



# PRODUCT SPECIFICATION

## MICRO SIM CONNECTOR, HINGE TYPE, 1.50MM MAX HEIGHT

### 1.0 SCOPE

This Product Specification covers the performance requirements of the SIM Card Connector (Hinge Type).

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

##### Product Name

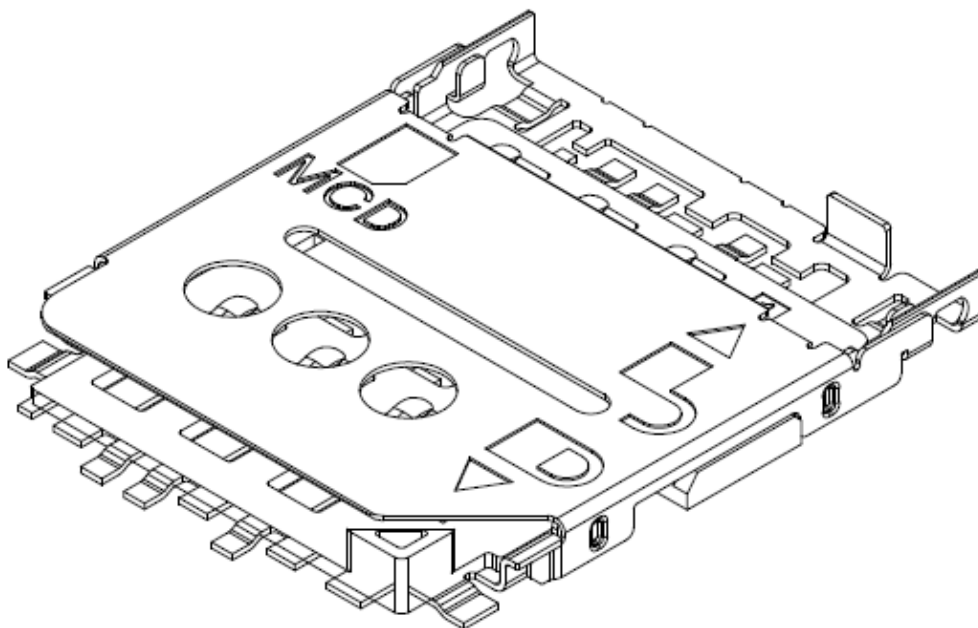
##### Series Number

MICRO SIM CONNECTOR, HINGE TYPE, 1.50MM MAX HEIGHT

78800

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See Sales Drawing for information on dimensions, materials, platings and markings.



#### TENTATIVE RELEASE:

THIS SPECIFICATION IS BASED ON DESIGN OBJECTIVES AND IS STRICTLY TENTATIVE. PRELIMINARY TEST DATA MAY EXIST, BUT THIS SPECIFICATION IS SUBJECTED TO CHANGE BASED ON THE RESULTS OF ADDITIONAL TESTING AND EVALUATION.

<u>REVISION:</u> <b>5</b>	<u>ECR/ECN INFORMATION:</u> <u>EC No:</u> <b>S2013-0467</b> <u>DATE:</u> <b>2012/12/21</b>	<u>TITLE:</u> <b>MICRO SIM CONNECTOR, HINGE TYPE, 1.50MM MAX HEIGHT</b>	<u>SHEET No.</u> <b>1 of 14</b>
<u>DOCUMENT NUMBER:</u> <b>PS-78800-001</b>	<u>CREATED / REVISED BY:</u> <b>Estelle 2012/12/21</b>	<u>CHECKED BY:</u> <b>JTAN 2013/03/11</b>	<u>APPROVED BY:</u> <b>Victor Lim 2013/03/11</b>



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## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents form a part of this specification to the extended specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence.

## 4.0 RATINGS

### 4.1 CURRENT RATING

0.5Amps Max. per contact

### 4.2 VOLTAGE RATING

5 Volt DC Max.

### 4.3 TEMPERATURE

Operating: - 30°C to + 85°C

## 5.0 MECHANICAL INTERFACE

### 5.1 CARD INTERFACE

SIM card interface: GSM 11.11 specification

### 5.2 PWB INTERFACE

Plating on PWB pads: OSP plated copper

## 6.0 PERFORMANCE

### 6.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contacts Low Level Contact Resistance (LLCR)	Mate connectors with dry circuit (20 mV, 100 mA MAX) on mated connector. Refer to appendix 1. (IEC 60512-2-1)	100 mΩ [MAXIMUM] Value includes bulk resistance of terminal
2	Insulation Resistance	Unmated connectors: apply a voltage of 500 VDC between adjacent contact for 1 minutes (IEC 60512-3-1)	1000 MΩ [MINIMUM]

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3	<b>Dielectric Withstanding Voltage</b>	Unmated connectors: apply a voltage of <b>500 VAC</b> between adjacent contact for <b>1 minutes</b> (IEC 60512-3-1)	No voltage breakdown
4	<b>Temperature Rise</b>	Mated and measure the temperature rise of contact, when rated current is passed. (IEC 60512-5-1)	Temperature Rise <b>+30°C</b> [MAXIMUM]

## 6.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	<b>Contact Normal Force</b>	Apply perpendicular force to terminal at the rate of 12.5mm/min. Measure contact normal force at <b>0.32mm</b> working height, read at return curve. Refer to appendix 2.	<b>0.20 N</b> [MINIMUM]  <b>1.30 N</b> [MAXIMUM]
6	<b>Lock/unlock force (With and without card)</b>	Lock and unlock shell from housing at a rate of 12.5mm/min. Lock and unlock 3 times before taking initial reading.	Locking force <b>15 N</b> [MAXIMUM]  Unlocking force <b>0.5 N</b> [MINIMUM]
7	<b>Durability (Terminal)</b>	Mate and unmate connector at vertical direction to maximum deflection case for <ul style="list-style-type: none"><li>5000cycles</li><li>At a rate of 500~600cycles/hour</li></ul> Take LLCR and normal force readings at 5000 <sup>th</sup> cycles. Refer to appendix 1 and 2. (EIA-364-09)	Contact Normal Force <b>0.20N</b> [MINIMUM]  LLCR <b>100 mΩ.</b> [MAXIMUM]

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8	<b>Durability (Locking system)</b>	Mate and unmate connector to 500cycles. Take reading at 500 <sup>th</sup> cycles. 1cycle (card loaded) = shell closed → shell locked → shell unlocked → shell opened.	Locking force <b>15 N</b> [MAXIMUM]  Contacts contact resistance <b>100 mΩ</b> [MAXIMUM]  Unlocking force <b>0.5 N</b> [MINIMUM]  No mechanical damage
9	<b>Vibration (Random)</b>	Frequency: 10~100 Hz, 0.0132 g <sup>2</sup> /Hz; Frequency: 100~500Hz, -3dB/Oct Applied for 1 hour in each 3 mutually perpendicular axes (IEC60068-2-64 Fh)	Contact resistance <b>100 mΩ</b> [MAXIMUM]  Discontinuity < 1 μs
10	<b>Mechanical Shock (specified pulse)</b>	Pulse shape = half sine Peak acceleration = 490m/s <sup>2</sup> (50G) Duration of pulse = 11ms Apply 3 successive shocks in each direction along the 3 mutually perpendicular axes. (IEC-60068-2-27 EA)	Contact resistance <b>100 mΩ</b> [MAXIMUM]  Meet Contact Force Spec  Discontinuity < 1 μs

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## 6.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
11	High Temperature Storage Life	At +85°C for 96 hours Recovery: 2 hours at ambient atmosphere (IEC60068-2-2 Bb)	Contacts contact resistance <b>100 mΩ</b> [MAXIMUM]  No mechanical damage, corrosion and oxidation at contact area
12	Thermal Shock	25 cycle at Ta = -55°C for 0.5 hours, then change of temp = 25°C MAX 5min, then, Tb = +85°C for 0.5hour, then cool to ambient Recovery: 2hours at ambient atmosphere (IEC60068-2-14 Na)	Contacts contact resistance <b>100 mΩ</b> [MAXIMUM]  No mechanical damage, corrosion and oxidation at contact area
13	Damp Heat (Cyclic)	Temp 25-55°C and 90-100%RH for 18 cycles of 24hours.  Recovery at 25°C and 25~75%RH for 2hours.  (Typical cycle in temp 25°C → 55°C in 3 hours; then maintain at 55°C for 9hours) (IEC60068-2-30Db)	Contacts contact resistance <b>100 mΩ</b> [MAXIMUM]  Insulation resistance <b>1000 MΩ</b> [MINIMUM]  No voltage breakdown  No mechanical damage, corrosion and oxidation at contact area

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14	<b>Solderability</b>	Solder paste is deposited on a ceramic plate via stencil. The connectors are steam aged and placed onto the solder paste print. The substrate is processed through a forced hot convection oven. Refer to section 9.0 for temp profile. The connectors are removed from the ceramic and inspected. Steam Aging: 8 hour  (ANSI-J-STD 002)	Solder coverage = 95% [MINIMUM]
15	<b>Resistance to Soldering Condition</b>	Unmated sample to be passed through reflow over according to temperature profiles shown in section 9.0  Reflow cycle: 3X times	No mechanical damage

## 7.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage. The parts shall be carried in reels inside boxes. For details, kindly refer to Packaging Specification PK-78800-001 and Sale drawing SD-78800-001.

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## 8.0 TEST SEQUENCES

Test Group →	Full Qualification Test						Screen Test		
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Test or Examination ↓									
Sample size	5	5	5	5	5	5	5	5	5
Resistance to Soldering Conditions	1	1	1	1	1	1	1	1	1
Contact Resistance (LLCR)	2,6,8			2,4,6	2,4	2,4	2,7	4,8	
Insulation Resistance		2,5						2	
Dielectric Withstanding Voltage		3,6						3	
Temperature Rise			2						
Contact Normal Force	3,5						3,8	5,7	
Durability (Terminal)	4							6	
Durability (Locking system)							5		
Lock/unlock force							4,6		
Vibration (Random)				3					
Mechanical Shock				5					
High Temperature Storage Life					3				
Thermal Shock						3			
Damp Heat	7	4							
Solderability									2

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DOCUMENT NUMBER:

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CREATED / REVISED BY:

**Estelle 2012/12/21**

CHECKED BY:

**JTAN 2013/03/11**

APPROVED BY:

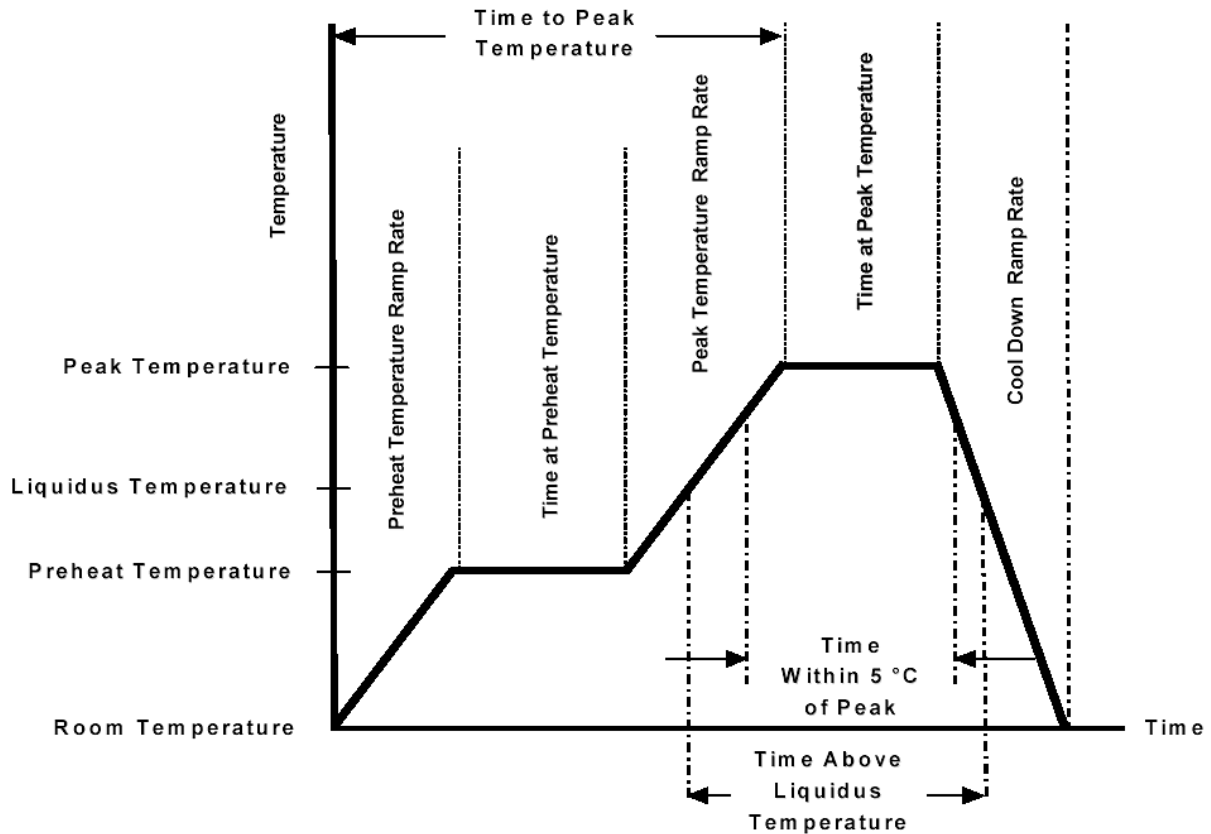
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## 9.0 SOLDERING PROFILE

### Lead-free reflow profile requirement for solderability testing



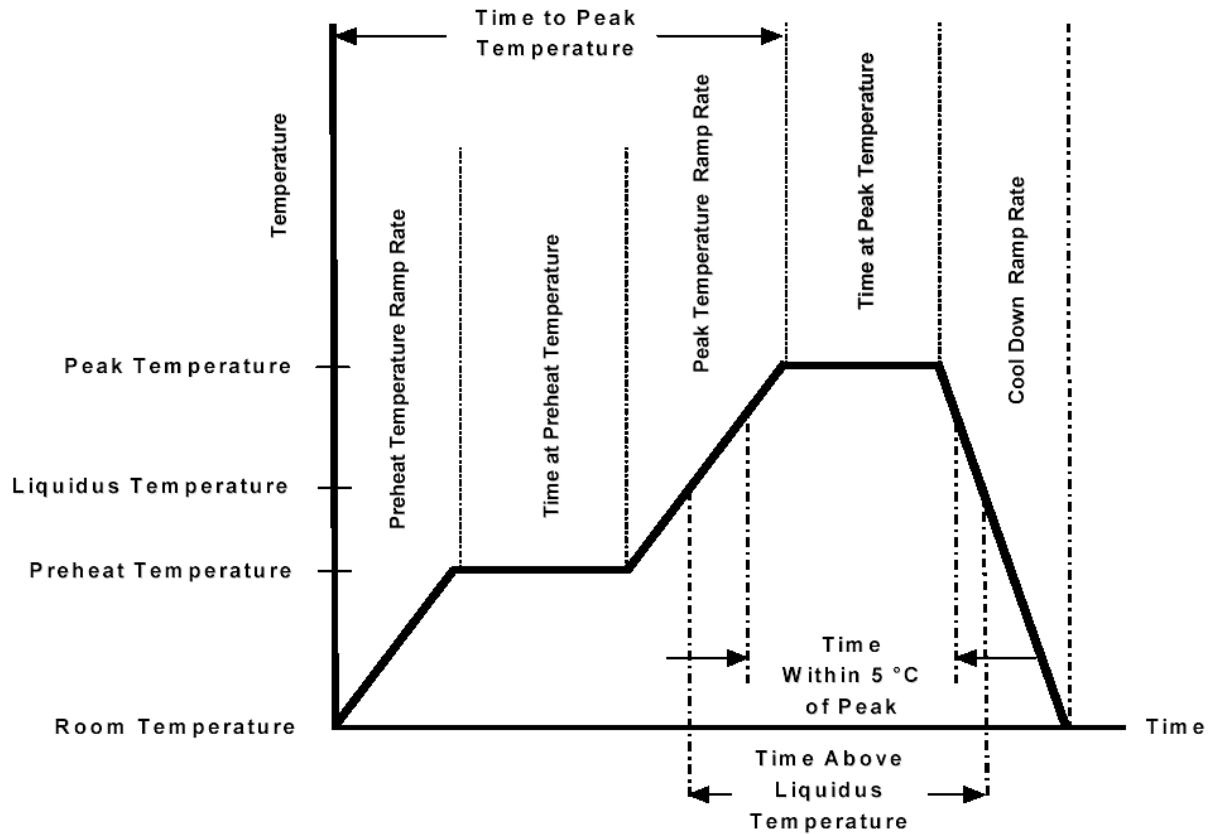
Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 180°C Max
Preheat Time	60 to 120 sec
Ramp to Peak	3°C/sec Max
Time over Liquidus (217°C)	30 sec Max
Peak Temperature	230 -0/+5°C
Time within 5°C of Peak	10 sec
Ramp - Cool Down	5°C/sec Max

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# PRODUCT SPECIFICATION

## Lead-free reflow profile requirement for soldering heat resistance testing



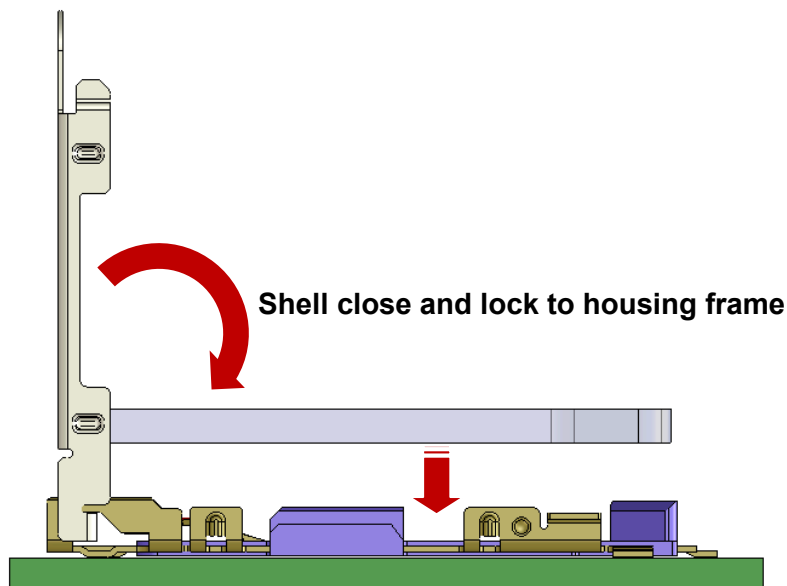
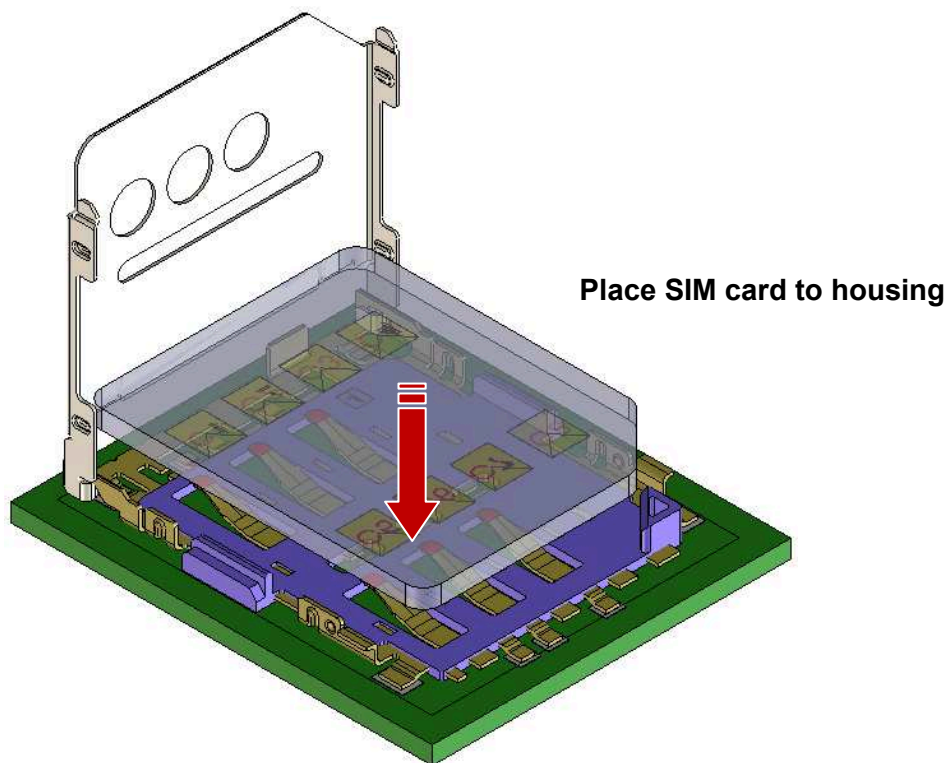
Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 180°C Max
Preheat Time	120 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquidus (217°C)	65 to 150 sec Max
Peak Temperature	255 -0/+5°C
Time within 5°C of Peak	10 sec
Ramp - Cool Down	5°C/sec Max
Time 40°C to 220	3 to 8 Min

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## 10.0 SIM CARD MOUNTING SEQUENCE



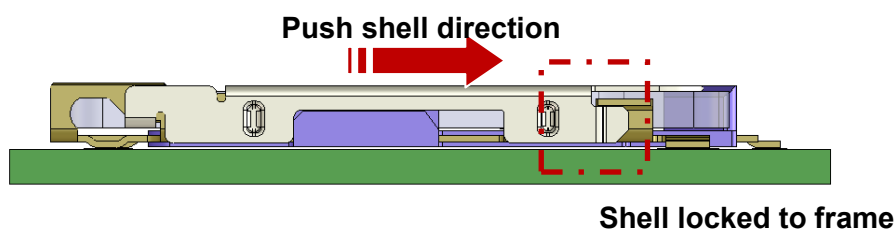
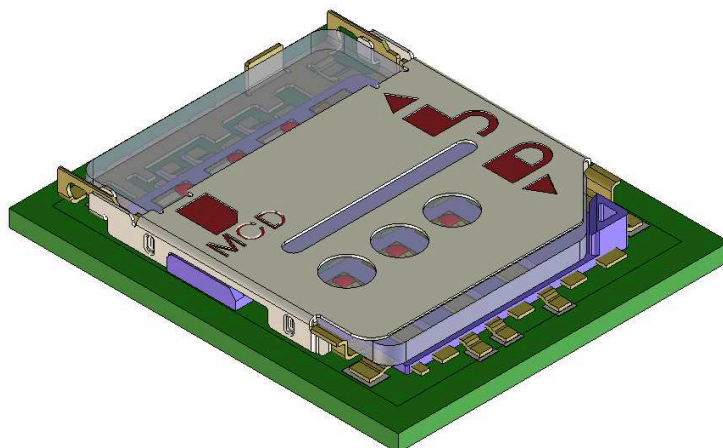
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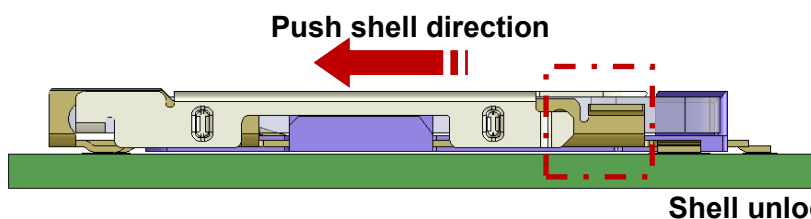
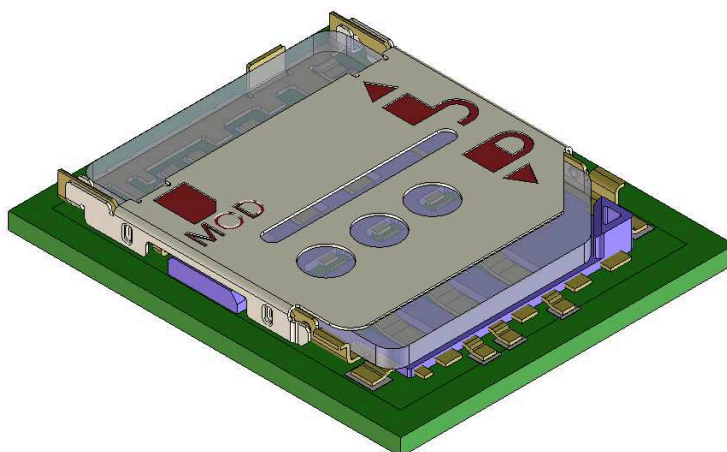
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## 11.0 CONNECTOR SHELL LOCKING AND UNLOCKING SEQUENCE

### A. Locked Position



### B. Unlocked Position

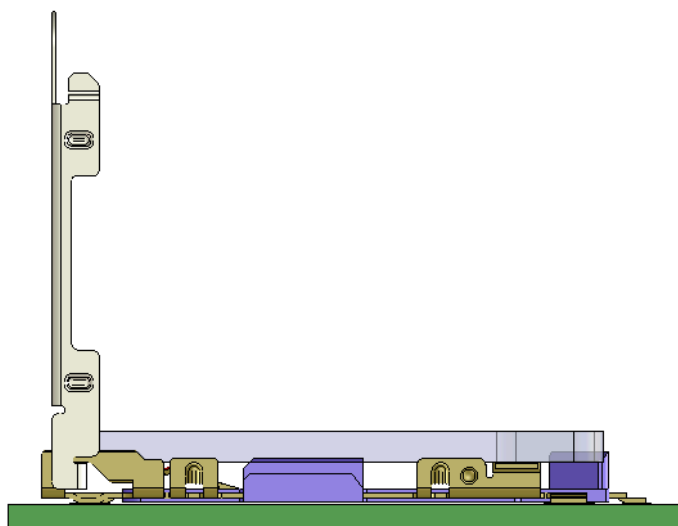
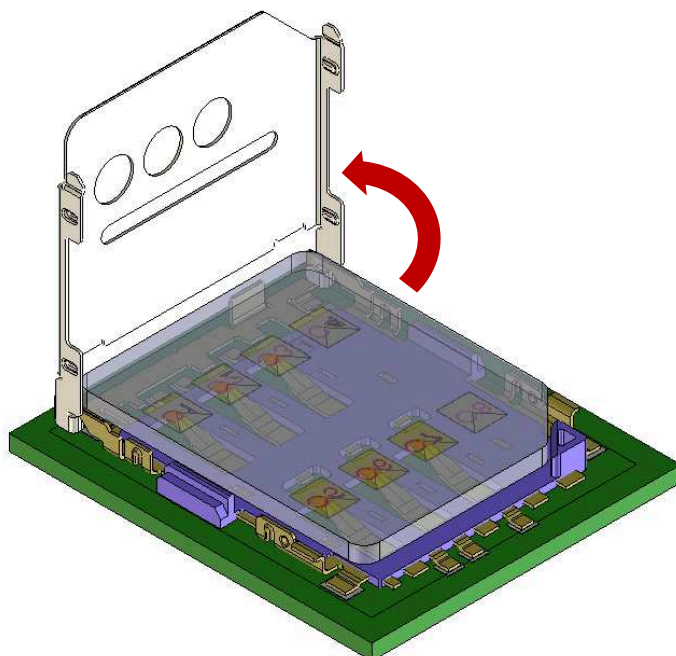


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## C. Open at 90 Degree Position

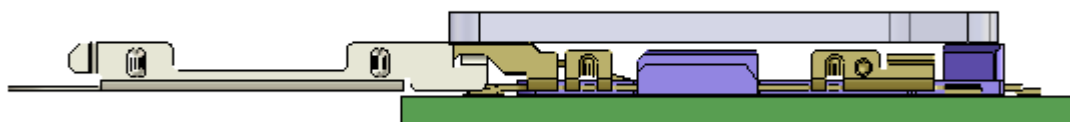
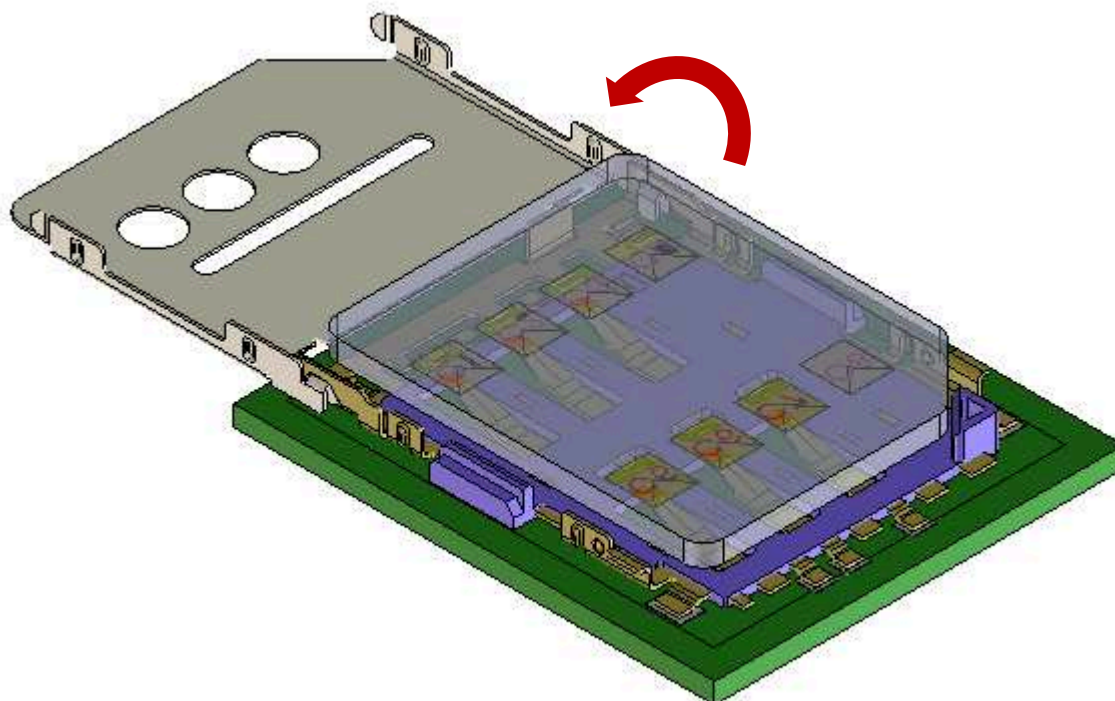


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## D. Open at 180 Degree Position



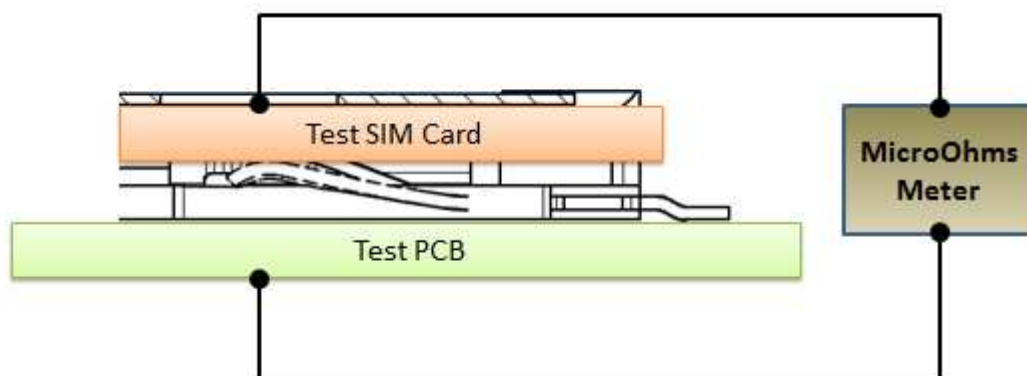
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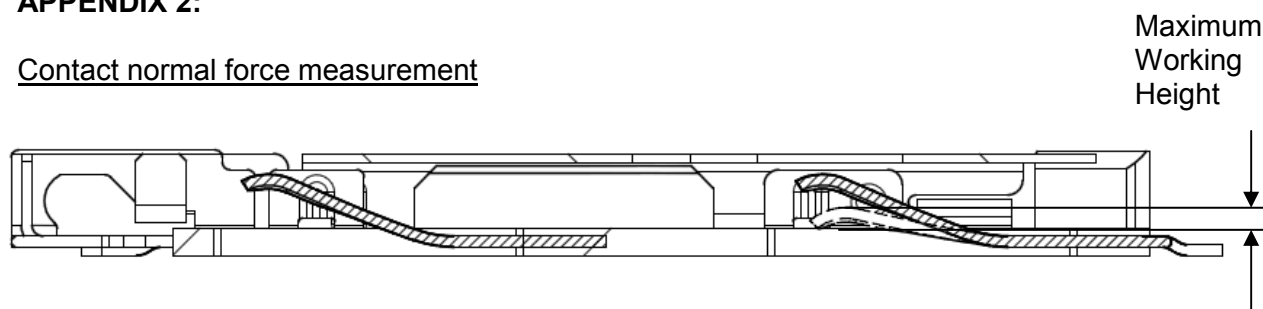
## APPENDIX 1:

### Contact resistance measurement



## APPENDIX 2:

### Contact normal force measurement



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