


NUMBER <b>GS-12-1195</b>	TYPE <b>PRODUCT SPECIFICATION</b>		
TITLE <b>M.2 connector</b>		PAGE <b>1 of 7</b>	REVISION <b>C</b>
		AUTHORIZED BY <b>Kenny Tai</b>	DATE <b>2014/11/19</b>
CLASSIFICATION <b>UNRESTRICTED</b>			

## 1. SCOPE

### 1.1. Contents

This Product Specification covers the 0.5mm pitch M.2 connector series, with selective gold and Ni plating.

### 1.2. Qualification


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.

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## 2. Applicable Document

FCI DRAWING: REFER TO EACH DRAWING INDIVIDUALLY

Drawing number	Product height(mm)	Key ID	Note
10128786	3.2mm	A	-
10128787	3.2mm	B	-
10128788	3.2mm	E	-
10128792	4.0mm	A	-
10128793	4.0mm	B	-
10128794	4.0mm	E	-
10128796	8.5mm	B	-
10128797	8.5mm	E	-
10128798	5.5mm	M	-
10131758	8.5mm	M	-

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### 3. Requirements

#### 3.1 DESIGN AND CONSTRUCTION

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

#### 3.2 MATERIALS


- 1.Housing: Thermoplastic
- 2.Contact: Copper alloy
- 3.Nail: Copper alloy

#### 3.3 RATINGS

Current: 0.5A  
Voltage: 50V AC  
Temperature: - 40 °C to +80 °C

#### 3.4 Performance Requirements and Test description

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.


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### 3.5 Test Requirements and Procedures Summary

ITEM	Test Item (Frequency)	Requirements	Procedure
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection in compliance with appliance specification and document are performed, the test samples shall be free from defects such as damage, creep, deformation, blister and burrs that are detrimental to the function and appearance of test samples. (EIA-364-18)


#### A. Electrical Requirement

ITEM	Test Item (Frequency)	Requirements	Procedure
2	Low Level Contact Resistance	<input type="checkbox"/> 55mΩ MAX.per contact (Initial) • ΔR=20mΩ Max.(Final)	Terminal: measure by dry circuit, 20mV Max, 10mA. EIA-364-06 Shell: measure by open circuit, 5V Max, 100mA. (EIA-364-23)
3	Dielectric withstanding Voltage	No breakdown	1. Unmated connector, apply [300V] AC (rms) for 1 minute between adjacent terminals or ground. 2. Mated connector, apply [300V] AC (rms) for 1 minute between adjacent terminal or ground. (EIA-364-20)
4	Insulation resistance	[ 500 ] M Ohm Min.( Mated) [ 100 ] M Ohm Min.(UnMated)	1. Unmated connector, apply 500V DC between adjacent terminals or ground. 2. Mated connector, apply 150V DC between adjacent terminals or ground. (EIA-364-21)
5	Contact current rating.	0.5 amperes min.	ambient temperature;25°C at still air temperature change.Not exceed 30°C (EIA-364-70)

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## B Mechanical Requirement

ITEM	Test Item (Frequency)	Requirements	Procedure
6	Mating Force	2.04Kgf(20N) Max	Operation Speed : [ 100 ] mm/min. Measure the force required to mate connector. (EIA-364-13)
7	Unmating Force	0.1Kgf(0.98N) Min	Operation Speed : [ 100 ] mm/min. Measure the force required to unmate connector. (EIA-364-13)
8	Durability	No evidence of physical damage.	Operation Speed : [ 100+/-50 ] cycle per hour. Durability Cycles : 60 cycles for 15u" & 30u" Au plating; 25 cycles for gold flash and other Au thickness. (EIA-364-09)
9	Durability (Preconditioning)	No evidence of physical damage	Perform 5 unplug/plug cycles if the application requires up to 25 over the life of the connector or socket; 20 cycles if the application requires 26-200; or 50 cycles if the application requires 201 or greater. (EIA-364-09)
10	Vibration	Appearance: no damage. Discontinuity: 1 microsecond Max.	Test condition VII test condition letter D(15 Minutes in each of 3 mutually perpendicular Direction both mating halves,should be rigidly fixed so as not to contribute to the relative motion of one contact against another .the method of fixturing should be detailed in the test report .(EIA-364-28)
11	Mechanical Shock	Appearance: no damage. Discontinuity: 1 microsecond Max.	Pulse width : 2msec Wave form : half sine 2450m/s2 {250G} 3 strokes in X, Y and Z axes by 2 direction (EIA-364-27 )
12	Reseating	No evidence of physical damage.	Manually unplug/plug the connector or socket, perform 3 such cycles.


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### C Environmental Requirement

ITEM	Test Item	Requirements	Procedure
13	Resistance to Reflow Soldering Heat	No physical damage shall occur. ( <b>Lead-Free</b> ) (See Note 2)	Pre Heat : 150~180°C, 90±30sec. Heat : 230°C Min., 30±10sec. Peak Temp. : <b>260+0/-5</b> °C, 10sec. Duration : 3 cycles
14	Thermal shock	See Note 1	Mated Connectors -55+/-3°C (30 min.), +85+/-2°C (30 min.) Perform this cycle, repeat 5 cycles (EIA-364-32)
15	Thermal Disturbance	See Note 1	Mated connectors Cycle the connector between -15°C+/-3°C and 85°C+/-3°C. Ramps should be 1°C min. per minute, and dwell times should ensure the contacts reach the temperature extremes (5 minutes min.). Humidity is not controlled. Perform 10 such cycles.
16	Thermal Cycling	See Note 1	Cycle the connector between -15°C+/-3°C and 85°C+/-3°C. Ramps should be 1°C min. per minute, and dwell times should ensure the contacts reach the temperature extremes (5 minutes min.). Humidity is not controlled. Perform 500 such cycles.
17	Humidity	See Note 1	Subject mated Connectors to 96 hours at 40°C with 90~95% RH. (EIA-364-31 Method II Test Condition A.)
18	Temperature Life	See Note 1	Mated Connector 90°C, 288 hours, (EIA-364-17 Method A.)
19	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2 °C and 5+/-1% salt condition for <b>24hours</b> . After test, rinse the sample with water and recondition the room temperature for 1 hour. (EIA-364-26B)

Note 1 : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence.


Note 2 : Resistance to soldering process is indicated on notes of customer drawing. Select the appropriate test type which drawing notes are matched with.

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### 3.6 TEST SEQUENCE

Test group	A	B	C	D	E	F	G	H	I
Examination of Product	1,8	1,10	1,10	1,10	1,7	1,10	1,3	1,3	1,3
Low level Contact resistance	2,5,7	2,5,7,9	2,5,7,9	2,5,7,9		2,8			
Dielectric withstanding Voltage					3,6,	9			
Insulation Resistance					2,5				
Contact current rating									2
Mating Force						3,6			
Unmating Force						4,7			
Durability						5			
Durability (Preconditioning)	3	3	3	3					
Vibration			6						
Mechanical Shock			8						
Reseating	6	8		8					
Resistance to Reflow Soldering Heat							2		
Thermal Shock		4							
Thermal Disturbance									
Thermal Cycling				6					
Humidity		6			4				
Temperature Life	4								
Temperature Life (Precondition)			4	4					
Salt Spray								2	

NOTE : Numbers indicate sequence in which tests are performed.

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**REVISION RECORD**

<b>Rev</b>	<b>Page</b>	<b>Description</b>	<b>EC#</b>	<b>Date</b>
A	All	Initial release	-	2014-06-04
B	ALL	Change durabuluty test cycles	ELX-T-18734	2014-09-03
C	ALL	Removed P/Ns which are not launched and obsoleted	ELX-T-19481	2014-11-19