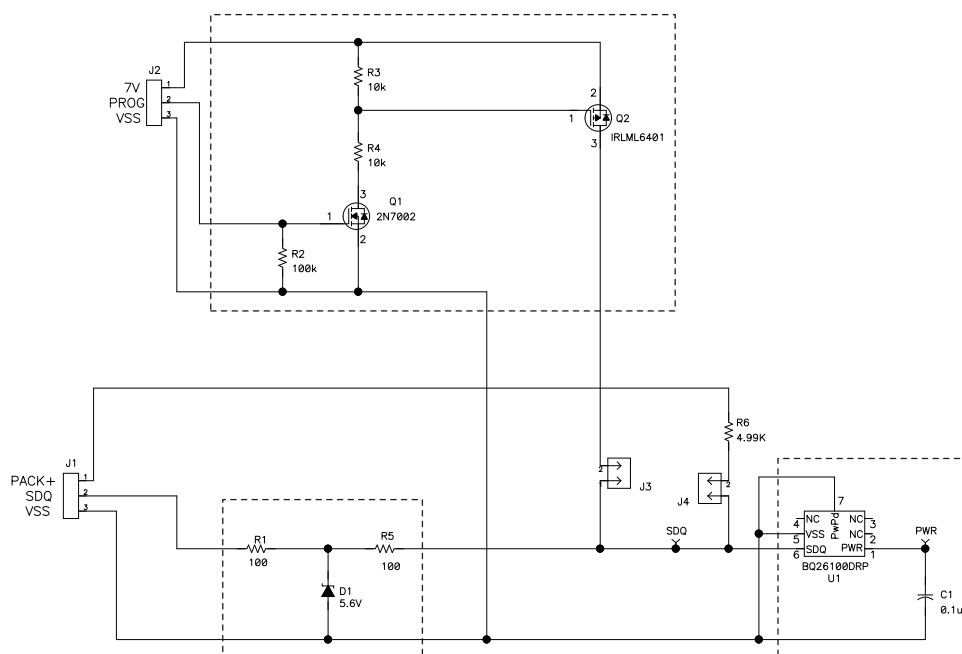
# 2    EVM Board Description

## 2.1    Schematic



**Figure 1. EVM Schematic**

## 2.2    Bill of Materials

**Table 1. Bill of Materials**

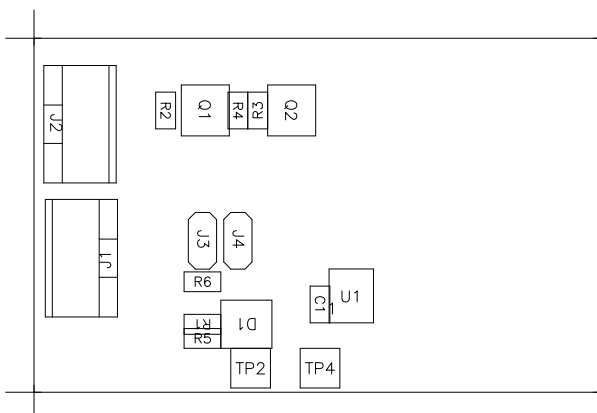| REFDES | QTY | DESCRIPTION | MFR | PART NUMBER |
|---|---|---|---|---|
| C1 | 1 | Capacitor, Ceramic, 0.1-uF, 16-V, [X7R] | Std | Std |
| D1 | 1 | Diode, Zener, 5.6-V, 350-mW | Diodes, Inc. | BZX84C5V6 |
| TP1,TP2,TP3,TP4 | 4 | Test Point, Black, 1mm | Keystone | 5001 |
| J1,J2 | 2 | Terminal Block, 3-pin, 6-A, 3.5mm | OST | ED1515 |
| J3,J4 | 2 | Header, 2-pin, 100mil spacing, (36-pin strip) | Sullins | PTC36SAAN |
| Q1 | 1 | MOSFET, N-ch, 60-V, 115-mA, 1.2-Ohms | Vishay-Liteon | 2N7002DICT |
| Q2 | 1 | MOSFET, Pch, -12V,-3.4A, 50 milliohm | IR | IRLML6401 |
| R1, R5 | 2 | Resistor, Chip, 100-Ohms, 1/16-W, 1% | Std | Std |
| R6 | 1 | Resistor, Chip, 4.99k-Ohms, 1/16-W, 1% | Std | Std |
| R2 | 1 | Resistor, Chip, 100k-Ohms, 1/16-W, 1% | Std | Std |
| R3,R4 | 2 | Resistor, Chip, 10k-Ohms, 1/16-W, 1% | Std | Std |
| N/A | 2 | Shunt, 100mil, Black | 3M | 929950-00 |
| U1 | 1 | IC, Authentication IC using SHA-1/HMAC, SDQ communication | TI | BQ26100DRP |

## 2.3 Layout



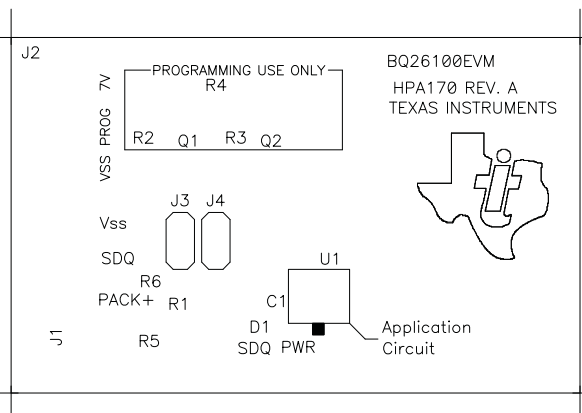Figure 2. PC Board Assembly



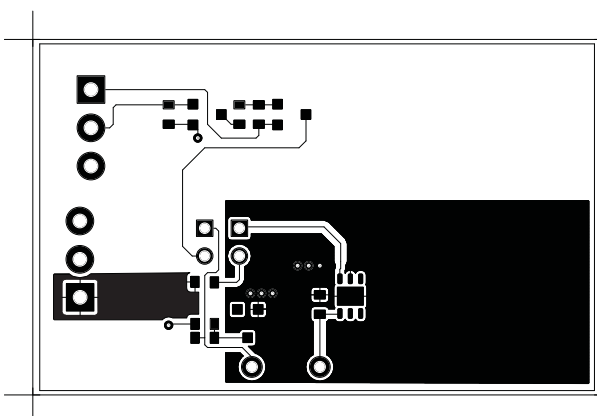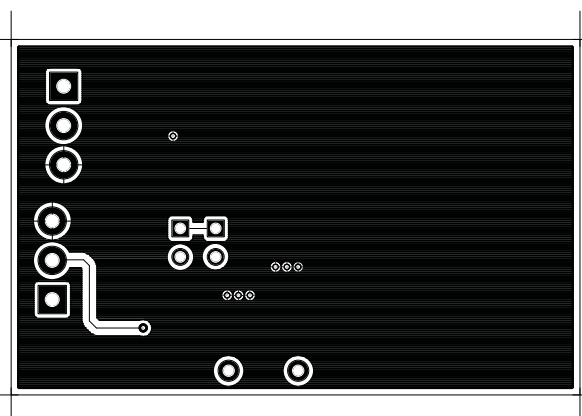Figure 3. PC Board Silkscreen



Figure 4. PC Board Top Layer



Figure 5. PC Board Bottom Layer

# 3 EVM Hardware and Software Setup

## 3.1 Software Installation

This section describes how to install the bq26100EVM PC software and how to connect the different components of the EVM.

The following steps install the bq26100 evaluation software:

1.  Insert CD ROM into a CD ROM drive.
2.  Select the CD ROM drive using **My Computer** or **File Manager**.
3.  Select the ReadMeFirst.txt file.
4.  Follow the instructions to install USB drivers for EV2300.
5.  After installing the USB drivers for EV2300, double-click on the Setup.exe icon that is under the bq26100 Evaluation Software folder.
6.  Follow the instructions on screen during the installation of evaluation software
7.  The setup program installs a windows application group

## 3.2 Hardware Connection

There are three hardware components to the bq26100EVM:

- The bq26100EVM circuit module, (HPA170)
- The PC interface board, (EV2300 – available separately)
- And the PC.

The following steps configure the hardware for interface to the PC:

1. Connect colored wires that are included with EV2300 to bq26100EVM using Table 2 as a guide. Ensure that if a red wire is included on the connector that the wire is shielded or cut off given that when connected to EV2300 this wire gives access to a 3.3V regulated output.
2. Connect the connector with colored wires to the HDQ connector that is on EV2300. HDQ connection is located on the top right of EV2300.
3. Connect the PC USB cable to the EV2300 and the PC USB port.

**Table 2. Wire Connection**

| bq26100 EVM | Wire Color |
|---|---|
| SDQ | Brown |
| VSS | Black |
| PROG | White |

To program the OTP of bq26100 a 7V pulse must be generated on the SDQ line. The HPA170 board has an additional circuit included that permits generating this pulse when using a Power Supply set to 7V and the VOUT output of the EV2300. The evaluation software controls this pulse for OTP programming.

When programming of OTP is expected the 7V supply must be connected to the HPA170 board at the 7V input of the board. Ensure that the ground of the power supply is connected to VSS of the board. When programming the key (see section 4.5 Key PGM) an additional power supply at about 3.3V with a 100 Ω resistor in series with a diode must be connected to the PWR pin of the bq26100 (Figure 6). The test point (PWR) gives access to the PWR pin. When programming the 5 pages of OTP memory and the STATUS bytes the additional 3.3V power supply is not needed.

There are two jumpers that can be connected. If programming OTP then J3 must be connected. When not using an EV2300 to evaluate the bq26100 and a pull-up resistor is required then J4 must be connected and a pull-up voltage must be provided on the PACK+ terminal.
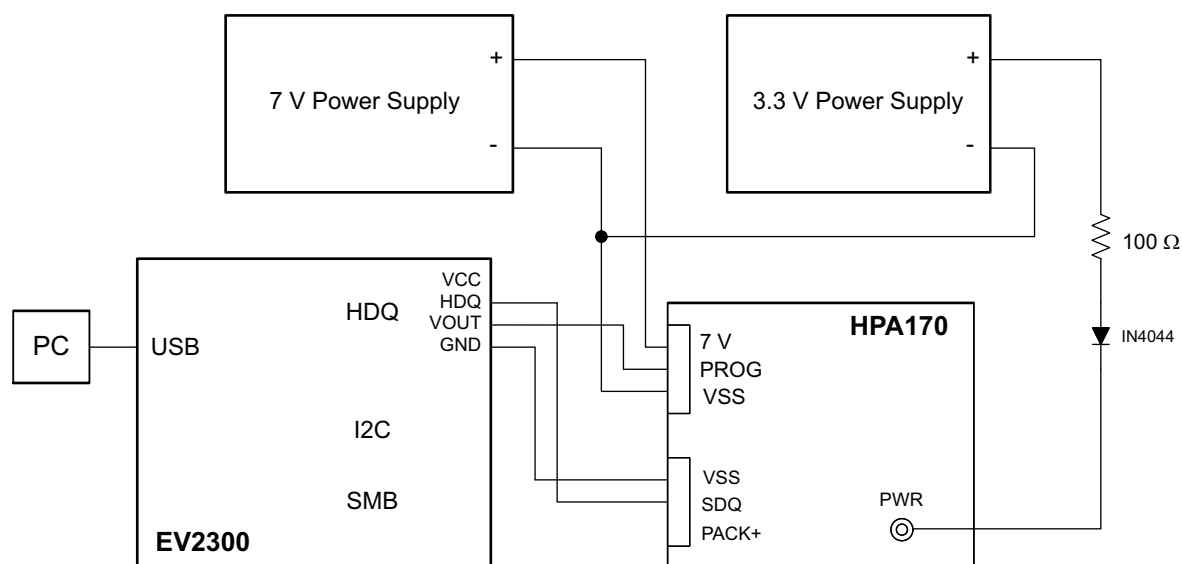


**Figure 6. Full Connection Set Up**

### 3.2.1    Normal Operation

Normal operation includes reading registers from bq26100, writing to RAM and EEPROM registers. If using the EV2300 to communicate with the bq26100 do not connect J4. This jumper is for using a pull-up resistor on the SDQ line. The EV2300 already provides a 10kΩ pull-up resistor that allows SDQ communication.

### 3.2.2    OTP Programming

To program OTP registers it is required to send a 7V pulse across the SDQ line after reading the corresponding CRC value. See data sheet for specific description of OTP programming requirements. When programming OTP registers is expected, the following must be ensured:

- J3 jumper is connected
- VOUT output of EV2300 is connected to PROG input of HPA170 board.
- Power supply set to 7V is connected across the 7V and VSS inputs of HPA170 board.

## 4      Software Operation

Run the program from the **Start|Programs|Texas Instruments|bq26100 Evaluation Software** menu sequence. If the EV2300 is not connected to a USB port, the program will display a USB error message and then display the ROM Commands page.

**Evaluation Software Pages**

This section describes the function of each page of the EVSW

## 4.1    ROM CMD

Within this page all the ID ROM commands can be tested for the bq26100 (Figure 7).

**Sections within the ROM CMD page**

**Application –** This section is to select how many bq26100 devices are on the SDQ bus. If only one device is used then select *Single Device*. This option causes that SKIP ROM command is sent before any communication attempt with the device. If more than one device is used then select *Multiple Devices*. This option causes that MATCH ROM command is sent before any communication attempt with the desired device.

**Search ROM –** This section demonstrates the SEARCH ROM command. When there are multiple devices on the SDQ bus the ROM ID of the devices that share the bus will be listed.

**Match ROM –** This section is only available when the *Multiple Devices* option is selected at the Application section. To use the MATCH ROM enter in the text box the ROM ID of the device of interest and then click on *Select Device* button. This will cause that MATCH ROM commands with the desired ROM ID will be sent whenever communication is attempted with the desired device. If SEARCH ROM was used, the desired ID can be copied from the SEARCH ROM list and then pasted into the MATCH ROM text box. Ensure that only the ID numbers are pasted into the text box and not the whole line referring to the device.

**Read ROM –** This section is only available when the *Single Device* option is selected at the Application section. The ID ROM of the device on the SDQ communication line will be displayed.
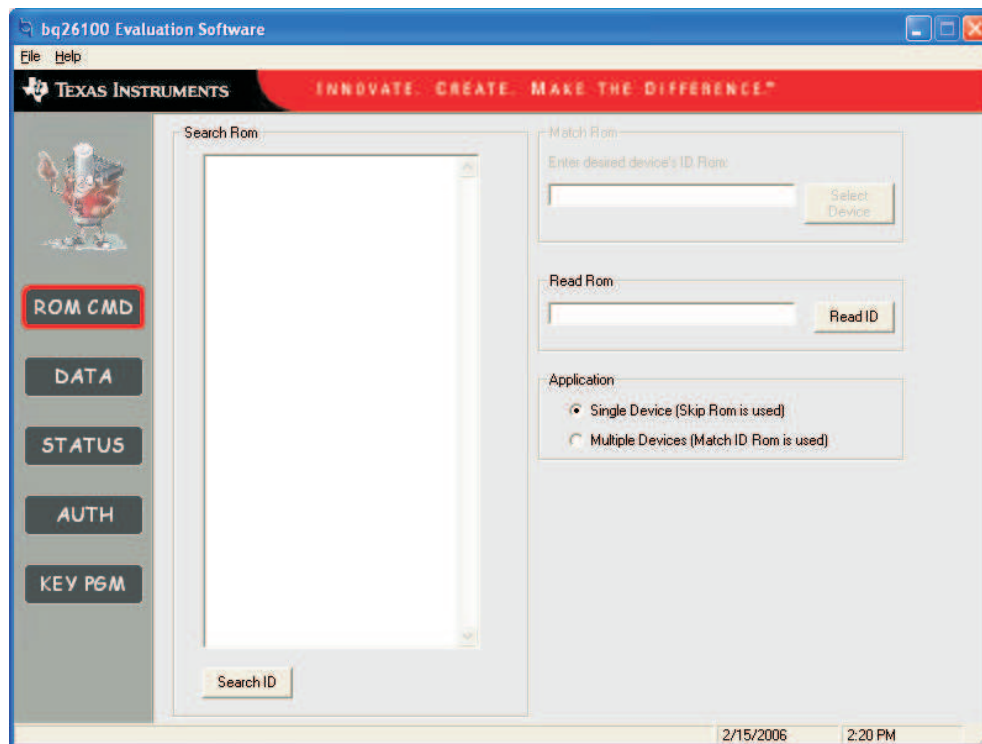
**Figure 7. ROM CMD Page**

## 4.2 DATA

### 4.2.1 OTP

This page (Figure 8) allows the user to program the OTP with desired values. It requires that the hardware is setup as described in section 3.2 of this user's guide for OTP programming.

The OTP memory map is organized in 5 pages of 32 bytes each. All registers can be read by clicking on the *Read OTP* button. As the registers of a specific page are being read, the page number will be highlighted in red.

Once the data is displayed on the grid after reading the OTP, the data can be compared with a data file to verify that the data contained in OTP is as expected. Click on the *Compare w/File* command button so that the data file against which the data will be compared is selected from a directory. The data file must be of extension type .otp. An example of a data file is included with the EVSW. It will be found under the directory C:\Program Files\EV26100. As the data is being compared an address location at a time, there will be a message indicating if data is not the same for a specific address. Also if there is a mismatch of data then the user will be asked if he or she desires to continue comparing the data with file or if to cancel. As long as one address contains data that is not equal to the data file a fail message will be displayed at end of data comparison.

There are two methods of programming the OTP using the EVSW. One is by clicking on a specific grid that corresponds to the register that needs to be written. Write the hex value of the data that needs to be written and then hit ENTER.

The other method of programming the OTP is by importing a data file that contains all the values to be programmed. The data file is of file extension .otp. The data file format follows along with the data file used for *Compare w/File* command. To create additional data files, modify the example file so that the values on the right side represent the desired values and save the file with a different name ensuring that the extension .otp is used. To import a file into the grid, go to File | Open OTP File and select the appropriate file. Once the file is opened the grid will be filled in with the values contained in the data file. Click on *Write OTP* button so that the values get programmed into the OTP.

A data file also can be saved by going to File | Save OTP File. The data that will be saved in the file is whatever is displayed on the grids representing the OTP memory map.

### 4.2.2 EEPROM

The DATA page also allows the user to program the 16-byte EEPROM with desired values. It is not required to use an external high voltage programming pulse to write the EEPROM.

The EEPROM memory map is organized in one row of 16 bytes. All registers can be read by clicking on the *Read EEPROM* button. The EEPROM also has a data compare with file feature similar to the OTP's. The data file for EEPROM must be of extension .eep. The EVSW includes an example of the file. It may be found under the directory C:\Program Files\EV26100.

There are two methods of programming the EEPROM using the EVSW. One is by clicking on a specific grid that corresponds to the register that needs to be written. Write the hex value of the data that needs to be written and then hit ENTER.

The other method of programming the EEPROM is by importing a data file that contains all the values to be programmed. The data file is of the same type as the one used for EEPROM compare with file feature. To create additional data files, modify the example file so that the values on the right side of the file represent the desired values and save the file with a different name ensuring that the extension .eep is used. To import a file into the grid, go to File | Open EEPROM File and select the appropriate file. Once the file is opened the grid will be filled in with the values contained in the data file. Click on *Write EEPROM* button so that the values get programmed into the EEPROM.
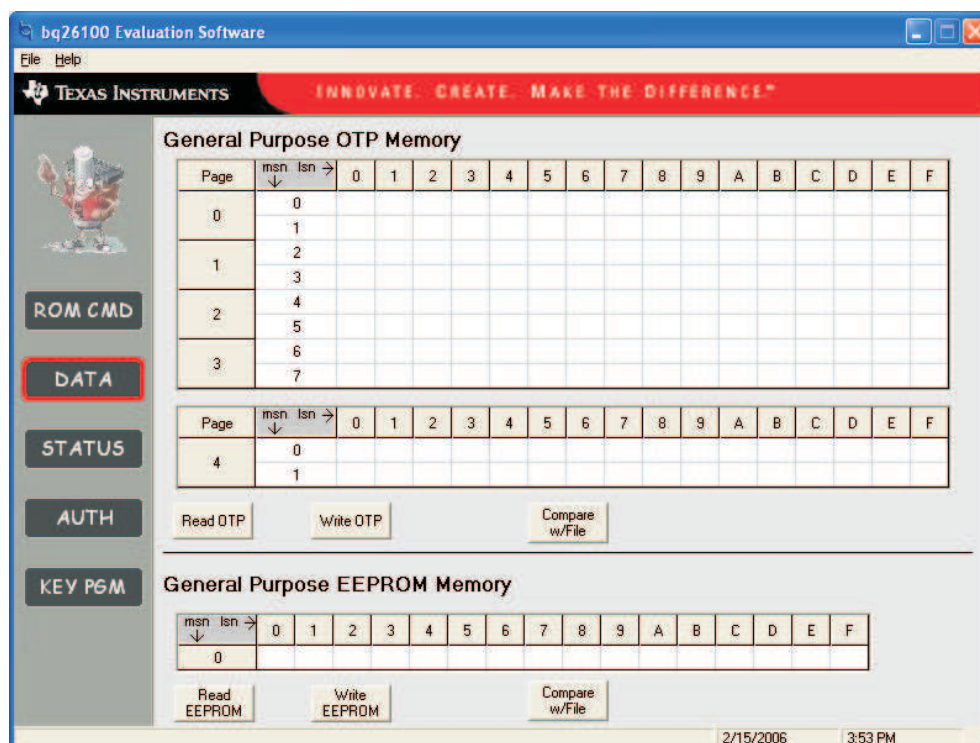


**Figure 8. DATA Page**

### 4.3 STATUS

This page (Figure 9) allows the user to read or write the OTP Status bytes of bq26100. The registers can be programmed by clicking on the appropriate grid; entering the desired value and pressing ENTER.

There are buttons that are provided so that the user can select specific pages for write protection. By selecting any of the Write Protection Bits button, register 0x00 of Status registers is written automatically so that the corresponding bit is set.

Note that the Status registers are OTP. Once a bit has been set it can not be cleared.
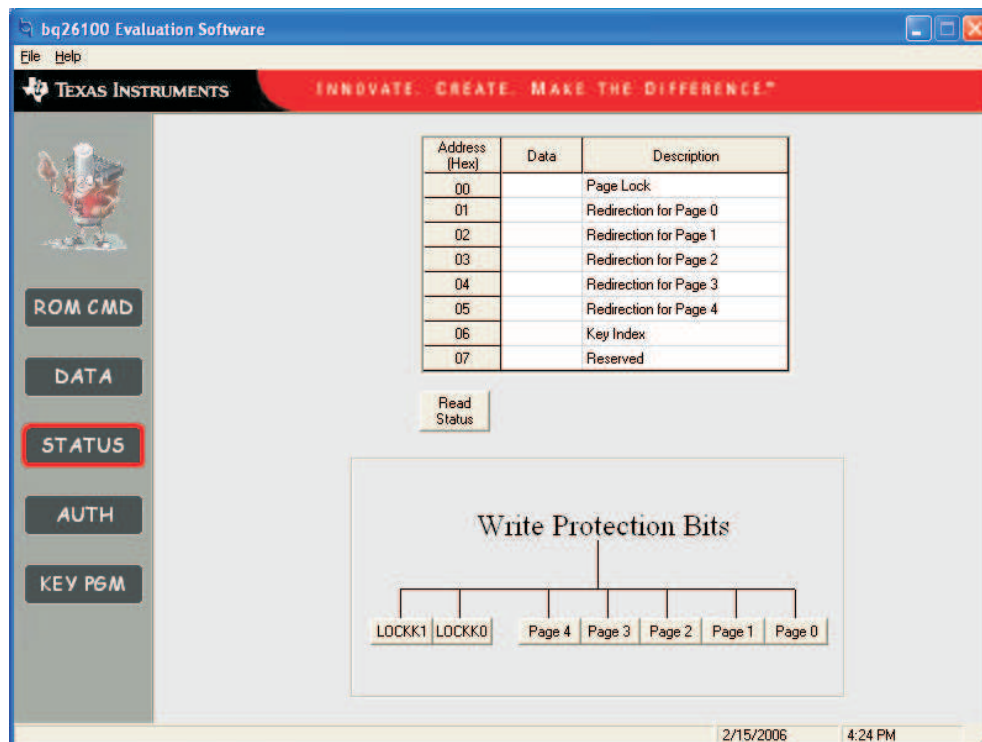


**Figure 9. STATUS Page**

## 4.4 AUTH

All the authentication process occurs at the AUTH page (Figure 10). The user must know the 128 bit Authentication Key that is stored in the bq26100. See section 4.5 for further information. Once the Authentication Key is entered (in HEX format), proceed by generating a random Message and send it to bq26100 by activating the appropriate command buttons. After sending the message to bq26100 hit the AUTH button that automatically executes a write into the CONTROL register and sets the AUTH bit. This will initiate the SHA-1/HMAC calculation by the IC and also by the evaluation software based on the 160-bit Message and the 128-bit Key. Once the authentication is done the result obtained by the bq26100 (DIGEST Register) and the evaluation software will be displayed. A message in the bottom will indicate if the authentication is successful or not.
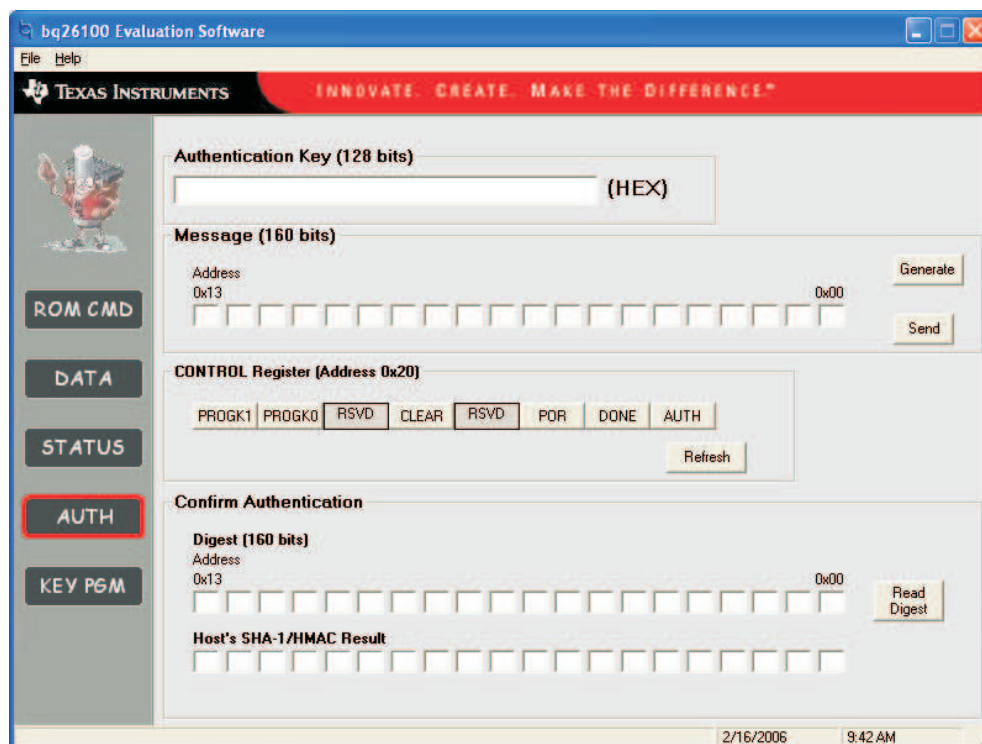
**Figure 10. AUTH Page**

Make variations to the steps described above to prove that only a correct combination of Authentication Key and Message are needed so that authentication is successful.

## 4.5 KEY PGM

This page (Figure 11 and Figure 12) allows the user to program the 128-bit Authentication Key into the bq26100. To program the key it must be ensured that it is setup as described in section 3.2 given that OTP memory is written into during the process.

To generate and program the key, two 64-bit messages are sent to the bq26100. For specifics on how to program the key for a bq26100 refer to the *Key Programming Description* section on the bq26100 datasheet.

A key can be generated with the EVSW either by providing specific messages or by generating random messages

If using random messages (Figure 11) then select *Random* on the Message Generation section of the KEY PGM page. The software provides the capability of programming the whole 128-bit key or just programming exclusively either the higher or lower 64 bits of the key. In the *Key to program* section make a check on the sections of the key that programming is required. To program the key, click on the *Generate Key* command button. The key generation and programming process ends by displaying the key that was programmed into private OTP memory of the bq26100 in the bottom text field.

**Figure 11. KEY PGM With Random Message Generation**

If using a specific message (Figure 12) then select *User Input* on the Message Generation section of the KEY PGM page. Select the portions of the key (lower 64 bits, higher 64 bits or both) to be programmed. Input hex byte values corresponding to each appropriate message needed for the key generation. The most significant byte is always to the left. After the message(s) is/are input then the *Generate Key* button is clicked to initiate the key generation and programming process. The key programmed to the bq26100 will be displayed on the *Generated Key* text field.

**Figure 12. KEY PGM Page with User Input**

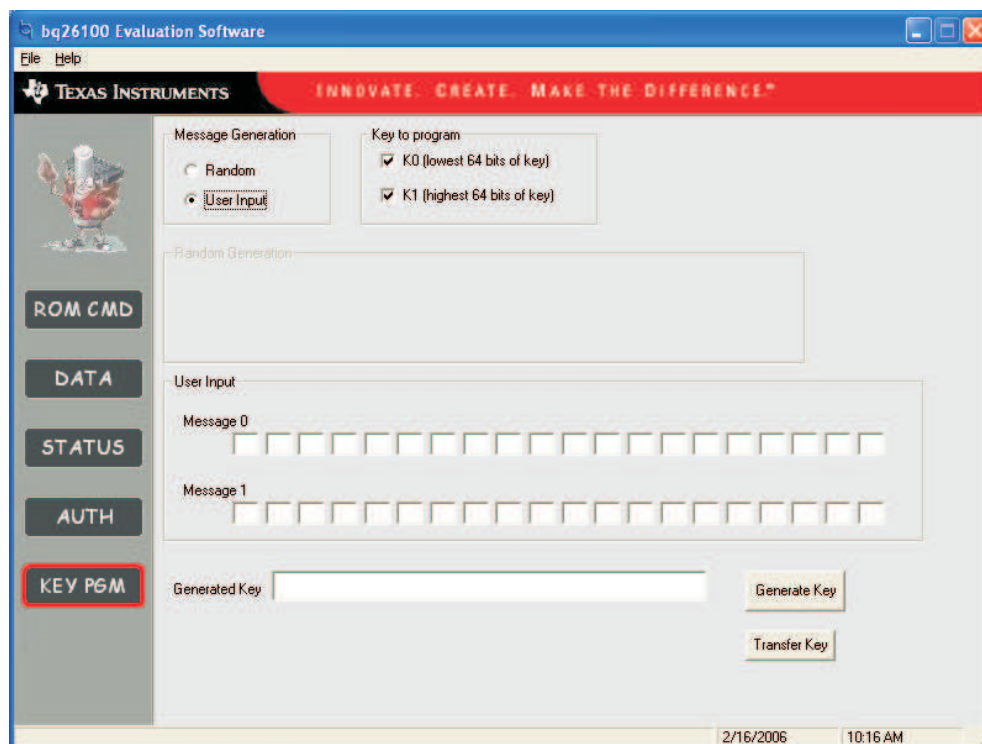Once a key is programmed into device, regardless if using the random message or user input methods, there's not a direct way to retrieve the data. Ensure that you record the Key that is generated. By hitting the *Transfer Key* command button a copy of the Key is placed automatically on the Authentication Key text box that's in the AUTH page of the evaluation software to facilitate the use for authentication. Be aware though that if the evaluation software is terminated that the key will not be stored. It is imperative that the key is recorded once generated.

For every half of the key that is programmed using the EVSW, the EVSW will perform a lock key on the device. For example if the lower 64 bits of the key are programmed then the LOCKK0 bit from the STATUS bytes is set. During normal operation this is not performed automatically by the bq26100. The EVSW is written to do so to avoid reprogramming the key with unknown data.

# EVALUATION BOARD/KIT/MODULE (EVM) ADDITIONAL TERMS

Texas Instruments (TI) provides the enclosed Evaluation Board/Kit/Module (EVM) under the following conditions:

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user indemnifies TI from all claims arising from the handling or use of the goods.

Should this evaluation board/kit not meet the specifications indicated in the User's Guide, the board/kit may be returned within 30 days from the date of delivery for a full refund. THE FOREGOING LIMITED WARRANTY IS THE EXCLUSIVE WARRANTY MADE BY SELLER TO BUYER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. EXCEPT TO THE EXTENT OF THE INDEMNITY SET FORTH ABOVE, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

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As noted in the EVM User's Guide and/or EVM itself, this EVM and/or accompanying hardware may or may not be subject to the Federal Communications Commission (FCC) and Industry Canada (IC) rules.

For EVMs **not** subject to the above rules, this evaluation board/kit/module is intended for use for ENGINEERING DEVELOPMENT, DEMONSTRATION OR EVALUATION PURPOSES ONLY and is not considered by TI to be a finished end product fit for general consumer use. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC or ICES-003 rules, which are designed to provide reasonable protection against radio frequency interference. Operation of the equipment may cause interference with radio communications, in which case the user at his own expense will be required to take whatever measures may be required to correct this interference.

**General Statement for EVMs including a radio**

*User Power/Frequency Use Obligations*: This radio is intended for development/professional use only in legally allocated frequency and power limits. Any use of radio frequencies and/or power availability of this EVM and its development application(s) must comply with local laws governing radio spectrum allocation and power limits for this evaluation module. It is the user's sole responsibility to only operate this radio in legally acceptable frequency space and within legally mandated power limitations. Any exceptions to this are strictly prohibited and unauthorized by Texas Instruments unless user has obtained appropriate experimental/development licenses from local regulatory authorities, which is responsibility of user including its acceptable authorization.

**For EVMs annotated as FCC – FEDERAL COMMUNICATIONS COMMISSION Part 15 Compliant**

**Caution**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC Interference Statement for Class A EVM devices**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

**FCC Interference Statement for Class B EVM devices**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**For EVMs annotated as IC – INDUSTRY CANADA Compliant**

This Class A or B digital apparatus complies with Canadian ICES-003.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Concerning EVMs including radio transmitters**

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

**Concerning EVMs including detachable antennas**

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Cet appareil numérique de la classe A ou B est conforme à la norme NMB-003 du Canada.

Les changements ou les modifications pas expressément approuvés par la partie responsable de la conformité ont pu vider l'autorité de l'utilisateur pour actionner l'équipement.

**Concernant les EVMs avec appareils radio**

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

**Concernant les EVMs avec antennes détachables**

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

## 【Important Notice for Users of EVMs for RF Products in Japan】

**This development kit is NOT certified as Confirming to Technical Regulations of Radio Law of Japan**

If you use this product in Japan, you are required by Radio Law of Japan to follow the instructions below with respect to this product:

1.  Use this product in a shielded room or any other test facility as defined in the notification #173 issued by Ministry of Internal Affairs and Communications on March 28, 2006, based on Sub-section 1.1 of Article 6 of the Ministry's Rule for Enforcement of Radio Law of Japan,

2.  Use this product only after you obtained the license of Test Radio Station as provided in Radio Law of Japan with respect to this product, or

3.  Use of this product only after you obtained the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to this product. Also, please do not transfer this product, unless you give the same notice above to the transferee. Please note that if you could not follow the instructions above, you will be subject to penalties of Radio Law of Japan.

**Texas Instruments Japan Limited**
**(address) 24-1, Nishi-Shinjuku 6 chome, Shinjuku-ku, Tokyo, Japan**

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## EVALUATION BOARD/KIT/MODULE (EVM)
## WARNINGS, RESTRICTIONS AND DISCLAIMERS

**For Feasibility Evaluation Only, in Laboratory/Development Environments.** Unless otherwise indicated, this EVM is not a finished electrical equipment and not intended for consumer use. It is intended solely for use for preliminary feasibility evaluation in laboratory/development environments by technically qualified electronics experts who are familiar with the dangers and application risks associated with handling electrical mechanical components, systems and subsystems. It should not be used as all or part of a finished end product.

Your Sole Responsibility and Risk. You acknowledge, represent and agree that:

1. You have unique knowledge concerning Federal, State and local regulatory requirements (including but not limited to Food and Drug Administration regulations, if applicable) which relate to your products and which relate to your use (and/or that of your employees, affiliates, contractors or designees) of the EVM for evaluation, testing and other purposes.

2. You have full and exclusive responsibility to assure the safety and compliance of your products with all such laws and other applicable regulatory requirements, and also to assure the safety of any activities to be conducted by you and/or your employees, affiliates, contractors or designees, using the EVM. Further, you are responsible to assure that any interfaces (electronic and/or mechanical) between the EVM and any human body are designed with suitable isolation and means to safely limit accessible leakage currents to minimize the risk of electrical shock hazard.

3. Since the EVM is not a completed product, it may not meet all applicable regulatory and safety compliance standards (such as UL, CSA, VDE, CE, RoHS and WEEE) which may normally be associated with similar items. You assume full responsibility to determine and/or assure compliance with any such standards and related certifications as may be applicable. You will employ reasonable safeguards to ensure that your use of the EVM will not result in any property damage, injury or death, even if the EVM should fail to perform as described or expected.

4. You will take care of proper disposal and recycling of the EVM's electronic components and packing materials.

**Certain Instructions**. It is important to operate this EVM within TI's recommended specifications and environmental considerations per the user guidelines. Exceeding the specified EVM ratings (including but not limited to input and output voltage, current, power, and environmental ranges) may cause property damage, personal injury or death. If there are questions concerning these ratings please contact a TI field representative prior to connecting interface electronics including input power and intended loads. Any loads applied outside of the specified output range may result in unintended and/or inaccurate operation and/or possible permanent damage to the EVM and/or interface electronics. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative. During normal operation, some circuit components may have case temperatures greater than 60°C as long as the input and output are maintained at a normal ambient operating temperature. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors which can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during normal operation, please be aware that these devices may be very warm to the touch. As with all electronic evaluation tools, only qualified personnel knowledgeable in electronic measurement and diagnostics normally found in development environments should use these EVMs.

**Agreement to Defend, Indemnify and Hold Harmless.** You agree to defend, indemnify and hold TI, its licensors and their representatives harmless from and against any and all claims, damages, losses, expenses, costs and liabilities (collectively, "Claims") arising out of or in connection with any use of the EVM that is not in accordance with the terms of the agreement. This obligation shall apply whether Claims arise under law of tort or contract or any other legal theory, and even if the EVM fails to perform as described or expected.

**Safety-Critical or Life-Critical Applications.** If you intend to evaluate the components for possible use in safety critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, such as devices which are classified as FDA Class III or similar classification, then you must specifically notify TI of such intent and enter into a separate Assurance and Indemnity Agreement.

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