

ISL85413DEMO1Z, ISL85412DEMO1Z

Wide VIN Synchronous Buck Regulator - Short Form Demonstration Boards

AN1931
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Description

The ISL85413DEMO1Z, ISL85412DEMO1Z kit is intended for use for point-of-load applications sourcing from 3.5V to 40V. The kit is used to demonstrate the performance of the ISL85413, ISL85412 Wide V_{IN} Low Quiescent Current High Efficiency Synchronous Buck Regulator with 300mA (ISL85413) and 150mA (ISL85412) output current.

The ISL85413, ISL85412 is offered in a 3mmx3mm 8 Ld DFN package with 1mm maximum height.

Recommended Equipment

The following materials are recommended to perform testing:

- 0V to 50V power supply with at least 2A source current capability
- Electronic loads capable of sinking current up to 1.5A
- Digital Multimeters (DMMs)
- 100MHz quad-trace oscilloscope
- Signal generator

Key Features

- Wide input voltage range 3.5V to 40V
- Synchronous operation for high efficiency
- No compensation required
- Integrated high-side and low-side NMOS devices
- Selectable PFM or forced PWM mode at light loads
- Continuous output current up to 300mA (ISL85413) and 150mA (ISL85412)
- Internal soft-start
- Minimal external components required
- Power-good and enable functions available

References

- [ISL85412](#) Datasheet
- [ISL85413](#) Datasheet

Ordering Information

PART NUMBER	DESCRIPTION
ISL85412DEMO1Z	Demonstration Board (150mA Output Current)
ISL85413DEMO1Z	Demonstration Board (300mA Output Current)

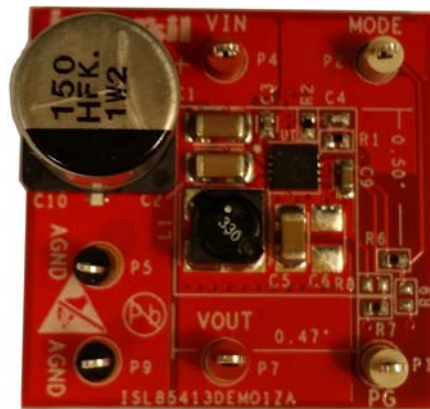


FIGURE 1. FRONT OF EVALUATION BOARD ISL85413DEMO1Z, ISL85412DEMO1Z

Quick Setup Guide

1. Ensure that the circuit is correctly connected to the supply and loads prior to applying any power.
2. Connect the bias supply to VIN, the plus terminal to VIN (P4) and the negative return to GND (P5).
3. Turn on the power supply.
4. Verify the output voltage is 3.3V for V_{OUT}.

Evaluating the Other Output Voltage

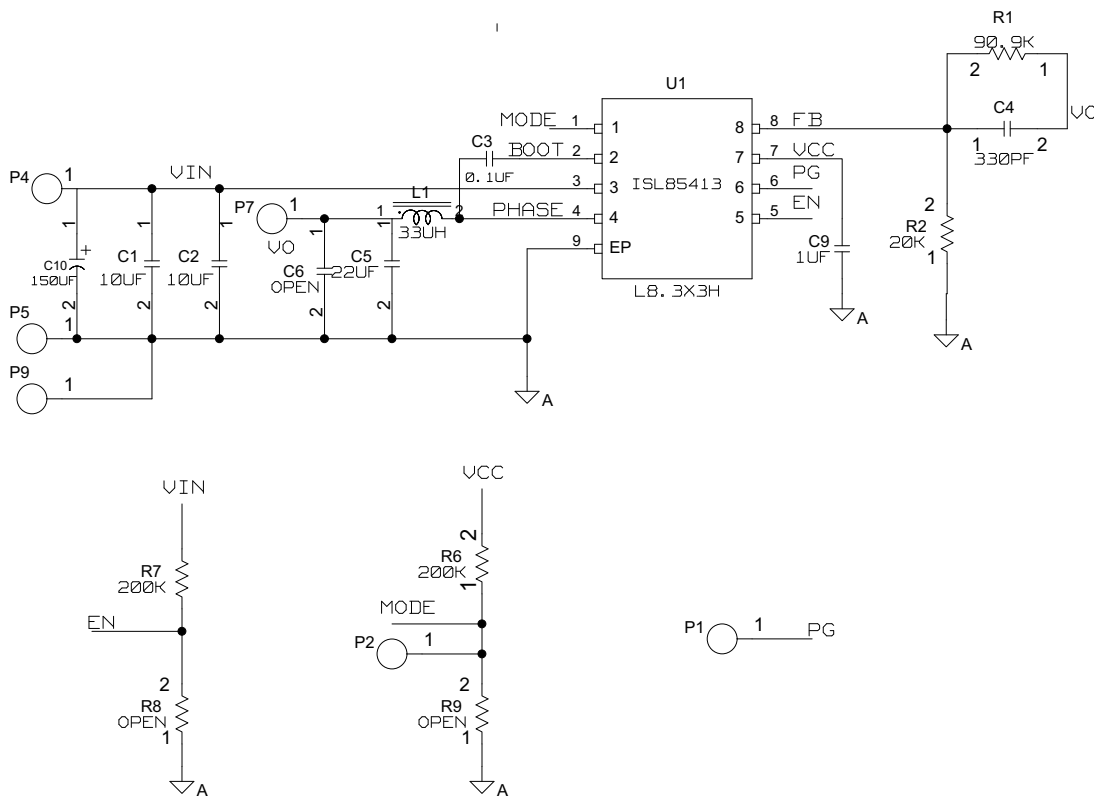
The ISL85413DEMO1Z, ISL85412DEMO1Z kit output is preset to 3.3V; however, output voltages can be adjusted from 0.6V to 15V. Please refer to application note [AN1929](#) and [ISL85412](#) datasheet for further information.

Disabling/Enabling Function

The ISL85413DEMO1Z, ISL85412DEMO1Z boards have the EN pin tied to V_{CC} via R₇. This keeps the part enabled all the time. To disable the part, remove R₇ and populate R₈ with a 0Ω resistor.

MODE Control

The ISL85413 and ISL85412 evaluation boards have a MODE pin that allows different mode operation. The Default board configuration has R₆ = 200k to V_{CC}, which defaults to PWM operation mode. If this pin is tied to GND the IC will operate in PFM mode.



NOTE: If the IC is used in an application where the input test leads have large parasitic inductance, the input electrolytic capacitor C₁₀ may be added to prevent transient voltages on the input pin.

FIGURE 2. ISL85413DEMO1Z AND ISL85412DEMO1Z SCHEMATIC

ISL85413DEMO1Z Board Layout

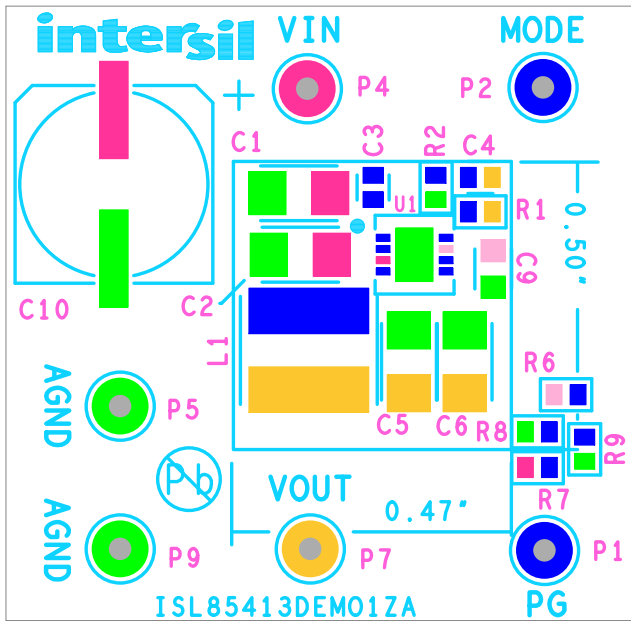


FIGURE 3. SILKSCREEN TOP

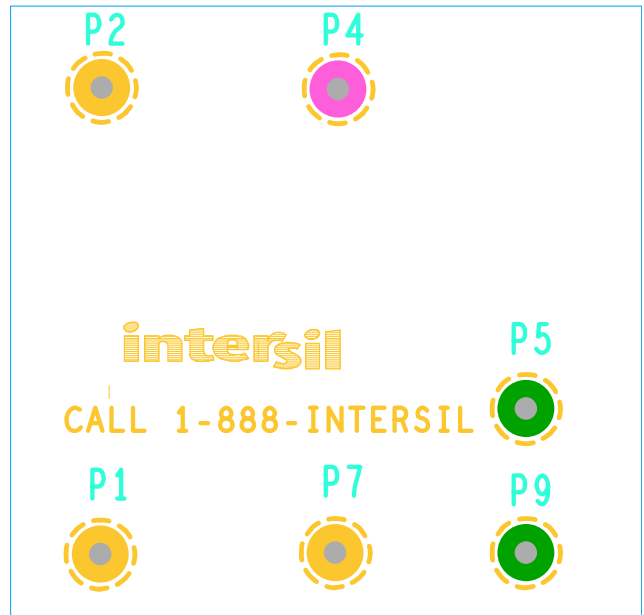


FIGURE 4. SILKSCREEN BOTTOM