



All Numerical values are in metric units. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ± 0.13 and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for the application of 56G MEZZ connector. 56G MEZZ is a series of board-to-board connector that connect two parallel PCB, also is known as “Mezzanine” connector. 56G MEZZ mainly transmits the high-speed differential signal, but it is also applicable to low-speed single ended signal and power. 56G MEZZ can be produced in various heights and various positions to meet different customer requests. Basic terms and features of this product are provided in Figure 1.

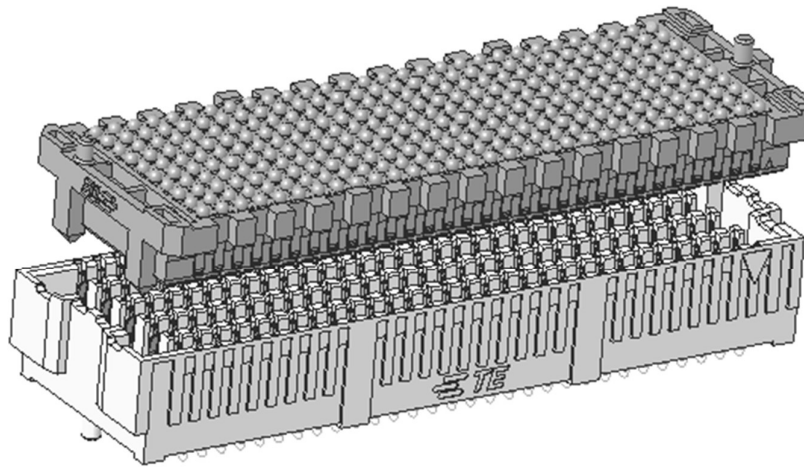


Figure 1

2. REFERENCE MATERIAL

2.1 Customer Assistance

Reference Base Product Part Numbers 2535030/2534030 are representative numbers of this connector. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Electronics Representative or, after purchase, by calling the Product Information Center at the number at the bottom of page.

2.2 Drawings

Customer Drawings for product numbers are available from www.te.com. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, Customer Drawing takes preference.

2.3 Specifications

Product Specification 108-XXXXX provides product performance requirements and test information.

3. REQUIREMENTS

3.1 Safety

Do not stack connector packages so high that the shipping containers buckle or deform.

3.2 Limitations

Connector assemblies are designed to operate in a temperature range of -55° to 125°C .

3.3 Material

The housing is high temperature thermoplastic. The contacts are made of copper alloy and plated at the contact interface with precious metal. All contacts have a nickel underplate and tin-plated soldering leads. Refer to the specific customer drawing for details.

3.4 PC Board

A. Material and Thickness

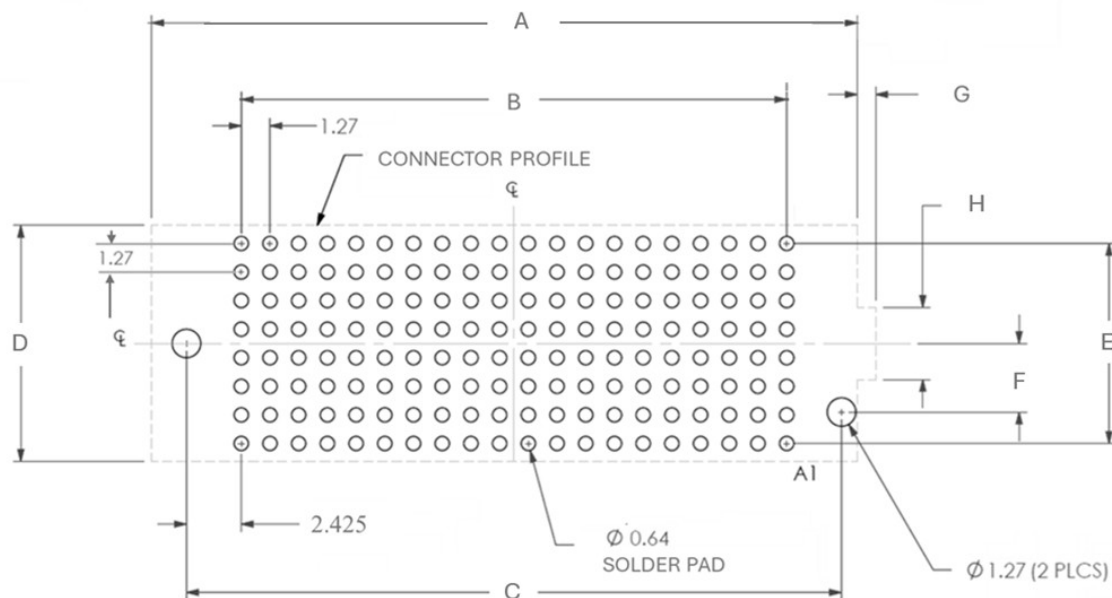
The PC board thickness should be taken to ensure the PC boards are at least thick enough to ensure board stability (flatness, etc.) throughout the reflow process and be rigid enough to support mate and un-mate cycling.

B. Circuit Pads

The circuit pads must be solderable in accordance with EIA-364-52.

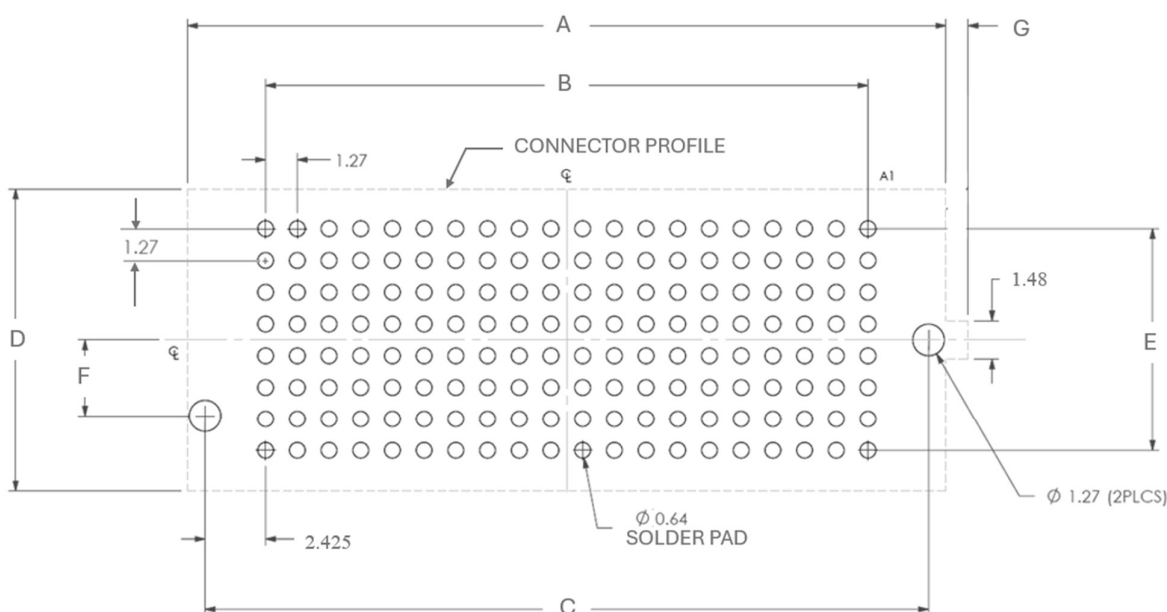
C. Layout

All holes and circuit pads must be precisely located on the pc board. The pc board layout must be designed using the dimensions provided on the customer drawings for the specific connector. A reference sample of the recommended pc board layout is given in Figure 2 and Figure 3.



RECEPTACLE								
POS.	A	B	C	D	E	F	G	H
80(4*20)	31.21	24.13	28.98	5.66	3.81	2.01	1.35	3.20
160(4*40)	56.61	49.53	54.38	13.28	11.43	3.05	0.84	5.70
160(8*20)	31.21	24.13	28.98	10.74	8.89	3.05	0.84	3.20
240(8*30)	43.91	36.83	41.68	10.74	8.89	3.05	0.84	3.20
300(10*30)	43.91	36.83	41.68	13.28	11.43	3.05	0.84	5.70
320(8*40)	56.61	49.53	54.38	10.74	8.89	3.05	0.84	3.20
400(10*40)	56.61	49.53	54.38	13.28	11.43	3.05	0.84	5.70
560(14*40)	56.61	49.53	54.38	18.36	16.51	3.05	0.84	5.70

Figure 2



PLUG							
POS.	A	B	C	D	E	F	G
80(4*20)	30.38	24.13	28.98	7.06	3.81	2.01	1.6
160(4*40)	55.78	49.53	54.38	14.68	11.43	3.05	0.8
160(8*20)	30.38	24.13	28.98	12.14	8.89	3.05	0.8
240(8*30)	43.08	36.83	41.68	12.14	8.89	3.05	0.8
300(10*30)	43.08	36.83	41.68	14.68	11.43	3.05	0.8
320(8*40)	55.78	49.53	54.38	12.14	8.89	3.05	0.8
400(10*40)	55.78	49.53	54.38	14.68	11.43	3.05	0.8
560(14*40)	55.78	49.53	54.38	19.76	16.51	3.05	0.8

Figure3

3.5 Soldering

A. Process

The connector will be soldered using infrared reflow (IR) or equivalent soldering technique. Reflow temperature and time may vary depending on the size of the pc board and placement of other components. This connector can be subjected to the reflow temperature and approximate time specified in Figure 4. Recommend O2 concentration by N2 ambient reflow is 1500PPM max.



CAUTION Excessive temperatures may cause connector housing degradation or plating deterioration.

Preheat/Soak (150°C-200°C)	Max Ramp Up Rate	Reflow Time (above 217°C)	Peak Temp	Time within 5°C of 260°C	Max Ramp Down Rate	Time 25°C to Peak Temp
60-120 sec.	3°C/s max.	40-150 sec.	260°C	30 sec. max.	6°C/s max.	8 min. max.

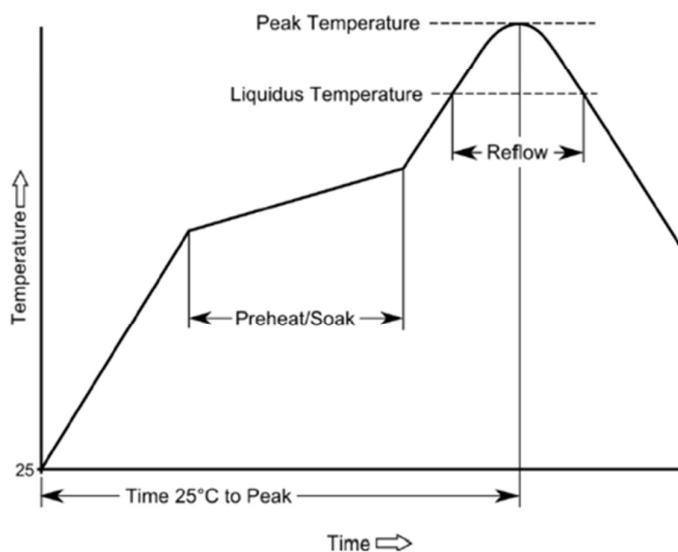
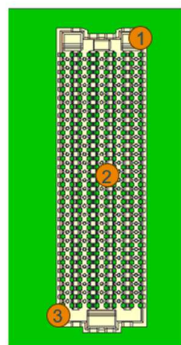
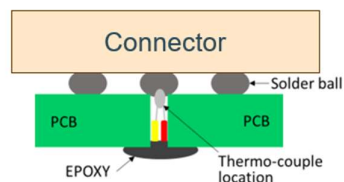


Figure 4

Temperature measurement points should be on the surface of the pads under the solder.
(Fig.5) temperature range should be less than 10°C.



Recommended measurement position



Thermo-couple from bottom of PC board

Figure 5

B. Solder Paste Characteristics

1. For 56G MEZZ connectors with lead free solder balls, alloy type shall be Sn / Ag / Cu. This type of alloy has a melting point temperature of 217°C.
2. Recommended flux incorporated in the paste should be “no clean” type. Other fluxes, such as rosin mildly active (RMA) type, are acceptable.

C. Stencil

The stencil aperture is determined by the circuit pad size and stencil thickness. It may be any shape as long as it prevents solder bridging from one pad to another. The stencil should be 0.15mm thick. The stencil layout must be designed using the dimensions provided on the customer drawing for the specific connector.

D. Solder Mask

When soldering, solder mask is recommended between all circuit pads to minimize solder bridging between pads. The mask must not exceed the height of the pad. If a trace is run between adjacent pads on the PC board, a solder mask must be applied over the trace to prevent bridging and wicking of solder away from the connector contact solder tin.

E. Reflow direction

When soldering, the connector lengthwise to be perpendicular to the conveyor.

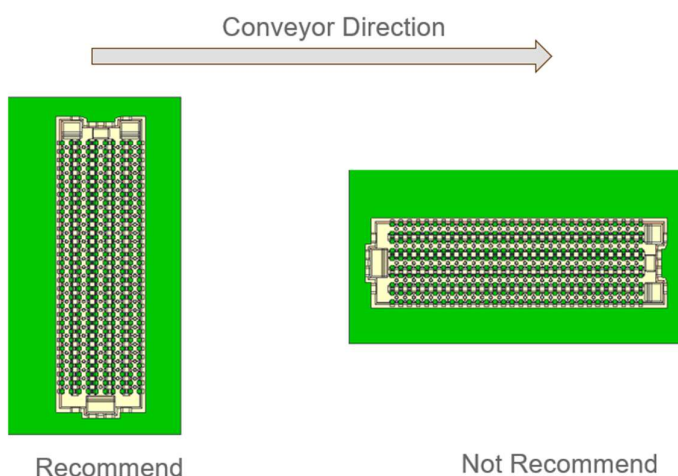


Figure 6

F. Second reflow

If customers need to flip over for the second reflow in their process, we suggest customers supply the fixture to support the connector during 2nd reflow process, or other methods which can prevent the risk of connector dropping off or soldering deformation.

G. Repair or rework

The connector is not repairable. Discard and replace any defective or damaged connector. Do not re-use the connector after removing it from the PC board

4. DESIGN RECOMMENDATION

4.1 Connector orientation

Multiple connectors on the same PCB are recommended to be orientated in the same direction. See Figure 7, it is acceptable for 2 max connectors on the same PCB. In this case these 2 connectors should be orientated in the same direction. Proper connector orientation will aid compliance with the recommended connector mating and un-mating procedures that are described in section 4.2.

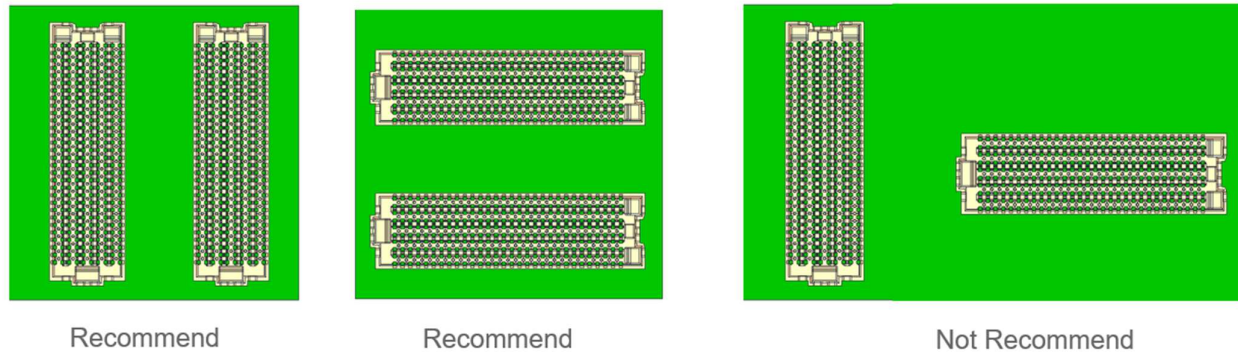


Figure 7

4.1 Polarizing

Guiding feature to polarize the plug to the receptacle. See the figure 8

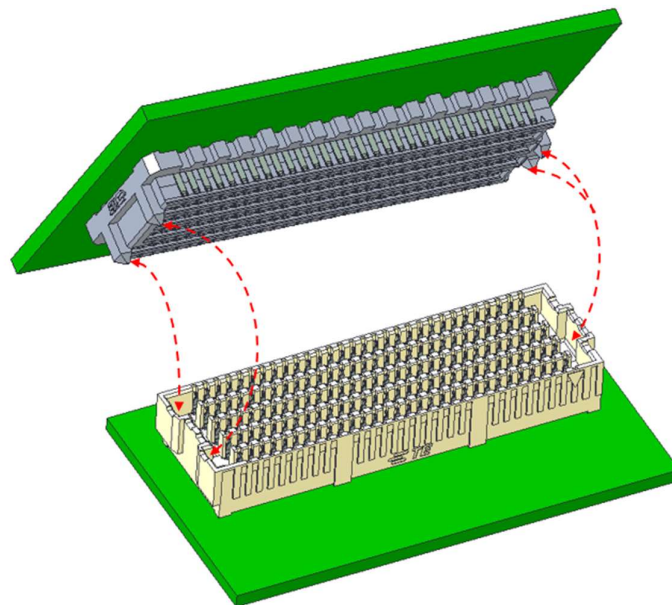


Figure 8

4.2 PCB keep-out zone

1. The mating/supporting plate placed zone which will withstand the mating force should be keep-out zone
2. There shall be sufficient space around the connector to accommodate rework, such space should be the keep-out zone

4.3 Connector guide ability and inclination

1. The connector guide is with ability of 0.8mm min misalignment during mating in length direction, 0.89mm min in width direction. See Figure 9.

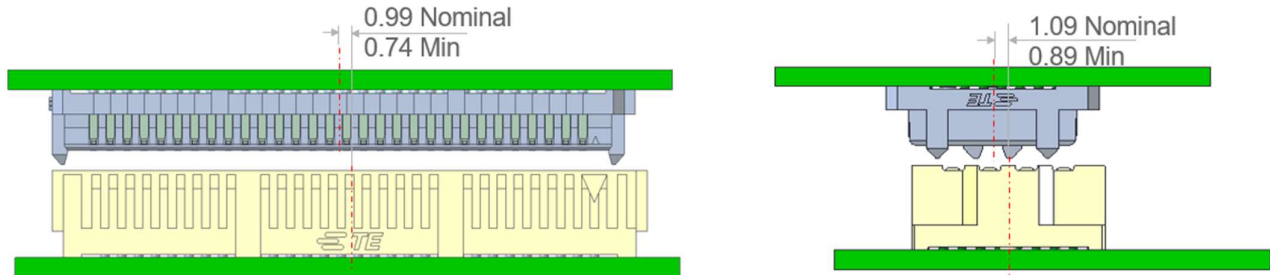


Figure 9

2. The connector guide is with ability $\pm 2^\circ$ with length direction and $\pm 16.5^\circ$ with width direction angle offset available when connectors are free-floating. See Figure 10.

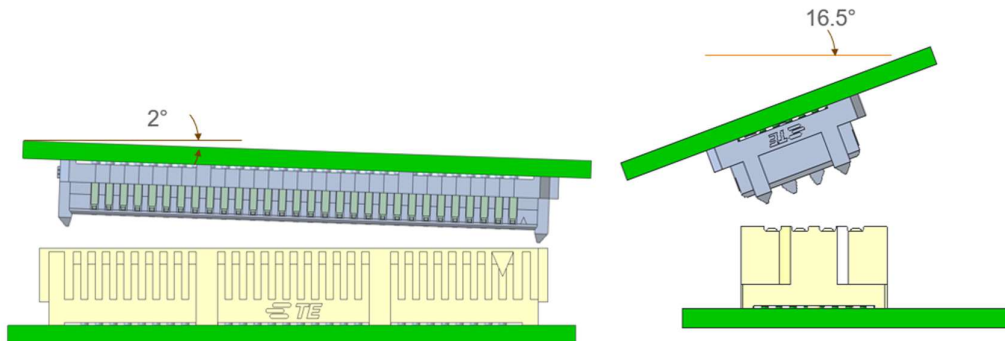


Figure 10

3. The connector guide is with ability $\pm 2.5^\circ$ angle offset available in mating surface direction. See Figure 11.

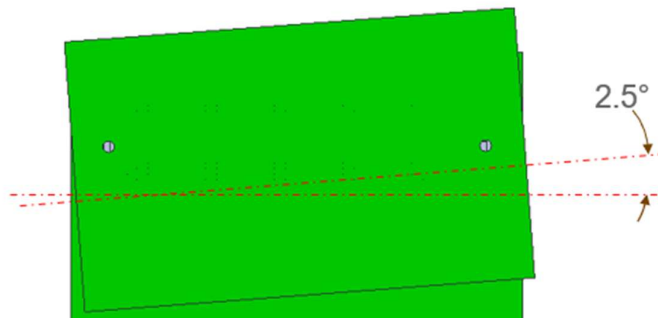


Figure 11

4.4 Mating and un-mating

A. For mating of the connector

- Connectors should be parallel with respect to each other during mating
- The mating process should be smooth, avoid mechanical shock, knocking etc.
- Recommend use mating machine and fixture for mating because of large mating force.
- The mating machine should be capable of supplying 300N min mating force per connector, the real mating force depends on actual connectors.
- Flat mating plate (customer supply) is required and applied on the opposite of mezz board during mating, see Figure 12.
- Flat supporting plate (customer supply) is required to support the base board during mating
- The mating/supporting plates should be on the opposite of connector on the boards.

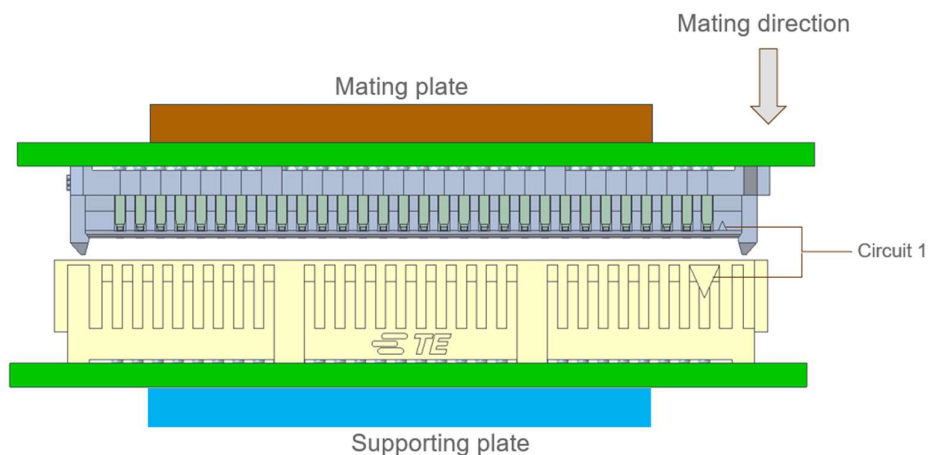


Figure 12

B. For un-mating of the connector

- Connectors should be parallel with respect to each other during un-mating.
- The un-mating process should be smooth, avoid mechanical shock, knocking etc.
- Recommend use fixture for un-mating because of large un-mating force
- The un-mating fixture should be placed next to connector, it is better to be around the connector. See figure 13.
- The fixture should have limiting bars to avoid the mezz board jumping or shock during un-mating

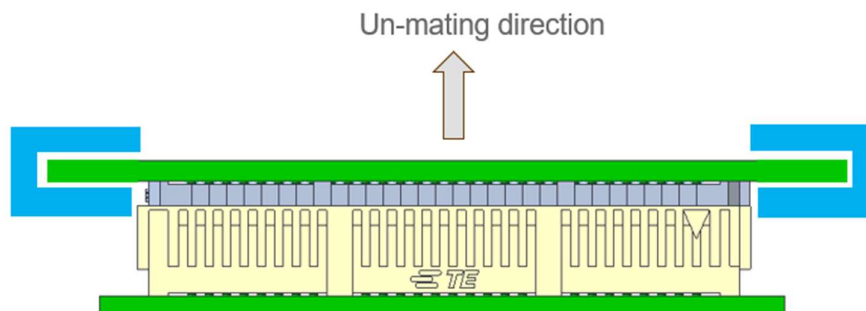


Figure 13

C. Wipe length

The wipe length is 1.13mm in fully mated condition.

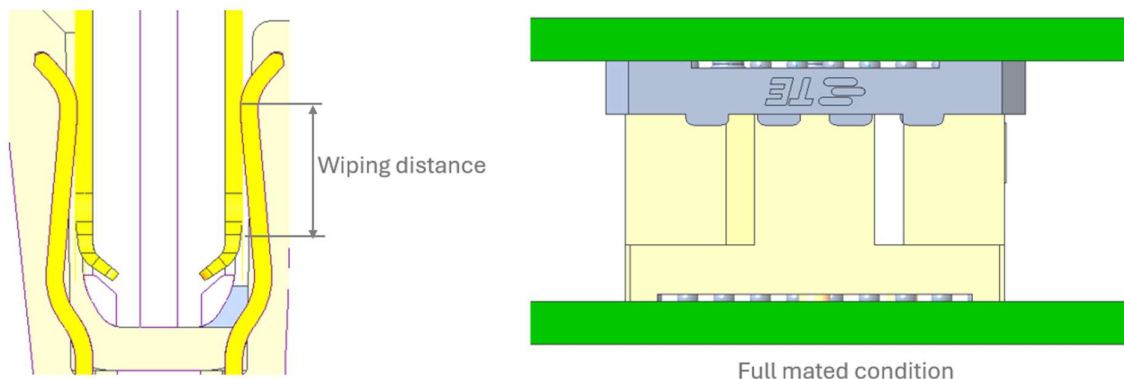
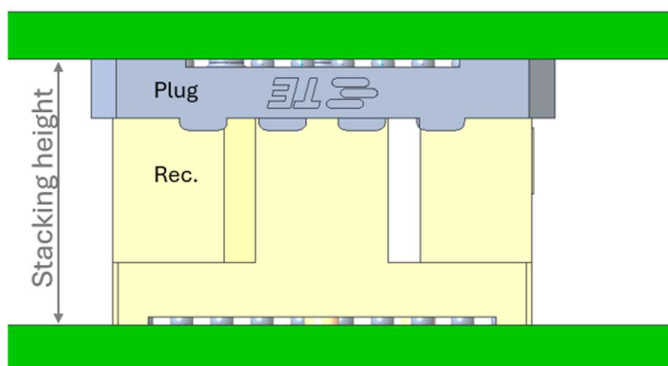


Figure 14

4.5 Stack height

56G MEZZ connector has three kind of stack height configuration ,7mm, 8.5mm and 10mm.



Stacking Height	Gender	
	Receptacle	Plug
10	2535030	2534040
8.5		2534030
7	TBD	

Figure 15

5. STORAGE RECOMMENDATION

5.1 Shelf Life

- The shelf life of the 56GMEZZ connector is recommended no longer than 1year under vacuum packing.
- The shelf life of the 56G MEZZ connector is recommended no longer than 3monthes once vacuum packing bag be opened.

5.2 Storage Condition

- Humidity no more than 60% RH
- Temperature will be 20~45°C, under 30°C is preferred.