

Project Number: Design Qualification Test Report						
Requested by: Tori Meek		Date: 5/25/2013		Product Rev: F		
Part #: BNC7T-J-P-GN-ST-TH1/RF179-74SP3-606060-0150 Tech: Aaron McKim Eng: Eric Mings					Eng: Eric Mings	
Part description: BNC7T/RF				Qty to	test: 8	
Test Start: 04/29/2013	Test Completed: 05/	17/2013				



DESIGN QUALIFICATION TEST REPORT

BNC7T/RF179 BNC7T-J-P-GN-ST-TH1/RF179-74SP3-606060-0150

Tracking Code: 251940_Report_Rev_1	Part #: BNC7T-J-P-GN-ST-TH1/RF179-74SP3-606060-0150
Part d	lescription: BNC7T/RF179

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
05/25/2013	1	Initial Issue	КН

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Part description: BNC7T/RF179				

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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SCOPE

To perform the following tests: Design Qualification test. Please see test plan.

APPLICABLE DOCUMENTS

Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

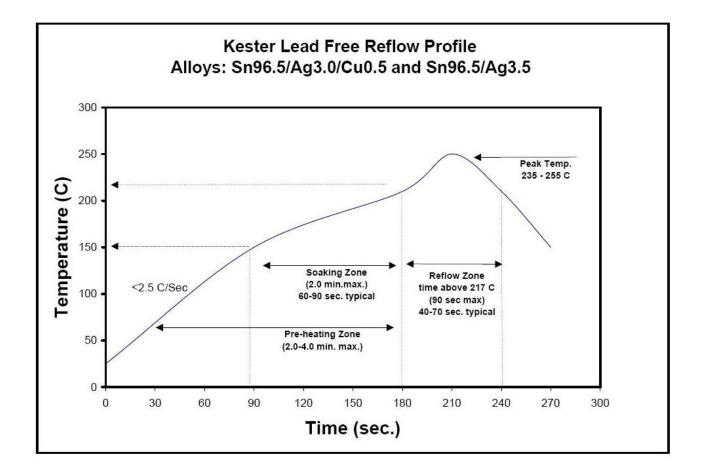
- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) The automated procedure is used with aqueous compatible soldering materials.
- 4) Parts not intended for testing LLCR are visually inspected.
- 5) Any additional preparation will be noted in the individual test sequences.
- 6) Solder Information: Lead Free
- 7) Re-Flow Time/Temp: See accompanying profile.
- 8) Samtec Test PCBs used: PCB-104333-TST

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Part description: BNC7T/RF179

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)

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FLOWCHARTS

Durability/Mating/Unmating/Gaps

TEST	GROUP B1
STEP	8 Parts
01	Contact Gaps
02	LLCR-1
03	100 Cycles (Total)
04	Clean w/Compressed Air
05	Contact Gaps
06	LLCR-2
07	Thermal Shock (Mated and Undisturbed)
08	LLCR-3
09	Cyclic Humidity (Mated and Undisturbed)
10	LLCR-4

Thermal Shock = EIA-364-32, Table II, Test Condition I:

-55°C to +85°C 1/2 hour dwell, 100 cycles

Humidity = EIA-364-31, Test Condition B (240 Hours)

and Method III (+25 °C to +65 °C @ 90% RH to 98% RH)

ambient pre-condition and delete steps 7a and 7b

Contact Gaps / Height - No standard method. Usually measured optically.

Gaps to be taken on a minimum of 20% of each part tested

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

Note: Signal and ground contact gaps were measured

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Dort d	lescription: BNC7T/RF170

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL SHOCK:

- 1) EIA-364-32, Thermal Shock (Temperature Cycling) Test Procedure for Electrical Connectors.
- 2) Test Condition 1: -55°C to +85°C
- 3) Test Time: ½ hour dwell at each temperature extreme
- 4) Number of Cycles: 100
- 5) All test samples are pre-conditioned at ambient.
- 6) All test samples are exposed to environmental stressing in the mated condition.

HUMIDITY:

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*.
- 2) Test Condition B, 240 Hours.
- 3) Method III, +25° C to + 65° C, 90% to 98% Relative Humidity excluding sub-cycles 7a and 7b.
- 4) All samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

LLCR:

- 1) EIA-364-23, Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
 - a. <= +5.0 mOhms:----- Stable
 - b. +5.1 to +10.0 mOhms:----- Minor
 - c. +10.1 to +15.0 mOhms: ----- Acceptable
 - d. +15.1 to +50.0 mOhms: ----- Marginal
 - e. +50.1 to +2000 mOhms: ----- Unstable
 - f. >+2000 mOhms:----- Open Failure

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RESILTS

CR Du	rability:		
Signal	•		
	r ial	101.08mOhms Max	
	ability, 100 Cycles		
	○ <= +5.0 mOhms	8 Points	Stable
	o +5.1 to +10.0 mOhms		
	o +10.1 to +15.0 mOhms	0 Points	Acceptable
	o +15.1 to +50.0 mOhms	0 Points	Marginal
	o +50.1 to +2000 mOhms	0 Points	Unstable
	o >+2000 mOhms	0 Points	Open Failure
• The	rmal Shock		
	○ <= +5.0 mOhms		
	o +5.1 to +10.0 mOhms		
	o +10.1 to +15.0 mOhms		_
	○ +15.1 to +50.0 mOhms		9
	o +50.1 to +2000 mOhms		
	o >+2000 mOhms	0 Points	Open Failure
• Hun	nidity		
	o <= +5.0 mOhms		
	• +5.1 to +10.0 mOhms		
	○ +10.1 to +15.0 mOhms	0 Points	Acceptable
	1-1: -00		_
	o +15.1 to +50.0 mOhms	0 Points	Marginal
	o +50.1 to +2000 mOhms	0 Points 0 Points	Marginal Unstable
		0 Points 0 Points	Marginal Unstable
Ground	 +50.1 to +2000 mOhms >+2000 mOhms 	0 Points 0 Points	Marginal Unstable
Groune Init	 +50.1 to +2000 mOhms >+2000 mOhms 	0 Points 0 Points 0 Points	Marginal Unstable
Init	 +50.1 to +2000 mOhms >+2000 mOhms d pin 	0 Points 0 Points 0 Points	Marginal Unstable
Init	 +50.1 to +2000 mOhms >+2000 mOhms d pin dial ability, 100 Cycles <= +5.0 mOhms 		Marginal Unstable Open Failurd Stable
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Tracking Code: 251940_Report_Rev_1

Part description: BNC7T/RF179

DATA SUMMARIES

LLCR Durability:

- 1) A total of 16 points were measured.
- 2) EIA-364-23, Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
 - a. <= +5.0 mOhms:----- Stable
 - b. +5.1 to +10.0 mOhms: ----- Minor
 - c. +10.1 to +15.0 mOhms: ----- Acceptable
 - d. +15.1 to +50.0 mOhms: ----- Marginal
 - e. +50.1 to +2000 mOhms ----- Unstable
 - f. >+2000 mOhms: ----- Open Failure

	LLCR Measurement Summaries by Pin Type					
Date	2013-4-29	2013-4-30	2013-5-7	2013-5-17		
Room Temp (Deg C)	24	23	22	23		
Rel Humidity (%)	32	32	47	44		
	Aaron	Aaron	Aaron	Aaron		
Technician	McKim	McKim	McKim	McKim		
mOhm values	Actual	Delta	Delta	Delta		
		100	Therm			
	Initial	Cycles	Shck	Humidity		
		Pin Type	1: Ground			
Average	4.26	0.20	0.25	0.33		
St. Dev.	0.22	0.16	0.17	0.15		
Min	4.02	0.00	0.09	0.18		
Max	4.63	0.48	0.58	0.66		
Summary Count	8	8	8	8		
Total Count	8	8	8	8		
	Pin Type 2: Signal					
Average	99.91	0.93	1.17	0.90		
St. Dev.	0.75	0.72	0.68	0.59		
Min	98.33	0.18	0.36	0.03		
Max	101.08	2.55	2.60	1.68		
Summary Count	8	8	8	8		
Total Count	8	8	8	8		

LLCR Delta Count by Category							
Stable Minor Acceptable Marginal Unstable Oper							
mOhms	<=5	>5 & <=10	>10 & <=15	>15 & <=50	>50 & <=1000	>1000	
100 Cycles	16	0	0	0	0	0	
Therm Shck	16	0	0	0	0	0	
Humidity	16	0	0	0	0	0	

Part description: BNC7T/RF179

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: MO-04

Description: Multimeter /Data Acquisition System

Manufacturer: Keithley

Model: 2700 Serial #: 0798688 Accuracy: See Manual

... Last Cal: 04/30/2013, Next Cal: 04/30/2014

Equipment #: THC-02

Description: Temperature/Humidity Chamber

Manufacturer: Thermotron

Model: SE-1000-6-6 **Serial #:** 31808

Accuracy: See Manual

... Last Cal: 02/16/2013, Next Cal: 02/16/2014

Equipment #: TSC-01

Description: Vertical Thermal Shock Chamber

Manufacturer: Cincinnatti Sub Zero

Model: VTS-3-6-6-SC/AC Serial #: 10-VT14993 Accuracy: See Manual

... Last Cal: 05/18/2012, Next Cal: 05/18/2013