

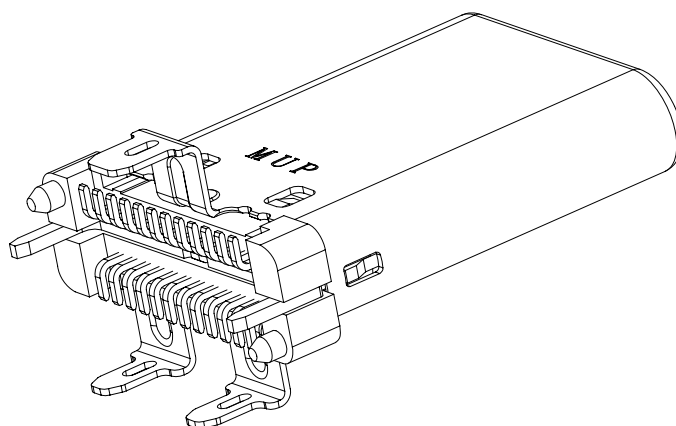
SAMPLE APPROVAL**承认书****型号 Model No.: MUP-U33001-1****版本 Revision: 1.0****发行日期 Issue Date: Aug.30.2021****MUP INDUSTRIAL CO., LTD****LingWu Industrial Park, Junzibu, Guanlan Street, Baoan District Shenzhen, China****TEL: 0755-29673656/57/58****FAX: 0755-29673655****E-Mail: sales@mupconnector.com****URL: [Http:// www.mupconnector.com](http://www.mupconnector.com)**

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1. Scope (范围)

This specification covers the performance, tests and quality requirements for the MUP USB 3.1 TYPE C Connector.

(此份产品规格适用于 MUP USB 3.1 TYPE C 连接器的产品功能, 测试方法及质量要求)

2. Applicable document (适用文件)

The following documents form a part of this specification to the extent specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

后文表格文件被视为本规范之一部份。当出现本规范的要求与产品图相冲突时,以产品图为准,当出现本规范的要求与有关文件相冲突时,以本规范为准。

2.1. Industry Standard (工业标准)

EIA364 Test Methods for Electronic and Electrical Component Parts.

电子以及电子组件的测试方法依照EIA364之规定执行

3. Material (材料)

1	Insulator 塑胶主体	Thermoplastic UL94V-0 热塑性塑料, 防火等级 UL94V-0
2	Contac 五金端子	Copper Alloy 合金铜
3	Plating 电镀	Contact area: Gold plated 接触上镀金

4. REQUIREMENTS (要求)

4.1 Performance requirement(性能要求):

Connector shall be designed to meet the electrical, mechanical and environmental performance requirements specified in 5.

本规范所定义之连接器的设计应达到本规范第 5 条款所定义的电气性能,机械性能以及环境等性能要求.

4.2 Ratings (额定条件):

A. Ratings Voltage (额定电压): 5V (RMS)

B. Ratings Current (额定电流): VBUS Pins (A4,A9,B4,B9): 1.25A/Pin,
GND Pins(A1,A12,B1,B12) : 1.25A/Pin
Other All Pins 0.25A/Pin

C. Operating Temperature (操作温度): -40°C to +85°C

D. Operating humidity (操作湿度): 10% ~ 95%RH

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions.

表1 详述了产品的电气、机械和环境的测试要求，所有测试都须在室温下执行。

5. Test Methods and Requirements: (测试方法及要求)

5.1 EXAMINATION OF PRODUCT (产品检验)			
No.	TEST ITEM (测试项目)	PROCEDURE (程序)	REQUIREMENT (要求)
1	External appearance checks 外观检验	EIA-364-18 Visual inspection. 视觉检验	Meets requirements of product drawing. No physical damage. 必须符合图面，外观无损伤
5.2 ELECTRICAL REQUIREMENT (电气性能)			
2	Contact Resistance 接触阻抗	EIA-364-23B Measure at 20mV(Max) open circuit at 100 mA. 在开放电路 20mV (Max)，100mA 电流下量测	Initial: 40mΩmax. After test: 50mΩmax. 初始阻抗40mΩ最大， 测试后阻抗值 50mΩ 最大
3	Insulation Resistance 绝缘阻抗	EIA-364-21 Test voltage 100V DC between adjacent contacts of mated and unmated connector assemblies. Interval of shield case and contacts too, in the same way. 分别测试配对和未配对连接器，100 V 直流电压下测试相邻端子和固定片与端子之间阻抗。	Initial: 100MΩ min. After tests:100MΩ min. 初始阻抗 100MΩ 最小， 测试后阻抗值 100MΩ 最小
4	Dielectric withstanding Voltage 耐电压	EIA-364-20 Mated connector, apply 100V AC (RMS.) for 1 minute between adjacent terminal or ground. 配合的连接器和在相邻的终端或接地之间施加 100V 的交流电压 1 分钟。	No Breakdown Leakage current: 0.5mA Max 不能击穿 漏电流: 0.5mA 最大

5	Contact Current Rating 触点额定电流 (温升)	EIA-364-70 METHOD 2 Mate connector: measure the temperature rise at rated current after: A current of 5 A shall be applied collectively to VBUS pins (i.e., pins A4, A9, B4, and B9) and 1.25A shall be applied to the VCONN pin (i.e., B5) as applicable, terminated through the corresponding GND pins (i.e., pins A1, A12, B1, and B12). A minimum current of 0.25 A shall also be applied individually to all the other contacts The ambient condition is still air at 25° C 配对连接器：测量额定电流下的温升： 应向 CBUS 引脚（即引脚 A4、A9、B4 和 B9）集体施加电流，1.25A 应适用于 VCONN 引脚 S（即 B5），并通过相应的 GND 引脚（即 A1、A12、B1 和 B12）端接。其他所有接触点也应单独施加 0.25A 的最小电流。	When current is applied to the contacts, the temperature rise shall not exceed 30°C at the outside surface of the shell. 当对接触点施加电流时，外壳外表面的温升不得超过 30°C。
5.3 MECHANICAL REQUIREMENT（机械性能）			
6	Mating Force 插入力	EIA-364-13 The insertion force test shall be done at a maximum rate of 12.5mm/min. 插入的速度为12.5mm/分钟	0.5~2.0Kgf
7	Unmating Force 拔出力	EIA-364-13 The extraction force test shall be done at a maximum rate or 12.5mm/min. 拔出的速度为12.5mm/分钟	Initial: 0.8~2.0Kgf After 500 to 10,000 cycles: 0.6~2.0Kgf
8	Durability 耐久性	EIA-364-09 The durability rating shall be 10,000 cycles minimum for the USB Type-C connector family. The durability test shall be done at a rate of 500+/-50 cycles per hour and no physical damage to any part of the connector and cable assembly shall occur. 耐久性测试需进行 10000 次循环。耐久性试验应以每小时 500+/-50 次的速度进行，且不得对连接器和电缆组件的任何部分造成物理损坏。	No physical damage 无物理损坏。 initial.: 40 m Ω Max after test: 50mΩ Max 初始阻抗 40mΩ 最大， 测试后阻抗值 50mΩ 最大

9	Vibration 振动	EIA-364-28 Frequency: 10-55-10Hz/ minute Amplitude: 1.52mm Direction: Each of X,Y,Z-axis directions * Each axis shall be at right angles to others. Period:15 minutess for each direction 频率:10-55-10Hz /分钟 振幅:1.52 毫米 方向:每一个 X,Y,z 轴方向 每个轴应与其他轴成直角。 周期:每个方向 15 分钟	Appearance:No Damage 外观:无损坏
			initial.: 40 m Ω Max after test: 50mΩ Max 初始阻抗 40mΩ 最大, 测试后阻抗值50mΩ最大
			There shall be no current discontinuity longer than 1 microsecond. 不存在电流间断超过 1 微秒。
10	Solder ability 可焊性	EIA-364-52 Solder pot temperature: 245±5℃, 5sec. 焊接剂温度: 245±5℃, 5 秒	The inspected area of each lead must have 95% solder coverage minimum. 焊接剂覆盖面积最少 95%
5.4 ENVIRONMENTAL REQUIREMENTS (环境性能)			
11	Thermal Shock 热冲击	EIA-364-32C Condition I 1 cycle consists of: - 55 ± 3 °C for 30 minutes +85 ± 3°C for 30 minutes Total cycles: 10 cycles 1 循环包括: -55±3°C 30 分钟 +85±3°C 30 分钟 总周期:10 个周期	1).Shall meet visual requirement, show no physical damage. 2). Contact resistance; After test: 50mΩ max. 3) Insulation resistance; 100MΩmin. 1) 满足视觉要求, 无物理损伤。 2). 接触电阻试验后: 50mΩ max. 3) 绝缘电阻: 100MΩmin
12	Temperature Life 高温老化	EIA-364-17B Mated Connector Temperature: 105 ± 2 °C Period: 96 hours 配对的连接器 测试温度: 105 ± 2 °C 持续时间: 96小时	1).Shall meet visual requirement, show no physical damage. 2). Contact resistance: After test: 50mΩ max. 3) Insulation resistance: 100MΩmin. 1) 无物理损伤。 2). 试验后接触电阻: 50mΩ max. 3) 绝缘电阻: 100MΩmin

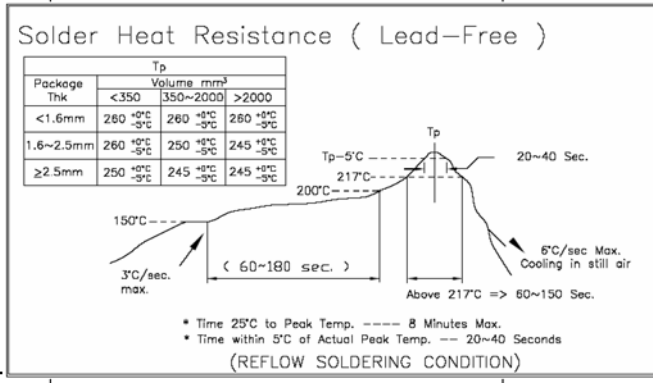
13	Salt Spray 盐雾	EIA-364-26B Subject mated connectors to $35 \pm 2^\circ\text{C}$ and $5 \pm 1\%$ salt condition for 24 hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. 产品对插后放至温度 $35^\circ\text{C} \pm 2^\circ\text{C}$，盐水浓度 $5 \pm 1\%$ 环境中储存 24 小时。测试之后，用水清洗后再空气中放置 1 小时。	No detrimental corrosion allowed in contact area and base metal exposed. (Don't include solder area) 产品接触区域与金属外露区域无氧化腐蚀（不包括焊接区区域）																			
14	Humidity-Temperature Cycle 温湿度循环	EIA-364-31C Cycle the connector between $25^\circ\text{C} \pm 3^\circ\text{C}$ at $80\% \pm 3\%$ RH and $65^\circ\text{C} \pm 3^\circ\text{C}$ at $50\% \pm 3\%$ RH. Ramp times should be 0.5 hour and dwell times should be 1.0 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles. 产品匹配，在温度 $25 \pm 3^\circ\text{C}$，湿度 $80\% \pm 3\%$ RH 和温度 $65 \pm 3^\circ\text{C}$，湿度 $50\% \pm 3\%$ RH 之间循环测试 24 次，每个温度保持时间 1H，温度转换时间 0.5H。	1. Contact resistance: 40 mΩ MAX 2. Appearance: No physical damage shall occur. 1. 接触阻抗初始 40mΩ 最大 2. 外观：表面无物理损伤																			
15	Resistance to Reflow Soldering Heat 耐焊接热	Solder Temp: $260 \pm 5^\circ\text{C}$, 20~40sec. 焊锡温度: $260 \pm 5^\circ\text{C}$, 20~40sec.  Figure 1: Solder Heat Resistance (Lead-Free) <table border="1"> <thead> <tr> <th rowspan="2">Package Thk</th> <th colspan="3">Volume mm³</th> </tr> <tr> <th><350</th> <th>350~2000</th> <th>>2000</th> </tr> </thead> <tbody> <tr> <td><1.6mm</td> <td>260 $\pm 5^\circ\text{C}$</td> <td>260 $\pm 5^\circ\text{C}$</td> <td>260 $\pm 5^\circ\text{C}$</td> </tr> <tr> <td>1.6~2.5mm</td> <td>260 $\pm 5^\circ\text{C}$</td> <td>250 $\pm 5^\circ\text{C}$</td> <td>245 $\pm 5^\circ\text{C}$</td> </tr> <tr> <td>$\geq 2.5\text{mm}$</td> <td>250 $\pm 5^\circ\text{C}$</td> <td>245 $\pm 5^\circ\text{C}$</td> <td>245 $\pm 5^\circ\text{C}$</td> </tr> </tbody> </table> Graph details: 150°C --- 3°C/sec. max. --- 200°C --- 60~180 sec. --- 217°C --- 20~40 Sec. --- 6°C/sec Max. Cooling in still air. Above 217°C => 60~150 Sec. * Time 25°C to Peak Temp. ----- 8 Minutes Max. * Time within 5°C of Actual Peak Temp. --- 20~40 Seconds (REFLOW SOLDERING CONDITION)	Package Thk	Volume mm³			<350	350~2000	>2000	<1.6mm	260 $\pm 5^\circ\text{C}$	260 $\pm 5^\circ\text{C}$	260 $\pm 5^\circ\text{C}$	1.6~2.5mm	260 $\pm 5^\circ\text{C}$	250 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$	$\geq 2.5\text{mm}$	250 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$	No physical damage shall occur. (不可有损坏)
Package Thk	Volume mm³																					
	<350	350~2000	>2000																			
<1.6mm	260 $\pm 5^\circ\text{C}$	260 $\pm 5^\circ\text{C}$	260 $\pm 5^\circ\text{C}$																			
1.6~2.5mm	260 $\pm 5^\circ\text{C}$	250 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$																			
$\geq 2.5\text{mm}$	250 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$	245 $\pm 5^\circ\text{C}$																			

Figure 1

Note1: Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

说明一：测试要求不能有物理损坏，测试依据表格二的顺序进行。

6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST:

(产品测试顺序表)

Test or Examination	Test Group									
	A	B	C	D	E	F	G	H	I	
	Test Sequence									
1. Examination of Product 产品外观	1, 9	1, 5	1, 9	1, 9	1, 9	1, 5	1, 3	1, 3	1, 3	
2. Contact Resistance 接触阻抗	2, 8	2, 4	2, 8	2, 8	2, 8	2, 4				
3. Insulation Resistance 绝缘阻抗			3, 6	3, 6	3, 6					
4. Dielectric Withstanding Voltage 耐电压			4, 7	4, 7	4, 7					
5. Contact Current Rating 触点额定电流(温升)									2	
6. Mating Force 插入力	3, 6									
7. Unmating Force 拔出力	4, 7									
8. Durability 耐久性	5									
9. Vibration 振动						3				
10. Solder ability 可焊性							2			
11. Thermal shock test 热冲击				5						
12. Temperature Life 高温老化					5					
13. Salt Spray 盐雾		3								
14. Humidity-Temperature Cycle 温湿度循环			5							
15. Resistance to Reflow Soldering Heat 耐焊接热								2		
Samples Size (Min) 测试样品数量 (最少)	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	

Figures 2

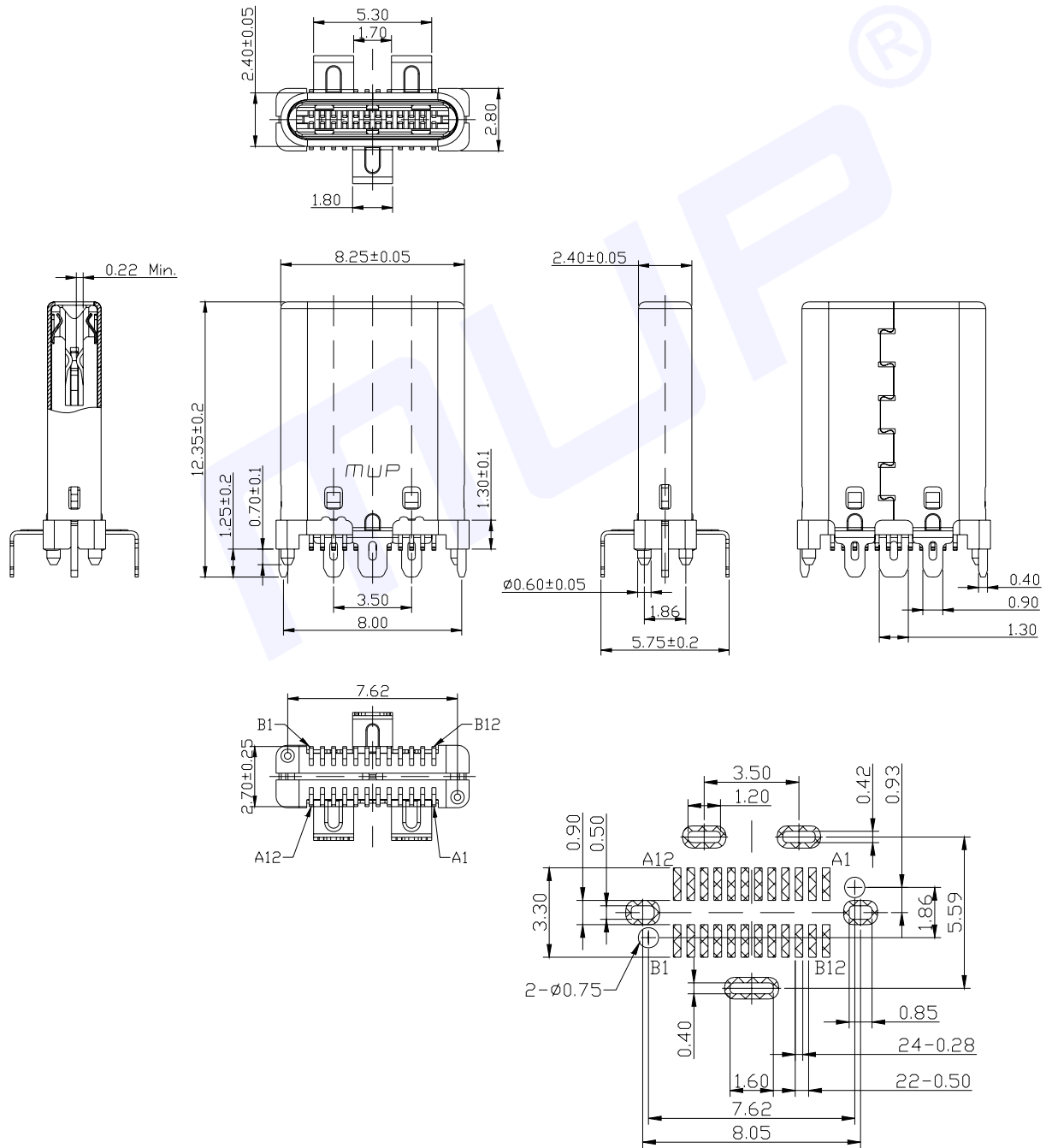
Note 2: (a) Numbers indicate sequence in which tests are performed.

(b) Discontinuities shall not take place in this test group, during tests.

说明二: (a) 测试依照矩阵要求数量进行测试

(b) 在测试中, 群组测试不能间断.

7. MECHANICAL OUTLINE DRAWING 机械制图



RECOMMENDED PCB LAYOUT(TOP VIEW)
THICKNESS 0.8±0.10MM;DEFAULT TOLERANCE:±0.05

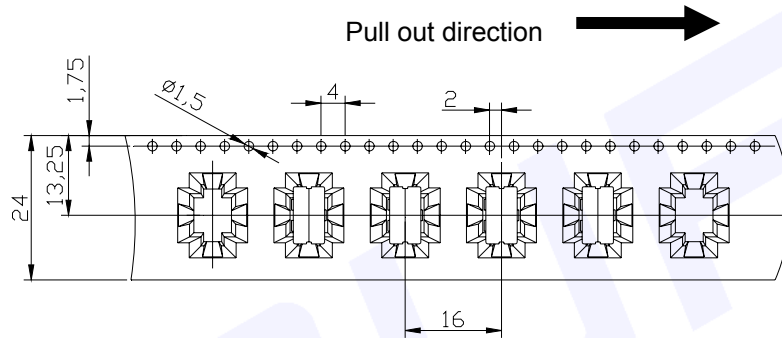
PIN ASSIGNMENT

PIN	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
SIGNAL	GND	SSTXP1	SSTXN1	Vbus	CC1	DP1	DN1	SBU1	Vbus	SSRXN2	SSRXP2	GND
SIGNAL	GND	SSRXP1	SSTXN1	Vbus	VBU2	DN2	DP2	VCONN	Vbus	SSRXN2	SSRXP2	GND
PIN	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1

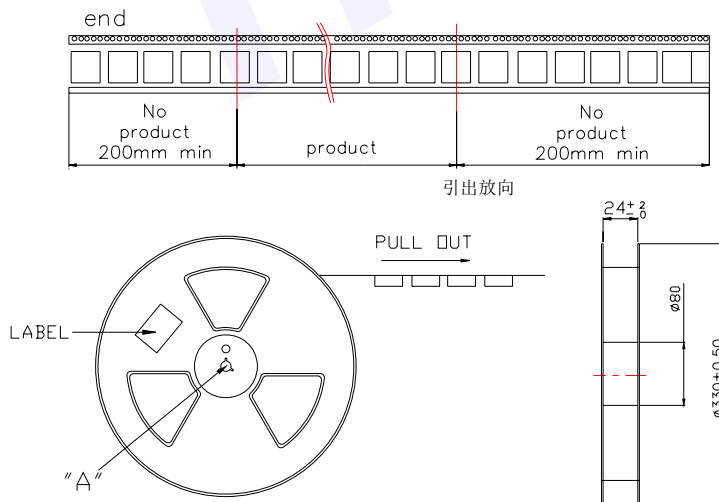
8. PACKING INFORMATION 包装示意图

8.1 Tape carrier packing information

8.2.1 Carrier Dimensions Diagram



8.2.2 Reel Form Diagram



G.W.:0.87 KG

Q'ty:300 pcs/Reel

N.W.:3.27 KG

G.W.:7.85 KG

Q'ty: 3000 Pcs per Carton (10 Reel set in order)

Meas: 35.00L×35.00W×31.50H cm

