

Block, Scott T.

From: Nakahara, Kazutaka <nakahara@slac.stanford.edu>
Sent: Friday, February 3, 2023 11:05 AM
To: Hansson, Conny; Doering, Dionisio; Hart, Philip Adam; Block, Scott T.; Nayak, Bhavna; Defay, Xavier
Subject: Fw: Current draw on Quad0

Hi,

Here's an email from Maciej saying that DVDD, 5sec, AVDD is the right way to turn it on. He also mentions a hardware bug in passing....I don't think the load resistor has been added in the past 2 years, so I suspect this bug still exists.

Regards,
Kaz

nakahara@slac.stanford.edu
cell: 650-391-7914
office: x5725
ASC lab: x3805

From: Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>
Sent: Friday, July 17, 2020 2:01 PM
To: Alex Batyuk <batyuk@stanford.edu>; Nakahara, Kazutaka <nakahara@slac.stanford.edu>
Cc: Hart, Philip Adam <philiph@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>
Subject: Re: Current draw on Quad0

I think I understood this problem and found a hardware bug. Fortunately easy to fix with just resistor loading change. We'll have to access all boards someday to fix this, but I confirm that it is safe to keep using the camera with the following startup:

1. Enable DVDD
2. Wait ~5 seconds
3. Enable AVDD

Thank you,
Maciej

From: Alex Batyuk <batyuk@stanford.edu>
Sent: Friday, July 17, 2020 1:31 PM
To: Nakahara, Kazutaka <nakahara@slac.stanford.edu>
Cc: Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Hart, Philip Adam <philiph@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>
Subject: Re: Current draw on Quad0

The current with only AVDD is 0.022A

Alex

On Jul 17, 2020, at 13:22, Nakahara, Kazutaka <nakahara@slac.stanford.edu> wrote:

Alex can correct me if I'm mis-remembering this, but when we turn on only AVDD by itself, the current draw is basically 0 (maybe 0.2A or so). It's only when the DVDD is then turned on that the current draw spikes.

Regards,
Kaz

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From: Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>
Sent: Friday, July 17, 2020 1:18 PM
To: Hart, Philip Adam <philiph@slac.stanford.edu>; Nakahara, Kazutaka <nakahara@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>
Cc: Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>
Subject: Re: Current draw on Quad0

Hi, if you turn on only AVDD do you see current draw above few mA? If so then I think one of the boards (analog likely) has an issue.

Thank you,
Maciej

From: Hart, Philip Adam <philiph@slac.stanford.edu>
Sent: Friday, July 17, 2020 1:11 PM
To: Nakahara, Kazutaka <nakahara@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>
Cc: Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>
Subject: Re: Current draw on Quad0

Sorry, I should have said, "I thought AVDD doesn't get applied to the board until DVDD is on and the digital board enables the analog board".

From: Hart, Philip Adam <philiph@slac.stanford.edu>

Sent: Friday, July 17, 2020 1:10 PM

To: Nakahara, Kazutaka <nakahara@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>

Cc: Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>

Subject: Re: Current draw on Quad0

Hi, I think I understand the story now. Alex says he was turning on AVDD first, then DVDD, due to the mpod screen setup. I thought the behavior was AVDD doesn't turn on until DVDD is supplied, but in any case when he turns on DVDD first it comes up fine. I'm still interested in understanding the AVDD first behavior on Q0, but we don't plan to see it again.

Thanks,
Philip

From: Nakahara, Kazutaka <nakahara@slac.stanford.edu>

Sent: Friday, July 17, 2020 12:58 PM

To: Hart, Philip Adam <philiph@slac.stanford.edu>; Kenney, Christopher J. <kenney@slac.stanford.edu>

Cc: Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>

Subject: Re: Current draw on Quad0

Hmm, maybe the voltage drop across the cable is making the voltage at the detector marginal? Would the detector try to grab more current if it's at (or slowly below) the edge of what's needed to power the boards?

Regards,
Kaz

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From: Hart, Philip Adam <philiph@slac.stanford.edu>

Sent: Friday, July 17, 2020 12:23 PM

To: Kenney, Christopher J. <kenney@slac.stanford.edu>; Nakahara, Kazutaka <nakahara@slac.stanford.edu>

Cc: Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>

Subject: Re: Current draw on Quad0

We nominally should have DVDD on first, then AVDD.

Is it possible that we have those switched?

- Philip

From: Kenney, Christopher J. <kenney@slac.stanford.edu>
Sent: Friday, July 17, 2020 12:12 PM
To: Nakahara, Kazutaka <nakahara@slac.stanford.edu>
Cc: Hart, Philip Adam <philiph@slac.stanford.edu>; Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>; Kwiatkowski, Maciej <mkwiatko@slac.stanford.edu>; Blaj, Gabriel <blaj@slac.stanford.edu>
Subject: Re: Current draw on Quad0

Any ideas?

From: Nakahara, Kazutaka <nakahara@slac.stanford.edu>
Sent: Friday, July 17, 2020 12:11 PM
To: Kenney, Christopher J. <kenney@slac.stanford.edu>
Cc: Hart, Philip Adam <philiph@slac.stanford.edu>; Alex Batyuk <batyuk@stanford.edu>; McKelvey, Mark E <mmck@slac.stanford.edu>
Subject: Current draw on Quad0

Hi Chris,

We're seeing an odd issue with the new epix10k2m that we just deployed to MFX. When we turn on both the digital and analog voltages to 6V at the same time, the current draw on the digital line spikes to >5.5A (I've seen it as high as 8.5A). This only seems to happen with Quad0. Is it possible we're damaging something with such a high inrush current on the line?

If we turn on the analog power first, wait 5 sec, and then turn on the digital power, this doesn't seem to happen. So we'll run like that for the time being, but I'd like to double check with you that the above behavior isn't a sign of troubles to come.

Regards,
Kaz

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