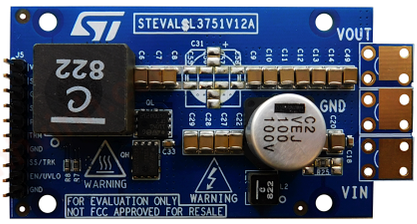
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STEVAL-L3751V12

Data brief

75 V, up to 15 A, DC-DC buck converter based on the L3751 controller



Product summary	
Evaluation board based on DC-DC converter buck regulator with L3751 controller	STEVAL-L3751V12
6 to 75 V wide input voltage synchronous buck controller	L3751PUR
Applications	Buck Converter

Features

- 6 to 75 V wide input voltage range
- Selectable two-output voltage level: 5 or 12 V
- 230 kHz switching frequency setting
- Low drop-out operation during line transient
- Pulse skipping or forced PWM operation at light load
- Synchronization from 185 to 345 kHz
- Power good open collector output validates the VOUT
- 7.5 V gate drivers for standard Vth MOSFETs
- Constant current protection with hiccup mode
- Current sensing on rds-on low-side
- Improved line-transient response
- Input voltage undervoltage lockout
- Internal voltage monitoring
- Thermal protection
- Operating junction temperature range: -40 to 150°C

Description

The 6 to 75 V wide input voltage range STEVAL-L3751V12 synchronous buck evaluation board features an extreme voltage conversion ratio over switching frequency.

The board provides a regulated 5 V output at 230 kHz switching frequency. The output voltage can be easily set to 12 V using a jumper connector. Different voltage output can be selected by changing a resistor to a lower V_{IN} range.

The STEVAL-L3751V12 is a 100 W demo board. The default maximum current is set to 15 A. It can be easily selected by changing a resistor.

The evaluation board is based on the L3751 synchronous buck controller, which implements the voltage mode in a VQFN package.

The diode emulation (DEM) implements the pulse-skipping mode, which maximizes the efficiency at light-load with a controlled output voltage ripple.

The forced PWM (FPWM) over-the-load range makes the switching frequency constant and minimizes the output voltage ripple.

The power good open collector output validates the regulated output voltage for monitoring. It implements the output voltage sequencing for digital ICs during the power-up phase.

The embedded gate driver is designed for standard Vth MOSFET and minimizes the number of external components.

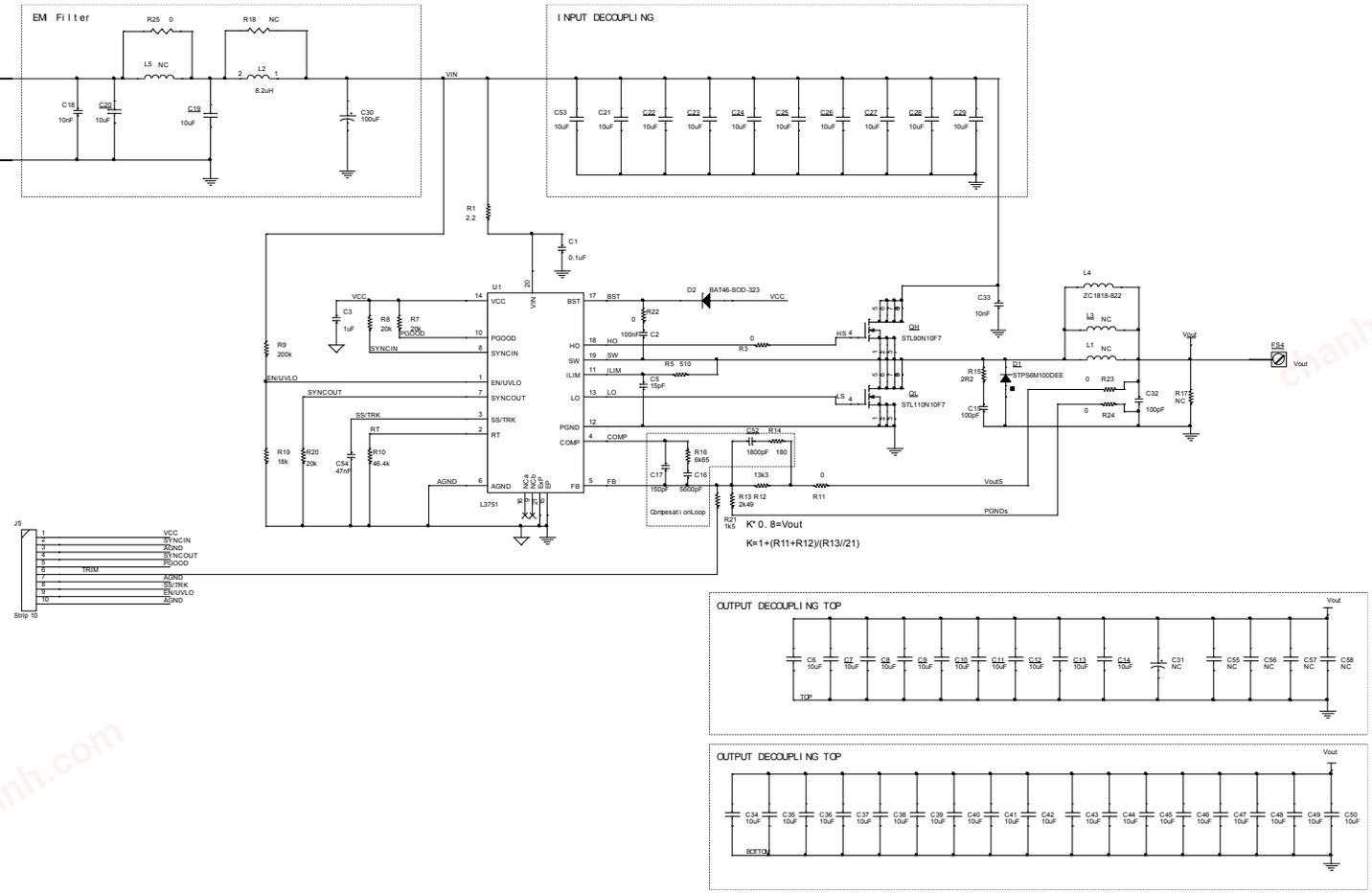
The embedded protections, such as the output overcurrent, the input voltage UVLO, the internal voltage monitoring, and the thermal shutdown at 150°C degrees, feature a controlled and safe operation for critical environments in telecom, networking, and industrial applications.

You can use the eDesignSuite software tool to configure the L3751 buck converter and satisfy the application requirements.

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1 Schematic diagrams

Figure 1. **STEVAL-L3751V12 circuit schematic**



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2 Board setting and VQFN pin connection

Figure 2. **STEVAL-L3751V12 setting**

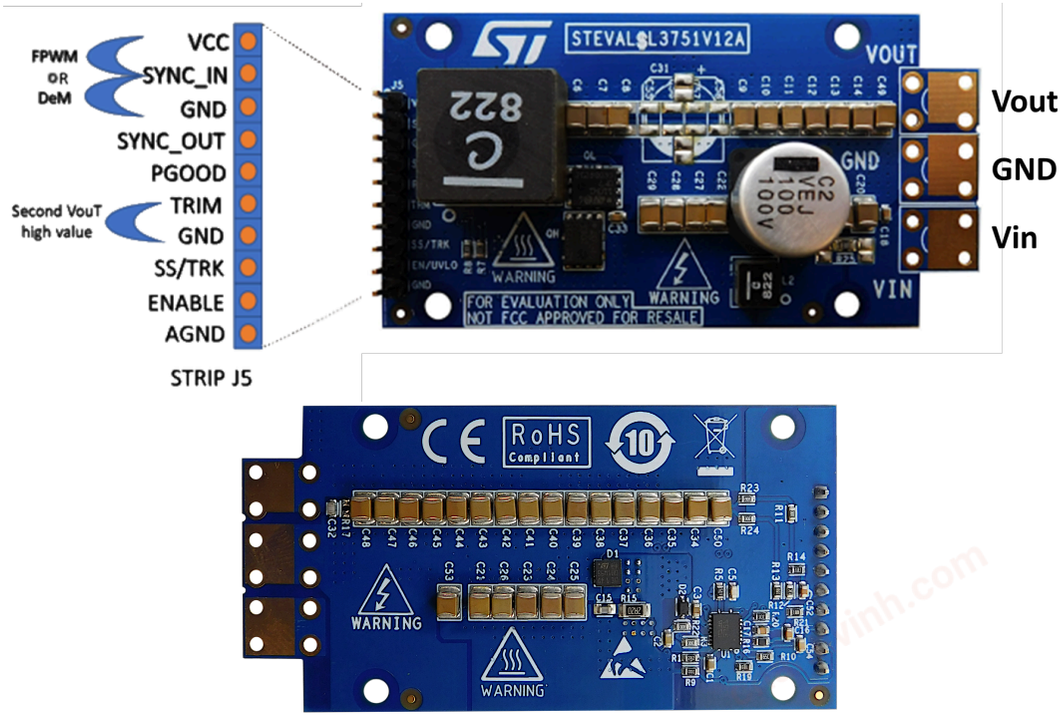
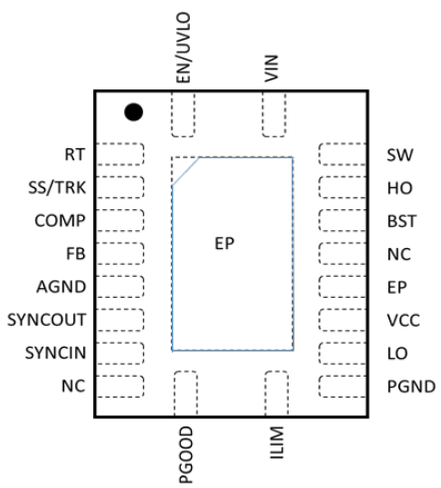


Figure 3. **VQFN pin connection (top view)**



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3 Board versions

Table 1. **STEVAL-L3751V12 versions**

PCB version	Schematic diagrams	Bill of materials
STEVAL$L3751V12A (1)	STEVAL$L3751V12A schematic diagrams	STEVAL$L3751V12A bill of materials

1. *This code identifies the STEVAL-L3751V12 evaluation board first version. It is printed on the board PCB.*

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Revision history

Table 2. **Document revision history**

Date	Revision	Changes
24-Aug-2022	1	Initial release.
06-Sep-2022	2	Updated Title and Features.
19-Jan-2023	3	Updated Description and Schematics.

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