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	DM 12/6/06 ECN E2007-0526									
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DOCUMENT NUMBER PS-99020-0071						FILENAME PS-99020		SHEET 1 of 13		



## 1.0 SCOPE

This specification defines the performance of the 2.54 mm pitch SIM PCB connector 91228, and mating card holders 91236 and 91356 for usage with the Plug-in SIM as specified by the GSM 11.11 Version 5.3.0: July 1999 specification.

NOTE: Normal force at maximum deflection see Test Ref. 5.10.

## 2.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See sales drawing and other sections of this specification for the relevant reference documents and specifications. In cases where the specification differs from the product drawings, the product drawings take precedence.

Description	Document
SIM PCB connector	SDA-91228, SDA-91228-008, SDA-91228-010, SDA-91228-011, SDA-91228-012 SD-91228-001 RSD-91228-008 RSD-91228-010 RSD-91228-011 RSD-91228-012
Card Holder	SDA-91236, SDA-91236-006, SDA-91236-009, SD-91356-001 RSD-91236-008, RSD-91236-010

## 3.0 RATINGS

3.1	Current	0.5 Amp maximum per contact
3.2	Voltage	50 V DC (maximum)
3.3	Durability	5000 mating cycles
3.4	Operating temperature range	-30°C to +85°C
3.5	Storage temperature range	-40°C to +90°C

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#### 4.0 ELECTRICAL PERFORMANCE

See section 7.0 for test sequence.

Test Ref.	Item	Test Condition	Requirements
4.1.	Contact Resistance (IEC 512-2, test 2a)	Mated connector with dry circuit of 20mV, 100mA maximum, per Appendix 1	Initial Value <50mΩ
4.2	Insulation Resistance (IEC 512-2, test 3a)	Unmated connector with 500 V DC between adjacent contacts	1000 MΩ minimum
4.3	Dielectric Strength (IEC 512-2, test 4a)	Unmated connector with 1000 V AC for 1 minute between adjacent contacts, as per Appendix 2	No voltage breakdown

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**5.0 MECHANICAL PERFORMANCE**

Test Ref.	Item	Test Condition	Requirements
5.1	Durability	Mate connector with SIM card inserted in holder at a rate of 10 cycles per minute to 5000 cycles. Use push button for card ejection, as per Appendix 3	Appearance - no damage. Maximum change from initial contact resistance = 20mΩ
5.2	Vibration (IEC 68-2-6)	10-150 Hz 0.15mm or 2g, duration 40 minutes, total 5 cycles in X,Y,Z axes	<1μsecond discontinuity. Maximum change from initial contact resistance = 20mΩ
5.3	Shock (IEC 68-2-27)	50g/11m sec ½ Sine, 3 shocks each of X,Y,Z axes, total 18 shocks	<1μsecond discontinuity. Maximum change from initial contact resistance = 20mΩ
5.4	Solder Tab Destruction Test	Apply a 4.9 N load for 1 min in all directions, as per Appendix 4	No damage to solder joints ( cracks or damage)
5.5	Mating Force	Mate connectors at a rate of 25 ± 3 mm/min	Mating Force 4.9 N max
5.6	Unmating Force	Unmate connectors at a rate of 25 ± 3 mm/min	Unmating Force ( push button force) 20N max
5.7	Card Holder Retention Force (latch enabled)	Pull card holder axially at 25-50 mm/min.	Retention Force 5N min
5.8	Terminal/Housing Retention Force	Apply an axial load to a terminal assembled in the housing at a speed of 25-50mm/min., as per Appendix 5	Retention Force 2.9 N min
5.9	Multi-axis Function Test for PCB Mounted Housing.	Apply Forces in all 4 directions, as per Appendix 6	F1/F2/F3/F4/F5>40N
5.10	Normal Force	Measure Normal Force per Appendix 8	Normal Force 0.2≤Fn≤0.7N.

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# Product Specification



LANGUAGE

English

## 6.0 ENVIRONMENTAL PERFORMANCE

Test Ref.	Item	Test Condition	Requirements
6.1	Resistance to solder conditions	a) Sample to be passed twice through reflow oven according to temp profile shown in appendix 7. One hour cooling between passes. b) Manual soldering at solder temp. of $300 \pm 5^{\circ}\text{C}$ for 3 sec.	Appearance - no damage
6.2	Solderability (IEC 68-2-20, test Ta, method 1)	Samples to be steam aged for 16 hrs using a steam aging chamber, or equivalent. Solder temp. $235 \pm 5^{\circ}\text{C}$ , wetting time 3 sec.	95% of immersed area must show no voids, pin holes, etc.
6.3	Damp Heat Cyclic (IEC 68-2-30, variant 1)	Upper air temp. $25-55^{\circ}\text{C}$ for 6 cycles, duration 6 days Recovery is 2 hrs at std. atmospheric condition.	Appearance - no damage. Maximum change from initial contact resistance = $20\text{m}\Omega$
6.4	Salt Spray (IEC 512-6, test 11f)	$5 \pm 1\%$ salt solution Duration 48 hrs	Appearance - no damage. Maximum change from initial contact resistance = $20\text{m}\Omega$
6.5	Long Term Dry Heat	$105^{\circ}\text{C}$ for 1000 hours	Appearance - no damage. Maximum change from initial contact resistance = $20\text{m}\Omega$
6.6	Temperature Change (IEC 68-2-14)	Ta = $-30^{\circ}\text{C}$ , Tb = $85^{\circ}\text{C}$ , rate of change of temperature $1 \pm 0.2^{\circ}\text{C}/\text{minute}$ 8 hours/cycle for 5 cycles Recovery is 2 hrs at std. atmospheric condition.	Appearance - no damage. Maximum change from initial contact resistance = $20\text{m}\Omega$
6.7	Thermal Shock (IEC 68-2-14)	$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ 5 cycles per hour (total 5 hours)	Appearance - no damage. Maximum change from initial contact resistance = $20\text{m}\Omega$

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6.8	SO <sub>2</sub> (IEC 68-2-42-KC)	Mated connectors exposed to 10 ±3ppm of SO <sub>2</sub> gas with 85-90% humidity at 40 ±2°C for 96 hours.	Appearance - no damage. Maximum change from initial contact resistance = 20mΩ
6.9	Temperature Rise Test	Mate connector and measure the temperature rise of the contacts when the max. rated DC current is applied	Temperature rise of 30 °C max
6.10	Cold Resistance	Mate connectors and expose to -40 ±3°C for 96 hours. Allow samples to reach room temp (1hr) before measurement.	Appearance - no damage. Maximum change from initial contact resistance = 20mΩ
6.11	Heat Resistance	Mate connectors and expose to 85 ±2°C for 96 hours. Allow samples to reach room temp (1hr) before measurement.	Appearance - no damage. Maximum change from initial contact resistance = 20mΩ

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# Product Specification



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## 7.0 TEST GROUPINGS

Test Ref.	Test Item	GP1	GP2	GP3	GP4	GP5
4.1	Contact Resistance	2,4,6	2,8,12	2,4,6,8	2,4,7,9	
4.2	Insulation Resistance		5,13			
4.3	Dielectric Strength		6,14			
5.1	Durability		7			
5.2	Vibration				5	
5.3	Shock				6	
5.4	Solder Tab Destruction Test.					2
5.5	Mating Force.		3,10			2
5.6	Unmating Force.		4,9			
5.7	Card Retention Force.					2
5.8	Terminal/Housing Retention Force					2
5.9	Multiaction Function Test for PCB Mounted Housing					2
5.10	Normal Force at maximum deflection	3,7				
6.1	Resistance to Solder Conditions	1	1	1	1	1
6.2	Solderability					2
6.3	Damp Heat Cyclic		11			
6.4	Salt Spray			5		
6.5	Long Term Dry Heat	5				
6.6	Temp. Change				3	
6.7	Thermal Shock			3		
6.8	SO <sub>2</sub>				8	
6.9	Temperature Rise					2
6.10	Cold Resistance			7		
6.11	Heat Resistance					2

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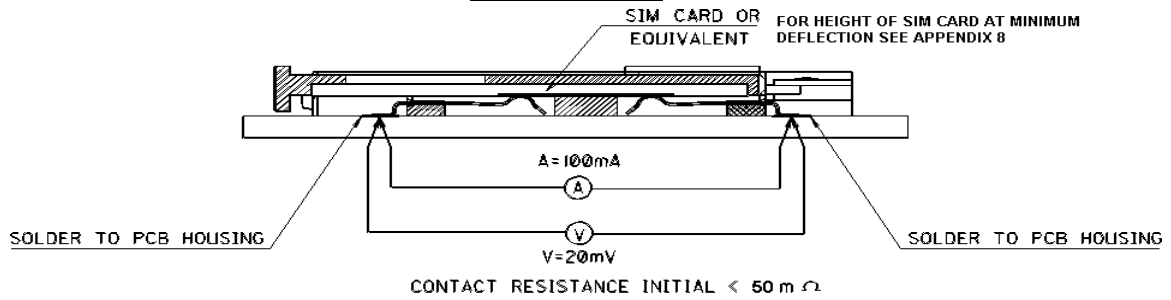
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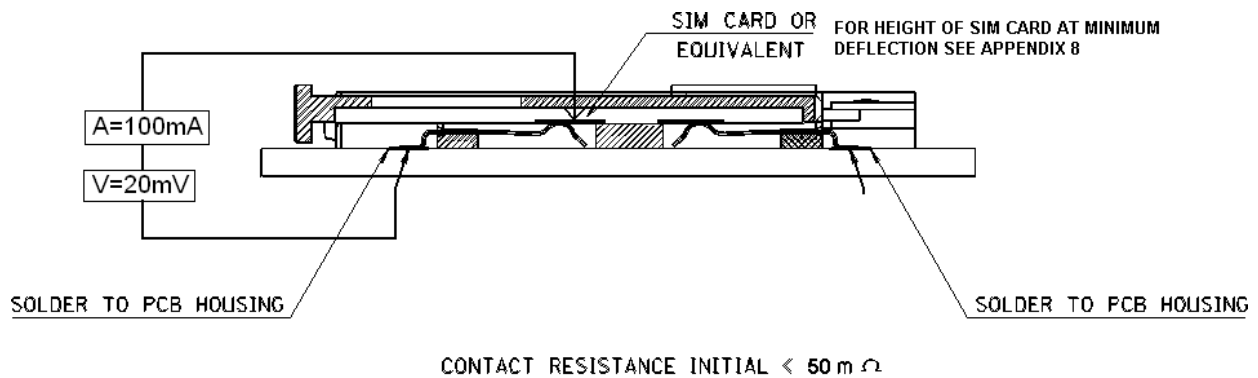




### Appendix 1:



#### Contact Resistance Across Cardholder Bridge Contact (4.1)

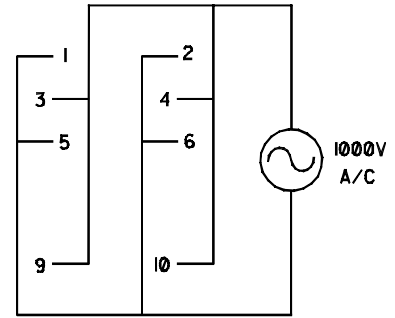
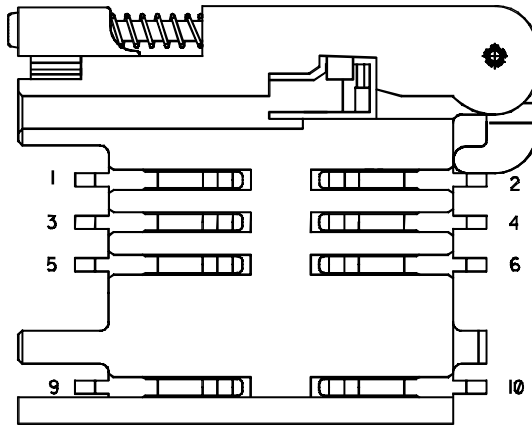


#### Contact Resistance Across Sim Card and Signal Contacts (4.1)

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**Appendix 2:**



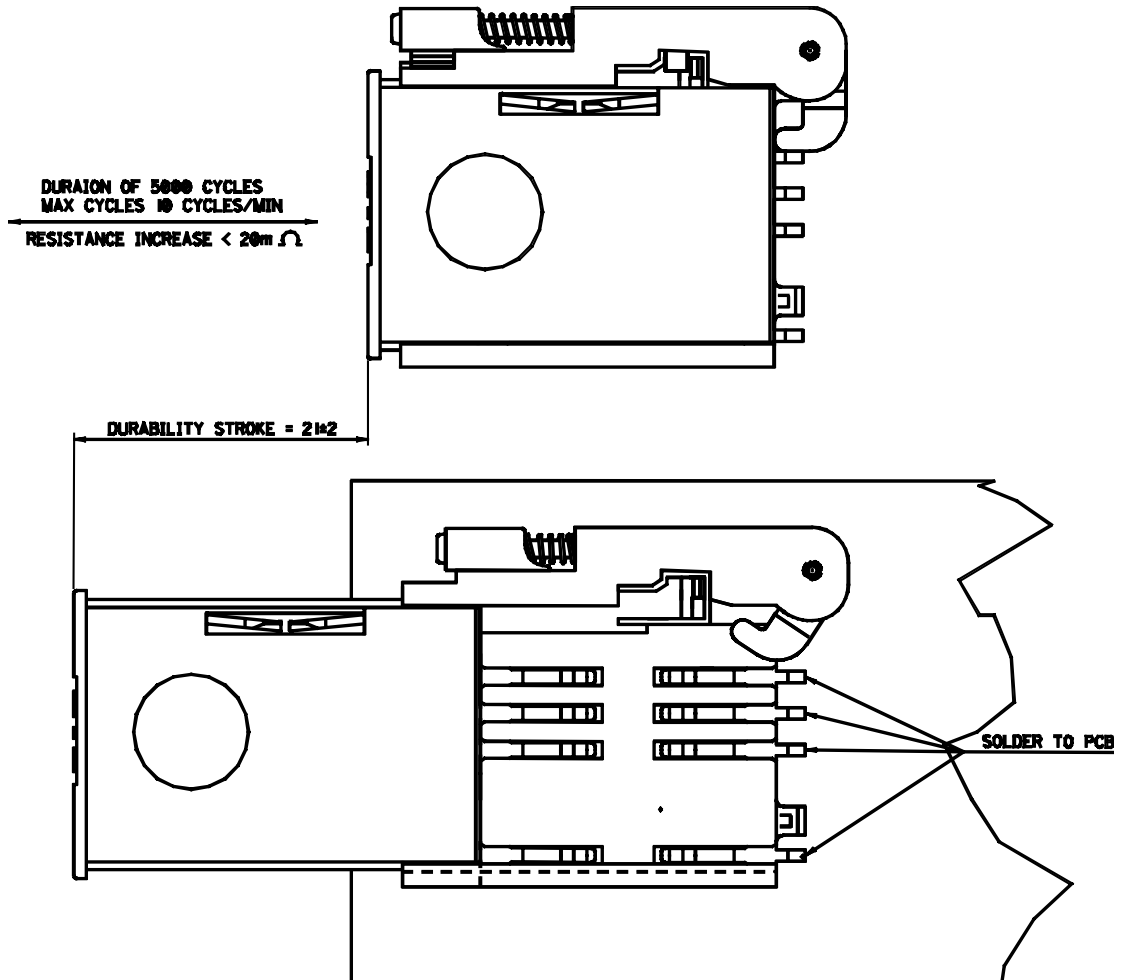
DIELECTRIC STRENGTH WIRING DIAGRAM

Dielectric Strength (4.3)

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**Appendix 3:**

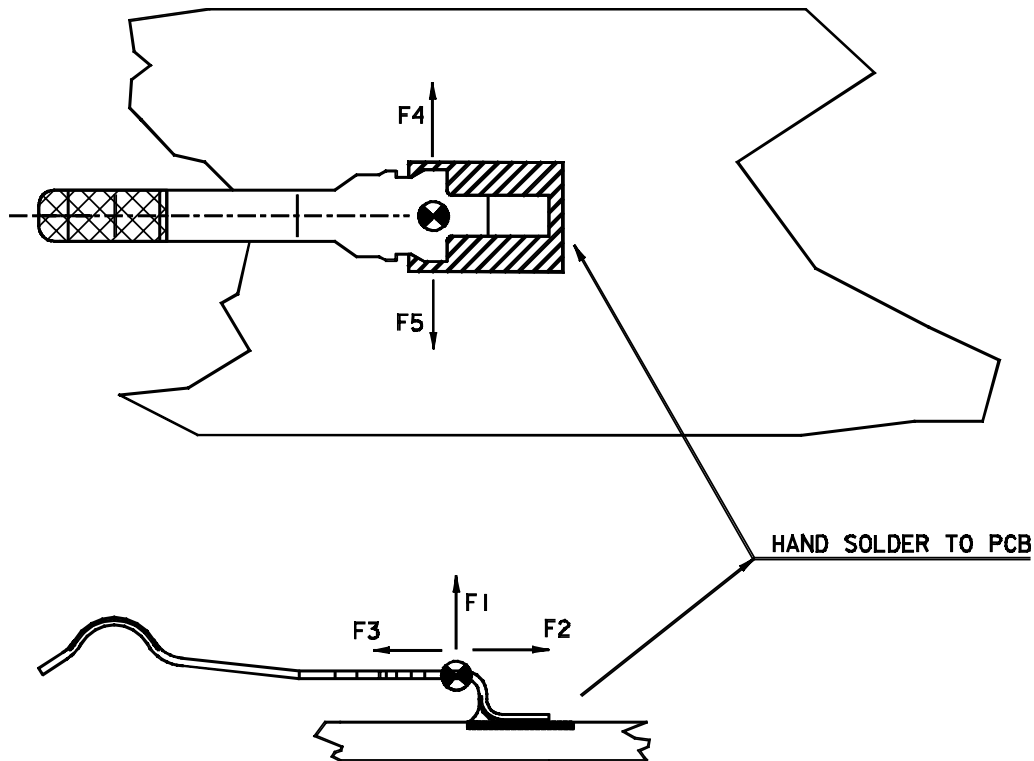


Durability (5.1)

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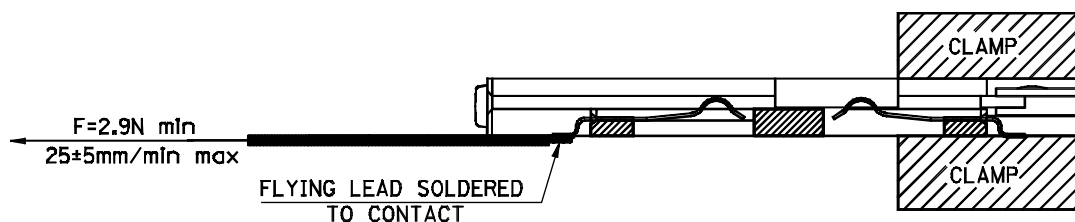


**Appendix 4:**



Solder Tab Destruct Test (5.4)

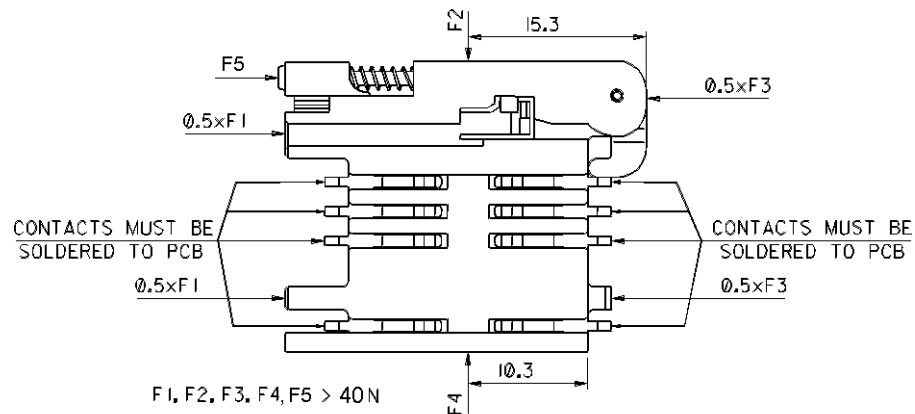
**Appendix 5:**



Terminal/Housing Retention Force (5.8)

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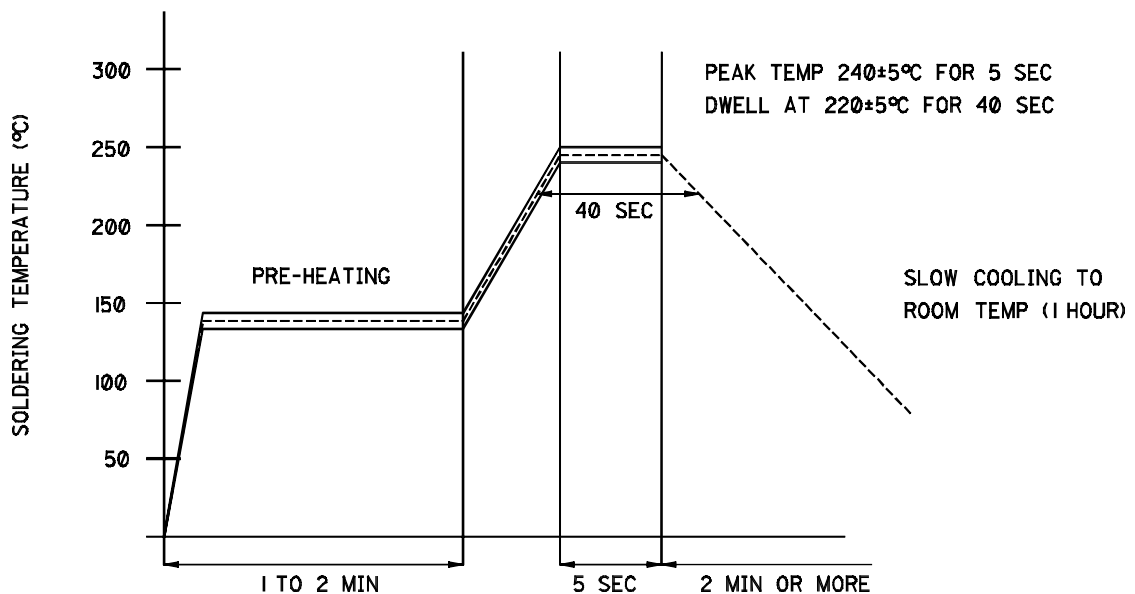
## **Appendix 6:**



### Multitaxis Function Test ( 5.9)

## **Appendix 7:**

REFLOW SOLDERING TEMPERATURE PROFILE

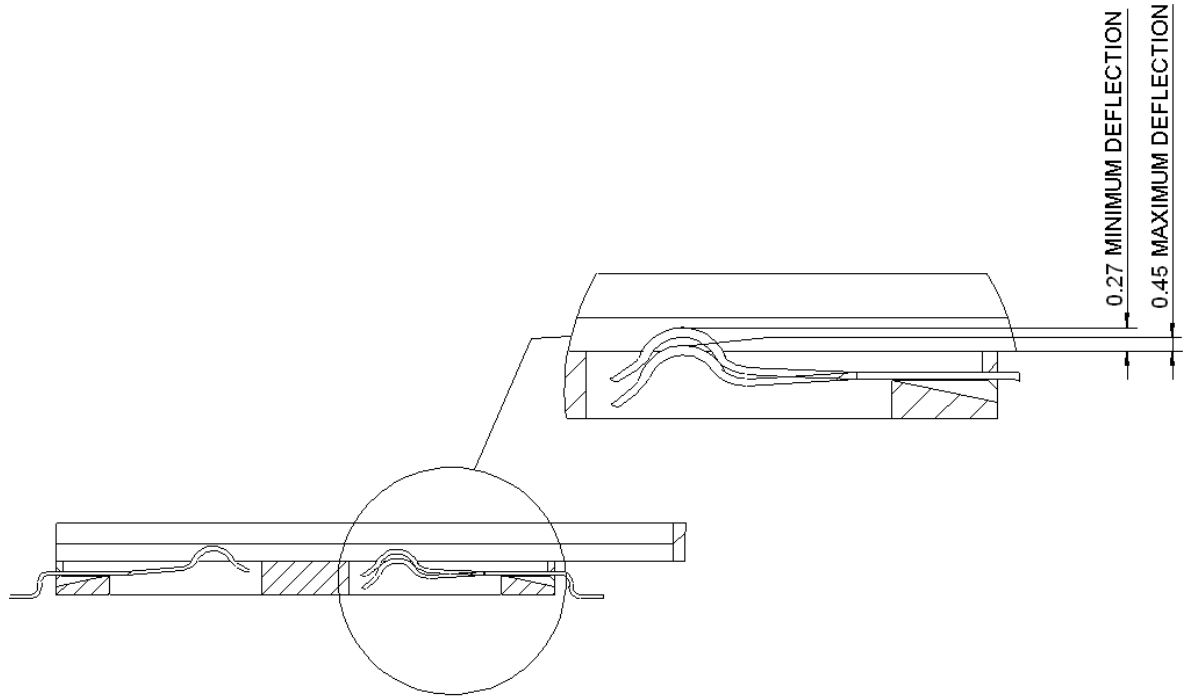


## Resistance to Solder Conditions (6.1)

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**Appendix 8:**



Maximum Normal Force (5.10)

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