

TTM Technologies, Inc. is a world-wide leader in the manufacture of technologically advanced PCBs, backplane and sub-system assemblies. Our “Global Presence / Local Knowledge” approach creates a one-stop global solution. TTM stands for time-to-market, and represents how the company’s time-critical, one-stop manufacturing services enables customers to shorten the time required to develop new products and bring them to market.

Headquarters	Santa Ana, CA
Founded	1998
Ownership	Public, NASDAQ – TTMI
Employees	Approximately 17,000
Total Facilities	Over 4 million square feet
Divisions	(13) PCB fabrication / (2) Focused assembly
Manufacturing Locations	USA and China
Sales Locations	North America, Asia and Europe

### Locations

<b>Aerospace / Defense</b>	<b>High Tech / Quick-Turn/ High Mix</b>	<b>Focused Assembly</b>	<b>Volume Production</b>	<b>Substrate</b>
Stafford, CT	Chippewa Falls, WI	Shanghai, China	Dongguan – DMC	Shanghai – SMST
Santa Clara, CA	Santa Ana, CA	Stafford Springs, CT	Dongguan – SYE	
San Diego, CA	Logan, UT		Guangzhou – GME	
	Hong Kong – OPCM		Shanghai – SME	
			Suzhou – MAS	

### Contact Information

<b>Center</b>	<b>Contact</b>	<b>Phone</b>	<b>Email</b>
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General Support	Dong Pham	714-327-3071	support@ttmtech.com

## Rigid PCBs

Up to 56 layers	Over 50 UL approved laminates	All Layer Interconnected HDI
Dimensions up to 23" x 42.5"	Embedded Resistor/Capacitor	Stacked microvias / Via in pad / Via on hole / FCV
Thickness up to .325"	Mixed dielectrics	Copper & epoxy hole fill
Heavy copper up to 5 oz.	Thin core dielectrics	0.4 mm pitch BGA

## Flex & Rigid-Flex

Type 2, 3 & 4 flex (double sided, multilayer & rigid-flex)	Acrylic, epoxy & adhesive-less polyimide flex materials	Bikini cut, bookbinder & loose leaf construction
Up to 16 R-Flex layers	Thickness up to .118"	Combination surface finishes Epoxy fillet

## IC Substrate

2, 4, 6 Layers (2+2+2 stacked via)	Type: SIP, CSP, BOC	Thin board: 130um(2L), 220um(4L)
BT material	Fine trace width / space 30/30um	Flip chip C4 pad
Wire bonding (ENEPIG, Soft gold, Hard gold)	Via on hole / Via in pad / FCV	

## Thermal Management

In-house milling & bonding	Epoxy & B-stage films	Copper base materials
Buried metal core constructions	Thermal & conductive bonding	Various surface finishes

## Approvals & Qualifications

ISO 9000 (Quality System)	AS9100 (Aerospace)	UL Recognized
ISO 14001 (Environmental)	IPC-A-600, Class 3	RoHS compliant

## Rigid PCBs

60+ layers	Over 50 UL approved laminates	HDI
Dimensions up to 30" x 54"	Embedded passives	Stacked microvias / Via in pad
Thickness up to .450"	Mixed dielectrics	Copper and epoxy hole fill
Heavy copper up to 10 oz.	Thin core dielectrics	0.4 mm pitch BGA

## Flex & Rigid-Flex

Type 2, 3 and 4 (double sided, multilayer and rigid-flex)	Acrylic, epoxy & adhesive-less polyimide flex materials	Bikini cut, bookbinder and loose leaf construction
30 + layers	Over 50 rigid material options	Combination surface finishes
Dimensions up to 24" x 48"	Thickness up .300"	Epoxy fillet

## RF / Microwave

High frequency / bandwidth designs	Mixed dielectrics (hybrids)	Plated cavities
Planar and screened resistors	Dielectric foam	Formed (conformal) PCBs
Dimensions up to 24" x 48"	Conductive paste	Optical machining

## Thermal Management

Passive and active designs	Epoxy and B-stage films	Aluminum & copper base materials
Buried metal core constructions	Thermal & conductive bonding	Various surface finishes
Externally mounted heatsinks	In-house milling and bonding	

## Approvals & Qualifications

ISO 9000 (Quality System)	UL Recognized	MIL-P50884
ISO 14001 (Environmental)	IPC-A-600, Class 3	MIL-P-55110
AS9100 (Aerospace)	RoHS compliant	MIL-PRF-31032
TL 9000 (Telecom)	ITAR compliant	Nadcap (Stafford, Stafford Springs and Santa Clara Divisions)

## Custom Assembly

North American Operations

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### Backplanes

Dimensions up to 28" x 52"	Press-fit (compliant –pin)	AOI & X-ray inspection
Thickness up to .400"	Surface mount (chip, QFP, BGA)	Level 2, 3 & 4 testing
Custom and Industry Standard	Wave / selective solder	Conformal coating

### Flex & Rigid-Flex

Dimensions up to 22" x 52"	Press-fit (compliant-pin)	AOI & X-ray inspection
Passive & active components	Surface mount (chip, QFP, BGA)	Level 2,3, & 4 testing

### RF / Microwave

Dimensions up to 22" x 34"	1-piece hermetic GPO and GPPO	X-ray inspection
Blind via, surface mount, thru-hole		RF testing (20+ GHz)

### Integrated Assembly

Card cage through cabinet	Power supplies / fan trays	Functional testing
Backplanes / Midplanes	Peripherals & controllers	Mil / Aero conduction cooled
Harnessing / cabling	I/O interfaces	

### Approvals & Qualifications

ISO 9000 (Quality System)	UL Recognized	MIL-A-28870 (QML)
ISO 14001 (Environmental)	IPC-A-600, Class 3 (inspection)	MIL-STD-2166 (compliant pin)
AS9100 (Aerospace)	IPC-7711 (rework)	RoHS compliant
TL 9000 (Telecom)	J-STD-001, Class 3 (workmanship)	Nadcap (Stafford Springs and Santa Clara Division)

### PCBs (Rigid, Flex, Rigid-Flex & Backplanes)

PCB Cost / Benefit Analysis	PCB Schematic & Simulation	PCB CAD Layout & Mfg Doc
- Panelization	- OrCAD	- Allegro
- Stackup / Construction	- DX Designer	- BoardStation
- Laminate Optimization	- TAS PCB	- Expedition
- Valor DFM Check	- HSPICE & HFSS	- PADS

### Backplanes Assemblies

Via & Trace Modeling	Connector Specification Advice	Signal Integrity Characterization
Single-Ended Critical Net Simulation	Connector Pin-Out Advice	Design Rules Optimization
Differential Channel Simulation	Via Counter-Boring / Backdrilling	Design for Assembly Advice
Cross-Talk Management	Power Voltage Drop Analysis	Design for Testability Advice
Impedance Control & Optimization	Power Thermal Gradient Analysis	Schematics & CAD Layout

### Integrated Systems (Card Cages, Chassis & Enclosures)

Power Input & Conditioning	Enclosure Thermal Management	Structural Integrity Simulation
Power Distribution & Control	Convection Cooling & Air Movers	Enclosure / Card Rack CAD
PICMG Stds Customization	Conduction Cooling & Heat Sinks	Pro / Engineer
Industry Stds Confidence Testing	Acoustical Noise Management	SolidWorks
Industrial Design Assistance	Fan Speed Controls	AutoCAD