

Re: high voltage boost DC/DC converters (5V->250V)

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- *From:* Joerg <notthisjoergsch@xxxxxxxxxxxxxxxxxxxxxxxx>
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Winfield Hill wrote:

On Nov 29, 5:14 pm, Michael <nleah...@xxxxxxxx> wrote:

Hi there – at work I'm probably going to have to design a high voltage DC/DC converter sometime in the near future. It looks like it'll be something along the lines of 5V input and 250V output. Current will be under 10ma. Probably more like 1–2ma. The more regulated the better, but I will probably just regulate it down a bit with a FET to clean it up.

My understanding is that once you start to get to something like an output voltage 10x or more of the input voltage the standard boost circuit (cap + diode + inductor) no longer really cuts it. Instead, I've read that step-up transformers are a better way to go. However, when I look through Digi-Key, all I see are step down transformers for stepping down wall power, as well as various specialty transformers.

Small smps transformers are very easy to wind.

Here's what I designed for a similar need about 12 years ago. I used an LT1172 switcher IC in a miniDIP package.

My technician wound the transformer bobbin.

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Aha! I always have to put lots of aloe creme on my index fingers after doing too much of this winding. Else they'll split open in cold weather.

I used an RM8 core with 3B7 material, gapped (on one side) for A160 ($A_L = 160\text{nH}/N^2$).
The primary was 10 turns of #24 magnet wire

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(for $L = 25\mu\text{H}$), then a layer of tape, and
the secondary was 100 turns of #30 wire.
So you can see it was easy to wind.

I mostly go non-gapped. Push pull or AC-coupled half-bridge. And don't mis-count. One-Mississippi,
two-Mississippi, ...

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Regards, Joerg

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