

PLECS

*DEMO MODEL*

## Buck Converter with Analog Controls

Last updated in PLECS 4.3.1

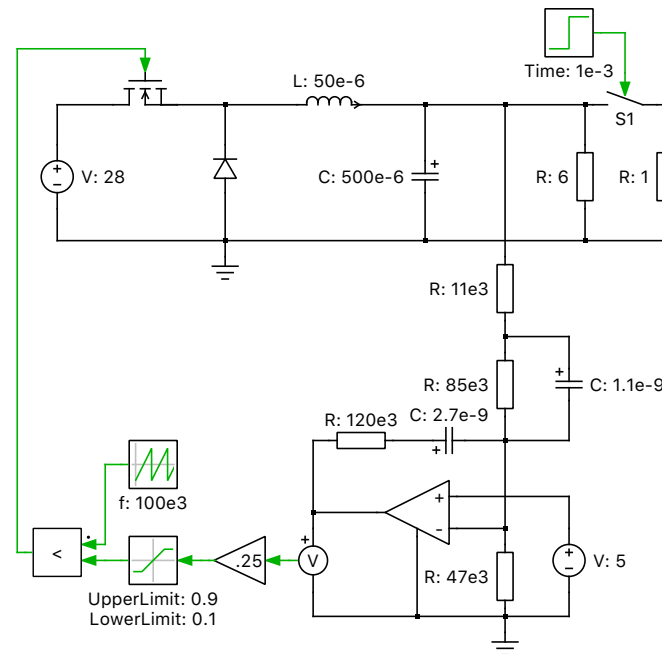
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## 1 Overview

This demonstration shows a buck converter with a resistive load. The controller is implemented in PLECS with electrical circuit components; the pulse generation is performed by comparing the output voltage against a sawtooth signal.

## 2 Model



**Figure 1: Buck converter with analog controls**

The power circuit of the model is using MOSFET as active switching component with resistive load. The output voltage is sensed by the control circuit with one operational amplifier. The control reference is provided by one constant voltage source and is compared to the measurement. Several resistors and capacitors compose the feedback loop, which make the analog circuit works as a PID-type controller.

## 3 Simulation

After starting the simulation, the analog controller regulate the output voltage to the reference value. At 1 s, additional resistive load is connected by the switch  $S_1$ , and the rising load current and a voltage drop during the transient can be observed.

## Revision History:

PLECS 4.3.1      First release

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### *PLECS Demo Model*

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