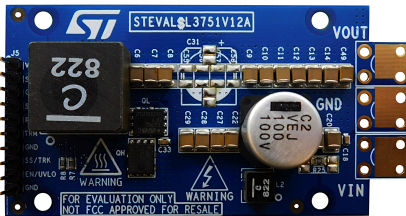


## 75 V 15 A DC-DC converter buck regulator evaluation board with L3751 controller



### Features

- 6 to 75 V wide input voltage range
- Selectable two-output voltage level: 5 V 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 with internal compensation to minimize the design complexity and size.

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  $V_{th}$  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.

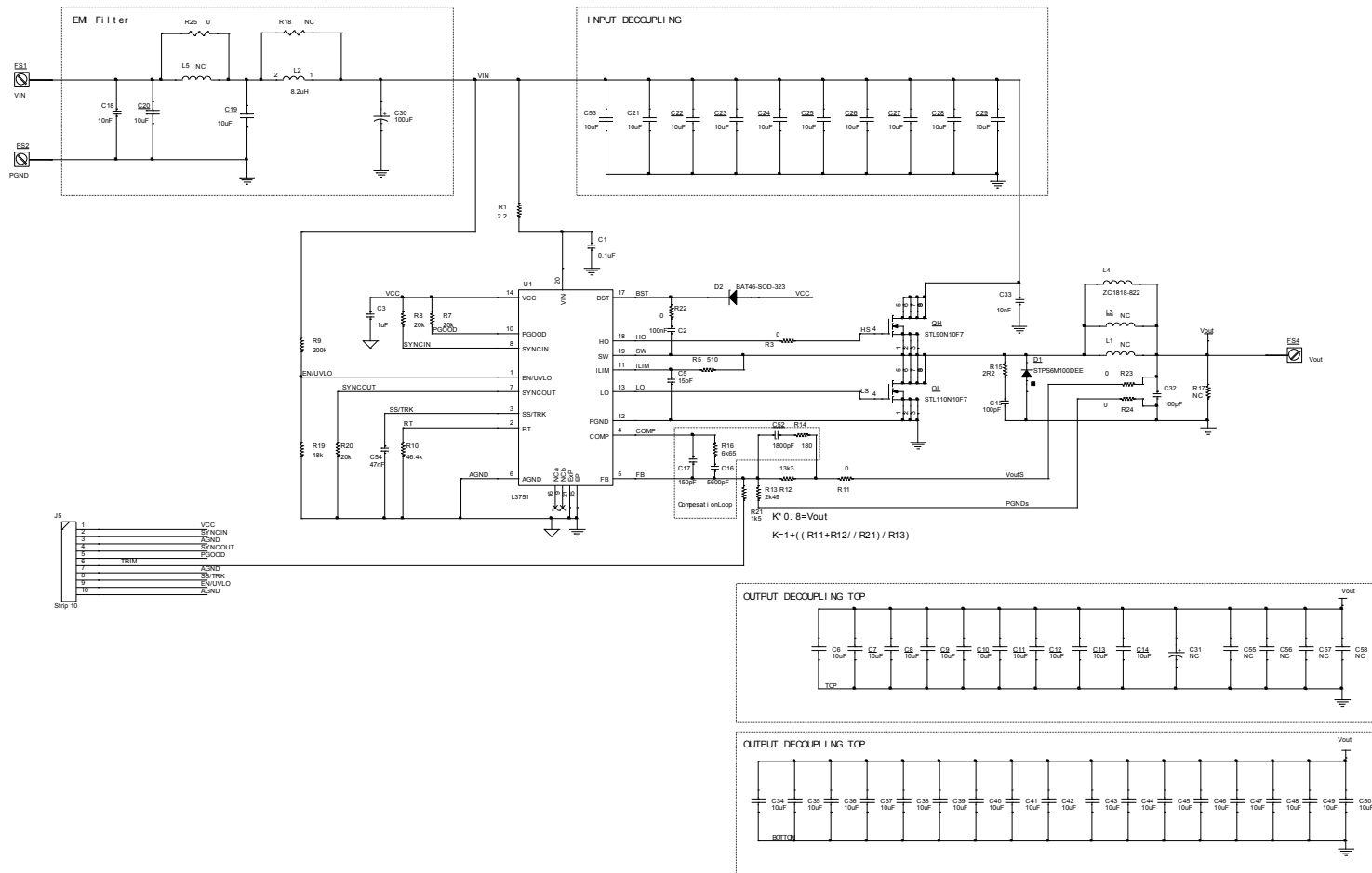
You can use the [eDesignSuite](#) software tool to configure the [L3751](#) buck converter and satisfy the application requirements.

#### Product summary

Evaluation board based on DC-DC converter buck regulator with L3751 controller	<a href="#">STEVAL-L3751V12</a>
6 to 75 V wide input voltage synchronous buck controller	<a href="#">L3751PUR</a>
Applications	Buck Converter

# 1 Schematic diagrams

Figure 1. STEVAL-L3751V12 circuit schematic



## 2 Board setting and VQFN pin connection

Figure 2. STEVAL-L3751V12 setting

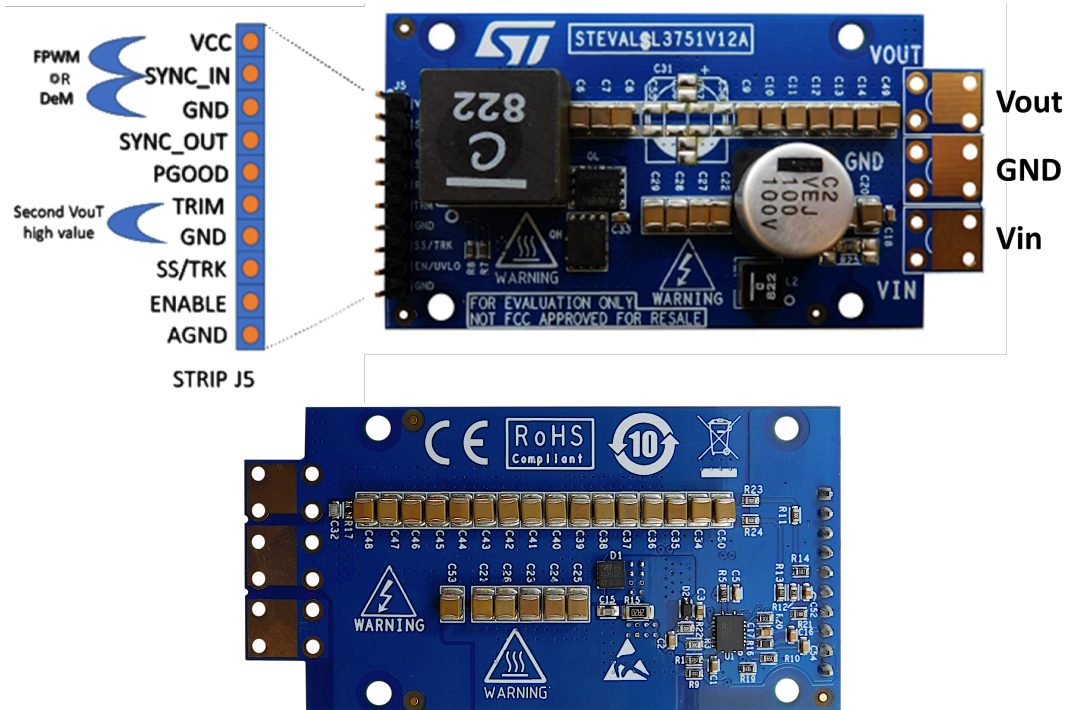
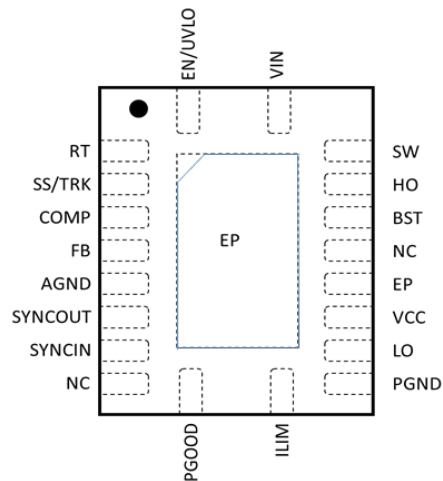


Figure 3. VQFN pin connection (top view)



### 3 Board versions

**Table 1. STEVAL-L3751V12 versions**

PCB version	Schematic diagrams	Bill of materials
STEVAL\$L3751V12A <sup>(1)</sup>	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.



## Revision history

**Table 2. Document revision history**

Date	Revision	Changes
24-Aug-2022	1	Initial release.

**IMPORTANT NOTICE – READ CAREFULLY**

STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to [www.st.com/trademarks](http://www.st.com/trademarks). All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved