

Empower Your Tomorrow's
Technology Today.

KINGBROTHER
Circuit Your Wisdom

Innovative Integrated Design–Manufacture
Service Provider

2024



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Empower Your Tomorrow's
Technology Today.

Mission

Circuit your wisdom. Using technology and ingenuity to reconstruct the world of electronic circuits and make innovation simpler.

Vision

CRO for electronic product R & D
Service provider for hardware innovation, digital integration
Service provider for commercialization of scientific and technological achievements

Strategy

Empower your tomorrow's technology today

Business Philosophy

Design-Oriented, leading technology
Rapid service and ingenious manufacturing.

Catalogue

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Company Profile

KINGBROTHER SZ.301041

Founded in 1997, KingBrother specializes in electronic interconnection technology and focuses on electronic product R&D and hardware innovation, integrated electronics design and manufacturing, industrial internet platform and technological innovations business etc. KingBrother strives to build a world-class electronic design and hardware innovation service platform.

Products and Services

Electronic Design services



IDH



PCB design

Printed-Circuit Board



PCB
manufacture

Electronic Manufacturing Services



BOM
service



Assembly



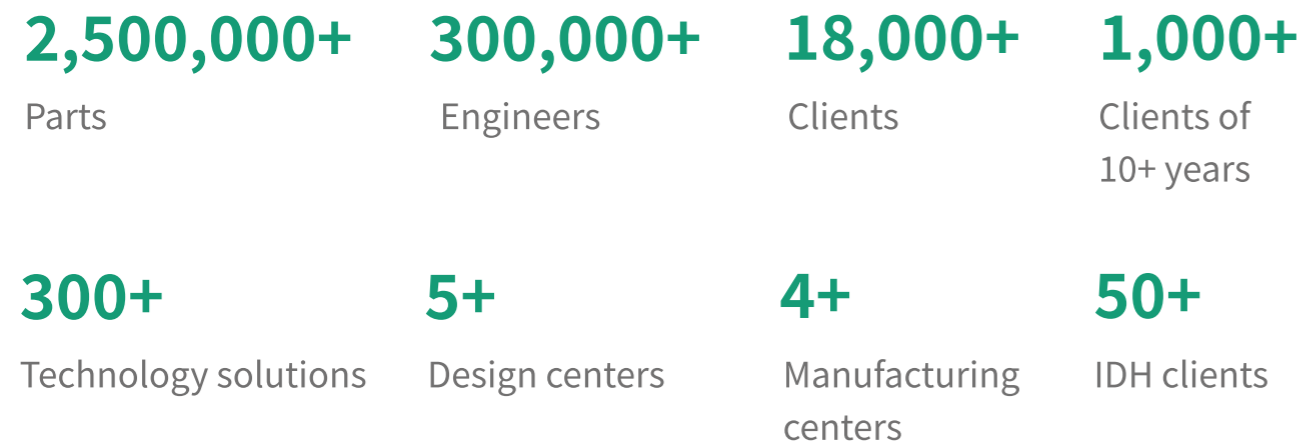
Electronic
engineering
and testing

Technology R&D Roadmap



Brand Advantages

27+ Years brand accumulation, research and technology, design and industry resources, empowering the integrated design and innovation service.



Integrated Design and Manufacture



Design-Oriented Collaborative Innovation

Build a world-class industrial design center

The era of artificial intelligence and internet of things puts forward higher requirements for hardware innovation. Adheres to the concept of "Design-Oriented", KingBrother takes IDH department as the core of product development chain, in order to support the group's technology research and innovation, collaborative manufacturing and R&D services. The design field covers the whole scene, the whole industrial chain and the whole life cycle. The design features include standardization, digitization, automation and intelligence, and it is committed to building a world-class industrial design center.

Design Services

IDH CAD BOM

Design Advantages

Intimate services

- Professional engineer one-on-one on-site follow-up
- Each project provides a "1+N" team model

Professional IDH team

- Gathering hundreds of outstanding designers from around the world.
- More than 5 years per capita design experience

Price advantage

- Free package design of PCB components
- Cost-effective simulation service

Take design quality as the top priority

- Leading the way in initiating lean culture and lean design among peers
- Clarify the policy of prioritizing design quality

Product diversification

- Annual experience in designing thousands of products, covering communication, multimedia, computer, industrial control, aerospace, medical, transportation, etc

Wide customer coverage

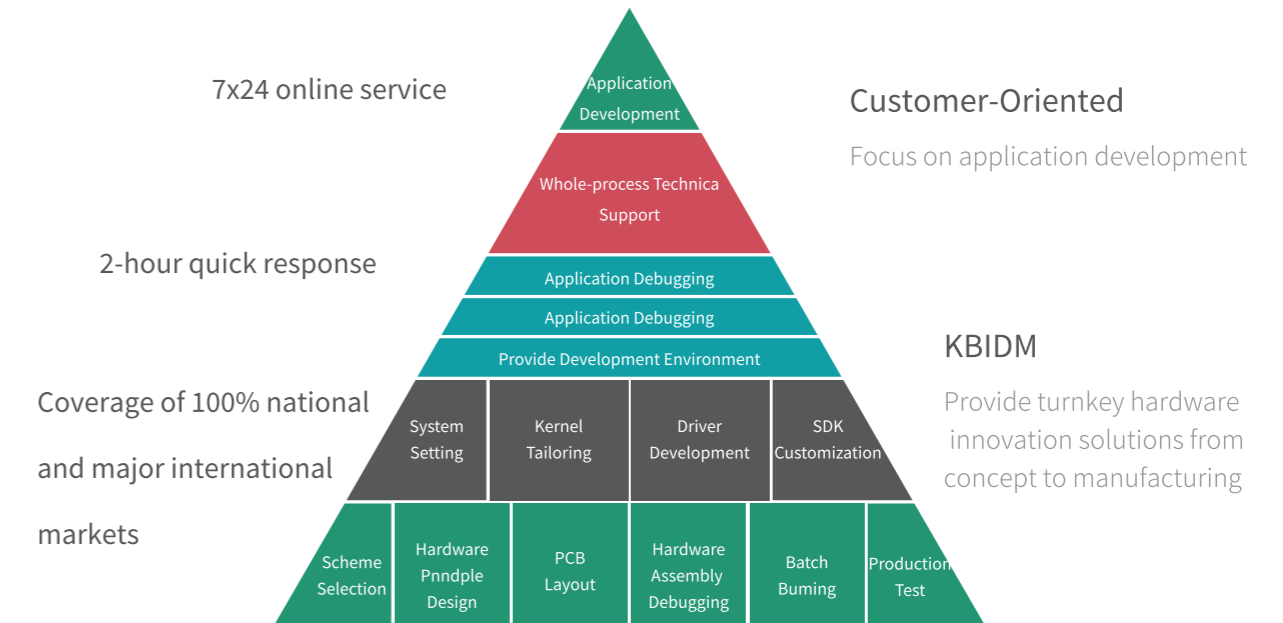
- Serving over thousands of enterprises, 50+ Fortune 500 companies, and many well-known domestic companies

IDH Solution

Focused on application and program development, IDH (Independent Design House) provides customers with complete design and R&D technical services, including electronic products, modules, baseboards, core boards, and whole board customization, to accelerate the launching of products.

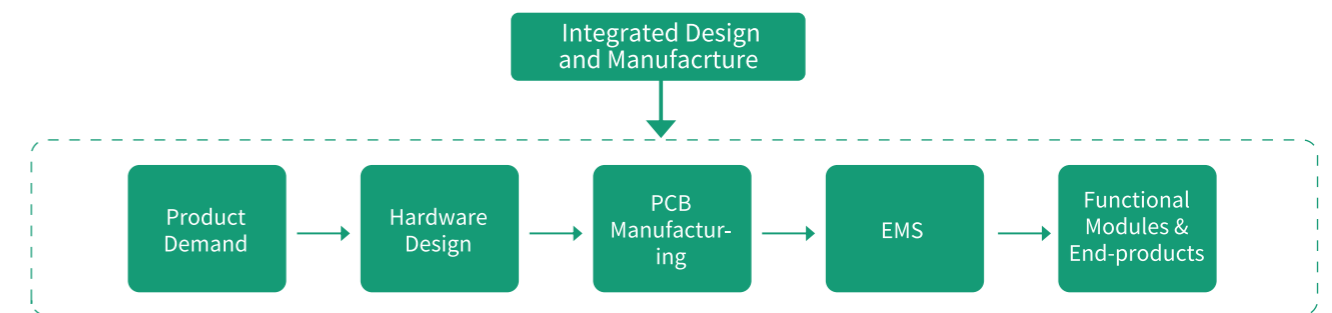


Service Advantages



IDM Advantages


By integrating the manufacturing and supply chain advantages of KingBrother, KBIDM creates an efficient, low-cost, and highly competitive chain system from design to manufacturing, from solutions to products. We help customers develop innovative products with the shortest delivery time and the best quality.



IDH Design


Scheme design of embedded complete machine

Focus on design, realize the customization of functional requirements, save development time for customers, reduce costs and improve efficiency.




Rich development resources

The software and hardware development resources of many industries and applications are rich, providing solutions in various forms and directions.



Reliable design capability












Extensive design experience, combined with practical application, helps customers shorten the design cycle and complete products that meet market demand.



Deep technical support





In-depth cooperation with the original IC factory provides technical support for the underlying hardware system and software system, making the whole product more reliable.

Master Control Platform

ARM platform	 	DSP platform	
	 	FPGA platform	
	 	GPU platform	  

IDH Design Quality Assurance

Provide systematic guarantees such as demand management, project management, change management, problem management, material management and document management; Establish a structured and asynchronous development process. Through the platform-based development process, the product development process will form a closed loop to promote product R&D management.

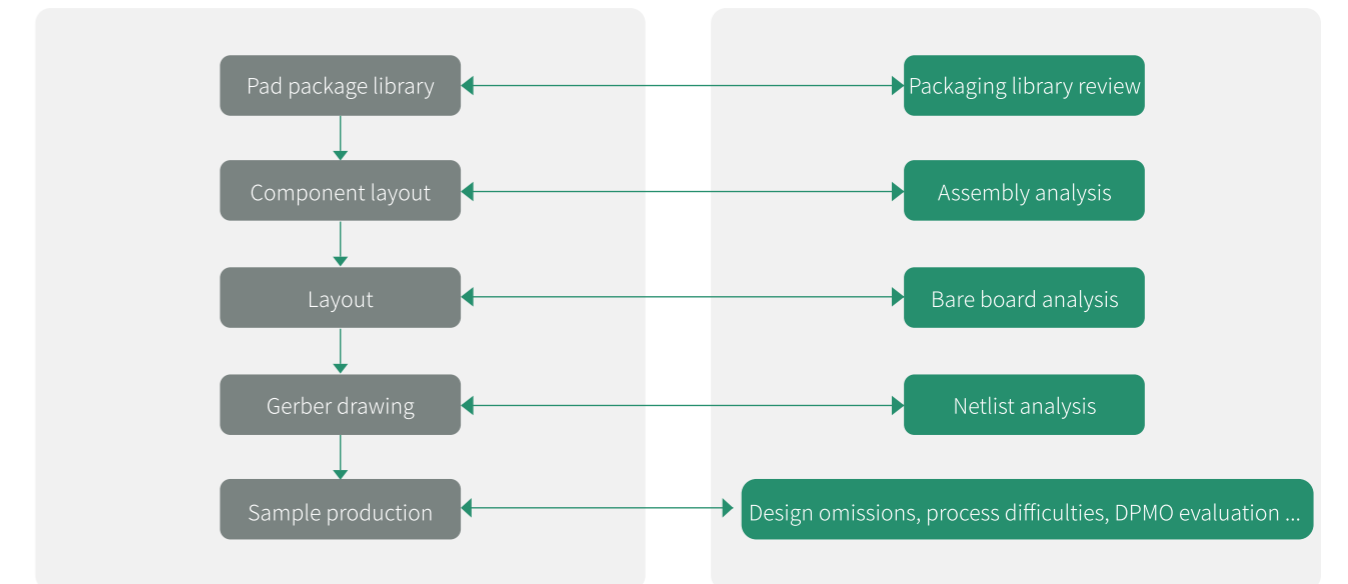
 <p>management of standardization</p>	 <p>Project planning control</p>	 <p>Platform database</p>	 <p>Problem management mechanism</p>
Standardized R&D process, standardized coding, naming and format of business workflow	Project schedule management, project cost planning, project baseline management and project status management.	Establish the integration of multiple workflow database design software. ERP system integration	Record, classify and follow up the problem, summarize and file the experience and share it.

Design for Reliability





System Design Review and Manufacturability Design Base On DFX

Intelligent DFX software+reliability experience library empowers design reliability



DFM review into design

<p>PCB and EMS production capability matching</p> <ul style="list-style-type: none"> · Minimum outer line width/spacing · Maximum layer count · Minimum small out-line package space · Minimum pitch of BGA · Maximum PCB dimension · 	<p>Digital model is the basis of electromechanical collaborative design.</p> <p>Electromechanical collaborative design can effectively accelerate the complete machine design.</p> <ul style="list-style-type: none"> · ProE/Solidworks/Catia/UG... 
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Design Capability

Item	Function	Capabilities
Processor	ARM	TI: AM3358, AM4376, AM5728 NXP: i.MX6, i.MX8, LS1043 Rockchip: RK3288, RK3399, RK3566, RK3568, RK3588 Allwinner: T3, T5, A20 Hisilicon: Hi3519, Hi3559
	GPU	Nvidia: Jetson AGX Xavier Horizon Robotics: J3, J5, X3 Intellifusion: EDGE10 series
	FPGA	XILINX: ZYNQ7020
	DSP	TI: TMS320C6678 TMS320C665x
Storage	DDR/SDRAM	SDRAM, DDR2, DDR3, LPDDR3, DDR4, LPDDR4
	eMMC/Nand	eMMC, Nand FLASH
	Others	SPI FLASH, QSPI FLASH, EEPROM, SRAM
	External storage	SSD, Hard disk, USB flash disk, TF card, SD card
Communication Interface	/	UART, I2C, SPI, CAN, LIN, Ethernet, USB2.0, USB3.0, Type C, SDIO, PCIE, SATA, SerDes, Telecommunication, Peripheral Bus
Display Interface	Display	HDMI, DVI, VGA, LVDS, MIPI DSI, DP, CVBS, EDP, SDI
	Touch Screen	Capacitive touch, Resistive touch
Camera Interface	/	MIPI CSI, DVP, Ethernet camera
Voice	/	I2C, TDM, PCM
Power	/	DC, AC
Product design	IDesign	Appearance style, material, color matching, electromechanical coordination
	Structural design	Materials, processes, mold opening optimization, reinforcement, protective design, electromechanical collaboration
Software	OS	Android, Linux, Wince, Ubuntu, Debian
	Others	BSP Development
Product Integration	Complete Machine	Complete machine design solutions, Customized solutions, BOM procurement, PCBA production test, Complete machine production assembly test

IDH Cases



Rugged Tablet

Basic Info: Based on RK3399 and android system, it has a Type-C dock, Wi-Fi and wired networking function, and a USB3.0 interface for transferring files. It has automatic search function, equipped with camera fingerprint sensor, microphone and speaker, capacitive touch screen. The structure design of the whole machine is dustproof, waterproof and anti-falling.

Features: HD video processing, extensible output

Application Field: Security, industrial control

Heart Rate Variability Analyzer

Basic Info: Based on RK3566, it adopts medical standard design, uses anti-interference, high-standard components, Linux system, and optimized multi-channel data algorithm. It has a stability guarantee of operation efficiency and power consumption. Besides, with WIFI and network interface, it allows professional doctors to conduct data statistics and analysis. ID structure design adopts advanced texture, in line with the professional and concise characteristics of medical devices. It is versatile with stable performance.

Features: Portable, multi-channel data processing

Application Field: Medical and health equipment



Edge Computing Industrial Controller

Basic info: Based on RK3588, through 5G network and various industrial control interfaces, deployed in a specific edge computing network system. mainly applicable to the field of intelligent manufacturing, low-delay control and monitoring of factory equipment and improving production efficiency and quality. In the application of IoT, realize real-time transmission and analysis of IoT device data, strengthen smart city and smart transportation applications.

Features: Multiple industrial interfaces, TSN time-sensitive network support, 5G

Application Field: industrial control

CAD Design

PCB Design

Adhere to R&D customer demand-oriented and design first, provide customers with high-speed PCB design and value-added services, as well as the optimal solutions for product performance, cost and manufacturing cycle.

Services



PCB design training and diagnosis

- Design of high-speed, high-density, mixed digital and analog PCB
- Design of embedded capacitance resistance, HDI and rigid-flexible
- Drawing schematic library, component package library
- Multiple software versions PCB design and PCB revision



EMC problem diagnosis, analysis and design

- By changing the components' selection, single board structure and other measures to provide solutions to EMC design
- By adjusting the layout and wiring of PCB files, make a scheme to ensure it passes the EMC grade
- Provide EMC solutions through product debugging and rectification



High density and high speed PCB design



SI signal integrity analysis

- Provide IBIS model, perform SI analysis on single board, and output simulation report data
- By changing the topology, chip driving ability, termination matching resistance scheme, etc., Solve the problems such as timing, reflection and crosstalk



Packaging library design and management consulting

- Based upon the DataSheet documents provided by customers, design PCB package and schematic package in accordance with standard specifications
- Manage and classify the component library

Simulation Design

Service

- DDR 3/4/5 Parallel Signal Simulation and Timing Simulation
- Simulation optimization of high-speed serial signal channels for 2.5-100G
- High speed backplane system channel simulation, design and test technology
- Power IR-Drop voltage drop, PDN impedance analysis
- Passive structure S parameter extraction and channel optimization simulation
- Signal integrity technology related training
- Multiple software versions PCB design and PCB revision

Customer pain point

- The signal rate can not meet the design requirements
- Excessive signal reflection causes signal overshoot, ringing, edge delay, etc
- Excessive signal crosstalk causes data error and packet loss
- Power/GND noise, sudden signal changes produce peak current, causes voltage fluctuation between power supply and GND
- The voltage drop is too large, the load is undervoltage, which cause boards cannot be started normally
- Insufficient copper foil, resulting in excessive local heat

EDA Industrial Design Software Independently Developed by KingBrother Make Layout Easier!

KBEDA skill is a secondary development tool based on cadence software platform, which is suitable for several version of cadence, Allegro. It has more than 400 different application functions, many of which got software copyright and patent license.

This skill Improve the design quality and help customers shorten the cycle.

Advantages

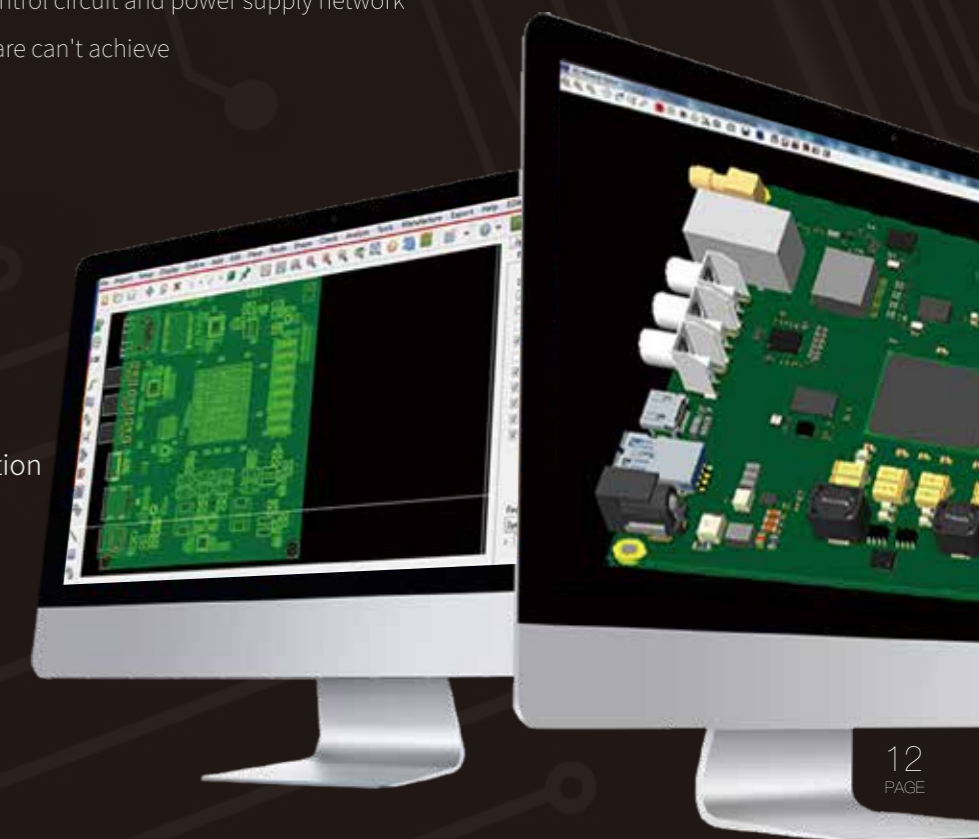
- King Brother's 20 Years' data accumulation and experience contribution
- After 10 years of iteration, hundreds of design teams and VIP users have actually verified it
- Nearly 140 manufacturability design inspection tools
- Improve PCB design operation specifications, design efficiency, and guarantee product quality

Main Features

- User graphical interface of features
- Professional PCB packaging design function
- Design and plan specialized system functions and command sets
- Comprehensive inspection of production manufacturability
- Data analysis and rapid automatic processing for modular and repetitive work
- Customize the file format required by users
- Routine inspection of system circuit, control circuit and power supply network
- Realize the functions that allegro software can't achieve

Major Categories

- 🔧 | Tool
- ↔️ | Import
- ↻️ | Conversion
- ➡️ | Export
- 🔍 | Check
- ⚙️ | Settings
- 🤖 | Automation
- 📧 | Encapsulation



Design Capabilities

Items	Capabilities
Max Design Layers	46L
Max PIN Number	50000 PIN
Max Connections Number	33926 Connections
Minimum Trace Width	2mil
Minimum Trace Space	2mil
Minimum Via Diameter	4mil
Maximum BGA Number	47
Minimum BGA PIN Spacing	0.35mm
Maximum BGA PIN Number	4096pin
Max Signal Rate	56G
Products Designed	Industrial Control Industrial camera, Motor driver board, Blockchain mining machine Computing board, Control board, Server mainboard, High & low voltage power supply board
	Communication Radar Equipped PCB Automotive Electronics PCB, RF PCB
	consumer Base Station mainboard, Smart home, Router, Computing Class boards, Small HDI PCB for consumer electronics, Video processing PCB, Medical ultrasound Mainboard, Tablet mainboard
Chips Designed	Loongson, Phytium, XILINX (FPGA), NXP, HISILICON, Rockchips, AMD, INTEL, Allwinner, MTK

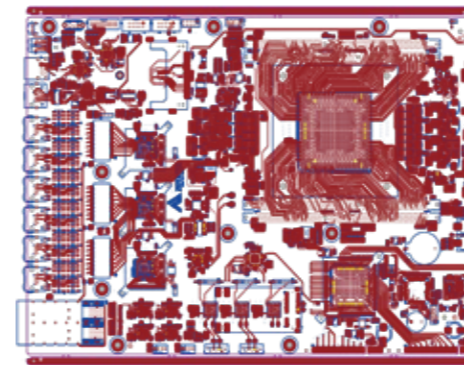
Quick Delivery

Design Quantity	Quickest Delivery Date
0-1000PIN	3days
1000-3000PIN	5days
3000-5000PIN	7days
5000-8000PIN	10days
8000-10000PIN	13days
10000-20000PIN	17days

Service Commitments

Efficient Response, Support		Professional Guidance, Intimate Service	
Complete data review and quotation	1hour	"One-to-one" service for senior engineers	
Quick response	2hours	Daily progress notification review and status technical support	
Technical support	7*24hours	Each design step has a comprehensive QA by professionals	
Order service	7*24hours	Design quality to ensure compliance with common board requirements	

CAD Design Cases



Network Security Platform

Technical difficulties

Chips include PEX8748, SW1621, LCMX02-2000HC, DDR3, optical port, electrical port, SATA, USB3.0, PCIe3.2 and 2.0, etc. The difficulty of this project lies in the high calorific value; The power consumption of CPU and DDR is large, the CPU power supply 130A, and the power supply layer is few; There are many high-speed signals.

Solution

The air duct runs from left to right. In order to ensure good ventilation and heat dissipation effect, DIMM bars are placed horizontally during layout, and radiators are added to each high-power chip. In order to meet the requirements of CPU power flow, two 20Z power layers are planned. For high-speed lines, consider reducing stubs, and the surface line will directly enter the PCIe slot, reducing stubs and layer-changing vias.

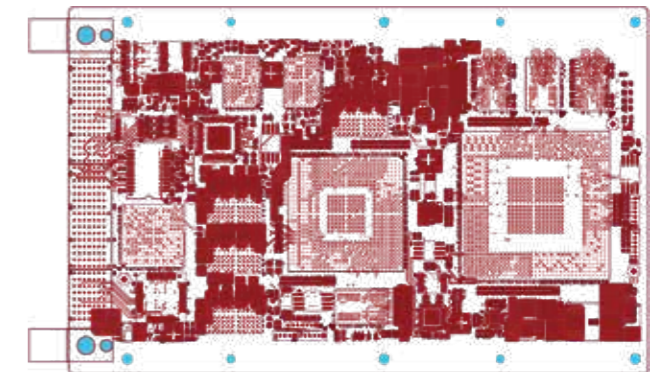
Loongson 3AVPX board

Technical difficulties

Chips include LS3A3000, DDR3, LS7A1000, etc. The difficulty of this project lies in realizing the layout of more chips and power supplies such as 3A+7A+DDR3 on a smaller 3U board, and the number of power supplies is numerous, which makes the design difficult.

Solution

While referring to similar board layout ideas and previous design experience, through active communication with customers, the schematic design and power supply scheme are optimized; Through reasonable layout and reasonable stacking, the signal quality is guaranteed, and the requirements of manufacturability and cost control are taken into account. Finally, the design was successfully completed and delivered to the customer.



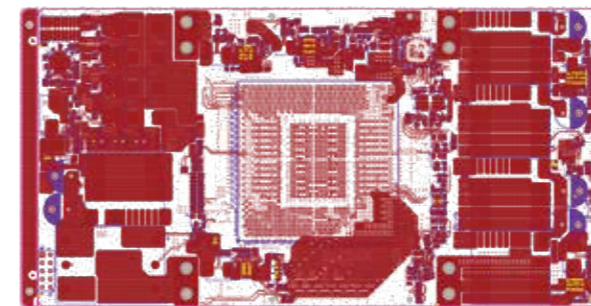
Liquid-Cooled High Performance Computing Card

Technical difficulties

HYGON CPU and ZiFang processor, D50SV0R8200D high-power power supply, etc. The difficulty of this project lies in 25GPCIe and large calorific value; The power consumption of CPU is large, the CPU power supply is 960A, and the layout is compact, and the 48V power supply needs to be isolated.

Solution

With the cooperation of SI experts and structural experts, we have communicated with customers for many times, and adopted the one step blind hole to solve the STUB problem of high-speed line, mechanical blind hole and secondary pressing to solve the layout, isolation and high-power heat dissipation problems, and successfully completed the project according to customer requirements and won favorable comments.



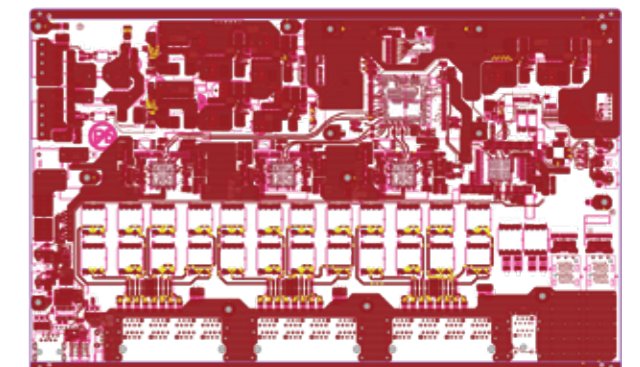
Industrial POE Switching Motherboard

Technical difficulties

Realtek's switch chips RTL9312, RTL8231, DDR3, USB3.0, VGA, optical port, electrical port, POE, etc. The difficulty of this project lies in high-speed circuit design, structural limitation in the board, POE, etc. At the same time, it must meet the customer's electro magnetic compatibility requirements and cooling structure

Solution

Optimize the structure, layout, schematic design and power supply scheme according to the customer's ideas and repeated communication, according to the structural requirements and cost considerations, so as to meet the customer's design requirements; While ensuring the signal quality, it also takes into account the requirements of manufacturability and cost control. Finally, the design was successfully completed and delivered to customer.



Flexible Manufacturing Ingenuity in Service

PCB prototype expert

Meet the needs of prototype and quick turn for product development and hardware innovation.

KingBrother cooperate with more than 10000+ customers worldwide, covered Asia Pacific, Europe, North America, Australia and Africa. Products are widely applied in Telecommunication, Industrial control, Medical, Automotive, Military and etc.

Design Optimization

PCB prototype and quick turn

Research and development stage
Multi-variety, small batch and fast delivery

Flexible production
Small production unit, no MOQ, quick-turn

Take service as the core
Provide engineering technical support for customer research and development

The annual customer service volume is ≥ 3000
Covering industrial control, medical equipment, electric power and energy, almost all industrial industries, research institutes and start-ups have PCB design and manufacturing capabilities of various electronic products



PCB volume

Mass production
Variety, large batch and batch delivery

Standardized production
Large production unit and fixed production schedule

Manufacturing as the core
Does not involve engineering and technical services

The annual customer service volume is < 100
Focus on bulk consumer goods such as computers and consumer electronics

Service hardware engineer, customized production and technical service

PCB Prototype, Small and Medium Batch has Unique Advantages



Inherit the data and experience of sample production, and reduce the import cost and trial and error cost.



Transition from research and development to mass production, one-stop service, reducing communication costs and business costs.



Quick response
Quick communication
Quick delivery

PCB Manufacturing

PCB Division Business

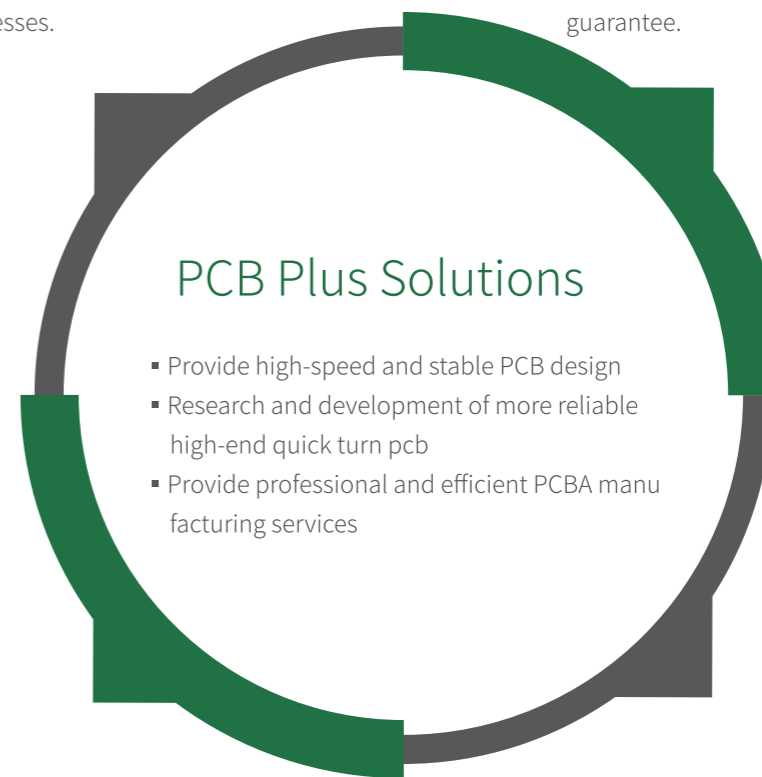
Based on 20+ years of prototype and Quick-turn service experience, KingBrother has built a flexible production system and service platform suitable for small batch and multi-batch, which can meet the needs of customers for high, medium, low-end and special products, help customers improve R&D efficiency and seize the market quickly.

High Reliability

Understand the needs of customers at the first time, and ensure the reliability of products in the application process with advanced hardware facilities, strict quality control and standardized production and testing processes.

Quick Turn

A flexible production system adapted to small batch and multi-batch has been built, with professional service and high efficiency of research and development, so that to provide customers with fast delivery guarantee.



Design Oriented

Adhere to the systematic design-oriented, to provide customers with high Fast PCB design and value-added services, as well as product. Optimal solution of energy, cost and manufacturing cycle

Leading Technology

Focus on PCB R&D, manufacturing and technological innovation, have rich experience in industry standards and process quality, and provide customers with diversified PCB design and manufacturing solutions.

PCB Manufacturing

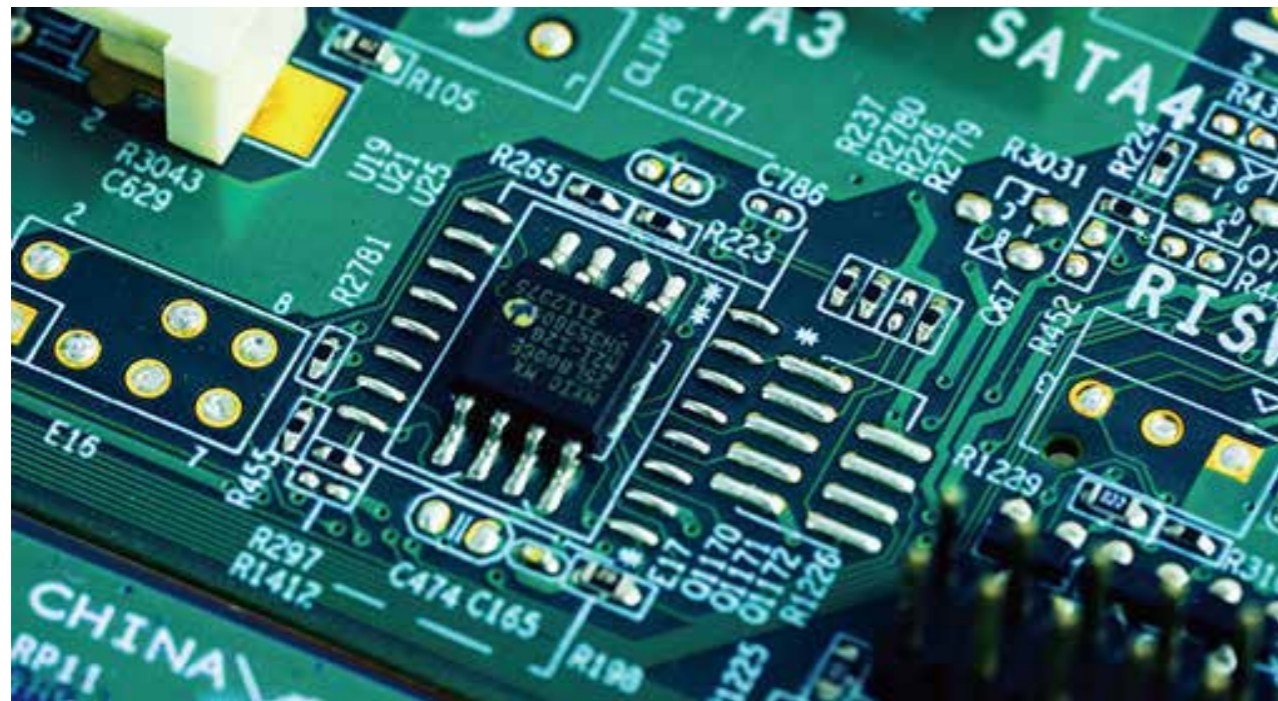
Specialized in high-mix, low to medium volume, quick-turn PCB manufacturing service.

Advantages

- ✓ High-reliability
- ✓ Quick Turn
- ✓ Design Oriented
- ✓ Leading Technology
- ✓ No MOQ

Service Promise

- 2 Hours quotation response
- 2 Hours customer service quick response
- 7×24 Hours technical support
- 7×24 Hours order service
- 7×24 Hours production operation



Quality Certificates & Standard System

KingBrother certified with ISO9001, ISO14001, ISO45001, IATF16949, ISO13485, CQC, UL, AEO, intellectual property, and obtained the ISO/IEC17025 laboratory accreditation certificate to ensure the high reliability of customers' products.



ISO9001



IATF1694



ISO13485



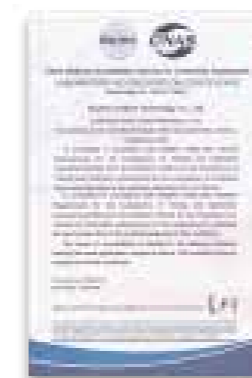
ISO45001



ISO14001



ISO50001



UTEST Laboratory



CQC



UL



ROHS



Intellectual Property



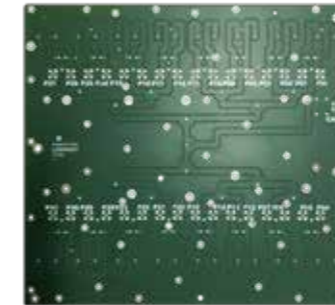
Green Factory

Technology Capabilities

Items		Technology Capability	
		Prototype	Volume
Product category		Buried resistance buried capacitance board, buried magnet board, buried component board, buried copper block board, buried ceramic PCB, ceramic board, high-resistance carbon oil board, backlight mini-led board, semi-flexible board, Substrate board, IC substrate board	Single and double side boards, multilayer boards, high-frequency step boards, HDI boards, rigid-flex boards, heavy copper boards, high-frequency hybrid boards, mechanical blind buried boards, metal substrates board, metal core boards, high-speed backboards, high-speed optical modules, millimeter-wave radar PCB, and 5G coupler PCB.
Transmission speed		Max:112Gbps	Max:25Gbps
Layer	FR4	68	30
	Rigid-Flex	Total layer/Flex layer: 30/26	Total layer/Flex layer:20/12
	High frequency mixed pressure	28	20
	Pure PTFE	24	16
	HDI	28/any step	20/4 step
	iC substrate	4	2
Board size	Rigid board	Max:550mm*900mm	Max:550mm*620mm
	2L Flex board	Max:2000*200mm	Max:1250*200mm
Max. board thickness		12mm	6.5mm
Trace width/space	PCB	Min:2.0/2.0 mil	Min:3.0/3.0 mil
	iC substrate	Min:30/30 um	Min:40/40 um
Max. copper thickness		18 OZ	6 OZ
Hole diameter	Mechanical hole	Min:0.10mm	Min:0.15mm
	Laser hole	Min:0.10mm	Min:0.10mm
	Half plated hole	Min:0.30mm	Min:0.40mm
Hole wall spacing of vias	Same network	Min:0.13mm	Min:0.2mm
	Different networks	Min:0.25mm	Min:0.30mm
Via to inner copper or wire	≤10L	Min:0.125mm	Min:0.15mm
	>10L	Min:0.15mm	Min:0.18mm
Aspect ratio		20:1	16:1
Soldermask bridge	Green color	Min:3.0 mil	Min:4.0 mil
	Other color	Min:4.5 mil	Min:5.0 mil
Resin plug hole diameter		0.08-0.8 mm	0.1-0.6 mm
Tolerance of impedance		±5%	±10%
Gold thickness	Immersion gold	MAX:5-8u"	MAX:3-8u"
	Plating Soft gold	MAX:80-120u"	MAX:1-3u"
	Plating Hard gold	MAX:80 u"	MAX:30 u"
Finsihing surface		HASL/HASL Lead free, OSP, Immersion silver, Immersion gold, Immersion Tin, ENEPIG, Plating gold, Plating Ni, Hard gold connector, Plating thick soft gold (bonding).	
Special technology		Heavy copper blind & buried vias, Metal core, Rigid-flex, Embedded copper, high-frequency hybrid, long and short gold connector, back drill, depth control drill, via in pad, half hole, countersink, step slot. Stack via, laser cut, epoxy fill, mix surface finish, embedded component, carbon ink.	

The Circuits Solutions to Communication

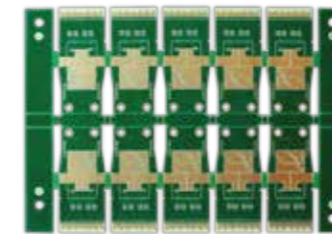
High-speed board with high precision and high alignment can meet the requirements of communication directivity, standing wave ratio, coupling degree and insertion loss, and is widely used in 5G base stations, micro base stations, antennas, millimeter-wave radars and other products.



Products and application: Calibration network (5G antenna) /5G communication base station (2.6G frequency band)

Material: Rogers4730G3

Product features: Trace width tolerance ±0.5mil



Products and applications: 100G optical module /5G communication

Material: Panasonic M6

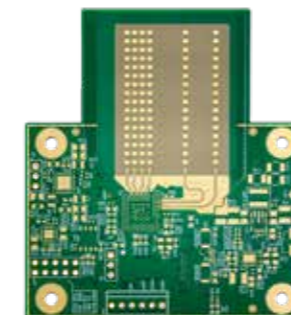
Product features: Impedance tolerance 8%



Products and applications: 24G IoT Radar/Communication

Material: S7136H

Product features: Impedance tolerance 5%, trace width tolerance ±0.5mil



Products and applications: 77G Millimeter Wave Radar/Communication

Material: TU943SN

Product features: Impedance tolerance 5%, trace width tolerance ±0.5mil

The 3D Assembly Solutions

The development of rigid-flex technology has changed the traditional plane design concept and expanded it to 3D space, which has brought more choices to product design. By using the flexible and foldable characteristics of the rigid-flex board, the available indoor space can be maximized and the volume of the whole system can be reduced.



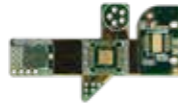
Product: multilayer Rigid-flex
Applications: telecommunication
Layer count: 26L (8 layers in flex) Thickness: 4.0mm
Thickness: 4.0mm
Minimum line width/line spacing: 4.0mil/4.0mil



Product: Large size rigid-flex
Applications: telecommunication
Layer count: 16L (flex 12 layers)
Thickness: 2.3mm
Minimum line width/line spacing: 6.0mil/5.0mil



Products: Heavy copper Rigid-flex
Applications: power module
Layer count: 18L (flex 14 layers)
Copper thickness of flex board: 20Z
Minimum line width/line spacing: 4.5mil/4.5mil



Products: HDI+rigid-flex
Applications: mdical
Layer count: 6L
Copper thickness of flex board: 1.0mm
Minimum line width/line spacing: 3.0mil/3.0mil

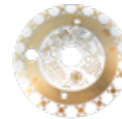
High Thermal Conductivity and High Heat Dissipation Solution

The solutions to high thermal conductivity and high heat dissipation

High thermal conductivity and high heat dissipation circuit board can meet the heat dissipation requirements of high-power electronic products, usually including copper substrate, aluminum substrate and embedded metal block PCB, which can be used in RF, lighting, electric power, power supply and other products, and its application fields include communication, energy, industrial control and so on.



Products and applications: single-sided aluminum substrate/communication
Material: PTFE (or high thermal conductivity material)+aluminum base
Number of floors: 1L
Thickness: 1.8mm
Minimum line width/line spacing: 10.0mil/10.0mil



Products and applications: aluminum-based sandwich PCB /LED
Material: aluminum base+high thermal conductivity material
Layer number: 4L
Thickness: 3.0mm (2.0mm based on aluminum)
Minimum line width/line spacing: 8.0mil/6.0mil



Products and applications: Buried Copper Block Printed Board/Communication
Material: copper block+high Tg FR-4 material
Layer number: 4L
Thickness: 1.2mm
Minimum line width/line spacing: 7.0mil/4.6mil



Products and applications: thick copper-aluminum-based laminated plates/new energy vehicles
Material: aluminum-based (1.5mm)+ high TG material
Layer number: 2L
Surface copper: 60Z (inner and outer layers)
Minimum line width/line spacing: 20.0mil/20.0mil

The Integrated Solutions to HDI PCB

HDI's product technology development based on high-density interconnection demand meets the special requirements of product special material processing, arbitrary layer interconnection and special process compounding.

Class carrier board is mainly used as the carrier of IC chip and provides signal interconnection between chip and PCB. Heat dissipation channel and chip protection are key components in packaging.



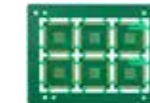
Products and applications: 5 step HDI board/communication material: TU872SLK.
Layer count: 12L
Thickness: 1.2mm
Minimum line width/line spacing: 2.0mil/2.5mil



Products and applications: 3 step HDI board/communication material: TU872SLK
Layer count: 12L
Thickness: 1.6mm
Minimum line width/line spacing: 2.0mil/2.0mil



Products and applications: heavy copper HDI board/power module
Material: S1000-2
Number of floors: 12L
Copper thickness: 30Z (inner and outer layers)
Minimum line width/line spacing: 4.5mil/4.5mil



Products and applications: 4L micro via conductive BGA substrate/digital chip
Material: BT
Layer count: 4L
Thickness: 0.28mm
Minimum line width/line spacing: 40um/40um

The Solutions to High Frequency Signal Transmission

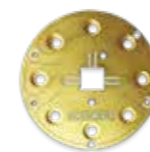
Multi-layer high-frequency board (including stepped slot structure) can save the space occupied by devices and meet the special installation requirements of RF, power splitter and other products, and is usually used in radar antennas, communication fields and so on.



Products and applications: high-frequency mixed-pressure stepped board/communication
Material: RO4350B+S1000-2
Layer count: 8L
Thickness: 1.5mm
Special technology: Three-step groove



Products and applications: PTFE high-frequency stepped board/communication
Material: TLX-8+TLY-5
Layer number: 4L
Thickness: 3.7mm
Special technology: PTFE step groove




Products and applications: High-frequency step board/communication material: RO4350B
Layer count: 4L
Thickness: 2.6mm
Special technology: Blind buried hole+cavity slot



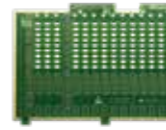
Products and applications: High-frequency step board/communication material: ARLON 880
Layer count: 12L
Thickness: 2.0mm
Special technology: Cavity slot

The Solutions to High Speed Signal Transmission


High-speed multi-layer circuit boards are made of high-speed plates, which can meet the requirements of high-speed signal transmission of products. They are widely used in base stations, servers, main control boards, optical modules, etc, and their application fields include communication and computers.




Products and applications: high-speed backplane/communication material: TU872SLK
Layer count: 24L
Thickness: 5.0mm
Minimum line width/line spacing: 3.0mil/3.0mil



Products and applications: high-speed backplane/communication material: TU872SLK
Layer count: 18L
Thickness: 5.0mm
Minimum line width/line spacing: 3.0mil/3.0mil



Products and applications: high-speed backplane/communication
Material: M6
Layer count: 26L
Thickness: 5.5mm
Minimum line width/line spacing: 4.5mil/4.5mil




Products and applications: high-speed backplane/communication material: TU872SLK
Layer count: 48L
Thickness: 5.0mm
Minimum line width/line spacing: 3.5mil/3.5mil

The Solutions to the Miniaturization of Electronics

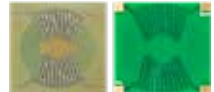
Embedded products can meet the requirements of product miniaturization, reduce the space occupied by devices, and can be used in RF products, power products, portable equipment, etc., and the application fields are communication and consumer electronics.



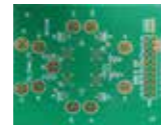
Products and applications: Buried device PCB/ communication
Material: component +S1000-2
Layer count: 6L
Thickness: 2.1mm
Minimum line width/line spacing: 4.0mil/5.0mil



Products and applications: buried capacitor PCB/ consumer electronics
Material: 3M capacitor material +S1000-2
Layer count: 12L
Thickness: 1.6mm
Minimum line width/line spacing: 4.0mil/5.0mil



Products and applications: buried magnetic core PCB/ power device
Material: magnetic core (inductor) +S1000-2
Layer count: 4L
Thickness: 2.0mm
Minimum line width/line spacing: 4.0mil/3.0mil



Products and applications: buried resistor PCB/ communication
Material: high speed+buried copper foil (square resistance 50Ω)
Layer count: 20L
Thickness: 3.0mm
Minimum line width/line spacing: 4.0mil/4.0mil

IEMS

Provide a vertically integrated one-stop solution

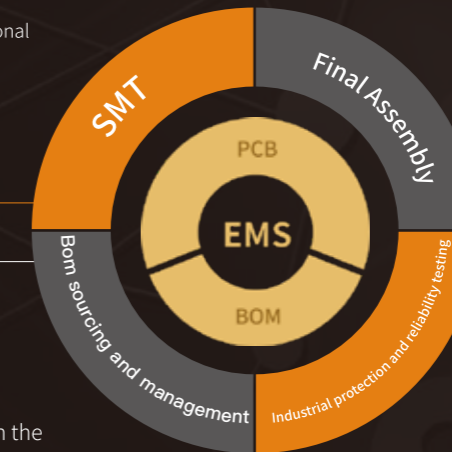
King Brother is committed to providing customers with high-reliability electronic product manufacturing services, focusing on intelligent hardware, communication technology, Internet of Things, industrial control, and automotive electricity.

Electronic products in the fields of electronics, medical care and new energy provide one-stop solutions such as BOM alignment, PCBA assembly, assembly, function and reliability testing.

Services

Equipped with automatic printing machine, SIEMENS/FUJI high speed. A complete set of SMT production and testing equipment, such as mounter, lead-free reflow soldering and X-RAY, can provide customers with professional SMT processing services.

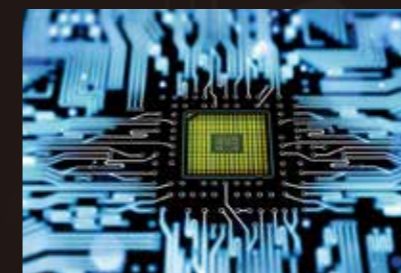
With advanced THT welding and assembly production line, we can provide customers with trial production and mass production of high-density through-hole welding services.



The company has established a good strategic cooperative relationship with the original chip factory or the main agent supplier, which can ensure the traceability and reliability of the purchased components and strictly warehouse the components standardized management of storage.

It has a fully automatic PCBA board spraying production line, which can provide protection treatment for electronic products containing three-proof paint and other chemical materials, as well as on-load reliability testing services for products.

Advantages



- PCB quality determines product quality.
- Deep process understanding of PCB is the basis of other links.



- BOM is based on PCB design, and PCB template is the bottom entrance.
- Quality delivery can reduce the cost of communication and trial and error in other links.



- The decision makers of PCB and PCBA are both engineers.
- Seamless connection between product research and development links, fast service and improved efficiency.

Electronic Manufacturing Service Case

IEMS Cases



Products and applications:
light valve main control board/electric power

Mounting process:
double-sided SMT+ single-sided

THT mixed main chip:
P2020.

Product function:
optical transceiver control

New technical features:
high-speed optical fiber communication, mixed signal processing.



Products and applications:
immunoassay system/medical treatment

Mounting process:
double-sided SMT+ single-sided THT mixed installation

THT mixed main chip:
EPM1270

Product function:
data sorting

New technical features:
low radiation, high reliability, accurate detection of data, intelligent analysis and output of diagnostic suggestions.



Products and applications:
launch control board/power

Mounting process:
double-sided SMT+ single-sided

THT mixed main chip:
XC3S400.

Product function:
light emission control

New technical features:
FPGA real-time signal processing, dual-system redundancy design, and unique patented light tube design.



Products and applications:
TE/ power, communication

Mounting process:
double-sided SMT+ single-sided THT mixed installation

Main chip:
HEF4001BT

Product function:
thyristor control unit

Features of new technology
signal processing.



Products and applications:
launch control board/power

Mounting process:
double-sided SMT+ single-sided

THT mixed main chip:
XC3S400.

Product function:
light emission control

New technical features:
FPGA real-time signal processing, dual-system redundancy design, and unique patented light tube design.



Products and applications:
elevator monitoring system/industrial control

Mounting process:
double-sided SMT+ single-sided THT mixed installation

THT mixed main chip:
STM32

Product function:
slide, jitter, temperature monitoring.

New technical features:
using edge computing-cloud platform to implement elevator life cycle management.



Products and applications:
water level monitoring system/environmental control

Mounting process:
double-sided SMT+ single-sided THT mixed installation

THT mixed main chip:
TMS320C64

Product function:
water level and temperature monitoring

New technical features:
after the system is processed, the water flow of each drainage ditch measuring point is displayed on the host screen of the monitoring center station.



Products and applications:
charging pile industrial control board/industrial control

Mounting process:
double-sided SMT+ single-sided THT mixed installation

THT mixed main chip:
TMS320VC33

Product function:
detection

New technical features:
rich interfaces and fast design.



Products and applications:
data acquisition/Communication

Mounting process:
double-sided SMT+ single-sided

THT mixed main chip:
HI3515

Product function:
data acquisition

New technical features:
an interface design for collecting data from outside the system and inputting it into the system.



Products and applications:
NB-IOT/ smart meter reading, smart home main chip: Hi211

Mounting technology:
single-sided mounting SMT

Product size:
19 * 18.4 * 2.2mm.

Product features:
wireless data communication

Features of new technology:
compact size, ultra-low power consumption and ultra-wide temperature range, which can be widely used in smart meter reading, smart city, smart home, smart agriculture and other industry application scenarios.

PCB Assembly

Through assembly, KingBrother fixes electronic components such as active parts, passive parts, and plug-in parts on the PCB by SMT and DIP, so as to realize the interconnection between electronic components and circuits

Process Capability Technology Capabilities

Project		Conventional technology	Unconventional process	Remarks	
SMT process	PCB	Minimum size	L≥50mm W≥50mm	L<50mm W<50mm	The distance between BOT, TOP surface components and mark points and the edge of the board shall be ≥ 3 mm; The size of unconventional PCB is within the scope of semi-automatic printing equipment, and the minimum accuracy is 0.5pitch.
		Maximum size	L≤450mm W≤350mm	L: 800-450mm W: 400-350mm	
		Component thickness (t)	0.5mm≤T≤3mm	T<0.5mm T>3mm	
	Device size	Minimum package	0201(0.6mm*0.3mm)	01005 (0.3mm*0.2mm)	Height of double-sided process device ≤ 25mm.
		maximum size	SMD≤200mm*125mm	SMD>200mm*125mm	
		Device thickness	T≤15mm	T>15mm	
	QFP, SOP, SOJ and other polypods.	Minimum PIN spacing	0.4mm	0.3mm≤Pitch<0.4mm	
CSP, BGA	Minimum ball spacing	0.4mm	0.3mm≤Pitch<0.4mm		
DIP process (wave soldering)	PCB尺寸	minimum size	L≥50mm W≥50mm	L<50mm	1. BOT surface element <5 mm; 2. The distance between the pin of the plug-in component and the SMT part on the BOT surface > the thickness of the SMT part+2.0mm.
		maximum size	L≤500mm W≤450mm	L<800mm W≤450mm	
		Thinnest size	0.5mm	T<0.5mm	
		Thickest size	5mm	T>5mm	
Three-proof paint technology	processing parameter	Temperature tolerance range	-30°C≤T≤120°C	-50°C≤T≤150°C	/
		Coating thickness	20um≤T≤35um	35um≤T≤60um	
Flying needle testing process	Device height	Upside	H≤60mm	H>60mm	/
		Downside	H≤120mm	H>120mm	
	PCB thickness	Thickness	T≤5mm	T>5mm	

BOM Solutions

Using product thinking to optimize BOM and manage supply chain, combined with big data and professional artificial technology, we provide customers with one-stop BOM kit supply services, and help them to save manpower, financial resources, and material resources, reduce customer operating costs, and efficiently overcome production difficulties.



BOM Selection

Using accumulated engineering data to provide customers with technical support for component selection.



BOM Kitting

Strategic cooperation agreements with ten large component distributors to improve procurement efficiency and reduce procurement costs.

Advantages

High quotation coverage rate, personalized service, and strong purchasing feasibility.

Big Data

With millions of base data, we can quickly improve the BOM, automatically complete it, easily manage alternative materials, verify usage, avoid mistakes and reduce troubles.

Complete System

Professional team to improve BOM structural and non-standard parts, provide complete product BOM kit services, complete inspection procedures and scientific supplier management.

Quick service

Quickly calculate the best cost linking data platform. Quickly locate and obtain inventory and price information

Cost Down

Focus on product BOM management to make procurement easy and efficient, reduce costs and shorten the product kit cycle.

Using product thinking to optimize BOM and manage supply chain

E-BOM Engineering design

Component verification and reliability testing

- Active components
- Passive components
- Module categories
- Mechanical/Hardware categories
- Packaging materials

BOM risk assessment

- High-Risk component screening
- Second source Sourcing Assistance
- Functional comparison
- Component verification

P-BOM Technical manufacturing design

Fake product Identification

Identification material origin from original manufacturer, refurbished, or recycled material

- Comparison and testing Items
- Components testing
- Mechanical parts testing

Other services

- Complete kit Management
- Cost optimization
- Material inspection/verification
- Supplier audit assistance
- Qualified supplier mentoring and certification

M-BOM Manufacturing

BOM DFP design optimization for procurement feasibility

Assistance in early identification of BOM design selection missing, reduce duplicate trial production time and costs and improve product quality

Green environmental protection system review and establishment

- REACH, ROHS, and exemption investigation and audit services
- Qualified supplier Mentoring and Certification

Electronic Engineering Service Ensures Quality Production

EES & Testing

KingBrother testing service center has a central laboratory equipped with advanced testing equipment and professional technical team, which can provide testing services for electronic components, PCBs, PCBA, and electronic products, including electrical and electronic performance testing, safety and regulatory testing, reliability testing, and product failure analysis.

As a professional testing institution, the testing service center has obtained national CNAS/Guangdong CMA qualification certification and can issue authoritative testing reports recognized by third parties.



Reliability Testing

Mechanical reliability

- Vibration test
- Friction test
- Drop test
- Impulse test

Environmental reliability

- Thermal shock test
- High temperature test
- Constant temperature and humidity test
- Low temperature test
- Aging test
- Salt spray test
- Temperature/Humidity cycle test
- Rapid temperature change test

Electrical reliability

- Secondary screening of components
- high-voltage insulation test
- Insulation resistance test
- CAF resistance test

Failure Analysis

PCB

- Open & short circuits
- Delamination
- Abnormal impedance
- Insufficient voltage withstanding
- Corrosion
- Migration

PCBA

- Abnormal function
- Poor soldering
- Partial leakage
- IMigration failure
- Solder joint cracking
- Open & short circuits

Components

- Open & short circuits
- Electrical parameter drift
- Function failure
- Poor soldering
- Burning down
- Electric leakage

Material Analysis

PCB

- Ductility
- Peel strength
- Crystallization analysis
- Roughness detection

PCBA

- Adhesion
- Hardness testing
- Composition analysis
- Chemical resistance test

Components

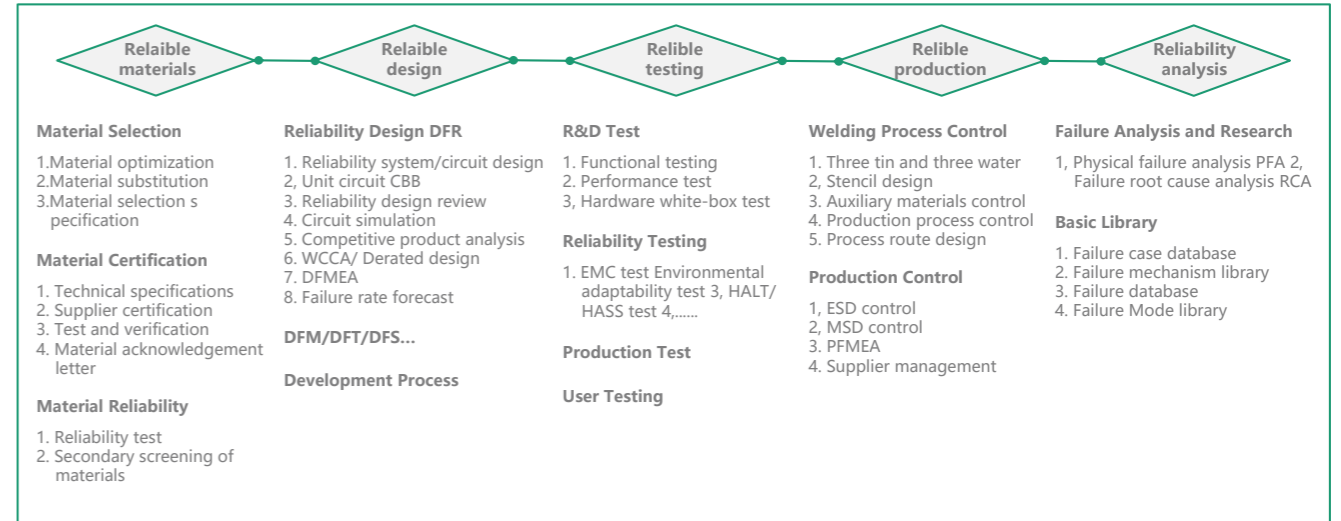
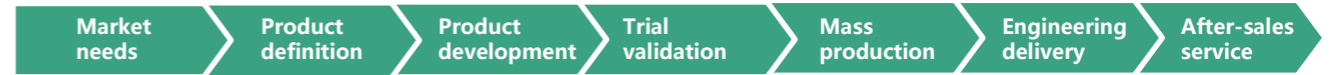
- TG testing
- TD testing
- CTE testing
- Dielectric constant
- Dielectric loss
- Delamination time
- Thermal shock test
- Withstand voltage test
- Insulation resistance test

Testing for Hazardous Substances

RoHS regulations restriction Testing of substances	EU RoHS & China RoHS restrictions: Lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr(VI)), polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE);EU RoHS priority substances: hexabromocyclododecane (HBCDD), diiso-octanoic acid phthalate (DEHP), butylbenzyl phthalate (BBP), dibutyl phthalate (DBP)
REACH directive focus on substance testing (84 items)	Anthracene, 4,4'-diaminodiphenylmethane, cobalt dichloride... 84 items (still being updated)
REACH directive appendix 17 Restricted substances	Dichloromethane (Dichloromethane), benzene (benzene), polychlorinated terphenyls (PCTs) and other 59 items
Halogen-free detection	EN 61249-2-21:03, IEC 61249-2-21:03 IPC, JEDEC J-STD-709, IPC TM650, etc Detection of quasi-specified halogen fluorine (F), chlorine (Cl), bromine (Br), iodine (I) content

No.	Services	Capabilities	Technical Capabilities
1	Material reliability	Components screening	Multi-dimensional component optimization
2		Components replacement	Compatible substitution or functional substitution
3		Components inspection	Components inspection and second screening
4	Design reliability	SCH optimization	SCH design, change, optimization, standardization
5		PCB optimization	Layout, wiring, impedance, package optimization
6		Reverse engineering	SCH、PCB、BOM reverse
7		SI/PI	Signal/power integrity simulation
8	Testing reliability	White-box testing / Flying probe testing	Open & short circuits and signal testing
9		Functional testing	Functional tools design and testing
10	DFX design	CAM design	DFM design
11		EBOM design	DFP design
12		PCBA simulation	DFA simulation
13	Reliability test	Environmental testing	High temperature, low temperature, temperature cycle, rapid temperature change, impact Attack, aging, etc
14		Mechanical testing	Vibration, drop, peel degree, thermo-mechanical, etc
15		Electric testing	Impedance, voltage resistance, leakage current, function, etc
16	Failure analysis	Product failure analysis	Analyze the failure mechanism and root cause of the product
17		Components failure analysis	Analyze the failure mechanism and root cause of the components

Reliability Engineering



Reliable Overall Solution

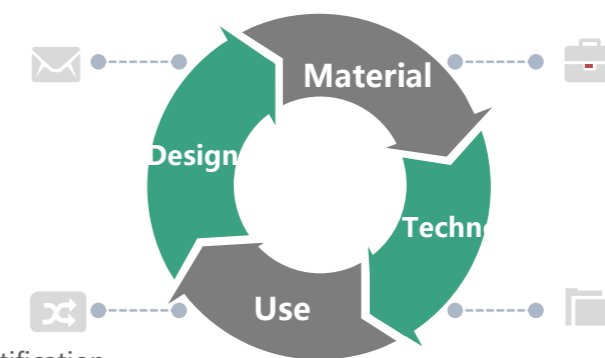
The integrated reliability solutions TSR refers to a reliability-oriented approach that identifies reliability risks and failure mechanisms from product design, materials, processes, and use. Guided by reliability physics theory, it systematically improves product reliability levels from four dimensions: design, materials, processes, and use, enhancing the brand value of the enterprise.

Design TSR Solutions

Design review, design verification testing, white-box testing, etc

Use TSR Solutions

Data collection, risk identification
Life prediction, failure analysis



Material TSR Solutions

Principle, material, process, structure, failure mechanism, historical failure

Technology TSR Solutions

Process specification, process evaluation
Stress identification, technology control

Intellectual Property

The company has a fully organizational system and guarantee mechanism for technological innovation, and has established a series of scientific research and innovation platforms including "Research Institute", "Central Laboratory", "Guangdong Engineering Technology Research and Development Center", "Guangdong Enterprise Technology Center", and "Guangdong Industrial Design Center", and gradually constructed and formed an intellectual property management system for the purpose of protecting innovation.

After more than 20 years of technological accumulation, a group of core technologies in the field of electronic circuits with completely independent intellectual property rights have been mastered, and some key technologies have reached the international advanced level.

Advantages

Authorized 180 valid patents



- 82 invention patents
- 93 utility model patents
- 5 appearance patents

237 Copyright



- 116 software copyright
- 10 works copyright registration
- 111 papers were published in core journals of the industry

Important Awards

The 20th China Patent Excellence Award

Patent Name:
A large-area thick GEM production process

Patent number:
ZL201410704645.3

The 21st China Excellent Patent Award

Patent Name:
The invention discloses a PCB board with built-in active device

Patent number:
ZL201510774459.1

The 22nd China Excellent Patent Award

Patent Name:
Magnetic core laminated blind hole Fabrication method of electromagnetic induction multilayer printed circuit board

Patent number:
ZL201410285999.9

High-tech Products

- Embedded core multilayer PCB
- Embedded copper block multilayer PCB
- PCB with thick gas electron multipliers
- High frequency high precision RF PCB
- Oversized high-speed communication backplane
- Embedded components multilayer PCB
- High step HDI rigid-flex board
- PCB for 400G high-speed photoelectric signal conversion module
- High heat dissipation aluminum-based board used in new energy vehicle motor drive module
- High speed communication HDI board
- Ntensive step slot PCB for phased array radar

Partners & Customers



2,500,000+

Part numbers

300,000+

Industry engineers

300+

Technical Solutions

In the past 27 years, we have served more than 18,000 customers, including more than 1,000 customers who have worked with us for more than 10 years. Growing with customers makes us your reliable partner.