

**Your lifespan is the same,  
whether you spend it  
laughing or lamenting.**  
*(Chinese proverb)*

## What is the Meaning of Life?

First things first: I don't actually know the meaning of life, and it's not (yet) something I've really tried to tackle! But in any case, it is a topic that should engage us somehow. Are we simply here, or is there an assignment for us? Do we really have to ingest the - if you will allow me to use the expression - 'BS' that we are subject to daily from the tabloid newspapers. This is not about reporting, but is purely sensational journalism. Sell as many newspapers as possible or achieve the highest possible rating figures, all under the motto "bad news is good news!" Is that our assignment on this planet, to simply play along with all the games?



Could it be that perhaps our reason for being here is to do something? When I say "do", I mean the opposite to "consume". Why not even do something good? Help someone, make someone happy? With a deed, an action? Yes, I strongly believe that it is our duty to do something. Each and every one of us has a role to play. The person who prays, the minister, the teacher, the gardener, the farmer, the blue-collar worker, the boss, the musician and so on. Each of their duties should have the same goal; to make other people happy. So we come back to (tabloid) journalism: even this should have

the same task, i.e. to make people happy. But with a bit of decorum, objectivity and accurate investigations, please. And the majority of people believe what is written in newspapers is accurate! One believes what one reads in the newspapers. There was recently a 'tall tale' about a Mongolian asylum seeker here in Switzerland, who was exposed as a fraudster by our humanitarian institutions. But the over-enthusiastic tabloid media, who actually knew that this Mongolian was lying, stepped into the ring against an improvement to the Swiss asylum law. The new asylum law would enable such cases to be eliminated from the outset. No more and no less.

The meaning of our lives is to use our own strengths according to the possibilities open to us. With the goal of helping others and, consequently, making them happy. I am convinced of this. It is our humanitarian duty. But this task can only be successfully carried out, by supporting the good and punishing the bad. And the good are not necessarily the nice guys!

Beat De Coi

## Light Barrier Chip epc13x with Light Reserve output

The epc13x family consists of no less than eight different products. Three of them come with a light reserve output, as shown in the table below. What does 'light reserve' mean? This expression stands for a signal situation whereby a light barrier can operate reliably. This means that there is enough signal margin to ensure dirt, dust, or mechanical adjustment errors do not interfere with the light barrier's operation. The way to achieve 'light reserve' is quite simple. There is one input signal threshold where the output of the light barrier is triggered. Actually, it turns the output on if the signal strength

Model	Output		Light Reserve Output		Response Time		Sensitivity			
	digital	analog	w/o	with	slow	fast	low	medium	high	very high
epc130		x	x		x					
epc131		x	x			x				
epc134	x			x		x		x		
epc135	x			x	x				x	
epc136	x			x		x	x			
epc137	x		x		x					x
epc138	x		x		x				x	
epc139	x		x			x	x			

in the photo diode exceeds this level. However, if the incoming signal is just a little bit above the trigger threshold, a small signal loss turns the output off. This would mean the light barrier would not operate reliably in such a situation. In order to avoid this, a second incoming signal threshold is introduced. This threshold is typically 50% above the 'normal' threshold. When the incoming light reaches the 'light reserve' threshold, the 'normal' output will stay high even if the incoming signal experiences a slight loss during operation. The light barrier thus retains its stability and can operate reliably. The epc134, 135, and 136 products deliver the light reserve output at the same pin as the standard output signal. If the 'normal' threshold is reached, one output pulse is generated. If the 'light reserve' threshold is reached, two output pulses appear at the out pin. As shown in the table to the left, various configurations are available for both long range and high speed applications.

*Pricing information and data sheets are available upon request at sales@espros.ch. Samples are available from stock.*

## Quality Lab under Full Steam

Since our startup in January 2007, six product lines featuring 40 different products have been developed and released for sale. These include light barrier chips, power digital drivers, light curtain chips, photo diodes and photo diode arrays. In addition to that, 3D camera pixel structures and EEPROM cells are in the integration phase of complex 3D camera product lines. However, the development of the technology, design of the chip and simulation on the computer is insufficient to create a product reliable enough for use in the

so that the volume is large enough for statistical relevance. Depending on the test type, the chips are either in operation or not during the qualification process in the test chamber.

The Tests verify that the product will function as specified for the intended lifetime and will meet the longterm failure rate. Most chemical and physical processes affecting the materials and their interfaces can be accelerated by higher temperature, electrical potential or current.

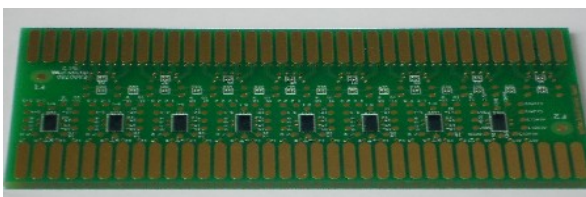


*Panoramic view of the epc quality lab*

real world. Thus, extensive qualification procedures have to be completed. The procedures to ensure reliability are defined in the JEDEC 47G and JESD22 standards. epc carries out the following such tests:

- High Temperature Operating Life (HTOL)
- Highly Accelerated Temperature Humidity Stress (HAST)
- Temperature Humidity Bias (THB) Test
- Temperature Cycle (TC) Test

We are proud that we own the full range of equipment required to perform all these test standards inhouse. A product is only released for sale when it passes all qualification tests described in these standards. The tests comprise electrical, mechanical and environmental tests.



*Qualification test board for the epc330 photo diode array*

These stress the parts to the same extent they can expect to experience over their full lifetime.

The picture above shows a typical test board where the chips are stressed during qualification. In this sample, eight dies of epc330 are located (soldered) to the board. Many of such boards are used to stress 100 or more chips simultaneously

They also verify that humidity does not interfere with the die and package materials. The die and the bonding system are also protected against corrosion. Corrosion can be caused by high temperature, humidity, and electrical potentials.

We also ensure that the materials used, together with their interfaces, are stable against mechanical stress caused by large temperature fluctuations.



*Shear test to qualify bonding joints*

test which could easily operate a steam machine. The test cyclically ramps up and down the temperature from -55°C to 150°C for up to 2,000 times, depending on the device under test.

*If you have any questions according to product qualification, please contact Hanspeter Keller at [hanspeter.keller@espros.ch](mailto:hanspeter.keller@espros.ch)*

+++ sales engineer, test engineer, accountant, etc. +++ interesting job opportunities on [www.espros.ch](http://www.espros.ch) +++ have a look! +++