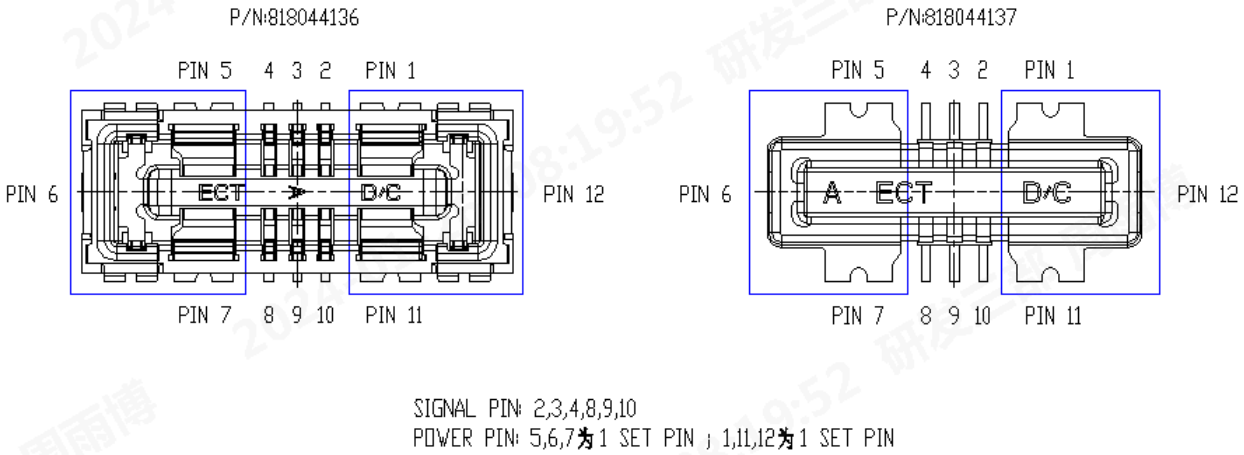
Product Specification

Rev.	Description	Written/Date	Checked/Date	Approved/Date
X1	New Release	Rain 11/20/23’	Sean.Zhang 11/20/23’	Sean.Zhang 11/20/23’

1.0 Scope: This specification covers the requirements for product performance and test methods of ECT's Board To Board High current Connectors of the part numbers specified as bellow. Product shall be of the design, construction and physical dimensions specified in the applicable product drawing.

本规格书包含了ECT 板对板 大电流 连接器(料号是818044136/818044137)的性能需求测试方法. 产品的设计, 结构, 形状和尺寸应该在适当的产品图面中进行描述.



SIGNAL PIN: 2,3,4,8,9,10
POWER PIN: 5,6,7为1 SET PIN ; 1,11,12为1 SET PIN

2.0 Rating:

2.1 Voltage Rating: 30V AC/DC

额定电压: 30V AC / DC

2.2 Rated current : For signal pin 0.3 AMPS/Pin (Max), For power pin 17 AMPS / SET Pin (Max)

额定电流: 信号 Pin 0.3 AMPS/Pin（Max）,电源 Pin 17 AMPS/SET Pin (Max)

2.3 Temperature Range: -10℃ to +35℃ storage; -40℃ to +85℃ operating

温度范围：-10℃ to +35℃ storage; -40℃ to +85℃ operating

3.0 Test Condition:(测试条件)

All tests shall be performed as bellow conditions unless otherwise specified.

所有测试依据以下规格条件执行，特别说明规格除外。

3.1 Temperature range : +15℃ to +35℃

测试温度范围：+15℃ to +35℃

3.2 Humidity range: 25% to 80%

测试湿度范围：25% to 80%

3.3 Atmospheric Pressure: 86kPa to 106 kPa (860 to 1060 m bar)

测试大气压力：86kPa to 106 kPa (860 to 1060 m bar)

4.0 Test Methods and Requirements(测试方法和要求):

4.1 Examination of product(产品外观检验):

Item 项目	Test Description 测试描述	Test Methods 测试条件	Requirement 要求

4.1.1	Examination of product (Outward Appearance Structure) 产品外观结构检验	**EIA 364-18** Shall be confirmed with eyes in accordance with each drawing. Shall be confirmed by using proper measuring instruments. 依照图面要求对产品目视检查，再用测量工具按图面要求测量尺寸	1). Shall meet visual requirement, show no physical damage. 外观没有任何的物理损坏 2). Structure shall be meet the design and dimensional requirements of drawing.外观结构应满足图纸的设计和尺寸要求

4.2 Electrical Performance(电气性能):

Item 项目	Test Description 测试描述	Test Methods 测试条件	Requirement 要求
4.2.1	Low Level Contact Resistance (LLCR) 低功率接触阻抗	**EIA-364-23C** Make the BTB plugs and receptacles on board be fully mated ,then apply 20mV, 100mA current to the mated specimens , 将焊板的 BTB 公母端实配后通电测试，电流及电压规格：20mV, 100mA。测试公母端实配后 LLCR	信号pin（signal）: 初始LLCR Max . 20 mΩ Initial Max. 20 mΩ 寿命&环境后20mΩ 20mΩ after test 电源pin（Power）: 初始LLCR Max .1.5 mΩ Initial LLCR Max. 1.5 mΩ 寿命&环境后Max .3 mΩ Max. 3 mΩ after test
4.2.2	Insulation Resistance 绝缘阻抗	**EIA 364-21D** (or MIL-STD-202F, Method 302, Test Condition B) Apply a voltage of 250V DC between adjacent terminals. of the plugs and receptacles. Electrification Time: 1 min 施加 250V DC 到公端&母端相邻两根端子之间，通电时间：1 min	1).Initial: 1000 MΩ Minimum. 2).After test: 1000 MΩ Minimum. 初始值: 1000 MΩ Minimum. 测试后: 1000 MΩ Minimum.
4.2.3	Dielectric Withstanding Voltage 耐电压	**EIA 364-20** (or MIL-STD-202F, Method 301, Test Condition B) Apply a voltage of 250V AC between adjacent terminals. of the plugs and receptacles. Electrification Time: 1 min. 施加 250V AC 到公端&母端相邻两根端子之间，通电时间：1 min	1). samples no breakdown. 样品无击穿，烧焦等不良. 2). Leakage current: 0.5mA Maximum 表面漏电：0.5mA Maximum

4.2.4	Temperature rise 温升测试	**EIA 364-70B, Test Method I** Connect series, Mate connector and measure the temperature rise at the rated current after 3 hours. 串联，匹配连接器，并量测在额定电流下通电 3 小时前后的温度升高的差异.	△T30℃ Maximum. Dimensions of Copper Foil for Power Pin Pad: 电源 Pin PCB 铜箔 Pad 尺寸： Length*width*thickness=10*17*0.035 长*宽*厚=10*17*0.035
4.2.5	Nominal Value of Contact offset requirement 端子容差要求	Contact offset 0.1mm in pitch direction, no short circuit or open circuit. 公母互配后，端子在pitch方向错位0.1mm，不会发生短路断路	公母互配后，端子在pitch方向错位0.1mm，不会发生短路断路

4.3 Mechanical Performance（机械性能）：

Item 项目	Test Description 测试描述	Test Methods 测试条件	Requirement 要求
4.3.1	Radom Vibration 随机振动	**EIA-364-28F**, Condition V test letter A 5.35Gs RMS 15 Minutes each axis	1）Discontinuity max 1 μs all contacts in series 导通瞬断不可超过 1.0 微秒
4.3.2	Sine Vibration 正弦振动	**EIA-364-28F,** Condition I half-sine wave, apply 0.1 A DC current。 frequency:10-55-10 Hz; amplitude: 1.52mm sweep time:1 minute the connectors condition is PCB mounting and the plugs mated with receptacles , they must be tested 2 hours in each of the 3 axis(X,Y,Z),total 6 hours. 半正弦波，通以 0.1ADC 电流。 测试频率:10-55-10 Hz; 振幅: 1.52mm 波形完成扫描时间:1 minute；将公母头配合好之后在 X,Y,Z 3 个轴向各测试 2 小时，共 6 小时。	1） Discontinuity max 1 μs all contacts in series 导通瞬断不可超过 1.0 微秒

4.3.3	Physical Shock 机械冲击	**EIA 364-27C,** Test Condition A Physical Shock EIA 364-27 Test Condition A (orMIL-STD-202F, Method 213) half-sine wave, apply 0.1ADC current Acceleration:50G(490m/s2) duration：11ms. the connectors condition is PCB mounting and the plugs mated with receptacles , shocking apply to 3 times in each of the 6 direction of 3 axis.18 total shock. 半正弦波，通以 0.1ADC 电流。 测试的重力加速度:50G(490m/s2) 测试时间：11ms. 将焊接 PCB 公母头配合,在 X,Y,Z 三轴 6 个方向各冲击 3 次，总共 18 次	Discontinuity max 1 μs all contacts in series 导通瞬断不可超过 1.0 微秒
4.3.4	Drop test 跌落测试	Receptacle soldered to pwb (Pb-free). Pwb mounted to 180g jig. Plug mated to receptacle. Drop from 1.5m 18 times.6 directions each 3 times 公母座连接器分别焊接在PCB板上，并配合到位，固定在180g重量的夹具上，从1.5米高处自由落体18次（6个方向，每个方向各3次）	No mechanism damage No cracks on solder joints. Electric function is O.K. Discontinuity max 1 μs all contacts in series 无机械损伤 无焊脚开裂 电气性能ok 端子瞬断时间小于1μs,
4.3.5	X/Y direction HSG strength X/Y推力测试	BTB on PCB and mating status，make plug and Rec. shear slip by X/Y direction until HSG broken, record curves and get the Max value dates of shear strength. BTB公母头配合后，沿X/Y方向剪切错动，直至破坏，记录HSG抗破坏曲线及最大力值；	X/Y direction HSG strength need ≥35N HSG X/Y方向抗剪切破坏强度不小于35N；
4.3.6	Guiding test 导向能力测试	Make mating test by BTB Plug &Rec. offset 0.25mm in X/Y direction, set upper limit mating force ≥60N 公母头X/Y方向错位0.25mm扣合测试（一端可浮动），扣合力上限设定≥60N；	No broken and scrap on Plug & Rec. side 公母无扣合破损及碎屑

4.3.7	Durability 寿命测试	**EIA 364-09C** Make the specimens that are on board mated, then fix the receptacles to the machine on horizontal or perpendicular direction. Use the machine catch the plugs and separate the specimens, then make the plugs be fully mated with receptacles at a rate of 12.5 millimeters/minute on horizontal or perpendicular direction.duration:30 cycles 将焊板的 BTB 公端与母端配合好后将母端水平或垂直固定在测试仪器上，用仪器夹住公端分离，然后将公端以 12.5 millimeters/minute 的速度水平或垂直插入焊板母端直到配合到位，循环 30 次	1).Shall meet visual requirement, show no physical damage. 外观没有任何的物理损坏 2). Contact Resistance value after test: Signal pin : 20mΩ Max / PIN Power pin : 3mΩ Max / PIN 测试后电阻值： 信号 pin : 20mΩ Max / PIN 电源 pin : 3mΩ Max / PIN 3) Mating force(插入力)： 第一次（1ST）= 6~30N 第三十次 (30ST)= 6~30N Unmating force：(拔出力) 第一次（1ST）Min= 8N 第三十次 (30ST) Min= 6N
4.3.8	Connector Mating & Unmating Force 插入/拔出力	**EIA 364-13E** Make the specimens that are on board mated, then fix the receptacles to the machine on horizontal or perpendicular direction. Use the machine catch the plugs and separate the specimens, then make the plugs be fully mated with receptacles at a rate of 12.5millimeters/minute on horizontal or perpendicular direction. 将焊板的 BTB 公端与母端配合好后将母端水平或垂直固定在测试仪器上，用仪器夹住公端分离，然后将公端以 12.5 millimeters/minute 的速度水平或垂直插入焊板母端直到配合到位	**3) Mating force**(插入力)： 第一次（1ST）=6~30N 第三十次 (30ST)Max=6~30N **Unmating force**：(拔出力) 第一次（1ST）Min= 8N 第三十次 (30ST) Min= 6N
4.3.9	Click ratio 手感率	After mating/un-mating test，calculate click ratio by mating force peak & Valley value. 从插拔力曲线中的插入力峰值和谷值计算手感率；	寿命前后手感率≥ 60% Before & After test ≥ 60%

4.3.10	Contact Retention Force 端子保持力	**EIA 364-35** The pull speed shall 12.5 mm per minute on the terminal assembled in the housing(Only for female group vertical PIN terminal signal and power PIN) 以 12.5 mm per minute 的速度，将组装在胶芯内的以垂直方向端子拔出（仅针对母座组立式端子信号 PIN 及电源 PIN）	0.2N Min / PIN 最小0.2N / PIN

4.4 Environmental performance（环境性能）

Item 项目	Test Description 测试描述	Test Methods 测试条件	Requirement 要求
4.4.1	Thermal Shock 温度冲击	**EIA 364-32F,** Test Condition I**,** test duration A-1 参考 **EIA 364-32F,** 测试条件：Condition I, 持续时间：A-1 25 cycle at Ta = - 55 ℃ (+0/-5℃) for 0.5 hours; then change of temp=25℃ (+/-10 ℃) Maximum 5 min; then Tb=+85℃(+3/-0 ℃) for 0.5 hours; then cool to ambient. Recovery: 2 hours at ambient atmosphere.	无机械损伤 无性能变化 信号 pin : 20mΩ Max / PIN 电源 pin : 3mΩ Max / PIN 绝缘阻抗≥1000MΩ
4.4.2	Humidity-Temperature Cycling 湿热循环	**EIA-364-31C** Method IV Test Condition B Mated. 25±3℃,95±5%RH for 9hrs, then change to 55±3℃ in 3hrs;55±3℃,93±5%RH for 9Hrs, then change to 25±3℃ in 3hrs. 24hrs for 1 cycle, total 10 cycles(240Hr) 导通状态下，在25±3℃,95±5%RH的条件下持续9hrs,然后在3hrs内完成温度转换至55±3℃,93±5%RH; 然后55±3℃,93±5%RH的条件下持续9hrs,然后在3hrs将条件转为25±3℃,95±5%RH. 1个循环24hrs，完成10个循环共240hrs	无机械损伤 无性能变化 信号 pin : 20mΩ Max / PIN 电源 pin : 3mΩ Max / PIN 绝缘阻抗≥1000MΩ

4.4.3	Temperature life 温度寿命	**EIA-364-17**，Method A， test condition 3 Make the samples be separated and Leave them in the chamber of temperature +85℃ +/-2℃ for 96hr，then it shall be subjected to standard atmospheric condition for 1~2h 将测试样本分离放置在一个+85℃+/-2℃的空间里暴露 96 小时，然后在标准环境下放置 1-2h.	无机械损伤 无性能变化 信号 pin：20mΩ Max / PIN 电源 pin：3mΩ Max / PIN 绝缘阻抗≥1000MΩ
4.4.4	Cold temperature 低温测试	**EIA-364-59A** test condition 3 ,duration D Make the samples be separated and Leave them in the chamber of temperature -40℃ +/-2℃ for 96hr，then it shall be subjected to standard atmospheric condition for 1~2h 将测试样本分离放置在一个-40℃+/-3℃的空间里暴露 96 小时，然后在标准环境下放置 1-2h	无机械损伤 无性能变化 信号 pin：20mΩ Max / PIN 电源 pin：3mΩ Max / PIN 绝缘阻抗≥1000MΩ
4.4.5	High-temperature and humidity 高温高湿	**EIA-364-31C** High-temperature 85°C , 95%RH Duration : 120h visual inspection once a day 在温度85℃,湿度95% RH的条件下进行120hrs的测试，每天进行一次外观检测	无机械损伤 无性能变化 信号 pin：20mΩ Max / PIN 电源 pin：3mΩ Max / PIN 绝缘阻抗≥1000MΩ
4.4.6	Salt water spray 盐雾测试	**EIA 364-16A** (MIL-STD-202 METHOD 101) Temperature: 35℃±2℃ 温度：35℃±2℃ Density of salt water : 5±1% 盐水浓度：5±1% Duration: 48±2 hours. 持续时间: 48±2 hours.	无机械损伤 无性能变化 信号 pin：20mΩ Max / PIN 电源 pin：3mΩ Max / PIN 绝缘阻抗≥1000MΩ

4.5 Solder-ability requirement(焊接性能)			
4.5.1	Surface Mount Solder-ability Test 沾锡测试	Refer to IPC-J-STD-002C. 参考 IPC-J-STD-002C.	At least 95% of immersed area should be adequately wetted on all samples except on cutting edge 除了端子的裁切面外，所有样品的焊脚沾锡面积至少 95%
4.5.2	Resistance to Reflow Soldering Heat: 过炉测试	Refer to IPC-J-STD-002C The unmated DUT should withstand three immediately followed reflow processes meet Huawei IR curve. Nitrogen is not allowed for this test. Number of reflows should meet at least 3 cycles. 参考IPC-J-STD-002C. 测试样品需过炉三次 参考华为炉温曲线，不带锡膏，不使用氮气	No deformation of component after reflow on any side of the component 1). Appearance shall not be distinct damage. 不能出现明显的外观损坏 2).The key dimensional shall still meet the design requirements of drawing after reflow. 产品过炉后关键尺寸仍满足规格要求
4.5.3	Flux resistance / penetration: 爬锡&锡渗透	IPC-J-STD-002C The component should withstand three immediately followed Huawei reflow requirements. IPC-J-STD-002C. 测试样品需过炉三次 参考华为炉温曲线 焊盘，钢网开口和厚度	No flux or solder ingression into contact area. The functional and electrical requirements fulfilled 不允许助焊剂和锡膏侵入到端子接触部位 产品功能ok 电气性能ok
4.5.4	Co-planarity measurement during reflow cycle 炉后共面度	Refer to IPC-J-STD-002C The co-planarity of the soldering terminals should be measured during the whole reflow cycle which meet the maximum limits stated by IPC-J-STD-002C, latest revision. 参考IPC-J-STD-002C. 焊接端子的共面度应在整个回流周期内测量，满足最新修订的IPC-J-STD-002C规定的最大限值.	Co-planarity max 0.08mm After IR max 0.10mm 炉前max 0.08mm 炉后max 0.10mm
4.5.5	Solder peel off strength 焊接剥离强度	Minimum Number of samples: 10 pcs Connector(both Rec.& Plug) peeling strength from board Final peel off force should be noted for each direction. 最小样品数量:10pcs 连接器（包含母座&公座）从板上剥离的强度，记录每个方向的最终剥离强度	1N/焊点 Min.

5.0 INFRARED REFLOW CONDITION (回流焊曲线条件)

过炉回流曲线要求	
参数	典型值
均温区要求 （150°C 到 200°C）	100~120 s
峰值温升速率(TL~Tp)	Max: 3°C /s
液态线（217°C）以上时间	100~150s
最低回流峰值温度	255°C
250°C 以上时间	Min: 30s
冷却阶段的斜率（Tp~TL）	Max: -6℃/s
25°C 到 Tp 时间	Max: 8min

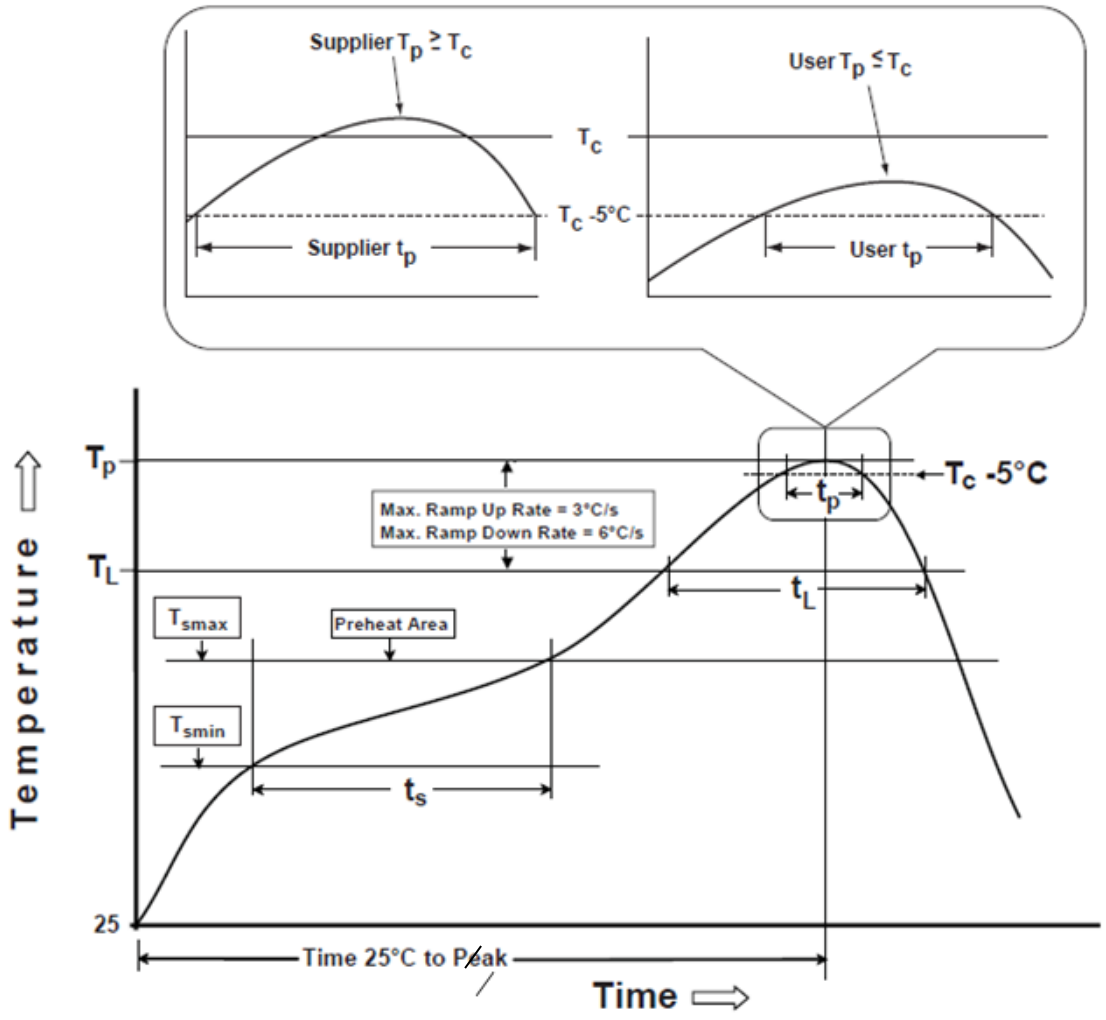


Fig1.Reflow Temperature profile

6.0 INSTRUCTION OF APPLICATION TO USAGE 产品组装的使用说明

This specification is written based on the supposition that the receptacle is mounted on PCB (Hard PCB) and the plug is mounted on FPC. In the case of the receptacle is mounted on FPC and the plug is mounted on PCB (Hard PCB) is also covered. Receptacle contains formable terminal. Please pay attention to un-mating process of connectors if you mount Receptacle on FPC

本说明书根据母座端往PCB基板（硬板）侧实际安装、公座端往FPC（软板）侧，实际安装的设想而作成，同时也适用于公座端往FPC（软板）、公座往PCB基板（硬板）上的实装。母座上的端子容易变形，实装到FPC（软板）上时，特别要注意拔出时的操作。 (以下图示为类似产品)

6.1 MATING (插入操作相关)

6.1.1 HOW TO MATE(INSERTION) 组合方法（插入方法）

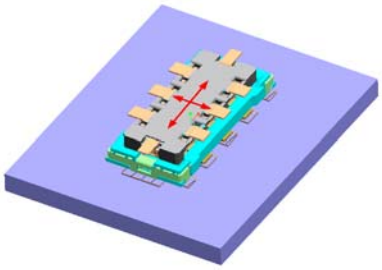
After positioning correctly for mating ,then the distance between PCB and FPC is about 0.50 mm, insert the Plug to the receptacle in parallel with each other.

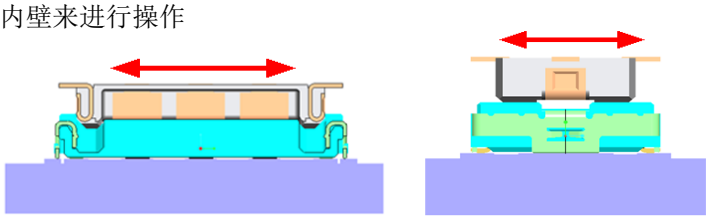
组合时（插入时）请对好位置再进行。位置对好时，PCB基板和FPC软板间的尺寸大概位置在0.50 mm之后，请将公座侧与母座侧保持平衡后再插入

Please find correct position at inside wall of receptacle and inside wall of plug

正确的位置调合如右图，请沿母座内壁和公座内壁来进行操作

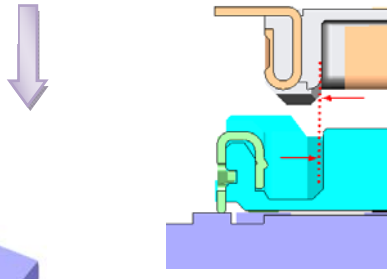
STEP 1





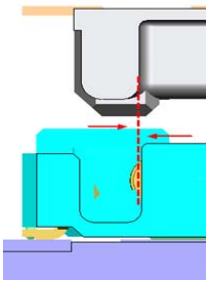
Positioning the plug correctly in parallel with the receptacle

请在公座侧与母座侧保持平衡的状态下再校对位置

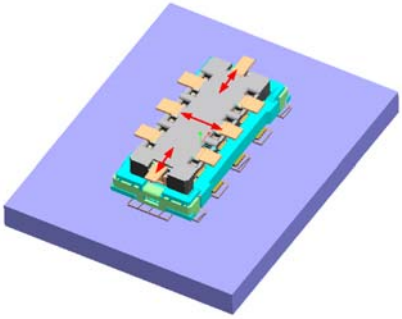


Correct position

调整确切位置



STEP 2

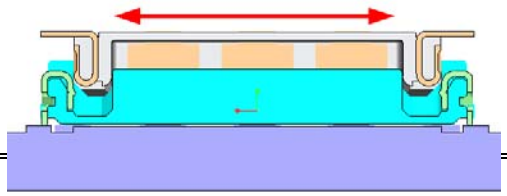


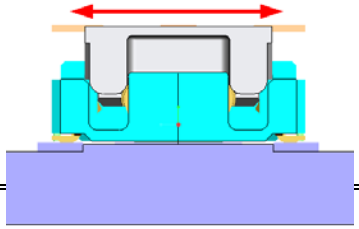
Correct position for mating

正确的嵌合调整位置

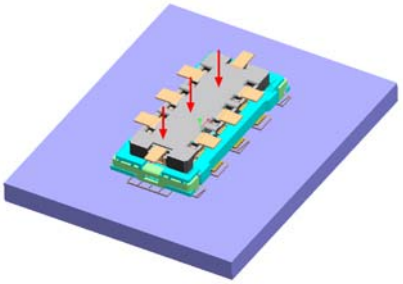
Position the plug correct by adjusting back or forth

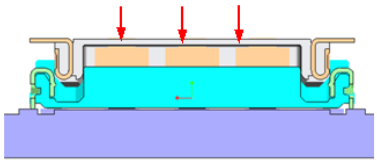
轻轻移动公座侧来确认位置调合是否正确

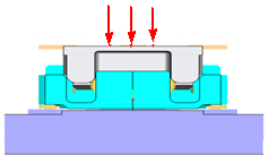




STEP3



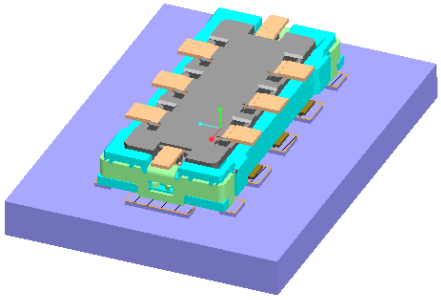




Insert the plug in parallel wich the receptacle until fully seated

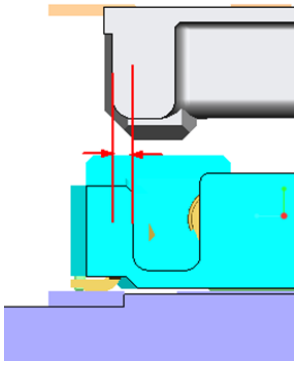
请将公座侧平行压入到母座

STEP4



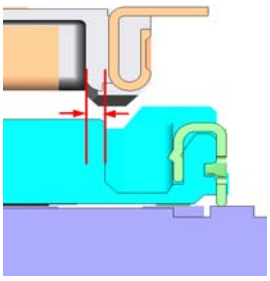
6.2 MATING POSITIONING WITH SLIGHTLY INCLINED 组合时调合位置的方法（位置平行调整困难时）

6.2.1 When operated in “a” Direction(lengthways) 长方向有自由度时



Please keep it within 0.15mm

请保持在 0.15mm 以内

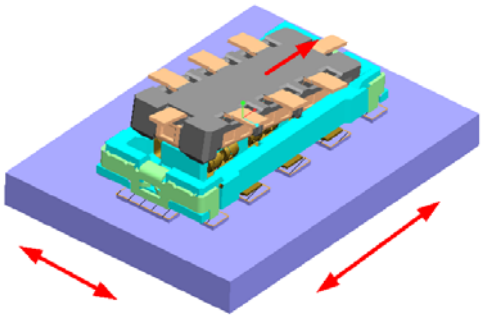


Please find right Position regarding to procedure below(请按以下流程来调整位置)

“ b” Direction 短方向

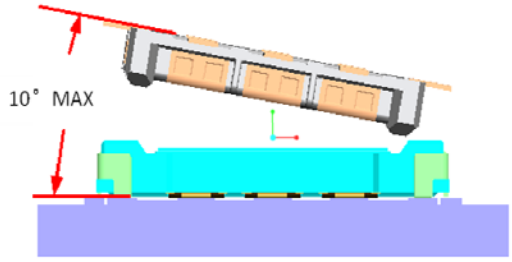
“ a” Direction（lengthways） 长方向

STEP1



“b” Direction

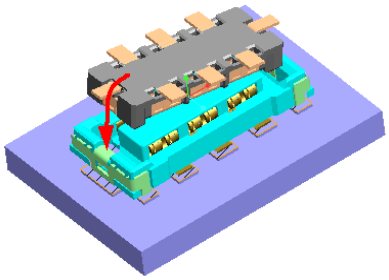
“a” Direction



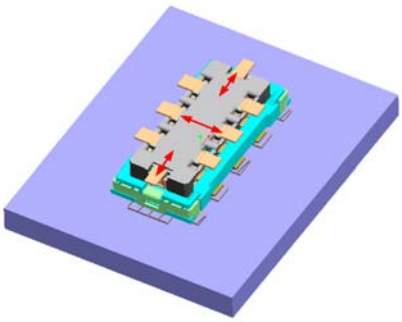
Position for mating by inclining the plug to the receptacle approximately less than 10^0

请在公座侧稍微倾斜（10 度以下）的状态下进行组合位置调整操作

STEP2



STEP3



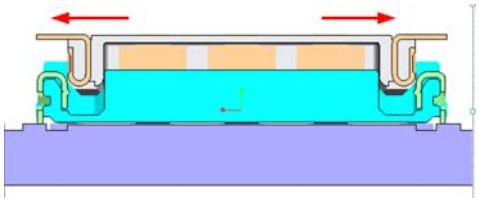
Please go to the STEP3 in 6.1.1

请参照 6.1.1 步骤 3 进行下一步操作

Once the plug is positioned over the receptacle

Move it to the parallel position

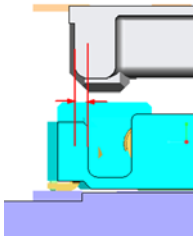
位置调合后，请将公座侧和母座侧保持平行



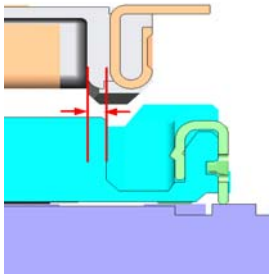
Position the plug correct by adjusting back or forth

轻轻移动公座侧来确认位置调合是否对位

6.2.2 When operated in “b” Direction 短方向有自由度时



Please find right Position regarding to procedure below(请按以下流程来调整)



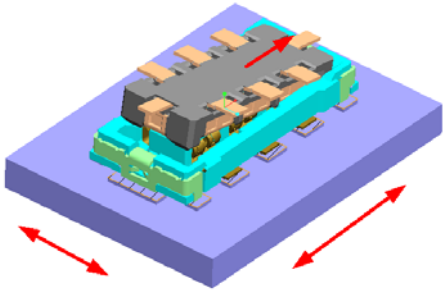
Please keep it within 0.15mm

请保持在 0.15mm 以内

“ b” Direction 短方向

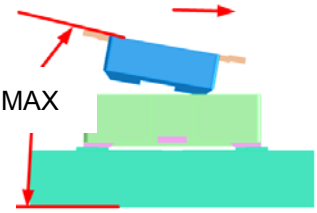
“ a” Direction（lengthways） 长方向

STEP1



“b” Direction

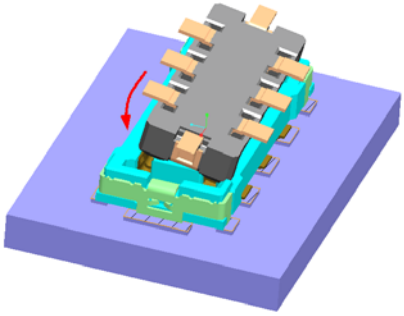
“a” Direction

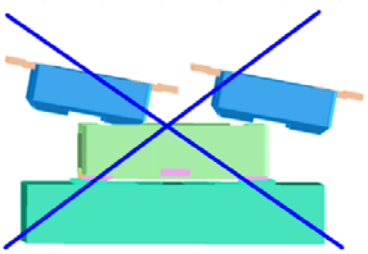


Position for mating by inclining the plug to the receptacle approximately less than 10^0

请在公座侧稍微倾斜（10 度以下）的状态下进行组合位置调整操作

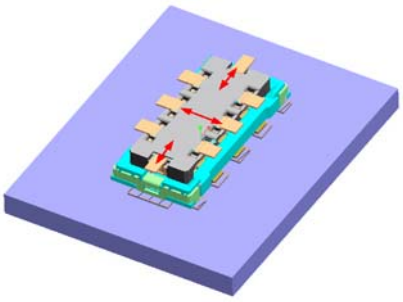
STEP2





Notes)Pay attention NOT to have the wrong position in “b” Direction 注：请注意位置调合偏差不能太大

STEP3



Please go to the STEP3 in 6.1.1

请参照 6.1.1 步骤 3 进行下一步操作



Once the plug is positioned over the receptacle

Move it to the parallel position

位置调合后，请将公座侧和母座侧保持平行

Position the plug correct by adjusting back or forth

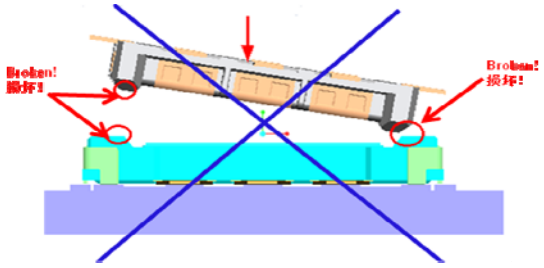
轻轻移动公座侧来确认位置调合是否对位

6.3 CONNECTOR HANDLING WHEN MATING(组合时操作注意事项)

Please DO NOT apply force while mating the receptacle or plug at an angle in the “a” direction(lengthways)

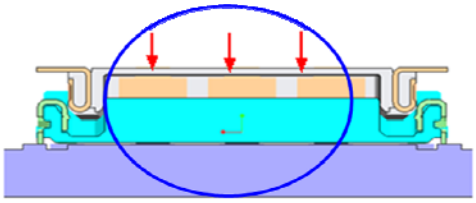
It may cause damage to the connector

请在连接器之间平行的状态下进行组合操作。如果在连接器之间不平行、处在倾斜的状态下组合时，连接器本体之间可能会有干涉，就会有损坏连接器的可能。



Mating with angle(Wrong Handling)

连接器倾斜组合

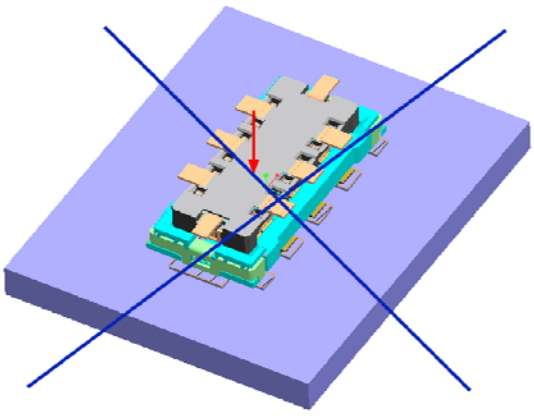


Mating with Parallel(Correct Handling)

连接器平行组合

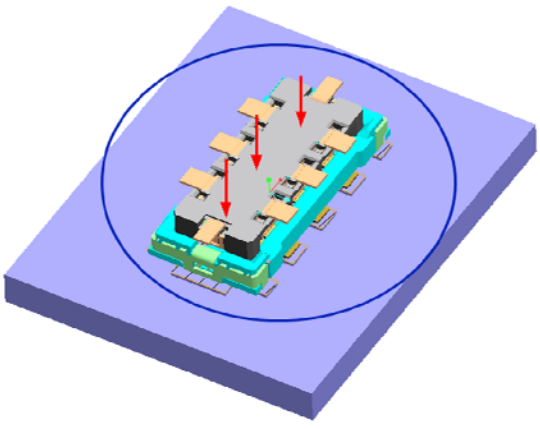
This product is downsized comparing with the current products and needs to be handled more carefully. When mating(inserting), do NOT push the only center of connector but the whole connector in parallel with The receptacle . When pushed only the center of connector , it may cause damage to the connector

本产品比现有产品还要小，连接器的强度较低。组合（插入）时，不能单单只按押连接器中间部，要平行按押整体。FPC 加强板的强度不充足时，如果只按押连接器中间的话，连接器就会有折断的可能。



Pushing only Center(Wrong Handling)

只按压连接器中间部



Pushing Whole Paralleled(Correct Handling)

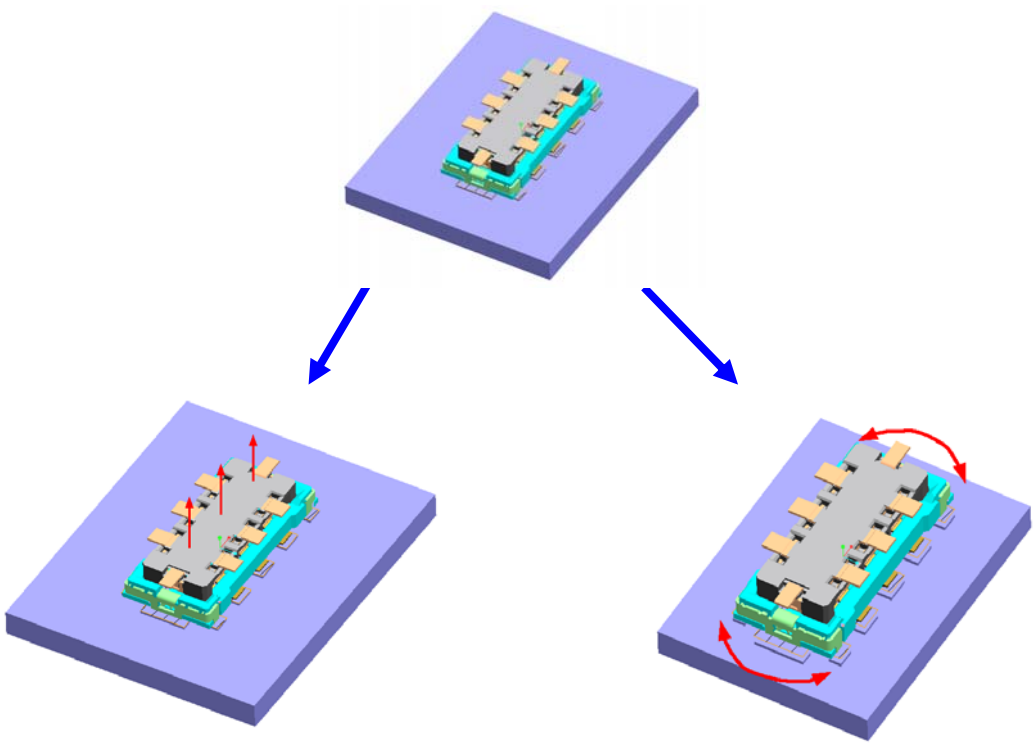
平行按压连接器整体

6.4 UN-MATING

6.4.1 HOW TO WITHDRAW 拔出方法

The plug shall be released from the receptacle paralleled to the mated axis or by moving the plug slowly

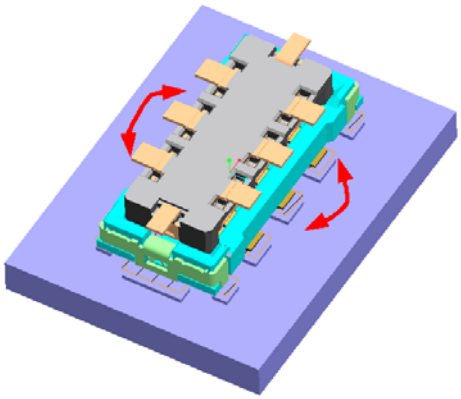
极力沿着组合轴平行拔去，或是向左右一点点边晃动边拔出。



Releasing the plug paralleled to the mated axis

沿着组合轴向平行拔去

Releasing the plug by moving slowly in “a” direction (lengthways) 向左右一点点边晃动边拔去（长方向）



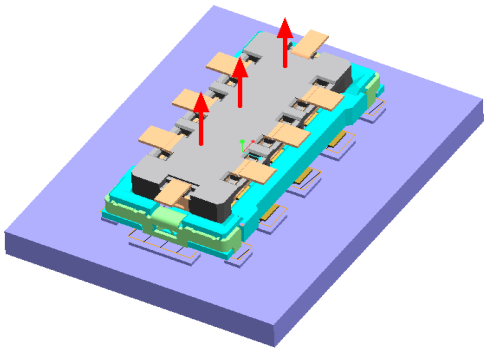
Releasing the plug by moving slowly in “b” direction

向左右一点点边晃动边拔去(短方向)

6.4.2 CONNECTOR HANDLING WHEN WITHDRAWING（拔出时操作注意事项）

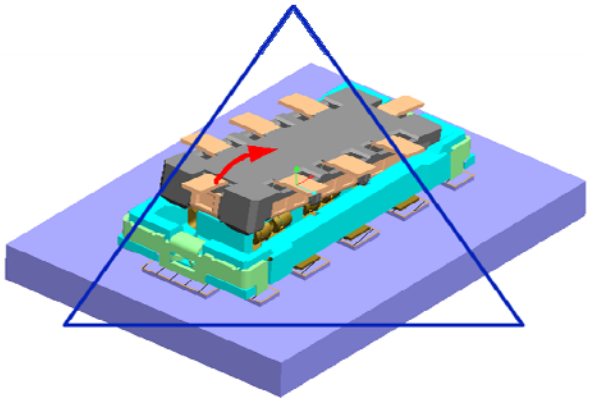
This product is downsized comparing with the current products and needs to be handled more carefully When un-mating(withdrawing), do NOT twist the plug to release . It may cause damage to connector.

本产品比现有产品还要小，连接器的单体强度较低（单体强度）。如果在过度倾斜状态下拔去的话，连接器就会有破损的可能



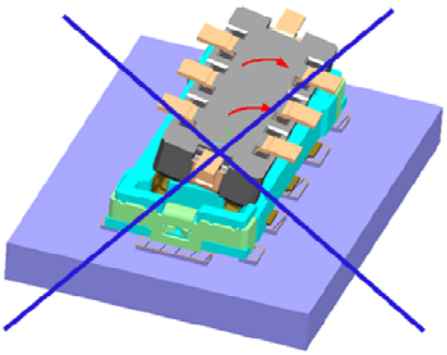
Releasing the plug paralleled to the mated axis

沿着组合轴向平行拔去



Slant releasing in “a” Direction (lengthways)

长方向的倾斜拔出



Slant releasing in “b” Direction

短方向的倾斜拔出

Merit and demerit for slant releasing are below

长方向的倾斜拔去方式与短方向的倾斜拔去方式存在以下优点及缺点

	Slant releasing in “a” Direction (lengthways) 长方向的倾斜拔出	Slant releasing in “b” Direction 短方向的倾斜拔出
Merit 优点	1.Not easily cause the damage to the terminals 不容易引起端子变形 2.Hard to be withdrawn 拔出的力度小	None 无特别优点
Demerit 缺点	1. Multiple connector can be damaged plug 多个连接器时拔出时可能会损坏公座	The continuity defect can be caused by damage to the terminals 端子变形风险，同时会存在不导通的可能

7.0 Test Group		Sample Groups																		
Test Item	Test Description	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P			
4.1.1	外观检查	1,9	1,7	1,5	1,3	1,3	1,3	1,3	1,7	1,7	1,7	1,9	1,9	1,7	1,3	1,5	1,3			
4.2.1	LLCR	4,10	2,6	2,4					2,5	2,5	2,5	2,6	2,6	2,5						
4.2.2	绝缘阻抗	5,11	,						3,6	3,6	3,6	3,7	3,7	3,6						
4.2.3	耐电压	6,12										4,8	4,8							
4.2.4	温升				2															
4.3.1	随机振动		3																	
4.3.2	正弦振动		4																	
4.3.3	机械冲击		5																	
4.3.4	跌落测试			3																
4.3.5	X/Y 推力测试					2														
4.3.6	导向能力测试						2													
4.3.7	耐久测试	7																		
4.3.8	插拔力测试	2,8																		
4.3.9	手感率	3,9																		
4.3.10	端子保持力							2												
4.4.1	温度寿命								4											
4.4.2	低温									4										
4.4.3	温湿循环										4									
4.4.4	高温高湿											5								
4.4.5	温冲												5							
4.4.6	盐雾													4						
4.5.1	沾锡测试														2					
4.5.2	过炉测试															2				
4.5.3	爬锡&锡渗透															3				
4.5.4	炉后共面度																2			
4.5.5	焊接强度															4				
测试数量		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15			