

Designing and Handling Guidline for CX90MWD2-24P(***)

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1. Revision History

Revision History	Date	Handled by	Remarks
1.0	Jan. 31, 2018	SH.LIM	Draft version
2.0	Apr. 04, 2018	MY.HAN	Release
3.0	May. 11, 2018	MY.HAN	Revision
4.0	May. 09, 2019	MY.HAN	Revision
5.0	Sept. 19, 2019	MY.HAN	Revision

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

- * Waterproof type USB Type-C Connector
 - Meet the requirements of the IPX8 standard
- * Durable connector
 - Deep drawing uni-body shell design
- * Space saving by minimized length design
 - Total Length : 8.35mm
- * Enhanced fixation strength on PCB and high durability
 - Dip soldering structures at both shell and mid plate
- * Compliant to USB specification
 - USB Type-C compliant interface connector.

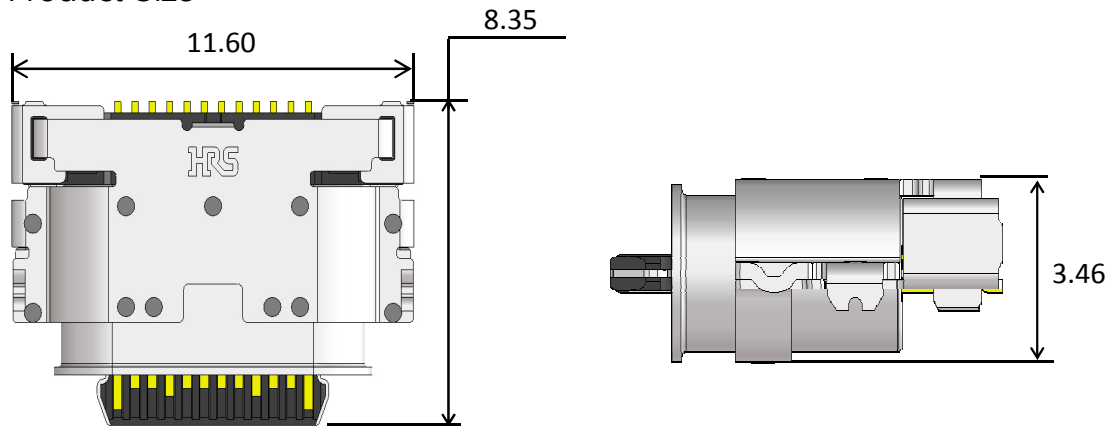
3.2 Specification

No. of Contacts	24
P.C.B Mounting type	Mid Mount
Soldering type	Two rows SMT
Current rating	DC 5A max. for Vbus & GND DC 1.25A for Vconn 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

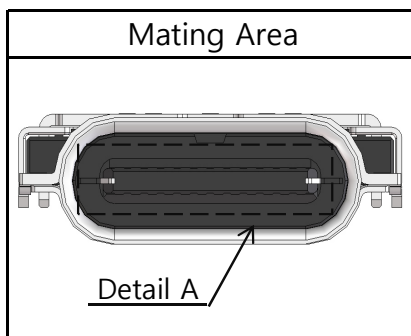
- * Storage conditions apply to original packaging only, void if opened. Warranty period is 12month max. in the storage conditions above and calculated by manufacture date

3.3 Product Size



Width	11.60
Length	8.35
Height	3.46

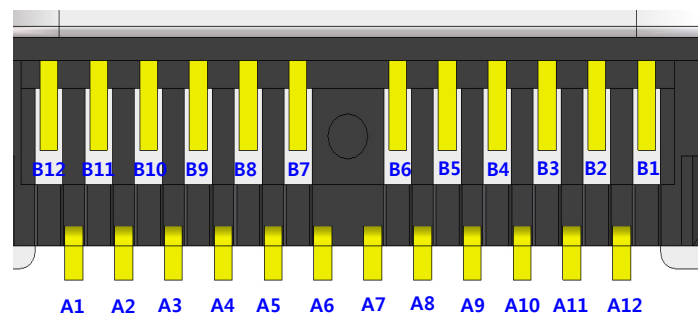
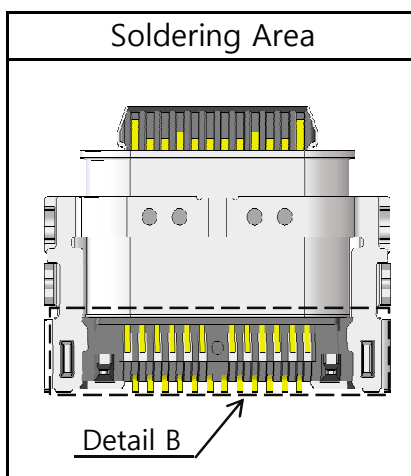
3.4 Pin Assignment



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

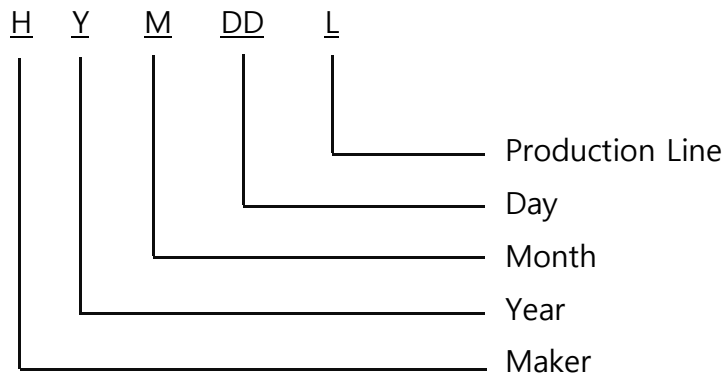
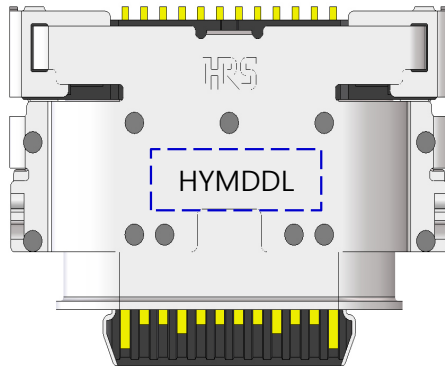


Detail A



Detail B

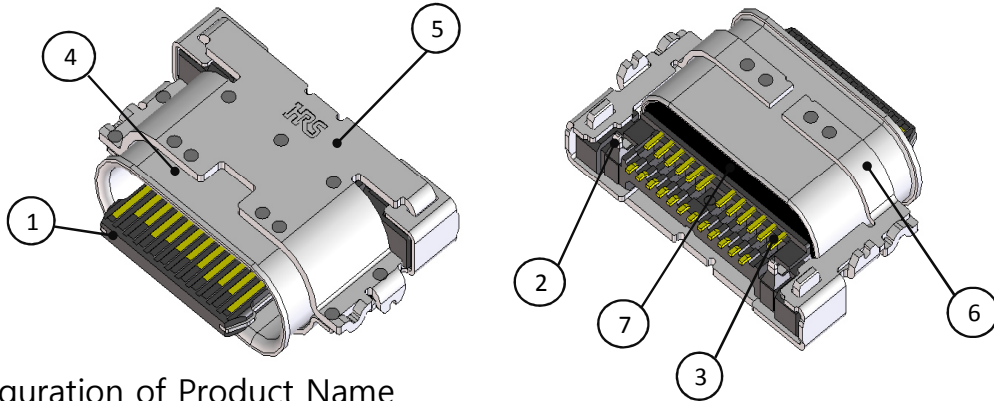
3.5 Manufacturing Date Code System



Maker		Year		Month		Day		Production Line	
Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark
Hirose Korea	H	2010	0	Jan.	1	1st	01	SAMPLE	S
		2011	1	Feb.	2	2nd	02	Manual #1	1
		2012	2	Mar.	3	3rd	03	Manual #2	2
		2013	3	Apr.	4	4th	04	Manual #3	3
		2014	4	May	5	5th	05	Manual #4	4
		2015	5	Jun.	6	6th	06	...	...
		2016	6	Jul.	7	7th	07	Auto #1	A
		2017	7	Aug.	8	8th	08	Auto #2	B
		2018	8	Sep.	9	9th	09	Auto #3	C
		2019	9	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	Mid Plate	Stainless Steel (0.15t)	Ni1-5 μ m
3	Contact	Copper Alloy (0.12t)	Contact Area: Au0.05 μ m Min over Pd-Ni0.75 μ m Min over Ni2-5 μ m Lead Area: Au0.05 μ m Min over Ni2-5 μ m
4	Inner Shell	Stainless Steel (0.2t)	Cleansing
5	Top Shell	Stainless Steel (0.3t)	Ni1-5 μ m
6	Bottom Shell	Stainless Steel (0.2t)	Ni1-5 μ m
7	Potting	Silicone	Black Color

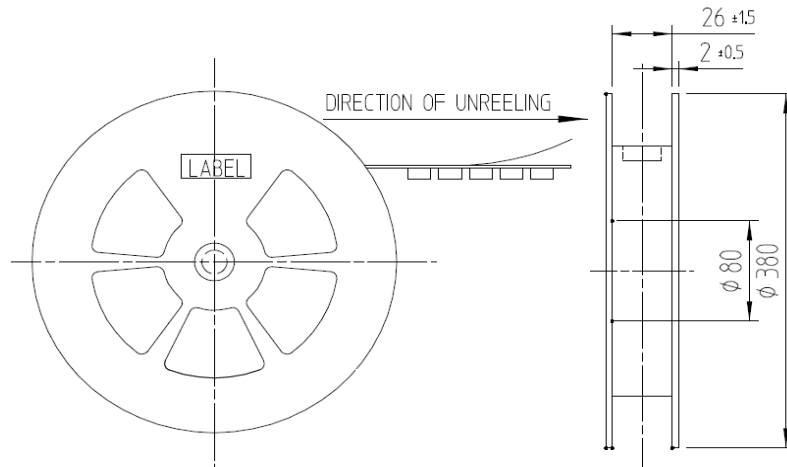


3.7 Configuration of Product Name

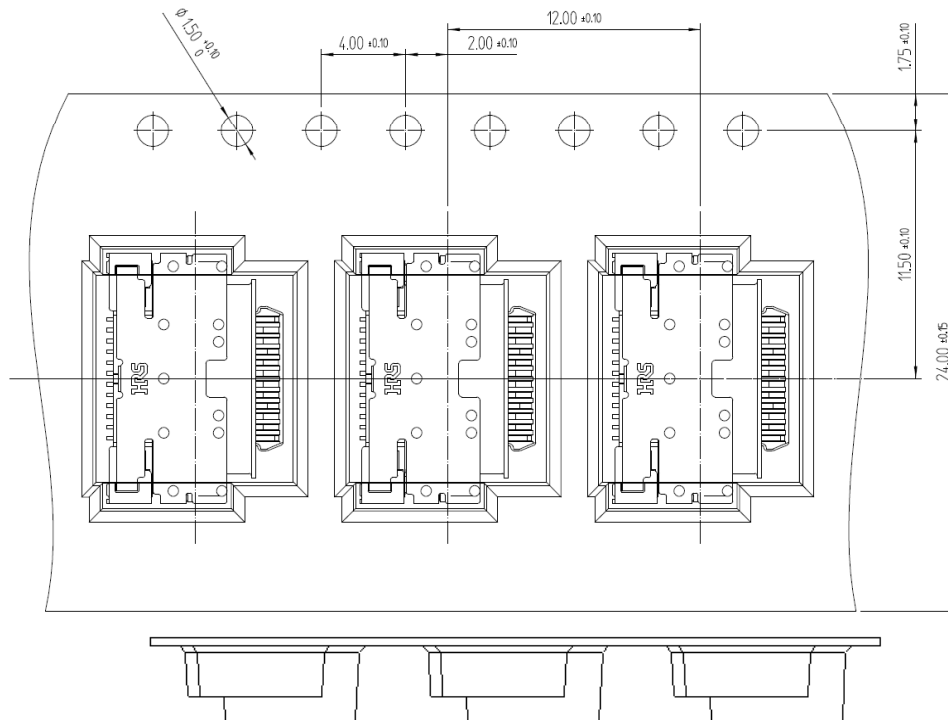
CX 90 M WD 2 - 24 P
(1) (2) (3) (4) (5) (6) (7)

(1) Series Name		CX
(2) Soldering Type	60	Paddle Card
	70	Right angle Hybird (SMT+Dip)
	90	Right angle SMT
(3) Mounting Type	B	Top-mount
	M	Mid-Mount
(4) Special specifications	W	Waterproof
	D	Deep Drawing
(5) Serial No		None or 1,2,3....
(6) Contact No		24
(7) Contact Type	P	Male contacts
	S	Female contacts

3.8 Reel Dimensions



3.9 Emboss Carrier Tape Dimensions

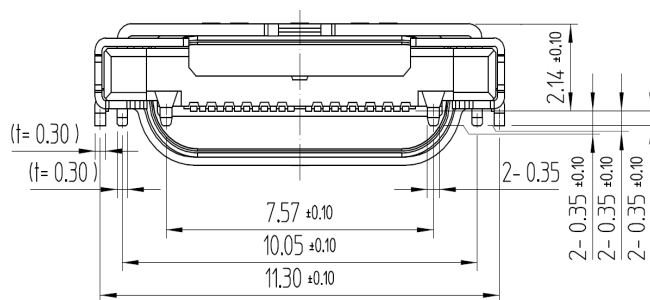


※ Emboss Tape was designed in accordance with EIA-481

3.10 Packing Quantity Per Reel: 1,500 PCS

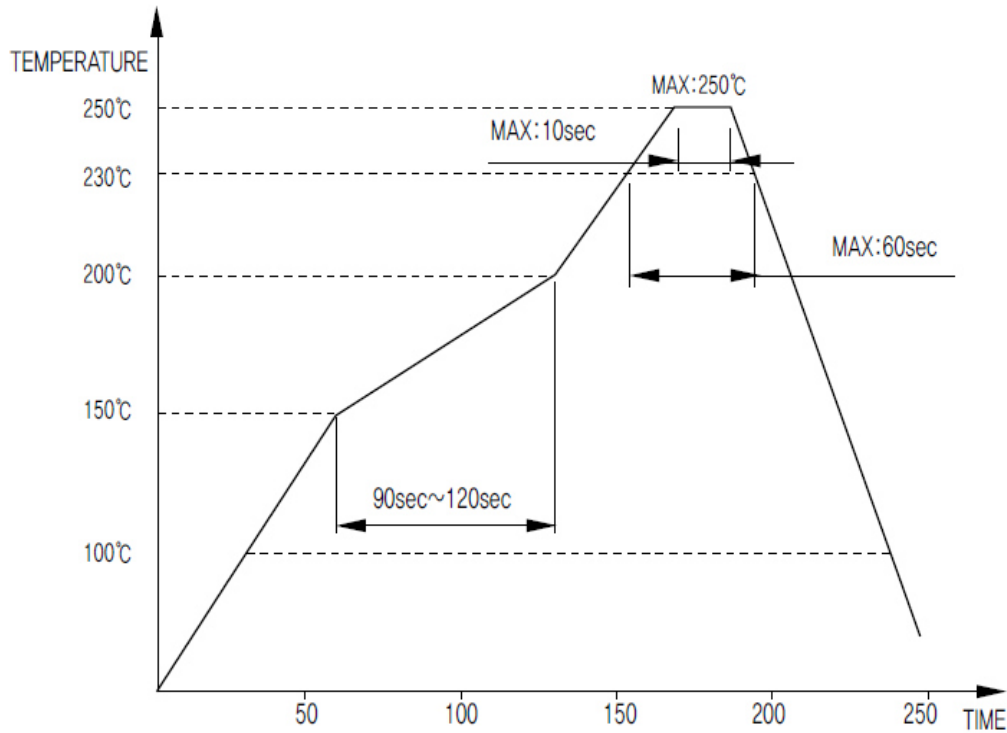
3.11 Peeling Strength:

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



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

* Temperature between 1st and 2nd reflow must be cooled down to room temperature

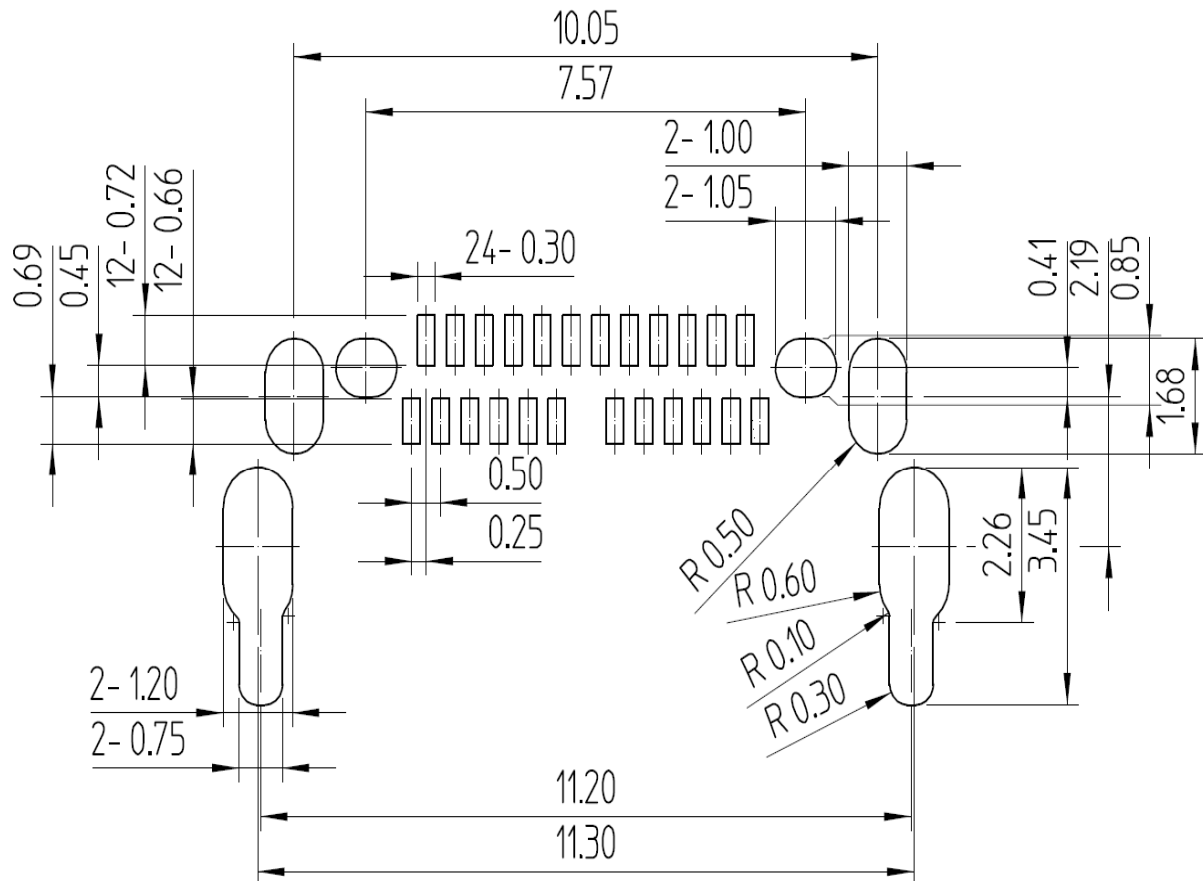
- Reflow heating method and condition

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

4.4 Metal Mask Designing

RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)



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

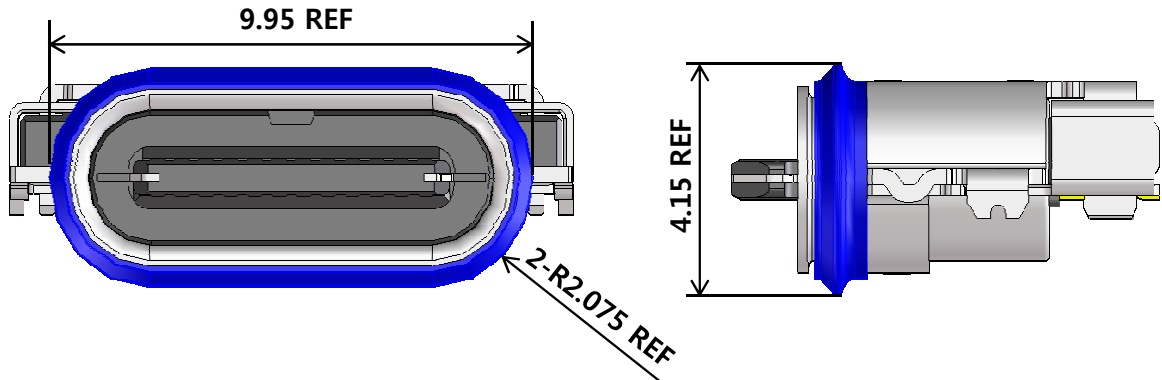
$$\text{Open rate(\%)} = \frac{\text{Opening size of mask}}{\text{Land size of PCB}}$$

4.5 Solder Paste

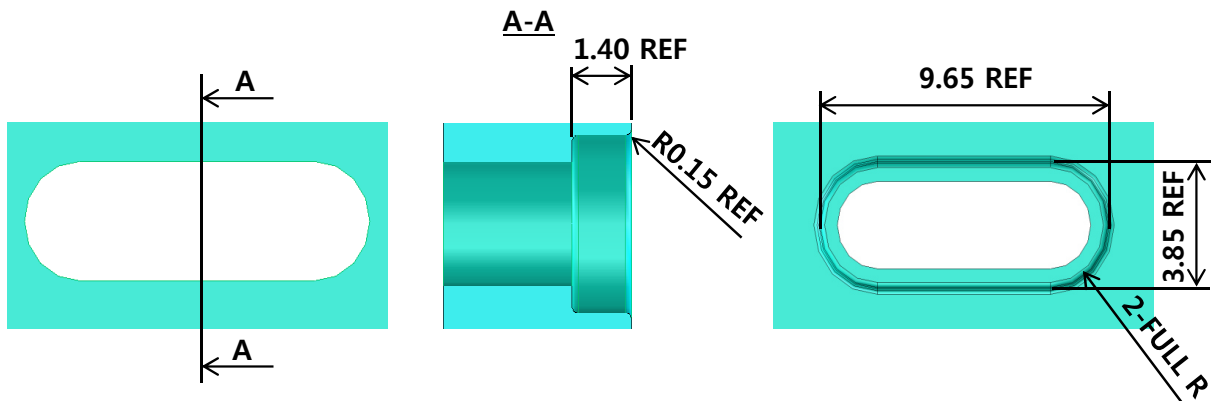
Lead-free solder paste

5. Gasket Reference dimension

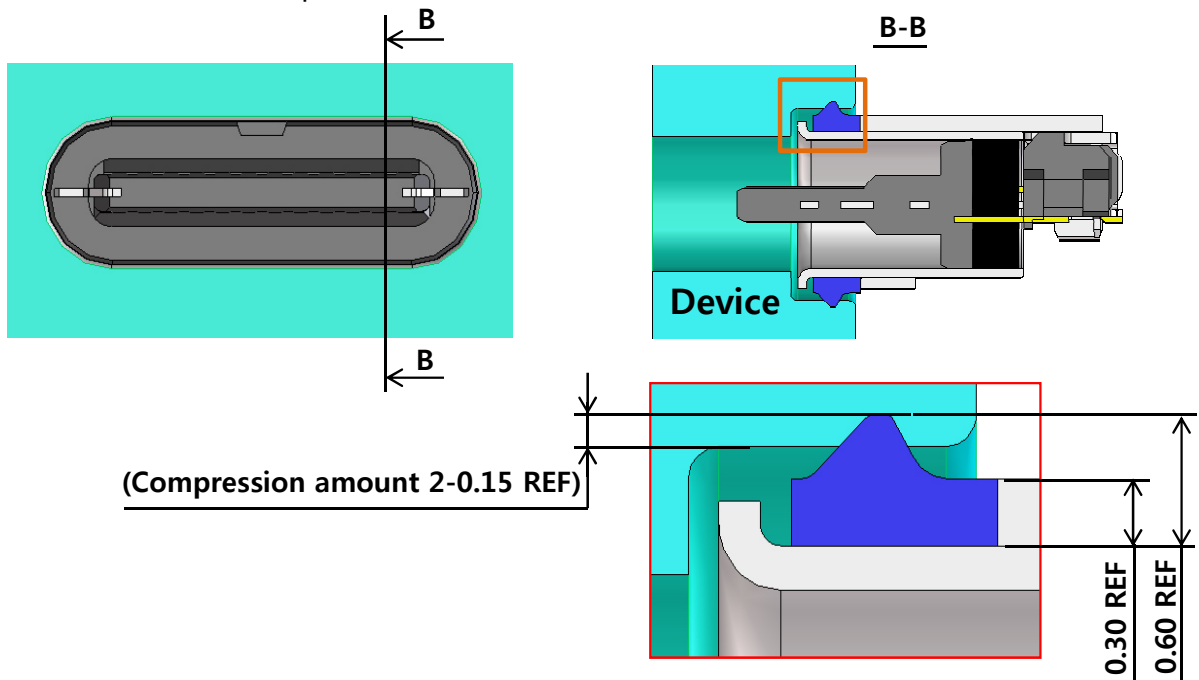
5.1 Connector with a Gasket



5.2 Recommended dimensions of the device chassis



5.3 Recommended compression condition of a Gasket



6. Notice for Connector Handling

6.1 Mating Plug

Please use USB Type-C Plug only

