MID/LDS MEDICAL

MediSpec™ MID/LDS Technology Optimizes Medical Device Design, Shortens Time-to-Market, Improves Patient Comfort and Care

BUSINESS CHALLENGE

As global healthcare demand soars, mobile and wearable medical devices can aid in diagnostic, therapeutic, monitoring and treatment of disease. The market for portable diagnostic imaging applications continues to grow. Patient monitors and other medical devices have gone from bulky to portable to handheld to the latest wearable technologies for patients and consumers who want a proactive role in achieving health and fitness goals.

Devices such as these set high expectations for powerful features in a small form factor. Users want comfort, convenience and less bulky medical devices. In some cases, they may need the ability to synchronize with a smartphone or tablet via common communication protocols. Cost, space and weight are key design considerations that will give the user a better experience. A printed circuit board (PCB) can pose limitations in mobile and wearable medical devices when space is at a premium.

DESIGN CHALLENGES

• Device size and weight – patient comfort
• Device reliability and performance – patient health and safety
• Enhanced features – patient convenience
• Regulatory compliance – patient health and safety
• Affordability – marketability and profitability

Medtech manufacturers face regulatory pressures related to Health Insurance Portability and Accountability (HIPAA) patient privacy regulations and FDA standards, including materials, component traceability and accountability for medical devices used in the care of patients.

SOLUTION

Molex MediSpec molded interconnect device and laser direct structuring (MID/LDS) technology delivers on the promise of enhanced reliability, space and cost-control for medical devices. Reduced size, weight and complexity are key advantages of MediSpec MID/LDS. Molex streamlines design and manufacturing to deliver exceptional quality and performance. MediSpec MID/LDS devices are more economical and improve functionality over bulkier assemblies. The technology is ideal for endoscopic devices and catheters, and a range of mobile and wearable devices, including wired remote, sensor-based, and wireless antenna-based remote patient monitoring.

MediSpec MID/LDS technology allows copper traces to be directly imaged onto a variety of molded plastics (PC, PC/ABS, OBT, PA, LCP, Peek). Featuring a fine pitch capability of 100um trace width, MID/LDS assemblies support multi-function features (laser drill via holes, switch pads, sensors, antenna, etc.) and manufacturing processes, including surface-mount technology (SMT), insert molding, wire bonding, plastic welding, two-shot molding and overmolding, plated through-hole vias, and cosmetic painting.

Combining the versatility of the MID two-shot molding process with the speed and precision of LDS technology, MID/LDS packaging simplifies mechanical and electronic designs. Three-dimensional (3D) MID/LDS enables rapid prototyping and optimizes design freedom in complex medical applications.

Molex provides the manufacturing expertise to customize MID/LDS selective trace circuitry incorporating connectors, antennas, sensors and more. While a conventional PCB requires assembly of multiple components, MediSpec MID/LDS delivers fully integrated fine-pitch 3D shielded circuitry for high-density applications in medical-grade RoHS-compliant molded plastics.
CUSTOMER BENEFITS

Molded Interconnect Device (MID)
• Electronic circuitry on molded plastic eliminates expensive tooling
• 3D selective plating consolidates circuitry (antennas, LEDs, sensors, etc.) into single assembly
• Delivers significant space savings over traditional 2D technologies, such as PCB and flex circuit

Laser Direct Structuring (LDS)
• Greater flexibility and geometric 3D design freedom
• Micro-line electronic traces imaged using 3D axis laser
• Direct transfer of CAD design onto molded antenna carrier or device structure

MOBILE AND WEARABLE MEDTECH DEVICES:
MediSpec MID/LDS Integrated Antenna, Sensor, Connector Applications
• Continuous Positive Airway Pressure (CPAP) devices
• Neuromodulation therapy and neurostimulation controllers
• Pulse oximeter sensors
• Pacemakers
• Blood glucose meters
• Disposable catheter interfaces
• Drug delivery systems
• Home healthcare telemetry
• Telehealth remote patient monitoring
• Radio Frequency Identification (RFID) solutions

To learn more www.molex.com/ab/medicalmidlds.html