

# Designing and Handling Guideline for CX80B1-24P

## Table of contents

|                                           |       |    |
|-------------------------------------------|-------|----|
| <b>1. Revision History</b>                | ----- | 3  |
| <b>2. Introduction</b>                    |       |    |
| 2.1 Purpose                               | ----- | 3  |
| 2.2 Scope                                 | ----- | 3  |
| 2.3 Reference Specification               | ----- | 3  |
| <b>3. Product Information</b>             |       |    |
| 3.1 Product Feature                       | ----- | 4  |
| 3.2 Specification                         | ----- | 4  |
| 3.3 Product Size                          | ----- | 5  |
| 3.4 Pin Assignment                        | ----- | 5  |
| 3.5 Manufacturing Date Code System        | ----- | 6  |
| 3.6 Part List                             | ----- | 7  |
| 3.7 Configuration of Product Name         | ----- | 7  |
| 3.8 Reel Dimensions                       | ----- | 8  |
| 3.9 Emboss Carrier Tape Dimensions        | ----- | 8  |
| 3.10 Packing Quantity                     | ----- | 8  |
| 3.11 Peeling Force                        | ----- | 8  |
| 3.12 Product Dimension                    | ----- | 9  |
| <b>4. Notice for Soldering</b>            |       |    |
| 4.1 Recommended Reflow Temperature Profil | ----- | 10 |
| 4.2 PCB Designing                         | ----- | 11 |
| 4.3 PCB Thickness                         | ----- | 11 |
| 4.4 Metal Mask Designing                  | ----- | 12 |
| 4.5 Solder Paste                          | ----- | 12 |
| <b>5. Notice for the Device Design</b>    |       |    |
| 5.1 Recommended Device Designing          | ----- | 13 |
| <b>6. Notice for Connector Handling</b>   |       |    |
| 6.1 Mating plug                           | ----- | 14 |

## 1. Revision History

| Revision History | Date           | Handled by | Remarks       |
|------------------|----------------|------------|---------------|
| 1.0              | May. 05, 2018  | JH.BOO     | Draft version |
| 2.0              | June. 27, 2018 | JH.BOO     | Release       |
|                  |                |            |               |

## 2. Introduction

### 2.1 Purpose

The guidelines are intended to provide information on product features and how to handle them.

Guidelines are intended to provide general information and do not limit your design or guarantee results in all situations.

### 2.2 Scope

Guidelines describe basic design information, recommended device dimensions, and regulatory requirements.

These guidelines will be revised from time to time to reflect changes in technology and production capacity.

### 2.3 Reference Specification

- Universal Serial Bus Type-C Connectors and Cable Assemblies Compliance Document  
Revision 1.1 May 28, 2016
- Universal Serial Bus Type-C Cable and Connector Specification  
Revision 1.3 July 14, 2017

### 3. Product Information

#### 3.1 Product Feature

- \* USB3.1 Gen2(10Gbps), high speed transmission
- \* Reduced mounting area contributes to space saving
  - Mounting area : 28.07mm<sup>2</sup>
- \* Reversible plug orientation ensures easy insertion
- \* Improved peeling strength using 6 THR\* mounting posts
- \* Pick and place cap
- \* Compliant to USB specification
  - USB Type-C compliant interface connector.

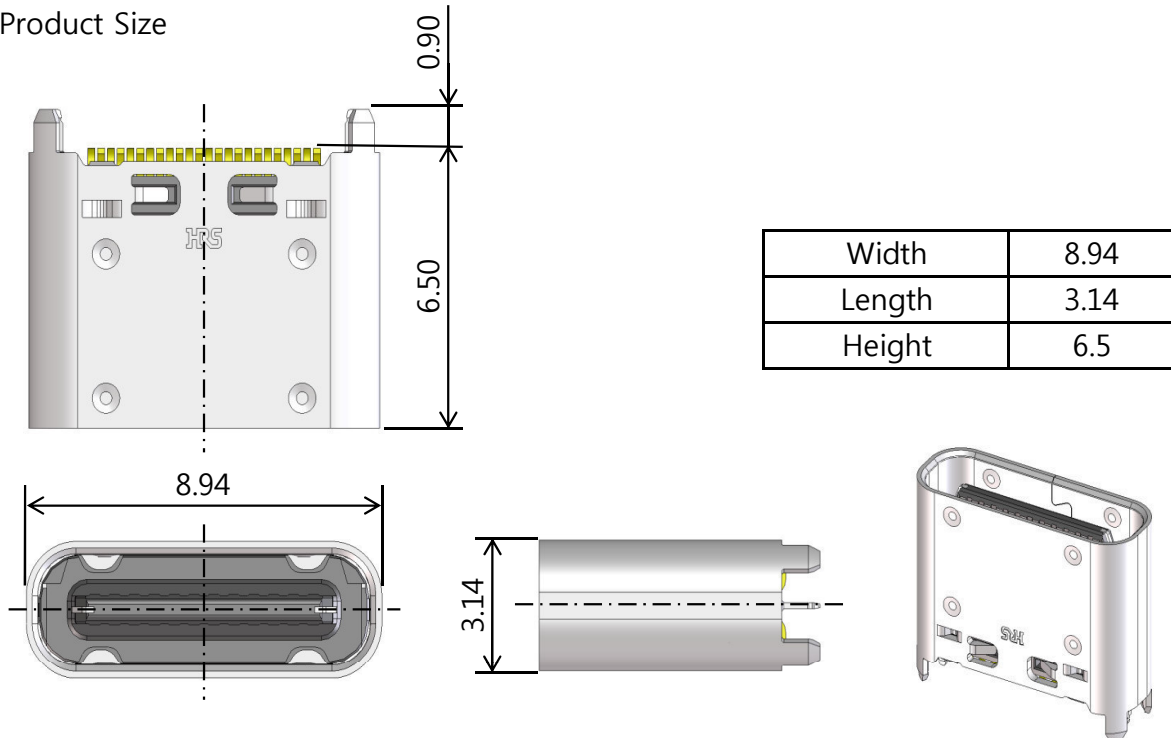
#### 3.2 Specification

|                             |                                                                                |
|-----------------------------|--------------------------------------------------------------------------------|
| No. of Contacts             | 24                                                                             |
| P.C.B Mounting type         | Top-mount                                                                      |
| Soldering type              | Straight SMT                                                                   |
| Current rating              | DC 5A max. for Vbus & GND<br>DC 1.25A for Vconn<br>DC 0.25A for the other pins |
| Voltage rating              | 20V AC                                                                         |
| Operating Temperature       | -40°C ~ +85°C (Including Temp.rise), 95% RH MAX                                |
| Storage Condition           | -10°C ~ +60°C (With Packing), 15% ~ 70% RH                                     |
| Contact Resistance          | 40mΩ Max. (Initial)                                                            |
| Withstanding Voltage        | 100V AC for 1 minute                                                           |
| Insulation Resistance       | 100MΩ Min. (500V DC)                                                           |
| Mating Cycles               | 10,000 times                                                                   |
| Insertion/ Extraction Force | Insertion: 5~20N, Extraction: 8~20N                                            |

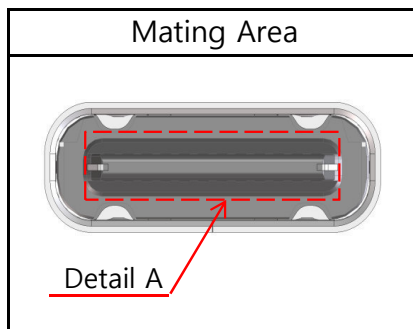
#### Note

- \* Storage conditions apply to original packaging only, void if opened. Warranty period is 12month max. in the storage conditions above and calculated by manufacture date code.

### 3.3 Product Size



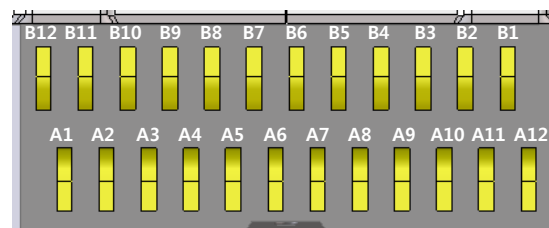
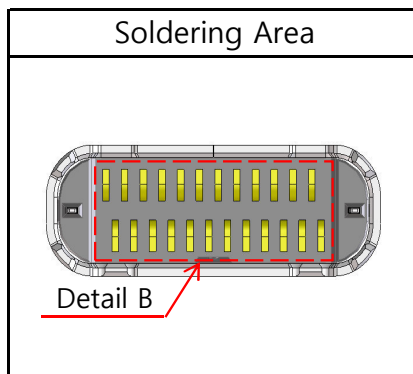
### 3.4 Pin Assignment



|     |      |      |      |      |    |    |      |      |      |      |     |
|-----|------|------|------|------|----|----|------|------|------|------|-----|
| A1  | A2   | A3   | A4   | A5   | A6 | A7 | A8   | A9   | A10  | A11  | A12 |
| GND | TX1+ | TX1- | Vbus | CC1  | D+ | D- | SBU1 | Vbus | RX2- | RX2+ | GND |
| GND | RX1+ | RX1- | Vbus | SBU2 | D- | D+ | CC2  | Vbus | TX2- | TX2+ | GND |
| B12 | B11  | B10  | B9   | B8   | B7 | B6 | B5   | B4   | B3   | B2   | B1  |

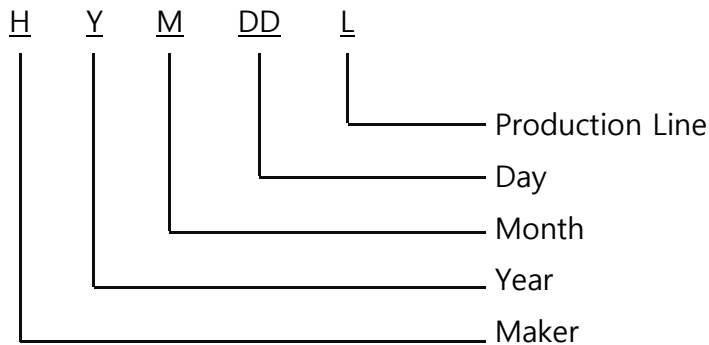
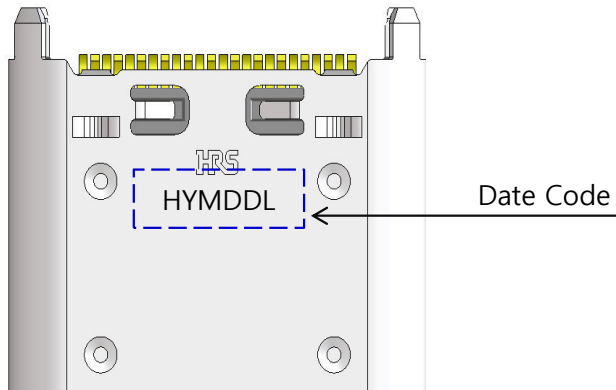


**Detail A**



**Detail B**

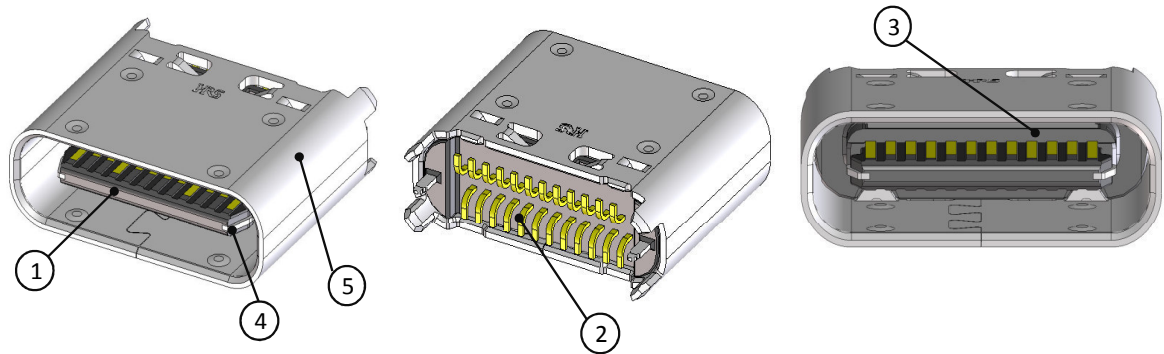
### 3.5 Manufacturing Date Code System



| Maker       |      | Year |      | Month |      | Day  |      | Production Line |      |
|-------------|------|------|------|-------|------|------|------|-----------------|------|
| Ex.         | Mark | Ex.  | Mark | Ex.   | Mark | Ex.  | Mark | Ex.             | Mark |
| HiroseKorea | H    | 2018 | 8    | Jan.  | 1    | 1st  | 01   | SAMPLE          | S    |
|             |      | 2019 | 9    | Feb.  | 2    | 2nd  | 02   | Manual #1       | 1    |
|             |      | 2020 | 0    | Mar.  | 3    | 3rd  | 03   | Manual #2       | 2    |
|             |      | 2021 | 1    | Apr.  | 4    | 4th  | 04   | Manual #3       | 3    |
|             |      | 2022 | 2    | May   | 5    | 5th  | 05   | Manual #4       | 4    |
|             |      | 2023 | 3    | Jun.  | 6    | 6th  | 06   | ...             | ...  |
|             |      | 2024 | 4    | Jul.  | 7    | 7th  | 07   | Auto #1         | A    |
|             |      | 2025 | 5    | Aug.  | 8    | 8th  | 08   | Auto #2         | B    |
|             |      | 2026 | 6    | Sep.  | 9    | 9th  | 09   | Auto #3         | C    |
|             |      | 2027 | 7    | Oct.  | A    | 10th | 10   | Auto #4         | D    |
|             |      | ...  | ...  | Nov.  | B    | 11th | 11   | Auto #5         | E    |
|             |      | ...  | ...  | Dec.  | C    | ...  | ...  | ...             | ...  |

### 3.6 Part List

| No | Part         | Materials       | Color / Finish                                                                                               |
|----|--------------|-----------------|--------------------------------------------------------------------------------------------------------------|
| 1  | Insulator    | Thermal Plastic | UL94V-0, Black Color                                                                                         |
| 2  | Contact      | Copper Alloy    | Contact Area: Au0.05μm Min over Pd-Ni0.75μm Min over Ni2.0μm Min<br>Lead Area: Au0.05μm Min over Ni1.0μm Min |
| 3  | Ground Plate | Stainless Steel | Cleansing                                                                                                    |
| 4  | Mid Plate    | Stainless Steel | Nickel Plating                                                                                               |
| 5  | Metal Shell  | Stainless Steel | Nickel Plating                                                                                               |



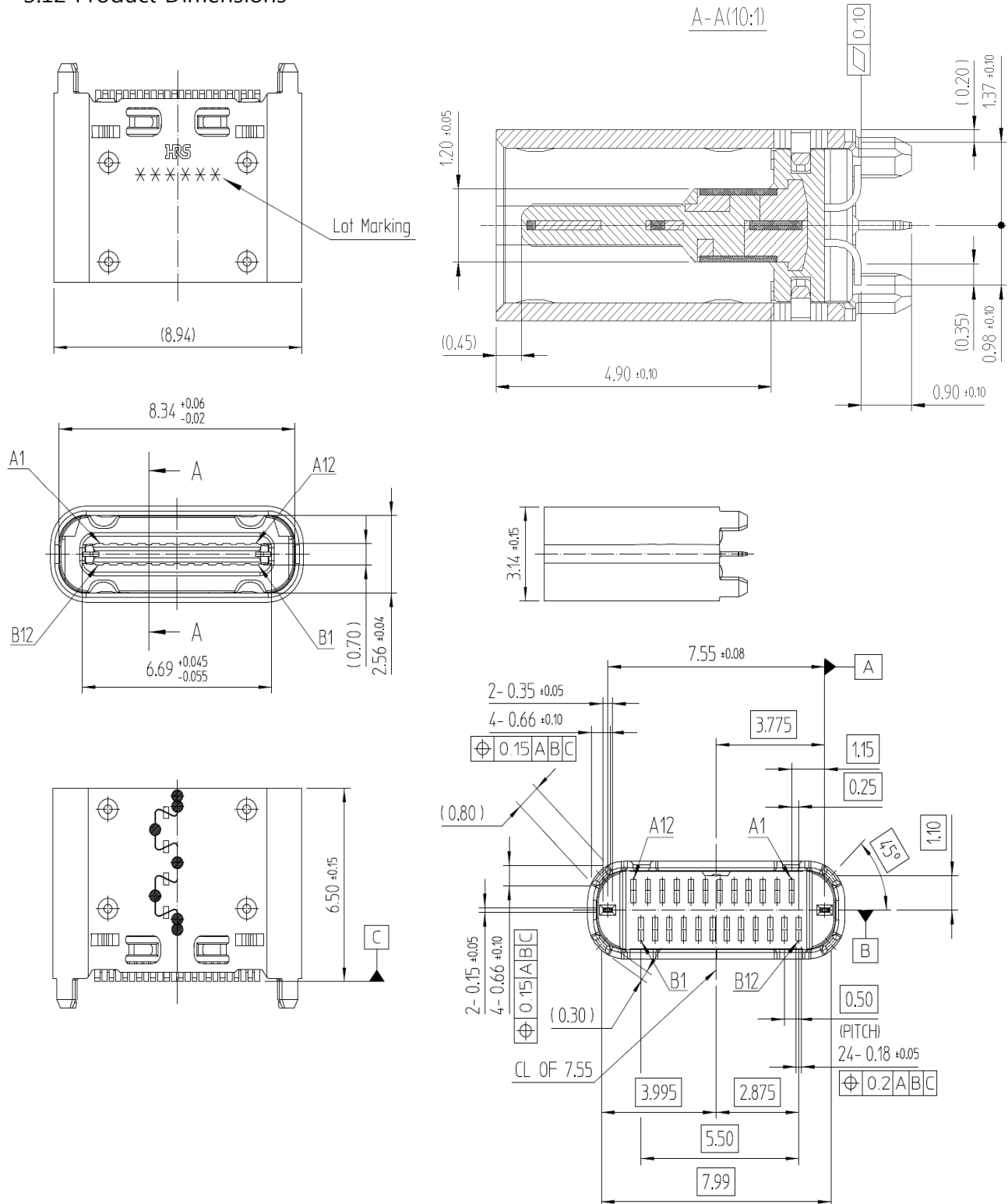
### 3.7 Configuration of Product Name

CX    80    B 1 -    24    P  
 (1)    (2)    (3) (4)    (5)    (6)

|                    |                      |                                                                                |
|--------------------|----------------------|--------------------------------------------------------------------------------|
| (1) Series Name    |                      | CX                                                                             |
| (2) Soldering Type | 60<br>70<br>80<br>90 | Paddle Card<br>Right angle Hybird (SMT+Dip)<br>Straight SMT<br>Right angle SMT |
| (3) Mounting Type  | B<br>M               | Top-mount<br>Mid-mount                                                         |
| (4) Serial No      |                      | None or 1, 2, 3, ...                                                           |
| (5) Contact No     |                      | 24                                                                             |
| (6) Contact Type   | P<br>S               | Male contacts<br>Female contacts                                               |

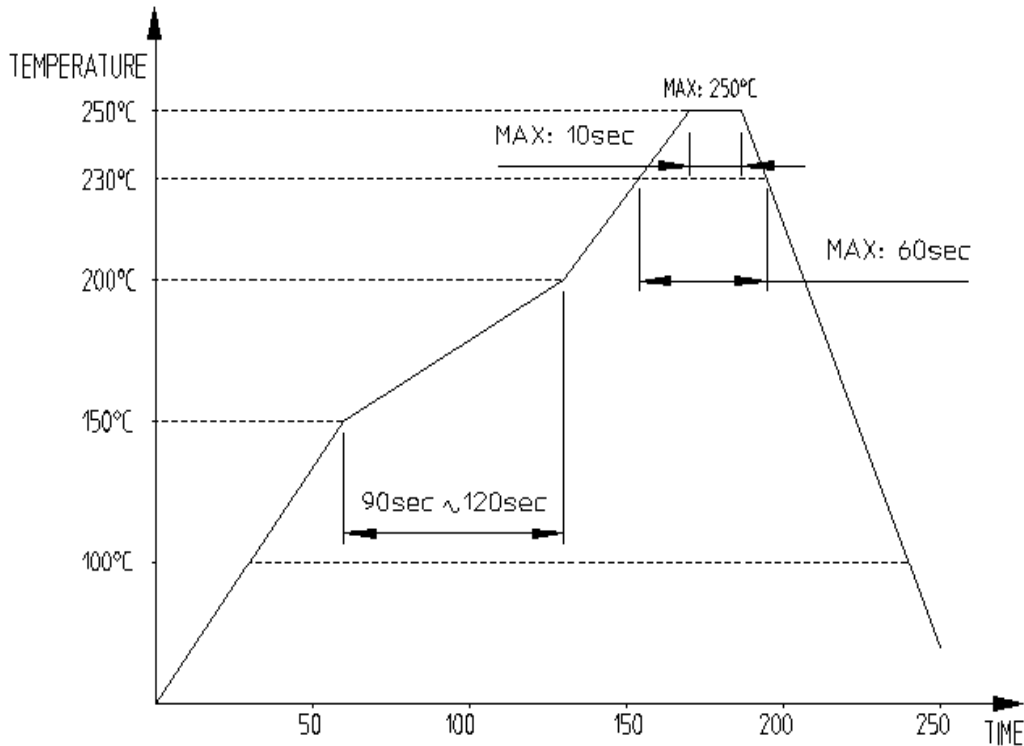


## 3.12 Product Dimensions



## 4. Notice for Soldering

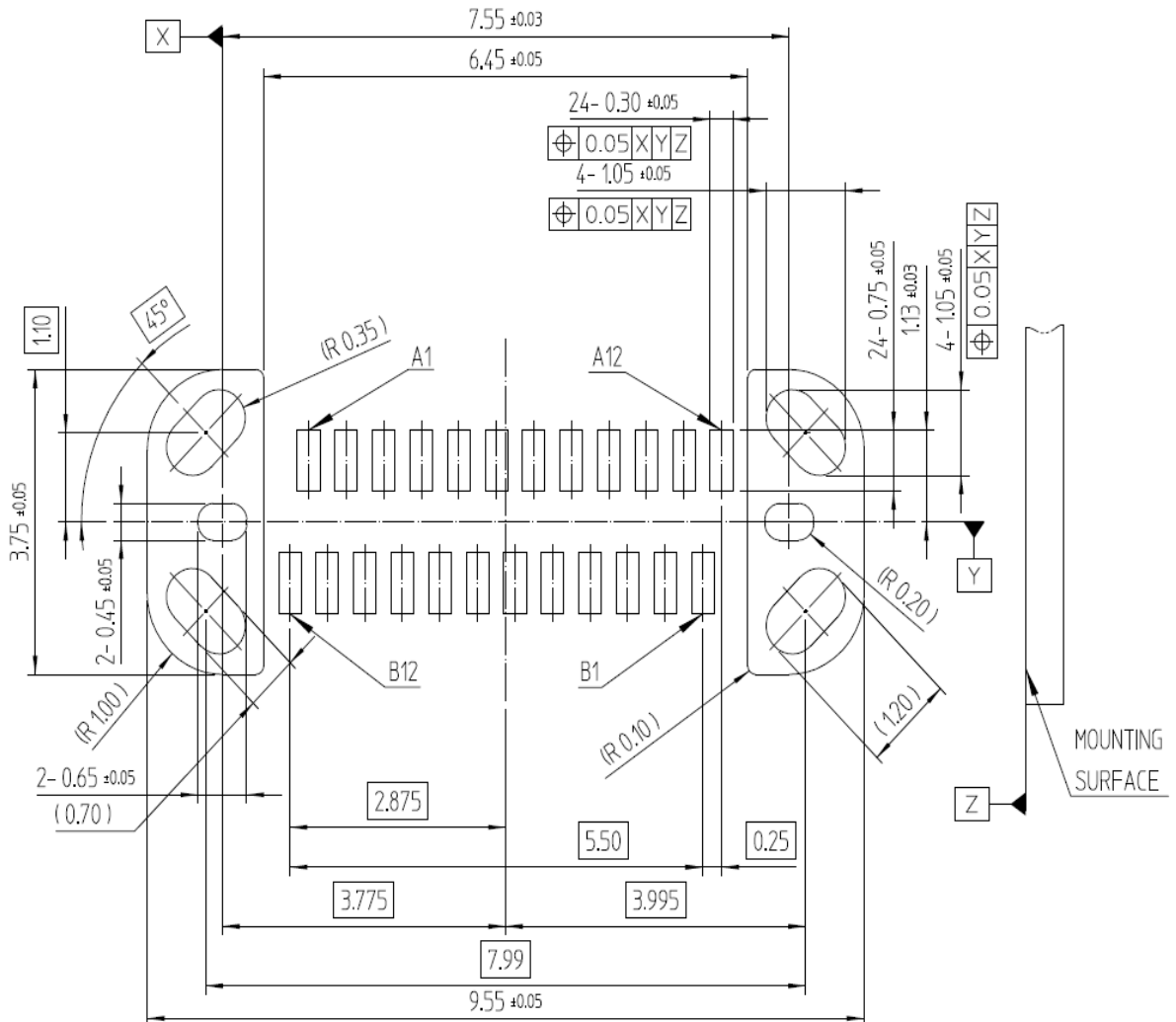
### 4.1 Recommended Reflow Temperature Profile



- Profile measuring point  
The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.
- Reflow cycles  
Up to 2 cycles of reflow soldering are possible under the same conditions.  
\* Temperature between 1st and 2nd reflow must be cooled down to room temperature
- Reflow heating method and condition  
Far-infrared heater and hot convective blowers used in combination, normal atmosphere, or nitrogen atmosphere.
- Top surface of the contact leads may not covered by solder depending on reflow condition

## 4.2 PCB Designing

### RECOMMENDED PCB LAYOUT (TOP-VIEW) (REFERENCE ONLY)



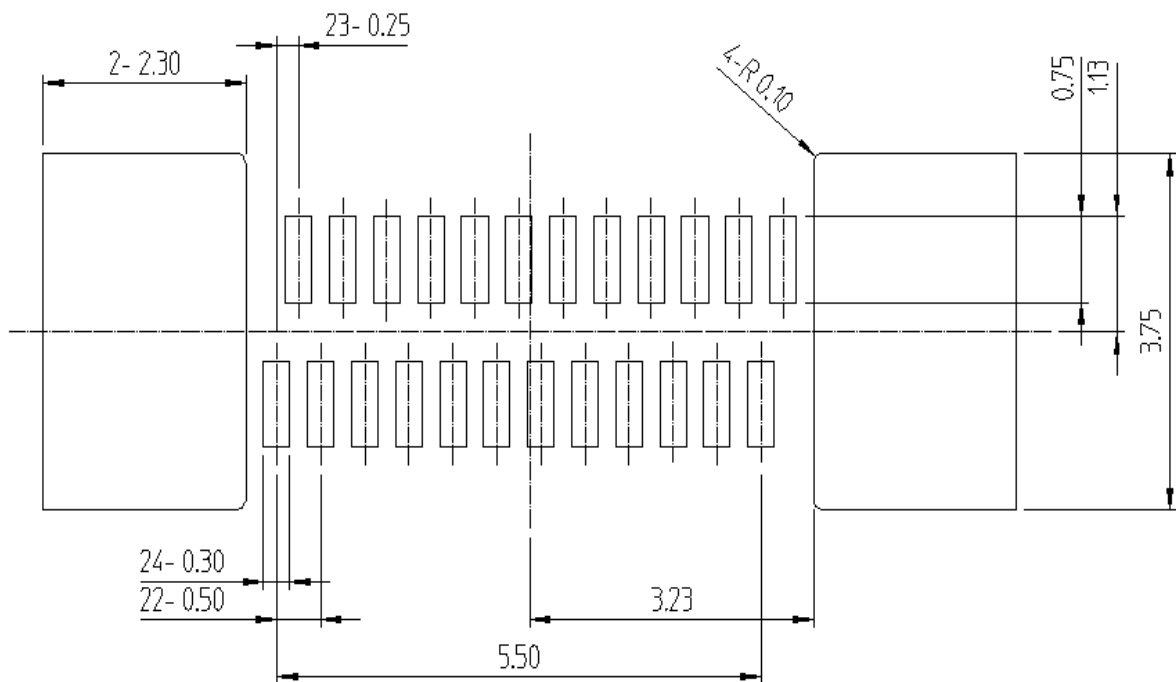
## 4.3 PCB Thickness

Recommended PCB thickness is 1.0mm.

#### 4.4 Metal Mask Designing

##### RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)

(REFERENCE ONLY)



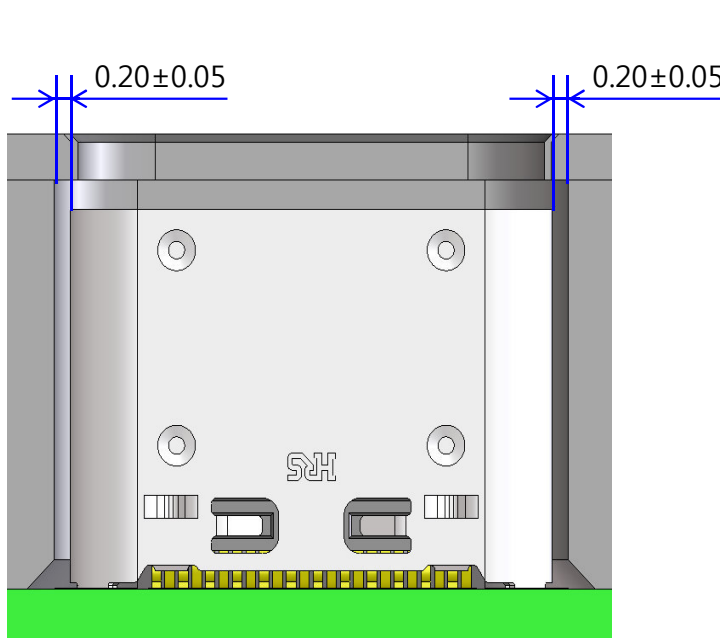
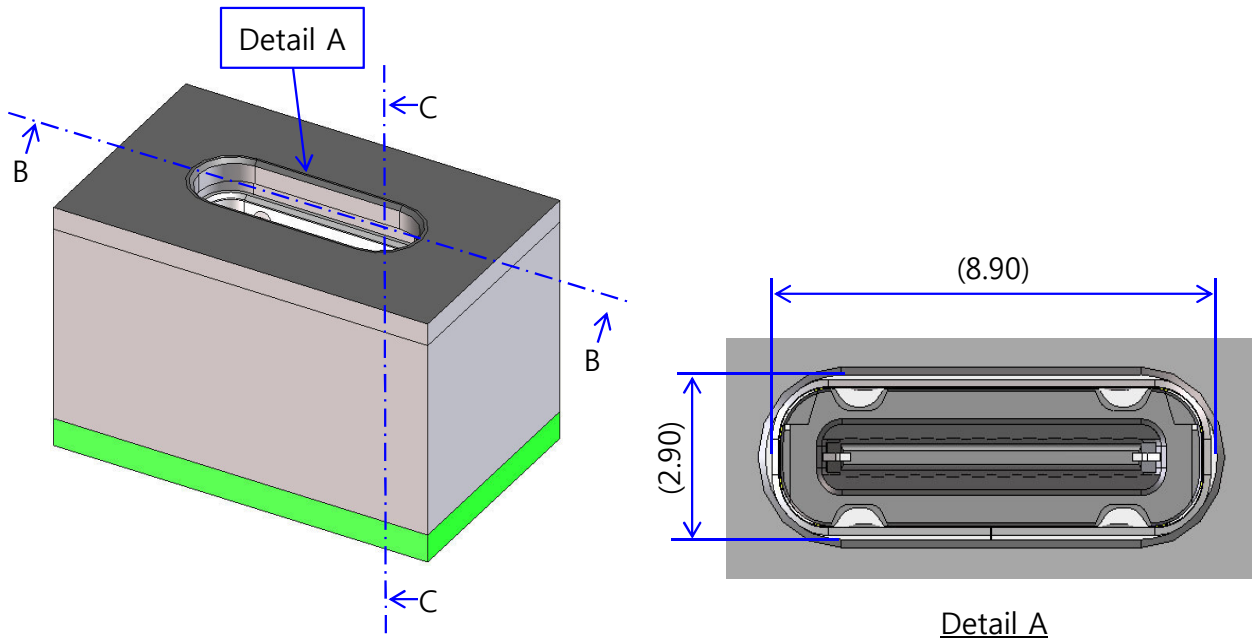
- Metal mask thickness: 0.10mm
  - Open rate: 100%
- $$\text{Open rate(\%)} = \frac{\text{Opening size of mask}}{\text{Land size of PCB}}$$

#### 4.5 Solder Paste

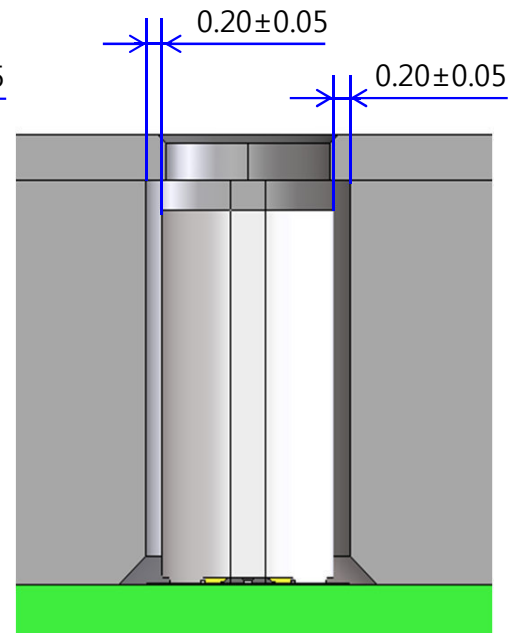
Lead-free solder paste

## 5. Notice for the Device Design

### 5.1 Recommended Device Designing



Section B-B



Section C-C

## 6. Notice for Connector Handling

### 6.1 Mating Plug

Please use USB Type-C Plug only

