



SINGATRON
ENTERPRISE CO., LTD.

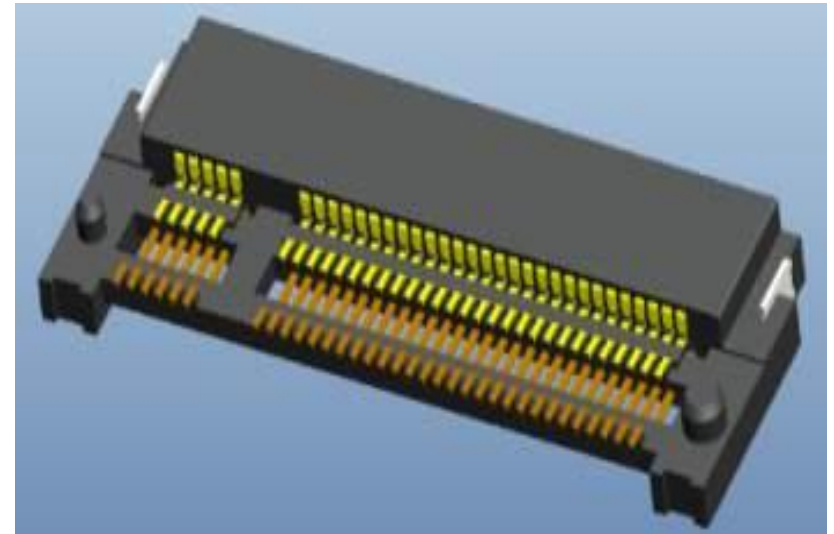
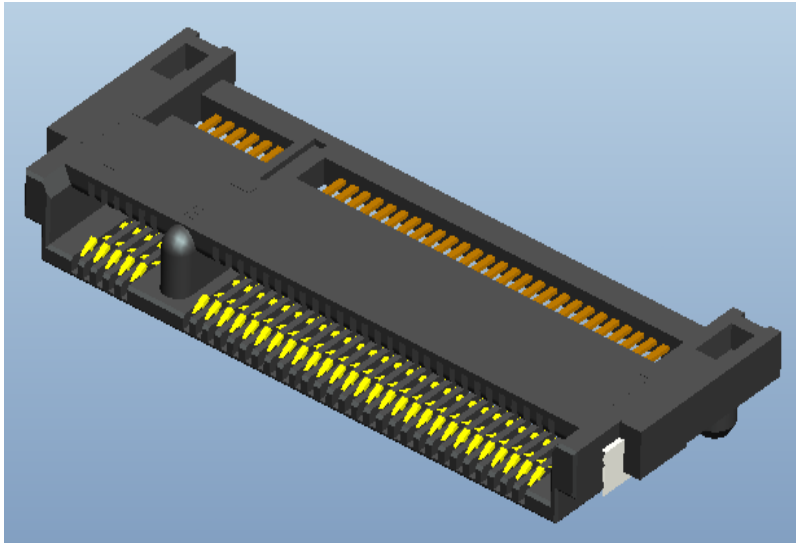


Specialized Connector Manufacturer

M.2 (NGFF) Connector

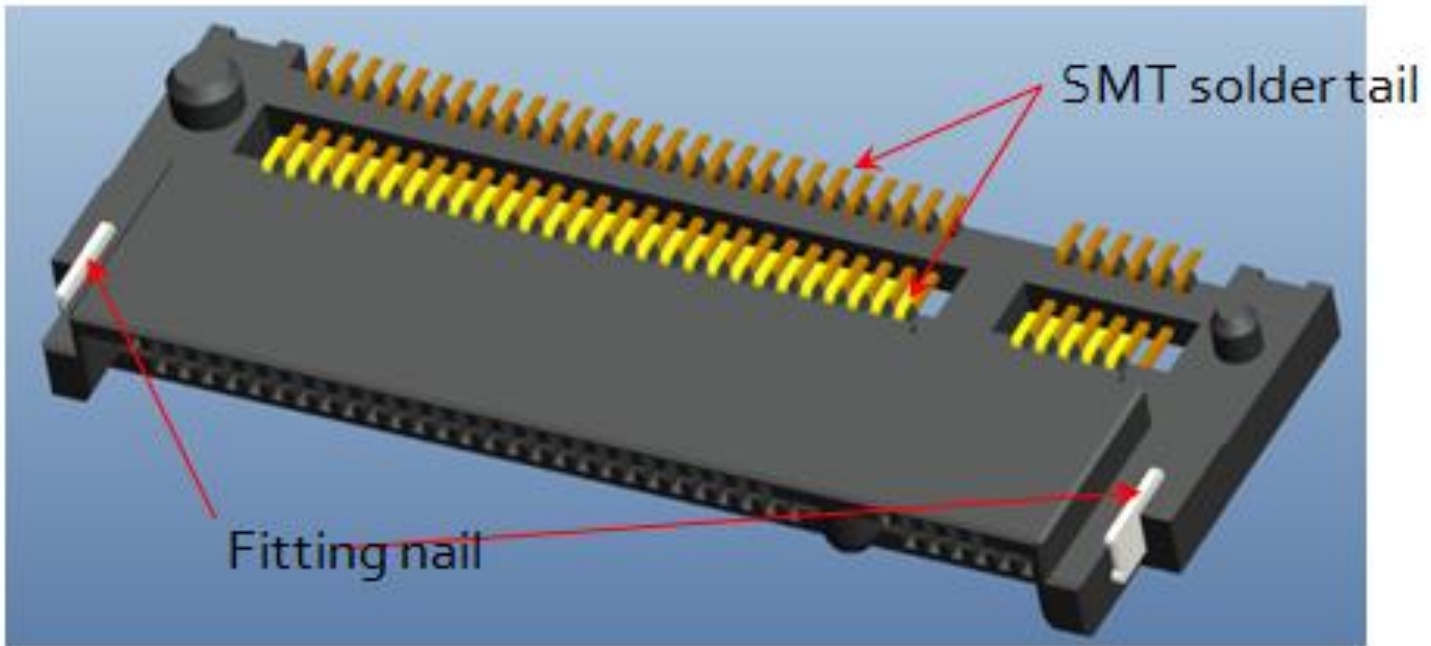


M.2 (NGFF) Connector





1. The integrated insert-molding guarantee SMT co-planarity



Advantages of product structure

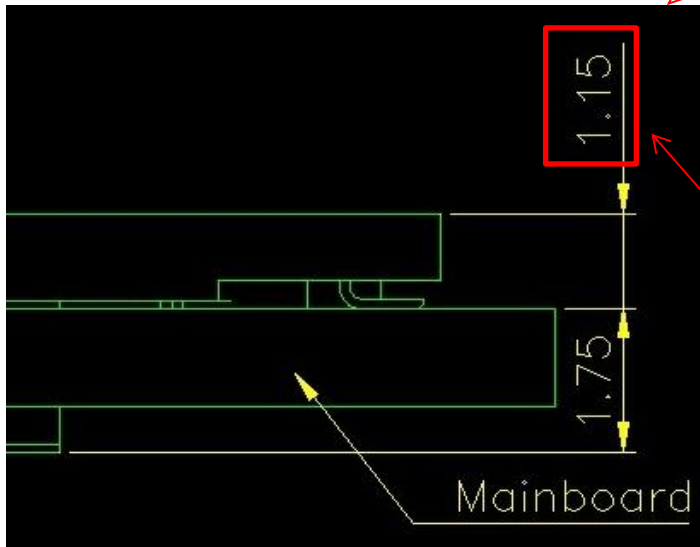


2. Advantages of the minimum top height above PCB.

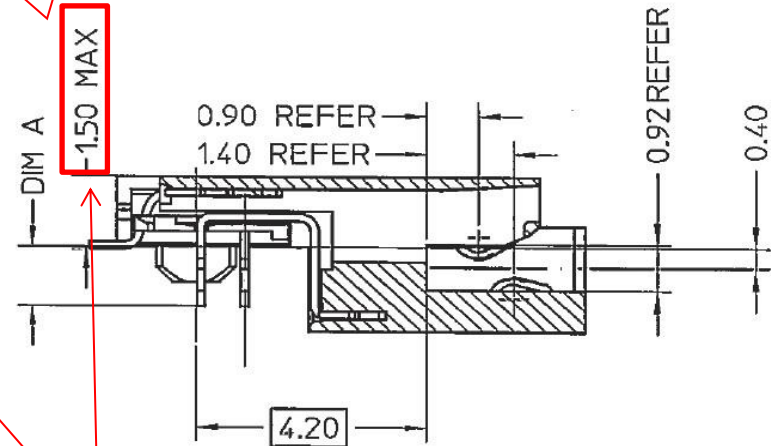
The structure of the product is one piece insert molding, the top height above PCB can be made **1.15mm (2NF1502 Series)** which has space advantage to competition (which is 1.50mm).

**Save height
0.35mm, 23%**

Singatron's 2NF1502



Competition's



Top height above PCB

Advantages of product structure

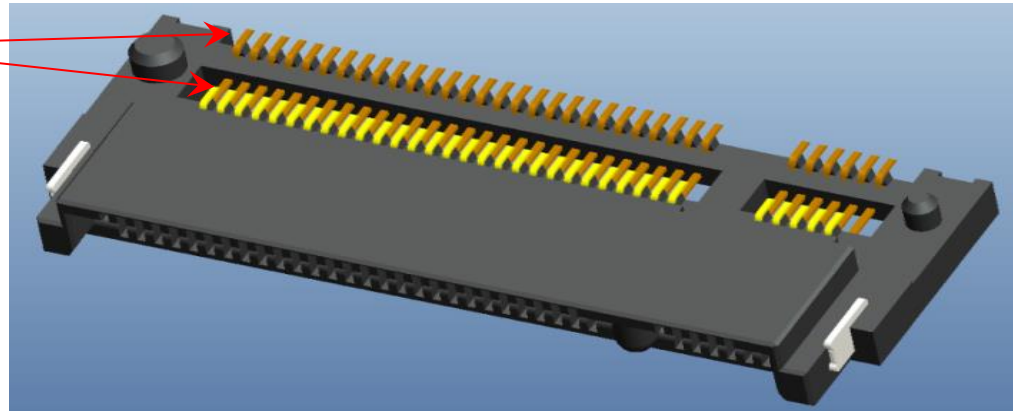


3. More Options

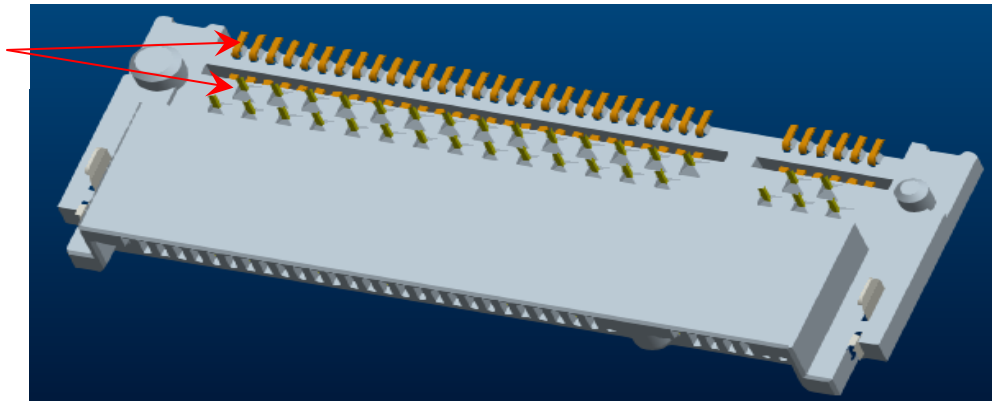
a. SMT type

b. SMT+DIP type

a. SMT type



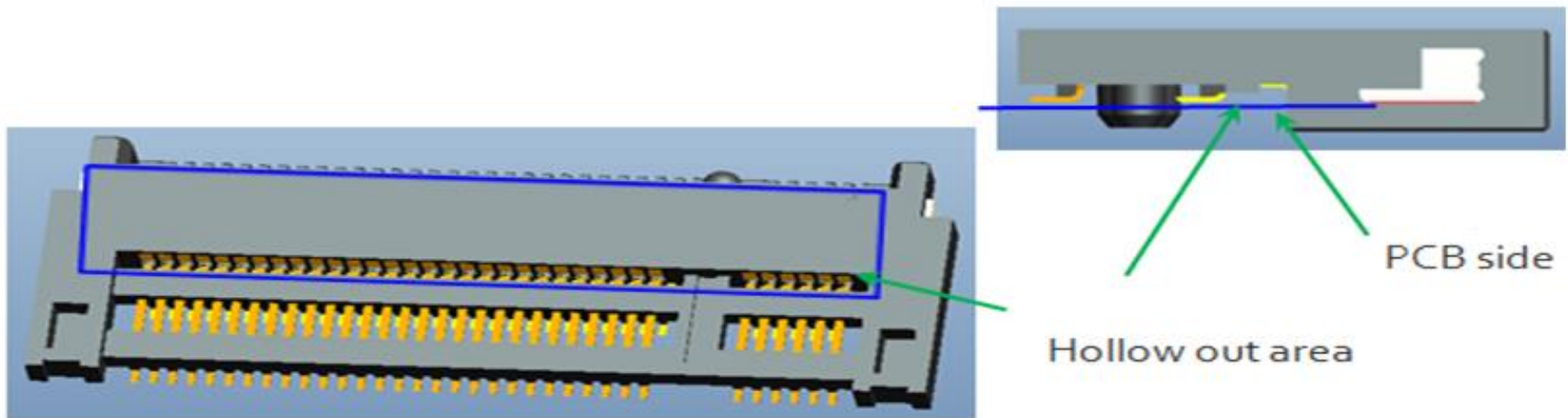
b. SMT+DIP type





4. Hollow out the plastic housing makes better performance on the soldering

In this design, 2NF3006 & 2NF1500, we hollow out the plastic housing on the top and the bottom of the connector. In this way the heat convection would help to improve the soldering process. Furthermore, the hollow out area on the top is easy to observe and assure the status of the inner terminals while soldering.

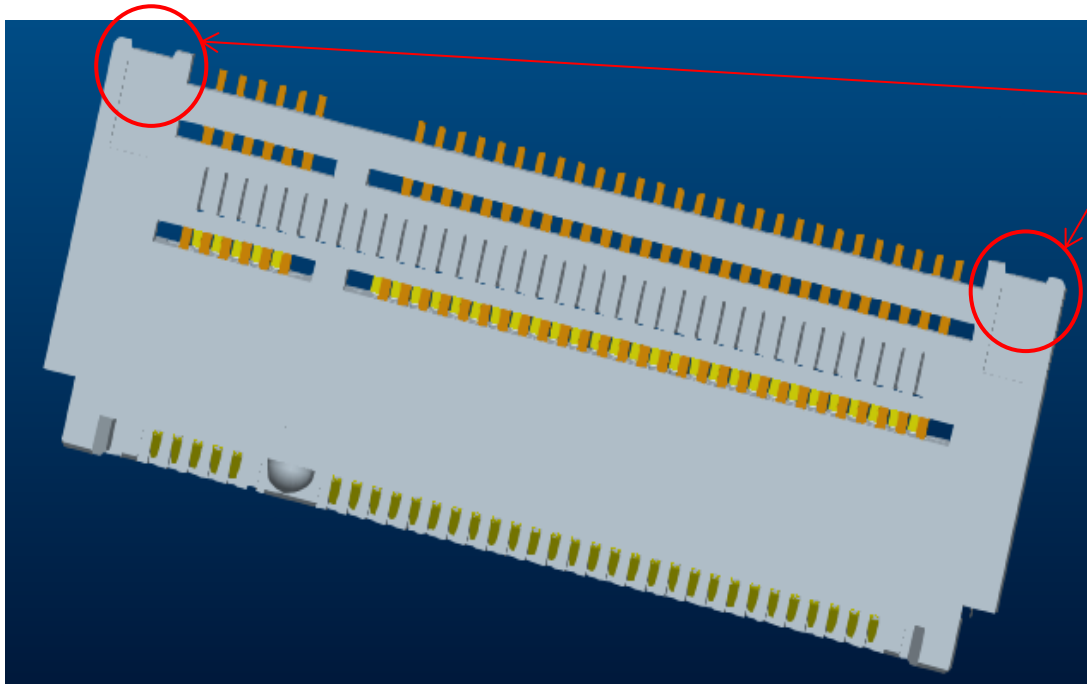




5. Designing for protecting SMT solder tail

Adding plastic on both sides of housing helps protect terminals during transportation.

Prevent deformation of the solder terminals.

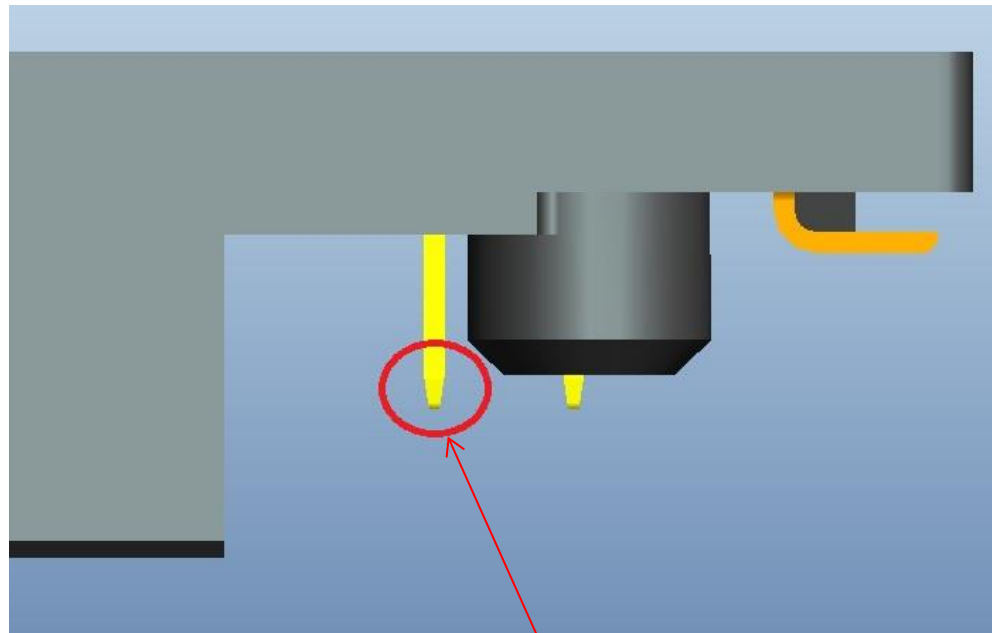


**Protection for
SMT solder
terminals.**



6. Pin Chamfering Design

With Singatron's process capability of precision tooling, we can make dip pins chamfered so it is easy to be put into PCB holes.

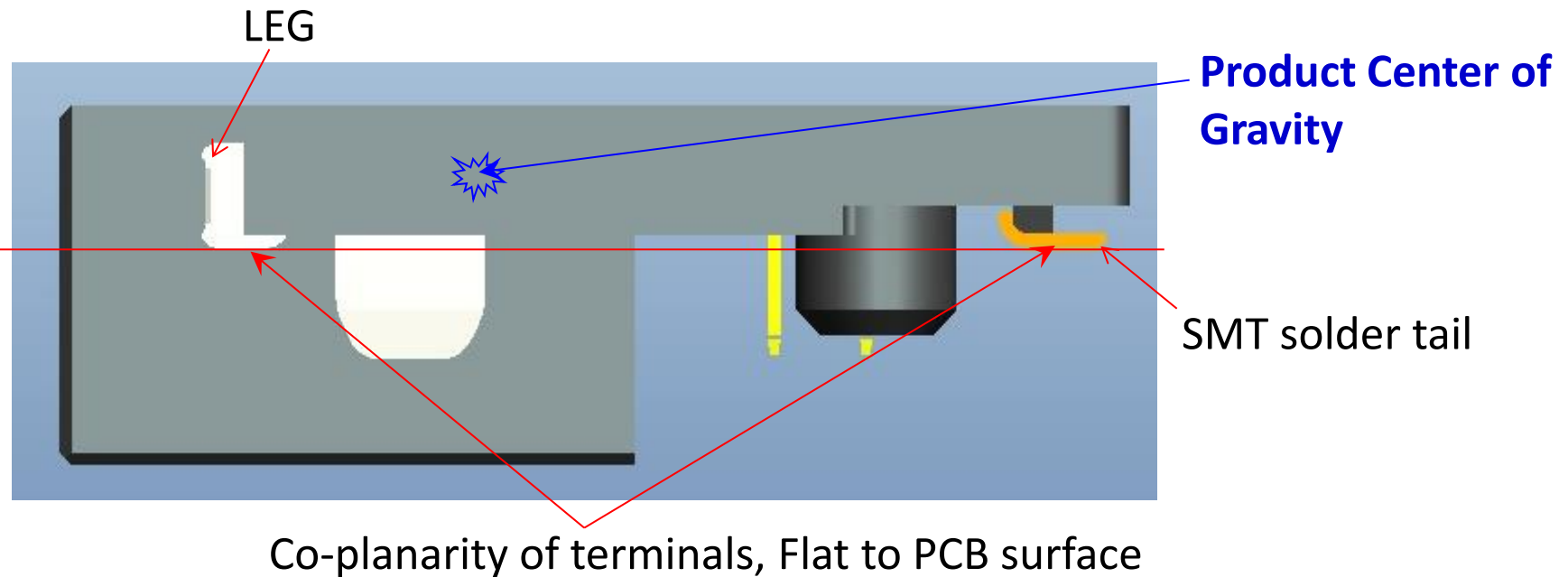


DIP pin chamfering



7. Effect on PCB Center of Gravity balancing

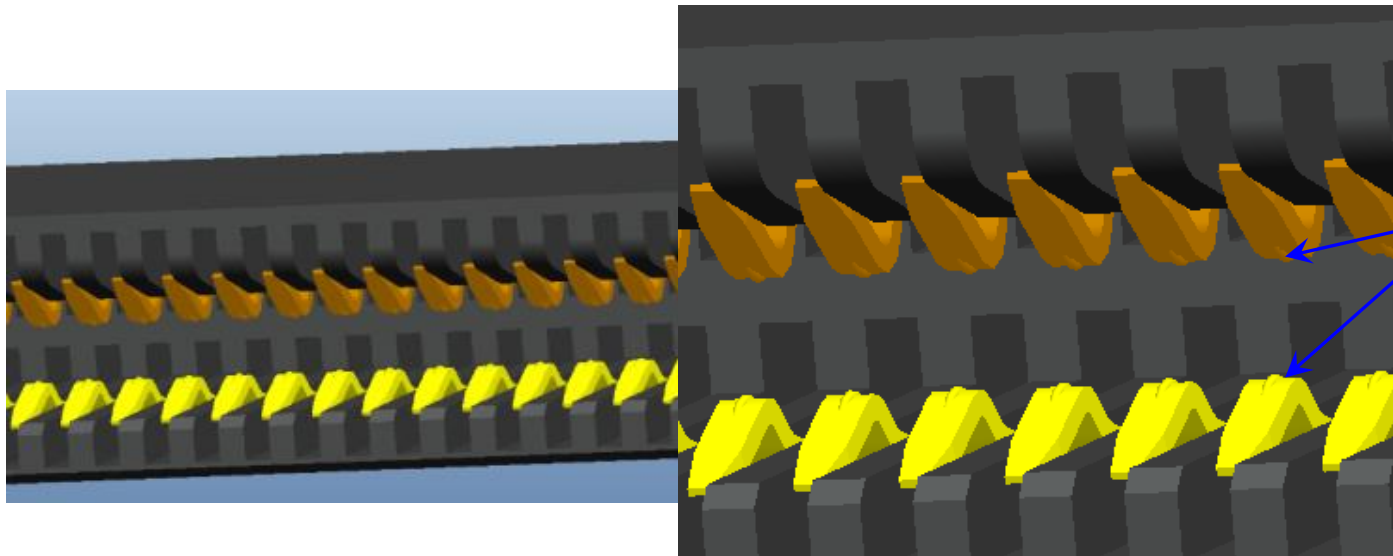
The product stands on PCB by front LEG and back SMT solder tail. The center of gravity of product is balanced on PCB.





8. Embossing on the terminals makes the contact more stable

There are dimples on upper and lower terminals, which is good to strengthen the contact pressure and eliminate the bad foreign matters such as oxidized layer or oil on the terminals. In this way the contact would be more stable.



Dimples on contact area

Advantages of product structure



9. High performance on Hi-frequency transmission

Using insert molding, the product has high performance on Hi-frequency transmission. Test report is as below:

Summary Result

NGFF Differential Insertion Loss summary result. Bot

Start	Stop	Lim From	Lim To	T0	@(MHz)
1	2500	-0.5	-0.5	-0.26	2460.24
2500	5000	-0.5	-2.5	-0.42	5000
5000	12000	-2.5	-23.5	-0.98	12000
MHz	MHz	dB	dB	Pass	

NGFF Differential Near End Crosstalk summary result. Bot

Start	Stop	Lim From	Lim To	T0-R1	@(MHz)
1	2500	-32	-32	-44.41	2460.24
2500	5000	-26	-26	-39.49	4860.18
5000	10000	-20	-20	-35.28	7170.12
10000	12000	-10	-10	-36.54	11985
MHz	MHz	dB	dB	Pass	

NGFF Differential Return Loss summary result. Bot

Start	Stop	Lim From	Lim To	T0	@(MHz)
0.3	3000	-15	-15	-30.61	1845.25
3000	5000	-15	-5	-22.35	3945.2
5000	12000	-1	-1	-12.87	9420.06
MHz	MHz	dB	dB	Pass	

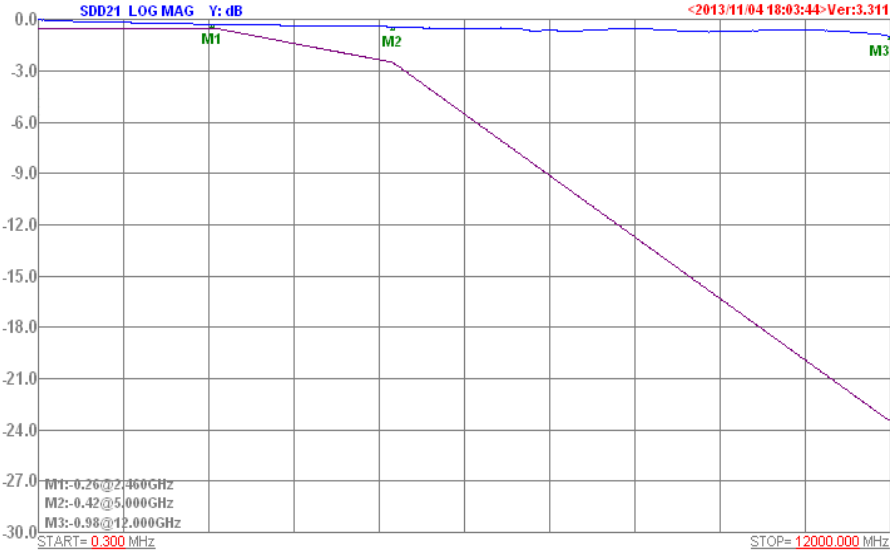
NGFF Differential Far End Crosstalk summary result. Bot

Start	Stop	Lim From	Lim To	T0-R1	@(MHz)
1	2500	-32	-32	-49.68	2500
2500	5000	-26	-26	-40.14	4560.19
5000	10000	-20	-20	-34.54	9900.05
10000	12000	-10	-10	-30.01	11700
MHz	MHz	dB	dB	Pass	

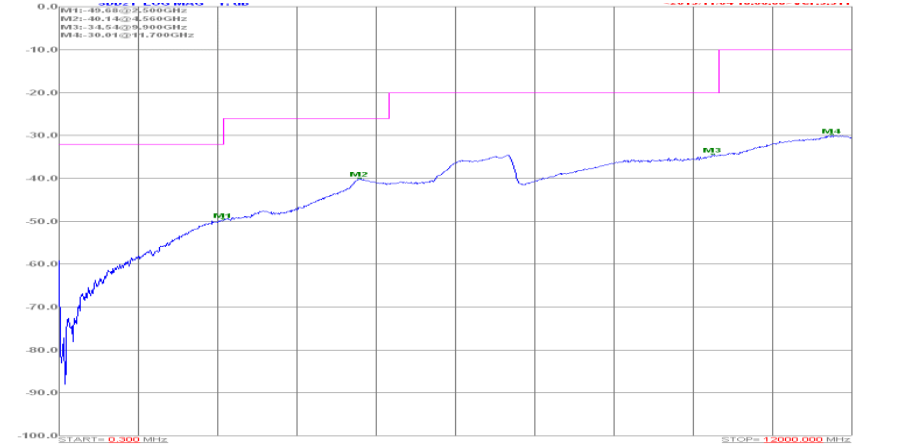
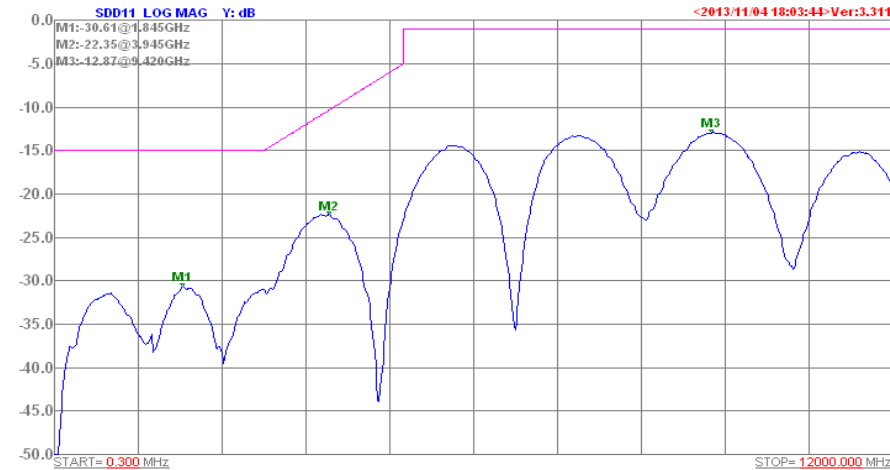
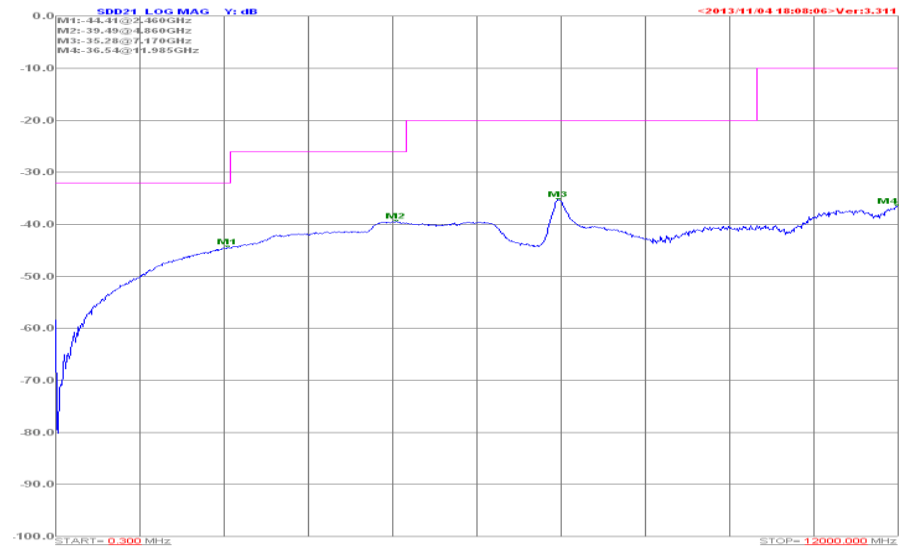
Advantages of product structure

9. High performance on Hi-frequency transmission

NGFF Differential Insertion Loss T0 -(PASS)



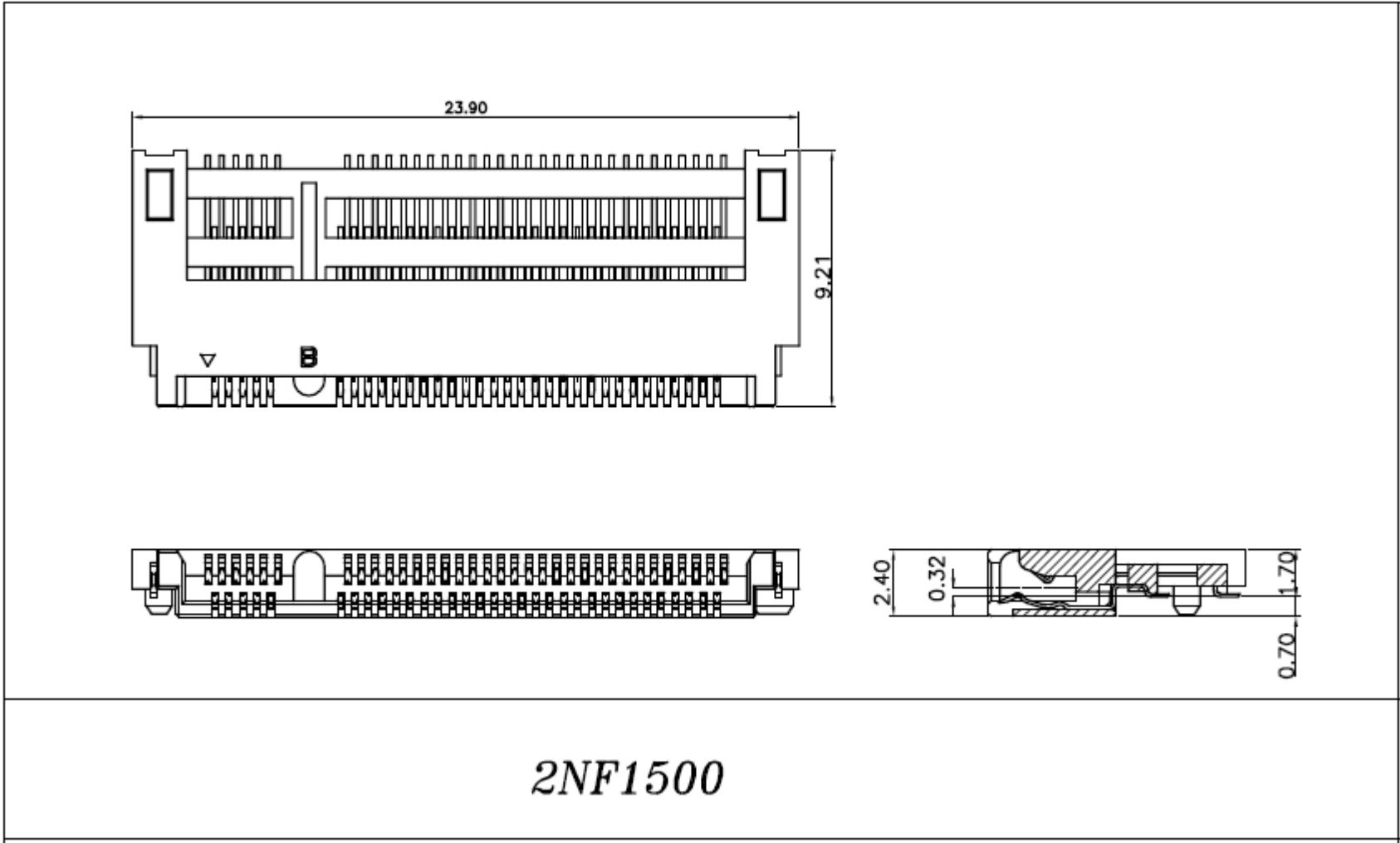
NGFF Differential Near_End Crosstalk T0-R1 -(PASS)

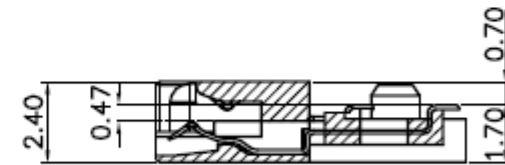
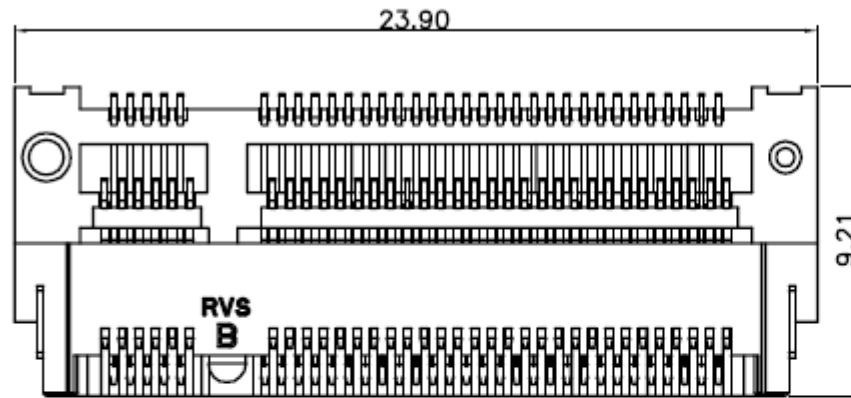


M.2 Product Roadmap

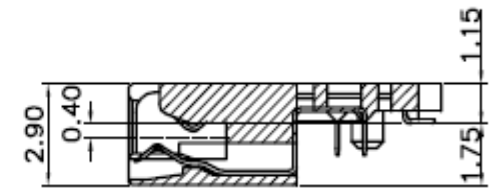
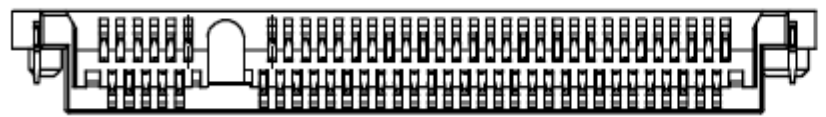
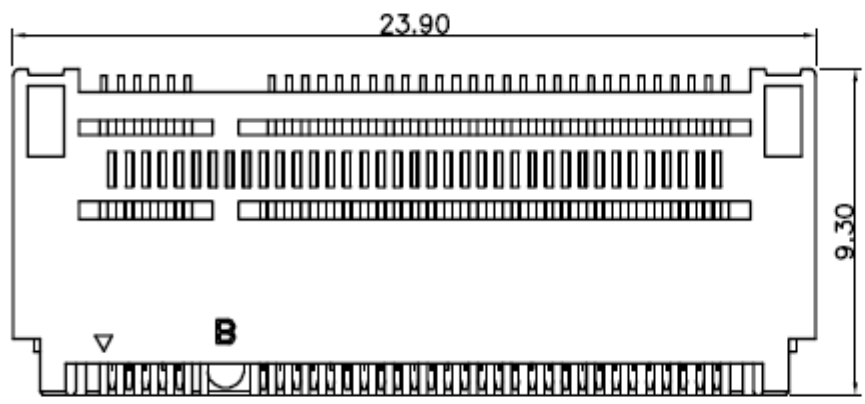


Series	Type	Height (PCB to Top)	Height (Under PCB)	The center of the SIM card to PCB	Total Height	Structure	Soldering	Key	Status
2NF1500	Sinking	1.7	0	0.4	2.4	Insert Molding	SMT (single)	B	Production
2NF3006	Reverse Sinking	1.7	0	0.4	2.4	Insert Molding	SMT (single)	B	Production
2NF1502	Sinking	1.15	1.75	0.4	2.9	Insert Molding	DIP+SMT	B	Tooling
2NF1503	Sinking	1.5	1.4	0.4	2.9	Assembly	DIP+SMT	B,E	Design Finished
2NF3002	SMT	1.9	0	0.8	2	Assembly	SMT (double)	B,E,M	Tooling
2NF3001	SMT	3	0	2	3	Assembly	SMT (double)	A,B,E	Production
2NF3007	SMT	4	0	3	4.05	Insert Molding	SMT (double)	A,B	Design Finished

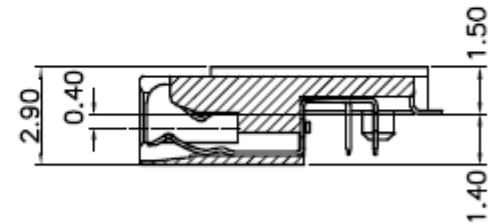
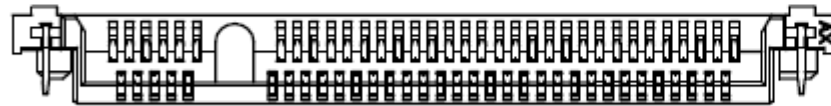
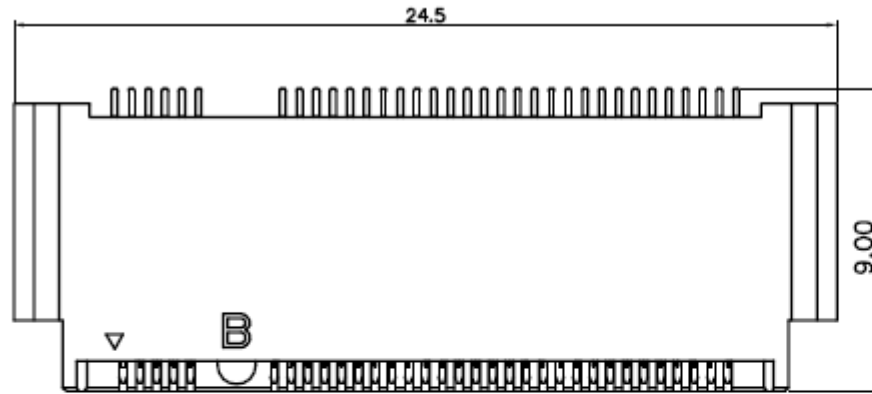




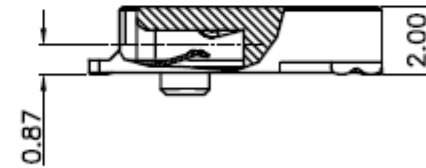
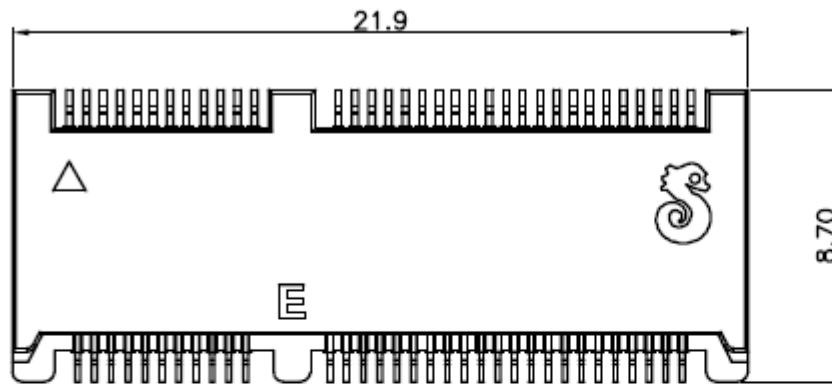
2NF3006



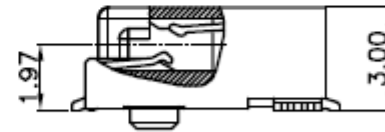
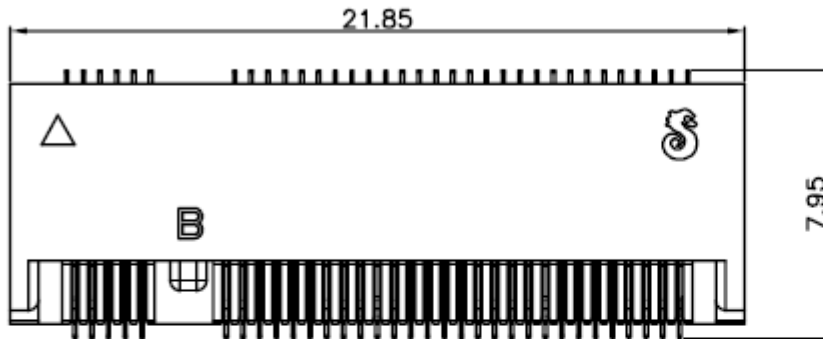
2NF1502



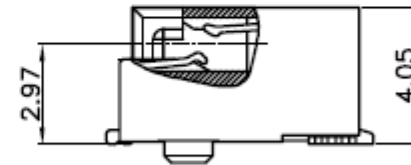
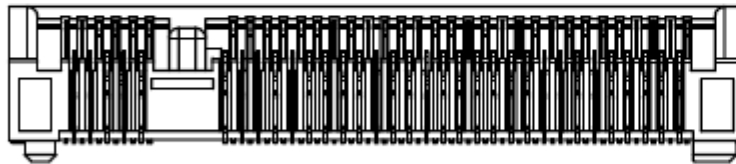
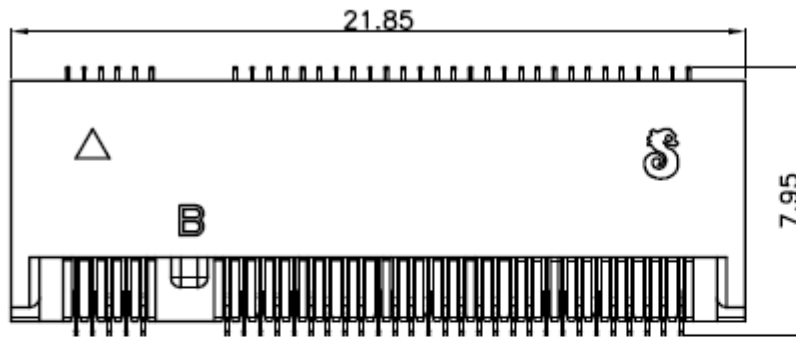
2NF1503



2NF3002



2NF3001



2NF3007



The End

Thank You!