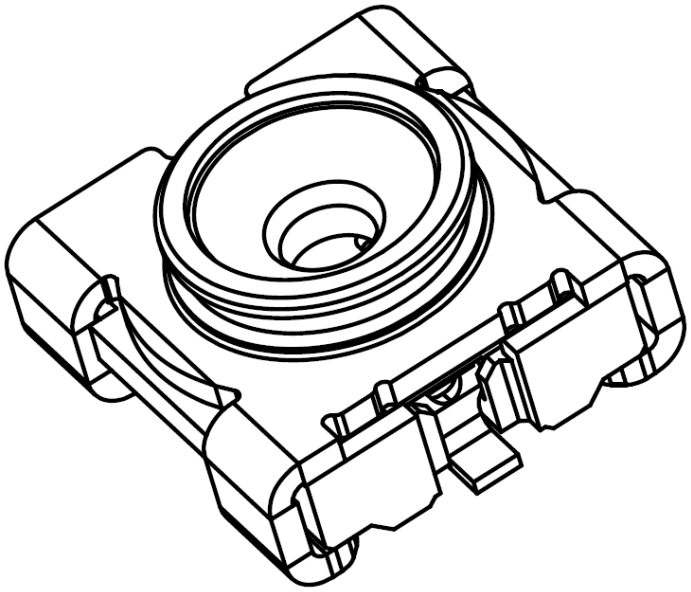
ELECTRIC CONNECTOR TECHNOLOG	Document Number: 60651376701

产品规格书

Product Specification



P/N: 818003767	Title : Mini RF Ⅳ Switch Connector

Rev.	ECN	Release and Revision Description	Prepared By/Date:	Approved By/Date:
A	ECN160184	FIRST RELEASE	Martin/01.29,16	Tan/01.29,16
B	ECN170154	端子加孔	Martin/01.20,17	Tan/01.20,17
C	ECN170858	增加0.08厚钢网推荐尺寸	Martin/05.16,17	Ken/05.16,17
D	ECN171058	修订推荐钢网尺寸	Martin/10.10,17	Ken/10.10.17

Content

目录

1. Scope/范围: 2
2. Product Application/产品应用： 3
3. Technology Parameters/技术参数 3
4. Ratings/额定性能要求 3
5. Profile Dimensions and material specifications /外形尺寸及材料规格 4
6. Electrical Performance/电气性能 4
7. Mechanical Performance/机械性能 6
8. Environmental Performance/环境性能 8
9. Recommended PCB Layout 推荐的 PCB 安装焊盘 10
10. Recommended Metal Mask 推荐的钢网规格 10
11. Recommended Reflow Soldering Condition/SMT 推荐的回流焊接温度曲线图 11
12. Test Sequence and Sample Quantity/测试顺序及样品数量 12
13. Recommended Mating test Probe 推荐的测试探针 13
14. Packaging 包装 14
15. Usage Precaution 使用禁忌或注意事项 14

1. Scope/范围:

This Product Specification covers the requirement of Mini RF Ⅳ Switch Connector on product performance, test methods and quality assurance provisions.

本规格书内容涵盖 Mini RF 第四代开关型同轴连接器产品的要求，包括性能指标、测试方法及质量保证方面等。

2. Product Application/产品应用：

The SMT type coaxial connector with switch is designed for Characteristic Measurement in the Mobile phones, W-LAN M, Microwave equipments, etc, application. Please let us know before using any of the products in the application not described above.
该SMT型同轴带开关连接器产品用于移动电话、W-LAN、其它无线和测量设备等领域电路的特性测量，如果用于本文中未提及的领域请在使用前告知。

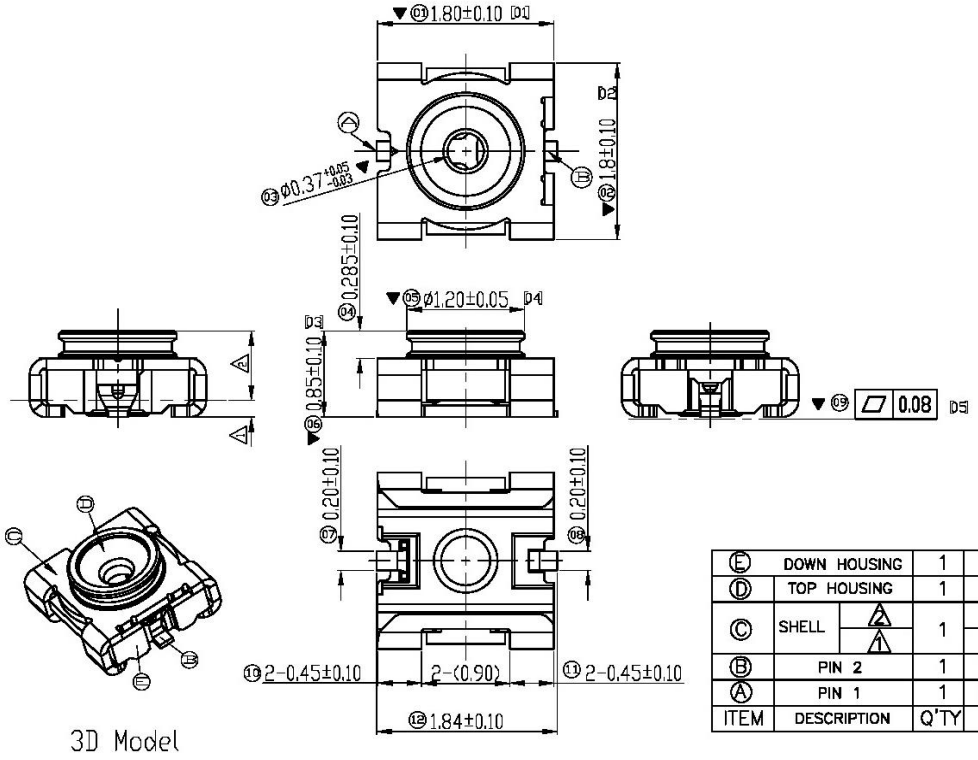
3. Technology Parameters/技术参数

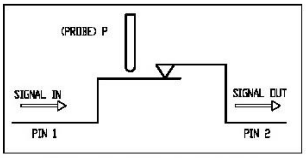
Frequency Range 频率范围：	DC~11GHz
Operating Humidity 工作湿度：	95% R.H.MAX
Temperature Rating 温度范围：	-40℃～+85℃
Nominal Characteristic Impedance 特征阻抗：	50 Ohm
V.S.W.R.电压驻波比：	1.2 Max.(DC~3GHz)； 1.3 Max.(3~6GHz)； 1.4 Max.(6~11GHz)；
Insertion Loss 插入损耗：	-0.1dB Max.(DC~3GHz)； -0.2dB Max.(3~6GHz)； -0.3dB Max.(6~11GHz)；
Isolation 隔离度：	-20dB Min.(DC~3GHz)； -15dB Min.(3~6GHz)； -10dB Min.(6~11GHz)；

4. Ratings/额定性能要求

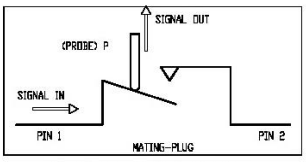
Voltage Rating 额定电压：	60 VAC (R.M.S);
Insulation Resistance 绝缘电阻：	1000 Megohm;
Withstanding Voltage 耐电压：	100V AC 1 Min.;
Durability 使用寿命：	100 Cycle

5. Profile Dimensions and material specifications /外形尺寸及材料规格





STATE OF CONTACT UNMATED

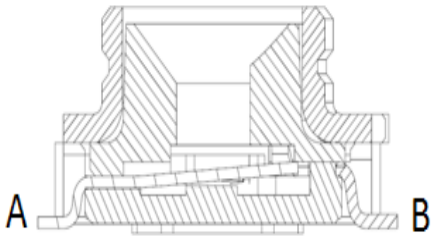
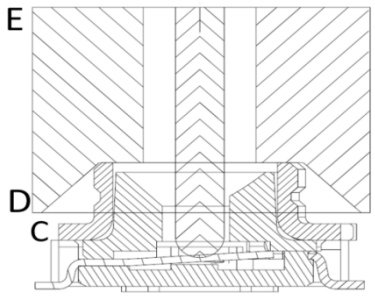
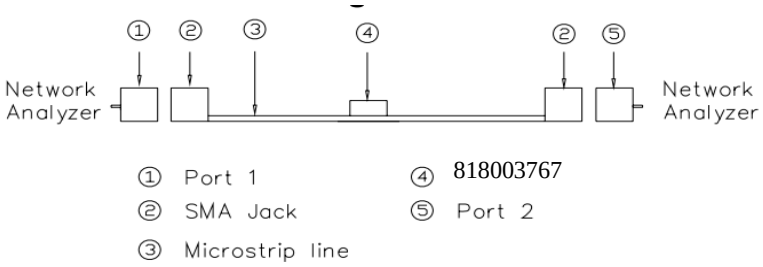


STATE OF CONTACT MATED

Ⓔ	DOWN HOUSING	1	LCP UL94V-0/BLACK
Ⓓ	TOP HOUSING	1	LCP UL94V-0/BLACK
Ⓒ	SHELL ②	1	Copper Alloy/Ni:50u" Min
	SHELL ①		Copper Alloy/Au:2u" Min; Ni:50u" Min
Ⓑ	PIN 2	1	Stainless Steel/Au:2u" Min; Ni:50u" Min
Ⓐ	PIN 1	1	Stainless Steel/Au:5u" Min; Ni:50u" Min
ITEM	DESCRIPTION	Q'TY	MATERIAL/FINISH

6. Electrical Performance/电气性能

Item 项目	Description 项目描述	Test Condition 测试条件	Requirement 规格要求
6.1	Contact Resistance 接触电阻	(EIA 364-23) Testing by the voltage dropping method with the low level current. 按照 EIA364-23 要求，采用低电平压降方式测量电阻值。 Open circuit voltage 开路电压： 20mV MAX Circuit current 电流： 100mA MAX *Note: Test Methods are as following Figure1 and Figure 2, Body Resistance is eliminated here. 备注：测试方法参照图 1 和图 2，此处的接触电阻测试不包括体电阻。	Inner contact 中心导体 ：Initial 初始 100mΩ Max.* ：After 测试后 120mΩ Max.* Ground contact 外导体 ：Initial 初始 20mΩ Max.* ：After 测试后 50mΩ Max.*
		Inner contact /中心导体: **RAB**	Ground contact/外导体:**RCE - RDE**

		 **Figure 1**	 **Figure 2**
6.2	Insulation Resistance 绝缘电阻	(EIA 364-21) Testing by applying the specified voltage (DC 200 V) between the inner and ground contacts for one minute. 在内外导体之间施加 200V DC 的电压，测试时间 1 分钟。	Initial 初始：1000 MΩ MIN After 试验后：100 MΩ MIN
6.3	Dielectric withstanding voltage 耐电压	(EIA364-20) Testing by applying the specified voltage(AC 100 V) between the inner and ground contacts for one minute. 在内外导体之间施加 100V AC 的电压，测试持续 1 分钟。	No evidence of breakdown 无瞬断、熔闪、击穿
6.4	V.S.W.R. （NC） 电压驻波比	Measurement system is as following figure 3 and tested by network analyzer. Frequency：DC~11GHz 如图 3 所示,通过网络分析仪测试; 频率范围为 DC~11GHz;	1.2 Max.(DC~3GHz); 1.3 Max.(3~6GHz); 1.4 Max.(6~11GHz);
6.5	Insertion Loss （NC） 插入损耗	Measurement system is as following figure 3 and tested by network analyzer. Frequency：DC~11GHz 如图 3 所示,通过网络分析仪测试; 频率范围为 DC~11GHz; Note: the loss of the other conductive part than the receptacle is not included. 注：除产品外的所有其它导体引起的损耗被消除。	-0.1dBMax(DC~3GHz) -0.2dBMax.(3~6GHz); -0.3dBMax.6~11GHz);
 **Figure 3**			

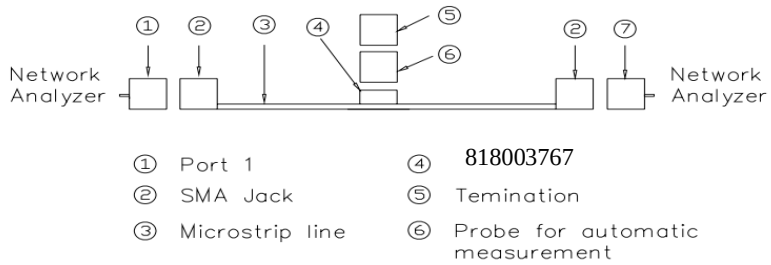
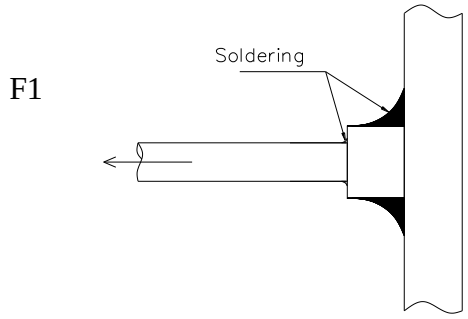
6.6	Isolation 隔离度	Measurement system is as following figure 4 and tested by network analyzer. Frequency：DC~11GHz 如图 4 所示,通过网络分析仪测试; 频率范围为 DC~11GHz; Note: the manual testing probe should be inserted to the mating portion of the receptacle completely during the testing. 注：此项测试中，需要使用手动测试公头，并保证完全插配到母座上。	-20dBMin.(DC~3GHz); -15dBMin.(3~6GHz); -10dBMin.(6~11GHz)
			

Figure 4

7. Mechanical Performance/机械性能

Item 项目	Description 项目描述	Test Condition 测试条件	Requirement 规格要求
7.1	Engage and Disengage Force 插拔力	A. Mating Force Mate the connectors, the mating axis of both connectors must be aligned and the connectors can be mated fully and measure the mating force at the speed of 25±3mm/minutes. B. Un-mating Force Mate the connectors until they can't be moved, then push the lock to lock them together. Un-mate connectors until they're separated completely and measure the un-mating force at the speed of 25±3mm/minutes. A.插入力 公母头连接器对正互配插入，确保两者能完全配合，并测试其插入力，速率：每分钟 25±3 毫米; 拔出力 B.对插到死点位置为止，表示两者已完全配合，此时再按下锁扣，将公母头锁在一起,将公母头分离到完全分开位置并测试其拔出力，速率：每分钟 25±3 毫米。	1. Engage Force 插入力: 无 2.Disengage Force 拔出力： 无

7.2	Allowed Push Force 推压力	The connector is soldered on the test PCB and then push the switch of the connector from on-state to off-state by a test probe as shown in Figure 5 with the required force along the axis direction, which is needed to get 15dB isolation at 6GHz is measured. 通过测试探针以轴向力下压连接器开关的动弹片使开关完全断开,当 6GHz 频点所 对应的隔离度达到 15dB 时,测试所施加的力.	1.5-2.0N. (0.15-0.20Kgf)
7.3	Durability 耐久性	Engage and disengage the receptacle connector which is soldered to the test board and its mating plug cable for 100 cycles at the speed of 25± 3mm/minutes along the mating direction by the push-push machine. 将母座焊接在测试板上，然后，通过插拔力测试仪沿配合方向以每分钟 25±3 毫米的速度插拔公母头 100 个循环进行测试。	Appearance: No abnormality 外观：无损伤 Contact Resistance: Shall meet 6.1 接触电阻： 满足节 6.1 要求
7.4	Adhered of Electrode Terminal 焊点保持力	Soldering test sample with test PCB . Measurement conditions are as followings according to figure 5: 将产品已正常焊接工艺焊在 PCB 上,按图 5 方式在下述条件下测量: 1. Force(拉力):F1=30N 2.Time(时间):5+/-1s.	No excoriation of electrode terminal 焊接端子无明显脱落
		 **Figure 5**	
7.5	Vibration 机械振动	Apply the following vibration conditions to the mating connector. During the testing,run 100mA DC to check electrical discontinuity. Frequency:10Hz → 100Hz → 10Hz/approx 20minutes. Half amplitude,Peak value of acceleration: 3mm or 60m/s² (6G). Directions,cycle:3 mutually perpendicular direction,3 cycles for each direction. 将公母头配合，并施加如下条件测试.在测试期间,施加 100mA DC 电压,并检验电不连续性. 频率：10Hz→100Hz→10Hz/20minutes. 半振幅、加速度：3mm、60 m/s² (6G) 方向和循环次数：每个互相垂直方向上进行 3 次测量。	Appearance: No abnormality 外观：无损伤; Contact Res.: Shall meet 6.1 接触电阻： 满足节 6.1 的要求; No discontinuities of 10 μs or longer. 电不连续性不超过 10 μs。

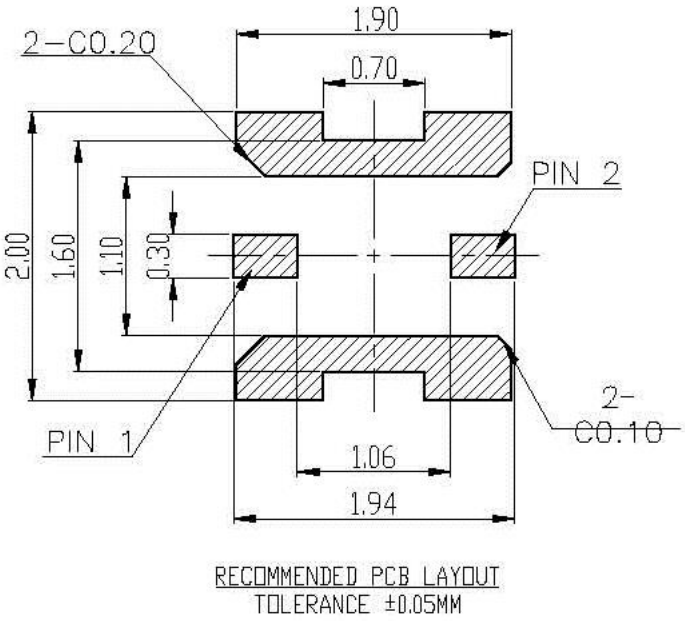
7.6	Shock 机械冲击	EIA 364-27 Condition A The object of this test procedure is to detail a standard method to assess the ability of a connector to withstand specified severity of mechanical shock.Test Current:100mA. Peak value of acceleration:750m/s² (75G) Duration :6ms Wave form : half sinusoidal Directions,cycle : 6 mutually perpendicula direction, 3cycles about each direction 此测试程序的目的是要作一详细标准以评估连接器能承受特定严格机械冲击的能力. 振幅峰值，:750m/s² (75G) 持续时间：6 毫秒 波型：半正弦波 方向和循环次数：每 6 个相互垂直方向上各进次 3 次.通电 100mA 测试电不连续性.	Appearance: No abnormality 外观：无损伤; Contact Res.: Shall meet 6.1 接触电阻： 满足节 6.1 的要求; No discontinuities of 10 μs or longer. 电不连续性不超过 10 μs。

8. Environmental Performance/环境性能

Item 项目	Description 项目描述	Test Condition 测试条件	Requirement 规格要求
8.1	Humidity 恒温恒湿试验	（MIL-STD-202, Method 103Test Condition B ） Test is done without mating adaptor ,apply the following environment to the mating connector. Temperature : 60℃. Humidity : 95%R.H. Duration: 96 hours(50hours*). Note: The condition is under the “*”value when test is done with adaptor. Measurements should be done within 2hours. 在未用转接器插合状态下，根据 MIL-STD-202 试验条件 B 中的第 103 方法,对已配合的连接器施加下列条件测试。 温度: 60℃； 湿度: 95%R.H； 持续时间: 96 小时(50 小时*)； 备注：1）在有转接器插合状态下测试时间为 “*” 值. 2）所有测量应在完成湿度试验 2 小时内进行。	Appearance: No abnormality 外观：无损伤； Contact Resistance: shall meet 6.1 接触电阻：满足 6.1； Insulation Resistance: shall meet 6.2 绝缘电阻：满足 6.2； Dielectric withstanding voltage meet 6.3 耐电压：满足 6.3

8.2	Thermal Shock 冷热冲击	(MIL-STD-202,Method107 Test Condition) Apply the following environment to the mating connector as following: -50℃(30min)~25℃(5max) ~ 90℃(30min) ~ 25℃(5max) Transition time: : 5min. MAX Cycles: 50 Cycles 根据 MIL-STD-202，按如下试验条件对已配合的连接器施加下列条件测试. 循环：-50℃(30min)~25℃(5max)~90℃(30min) ~ 25℃(5max) 转换时间: 5 min Max. 循环次数: 50 次数	Appearance: No abnormality 外观：无损伤； Contact Resistance: shall meet 6.1. 接触电阻：满足节 6.1 中的要求； Insulation Resistance: shall meet 6.2 绝缘电阻：满足节 6.2 中的要求； Dielectric withstanding voltage shall meet 6.3. 耐电压：满足节 6.3 中的要求。
8.3	Solderability 可焊性	Apply the following environment to the mating connector Temperature : 245±5℃ Duration : 3~5 second Test sample should be observed by the magnification of 10times after the test. 按下列条件对已配合的连接器进行测试. 温度: 245+/-5℃ 持续时间:3~5 秒钟. 观测：10 倍放大镜	At least 95% covered by a continuous new solder coating. 吃锡面积大于 95%以上。
8.4	Resistance to soldering heat 耐焊接热	According to the following conditions to test connector. 1. Infrared reflow soldering, the peak temperature of 260 degrees Celsius, reference temperature curve, and the requirements of the SMT 2 times; 2. electric soldering iron, requires 300 degrees 5 seconds, 350 degrees below 3 seconds. 按下列条件进行测试： 1.红外线回流焊接，峰值温度260度以下，可参考温度曲线图，且要求SMT2次； 2.电烙铁焊接，要求300度5秒，350度3秒以下。	Appearance: No abnormality. 外观无明显损伤； Coplanarity of the solder tail should be not beyond 0.10mm 焊脚平面度不超 0.10mm。
8.5	Salt Spray 盐雾测试	（EIA 364-26 Test Condition A） Apply the following environment to the mating connector Temperature : 35±2℃ Relative Humidity : 90~98%R.H Salt water density: 5±1% Duration : 48 hours for contact area 根据 EIA364-26 试验条件 A 中的要求,,对已配合的连接器施加下列条件测试： 温度: 35±2℃； 相对湿度: 90~98%R.H； 盐水浓度: 5±1%； 持续时间: 48 hours；	Appearance: No abnormality 外观：无损伤； Contact Resistance: Shall meet 6.1 接触电阻： 满足节 6.1 中的要求

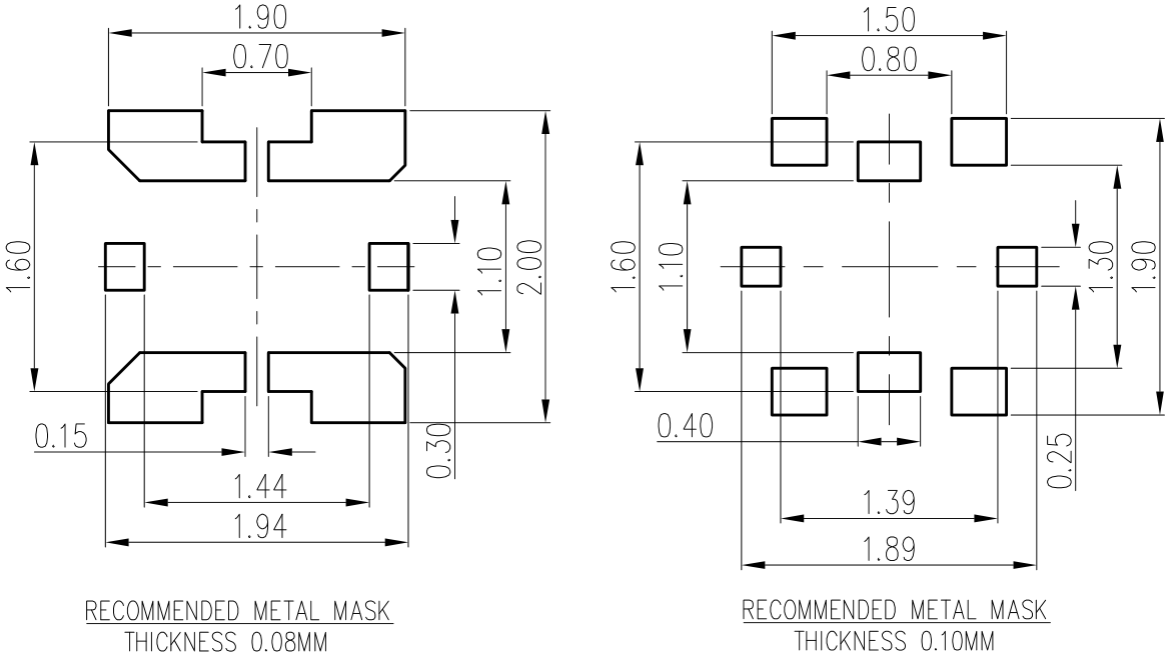
9. Recommended PCB Layout 推荐的 PCB 安装焊盘



Recommended PCB Layout

推荐的 PCB 安装焊盘

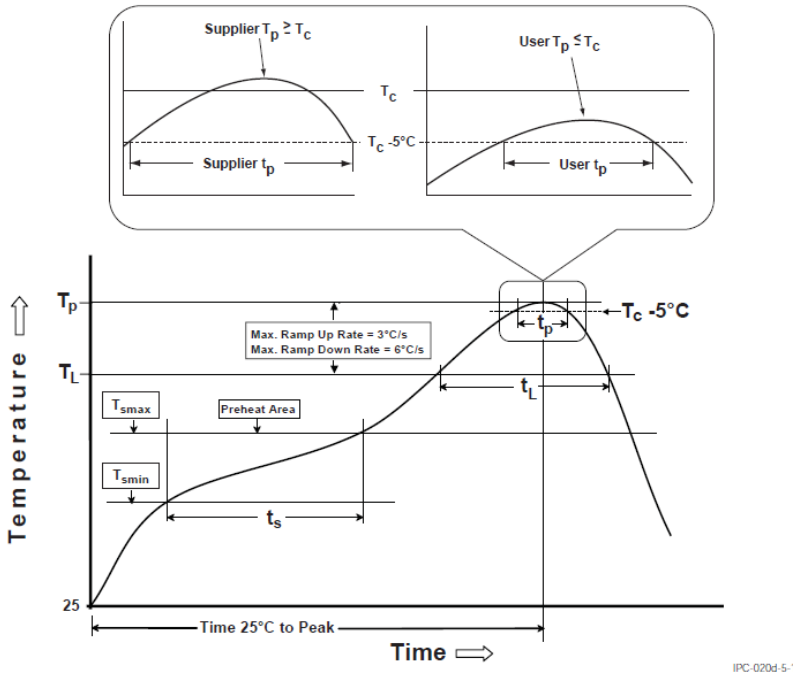
10. Recommended Metal Mask 推荐的钢网规格



Recommended Metal Mask

推荐的钢网规格

11. Recommended Reflow Soldering Condition/SMT 推荐的回流焊接温度曲线图



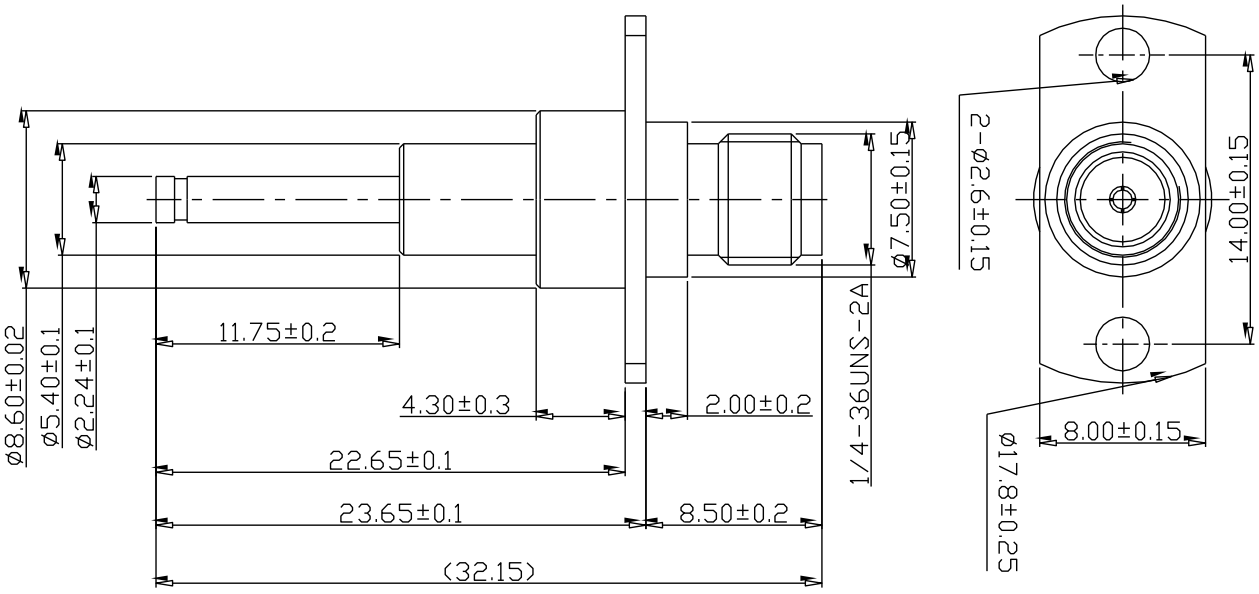
Recommended Temp.&Time of Reflow Soldering 建议回流焊温度与时间条件

12. Test Sequence and Sample Quantity/测试顺序及样品数量

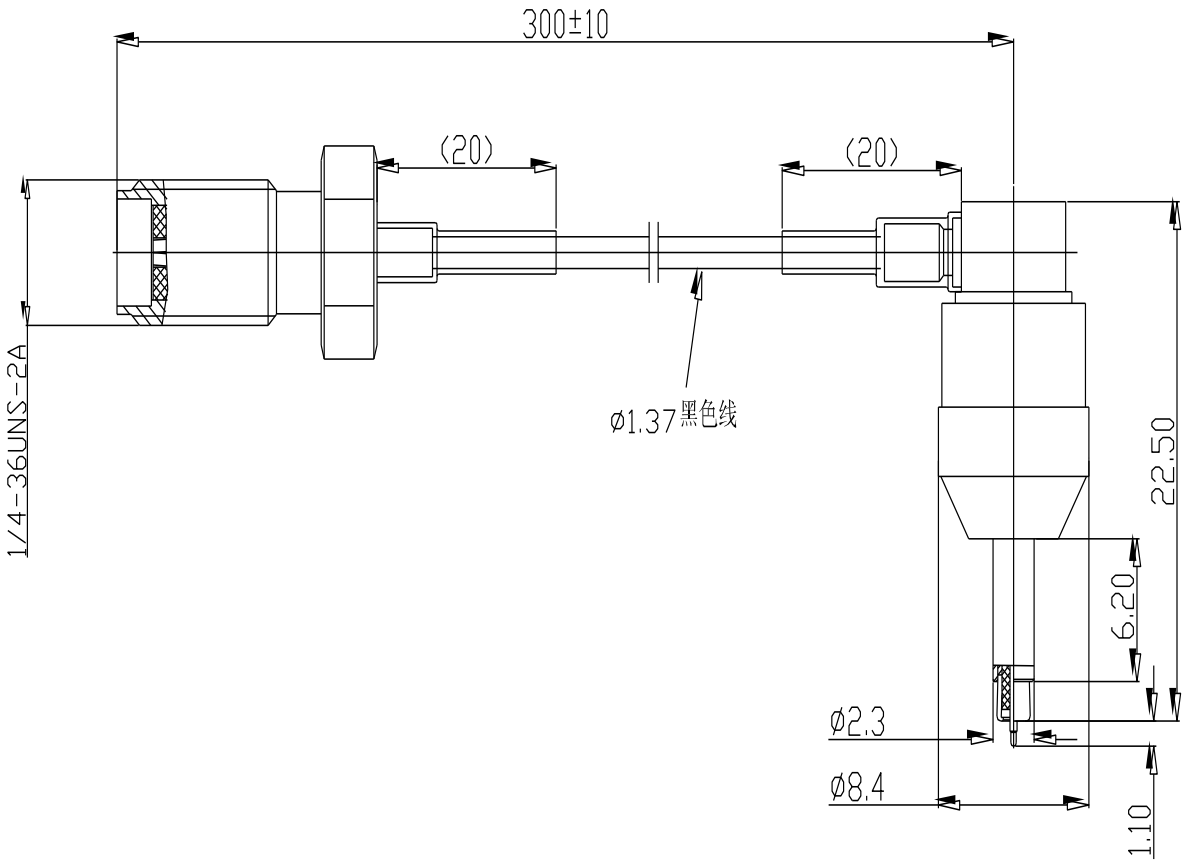
Test Item 测试项目	Group（测试分组）											
	A	B	C	D	E	F	G	H	I	J	K	L
Examination of product （外观检测）	1,10	1	1,3	1,	1,	1,5	1,5	1,3	1,3	1,5		
Contact Resistance （接触电阻）	2,11			2,4	2,4	2,4	2,4			2,4		
Insulation Resistance （绝缘电阻）	3											
Dielectric Withstanding Voltage （耐电压）	4											
V.S.W.R and Insertion Loss. ON （电压驻波比和插入损耗.开关ON）	5,12											
Isolation （隔离度）	6,13											
Engage/Disengage Force (插拔力)	7,9											
Allowed Push Force （推压力）		2,4										
Durability （耐久性）	8	3										
Adhered of Electrode Terminal （焊点保持力）			2									
Vibration （振动）				3								
Shock （机械冲击）					3							
Humidity （恒温恒湿试验）						3						
Thermal Shock （冷热冲击）							3					
Solderability （可焊性）								2				
Resistance to soldering heat （焊锡耐热性）									2			
Salt Spray （盐雾测试）										3,		
Sample QTY(PCS) 样品数量	5	5	5	5	5	5	5	5	5	5		
The number of group is test sequence 测试分组中的序号为试验顺序.												

13. Recommended Mating test Probe 推荐的测试探针

Type A:



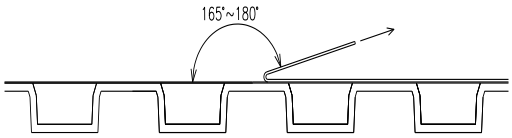
Type B:



14. Packaging 包装

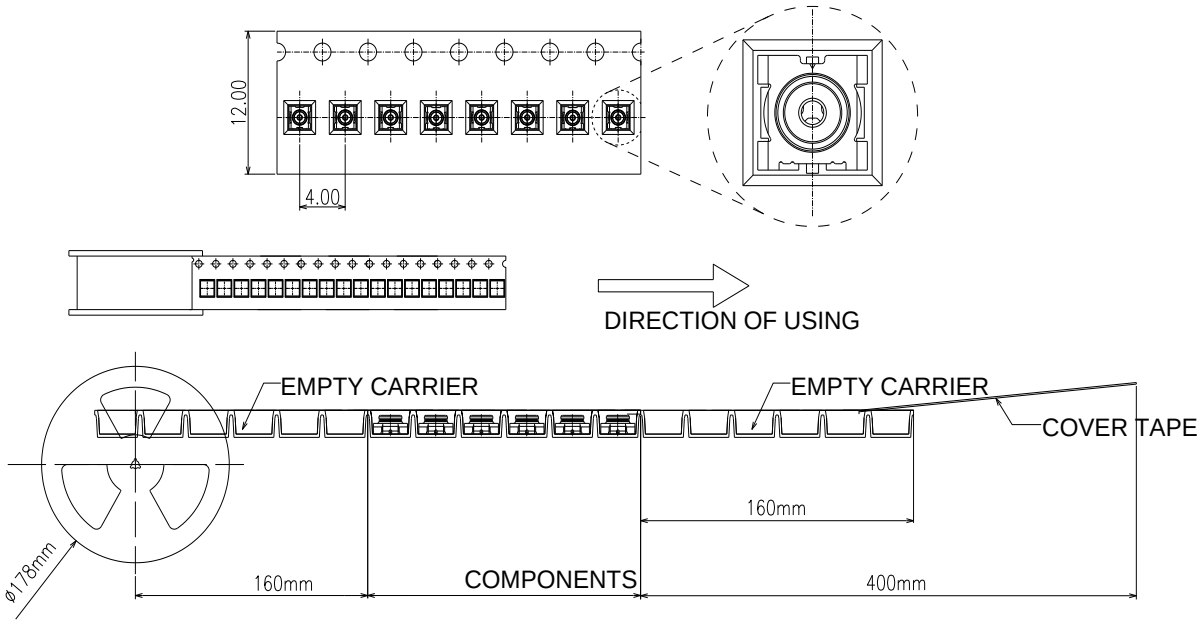
14.1 The pull force of the tape: Pull the tape at the speed of 300mm/min, the pull force is 1.3N Max..

上带的剥离力度：300mm/min 的速度进行剥离，力度最大应该是 1.3N.



14.2 Packaging type: Tape&Reel,3000Pcs/R（Φ178mm）.

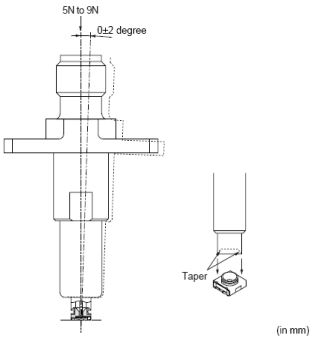
包装方式：载带包装，3000Pcs/卷（Φ178mm）.



15. Usage Precaution 使用禁忌或注意事项

No	Items 项目	Matter 事项
15.1	Connection/ disconnection of connectors 连接器的连接和断开	a).To mate the connectors, the mating axis of both connectors must be aligned and the connectors can be mated fully, until they can't be moved. Not allowed in a very tilt mating angle and do not bend coaxial cable in the measuring procedure, otherwise you'll get a not good test data. b).TPlease use this product following the proper operating steps ,prohibit impose inserting and pulling- off operation forcibly during the whole usage period, otherwise will damage this product，As shown in Figure 6. a).公母头连接器进行配合前，务必确保两者对齐，对插到死点位置为止，表示两者已完全配合在一起，不要以极偏的角度插配连接器，测试使用过程中，请不要将同轴线折弯，否则可能会影响测试效果。 b) 应用过程中需按应用步骤顺序正确操作，禁止强行插入与拔出手动测试头，否则会损坏 RF 测试座及测试头，如图 6 所示。

Type A:



Type B:

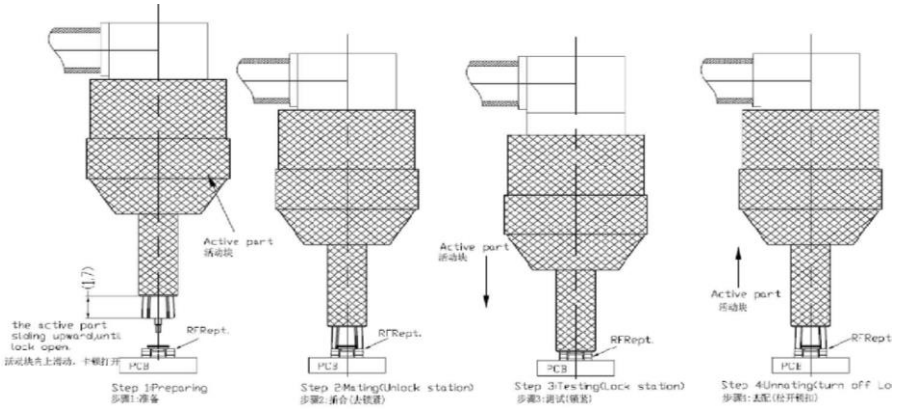
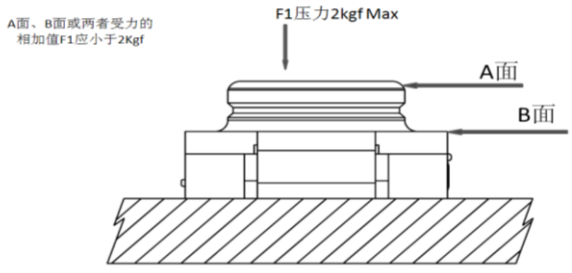


Figure 6

No	Items 项目	Matter 事项
15.2	Precautions 禁忌	a)Please mount this product at the position so that stress by wrap and/or bend of the PCB may not apply to it. b)Please avoid the cleaning of this product c)The product can' t be in the longtime compression and the pressure on surface no more than 2Kgf. Please refer to figure 7 a)产品安装位置处不应有 PCB 翘曲和/或弯曲施加应力. b)请避免清洁此产品 c)产品表面所承受压力最大不能超过 2Kgf,且不能处于长久受压状态.请参照图 7 所示。
		
		Figure 7
15.3	Stockpile condition 存储条件	Use this product within 6 months after receipt Condition : Temp: -10~+40℃ Humidity:15~85% 有效期：请在产品接收后的 6 个月内使用 存储环境：温度:-10~+40℃； 湿度:15%~85%