USER GUIDE
for CX90BW-16P*

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1. Revision History

Revision History	Date	Handled by	Remarks
0.1	Sept., 06, 2021	Y.B.PARK	Draft version
0.2	June, 02, 2022	M.S.JEONG	RE-2-1937
1.0	Sept., 30, 2022	Y.B.PARK	RE-2-1992
2.0	Oct., 11, 2022	Y.B.PARK	RE-2-2000
2.1	Oct., 31, 2023	Y.G.KIM	RE-2-2395
2.2	Nov., 08, 2023	Y.G.KIM	RE-2-2453
2.3	Jan., 06, 2024	Y.G.KIM	RE-2-2494
2.4	Jul., 24, 2024	S.W.OH	RE-2-2586
2.5	Feb., 10, 2025	Y.G.KIM	RE-2-2695

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 2.1 May 2021

3. Product Information

3.1 Product Feature

1) Water/Dust-resistant type USB Type-C Connector
   * Meet the requirements of the IP54 or IP68 standard
2) 5A current rating for quick charging.
3) USB 2.0 High-speed(480Mbps) transmission.
4) Improved peeling strength using 2 THR* mounting posts.
   * Through-Hole-Reflow
5) Reversible plug orientation ensures easy insertion.

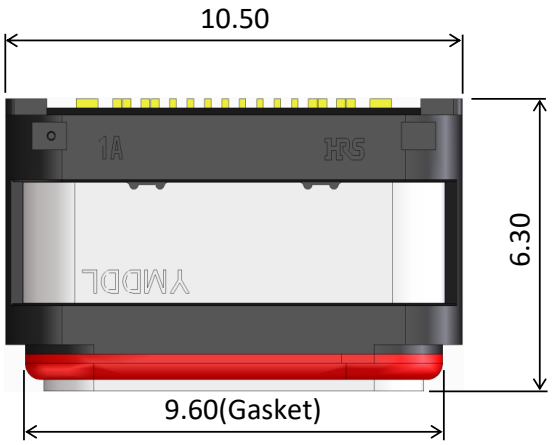
3.2 Specification

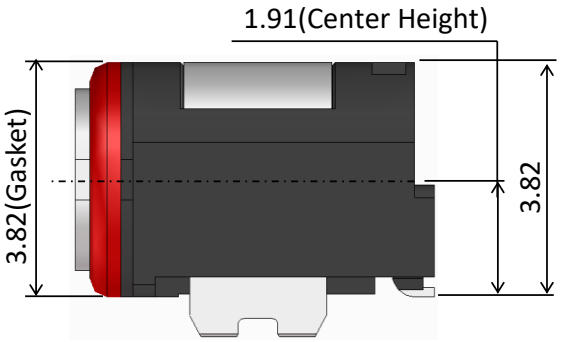
No. of Contacts	16
P.C.B Mounting type	Top-Mount
Soldering type	Rignt angle SMT
Current rating	1.25A Max. for each power pin(A1, A4, A9, A12, B1, B4, B9, B12), 1.25A Max. VCON(i.e. B5) 0.25A for the other pins
Voltage rating	48V AC/DC
Operating Temperature	-40℃ ~ +105℃ (Including Temp.rise), 95% RH MAX
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 (Initial), 6~20N (After test)

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.

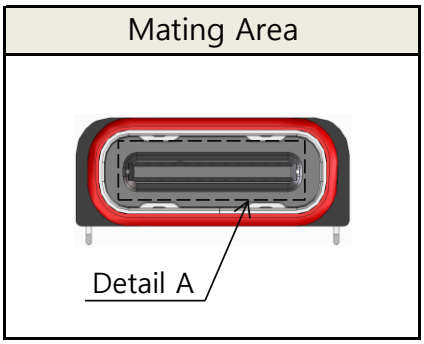
3.3 Product Size





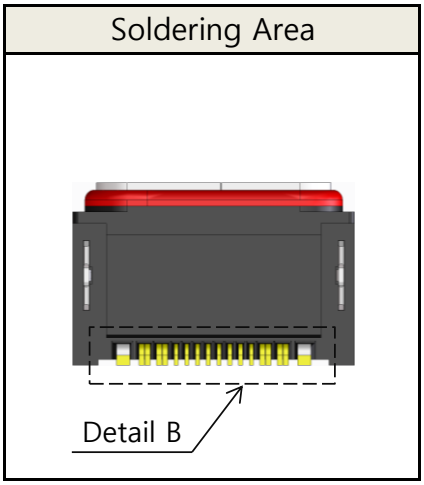
Width	10.50
Length	6.30
Height	3.82
Center Height	1.910

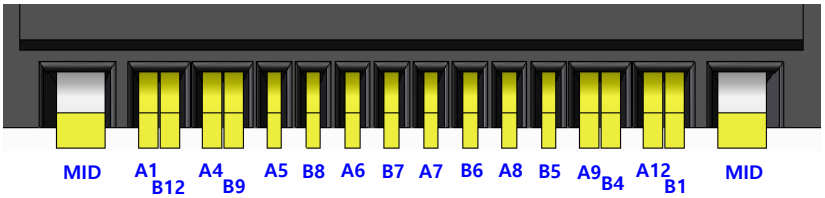
3.4 Pin Assignment



A1			A4	A5	A6	A7	A8	A9			A12
GND			Vbus	CC1	D+	D-	SBU1	Vbus			GND
GND			Vbus	SBU2	D-	D+	CC2	Vbus			GND
B12			B9	B8	B7	B6	B5	B4			B1

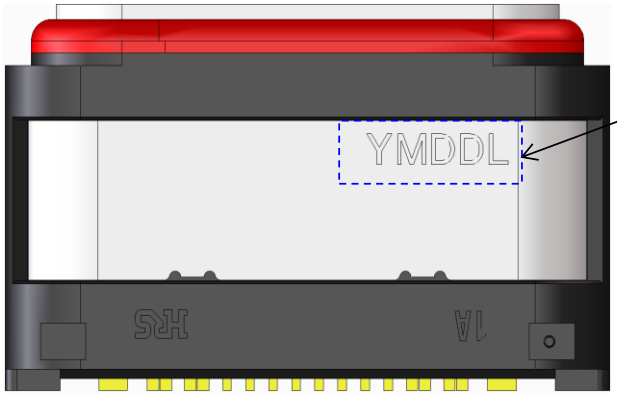
Detail A

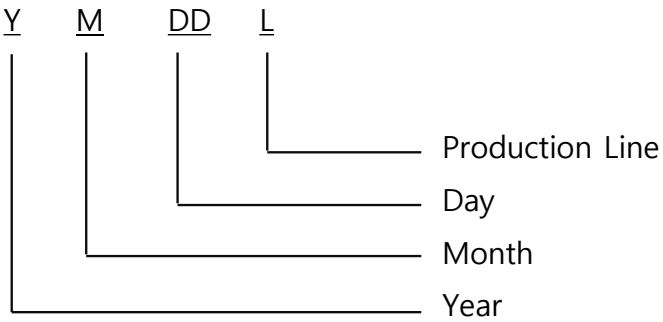




Detail B

3.5 Manufacturing Date Code System

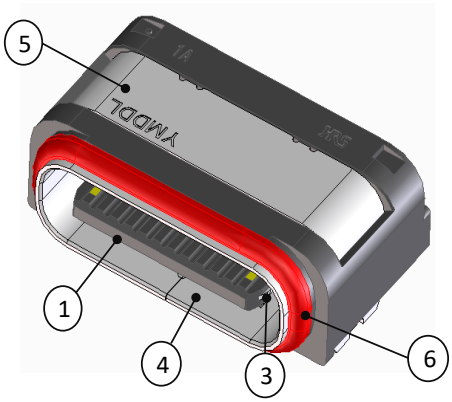


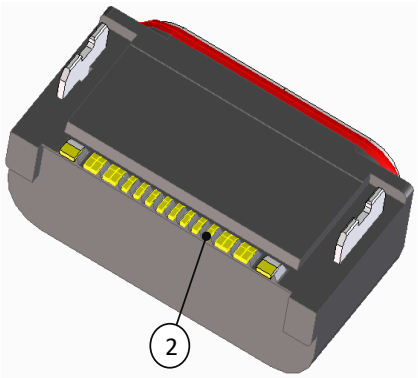


Year		Month		Day		Production Line	
Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark
2020	0	Jan.	1	1st	01	SAMPLE	S
2021	1	Feb.	2	2nd	02	Manual #1	1
2022	2	Mar.	3	3rd	03	Manual #2	2
2023	3	Apr.	4	4th	04	Manual #3	3
2024	4	May	5	5th	05	Manual #4	4
2025	5	Jun.	6	6th	06	...	...
2026	6	Jul.	7	7th	07	Auto #1	A
2027	7	Aug.	8	8th	08	Auto #2	B
2028	8	Sep.	9	9th	09	Auto #3	C
2029	9	Oct.	A	10th	10	Auto #4	D
2030	0	Nov.	B	11th	11	Auto #5	E
...	...	Dec.	C	...	...	...	...

3.6 Part List

No	Part	Materials	Finish / Color
1	INSERT CASE	Thermoplastic	UL94V-0, Black Color
2	CONTACT	Copper Alloy	Contact, Lead Area : Gold over Nickel plated Non-Contact Area : Nickel plated
3	MID PLATE	Stainless Steel	Lead Area : Gold over Nickel plated Other Area : Nickel plated
4	SHELL	Stainless Steel	Cleansing
5	BRACKET	Stainless Steel	Nickel plated
6	GASKET	Urethane acrylate	Red color



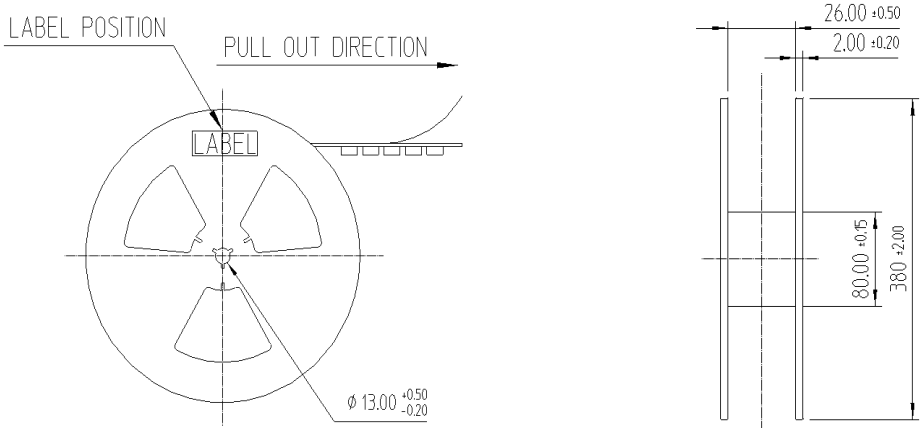


3.7 Configuration of Product Name

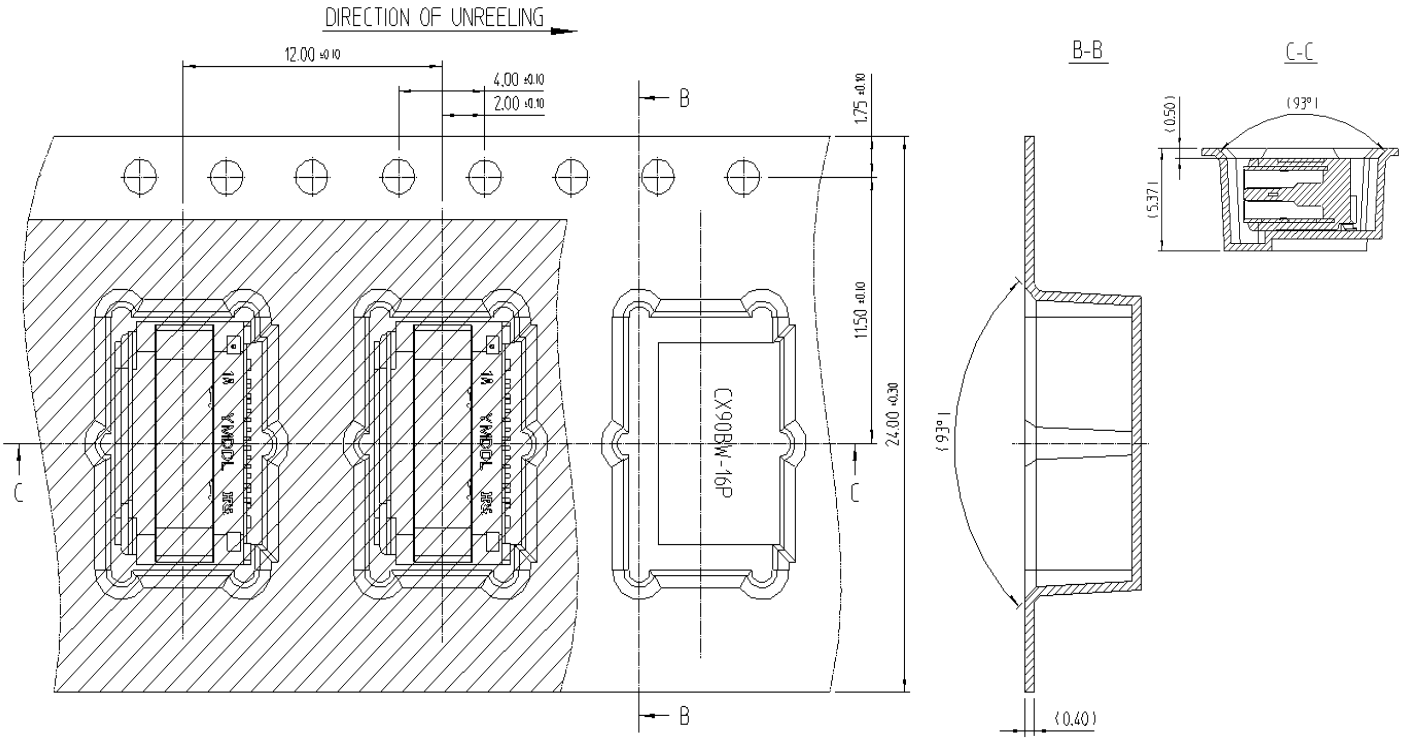
CX (1) 90 (2) B (3) W (4) - 16 (5) P (6) * (7)

①	Series Name	CX	CX Series
②	Soldering Type	90	Rignt angle SMT
③	Mounting Type	B	Top-mount
④	Special specifications	W	Water/Dust-resistant
⑤	Contact No	16	16 position
⑥	Contact Type	P	Male contacts
⑦	Serial No. 2	Blank	IP54
		1	IP68

3.8 Reel Dimensions



3.9 Emboss Carrier Tape Dimensions



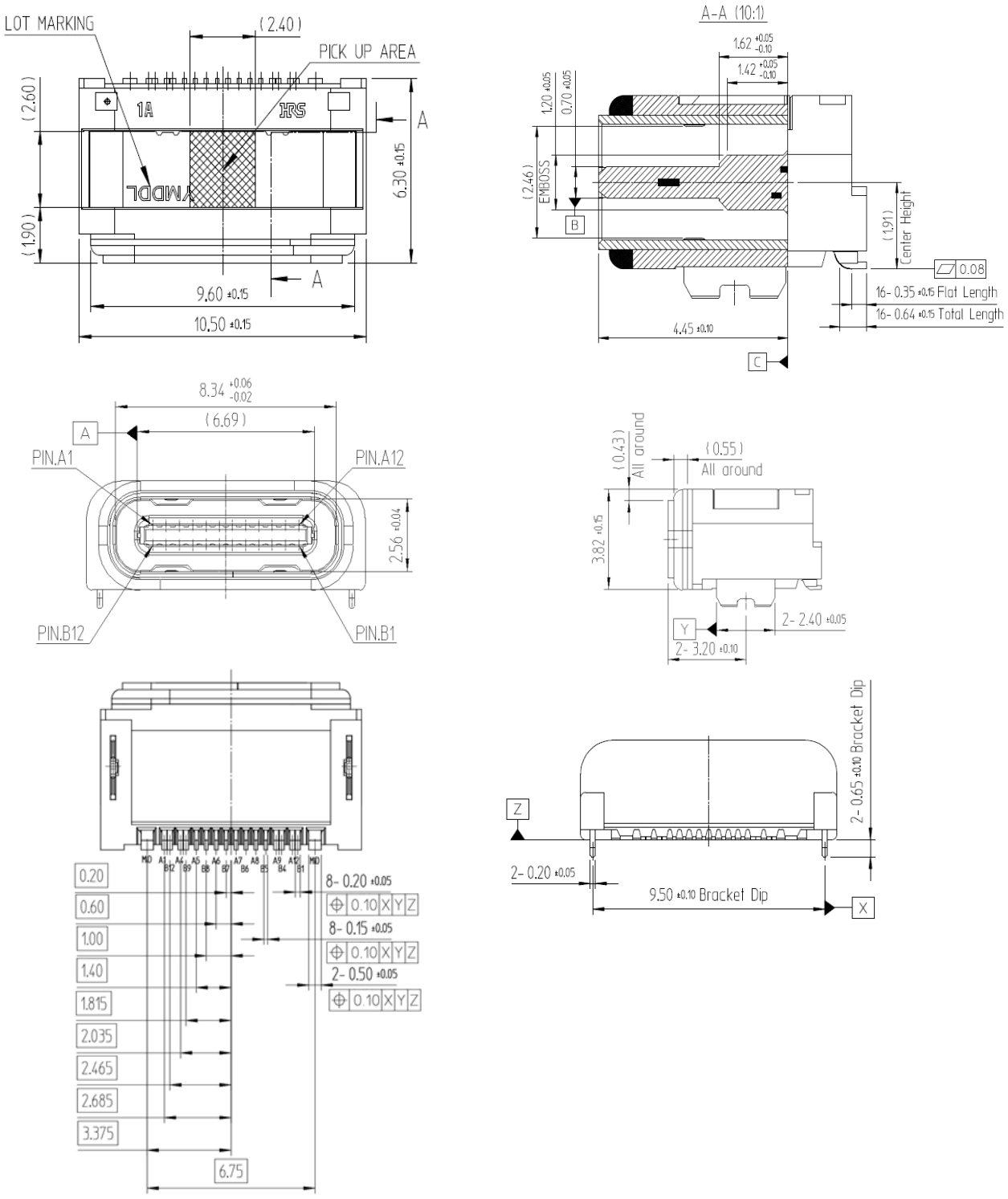
※ Emboss Tape was designed in accordance with EIA-481

3.10 Packing Quantity Peer Reel: 1,400 PCS

3.11 Peeling Strength:

Cover tape shall have a total peel strength of from 0.3N to 1.0N

3.12 Product Dimensions

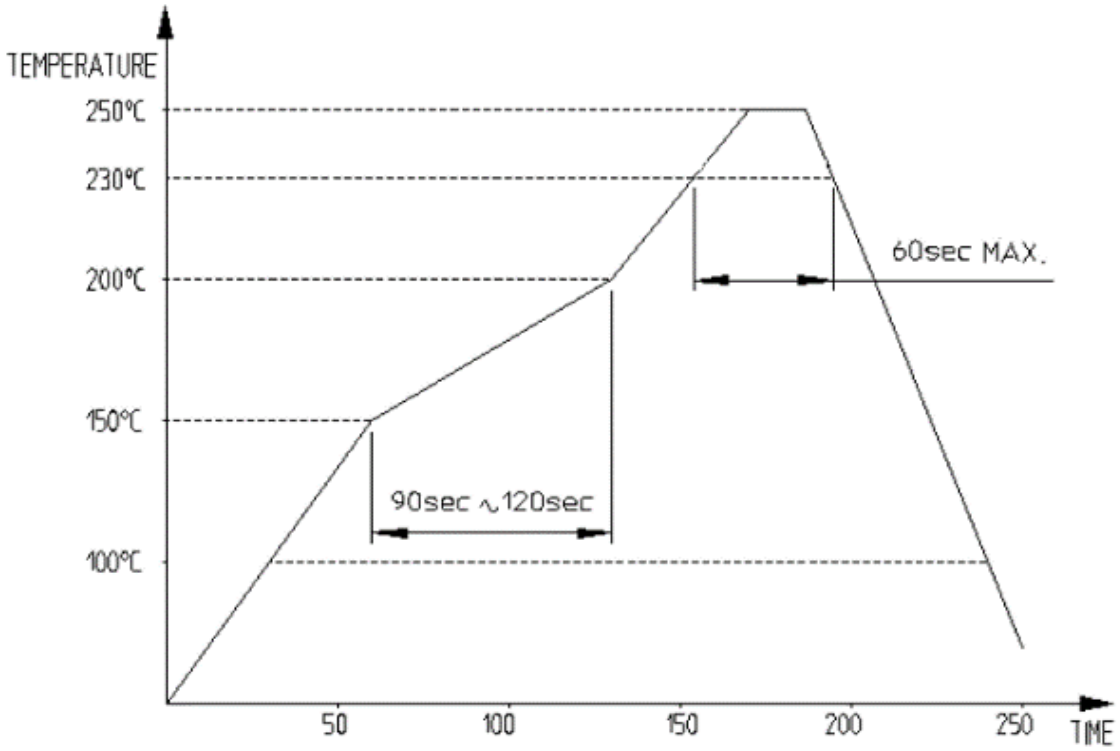


Note

* Specifications herein are subjected to change without notice. Please see the latest drawing to confirm the detail.
* General tolerance : ±0.2

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

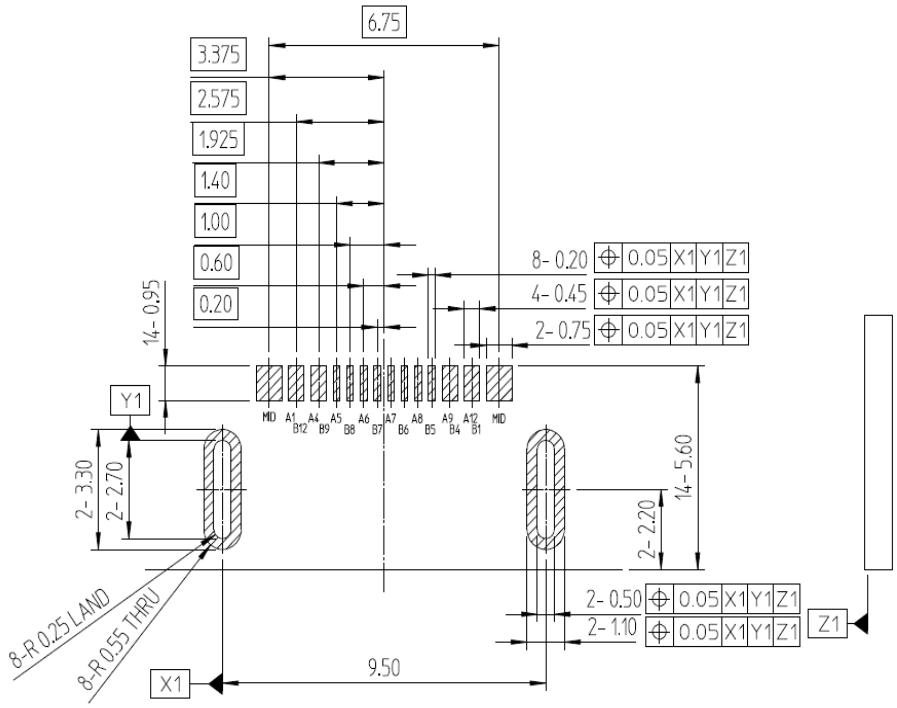
• Reflow heating method and condition
Far-infrared heater and hot convective blowers used in combination,
normal atmosphere, or nitrogen atmosphere..

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

4.2 PCB Designing

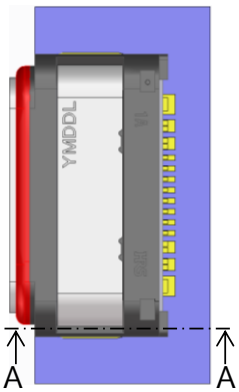
RECOMMENDED PCB LAYOUT (TOP-VIEW)

(REFERENCE ONLY)

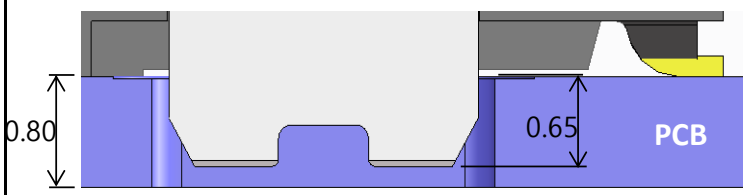


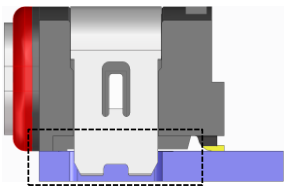
4.3 PCB Thickness

Recommended PCB thickness is 0.80+/-0.05mm considering 0.65+/-0.1mm of PIP leg length.



SECTION A-A



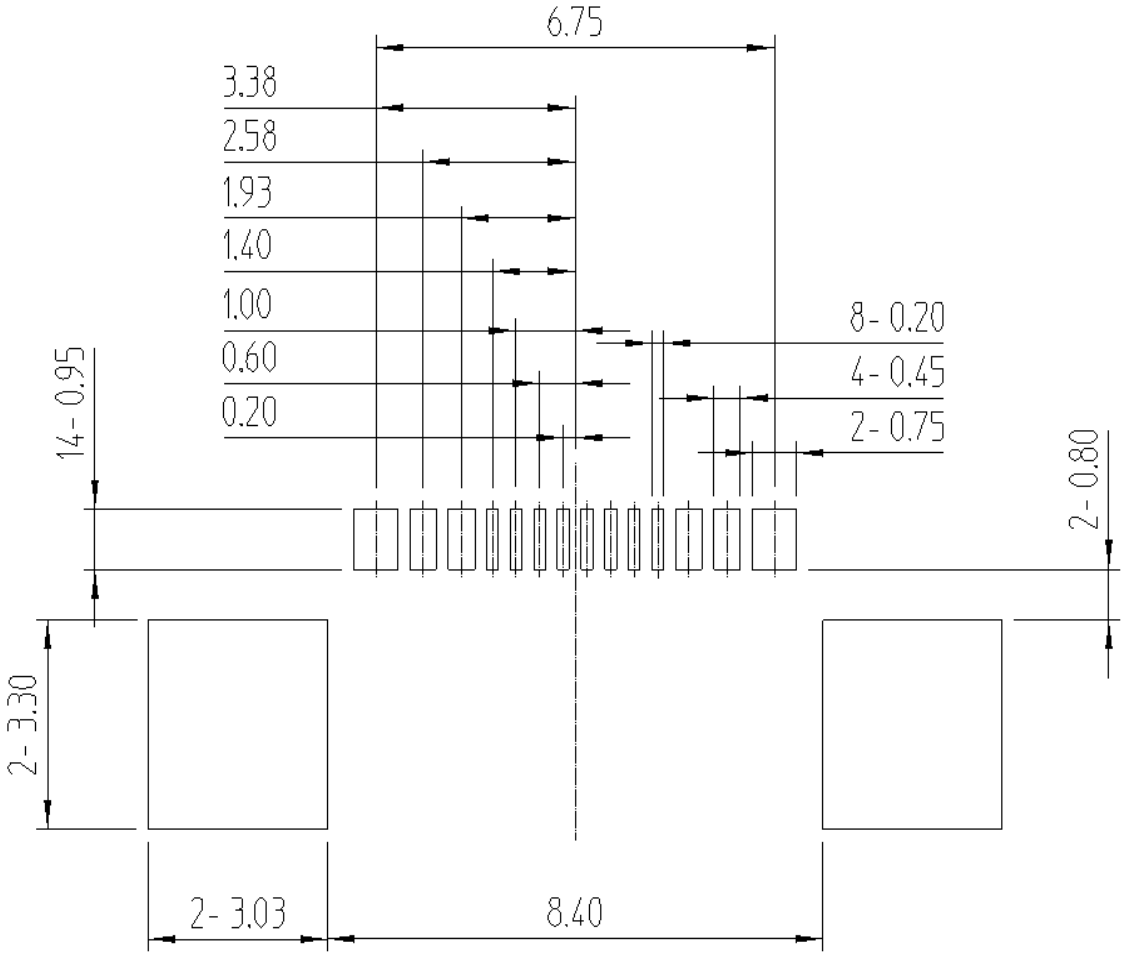


The PIP leg can be protruded to the bottom side of PCB in case the PCB thickness is less than the PIP leg length.

Section A-A

4.4 Metal Mask Designing

RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)



Note

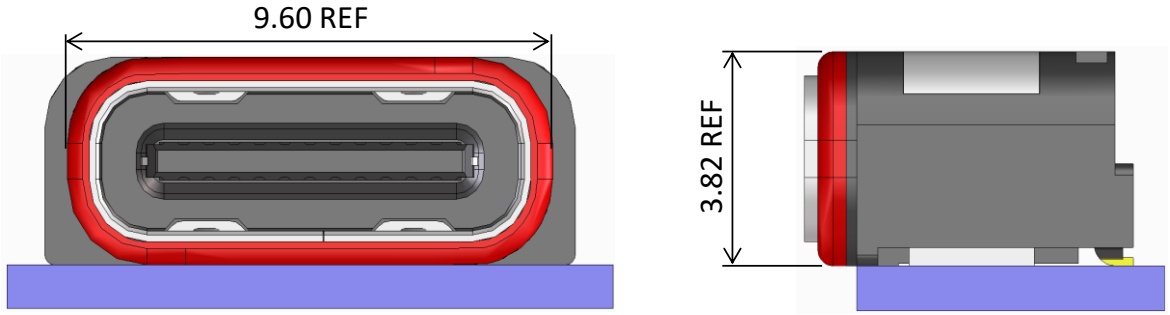
* Recommended metal mask thickness is 0.1mm. Above metal mask dimensions are suggested based on 0.8mm of PCB thickness. Please adjust the metal mask opening size in case of thicker PCB than recommended because the lack of solder amount at the PIP holes can be happened.

4.5 Solder Paste

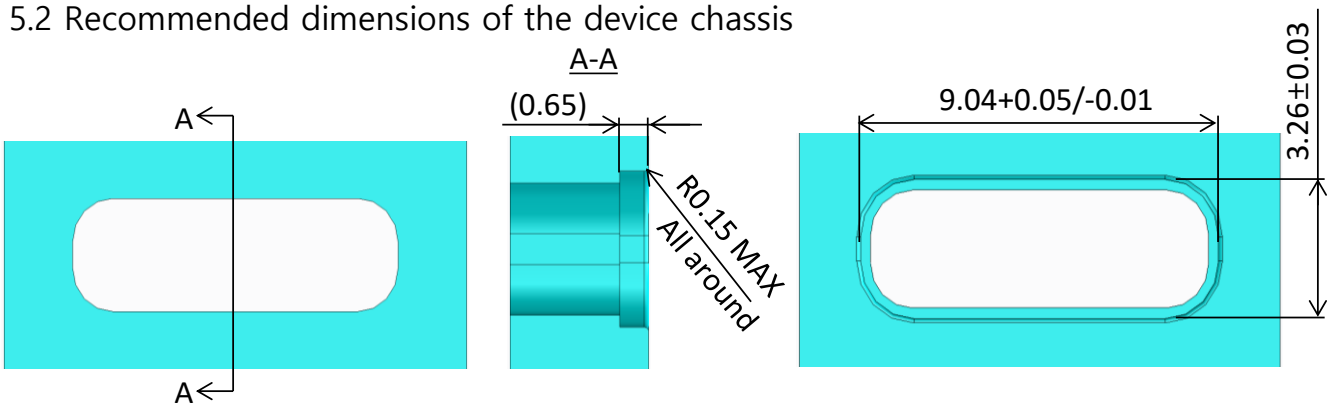
Lead-free solder paste

5. Set Chassis Design Guide

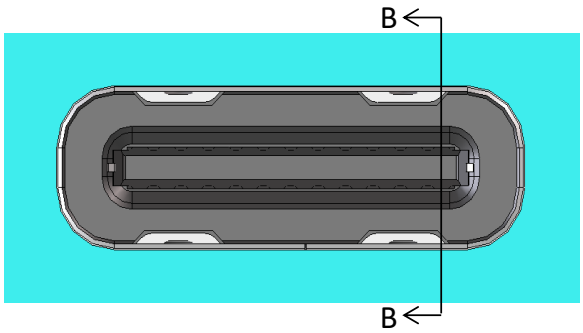
5.1 Connector with a Gasket

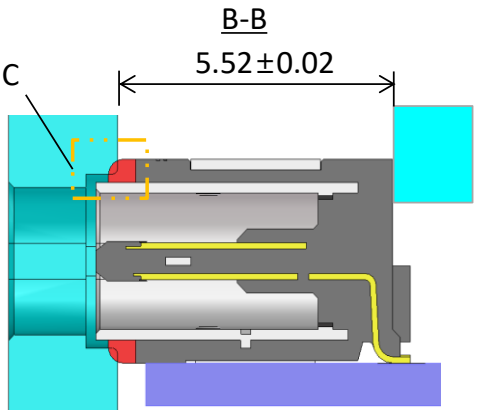


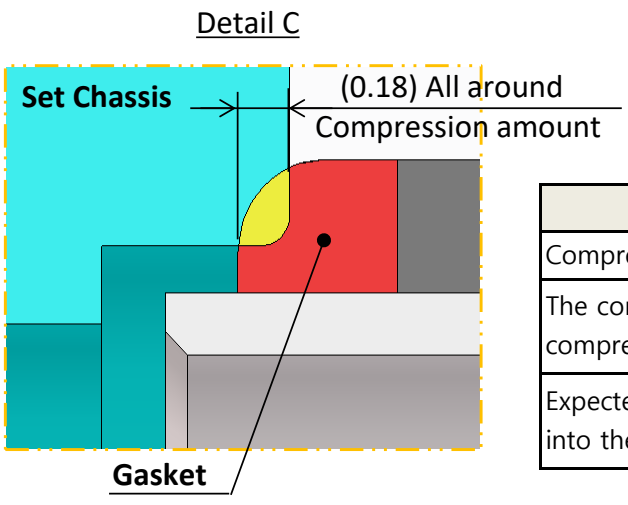
5.2 Recommended dimensions of the device chassis



5.3 Recommended compression condition of a Gasket





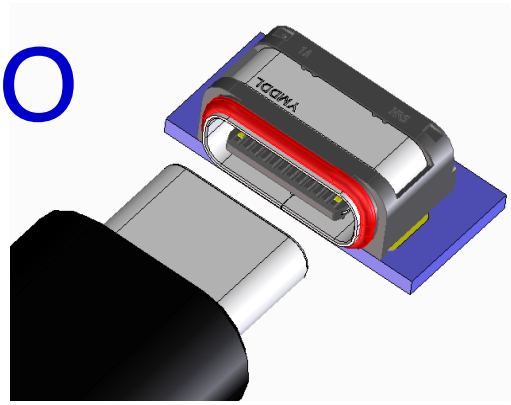


Items	Option#1	Option#2
Compressed amount of the gasket (mm)	(0.18)	(0.33)
The control dimension to determine the compressed amount of the gasket (mm)	5.52±0.02	5.39±0.02
Expected force to insert the connector into the device (N)	(10)	(30)

6. Notice for Connector Handling

6.1 Mating Plug

Please use USB Type-C Plug only

With USB Type-C Plug	With the other Plugs
O 	X