

## Re: UC3843 power supply help needed!!!

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*Source:* <http://sci.tech--archive.net/Archive/sci.electronics.design/2005-05/msg02229.html>

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- *From:* [seegoon99@xxxxxxxx](mailto:seegoon99@xxxxxxxx)
  - *Date:* 16 May 2005 23:17:56 -0700
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colin wrote:

> <[seegoon99@xxxxxxxx](mailto:seegoon99@xxxxxxxx)> wrote in message  
> [news:1116227614.747750.258110@xx](mailto:news:1116227614.747750.258110@xx)  
> Hi to all.  
> I have built a power supply using a uc3843 chip and need some help.  
> The supply takes 220Vac and steps it down to 14Vdc(approx).  
> I have managed to get the supply working OK , but I still need a bit  
of  
> help.The schematic is attached , in LTSpice format.I modeled the  
> schematic and it seems to be ok , but I'm not sure how much you can  
> trust a simulation it this sort of level.  
> I've attached the model file for anyone who would like to simulate  
the  
> schematic. Hope it does not make the file to big , but I don't have  
any  
> access to any other binary groups to send it to.  
>  
> When I first powered up the circuit the output was very noisy , and  
got  
> worse as the load increaced.I found by lots of trial and error that  
if  
> I put a small(100pF) cap across R11(3k3) the output stabilizes and  
> everything seems good.There is a bit of high frequency noise on the  
> output at the switching frequency , but I am sure this is to be  
> expected.  
> Now the problem...  
>  
> I found by checking the drive to the FET that the loop seems unstable  
> at certain loads.As I increace the load from 0A to 2.5A  
> you can see the gate drive pulse width increacing as expected , but  
at  
> certain loads it seems to jump all over the place and the scope can't  
> trigger.From about 300mA to say 1,5A the gate drive is a mess , and  
> after that it seems to settle down nicely.  
>  
> How do I go about fixing this.It does not seem to be causing a  
problem  
> on the output , but I would like to fix it up anyway.

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- > I am sure it is a loop/compensation problem , but I am not sure how to
- > go about fixing it.I have tried changing the gain resistor(R5) to 100k
- > and 147K to no avail.Same with the compensation cap C2(100p / 200p).
- I
- > have also fiddled with the resistor/cap combination around the TL431 ,
- > also without much luck.
- > I am not very experienced with this type of power supply , so I am in
- > the dark a bit!!
- > It may also be a board layout problem.I did the board in a hurry
- > and did not pay HUGE amount of attention to layout , but I did try and
- > keep high current areas away from control lines etc.It is single sided.
- > This is a sort of hobby project , so time is not really of the
- > essence. I only have a scope and meter to work with , so any solutions
- > that involve using other expensive equipment will be out of my
- > capability.My maths is also not very hot , so any solution that involve
- > lots of complex maths may be beyond me , but post them anyway as the
- > may be of interest to someone else.(they will be of interest to me ,
- > even if over my head!!)
- >
- >
- > ive used this chip in probaly a dozen designs, its a realy neat little
- > package, i cldnt load your circuit, but if u cld post a jpg il have a look
- > at it, the spec sheet for this device is realy good, if u have loop
- > stability problems you realy need to analyse your loop charecteristics
- > carefully.
- >
- > with opto feed back you need to account for the wide variation in loop gain
- > they can have.
- >
- > some designs rely on a smal amount of esr in the output caps to ensure
- > stability, although persoanly i would try to avoid this.
- >
- > with current mode control its realy easy to charecterise the output, its
- > just like a big integrator, so
- > any roll of in the rest of feedback loop needs to occur when the overall
- > gain is less than 1. finding the loop gain at wich it becomes

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unstable and

> reducing it by a factor of 2 or so is one possibility.

>

> Colin =^.^=

Hi there. I don't have any access to any other groups , how can I post a jpg to this group?

Do you have an email I can send it to.

Cheers

Rob

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• ***Follow-Ups:***

◆ ***Re: UC3843 power supply help needed!!!***

◇ *From:* petrus bitbyter

◆ ***Re: UC3843 power supply help needed!!!***

◇ *From:* Pooh Bear

• ***References:***

◆ ***UC3843 power supply help needed!!!***

◇ *From:* seegoon99

◆ ***Re: UC3843 power supply help needed!!!***

◇ *From:* colin

• Prev by Date: ***Re: flybacks & transformer leakage***

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