TPS61096EVM-787 Evaluation Module

This user's guide describes the schematic, layout and operation of the TPS61096AEVM-787 evaluation module (EVM). The input voltage range of the EVM is 1.8 V to 5.5 V. The output voltage is set to 18 V, which can be modified through the feedback resistor. The EVM is assembled with A version device TPS61096A after May, 2017.

1 Performance Specification

Table 1 provides a summary of the TPS61096EVM-787 performance specifications. All specifications are given at the ambient temperature of 25°C.

Table 1. Performance Specification Summary

Specification	Test Condition	MIN	TYP	MAX	UNIT
Input Voltage		1.8		5.5	V
Output Voltage	V_{IN} = 3.6V, I_{OUT} = 20 mA	17.5	18	18.5	V
Output Current	V_{IN} = 3.6V, I_{LIM} = HIGH			30	mA

2 Schematic

The schematic of the EVM is shown in Figure 1. The function of the connectors is described following:

- J1: Input voltage positive and negative node.
- J2: Output voltage positive and negative node.
- J3: Enable or disable the boost converter
- J4: Input of the level shifter
- J5: Output of the level shifter
- J6: Current limitation selection
- J7: Ground for probe

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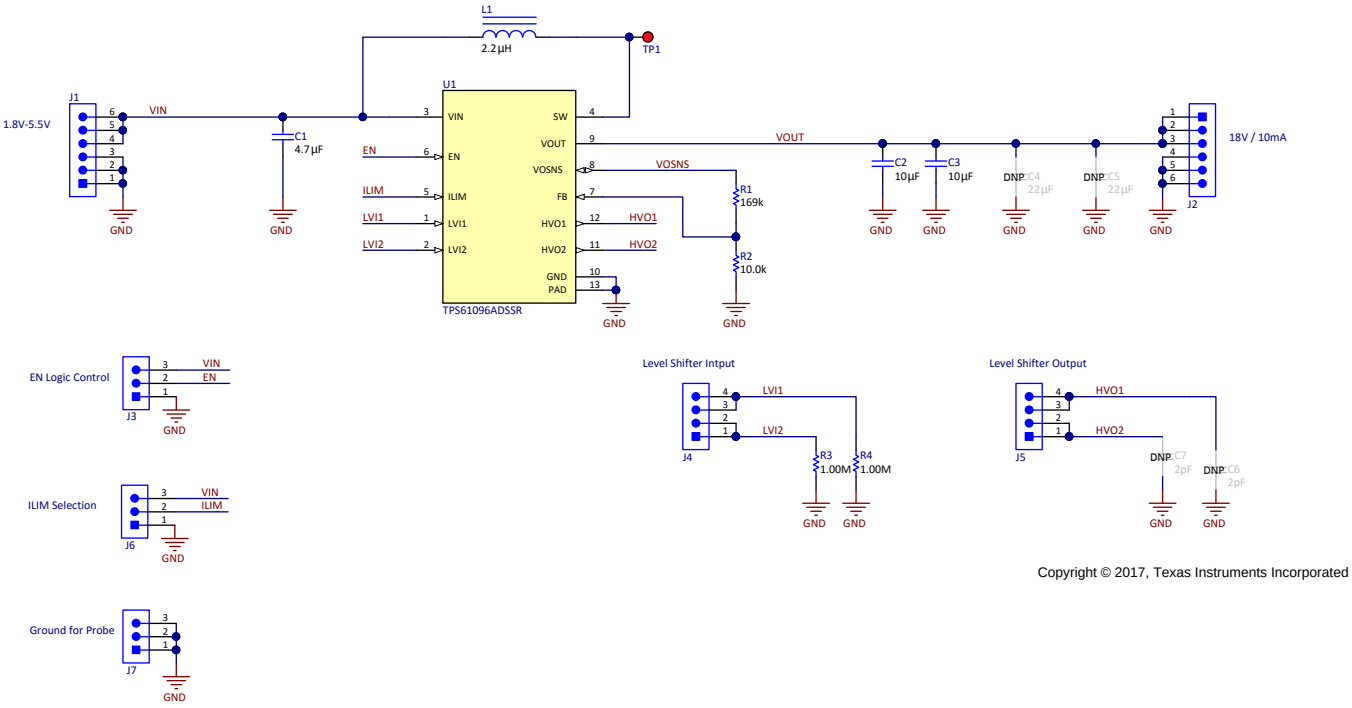


Figure 1. Schematic of the TPS61096EVM-787

2.1 External Components

Some external passive components in the schematic of the EVM are unnecessary in the real application. They are populated for evaluating the TPS61096 easily.

C4, C5 are provided for additional output capacitors. These capacitors are not required for proper operation but can be used to reduce the output voltage ripple and to improve the load transient response.

C6, C7 are provided to test the capacitance driving capability of the level shifter.

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3 Layout

There are two layers in the PCB. The top and bottom sides of the PCB layout are shown in Figure 2 and Figure 3 respectively

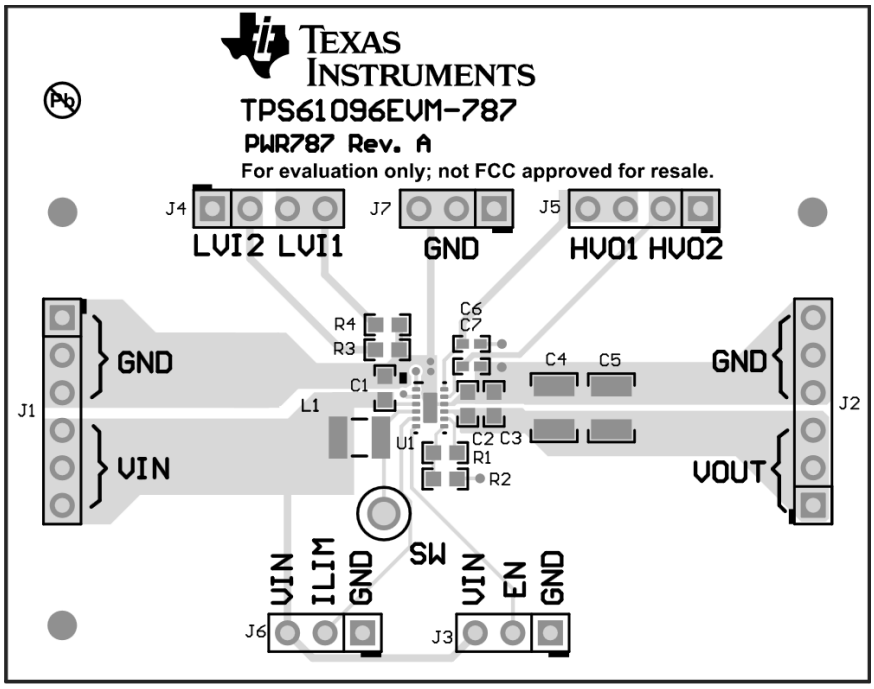


Figure 2. Top View of the TPS61096EVM-787

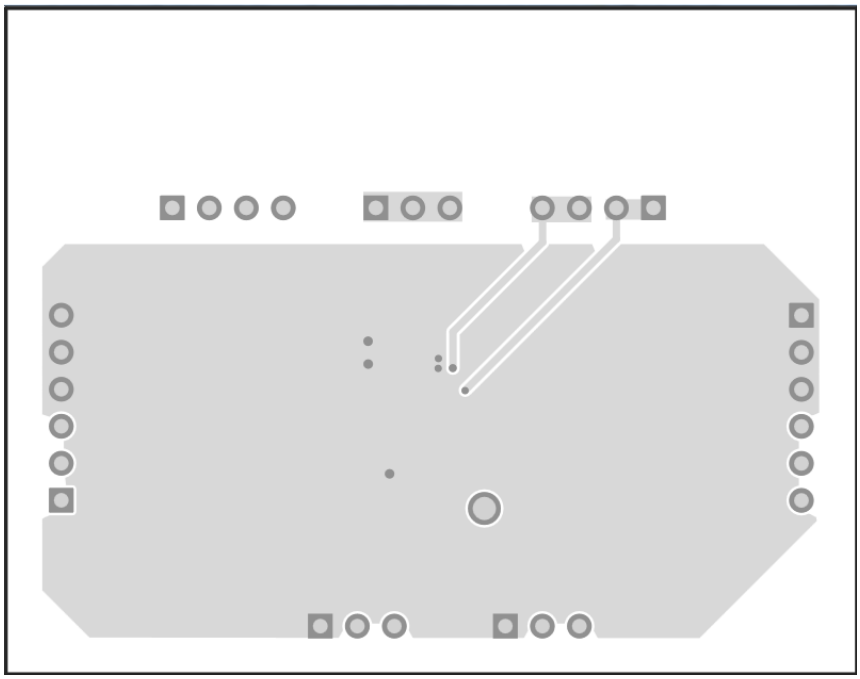


Figure 3. Bottom View of the TPS61096EVM-787

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4 Bill of Material

The BOM of the TPS61096EVM is shown in Table 2.

Table 2. BOM of TPS61096EVM-787

Designator	Quantity	Value	Description	Package	Part Number	Manufacturer
C1	1	4.7uF	CAP, CERM, 4.7 µF, 6.3 V, +/- 10%, X5R, 0603	0603	GRM188R60J475KE19D	MuRata
C2, C3	2	10uF	CAP, CERM, 10 µF, 35 V, +/- 20%, X5R, 0603	0603	GRM188R6YA106MA73D	MuRata
L1	1	2.2uH	Inductor, Wirewound, 2.2 µH, 1.5 A, 0.106 ohm, SMD	3.2x2.5mm	74479299222	Wurth Elektronik
R1	1	169k	RES, 169 k, 1%, 0.1 W, 0603	0603	CRCW0603169KFKEA	Vishay-Dale
R2	1	10.0k	RES, 10.0 k, 1%, 0.1 W, 0603	0603	RC0603FR-0710KL	Yageo America
R3, R4	2	1.00Meg	RES, 1.00 M, 1%, 0.1 W, 0603	0603	RC0603FR-071ML	Yageo America
U1	1		TPS61096DSSR, DSS0012A	DSS0012A	TPS61096ADSSR	Texas Instruments

Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Changes from Original (August 2016) to A Revision	Page
• Added sentence to the first paragraph: The EVM is assembled with A version device TPS61096A after May, 2017.	1

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      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.

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      NOTE: 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

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- *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.*

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(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.

Concernant les EVMs avec appareils radio:

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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.

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

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2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.

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