Designing and Handling Guidline for CX70M1-24P(000)

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1. Revision History

Revision History	Date	Handled by	Remarks
1.0	June. 10, 2022	YJ.KIM	Draft version
2.0	February. 09, 2023	YJ.KIM	Revised

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 Cable and Connector Specification
  Revision 2.2 October 2022

3. Product Information

3.1 Product Feature

* USB4 Gen.2 x 2 (20Gbps) transmission speed
* 6A current rating for quick charging
* Reversible plug orientation ensures easy insertion
* Hybrid mounting design provides easy inspection and rework
* Compliant to USB specification
  - USB Type-C compliant interface connector

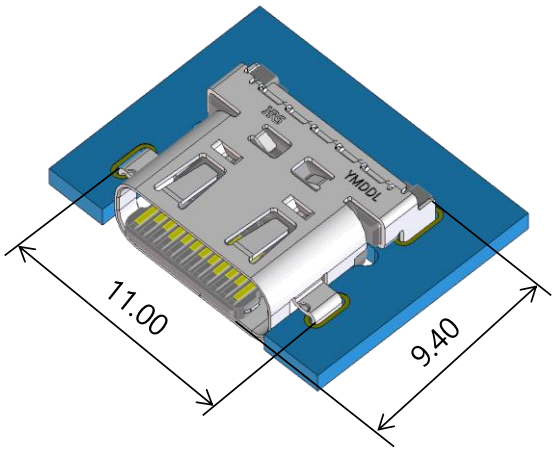
3.2 Specification

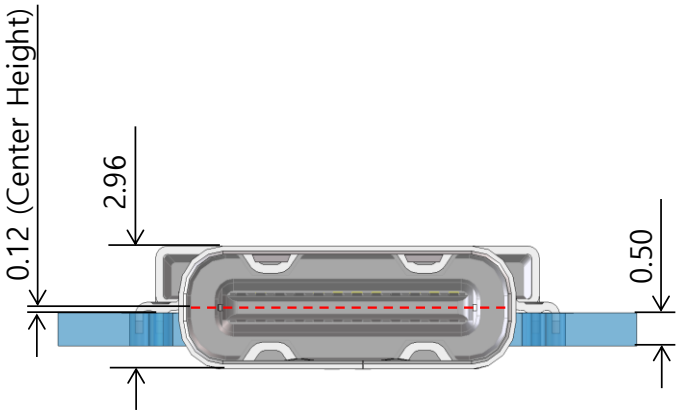
No. of Contacts	24
P.C.B Mounting type	Mid-mount
Soldering type	Right angle Hybrid (SMT+Dip)
Current rating	1.5A max. for each power pin (i.e., A1, A4, A9, A12, B1, B4, B9, B12) 1.25A for Vconn pin (i.e., B5) 0.25A max. for the others.
Voltage rating	48V AC/DC
Operating Temperature	-40℃ ~ +105℃ (Including Temp.rise), 95% RH MAX
Storage Condition	-10℃ ~ +60℃ (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.

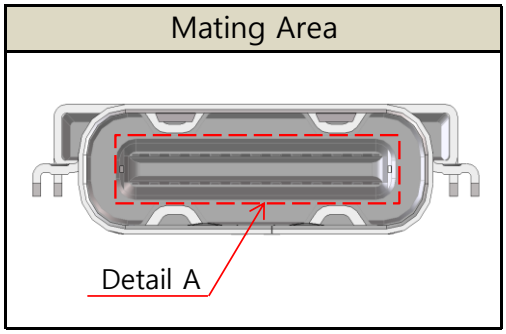
3.3 Product Size

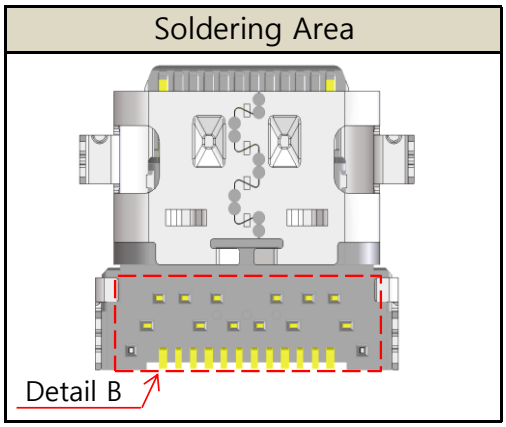




Width	11
Length	9.4
Height	2.96
Center Height	0.12

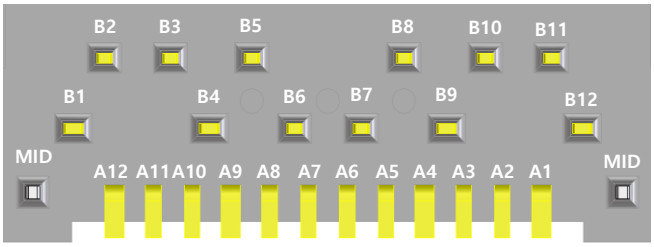
3.4 Pin Assignment





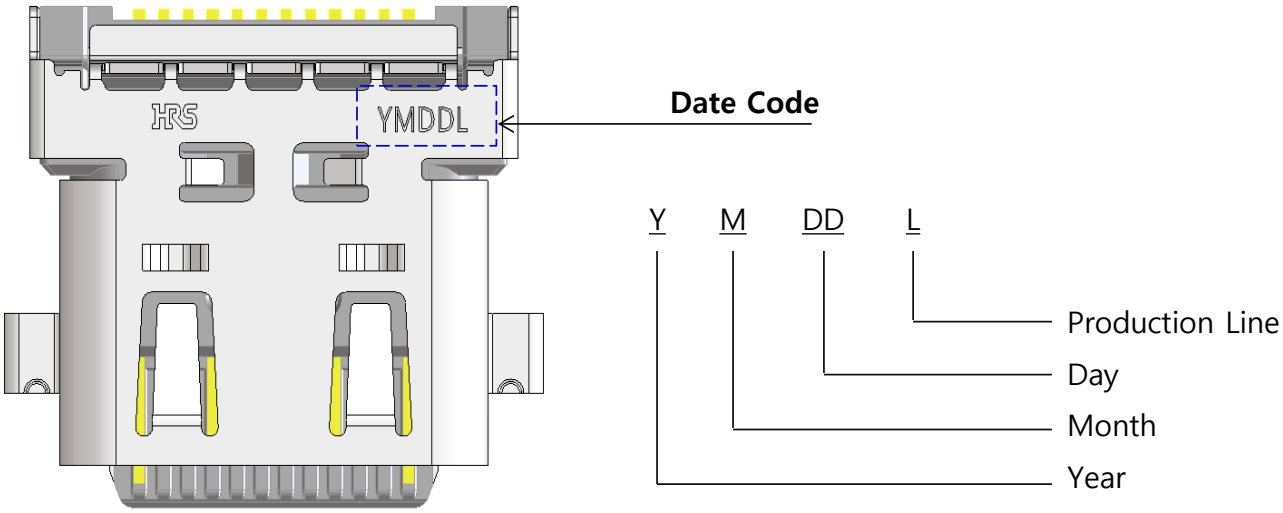
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
GND	TX1+	TX1-	Vbus	CC1	D+	D-	SBU1	Vbus	RX2-	RX2+	GND
GND	RX1+	RX1-	Vbus	SBU2	D-	D+	CC2	Vbus	TX2-	TX2+	GND
B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1

Detail A



Detail B

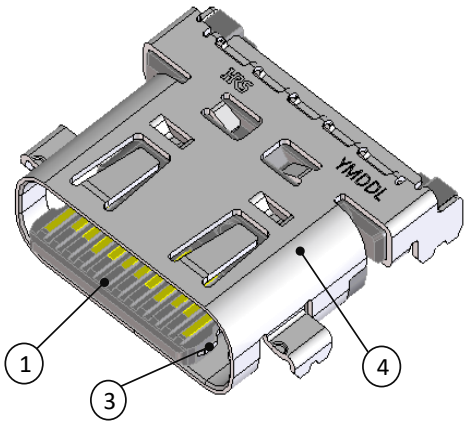
3.5 Manufacturing Date Code System

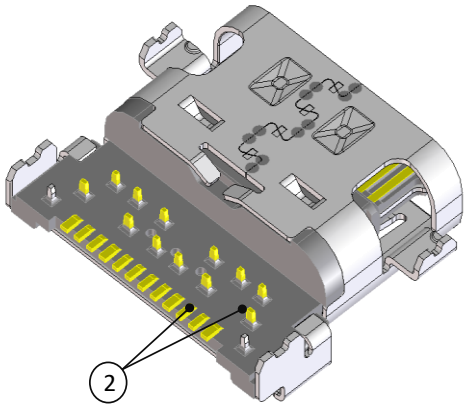


Year		Month		Day		Production Line	
Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark
2018	8	Jan.	1	1st	01	SAMPLE	S
2019	9	Feb.	2	2nd	02	Manual #1	1
2020	0	Mar.	3	3rd	03	Manual #2	2
2021	1	Apr.	4	4th	04	Manual #3	3
2022	2	May	5	5th	05	Manual #4	4
2023	3	Jun.	6	6th	06	...	...
2024	4	Jul.	7	7th	07	Auto #1	A
2025	5	Aug.	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 Ni2.0μm Lead Area : Au0.05μm Min over Ni2.0μm
3	Mid Plate	Stainless Steel	Nickel Plating
4	Metal Shell	Stainless Steel	Nickel Plating



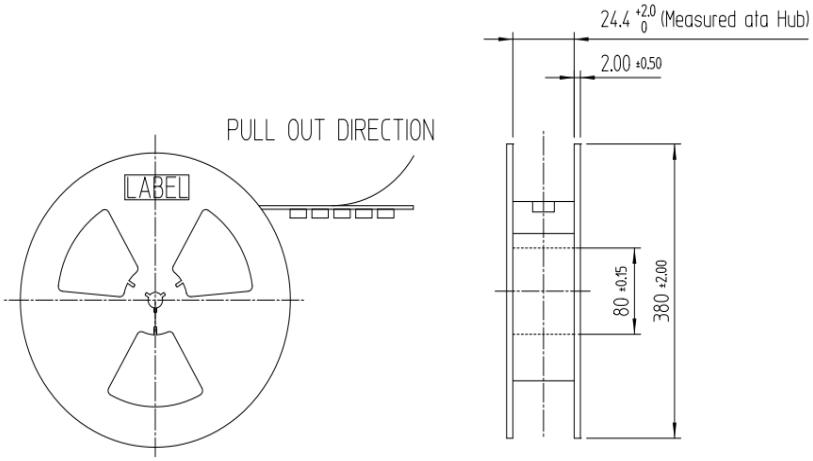


3.7 Configuration of Product Name

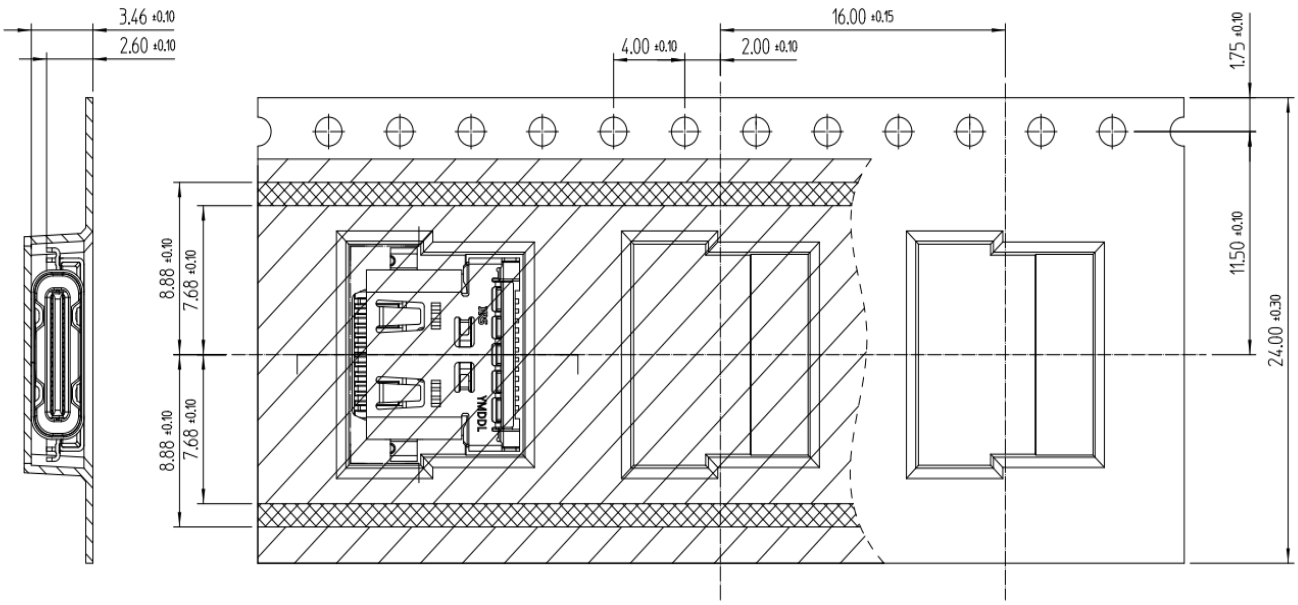
CX (1) 70 (2) M (3) 1 (4) - 24 (5) P (6)

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

3.8 Reel Dimensions



3.9 Emboss Carrier Tape Dimensions



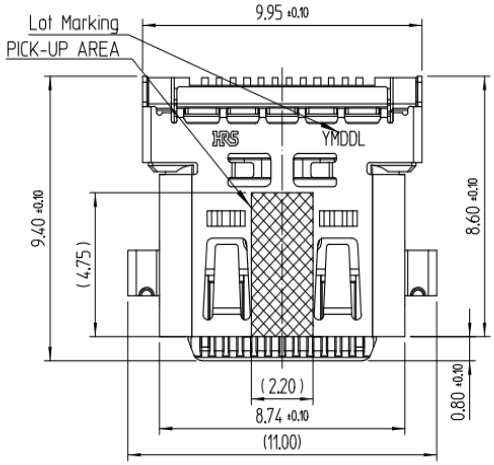
※ Emboss Tape was designed in accordance with EIA-481

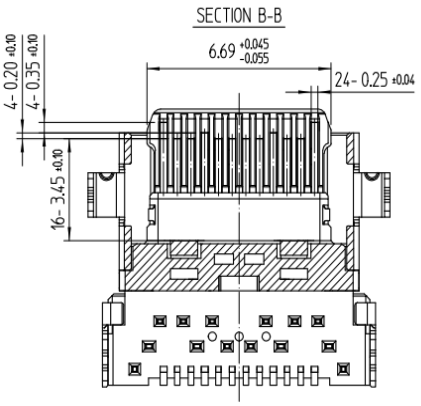
3.10 Packing Quantity Peer Reel: 1,400 PCS

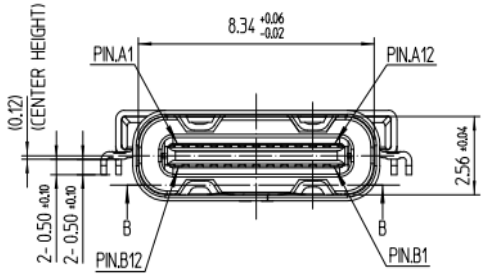
3.11 Peeling Strength:

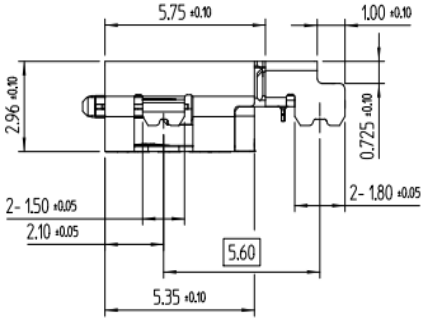
Cover tape shall have a total peel strength of from 0.1N to 1.3N

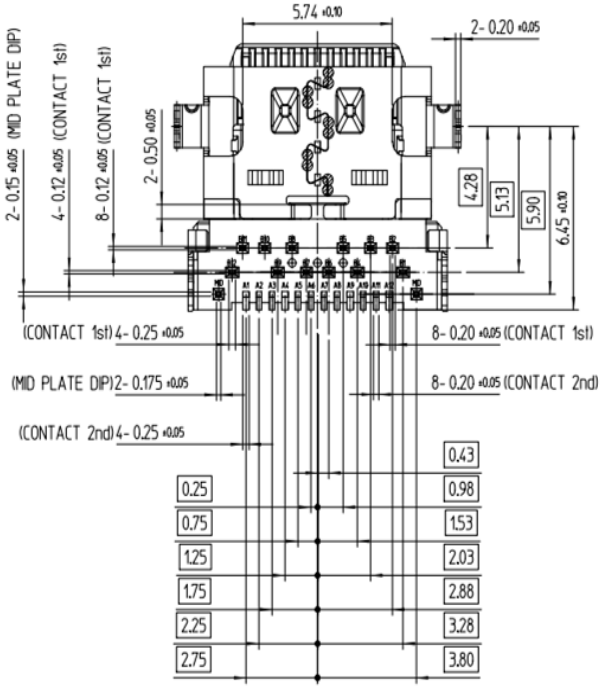
3.12 Product Dimensions

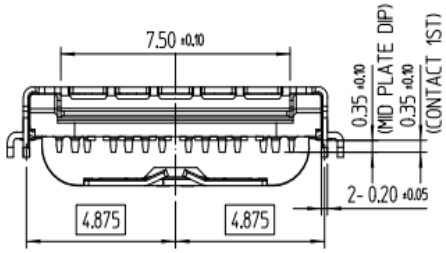






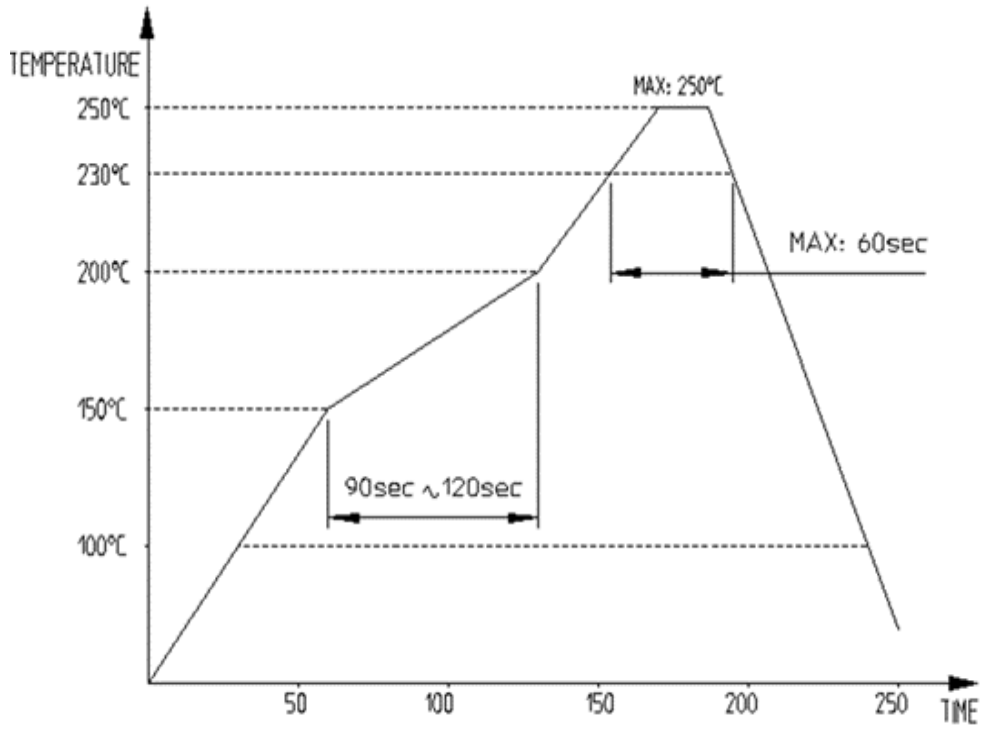






4. Notice for Soldering

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

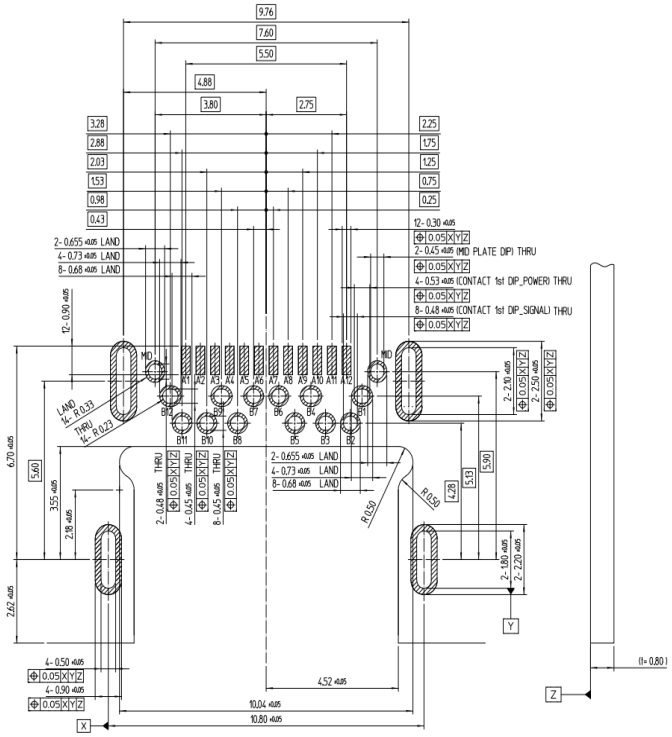
- Reflow heating method and condition
  Far-infrared heater and hot convective blowers used in combination,
  normal atmosphere, or nitrogen atmosphere.

- Top surface of the contact leads may not covered by solder depending on reflow condition

4.2 PCB Designing

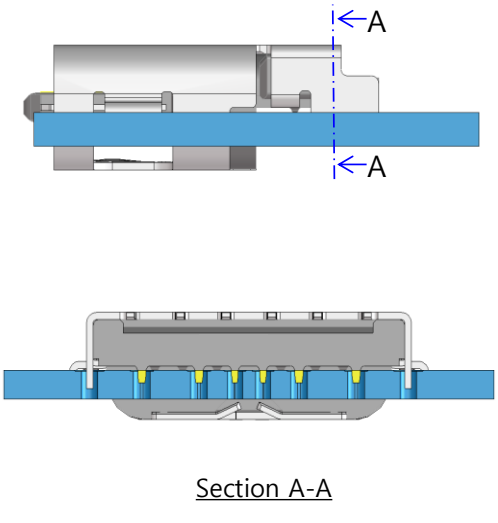
RECOMMENDED PCB LAYOUT (TOP-VIEW)

(REFERENCE ONLY)

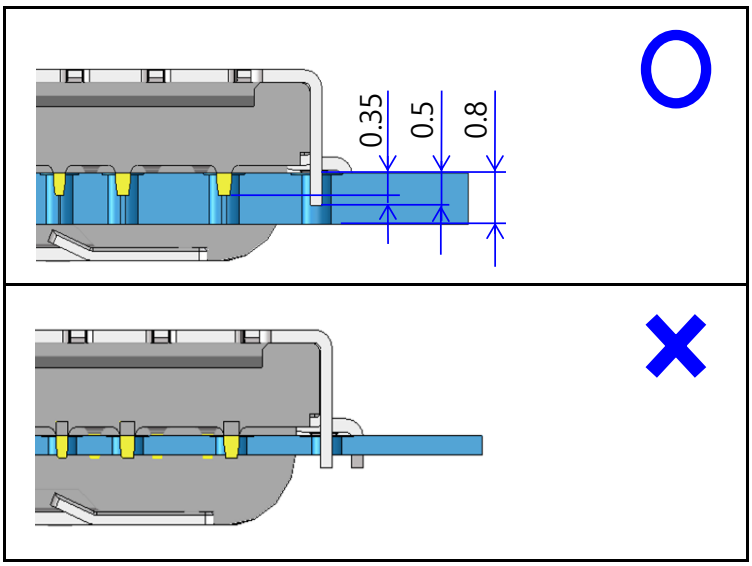


4.3 PCB Thickness

Recommended PCB thickness is 0.8mm or over considering 0.50mm PIP leg length



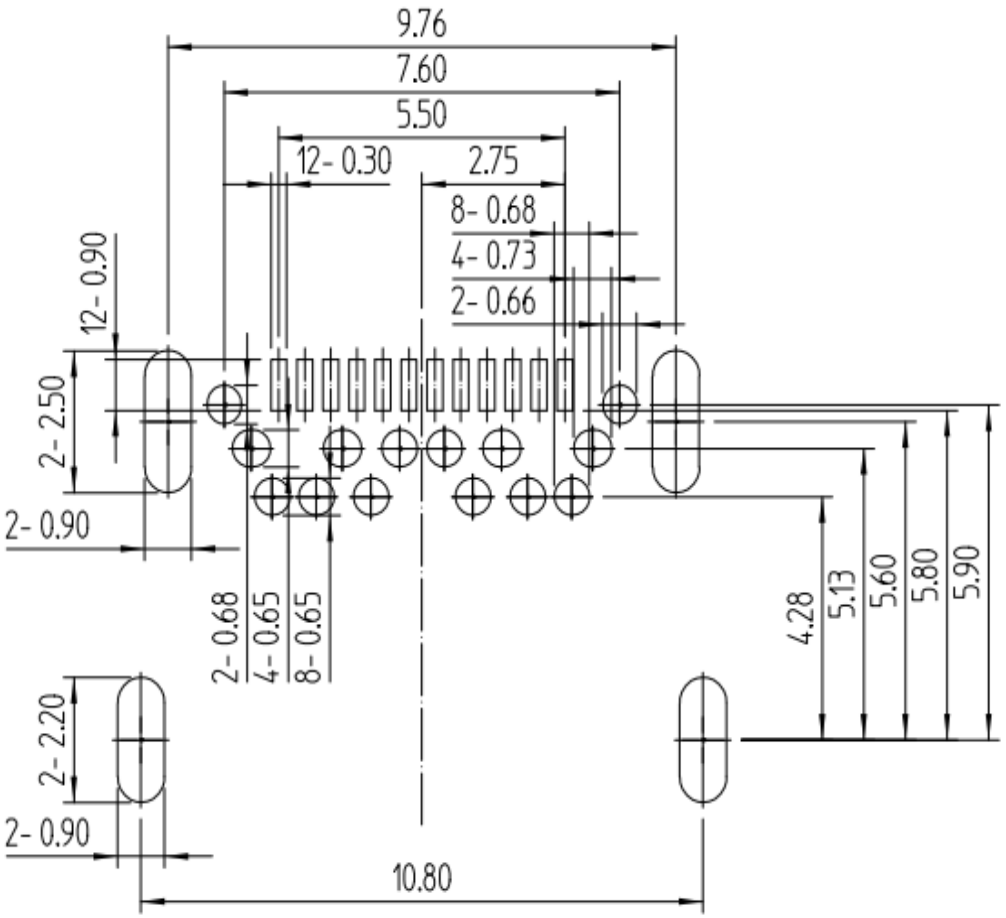
Section A-A



4.4 Metal Mask Designing

RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)

(REFERENCE ONLY)



- Metal mask thickness: 0.10mm
- Open rate: 100%

$$\text{Open rate}(\%) = \frac{\text{Opening size of mask}}{\text{Land size of PCB}}$$

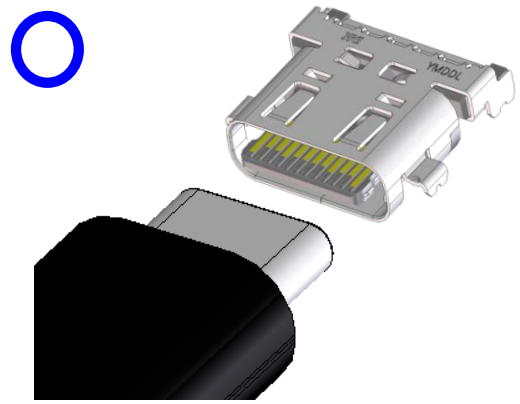
4.5 Solder Paste

Lead-free solder paste

5 Notice for Connector Handling

5.1 Mating Plug

Please use USB Type-C Plug only

With USB Type-C Plug	With the other Plugs
	
Examples of plugs (Prohibited)