

Designing and Handling Guidline for CX90B-16P1

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1. Revision History

Revision History	Date	Handled by	Remarks
1.0	August 10, 2023	S.K.JANG	Initial 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 Cable and Connector Specification
Revision 2.1 May 2021

3. Product Information

3.1 Product Feature

- 1) 5A current rating for quick charging.
- 2) USB 2.0 High-speed(480Mbps) transmission.
- 3) Improved peeling strength using 4 THR* mounting posts.
* Through-Hole-Reflow
- 4) Reversible plug orientation ensures easy insertion.
- 5) Compliant to USB specification (USB Type-C compliant interface connector)

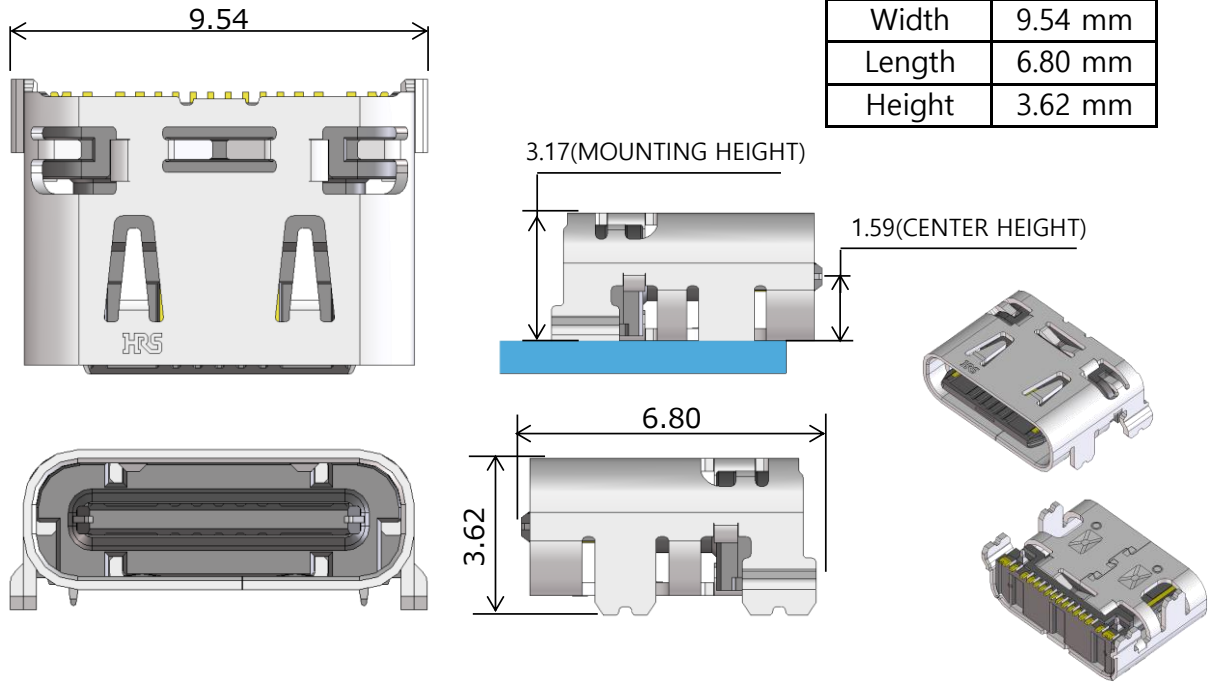
3.2 Specification

No. of Contacts	16
P.C.B Mounting type	Top-Board
Soldering type	Single row SMT
Current rating	DC 1.25 A Max. for VBUS & GND (i.e. A1, A4, A9, A12, B1, B4, B9, B12) DC 0.25 A for the other pins
Voltage rating	48V AC
Operating Temperature	-40 °C ~ +105 °C (Including Temp. rise) / 95 % RH Max.
Storage Condition	-10 °C ~ +60 °C (With Packing) / 15 % ~ 70 % RH
Contact Resistance	40 mΩ Max. (Initial)
Withstanding Voltage	100 V AC for 1 Minute
Insulation Resistance	100 MΩ Min. (500 V DC)
Mating Cycles	10,000 Times
Insertion/ Extraction Force	Insertion : 5~20 N, Extraction : 8~20 N

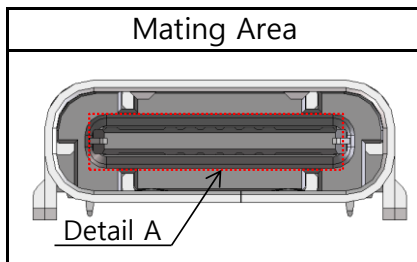
Note

Storage conditions apply to original packaging only, void if opened.
Warranty period is 12 months max. in the storage conditions above and calculated by manufacturing date code.

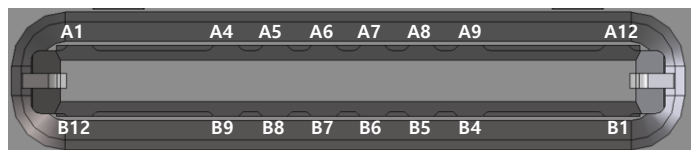
3.3 Product Size



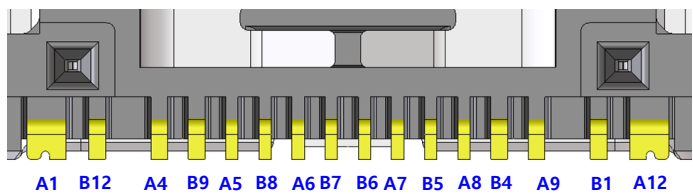
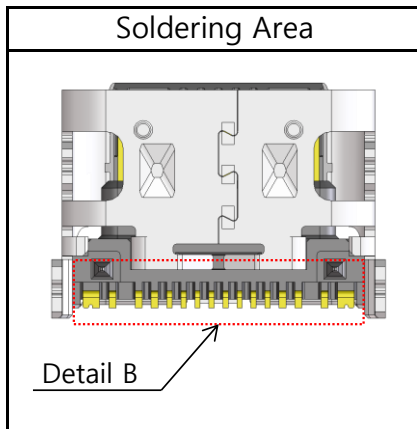
3.4 Pin Assignment



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

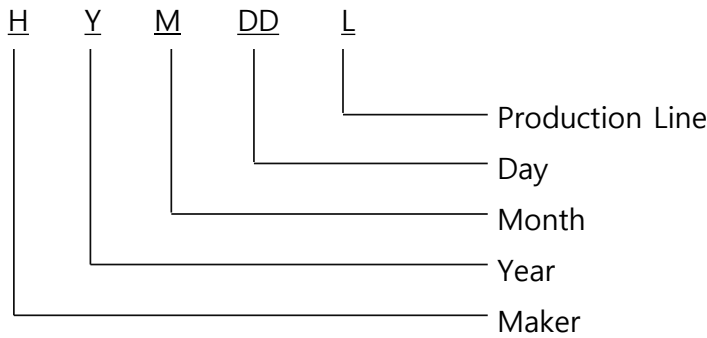
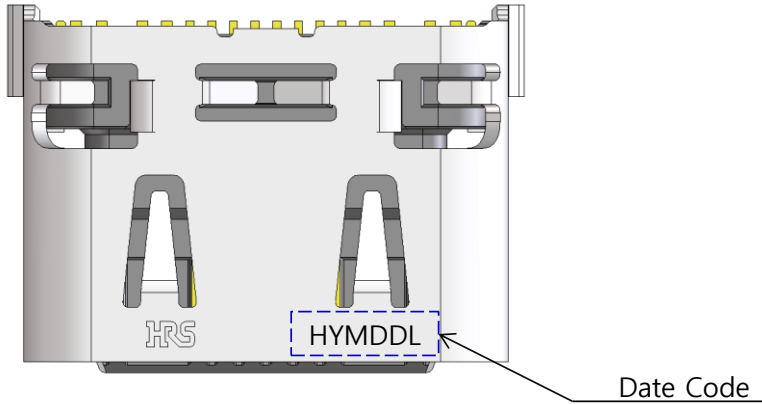


Detail A



Detail B

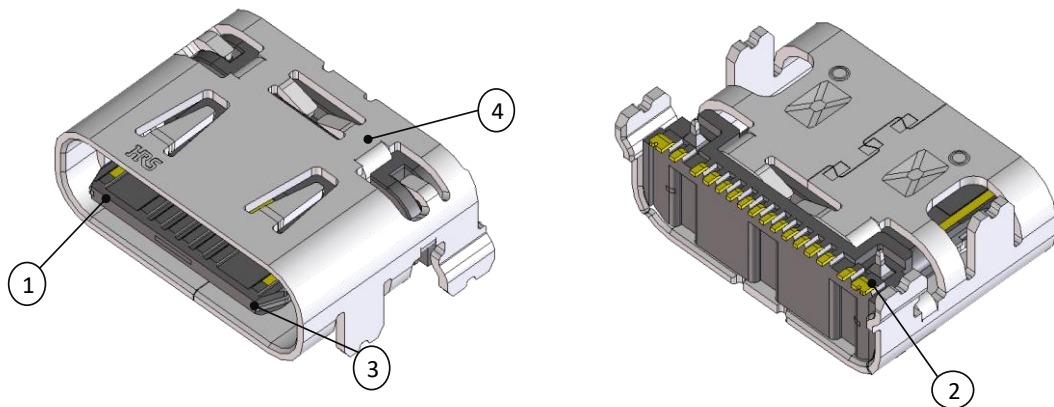
3.5 Manufacturing Date Code System



Maker		Year		Month		Day		Production Line	
Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark	Ex.	Mark
Hirose Korea	H	2022	2	Jan.	1	1st	01	SAMPLE	S
		2023	3	Feb.	2	2nd	02	Manual #1	1
		2024	4	Mar.	3	3rd	03	Manual #2	2
		2025	5	Apr.	4	4th	04	Manual #3	3
		2026	6	May	5	5th	05	Manual #4	4
		2027	7	Jun.	6	6th	06	...	...
		2028	8	Jul.	7	7th	07	Auto #1	A
		2029	9	Aug.	8	8th	08	Auto #2	B
		2030	0	Sep.	9	9th	09	Auto #3	C
		2031	1	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 : Au 0.20 μ m min. over Ni 2.0 μ m min. Non-contact Area : Au 0.03 μ m min. over Ni 2.0 μ m min. Lead Area : Au 0.05 μ m min. over Ni 2.0 μ m min.
3	Mid Plate	Stainless Steel	Ni 1.25 μ m min.
4	Metal Shell	Stainless Steel	Ni 1.25 μ m min.

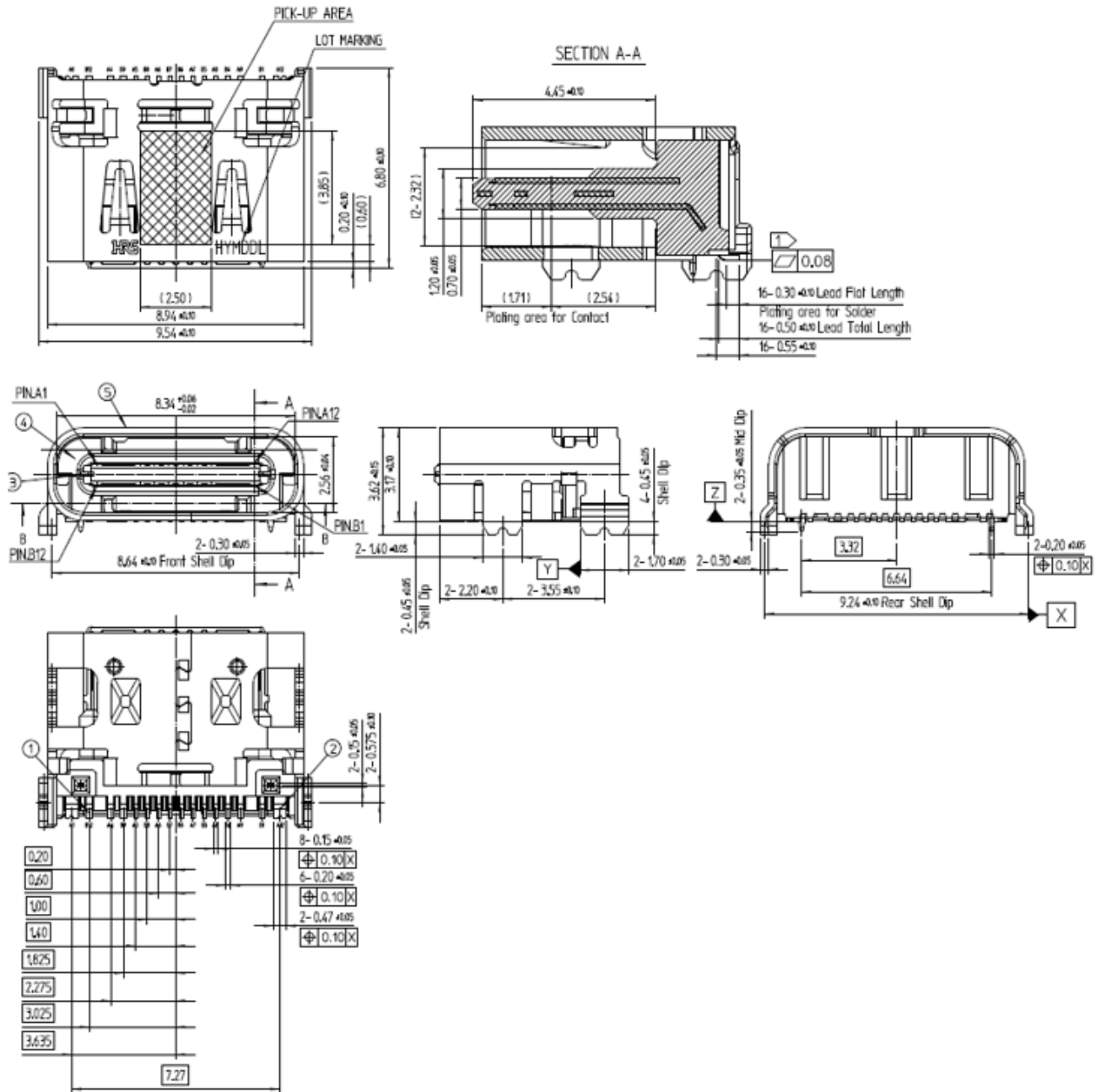


3.7 Configuration of Product Name

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

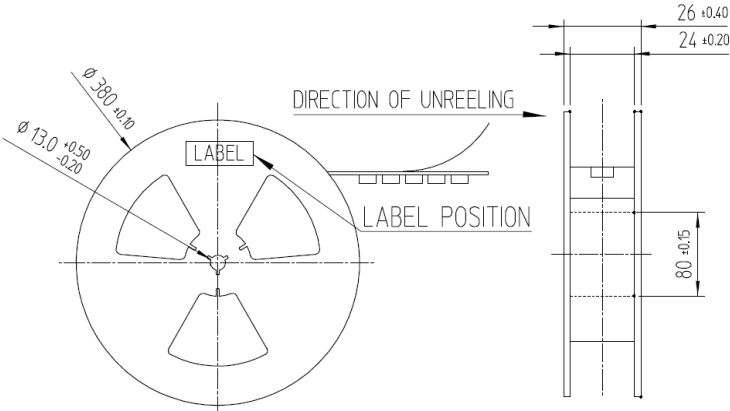
(1) Series Name		CX
(2) Soldering Type	60	Paddle Card
	70	Right angle Hybrid (SMT+Dip)
	80	Straight SMT
	90	Right angle SMT
(3) Mounting Type	B	Top-Board
	M	Mid-mount
(4) Contact No		16
(5) Contact Type	P	Male contacts
	S	Female contacts
(6) Serial No	1	Nont or 1,2,3....

3.12 Product Dimensions

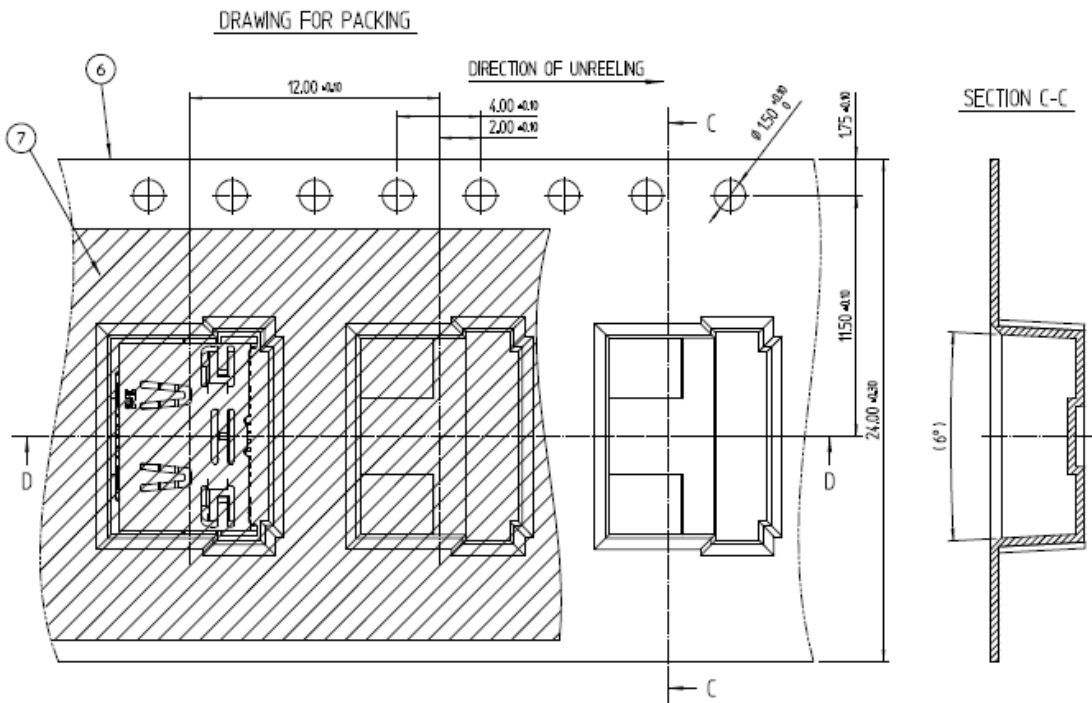


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3.8 Reel Dimensions



3.9 Emboss Carrier Tape Dimensions



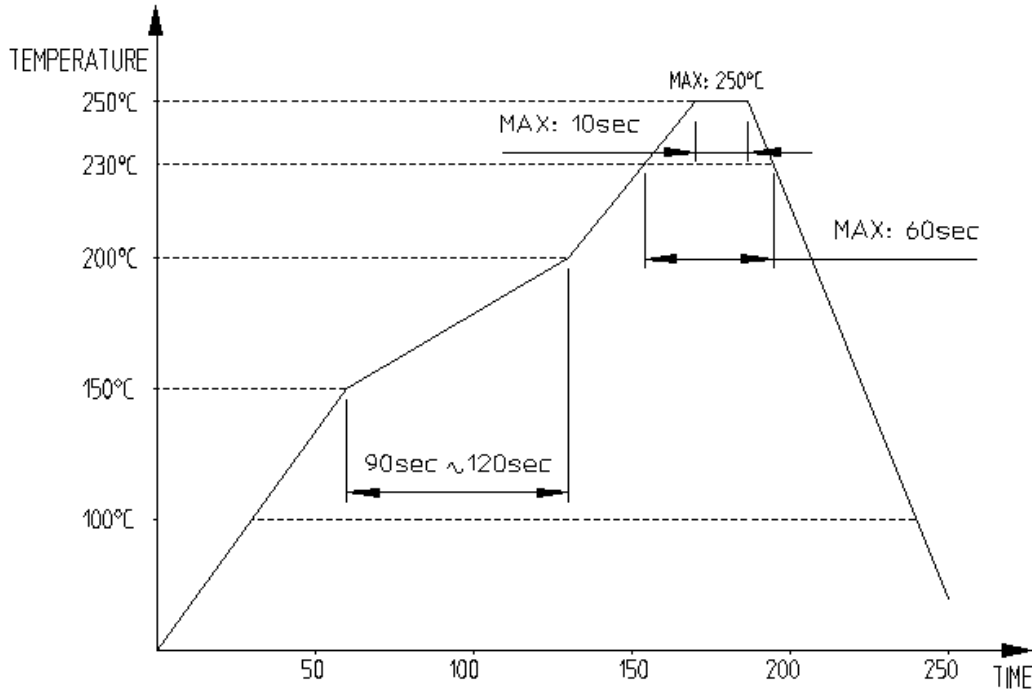
※ Emboss Tape was designed in accordance with EIA-481

3.10 Packing Quantity Per Reel : 1,500 PCS

3.11 Peeling Strength : Cover tape shall have a total peel strength of from 0.10 N to 1.32 N

4. Notice for Soldering

4.1 Recommended Reflow Temperature Profile

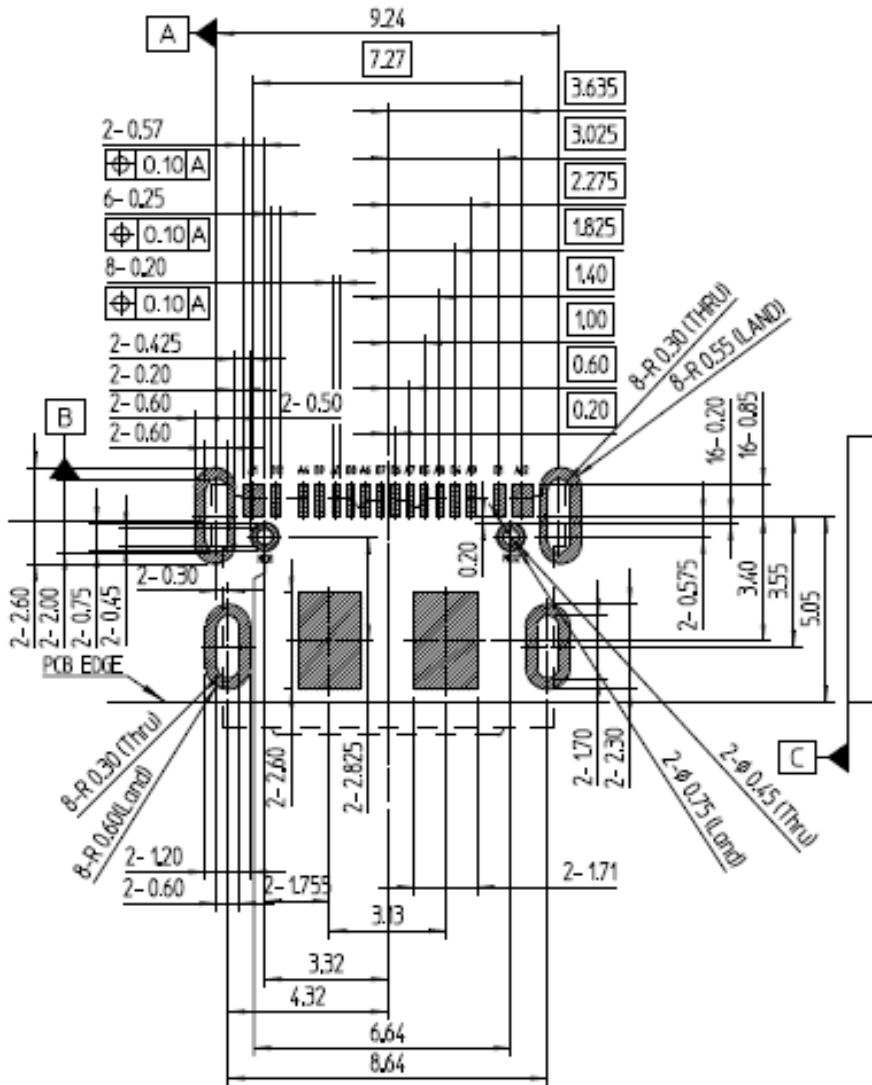


- Profile measuring point
The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.
- Reflow cycles
Up to 2 cycles of reflow soldering are possible under the same conditions.
* Temperature between 1st and 2nd reflow must be cooled down to room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

4.2 PCB Designing

RECOMMENDED PCB LAYOUT (TOP-VIEW)

RECOMMENDED PCB LAY OUT (TOP-VIEW)
(GENERAL TOLERANCE ± 0.05)



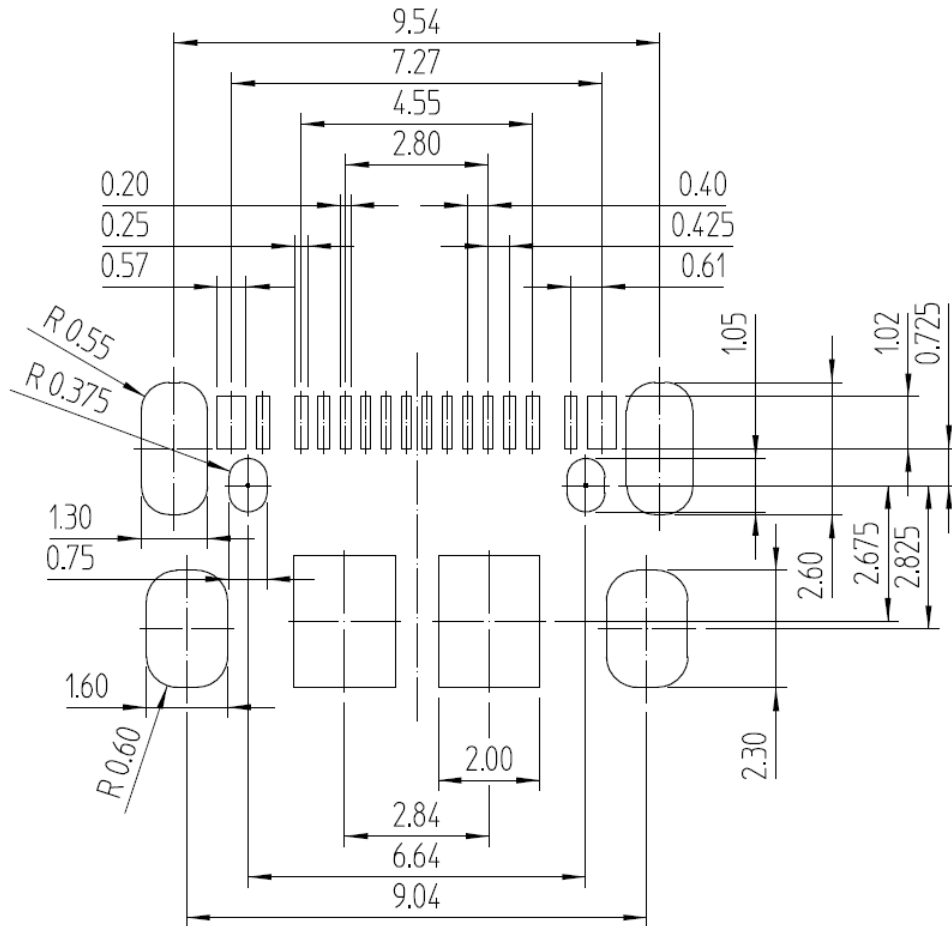
4.3 PCB Thickness

Applicable PCB thickness is 0.55mm or over considering 0.45mm DIP leg length

4.4 Metal Mask Designing

RECOMMENDED METAL MASK LAYOUT (TOP-VIEW)

(REFERENCE ONLY)



- Metal mask thickness : 0.10 mm
- Open rate : 120 %

$$\text{Open rate (\%)} = \frac{\text{Opening area of mask (mm}^2\text{)}}{\text{Land area of PCB lead (mm}^2\text{)}}$$

4.5 Solder Paste

- Lead-free

5 Notice for Connector Handling

5.1 Mating Plug

Please do not use other plugs but TYPE-C plug

