

Product Specification [产品规格书]:	Document No	PS-2204-01
Subject [主题]:	Date Issued	2022/08/24
2.20mm Pitch 2204 Series Connector Specification	Date Revised	2022/08/24
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This specification is referred to the 2.20mm series wire to board connector

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**【1.适用范围 Scope】**

此种规格包括 2.20mm Pitch 2204 Series 连接器规格说明.

This Specification Covers the 2.20mm Pitch 2204 Series Connector Specification.

**【2.规格与料号 Spec and Part number】**

规格内容 Specification	产品料号 Production No.	产品图示 Picture of Product
母端子/Female Terminal	2204TXF-HY2B 2204TXF-HY2B-H	
公胶壳/ Male Housing	2204AM-2*XX-XXXX 2204AM-2*XXH-XXXX	
针座 DIP/ Wafer DIP Type	2204WV-2*XXXX-10TXXXXX 2204WR-2*XXXX-10TXXXXX 2204WVS-2*XX-PPXXXX	

**【3.材质与表面处理 Disposal of Material and surface】**

规格内容 Specification	材质 Materials	表面处理 Disposal of Surface
母端子/Female Terminal	铜合金/ Copper Alloy	Top planting: Sn 40~120u"(1~3um) overall
公胶壳/ Male Housing 二级锁扣/TPA	PPE+PS	UL 94V-0
针座/ Wafer	Plastic : PA10T / PBT	UL 94V-0
	PIN&Solder tab: Brass	Top planting: Sn 80~200u"(2~5um) ; Under Ni 40~120u"(1~3um) overall

(上述参数请以工程图为准/Please Refer to the Project drawing for the above Specification)

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【4. 额定等级 Ratings and applicable wires】

项目【Item】	规格【Standard】	
额定电压 Rated Voltage (Max.)	50V Max.	[AC/DC]
额定电流 Rated Current (Max.)	3A Max. (0.64mm) 12A Max. (2.3mm)	
使用温度范围 Ambient temperature Range	-40°C~+125°C	

【5.测试方法及要求 Test Methods and Requirements】

5-1. 外观检查 Examination of product.

测试内容 Item	规格要求 Specification requirements	参考标准 Reference standard
产品外观检查 Visual Inspection	借助 10 倍放大镜对每一个试验样品进行检查，详细记录所有制造或材料的瑕疵，如：裂缝、变色、毛刺等。 Inspect each sample with a 10x magnification, recording all defects in all process or material defects such as cracks, discoloration, flash, etc.	USCAR-2 Rev.7 5.1.8

5-2. 电气的性能 Electrical Performance.

项目 【Item】	条件 【Test Condition】	规格 【Requirement】
5-2-1 电路连贯性监控 Circuit Continuity Monitoring	电流的连续性监控不能间断超过 1us；不允许任何端子电阻超过 7 欧的时间大于 1us 的情况发生 There must be no loss of electrical continuity for more than 1 microsecond There must be no instance in which the resistance of any terminal pair exceeds 7.0 Ω for more than 1 microsecond	USCAR-2 Rev.7 5.1.9
5-2-2 干电路电阻 Dry Circuit Resistance	在环境前/后 ≤20mΩ Initial/Final ≤20mΩ	USCAR-2 Rev.7 5.3.1
5-2-3 电压降 Voltage Drop	在环境前/后 ≤50mV Initial/Final ≤50mV	USCAR-2 Rev.7 5.3.2

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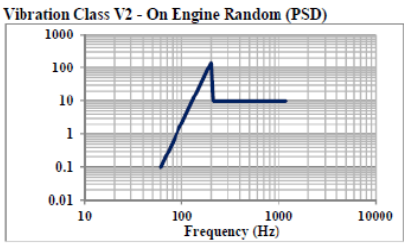
项 目 【Item】	条 件 【Test Condition】	规 格 【Requirement】
5-2-4 最大试验电流能力 Maximum test current capacity	在无风的封闭场所内搭建一个电路 温度: 23±5°C(室温) 时间: 等待 15 分钟 (电流在输出时, 电路的温度达到稳定) Create a circuit in a draft free environment Temperature :23±5°C(room temperature) Time: Wait at least 15 minutes for the circuit temperature to reach Steady State	USCAR-2 Rev.7 5.3.3
5-2-5 电流循环 Current Cycling	1.测试电流为最大试验电流 90%, 通电 45 分钟, 断电 15 分钟, 完成 1008 个循环 2.任何端子温升不超过 55°C 3.干电路电阻 ≤ 20mΩ 1.Test current is 90% of the maximum test current , 45 minutes of power on , 15 minutes of power off , and 1008 cycles are completed. 2.The temperature rise must not exceed 55°C at any time during the test for any terminal 3.Dry circuit resistance is less than or equal 20mΩ	USCAR-2 Rev.7 5.3.4
5-2-6 绝缘电阻 Insulation Resistance	将试验样品的所有接端交错连接成两组, 再施加 1000 VDC 电压测量绝缘电阻。 绝缘电阻 > 100 MΩ Apply 1000 VDC voltage (desiccation bound) between all contacts connected together and a metal foil surrounding the housing. In addition, apply the voltage a different test sample to every two adjacent contacts. Insulation resistance > 100 MΩ	USCAR-2 Rev.7 5.5.1

5-3. 机械的性能 Mechanical Performance.

项 目 【Item】	条 件 【Test Condition】	规 格 【Requirement】
5-3-1 连接器/端子循环 Connector and/or Terminal Cycling	完成每一对端子和连接器 10 次插拔 Completely mate and un-mate each connector or terminal pair 10 times	USCAR-2 Rev.7 5.1.7
5-3-2 端子到端子啮合/分离力 Terminal to Terminal Engage/Disengage Force	以不超过 50mm/min 的均匀速度插入对配端子, 接触面无破损, 未暴露基材 Engage the mating terminals at a uniform rate not to exceed 50 mm/min No base material should be exposed	USCAR-2 Rev.7 5.2.1
5-3-3 连接器至连接器的配合/分离力 (无机械辅助) Connector-Connector Mating/Unmating/Retention Forces (non-assist)	连接器的一次自锁机构是完全分离/松开的, 拔出 ≤ 75 N。 Unmating Force ≤ 75 N with the primary connector lock completely disengaged/disabled	USCAR-2 Rev.7 5.4.2

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5-3-4	端子至连接器插入/保持力 Terminal-Connector Insertion/Retention Force	端子以不超过 50mm/min 的均匀速度插入连接器 端子插入力 ≤15N 端子以不超过 50mm/min 的均匀速度拉出连接器，端子保持力(一次锁) ≥30N 端子保持力(一次锁+二次锁) ≥60N The terminal straight into the connector at a uniform rate not to exceed 50 mm/min The Insertion Force ≤15N; Pull the terminal straight back from the connector at a uniform rate not to exceed 50mm/min, until pullout occurs. The Retention Force (Primary ) ≥30N The Retention Force (Primary + Secondary Lock) ≥60N	USCAR-2 Rev.7 5.4.1
5-3-5	极性特征有效性 Polarization Feature Effectiveness	以错误的方向将公连接器插入母连接器,公母端子间不通电 Insert the male connector into the female connector in the wrong direction, and the male and female terminals are not electrical contact	USCAR-2 Rev.7 5.4.4
5-3-6	混合组件的啮合分离力 Miscellaneous Component Engage/Disengage Force	15N ≤ 啮合力 ≤60N 分离力: 18N ≤ 锁定到预锁 ≤60N 预锁到完全分离 ≥25N 15N ≤ Engagement Force ≤60N Removal Force: 18N ≤ Lock to pre-set ≤60N Removal from Pre-state ≥25N	USCAR-2 Rev.7 5.4.5
5-3-7	震动/机械冲击 Vibration/Mechanical Shock	冲击: 1.加速度 35g、脉宽 5~10ms、半正弦 2.每轴 10/次、6 个轴向 振动: 三个相互垂直的轴中各进行 8 小时振动测试, 使用 60-1200HZ 12.1grms 没有任何端子对的电阻在 1 微秒内超过 7.0Ω 的情况发生 Shock :1. Acceleration 35 g, Duration 5~10 ms, Half Sine Wave 2. Each axis 10/times ,6 axes. Vibration :8 hours of vibration test in each of the three vertical axes, using 60-1200 HZ 12.1grms Does not occur when the resistance of any terminal pair exceeds 7.0Ω within 1 microsecond.	USCAR-2 Rev.7 5.4.6



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5-3-8 端板 Pin 针保持力 Header Pin Retention	保持力 $\geq 15\text{N}$ Retention force $\geq 15\text{ N}$	USCAR-2 Rev.7 5.7.1
5-3-9 连接器安装特征机械强度 Connector Mounting Feature Mechanical Strength	断开安装特征或将连接器与安装部件分离所需的最小力 The minimum force required to break the mounting feature or separate the connector from the mounting feature	USCAR-2 Rev.7 5.4.11

**5-4. 环境性能及其它 Environmental Performance and Others.**

项 目 【Item】	条 件 【Test Condition】	规 格 【Requirement】
5-4-1 热冲击 Thermal Shock	低温 -40°C，高温 +105°C 低温保持 30 分钟，高温保持 30 分钟，高低温转换小于 30 秒，100 次循环，不能有任何端子电阻超过 7 欧的时间大于 1us 的情况发生 干电路电阻 $\leq 20\text{m}\Omega$ ; 电压降 $\leq 50\text{mV}$ Min.temperature:-40°C,Max.temperature:+105°C Cold soak for 30 min,Heat soak for 30 min,Transfer time<30s,Cycles 100 times,There must be no instance in which the resistance of any terminal pair exceeds 7.0 $\Omega$ for more than 1 microsecond Dry Circuit Resistance $\leq 20\text{m}\Omega$ ; Voltage Drop $\leq 50\text{mV}$	USCAR-2 Rev.7 5.6.1
5-4-2 温度/湿度循环 Temperature/H umidity Cycling	温度变化幅度: -40°C to 105°C 时间: 温室内 5 小时内不能进行泄漏 湿度: (80-100)% 干电路电阻 $\leq 20\text{m}\Omega$ ;电压降 $\leq 50\text{mV}$ 绝缘电阻 > 100 M $\Omega$ 端子插入力 $\leq 15\text{N}$ 端子保持力(一次锁) $\geq 30\text{N}$ 端子保持力(一次锁+二次锁) $\geq 50\text{N}$ Time: No leakage within 5 hours of greenhouse Temperature range :-40°C to 105°C Humidity :(80-100)% Dry Circuit Resistance $\leq 20\text{m}\Omega$ ; Voltage Drop $\leq 50\text{mV}$ Insulation resistance > 100 M $\Omega$ The Insertion Force $\leq 15\text{N}$ The Retention Force (Primary ) $\geq 30\text{N}$ The Retention Force (Primary + Secondary Lock) $\geq 50\text{N}$	USCAR-2 Rev.7 5.6.2

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5-4-3 高温暴露 High Temperature Exposure	时间: 1008H, 温度: 125°C 干电路电阻 ≤ 25mΩ; 电压降 ≤ 50mV 端子插入力 ≤ 15N 端子保持力(一次锁) ≥ 30N 端子保持力(一次锁+二次锁) ≥ 50N Time: 1008H, Temperature :125°C Dry Circuit Resistance ≤ 25mΩ; Voltage Drop ≤ 50mV The Insertion Force ≤ 15N The Retention Force (Primary) ≥ 30N The Retention Force (Primary + Secondary Lock) ≥ 50N	USCAR-2 Rev.7 5.6.3
5-4-4 焊锡耐热性 Resistance to Soldering Heat	焊接时间: 5~10 秒. 焊接温度: 255+5/-5°C. Soldering time:5~10 sec solder. Temperature:255+5/-5°C.	EIA-364-56

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**【7.测试组 Test Group】**

流程图		端子机械测试	电气性能	连接器机械测试				
参考标准	测试序列	端子至端子的啮合/分离力	最大电流/电流循环	端子至连接器的插入/保持力	混合部件的啮合/分离力	连接器至连接器的配合/分离力	极性特征	板端 Pin 针保持力
USCAR-2	序列 ID	A	B	C	D	E	F	G
	测试样品	10	10	10	10	15	10	10
5.1.7	连接器/端子循环		2					
5.1.8	外观检查	1、3	1、5	1、3	1、3	1、3	1、3	1、3
5.2.1	端子至端子的啮合/分离力	2						
5.3.3	最大试验电流能力		3					
5.3.4	电流循环		4					
5.4.1	端子至连接器的插入/保持力			2				
5.4.2	连接器至连接器的配合/分离力 (无机械辅助)					2		
5.4.4	极化特征效果						2	
5.4.5	混合部件的啮合/分离力				2			
5.7.1	板端 Pin 针保持力							2

说明:

准备的样品应与适用于生产的说明一致，应随机从当前生产中选取



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流程图		连接器系统电性能测试顺序				
参考标准	测试序列	振动冲击	热冲击	温度/湿度循环	高温暴露	焊锡耐热性
USCAR-2 或 EIA-364	序列 ID	H	I	J	K	L
	测试样品	10	10	10	10	5
5.1.8	外观检查	1、7	1、7	1、8	1、7	1、3
5.1.7	连接器/端子循环	2	2	2	2	
5.1.9	电路连贯性监控	4	4			
5.3.1	干式电路电阻	3、5	3、5	3、5	3、5	
5.3.2	电压降	6	6	6	6	
5.4.1	端子至连接器的插入/保持力			9	8	
5.4.6	振动/机械冲击	4				
5.5.1	绝缘电阻			7		
5.6.1	热冲击		4			
5.6.2	温度/湿度循环			4		
5.6.3	高温暴露				4	
EIA-364-56	焊锡耐热性					2

注释:

- (1) 环境温度等级 T3: -40°C to 125°C。
- (2) 振动等级 V1
- (3) 本产品适用于线缆选用 20~22 AWG (AVSS 0.30~0.5 0mm<sup>2</sup>), Insulation O.D. 1.60mm(Max.)