

User Guide for FAN4861X Evaluation Board

Fixed-Output Synchronous Boost Regulator

EVBUM2933/D

Featured onsemi Products: FAN48610, FAN48618, FAN4619

This user guide supports the evaluation board for FAN48610/8/9 family of products. It should be used in conjunction with the FAN48610/8/9 data sheet.

Description

The FAN4861X evaluation board is a compact circuit including onsemi's FAN48610/8/9 fixed-output synchronous boost regulator in a 9-bump Wafer-Level Chip-Scale Package (WLCSP). Small input/output capacitors and a 470 nH inductor ensure smooth output regulation.

The board also features footprints to accommodate additional input/output capacitors and inductor current measurements. The evaluation board provides probe access points to all key circuit nodes so that electrical characteristics can be measured.

Features of FAN48610

- Input Voltage Range: 2.5 V to 4.8 V
- Output Voltage Range: 3.0 V to 5.0 V

- $I_{OUT} \geq 1\text{ A}$ at $V_{OUT} = 5.0\text{ V}$, $V_{IN} \geq 2.5\text{ V}$
- $I_{OUT} \geq 1.5\text{ A}$ at $V_{OUT} = 5.0\text{ V}$, $V_{IN} \geq 3.0\text{ V}$
- Up to 94% Efficient
- Internal Synchronous Rectification
- Soft-Start with True Load Disconnect
- Short-Circuit Protection
- 9-Bump, 1.215 mm x 1.215 mm, 0.4 mm Pitch WLCSP
- Three External Components: 2016 0.47 μH Inductor, 0603 Case Size Input / Output Capacitors

Quick Start Connection Guide

1. Connect input power supply (2.7 V – 4.8 V for FAN48610) across VIN and GND_1 shown in Figure 1.
2. Set EN header to the '+' position with a jumper to drive EN pin with VIN voltage or connect an external power supply between middle header and '-' position at EN to drive EN pin externally.
3. Connect a load between VOUT and GND_2.
4. Kelvin connected input and output voltage-sense points (VIN_S, VOUT_S) are provided.

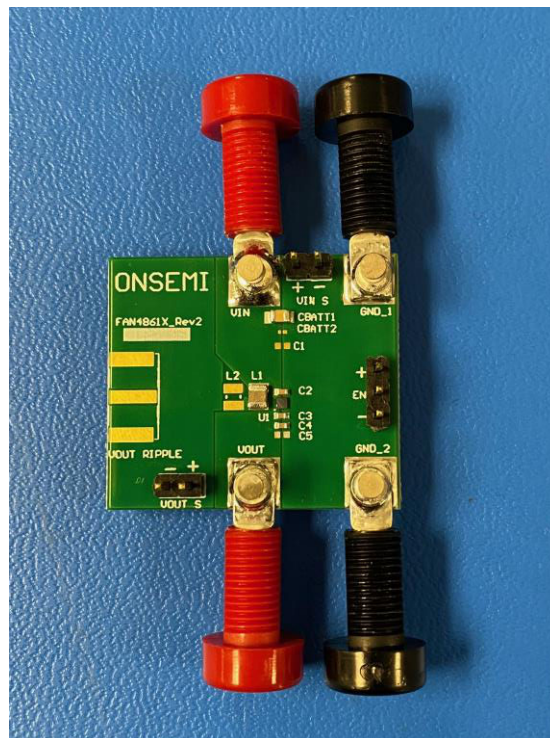


Figure 1. Evaluation Board Connection Diagram Evaluation Board Specifications

Table 1. BILL OF MATERIALS FOR FAN48610

Reference	Qty.	Description	Manufacturer
U1	1	IC, FAN48610 (WLCSP 9)	onsemi
L1	1	470 nH, 20%, 3.2 A, 40 mΩ	TOKO DFE201612C-R47M
C2	1	10 μF, 10%, 6.3 V, X5R, 0603	TDK C1608X5R0J106K080AB
C3	1	22 μF, 20%, 6.3 V, X5R, 0603	TDK C1608X5R0J226M080AC
CBATT1	1	100 μF, 6.3V, X5R, 0805	GRM21BR60J107M
VOUT RIPPLE	-	DNI	DNI

Evaluation Board Special Features

Input / Output Capacitance

The FAN4861X evaluation board includes empty locations for the addition of input and output capacitance.

CBATT1 provides a suitable local charge reservoir when inductance is introduced by long cables from the DC source.

ENABLE Header

The ENABLE header is set to ‘+’ position by default. To disable the FAN48610/8/9, move the EN jumper to the ‘-’

position. An external power supply can also be used to drive EN.

Signal Monitoring

VIN_S, VOUT_S, and EN signals can be monitored with an oscilloscope probe at headers shown in Figure 1.

For best output ripple measurements, do not use VOUT_S; instead monitor directly across the output capacitor with an oscilloscope probe.

Printed Circuit Board

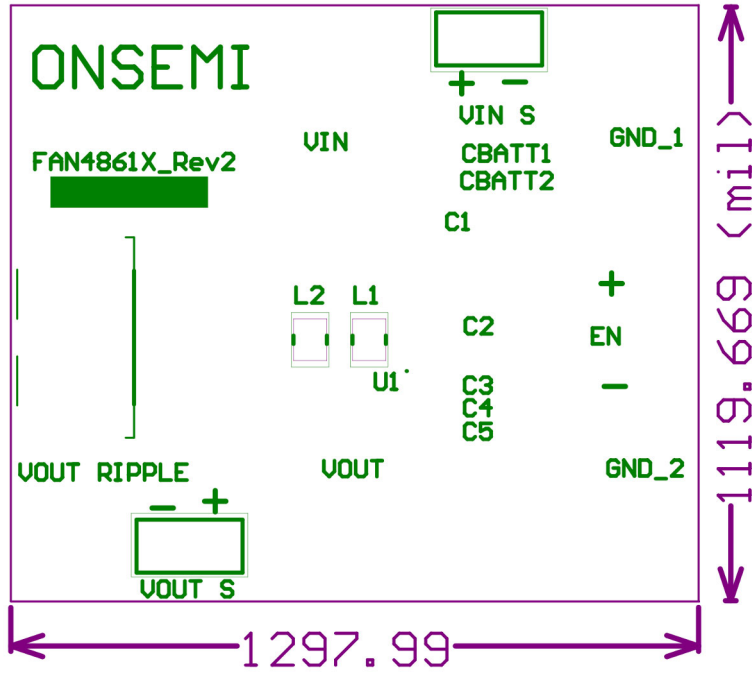


Figure 2. Top-Side Silk Screen

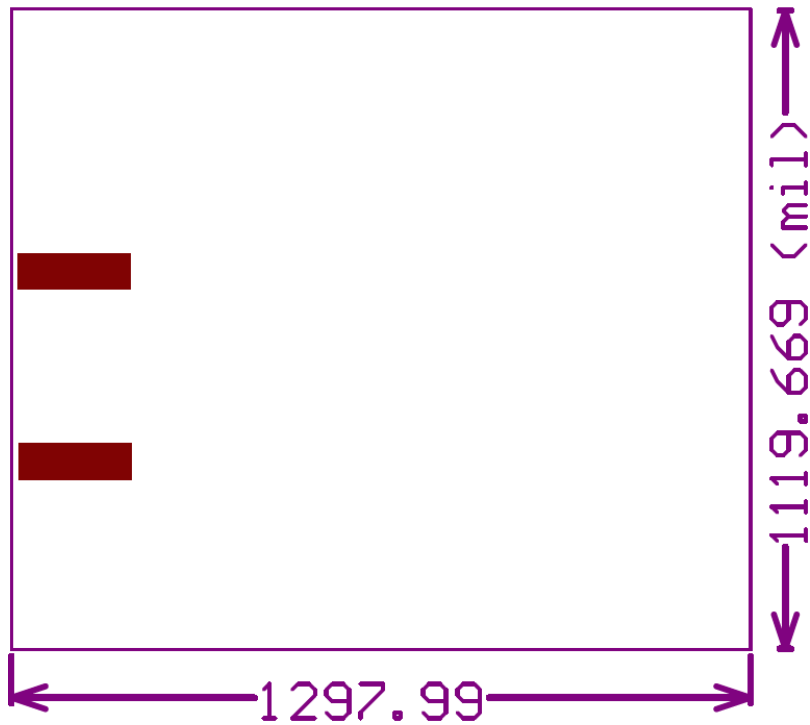


Figure 3. Bottom-Side Silk Screen

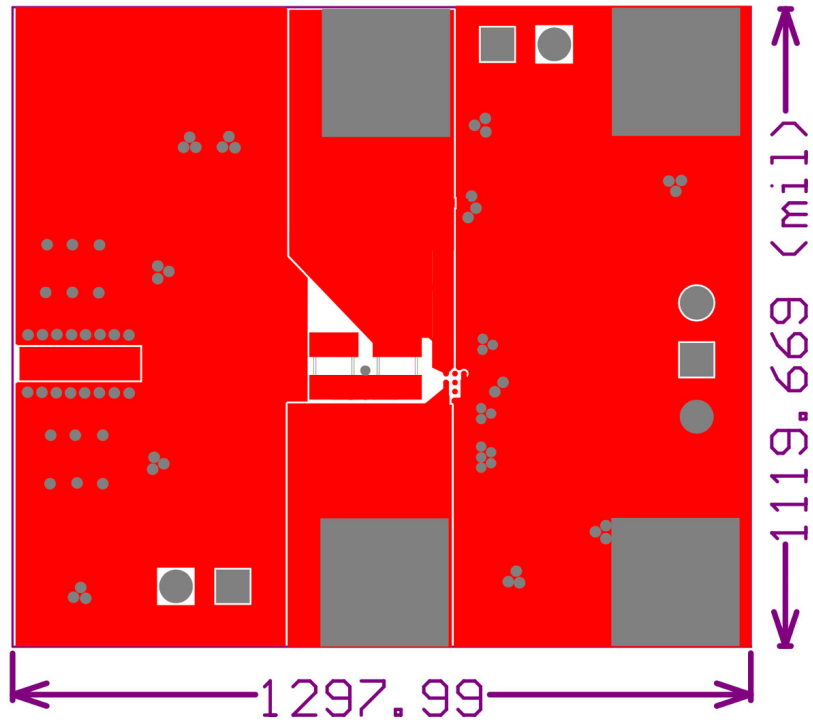


Figure 4. Top Layer

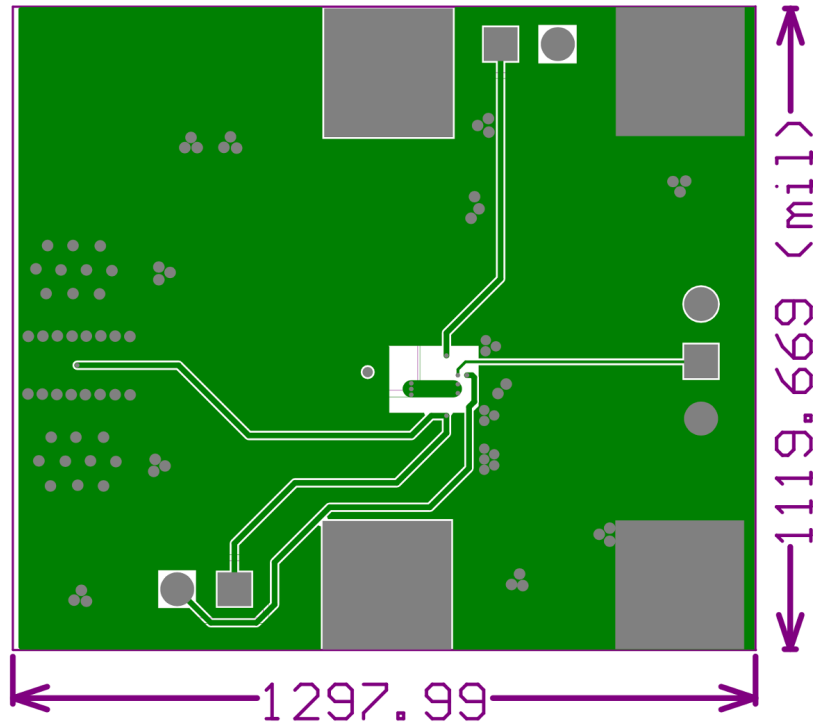


Figure 5. Mid-Layer 1

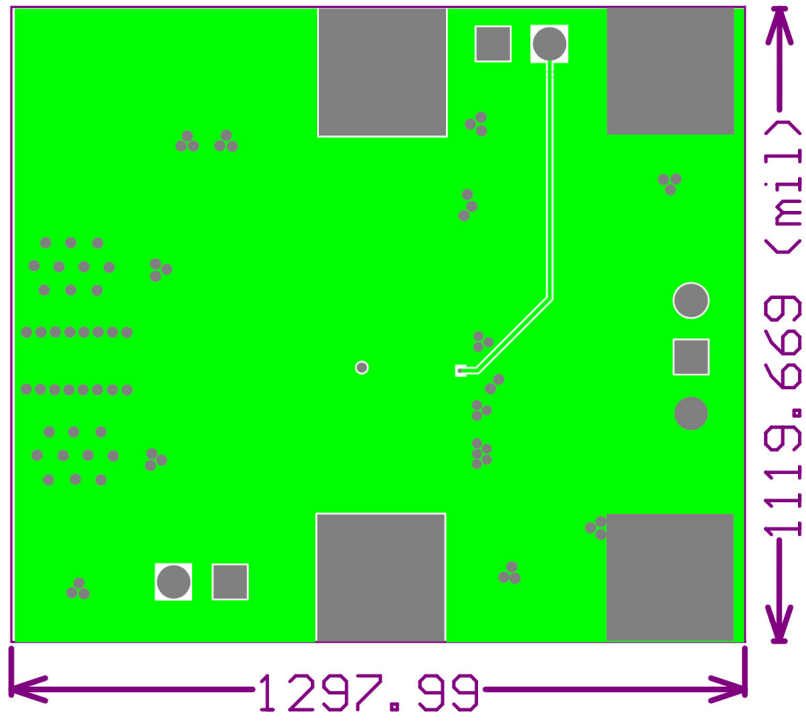


Figure 6. Mid-Layer 2

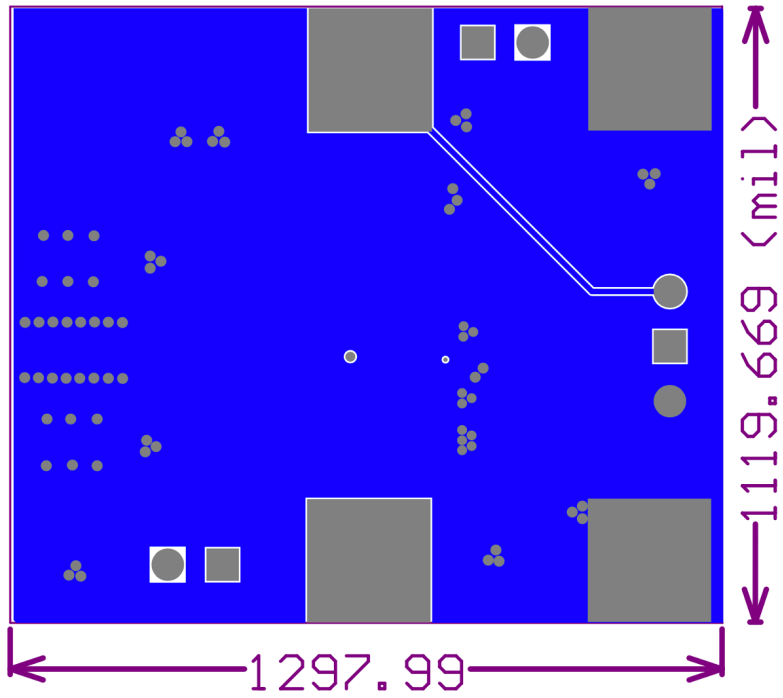


Figure 7. Bottom Layer

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Schematic

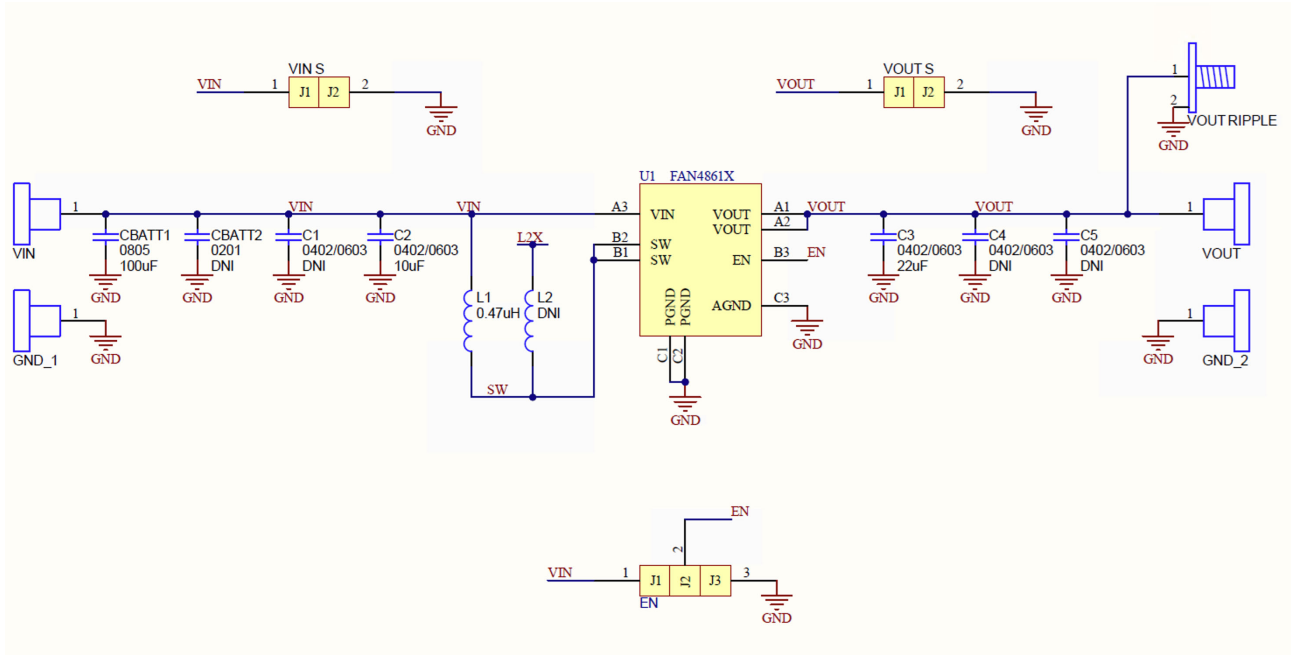


Figure 8. Evaluation Board Schematic

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REVISION HISTORY

Revision	Description of Changes	Date
P0	Initial document version release.	09/03/2025

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