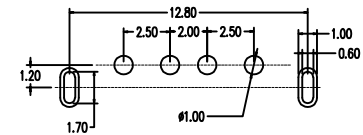
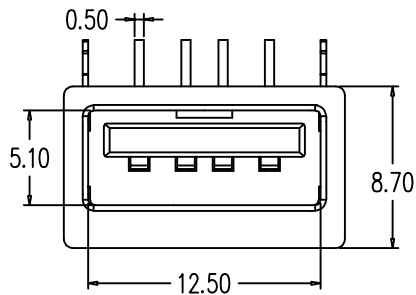
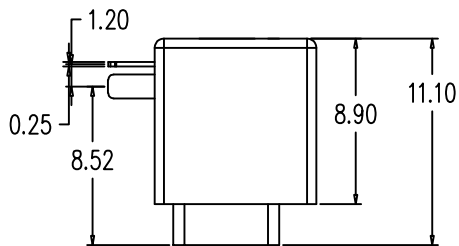
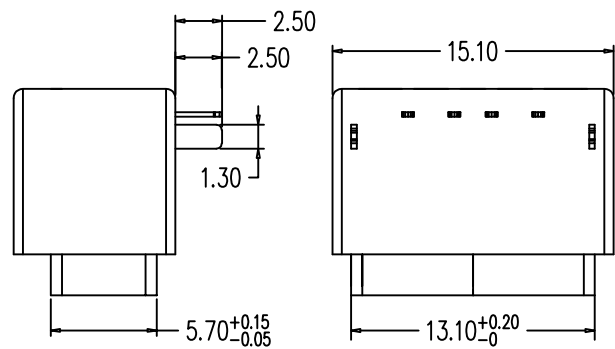
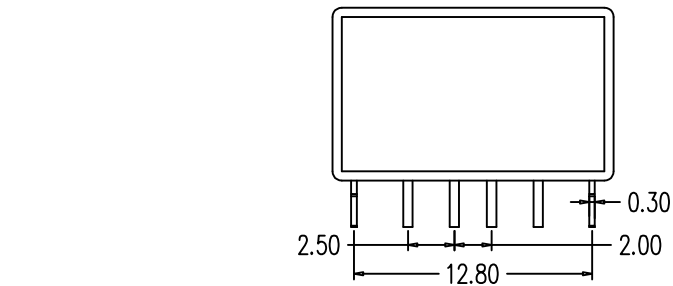


深圳市格林纳科技有限公司

样品承认书

SPECIFICATION FOR APPROVAL

供应商名称 SUPPLIER	深圳市格林纳科技有限公司				
产品名称 PRODUCT NAME	USB2.0 AF侧插卷边				
物料代码 PART NO	MD-2A104H01C01				
版本 VERSION	A				
规格型号 MODEL	USB2.0 AF 侧插卷边 端子黄铜外壳 铁壳 PBT白 盐雾24H 托盘包 装				
供应商承认日期 SUPPLIER APPROVED DATE	2025/4/17				
备注 REMARK					
MANUFACTURER 制 造 商（加盖公章）			CUSTOMER RECOGNITION 客 户 确 认		
PRODUCE 制 作	CHECKED 检 查	APPROVED 确 认	QA CHECKED 品质确认	RD CHECKED 研发确认	RD APPROVED 研发批准



NOTES:

1. MATERIAL SPECIFICATION:

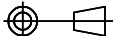
- 1) INSULATION MATERIAL: THERMOPLASTIC HALGENFREE.
- 2) SHELL: SPCC T: 0.30mm
PLATING: NICKEL
- 3) TERMINAL: COPPER ALLOY T: 0.25mm
PLATING: GOLD/TIN PLATED;

2. ELECTRICAL CHARACTERISTIC:

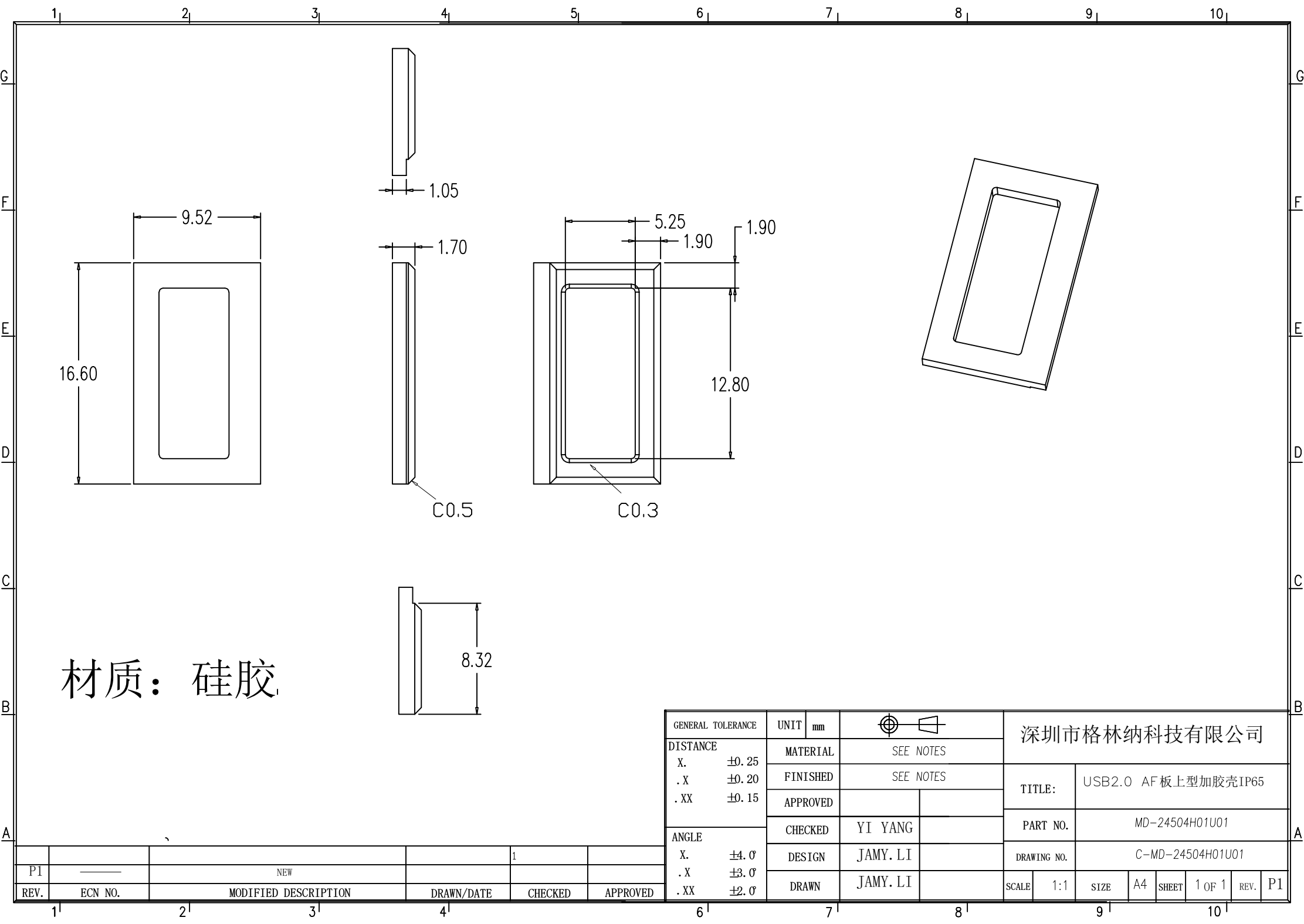
- 1) INSULATION RESISTANCE: 1000MΩ MIN;
- 2) CONTACT RESISTANCE: 30mΩ MAX;
- 3) WITHSTANDING VOLTAGE: 500V AC;

3. MECHANICAL CHARACTERISTICS:

- 1) INSERTION FORCE: 3.57Kgf Max;
- 2) EXTRACTION FORCE: 1.02Kgf Min;
- 3) Waterproof grade: IP65

GENERAL TOLERANCE		UNIT	mm			深圳市格林纳科技有限公司											
DISTANCE				MATERIAL		SEE NOTES		TITLE:		USB2.0 AF板上型加胶壳IP65							
X.	±0.25			FINISHED		SEE NOTES											
. X	±0.20			APPROVED				PART NO.		MD-24504H01U01							
. XX	±0.15			CHECKED		YI YANG											
ANGLE				DESIGN		JAMY. LI		DRAWING NO.		C-MD-24504H01U01							
X.	±4. 0°			DRAWN		JAMY. LI											
. X	±3. 0°							SCALE	1:1	SIZE	A4	SHEET	1 OF 1	REV.	P1		
. XX	±2. 0°																

P1		NEW		1	
REV.	ECN NO.	MODIFIED DESCRIPTION	DRAWN/DATE	CHECKED	APPROVED



材质：硅胶

GENERAL TOLERANCE		UNIT	mm			深圳市格林纳科技有限公司									
DISTANCE X. ±0.25 .X ±0.20 .XX ±0.15		MATERIAL	SEE NOTES			TITLE:		USB2.0 AF板上型加胶壳IP65							
		FINISHED	SEE NOTES												
		APPROVED			PART NO.		MD-24504H01U01								
		CHECKED	YI YANG												
ANGLE X. ±4.0° .X ±3.0° .XX ±2.0°		DESIGN	JAMY. LI			DRAWING NO.		C-MD-24504H01U01							
		DRAWN	JAMY. LI												
		SCALE	1:1		SIZE	A4	SHEET	1 OF 1		REV.	P1				

				1	
P1		NEW			
REV.	ECN NO.	MODIFIED DESCRIPTION	DRAWN/DATE	CHECKED	APPROVED

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1; SCOPE (适用范围)
2; REFERENCE DOCUMENTS (参考文档)
3; FEATURE & DIMENSIONS (特征及尺寸)
3.1. PRODUCT DIMENSION (产品尺寸)
3.2. PCB/PANEL LAYOUT (印刷电路板布局)
3.3. MATERIAL (材料)
3.4. MECHANICAL & ELECTRICAL CHARACTERISTIC (机械及电气特性)
3.5. PACKAGING (包装)
3.6. MARKING (标识)
3.7 TRANSPORTATION (运输)
3.8 STORAGE (存贮)
4. ENVIRONMENTAL (环境要求)
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4.2. RESISTANCE TO SOLDER HEAT (耐焊接热)
4.2.1. Wave Soldering (波峰焊)
4.2.1.1. Preheat (预热)
4.2.1.2. Soldering (焊接)
4.2.1.3. Cool Down (冷却)
4.2.2. INFRARED REFLOW (红外线回流焊)
4.2.2.1. Preheat (预热)
4.2.2.2. Soldering (焊接)
4.2.2.3. Cool Down (冷却)
4.3. CLEANING (清洗)
5. PERFORMANCE AND TEST DESCRIPTION (性能及测试)
5.1. REQUIREMENT (要求)
5.2. TEST CONDITION (测试条件)
5.3. SAMPLE SELECTION (样品选择)
5.4. TEST SEQUENCE (测试顺序)
6. QUALITY ASSURANCE PROVISIONS (质量保证)
TABLE I: PERFORMANCE REQUIREMENTS
TABLE II: PRODUCT QUALIFICATION TEST SEQUENCE
TABLE III: REFLOW SOLDERING PROFILE

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USB2.0 AF产品规格书

1. SCOPE（适用范围）
This product specification defines the product performance and the test methods to ascertain the performance of the USB 2.0 SERIES "A" RECEPTACLE CONNECTOR; which is designed and manufactured by MDNECT
本产品规格书规定了由格林纳设计生产的 USB 2.0 系列“A”母头 连接器产品的特性及测试方法.
2. REFERENCE DOCUMENTS（参考档）
MIL-STD-1344A Test method for electrical connector（电子连接器测试方法）
MIL-STD-202F Test method for electrical components（电子零件测试方法）
EIA364 Test method for electrical components（电子零件测试方法）
JIS C 0051 Test method for electrical components（电子零件测试方法）
MIL-G-45204C Specification for gold plating（镀金规格）
IEC-512-3 IEC standard for current carrying capacity tests（IEC电流测试标准）
QQ-N-290A Specification for nickel plating（镀镍规格）
MIL-P-81728A Specification for tin/lead plating（镀锡铅规格）
MIL-T-10727B Specification for tin plating（镀锡规格）
UL498 UL standard for safety of attachment plug and receptacle（UL安规要求标准）
EN/ISO5961 Determination of total lead & cadmium content（总铅和总镉含量测定）
EN1122 Determination of total lead & cadmium content（总铅和总镉含量测定）
EN13346 Determination of heavy metals content（重金属含量测定）
EPA3052 Determination of total lead & cadmium content（总铅和总镉含量测定）
3. FEATURE & DIMENSIONS（特征及尺寸）
3.1. PRODUCT DIMENSION（产品尺寸）
These connectors shall have the dimensions as shown in customer drawing。
本产品的相关尺寸参见客户图面。
3.2. PCB/PANEL LAYOUT（印刷电路板布局）
The recommended PCB layout is shown in customer drawing。
本产品适用的PCB layout参见客户图面。
3.3. MATERIAL（材料）
The harmful material can follow the requirement of RoHS.
本产品使用的材料符合 RoHS 指令要求。

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3.4. MECHANICAL & ELECTRICAL CHARACTERISTIC （机械及电气特性）
The connector shall have the mechanical and electrical performance as described in table 1:
本产品的机械及电气特性见附表1。
3.5. PACKAGING （包装）
Products shall be packaged according to requirements specified in purchase order for safe delivery.
Products required tray or carrier tape should meet the proper specification per purchase order.
Connector container and the packaging specification is shown in customer drawing.
产品包装可依客户指定要求。无特殊要求，本产品采用tray盘包装，具体规格见客户图面。
3.6. MARKING （标识）
Manufacturer,s name, industry recognized logo, or customer approved marks.
标示制造商的名称，或客户认可的相关标志。
3.7.TRANSPORTATION （运输）
Any vehicle can be adopted for the transportation, but moisture-proof and no mechanical damage.
可采用任何运输工具运输，勿淋湿及机械性损伤。
3.8.STORAGE （存贮）
Temperature: -25℃~+85℃， Relative humidity: ≤80%， Not to storage in corrosive environments A
re-qualification test shall be conducted immediately while the storage duration exceed 6 months.
温度：-25℃~+85℃；相对湿度：≤80%；勿贮存于腐蚀环境内。贮存期超过6个月后可重新进行质量确认。
4. ENVIRONMENTAL （环境要求）
4.1. SOLDERABILITY （可焊性）
Connector's solderability can meet EIA 364-52 standard. Finish shall be free of contaminants.
产品可焊性符合EIA 364-52 标准规定的相关要求，表面不得有污染物。
4.2. RESISTANCE TO SOLDER HEAT （耐焊接热）
4.2.1. Wave Soldering （波峰焊）
Consists of three consecutive phases. 包括三个连续的阶段完成；
4.2.1.1. Preheat （预热）
Increase in temperature not to exceed 4℃ per second. Final preheat temperature will be within 125℃ of solder temperature.
温度增加不超过4℃/秒，最终预热温度不超过125℃。

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4.2.1.2. Soldering (焊接)
Device leads will be exposed to solder wave at 250 °C for a maximum of 5 seconds.
设备中的引导焊接温度最高250℃不超过5秒.
4.2.1.3. Cool Down (冷却)
Cool down in ambient air at approximately 20 °C to 25 °C . 冷却到周围环境温度 20 °C ~ 25 °C .
4.2.2. INFRARED REFLOW (红外线回流焊)
Three cycles. Each cycle consisting of three consecutive phased.
三个周期，每个周期包括三个连续的阶段完成；
4.2.2.1. Preheat (预热)
Increase in temperature not to exceed 4 °C per second. 温度增加不超过 4 °C /秒，
4.2.2.2. Soldering (焊接)
Maximum allowable time above reflow temperature of 183 °C is 90 seconds. Maximum temperature in this interval is 250 °C , not to exceed 10 seconds.
回流焊温度183℃以上的时最长不超过 90秒. 最高温度250℃时间不超过10秒.
4.2.2.3. Cool Down (冷却)
Cool down shall not exceed 6 °C per second. 冷却速度不超过 6 °C /秒.
Note: (注) Device temperature measurements are referenced from the top-center of the
package outer surface.
设备温度量测时以从顶部中间位置测量为准；
4.3. CLEANING (清洗)
Connectors resist to cleaning process. Aqueous Cleaning: Three cycles; each cycle consisting of a maximum of one minute exposure to 54 °C to 66 °C dematerialized tap water at a maximum pressure of 30 psi;
followed by air drying for 60 °C to 90 seconds at 93 °C to 121 °C .
产品本身可以承受清洗制程。 水洗：包含三个循环，每个循环包括以下：以最大压力30帕，温度 54 °C ~ 66 °C , 去除矿物质的水，用水龙头冲洗最多一分钟，然后用温度 93 °C ~ 121 °C 的空气吹60到90秒；
5. PERFORMANCE AND TEST DESCRIPTION (性能及测试)
5.1. REQUIREMENT (要求)
Product is designed to meet electrical, mechanical, and environmental performance requirements specified in Table I.
本产品符合附表一列出的机械，电气及环境要求.

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5.2. TEST CONDITION（测试条件）

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

除非特别注明，所有测试在室温条件下完成；

5.3. SAMPLE SELECTION（样品选择）

Test samples shall be selected at random from current production. No test samples shall be reused.

Samples are pre-conditioned with 10cycles of durability. Each group shall be containing 5 test samples.

测试样品从现生产的产品中随机抽取，所有测试过的样品不得重复使用. 样品已预先插拔10次，
每组测试有5个样品；

5.4. TEST SEQUENCE（测试顺序）

Products qualification test sequence as shown in **Table II**.

产品质量测试顺序见附表二.

6. QUALITY ASSURANCE PROVISIONS（质量保证）

MDNECT is responsible for the quality of the part as it is delivered to customer.

Failing lots will be return or other supplier corrective action.

格林纳对出给客户的所有产品质量负责，不良批次的产品退回或由供应商做矫正；

7. Test description（测试描述）：

TABLE I: PERFORMANCE REQUIREMENTS

附表I：性能要求

Items（项目）		Requirements(要求)	Test Methods(测试方法)
1	Confirmation of Product 产品确认	Product shall be conforming to the requirements of applicable product drawing 产品要符合产品图纸要求	Visually, dimensions and functionally inspected per applicable product drawing. 根据图纸对产品进行尺寸、外观和功能检查

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Electrical Requirement

电气性能

Items (项目)		Requirements(要求)	Test Methods(测试方法)
2	Current Rating	2A at 30V AC minimum when _{of}	EIA 364-30 The object of this test is to detail a standard method to determine the capacitance between conductive elements of a USB 2.0 connector. 本测试方式是详细说明USB2.0电流的测试方法
	接触额定电流	25°C. With ^d power app ^b lied ^t to the Exceed connector under test. 环境温度25℃, 在30V电压支持2A电流	
3	Low level Contact resistance 低电平接触阻抗	1. 30 mΩ (Max) initial for VBUS (pin1) and GND (pin4) contacts. 2. 50 mΩ (Max) initial for all other contacts. 3. Maximun change(delta) of +10 Ω after environmental stresses	Subject mated contacts assembled in housing to 20mV Max open circuit at 100mA Max. EIA-364-23B
4	Insulation Resistance 绝缘阻抗	100 M Ohm Min.	Impressed voltage 500 V / DC. Test between adjacent circuits of unmated connector.EIA-364-21.
5	Dielectric Strength 耐电压	No breakdown shall occur.	100V / AC for 1minute Test between adjacent circuits of unmated connector.EIA-364-20.

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Mechanical Requirement

机械性能

Items (项目)		Requirements(要求)	Test Methods(测试方法)
6	Insertion Force 插入力	35N(3.57 kgf) Max.	Operation Speed: 12.5mm/min. Measure the force required to mate connector. EIA-364-13
7	Extraction Force 拔出力	10N(1.02 kgf) Min. (Initial) 8N (0.816 kgf) Min. (Final)	Operation Speed: 12.5mm/min. Measure the force required to Un-mate connector. EIA-364-13
8			
9	Solderability 沾锡性	The inspected area of each lead must have 95% solder coverage Minimum.	Solder pot temperature: 250±5°C Soldering time: 3 to 5 Seconds Test reference standard: EIA 364-52

Environmental Requirements

环境要求

Items (项目)		Requirements(要求)	Test Methods(测试方法)
10	HumidityTemperature Cycle 恒温恒湿	Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified	Mated Connector 25~65°C, 90~95% RH, 10 Cycles, EIA-364-31B.
11	Resistance to Reflow Soldering Heat 热风回流焊	No physical damage shall occur. (Lead-Free)	Pre-soak condition, 85°C/85%RH for 168 hours. Pre Heat: 150~180°C, 90±30sec. Heat: 230°C Min., 30±10sec. Peak Duration: 3 cycles Condition B, Table III
12	Salt Spray 盐雾	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2°C and 5+/-1% salt condition for 24 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.

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TABLE II: PRODUCT QUALIFICATION TEST SEQUENCE

附表II:测试群组

Test Description	Test Group					
	A	B	C	D	E	
1. Confirmation of Product(产品确认)	1,5	1,9	1,4	1,9	1,3	
2.Contact Current Rating 接触额定电流						
3.Low level Contact resistance 低电平接触阻抗	2	2,8		2,6		
4. Insulation Resistance 绝缘阻抗	3			3,7		
5. Dielectric Strength 耐电压	4			4,8		
6. Insertion Force 插入力		3,6				
7. Extraction Force 拔出力		4,7				
8.Durability or Insertion/extraction Cycles 耐久/插入/拔出力		5				
9. Solderability 沾锡性			2			
10.Humidity-Temperature Cycle 恒温恒湿				5		
11. Resistance to Reflow Soldering Heat 热风回流焊			3			
12. Salt Spray (盐雾)					2	

NOTE:

- a) Numbers indicate sequence in which tests are performed.
- b) Discontinuities shall not take place in this test group, during tests.

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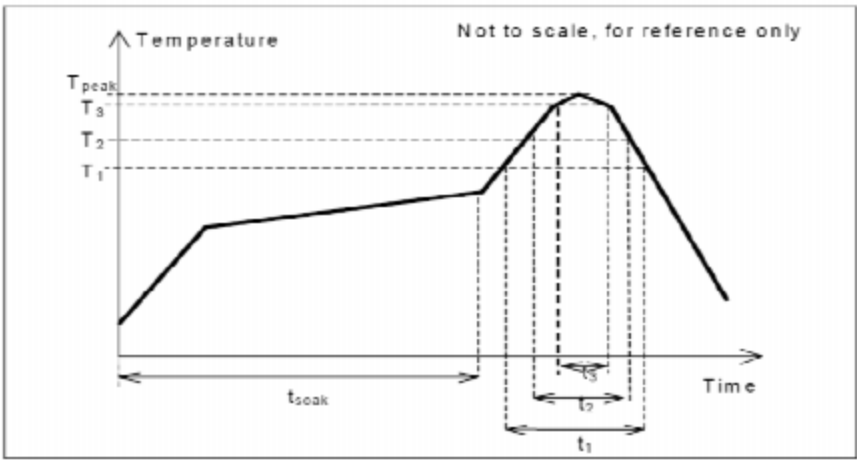
TABLE III:REFLOW SOLDERING PROFILE

附表III:回流焊验证

Pb-free reflow profile requirements:

无铅回流焊要求

Parameter	Reference	Specification
Average temperature gradient in preheating		2.5°C/s
Soak time	T soak	2-3 minutes
Time above 217°C	t1	60 s
Time above 230°C	t2	50 s
Time above 250°C	t3	5 s
Peak temperature in reflow	T peak	255°C (-0/+5°C)
Temperature gradient in cooling		Max -5°C/s



This profile is the minimum requirement for evaluating soldering heat resistance of components. Heat transfer method used for reflow soldering is hot air convection. The actual air temperatures used to achieve the specified profile is higher and largely dependent on the reflow equipment.