

Sharpen the saw.

CEO's Note

Dear Readers,

"A device is only as good as its power supply"! This quote was one of the first things I learned in electronics long before I became an electronics engineer. It was the headline of the German electronics magazine «Elektor». It was, and still is a magazine for the electronics enthusiasts community. It's wording and explanations are more popular science, than academic. It always included very useful practical tips and hints. For example, one cannot over emphasise the above quote about important a clean and perfectly routed power supply is. I'm not talking about a perfect buck or boost converter or an LDO regulator. I'm talking about the supply at the point where it is needed: for sensitive devices such as a super-fast FPGA, a very sensitive amplifier, or an imager. If the supply or the ground rail picks up noise from other circuitry, a troublesome time is ahead of the hardware engineer. Believe me, it's incredible, how many electronics engineers I meet who simply neglect this important topic. Frankly speaking, it seems to me that they simply don't understand at all. But, the power supply at the point where its needed is like the foundation of a house.



Signal coupling by a ground loop

A connection (line) in the schematic diagram of a PCB layout tool is just a line. No physical properties, just ideal. That's the beauty of a CAD software tool. However, when this line becomes a track on a PCB, things get complicated: The track incorporates inductance, resistance and capacitance to neighbouring tracks and device leads. In addition, they become antennas and pick up electric and magnetic fields. However, always the worst aspect, believe me, is galvanic coupling. Large and quickly changing currents on ground tracks and planes easily lifts the ground up by a few millivolts, even tens of millivolts or more. A sensitive node e.g. in an amplifier or ADC picks up this ground noise as if it were a signal. It's obvious that the sensitivity of the circuitry is jeopardized. It cannot be compensated by software; a common approach to camouflage a bad analog design.

My hints:

- Look out first for strong and fast changing currents (switching) which see inductance in ground tracks. Make sure these tracks are as short as possible to the decoupling cap. Every millimeter counts.
- 2) Make sure that the individual grounds of the sub-circuits are separately routed to the common ground star point. A shared ground line of a sensitive sub-circuit with high current AC switching is a disaster. Believe me!

If one follows these two simple rules, you're good! All the other parasitic effects are on a much lower order.

I'm sorry, I don't want to be your schoolmaster. But, again with so many bad experiences over my almost 40 year electronics engineering career, I wanted to share this important topic with you. Maybe your next PCB design is «first-time-right».

Beat De Coi

PS: My editorial in the last CHIPS newsletter was greatly inspired by an article published in the «Neue Zürcher Zeitung NZZ» issued on December 31st, 2018 by Marcel Schoenenberger. The article reflected perfectly my personal mood regarding the development of the society here in Switzerland. A little bit of a black and white rating, but the «I» for many people became much more important than the «we». Nobody is living alone on our planet so all humans on earth have to be a team. At least to some extent.

Michael Schoenenberger triggered me to write my editorial because, as an entrepreneur, it becomes more and more difficult successfully running a company here in this country. The demand of society is a key challenge besides all the technological, operational, and also political uncertainties, such as the growing trade war we have to deal with.

Since Marcel Schoenenberger, who wrote the article in the NZZ, used such powerful expressions in the German language, I allowed myself to appropriate some of them in my English text. My sincere apologies that I did not mention this source in the CHIPS January newsletter.

Review TOF Developer Conference San Francisco

From January 29 – 31, we held the second edition of the TOF Developer Conference in San Francisco. More than 30 participants attend this event in the Mission Bay Conference Center at the University of California San Francisco (UCSF).



Full audience at TOF Developer Conference in San Francisco

The conference shows, how important it is to have a deep understanding of the underlying optical

From January 5th until 7th 2019, ESPROS exhibited at SPIE Photonics West in San Francisco. It is one of the most important exhibitions for ESPROS worldwide to present the latest technology, products, and product ideas.



physics, the behavioral model of the used imager, and an excellent understanding of the artifacts of a TOF camera.



Practical work during the sessions

With a mix of theoretical background, guidelines to working implementations based on examples, and practical work with our TOF>cam635, the course gave a very good overview of how to improve the challenging knowledge of TOF systems.

ESPROS at SPIE Photonics West



Highlight on our booth was the four TOF cameras we brought with us, where the attendees were deeply impressed about our live demonstration.

Save the date: TOF Developer Conference China in April 2019

Our next conferences coming up in April 2019 in China:

- April 2-4 TOF Developer Conference, Shanghai
- April 9-11 TOF Developer Conference, Shenzhen

Don't miss this opportunity to get the deep understanding of how to implement TOF technology at its best. Register now! Places are limited, first come-first served!

For more details, please click here.

Email: tof.developerconference@espros.com

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