# PRODUCT SPECIFICATION

**SIM CARD CONNECTOR, BLOCK SIM, 0.30mm HEIGHT**

## 1.0 SCOPE

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

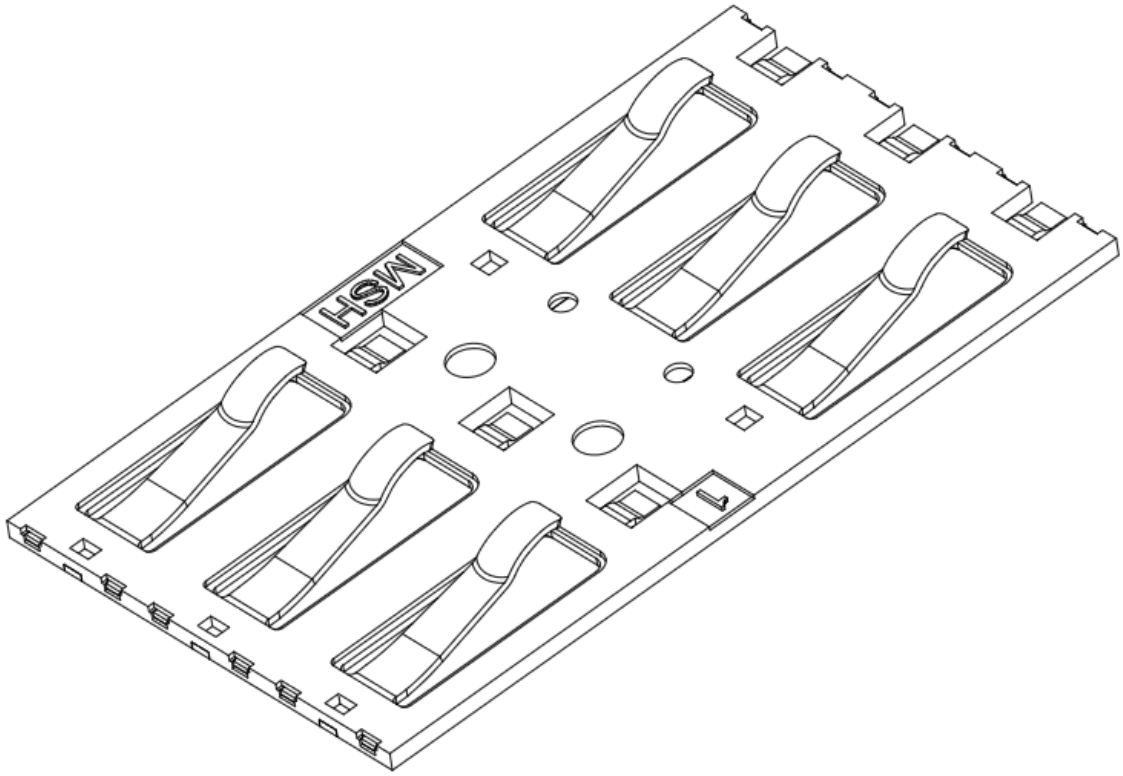
## 2.0 PRODUCT DESCRIPTION

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

| Product Name | Series Number |
|---|---|
| SIM CARD CONNECTOR, BLOCK SIM, 0.30MM HEIGHT | 78545 |

### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See Sales Drawing SD-78545-003 for information on dimensions, materials, platings and markings.



## 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

15 Volt DC Max.

### 4.3 TEMPERATURE

Operating: - 30°C to + 85°C
Storage (with packaging): - 5°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

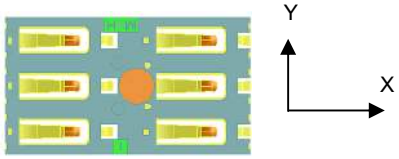
## 6.0 PERFORMANCE

### 6.1 ELECTRICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| 1 | **Low Level Contact Resistance (LLCR)** | Mate connectors with dry circuit (**20** mV, 100mA MAX) at 0.30mm away from housing top surface (see appendix 1) (IEC 60512-2-1) | **100** milliohm [MAXIMUM] [initial] Value includes bulk resistance of terminal |
| 2 | **Insulation Resistance** | Unmated connectors: apply a voltage of **500** VDC between adjacent contact for **1** minute (IEC 60512-3-1) | **1000** Megohms [MINIMUM] |

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

### 6.2 MECHANICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| **5** | **Contact Normal Force** | Measure contact normal force at **0.30mm** away from housing top surface. (refer to Appendix 2).<br>Reading to be taken from returned curve. | **0.30N** min at **0.3mm** away from housing top surface |
| **6** | **Durability** | Mate connectors at 240-550 cycles/hour to 500 cycles. Horizontal insertion for max deflection case. | Contact resistance<br>**100** milliohms<br>[MAXIMUM]<br>Contact Normal Force within spec. (refer to Appendix 1&3) |
| **7** | **Solder Joint Peeling Strength** | Apply a load to the connector parallel to the PWB (X & Y direction)<br>  | **20 N**<br>[MINIMUM] |
| **8** | **Resistance to Soldering Condition** | Unmated sample to be passed through reflow over according to temp profiles (shown in section 9.0) | No mechanical damage |

### 6.3 ENVIRONMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| **9** | **Dry cold (steady state)** | At -40°C for 96 hours<br>Recovery: 2 hours at ambient atmosphere<br>(IEC60068-2-1Ab) | Contact resistance **100** milliohms [MAXIMUM] |
| **10** | **Dry heat (steady state)** | At +85°C for 96 hours<br>Recovery: 2 hours at ambient atmosphere<br>(IEC60068-2-2Bb) | Contact resistance **100** milliohms [MAXIMUM] |
| **11** | **Thermal Shock** | 25 cycle at Ta = -55°C for 0.5 hours, then change of temp = 25°C MAX 5min, then, $T_b$ = +85°C for 0.5hour, then cool to ambient<br>Recovery: 2hours at ambient atmosphere<br>(IEC60068-2-14 Test Na) | No mechanical damage, corrosion and oxidation at contact area<br><br>Contact resistance **100** milliohms [MAXIMUM] |
| **12** | **Humidity Cyclic** | Cycle the parts between 25 °C ± 3 °C at 80% ± 3% RH and 65 °C ± 3 °C at 50% ± 3% RH.<br><br>Ramp times should be 0.5 hour and dwell times should be 1.0 hour.<br><br>Dwell times start when the temperature and humidity have stabilized within the specified levels.<br><br>Perform 24 cycles.<br>(EIA-364-1000.01A) | Contact resistance **100** milliohms [MAXIMUM]<br><br>Insulation resistance **1000** Megohms [MINIMUM]<br><br>No voltage breakdown |
| **13** | **Salt Spray** | 48 hours spray, at temp 35± 2°C, R/H 90-95%, Salt NaCl mist 5% after test was parts and return to room ambient for 1~2 hours<br>(IEC60068-2-11 Test Ka) | Contact resistance **100** milliohms [MAXIMUM] |

| | | | |
|---|---|---|---|
| **14** | **Vibration (Random)** | Frequency: 10~100 Hz, 0.0132 g2/Hz;<br>Frequency: 100~500Hz, -3dB/Oct<br>Applied for 1 hours in each 3 mutually perpendicular axes<br>(IEC60068-2-64 Fh) | Contact resistance **100** milliohms [MAXIMUM]<br><br>Discontinuity < 1 μs |
| **15** | **Shock (specified pulse)** | Pulse shape = half sine<br>Peak acceleration = 490m/s$^2$ (50G)<br>Duration of pulse = 11ms<br>Apply 3 successive shocks in each direction along the 3 mutually perpendicular axes.<br>(IEC-60068-2-27 EA) | Contact resistance **100** milliohms [MAXIMUM]<br><br>Discontinuity < 1 μs |
| **16** | **Solderability** | 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. The connectors are removed from the ceramic and inspected.<br>Steam Aging: 1 hour<br>(ANSI-J-STD 002) | No bridging and good coverage |

## 7.0 PACKAGING

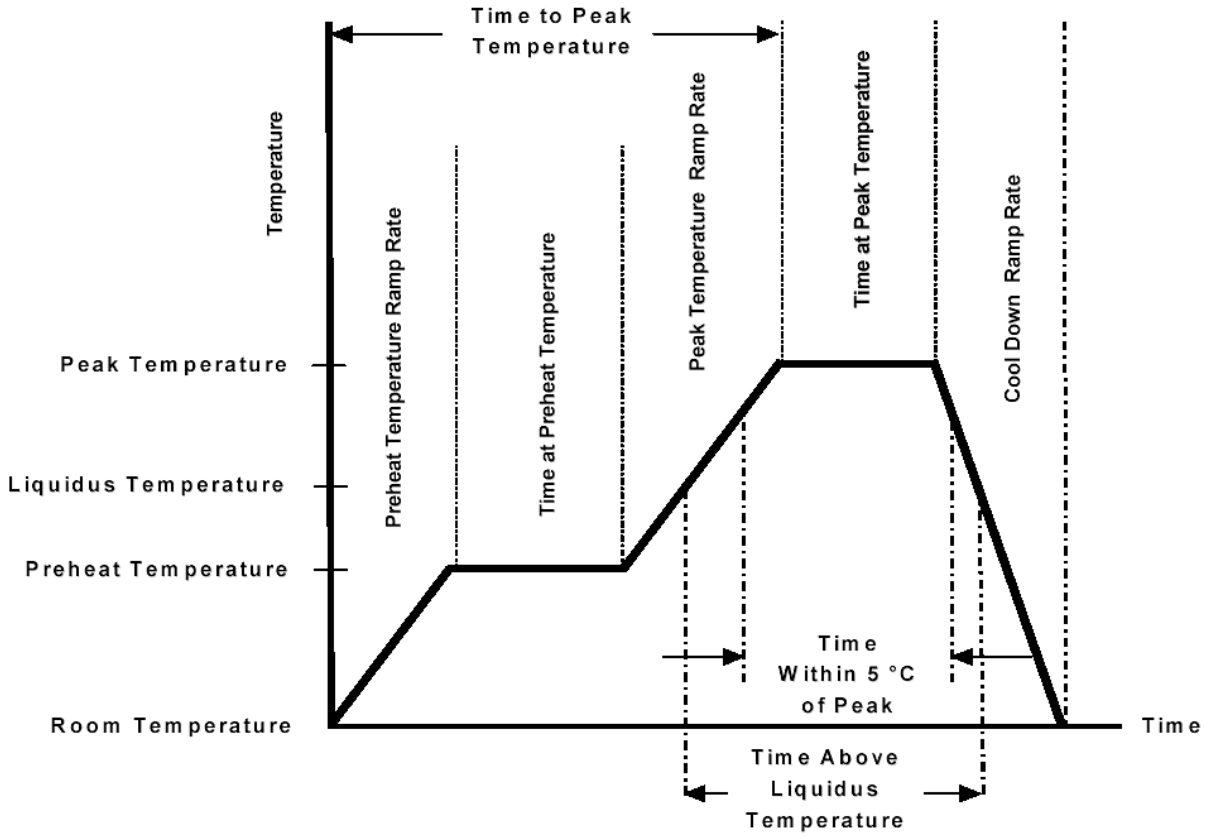
Parts shall be packaged to protect against damage during handling, transit and storage. The parts shall be carried in reels inside boxes. For details, kindly refer to Packaging spec PK-78545-001 and Sale drawing SD-78545-003.

## 8.0 TEST SEQUENCES

| **Test Group →** | Grp1 (screen test) | Grp2 | Grp3 | Grp4 (screen test) | Grp5 | Grp6 (screen test) | Grp7 | Grp8 |
|---|---|---|---|---|---|---|---|---|
| **Test or Examination ↓** | | | | | | | | |
| **Sample size** | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Resistance to Soldering Conditions | 1 | 1 | 1 | 1 | 1 | | 1 | 1 |
| Contact Resistance | 2,5 | 2,7 | 2,4 | | | | 2,5 | 2,5 |
| Insulation Resistance | | 3,8 | | | | | | |
| Dielectric Withstanding Voltage | | 4,9 | | | | | | |
| Temperature Rise | | | | | 2 | | | |
| Contact Normal Force | 3,6 | | | | | | | |
| Durability | 4 | | | | | | | |
| Solder Joint Peeling Strength | | | | 2 | | | | |
| Dry Cold | | | | | | | 3 | |
| Dry Heat | | | | | | | 4 | |
| Thermal Shock | | 5 | | | | | | |
| Cyclic Humidity | | 6 | | | | | | |
| Salt Spray | | | 3 | | | | | |
| Vibration | | | | | | | | 3 |
| Shock | | | | | | | | 4 |
| Solderability | | | | | | 1 | | |

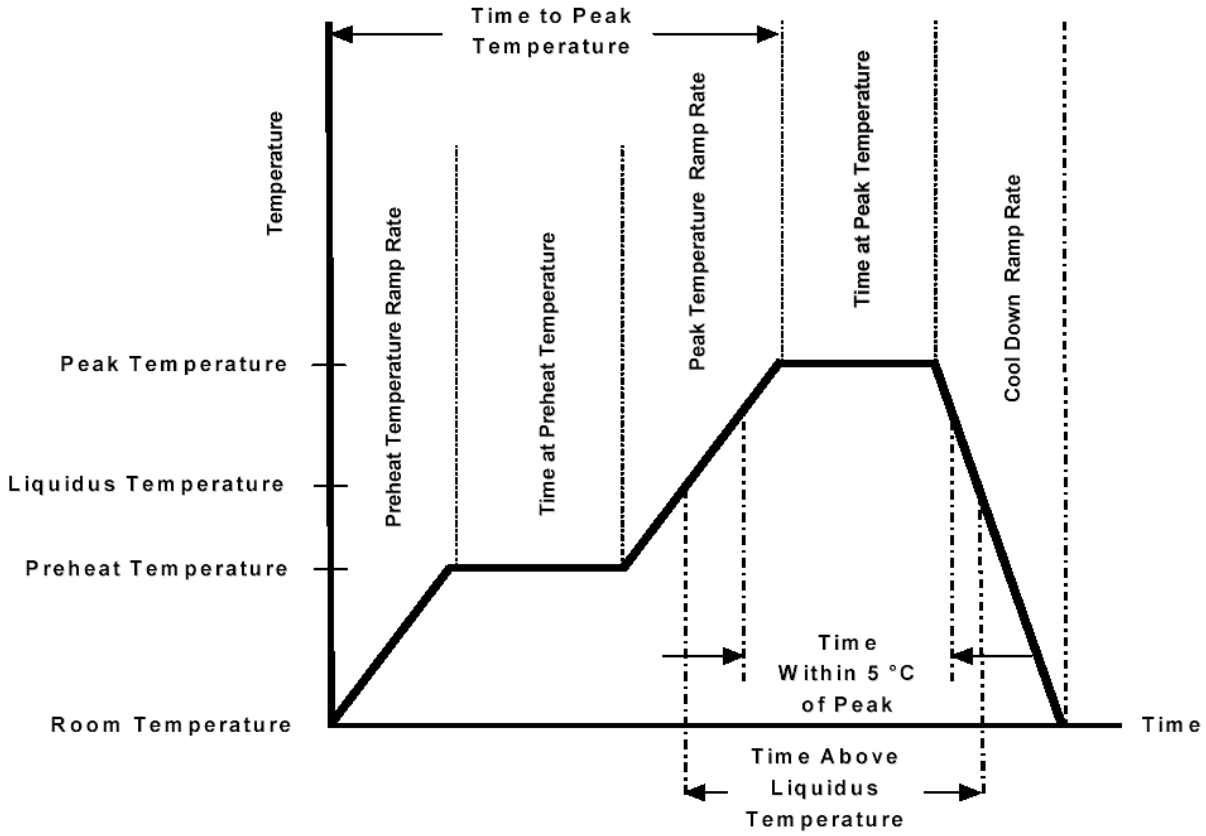
## 9.0 SOLDERING PROFILE

**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 |

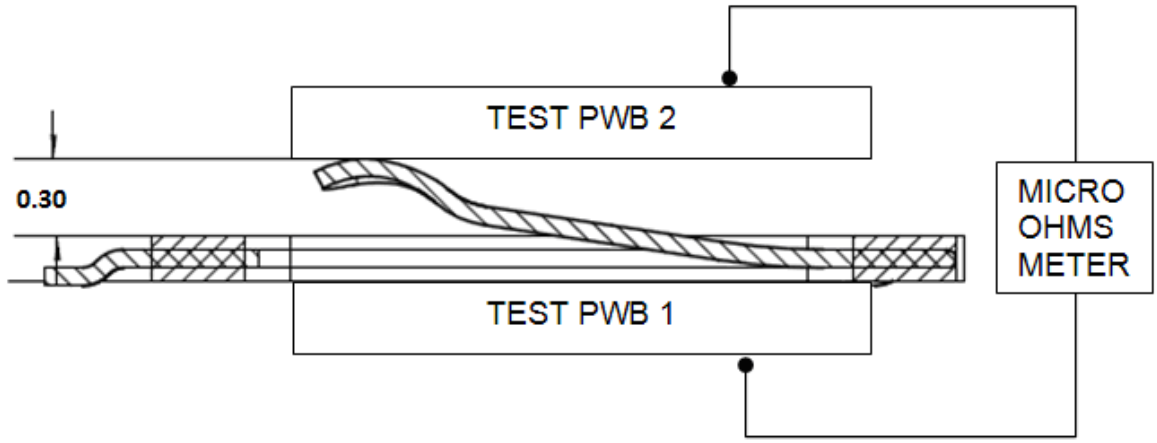
**Lead-free reflow profile requirement for soldering heat resistance testing**




| 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 |

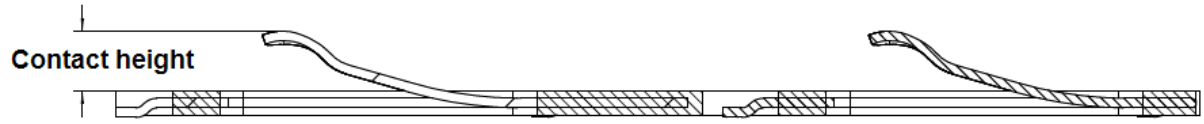
**APPENDIX 1:**

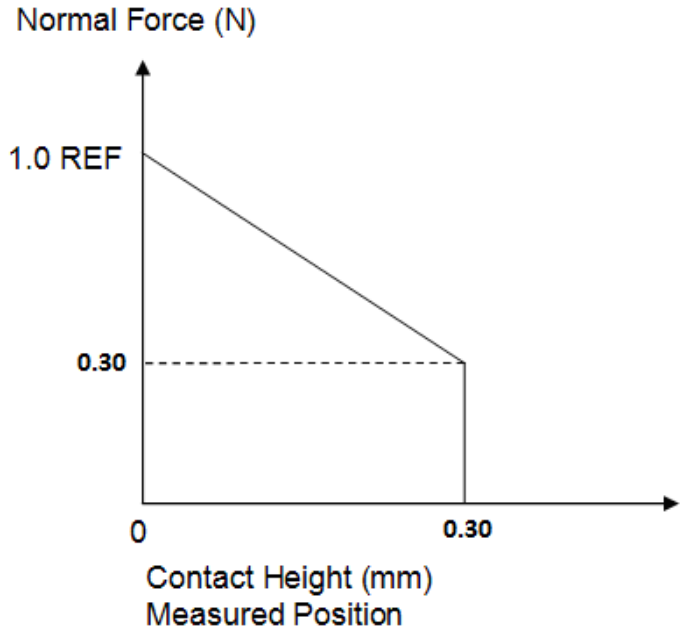
Contact resistance measurement




**APPENDIX 2:**

Contact normal force measurement






**APPENDIX 3:**

Card insertion directions in durability