

SPECIFICATION

SPEC. NO: ***** REV: X4

DATE: 2022.06.13

PRODUCT NAME: GenZ StraddleMount Connector

PRODUCT NO: /

东莞立讯技术有限公司

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Change history

版次	ECN No.	日期	变更内容
X1		2017.04.27	发行 X1 版
X2		2020.01.05	更改产品插入力与拔出力
X3		2021.05.25	新增端子正压力，扭矩，Wafer 或者 PIN 针保持力
X4		2021.06.13	修正电压与协会一致

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1 SCOPE

1.1 Content

- 1.1.1 This specification covers performance, tests and quality requirements for GenZ Straddle Mount Connectors

2 APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, latest edition of the specification applies. In the event of conflict between requirements of this specification and product drawing, product drawing shall take precedence.

2.1 Commercial standards

- 2.1.1 EIA-364-18, Initial examination of product.
- 2.1.2 EIA-364-18, Final examination of product
- 2.1.3 EIA-364-23, Low Level Contact Resistance (LLCR)
- 2.1.4 EIA-364-21, Insulation resistance
- 2.1.5 EIA-364-20, Withstanding voltage
- 2.1.6 EIA-364-28, Random vibration
- 2.1.7 EIA-364-27, Mechanical shock
- 2.1.8 EIA-364-09, Durability
- 2.1.9 EIA-364-13, Mating force & Unmating force
- 2.1.10 EIA-364-32, Thermal shock
- 2.1.11 EIA-364-31, Humidity/temperature cycling
- 2.1.12 EIA-364-17, Temperature life
- 2.1.13 EIA-364-65, Mixed flowing gas
- 2.1.14 EIA-364-10, Thermal cycling
- 2.1.15 EIA-364-91, Dust
- 2.1.16 EIA-364-70, Temperature Rise
- 2.1.17 EIA-364-26, Salt Spray
- 2.1.18 EIA-364-1000, Thermal disturbance

3 MECHANIC DIMENSIONS

3.1 Dimensions

See engineering drawing

Initial examination of product (EIA-364-18)

Visual and dimensional inspection per product drawing.

Requirement: meets requirements of engineering drawing.

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3.2 Final examination of product(EIA-364-18)

Visual inspection.

Requirement: meets visual requirements.

4 REQUIREMENTS

4.1 Design and Construction

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

4.2 Materials and Finish

4.2.1 Housing: thermoplastic, UL94V-0

4.2.2 Inner Housing: thermoplastic, UL94V-0

4.2.3 Insert Molding Housing: thermoplastic,UL94V-0

4.2.4 Terminal: copper alloy, gold plating over nickel on contact area and tin plating over nickel on solder area

4.3 Ratings

4.3.1 Operating temperature : -55℃ TO +85℃

4.3.2 Storage temperature : -20℃ TO 85℃

Relative humidity: 20% to 80%

Atmospheric pressure: 650mm to 800mm of Hg (86 ~106Kpa)

4.3.3 Voltage: 29 volts AC/DC max.

4.3.4 Current: 1.1A maximum per contact

4.4 Workmanship

Connectors shall be uniform in quality and shall be free from burrs, scratches, cracks, voids, chips, blisters, sharp edges, and other defects that will adversely affect product's life or serviceability

5 ELECTRICAL CHARACTERISTIC

5.1 Low Level Contact Resistance (EIA-364-23)

Test voltage: 20mV DC Max; Test current: 100 mA Max. All contacts should be measured.

Requirement:

Initial: 30mΩ Max., Δ 15 mΩ Max.

5.2 Insulation resistance (EIA-364-21)

Test voltage: 100V DC. Duration: 1 minute.

Point of Measurement: Between adjacent contacts.

Requirement: 1000 M-ohms minimum.

5.3 Withstanding voltage(EIA-364-20)

Test voltage: 300 volts AC at sea level. Duration: 1 minute.

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Point of Measurement: Between adjacent contacts, signal to signal and signal to ground.

Requirement: No evidence of arc-over, insulation breakdown, or excessive leakage current > 0.5 mA.

6 MECHANICAL CHARACTERISTICS

6.1 Connector solder ability (IPC/ECA J-STD-002C, Test S1)

Conditioning: 8 hours $\pm$ 15 minutes steam.

Preheat: 150° to 180°C / 60-120 seconds

Reflow: 230° to 260°C / 30-60 seconds

Requirement: solderable area shall have a minimum of 95% solder coverage.

6.2 Random Vibration (EIA-364-28, Test Condition VII, Level D)

Random profile: 5 Hz @ 0.01 g²/Hz to 20 Hz @ 0.02 g²/Hz (slope up), 20 Hz to

500 Hz @ 0.02 g²/Hz (flat) Input acceleration is 3.13 g RMS 10 minutes per axis for all

3 axes on all samples Random control limit tolerance is $\pm$ 3 dB.

Test sample and test fixture should be fixed on test machine in steadily station.

Requirement: Electrical discontinuity less than 1us.

6.3 Mechanical shock (EIA-364-27, Test Condition A)

Accelerate Velocity: 490m/s²; Waveform: Half-sine shock plus; Duration: 11ms;

3 drops each to normal and reversed directions of X, Y and Z axes;

Test sample and test fixture should be fixed on test machine in steadily station.

Electrical discontinuity less than 1us.

Requirement: Electrical discontinuity less than 1us.

6.4 Durability (EIA-364-9)

Mating and unmating specimens without shell latches engaged for 200 cycles at a maximum rate of 25.4mm per minutes.

Requirement:

6.4.1 Shall meet visual requirements, show no physical damage.

6.4.2 LLCR: Δ 15 milliohms maximum.

6.5 Durability (preconditioning) (EIA-364-9)

Mating and unmating specimens without shell latches engaged for 20 cycles at a maximum rate of 25.4mm per minutes.

6.6 Mating force (EIA-364-13, Method A.)

Measurement: the force to mate cable plug into connector without latch.

Requirement: 1.1N Max. per contact pair.

Product Category	Max. Mating force (N)
1C	30.8
2C	46.2
4C	77.0

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4C PLUS

92.4

6.7 Unmating force (EIA-364-13, Method A.)

Measurement: the force to unmating plug from connector without latch.

Requirement: 0.1 Min. per contact.

Product Category	Min. Unmating force (N)
1C	2.8
2C	4.2
4C	7.0
4C PLUS	8.4

6.8 Screw torque: 1.65kgf.cm. Use the national standard screw of M2*6

6.9 Contact Normal Force: (EIA-364-04C)

Displacement:0.35mm

Test rate:2.54mm/min

50gf minimum, After temperature,35gf minimum.

6.10 Wafer or Pin retention force:

Wafer retention force :10N min. Pin retention force: 3N min

7 ENVIRONMENTAL CHARACTERISTICS

7.1 Thermal shock(EIA-364-32, Method A, Test Condition I)

Subject mated specimens to 5 cycles between -55 and 85°C with 30 minutes dwells at temperature extremes and 1 minute transition between temperatures.

Requirements: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.2 Humidity/temperature cycling(EIA-364-31, Method III)

Subject mated specimens to 10 cycles between 25 and 65°C at 90 to 95%RH.

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.3 Temperature life (EIA-364-17, Method A)

Subject mated specimens to 115°C for 72 hours.

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.4 Temperature life (preconditioning) (EIA-364-17, Method A)

Subject mated specimens to 115°C for 48 hours.

7.5 Mixed flowing gas(EIA-364-65, Class II A

EIA-364-65, Class IIA (4 gas).Subject board mounted specimens to environmental Class IIA for 14 days. One-half of the specimens (receptacle only) unmated for 7 days followed by 7 days mated. The remaining one-half of the specimens mated for 14 days.

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Requirements: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.6 Temperature rise (EIA-364-70)

30°C maximum temperature rise at rated (1.1A) current after 96 hour (45 minutes ON and 15 minutes OFF). Fixture as required.

7.7 Salt Spray (EIA-364-26, Test Condition B)

Subject unmated specimens to 5% NaCl, 48h.

Requirement: All pins' contact surfaces without obvious corrosion.

7.8 Thermal disturbance

Subject mated and board mounted specimens to 10 temperature cycles between 15±3°C and 85±3°C as measured on the part. Ramps shall be minimum of ±2°C per minute with dwell times long enough to ensure contacts reach the temperature extremes (a minimum of 5 minutes). Humidity not controlled.

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

7.9 Dust (EIA-364-91)

Expose unmated connectors to dust contamination. Dust composition: #1. Flow rate: 300 meters/minute. Exposure time: 1 hour

Requirement: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

8 SECOND LEVEL ASSEMBLY REQUIREMENTS

8.1 Reseating

- a) Need no evidence of physical damage was visible as a result of 3 reseating cycles.
- b) LLCR and LLCR change should be accord with spec after 3 reseating cycles.

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9 QUALIFICATION TESTING SEQUENCES

Table 1

QUALIFICATION TEST														
N o.	Description	Section	Test Group & Sequence											
			1	2	3	4	5	6	7	8	9	10	11	12
1	Initial examination of product	3.2	1	1	1	1	1	1	1	1	1	1	1	1
2	Reseating	8.1	6		8	8					10			
3	LLCR	5.1	2,5,7	2,5,7,9	2,5,7,9	2,5,7,9		2,5,7		3, 9	2,5,7,9,11			
4	Insulation resistance	5.2					2							
5	Withstanding voltage	5.3					3			2, 10				
6	Connector solder ability.	6.1							2					
7	Random vibration	6.2		6										
8	Mechanical shock	6.3		8										
9	Mating force	6.6								4, 7				
10	Unmating force	6.7								5, 8				
11	Durability (preconditioning)	6.5	3	3	3	3	4	4			3			
12	Durability	6.4								6				
13	Thermal shock	7.1			4									
14	Humidity/temperature cycling	7.2			6									
15	Temperature life	7.3	4										3	
16	Temperature life (preconditioning)	7.4		4							4			
17	Mixed flowing gas	7.5									6			
18	Temperature rise	7.6						3,6						
19	Salt Spray	7.7					5							
20	Thermal disturbance	7.8				6					8			
21	Dust	7.9				4								
22	Final examination of product	3.3	8	10	10	10	6	8	3	11	12			
23	Screw torque	6.8										2		
24	Contact Normal Force	6.9											2,4	
25	Wafer or PIN retention force	6.10												2

Note:

(a) 5pcs samples are required in group 1, 2, 3, 4, 5, 6, 7, 8,10,11

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- (b) 10pcs samples are required in group 9.
- (c) When the connector is insert-molding structure , we can use the insert-molding instead of connector testing normal force; But when the connector is Pin insertion structure, The test can be carried out only after the PCB board is welded.