Flyback Converter: Buck-Boost Derived

Flyback Transformer

- A two-winding inductor
- Symbol is same as transformer, but function differs significantly from ideal transformer
- Energy is stored in magnetizing inductance
- Magnetizing inductance is relatively small
- Current does not simultaneously flow in primary and secondary windings
- Instantaneous winding voltages follow turns ratio
- Instantaneous (and rms) winding currents do not follow turns ratio
- Model as (small) magnetizing inductance in parallel with ideal transformer
Flyback Waveforms

Flyback Equivalent Circuit Model
Flyback Reverse Recovery

Flyback Equivalent Circuit Model
High Step-Up Conversion Ratios

Boost Converter

Flyback, \( n=100 \)

Switch Ratings