

## **TPS60250EVM-185**

### Contents

1	Introduction .....	1
2	Setup .....	2
3	Board Layout .....	6
4	Schematic and Bill of Materials .....	9

### List of Figures

1	TPS60250 Software Screenshot.....	5
2	Assembly Layer .....	6
3	Top Layer Routing .....	7
4	Bottom Layer Routing .....	8
5	TPS60250EVM-185 Schematic.....	9

### List of Tables

1	Factory EVM Jumper Settings .....	4
2	TPS60250EVM-185 Bill of Materials.....	10

## **1 Introduction**

The Texas Instruments TPS60250EVM-185 evaluation module (EVM) helps designers evaluate the operation and performance of the TPS60250 white LED (WLED) driver for applications that are powered with one Li-ion or Li-polymer cell and require two or three separate banks of WLEDs. The TPS60250 contains a 1x/1.5x chargepump, as well as seven current sinks that are configured into a main display bank of four or five WLEDs and a sub-display bank of two WLEDs. Additionally, the fifth main display WLED can be configured to drive an aux display at up to 80 mA for backlighting a keypad or a weak camera flash.

## 2 Setup

This chapter describes the jumpers and connectors on the EVM, as well as how to properly connect, set up, and use the TPS60250EVM-185.

### 2.1 Input/Output Connector Descriptions

#### J1 – VIN

This is the positive input voltage connection to the converter. The EVM operates from any supply voltage between 3 V and 6 V. The leads to the input supply should be twisted and kept as short as possible to minimize EMI transmission and input voltage droop.

#### J2 – GND

This is the input return connection for the input power supply.

#### J3 – USB to GPIO Connector

This is the connector for the interface box. Connect a ribbon cable of the interface box to this device.

#### J4 – WLED CATHODE DM5

This is the DM5 connection for using an external aux display WLED bank. Connect the cathode(s) of the external aux display bank to this input.

#### J5 – WLED ANODE DM5

This is the anode connection for using an external aux display WLED bank. Connect the anode(s) of the external aux display bank to this output.

#### JP1 – DM1

JP1 is used to connect the cathode of the DM1 LED to the DM1 pin on the TPS60250. Place a shunt on JP1 to connect the WLED to the DM1 input. Remove the shunt to measure the DM1 current or use an external WLED for DM1.

#### JP2 – DM2

JP2 is used to connect the cathode of the DM2 LED to the DM2 pin on the TPS60250. Place a shunt on JP2 to connect the WLED to the DM2 input. Remove the shunt to measure the DM2 current or use an external WLED for DM2.

#### JP3 – DM3

JP3 is used to connect the cathode of the DM3 LED to the DM3 pin on the TPS60250. Place a shunt on JP3 to connect the WLED to the DM3 input. Remove the shunt to measure the DM3 current or use an external WLED for DM3.

#### JP4 – DM4

JP4 is used to connect the cathode of the DM4 LED to the DM4 pin on the TPS60250. Place a shunt on JP4 to connect the WLED to the DM4 input. Remove the shunt to measure the DM4 current or use an external WLED for DM4.

#### JP5 – DM5

JP5 is used to connect the cathode of the DM5 LED to the DM5 pin on the TPS60250. Place a shunt on JP5 to connect the WLED to the DM5 input. Remove the shunt to measure the DM5 current or use an external WLED for DM5.

#### JP6 – DS1

JP6 is used to connect the cathode of the DS1 LED to the DS1 pin on the TPS60250. Place a shunt on JP6 to connect the WLED to the DS1 input. Remove the shunt to measure the DS1 current or use an external WLED for DS1.

## JP7 – DS2

JP7 is used to connect the cathode of the DS2 LED to the DS2 pin on the TPS60250. Place a shunt on JP7 to connect the WLED to the DS2 input. Remove the shunt to measure the DS2 current or use an external WLED for DS2.

## 2.2 Equipment Requirements

In order for this EVM to operate properly, the following components must be connected and properly configured.

### 2.2.1 Personal Computer

A computer with a USB port is required to operate this EVM. The TPS60250 interface software, which is run on the personal computer (PC), communicates with the EVM via the PC USB port. The user sends commands to the EVM and reads the contents of the TPS60250 internal registers through the USB port.

### 2.2.2 Printed Circuit Board Assembly

The TPS60250EVM-185 PCB contains the TPS60250 IC and its required external components. This board contains several jumpers and connectors that allow the user to customize the board for specific operating conditions.

### 2.2.3 USB to I<sup>2</sup>C Adapter

The HPA172 is the link that allows the PC and the EVM to communicate. The adapter connects to the PC with the supplied USB cable on one side and to the EVM through the supplied ribbon cable on the other. When the user writes a command to the EVM, the interface program, which is run from the PC, sends the command to the PC USB port. The adapter receives the USB command and converts the signal to an I<sup>2</sup>C protocol. It then sends the I<sup>2</sup>C signal to the TPS60250 board. When the user reads a status register from the EVM, the PC sends a command to read a register on the EVM. When the EVM receives the command, it reports the status of the register via the I<sup>2</sup>C interface. The adapter receives the information on the I<sup>2</sup>C interface, converts it to a USB protocol, and sends it to the PC.

### 2.2.4 Software

Texas Instruments provides software to assist the user in evaluating this EVM. Check the TPS60250EVM-185 product folder (<http://www.ti.com/tool/tps60250evm-185>) on the TI Web site for the latest version of the software.

### 2.2.5 Power Supplies

The TPS60250 EVM requires one power supply for operation. It may need to supply several hundred mA, depending on the WLED currents.

## 2.3 Operation

The following steps must be followed before the EVM can be operated.

1. Install the TPS6025xEVM software.
2. Connect the input voltages to the EVM.
3. Configure all EVM jumpers to the factory settings in Table 1.
4. Connect the ribbon cable between the EVM and the USB-TO-GPIO (HPA172) adapter.
5. Connect the USB cable between the computer and USB-TO-GPIO adapter
6. Run the TPS6025xEVM software.

**Table 1. Factory EVM Jumper Settings**

Jumper	Shunt Location
JP1	Installed
JP2	Installed
JP3	Installed
JP4	Installed
JP5	Installed
JP6	Installed
JP7	Installed

### 2.3.1 TPS6025x Software Operation

The software is designed to work with the entire TPS60250/1/2 family of devices. A screenshot of the software is shown in [Figure 1](#). Upon being opened, the software asks the user to select which particular EVM is installed.

The top part of the software contains a link to the device datasheet as well as buttons to read and write all the registers.

The bottom part of the software indicates that the USB-to-GPIO adaptor is installed and working properly. It also notes the I<sup>2</sup>C bus speed (100 kHz).

#### 2.3.1.1 Left Half of Software GUI - Settings

This portion of the software allows the user to enable/disable the different banks of LEDs using simple check boxes. Open lamp detection may be enabled/disabled using the provided check box. Refer to the TPS60250 data sheet for a description of the open lamp detection. Additionally, a pulldown box (MODE) is available to control the aux display settings. The aux display may be grouped with main display or set for the separate high-current (80 mA) aux display. When using the high-current setting, it is suggested that separate LEDs are connected between the J5 (cathode connection) and J6 (anode connection) connectors. The LEDs installed on the EVM are rated for 30-mA dc current and may be damaged at the higher current. Selecting the shutdown option in the Aux Display pulldown menu disables all of the LEDs and places the IC in a low-power shutdown mode. The internal registers are not changed in this mode.

Another MODE pulldown box allows selection of what switching mode is used to drive the WLEDs: auto switch, forced 1x, or forced 1.5x. Finally, there are 3 pulldown boxes at the bottom to set the WLED current for each of the banks.

#### 2.3.1.2 Right Half of the GUI - Register Map

This portion of the software allows the user to change the registers on a bit level. All this functionality is already included in the easy to use boxes and pulldowns on the left half side of the GUI.

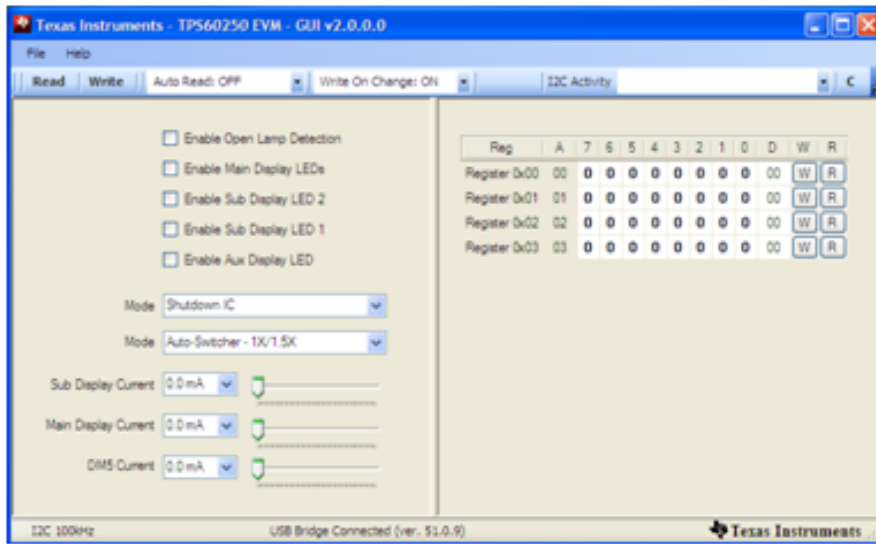


Figure 1. TPS60250 Software Screenshot

### 3 Board Layout

This chapter provides the TPS60250EVM-185 board layout and illustrations.

#### 3.1 Layout

Board layout is critical for all switch mode power supplies. Figure 2 through Figure 4 show the board layout for the TPS60250EVM-185 PCB.

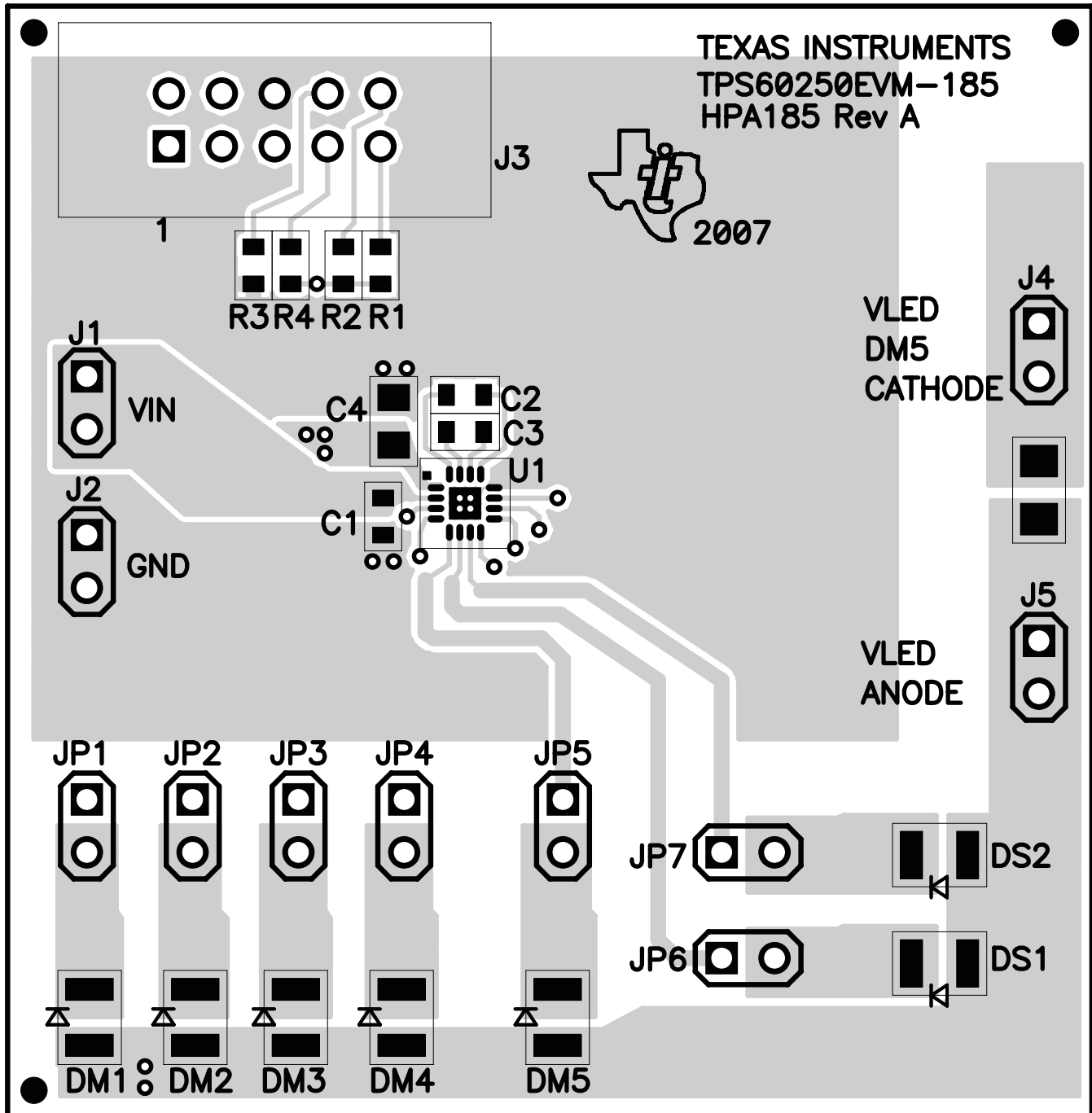


Figure 2. Assembly Layer

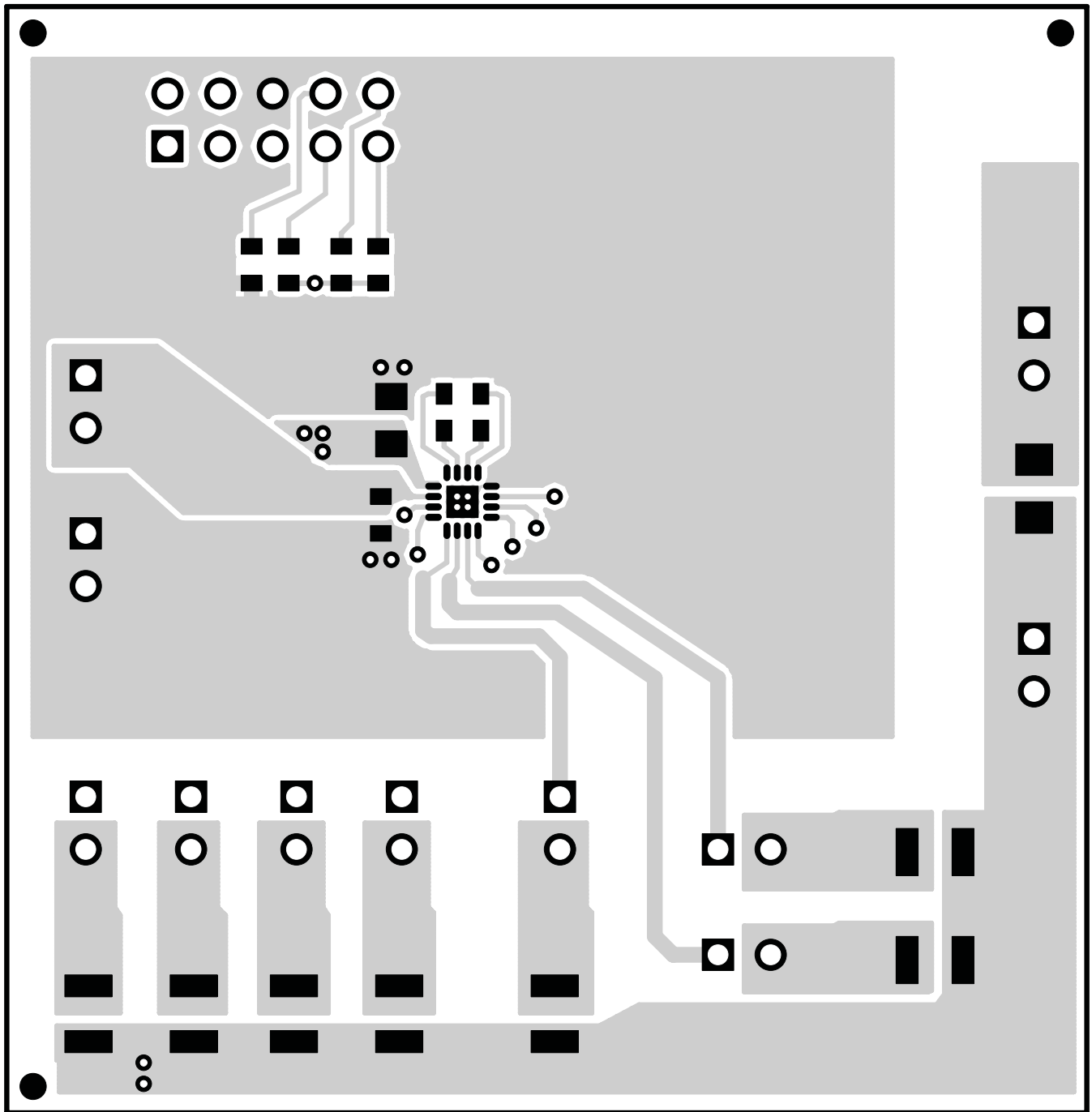
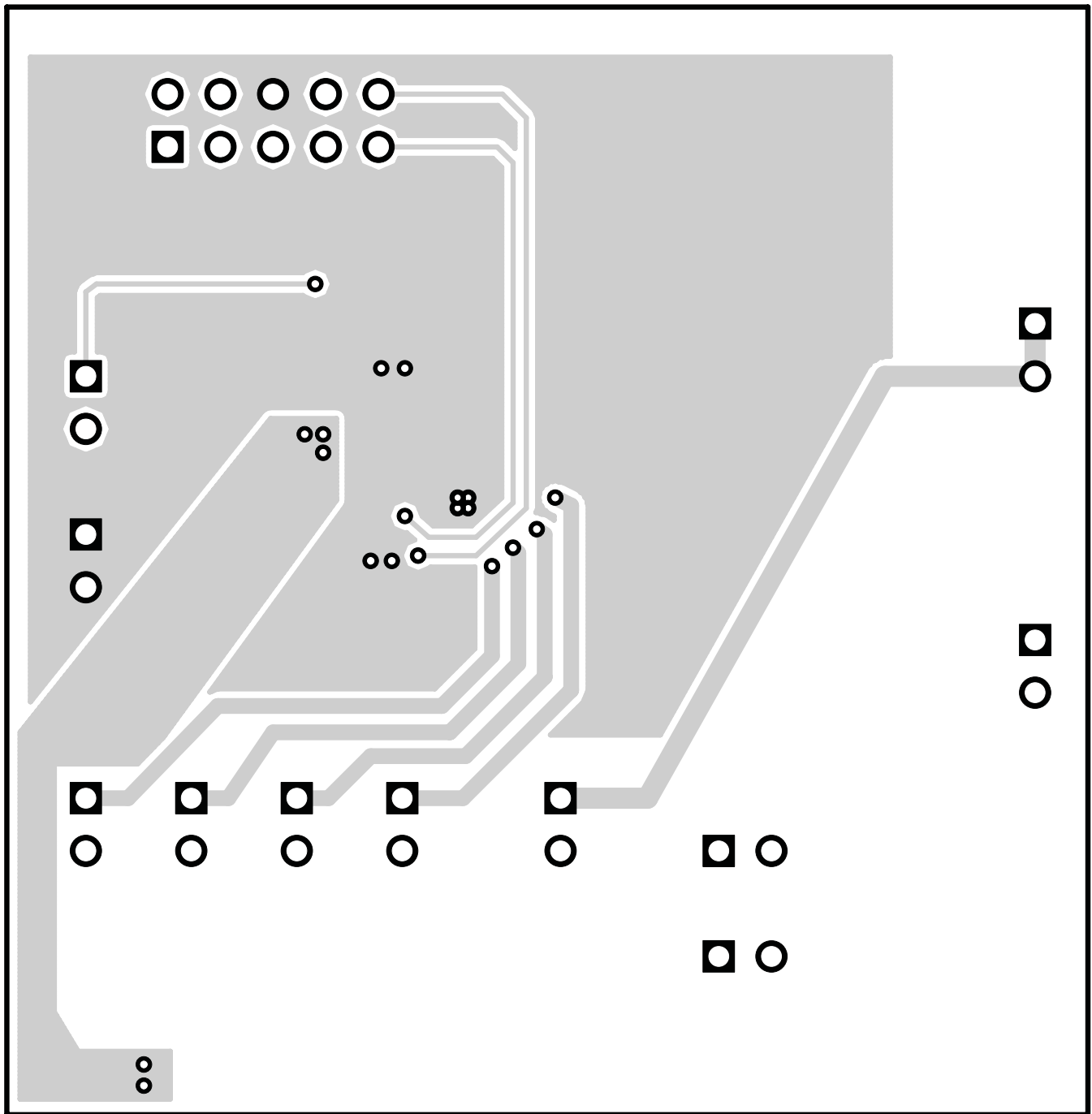


Figure 3. Top Layer Routing



**Figure 4. Bottom Layer Routing**



## 4 Schematic and Bill of Materials

This chapter provides the TPS60250EVM-185 schematic and bill of materials.

### 4.1 Schematic

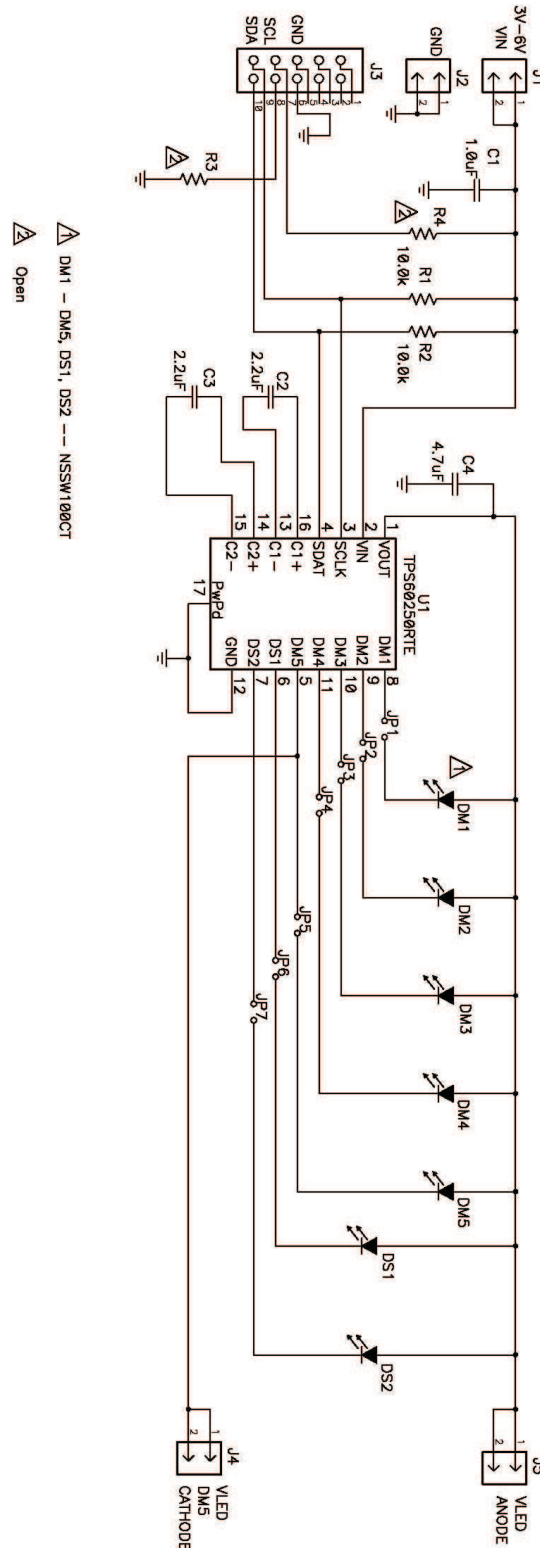


Figure 5. TPS60250EVM-185 Schematic

## 4.2 Bill of Materials

**Table 2. TPS60250EVM-185 Bill of Materials**

Count	RefDes	Value	Description	Size	Part Number	MFR
1	C1	1.0uF	Capacitor, Ceramic, 25V, X5R, 10%	0603	GRM188R61E105KA12	muRata
2	C2, C3	2.2uF	Capacitor, Ceramic, 10V, X5R, 10%	0603	GRM188R61A225KE34	muRata
1	C4	4.7uF	Capacitor, Ceramic, 10V, X5R, 10%	0805	GRM21BR61A475KA73	muRata
7	DM1 - DM5, DS1, DS2		Diode. LED, White	0.079 × 0.118	NSSW100CT	Nichia
2	R1, R2	10.0k	Resistor, Chip, 1/16W, 1%	0603	Std	Std
0	R3, R4	Open	Resistor, Chip, 1/16W, 1%	0603		
1	U1		IC, High Efficiency Charge Pump for 7 WLEDS with I <sup>2</sup> C Interface	QFN-16	TPS60250RTE	TI

### Related Documentation From Texas Instruments

 TPS60250 data sheet ([SLVS769](#))

## 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.

Please read the User's Guide and, specifically, the Warnings and Restrictions notice in the User's Guide prior to handling the product. This notice contains important safety information about temperatures and voltages. For additional information on TI's environmental and/or safety programs, please visit [www.ti.com/esh](http://www.ti.com/esh) or contact TI.

No license is granted under any patent right or other intellectual property right of TI covering or relating to any machine, process, or combination in which such TI products or services might be or are used. TI currently deals with a variety of customers for products, and therefore our arrangement with the user is not exclusive. TI assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or services described herein.

## REGULATORY COMPLIANCE INFORMATION

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 this Product 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**

<http://www.tij.co.jp>

#### **【ご使用にあたっての注】**

本開発キットは技術基準適合証明を受けておりません。

本製品のご使用に際しては、電波法遵守のため、以下のいずれかの措置を取っていただく必要がありますのでご注意ください。

1. 電波法施行規則第6条第1項第1号に基づく平成18年3月28日総務省告示第173号で定められた電波暗室等の試験設備でご使用いただく。
2. 実験局の免許を取得後ご使用いただく。
3. 技術基準適合証明を取得後ご使用いただく。

なお、本製品は、上記の「ご使用にあたっての注意」を譲渡先、移転先に通知しない限り、譲渡、移転できないものとします。

上記を遵守頂けない場合は、電波法の罰則が適用される可能性があることをご留意ください。

日本テキサス・インスツルメンツ株式会社  
東京都新宿区西新宿 6 丁目 2 4 番 1 号  
西新宿三井ビル

<http://www.tij.co.jp>

## 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. 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.

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2012, Texas Instruments Incorporated

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as "components") are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI's terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

TI assumes no liability for applications assistance or the design of Buyers' products. Buyers are responsible for their products and applications using TI components. To minimize the risks associated with Buyers' products and applications, Buyers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of significant portions of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI components or services with statements different from or beyond the parameters stated by TI for that component or service voids all express and any implied warranties for the associated TI component or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

### Products

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
OMAP Applications Processors	<a href="http://www.ti.com/omap">www.ti.com/omap</a>
Wireless Connectivity	<a href="http://www.ti.com/wirelessconnectivity">www.ti.com/wirelessconnectivity</a>

### Applications

Automotive and Transportation	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Energy and Lighting	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Space, Avionics and Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>

### TI E2E Community

[e2e.ti.com](http://e2e.ti.com)

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Texas Instruments:](#)

[TPS60250EVM-185](#)