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	Date revised	2018-11-23	checked by	Jay
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1. SCOPE (适用范围)

This specification covers the performance, tests and quality requirements for the HDMI TYPE Connector.(本规范涵盖了 DP 连接器的性能、测试和质量要求。)

2. PRODUCT DESCRIPTION (产品描述)

DESCRIPTION (描述)	Part Number (料号)
Display port连接器 母座反向平口贴麦拉	CAR02-201EN5F

3. APPLICABLE DOCUMENT (XB CONNECTIVITY 适用文件)

The following documents form a part of this specification to the extent specified herein. 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. (下列文件构成本规范的一部分，在此规定的范围内。本规范要求与产品图纸有冲突时，以产品图纸为准。如果本规范的要求与参考文件发生冲突，应以本规范为准。)

- EIA 364 Test procedures for electrical connector (EIA364电子连接器的测试程序)
- UL 94-V0 Flammability standard (UL 94-V0 阻燃性标准)

4. REQUIREMENTS (要求)

4.1. Design and Structure (设计和结构)

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

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(XB Connectivity 产品的设计、结构和物理尺寸参考所适用的产品图纸)

4.2. Materials/ Finish (材料/表面处理)

Materials used in the structure of product shall be as specified on the applicable product drawing. (XB Connectivity 产品结构中使用的材料参考所适用的产品图纸)

4.3. Ratings (额定功率)

XB Connectivity Item (项目)	Standard (标准)	
Rated Voltage (Maximum)额定电压	40V	AC
Rated Current (Maximum)额定电流	0.5A	
Operating temperature range工作温度范围	-20℃ ~ +85℃ From -20 to +85 degree centigrade	
Storage Temperature Range储存温度范围	-20℃ ~ +65℃ From -20 to +65 degree centigrade	

5. TEST STANDARD (XB CONNECTIVITY 测试标准)

Unless otherwise specified, the standard range of atmospheric conditions for making measurements and tests are as follows (除另有说明外，用以进行测量和测试的标准环境条件范围如下)

5.1 Ambient temperature (环境温度) : 5℃ to 35℃

5.2 Relative humidity (相对湿度) : 45% to 85%

5.3 Air pressure (气压) : 86Kpa to 106Kpa

6. HOWEVER, IF DOUBTS ARISE CONCERNING JUDGMENTS. PERFORM UNDER THE FOLLOWING STANDARD CONDITIONS. (但是，如果对判决产生疑问，按照下列标准条件执行)

Temperature (温度) : 23±1℃.

Humidity (湿度) : 50%±2% RH.

Air Pressure (气压) : 86~106kPa

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7. PERFORMANCE AND TEST DESCRIPTION (XB Connectivity 性能和测试类型)

7.1 APPRARANANCE (外观)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	Appearance (外观)	Visual. (目视)	Should not have any flaw Scratch discoloration and crushed (无任何裂痕、刮伤、 污染和变形)

7.2 ELECTRICAL (电气)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	Contact Resistance (接触电阻)	Mated connectors. Contact: measure by dry circuit, 20mVolts maximum, 10mA . Shell: measured by open circuit, 5Volts maximum, 100mA . (端子: 将公母对插后, 在回路施加直流最大 20mV 10mA 的电流。 铁壳: 将公母对插后, 在回路施加直流最大 5V 100mA 的电流。) (ANSI/EIA-364-06B)	Excluding conductor resistance (接触电阻): 10 mΩ Max.
2	Dielectric Strength (耐电压)	Unmated connectors, apply 250 Volts AC(RMS) between adjacent terminal or ground. (未对插的连接器, 在相邻端子之间施加 250V AC 1mA 的电流 1 分钟) Mated connector, apply 150 Volts AC(RMS) between adjacent terminal and ground. (对插的连接器, 在相邻端子之间施加 150V AC 1mA 的电流 1 分钟) (ANSI/EIA-364-20C, Method A)	No Breakdown (没有损坏)
3	Contact Current Rating (额定电流)	55℃, maximum ambient 85℃, maximum temperature change (给端子一个负载, 当温度分别达到 55℃和 85℃稳定状态下, 量测当时的电流) (ANSI/EIA-364-70A)	0.3 A MIN.

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4	Insulation Resistance (绝缘电阻)	Unmated connectors, apply 500 volts DC between adjacent terminal or ground. (未对插的连接器, 在相邻端子之间施加 500V DC 1mA 的电流 1 分钟) (ANSI/EIA-364-21C)	100M Ω MIN.
		Mated connectors, apply 150 volts DC between adjacent terminal or ground. (对插的连接器, 在相邻端子之间施加 150V DC 1mA 的电流 1 分钟)	10M Ω MIN.
5	Applied Voltage Rating (额定电压)	40 Volts AC(RMS.) continuous maximum, on any signal pin with respect to the shield. (连续对所有端子施加最大 AC 40V 电压)	No Breakdown (没有如跳电破裂之类的损坏)
6	TMDs Signals Time Domain Impedance (信号时差)	Rise time $\leq$ 200 psec (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential Source-side receptacle connector mounted on a controlled impedance PCB fixture. (将插座连接器安装在受控阻抗 PCB 上, 上升时间 $\leq$ 200 秒(10%-90%), 量测每个 HDMI 设计的信号接地接脚比差, 差示测量试样环境 = 100 欧姆) (ANSI/EIA-364-108)	Connector Area (连接器区): 100 ohms $\pm$25% Transition Area (过渡区): 100 ohms $\pm$15%

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7	TMD5 Signals Time Domain Cross talk FEXT (信号串扰)	Rise time ≤ 200 psec (10%-90%). Signal to Ground pin ratio per HDMI designation. Differential Measurement Specimen Environment Impedance = 100 ohms differential. Source-side receptacle connector mounted on controlled impedance PCB fixture. Driven pair and victim pair. (对插连接器, 将插座连接器安装在受控阻抗 PCB 上, 上升时间 ≤ 200 秒(10%-90%), 量测每个 HDMI 设计的信号接地接脚比差, 差示测量试样环境 = 100 欧姆) (ANSI/EIA-364-90)	10% maximum
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7.3 MECHANICAL (机械)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	Vibration (振动测试)	Amplitude : 1.52mm P-P or 147m/s2 {15G} (振幅: 1.52mm) Sweep time: 50-2000-50Hz in 20 minutes. (频率: 20 分钟内变换 50-2000-50Hz) Duration : 12 times in each (total of 36 Times) X, Y, Z axes. (持续时间: 每个方向 12 小时, 共 36 小时) Electrical load : DC100mA current shall be Flowed during the test. (负载: 施加 DC 100mA 电流测试) (ANSI/EIA-364-28 Condition III)	Appearance (外观) : No Damage (没有损坏) Contact Resistance (接触阻抗) : Contact :Change from initial value:30 milliohms maximum. (端子: 测试后 30 毫欧最大) Shell Part :Change from initial value:50 milliohms maximum. (外壳: 测试后 50 毫欧最大) Discontinuity (断讯) : 1 μ sec maximum. (不能超过 1 微秒)

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2	Shock (冲击测试)	Pulse width: 11 msec., Waveform : half sine, 490m/s2{50G}, 3 strokes in each X.Y.Z. axes (将对插后的连接器固定于冲击实验机上, 并施加下列测试条件: 冲击时间11毫秒 波形: 半正弦波 加速度最大50G, 沿3个互相垂直达的方向) (ANSI/EIA-364-27, Condition A)	Appearance (外观) : No Damage (没有损坏) Contact Resistance (接触阻抗) : Contact :Change from initial value:30 milliohms maximum. (端子: 测试后 30 毫欧最大) Shell Part :Change from initial value:50 milliohms maximum. (外壳: 测试后 50 毫欧最大) Discontinuity (断讯) : 1 μ sec maximum. (不能超过1微秒)
3	Durability (寿命测试)	Measure contact and shell resistance after Following. Automatic cycling : 10,000 cycles at 100 ± 50 cycles per hour (将公座及母座焊接在 PCB 上, 然后以每小时 100 ± 50 次的速度沿轴向插拔 10000 次)	Contact Resistance (接触阻抗) : Contact : Change from initial value:30 milliohms maximum. (端子: 测试后 30 毫欧最大) Shell : Change from initial value:50 milliohms maximum. (外壳: 测试后 50 毫欧最大)
4	Insertion /Withdrawal Force (插入/拔出力)	Insertion and withdrawal speed : 25mm/minute. (将公座或母座焊接在 PC 板上, 然后以每分钟 25mm 的速度沿轴向插拔 3 次后再测量其插入和拔出力) (ANSI/EIA-364-13)	Withdrawal force(拔出力): 5N minimum 25N maximum after 10,000 cycles mating (插拔 10000 次后) : 3N minimum 25N maximum Insertion force (插入和拔出力) : 44.1N {4.5kgf} maximum

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5	Terminal Pull-out force (端子保持力)	Apply axial pull out force on the terminal assembled in the housing at a rate of 25 ± 3mm Per minute (沿胶芯组装面, 用每分钟25 ± 3mm的速度拔出端子)	2.94N {0.3kgf} MIN.
6	Wrenching Strength (扭力强度试验)	Mated connectors, apply perpendicular forces to plug at a 15 mm distance from the edge of the receptacle covered by test fixture. Perform this test using virgin parts. Forces are to 4 directions (left, right, up, down). (将插座焊板后夹具覆盖, 对插连接器, 在距离插座口 15mm 处对公头向四个方向(左, 右, 上, 下)施力)	Appearance 0-20N: No plug or receptacle damage. 20-40N: No receptacle damage. (检查外观, 当 0-20N 力时公母座不可有损坏, 当 20-40N 力时母座不可有损坏)

7.4 ENVIRONMENTAL (环境)

ITEM	DESCRIPTION (类型)	TEST CONDITION (测试条件)	REQUIREMENT (要求)
1	Thermal Shock (冷热冲击)	10 cycles of: a) -55°C for 30 minutes b) +85°C for 30 minutes (ANSI/EIA-364-32C, Condition I) (将连接器焊在 PCB 上后将其暴露在下列环境长件中循环 10 次: 置于-55° C ± 3° C 温度中 30 分钟, 再转换至+85° C ± 2° C 下 30 分钟, 再换至标准温度条件 10-15 分钟)	Appearance (外观): No Damage (没有损坏) Contact Resistance (接触阻抗): Contact :Change from initial value:30 milliohms maximum. (端子: 测试后 30 毫欧最大) Shell Part :Change from initial value:50 milliohms maximum. (外壳: 测试后 50 毫欧最大)

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2	Humidity (恒温恒湿)	A Mate connectors together and perform the test as follows. Temperature : +25 to +85°C Relative Humidity : 80 to 95% Duration : 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24hours, after which the specified measurements shall be performed. (将公母座配对后放入下列环境中测试: 温度: +25 to +85° C 湿度: 80 to 95% 时间: 4 天 (96 小时) 测试后产品应置于标准大气条件下 24 小时后再进行测量) (ANSI/EIA-364-31B)	Appearance (外观) : No Damage (没有损坏) Contact Resistance (接触阻抗) : Contact :Change from initial value:30 milliohms maximum.(端子: 测试后 30 毫欧最大) Shell Part :Change from initial value:50 milliohms maximum.(外壳: 测试后 50 毫欧最大)
		B Unmated each connectors and perform the test as follows. Temperature : +25 to +85°C Relative Humidity : 80 to 95% Duration : 4 cycles (96 hours) Upon completion of the test, specimens shall be conditioned at ambient room conditions for 24 hours, after which the specified measurements shall be performed. (将单个连接器放入下列环境中测试: 温度: +25 to +85° C 湿度: 80 to 95% 时间: 4 天 (96 小时) 测试后产品应置于标准大气条件下 24 小时后再进行测量) (ANSI/EIA-364-31B)	1. Appearance (外观) : No Damage (没有损坏) 2. Dielectric Withstanding Voltage and Insulation Resistance (耐电压和绝缘阻抗) : Conform to item of 3. Dielectric Withstanding Voltage and Insulation Resistance (符合耐电压和绝缘阻抗测试要求)

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3	Thermal Aging (热老化)	Mate connectors and expose to $+105 \pm 2^{\circ}\text{C}$ for 250 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (ANSI/EIA-364-17B, Condition 4, Method A) (将连接器放在 $+105 \pm 2^{\circ}\text{C}$ 的环境中 250 小时, 然后再移至标准温度条件下 1-2 小时, 再进行测量)	Appearance (外观) : No Damage (没有损坏) Contact Resistance (接触阻抗) : Contact :Change from initial value:30 milliohms maximum.(端子: 测试后 30 毫欧最大) Shell Part :Change from initial value:50 milliohms maximum.(外壳: 测试后50 毫欧最大)
4	Salt Spray Test (盐雾测试)	Mated connectors to $35 \pm 2^{\circ}\text{C}$. Humidity:85%(R.H). PH value:6.5~7.2 and $5 \pm 1\%$ salt condition for 24hours. After test, rinse the sample with water and recondition the room temperature for 1 hour test CR and IR. (配对连接器放置在 $35 \pm 2^{\circ}\text{C}$, 温度为 85% PH 值 6.5~7.2 和 5%浓度的实验箱内测试 24 小时, 测试后用水清洗样品, 放置室温 1 小时测试接触阻抗与绝缘阻抗) EIA-364-26B.	(1) Insulation Resistance and Contact Resistance (符合绝缘阻抗和接触阻抗测试要求) (2) Appearance shall no rust, oxidation, corrosion and other undesirable phenomena. (外观须无生锈、氧化、腐蚀等不良现象)
5	Solder ability (可焊性)	Immerse the solder pin of the connector in solder bath at $245 \pm 5^{\circ}\text{C}$ for $3 \pm 0.5\text{sec}$. After dipped the pin in the flux 5sec. (将端子脚浸入助焊剂中 5 秒, 然后将端子脚浸入 $245 \pm 5^{\circ}\text{C}$ 的锡炉中 3 ± 0.5 秒)	Solder wetting: 95% of immersed area must show voids, Pin holes. (锡附着面积应超过浸入表面积的 95%以上)

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6	Resistance to Soldering heat (焊锡耐热性)	The contact of terminal shall be tested resistance to soldering heat in the following conditions. After Resistance to soldering heat test Contact Resistance. (端子应在下列条件下做耐吃锡性试验, 焊锡耐热性后试接触阻抗) In case of solder iron (2 time) 电烙铁(两次) Temperature 温度: $\leq 350^{\circ}\text{C}$ Time 时间: 5s+/-1s	Should not have any flaw scratch and crack. (无任何裂痕、刮伤和破裂)
7	IR-reflow (回流焊)	MIL-STD-202G method 210F Peak temperature time 260°C Max, 10 sec or more. (峰值温度时间最高 260°C, 10 秒或以上) Duration : 2 cycles (过炉 2 次) Lead-Free Solder (无铅锡膏): Sn96.5Ag3Cu0.5 Refer to section 9 (请参阅第 9 条)	Should not have any flaw scratch and crack (无任何裂痕、刮伤和破裂) No visual damage to insulator. (绝缘体不得有严重变形)



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8. Product Qualification and TEST GROUP (产品验证和测试分组)

XB Connectivity TEST ITEM (测试项目)		TEST GROUP (测试分组)										
		A	B	C	D	E	F	G	H	I	J	K
		TEST SEQUENCE										
1	Appearance (外观)	1,8	1,7	1,6	1,6	1,9	1,3	1,4	1,8	1,8	1,3	1,5
2	Contact Resistance (接触电阻)		3,6	3,5	3,5	3,7			3,6	3,6		2,4
3	Dielectric Strength (耐电压)	3,7										
4	Insulation Resistance(绝缘电阻)					4,8			4,7	4,7		
5	Contact Current Rating (额定电流)	4										
6	Applied Voltage Rating (额定电压)	5										
7	TMDS Signals Time Domain Impedance (信号时差)		4									
8	TMDS Signals Time Domain Cross talk FEXT (信号串扰)		5									
9	Vibration (振动测试)			4								
10	Shock (冲击测试)				4							
11	Durability (寿命测试)					6						
12	Insertion /Withdrawal Force (插入/拔出力)					5						
13	Terminal Pull-out force (端子保持力)						2					
14	Wrenching Strength (扭力强度试验)							3				
15	Thermal Shock (冷热冲击)								5			
16	Humidity (恒温恒湿)									5		
17	Thermal Aging (热老化)											
18	Salt Spray Test (盐雾测试)	6										
19	Solder ability (可焊性)										2	
20	Reflow Soldering Heat Resistance (焊锡耐热性)											3
21	IR-reflow (回流焊)	2	2	2	2	2		2	2	2		
	Number of Samples Required (所需样本数目)	5										

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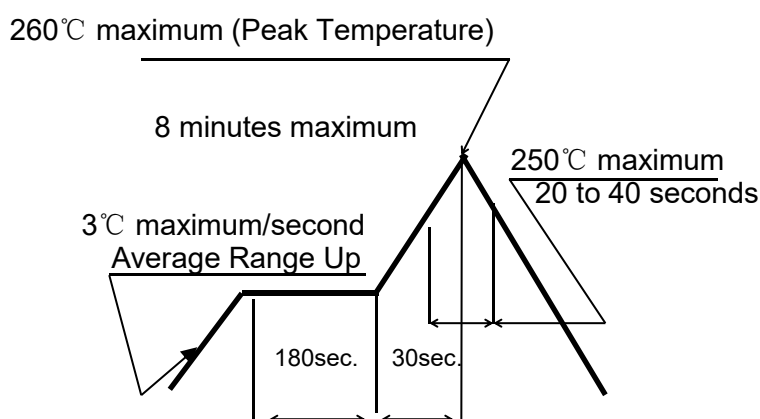
9. SOLDERING 焊接：

9.1. Wave soldering (波峰焊) : DIP Suggestions solder temperature at 260°C(500°F) max.5 seconds . DIP 型推荐焊接焊锡温度为 260°C (500°F) 最多 5 秒

9.2. Hand soldering (手焊) : Use a soldering iron of 30 watts controlled at 350°C approximately 5 seconds. while applying solder.

使用 30W 烙铁控制温度在 350°C,焊接时长约 5 秒

9.3. Reflow soldering profile(回炉焊):When the maximum temperature of the reflow furnace is 260 °C and the temperature is 260 °c. 10 seconds MAX. (reference) SMT 型回焊炉最高温度为 260°C , 温度为 260°C时 , 最长时间不超过 10 秒 (如图)



(Preheat Temperature预热温度: 150~200°C Maximum.)

Temperature Condition Graph.温度状态图

(Temperature on Board Pattern Side)

Requirement要求: No physical damaged or plastic melting.: 无物理损伤或塑料熔化

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01	New Release	2015/04/30	Josephine Lin

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