

## ISL85413DEMO1Z, ISL85412DEMO1Z

Wide VIN Synchronous Buck Regulator - Short Form Demonstration Boards

AN1931 Rev 1.00 March 13, 2015

# **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:

- OV 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
ISL85412DEM01Z	Demonstration Board (150mA Output Current)
ISL85413DEM01Z	Demonstration Board (300mA Output Current)



FIGURE 1. FRONT OF EVALUATION BOARD ISL85413DEM01Z, ISL85412DEM01Z

## **Quick Setup Guide**

- 1. Ensure that the circuit is correctly connected to the supply and loads prior to applying any power.
- 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 VOLT

### **Evaluating the Other Output Voltage**

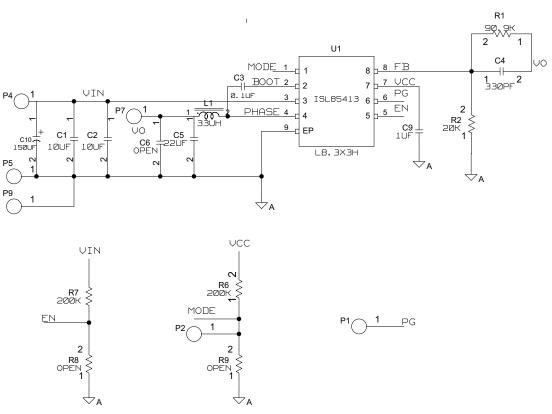
The ISL85413DEMO1Z, ISL85412DEMO1Z kit output is preset to 3.3V; however, output voltages can be adjusted from 0.6V to 15V. Please refer to application note <a href="Mileses-AN1929">AN1929</a> and <a href="ISL85412">ISL85412</a> datasheet for further information.

#### **Disabling/Enabling Function**

The ISL85413DEMO1Z, ISL85412DEMO1Z boards have the EN pin tied to  $V_{CC}$  via  $R_7$ . This keeps the part enabled all the time. To disable the part, remove  $R_7$  and populate  $R_8$  with a  $0\Omega$  resistor.

#### **MODE Control**

The ISL85413 and ISL85412 evaluation boards have a MODE pin that allows different mode operation. The Default board configuration has  $R_6$  = 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 C<sub>10</sub> may be added to prevent transient voltages on the input pin.

FIGURE 2. ISL85413DEM01Z AND ISL85412DEM01Z SCHEMATIC

# **ISL85413DEMO1Z Board Layout**

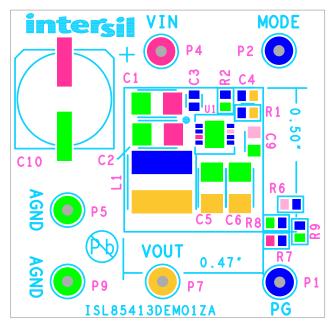


FIGURE 3. SILKSCREEN TOP

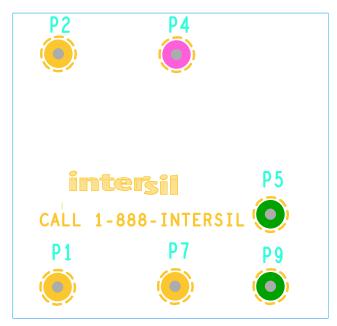


FIGURE 4. SILKSCREEN BOTTOM

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