

2 A step-down switching regulator demonstration board based on the L5985

Data Brief

Features

- 2 A DC output current
- 2.9 V to 18 V input voltage
- Output voltage adjustable from 0.6 V to 16 V
- 250 kHz switching frequency, programmable up to 1 MHz
- Internal soft-start and inhibit
- Low dropout operation: 100 % duty cycle
- Zero-load current operation
- Over-current and thermal protection
- VFQFPN8 3 mm x 3 mm package



Description

The EVAL5985 demonstration board provides the design engineer with a fully functional step-down switching regulator with an output current of up to 2 A. The board integrates STMicroelectronics' L5985 step-down switching regulator, together with all the external components required for a typical application.

The rated voltage of the input capacitor and the Schottky diode rectifier repetitive peak reverse voltage are both 25 V, making the board capable of covering the entire 2.9 V - 18 V input voltage range of the L5985 device.

The board features an external resistor divider (R1 and R2) designed for an output voltage of 3.3 V.

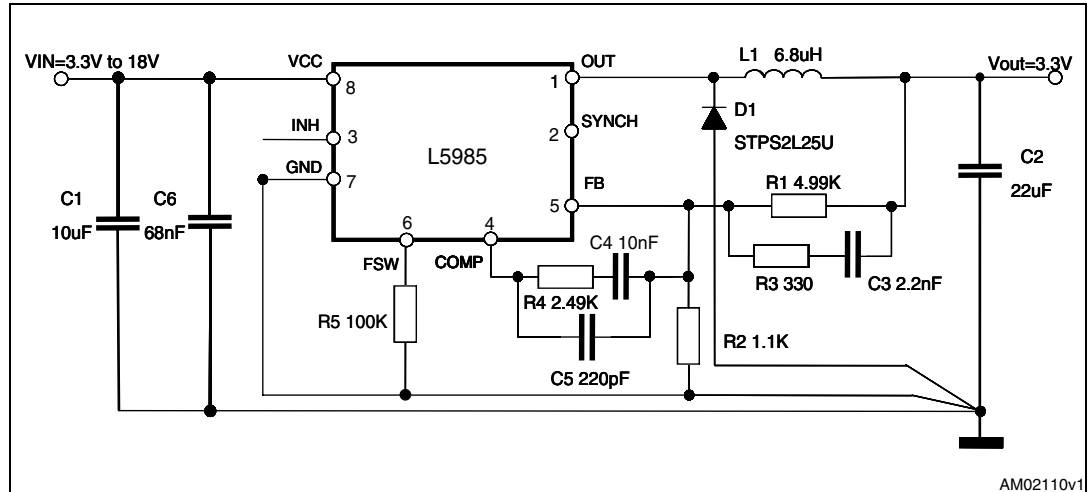
The output voltage can be set to a level from 0.6 V up to the rated voltage of the output capacitor (16 V).

The compensation network on the demonstration board allows the use of MLCC as output filter to keep the loop stable. The inductor saturation current and forward current of the Schottky diode are within the current limit values.

The switching frequency on the demonstration board is set to 500 kHz by means of the R5 resistor connected to pin Fsw.

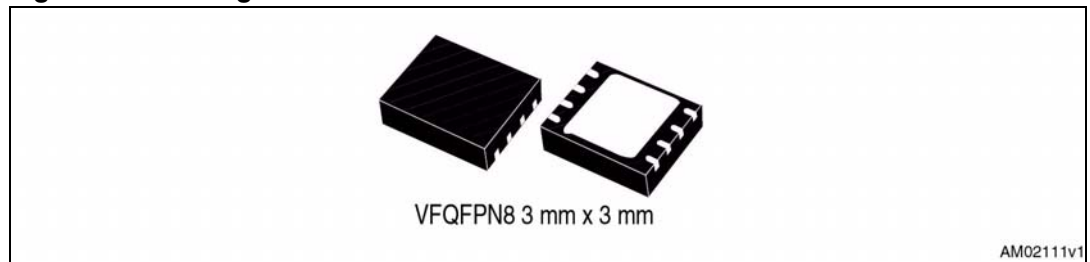
1 EVAL5985 application circuit and component list

Figure 1. Application circuit



AM02110v1

Figure 2. Package



AM02111v1

Table 1. Component list

Reference	Part number	Description	Manufacturer
C1	GRM31CR61E106KA12	10 μ F, 25 V	Murata
C2	GRM31CR61C226KE15B	22 μ F, 16 V	Murata
C3		2.2 nF, 50 V	
C4		10 nF, 50 V	
C5		220 pF, 50 V	
C6		68 nF, 25 V	
R1		4.99 k Ω , 1%, 0.1 W 0603	
R2		1.1 k Ω , 1%, 0.1 W 0603	
R3		330 Ω , 1%, 0.1 W 0603	
R4		2.49 k Ω , 1%, 0.1 W 0603	
R5		100 k Ω , 1%, 0.1 W 0603	
L1	7447779006	6.8 μ H, 30%, 2.91 A	Würth Elektronik
D1	STPS2L25V	2 A, 25 V	STMicroelectronics

2 PCB layout

Figure 3. PCB layout (component side)

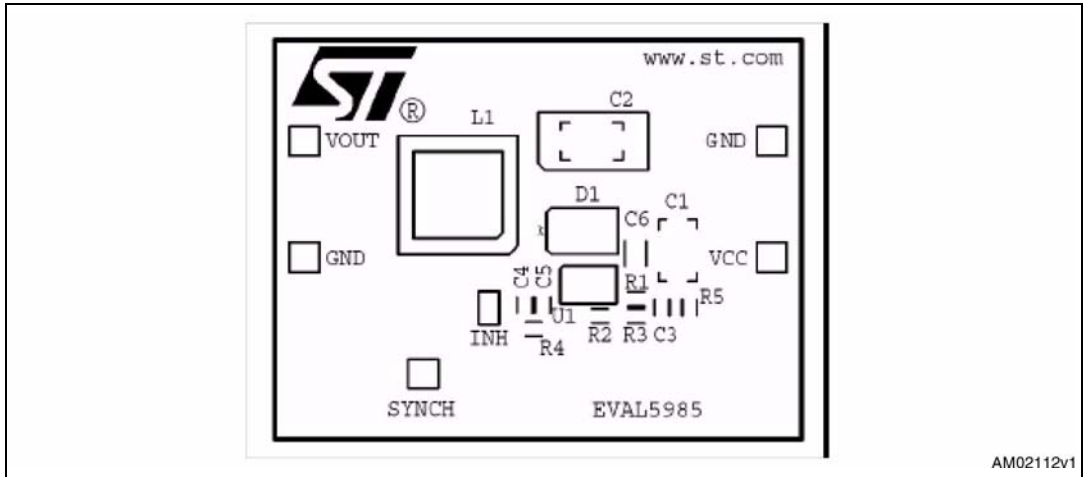


Figure 4. PCB layout (bottom side)

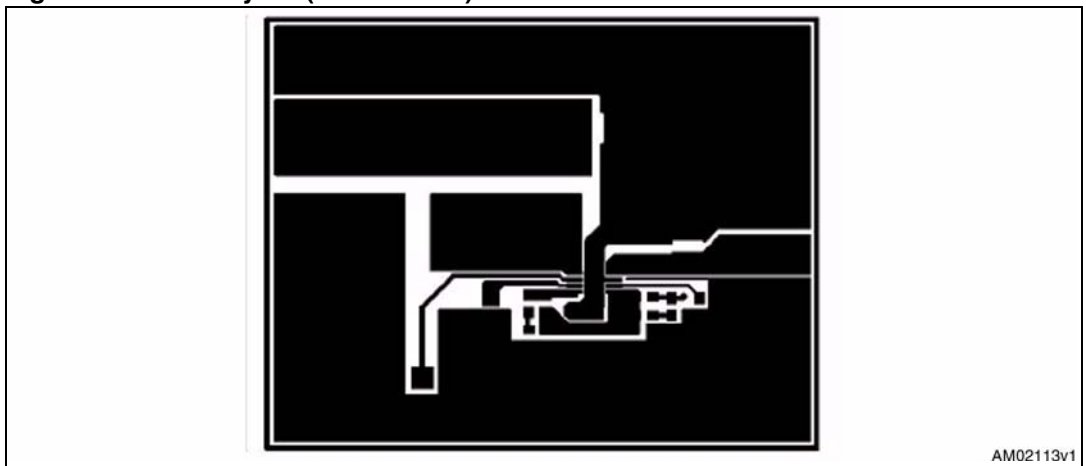
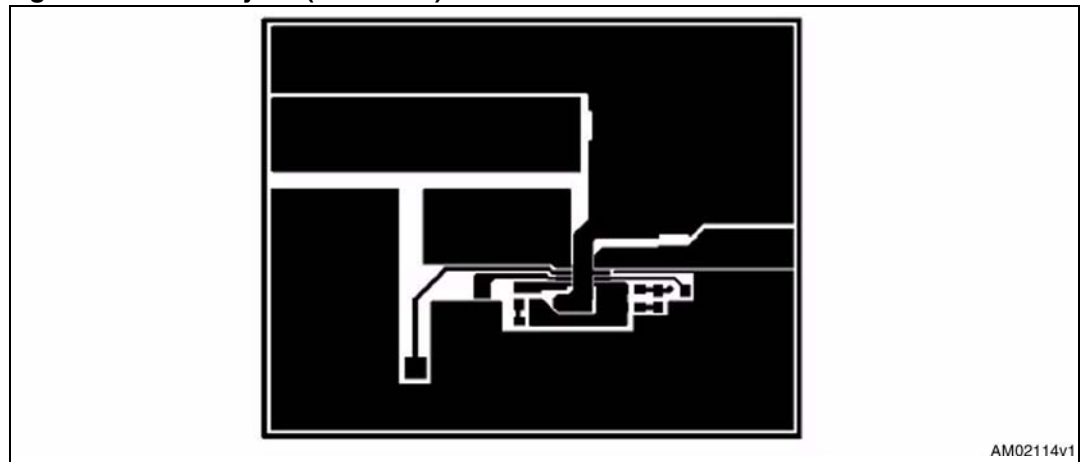


Figure 5. PCB layout (front side)



3 Package mechanical data

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4 Revision history

Table 2. Document revision history

Date	Revision	Changes
19-Jan-2009	1	Initial release

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