

# Wireless and Disposable Medical Device Technology: The Future Is Flexible

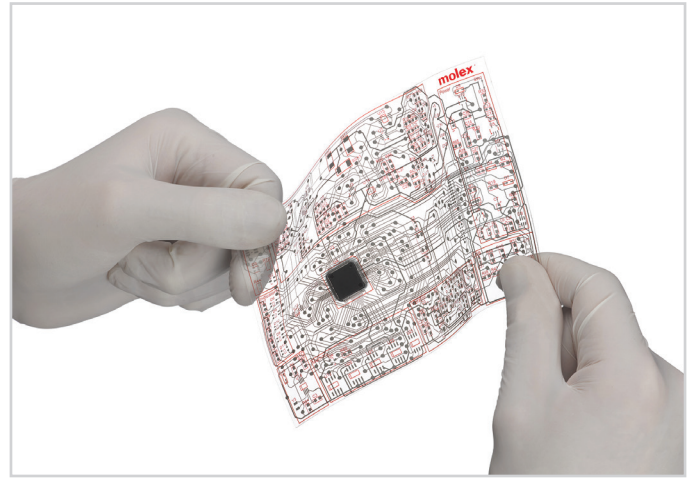
## The Right Choices Can Enhance Communication and Comfort

### SITUATION

Wireless and disposable medical sensing promises to revolutionize how we diagnose, monitor and deliver therapies to those suffering from a variety of health ailments. In the end, this allows medical providers to make data-driven decisions for optimal patient care.

Next-generation embedded electronics make medical devices intelligent in ways that have not been possible before. Disposable circuitry is transforming not just medical devices but also how healthcare is delivered. Patients can be monitored constantly without burdening the already understaffed professional healthcare community, and remote monitoring can allow patients to recover in their own homes, which many believe shortens recovery time and improves outcomes. Additionally, the disposable nature of these devices can aid in reducing the risk of spreading infection between patients by eliminating reuse.

Flexible printed circuits (FPCs) are now providing functions previously offered only by rigid substrates, but with flexibility and stretchability, making solutions simpler, more comfortable and more reliable.



### TREND 1: Flexibility

- Flexible circuits and substrates result in thinner, more comfortable devices that allow movement.
- As circuit density and layer count increase to provide more functionality, durability and reliability are paramount in repetitive bending/flexing body-worn applications.

### TREND 2: Wireless Communication and Sensing

- Embedded and printed antennas provide low-power wireless communication. Protocols include RFID, NFC, BLE and LoRa.
- Sensors benefit the diagnosis and monitoring of a patient's vital signs by translating various biosignals and biomarkers into electrical signals that can be digitally sampled and recorded.

### TREND 3: Data Collection

- The ability to collect, condense and synthesize useful and — in many instances — real-time data and information from patients will provide the healthcare industry with exponential opportunities for improving the efficacy of data collection, analysis, and automated decision-making.

### TREND 4: Cleanliness and Reduced Cross-Contamination

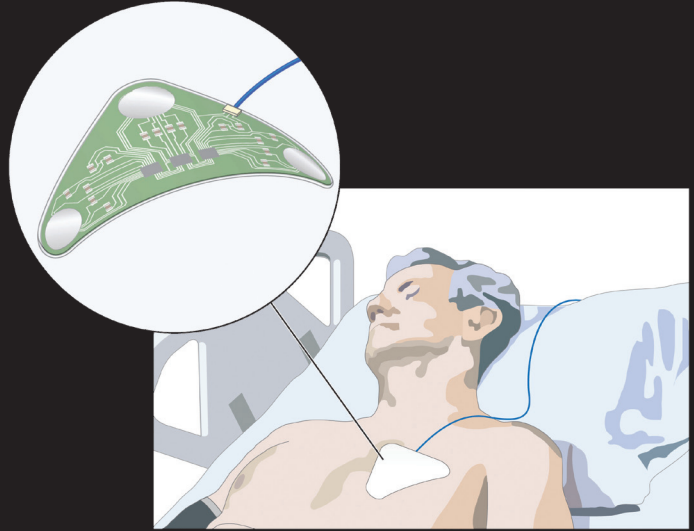
- The disposable nature of these devices can aid in reducing the risk of spreading infection between patients by eliminating the need for reuse.
- Designers and suppliers must choose the materials to meet biocompatibility requirements as well as more stringent industry and governing body standards.

## WHAT'S TRENDING

# Custom Circuitry for Flexibility and Functionality

Next-generation embedded electronics make medical devices intelligent in ways that have not been possible before. Flexible circuit technology is the answers for your most challenging smart medical wearable applications. Sensors, materials, power sources and wireless communication are married to create functional and comfortable monitoring solutions.

Custom flexible circuitry can provide engineers and designers with the creativity, functionality and reliability needed to meet growing medical device design requirements. A reliable design and manufacturing partner offers component reliability and better sourcing to maintain material supply.



## TOTAL INTERCONNECT SOLUTIONS

Molex's **medical wearable solutions** deliver flexible, lightweight circuitry with electronics integration – ideal for single-use, body-worn devices used in therapeutic, diagnostic and monitoring applications.



### The Right Solutions for Better Outcomes

Molex is a full-service leader in **flexible circuitry**, inks, substrates, materials and assembly, and packaging.

Our engineers employ a consultative approach to develop cutting-edge solutions to the medical industry's most challenging problems.

The solutions are ideal for applications where space is at a premium and demand flexible, lightweight and smaller form factors. Conventional and additive, multilayer **Copper flex** and **Silver flex** circuits offer choices in design and complexity, disposability and environmentally friendly solutions.

Material options: PET (polyester), polyimide, paper, fabrics, nonwoven materials and stretchable substrates

Conductive, dielectric and functional inks are available including: Silver, Copper, carbon, dielectrics and encapsulants.

Molex is ISO 13485 certified and maintains traceability and device history data management systems.

[www.molex.com/link/medicalwearables.html](http://www.molex.com/link/medicalwearables.html)

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