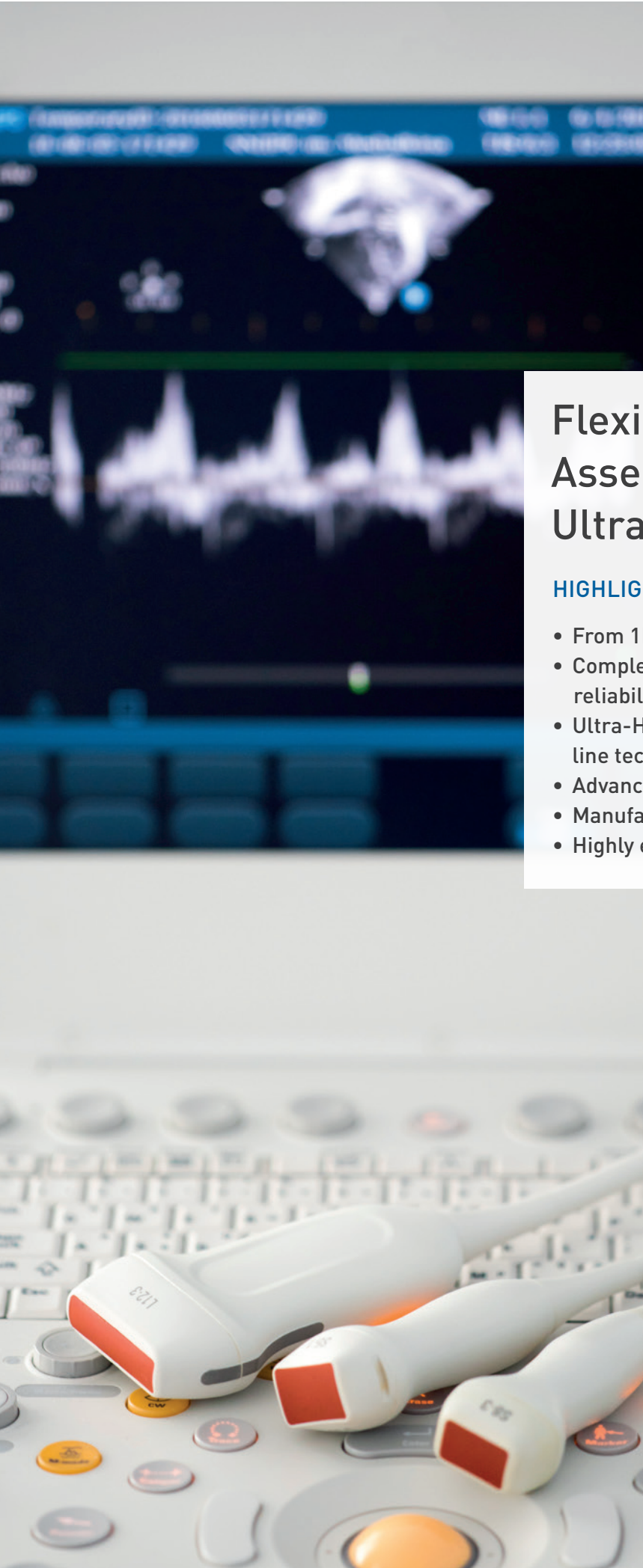




Micro Systems Technologies

The background of the slide is a composite image. The top half shows a close-up of a medical ultrasound monitor displaying a 3D anatomical scan of a heart. The bottom half shows a close-up of a white medical keyboard with several orange and grey buttons. A white ultrasound probe with a red sensor tip is resting on the keyboard. A decorative graphic of blue concentric lines is on the right side of the slide.

## Flexible Electronic Assemblies for Medical Ultrasound Imaging

### HIGHLIGHTS

- From 1D to 3D and beyond
- Complex, miniaturized solutions with highest reliability
- Ultra-HDI/microvia flex PCBs in ultra-fine line technology
- Advanced assembly and inspection technologies
- Manufactured according to ISO 13485 standard
- Highly effective processes and 100% traceability

# Flexible Electronic Assemblies for Medical Ultrasound Imaging

Micro Systems Technologies (MST) provides highly reliable flex circuit solutions for ultrasound imaging used in diverse medical diagnostic areas. The applications include assemblies for 1D – 4D transducers, IVUS catheters, readout electronics and high resolution cables.

## Enabling Capabilities in PCB Manufacturing

- Wide range of organic materials
- Advanced LCP substrates for biocompatible catheter solutions
- Ultra fine line technology
- Ultra-thin materials
- Thin-film technology
- Semi-additive technology
- Advanced registration concept
- Folded systems

## PCB Design Features

- Bending zones optimized for countless bending cycles
- Thinned bending zones
- Bendable surface finishes to prevent cracks
- Blind, stacked, staggered and filled vias
- Vias in pads for BGA and flip chip assembly
- Fine pitch arrays down to 35 µm pitch
- Selected areas with stiffeners for connectors

## Enabling Capabilities in Assembly Technology

- Die attach technologies
- Wire bonding
- Die protection / encapsulation
- Semiconductor packaging incl. die stacking
- Surface Mount Technology (SMT)
  - Under cleanroom conditions
  - On any board material
  - Plasma and IPA cleaning
  - Flip chip / CSP
  - Fine pitch BGA capabilities
  - 01005 components

Description	Leading Edge Capability
Lines/spaces	15/20 µm*
Microvias/pads Ø	25/75 µm
Thinnest starting material	12 µm
Thinnest dielectric + adhesive or for multilayer	12 + 12 µm 3 + 17 µm
Artwork to soldermask tolerance	+/- 10 µm
Layer count	10+

\*depends on Cu thickness

## Your Added Value

- Sophisticated, miniaturized electronic assemblies from one source
- Design and services for guaranteed reliability and predictability
- Design to cost
- 100% traceability
- Supply chain integration
- Supply chain continuity
- Engineering and manufacturing in Europe and the United States
- Benefit through more than 30 years of experience in medical technology

## Quality

The quality system of the MST Group derives from the stringent requirements of life-sustaining implants and assures 100% traceability of processes and materials. The companies are certified according to the standards ISO 13485 and ISO 9001

## Micro Systems Technologies

Micro Systems Technologies Group (MST) consists of four technology companies that provide innovative products and services for medical devices, especially implants, and other high-reliability/high-performance industries. The offering includes HDI/microvia PCBs, ceramic substrates, assembly and semiconductor packaging processes, electronic module design and manufacturing, as well as batteries and battery packs for medical implants.

The MST Companies:  
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LITRONIK Batterietechnologie GmbH  
Micro Systems Engineering GmbH  
Micro Systems Engineering, Inc.

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