



# SPECIFICATION

SPEC. NO: SPEC-\*\*-\*\*\*\* REV: X2

DATE: 2021/10/18

PRODUCT NAME: OSFP Single Port Connector

PRODUCT NO: PEPX60-XXXX-XXX-1X

立讯精密工业股份有限公司

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Product Number: PEPB60-6301-000-1R

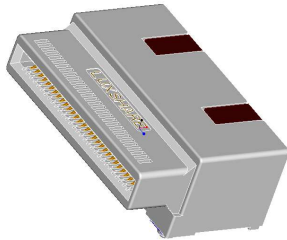
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Product Description : OSFP Single Port Connector

## 1 SCOPE

### 1.1 Content

1.1.1 This specification covers performance, tests and quality requirements for PEPX60-XXXX-XXX-1R



## 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
- 2.1.14 EIA-364-65, Mixed flowing gas
- 2.1.15 EIA-364-10, Thermal cycling
- 2.1.16 EIA-364-91, Dust

## 3 MECHANIC DIMENSIONS

### 3.1 Dimensions

See engineering drawing: PEPB60-6301-000-1R

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- 3.2 Initial examination of product (EIA-364-18)  
 Visual and dimensional inspection per product drawing.  
 Requirement: meets requirements of engineering drawing.
- 3.3 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 : -40℃ TO +85℃  
 4.3.2 Voltage: 30 volts AC/DC max.  
 4.3.3 Current: 0.5ampere maximum per signal contact  
 1.5 ampere maximum per low speed power 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: 30milliohms maximum for signal contacts.  
 $\Delta R$  10 milliohms maximum for signal contacts.
- 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.

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 solderability (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 250°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)

Subject mated specimens to 3.10G's rms between 20 to 500Hz. Fifteen minutes in each of 3 mutually perpendicular planes.

Requirement: No discontinuities of 1 microsecond or longer duration.

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

Subject mated specimens to 30G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Requirement: No discontinuities of 1 microsecond or longer duration.

### 6.4 Durability(EIA-364-9)

Mating and unmating specimens with cage latches engaged for 100 cycles at a maximum rate of 500 cycles per hour.

Requirement:

6.4.1 Shall meet visual requirements, show no physical damage.

6.4.2 LLCR:  $\Delta R$  10 milliohms maximum for signal contacts.

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

Measurement: the force to mate cable plug into OSFP connector including cage.

Requirement: 40 N maximum

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

Measurement: the force to unmate cable plug from OSFP connector including cage by pulling at latching release feature.

Requirement: 30 N maximum

## 7 ENVIRONMENTAL CHARACTERISTICS

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

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(10 days) between 25 and 65°C at 80 to 100%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, preconditioning(EIA-364-17, Method A)

Subject mated specimens to 105°C for 132 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 (EIA-364-17, Method A)

Subject mated specimens to 105°C for 228 hours.

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

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

Subject board mounted specimens to environmental Class II A for 14 days. One-half of the specimens (receptacle only) unmated for 7 days followed by 7days mated. Remaining one-half of the specimens mated for 14 days.

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

## 7.6 Thermal cycling(EIA-364-31)

Subject mated and board mounted specimens to 10 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: Shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the product qualification.

## 7.7 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

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

## 9 QUALIFICATION TESTING SEQUENCES

Table 1

| QUALIFICATION TEST |                                     |         |                       |           |         |      |         |   |   |
|--------------------|-------------------------------------|---------|-----------------------|-----------|---------|------|---------|---|---|
| No<br>.            | Description                         | Section | Test Group & Sequence |           |         |      |         |   |   |
|                    |                                     |         | 1                     | 2         | 3       | 4    | 5       | 6 | 7 |
| 1                  | Initial examination of product      | 3.2     | 1                     | 1         | 1       | 1    | 1       | 1 | 1 |
| 2                  | Reseating                           | 8       | 7                     |           | 5       |      |         |   |   |
| 3                  | LLCR                                | 5.1     | 3, 8                  | 2, 4, 6   | 2, 4, 6 |      | 2, 4, 6 |   |   |
| 4                  | Insulation resistance               | 5.2     |                       |           |         | 2, 6 |         |   |   |
| 5                  | Withstanding voltage                | 5.3     |                       |           |         | 3, 7 |         |   |   |
| 6                  | Connector solderability.            | 6.1     |                       |           |         |      |         | 2 |   |
| 7                  | Random vibration                    | 6.2     | 5                     |           |         |      |         |   |   |
| 8                  | Mechanical shock                    | 6.3     | 6                     |           |         |      |         |   |   |
| 9                  | Mating force                        | 6.5     | 2                     |           |         |      |         |   |   |
| 10                 | Unmating force                      | 6.6     | 9                     |           |         |      |         |   |   |
| 11                 | Durability                          | 6.4     | 4                     |           |         |      |         |   |   |
| 12                 | Resistance to reflow soldering heat |         |                       |           |         |      |         |   | 2 |
| 13                 | Thermal shock                       | 7.1     |                       |           |         | 4    |         |   |   |
| 14                 | Humidity/temperature cycling        | 7.2     |                       | 5         |         | 5    |         |   |   |
| 15                 | Temperature life, preconditioning   | 7.3     |                       |           |         |      |         |   |   |
| 16                 | Temperature life                    | 7.4     |                       | 3 (c) (d) |         |      |         |   |   |
| 17                 | Mixed flowing gas                   | 7.5     |                       |           | 3       |      |         |   |   |
| 18                 | Thermal cycling                     | 7.6     |                       |           |         |      | 5       |   |   |
| 19                 | Dust                                | 7.7     |                       |           |         |      | 3 (c)   |   |   |
| 20                 | Final examination of product        | 3.3     | 10                    | 7         | 7       | 8    | 7       | 3 | 3 |

Note:

- (a) 5pcs samples are required in group 1, 2, 4, 5, 6, 7.
- (b) 10pcs samples are required in group 3.
- (c) Precondition specimens with 20 durability cycles with latches engaged.
- (d) Mated to blank transceivers (no components added to cable connector PCB).