SGCircuits
PCB Group
for excellent customer solutions

www.sunshinepcbgroup.com

Sunshine Global Circuits

Company Profile

November 2025

Core Value

Mission:

Innovation empowers the world with an intelligence network to build a better life promoting low-carbon while providing a strong impetus for realization of dual-carbon goals.

Vision:

To be a global leader in green intelligent manufacturing of Cutting-Edge electronic circuits.

Strategy:

International leadership through innovation.

Sales Distribution

Business Focus

- Mid - high end PCB manufacturer with 85% PCB exported
- Establishing a global production capacity with factories located in Shenzhen, Jiujiang, Germany, and Malaysia
- Serving industrial, medical, energy, communications, automotive, and semiconductor testing industries

2024 Operating Data

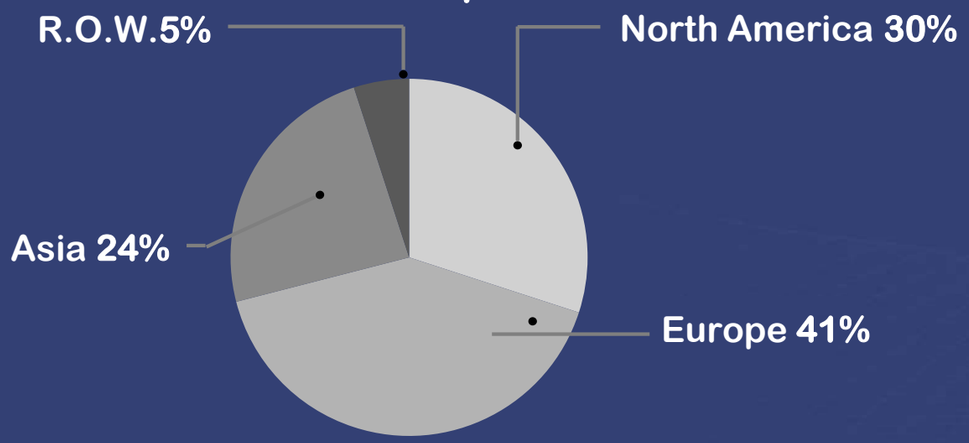
Total Asset
487 Million USD

Sales
220 Million USD

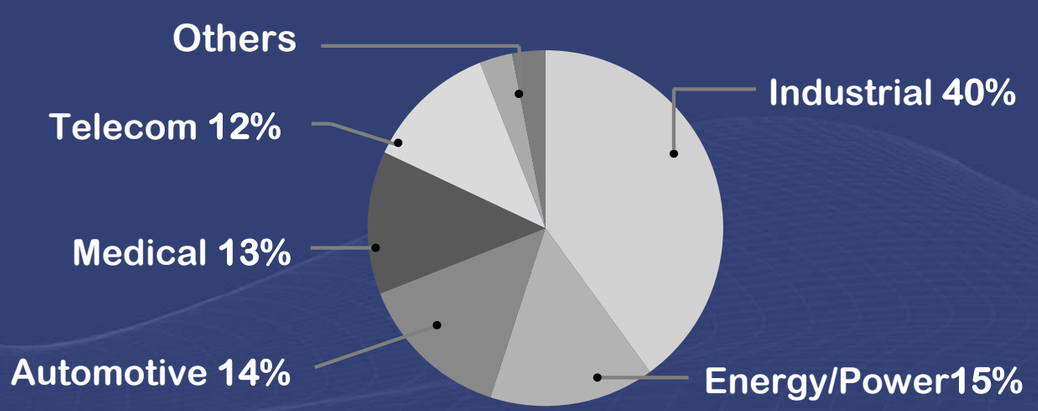
R&D
10.7 Million USD

Sales by Region

85% Export

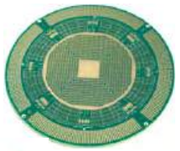


Sales by Market

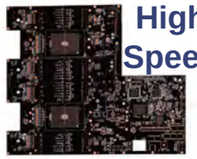


Product Positioning

ATE



High Speed



HDI

Heavy Copper

Automotive

Metal Core

Rigid-Flex

RF Microwave

International Leadership through Innovation

SZ ATE, Multi-Layer, Sample/R&D Capacity : 18000m²/M

J1 **Automotive, Metal Core, HDI** Capacity : **70000m²/M**

J2 HDI, High Speed, Heavy Copper Capacity : 60000m²/M

J3 **Rigid-Flex, RF Microwave** Capacity : **15000m²/M**

GE Automotive, Sample/QTA Capacity : 2000m²/M

PV **RF Microwave, Multilayer, Sample/QTA** Capacity : **2500m²/M**

Customers

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EMS	flex, JABIL, PLEXUS, GPV, BMK, NEOTech (NATEL EPIC OnCore), SIGMATRON INTERNATIONAL, VENTURE, zollner, creation TECHNOLOGIES, EmeraldEMS (ELECTRONIC MANUFACTURING SERVICES)
Industrial Technology	DAKTRONICS, Johnson Controls, MOTOROLA SOLUTIONS, Grayhill, Lenze, Miller, ABB, BANNER, IPG PHOTONICS, GENERAC, Basler, ELEMENT ENERGY
Power & Energy	EATON, Advanced Energy, lunar energy, LEACH INTERNATIONAL CORP, GAÏA CONVERTER, ANORD MARDIX
Medical	BECKMAN COULTER, Boston Scientific, ThermoFisher SCIENTIFIC, SIEMENS Healthcare, Dräger, stryker, BD
Telecom	QUALCOMM, Clear-Com AN HME COMPANY, ARRIS, ADTRAN, Grass Valley WE LOVE LIVE, STARRY, COMTECH EF DATA
Transportation	JOHN DEERE, CAT, NIO, ALSTOM Faiveley TRANSPORT, HL Mando, EBW Electronics, HANON SYSTEMS
Others	Infinitum, FLUKE, Genetec, CRESTRON, qorvo, Extron, NXP, AMX by HARMAN, SoundOff Signal, Meyer Sound, PRODRIVE TECHNOLOGIES

Internationalization Process

With over 20 years of development history, SGC has navigated through numerous opportunities and challenges. Through relentless innovation and advancement, SGC has showcased its profound heritage and exceptional capabilities in the electronic industry.

2001

Sunshine Global Circuits Co., Ltd (Shenzhen) was established.

2002-2008

- Sunshine Shenzhen achieves certifications for ISO9001, ISO/TS16949 and ISO14001.

2010-2013

- Sunshine Circuits USA, LLC was established in Plano, Texas.
- Sunshine expands manufacturing outside of China by acquiring a PCB shop in Remscheid, Germany.
- Accredited ISO13485.

2014-2015

- Sunshine Jiujiang begins production and ramps up capacity.
- Sunshine Jiujiang achieves certifications for ISO9001, ISO/TS16949 and ISO14001.
- Sunshine Shenzhen has been certified ISO14067 carbon footprint for PCB.

2016-2017

- Appointed as executive director unit of industry associations CPCA, GPCA and SPCA.
- Awarded "Outstanding Supplier" by international renowned companies such as BMK, Enics, and Flextronics.
- Jiujiang Sunshine phase 1 has expanded its monthly production capacity to 40,000 square meters.
- Successfully launched Rigid-Flex product line.

2018

- Listed on the Shenzhen Stock Exchange(stock code: 300739).
- Sunshine Shenzhen established Green Manufacturing Center.

2019-2020

- Successfully launched IC substrate product line.
- Introduced optical module.
- Jiujiang Sunshine established a national-level laboratory.
- Rigid-Flex product line monthly capacity expanded to 10,000 square meters.
- Comprehensively upgraded SAP system.
- Introduced international human resource man-agreement solution.

2021-2023

- Jiujiang Sunshine phase I has expanded monthly production capacity to 100,000 square meters.
- Launched dedicated production lines for RF Microwave, Heavy Copper, High Speed Linecards, and ATE Boards.
- Accredited AEO from Shenzhen Customs.
- Acquired Vision Industries, a PCB factory in Malaysia.

02 Global Presence

Foundation for Development

Since SGC launched its international strategy in 2006, SGC has always adhered to the principles of integrity in business and win-win cooperation. Committed to expanding overseas markets, SGC has established a comprehensive overseas sales channel and achieved closed-loop operations throughout the entire process, providing global customers with high - quality and high - efficiency services.

Worldwide Reach

2013
Remscheid, Germany

2012
Chemnitz, Germany

2014
Jiujiang, China

2011
Texas,USA

2023
Penang,Malaysia

2001
Shenzhen, China

Penang
Malaysia (in progress)

Zhuhai
China (in progress)

Frontier
Sales & Tech Support

Texas, USA
Chemnitz, Germany

Factory
Quick turn & Prototypes

Remscheid, Germany
Penang, Malaysia
Shenzhen, China

Factory
Mass Production & Automation

Jiujiang, China
Zhuhai · China (in progress)
Penang, Malaysia (in progress)

Factories

Sunshine Shenzhen HMLV Technology Center	
	
Site Focus	**R&D/Prototype/ QTA/HMLV**
Floor Area	20,000 m^2 (215K ft^2)
Layer Count	2L - 70L
Technologies	HDI, Stacked Microvias Low Loss Laminates, Advanced Technology ATE (Load boards, Probe Cards, BIB)
Best Lead-Time	2-8L: 7 working days 10L+: 10-15 work-days
Benefits to Customers	Technology focus, HMLV support, QTA R&D

Sunshine Jiujiang Volume Production Center	
	
Site Focus	**High Mix L/M/H Volume**
Floor Area	145,200 m^2 (1563K ft^2)
Layer Count	2L - 42L
Technologies	High Speed Digital, Heavy Copper, HDI Rigid-Flex and Flex, RF Microwave, AL-PCB
Best Lead-Time	2-8L: 7-10 work-days
Benefits to Customers	High Volume Support, Transfer from Penang or Germany

Sunshine Europe QTA/Prototype Center	
	
Site Focus	**QTA/Prototype/ Sample**
Floor Area	3,300 m^2 (35 K ft^2)
Layer Count	2L – 20L
Technologies	Rigid PCB 2-20L, Sequential Lamination, Heavy Copper, Rigid-Flex
Best Lead-Time	2-6L: 5 working days 8-16L: 8 working days
Benefits to Customers	Early Engineering Involvement, Frontline support, Domestic Service

Sunshine Penang QTA/HMLV Center	
	
Site Focus	**QTA/Prototype/ HMLV**
Floor Area	2,800 m^2 (30K ft^2)
Layer Count	2L - 16L
Technologies	Rigid PCB 2-16L, RF Microwave, Hybrids, Cavity
Best Lead-Time	2-8L: 5-10 work-days 10L+: 15 working days
Benefits to Customers	QTA Service, South East Asia PCB option

Factory: Shenzhen, China

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High-mix-low-volume, Quick Turn, High Technology

Up to 70 Layers

7 Steps HDI

ATE PCB

6μm L/S
RDL Laboratory

Glass Substrate Laboratory

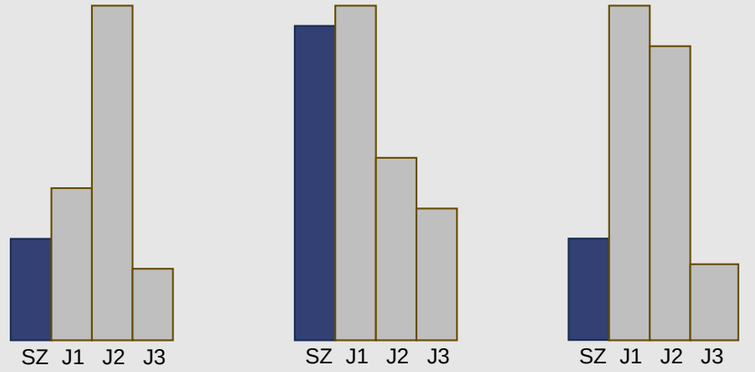
Headquarter
Since 2001

SAP ERP

R&D
Center

Corporate Functions
400 Employees

Floor Space (m^2)	Workers	Monthly Capacity (m^2)
20k	510	18k



Factory: Jiujiang

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Visit Jiujiang factory by air or by train

Factory J1 Jiujiang

Prototypes to Mass Production

Automotive
Industrial Control
Medical Devices

2-16L Rigid PCB's
Metal Backed PCB

HDI

Stacked Microvias
Sequential Lamination

97

Drill Machines

High
Volume

Panel-Level
Traceability

VDA
6.3

AEO

IATF 16949

Floor Space (m^2)

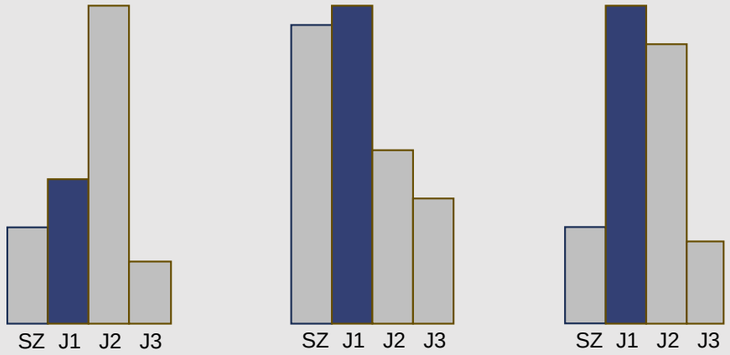
30k

Workers

574

Monthly Capacity (m^2)

70k



Factory J2 Jiujiang

Automated Lines, Substrate-like PCB's

Power & Energy
Heavy Copper Line

Server AI Telecom
High Speed Digital & HDI Line

Max. Thickness
10mm

Max. Copper Thickness
15Oz

8-42 Layers

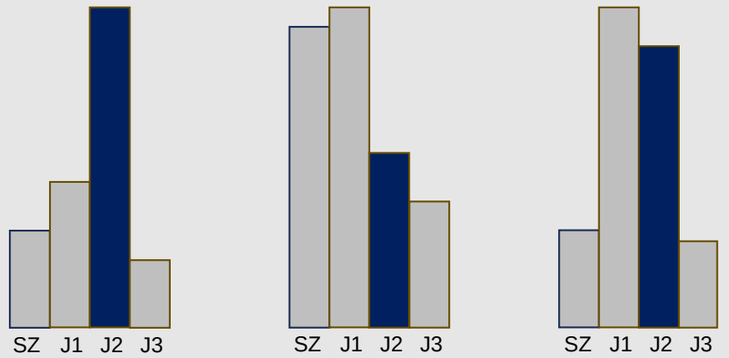
6 Generation
Laser Driller

Automated Line
Smart Factory

3D
Back drill
4+/-2mil

100
Clean Room

Floor Space (m^2)	Workers	Monthly Capacity (m^2)
68k	326	60k



Factory J3 Jiujiang

Rigid-Flex & Radio Frequency Microwave Product Lines

Rigid-Flex

1-4 Steps HDI, Up to 28 Layers, Air gap,
RF Microwave & High Speed Hybrid Design

RF Microwave

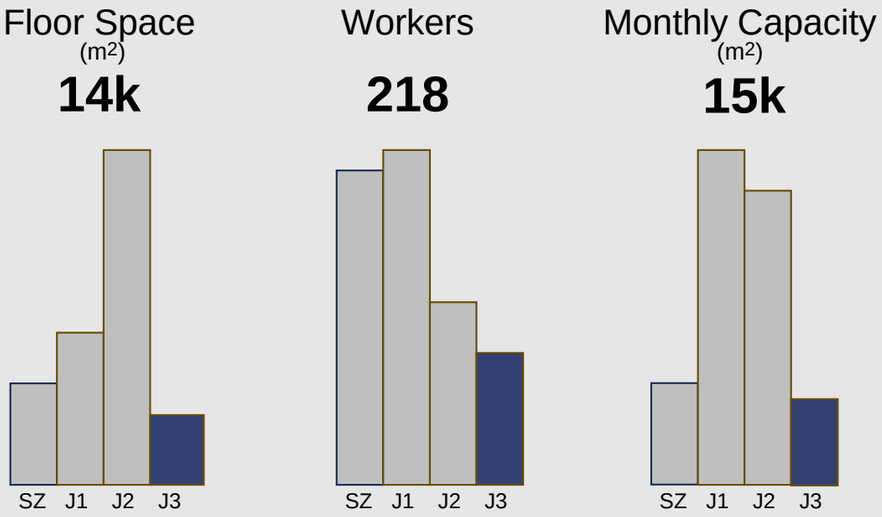
1-4 Steps HDI, Up to 24L, Hybrid Design,
Cavity, HDI, Backdrill, Embedded Coin

Industrial Control, Medical, Aerospace, Military, Auto

ROGERS CORPORATION

TACONIC

ADAS, Rader Transceiver



Factory: Remscheid, Germany

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Quick-turn, Prototypes & Low Volumes

Automotive
2-20 **Layers**

Rigid-Flex
2-12 **Layers**

Founded 1966
Acquired 2013

37
Employees

ISO 9001
ISO 14001
CERTIFIED ISO 50001 CERTIFIED

40min to Düsseldorf

Efficient Quick Domestic Service
QTA
4Days 2-10Layers

3,300 m^2 **Floor Space**
2,000 m^2 **Monthly Capacity**

SGC Owned Land & Building

Seamless transfer to JJ & Penang Plants

Factory: Penang, Malaysia

Quick-turn & Low Volumes

Rigid FR4
2-16 Layers

RF Microwave
2-10 Layers

Founded 1989
Acquired 2023

100
Employees

CERTIFIED ISO 9001:2015 COMPANY

5-10 **Days**
QTA
2 to 6 **Layers**

tuc
ROGERS CORPORATION
AGC
isola

MacDermid Alpha ELECTRONICS SOLUTIONS
UYEMURA
NIHON SUPERIOR.
四国化成

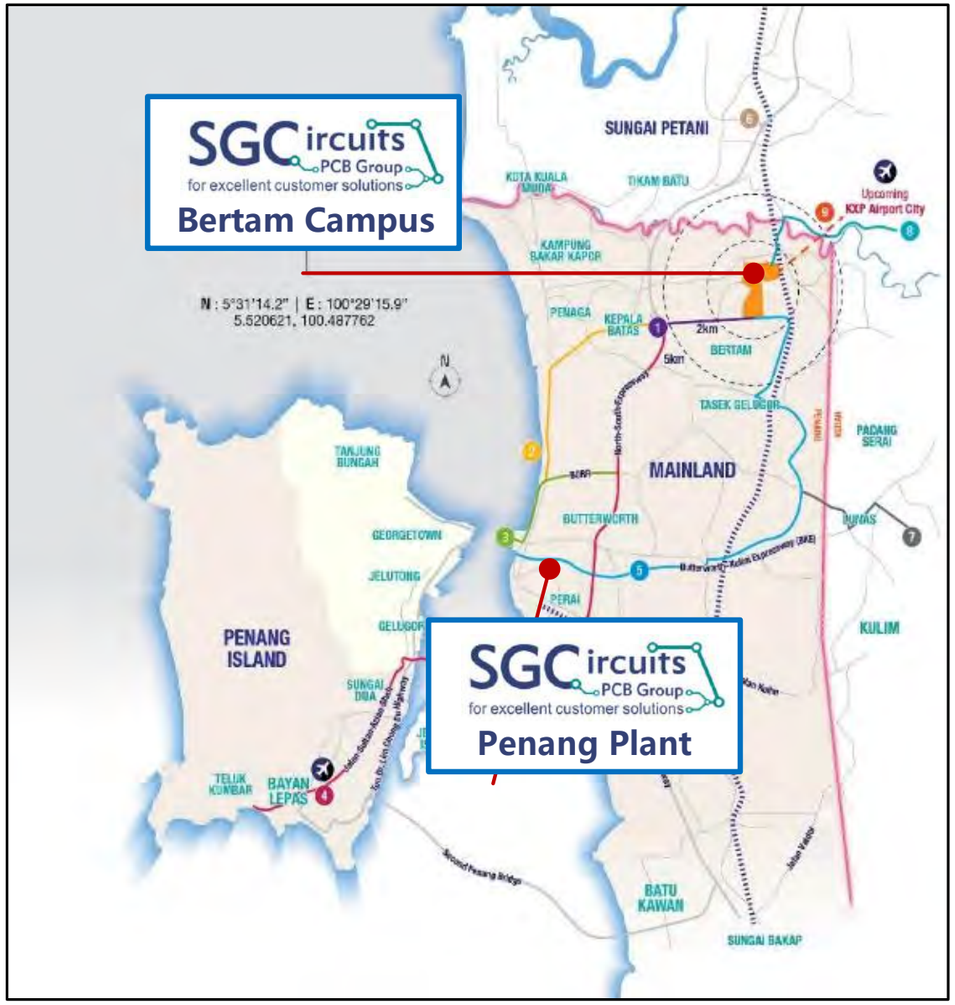
6 Surface Finishes

ENIG, LF-HAL, OSP, Ag
Hard Au, Soft Au

2,800 m^2 Floor Space
2,500 m^2 Monthly Capacity

>> A short video of Penang plant can be found here (https://youtu.be/g-Yp3lCsYa4?si=CGr7TuaVAHt1Y314).

Future Bertam Facility



Target Products:
High layer count,
Rigid-Flex, ATE

High Mix-Low Volume
Hi-Speed Servers,
Medical Devices,
Industrial/Energy

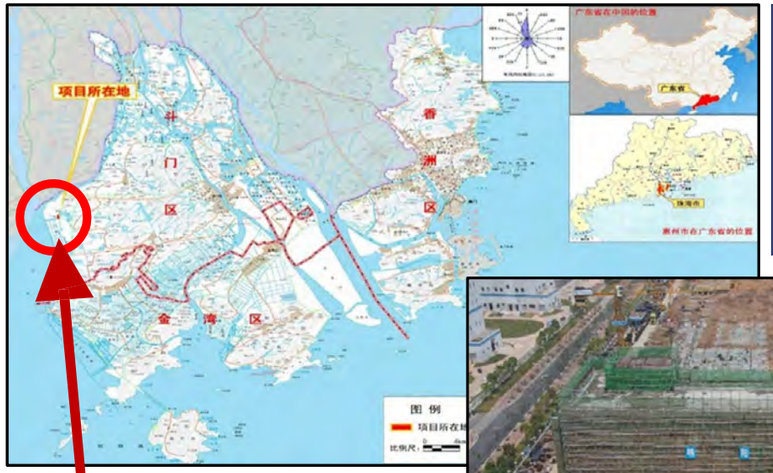
Bertam Project in progress
Ground Breaking in Feb 2026 (est.)
Start of Production Q1-2027 (est.)

Land Size 112K m^2 (27.6 acres)
Phase 1 Construction: 40,000 m^2
Support Infrastructure: 10,000 m^2
Phase 2 Construction: 40,000 m^2

Future Zhuhai Facility

Focus on HDI, AI Server, High layer count PCB's

- **Land Size:** 120,072 m^2 (30 acres, 1.3M ft^2)
- **Planned Construction:** 216,842 m^2 (2.33M ft^2)
- **1st phase under construction** 102,371 m^2 (1.1M ft^2)



- South China
- Near Macau
- Doumen Zhuhai
- Fushan Ind. Park

Start of Production by end of 2026

03 PCB Solutions

Leading with Innovation-Driven Expertise

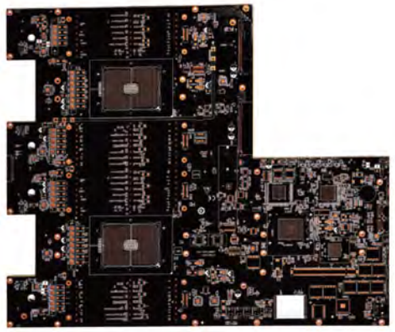
SGC leverages its technological expertise and industry experience to deliver advanced, professional solutions for diverse sectors.

Product Lines

High Speed Digital

Capacity: **36000**㎡/M

- **Layer Count:** 12-40L
- **Board Thickness:** 3.2-8.0mm
- **Aspect Ratio:** 40:1
- **Impedance:** ±7%
- **Stub:** ≤ 0.2mm
- **Lamination Cycles:** 5-7 times

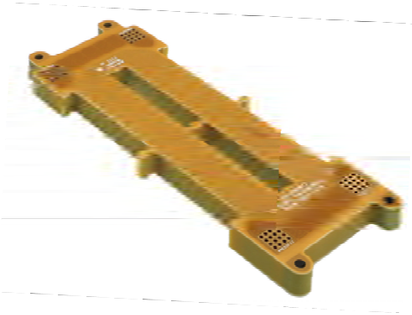


Base Station, Server, High Performance Computing

Heavy Copper

Capacity: **25000**㎡/M

- **Copper Thickness:** 3-12OZ
- **Layer Count:** 2-26L
- **Lamination Cycles:** 1-3 times
- **Impedance:** < 3%
- **Withstanding Voltage:** 2772V dc 60s

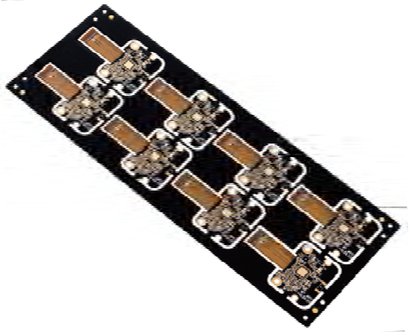


Power, Industrial Control, Telecommunication, etc.

Rigid-Flex

Capacity: **10000**㎡/M

- **Total Layer Count:** 30L+
- **Flex Layer Count:** 1-10L
- **Board Thickness:** 0.4-3.5mm
- **Min. Line width/space:** 3.5/3.5mil
- **Lamination Cycles:** 1～3 times
- **Structure:** HDI（3 steps or above）+ Rigid-Flex

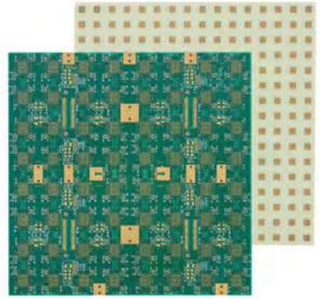


Automotive, Medical, Industrial Control, Aerospace, etc.

RF Microwave

Capacity: **5000**㎡/M

- **Line Width Accuracy:** ±0.6mil
- **Material:** Hydrocarbon, PTFE(with/without glass fiber), PPE, hybrid design
- **Lamination Cycle:** 1-4 times
- **Embedded:** Capacitance/ resistance/copper coin
- **Depth controlled routing,** Cavity metallization

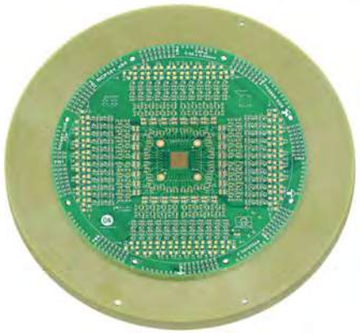


ADAS, RF Module, Base Station, etc.

ATE

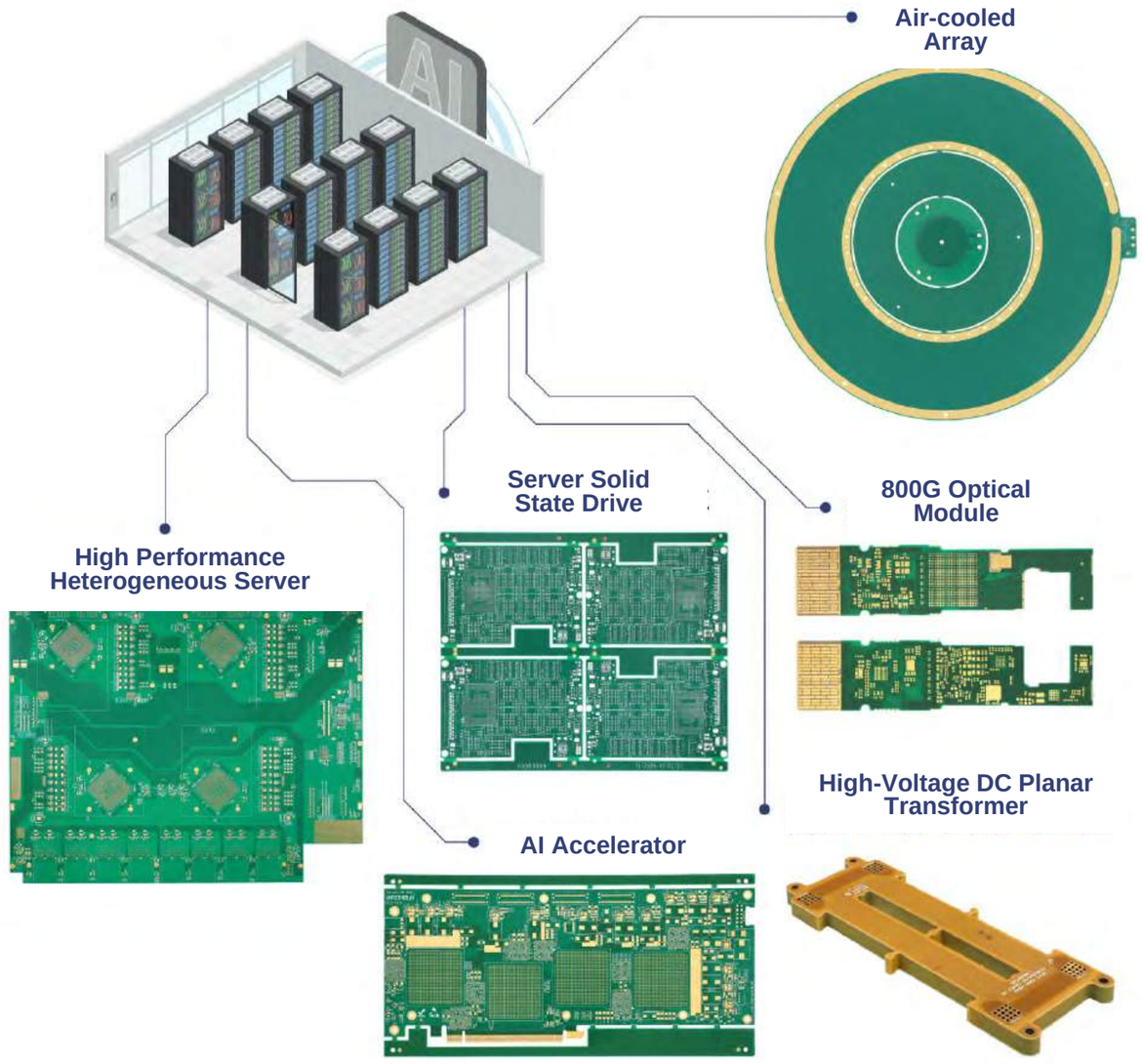
Capacity: 1**000**㎡/M

- **Layer Count:** 70L
- **Board Thickness:** 6.5mm
- **Aspect Ratio:** ≥ 40：1
- **Pitch（Min）：** 0.35mm
- **Surface Treatment:** Hard gold plating, ENIG, ENEPIG, etc.
- **Impedance:** ±7%



IC Testing

AI Data Center PCB Solutions



Technology

Item		Mass Production	Sample
Fundamental Capability	Layer Count	42	62
	Max. Board Thickness	6mm	8mm
	Outer Layer Line Width/ Space	3.5/3.5mil	3.0/3.5mil
	Inner Layer Line Width/ Space	3.5/3.5mil(1OZ)	3.0/3.5mil(1OZ)
		2.8/2.8mil(HOZ)	2.5/2.5mil(HOZ)
	Aspect Ratio	20:1	25:1
	Characteristic Impedance	±10%(Inner 1OZ)	±5%(Inner 1OZ)
	Beveling Tolerance	±0.075mm	±0.05mm
High Speed Digital	Registration	4.5mil	4mil
	Back-drill Stub	8mil	6mil
	Min. Hole Size	7mil	7mil
	Brown Oxide Method	Low profile	Low profile
	Low Loss Solder Mask	Y	Y
SI	VNA Frequency	26.5GHz	43.5GHz
	Test Method	Delta-L 4.0	
	Test Probe Frequency	40G/Delta-L 4.0	40G/Delta-L 4.0
Special Process	N+N, Hybrid Design, HDI, Deep Micro-via, Stepped Gold Finger, Variable Length Gold Finger, QR Code, POFV, Back-drill, Press-fit Hole, etc.		
Surface Treatment	OSP, HASL, Gold Finger, ENIG, etc.		

High Speed Solutions

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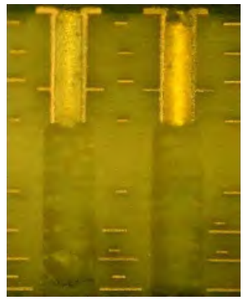
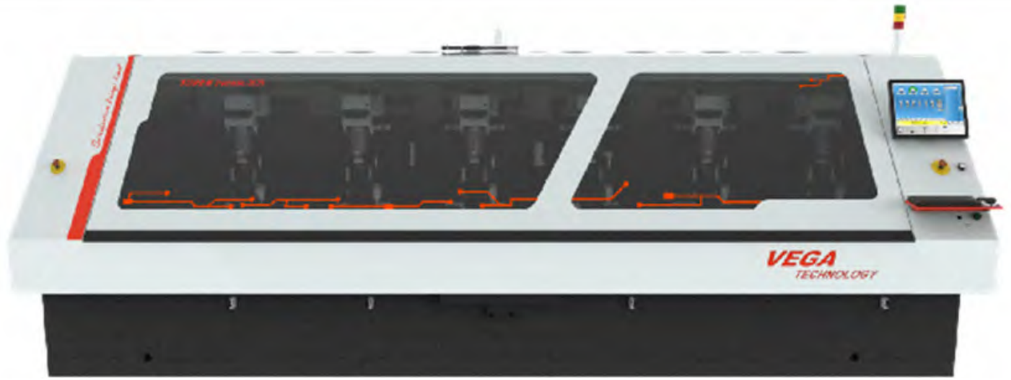
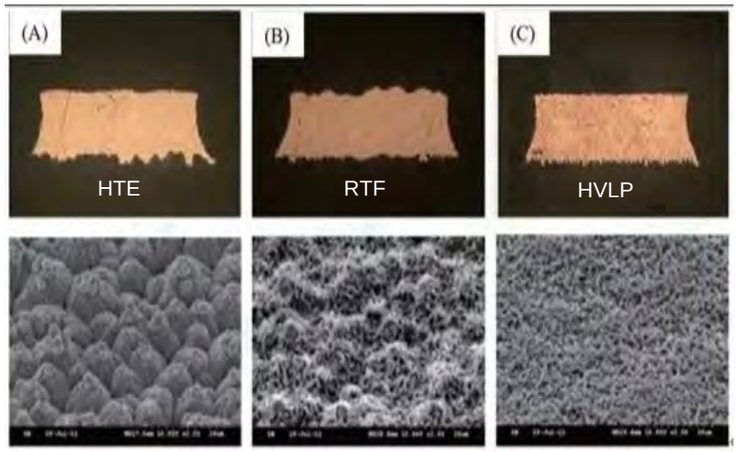
3D Back-drill Stub≤6mil



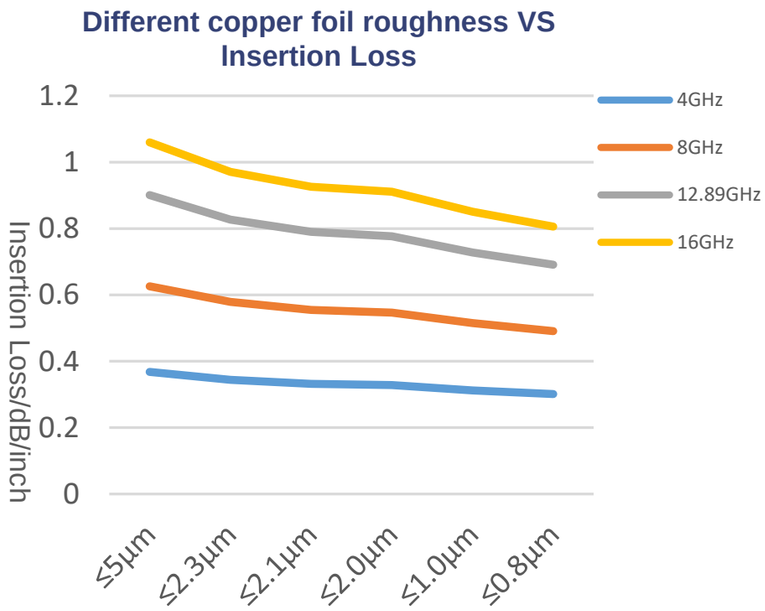


43.5 GHz VNA

Copper Foil Study



Type	Roughness (Rz)	4GHz	8GHz	12.89 GHz	16GHz
RTF	≤5μm	0.368	0.626	0.901	1.06
RTF2	≤2.3μm	0.344	0.579	0.827	0.971
RTF3	≤2.1μm	0.332	0.555	0.79	0.926
HVLP	≤2.0μm	0.328	0.547	0.777	0.911
HVLP2	≤1.0μm	0.312	0.515	0.728	0.851
HVLP3	≤0.8μm	0.301	0.491	0.691	0.806



High Density Solutions

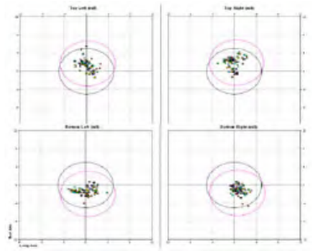
High Layer Count Registration & High Aspect Ratio

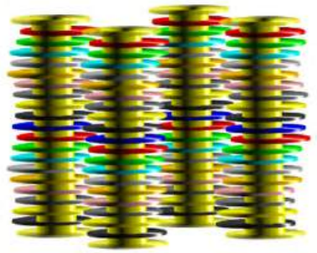
High Layer Count Registration System

CCD Masslam
Accuracy ≤3mil

XACT PCB

Registration Measurement System

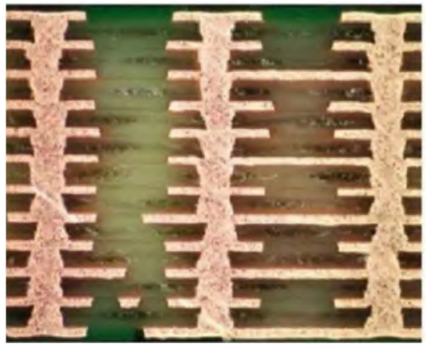


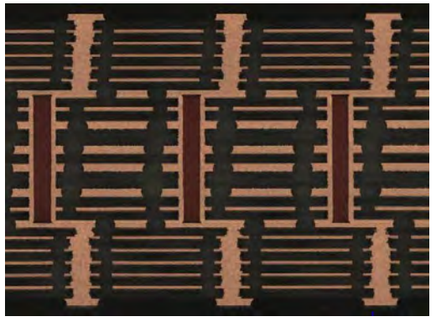


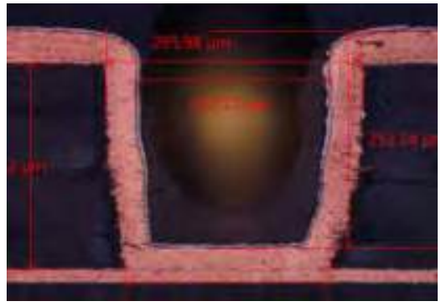
40L Layer to Layer

50:1 Aspect Ratio

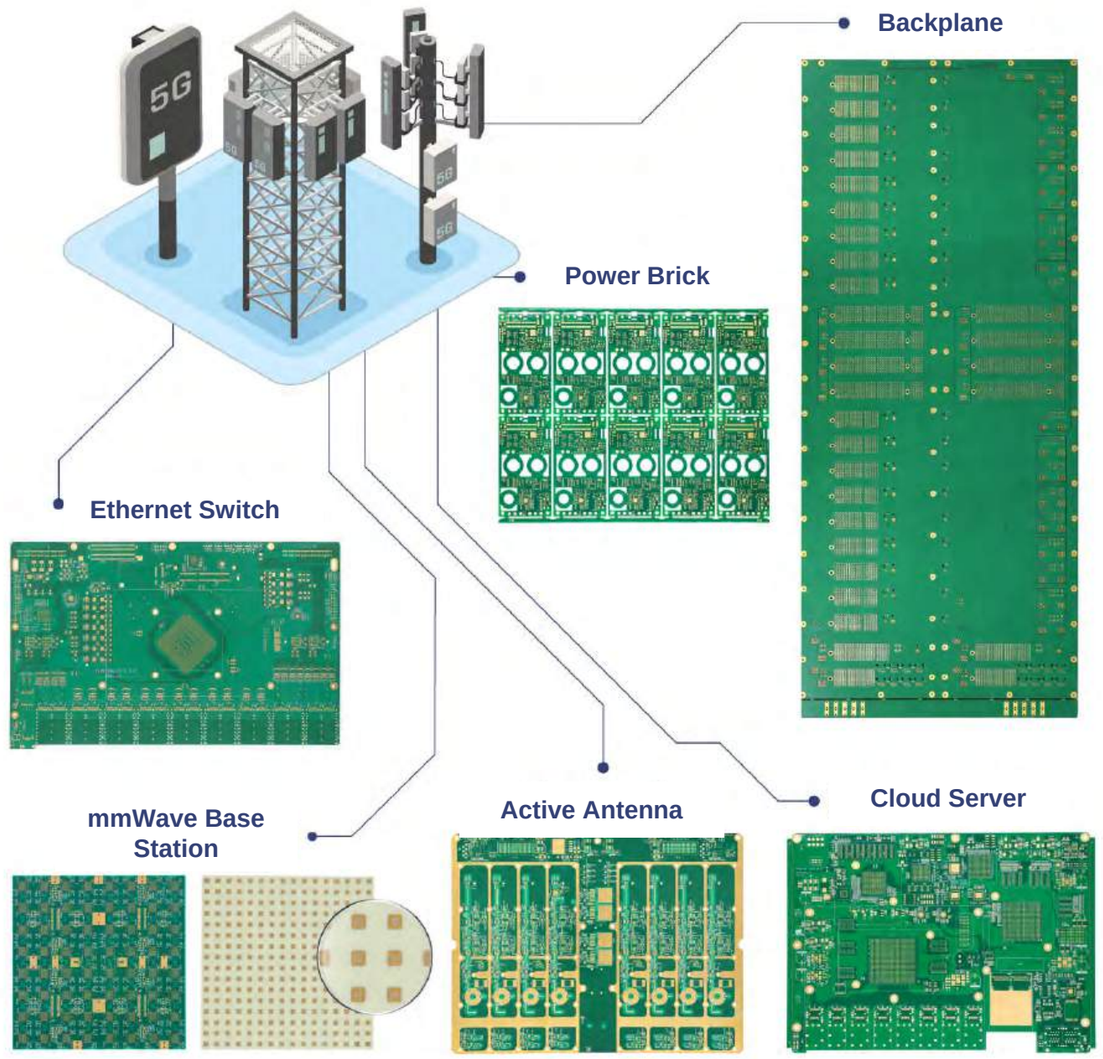
HDI & Deep Micro-via







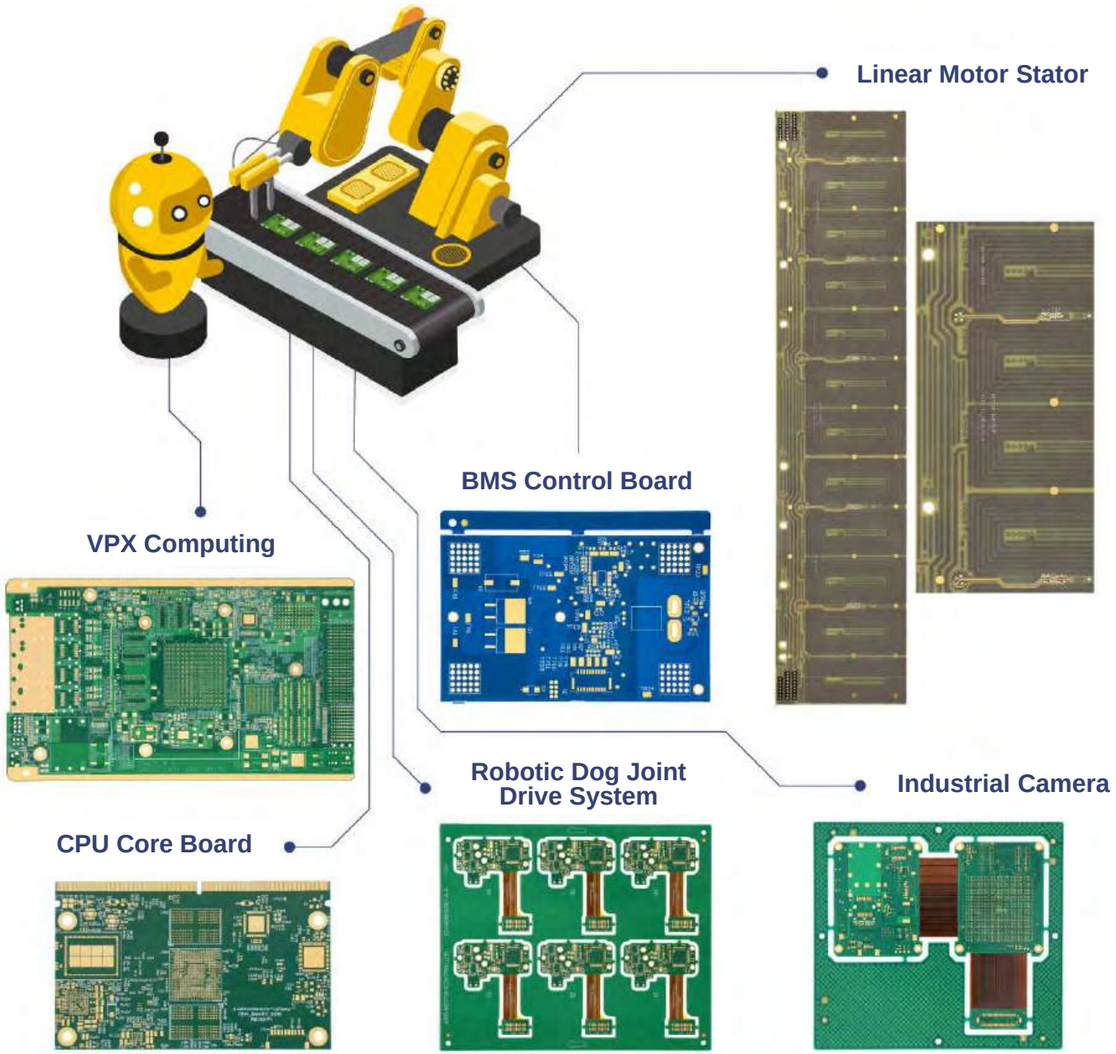
Data Communication Solutions



Technology

Item		Mass Production	Sample
Backplane	Max. Layer Count	60	70
	Max. Board Thickness	8mm	10mm
	Aspect Ratio	23:1	25:1
	Max. Dimension	1200*680mm	1200*680mm
Line Card	Max. Layer Count	42	62
	Max. Board Thickness	6mm	8mm
	Aspect Ratio	23:1	25:1
	Max. Dimension	1200*680mm	1200*680mm
Min. Line Width/Space	Inner Layer	2.8/2.8mil	2.5/2.5mil
	Outer Layer	3.5/3.5mil	3.0/3.5mil
Registration	Same Core	±25um	±20um
	Different Core	±4.5mil	±4.0mil
Min. Hole Size	Mechanical	≥0.15mm(6mil)	≥0.13mm(5mil)
	Laser	50-150um	50-200um
Max. Copper Thickness		4OZ	6OZ

Industrial Control & Robot Solutions



Technology

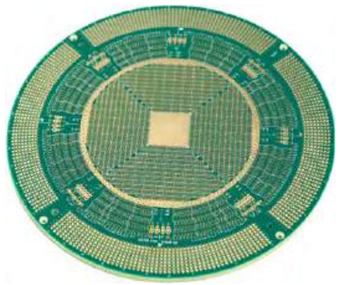
Item	Mass Production	Sample
Layer Count	2-30	2-40
HDI	3+N+3	7+N+7
Mechanical Drill	0.2mm	0.15mm
Laser Drill	100-150um	75-200um
Max Copper Thickness	6oz	15oz
Rigid-Flex Structure	Symmetric Structure, Air-gap, Flytail Structure, Multi-layer Flex Circuit	
Surface Treatment	ENIG/OSP/Immersion Tin/Immersion Silver/ENEPIG/Gold Finger/Soft Gold/Hard Gold	
Special Process	Resin Plug, Mechanical/Laser Micro-via, Depth Controlled Drilling/Routing, Edge Plating, Semi-Flex, POFV, Partial Heavy Copper (Variation 1OZ), etc.	
Laminate	S1000H, S1000-2M, S1150G, S1151G, Autolad1, Autolad1G, Autolad3, Autolad3G, IT-158, IT-180A, TU-865, EM827, VT-47, 370HR, R-5775	
Reliability Test	CAF, HAST, Thermal Shock, Constant Temp. and Hum., IST, Solderability, Thermal Stress Test, Ionic Contamination, Ionic Chromatography, etc.	

ATE Solutions

Product Display

Wafer Testing

ATE Probe Card



Description

- Material：HTG FR4
- Layer Count：44
- Board Thickness: 6.350mm
- Min. Hole Size：0.2mm
- Aspect Ration：32:1
- BGA Spacing：0.65mm
- Surface Treatment：Thin Gold Plating + Selective Hard Gold Plating
- Warpage：0.10%
- DUT Flatness：50μm

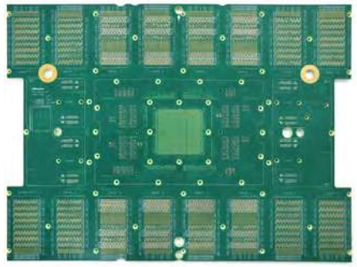
Finished Good Testing

ATE Load Board

Description

- Material：Megtron 6
- Layer Count：34
- Board Thickness: 5.08mm
- Min. Hole Size：0.13mm
- Aspect Ration：39:1
- BGA Spacing：0.40mm
- Surface Treatment：Thin Gold Plating + Selective Hard Gold Plating
- Warpage：0.15%

ATE Load Board

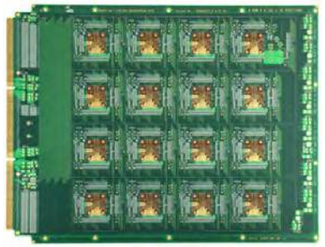


Description

- Material：Megtron 6
- Layer Count：70
- Board Thickness: 6.60mm
- Min. Hole Size：0.2mm
- Aspect Ration：33:1
- BGA Spacing：0.65mm
- Surface Treatment：Thin Gold Plating + Selective Hard Gold Plating
- Warpage：0.1%
- DUT Flatness：50μm

Aging Testing

ATE Burn In Board



Description

- Material：PI
- Layer Count：16
- Board Thickness: 1.6mm
- Min. Hole Size：0.13mm
- Aspect Ration：12:1
- BGA Pitch to Pitch: 0.35mm
- Surface Treatment：Gold Plating + Gold Finger Plating
- Warpage：0.20%
- DUT No.：16

Technology

Item		Mass Production	Sample
Max. Board Thickness (mm)		6.5	8.0
Max. Layer Count		60	70
Aspect Ratio		42:1	50:1
BGA Spacing(mm)	PTH	0.40	0.35
	HDI	0.35	0.30
Trace Spacing (mil)	Inner	3.0/3.0	2.0/3.0
	Outer	3.5/3.5	3.0/3.0
Tolerance Of Impedance	Inner	±10%	±5%
	Outer	±10%	±7%
Warpage (%)		0.3%	0.1%
DUT Flatness(μm)		50	40
Flatness of POFV (μm)		No dimple	No dimple
Surface Treatment		Hard Gold、Gold Finger、ENIG、ENEPIG	

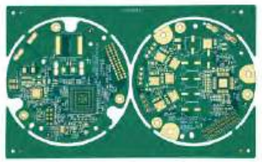
Automotive Solutions

Power Battery System

- Charge Controller
- Power Converter
- BMS

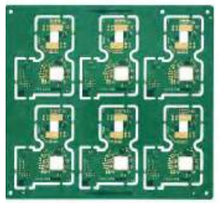
Chassis System

- Suspension System
- Steering Controller
- Brake Controller
- ESP



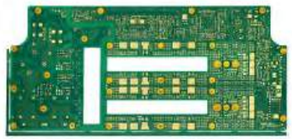
ADAS

- Stereo/Tri-Camera System
- Lidar
- mmWave Radar
- Ultrasonic Radar
- GPS & IMU
- ADAS Domain Controller



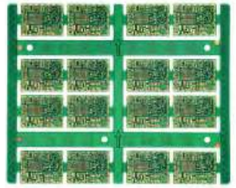
Motor & Drive

- Motor
- Drive Controller
- Inverter
- Cooling System



Intelligent Cockpit

- Multi-Screen
- Intelligent Meter
- Streaming Media Rearview Mirror
- Microphone and Audio System



Vehicle to Everything

- Vehicle Gateway
- High Performance Computing Platform
- Wireless Communication Module

Technology

Item		Mass Production	Sample
Min. Line Width/Space	Layer Count	2-12	2-20
	Outer（1oz）	132um/132um	114um/114um
	Inner（0.5oz）	64um/64um	64um/64um
Min. Hole Size	Mechanical	0.2mm	0.15mm
	Laser	75-150um	75-200um
HDI	Structure	2+N+2	3+N+3
	Aspect Ratio	≤0.8:1	≤1:1
Laminate	FR4	S1000H，S1000-2M，S1150G，S1151G，Autolad1，Autolad1G，Autolad3，Autolad3G，IT-158，IT-180A，TU-865，EM825	
	RF Microwave	RO3003G2, RO3003, RO4350B,	
RF Line Width Accuracy		±15um	±12um
Max. Copper Thickness	6 Oz		
Surface Treatment	ENIG/OSP/Immersion Tin/Immersion Silver/ENEPIG		
Reliability Test	CAF，HAST，Thermal Shock, Constant Temp. and Hum., IST，Solderability, Thermal Stress Test, Ionic Contamination, Ionic Chromatography, etc.		
Special Processes	Resin Plug, Mechanical/Laser Micro-via, Depth controlled Drilling/Routing, Edge-Plating, Semi-Flex, POFV，Partial Heavy Copper（Variation 1OZ), Hole Copper Thickness 60um, Metal-Backed, etc.		

Certifications

SGC ircuits PCB Group
for excellent customer solutions

ISO 9001:2015 (Manufacturing)	IATF 16949:2016 (Automotive)	ISO13485:2016 (Medical)	ISO45001:2018 (Healthy & safety)	ISO 14001:2015 (Environment)	ISO 14067:2013 (Carbon Footprint)	QC080000:2017 (Hazardous Substance)	ISO27001:2022 (Information Safety)	AS9100D:2016 (Aerospace)	ISO50001:2018 (Energy)

Shenzhen

Reach RoHS UL CQC

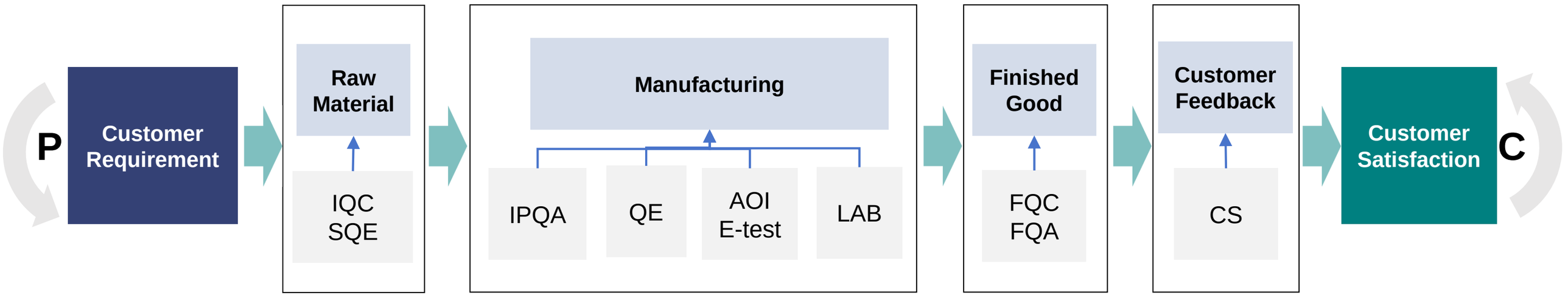
Jiujiang

Quality System

A

ISO9001 IATF16949 ISO13485 AS9100

QC080000 ROHS & REACH

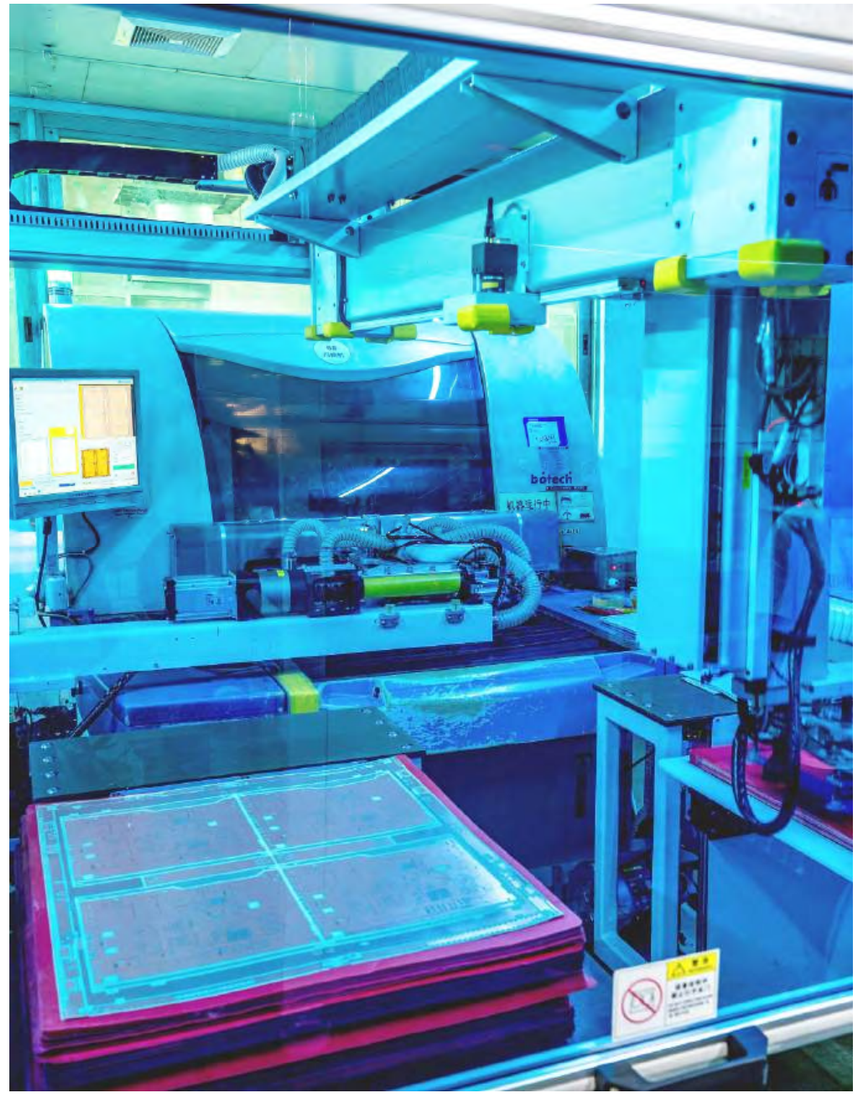


Quality Tool 5 Core Quality Tools/ VDA6.3/ PDCA/ 8D/ 7QC Tools

D

Leadtime

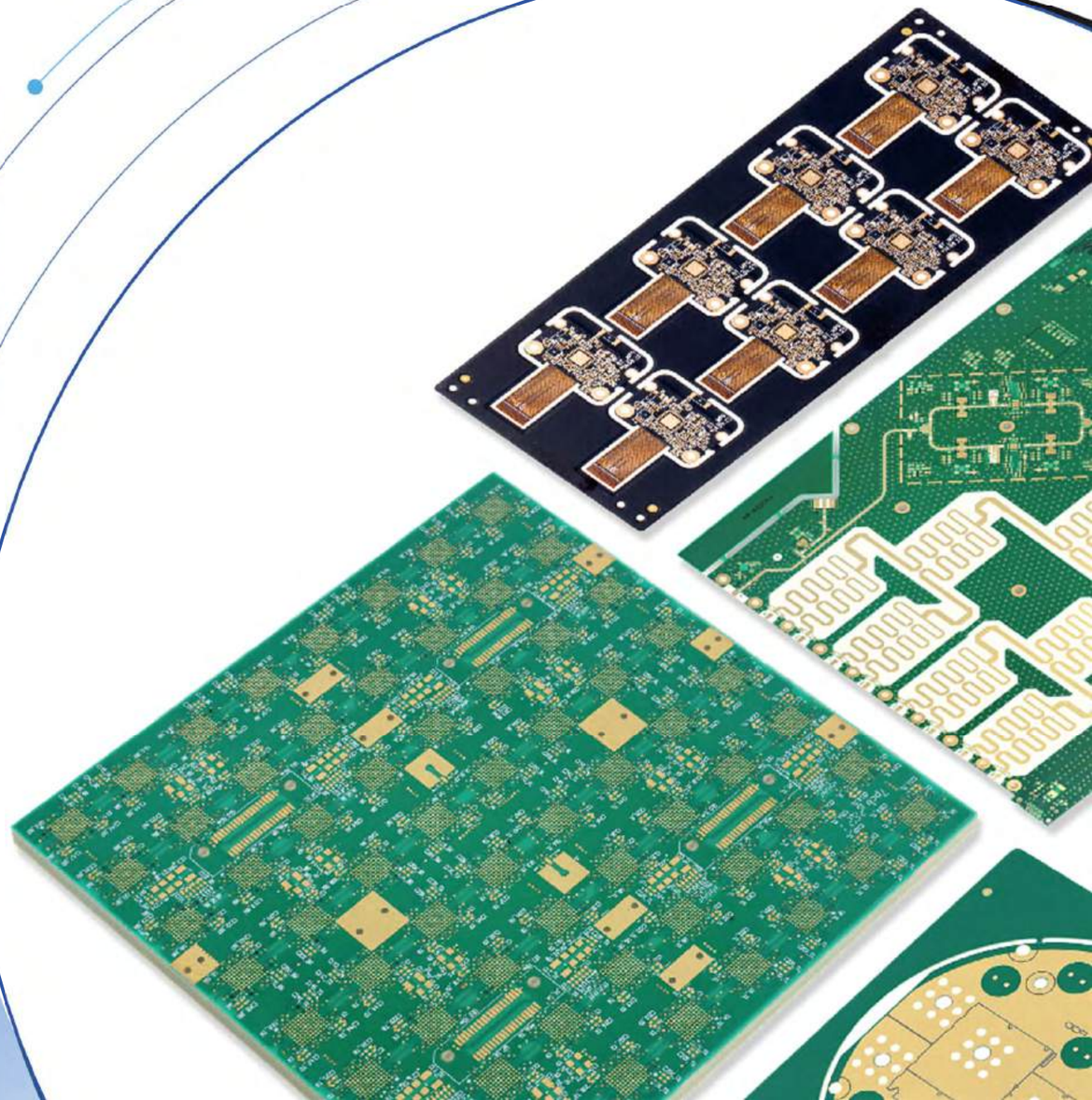
- Production lead-time is 4 to 5 weeks
  - Lead-time for FR4 not in stock is 2-4 weeks
  - Special material and thick cu foil may require longer LT
- NPI Support
  - Quick turns available, from 5 to 15 days (based on mat'l/tech)
  - DFM, stack-up, impedance simulation by Sunshine FAE's
  - R&D and NPI teams to support advanced products



04 Product Innovation

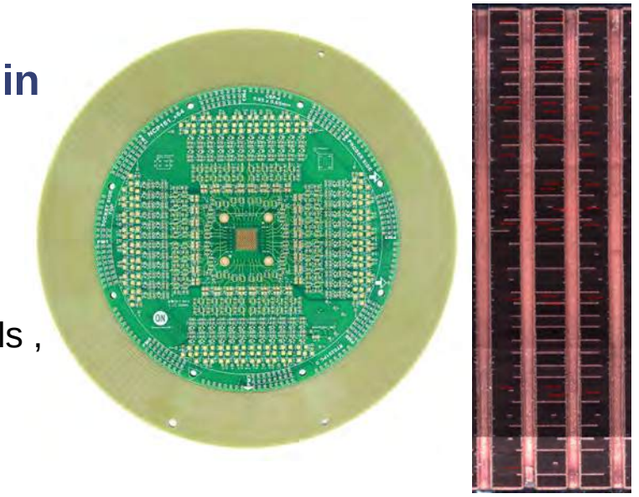
Empowering the Intelligent and Interconnected World

Product quality is the lifeblood of a company and the cornerstone of its sustainable development. By driving economic growth through technological innovation and enhancing customer satisfaction through meticulous manufacturing craftsmanship, SGC is committed to becoming a global leader in the green intelligent manufacturing of cutting-edge electronic circuits.

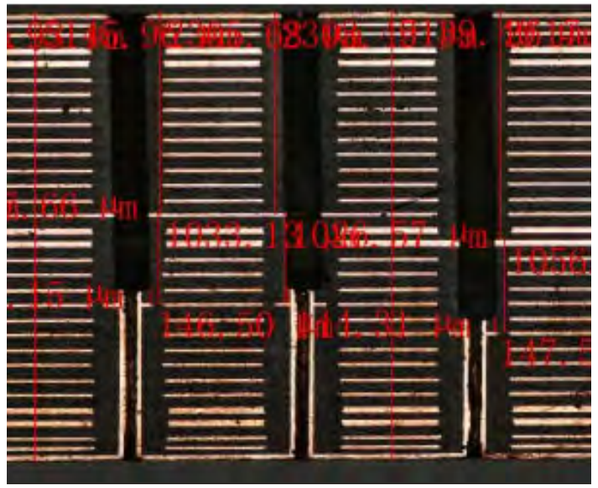


Technology Development

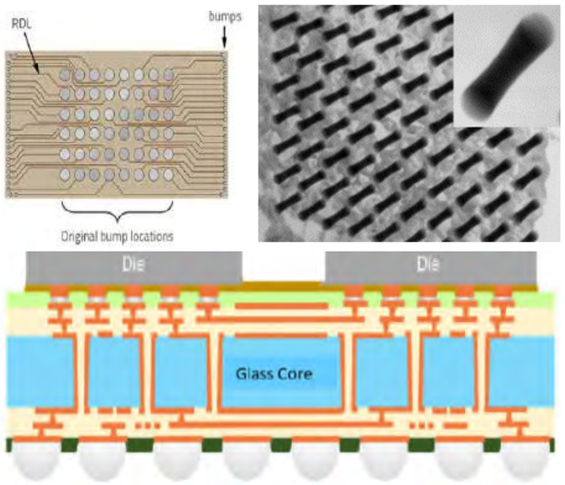
- **Sunshine is committed to and continuously engaged in R&D for PCB and Semiconductor technologies**
- **R&D projects for PCB's:**
  - High layer count 60+ with Aspect Ratio of 50:1
  - High speed and high computing power
  - Addition of new materials including extremely low loss materials , low profile copper foils and low profile oxide solution
  - Controlled impedance tolerance of +/- 7% or below
  - Controlled back drill stub length tolerance of 4 +/- 2mils
  - Thermal management solutions
  - PCB package, embedded passives and active components
  - High-density interconnects, stacked microvias 7+, 9+
  - Every Layer Interconnect structures (ELIC) and Deep Micro vias
- **R&D for Semiconductors:**
  - Substrate-like PCB's (SLP)
  - Modified Semi Additive Process (MSAP)
  - Pure Glass PCB, Redistribution Layer (RDL), Thru-Glass Via (TGV)
- **Green manufacturing technologies**



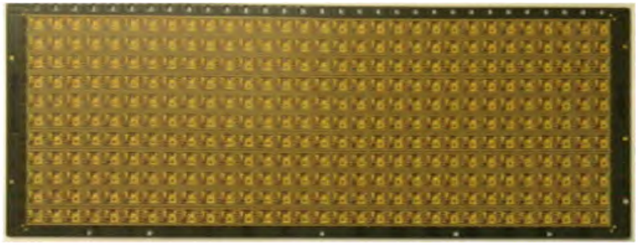
High layer & High Aspect Ratio



Back drill



Glass base package substrate



IC Substrate

PCB package

Laminate Selection

SGCircuits PCB Group
for excellent customer solutions

High Frequency		*S7136H、*RO4730G3、*AeroWave300、SCG 500 GF300 、mmWave77、 ZYF300CA-P、R-5575、Astra MT77、*RO4350B、*RO4835、AD300A 、*RO3003、RO3006 、VT-901/90H	Amplifier, Base station, ADAS Radar
High Speed Digital	Extremely low loss (Megtron9)	DF < 0.001	Megtron9N、Synmic9GN2H、TU-953、EM-896、IT-999、 DS-7409DY	Server, Switch, Router
	Extremely low loss (Megtron8)	DF < 0.002	Megtron8N、 Megtron8U、 Megtron8NC、TU-943HN、TU-943HR、EM-892K 、EM-892K2	Server, Switch, Router
	Ultra Low Loss (Megtron7)	0.002≤DF < 0.004	*Megtron7(GE) 、*Megtron7 、*Megtron7(NE)、*Megtron6(NE)、* EM-890K、*EM-890、TU-933+、IT-988GSE、Synamic6N 、Gallop 7D、 *EM-891K 、*DS-7409DVN、*Tachyon 100G、Synamic8G、Synamic8GN	Server, Switch, Router
	Very Low Loss (Megtron6)	0.004≤DF < 0.008	*Megtron6(G)、*Megtron6(K) 、*TU-883、IT-968、*IT-968G、*EM-528、*EM-528K、*I-Tera MT40 、Synamic6 、S30G-A、*EM-891、 DS-7409DV、*TU-883C、*TU-883A、TU-883SP	Server，Network，Optical module, Switch, Router
	Low loss (Megtron4)	0.008≤DF < 0.014	*Megtron4、 *Megtron4S 、*TU-872LK、*TU-872SLK、*TU-872SLKSP、*TU-863+、IT-958G、IT-170GRA2、S7439G 、*EM-526、*I-speed、*FR408HR、*NPG-170D、*N4000-13EP、 *N4000-13SI	Server, Fixed Network, Optical module, Switch, Router
	Mid loss (TU-862HF)	0.014≤DF < 0.02	*TU862HF、 * TU-865、 * EM-370(D)、 * EM-370(Z) 、 * EM-828(G)、 S7040G 、*IT-170GRA1、*IT-170GT、VT464L、* TU-862S、 * TU-862T、*EM-390、*NPG-171	5G mobile phones，Communication base stations
Standard FR 4		DF> 0.02	*R-1566WN、*R-1766、*R-1755V、EM-825、*EM827、*EM-827I、*TU-768、*S1141、S1150G、*S1000、*S1000H、Autolad 1、*IT-158、*IT-180A、IT-150G、*NP-140、*NP-155F、*NP-175F、NPG-15D、*185HR、*370HR、*H150(LF)、*H1170、*NY2140、*NY1140、*NY2150、*NPG-170N、	Auto, Mobile Phone

Remark: "*" -UL Approved, "Red" - Not Qualified, "Blue" -Qualified, "————" - Recommended HSD

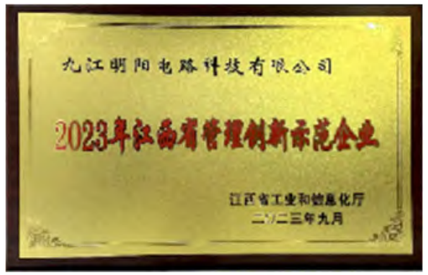
R&D Driven Innovation

2022-2024 Research & Technology Innovation

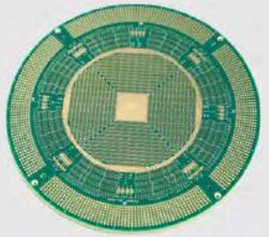
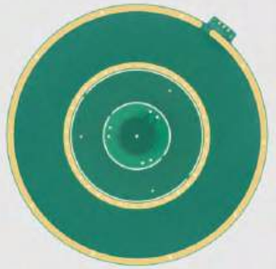
Items	2022	2023	2024
R&D Investment (Million RMB/Year)	87.07	85.66	76.34
Number of R&D Personnel	330	331	280
Number of Patents (Items/Year)	12	13	33

Technology Center has been awarded the title of "Guangdong Province 5G High-Density Interconnect HDI Printed Circuit Board Engineering Technology Research Center

SGC was honored with the title of “Specialized, High-end and Innovation-driven SMEs” in year 2023



Sunshine Jiujiang has been honored with the title of "Jiangxi Province Management Innovation Demonstration Enterprise“ in 2023

Name	Parameters	Photos	Application
Probe Card	• Layer Count: 30 Layers • Material: HTG FR4 • Thickness: 6.35mm • Line width/Line Space: 0.148/0.152mm • Min. Hole Diameter: 0.6mm • Surface Treatment: ENIG		Applied in the semiconductor packaging and testing field. A probe card is the interface between the tested chip and the tester during semiconductor wafer testing. By conducting electrical performance tests on the chips on the wafer, defective chips can be screened out, reducing packaging costs and ensuring chip quality.
Heavy Copper	• Layer Count：20-26 Layers • Material：TU865 • Thickness：5.8+0.58mm • Inner Copper Thickness：3/3 oz, 4/4oz • Hole Copper Thickness: 25um • Line width/ Line Space：0.55mm/0.152mm • Surface Treatment: ENIG • Voltage：2770V DC 60S • Layer Registration：+5mil • Range of Resistance (MAX-MIN) / MIN ≤ 3%		Applied in the new energy vehicle (NEV) field. The traditional wound coil motor is innovated into a printed circuit board (PCB) with an integrated wound coil, meeting the critical performance requirements of new energy vehicles.

Advanced Technology Development

Technology Center

- **Chief Engineer**
- **Technology Committee**

Project Management

1. Project Process and Quantitative Management
2. Intellectual Property Management
3. Project Application at Provincial, City, and National Levels
4. Organization of Project Assessment
5. Annual Technical Planning and Compilation

Product Development

1. High Frequency High Speed Team
2. Rigid-Flex Team
3. Optical Module Team
4. ATE Team

Technology Development

1. Material Research Team
2. Basic Technology Team
3. Digitalization and Simulation Team

NPI

High Complexity Product Team

Central Laboratory

1. Establish R&D platform & open the platform
2. Quality Management Research
3. Failure Analysis and Reliability Studies of Electronic Products
4. Laboratory for Advanced Packaging Process Research of Semiconductor Integrated Circuits

Industry-Academia-Research (IAR) Projects ：

南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

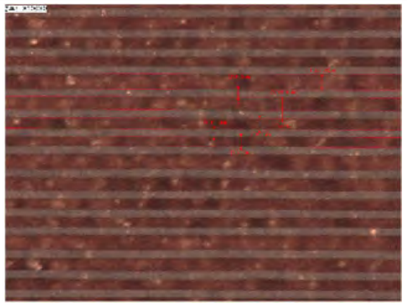
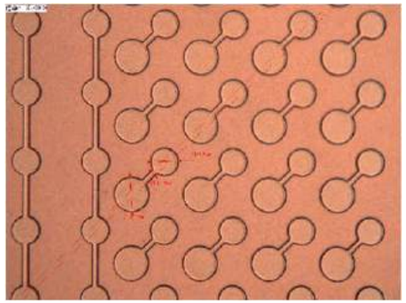
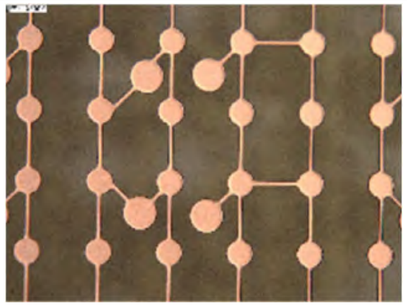
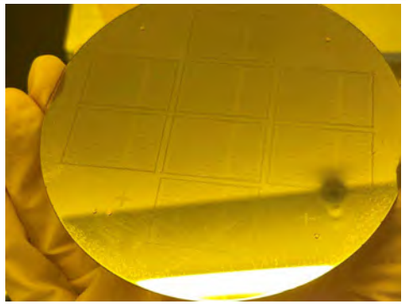
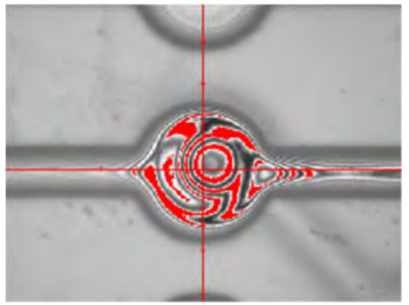
中国科学院深圳先进技术研究院 SHENZHEN INSTITUTE OF ADVANCED TECHNOLOGY CHINESE ACADEMY OF SCIENCES

中原工学院 Zhongyuan University of Technology

桂林航天工業學院 GUILIN UNIVERSITY OF AEROSPACE TECHNOLOGY

RDL 5um/5um Pilot Line

The main processes involved include lithography (for fine lines and micro-vias), sputtering (for seed layer formation), electroplating (for line metallization), planarization (for DUT surface flatness), and inspection (for precision and reliability testing).

Lithography	Sputtering	Electroplating	Planarization	Inspection
				
				
Resolution: 6/6um Accuracy: ±1.5μm	Evenness: 5% Power: 1KW	Evenness: 10% Accuracy: 0.1mA	Flatness: 10um	Image System: 1024*1024 Accuracy: 0.1um
Photolithography System	**Magnetron Sputtering**	**Electroplating Machine**	**CMP Grinding Machine**	**3D Contourgraph**

Reliability Testing

Advance Outgoing and Long-Term Reliability Testing

			
Impedance tester	ROHS tester	X-RAY finished coating thickness tester	Microscope
			
Ion mobility tester	Ion contamination tester	Thermal shock tester	Reflow tester

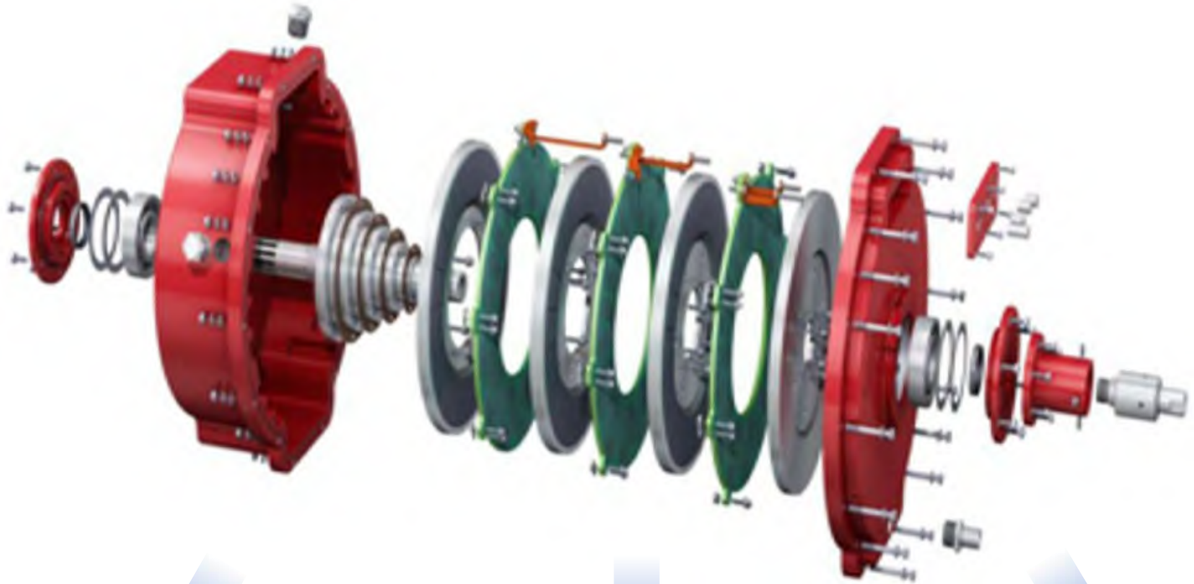
Standard test

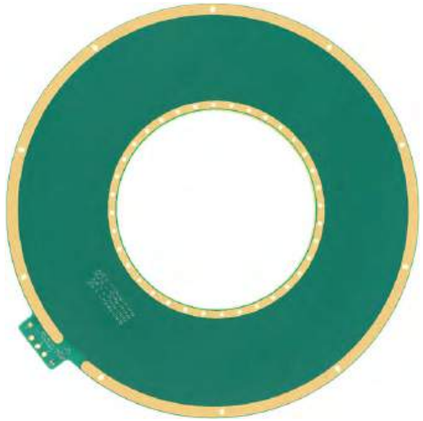
- 100% E-test
- 100% Visual check
- PCB dimension measure
- Micro-section
- Solderability test
- Thermal stress test
- Solder mask peel off test
- Impedance test
- Tg & △Tg test
- ROHS detection

Reliability test

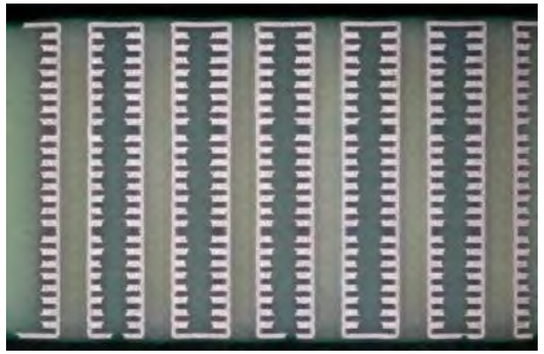
- Reflow test
- High temp & humidity test
- Temperature and humidity insulation resistance test
- Solvent resistance test
- Contamination test
- Thermal shock test
- Peel strength test
- Salt-mist test

Heavy Copper

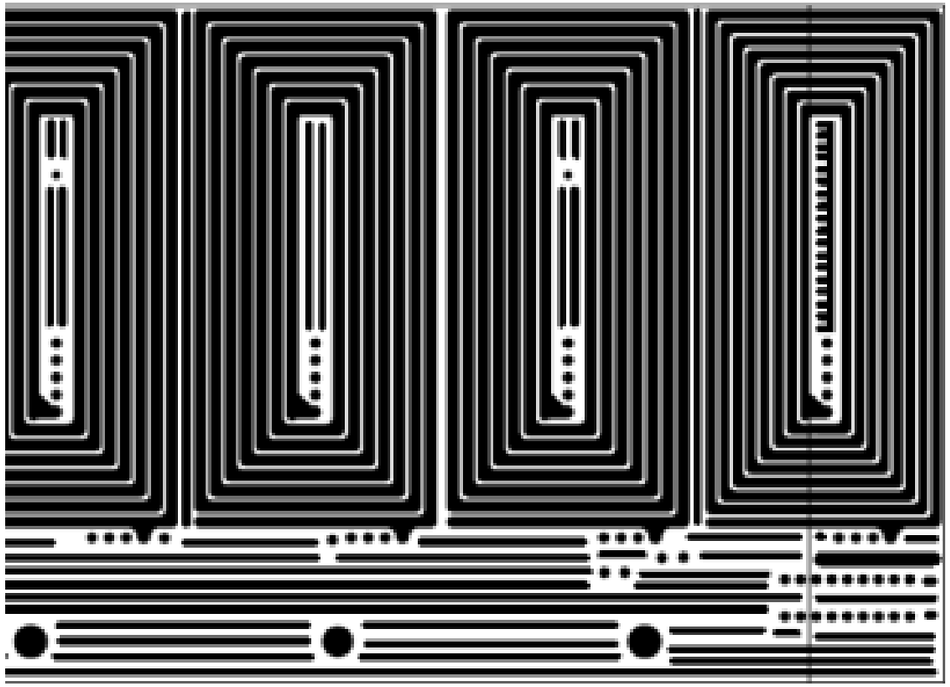




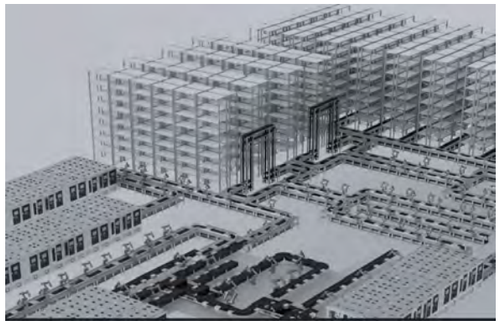
- Layer Count: 26L
- Material: TU-865
- Cu Thickness: 4 oz all layers
- PCB Thickness: 6.35 mm +/- 10%
- Finish: ENIG
- Requirements: Epoxy filled vias, HiPot, Coil resistance, Inductance testing, Blind/buried vias with multiple lam cycles
- Applications: Powertrain, Industrial drive motor, Stators

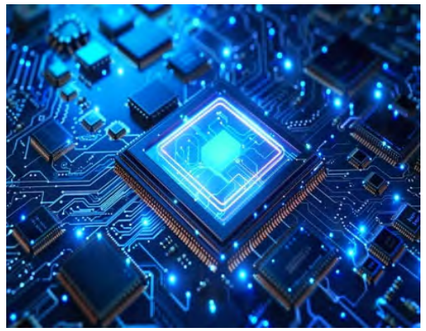


Heavy Copper



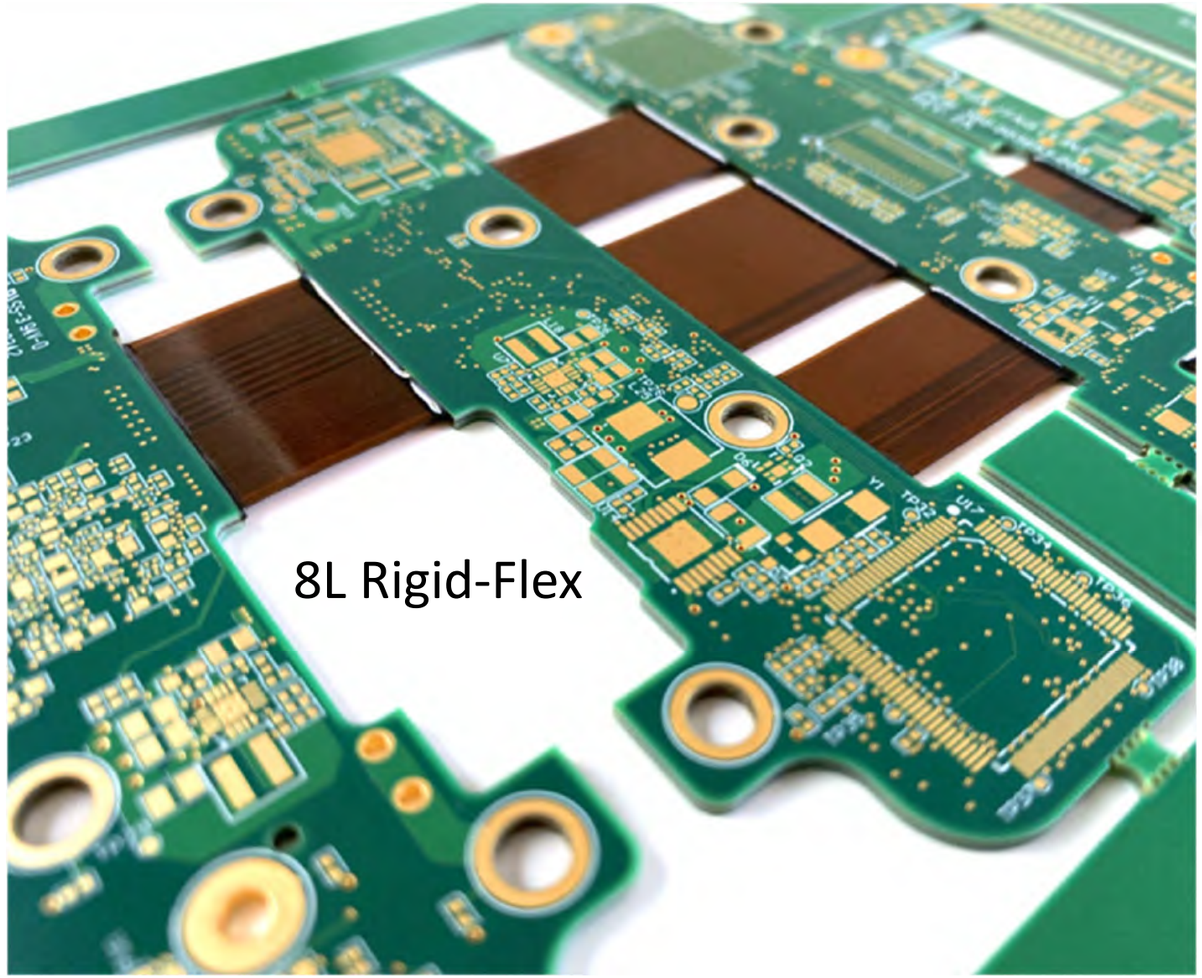
- Layer Count: 12L
- Material: TU-865
- PCB Thickness: 3.45 mm +/- 10%
- Cu Thickness: 5 oz (IL)
- Finish: ENIG
- Requirements: Epoxy filled vias, Inductance and Hi-Pot testing, Coil resistance, Depth routing
- Applications: Powertrain, Industrial drive motor, Maglev, Electric Vehicles, DC/DC Converters





Rigid-Flex & Flex

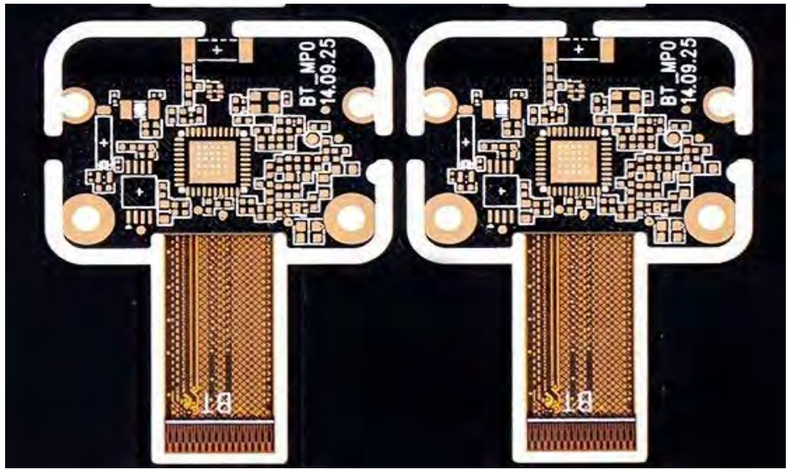
Flexible Solutions for Medical, Industrial & Automotive



8L Rigid-Flex

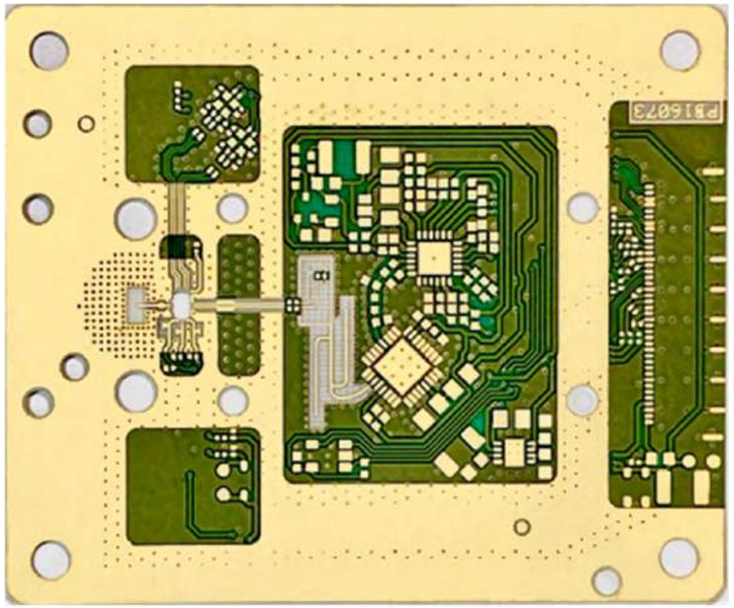
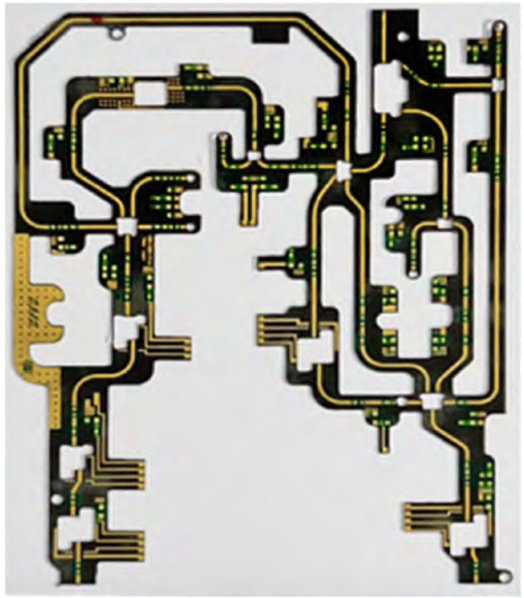
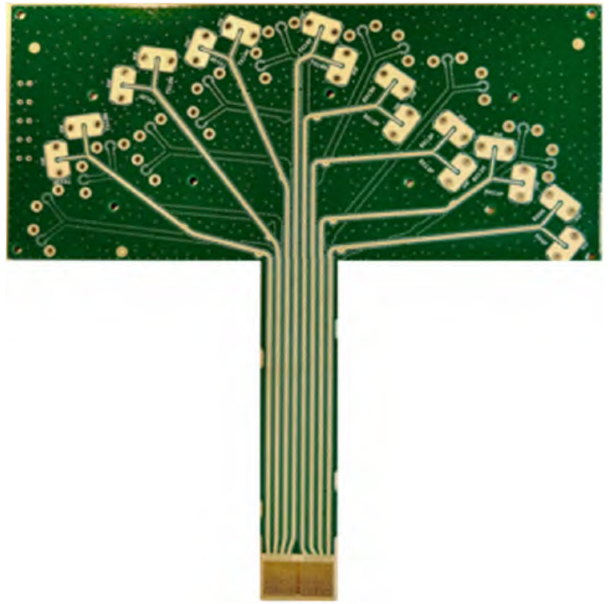
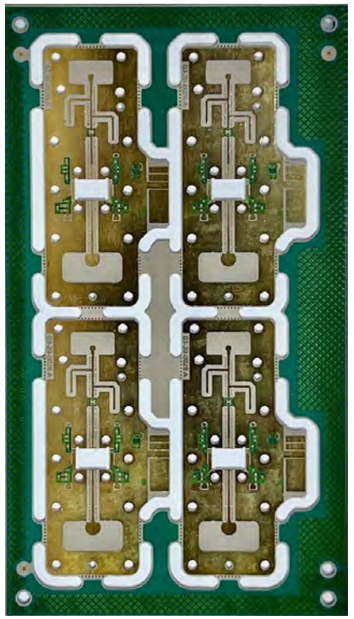
2L Flex with FR4 Stiffeners

4L Rigid-Flex

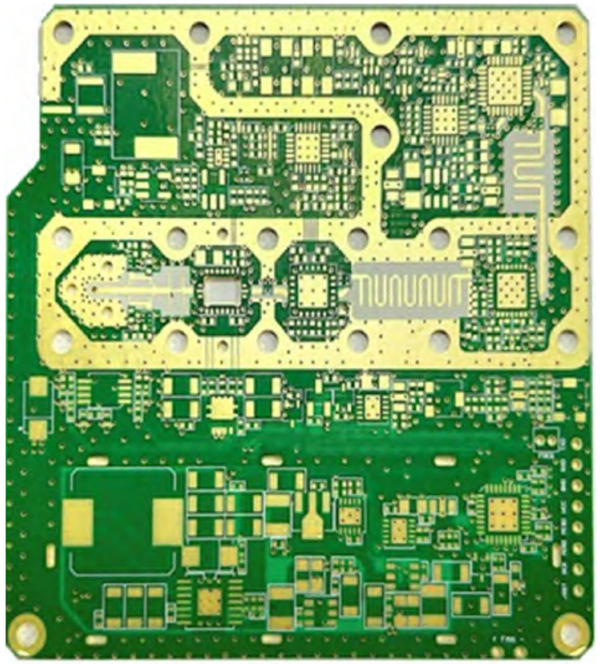


RF Microwave

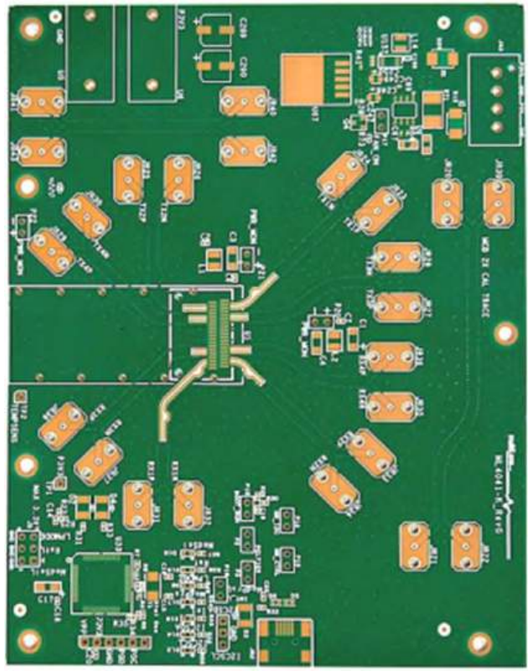
- Production in Malaysia and Jiujiang Facilities
- PTFE/Teflon, AGC Neltec, Taconic, Arlon, and Shengyi
- RO3000/4000, RT5880/6035, I-Speed, I-Tera MT, 2929 and 4450F
- ENIG, Wire Bondable and Flash Gold, Selective Finishes
- Wave Guide Pockets, Plated Edges, Controlled Depth Drill & Rout
- Applications: Antennas, Satellite & Wireless Communications, SI Testing, Automotive

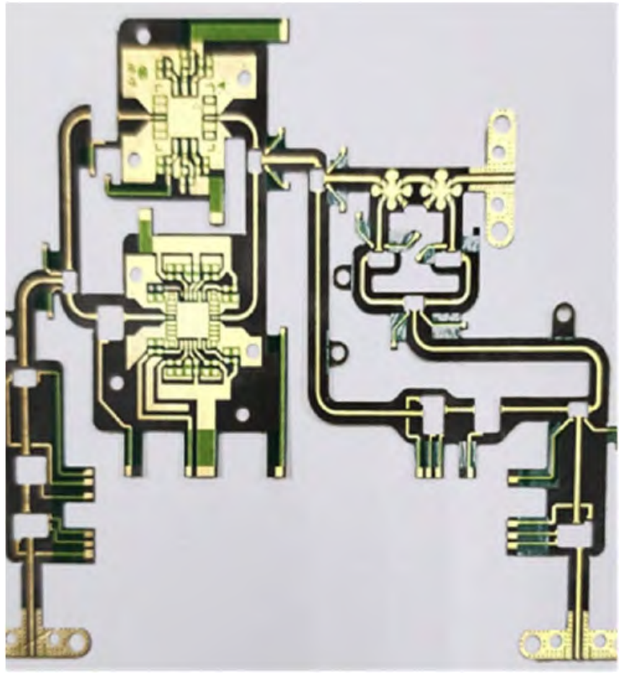
RF Microwave



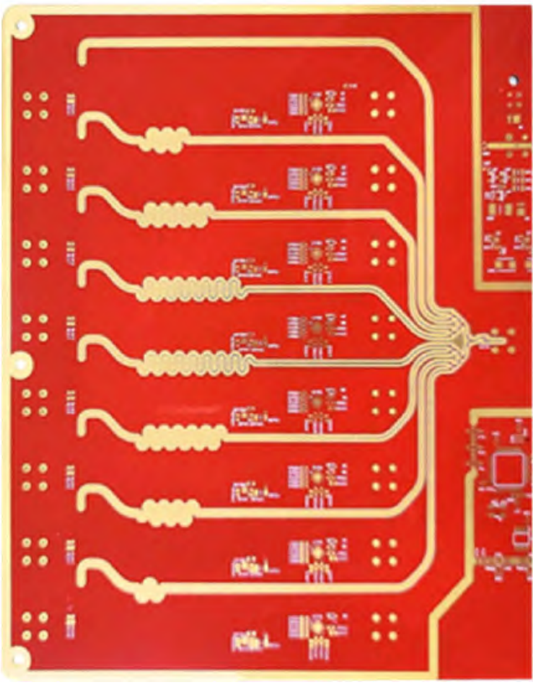
- Block-Up Converter (BUC)
- Layer Count: 4L
- RF35HTC + Fast-Rise PP
- ENIG
- Lo-Freq to Hi-Freq RF for transmission to satellite



- SI/RF Testing
- Layer Count: 6L
- Hybrid RO3003 + 185HR
- Impedance Control: ±5%
- OSP

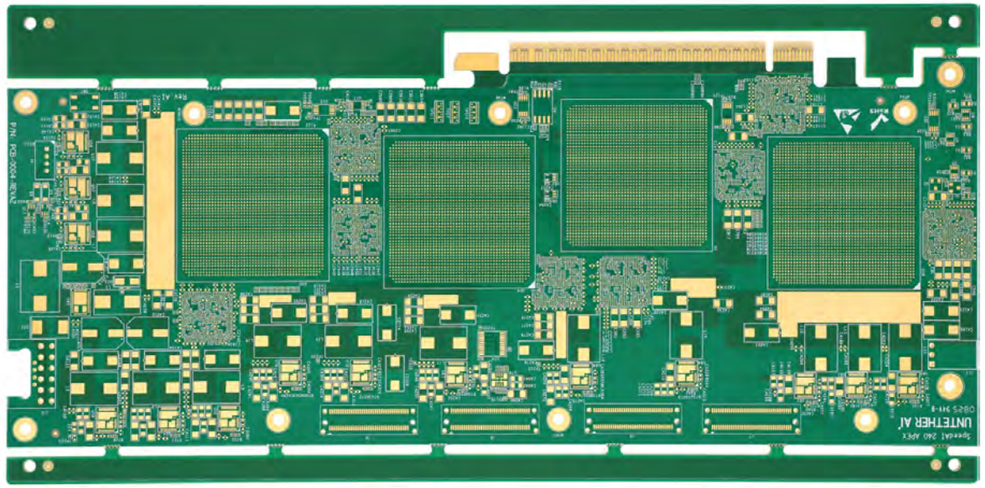


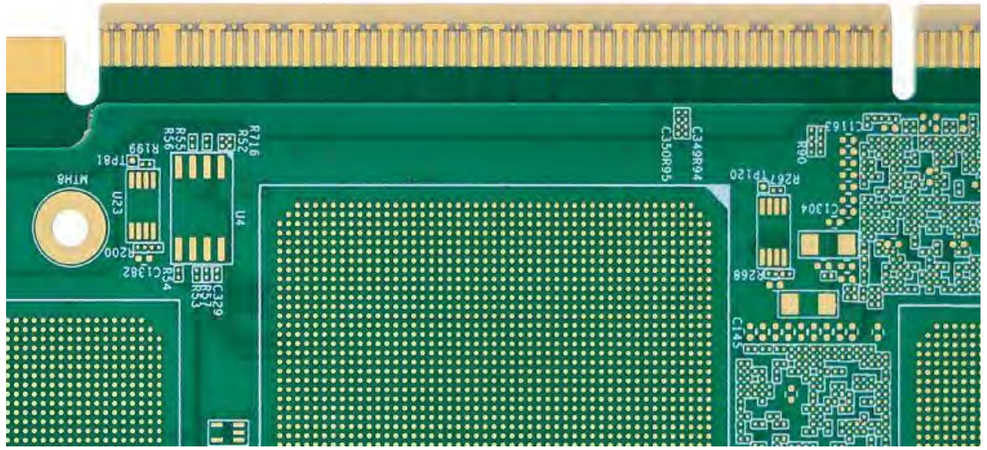
- Power Amplifier (wFEM)
- Layer Count: 2L
- RT/Duroid 5880 (.005”)
- Plated Over Filled Via
- ENIG + Selective Soft Gold

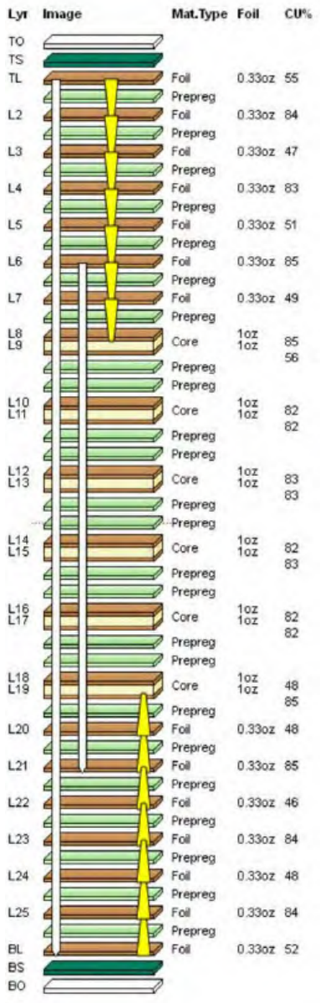


- Aerospace
- Layer Count: 8L
- Hybrid RO3003 + 185HR
- Plated Over Filled Via
- Impedance Control ±5%
- ENIG

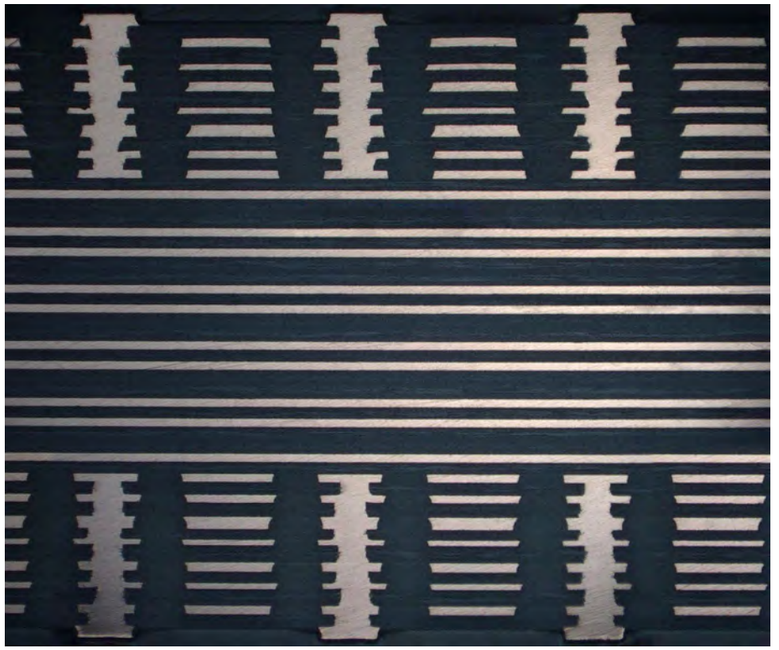
AI Accelerator





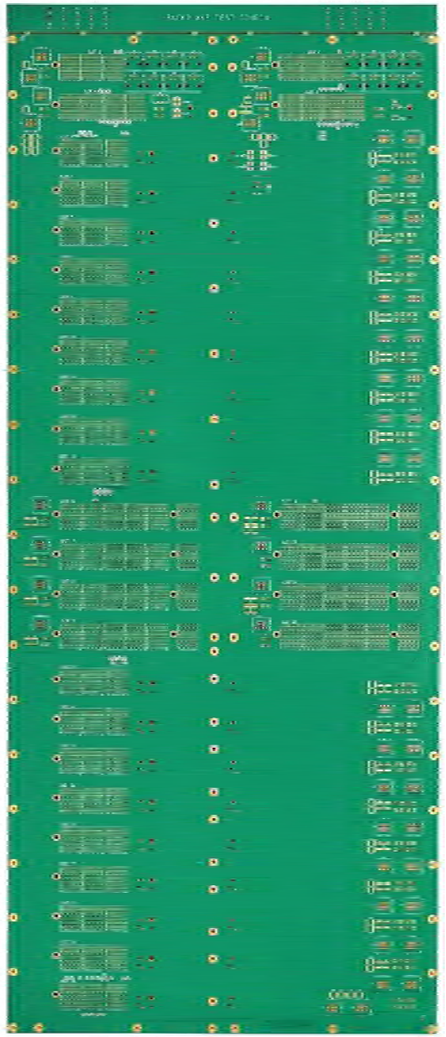


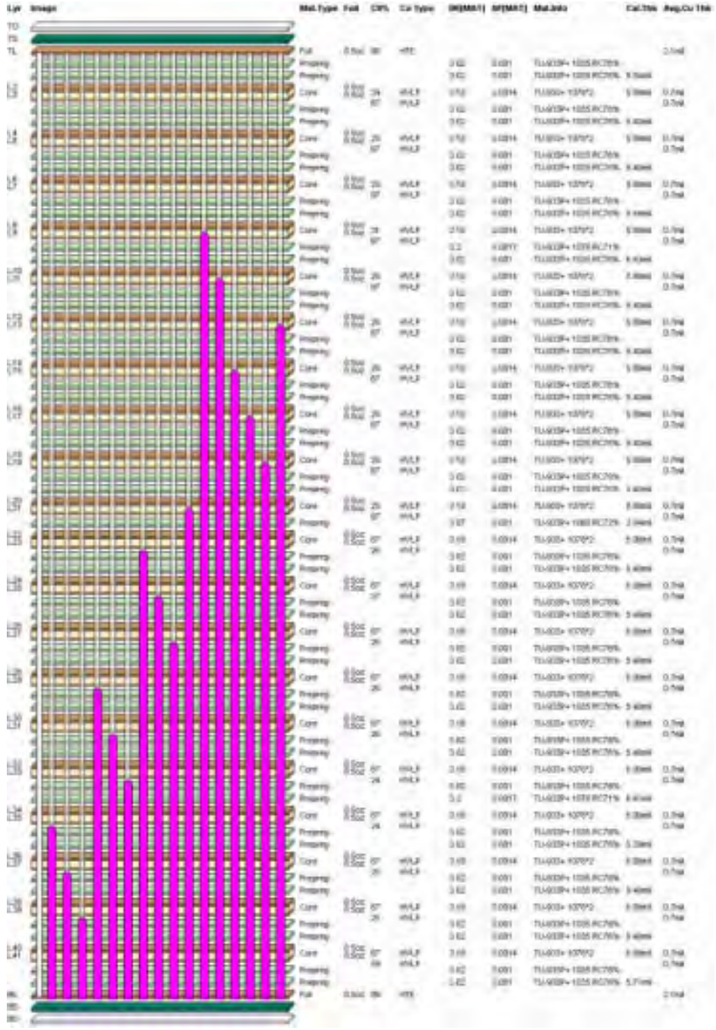
- 26 Layer Count
- EMC EM-890K
- 7 Steps HDI, Blind Buried Via L6-21
- 28 Sets Impedance with Tolerance ±10%
- Stepped Gold Finger (GF on L6 & L21)



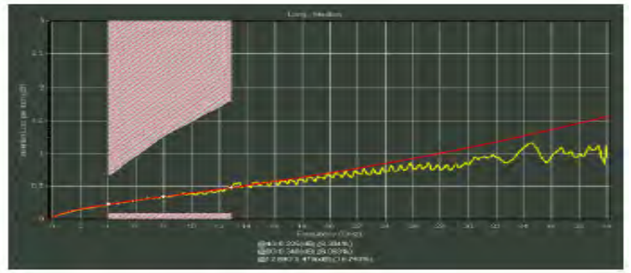
42L Back Plane

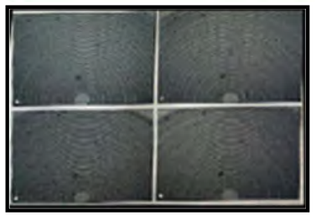
950mm 42Layers Back plane

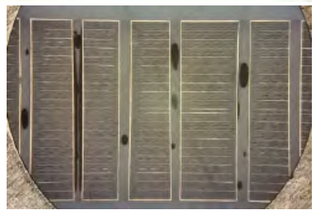




- Insertion loss 0.5dB@12.89GHz
- 42 Layers
- TU-943
- Thickness 6.5mm
- Trace W/S： 3/3mil
- ≤8mil Back drill stub
- 950mm*393mm Panel Size
- ENIG Surface Finish
- Low roughness oxide treatment







05 Green Manufacturing

Dedicated to Sustainability and Carbon Reduction

SGC is committed to environmental sustainability and actively pursue carbon reduction initiatives to minimize our ecological footprint.

Environment

Our mission is to be an industry leader in the sustainable manufacturing of PCB's

Certifications:

- ISO-14001 Environmental Mgmt System
- ISO-14067 Carbon Footprint
- ISO-45001 Occupational Health & Safety
- ISO-50001 Energy Management System
- QC-080000 Hazardous Substance Process Management

Extensive use of energy saving and resource reduction measures in our facilities

- Ground heat pumps and solar panels
- Water conservation and copper recycling
- High efficiency motors and equipment to reduce electricity

Green Manufacturing Technology Center (GMTC)

- Inkjet printing of solder mask
- Additive process - conductive paste printing

CO2e Emissions 2024

Total:
90,658
tCO2e
(Scope1 & 2)

Intensity:
418
tCO2e/million USD
(Scope1 & 2)

Target in 2025Y

- Photovoltaic power generation: **1040t**
- Green energy： Reduce **6,517.76t (SZ) and 8,741.76t (JJ) in 2025Y**
- Energy-saving renovation: Reduce **1480t (SZ) and 4,569.54t (JJ) in 2025Y**

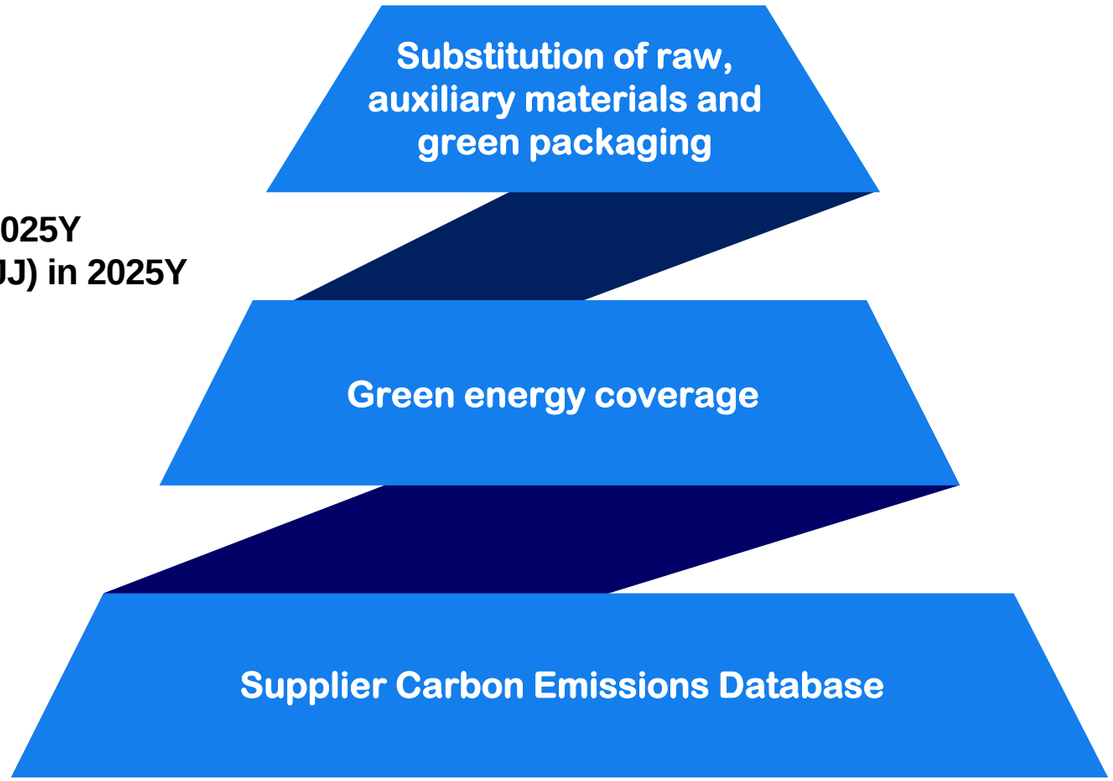
Mid-Term Goal

- Using 2029 as the basis year, carbon dioxide emissions are projected to decline by 50% from 2030 to 2039. (Scope1&2)
- The remaining 50% is projected to decline to **0** tCO2e from **2040-2049**. (Scope1&2)

Long-Term Goal

- Carbon dioxide peaking by **2029.** (Scope1&2)
- Carbon neutrality by **2050**. (Scope1&2)

IMPLEMENTATION PATHWAY



Thank You.

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