## Welcome to O-leading

O-Leading strives to be your one stop solution partner in EMS supply chain, including PCB design, PCB fabrication and PCB assembly (<u>Shenzhen PCBA one stop service SMD assembly PCB</u>), We provide some of the most advanced PCB technology, including HDI PCBs, multilayer PCBs, Rigid-Flexible PCBs.We can support from quick turn prototype to medium & mass Production.

In general, our global customers are very impressed with our services:Rapid response, competitive price and quality commitment.Providing more valuable technical service and overall solution is the way O-leading forward.

Looking to the future, O-leading will concentrate on the innovation and development of electronics manufacturing technology as always, and make persistent efforts on PCB & PCBA one-stop service to provide first-class services and create more value for our customers.

### PLEASE CLICK THESE FOR MORE INFORMATION <u>FR4 Rigid Double layer PCB</u> <u>Manufacture China</u>



#### O-LEADING TRADIDG



#### Кеер Гедалия

There's a phrase in Buddhism, 'Beginner's mind.'

lt's wonderful to have a beginner's mind

# WE HAVE A DREAM

#### Кеер ЛИПЛІЛБ

l would like to live to study and not study to live.

----Bacon

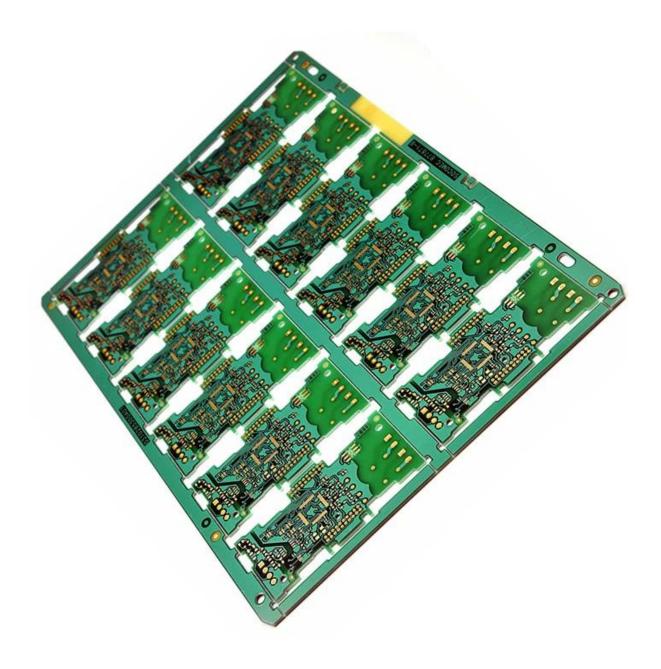


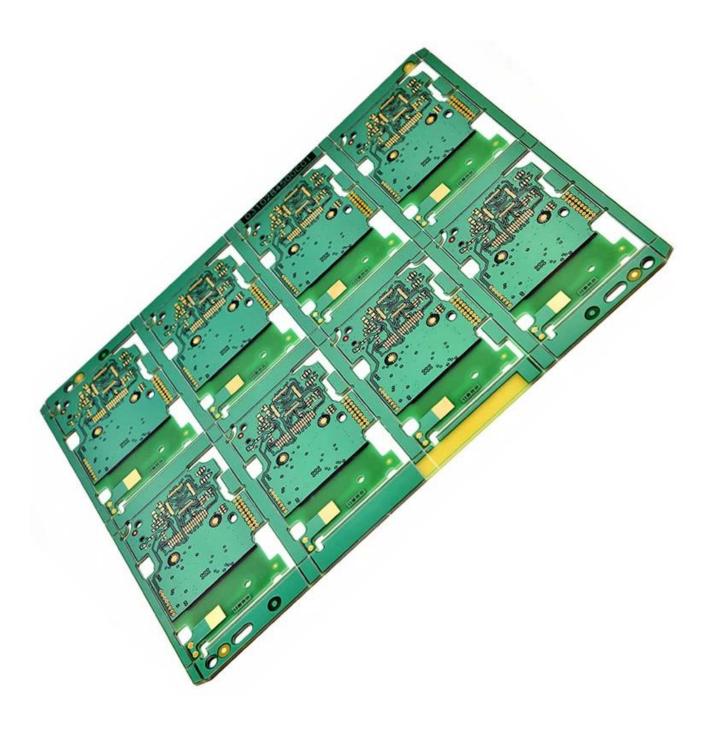
## **Product Description**

Custom Circuit Board Pcb Manufacture multilayer double side monolayer blank circuit board Pcb Manufacture Assembly (Industrial controller SMT assembly factory PCBA)

Product name	Printed Circuit Board	
Туре	Electroplated Gold + Gold Finger	
Usage	OEM Electronics	
Certificate	ROSH. ISO9001	
Solder mask	Green. Red. Blue. White. Black.Yellow	
Material	FR4 /aluminum/ceramic CEM1	
Service	One Stop Turkey Service	

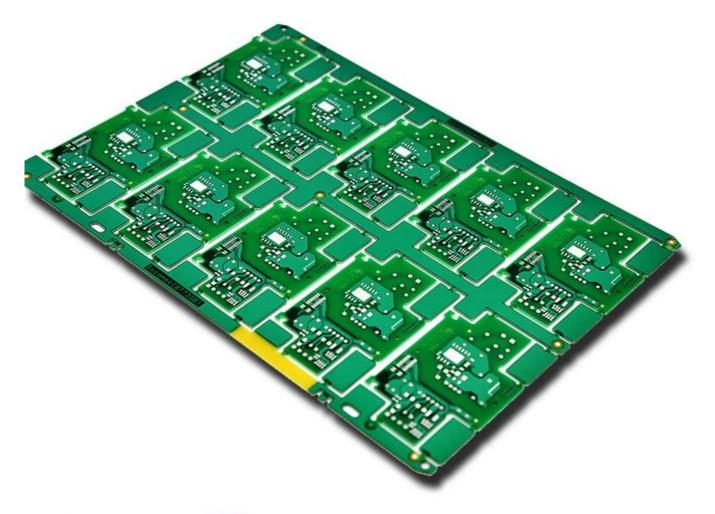
Function	Control Key Board PCB
PCB Standard	IPC-A-600







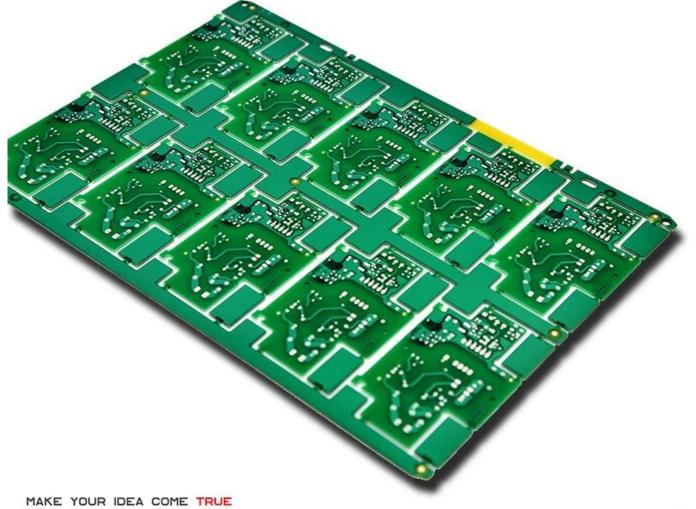




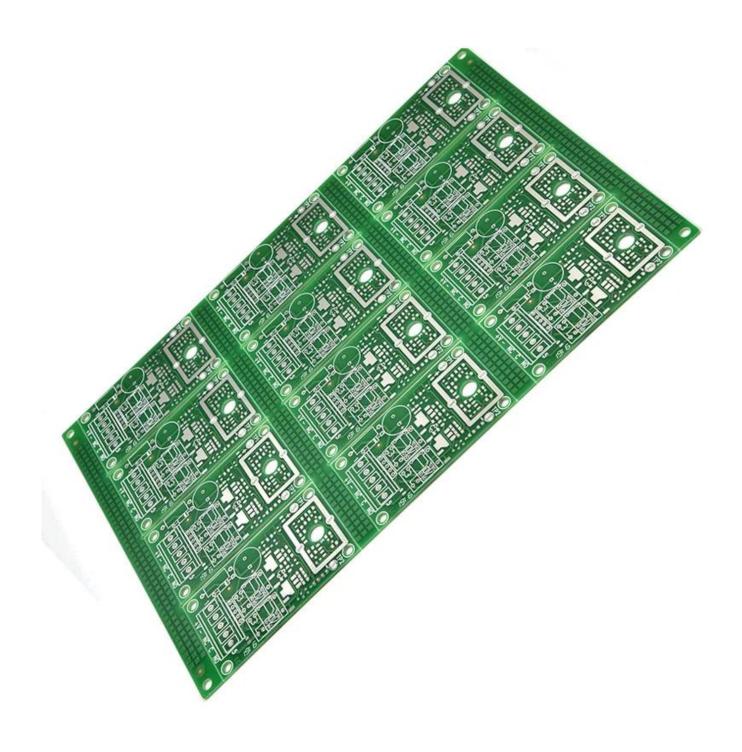
MAKE YOUR IDEA COME TRUE



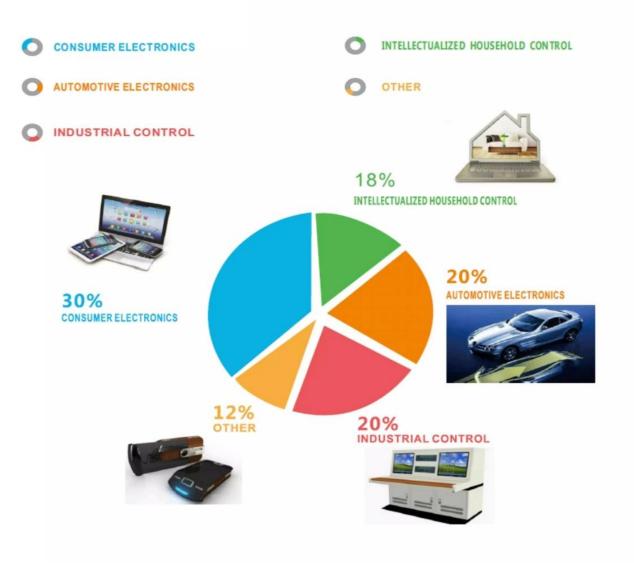


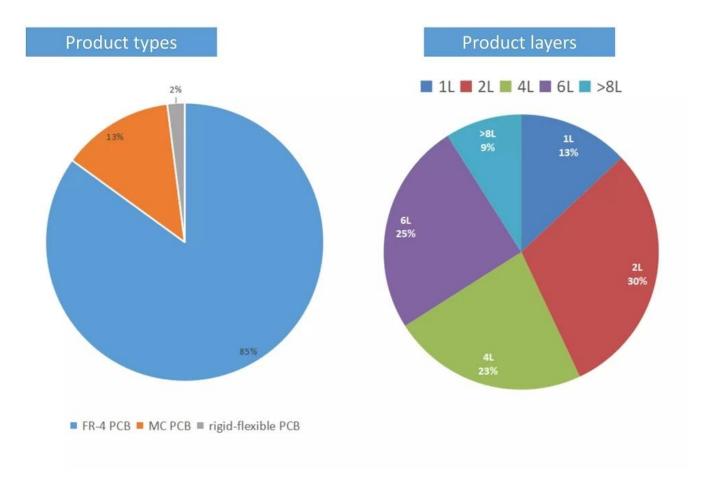






## **Market Share**



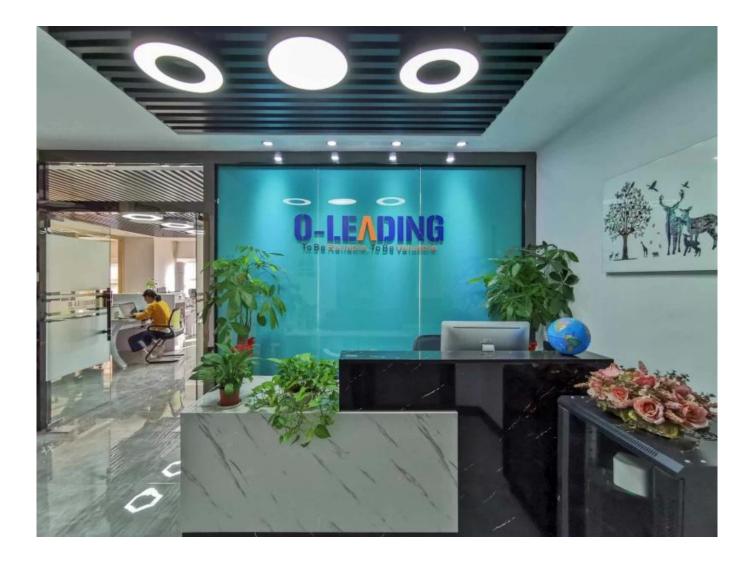


# **Production Process**

18 years experience in one-stop PCB and PCBA, we can make your idea come true,



## Our Team



#### Factory PCB





Drilling Machine



Pattern Plating Machine



Scrubbing Machine



Developing Machine



Routing Machine



High-speed flying probe machine



E-test Machine

- Factory SMT



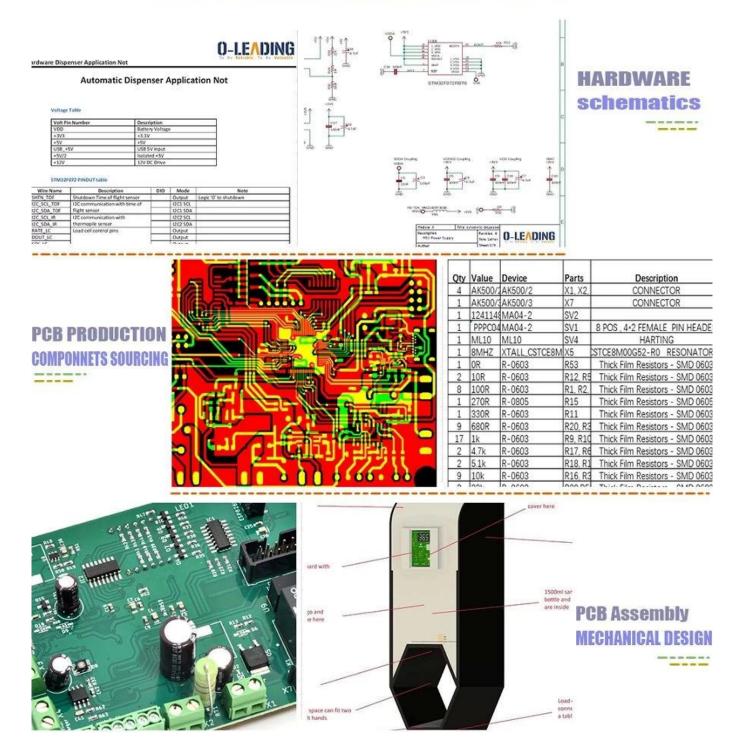








## **HOW O-LEADING MAKE A PROJECT FOR YOU**





### To be **AELIABLE**

Quality first ,

Customer supreme ,

Scientifically management ,

Striving for famous brand







#### To be **Valuaale**

Science and technology keeps head ,

Put people first,

Be precise and practical,

contribute sincerely



合作伙伴 Customers

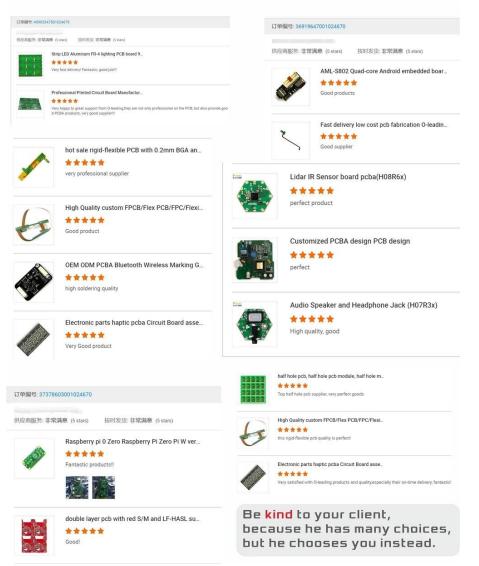


#### O-LEADING *CUSTOMER REVIEW*

#### CUSTOMER VOICE IS EXTREMELY IMPORTANT TO US

订单编号: 49335	5463501024670	订伸编号: 45922411001024670
供应商服务: 非常		605時后分: 世際調練 (Sister) 裕田(25): 世際編集 (Sister) High TG180 FR4 Circuit HOJ PCB 94V0 Board
	High quality usb power pcb , pcba manufacturer	High Tu Lie Pre-4 Uncut In UP Feat Yorku Baste _     This is a very difficult PCB design, but we are fucily to find 0-leading to support the PCB for us/very good to     prCB supplief.
	Fancy has done an exilent job, whenever we write, she answered us within 1 second, O-leading is very perfe cr with fast delivery, fast logistics, the most important thing is good quality, good packaging, thank you!	universal TR4 Multilayer PCB washing machine
	oem customized tohs pcb drawing schematic s ******* We received the boards, the quality is very good the price is very reasonable. Fancy is very nice & smart & e sperimend, the digitatic is super Fall vill come to see more in the future.	57件編号: 49024962001024070 
订单编号: 49298;	同意演评论	High quality Keyboard pcb & pcba Factory SMT
巴皮商服务: 非常		Electric contraction of the second se
<i>M</i> ,	High TG180 FR-4 Circuit HDI PCB 94V0 Board	[7]用発音: 405942250102473 (POERES: 在学校展示 のVano) HIFESE: 年代基本 (Pisco) Professional Primted Circuit Board Manufactur
ananananan ananananan ananananan ananananan ananananan tararananan	eem customized rohs pcb drawing schematic s	***** Vry high builty PCB products. Orkeding is the best PCB sugginise that we have ever worked with UTGPR-0F: LICKASTP26501026210
	國國議評论	(供应商服务: 非常满意 (5 stars) 按时发货: 非常满意 (5 stars)
	Strip LED Aluminum FR-4 lighting PCB board 9 ******* High quality, fast delivery, good service, competitive price, lucky and happy to purchase from O-leading!	High TGI80 FR4 Circuit HDI PCB 94V0 Board

# LISTER TO CUSTOMER VOICE



## Certifications







O-LEADING SUPPLY CHAIN (HK) CO., LIMITED

Test Report

# SGS

#### Test Report

#### No. SZXEC1900530401

Date: 30 Mar 2019 Page 2 of 6

#### Test Part Description :

Test Results :

### Specimen No. SGS Sample ID Description SN1 SZX19-005304.001 Green"PCB"

Date: 30 Mar 2019 Page 1 of 6

The following sample(s) was/were submitted and identified on behalf of the clients as : OSP

No. SZXEC1900530401

SGS Job No. :	RP19-005089 - SZ
Date of Sample Received :	22 Mar 2019
Testing Period :	22 Mar 2019 - 30 Mar 2019
Test Requested :	Selected test(s) as requested by client.
Test Method :	Please refer to next page(s).
Test Results :	Please refer to next page(s).
Conclusion :	Based on the performed tests on submitted sample(s), the results of Lead. Mercury, Cadmium, Heavalent chromium, Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs) and Phthalates such as Bis(2-ethylhexyl) phthalate (DEHP), Buyl) benzyl phthalate (BBP), Dbuyl phthalate (DBP), and Disobutyl phthalate (DBP) comply with the limits as set bj RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/85/EU.

1313.FLOOR 13, FORTUNE BUILDING, DANSHUI TOWN, HUIYANG DISTRICT, HUIZHOU, GUANGDONG, CHINA

Signed for and on behalf of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

Tina

Tina Fan Approved Signatory



Member of the SGS Group (SGS SA)

Remarks : (1) 1 mg/kg = 1 ppm = 0.0001%
 (2) MDL = Method Detection Limit

(3) ND = Not Detected ( < MDL ) (4) "-" = Not Regulated

#### RoHS Directive (EU) 2015/863 amending Annex II to Directive 2011/85/EU

Test Method : With reference to IEC 62321-4:2013+A1:2017, IEC62321-5:2013, IEC62321-7:2:2017, IEC 62321-6:2015 and IEC62321-8:2017, analyzed by ICP-OES, UV-Vis and GC-MS.

Test Item(s)	Limit	Unit	MDL	001
Cadmium (Cd)	100	mg/kg	2	ND
_ead (Pb)	1,000	mg/kg	2	8
Mercury (Hg)	1,000	mg/kg	2	ND
Hexavalent Chromium (Cr(VI))	1,000	mg/kg	8	ND
Sum of PBBs	1.000	mg/kg		ND
Monobromobiphenyl	-	mg/kg	5	ND
Dibromobiphenyl	12	mg/kg	5	ND
Tribromobiphenyl		mg/kg	5	ND
Tetrabromobiphenyl		mg/kg	5	ND
Pentabromobiphenyl		mg/kg	5	ND
Hexabromobiphenyl	-	mg/kg	5	ND
Heptabromobiphenyl	-	mg/kg	5	ND
Octabromobiphenyl		mg/kg	5	ND
Nonabromobiphenyl		mg/kg	5	ND
Decabromobiphenyl		mg/kg	5	ND
Sum of PBDEs	1,000	mg/kg		ND
Monobromodiphenyl ether		mg/kg	5	ND
Dibromodiphen yl ether		mg/kg	5	ND
Tribromodiphenyl ether		mg/kg	5	ND
Tetrabromodiphenyl ether	-	mg/kg	5	ND
Pentabromodiphenyl ether		mg/kg	5	ND



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### UL Product iQ™



E490354

ZPMV2.E490354 - WIRING, PRINTED - COMPONENT

### Wiring, Printed - Component

See General Information for Wiring, Printed - Component

#### O-LEADING SUPPLY CHAIN (HK) CO LTD

ROOM 1205, 12/F TAI SANG BANK BLDG 130-132 DES VOEUS ROAD CENTRAL, HONG KONG

	Cond	Width			Max			Max			
		Min	Cond	SS/	Area	Solo	der	Oper		Meets	с
	Min	Edge	Thk	DS/	Diam	Lim	its	Temp	Flame	UL796	т
Туре	mm(in)	mm(in)	mic(mil)	DSO	mm(in)	с	sec	с	Class	DSR	L
Multilayer (m	ass laminate) p	rinted wiring l	ooards.								
O-LEADING- 401	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	12.7 (0.5)	260	10	130	V-0	-	-
O-LEADING- 407	0.08 (0.003)	0.2 (0.008)	17 (0.67)	DS	9.7 (0.4)	260	10	130	V-0	All	-
Multilayer pri	nted wiring bo	ards.	A								
O-LEADING- 408	0.125 (0.005)	0.125 (0.005)	12 (0.47) Int:136	DS	50.8 (2.0)	280	20	130	V-0	All	*
Single layer p	rinted wiring b	oards.	n.					600	3 7	200	
O-LEADING- 002	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	105	V-0	All	-
O-LEADING- 003	0.38 (0.015)	1.14 (0.045)	34 (1.34)	SS	19.1 (0.8)	260	10	130	V-0		-
O-LEADING- 033	0.15 (0.006)	0.3 (0.012)	34 (1.34)	SS	25.4 (1.0)	260	10	120	V-0	All	-
O-LEADING- 205	0.1 (0.004)	0.3 (0.012)	34 (1.34)	DS	69.6 (2.7)	260	10	130	V-0	All	-
O-LEADING- 206	0.15 (0.006)	0.33 (0.013)	17 (0.67)	DS	69.6 (2.7)	260	10	130	V-0	All	-
O-LEADING- D01	0.14 (0.006)	0.15 (0.006)	33 (1.30)	DS	25.4 (1.0)	260	10	130	V-0	All	*
O-LEADING- S01	0.25 (0.010)	0.25 (0.010)	17 (0.67)	SS	25.4 (1.0)	260	4	130	V-0	All	*

#### WIRING, PRINTED - COMPONENT | UL Product iQ

O-LEADING- S02	0.2 (0.008)	0.2 (0.008)	17 (0.67)	SS	25.4 (1.0)	260	4	130	НВ		*
O-LEADING- S03	0.25 (0.010)	0.25 (0.010)	34 (1.34)	SS	25.4 (1.0)	260	4	130	V-0	All	*

\* - CTI marking is optional and may be marked on the printed wiring board.

Marking: Company name or file number and type designation. May be followed by a suffix to denote factory identification or burning test classification.

并不是所有出现在本数据库中的公司名称和产品都满足了UL跟踪检验服务的要求。只有带有 UL 标志的产品,才应该被视为经过 UL认证,并满足UL 跟踪检验服务的要求。注意查看产品上的标志。

UL 允许在线认证目录中所含材料的复制遵循以下条件:1指南信息、装配、构造、设计、系统和/或认证(文件)必须在不篡改任 何数据(或图纸)的情况下完整且无误导性地呈现。2."经 UL 允许从在线认证目录转载"声明必须出现在所摘取材料的邻近位置。此 外,转载材料必须包含以下格式的版权声明: "© 2019 UL LLC"

# Process Capability

PCB Production CapabilitiesLayer CountILayer.32LayerFinished coper thickness1/3e-12eMin Line with/spacing internal3.0mi/3.0milMax Aspect Ratio10-1Max Aspect Ratio0.2mi-5.0mmMax Fanel size(inches)6.55+150.0mmMin Line with/spacing internal0.2mi-5.0mmMin Line with/spacing internal0.2mi-5.0mmMax Panel size(inches)6.55+150.0mmMinimu Drilled Hole Size4milPlated Hole Tolerance4/-3milBind/burled Vasa (All Types)YESVia Fill/Conductive, Non-Conductive)YESSuffer Conductive)YESSuffer Conductive)YESSuffer Conductive)YESSuffer Conductive, Non-Conductive)YESSuffer EnsiblesHASLOSP.ENIG.HAL-LE.Immersion Tin_Gold fingers, Carbon inkSUT Erroduction CapabilitiesFR-4,CEM-1,CEM-3,Aluminum-based board, FPCMax PCB size510x1500mmMin PCB size50x50mmPCB Thickness0.5-4mmMin Components size0.5-4mmMin Components size0.5-4mmMin Component size0.500 and largerComponent max height15mmMin lead pitch0.3mmMin lead pitch0.4mmPlacement precision+/-0.03mm			je na se		
Finished copper thickness       1/3az-12oz         Min Line width/spacing internal       3.0mil/3.0mil         Min Line width/spacing internal       4.0mil/4.0mil         Max Aspect Ratio       10:1         Board thickness       0.2mm-5.0mm         Max Patel size(inches)       63591500mm         Minimum Drilled Hole Size       4mil         Plated Hole Tolerance       +/-3mil         Bind/Buried Vas (All Types)       YES         Via Fill(Conductive, Non-Conductive)       YES         Surface finishes       HASL OSP, ENIC, HAL-LF, Immersion Silver, Immersion Tin, Gold fingers, Carbon ink         SMT Production Capabilities       FR-4, PR-4, CEM-1, CEM-3, Aluminum-based board, FPC         Max PCB size       50x50mm         PCB Material       FR-4, Scmm         Min PCB size       50x50mm         PCB Thickness       0.5-4mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size component       0603 and larger         Component max height       15mm         Min lead pitch       0.3mm	PCB Production Capabilities				
Min Line wdth/spacing internal       3.0ml/3.0ml         Min Line wdth/spacing external       4.0ml/4.0ml         Max Aspect Ratio       10.1         Board thickness       0.2mm-5.0mm         Max Spect Ratio       635*1500mm         Minimum Drilled Hole Size       4ml         Plated Hole Tolerance       +/-3mil         Blind/Buried Vas (AIT Types)       YES         Via Fill/Conductive,Non-Conductive)       YES         Base Material       FR-4,FR-4high Tg.Halogen free material.Rogers,Aluminium base,Polyimide,Heavy Copper         Surface finishes       HASL,OSP,ENIG,HAL-LF,Immersion Silver,Immersion Tin,Gold fingers,Carbon ink         SMT Production Capabilities       FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size component       0603 and larger         Component max height       15mm         Min lead pitch       0.3mm	-	1Layer-32Layer			
Min Line width/spacing external       4.0mil/4.0mil         Max Aspect Ratio       10:1         Board thickness       0.2mm-5.0mm         Max Parel size(inches)       635*1500mm         Minimum Drilled Hole Size       4mil         Plated Hole Tolerance       +/-3mil         Bind/Buried Vias (All Types)       YES         Via Fill(Conductive,Non-Conductive)       YES         Surface finishes       HASL,OSP.ENIG.HAL-LF,Immersion silver,Immersion Tim,Gold fingers,Carbon ink         SMT Production Capabilities       FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size component       0603 and larger         Component max height       15mm         Min BGA ball pitch       0.4mm		1/3oz-12oz			
Max Aspect Ratio       10:1         Board thickness       0.2mm.5.0mm         Max Parel size(inches)       635*1500mm         Minimum Drilled Hole Size       4mil         Plated Hole Tolerance       +/.5mil         Blind/Burled Vias (All Types)       YES         Base Material       FR4.FR-thigh Tg.Halogen free material_Rogers.Aluminium base.Polyimide.Heavy Copper         Surface finishes       HASL_OSP.ENIG.HAL-LF.Jmmersion silver.Jmmersion Tin,Gold fingers.Carbon ink         SMT Production Capabilities       FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0603 and larger         Component max height       15mm         Min BGA ball pitch       0.4mm					
Board thickness     0.2mm-5.0mm       Max Panel size(inches)     635*1500mm       Minimum Drilled Hole Size     4mil       Plated Hole Tolerance     +/.3mil       Blind/Buried Vas (All Types)     YES       Base Material     FR4.4FR-4high Tg.Halogen free material_Rogers_Aluminium base,Polyimide,Heavy Copper       Surface finishes     HASL.OSP_ENIG.HAL-LF,Immersion silver,Immersion Tin,Gold fingers,Carbon ink       Surface finishes       PCB Material     FR-4,FR-4high Tg.Halogen free material_Rogers_Aluminium base,Polyimide,Heavy Copper       Max PCB size     510x1500mm       Min PCB size     50x50mm       PCB Thickness     0.5mm-4.5mm       Board thickness     0.5-4mm       Min Components size     0201       Standard chip size component     0603 and larger       Component max height     15mm       Min lead pitch     0.3mm       Min BGA ball pitch     0.4mm					
Max Panel size(inches)       635*1500mm         Minimum Drilled Hole Size       4mil         Plated Hole Tolerance       4/-/					
Minimum Drilled Hole Size4milPlated Hole Tolerance+/-3milBind/Buried Vias (All Types)YESBase MaterialFR-4,FR-4high Tg.Halogen free material,Rogers,Aluminium base,Polyimide,Heavy CopperSurface finishesHASL,OSP,ENIG,HAL-LF,Immersion Tin,Gold fingers,Carbon inkSMT Production CapabilitiesPCB MaterialFR-4,FR-4high Tg.Halogen free material,Rogers,Aluminium base,Polyimide,Heavy CopperSMTE Production CapabilitiesPCB MaterialFR-4,CEM-1,CEM-3,Aluminum-based board,FPCMax PCB size50x50mmMin PCB Size50x50mmPCB Thickness0.5-4mmMin Components size0201Standard chip size componer0603 and largerComponent max height15mmMin lead pitch0.4mm					
Plated Hole Tolerance+/-3milBind/Buried Vias (AII Types)YESVia Fill(Conductive, Non-Conductive)YESBase MaterialFR-4,FR-4 high Tg.Halogen Tree material, Rogers, Aluminium base, Polyimide, Heavy CopperBase MaterialKASL_OSP, ENIG, HAL-LF, Immersion Tin, Cold fingers, Carbon inkSMT Production CapabilitiesPCB MaterialFR-4, CEM-1, CEM-3, Aluminum-based board, FPCMax PCB size510x1500mmMin PCB size50x50mmPCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size componert0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm					
Blind/Buried Vias (All Types)       YES         Via Fill(Conductive, Non-Conductive)       YES         Base Material       FR-4,FR-4high Tg.Halogen free material,Rogers,Aluminium base,Polyimide,Heavy Copper         Surface finishes       HASL,OSP,ENIG,HAL-LF,Immersion silver,Immersion Tin,Gold fingers,Carbon ink         SMTE Production Capabilities         FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size componer       0603 and larger         Component max height       15mm         Min lead pitch       0.4mm					
Via Fill(Conductive, Non-Conductive)       YES         Base Material       FR4,FR-4high Tg.Halogen free material,Rogers,Aluminium base,Polyimide,Heavy Copper         Surface finishes       HASL,OSP,ENIG,HAL-LF.Jmmersion Tin,Cold fingers,Carbon ink         SMT Production Capabilities         SMT Production Capabilities         PCB Material         Max PCB size       FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size componer       0603 and larger         Component max height       15mm         Min lead pitch       0.4mm					
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Surface finishes       HASL,OSP,ENIG,HAL-LF,Immersion silver,Immersion Tin,Gold fingers,Carbon ink         SMT Production Capabilities       FR-4,CEM-1,CEM-3,Aluminum-based board,FPC         Max PCB size       510x1500mm         Min PCB size       50x50mm         PCB Thickness       0.5mm-4.5mm         Board thickness       0.5-4mm         Min Components size       0201         Standard chip size component       0603 and larger         Component max height       15mm         Min BGA ball pitch       0.4mm	, , ,		ree material Rogers Aluminium hase Polyimide Heavy Conner		
SMT Production CapabilitiesPCB MaterialFR-4,CEM-1,CEM-3,Aluminum-based board,FPCMax PCB size510x1500mmMin PCB size50x50mmPCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm					
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Min PCB size50x50mmPCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	PCB Material		FR-4,CEM-1,CEM-3,Aluminum-based board,FPC		
PCB Thickness0.5mm-4.5mmBoard thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	Max PCB size		510x1500mm		
Board thickness0.5-4mmMin Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	Min PCB size		50x50mm		
Min Components size0201Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	PCB Thickness		0.5mm-4.5mm		
Standard chip size component0603 and largerComponent max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	Board thickness		0.5-4mm		
Component max height15mmMin lead pitch0.3mmMin BGA ball pitch0.4mm	Min Components size		0201		
Min lead pitch     0.3mm       Min BGA ball pitch     0.4mm	Standard chip size component		0603 and larger		
Min BGA ball pitch     0.4mm	Component max height		15mm		
-	Min lead pitch		0.3mm		
Placement precision +/-0.03mm	Min BGA ball pitch		0.4mm		
	Placement precision		+/-0.03mm		

# Packaging & Delivery

# Shipping service





Express

	Quick Turn Lead Time				
Layer Count:	Lead Tim	Special Requirement			
1L/2L	2-3days	24 Hours,48 Hours			
4L	3-4days	48 Hours			
6L	4-5days	72 Hours			
8L	5-6days	NA			
10L	6-7days	NA			
12L	7-8days	NA			
14L	8-9days	NA			

Standard Lead Time				
Layer Count:	Sample Lead Time	Volume order lead time		
2L	4 days	10 days		
4L	5 days	11 days		
6L	6 days	12 days		
8L	8 days	14 days		
10L	10 days	16 days		
12L	12 days	18 days		
14L	14 days	20 days		
16-32L	18 days	24 days		

FAQ

#### **1**. How do O-Leading ensure quality?Our high quality standard is achieved with the following.

1.1 The process is strictly controlled under ISO 9001:2008 standards.

1.2 Extensive use of software in managing the production process

1.3 State-of-art testing equipments and tools. E.g. Flying Probe, X-ray Inspection, AOI (Automated Optical Inspector) and ICT(in-circuit testing).

1.4.Dedicated quality assurance team with failure case analysis process

1.5.Continuous staff training and education

#### 2. How do O-Leading keep your price competitive?

Over the last decade, prices of many raw materials (e.g. copper, chemicals) had doubled, tripled or quadrupled; Chinese currency RMB had appreciated 31% over US dollar; And our labor cost also increased significantly.

However, O-Leading have kept our pricing steady. This owns entirely to our innovations in reducing cost, avoiding wastes and improving efficiency. Our prices are very competitive in the industry at the same quality level.

We believe in a win-win partnership with our customers. Our partnership will be mutually beneficial if we can provide you anedgeon cost and quality.

#### 3. What kinds of boards can O-Leading process?

Common FR4, high-TG and halogen-free boards, Rogers, Arlon, Telfon, aluminum/copper-based boards, PI, etc.

### 4. What data are needed for PCB & PCBA production?

4.1 BOM (Bill of Materials) with reference designators: component description, manufacturer's name and part number.

4.2 PCB Gerber files.

4.3 PCB fabrication drawing and PCBA assembly drawing.

4.4 Test procedures.

4.5 Any mechanical restrictions such as assembly height requirements.

### 5. What's the typical process flow for multi-layer PCB?

Material cutting  $\rightarrow$  Inner dry film  $\rightarrow$  inner etching  $\rightarrow$  Inner AOI  $\rightarrow$  Multi-bond  $\rightarrow$  Layer stack up Pressing  $\rightarrow$  Drilling  $\rightarrow$  PTH  $\rightarrow$  Panel Plating  $\rightarrow$  Outer Dry Film  $\rightarrow$  Pattern Plating  $\rightarrow$  Outer etching  $\rightarrow$  Outer AOI  $\rightarrow$  Solder Mask  $\rightarrow$  Component Mark  $\rightarrow$  Surface finish  $\rightarrow$  Routing  $\rightarrow$  E/T  $\rightarrow$  Visual Inspection.

### 6. What's the key equipments for HDI manufacturing?

Key equipment list is as following: Laser drilling machine, Pressing machine, VCP line, Automatic Exposing machine, LDI and etc. The equipments we have are the best in the industry, laser drilling machines are from Mitsubishi and Hitachi, LDI machines are from Screen(Japan), Automatic Exposing machines are also from Hitachi, all of them make we can meet customer's technical requirements.

### 7. How many types of surface finish O-lead can do?

O-the leader has the full series of surface finish, such as: ENIG, OSP, LF-HASL, gold plating (soft/hard), immersion silver, Tin, silver plating, immersion tin plating, carbon ink and etc. .. OSP, ENIG, OSP + ENIG commonly used on the HDI, we usually recommend that you use a client or OSP OSP + ENIG if BGA PAD size less than 0.3 mm.

#### 8. What's your capability for FPC? Can O-Leading provide SMT service also?

O-Leading can fabricate FPC from single layer to 8layer, the working panel size can be as large as 2000mm\*240mm, please find the details in the page "Flex Capability". We also provide SMT one stop service to customer.

#### 9. What are the main factors which will affect the price of PCB?

Material; Surface finish; Technology difficulty; Different quality criteria; PCB characteristics; Payment terms; Different manufacturing countries.

### 10. What's the definition of PCB, PWB and FPC and what's the difference?

PCB is short for Printed Circuit Board; PWB is short for Printed Wire Board, same meaning as Printed Circuit Board; FPC is short for Flexible Printed Board.

#### 11. What factors should be considered when choosing the material for a PCB board?

Below factors should be considered when we choose the material for PCB: The material's Tg value should be greater than the operation temperature; Low CTE material has good performance of thermal stability; Good thermal resistance performance: Normally PCBs are required to resist 250°C for at least 50s. Good flatness; In consideration of the electrical properties, low loss/high permittivity material is used on high frequency PCB;

Polyimide glass fiber substrate used for flexible PCB; Metal core is used when the product has strict requirement of heat dissipation.

### 12. What's the merits of O-leading's rlgid-flex PCB?

O-leading's rigid-flex PCB has the characters of both FPC and PCB, so it can be used in some special products. Some part is flexible while the other part rigid, it can help save product's interior space, reduce product volume and improve performance.

#### 13. How to you make the impedance calculation?

The impedance control system is done using some test coupons, the SI6000 soft and the CITS 500s equipment from POLAR INSTRUMENTS. The equipment measures the impedance on a representative track configuration coupon of which the client has given us a determinate value and tolerance.