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专业线路板制造商
Professional PCB manufacturer

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深圳市天华电子科技有限公司
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PCBA

铝基板
Aluminum plate

铜基板
Copper substrate

单双面及多层线路板
Single double-sided and multi-layer circuit boards

SKD

Company profiles 企业简介

天华电子深圳公司成立于2016年6月份，江西公司成立于2019年8月份，公司专业从事单双面及多层印制线路板（铝基板、FR4、铜基板）设计、研发、SMT贴片装配、PCBA代工代料、销售、生产制造为一体的高新技术企业。

经过公司全体同仁的开拓进取，现已发展为专业生产线路板的中上规模企业，并先后通过了ISO9001:2015、ISO14001:2015国际质量管理体系认证、美国UL（E500393）等认证，推行全面质量管理体系和环境管理体系，符合ROHS、SGS从而保证了产品的高质量。

公司为了适应线路板发展朝小型化、节能化、高性能化的市场需要，公司一开始就引进国内领先的自动化生产设备以及高精密的检测设备，拥有行业领先的研发技术及生产制造能力。

公司以追求客户全面满意为宗旨，秉承精益求精，制造更高、更精、更可靠的产品质量承诺，通过诚信、进取、不断追求卓越与客户建立持久的良好合作关系。

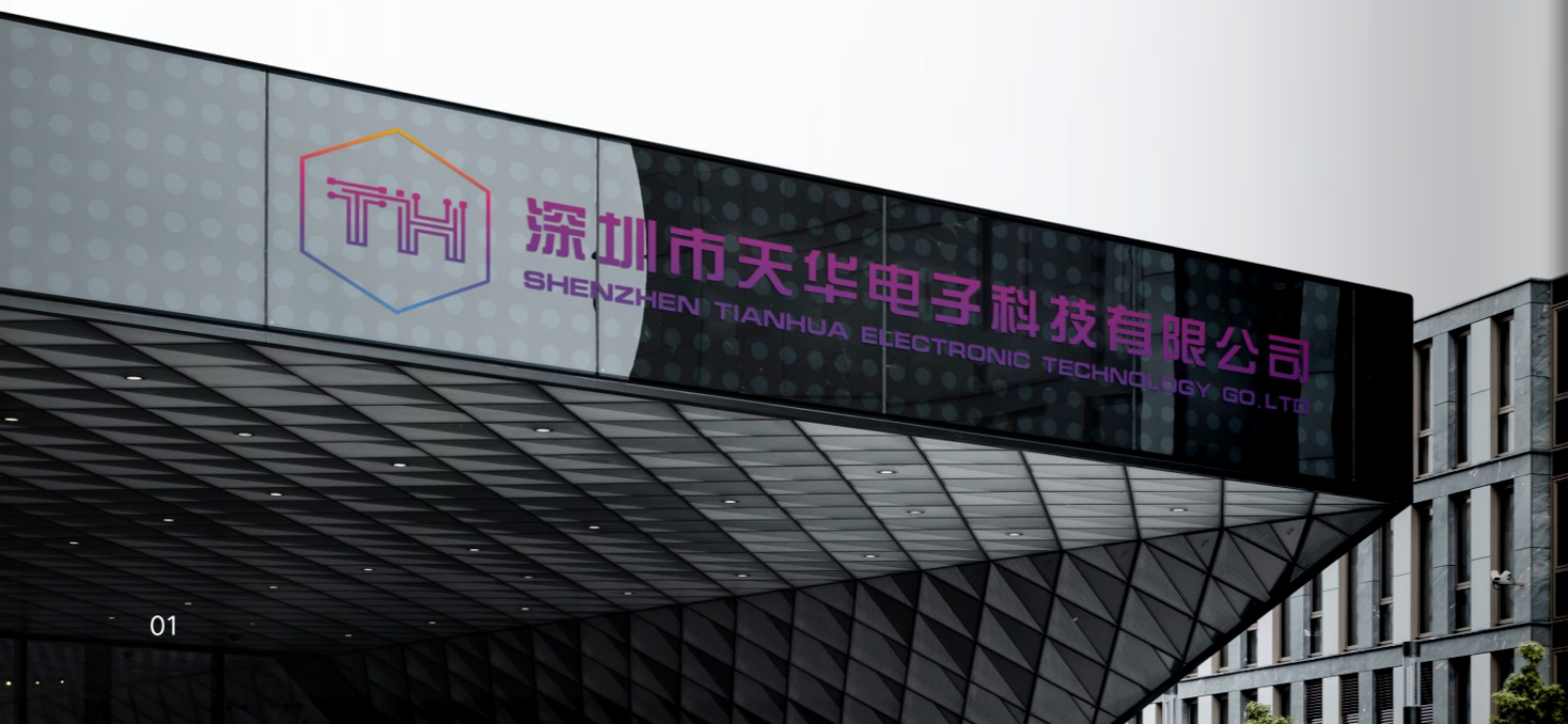
Tianhua Electronics Shenzhen Company was established in June 2016, and Jiangxi Company was established in August 2019. The company is a high-tech enterprise specializing in the design, research and development, SMT surface mount assembly, PCBA OEM, sales, and production of single-sided and multi-layer printed circuit boards (aluminum substrates, FR4, copper substrates).

Through the exploration and progress of all colleagues in the company, it has now developed into a mid to upper scale enterprise specializing in the production of circuit boards. It has successively passed ISO9001:2015, ISO14001:2015 international quality management system certification, and UL (E500393) certification in the United States. It has implemented a comprehensive quality management system and environmental management system, which comply with ROHS and SGS to ensure high product quality.

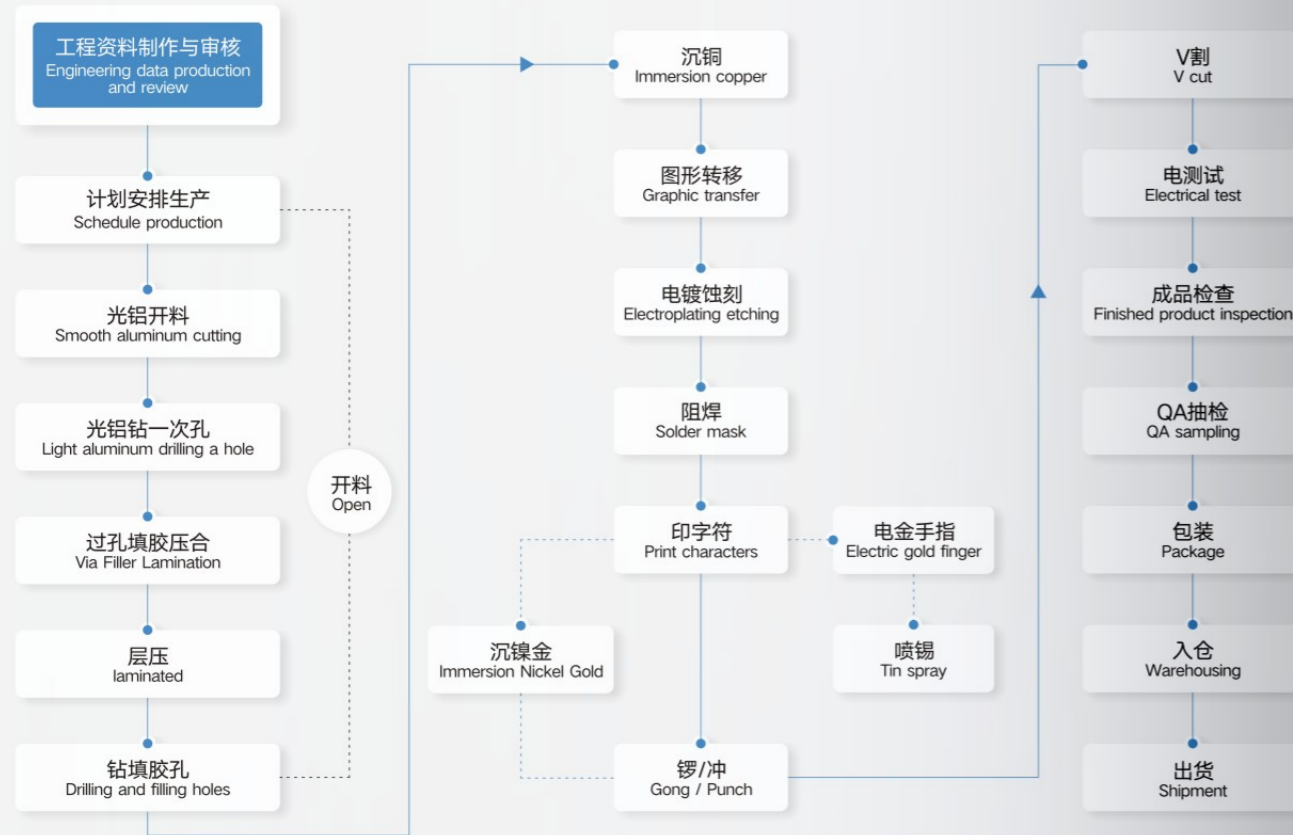
In order to meet the market needs of miniaturization, energy conservation and high-performance development of circuit boards, the company introduced domestic leading automatic production equipment and high-precision testing equipment from the beginning, and has industry-leading R & D technology and production and manufacturing capacity.

The company takes the pursuit of overall customer satisfaction as its purpose, adheres to the quality commitment of keeping improving and manufacturing higher, better and more reliable products, and establishes a lasting good cooperative relationship with customers through integrity, enterprising and continuous pursuit of excellence.

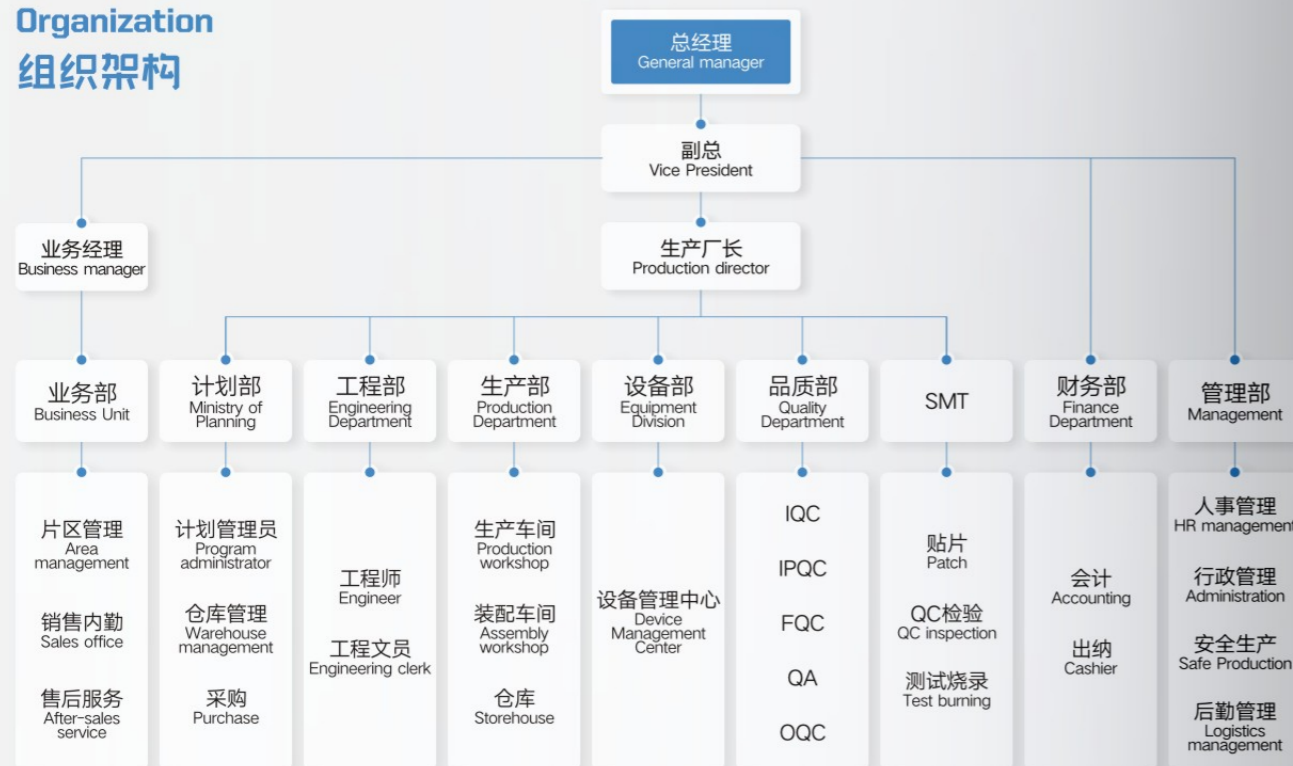
Enterprise honor 企业荣誉



Production process 生产流程



Organization 组织架构



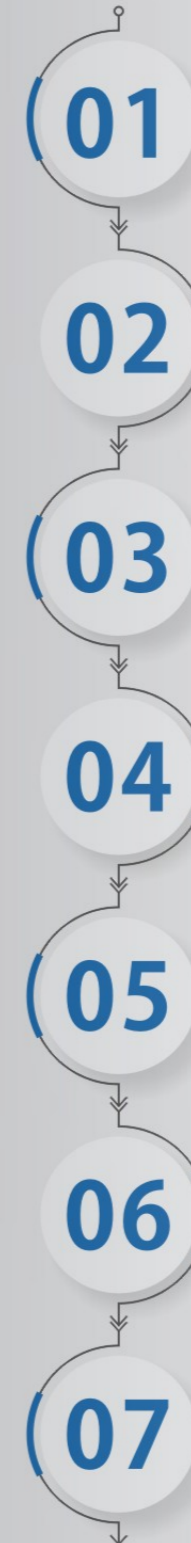
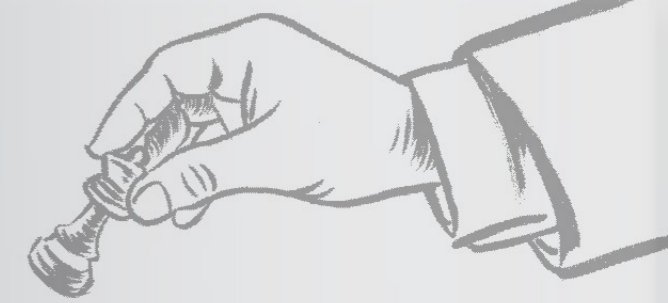
Quality policy 品质方针

美国UL认证合格工厂编号:E500393
UL certified factory No.: E500393

IATF16949认证
IATF16949 certification

生产前样板100%经过飞针测试
100% of the sample plate has been tested by flying needle before production

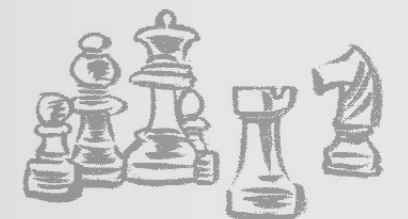
采用国际通用的IPC-A600-F标准控制生产流程
Adopt the international IPC-A600-F standard to control the production process



ISO9001-2015质量体系认证工厂
ISO9001-2015 quality system certification factory

ISO14001:2015环境体系认证合格工厂
ISO14001:2015 certified factory of environmental system

生产品100%经过断短路电子测试、耐压测试
100% of the products have passed the electronic test and voltage withstand test of breaking and short circuit



制程能力 Process capability

层数	Number of layers	1-24Layer		
板料种类	Plate type	FR-4、铁氟、铝基板、铜基板、高频、高导热板材 FR-4, iron fluorine, aluminum substrate, Copper substrate, high frequency, high thermal conductivity plate		
板厚	Plate thickness	0.2-5.0 0.1mm-3.0mm(6mil-120mil)		
铜厚	Copper thickness	1/3oz min; 10oz max		
加工尺寸	Machining dimension	6mm-1500mm		
导热系数	Thermal conductivity	1.0-398W		
击穿电压	Breakdown voltage	500-4000V		
最小线宽/线距	Minimum line width/line spacing	0.075mm(3mil)		
最小钻孔孔径	Minimum borehole diameter	0.1mm(4mil)		
最小冲孔孔径	Minimum punching hole diameter	0.9mm(36mil)		
公差 Tolerance	钻孔孔位	Borehole location	±0.075mm(3mil)	
	线宽	line width	线宽的 (line width) ±20%	
	孔径	Aperture	PTH±0.05mm(2mil) NPTH±0.075mm(3mil)	
	外形公差	Shape tolerance	铣床(Milling machine) ±0.1mm (6mil) 冲床 (Punch soil) ±0.1mm (5mil)	
	翘曲度	Warpage	0.70%-1%	
焊盘表面处理	Pad surface treatment	喷锡, 化学金, 化学锡, 化学银, OSP等 Tin spray, chemical gold, chemical tin, chemical silver, OSP, etc		
V割 V-cut	拼版尺寸	Mosaic size	110*110mm(mil) 600*1500mm(mil)	
	板厚	Plate thickness	0.6mm(24mil)mil	
	公差	Tolerance	±0.1mm(4mil)	
	槽宽	Slot width	0.50mm(20mil)max	
	角度	Angle	30°, 45°, 60°, 90°	
槽孔公差 Slot tolerance			PTH:±0.15mm(6mil) W:±0.1mm(4mil) PTH:±0.125mm(5mil) W:±0.1mm(4mil)	
	圆形偏差	Circular deviation	0.075mm(3mil)	
	多层板 Multi-layer board	层间偏差	Interlayer deviation	4 layers:0.15mm(6mil)max 6 layers:0.025mm(10mil)max
		层间标准度	Interlayer standard degree	±3mil(±76um)
板厚公差		Plate thickness tolerance	4 layers:0.13mm(5mil) 6 layers:0.15mm(6mil)	
特性阻抗		Characteristic impedance	50ohm±10	

快速反应 Rapid response

订单数量 (平方) Order quantity (square)	最快交货时间 Fastest delivery time	常规交货时间 Regular delivery time
样品 Sample	24小时/hours	48小时/hours
1-10 (平米) m ²	48小时/hours	72小时/hours
10-100 (平米) m ²	72小时/hours	120小时/hours
>100 (平米) m ²	视具体要求 Depending on specific requirements	

Scope of application

应用范围

金属基板主要应用于
Metal substrates are mainly used for



单双面多层FR-4主要应用于
Single double-sided multi-layer FR-4 is mainly used for

Single double-sided multi-layer FR-4 is mainly used for





生产车间

一站式贴片服务

拥有自己的高精度PCB制造工厂和自动化SMT组装产线，元器件的采购到SMT贴片加工、后焊、组装、烧录、测试一站式服务，包括各种专业的生产检测设备，同时拥有经验丰富的工艺研发生产团队，活力而专业的销售客服团队，资深严谨的采购团队和装配测试团队，国际化标准的管理体系，从而确保制造的PCBA产品达到卓越的品质标准，满足客户计划所需。



Production workshop

One stop patch service

It has its own high-precision PCB manufacturing factory and automatic SMT assembly line, and one-stop services from the purchase of components to SMT chip processing, post welding, assembly, burning and testing, including various professional production and testing equipment. At the same time, it has an experienced process research and development production team, a dynamic and professional sales and customer serviceteam, a senior and rigorous procurement team and assembly and testing team, and an international standard management system, So as to ensure that the manufactured PCBA products reach excellent quality standards and meet the needs of customer plans.



Production workshop
生产车间

经过多年的积累沉淀，公司培育了一支高素质、重实战的团队。除标准产品设计外，可以根据客户的需求定制产品，为客户提供一站式的解决方案。

一流的设备是品质的保证，“天华”一直注重技术的改进，从而使产品性能在市场竞争中处于领先地位。



After years of accumulation and precipitation, the company has cultivated a high-quality, practical team. In addition to standard product design, products can be customized according to customer needs, providing customers with one-stop solutions.

First-class equipment is the guarantee of quality, "TianHua" has always paid attention to the improvement of technology, so that the product performance is in a leading position in the market competition.



Quality inspection
品质检测

高品质的产品离不开完善的检测体系。公司拥有多台高精度检测设备，我们从原材料到成品，每一个环节都严格按照检验标准确保产品的优良品质。

公司员工拥有多年以上工作经验，熟悉产品知，精益化流程，缔造“精”品质。



High quality products cannot be separated from a complete testing system. The company has multiple high-precision testing equipment, and we strictly follow inspection standards in every step from raw materials to finished products to ensure the excellent quality of our products.

The company's employees have over many years of work experience, are familiar with product knowledge, lean processes, and create "precision" quality.



Thermal conductivity and thermal resistance of aluminum substrates

铝基板的导热系数和热阻

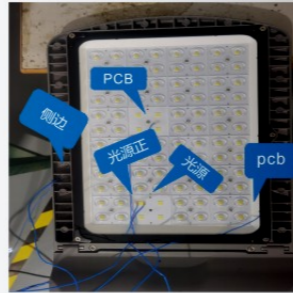
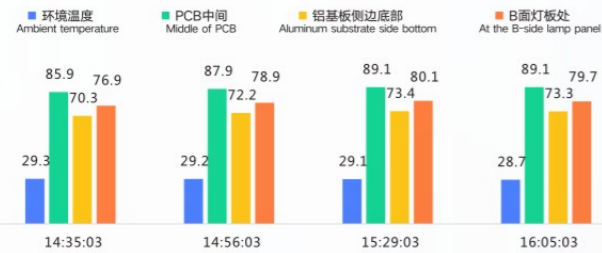
铝基板是一种常用的散热材料，具有良好的导热性能和低热阻。
Aluminum substrate is a commonly used heat dissipation material with good thermal conductivity and low thermal resistance.
铝基板的晶体结构紧密，原子间距离短，导致热量能够快速传导。
The crystal structure of aluminum substrate is compact, and the distance between atoms is short, which allows for rapid heat conduction.

1 导热系数 Thermal conductivity coefficient

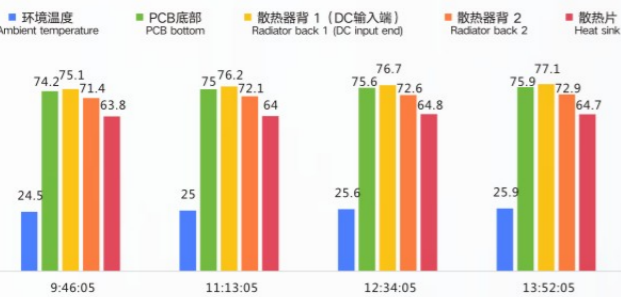
铝的导热性能已经能够满足大多数散热需求。导热系数的高低对于铝基板的散热性能有着重要影响。高导热系数意味着材料能够更快速地将热量传导到外部环境中，从而提高散热效果。

The thermal conductivity of aluminum is sufficient to meet most heat dissipation needs. The thermal conductivity has a significant impact on the heat dissipation performance of aluminum substrates. High thermal conductivity means that materials can quickly transfer heat to the external environment, thereby improving heat dissipation efficiency.

灯具温升测试报告试验数据
Lamp temperature rise test report test data



灯具温升测试报告试验数据
Lamp temperature rise test report test data



应用在一些要求较高的大功率照明灯具上，如路灯、球场、工矿灯、舞台灯等产品上，户外大功率灯具常常选择导热高的铝基板作为散热材料。
Applied to high-power lighting fixtures with high requirements, such as street lamps, sports fields, industrial and mining lamps, stage lamps, etc., outdoor high-power lighting fixtures often choose aluminum substrates with higher thermal conductivity as heat dissipation materials.

2 热阻 Thermal resistance

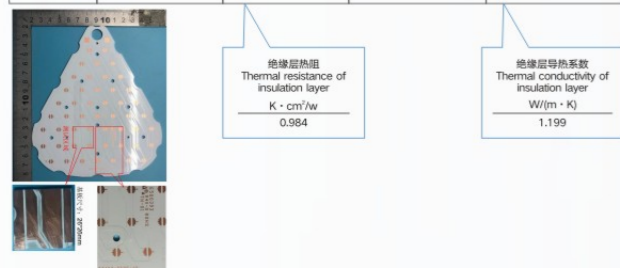
热阻是材料阻碍热量通过的能力的量化指标
Thermal resistance is a quantitative indicator of a material's ability to block the passage of heat

热阻较低意味着热量可以更容易地通过材料传导到外部环境中，从而提高散热效果。
A lower thermal resistance means that heat can be more easily transmitted through the material to the external environment, thereby improving heat dissipation efficiency.

1.0

样品 Sample	热端温度 (°C) Hot end temperature	冷端温度 (°C) Cold end temperature	压力 (Psi) Pressure	热流量 (W) Heat flow rate	总厚度 (mm) Total thickness	绝缘层厚度 (μm) Insulation layer thickness
铝基板 Aluminum substrate	80.02	67.08	80.04	67.34	1.55	118

测试样品 Test samples	基板总热阻 (K · cm ² /w) Total thermal resistance of substrate	绝缘层热阻 (K · cm ² /w) Thermal resistance of insulation layer	基板总导热系数 W/(m · K) Total thermal conductivity of substrate	绝缘层导热系数 W/(m · K) Thermal conductivity of insulation layer
铝基板 Aluminum substrate	1.075	0.984	14.418	1.199



2.0

样品 Sample	热端温度 (°C) Hot end temperature	冷端温度 (°C) Cold end temperature	压力 (Psi) Pressure	热流量 (W) Heat flow rate	总厚度 (mm) Total thickness	绝缘层厚度 (μm) Insulation layer thickness
测试区域1 Test area 1	79.97	69.92	80.02	75.15	1.52	120
测试区域2 Test area 2	79.99	69.11	80.04	73.50	1.52	120

测试样品 Test samples	基板总热阻 (K · cm ² /w) Total thermal resistance of substrate	绝缘层热阻 (K · cm ² /w) Thermal resistance of insulation layer	基板总导热系数 W/(m · K) Total thermal conductivity of substrate	绝缘层导热系数 W/(m · K) Thermal conductivity of insulation layer
测试区域1 Test area 1	0.689	0.598	22.065	2.007
测试区域2 Test area 2	0.781	0.690	19.465	1.739

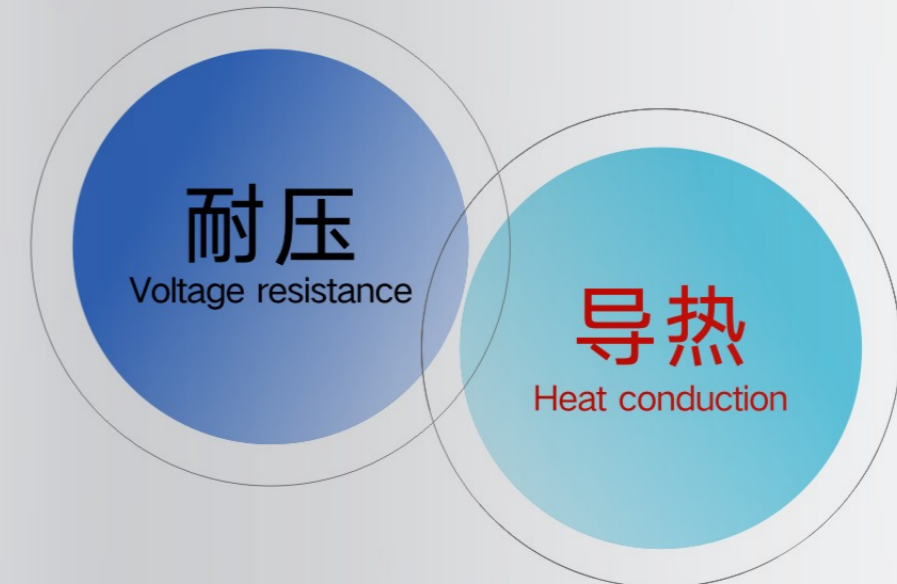


The relationship between insulation layer thickness and voltage resistance of aluminum substrates

铝基板的绝缘层与耐压的关系

铝基板中间的绝缘层有PP、导热胶（PP主要成分是环氧树脂和玻璃纤维布组合而成，导热胶主要成分是环氧树脂和三氧化二铝填料）等，它是衡量铝基板好坏的三大（导热、耐压、分层起泡）标准之一。（热阻值和耐压值是另两个性能）

The insulation layer in the middle of the aluminum substrate includes PP, thermal conductive adhesive (PP is mainly composed of epoxy resin and glass fiber cloth, and thermal conductive adhesive is mainly composed of epoxy resin and aluminum oxide filler), etc. It is one of the three standards (thermal conductivity, pressure resistance, and delamination foaming) that measure the quality of the aluminum substrate. (Thermal resistance value and withstand voltage value are the other two properties)

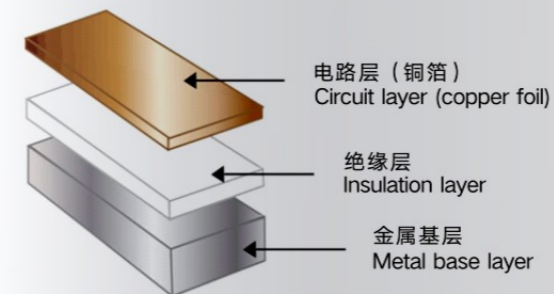


绝缘层是铝基板的一种重要组成部分，其作用是防止电路板上不同部件之间的短路和漏电，从而保证整个电路的正常运转。

The insulation layer is an important component of the aluminum substrate, which is used to prevent short circuits and leakage between different components on the circuit board, thereby ensuring the normal operation of the entire circuit.

绝缘层厚度对于铝基板的性能至关重要，与其所能承受的电压有密切关系。

The thickness of the insulation layer is crucial for the performance of aluminum substrates and is closely related to the voltage they can withstand.



绝缘层厚度 Insulation layer thickness	常规耐压 Conventional withstand voltage	漏电流 Leakage current
常规 routine 120~140UM	> 1500V	AC/5MA
170~200UM	> 3000V	AC/5MA

Product parameters
产品参数

金属基参考参数 Metal based reference parameters		
金属基	Metal based	铝/铜 Aluminum/Copper
材料型号	Material model	1060 3003 5052 / 红铜 (紫铜) Red copper (purple copper)
基材厚度	Substrate thickness	0.2、0.4、0.8、1.0、1.2、1.5、1.6、2.0、3.0、5.0
耐压范围	Voltage withstand range	AC1500-5000V
导热系数	Thermal conductivity coefficient	1.0W、1.5W、2.0W、3.0W、8.0W/398W
阻焊颜色	Color of solder mask	高反射油墨, 白、黑、绿、等 High reflective ink, white, black, green, etc
表面工艺	Surface technology	OSP、喷锡 Tin spraying、沉金 Sinking gold
成型方式	Forming method	CNC、冲压 Stamping、V-CUT
通用灯珠	Universal lamp beads	全系列灯珠 Full range of lamp beads
最小线宽线距	Minimum line width and line spacing	≥0.2
测试方式	Testing method	AOI扫描、测试机测试、飞针测试 AOI scanning, testing machine testing, flying needle testing

FR-4参考参数 FR-4 reference parameters		
材料	Material	KB 国纪 生益 KB Guoji Shengyi
TG	TG	TG130、TG135、TG150、TG170、TG200、TG250
层数	Number of layers	1L-24L
板厚	Plate thickness	0.12-3.2MM
最小孔径	Minimum aperture	0.1MM
最小线宽线距	Minimum line width and line spacing	0.1MM/0.1MM
内层铜厚	Inner layer copper thickness	18UM-35UM
外层铜厚	Outer copper thickness	35UM-210UM
表面处理	Surface treatment	化金、喷锡、OSP、沉银、碳油、金手指、蓝胶 Gold plating, tin spraying, OSP, silver sinking, carbon oil, gold fingers, blue glue
阻焊颜色	Color of solder mask	绿油、哑光绿油、红油、蓝油、黄油、白油、黑油、哑光黑油等 Green oil, matte green oil, red oil, blue oil, butter, white oil, black oil, matte black oil, etc
阻焊覆盖	Solder mask coverage	过孔盖油 过孔塞油 过孔开窗 Through hole cover oil through hole plug oil through hole opening window
阻焊塞孔	Solder plug hole	盖油、油墨塞、树脂塞 Cover oil, ink plug, resin plug
孔到线最小距离	Minimum distance from hole to line	0.15MM
测试方式	Testing method	AOI扫描、测试机测试、飞针测试 AOI scanning, testing machine testing, flying needle testing

Technical characteristics
技术特征

精细化、专业化加工, 突破工艺极限。
Fine and specialized processing, breaking through the limits of technology.



3mm
板材厚度

冲孔工艺
Product parameters



V穿工艺
V-threading process



Φ0.5mm
镭射开孔

镭射激光切割
Laser cutting



3mm
板宽

超窄加工
Ultra narrow machining



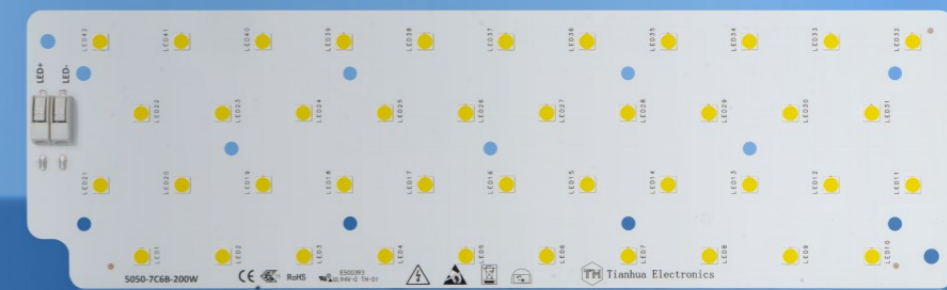
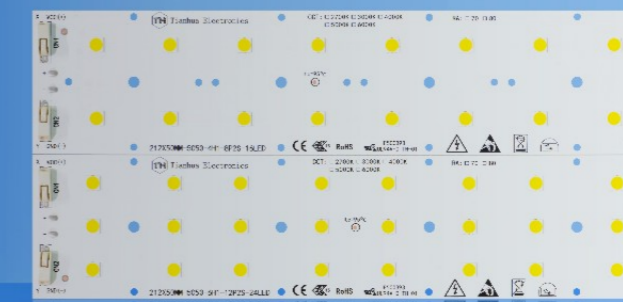
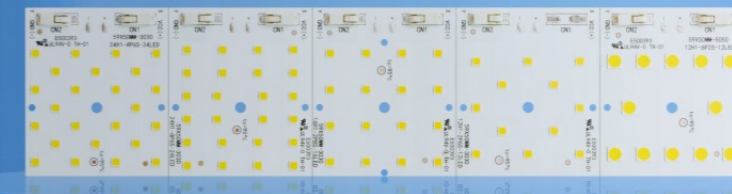
高精密线路
High precision circuits



超导
导热系数

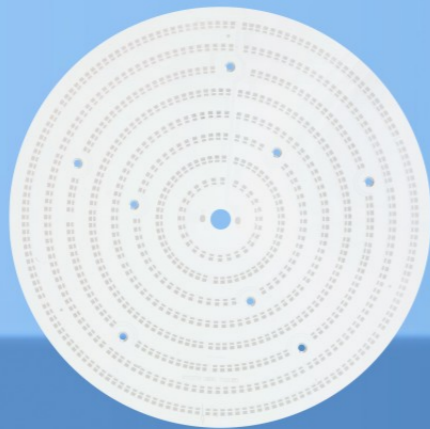
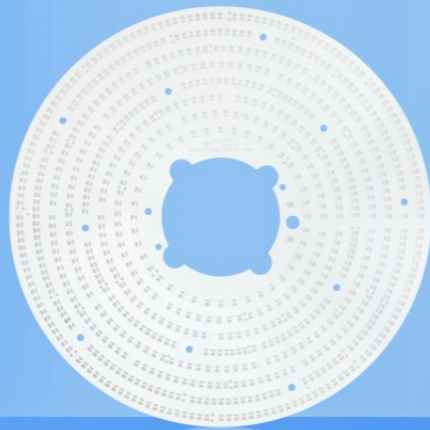
超导散热
Superconducting heat
dissipation

PCBA Z H A G A



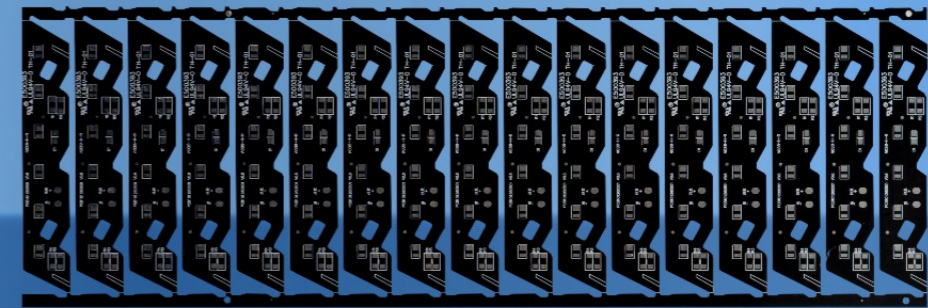
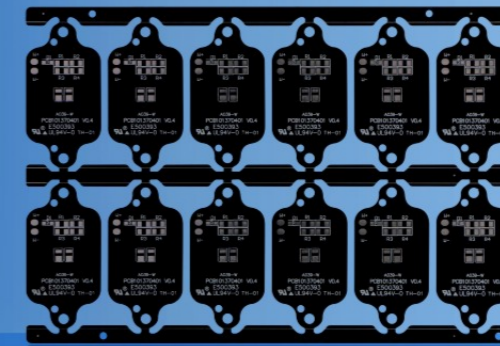
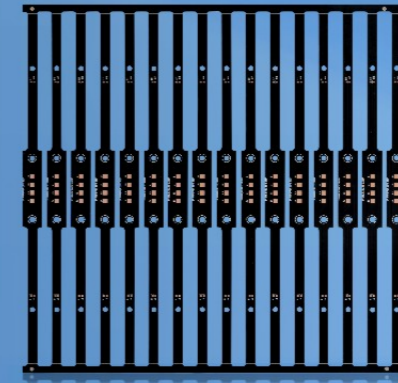
UFO mining lamp

UFO工矿灯



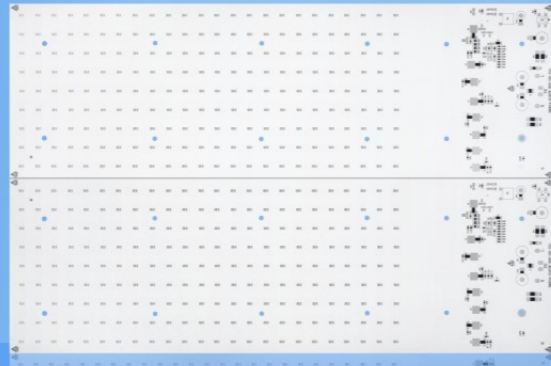
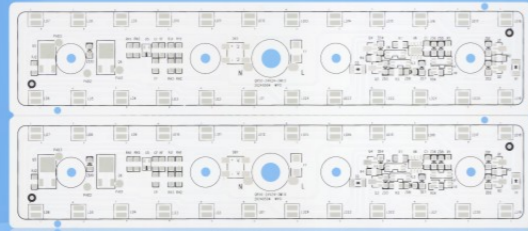
Car lights

车灯



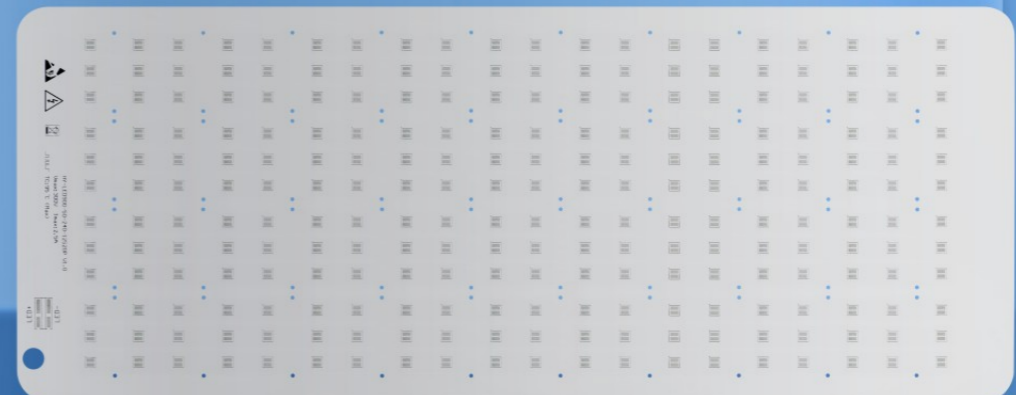
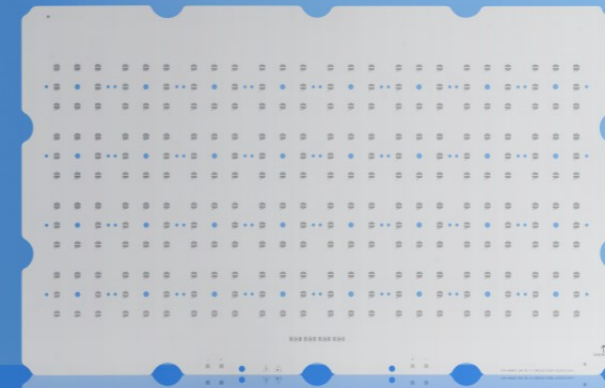
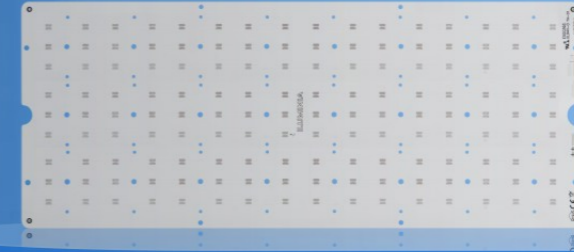
High voltage linear

高压线性



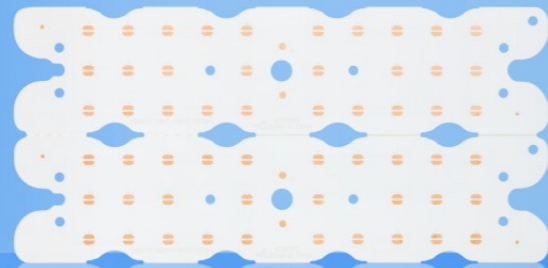
Street light projection light

路灯投光灯



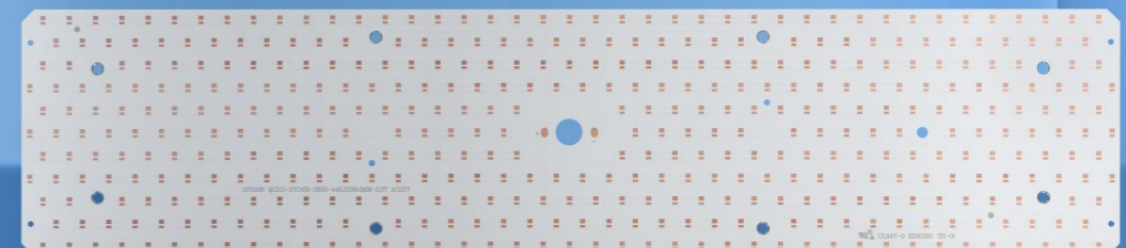
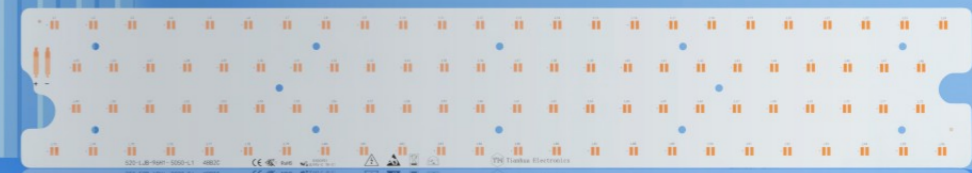
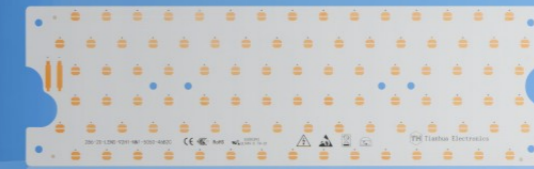
Module

模组



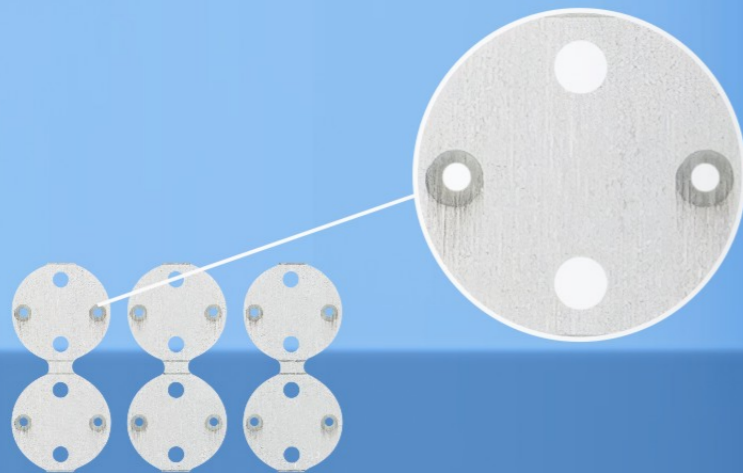
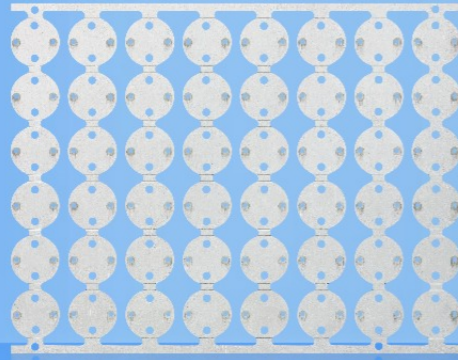
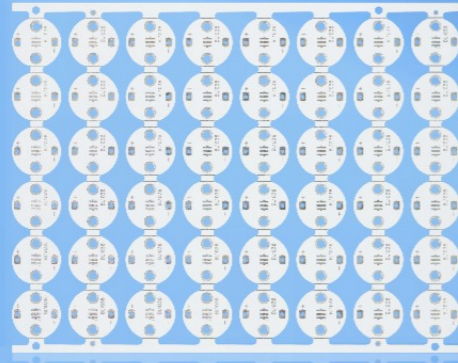
Stadium lights

球场灯



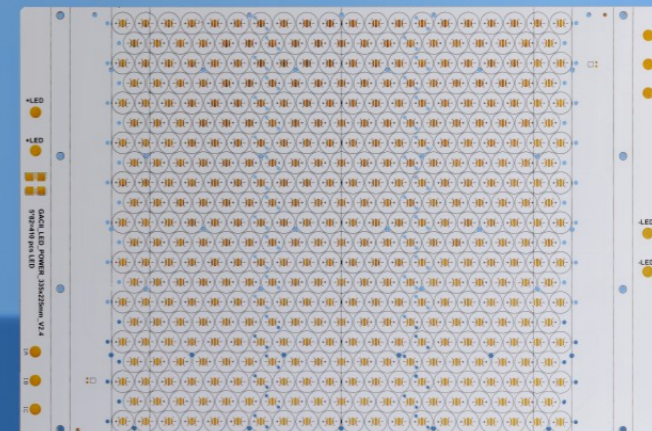
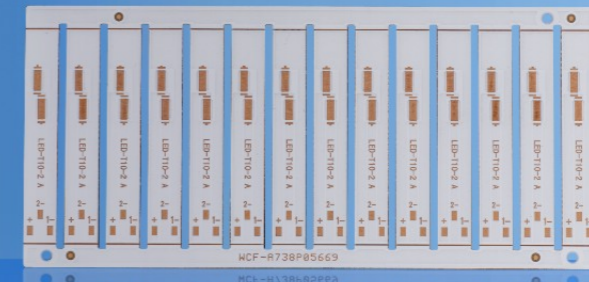
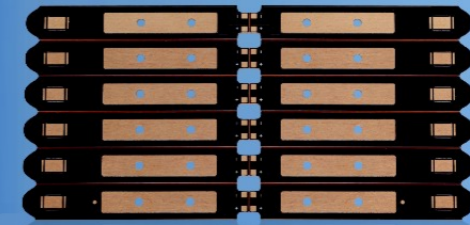
Double sided aluminum substrate, insulated through hole series

双面铝基板、绝缘过孔系列



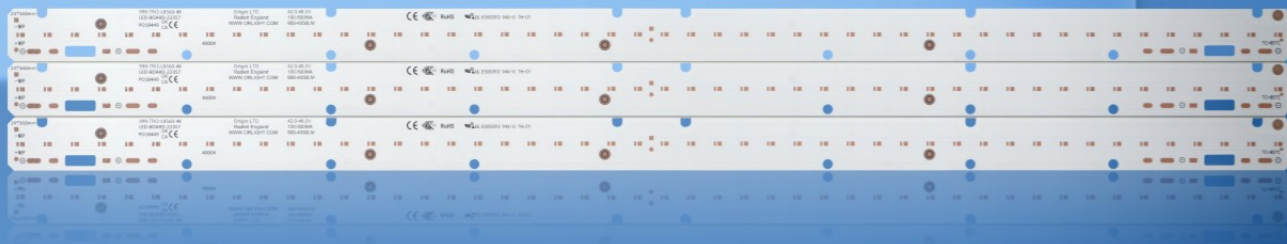
Copper substrate

铜基板



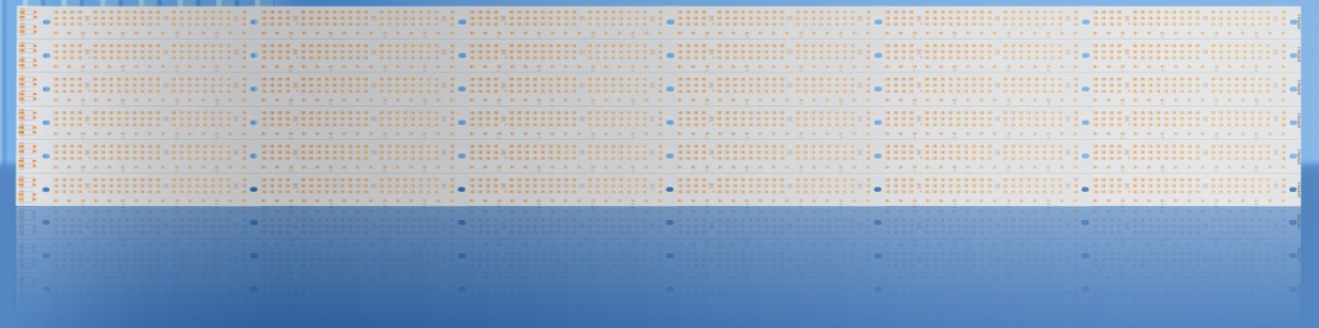
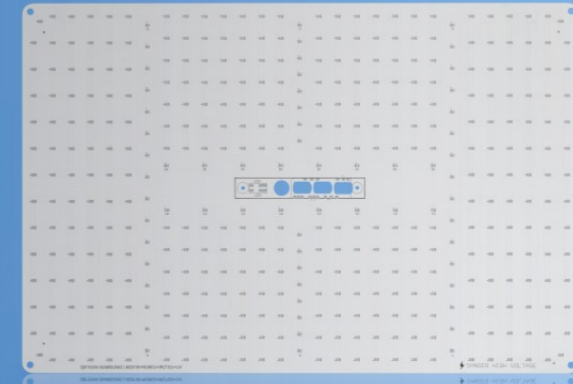
Line lights

线条灯



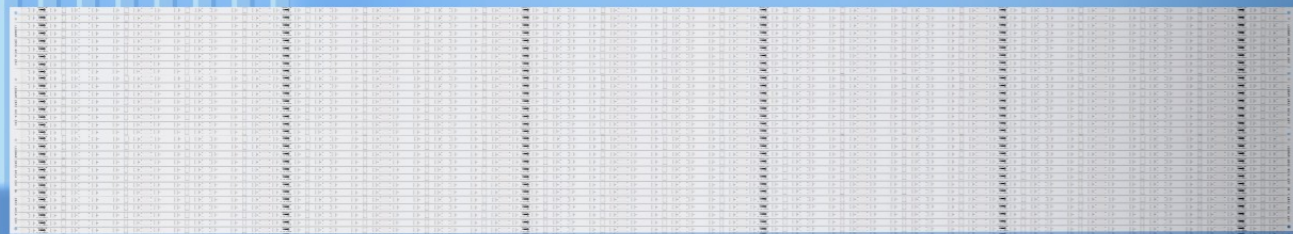
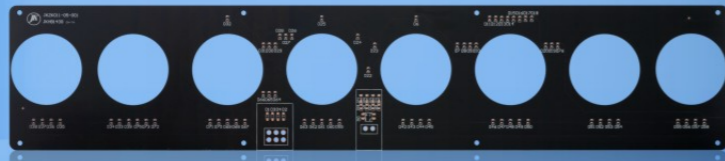
Plant lamp

植物灯



Double sided long strip version

双面长条版



Double sided multi-layer

双面多层

