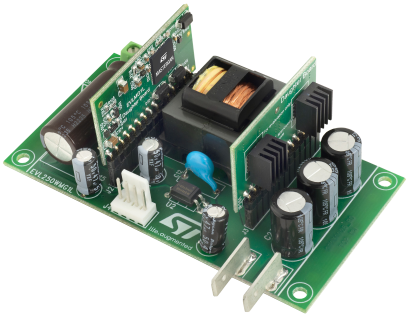
EVL250WMG1L

Data brief

400 V - 24 V / 10.5 A DC-DC resonant LLC converter for industrial applications, using MasterGaN1L, L6599A, and SRK2001A



Features

- High efficiency and compact solution for DC-DC conversion using MasterGaN1L
- Output voltage: 24 V
- Output power: up to 250 W
- Nominal input voltage: 400 V +/- 10%
- Efficiency: > 92%
- Outputs protected against short-circuit and overcurrent
- Input voltage monitor for correct sequencing as D2D converter, and brown-out protection
- Board size: 80 x 50 (W x H) mm. Maximum components height: 30 mm
- WEEE and RoHS compliant

Applications

- Industrial DC-DC applications
- Adapters
- Consumer SMPS

Product status link
EVL250WMG1L

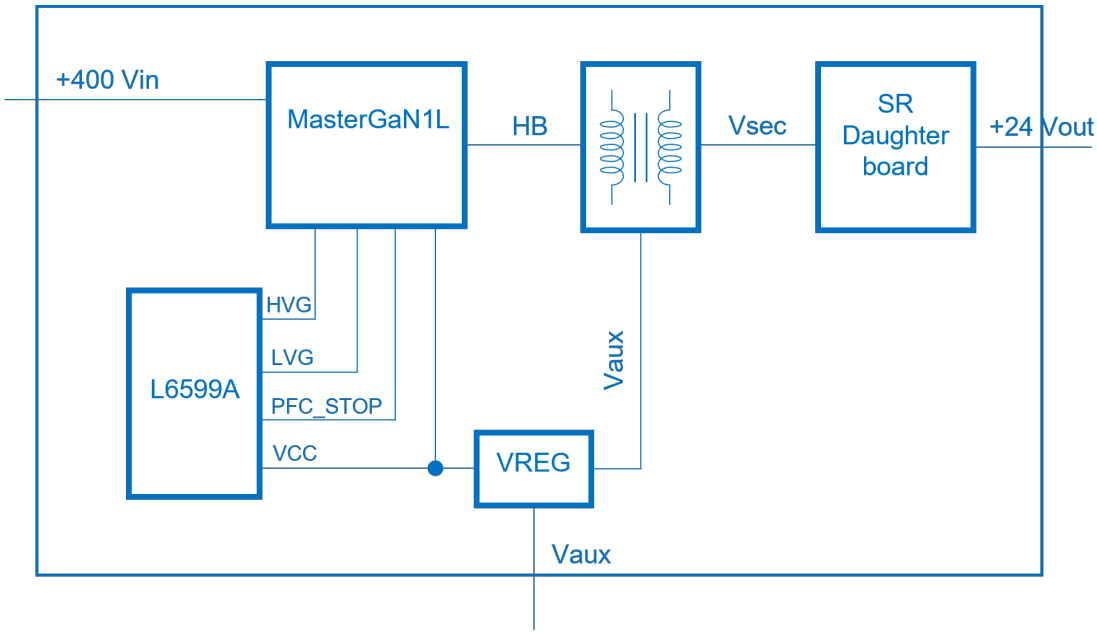
Description

The EVL250WMG1L demonstration board is a resonant LLC converter dedicated to any kind of industrial application where minimum size and high efficiency is required, based on the MasterGaN1L. This device, embedding a couple of GaN MOSFETs and a driver in the same package, allows to interface any kind of SMPS controller directly. Thanks to the GaN technology™ and to the embedded driver, the converter can be designed with an operating frequency higher than that using conventional MOSFETs. Actually, the board has no heat sinks on the primary side and has very reduced dimensions; the power density is 34 W/inch^3. The high efficiency and small size make the board also suitable when available space is limited. Output power can be up to 250 W A at 24 Vdc. Converters come with overcurrent, short-circuit, and overvoltage protection. The input voltage monitoring allows the startup with correct sequencing of cascaded converters, preventing operation with too low input voltage. The board is composed by a motherboard with the transformer and the primary controller, and two small daughterboards: one at the primary side embeds the MasterGaN1L, while another on the secondary side has the SR controller SRK2001A and the MOSFETs.

1 Block diagram and schematic diagrams

1.1 Block diagram

Figure 1. Block diagram for high visual impact

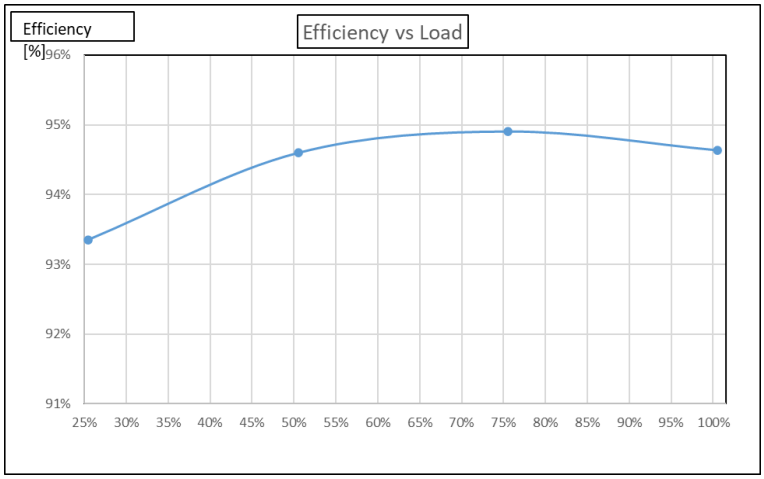


1.2 Efficiency

Table 1. Efficiency parameters

Load	Efficiency
100 %	94.63 %
75 %	94.90 %
50 %	94.60 %
25 %	93.35 %
No load power consumption	361 mW

Figure 2. Efficiency vs load



1.3 Schematic diagrams

Figure 3. **Motherboard schematic**

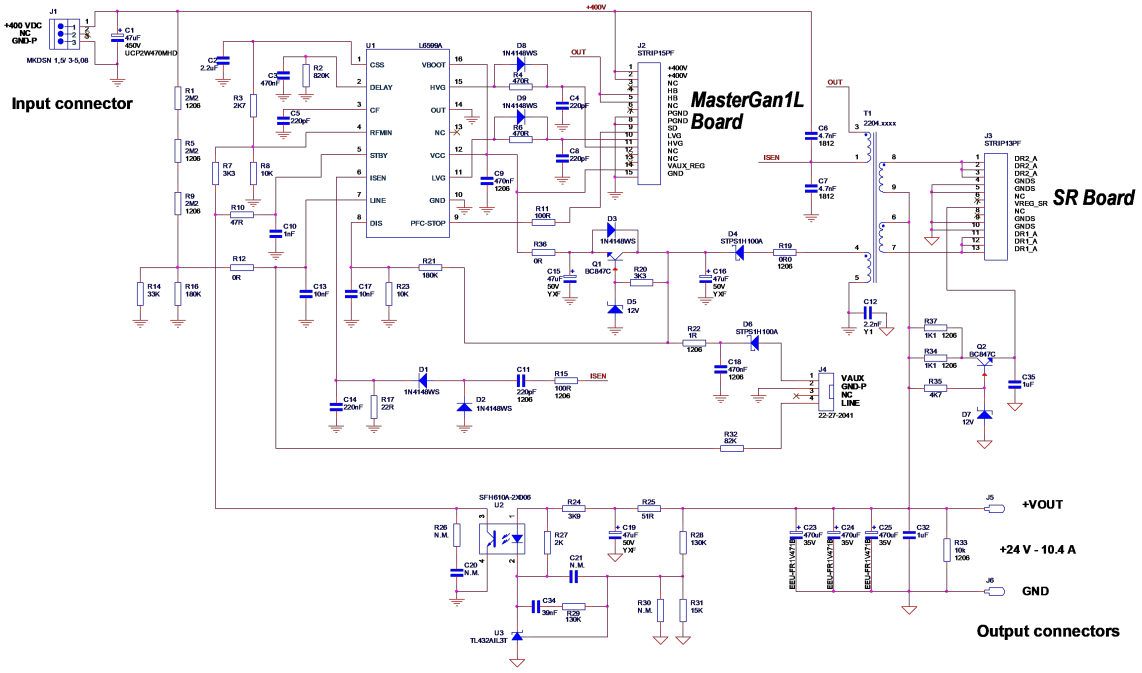


Figure 4. **MasterGan1L module schematic**

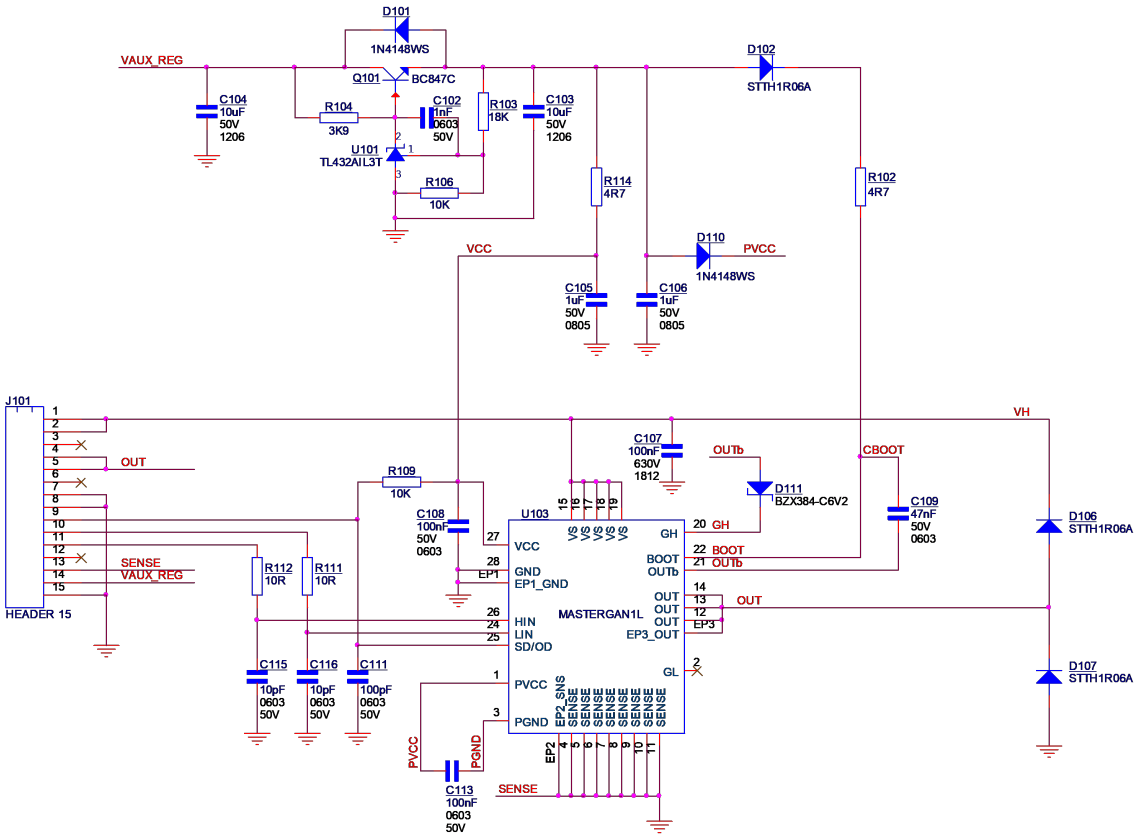
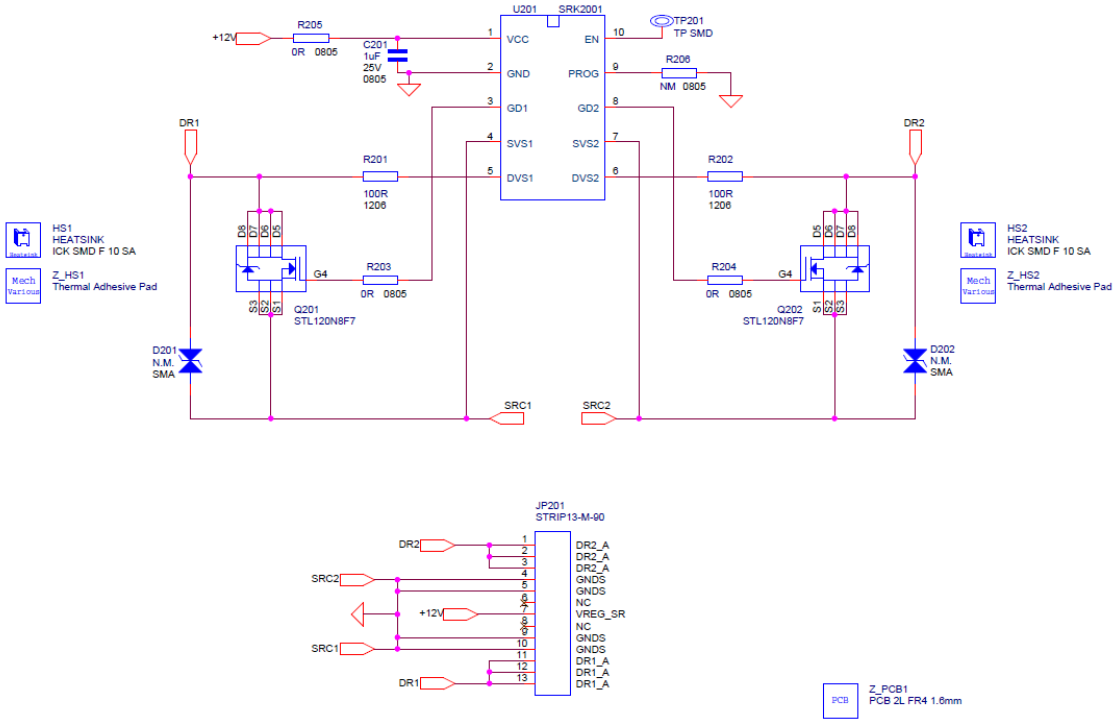


Figure 5. **SR module schematic**



Revision history

Table 2. **Document revision history**

Date	Version	Changes
26-Aug-2024	1	Initial release.
18-Sep-2024	2	Added Table 1 and Figure 2.

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