

文件名称:	Type C Socket Connector 24PIN CH1.15mm						
文件编号:	GS-GG-EN-002		制定人:		Teddy		
版本:	1	制定日期:	2016-08-11	页次:	1/13	适用范围	5A/Type C3.0&3.1

版本	日期	变更内容	变更者	审核	核准
1	2016-08-11	新发行	Teddy		

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1. Scope(范围)

1.1 Contents (内容)

This specification covers the performance, test methods and quality requirements for the Type C Socket Connector 24PIN CH1.15mm.

此规格书包含 Type C 24PIN CH1.15mm 连接器中的性能、测试及品质要求。

1.2. Qualification (条件)

When tests are performed on the subject product line, the procedures specified specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

生产过程检测时,应采用此规格书. 所有的检测应在使用相应的检测计划及产品图纸下进行。

2. Applicable Document (参考文件)

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.

在规格书指定范围内, 下列文件为其组成部分, 除非其有最新版本发布。当此规格书标准与产品图纸相冲突时, 以产品图纸为准, 当此规格书与参考文献相冲突时, 以此规格书为准。

- 2.1. EIA-RS-364
- 2.2. MIL-STD-1344A
- 2.3. MIL-STD-202F
- 2.4. UL 94
- 2.5. MIL-G-45204
- 2.6. MIL-T-10727
- 2.7.FED-QQ-N-290

3. Requirements (要求)

3.1. Design and Construction (设计及构造)

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

产品设计及构造及物理尺寸应符合适用的产品图纸。



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3.2. Materials (材质)

A. Housing : Refer To Jits Drawings

胶芯 : 查询杰思图纸

B. Contact : Refer To Jits Drawings

端子 : 查询杰思图纸

C. Shell : Refer To Jits Drawings

外壳 : 查询杰思图纸

3.3. Ratings (额定)

A. Voltage: DC 30V

电压: 直流电 30 伏

B. Current: 5A Max.

电流: 5A Max.

C. Operating Temperature: -40°C ~ +85°C

工作温度: -40°C ~ +85°C

3.4. Performance Requirements and Test descriptions (性能测试要求与条件)

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。



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4.1 Examination of product (产品外观)

Test items (测试项目)		Procedures (测试条件)	Requirement (要求)
4.1.1	Examination Of Product 产品外观	Visual inspection. Spec: EIA-RS-364-18A 目视检查 标准:EIA-RS-364-18A	Meets requirements of product drawing. No physical damage. 对照产品图纸，无物理损伤。

4.2. Electrical Performance (电气性能)

4.2.1	Contact Resistance 接触阻抗	The plug and receptacle were mated. Low-level current was applied and resistance measurements were taken.(20mV Max., 100mA, Out:6V) Spec: EIA-RS-364-23A. 配对好线端与板端后，通 100 毫安, 20 毫伏 最大电压，输出 6 伏. 标准:EIA-RS-364-23A	1).initial:40mΩ max 2). After Environmental Stresses:50mΩ max 初始值: 40mΩ 最大 环测后: 50mΩ 最大
4.2.2	Insulation Resistance 绝缘阻抗	Test between adjacent contacts of unmated samples at 250V DC, It was applied between all contacts. Spec: EIA-RS-364-21A 250 伏直流电下测试未配对连接器间所有相邻端子. 标准:EIA-RS-364-21A	100 MΩ Min. 最小 100 兆 欧姆
4.2.3	Dielectric Withstanding Voltage 耐电压	Test between adjacent contacts of unmated samples at 250V AC (R.M.S.) for 1 minute. Spec: EIA-RS-364-20A 250 伏交流电下测试未配对连接器间所有端子，持续 1 分钟. 标准:EIA-RS-364-20A	No evidence of flashover or breakdown. 没有明显的电弧或击穿现象.



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4.2.4	Temperature Rising 温度上升	Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value. 将各电极串联，通以额定电流，在恒温条件下，去除环境温度值。	5A for shall be applied collectively to Vbus pins(A4/A9/B4/B9)1.25A for Vconn pin(B5) with the return path through the corresponding GND pin(A1/A12/AB1/B12)0.25A for other contacts 30°C Max. Under loaded rating current 5A 应用于全体 Vbus PIN 上(A4/A9/B4/B9)，1.25A 应用于 Vconn PIN 上(B5) 由回路通过相应的接地 PIN(A1/A12A/B1/B12) 其它 PIN 0.25A。 额定电流下，温度上升小于或等于 30°C。
4.2.5	Differential impedance 差分阻抗 (USB3.1 type only)	The differential impedance of a mated connector should be within 85Ω±9Ω as seen from 40ps(20%~80%)Rise Time 连接器公母配对，差分阻抗 85Ω±9Ω，40ps(20%~80%)的上升时间	Maximun:94Ω Mimimun:76Ω 最大：94Ω 最小：76Ω
4.2.6	Differential impedance Loss(DDIL) 差分插入损耗 (USB3.1 type only)	The differential insertion loss Measures the differential signal energy transmitted through the mated connector 连接器公母配对，差分信号传输的插入损耗	≥ -0.25Bb for 100MHZ ≥ -0.35Bb for 2.5GHZ ≥ -0.45Bb for 5GHZ ≥ -0.75Bb for 10GHZ ≥ -1.85Bb for 15GHZ



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4.2.7	Differential Return Loss(DDRL) 差分回波损耗 (USB3.1 type only)	The differential Return loss Measures the differential signal reflection the mated connector 连接器公母配对, 差分信号传输的回波损耗	$\leq -20\text{Bb}$ for 100MHZ $\leq -20\text{Bb}$ for 5GHZ $\leq -13\text{Bb}$ for 10GHZ $\leq -6\text{Bb}$ for 15GHZ
4.2.8	Differential Near end&Far end Crosstalk Between SuperSpeed Pairs 超高速的近端和远端之间的对串扰 (USB3.1 type only)	The differential crosstalk measures the unwanted coupling between differential pairs. Both near end and far end Cross talk for mated connector. 连接器公母配对, 差分的近端和远端之间的超高速对串扰	$\leq -40\text{Bb}$ for 100MHZ $\leq -40\text{Bb}$ for 5GHZ $\leq -36\text{Bb}$ for 10GHZ $\leq -30\text{Bb}$ for 15GHZ
4.2.9	Differential Near end&Far end Crosstalk Between D+/D-and superspeed Pairs D+/D- 和超高速对之间的远端和近端串扰 (USB3.1 type only)	The differential near end and far end crosstalk between the D+/D-pairs and SuperSpeed Pairs in mated connector 连接器公母配对, D+/D-和超高速对之间的远端和近端串扰	$\leq -40\text{Bb}$ for 100MHZ $\leq -40\text{Bb}$ for 5GHZ $\leq -36\text{Bb}$ for 7.5GHZ
4.2.10	Differential to Common Mode 差分共模转换 (USB3.1 type only)	Common mode noise is related to EMC performance EMC 抗干扰性能	$\leq -30\text{Bb}$ for 100MHZ $\leq -30\text{Bb}$ for 6GHZ $\leq -25\text{Bb}$ for 10GHZ



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4.3.Mechanical Performance (机械性能)

4.3.1	Insertion Force 插入力	Operation Speed : 25 mm/min. Measure the force required to mate connector. Spec:EIA-364-13B 操作速度为 25mm/分钟, 测量连接器插入力。标准:EIA-364-13B	5N to 20N 5N 到 20N
4.3.2	Withdrawal Force 拔出力	Operation Speed : 25 mm/min. Measure the force required to mate connector. Spec:EIA-364-13B 操作速度为 25mm/分钟, 测量连接器拔出力。标准:EIA-364-13B	1~1000 Cycles 8N to 20N 1001~10000 Cycles 6N to 20N 1~1000 次 8N 到 20N 1001~10000 次 6N 到 20N
4.3.3	Terminal retention force 端子保持力	Apply axial pull out force on terminal in the housing at a rate of 25±3mm per minute。 Spec: EIA-364-13B 以每分钟 25mm 的速度, 测量端子从胶芯拉出的力量。 标准: EIA-364-13B	Minimum retention force 3.00N (0.3kgf)/PIN 端子保持力不小于 3.00N(0.3kgf)每 PIN
4.3.4	Durability 耐久性	Mate and unmated samples for 10000 cycles at maximum rate of 600 cycles per hour. See Figure 1. Spec:EIA-RS-364-09A 以每小时最多 600 次循环做插拔测试, 共 10000 次循环。见图一。 标准:EIA-RS-364-09A	1.Appearance No evidence of physical damage. 2.Electrical properties of the specifications are met 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求
4.3.5	Soldering strength 剥离强度	Operation Speed 25 mm/min. Direction : 6 surface test Spec:EIA-364-13B 操作速度为 25mm/分钟, 方向: 6 个表面测试 标准: EIA-364-13B	1.Appearance No evidence of physical damage. 2.Electrical properties of the specifications are met 3. 25N Min. 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求 3. 25N 最小



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4.3.6	wrenching strength 扭曲强度	Operation Speed 25 mm/min. Direction : 4 directions test Spec:EIA-364-13B 操作速度为 25mm/分钟, 方向: 4 个方向测试 标准: EIA-364-13B	1.Appearance No evidence of physical damage. 2.Electrical properties of the specifications are met 3. 50N Min at 15mm. 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求 3. 50N 最小作用在 15mm 处
4.3.7	Vibration 振动	The entire frequency range, from 10 to 55Hz and return to 10Hz shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of 3 mutually perpendicular directions.(total of 6 hours). Amplitude: 1.50mm Max. Spec: EIA-RS-364-28A, Condition I 在 10~55~10 赫兹频率范围内来回移动大约一分钟, 3 个方向每个方向 2 小时。(总计 6 小时) 振幅:最大 1.50mm。 标准:EIA-RS-364-28A,条件 I	1. Appearance No evidence of physical damage. 2.Open circuit less than 1 microsecond. 1. 外观没有明显的物理损害。 2. 开路不超过 1 毫秒。
4.3.8	Mechanical Shock 机械冲击	Accelerate Velocity : 490m/s ² (50G) Waveform : Half-sine shock plus Duration : 11msec No. of Drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test. Spec: EIA-364-27B 加速度:490 米/秒 ² (50G) 冲击波型:正弦半波连接时间:11 毫秒. X, Y:冲击次数, Z 轴正相反的方向各三次共 18 次 标准:EIA-364-27B	No electrical discontinuity greater than 0.1 or 1μsec shall occur. 瞬断不超 0.1 秒。



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4.4.Environmental Performance

4.4.1	Thermal Shock 冷热冲击	Mated Connector -55+/-3°C(30 minutes), +85+/-2°C(30 minutes) Perform this a cycle, repeat 10cycles Spec: EIA-364-32C 配对连接器在 -55+/-3°C(30 分钟), +85+/-2°C(30 分钟)为一个周期的环境 中, 重复 10 个周期 标准:EIA-364-32C	1.Appearance No evidence of physical damage. 2.Electrical properties of the specifications are met 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求
4.4.2	Thermal Aging 高温老化	(Spec: EIA-364-17B , Condition4 , Method A)Mate connector and expose to +105±2°C for 250 hours. Upon completion of the exposure period, the test specimens shall be conditional at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. 配对的连接器放置于 105±2°C温度中 250 小时, 当完成实验后, 样品放置一般环境 中 1 到 2 小时后, 再进行测试 标准: EIA-364-17B Condition4 Method A	1. Appearance No evidence of physical damage. 2. Electrical properties of the specifications are met 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求
4.4.3	Humidity-Temperatu re Cycle 温湿循环	Mated Connector 25~85°C , 90~95% RH 10 Cycles. Spec: EIA-364-31B. 配对连接器在 25~85°C , 90~95% 湿度 环境中测试 10 个周期, 标准:EIA-364-31B	1. Appearance No evidence of physical damage. 2. Electrical properties of the specifications are met 1. 外观没有明显的物理损害。 2. 电性符合产品规范要求



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		<p>3.7 Attachment:</p> <p>1.Humidity condition</p> <p>Fig 1.Humidity Condition</p>	
4.4.4	Salt Spray 盐雾	<p>The specimens shall be subjected to a salt water spray(concentration:5±1%) at a temperature of 35±2°C for 48 hours, then placed in ambient temperature for more than 1 hour.</p> <p>Spec: EIA-RS-364-26A</p> <p>将样品置于温度为 35±2°C，盐雾浓度 5±1%条件下 48 小时后，然后放置在室温下超过 1 小时。</p> <p>标准:EIA-RS-364-26A</p>	<p>1. Appearance No evidence of physical damage.</p> <p>2. Electrical properties of the specifications are met</p> <p>1. 外观没有明显的物理损害。</p> <p>2. 电性符合产品规范要求</p>
4.4.5	Solder ability 焊锡性	<p>After 5~10 seconds flux deep. Subject connector lead to solder bath (only tin) at 235±3°C for 5±0.5 seconds.</p> <p>Spec: MIL-STD-202F,Method 208</p> <p>焊接温度: 235±2°C</p> <p>持续时间: 5±0.5 秒</p> <p>标准:MIL-STD-202F,Method 208</p>	<p>More than 95% of the Solder area shall be covered with solder.</p> <p>粘锡面积超过 95%.</p>

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4.4.6	IR-reflow 回流焊测试	<p>Solder Temp.: 260±5°C, 10±0.5sec. 焊 锡温度: 260±5°C, 10±0.5sec.</p>	<p>No physical damage shall occur. 不可有损坏</p>
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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。

3. PRODUCT QUALIFICATION AND REQUALIFICATION TEST: 产品测试顺序表 Figure 2

Test or Examination	Test Group													
	A	B	C	D	E	F	G	H	I	J	K	L	M	
	Test Sequence													
4.1.1.Examination of Product 产品外观	1,10	1,14	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,10	1,4	1,4	1	
4.2.1.Contact Resistance 接触阻抗	3,7	3,9	3,7	3,7	3,7	3,7	3,7	3,7	3,7					
4.2.2.Insulation Resistance 绝缘阻抗	4,8	4,10	4,8	4,8	4,8	4,8	4,8	4,8	4,8					
4.2.3.Dielectric Withstanding Voltage 耐电压	5,9	5,11	5,9	5,9	5,9	5,9	5,9	5,9	5,9					
4.2.4.Temperature Rising 温度上升										3				
4.2.5.Differential impedance 差分阻抗											2			
4.2.6.Differential impedance Loss(DDIL)差分插入损耗											3			
4.2.7. Differential Return Loss(DDRL)差分回波损耗											4			



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Test or Examination	Test Group													
	A	B	C	D	E	F	G	H	I	J	K	L	M	
	Test Sequence													
4.2.8. Differential Near end&Far end Crosstalk Between SuperSpeed Pairs。 差分的近端和远端之间的超高速对串扰											5			
4.2.9. Differential Near end&Far end Crosstalk Between D+/D-and superspeed Pairs。 D+/D-和超高速对之间的差分串扰											6			
4.2.10. Differential to Common Mod 差分共模转换											7			
4.3.1. Insertion Force 插入力		6,12												
4.3.2. Withdrawal Force 拔出力		7,13												
4.3.3. Terminal retention force 端子保持力											2			
4.3.4. Durability 耐久性		8												
4.3.5. Soldering strength 剥离力	6													
4.3.6. wrenching strength 扭曲强度			6											
4.3.8.Vibration 振动性				6										
4.3.9.Mechanical Shock 机械冲击					6									
4.4.1Thermal Shock 冷热冲击						6								
4.4.4. Thermal Aging 高温老化							6							



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Test or Examination	Test Group												
	A	B	C	D	E	F	G	H	I	J	K	L	M
	Test Sequence												
4.4.5 Humidity-Temperature Cycle 温湿循环								6					
4.4.6. Salt Spray 盐雾									6				
4.4.7. Solder ability 焊锡性												2	
4.4.8. IR-reflow 回流焊测试	2	2	2	2	2	2	2	2	2	2	2		
No. of Test Samples (Min.) 测试样品数量 (最少)	5	5	5	5	5	5	5	5	5	5	5	5	

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

(b) 在测试中, 群组测试不能间断.

