Figure 19.28 Step-up converter during "on" state
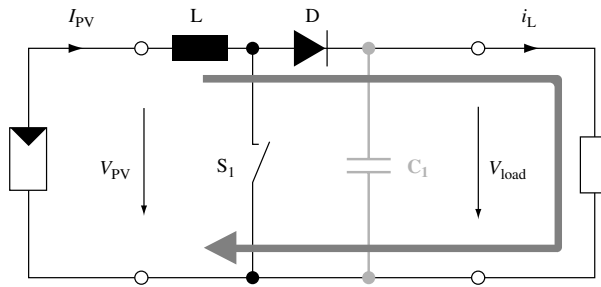

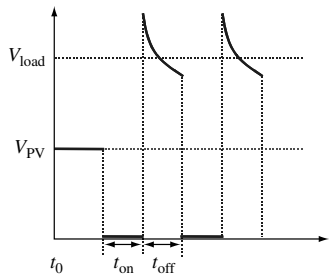**Figure 19.29** Step-up converter during "off" state

Figure 19.30 Behaviour of the load voltage of a step-up converter

After S_1 is switched off (Figure 19.29), the induced voltage in the inductor adds itself to V_{PV}, which then lies across the load. i_L flows through the inductor and further to the load. Thereby, it falls down gradually because $V_{load} > V_{PV}$:

$$\frac{di_L}{dt} = \frac{V_{PV} - V_{load}}{L}$$

The proceeding of the load voltage is illustrated in Figure 19.30. The diode D protects against a short circuit (i.e. discharge) of the charged capacitor C_1, which is assumed to be so big that it can smooth the load voltage completely.