7 Series FPGAs

Shared Power Supply regulators for MGTAVCC and MGTAVTT

seefront_ka
Visitor

Posts: 4
Registered: 06-18-2015

Shared Power Supply regulators for MGTAVCC and MGTAVTT Opt

11-11-2016 01:30 AM

Dear Community,

we are re-designing our Artix-7 PCI Express add in Card.

By reviewing the **7 Series FPGAs GTP Transceivers User Guide** UG482 we found the following requirement in table 5-14:
"The power supply regulator for this voltage should not be shared with non-Transceiver/non-MGT loads".

In our application MGTAVCC is shared with VCCINT. And MGTAVTT is shared with another logic IC.

From our current tests we can not find any problems with that, but I'd like to ask for your opinions?
Should we change our power supply concept ?

Thanks,

Kjer

Message 1 of 6 (2,727 Views) **0 Kudos**

MOD gnarahar
Moderator

Posts: 1,188
Registered: 07-23-2015

Re: Shared Power Supply regulators for MGTAVCC and MGTAVTT Opt

11-11-2016 01:48 AM

@seefront_ka Since you are redesigning your Card, I would highly suggest you to stick to recommendation of not sharing power regulators Transceivers with other non-GT rails.

GT Transceivers need clean power supply with good noise immunity and so sharing them with other non-GT rails may cause issues down th

Do redesign your power tree based on the recommendations to make sure you don't run into issues in future

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There's no such thing as a stupid question. Feel free to ask but do a quick search to make sure it ain't already answered.
Keep conversing, give Kudos and Accept Solution when you get one.

Message 2 of 6 (2,723 Views) **0 Kudos**

seefront_ka
Visitor

Posts: 4
Registered: 06-18-2015

Re: Shared Power Supply regulators for MGTAVCC and MGTAVTT Opt

11-11-2016 01:53 AM

OK - is a sufficient to implement a low noise step down switching regulator (similar to AC701 schematics) or should a linear regulator be use

Message 3 of 6 (2,721 Views) **0 Kudos**

MOD gnarahar
Moderator

Posts: 1,188
Registered: 07-23-2015

Re: Shared Power Supply regulators for MGTAVCC and MGTAVTT Opt

11-11-2016 01:55 AM

@seefront_ka A low noise switching regulator would be a good choice

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There's no such thing as a stupid question. Feel free to ask but do a quick search to make sure it ain't already answered.

Keep conversing, give Kudos and Accept Solution when you get one.

Message 4 of 6 (2,779 Views) **0 Kudos**

seefront_ka
Visitor

Posts: 4
Registered: 06-18-2015

Re: Shared Power Supply regulators for MGTAVCC and MGTAVTT

Opt

11-14-2016 01:50 AM

Dear gnarahar,

we repeated our noise measurements on MGTAVCC and MGTAVTT and can see that we are below 10 mVpp noise for our worst cast use cas
Could you please explain more detailed why it is so important to split up the power supply ?

Is noise the only requirement or are there other technical reasons why it is advised to have exclusive power regulators for MGTAVCC and MGTAVTT ? As we are working with a small XC7A15T we'd also like to keep the power tree compact.

Beste regards,

KA

Message 5 of 6 (2,649 Views) **0 Kudos**

MOD umamahe
Moderator

Posts: 2,036
Registered: 08-01-2012

Re: Shared Power Supply regulators for MGTAVCC and MGTAVTT

Opt

11-14-2016 02:28 AM

We do not recommend to share MGTAVCC is shared with VCCINT. The VCCINT is digital supply rail. MGTAVCC is analog supply rail. The MGT supply rail demands tight supply voltage and nose tolerance's for their high performance applications. The digital switching noise in VCCIN supply rail may effect on MGTAVCC and causes errors in MGT data transfer.

Please mark this post as an "Accept as solution" in case if it helped to resolve your query. So that it will help to other forum users to directly to the answer.

Give kudos to this post in case if you think the information is useful and reply oriented.

Message 6 of 6 (2,643 Views) **0 Kudos**

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