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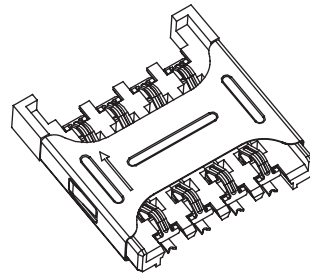
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PRODUCT SPECIFICATION

GradConn Part No.: CH03-FB

Product Description: Micro 3FF SIM Card Connector





1.0 Product Specification

1.1 Features
ETSI TS 102 221 Standard Micro SIM Card.

2.0 Technical Characteristics

2.1 General Characteristics		
Items	Standard	Description
Dimension		13.40L x 13.40W x 2.40H mm.
Weight		Approx. 0.50g.
Card Size	ETSI.TS.102.221	15.00 x 12.00 x 0.76 mm.
Contact Principle		Friction technology.
Mounting System		SMT Type (without post).
Durability		5,000 cycles min.
Material		
Insulator		Thermoplastic UL94V-0.
Data Contact		Phosphor Bronze.
Cover		SUS(304).
Plating		Gold over Nickel .

2.2 Electrical Characteristics (According to Standard IEC512)		
Items	Standard	Description
Number of contacts		6, 8 pins (optional).
Contact highly		0.70±0.05mm.
Rated voltage		50 V max.
Rated current		1 A max. 10μ A min.
Contact resistance	IEC512-2-2a	100mΩ max.
Insulation resistance pin to pin	IEC512-2-3a	>1000 MΩ/500 VDC.
Dielectric withstanding voltage	IEC512-2-4a	500 V AC rms 1 min. (sea level).



2.3 Mechanical Characteristics		
Items	Standard	Description
Card insertion force		20N Max.
Card retention force		1N min.
Contact location	ETSI.TS.102.221.	
Normal force		Min. 0.5N.
Contact retention force		>1.0N.

2.4 Solderability		
Items	Standard	Description
Wave	IEC-68-2-20.	Not Applicable.
Vaporphase		215°C, 30sec. max.
IR reflow		260°C, 10 sec. max.
Manual soldering	IEC68-2-20.	Not Applicable.

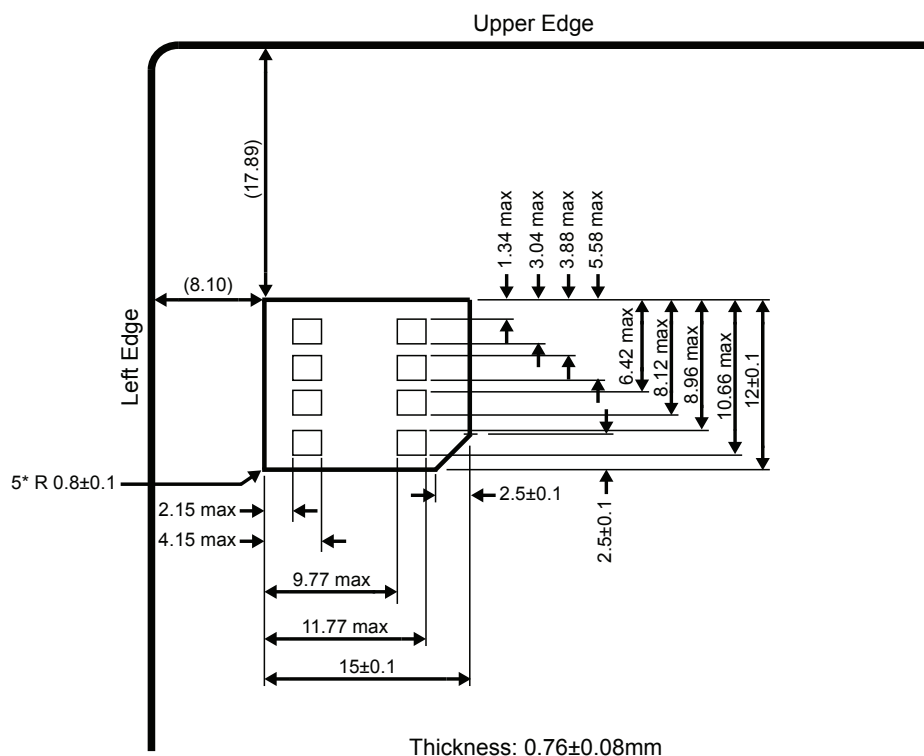
2.5 Environmental Characteristics (According to Standard IEC68)		
Items	Standard	Description
Operating temperature		-40°C ~ + 85°C.
Operating humidity		10% ~ 95% RH.
Storage temperature		- 40°C ~ + 85°C.
Storage humidity		10% ~ 95% RH.
Thermal Shock		-40°C ~ +85°C, 5 cycles.
Damp heat		40°C, 90%RH, 10 days.
Salt-mist		35°C, 5% NaCl, 24HR.

3.0 Interface

3.1 Signals

Contact No	Assignment	Description
C1	Vcc	Power Voltage.
C2	RST	Reset signal.
C3	CLK	Clocking signal.
C4	RFU	serve for feature use.
C5	GND	Power and signal ground.
C6	Vpp	Programming voltage.
C7	I/O	Serial data input/output.
C8	RFU	Reserve for feature use.

3.2 Micro SIM Card Contact Location (ETSI TS 102 221)





4.0 Test Data

4.1 Durability

Before Test

Purpose: 1. To test the mating/unmating force before and after 5,000 cycles mating.
2. To test the strength of cover.

Standard: Product spec.

Test 1. Put the part on tester.

Method: 2. Test at speed of 5mm/min.

Inspect Item: 1. Insertion Force: Max 20N.
2. Withdraw Force: Min 1N.
3. Low Level Contact Resistance: <100mΩ.

Sample	Data				Result
	Appearance	Insertion Force (N)	Withdrawal Force (N)	Contact Resistance (mΩ)	
1	No damage	5.34	3.25	9.09	Ok
2	No damage	5.46	2.89	9.47	Ok
3	No damage	5.71	3.16	9.17	Ok
4	No damage	6.29	3.08	8.53	Ok
5	No damage	5.95	3.05	8.74	Ok

After 5000 cycles.

Standard: Product spec.

Inspect Item: 1. Contact deform, damage.
2. Insertion Force: Max 20N.
3. Withdraw Force: Min 1N.
4. Low Level Contact Resistance: <100mΩ.

Sample	Data				Result
	Appearance	Insertion Force (N)	Withdrawal Force (N)	Contact Resistance (mΩ)	
1	No damage	7.45	6.09	9.09	Ok
2	No damage	7.54	6.02	9.47	Ok
3	No damage	7.49	6.07	9.17	Ok
4	No damage	7.4	6.03	8.53	Ok
5	No damage	7.51	5.98	8.74	Ok
Adjustment	Ok				



4.2 Normal Force			
Purpose: Measure force required to push the terminal down. Contacts require a proper normal force to make sure of a good contact with SIM card.			
Standard: Product Spec			
Method: 1. Fix the part on jig, measure the distance from contact to insulator surface. 2. Start the tester, write down the distance and force.			
Criteria: Normal force: Min 0.5N.			
Sample	Terminal Travelling (mm)	Normal Force (N)	Results
1	0.82	1.30	Ok
2	0.8	1.27	Ok
3	0.81	1.03	Ok
4	0.8	0.97	Ok
5	0.85	0.97	Ok

4.3 Contact Retention Force							
Method: Apply an axial load to terminal, assembled in the housing at a speed of 25-50 mm/min.							
Equipment: Mating/unmating tester.							
Criteria: >1N.							
Pin Sample	1	2	3	4	5	6	Result
1	2.37	2.88	2.13	2.78	2.01	3.01	Ok
2	2.14	2.12	2.56	3.02	3.14	2.89	Ok
3	2.22	2.21	2.88	3.04	3.02	2.11	Ok
4	3.16	3.14	2.99	2.31	3.01	2.15	Ok



4.4 Dielectric	
Purpose:	1. Verify the performance of withstanding rate voltage. 2. Verify the material insulation performance.
Standard:	Product Spec.
Method:	1. Test adjacent pin: shell and closed pin. 2. Test duration 1 min. 3. Leakage current 0.2mA.
Criteria:	500V/Minute.

Voltage:	500V/AC	Temp:	25°C
Leakage current:	0.02mA	Humidity:	60%
Test duration:	60 Seconds	Unit:	V

Sample	Record	Result
1	No breakdown.	Ok
2	No breakdown.	Ok
3	No breakdown.	Ok
4	No breakdown	Ok
5	No breakdown	Ok
Pass		

4.5 Insulation Resistance	
Purpose:	Performance of the insulation resistance.
Standard:	Product spec.
Method:	1. Apply on adjacent contact or contact and shell. 2. Write down the min data if various data available. 3. No breakdown, flashover.
Criteria:	>1000MΩ./min

Sample	Record	Result
1	1962MΩ	Ok
2	1847MΩ	Ok
3	1967MΩ	Ok
4	1694MΩ	Ok
5	1606MΩ	Ok
Pass		



4.6 Contact Resistance		
Purpose:	Verify the contact resistance.	
Standard:	Product spec.	
Method:	Measure the voltage drop at the circuit and work out the CR.	
Criteria:	>80MΩ/max.	
Sample	Record	Result
1	9.17mΩ	Ok
2	8.93mΩ	Ok
3	8.99mΩ	Ok
4	9.78mΩ	Ok
5	9.69mΩ	Ok
Pass		

4.7 IR Heat Resistant Test						
Purpose:	1. Check the contact and insulator stress after high temp. 2. Any other damage to the connector after high temp.					
Standard:	Product spec.					
Equipment:	IR reflow.					
Requirement:	1. Sample without damage, bending, deforming or bubbles before test. 2. Set IR Reflow temperature at 260°C (+/- 5°C), duration 7 minutes.					
Criteria:	1. No damage, bending, deforming or bubbles after test. 2. Coplanairity ≤0.08mm.					
Sample	Appearance	Deform	Bending	Bubble	Coplanairty	Result
1	Ok	Ok	Ok	Ok	0.08mm	Ok
2	Ok	Ok	Ok	Ok	0.07mm	Ok
3	Ok	Ok	Ok	Ok	0.07mm	Ok
4	Ok	Ok	Ok	Ok	0.08mm	Ok
5	Ok	Ok	Ok	Ok	0.05mm	Ok
Pass						



5.0 Dip Heat Resistant		
Purpose: To verify the heat resistance on dip solder.		
Standard: Product spec.		
Method: Temp (255±5)°C, with speed of 1±0.25 (inch)/S dip into solder pot, duration 3-5 seconds.		
Criteria: No crack, melt, deform.		
Sample	Criteria	Result
1	No crack, melt, deform.	Ok
2	No crack, melt, deform.	Ok
3	No crack, melt, deform.	Ok
4	No crack, melt, deform.	Ok
5	No crack, melt, deform.	Ok
Pass		