

东莞市高钺达电子有限公司

DONGGUAN GYUEDA ELECTRONICS CO.,LTD

承 认 书 SPECIFICATION FOR APPROVAL

Customer : _____

Description : _____ 高钺达Type-C 6PIN6.5立贴承认书

Part No. : _____ TPL65-N1S1-2106-Z

Customer P/N : _____

高钺达电子有限公司		客 户	
工程 承 认 章		工程 承 认 章	
品 管 承 认 章		品 管 承 认 章	

TAIWAN FACTORY:協昌精密工業股份有限公司

ADD: NO.95 Twopart Southharbour road,Taipei,Taiwan.CHINA 地址:

中国臺灣台北市南港路二段 95 號

TEL:02-27884666 FAX : 02-26535492

<http://www.dggyd.com/>

CHINA FACTORY:东莞市高钺达电子科技有限公司

地址:东莞市大岭山镇莞长路大岭山段110号2号楼701室

TEL:15342227750

E-mail:xiayan@dggyd.com

东莞市高钺达电子科技有限公司

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USB TYPE-C Connector Product Specification

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1. Scope 范围

1.1 Contents 内容

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

此份产品规格适用于 USB-C 类连接器的产品功能，测试方法及质量要求

1.2 QUALIFICATION 测试条件

The procedures shall be performed using the applicable inspection plan and product drawing.

所有产品的检验应按照检验计划及产品图面执行

2. APPLICABLE DOCUMENT 参考文献:

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. 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.

下面文件详细说明产品规格，除非有其它要求，应使用最新版本的文件，如果在产品规格书和产品图面不相符时，应优先选择产品图面，当产品规格书要求和参考文件不相符时，应优先选择产品规格书

3. REQUIREMENTS 要求

3.1 DESIGN AND CONSTRUCTION 设计和结构

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

产品的设计，结构及尺寸应符合产品图面

3.2 MATERIALS 材料

1.Housing: Refer To Drawings 胶芯：参考图面

2.Contact: Refer To Drawings 端子：参考图面

3.Shell: Refer To Drawings 外壳：参考图面

3.3 Storage Temperature: -25°C to 85 °C 储存温度：-25摄氏度——85摄氏度

3.4. PERFORMANCE REQUIREMENT AND TEST DESCRIPTION 功能要求及测试描述

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1.

产品设计应满足的电气、机械及环境性能要求见表 1。

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4.1 Examination of product 产品外观

Test items		Test Conditions	Requirement
4.1.1	Examination Of Product 产品外观	Visual inspection. 目视检查	Meets requirements of product drawing. No physical damage. 符合产品图面，无外观损坏

4.2.Electrical Performance 电气性能

4.2.1	Low level Contact resistance 低电平接触阻抗	The low level contact resistance measurement is made from the solder tail of the receptacle to the soldering point of the plug.when measured at 20mV Max. open circuit at 100mA. Mated test contacts must be in a connector housing. Test reference standard: EIA-364-23B 接触阻抗测量方式从母头的焊脚处至公头的焊脚处。 在开路最大电流为 100mA 电压为 20mV 情况下测试胶芯插入时端子之间接触处的阻抗值。测试参考标准: EIA 364-23B	1.40 mΩ (Max) initial for VBUS, GND and all other contacts. 2.Maximum change (delta) of +10 mΩ after environmental stresses. 1. 电源 PIN、接地 PIN 及其它 PIN 脚接触阻抗均为 40mΩ 最大。 2. 产品阻抗变化值不超过 10mΩ 。
4.2.2	Insulation Resistance 绝缘阻抗	Test between adjacent circuits Insulation Resistance of unmated and mated connectors. Test reference standard: EIA 364-21. 测试对插的连接器两个相邻端子之值。测试参考标准: EIA 364-21	100 MΩ Min. 100 MΩ 最小
4.2.3	Dielectric Strength 耐电压	when 100 Volts AC (RMS) is applied between adjacent contacts of unmated and mated connectors. Test reference standard: EIA-364-20. 使用 100V 交流电压测试公母头插入与拔出时相邻端子之间的承受电压情况。 测试参考标准: EIA 364-20	No breakdown shall occur. 产品不能出现衰竭、损坏现象。
4.2.4	Contact current rating 温升	1. A current of 3.0 A shall be applied collectively to VBUS pins (pins A4, A9, B4, and B9) 2. 1.25 A applied to the VCONN pin (B5 of the plug connector) with the return path through the corresponding GND pins (pins A1, A12, B1, and B12). 3. A minimum current of 0.25 A shall also be applied individually to all the other contacts. Test reference standard: EIA -364-70 method B 1. VBUS pins 需通过电流 3.0A(pin A4, A9, B4, and B9); 2. VCONN pin(公头 B5 pin)及 GND pins 需通过电流. 25A(pins	When the currents are applied to the contacts, the temperature rise shall not exceed 30 °C at any point on the USB Type-C mated plug and receptacle under test, when measured at an ambient temperature of 25 °C. 在相对温度为 25℃，当电流通过 USB C type 公母头连接器时，测试连接器中端子任一点温度不超过+30℃。

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		A1, A12, B1, and B12); 3. 其余 pin 需通过最小电流 0.25A. 测试参考标准: EIA 364-70 方法 B	
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4.3.Mechanical Performance 机械性能

4.3.1	Insertion Force 插入力	Measure the force required to mate connector, At a maximum rate of 12.5mm(0.492") per minute. Test reference standard: EIA-364-13 测试的力必须是相匹配的连接器, 插入速度不超过每分钟 12.5mm。 测试参考标准: EIA 364-13	The initial connector insertion force shall be within the range from 5 N to 20 N。 连接器初始插入力需在 5N~20N 范围内
4.3.2	Extraction Force 拔出力	Measure the force required to mate connector, At a maximum rate of 12.5mm(0.492") per minute. Test reference standard: EIA-364-13 测试的力必须是相匹配的连接器, 拔出速度不超过每分钟 12.5mm。 测试参考标准: EIA 364-13	The initial connector Extraction force shall be within the range from 8 N to 20 N。 Extraction force after Durability test :6N~20N 连接器初始拔出力需在 8N~20N 耐久测试后拔出力: 6N~20N
4.3.3	Durability or Insertion/extraction Cycles 耐久或插入拔出 次数	The durability test shall be done at a maximum rate of 200 cycles per Hour and no physical damage to any part of the connector and cable assembly shall occur.Test reference standard:EIA-364-09 耐久测试速度不超过每小时 200 个循环, 且测试后的产品及线材本身任何部位不能出现损坏。 测试参考标准: EIA 364-09	The durability rating shall be 10000 cycles minimum. 耐久测试最小 3 000 次。

4.4.Environmental Performance

4.4.1	Humidity 恒温恒湿	Temperature: 25~65℃; Relative humidity: 90-95%, Duration: 96Hours, Circulate test: 10 Cycles. Test reference standard: EIA 364-31 温度: 25~65℃; 相对湿度: 90~95% 持续时间: 96 小时; 循环测试: 10 次 测试参考标准: EIA 364-31	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 40 mΩ max. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min. 产品外观良好, 无损坏。接触阻抗: 40 mΩ 最大; 耐电压测试 OK, 绝缘阻抗 100MΩ 最小。
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4.4.2	Thermal shock 冷热冲击	Temperature range from -55°C to +85°C .Start from -55°C. After 30 min. change to +85°C, change time is no more than 30 seconds. Total 5 cycles. Test reference standard: EIA 364-32 温度变化范围: -25° C ~ +85° C, 从-25° C 开始, 30 分钟后换到+85° C; 转换时间不超过 30 秒; 共 5 个循环。测试参考标准: EIA 364-32	Shall meet visual requirements, show no physical damage. Contact Resistance (Low Level) 40 mΩ max. Dielectric Strength should be OK, Insulation Resistance should be 100 MΩ min. 产品外观良好, 无损坏。接触阻抗: 40 mΩ 最大; 耐电压测试 OK, 绝缘阻抗 100MΩ 最小。
4.4.3	Hot air reflow or IR reflow for SMT curing process SMT 热风回流焊	Place subjected connector on the PCB Board and expose them to the reflow oven and apply the following condition: Room 1: preheat temperature 150°C - 170°C for 100 seconds. Room 2: preheat temperature 170°C - 200°C for 100 seconds. Room 3: reflow temperature 200°C -260°C for 120-60 seconds.(For 260°C ONLY 5-10 seconds) 将产品放在 PCB 板上, 然后放入回焊炉中并用于以下条件: 时段 1: 预热温度 150°C-170°C 100 秒 时段 2: 预热温度 170°C -200°C 100 秒 时段 3: 回焊炉温度 200°C -260°C 100 秒。(260°C 时间仅 5~10S)	More than 95% of the dipped surface shall be wet with solder 超过 95%的焊接面积浸到锡。
4.4.4	Solderability 可焊性	Solder pot temperature: 250±5°C , Soldering time: 3 to 5 Seconds Test reference standard: EIA 364-52 锡炉温度: 250±5° C, 焊接时间: 3~5 秒 测试参考标准: EIA 364-52。	The inspected area of each lead must have 95% solder coverage Minimum. 检测焊接端的锡覆盖率需大于 95%
4.4.5	Salt Spray 盐雾测试	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.Test reference standard:EIA-364-26B. 测试的连接器需放于温度 35±2° C, 盐水浓度(重量比)5±1%的容器中测试 24 小时。测试后的产品使用清水冲洗后放入常温下 1 小时。测试参考标准: EIA 364-26。	Shall meet visual requirements, No detrimental corrosion allowed in contact area and base metal exposed. 产品外观良好, 端子及外壳金属无生锈、腐蚀及露底材不良。

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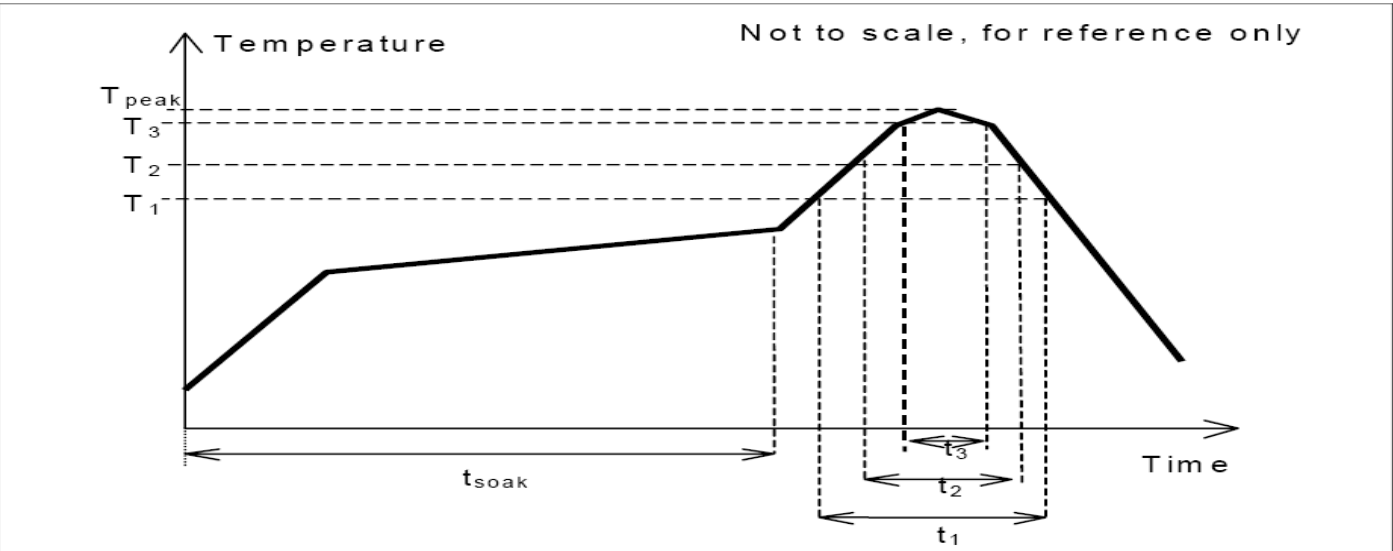
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TABLE II:REFLOW SOLDERING PROFILE

Pb-free reflow profile requirements:

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	260° 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.

Figure 1 (End)