



To dream anything that you want to dream, that is the beauty of the human mind. To do anything that you want to do, that is the strength of the human will. To trust yourself, to test your limits, that is the courage to succeed.

Bernard Edmonds

CEO's Note

Dear Readers,

3D TOF gains momentum, like hell! It is what we aimed for a long time. The number of projects with design-wins and production-wins with our products is growing almost daily. This keeps our manufacturing guys very busy to catch up with the increasing demand. That was the plan when I started ESPROS and I like it very much. However, the most satisfying events are, when customers say something like **«took a measurement and can say, epc660 is the best TOF sensor we have ever seen!»**

What a statement and a compliment! By the way, the customer is a Japanese automotive OEM working on mobile robotics operating outdoor. His statement is clearly based on the sunlight suppression capability of our TOF imagers epc611 (8x8), epc635 (160x60) and epc660 (320x240) which share the same platform. Together with the unsurpassed quantum efficiency, long range applications are possible. Ideal prerequisites for mobile robotics applications. Check it out!

Beat De Coi

Facial scanning using epc660

Was this a vision which the Grimm brothers tell us in the story of "Snow White": «Mirror, mirror at the wall, who is the fairest one of all?»

Not at the time of the writing of the story nor some years ago like 1980s, somebody imagined how fast this proverb will become reality. Today in 2018, girls and boys are smiling into their mobile phones and thinking: «Mobile, mobile in my hand, unlock the screen to the fairest one of all».

This "romantic function" is called by the engineers in dry and simple words: Face identification. It is a major key technology of this century- and this truly in the real meaning of unlock and lock. Mechanical keys, electronic keys, pin codes, retina or fingerprint identification, and now face recognition: This is the consequent intention of the engineers to handle identification and security functions more and more easily.

Whereas the development was started on the basis of conventional 2D pictures, the security aspects more and more became the center of this application. It means, find dominating relations in a picture which can identify a face as unique.

But our face has more than two dimensions. There is one more. This is the big opportunity for the upcoming new 3D imager technology to give this application a new parameter, the depth, to make it much, much stronger.

A good choice is to do this is by using the ESPROS epc660 3D TOF imager chip. The USPs of the chip - high sensitivity as well as the capability of suppressing strong ambient light - put it in a favorite role for mobile applications.



Figure 1: 3D facial scanning with epc660

High sensitivity means saving battery power and operation in the eye-safety regime due to fact that the active illumination can be designed to be less powerful.

Ambient-light acceptance is a key factor and a challenge for devices although they are used outdoor in a full sunlight environment.

ESPROS has built a demonstrator with the epc660 chip for such an application and supports the implementation thereof into real devices. A picture is shown in Figure 1 which can also be seen live in a video on our website www.espros.com. The 3D image shown is live! The key ingredients to this stunning performance are an epc660 chip with a modulation frequency of 36 MHz, VCSEL illumination, a good camera calibration and some relatively simple software.

SPIE Photonics West – Get customer's heartbeat

The January 2018 highlight was the SPIE Photonics West exhibition in San Francisco. It is the most important exhibition for ESPROS worldwide to present latest technology, products and product ideas. The announcements in the January 2018 issue of the CHIPS Newsletter as well as the posted video on the Website of the 3D facial scanning reached a wide audience. It resulted in lively traffic at our booth with visitors coming to see these products in live demonstrations.

We presented the following five brand new products for the first time:

- Facial scanning with epc660
- High speed FPGA camera with epc660
- TOF>cam 635 prototype
- TOF>range 611 range finder with 15m range
- TOF>range 611 on a rotary scanner

This bunch of new products is a clear statement of innovation and a focus to enable industrial applica-

tions. One path more for us into applications for modules and solutions.



Figure 2: Busy people at our booth at Photonics West 2018

Production line expansion

One of the most important factors is time to market. The semiconductor industry is in a very difficult position in this respect because the supply chain and thus the lead time is quite long. Typically, more than 20 weeks from the start of wafer processing to final chips is not abnormal. Thus, if a shortage in the supply chain occurs, e.g. due to increasing demand, allocation for 30-50 weeks is not really special. In the case of our products where we do rather complex backside processing, we had to add another 11 weeks to the supply lead time one year ago. This situation was not satisfying at all and we decided to invest heavily into additional in-house capabilities.

The result is now that we can do the backside and the back-end processing of the wafers within days, if needed. We showed this performance in a recent project where lead time from wafer production start until the chips were in the lab was only nine weeks.

Not just wafer processing and backside processing,

but also assembly including AR coating and band-pass filter bonding.

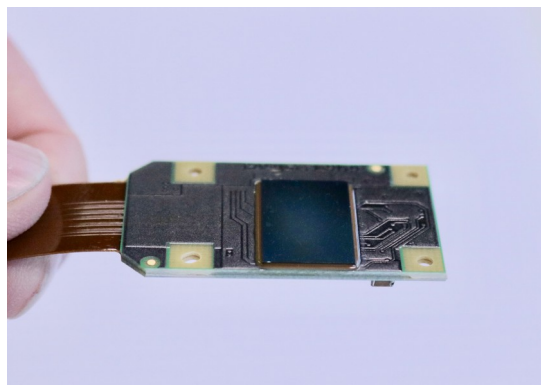


Figure 3: BSI imager chip from wafer start to final product in 9 weeks only!

Our supply chain guys did a tremendous job! Thanks to them indeed from the ESPROS sales force!



Figure 4: One section of the new UBM line

+++ interesting job opportunities on www.espros.com+++