Re: Powering a LPC2114 ARM7

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From: Ralph Malph (*noone_at_yahoo.com*)
Date: 01/13/04

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"Lewin A.R.W. Edwards" wrote:
>
> > I am designing a board using a Philips LPC2114 (nice chip). It uses
> > 1.8v for the core, 3.3v for I/O, and I also need 5v for some other
> > circuits on the board. None of them use much current. The power
> > supply is a 12v battery.
>
> This question has arisen in the Yahoo LPC2100 discussion group
> recently. Most people recommended linear regulators. Certainly, all
> the extant and proposed EVBs use them. But, most people are not
> designing battery−powered appliances. You can certainly realize higher
> efficiencies with alternative designs, though.
>
> > the battery? Is there a single device, such as a DC/DC converter
> > that can produce these voltages?
>
> Not exactly. You can construct a SMPS that will generate all the
> required voltages, but the cost will be quite substantial. If this not
> a high−volume consumer product you're designing, it is easier − much
> easier − to use linear regs.

A lot of people think of inductor based regulators for efficient power conversion. But there are also switched capacitor regulators that do a good job. I am using the TPS60500 which can be programmed for its output voltage and can be very efficient. But it won't work with a 12 volt input. A voltage halfing circuit in front of two of these should do the job. But after a look around, I don't see one that will take 12 volts input and provide more than 20 mA of current. So maybe this is not really practical. Or maybe you can do a better job of looking for a small, cheap charge pump to cut the 12 volts to 6 volts. Then the TPS60500 should be just what you want.