UM2122
User manual

Getting started with the STEVAL-ISB037V1 evaluation board for the LD39020 high PSRR, 200 mA LDO

Introduction

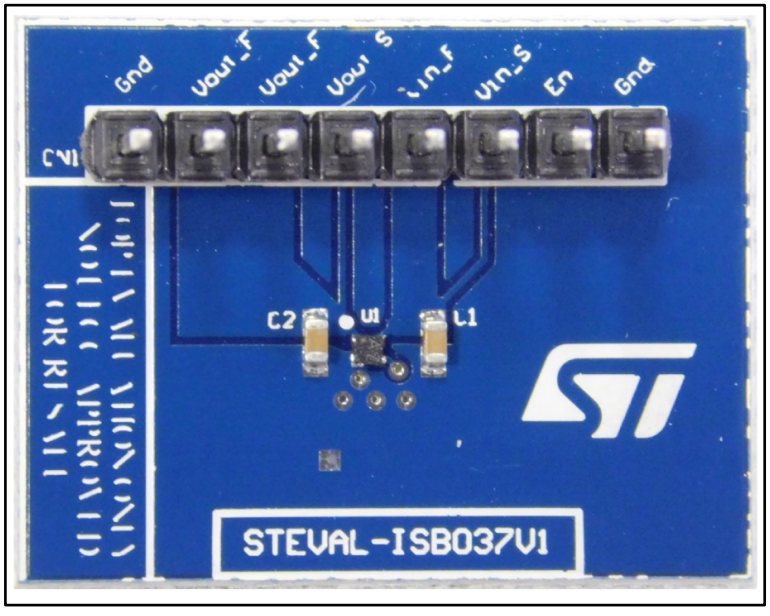
The STEVAL-ISB037V1 board features the LD39020 high performance linear voltage regulator, configured to convert a DC input voltage from 2.4 V to 5.5 V into a precise and stable 1.8 V output voltage.

Only two small ceramic capacitors are needed to implement the linear regulator solution.

The very low dropout LD39020 voltage regulator features high PSRR and low quiescent current in a tiny DFN4 package with a footprint of only (1 x 1) mm².

It is designed for low-power battery operated equipment such as smartphones, tablets and wearable devices.

Figure 1: STEVAL-ISB037V1 evaluation board



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1 Board overview

The STEVAL-ISB037V1 evaluation board size is 26 mm x 20 mm.

The PCB is made by using FR4 glass epoxy support with 2 copper layers.

The device features:

- Output current: 200 mA
- Logic controlled electronic shutdown
- High PSRR
  - 80 dB @ 1 kHz
  - 50 db @ 100 kHz
- Quiescent current:
  - 20 µA typ at no load
  - 0.03 µA typ in off mode
- 1.8 V ±0.5% output voltage
- Other voltage options available on request
- DFN4-1 x 1 package (0.8 x 0.8 available on request)
- RoHS compliant

1.1 Input/output connector

The 8-pin CN1 input/output connector provides:

- Kelvin connection points for input and output voltage;
- enable signal input;
- double GND connection.

Table 1: Input/output connector: pin description

Pin number	Pin description	Symbol
1, 8	Ground connection	GND
2, 3	Output voltage	V_{OUT} (force)
4	Output voltage sense pin	V_{OUT} (sense)
5	Input supply voltage	V_{IN} (force)
6	Input supply voltage sense pin	V_{IN} (sense)
7	Enable signal	EN

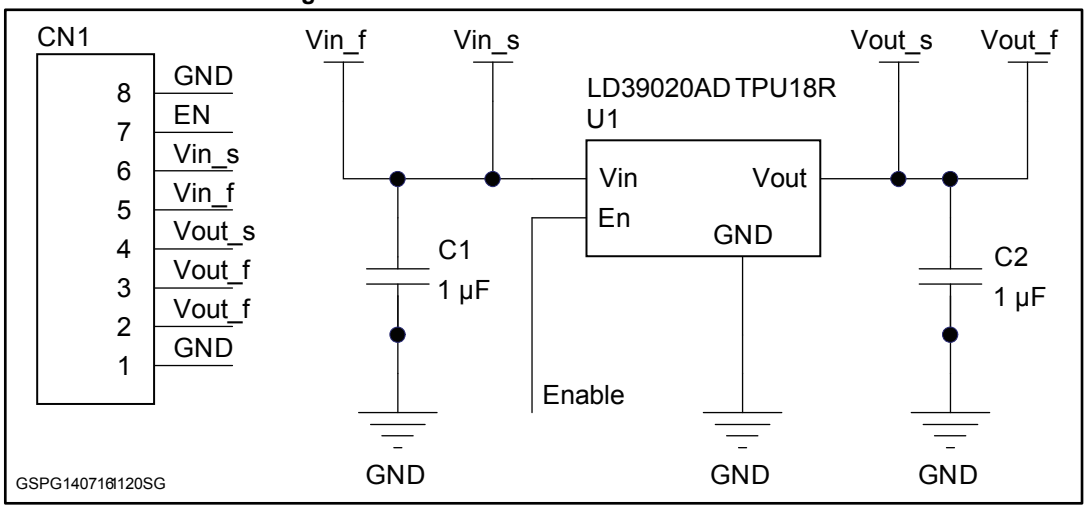
2 Getting started

To use the board, follow the procedure below:

1. Connect a DC power supply (voltage range 2.4 to 5.5 V_{DC}) to pin 5 and pin 1 (or 8).
2. Use pin 6 if you would sense the voltage on the device input pin.
3. Put a "high" level logic on pin 7 to turn the device ON (V_{EN} > 1 V).
   V_{EN} < 0.4 V turns the device OFF.
   To evaluate the device, it can be directly connected to V_{IN} or GND respectively.
4. Connect a multimeter or an oscilloscope on pin 2 (or 3) and pin 1 (or 8).
   The enable signal should never be left floating to avoid unwanted ON/OFF triggering.

3 Schematic diagram

Figure 2: STEVAL-ISB037V1 circuit schematic



4 PCB layout

Figure 3: STEVAL-ISB037V1 PCB layout: top side

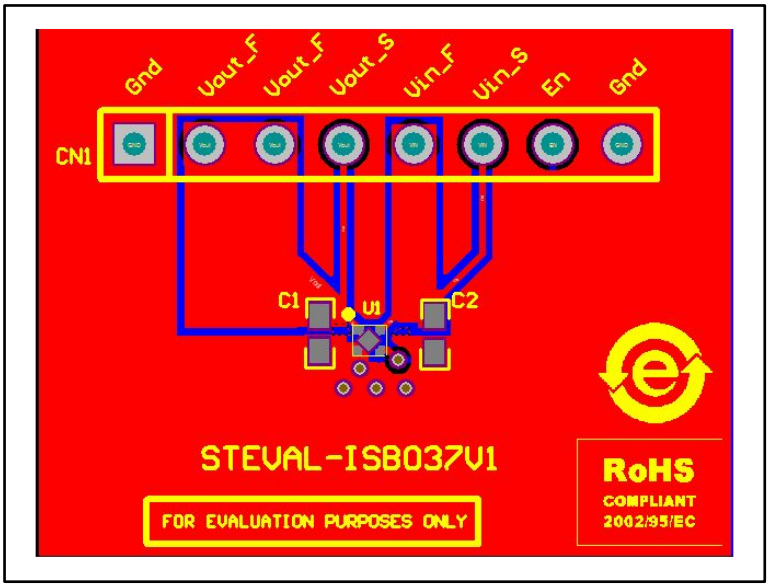
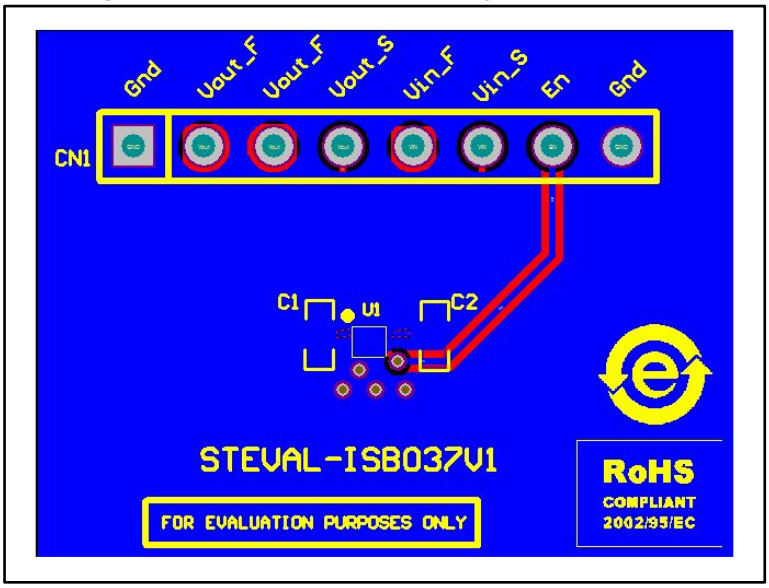


Figure 4: STEVAL-ISB037V1 PCB layout: bottom side



5 LD39020: block diagram and pinout

Figure 5: LD39020 block diagram

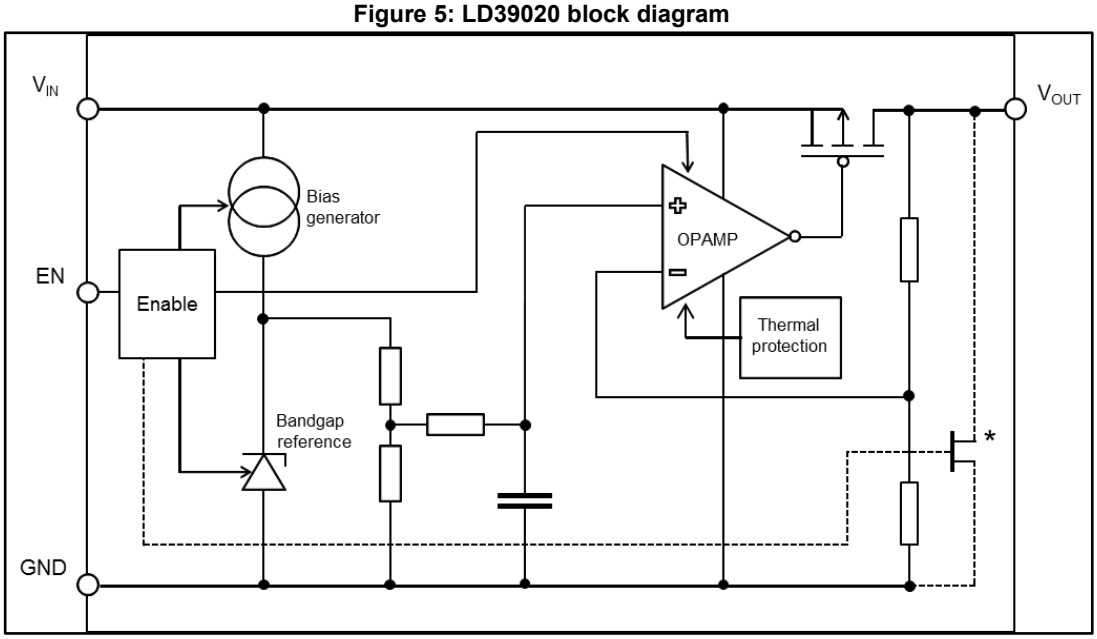


Figure 6: LD39020 (DFN4 - 1x1 package): pinout, bottom view

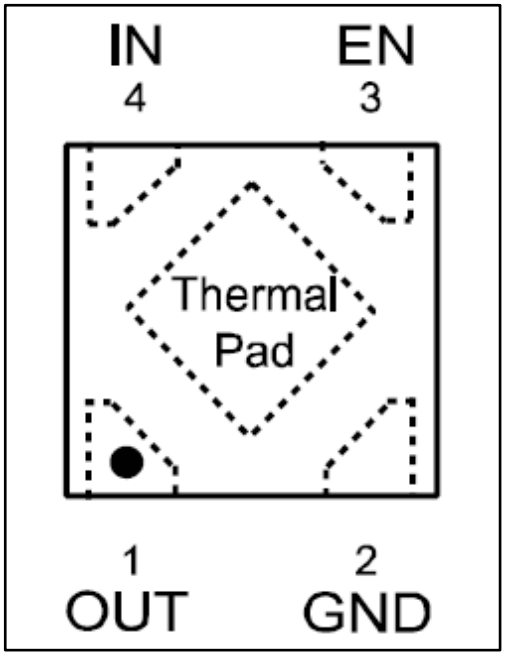


Table 2: LD39020 (DFN4 - 1x1 package) - pin description

Pin number	Pin Description	Symbol
1	Enable	EN
2	Input supply voltage	V_{IN}
3	Output voltage	V_{OUT}
4	Ground connection	GND

6 Revision history

Table 3: Document revision history

Date	Version	Changes
14-Oct-2016	1	Initial release.

Appendix A General handling precautions

- Do not modify or manipulate the board and the device when the board is powered and/or connected to the load;
- Do not supply the board with a DC source higher than the device maximum voltage;
- Any equipment or tool used for any manipulation of the semiconductor devices or board modification should be connected to ground to avoid ESD;
- The connectors and cables must be plugged and removed when the board is not supplied;
- Antistatic tools are recommended.

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