

Step-down Configuration In the step-down configuration, the output voltage is always less than the input voltage. When V_{out} tries to decrease, the ON-time of Q, is increased, causing an additional charge on to offset the attempted decrease. When V tries to increase, the ON-time of Q, is decreased, causing C to discharge enough to offset the attempted increase the output voltage. Therefore, the switching regulator is useful primarily in higher power applications or in applications where is of at most concern. The ON and OFF interval of Q, are shown in the below. The capacitor charges during the ON-time (t_{on}) and discharge during the off-time (t_{off}). The inductor further smooths the fluctuating of the output voltage caused by the charging and discharges action.