

MINIATURIZATION, FUNCTION, RELIABILITY:
DEVICE.EMBEDDING
SAMPLE WE.EMBED

Jürgen Wolf / February 2024

WÜRTH ELEKTRONIK MORE THAN YOU EXPECT

INTRODUCTION

Speaker

Jürgen Wolf

Head of Advanced Solution Center

- DEVICE.embedding
- STRETCH.flex
- Qualification, planning and further development of technologies
- Coordination of solutions and collaboration with technology partners

With Würth Elektronik Circuit Board Technology since 2008

How to reach me:

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Mail juergen.wolf@we-online.com



Jürgen Wolf

Head of Advanced Solution Center



AGENDA

DEVICE.embedding sample WE.embed

Our to-do list for today:

1. DEVICE.embedding
 - Why do you embed components into the PCB?
 - How is it done?
2. Sample
 - What do we see?
 - Where can I get it?

DEVICE.embedding

Stackup ET654T

- Component orientation Top/Bottom
- Internal component layer
- Technology Solder, Microvia & Flip-Chip
- Total layer count

Components embedded in the sample

- 24 red LEDs – Package 0603
- 3 resistors – Package 0402
- 3 capacitors – Package 0402
- 1 TVS diode – package SOD923
- 6 active components in packages UDFN3030-10, TSSOP-8 and DHVQFN162

Advantages

- High component density
- Short signal paths
- Protection of embedded components
- Isolation for high voltages
- Good thermal management
- Integrated shielding
- Protection against plagiarism

Interested?
Würth Elektronik GmbH & Co. KG
Advanced Solution Center
Team DEVICE.embedding
Phone +49 7940 946-1234
embedding@we-online.com
www.we-online.com/embedding

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MORE THAN YOU EXPECT

Power supply via USB

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Assembled inner layer

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WHY DO YOU EMBED COMPONENTS INTO THE PCB?

DEVICE.**embedding** sample WE.**embed**



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Assembled inner layer

Power supply via USB

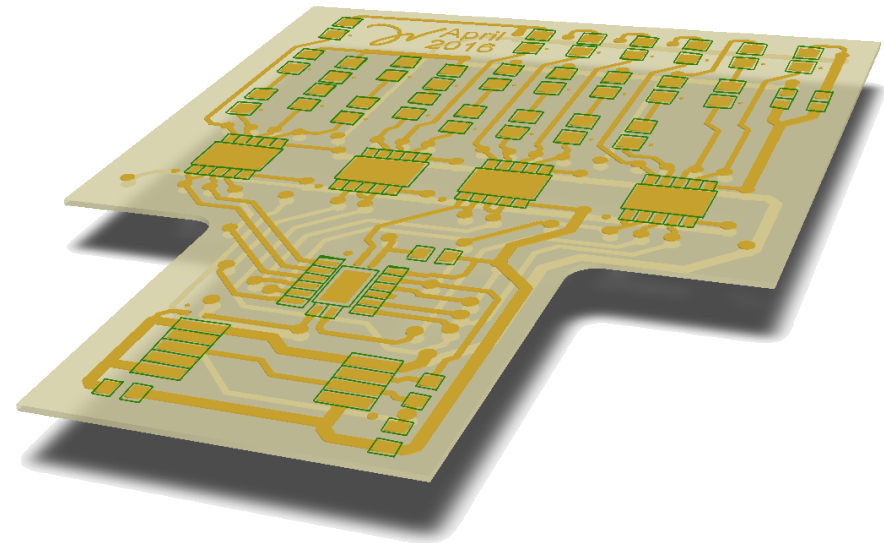
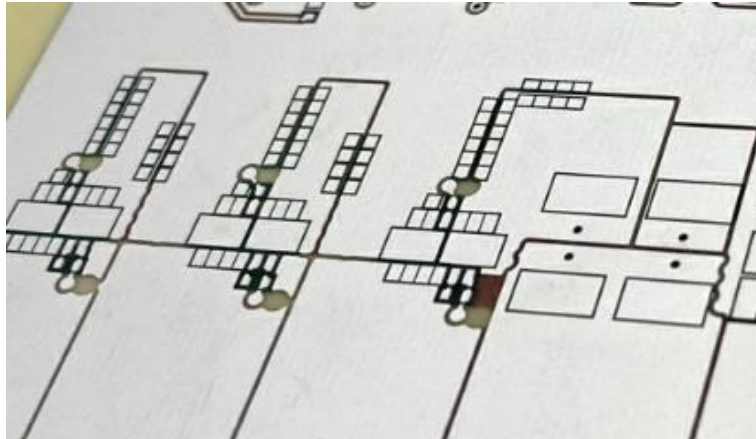
WÜRTH ELEKTRONIK
MORE THAN YOU EXPECT

HOW IS IT DONE?

DEVICE.embedding sample WE.embedding

Manufacturing process using the example of SOLDER.embedding

1. Manufacturing of the inner layer to be assembled
 - Structuring of the layout
 - Application of the solder resist
 - Application of the solder surface



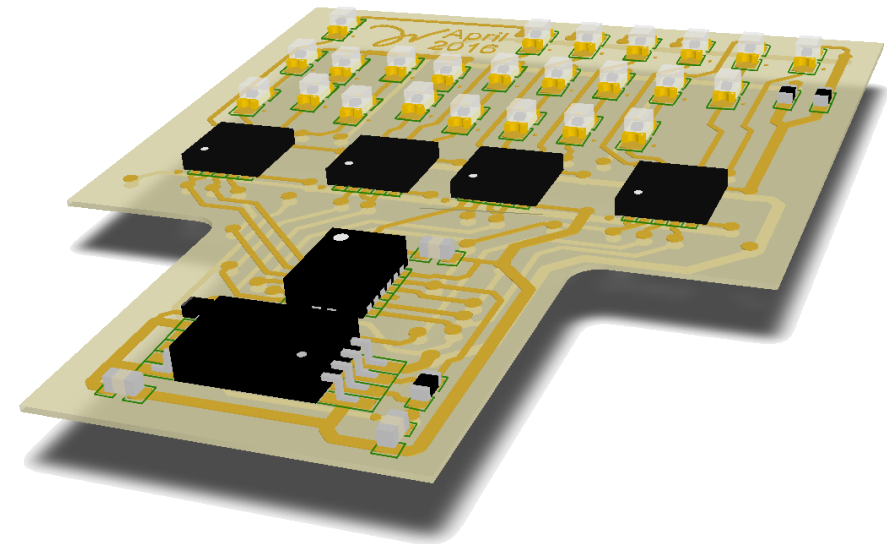
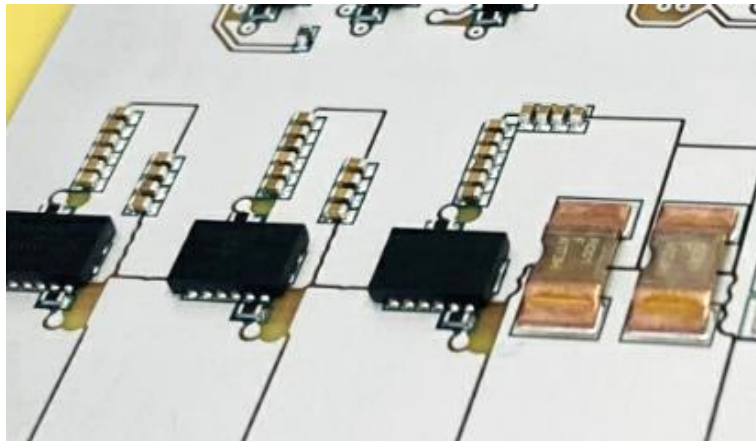
HOW IS IT DONE?

DEVICE.embedding sample WE.embed

Manufacturing process using the example of SOLDER.embedding

2. Assembly of the inner layer with SMD components

- Solder paste printing
- SMD assembly
- Cleaning



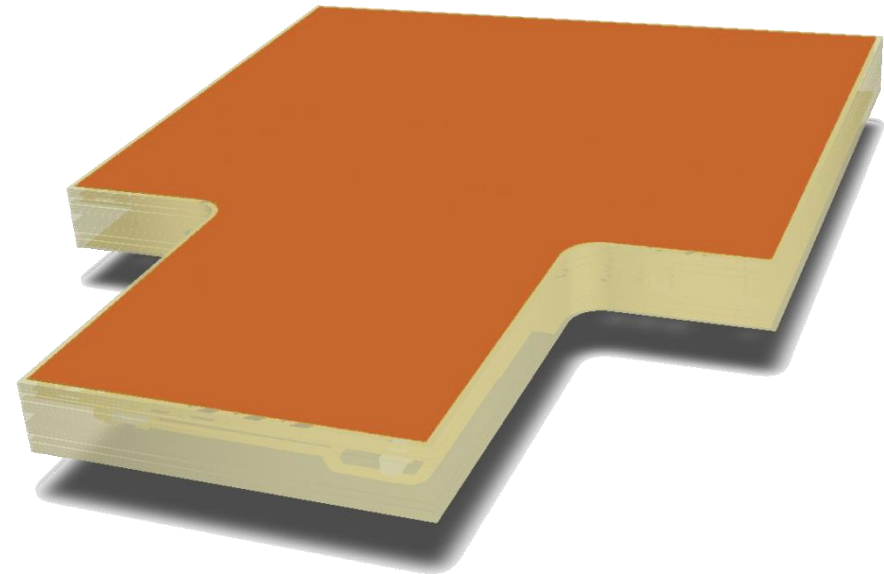
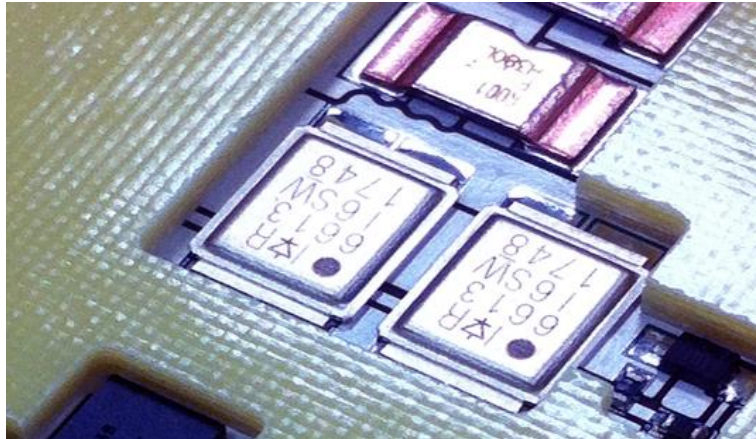
HOW IS IT DONE?

DEVICE.embedding sample WE.embed

Manufacturing process using the example of SOLDER.embedding

3. Lay-up and pressing of multilayers

- Copper foils
- Additional materials (uncut and cut-out prepregs, filling cores, special materials)
- Assembled inner layers



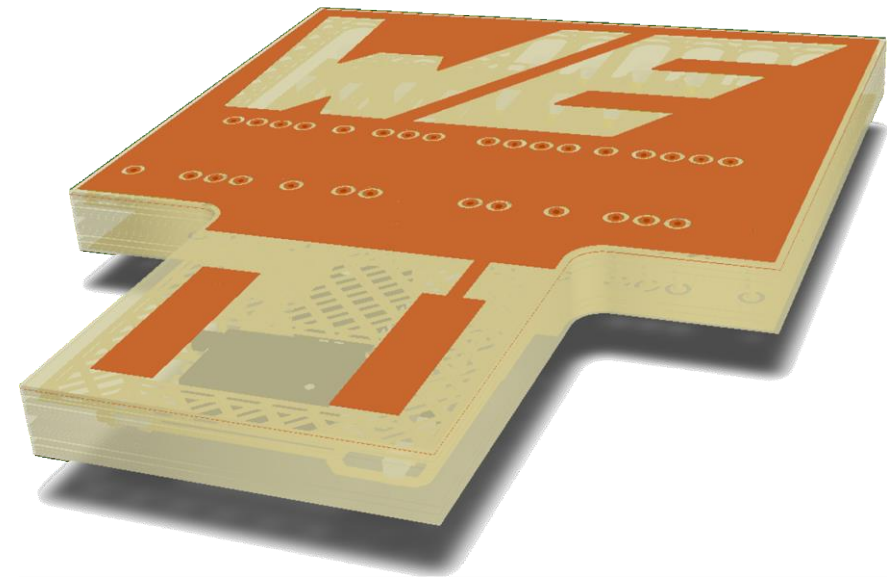
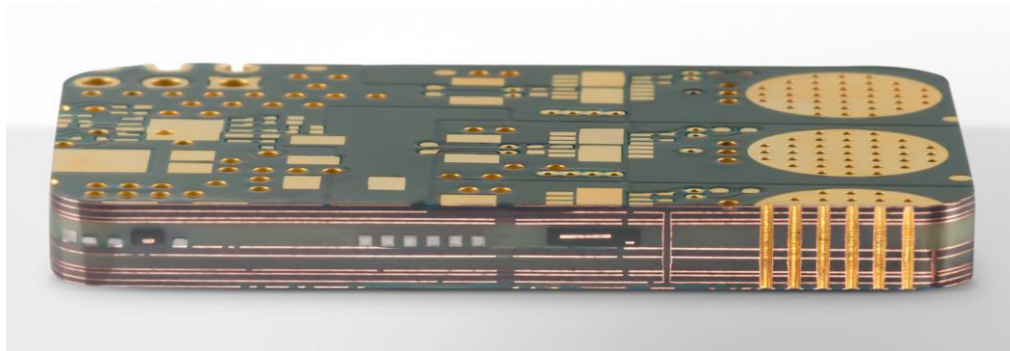
HOW IS IT DONE?

DEVICE.embedding sample WE.embed

Manufacturing process using the example of SOLDER.embedding

4. Finalisation of the printed circuit board

- Drilling / laser drilling
- Metallisation
- Structuring of the outer layers
- Solder resist
- Solder Surface
- Final Routing / V-scoring
- Final inspection / test

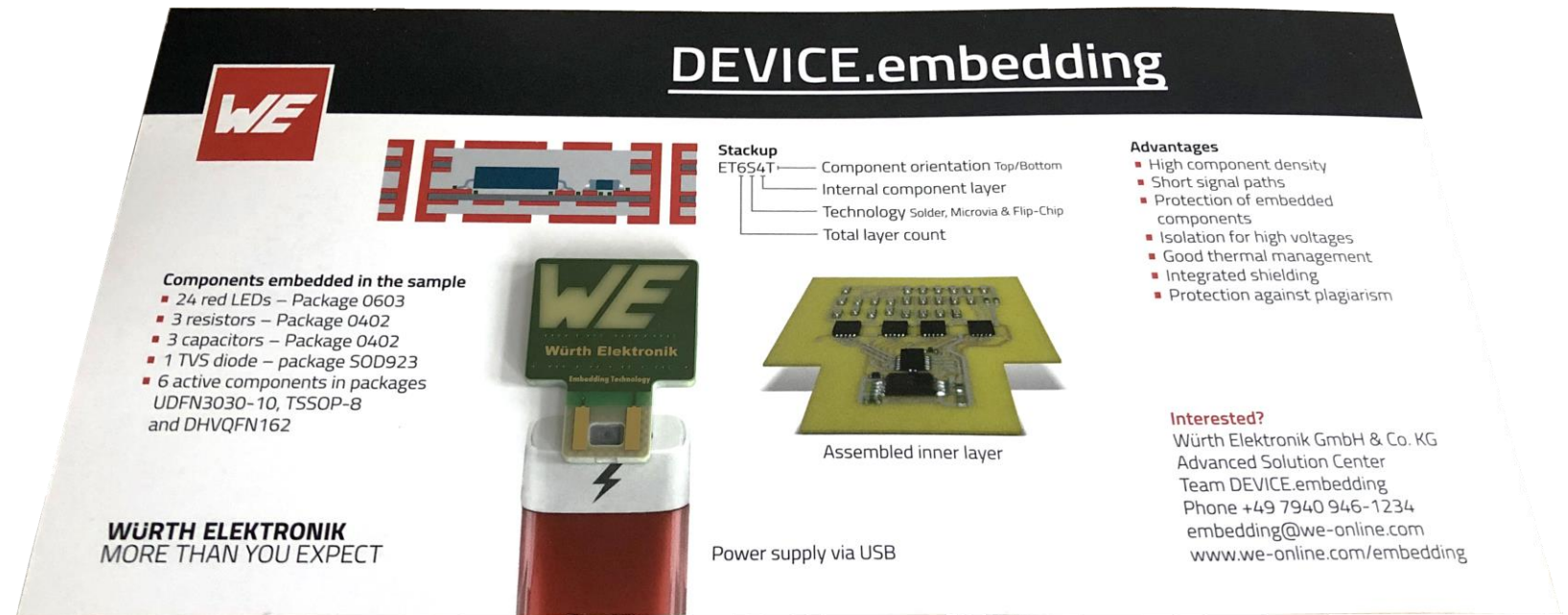


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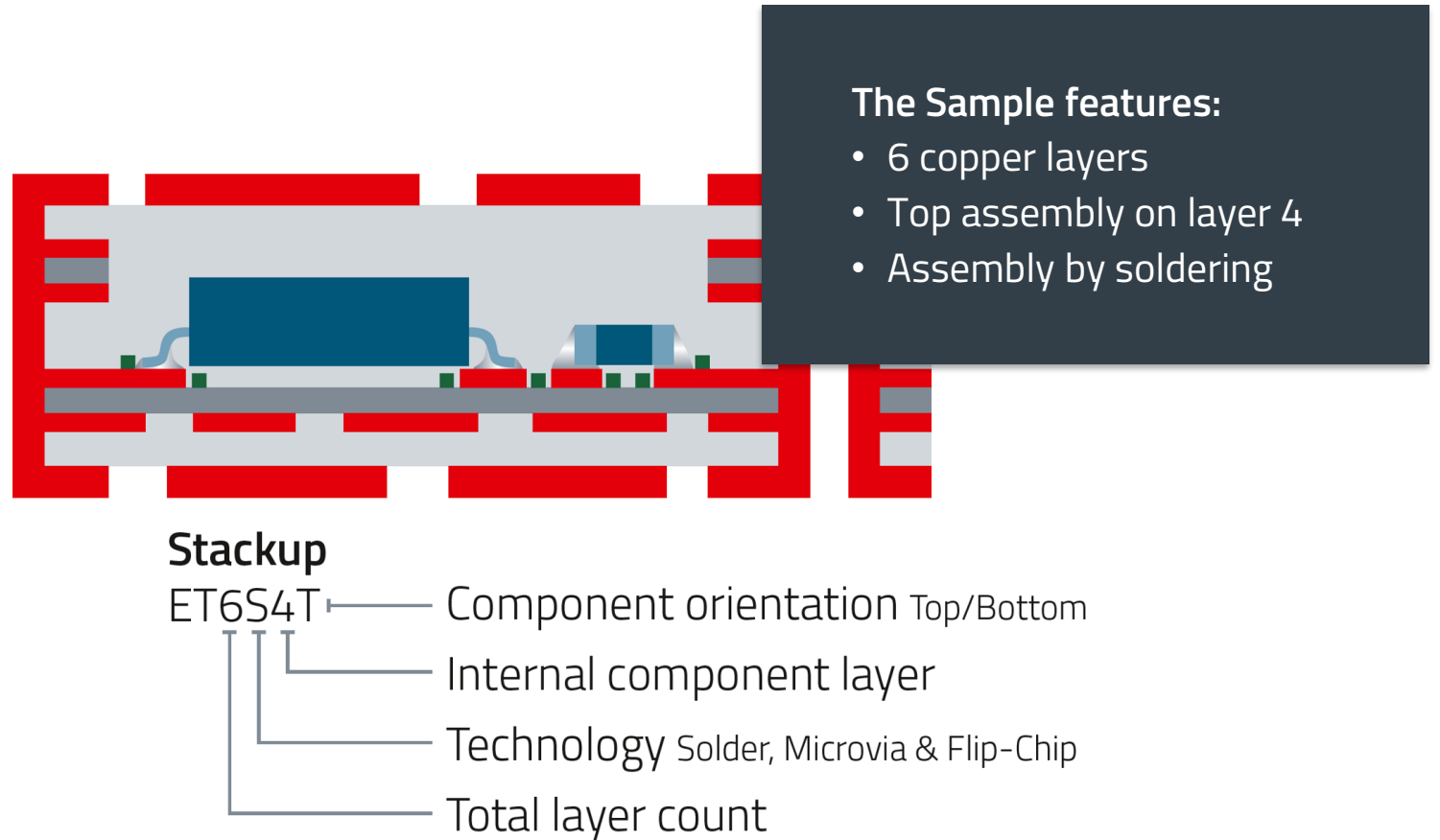


WHAT DO WE SEE?

Sample DEVICE.embedding

The WE.embed sample in detail

- Structure and nomenclature
- QR-Code
- Components, embedded
- Schematic and test points
- USB contact
- Let there be light!

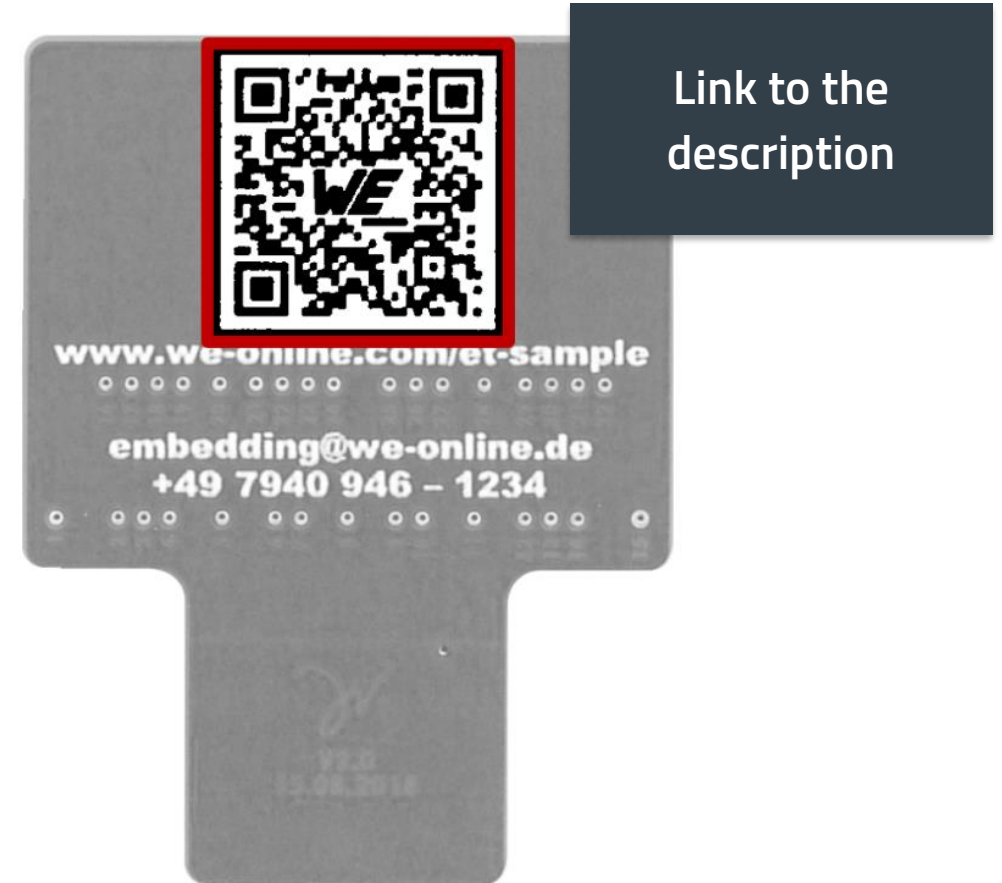


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Link to the
description

WHAT DO WE SEE?

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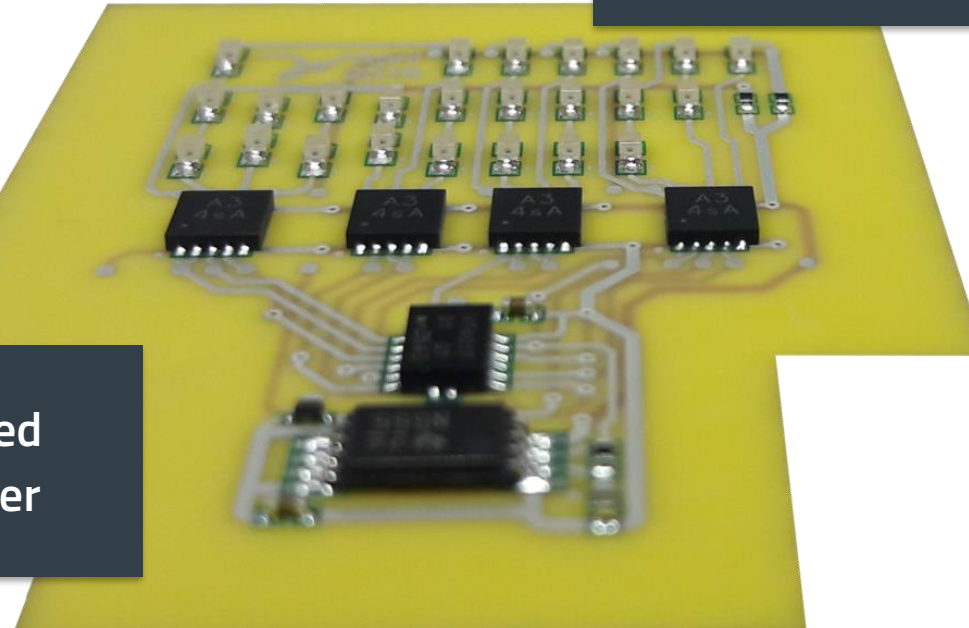
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assembled
inner layer

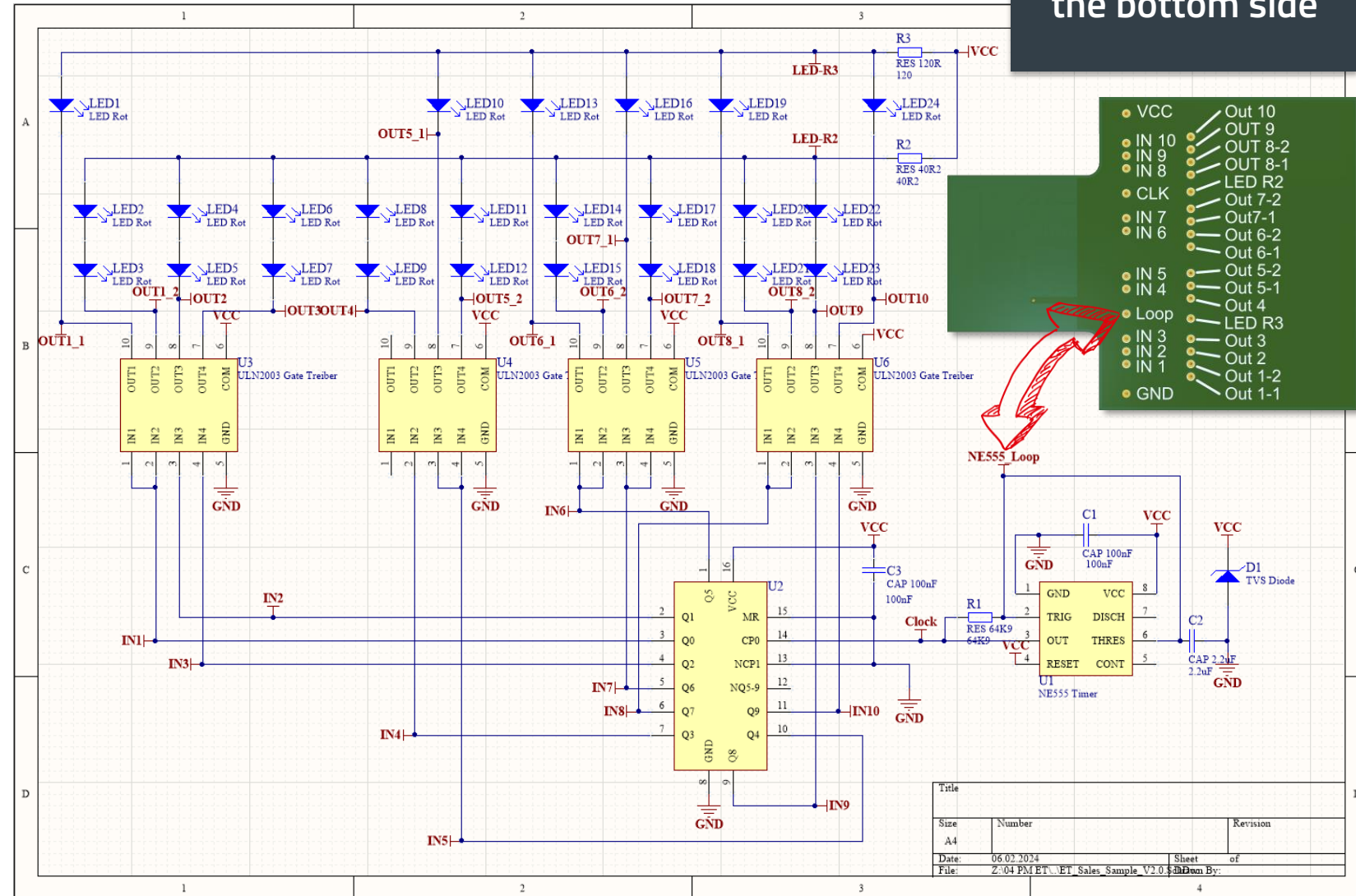


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Suitable for a
USB-A socket.

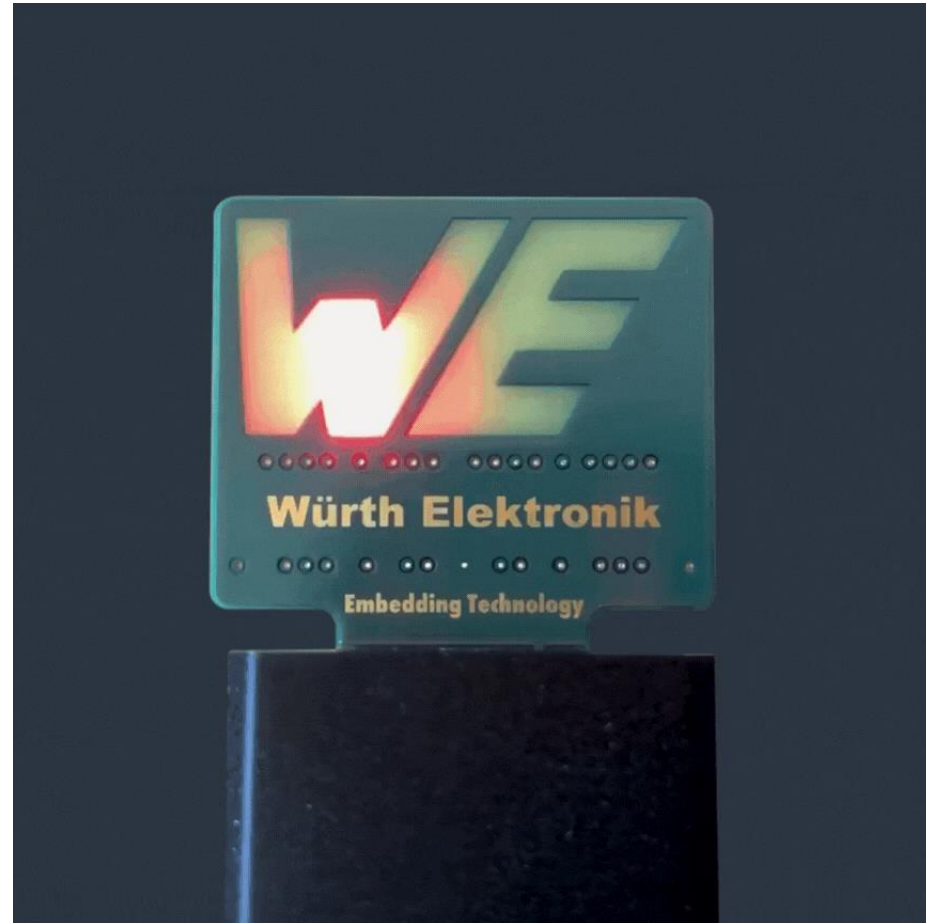
The depth milling
allows a view of the
embedded components.

WHAT DO WE SEE?

Sample DEVICE.**embed**ding

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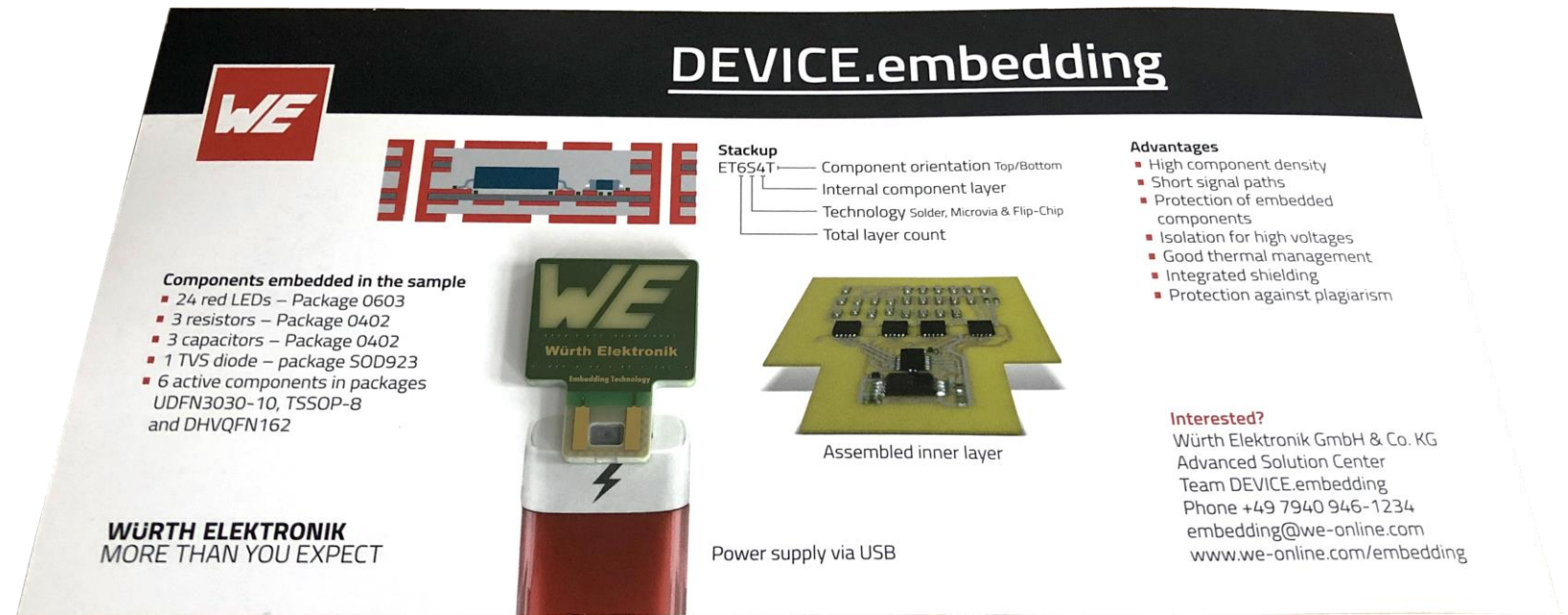


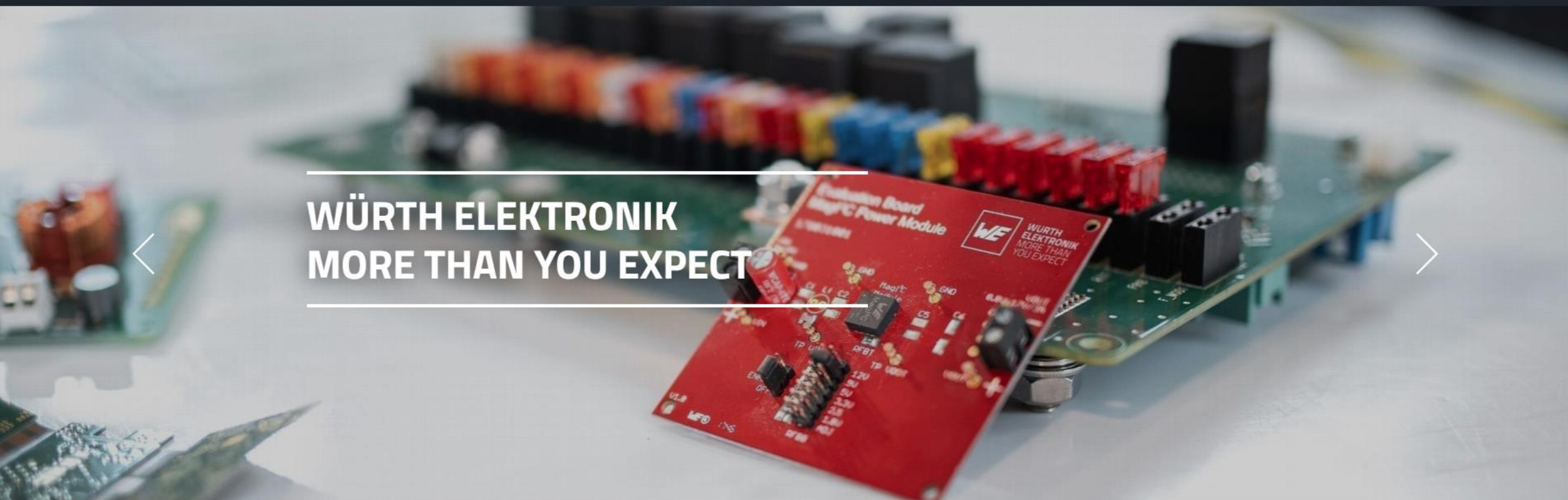
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Our Offer

Overview

Components

Intelli

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Printed Circuit Boards

Service & Support

ELECTRONIC COMPONENTS

INTELLIGENT POWER- AND
CONTROL SYSTEMS

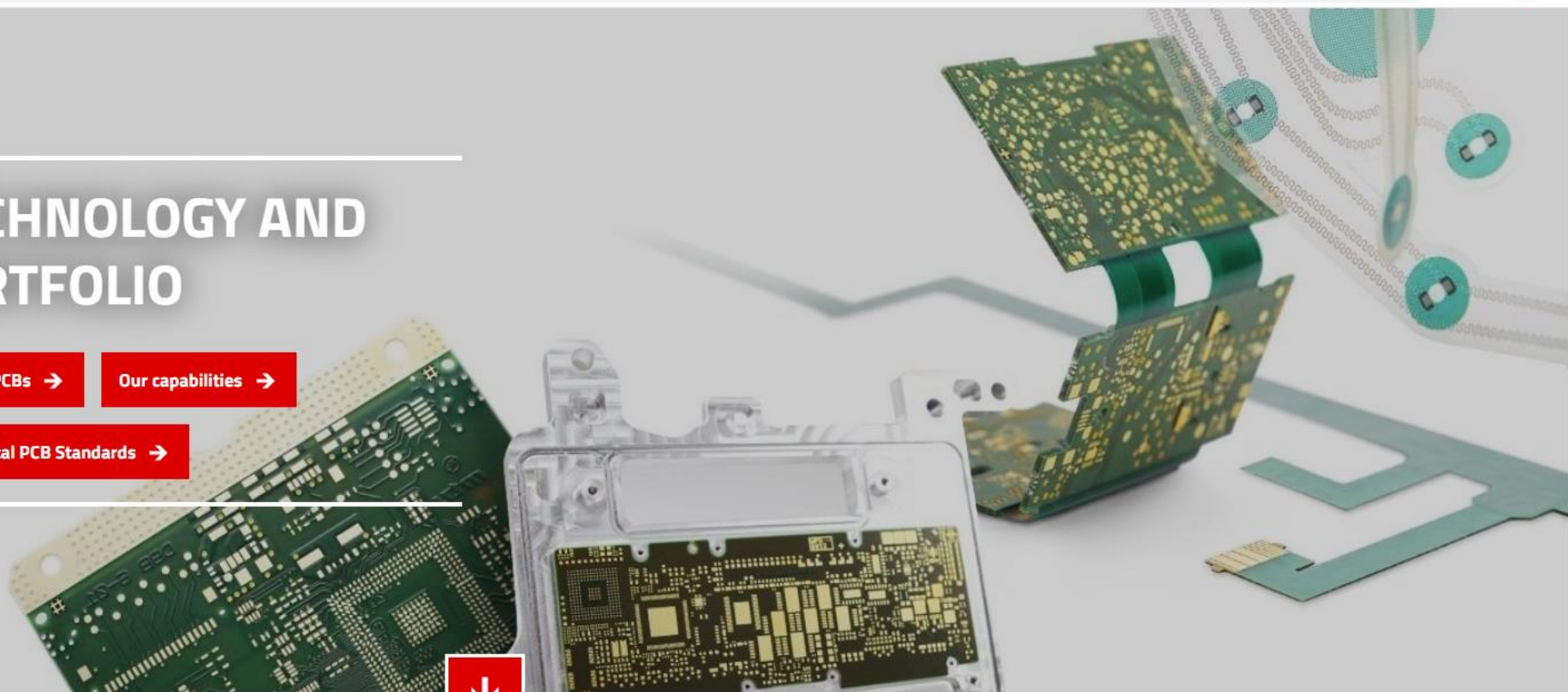
PCB TECHNOLOGY PORTFOLIO

OPEN POSITIONS



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- Technologies →
- Services for PCBs →
- Our capabilities →
- Webinar archive PCBs →
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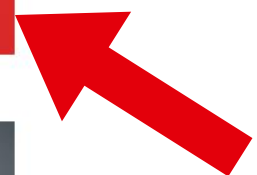
STRETCH.flex



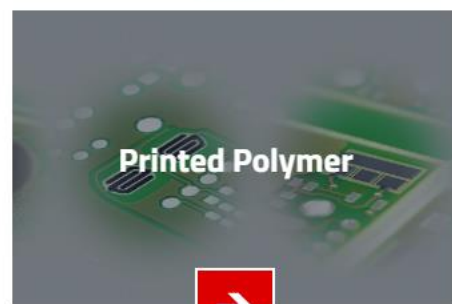
HDI Microvia



Embedding



Thermal Management



Printed Polymer

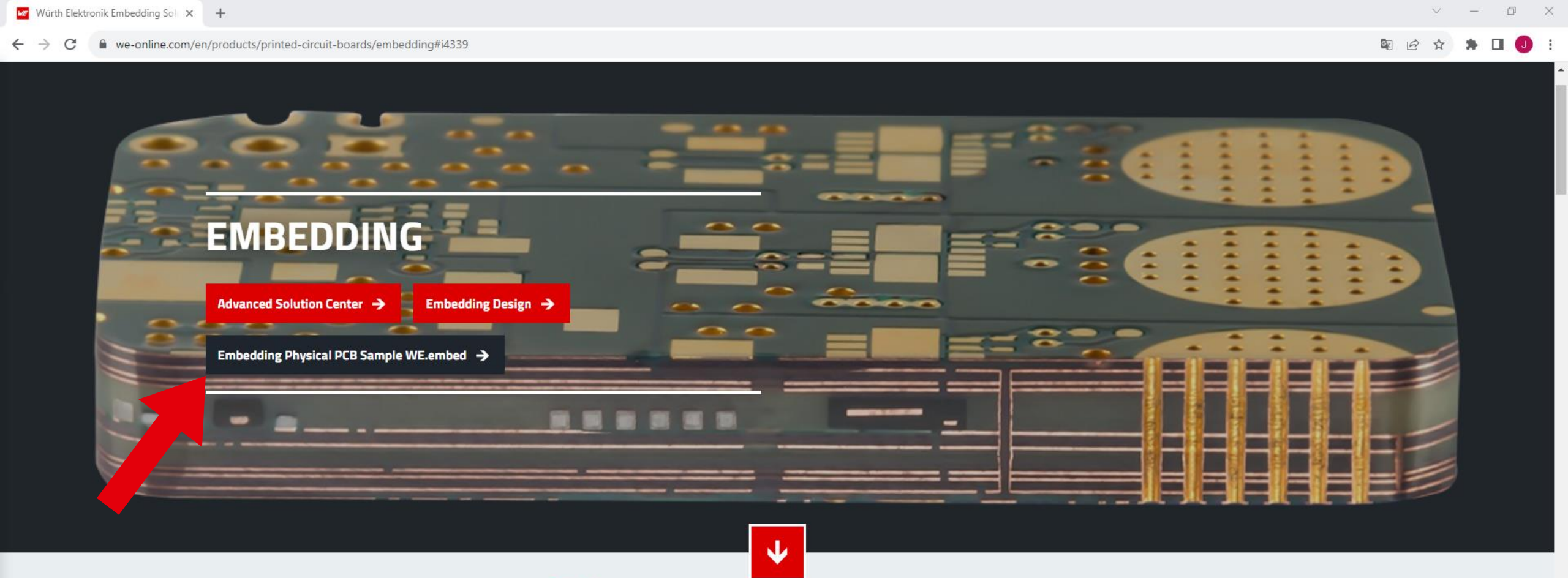


Wire Bonding



Services for PCBs





Würth Elektronik > Products & Services > Printed Circuit Boards > **Embedding**

DON'T MISS!

WEBINAR "Miniaturization, function, reliability: DEVICE.embedding physical PCB sample WE.embed!"

LET THERE BE LIGHT! Dive into the fascinating world of miniaturization of printed circuit boards with embedded active and passive components. The efficient use of ever smaller housing volumes and tiny surfaces is becoming increasingly important. Embedding technology is the proven solution to these challenges.

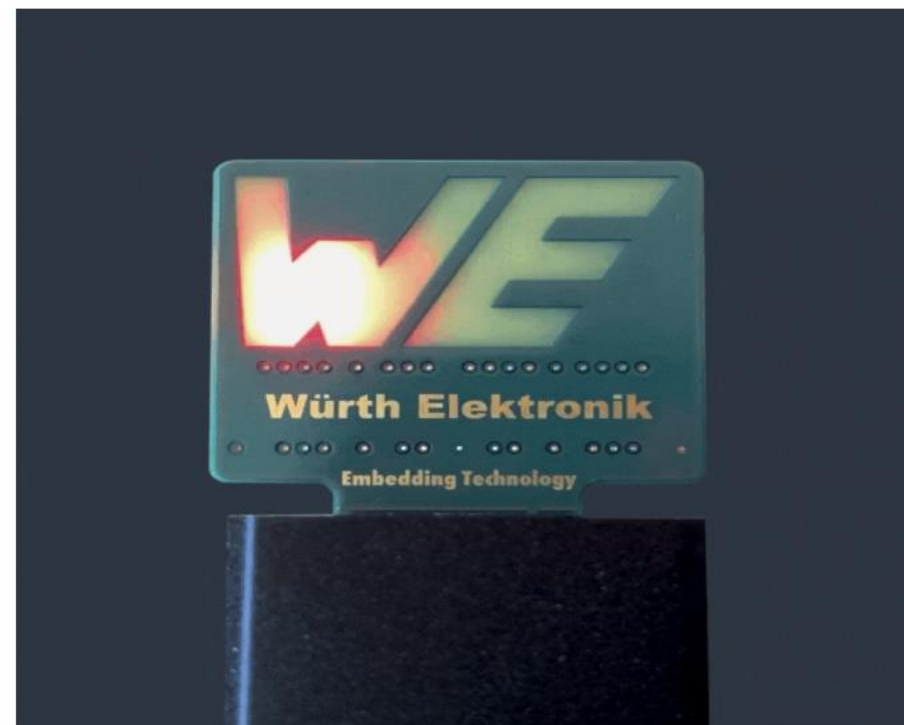
<https://www.we-online.com/de/produkte/leiterplatten/embedding/embedding-muster#i7472>



Let there be light!

Our `DEVICE.embedding` sample `WE.embed` shows you a working module with active and passive components, embedded with the `SOLDER.embedding` variant. Simply plug the sample into a USB-A socket and the `WE` logo shines in a whole new glow!

Order sample now →



THANK YOU VERY MUCH FOR YOUR ATTENTION!!

What Application do you have?
How can WE support you?

Contact:

Würth Elektronik GmbH & Co. KG
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Team DEVICE.**embedding**
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