ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Company Micro-module Design



Overview

MIKROE MIKROE is a development tools company dedicated to standardization and time-saving in the embedded industry.

Key Takeaways

Micro-module design involves creating compact, high-density electronic modules that integrate multiple functionalities while optimizing size, performance, and manufacturability.

Overview of Micro-Module Design

Micro-module design focuses on miniaturizing electronic components into compact modules that can perform complex functions efficiently. This process often combines ASICs, RFICs, MMICs, and high-density PCB modules to achieve optimal performance in limited space. Companies specializing in this field provide end-to-end services, from concept planning and design to prototyping, testing, and mass production .

Key Companies and Capabilities

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Microdul AG: ISO9001 and ISO13485 certified, Microdul specializes in custom microelectronics, including integrated circuits and miniaturized electronic and power modules. They leverage extensive ASIC design experience to develop tailored microelectronic components .

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HMT microelectronic AG: With over 40 years of experience, HMT offers mixed-signal ASICs, high-density modules, and microelectronic systems for industrial, automotive, aerospace, and medical applications. Their designs focus on reducing size, cost, and power consumption while maintaining high reliability and functional safety standards .

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ISI: Specializes in miniaturized PCB modules using surface mount technology (SMT) and high-density interconnect (HDI) designs. ISI emphasizes signal integrity, thermal management, and manufacturability, enabling smaller, more efficient modules for applications like UAVs and avionics .

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Micro Module Technology Co., Ltd.: Focuses on micro-joining technologies for bare chip direct mounting and interconnection between substrates. They provide one-stop support for miniaturization, thinning, and modularization of PCBs, including prototyping, evaluation, and mass production in cleanroom environments .

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CML Micro Design Services: UK-based consultancy offering MMIC, RFIC, and microwave/mmWave module design. They provide services from feasibility studies to full development, including testing and measurement, for high-frequency applications up to 100 GHz .

Design Considerations
• Miniaturization Techniques: Use of SMT, HDI PCBs, and bare chip mounting to reduce module size.

• Signal Integrity: Controlled impedance routing and differential pairs to minimize interference.

• Thermal Management: Thermal vias, heat sinks, and strategic component placement to manage heat.

• Manufacturability: Component availability, assembly techniques, and testing are integrated into the design process.

• Integration: Combining analog, digital, and power elements to optimize performance and reduce footprint.
Applications

Micro-modules are critical in aerospace, defense, automotive, medical devices, and industrial electronics, where space, weight, and power efficiency are crucial. They enable faster data processing, improved energy efficiency, and enhanced system performance in compact devices.

Conclusion

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Companies specializing in micro-module design provide comprehensive solutions that integrate miniaturization, high-density packaging, and functional optimization. By leveraging advanced design techniques and in-house manufacturing capabilities, these companies enable the development of smaller, more efficient, and highly functional electronic modules suitable for a wide range of demanding applications .

Article Content

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Here are the names of the SMRs being developed by each company on the list of 20. Note that this is not an exhaustive list, and

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Flibe Energy is a US-based company established to design, construct and operate small modular reactors

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Micromodule Technology - Company that specializes in the design and development of small scale electronic modules

Microdul AG

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We are the global leaders in SMR nuclear technology with our groundbreaking NuScale Power Module.

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