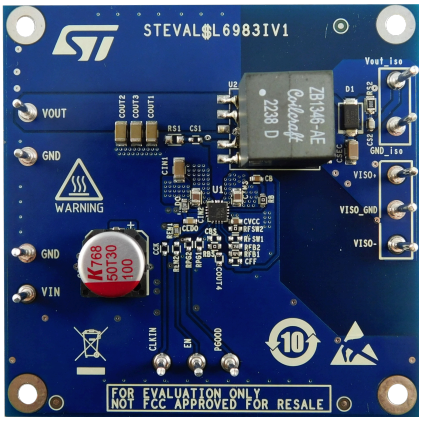
STEVAL-L6983IV1

Data brief

38 V, 10 W synchronous iso-buck converter evaluation board based on L6983I



Features

- Designed for iso-buck topology
- 4 to 38 V input voltage range
- Up to 10 W deliverable power (depending on the application conditions)
- Isolated output voltage unregulated
- Optional postregulation (not mounted, layout foreseen at the bottom)
- Embeds the transformer
- Regulation at the primary side, no optocoupler required
- 200 kHz to 1 MHz programmable switching frequency
- Suitable for external synchronization
- Power-good signal available
- Enable
- Input EMI filter embedded
- Selectable spread spectrum function for improved EMC performance

Product summary	
38 V, 10 W synchronous iso-buck converter evaluation board based on L6983I	STEVAL-L6983IV1
38 V 10W synchronous iso-buck converter for isolated applications	L6983IQTR
Applications	Industrial power supply Metering Motor drives

Description

The STEVAL-L6983IV1 is an evaluation board based on ST L6983I, 38 V, 10 W synchronous iso-buck converter designed for isolated applications.

The primary output voltage can be accurately adjusted, whereas the isolated secondary output is derived by using a given transformer ratio. No optocoupler is required.

The primary sink capability up to -4.5 A (even during soft-start) allows a proper energy transfer to the secondary side as well as enables a tracked soft-start of the secondary output.

The control loop is based on a peak current mode architecture and the device operates in forced PWM. The 390 ns blanking time filters oscillations, generated by the transformer leakage inductance, making the solution more robust.

The compact QFN-16 3x3 mm package and the internal compensation of the L6983I help minimizing design complexity and size.

The switching frequency can be programmed in the 200 kHz - 1 MHz range with optional spread spectrum for improved EMC.

The EN pin provides enable/disable functionality. The typical shutdown current is 2 uA when disabled. As soon as the EN pin is pulled-up the device is enabled, and the internal 1.3 ms soft start takes place.

The L6983I features power good open collector that monitors the FB voltage. Pulse by pulse current sensing on both power elements implements an effective constant current protection and thermal shutdown prevents thermal run-away. Due to the primary reverse current limit, the secondary output is protected against short-circuit events.

The evaluation board generates an isolated unregulated voltage and provides the possibility to use a post-regulation to generate a dual voltage (layout available on the bottom of the PCB, components not mounted).

1 Schematic diagrams

Figure 1. **STEVAL-L6983IV1 circuit schematic (1 of 2)**

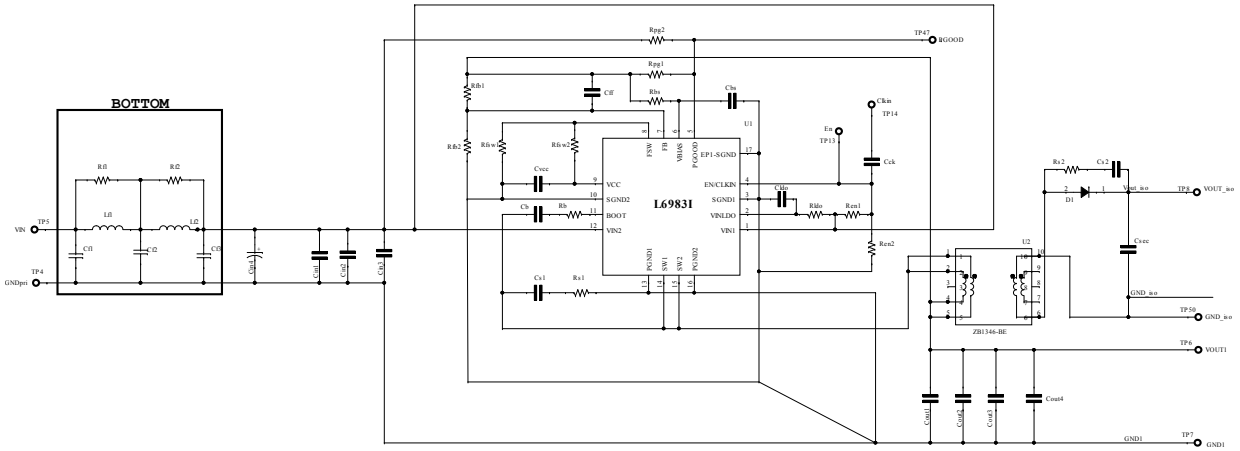
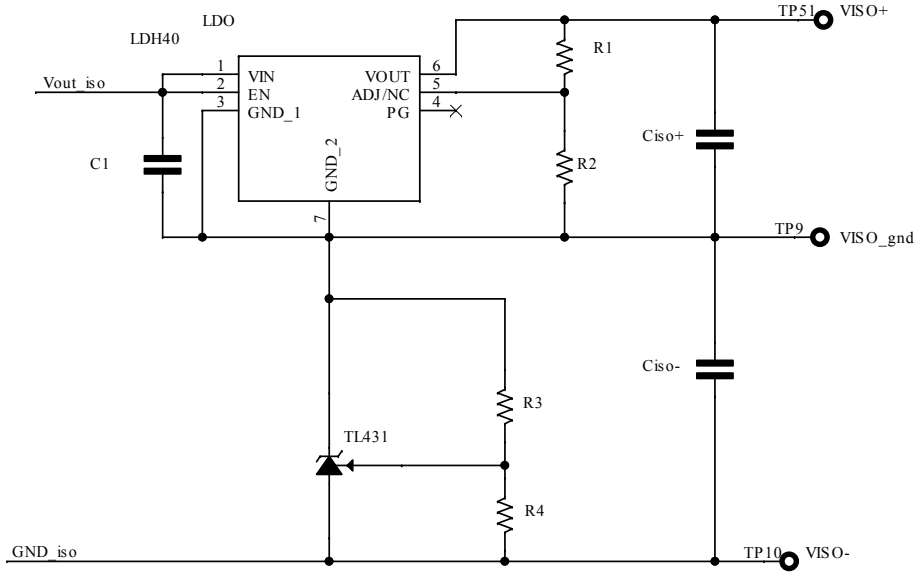


Figure 2. **STEVAL-L6983IV1 circuit schematic (2 of 2) - post regulation (not mounted, bottom side)**



2 Board versions

Table 1. STEVAL-L6983IV1 versions

Finished good	Schematic diagrams	Bill of materials
STEVAL$L6983IV1A (1)	STEVAL$L6983IV1A schematic diagrams	STEVAL$L6983IV1A bill of materials
STV$L6983IV1B (1)	STV$L6983IV1B schematic diagrams	STV$L6983IV1B bill of materials

1. *This code identifies the STEVAL-L6983IV1 evaluation board first version. It is printed on the board PCB.*
2. *This code identifies the STEVAL-L6983IV1 evaluation board second version. It is printed on the board PCB.*

Revision history

Table 2. **Document revision history**

Date	Revision	Changes
10-Mar-2023	1	Initial release.
31-Jan-2024	2	Updated Features and Schematic diagrams.
01-Apr-2025	3	Updated Section 1: Schematic diagrams and Section 2: Board versions. Updated finish good to STV$L6983IV1B.