

MEDICAL, INDUSTRIAL & INSTRUMENTATION

# Game-changing Medical & Industrial Applications Rely on TTM Technologies

TTM Technologies is a global leading supplier of Printed  
Circuit Board, RF and Microwave, and Engineered solutions

## ABOUT TTM

TTM Technologies, Inc. is a leading global manufacturer of technology solutions, including mission systems, radio frequency ("RF") components, RF microwave/microelectronic assemblies, and quick-turn and technologically advanced printed circuit boards ("PCB's). TTM stands for time-to-market, representing how TTM's time-critical, one-stop manufacturing services enable customers to shorten the time required to develop new products and bring them to market. Additional information can be found at [www.ttm.com](http://www.ttm.com)

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OUR WEBSITE [WWW.TTM.COM](http://WWW.TTM.COM)

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## MEDICAL, INDUSTRIAL & INSTRUMENTATION

# TTM Technologies has a proven track-record for high-reliability solutions for Medical & Industrial applications

### WHY CHOOSE TTM?



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### Global Footprint

- Full service offering
- Product development, quick-turn, volume production
- Seamless transfer from prototype to volume production, on- and off-shore solutions
- Global sales and field applications support
- Worldwide manufacturing locations



### Technology

- Ongoing capital investment for capacity and advanced capabilities to support medical and industrial customers
- Thick-Film, Ceramics, High-Density Interconnect ("HDI"), advanced HDI, and RF processing expertise
- Early technology collaboration; improved design for manufacture and cost



### Reputation

- Top medical PCB supplier worldwide\*
- Award-winning manufacturing facilities and teams
- Strong relationships with OEMs
- High-reliability expertise for medical devices and sensors
- TTM is a major supplier of HDI technology

\*Source: Prismark, June 2024 report

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## GET TO VOLUME FASTER: GLOBAL SEAMLESS TRANSFER

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### Common Stack-Up Generation

Asia materials and manufacturability incorporated into North American stack-ups.

### Reduced Risk

Greater ease and reliability when transferring part numbers from prototype site to volume site. Not to mention the peace of mind that comes from a professionally managed global supply chain and network of manufacturing facilities.

### Manufacturability For Volume: Considered From The Start

TTM has developed strategies that provide our customers with efficient, streamlined approaches to help their products seamlessly transfer from prototype to volume production across our sites in North America and Asia Pacific. The streamlined quoting, in-parallel stack-ups, Design For Manufacture (“DFM”) reviews during the tooling stage, and the efficient technical query (“TQ”) process allow our global teams to reduce risk and provide faster time-to-market and superior quality products to customers worldwide.

### Save Time & Resources

A single TQ to send to our customer, outlining all issues, valid for prototyping and production. Faster development cycles mean shorter time-to-market.

### Common Material Strategy

No need to redesign to account for different dielectric parameters; saving time and resources.



TTM recognizes our opportunity to positively impact the world around us by managing our operations in a sustainable manner. We believe that sustainable practices are essential to the long-term success of our business and that we have a responsibility to consider how our business interacts with society and impacts the environment. To learn more about our sustainability efforts, view our CSR report at [ttm.com](http://ttm.com).

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## CASE STUDY

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### PCB Designs and Developments for the Future of Surgical Robots

The medical market is one of many industries TTM Technologies (“TTM”) is proud to serve. The range of printed circuit board (“PCB”) applications in the medical field is significant, and ever-growing. These factors have become critically important as technology advances over the years compelling TTM to step up our game and above. Today, as more medical diagnostic, research and treatment methods have become computerized, PCB products for medical equipment have become a standard requirement throughout the industry. PCBs can be found in everything from pocket-sized pacemakers, defibrillators and heart monitors to large-scale medical imaging systems such as MRIs, CT scans and more.

At TTM, our specialized factories position TTM to support our customers addressing a broad spectrum of medical industry requirements with PCB products, substrates, specialty components, value-add assemblies and other highly engineered custom solutions. In addition to such a broad product-mix offering, TTM also offers our customers a range of manufacturing solutions from quick-turn sampling and new product introduction (“NPI”) to high produce mix, low volume production and mass, high volume production.

### Challenges – The Right Kind of PCB, The Right Kind of Flexibility

Recently our team was involved with yet another exciting project for one of our long-term customers, participating in the development of their latest generation of surgical robots. Representing this customer’s most ambitious project to date, the objective and challenge for these robots was increased performance and patient satisfaction for less cost. TTM’s role in this project was to develop and manufacture three different Class 3, high reliability rigid-flex boards to address the customer’s exacting requirements for dynamic flexing within tight space constraints. Product quality and high reliability is paramount since the end-use application is human surgical robotics.

### The Advantage of TTM Technologies – The Importance of Trust

For an industry that depends on stringent process control and product traceability, TTM is your trusted and collaborative partner. The trust our customer places in us is equivalent to the trust doctors and patients place in these surgical robots. We offer confidence to our customers by providing them with a single source on PCBs accompanied with sound and practical technical support. Our entire team – TTM Sales, Field Application Engineers and site personal in Toronto and Stafford – is honored to work on this project and effect a positive change to the world.

**TTM'S GLOBAL NETWORK OF ENGINEERS HAS EXPERIENCE WITH TODAY'S EMERGING TECHNOLOGIES**

**Making Work Reliable:  
Examples of Medical Applications TTM Supports**

- Connected Medical Devices & Sensors
- Patient Monitoring
- Wearable Sensors
- Implantable Devices
- Pain Management / Nerve Stimulation
- Pacemakers / Defibrillators
- Ventilators
- MRI / CT Scan / X-Ray Technology
- Continuous Blood-Glucose Meters
- Test Equipment
- Surgical and Service Robots

**Making Work Smarter:  
Examples of Industrial and Instrumentation Applications TTM Supports**

- Automated Test & Measurement ("ATE")
- Industrial Automation
- Connectivity
- Oil & Gas Exploration Systems
- Smart Home
- Service and Industrial Robotics
- Power / Energy Storage
- Electric Vehicle Charging Infrastructure

**For more information on Medical and Industrial applications, please speak with your TTM Sales representative or contact us by:**



[CorporateMarketing@ttm.com](mailto:CorporateMarketing@ttm.com)



[ttm.com/contact](http://ttm.com/contact)

**TTM GLOBAL LOCATIONS**



**CORPORATE LOCATIONS  
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