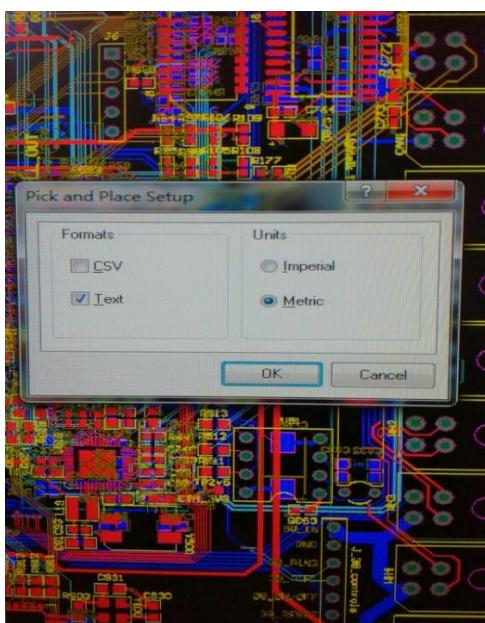
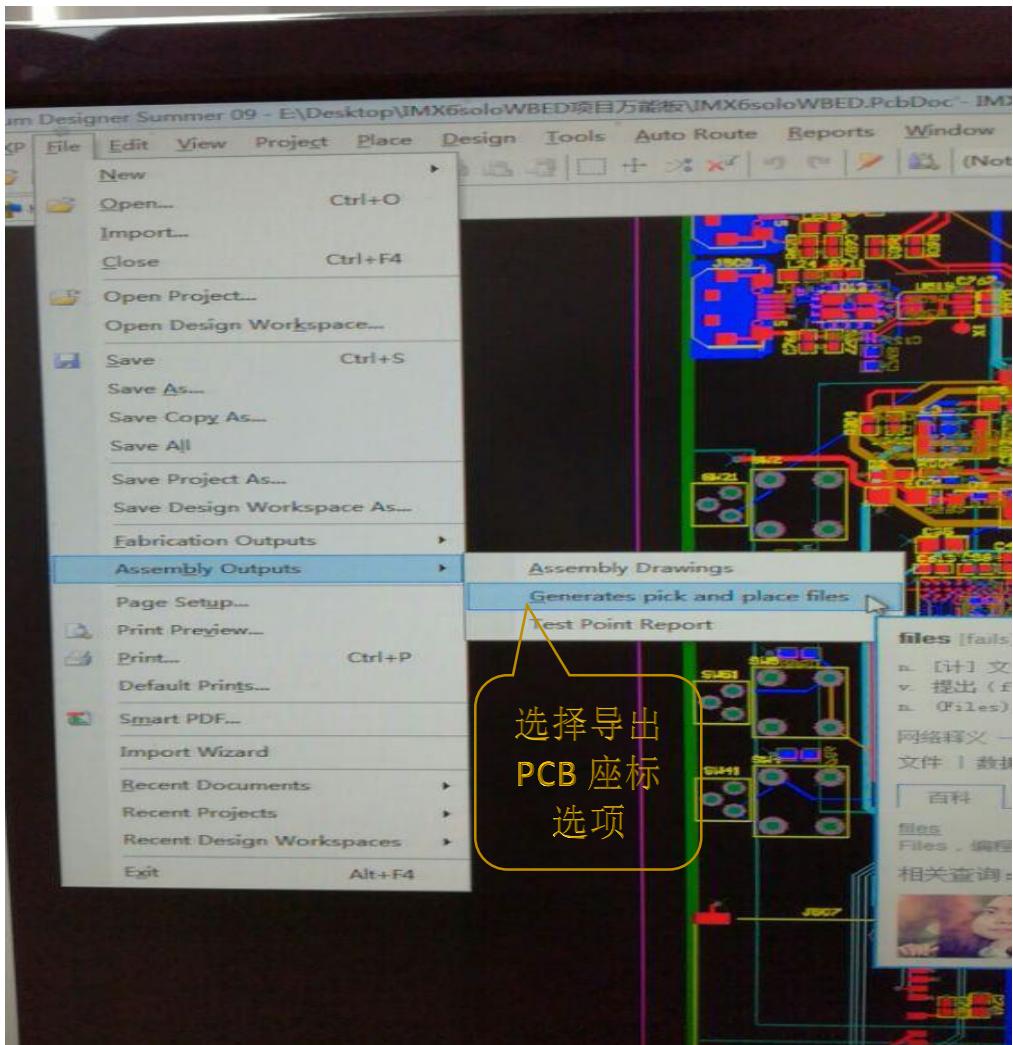


Altium Designer9 软件细节使用方法

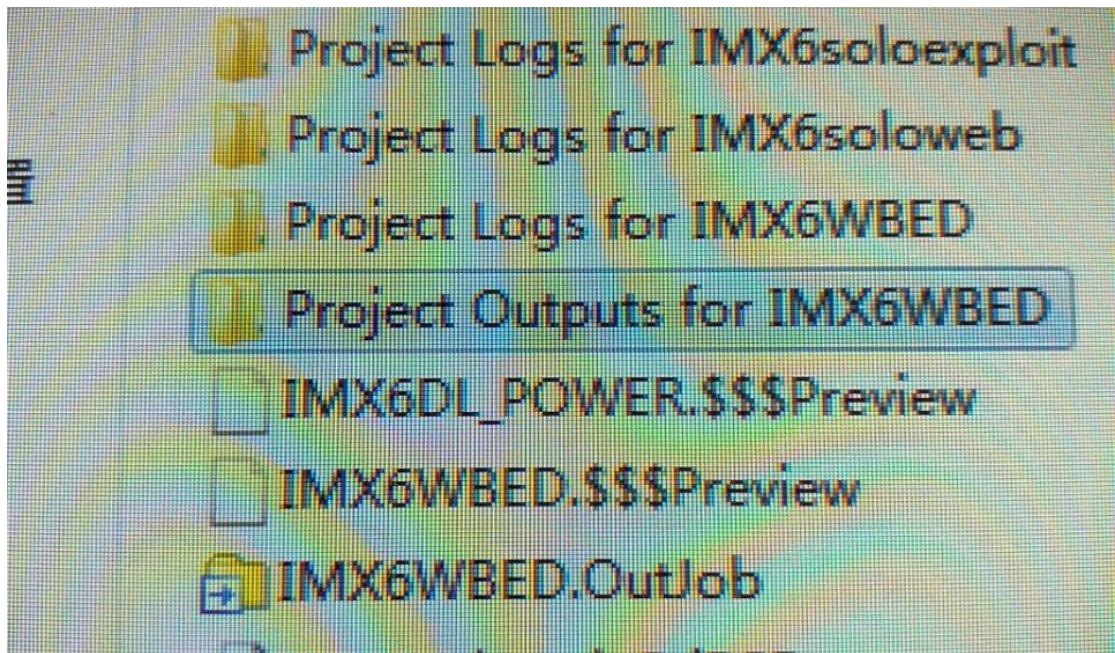
作者:向仔州

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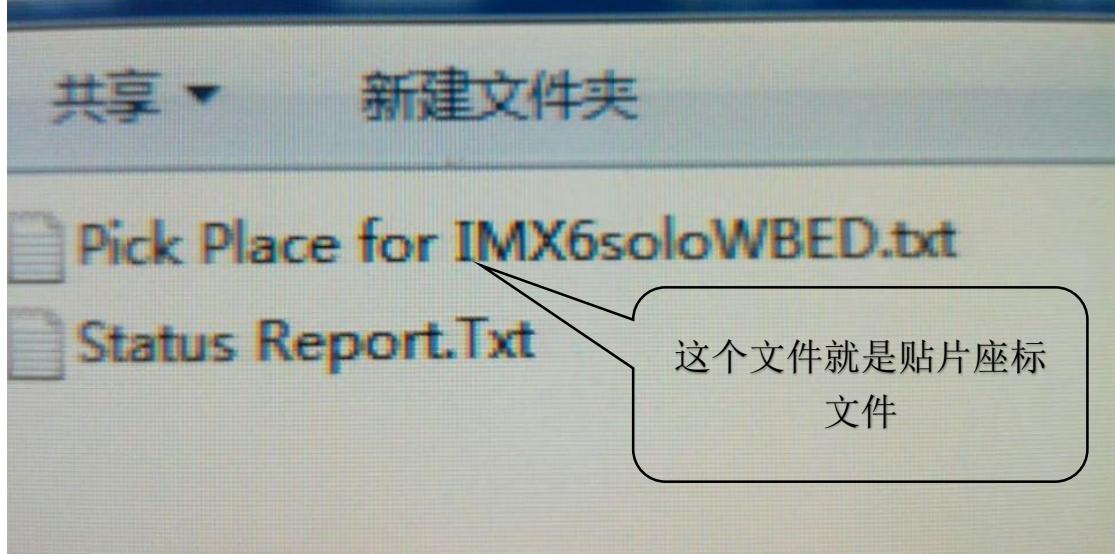
导出 PCB 加工 SMT 贴片座标文件



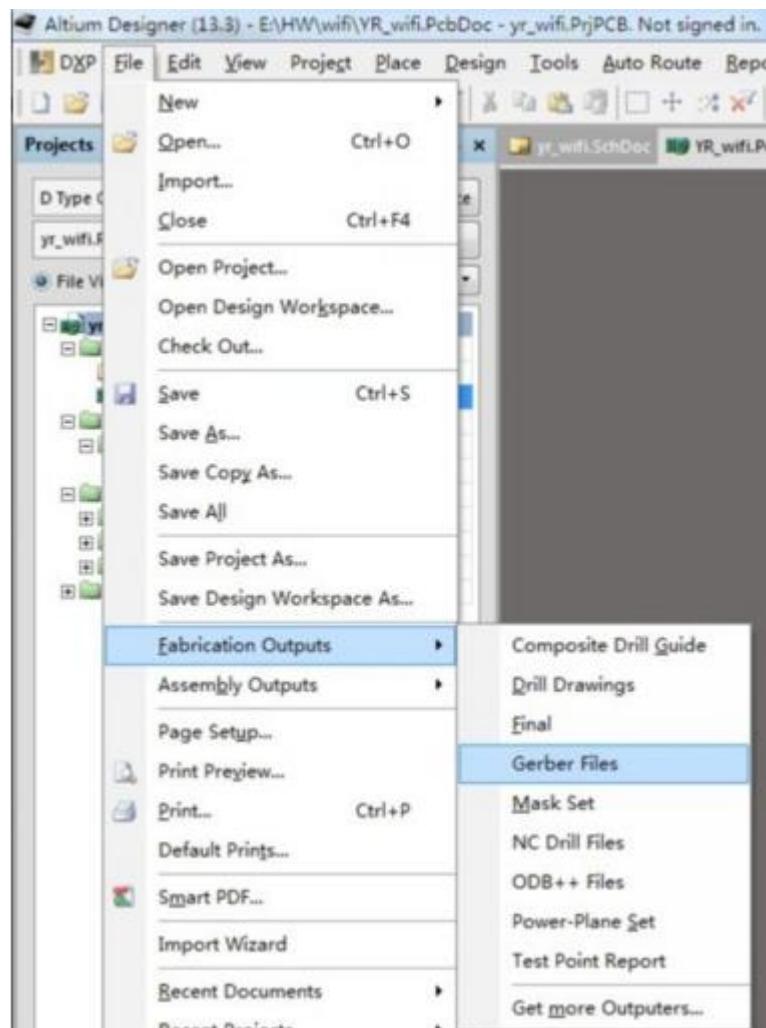
一般国内厂商都是用公制 mm 表示



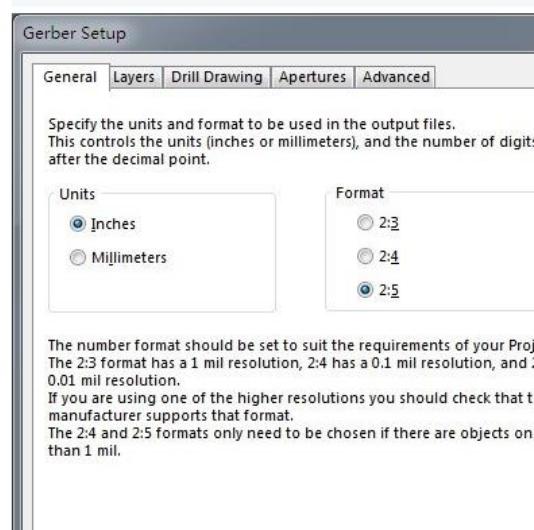
导出的的 Pick 座标 txt 文件在工程输出目录下，打开 Project Outputs for IMX6WBED 文件
/BED项目万能板 ➤ Project Outputs for IMX6WBED



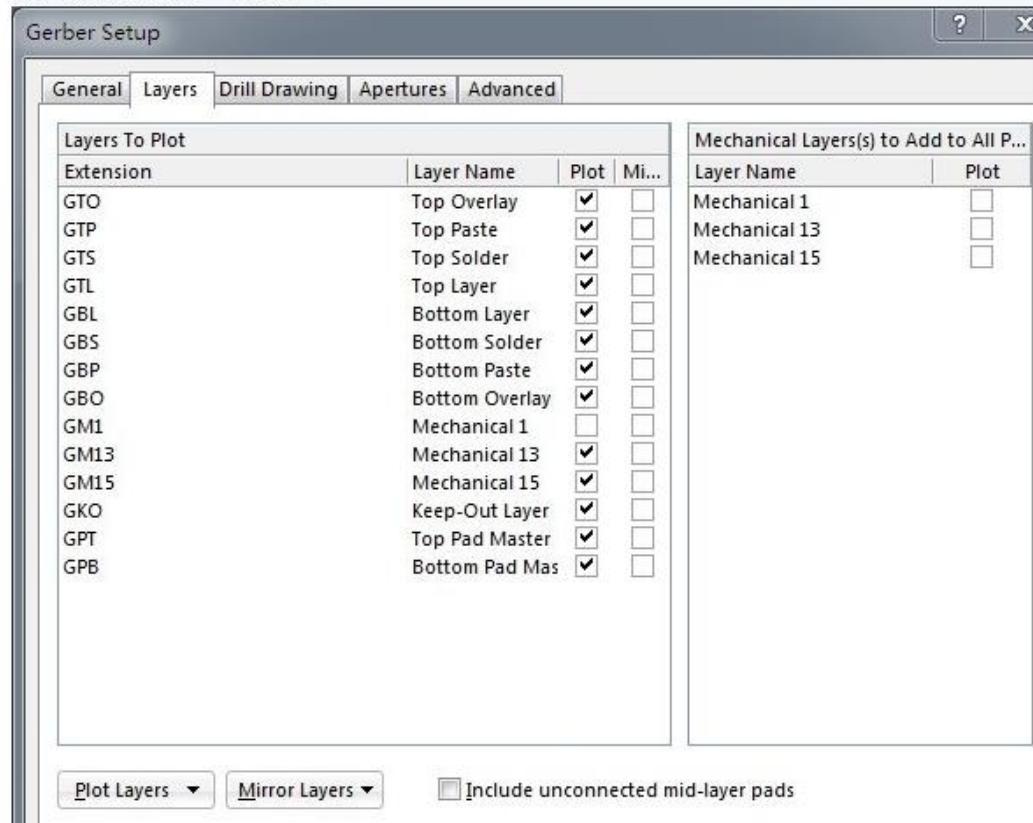
如何导出 Gerber 文件



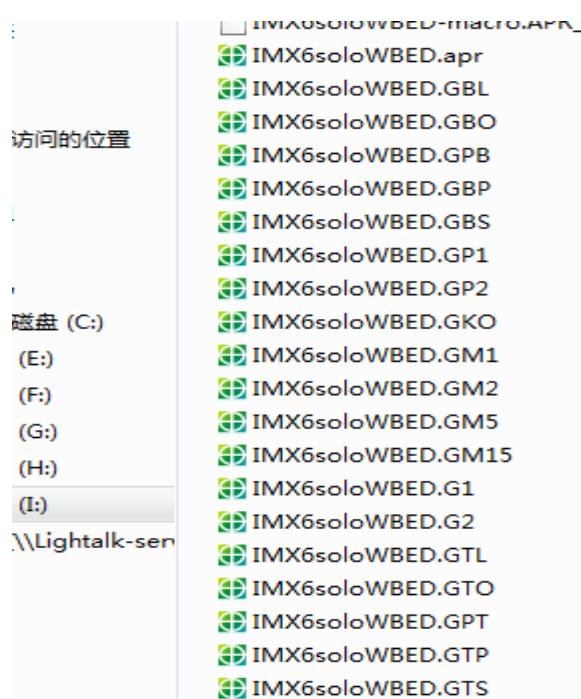
2. 参数设定。
 - 1) 在“General”选择Units (单位) :Inches, Format (



- 2) 在“Layers”选择需要用的Layer，双面板包含:GTO,GTS,GTL,GBL,GBS,GBO,GKO.(7个)。右边选项选，镜像层选择：“All Off”；

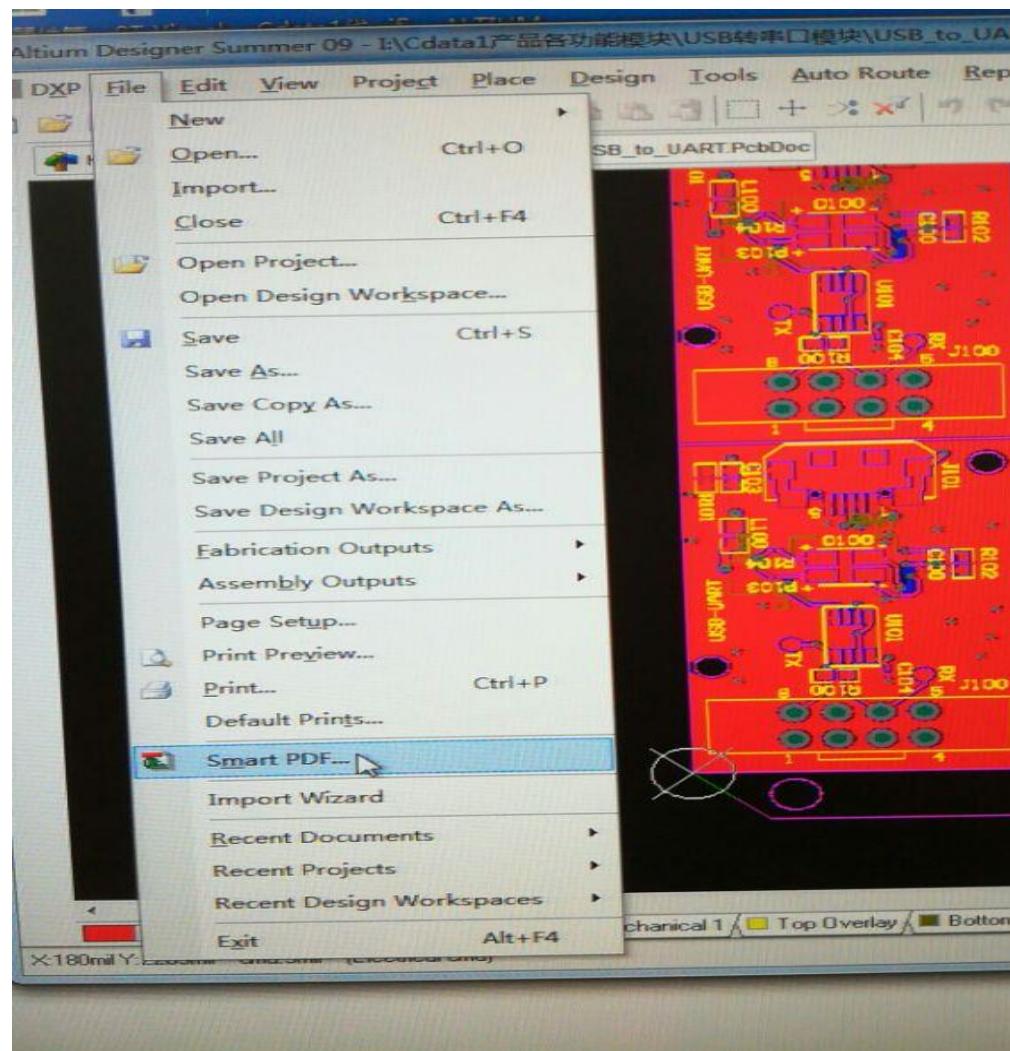


Project Outputs for IMX6WBED 就会在输出目录下产生 GerBer 文件

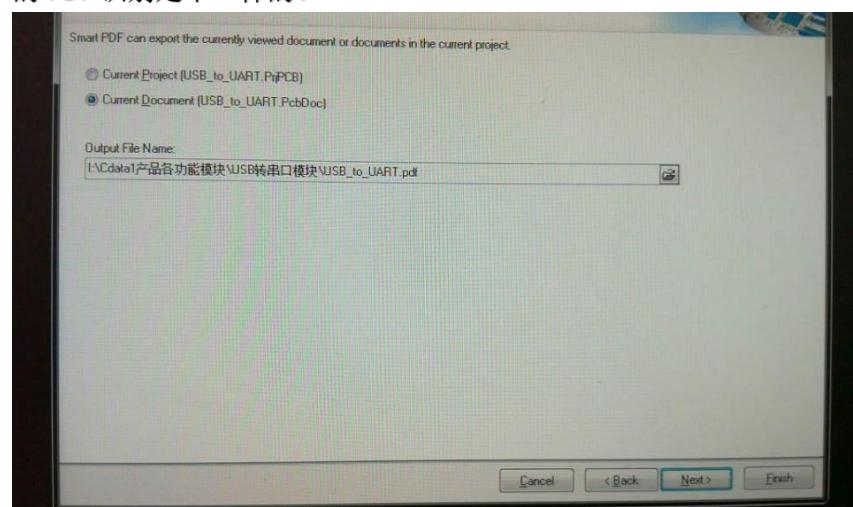


如何将 SMT 贴片文件输出在 PDF 文件上。

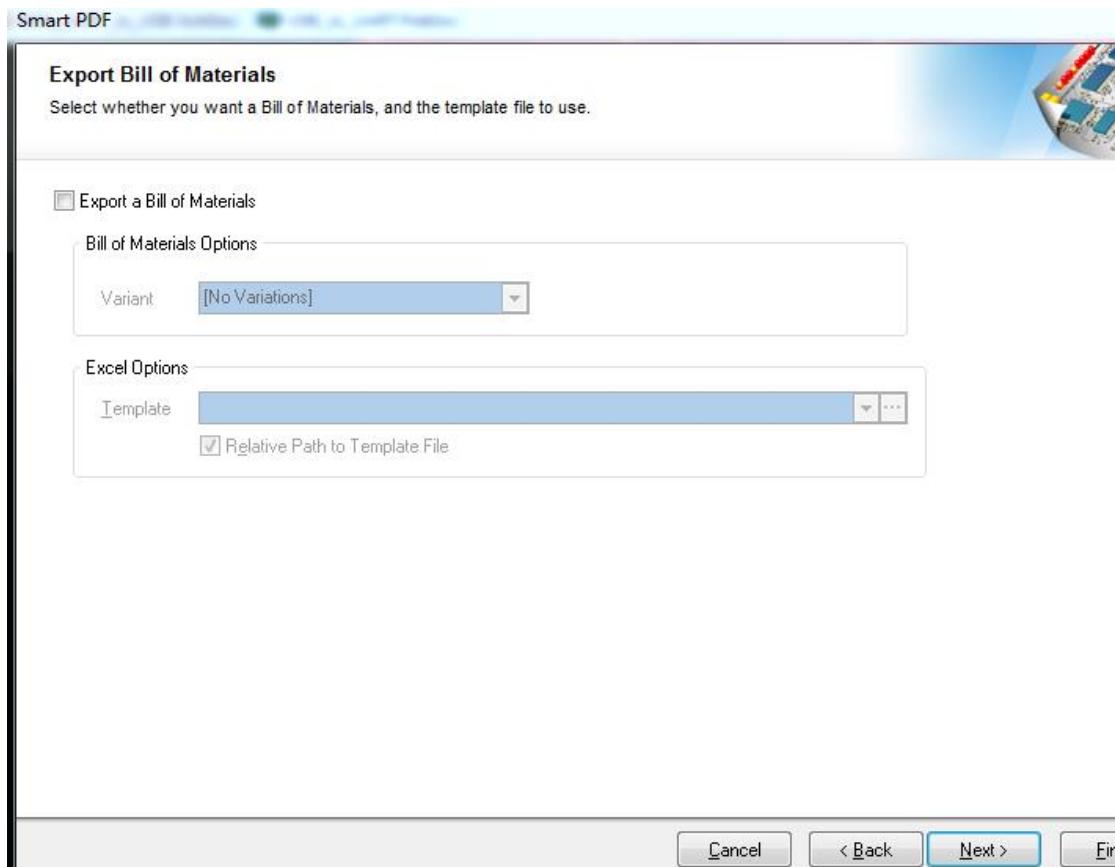
比如我现在要输出顶层的贴片图



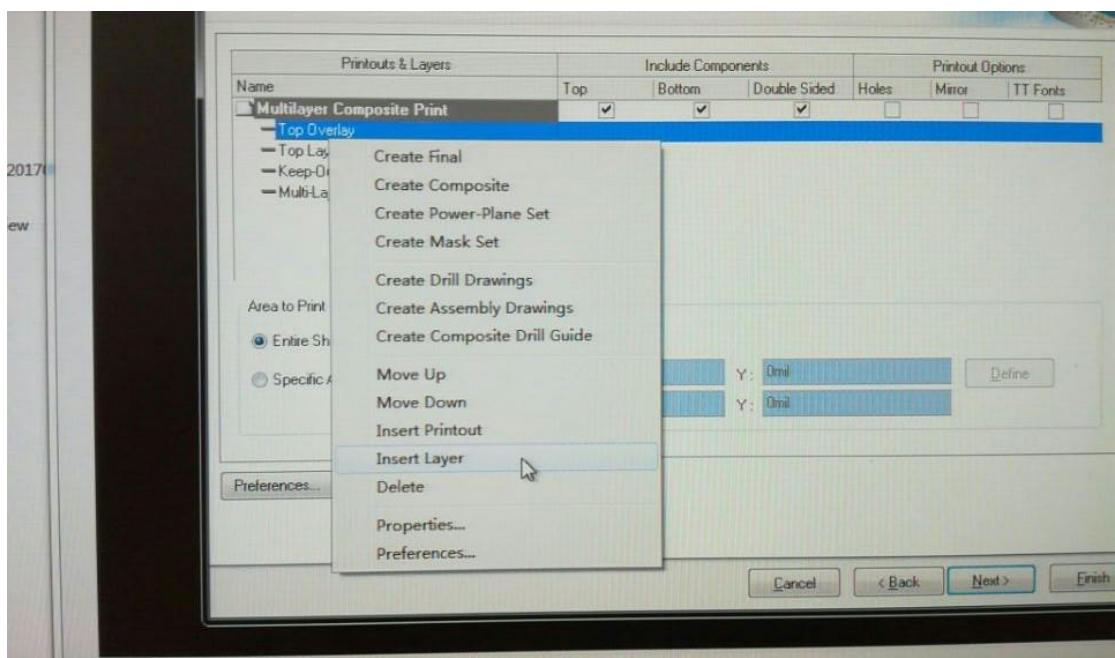
一点要先进入 PCB 版图，然后点击输出 PDF，不要在工程项目下点击输出 PDF。因为输出的 PDF 识别是不一样的。



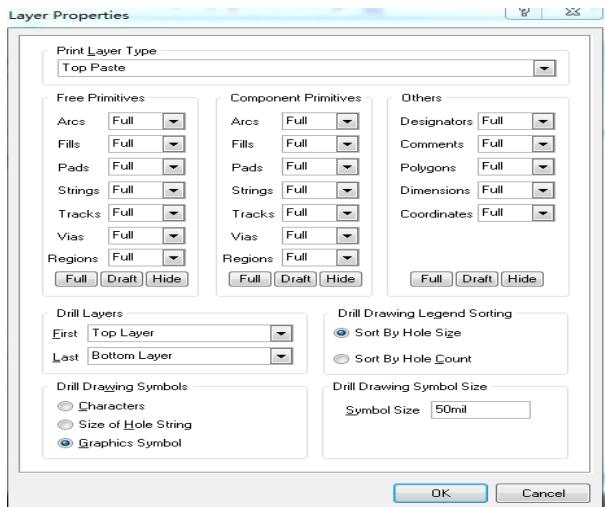
选择第二个 Document 文档输出，这样就输出你指定的 PCB，不会输出整个项目文件



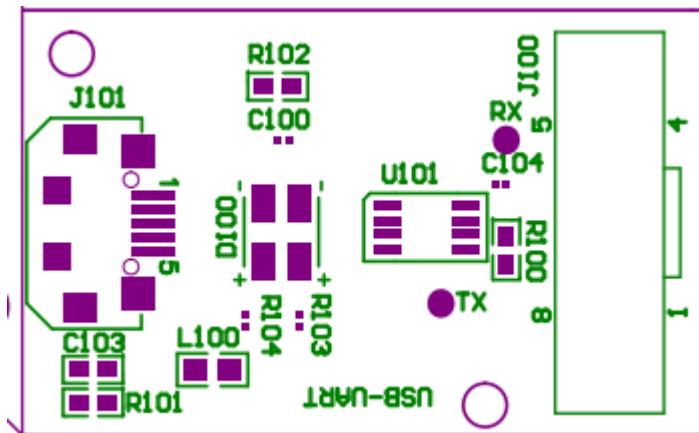
不要选择 Export, 否则会出错



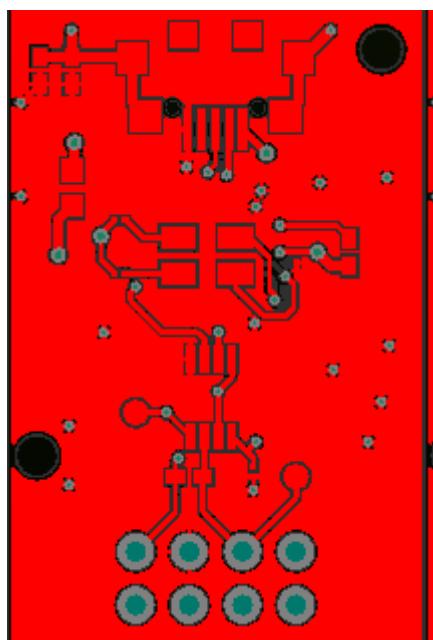
选择你要输出的 PCB 层，这里我先做顶层，所以我加入顶层的东西



这个顶层 Paste 是为了 PDF 有焊盘可以看



你看有紫色的焊盘，这样看舒服些，我把顶层 top layer 红色线取消了，因为红色线还包含焊盘，看其不舒服，

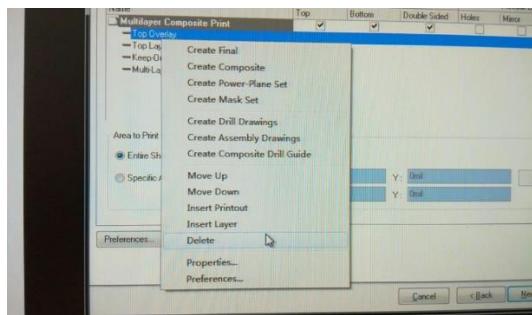


就像这样看起很不舒服所以我用 paste 来替焊盘形状

下面我们来输出底层贴片图
老规矩一路 next 到层设置这里

Printouts & Layers		Include Components			Printout Options		
Name		Top	Bottom	Double Sided	Holes	Mirror	TT Fonts
Multilayer Composite Print		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Top Paste
- Top Overlay
- Keep-Out Layer
- Multi-Layer



用 delete 删除你不要的层

Printouts & Layers		Include Components			Printout Options		
Name		Top	Bottom	Double Sided	Holes	Mirror	TT Fonts
Multilayer Composite Print		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

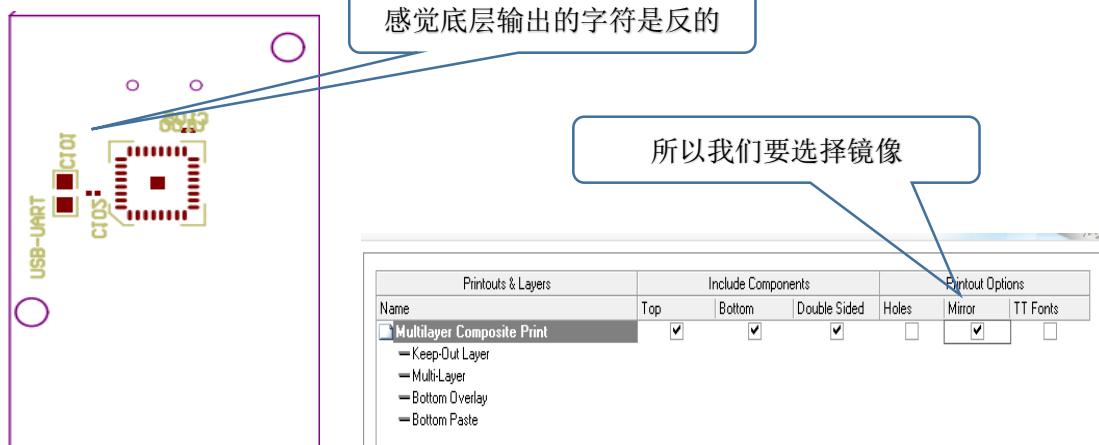
- Keep-Out Layer
- Multi-Layer

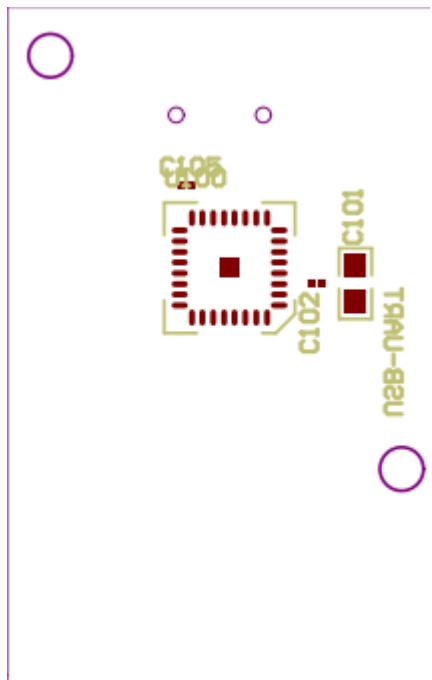
然后添加你要输出的底层，层选项

Printouts & Layers		Include Components		
Name		Top	Bottom	
Multilayer Composite Print		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

- Keep-Out Layer
- Multi-Layer
- Bottom Overlay
- Bottom Paste

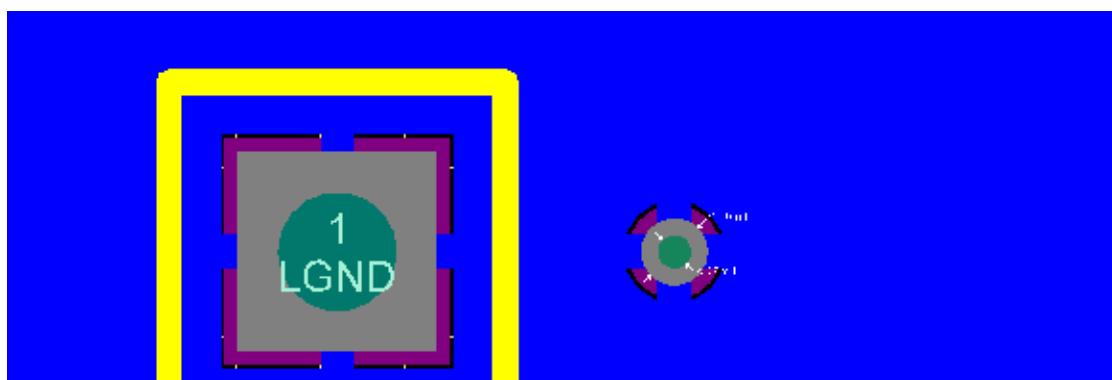
输出底层文件



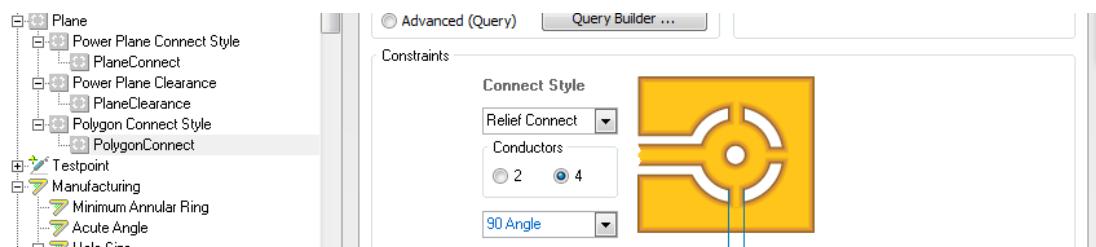


这下输出的字符看起舒服多了。

如何将焊盘和过孔分开敷铜规则



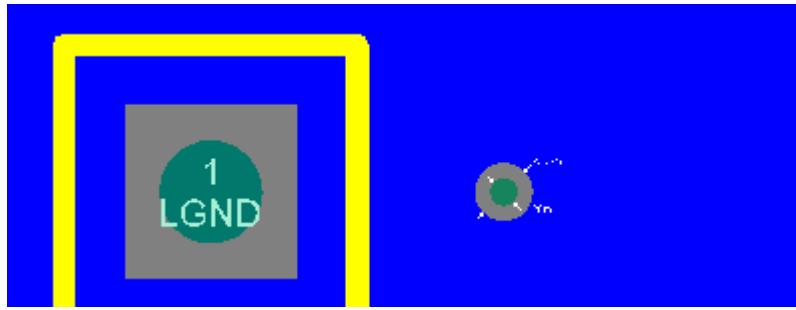
我想把焊盘变成十字敷铜，过孔取消十字全部接地



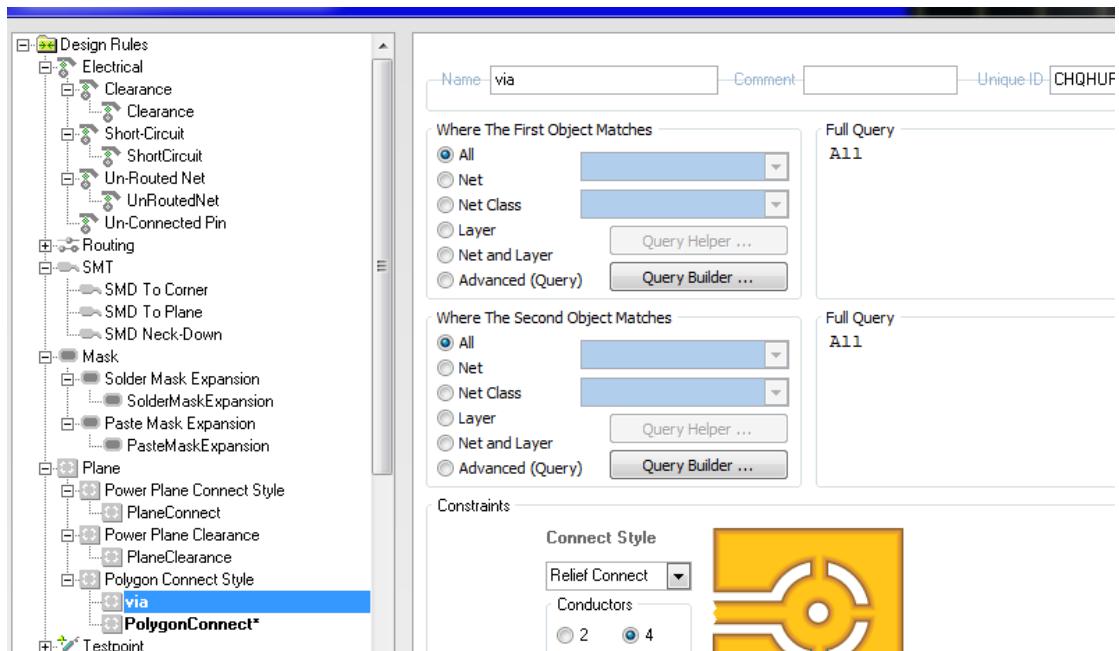
我修改敷铜规则



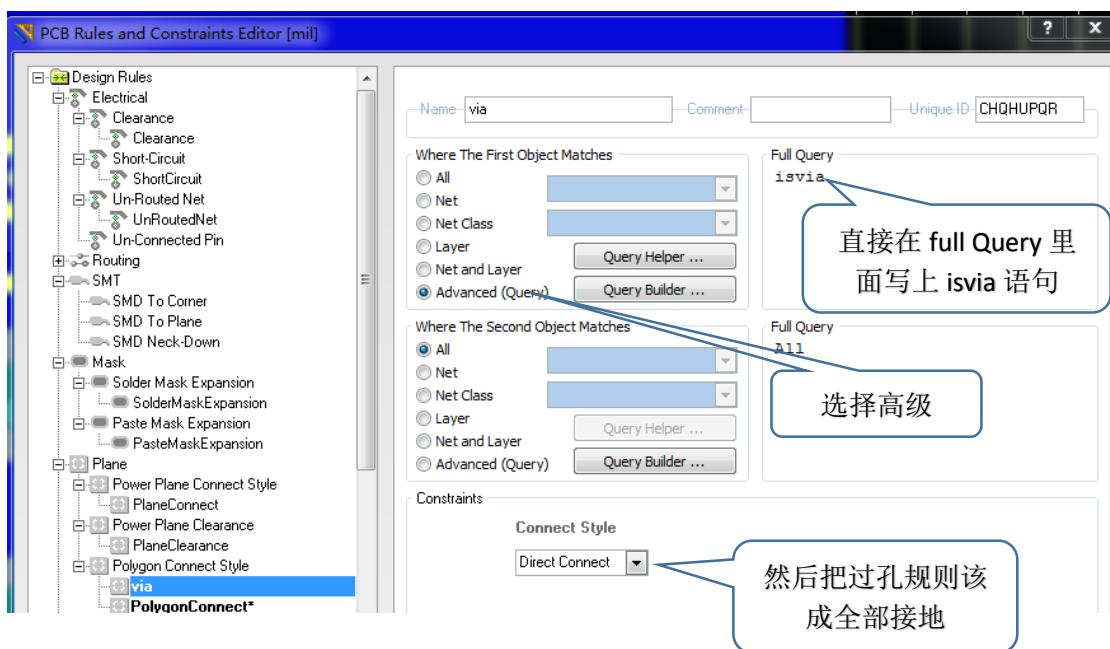
取消十字焊盘

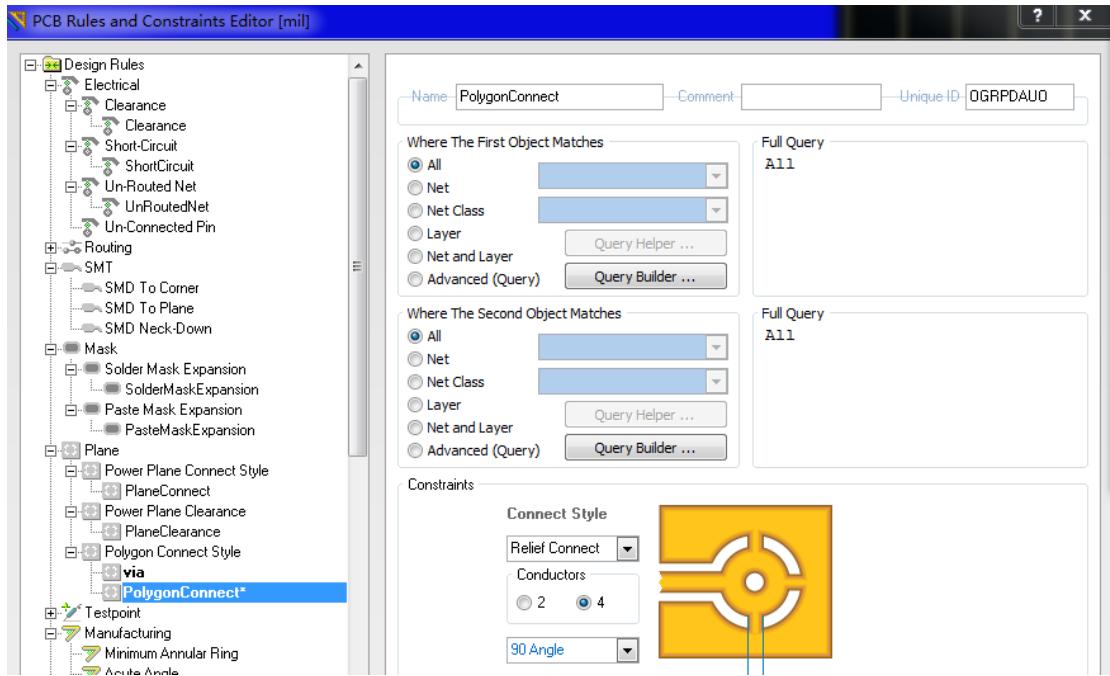


然后就出现焊盘过孔都全部接地了，这不是我想要的

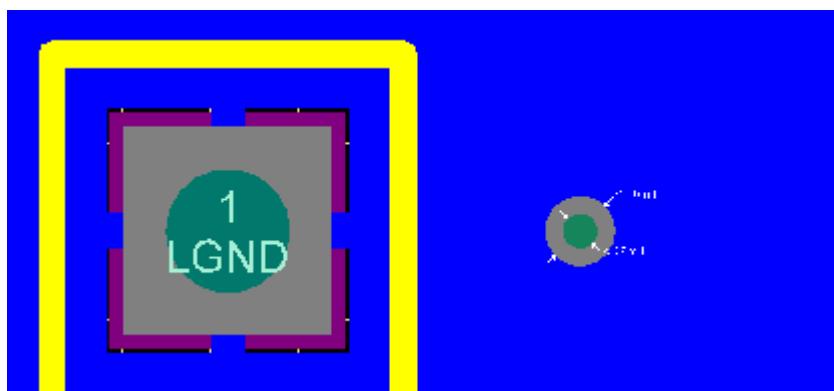


所以打开规则，在 Polygon Connect Style 这里新加一条规则，名字自己取





然后把默认全局敷铜规则改成以前十字规则



这样就可以让焊盘和过孔适应分开敷铜规则

PCB 绘制网格背景颜色设置

oard Layers And Colors | Show / Hide | View Options

Signal Layers (S)	Color	Show	Internal Planes (P)	Color	Show	Mechanical Layers(M)	Color	Show	Enable	Single Layer Mode	Linked To Sheet
Top Layer (T)	Red	<input checked="" type="checkbox"/>				Mechanical 1	Magenta	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bottom Layer (B)	Blue	<input checked="" type="checkbox"/>									

Only show layers in layer stack Only show planes in layer stack Only show enabled mechanical Layers

All On All Off Used On All On All Off Used On All On All Off Used On

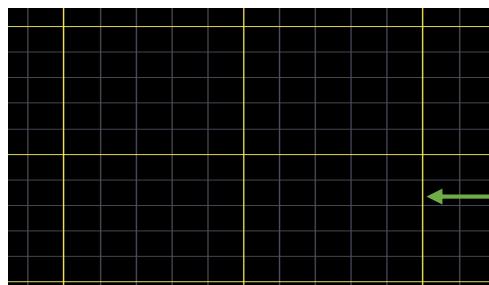
Mask Layers (A)	Color	Show	Other Layers (O)	Color	Show	System Colors (Y)	Color	Show
Top Paste	Grey	<input checked="" type="checkbox"/>	Drill Guide	Dark Red	<input checked="" type="checkbox"/>	Default Color for New Nets	Black	<input checked="" type="checkbox"/>
Bottom Paste	Dark Grey	<input checked="" type="checkbox"/>	Keep-Out Layer	Magenta	<input checked="" type="checkbox"/>	Background	Green	<input checked="" type="checkbox"/>
Top Solder	Dark Purple	<input checked="" type="checkbox"/>	Drill Drawing	Red	<input checked="" type="checkbox"/>	DRC Error Markers	Yellow	<input checked="" type="checkbox"/>
Bottom Solder	Magenta	<input checked="" type="checkbox"/>	Multi-Layer	Grey	<input checked="" type="checkbox"/>	Selections	Purple	<input checked="" type="checkbox"/>

All On All Off Used On All On All Off Used On All On All Off Used On

Silkscreen Layers (K)	Color	Show	System Colors (Y)	Color	Show
Top Overlay (E)	Yellow	<input checked="" type="checkbox"/>	Visible Grid 1	Light Blue	<input checked="" type="checkbox"/>
Bottom Overlay (R)	Dark Yellow	<input checked="" type="checkbox"/>	Visible Grid 2	Light Green	<input checked="" type="checkbox"/>

All On All Off Used On

All Layers On All Layers Off Used Layers On Selected Layers On Selected Layers Off Clear All Layers



设置大网格颜色



设置小网格颜色

Altium designer BOM 单输出问题

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Description	Designator	/	Footprint	/	LibRef	/	Quantity	/	Value
Comment	<input type="checkbox"/>	Capacitor, Resistor	C1, C2, C4, C5, R1, 0603		SMD Electrolytic Capacitors 4X 5.3		Cap_Pol1		8	0.1uF, 10pF, 330R, 470R	
Footprint	<input checked="" type="checkbox"/>	Polarized Capacitor	I C3				LED0		1	10uF	
		Typical INFRARED	D1		LED_0603		LED0		1		
		Typical INFRARED	D2		LED_0603		LED0		1		
				J1	Micro usb 5P/F B Type SMT		USB_AB 5 MICRO		1		
				U1	CH340-S016		CH340G		1		
				X1	11.0592M_49SMD		XTAL-32.768KHZ		1		

All Columns Show ▾

- PhysicalPath
- Pins
- Project
- ProjectName
- Published
- Publisher
- Quantity
- Revision
- Rule
- SheetNumber
- SheetTotal
- Signal Integrity
- Simulation
- SourceLibraryName
- Sub-Parts
- Time
- Title
- UniqueIdName
- UniqueIdPath
- Value
- Variant

Export Options

File Format: Microsoft Excel Worksheet (*.xls) ▾

Add to Project
 Open Exported

Excel Options

Template: ▾

Relative Path to Template File

Supplier Options

<none> ▾ Production Quantity: 1 ▾

Round up Supplier Order Qty to cheaper price break
 Use cached pricing data in parameters if offline

Menu Export... Include Not Fitted Components Include Parameters From Database Include Parameters From PCB OK Cancel

这里是显示你要输出元器件哪些参数

比如取消掉 value

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Comment	/	Description	Designator	/	Footprint	/	LibRef	/	Quantity
Comment	<input checked="" type="checkbox"/>	0603	Capacitor, Resistor	C1, C2, C4, C5, R1, 0603			Cap_Pol1		Cap_Res2		8
Footprint	<input checked="" type="checkbox"/>	4*5.3	Polarized Capacitor	I C3							1
		LED_GREEN	Typical INFRARED	D1			LED0		LED0		1
		LED_REG	Typical INFRARED	D2			LED0		LED0		1
		USB AB 5 MICRO			J1		Micro usb 5P/F B T ₃	USB AB 5 MICRO			1
		CH340G			U1		CH340-S016	CH340G			1
		12M			X1		11.0592M_49SMD	XTAL-32.768KHZ			1

All Columns Show ▾

- PhysicalPath
- Pins
- Project
- ProjectName
- Published
- Publisher
- Quantity
- Revision
- Rule
- SheetNumber
- SheetTotal
- Signal Integrity
- Simulation
- SourceLibraryName
- Sub-Parts
- Time
- Title
- UniqueIdName
- UniqueIdPath
- Value
- Variant

Export Options

File Format: Microsoft Excel Worksheet (*.xls) ▾

Add to Project
 Open Exported

Excel Options

Template: ▾

Relative Path to Template File

Supplier Options

<none> ▾ Production Quantity: 1 ▾

Round up Supplier Order Qty to cheaper price break
 Use cached pricing data in parameters if offline

Menu Export... Include Not Fitted Components Include Parameters From Database Include Parameters From PCB OK Cancel

你看 value 这列就没有了

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Description	Designator	Footprint	LibRef	Quantity	Value
Comment	<input type="checkbox"/>	Capacitor, Resistor	C1, C2, C4, C5, R1, 0603		Cap.Res2	8	0.1uF, 10pF, 330R, 470R
Footprint	<input checked="" type="checkbox"/>	Polarized Capacitor I	C3	SMD Electrolytic Capacitors 4X 5.3	Cap.Pol1	1	10uF
		Typical INFRARED	D1	LED_0603	LEDO	1	
		Typical INFRARED	D2	LED_0603	LEDO	1	
			J1	Micro usb 5P/F B Type SMT	USB AB 5 MICRO	1	
			U1	CH340-5016	CH340G	1	
			X1	11.0592M_49SMD	XTAL-32.768KHZ	1	

All Columns Show ▾

- PhysicalPath
- Pins
- Project
- ProjectName
- Published
- Publisher
- Quantity
- Revision
- Rule
- SheetNumber
- SheetTotal
- Signal Integrity
- Simulation
- SourceLibraryName
- Sub-Parts
- Time
- Title
- UniqueIdName
- UniqueIdPath
- Value
- Variant

Export Options

File Format: Microsoft Excel Worksheet (*.xls)

Add to Project
 Open Exported

Excel Options

Template:
 Relative Path to Template File

Supplier Options

Production Quantity:
 Round up Supplier Order Qty to cheaper price break
 Use cached pricing data in parameters if offline

Menu Export... Include Not Fitted Components Include Parameters From Database Include Parameters From PCB

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Description	Designator	Footprint	LibRef	Quantity	Value
Comment	<input type="checkbox"/>	Capacitor, Resistor	C1, C2, C4, C5, R1, 0603		Cap.Res2	8	0.1uF, 10pF, 330R, 470R
Footprint	<input checked="" type="checkbox"/>	Polarized Capacitor I	C3	SMD Electrolytic Capacitors 4X 5.3	Cap.Pol1	1	10uF
		Typical INFRARED	D1	LED_0603	LEDO	1	
		Typical INFRARED	D2	LED_0603	LEDO	1	
			J1	Micro usb 5P/F B Type SMT	USB AB 5 MICRO	1	
			U1	CH340-5016	CH340G	1	
			X1	11.0592M_49SMD	XTAL-32.768KHZ	1	

All Columns Show ▾

- PhysicalPath
- Pins
- Project
- ProjectName
- Published
- Publisher
- Quantity
- Revision
- Rule
- SheetNumber
- SheetTotal
- Signal Integrity
- Simulation
- SourceLibraryName
- Sub-Parts
- Time
- Title
- UniqueIdName
- UniqueIdPath
- Value
- Variant

Export Options

File Format: Microsoft Excel Worksheet (*.xls)

Add to Project
 Open Exported

Excel Options

Template:
 Relative Path to Template File

Supplier Options

Production Quantity:
 Round up Supplier Order Qty to cheaper price break
 Use cached pricing data in parameters if offline

Menu Export... Include Not Fitted Components Include Parameters From Database Include Parameters From PCB

这样输出的 bom 表电阻电容很难区分开，无法统计元器件各类数量，
 这是因为你没有在 grouped(分组)里面设置

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Description	Designator	Footprint	LibRef	Quantity	Value
Comment	<input type="checkbox"/>	Capacitor, Resistor	C1, C2, C4, C5, R1, 0603		Cap, Res2	8	0.1uF, 10pF, 330R, 470R
Footprint	<input checked="" type="checkbox"/>	Polarized Capacitor I	C3	SMD Electrolytic Capacitors 4X 5.3	Cap Pol1	1	10uF
		Typical INFRARED	D1	LED_0603	LEDO	1	
		Typical INFRARED	D2	LED_0603	LEDO	1	
			J1	Micro usb 5P/F B Type SMT	USB AB 5 MICRO	1	
			U1	CH340-S016	CH340G	1	
			X1	11.0592M_49SMD	XTAL-32.768KHZ	1	

All Columns Show ▾

PhysicalPath Pins Project ProjectName Published Publisher Quantity Revision Rule SheetNumber SheetTotal Signal Integrity Simulation SourceLibraryName Sub-Parts Time Title UniqueIdName UniqueIdPath Value Variant

Export Options

File Format Microsoft Excel Worksheet (*.xls) Add to Project Open Exported

Excel Options

Template Relative Path to Template File

Supplier Options

<none> Production Quantity 1 Round up Supplier Order Qty to cheaper price break Use cached pricing data in parameters if offline

Menu Export... OK Cancel

Bill of Materials For Project [Cdata1-CH340G.PrjPCB] (No PCB Document Selected)

Grouped Columns	Show	Comment	Description	Designator	Footprint	LibRef	Quantity	Value
Value	<input checked="" type="checkbox"/>	0603	Capacitor	C1, C2	0603	Cap	2	10pF
Comment	<input checked="" type="checkbox"/>	4*5.3	Polarized Capacitor I	C3	SMD Electrolytic Cap	Cap Pol1	1	10uF
Footprint	<input checked="" type="checkbox"/>	0603	Capacitor	C4, C5	0603	Cap	2	0.1uF
		LED_GREEN	Typical INFRARED	D1	LED_0603	LEDO	1	
		LED_REG	Typical INFRARED	D2	LED_0603	LEDO	1	
		USB AB 5 MICRO		J1	Micro usb 5P/F B Tj	USB AB 5 MICRO	1	
		0603	Resistor	R1, R2	0603	Res2	2	470R
		0603	Resistor	R3, R4	0603	Res2	2	330R
		CH340G		U1	CH340-S016	CH340G	1	
		12M		X1	11.0592M_49SMD	XTAL-32.768KHZ	1	

All Columns Show ▾

PhysicalPath Pins Project ProjectName Published Publisher Quantity Revision Rule SheetNumber SheetTotal Signal Integrity Simulation SourceLibraryName Sub-Parts Time Title UniqueIdName UniqueIdPath Value Variant

Export Options

File Format Microsoft Excel Worksheet (*.xls) Add to Project Open Exported

Excel Options

Template Relative Path to Template File

Supplier Options

<none> Production Quantity 1 Round up Supplier Order Qty to cheaper price break Use cached pricing data in parameters if offline

Menu Export... OK Cancel

Comment	Description	Designator	Footprint	LibRef	Quantity	Value
0603	Capacitor	C1, C2	0603	Cap	2	10pF
4*5.3	Polarized Capacitor	C3	SMD Electrolytic Cap	Cap Pol1	1	10uF
0603	Capacitor	C4, C5	0603	Cap	2	0.1uF
LED_GREEN	Typical INFRARED	D1	LED_0603	LEDO	1	
LED_REG	Typical INFRARED	D2	LED_0603	LEDO	1	
USB AB 5 MICRO		J1	Micro usb 5P/F B T	USB AB 5 MICRO	1	
0603	Resistor	R1, R2	0603	Res2	2	470R
0603	Resistor	R3, R4	0603	Res2	2	330R
CH340G		U1	CH340-S016	CH340G	1	
12M		X1	11.0592M_49SMD	XTAL-32.768KHZ	1	

导出之后 excel 文件就是这样，你可以在 excel 增加列或者删除列来调整供应商和其他属性让你的工作方便了许多。

如何让 ALTIUM DESIGNER 按照 bom 单的格式输出

A	B	C	D	E	F	G	H	I	J
Number	Description	Designator	Value	Footprint	Quantity	Manufacturers Mfr. Part Number	VISHAY INTERTECHNOLOGY	备注	网站
1	Polarized Capacitor (Radial)	C1, C5, C6, C7	Electrolytic CAP 1uF 10% 4x5.3 SMD	SMD Electrolytic Capacitors 4x5.3	4	'Electrolytic CAP 1uF 10% 4x5.3 SMD'	华强北		
2	Polarized Capacitor (Radial)	C30	Electrolytic CAP 1uF 10% 6.3x7.7 SMD	SMD6.3x7.7	1	'Electrolytic CAP 1uF 10% 6.3x7.7 SMD'	华强北		
3	crystal oscillator	X1	11.0592M	11.0592M_49SMD	1	11.0592M	华强北		
4	Polarized Capacitor (Radial)	C16, C18	钽电容 100uF±5% 16V	Cap-3216-T	2	钽电容 100uF±5% 16V	华强北		

比如我 bom 单格式是这样的

序号 元器件类型 位号 参数 封装 数量 厂家元器件名称 厂家 备注 网站

Bill of Materials For Project [Cdata1-stm8-hw.PjPCB] (No PCB Document Selected)														
Grouped Columns	Show	Comment	/	Description	/	Designator	/	Footprint	/	LibRef	/	Quantity	/	Value
Value	<input checked="" type="checkbox"/>	4x5.3		Polarized Capacitor	C1, C5, C6, C7	SMD Electrolytic Cap	Cap Pol1					4	10uF	
Comment	<input checked="" type="checkbox"/>	0603		Capacitor	C2, C3, C9, C11, C1	0603						11	0.1uF	
Footprint	<input checked="" type="checkbox"/>	0603		Capacitor	C4, C8	0603						2	0.01uF	
		0603		Capacitor	C10, C12	0603						2	10uF	
		0603		Capacitor	C13	0603						1	1uF	
		0805		Capacitor	C15	0805						1	1uF	
		476J		Polarized Capacitor	C16, C18	Cap-3216-T						2	47uF	
		6.3X7.7		Polarized Capacitor	C30	SMD6.3x7.7						1	100uF	
		HY-PH-2.0-4P			J1, J5	HY-PH-2.0-4P						2		
All Columns	Show	2510-A-4P			J2	2510-A-4P						1		
Address1	<input type="checkbox"/>	USB AB 5 MICRO			J3	Micro usb 5P/F B T	USB AB 5 MICRO					1		
Address2	<input type="checkbox"/>	Header 4		Header, 4-Pin	P1	Header 4						1		
Address3	<input type="checkbox"/>	S8550			Q1	S8550_SOT23	S8550					1		

Altium designer 是标准输出，没有按照自己公司的格式来，那么我们需要修改格式

Bill of Materials For Project [Cdata1-stm8-hw.PjPCB] (No PCB Document Selected)														
Grouped Columns	Show	Comment	/	Description	/	Designator	/	Footprint	/	LibRef	/	Quantity	/	Value
Value	<input checked="" type="checkbox"/>	4x5.3		Polarized Capacitor	C1, C5, C6, C7	SMD Electrolytic Cap	Cap Pol1					4	10uF	
Comment	<input checked="" type="checkbox"/>	0603		Capacitor	C2, C3, C9, C11, C1	0603						11	0.1uF	
Footprint	<input checked="" type="checkbox"/>	0603		Capacitor	C4, C8	0603						2	0.01uF	
		0603		Capacitor	C10, C12	0603						2	10uF	
		0603		Capacitor	C13	0603						1	1uF	
		0805		Capacitor	C15	0805						1	1uF	
		476J		Polarized Capacitor	C16, C18	Cap-3216-T						2	47uF	
		6.3X7.7		Polarized Capacitor	C30	SMD6.3x7.7						1		
		HY-PH-2.0-4P			J1, J5	HY-PH-2.0-4P						2		
All Columns	Show	2510-A-4P			J2	2510-A-4P						1		
Address1	<input type="checkbox"/>	USB AB 5 MICRO			J3	Micro usb 5P/F B T	USB AB 5 MICRO					1		
Address2	<input type="checkbox"/>	Header 4		Header, 4-Pin	P1	Header 4						1		
Address3	<input type="checkbox"/>	S8550			Q1	S8550_SOT23	S8550					1		
ApprovedBy	<input type="checkbox"/>	0603		Resistor	R1	0603						1		
Author	<input type="checkbox"/>	0603		Resistor	R2	0603						1		
CheckedBy	<input type="checkbox"/>	0603		Resistor	R3	0603						1		
Comment	<input checked="" type="checkbox"/>	0603		Resistor	R4, R5, R3, R11	0603						1		
CompanyName	<input type="checkbox"/>	0603		Resistor	R6	0603						1		
Component Kind	<input type="checkbox"/>	0603		Resistor	R7	0603						1		
ComponentKind	<input type="checkbox"/>	0603		Resistor	R8	0603						1		
CurrentDate	<input type="checkbox"/>	0603		Resistor	R10	0805						1		
CurrentTime	<input type="checkbox"/>	AMS1117-3.3V			U1	AMS1117-3.3V						1		
Date	<input type="checkbox"/>	TPS7A4901DGN			U2	TPS7A4901DGN						1		
Description	<input checked="" type="checkbox"/>	STM8S20856-LQFPF			U3	STM8S20856-LQFPF						1		

这个行列顺序是根据英文字符顺序来排列的

这里就是选择要输出哪些元器件参数,

Bill of Materials For Project [Cdata1-stm8-hw.PjPCB] (No PCB Document Selected)

Grouped Columns	Show	Address1	Description	Designator	Value	Footprint	Quantity	Address2	Address3	Address4
Value	<input checked="" type="checkbox"/>		Polarized Capacitor C1, C5, C6, C7	10uF	SMD Electrolytic Capacitor	4				
Comment	<input type="checkbox"/>		Capacitor	C2, C3, C9, C11, C1 0.1uF	0603	11				
Footprint	<input checked="" type="checkbox"/>		Capacitor	C4, C8	0.01uF	0603	2			
ApprovedBy	<input type="checkbox"/>		Capacitor	C10, C12	10pF	0603	2			
Author	<input type="checkbox"/>		Capacitor	C13	1uF	0603	1			
CheckedBy	<input type="checkbox"/>		Capacitor	C15	1uF	0805	1			
Comment	<input type="checkbox"/>		Polarized Capacitor C16, C18	47uF	Cap-3216-T	2				
CompanyName	<input type="checkbox"/>		Polarized Capacitor C30	100uF	SMD6 3x7.7	1				
ComponentKind	<input type="checkbox"/>		J1, J5		HY-PH-2.04P	2				
ComponentKind	<input type="checkbox"/>		J2		2510-A-4P	1				
CurrentDate	<input type="checkbox"/>		J3		Micro usb 5P/F B T3	1				
CurrentTime	<input type="checkbox"/>		Header, 4-Pin	P1	HDR1X4	1				
Date	<input type="checkbox"/>		Q1		S8550_SOT23	1				
DesignatorX(Mil)	<input type="checkbox"/>		Resistor	R1	9.1K±1%	0603	1			
DesignatorX(mm)	<input type="checkbox"/>		Resistor	R2	5.1K±1%	0603	1			
DesignatorY(Mil)	<input type="checkbox"/>		Resistor	R3	10K	0603	1			
DesignatorY(mm)	<input type="checkbox"/>		Resistor	R4, R5, R9, R11	1k	0603	4			
DesignItemId	<input type="checkbox"/>		Resistor	R6	4.7K±1%	0603	1			
Export Options			Resistor	R7	1.8K±1%	0603	1			
File Format	Microsoft Excel Worksheet (*.xls)		Resistor	R8	120R	0603	1			
Add to Project	<input type="checkbox"/>		Resistor	R10	0R	0805	1			
Open Exported	<input type="checkbox"/>					X1	11.0592M_435MD			

我把这些勾选的先全部删除掉

然后我要把我需要的参数移动到上面来，这个列表下面的名称是可以移动的

我将需要输出的参数都移动上来了，这样就可以按照规格输出 bom 单

因为厂家型号，厂家名称这些在 altium designer 的 bom 单输出栏上找不到可以使用的输出项，所以我用 address1~4 来代替

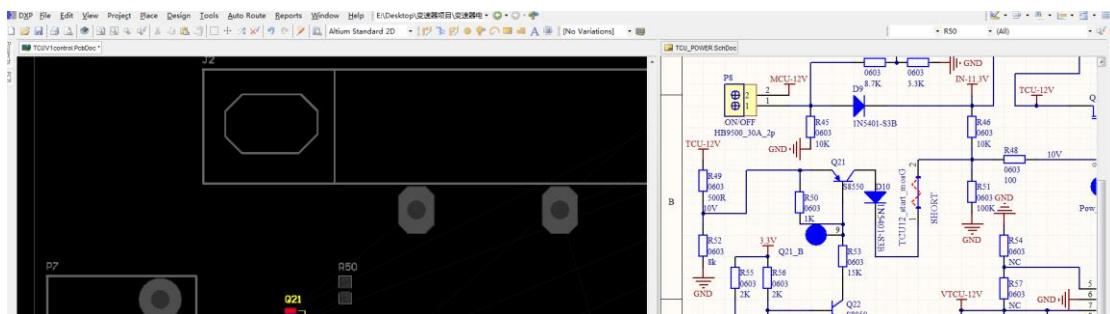
然后点击确定，这样，当前的工程 bom 单输出格式就确定了

将这些 Address 改成序号，厂家网站就可以上了

然后按照标准输出 excel 格式的文件

A	B	C	D	E	F	G	H	I
Address1	Description	Designator	Value	Footprint	Quantity	Address2	Address3	Address4
	Polarized Capacitor (Pc1, C5, C6, C7)	10uF	SMD Electrolytic Capacitor	4				
	Capacitor	C2, C3, C9, C11, C14, C1	0.1uF	0603	11			
	Capacitor	C4, C8	0.01uF	0603	2			

原理图窗口分页

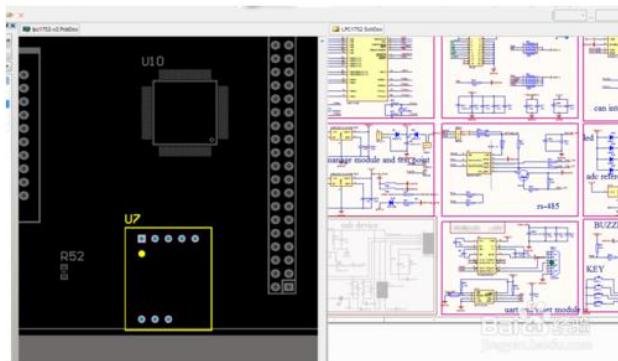


s Window
点击 window->选择 tile vertically

根据原理图的走线来查看 PCB 布线

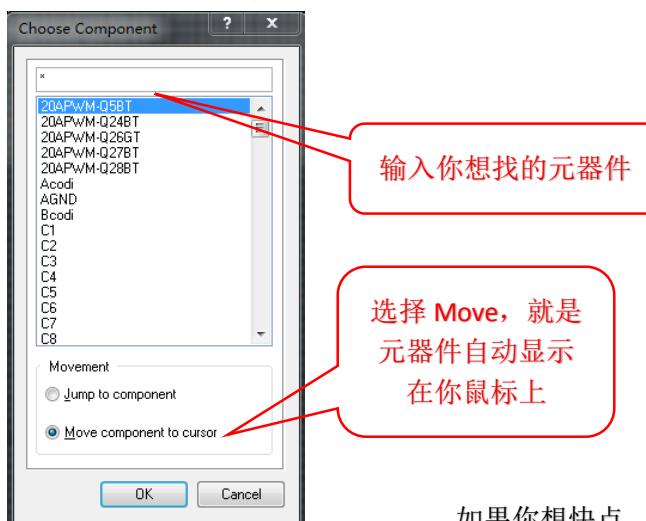
点击菜单栏里面的 tools 按钮->选择 cross probe

如图所示，鼠标变成十字光标，在原理图中点击器件，在PCB中高亮显示，在PCB中点击器件，在原理图中高亮显示。



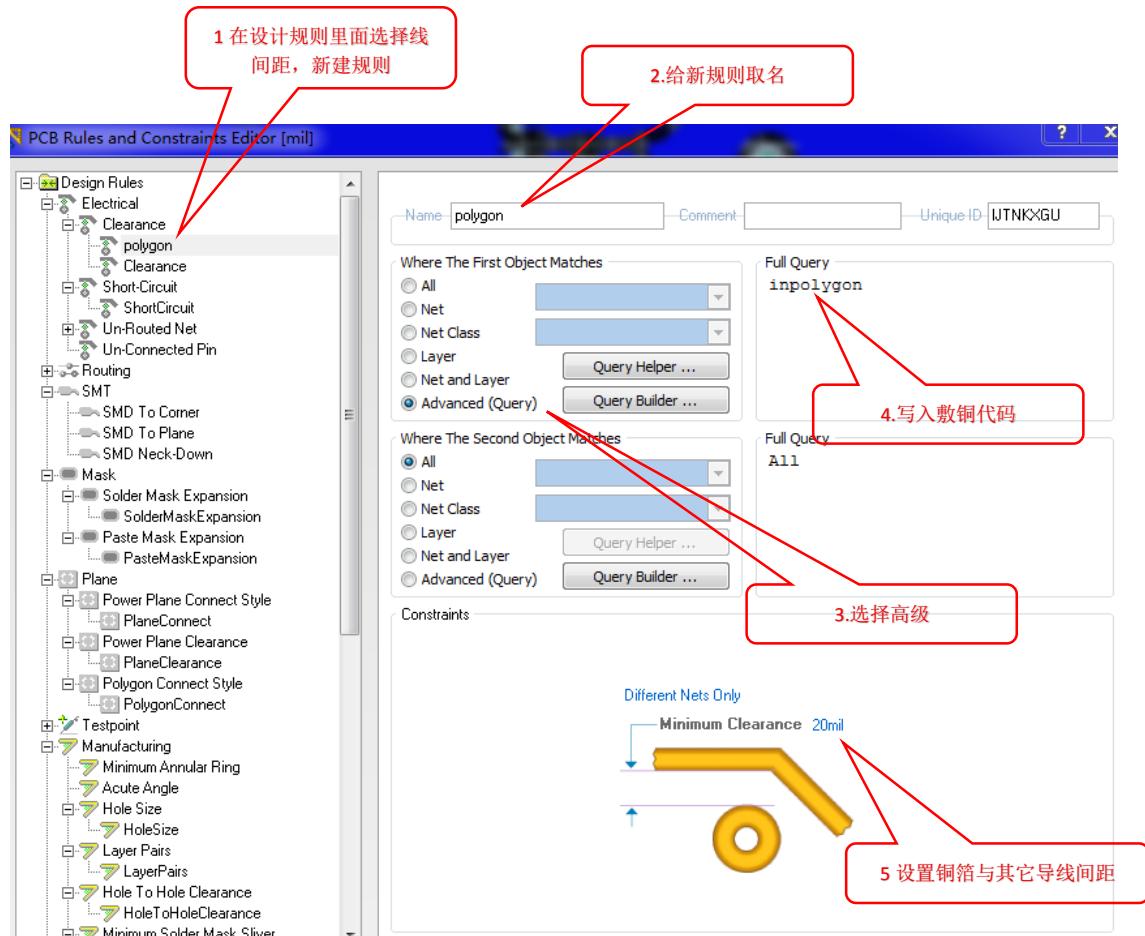
PCB 输入元器件编号，元器件自动出现在鼠标上

输入快捷键 M->component 出现十字光标，点击空白处

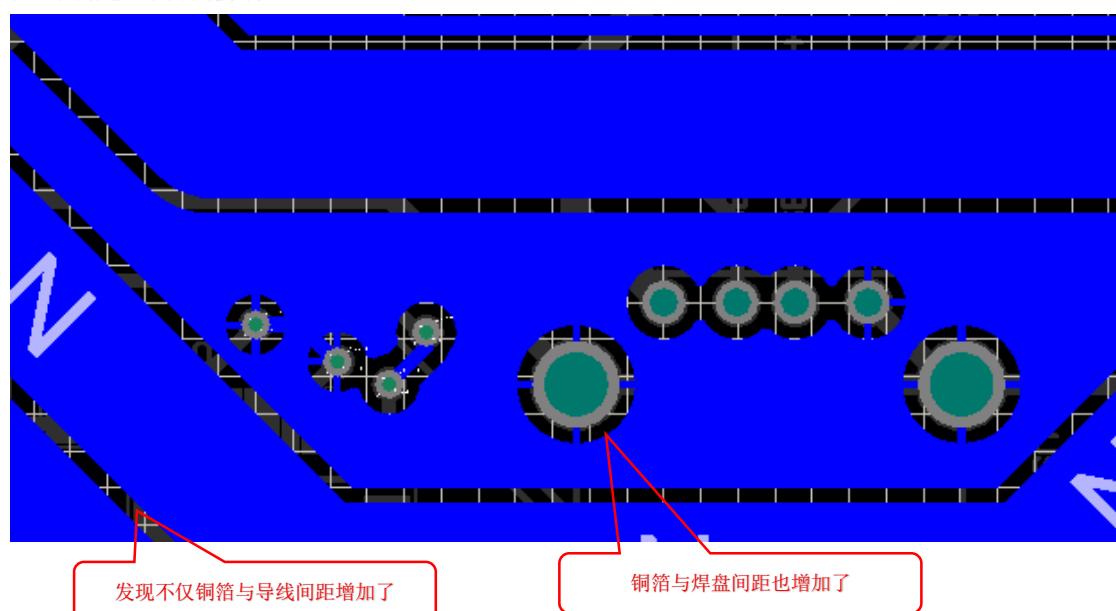


如果你想快点，就 M+C 出现光标，点击空白

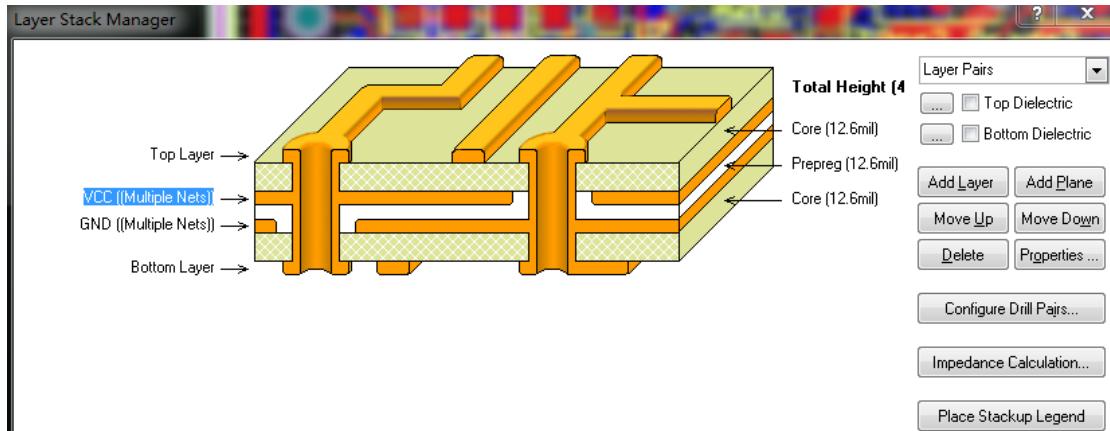
PCB 敷铜和其它导线保持的间距设置



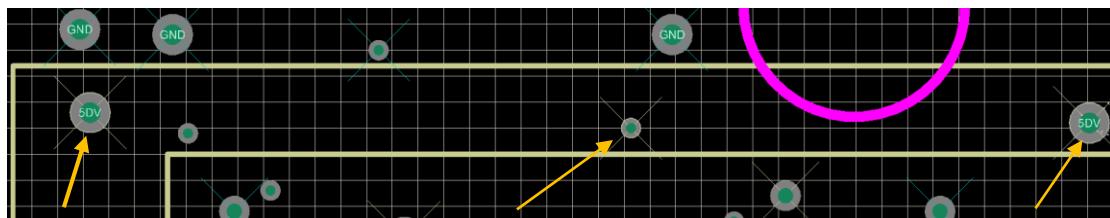
点击确定, 开始敷铜



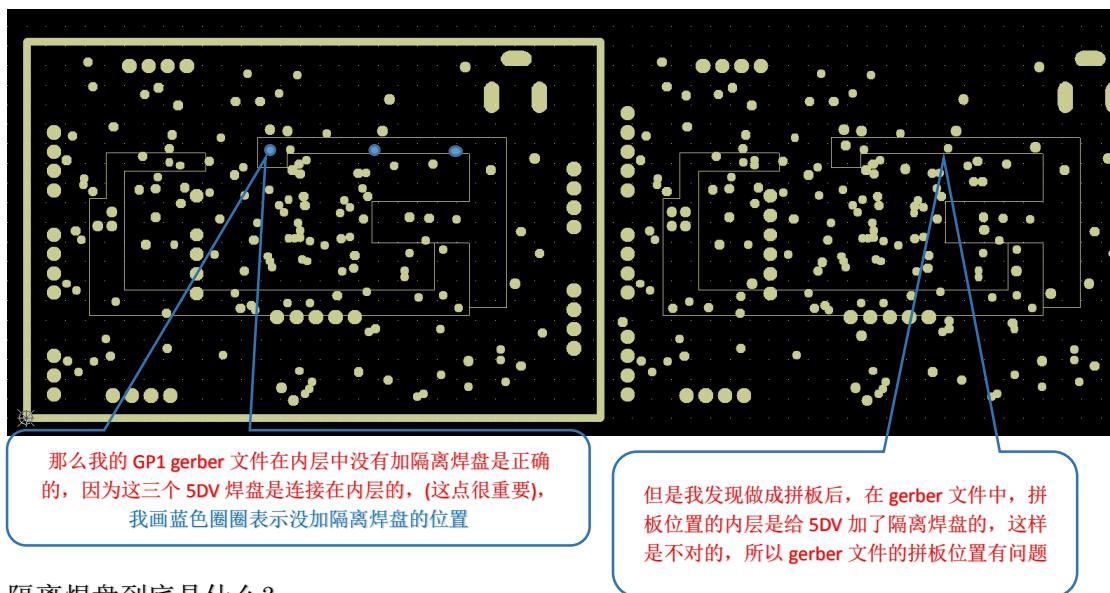
AD9 软件在多层板下，PCB 拼板输出 gerber 文件的问题，主要出现在内层用负片情况(重点记住)，如果换成 ad14 或更高版本问题解决



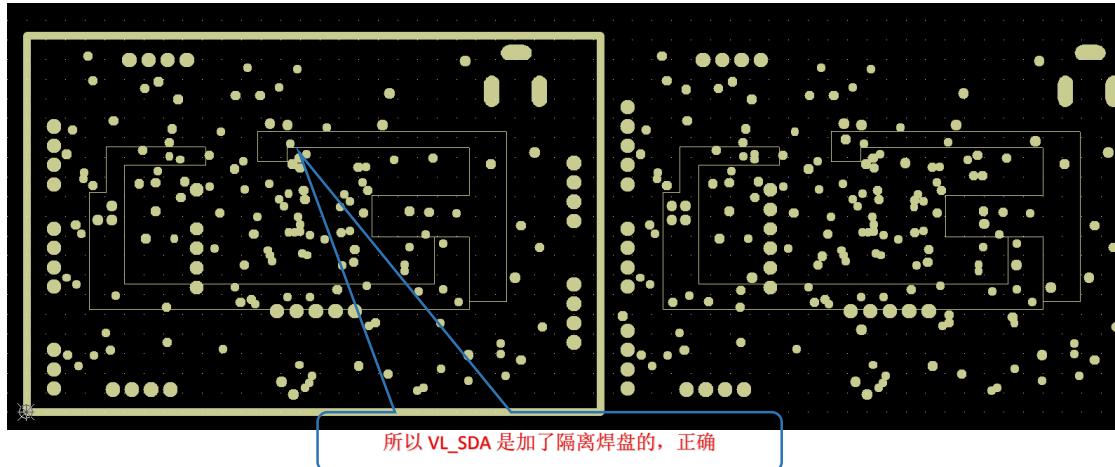
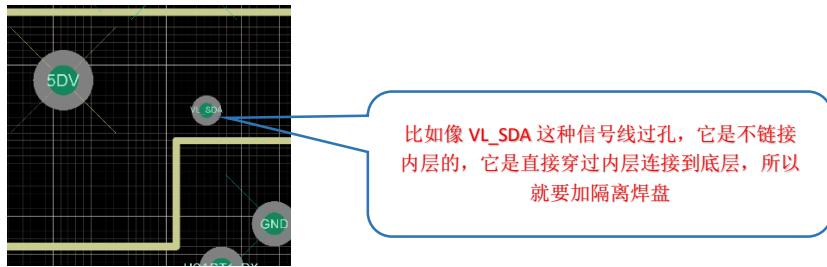
这是我四层板结构，内层的 VCC 和 GND 都分了多组电源和多组 GND，所以不能给内层指定网络，选择默认 Multiple Nets 是正确的



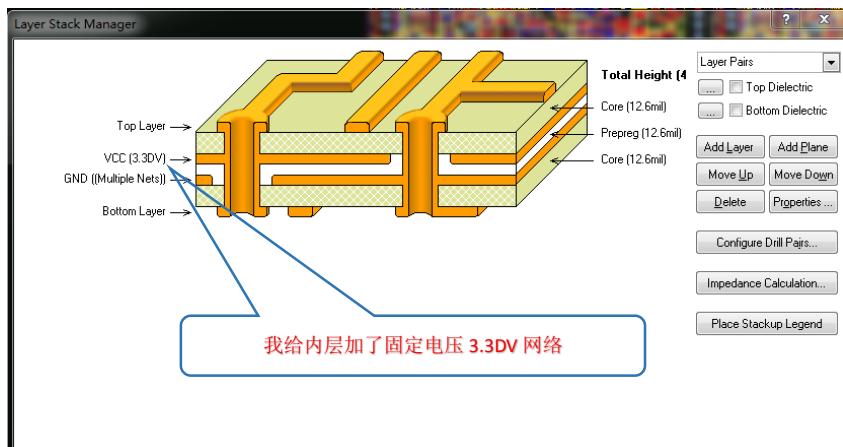
黄色箭头表示我的顶层 5V 电源要和内层 5V 电源平面连接



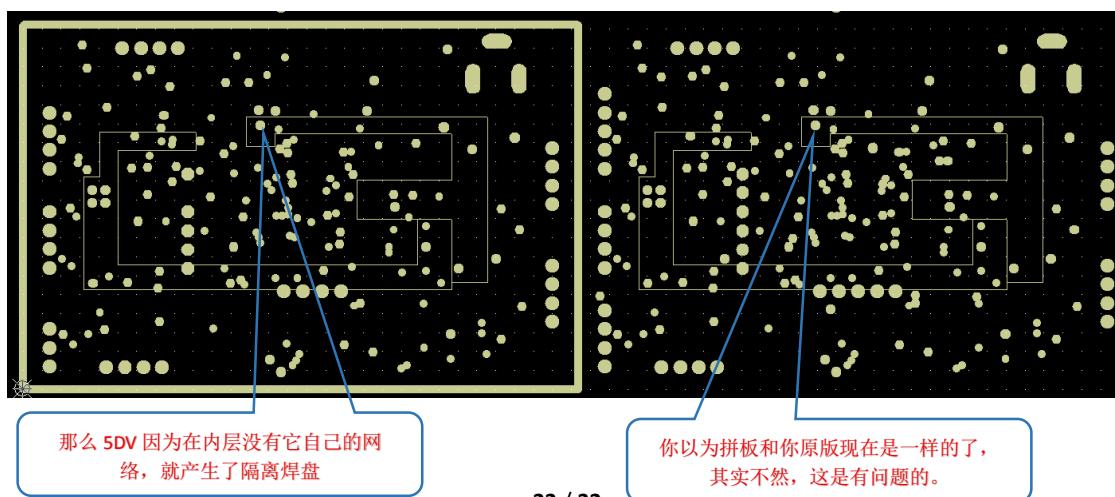
隔离焊盘到底是什么？



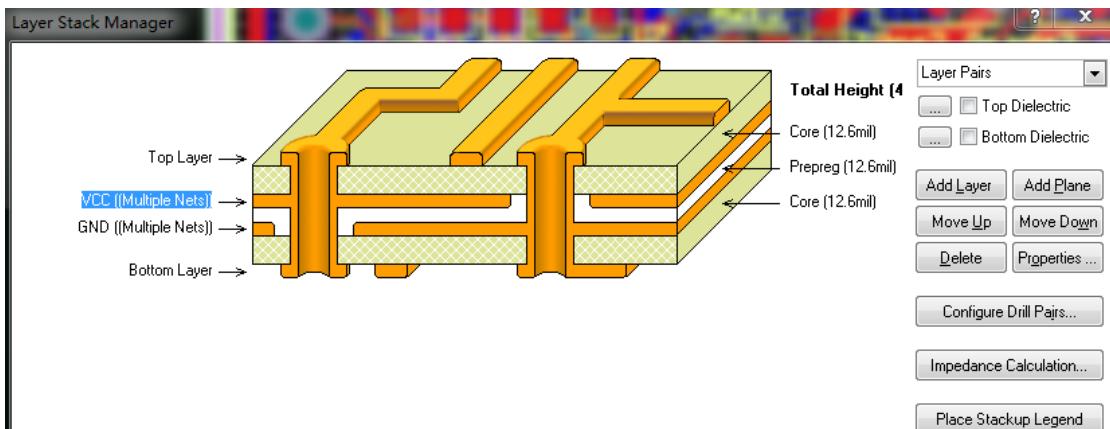
但是经过我对板层的调整，发现个问题



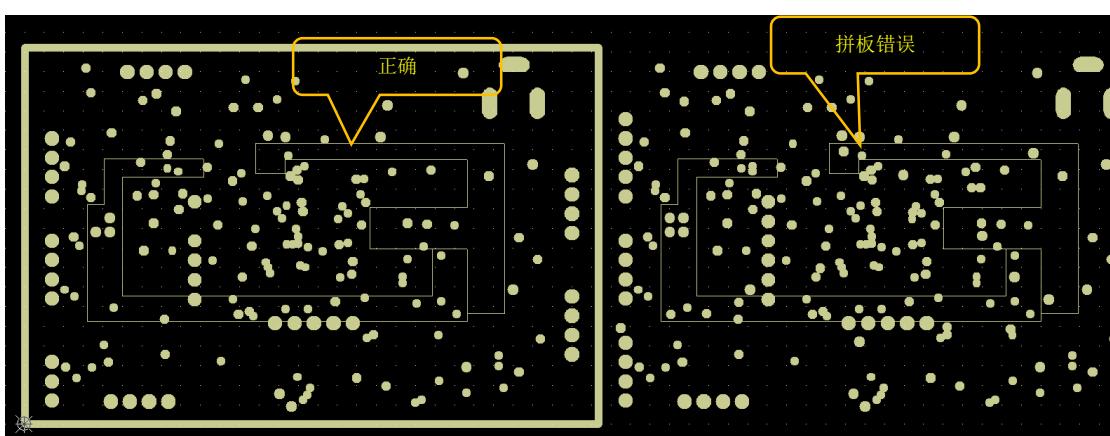
这样，第二层内层整个平面都是 3.3DV 网络。



因为你内层有多组电源平面，所以，5DV 不应该有隔离焊盘



将叠层网络 VCC 变回以前多网络状态才对。也不知道上一页怎么回事变成了 3.3DV 网络....
然后你去拼板，再次变回了原版正确，拼板错误的情况。



这样只有叫 PCB 板厂工程师将拼板按照原版来做。只有这样了。

给 PCB 板厂的 gerber 文件需要哪些？

一般双面板交给 PCB 厂的文件主要有以下几个：

GTO (Top Overlay, 顶层丝印层, 常见的白油)

GTS (Top Solder, 顶层阻焊层, 常见的绿油)

GTL (Top Layer, 顶层走线层)

GBL (Bottom Layer, 底层走线层)

GBS (Bottom Solder, 底层阻焊层)

GBO (Bottom Overlay, 底层丝印层)

GMx (Mechanical x, 机械层, 用来定义板边。部分人喜欢用 GKO (Keep-Out Layer) 来定义板边)

 Infrared_test.GTO 顶层丝印

Infrared_test.GTS 顶层绿油

Infrared_test.GTL 顶层走线(一般是红色走线)

Infrared_test.GBL 底层走线

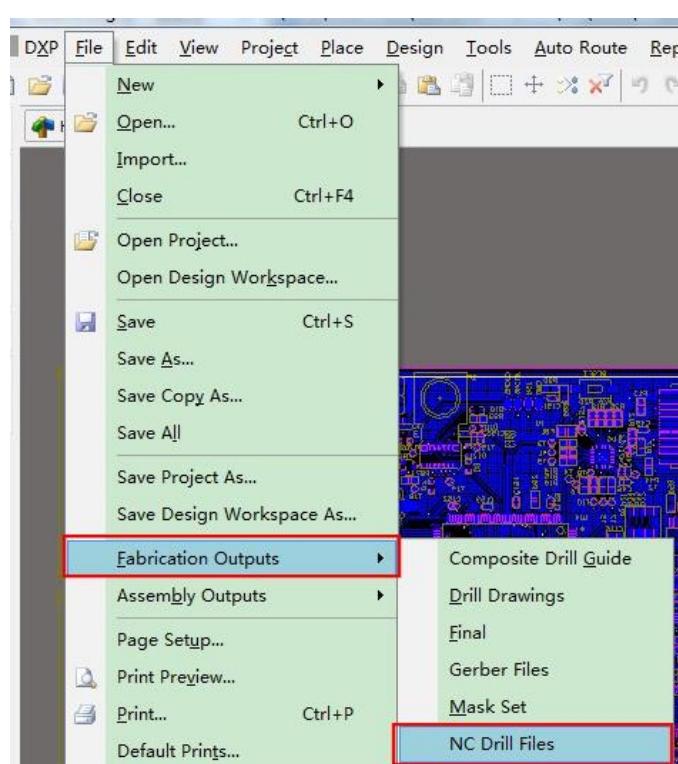
Infrared_test.GBS 底层绿油

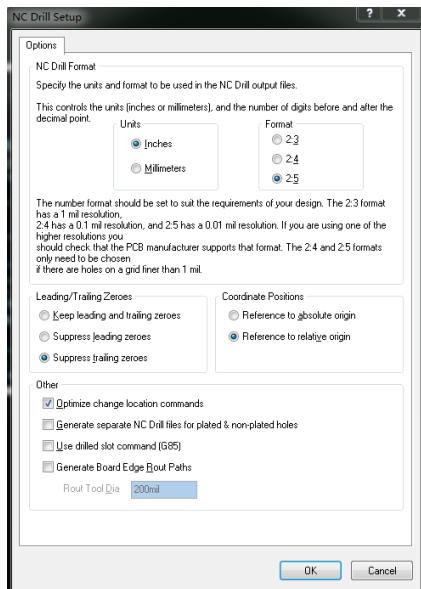
Infrared_test.GBO 底层丝印

Infrared_test.GKO PCB 边框, 我一般用 keep out 层

这 9 个文件就是双面板需要的 gerber 文件

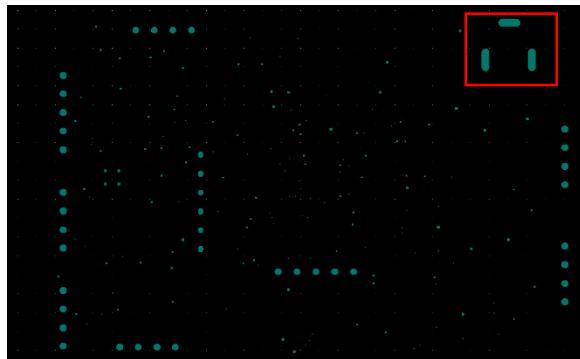
然后还要加 1 个钻孔的网表





点击 OK

导出的钻孔文件同样会输出至 Project Outputs 文件夹里,下图红框所示即为钻孔文件:



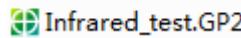
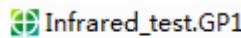
如果你的 PCB 有非完全圆形的过孔那么会生成两个钻孔文件



把这两个钻孔文件交给板厂

我建议先用嘉立创软件看看你的钻孔是否偏移了位置, 如果偏移了, 要修改钻孔座标。

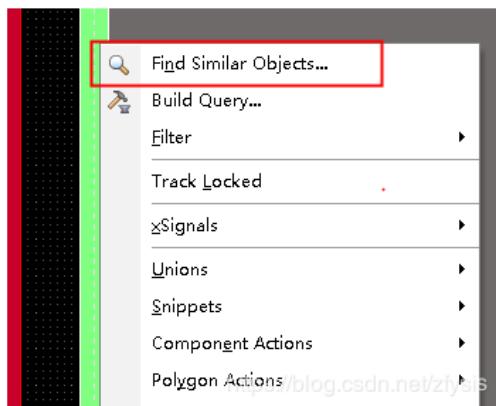
如果是多层板输出 gerber 文件, 会多出多层板的文件



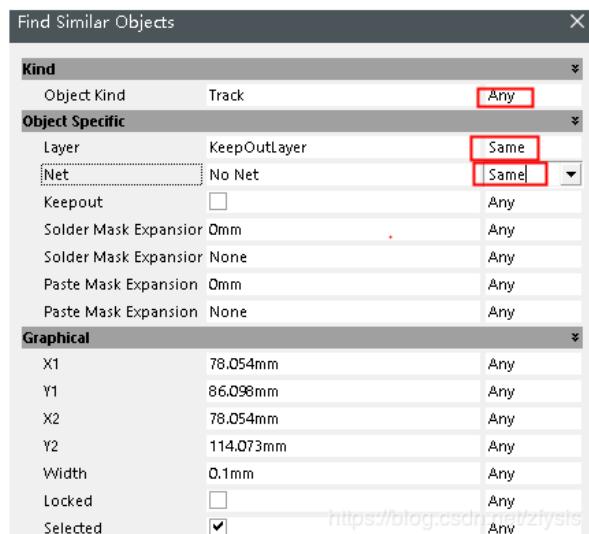
比如我中间有两层内层平面, 就会多出 GP1 和 GP2

Altium designer 输出 gerber 没有 keep out 层显示问题

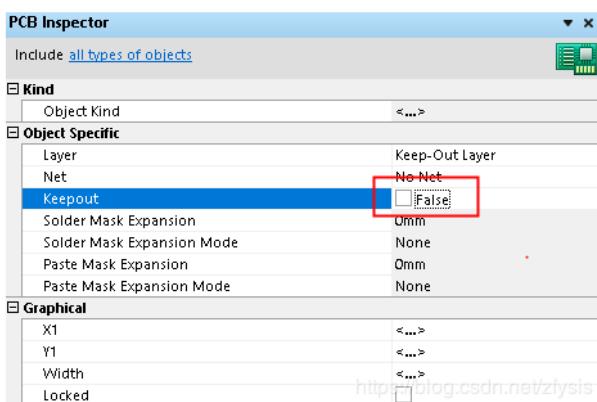
右键选中keepout，点击 “Find Similar Objects”，下一步。。。



作如下红框内选择，



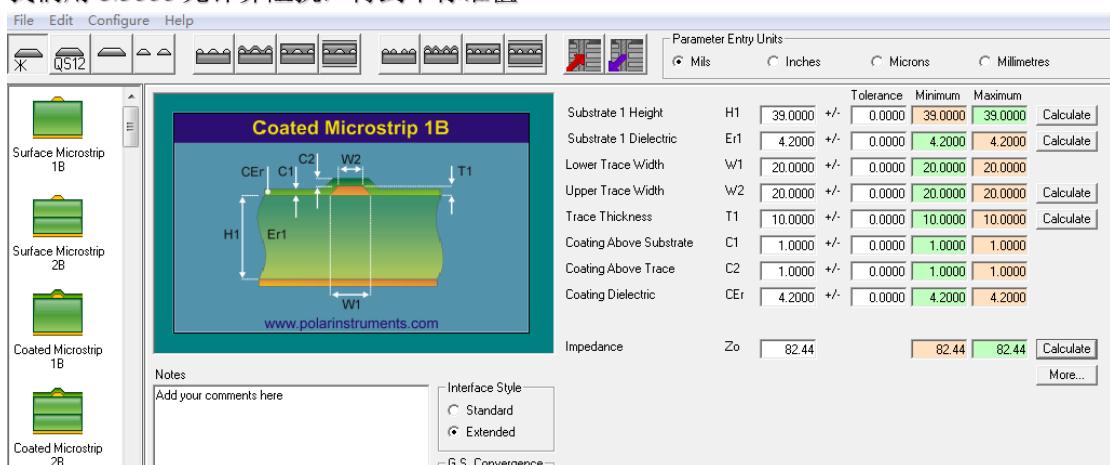
如图勾选中板框对象，点击 “确定” ，下一步，



先点击变为 “True” ，然后再点击变为 “False” ，关闭窗口，生成gerber。。。

阻抗布线方法

我们用 SI9000 先计算阻抗，得到个标准值



(H1) 板厚 39mil

(Er1) 介电常数 4.2

(W1) 线宽 20mil (W2) 线宽 20mil

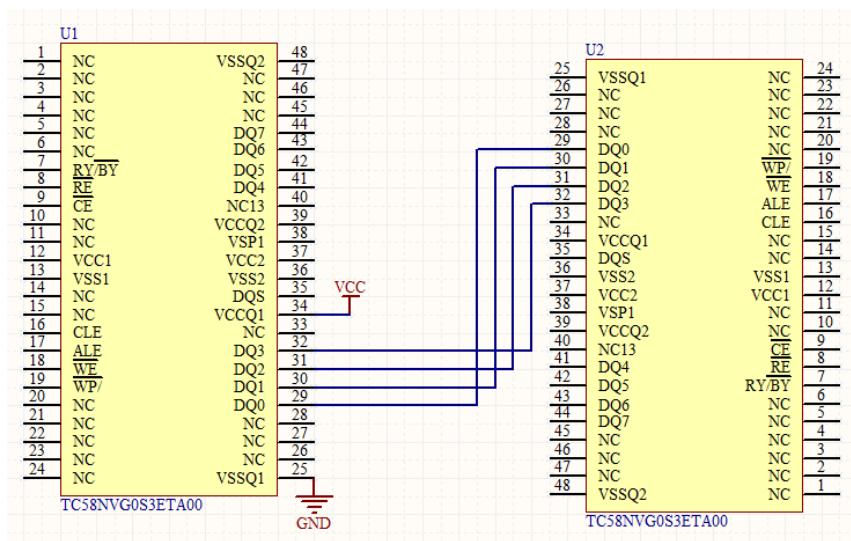
(T1) 铜箔厚度 10mil

(C1),(C2) 绿油厚度 1mil

CEr 绿油介电常数 和 Er1 选择一样 4.2

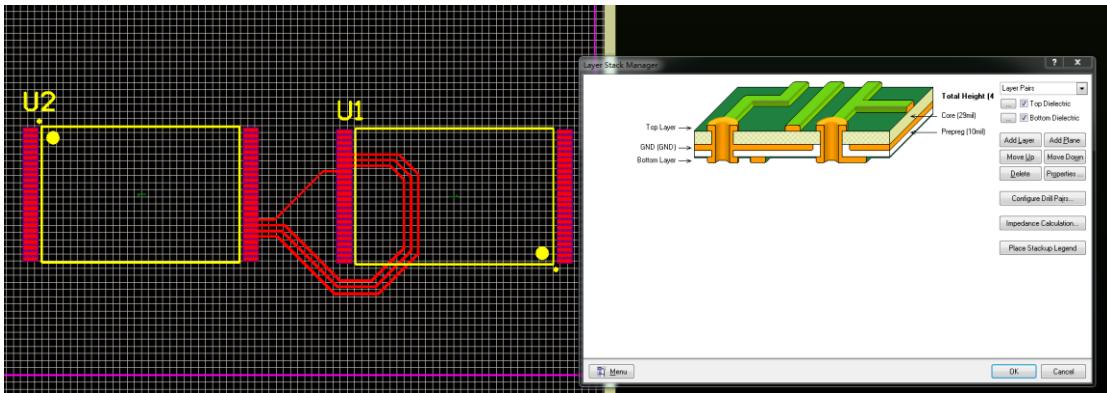
得到阻抗为 82.44 欧

Altium Designer 阻抗布线设置

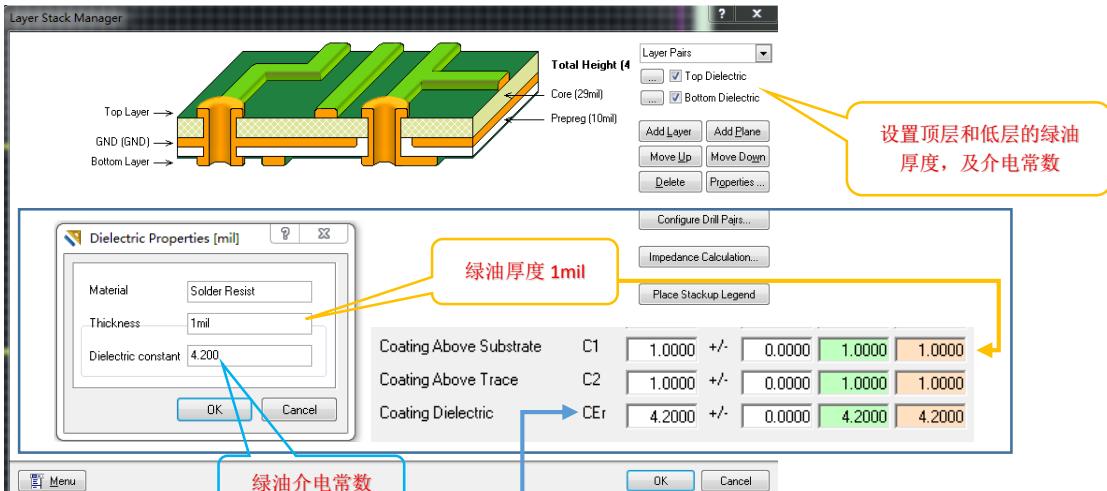
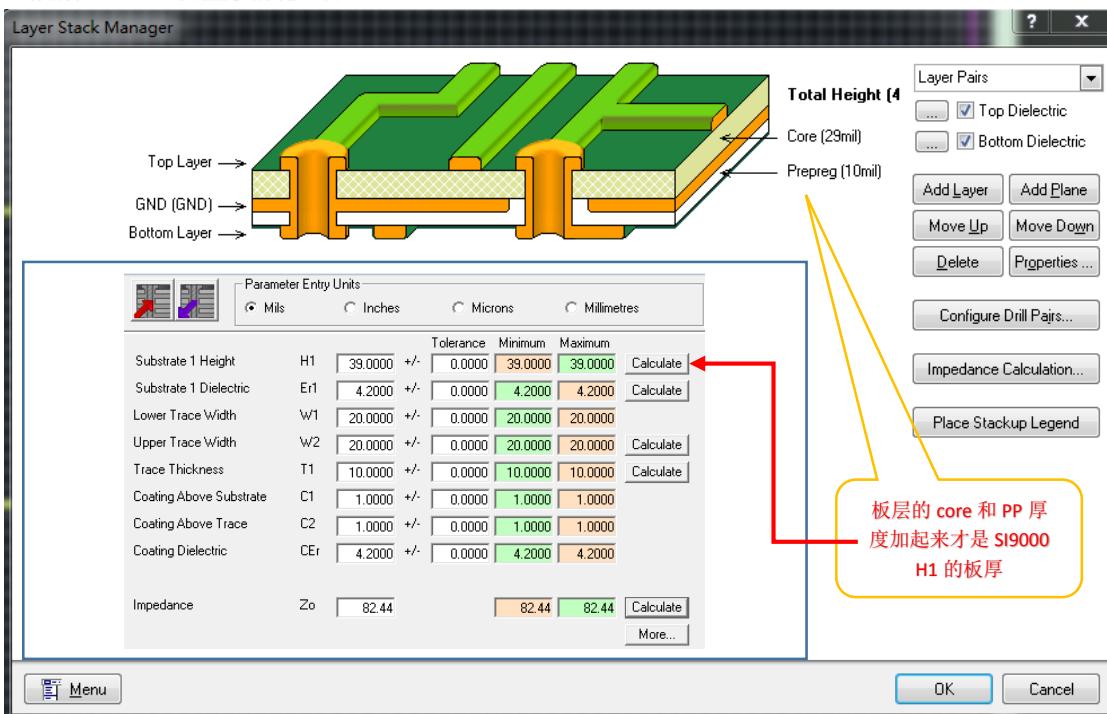


我们测试这两个芯片的布线阻抗

1.首先设置板层结构，这个和阻抗息息相关

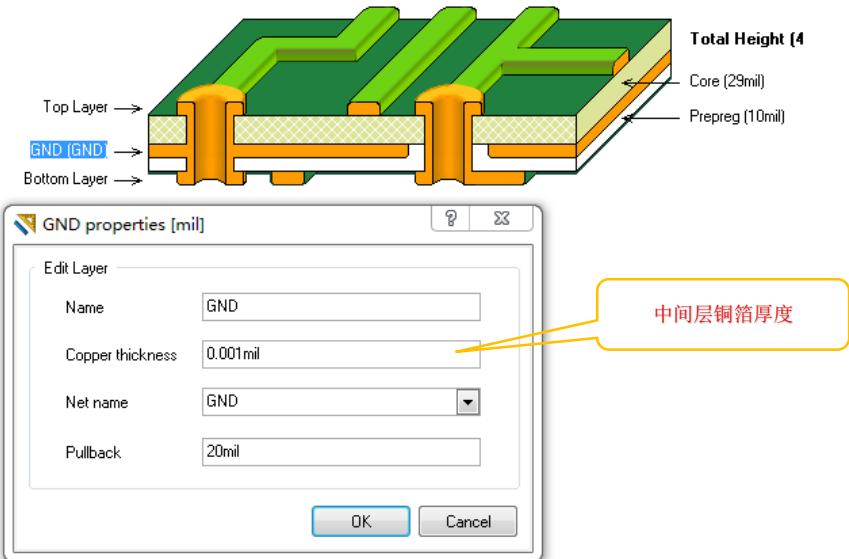


2.根据 SI9000 设置板层参数



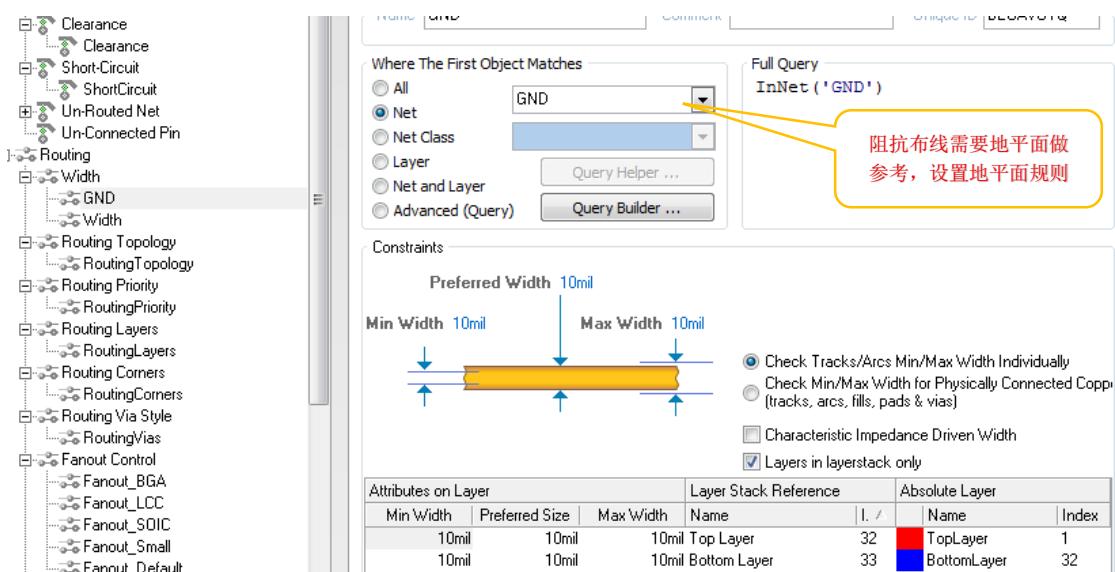
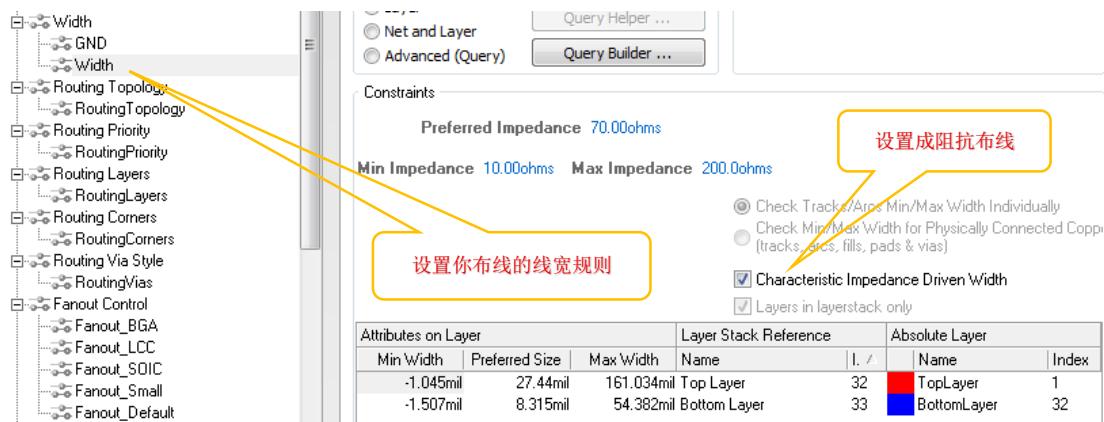
你看我 AD 设置的板层和 SI9000 一样

3. 因为顶层或者底层走线阻抗是需要有参考平面的，所以需要加一层完整的地平面做参考

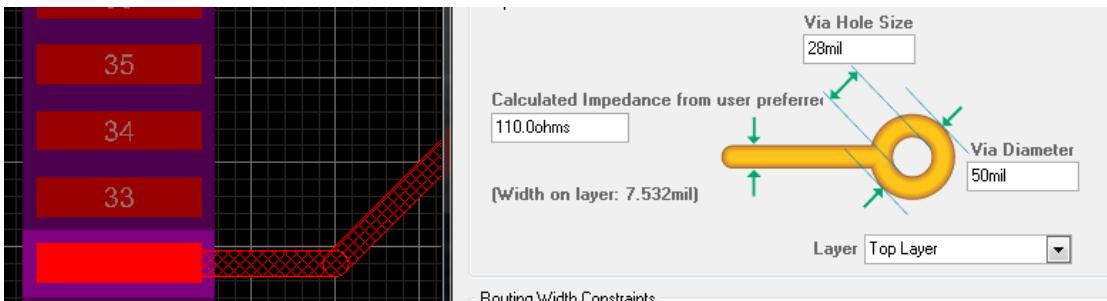


这样顶层 Top Layer 走线是按照中间的 GND 做参考的

4. 下面开始设置走线规则

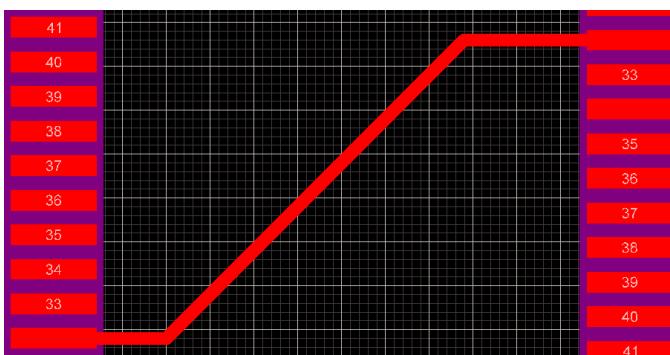


5. 然后可以开始布线了



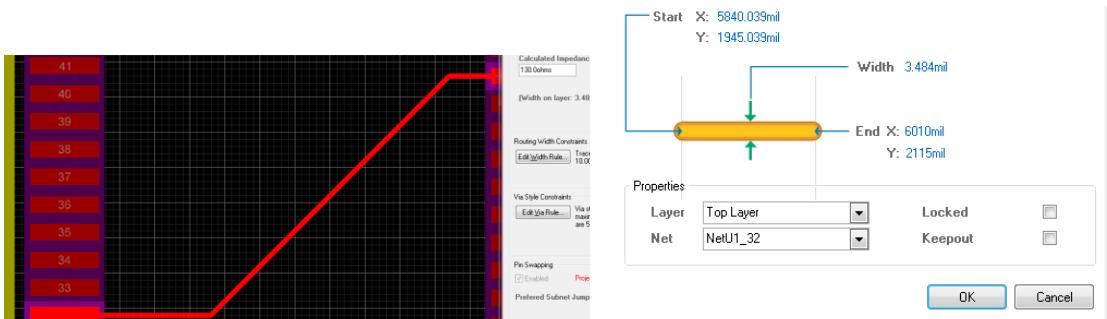
布线方式还是和平时走线一样，只是线宽变成了欧姆来表示。

现在是 110 欧阻抗，过孔需要 28mil 的规则。



这就是 1 条 110 欧阻抗的走线

130 欧姆走线线宽是多少呢？

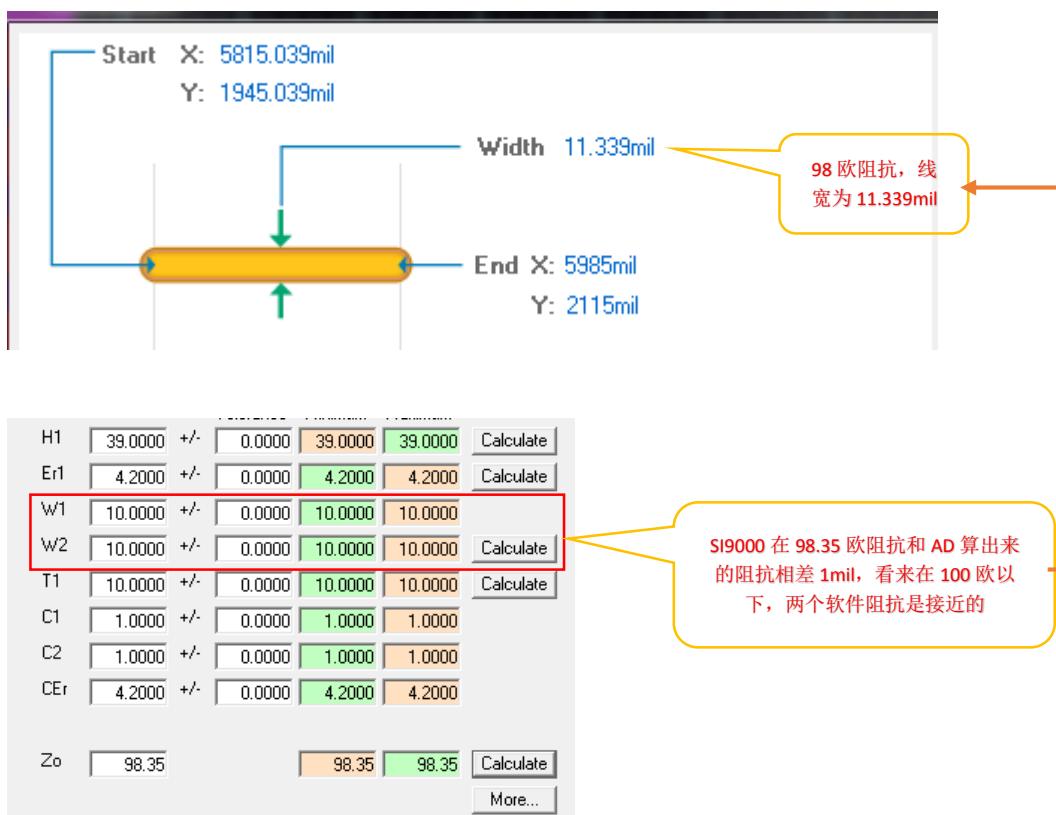
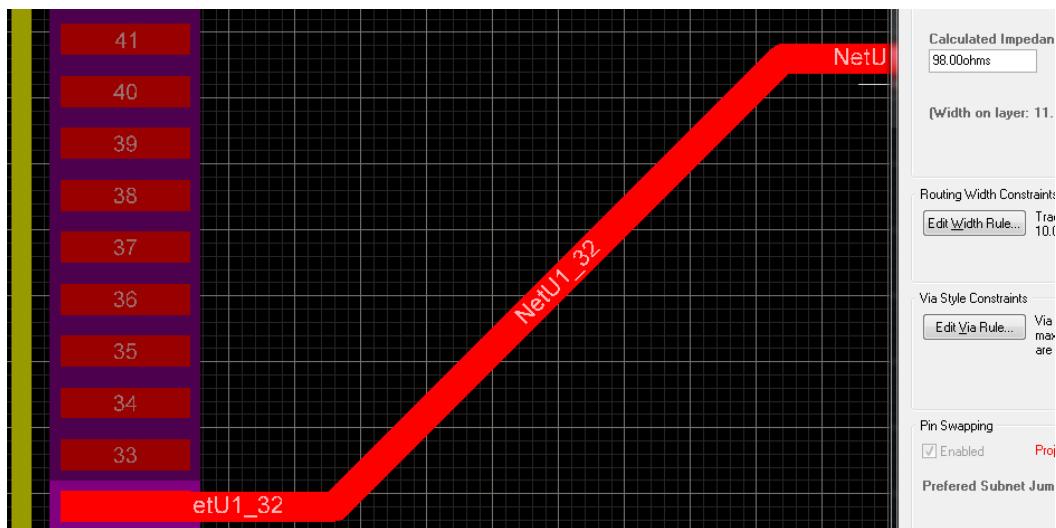


130 欧姆走线线宽是 3.484mil。为了验证 AD 这个软件是正确的，我们在 SI9000 修改线宽到 3.484mil 试试。

H1	[39.0000 +/- 0.0000]	[39.0000]	[39.0000]	Calculate
E1	[4.2000 +/- 0.0000]	[4.2000]	[4.2000]	Calculate
W1	[3.4840 +/- 0.0000]	[3.4840]	[3.4840]	Calculate
W2	[3.4840 +/- 0.0000]	[3.4840]	[3.4840]	Calculate
T1	[10.0000 +/- 0.0000]	[10.0000]	[10.0000]	Calculate
C1	[1.0000 +/- 0.0000]	[1.0000]	[1.0000]	
C2	[1.0000 +/- 0.0000]	[1.0000]	[1.0000]	
CEr	[4.2000 +/- 0.0000]	[4.2000]	[4.2000]	
Zo	[116.20]	[116.20]	[116.20]	Calculate
More...				

修改线宽成 3.484mil，阻抗变成了 116 欧，有点接近，但是差距还是有点大

是不是 SI9000 只有在 50 欧~120 欧才是准确的？我们试试



所以这个调试过程还是自己用 AD 和 SI9000 对比着调，调出一个走线参数。可以修改板厚，介电常数，线宽来调试。

