

SPECIFICATION

SPEC. NO: _____ REV: _____ X5

DATE: _____ 2022.09.20

PRODUCT NAME : _____ DDR5 288Pin SMT Connector

PRODUCT NO: _____ PD5288-XXXX-XXX-XH

立讯精密工业股份有限公司

LUXSHARE-ICT PRECISION INDUSTRIAL CO.,LTD.

中国广东省东莞市清溪镇青皇村青皇工业区葵青路 17 号
No. 17, KuiQing Road, QingHuang Industrial Zone,
QingHuang Village, QingXi Town, DongGuan City,
GuangDong Province, China

	APPROVED	CHECKED	PREPARED	DCC ISSUE
Name	Rongzhe Guo	Hongji Chen	Kevins Wu	

Product Number: PD5***-5***-***-*H

Product Description : DDR5 288Pin SMT Connector

1 SCOPE

1.1 Content

1.1.1 This specification covers performance tests and quality requirements for PD5***-***-*H.



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
- 2.1.10 EIA-364-13, Unmating force
- 2.1.11 EIA-364-32, Thermal shock
- 2.1.12 EIA-364-31, Humidity/temperature cycling
- 2.1.13 EIA-364-17, Temperature life

SPEC No.:	Rev.: X5	Pre-ECN No.:	Page:1
-----------	----------	--------------	--------

- 2.1.14 EIA-364-65, Mixed flowing gas
- 2.1.15 EIA-364-10, Thermal cycling
- 2.1.16 EIA-364-70, Current Rating

3 MECHANIC DIMENSIONS

3.1 Dimensions

See engineering drawing: PDRBB9-5300-000-0H-01

3.2 Examination of product (EIA-364-18)

Visual and dimensional inspection per product drawing.

Requirement: Visual inspection in compliance with applicable specifications and documents were performed. The test samples shall be free from defects such as damage, creep, deformation, blister and burrs that are detrimental to the functions and appearances of test samples.

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 Latch: thermoplastic, UL94V-0

4.2.3 Terminal: copper alloy, plated gold on contact area and tin on solder area over nickel

4.2.4 Board lock: stainless steel, plated tin over nickel.

4.3 Ratings

4.3.1 Operating temperature : -40°C TO +85°C

4.3.2 Storage temperature : -20°C TO +70°C

Relative humidity: 20% to 80%

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

4.3.3 Voltage: 1.1 volts AC

4.3.4 Current: 0.75ampere maximum per contact

4.3.5 Differential Impedance: $50 \pm 5\Omega$, 60psec t_r (20 to 80%)

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)

Max. open voltage 20mV. Max current 100 mA. All contacts to be measured.

Requirement: Initial: 40milliohms maximum for signal contacts.

SPEC No.:	Rev.: X5	Pre-ECN No.:	Page:2
-----------	----------	--------------	--------

ΔR 20 milliohms maximum for signal contacts.

5.2 Insulation resistance (EIA-364-21)

Test voltage 500V DC. Measure between adjacent contacts.

Requirement: 1 megohms minimum.

5.3 Withstanding voltage(EIA-364-20)

Test voltage: 500V AC at sea level. Duration 1 minute. Test between adjacent contacts, signal to signal and signal to ground.

Requirement: One minute hold with no breakdown or flashover.

5.4 Current Rating

The temperature rise above ambient shall not exceed 30°C at any point in the system when contacts are powered at 0.75amperes

Reference EIA-364-70

6 MECHANICAL CHARACTERISTICS

6.1 Connector solderability (JESD 22-B-102; Condition C)

Conditioning: 8 hours $\pm$ 15minute 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)

Mated samples are subjected to vibration test per axis. Test duration for each axis is 10 minutes (total of 30 minutes). The test current is 100mA for all contacts, which are wired in series and attached to an electrical discontinuity monitor.

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

20Hz to 500 Hz @ 0.02 g²/Hz (flat)

Input acceleration is 3.13 g RMS

Requirement: No discontinuities of 1 microsecond or longer duration.

6.3 Mechanical shock (EIA-364-27 Method H)

Mated samples are subjected to 6 shocks per axis (total of 18 shocks) complied with trapezoidal which had a 50g's level. Duration 11 ms.

Module weight 53 grams and velocity change 170 inches/sec for others.

Requirement: No discontinuities of 1 microsecond or longer duration.

6.4 Durability (Precondition) (EIA-364-09)

Test samples were subjected to fully mating and unmating for 5 cycles.

Requirement: After 5 cycles of durability test the samples shall pass the requirements of the following test item, the sample shall be no evidence of physical damage (e.g. contact with

SPEC No.:	Rev.: X5	Pre-ECN No.:	Page:3
-----------	----------	--------------	--------

metal thread/burr)

6.5 Durability(EIA-364-09)

Mated and unmated specimens with cage latches engaged for 25 cycles at a maximum rate of 500 cycles per hour.

Requirement: After 25 cycles of durability test the samples shall pass the requirements of the following test item, the sample shall be no evidence of physical damage (e.g. contact with metal thread/burr)

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

Module to connector with ejectors, Mate a 1.37mm thickness gauge to the connector at a rate of 25.4 mm/min.

Requirement: 106.8 N maximum

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

Pull out 1.17+/-0.01 mm thick test gauge form connector without ejectors at a rate of 12.7mm/min.

Requirement: 19.77 N minimum

6.8 Reseating

Test samples were subjected to fully mating and unmating for 3 cycles.

Requirement: Need no evidence of physical damage was visible as a result of 3 reseating cycles.

6.9 Module un-mate force (Module pull up from connector with ejectors)

Pull up from the center of the test module 1.17mm thickness with the ejectors closed at a rate of 12.7 mm/min.

Requirement: 9.1kgf minimum

6.10 Retention force- Terminal (EIA 364-29, Method C)

Axial pull out of terminal in the housing at a rate of 25.4 mm/min.

Requirement: 300gf minimum per pin

6.11 Retention force- Board lock or Metal tab (EIA 364-29, Method C)

Axial pull out of terminal in the housing at a rate of 25.4 mm/min.

Requirement: 13.3N minimum per pin

6.12 Ejector overstress force

Unmated connectors, apply an actuation force on the ejector at a rate of 25.4 mm/min in the fully open position.

Requirement: 3.5 kgf minimum force held for 10 sec. with no damage.

6.13 Insertion force - Connector to board (EIA-364-05)

Unmated connectors, Push connector into applicable PCB at a rate of 12.7 mm/min, board lock PCB hole size 2.45 mm

Requirement: 4.0Kgf Max.

7 ENVIRONMENTAL CHARACTERISTICS

SPEC No.:	Rev.: X5	Pre-ECN No.:	Page:4
-----------	----------	--------------	--------

SPECIFICATION

7.1 Thermal shock (EIA-364-32, Method A, Table 2, Test Condition 1)

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

Requirements: Shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

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

Subject mated specimens to 24 cycles between 25 and 65 °C at 80 to 100%RH. Ramp time is 0.5 hours, and dwell time is 1 hour. Dwell time starts when the temperature and humidity have stabilized within the specified levels.

Requirement: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

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

Subject mated samples were exposed to 105 °C temperature for 24 hours or 36 hours or 72 hours to simulate 60 °C field temperature 3 years or 5 years or 10years.

Requirement: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

7.4 Temperature life (EIA-364-17, Method A, Conditions 4)

Subject mated samples were exposed to 105 °C temperature for 48 hours or 72 hours or 120 hours to simulate 60 °C field temperature 3 years or 5 years or 10years.

Requirements: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

7.5 Mixed flowing gas (EIA-364-65, Class II A, Option 4)

Subject unmated for 2/3 of the test duration, mated for 1/3 of the test duration (5 days to simulate a 3-year field life, 7 days to simulate a 5-year field life, 14 days to simulate a 10-year field life).

Requirements: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

7.6 Thermal cycling (EIA-364-10, Condition A)

Subject mated and board mounted specimens to 500 temperature cycles between 15 ±3°C and 85 ±3°C as measured on the specimen. Ramp times > 2°C per minute with dwell times long enough to ensure contacts reach the temperature extremes (5 minutes minimum). Humidity not controlled.

Requirement: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

7.7 Thermal disturbance

Cycle the connector or socket between 15°C±3°C and 85°C±3°C, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not

controlled. Perform 10 such cycles.

Requirement: Upon completion of the test, there shall be no physical damage to the samples and the samples shall pass the requirements of following test item.

8 SECOND LEVEL ASSEMBLY REQUIREMENTS

SPEC No.:	Rev.: X5	Pre-ECN No.:	Page:6
-----------	----------	--------------	--------

SPECIFICATION

8.1 Reseating

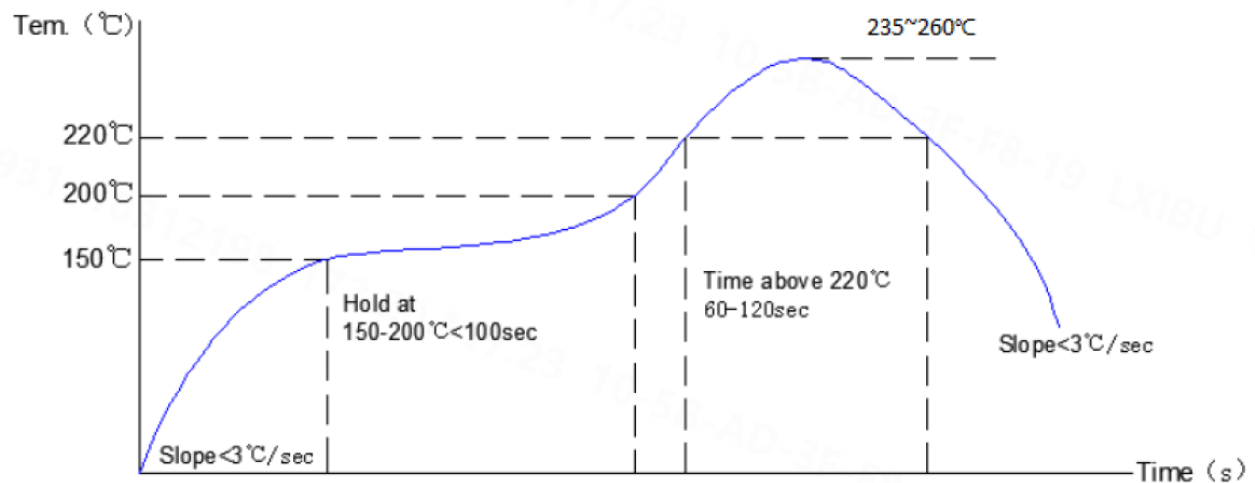
- Need no evidence of physical damage was visible as a result of 3 reseating cycles.
- LLCR and LLCR change should be accord with spec after 3 reseating cycles.

1) Qualification Testing Sequences

ITEM	TEST DESCRIPTION	TEST SEQUENCE													TEST METHOD
		A	B	C	D	E	F	G	H	J	K	L	M	N	
1	Examination of product	1	1	1	1	1	1	1	1	1	1	1	1	1	3.2
2	Low Level Contact Resistance	2,5,7	2,5,7,9	2,4,6,8	4,6	2,5,7,9	2,5,7,9,11,13								5.1
3	Thermal disturbance						10								7.7
4	Durability				5										6.5
5	Durability (Precondition)	3	3	3		3	3								6.4
6	Mechanical shock			7											6.3
7	Reseating	6	8			8	12								6.8
8	Temperature life	4													7.4
9	Temperature life (Precondition)					4	4								7.3
10	Temperature-Humidity Cycling		6												7.2
11.	Thermal Cycling					6									7.6
12.	Thermal shock		4												7.1
13.	Random Vibration			5											6.2
14	MFG						6,8								7.5
15	Dielectric withstanding voltage				2,7										5.3
16	Insulation resistance				3										5.2
17	Mating force							2							6.6
18	Module un-mate force (Module pull up from Connector with ejectors)							3							6.9
19	Retention force- terminal								2						6.10
20	Retention force- fork lock/metal Tab								3						6.11
21	Ejector overstress force									2					6.12
22	Insertion force – Connector to board										2				6.13
23	Un mating force											2			6.7
24	Solderability												2		6.1
25	Current Rating													2	5.4
SAMPLES SIZE PER TEST GROUP		5	5	5	5	5	5	5	5	5	5	5	5	5	

Remark:

- 5pcs samples are required in each group.
- Referenced Graph of Current VS Temperature
- Insertion force - Connector to board test is only for forklock.



Recommended Reflow Profile_Note

- 1 Time: $< 100\text{sec}$ between 150~200 degree
- 2 Time: 60~120sec above 220 degree
- 3 Peak temperature: 235~260 degree
- 4 Temperature slope:
 - 4.1 Ave ramp-up rate 3 degree/sec max
 - 4.2 Ramp down rate 3 degree/sec max