

Re: Digital vs Analog Isolators in Smmps Design

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- *From:* Ross Herbert <rherber1@xxxxxxxxxxxxxxxx>
 - *Date:* Sun, 01 Mar 2009 02:33:42 GMT
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On Sat, 28 Feb 2009 10:25:30 -0800, D from BC <myrealaddress@xxxxxxxx> wrote:

:On Sat, 28 Feb 2009 08:14:08 GMT, Ross Herbert
:<rherber1@xxxxxxxxxxxxxxxx> wrote:

:

:>On Fri, 27 Feb 2009 19:58:46 -0800, D from BC <myrealaddress@xxxxxxxx> wrote:

:>

:>:On Sat, 28 Feb 2009 03:06:38 GMT, Ross Herbert

:>:<rherber1@xxxxxxxxxxxxxxxx> wrote:

:>:

:>:>

:>:>I pulled a psu from a defunct Epson inkjet printer and it uses a similar
setup

:>:>to your description. The mains input primary side switcher uses a mosfet

:>:>controlled by bjt's and the secondary side uses a L4962EA 1.5A smpps
controller

:>:>to produce a 42V output.

:>:>

:>:>As for the OP's query, my initial reading is that the digital isolator
cannot

:>:>be applied to smpps feedback control. The output control of an smpps relies on

:>:>

:>:

:>:I don't think so.

:>

:>:Once the analog error signal gets to a PWM (or other), the error

:>:signal crosses into digital land.

:>:This works when the PWM is on the secondary side.

:>

:>Take a look at the data sheet for a typical controller IC commonly used in
SMPS,

:>eg. UC3842.

:>

:>"Pin 2 - Voltage feedback - This is the inverting input of the Error
Amplifier.

:>It is normally connected to the switching power supply output through a
resistor

:>divider."

:>

Re: Digital vs Analog Isolators in Smmps Design

:>That says the feedback signal is analog, not digital.

:>

:>In SMPS which don't use a PWM controller IC, the feedback signal is always

:>analog.

:

:I think the UC3842 is meant to be used on the primary side.

:I don't think a digital isolator can be used with a current mode

:controller (UC3842) because it uses 2 feedback loops. One loop is the

:current ramp from the primary side and other loop is the voltage

:monitoring (via linear opto) from the secondary side.

:To use a digital isolator, there can only be linear feedback loops on

:secondary side.

:(The UC3842 uses a primary (I mode) and secondary (V mode) feedback

:loops.)

:A digital isolator can work with a voltage mode controller used on the

:secondary side. (The UC3842 is a current mode controller.)

:With a digital isolator, it's the mosfet gate signal that is

:isocoupled not a sample of the output voltage.

In this thread so far, you hadn't indicated that you were trying to implement a smmps design with the PWM control on the secondary side. It was Tim who raised this possibility but you didn't indicate that you were going down this path. It is no wonder that I assumed that you were trying to implement digital feedback control from the secondary side to the primary side of a line powered smmps.

Only now, when I pointed out that a typical widely used smmps controller IC wouldn't work using digital feedback, did you specify that you were thinking of doing the pwm and feedback control on the secondary side. If I had known what you were trying to do then I probably wouldn't have commented at all.

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