

APRIL 15, 1997

TEST REPORT #96506

ENVIRONMENTAL TESTING
(THERMAL SHOCK/CYCLIC HUMIDITY)

BGA SOCKETS

PART NUMBERS

BCZ-256-1230-16AA01 GOLD PLATED

BCZ-256-1230-16AA09 TIN-LEAD PLATED (GREASED)



APPROVED BY: THOMAS PEEL
VICE PRESIDENT AND
DIRECTOR OF TEST PROGRAM DEVELOPMENT
CONTECH RESEARCH, INC.



Contech Research

CERTIFICATION

This is to certify that the evaluation described herein was designed and executed by personnel of Contech Research, Inc.

All equipment and measuring instruments used during testing were calibrated and traceable to NIST according to ISO 10012-1 and ANSI/NCSL Z540-1, as applicable.

All data, raw and summarized, analysis and conclusions presented herein are the property of the test sponsor. No copy of this report, in part or in full, shall be forwarded to any agency, customer, etc., by Contech Research without the written approval of the test sponsor.



Thomas Peel
Vice President and
Director of Test Program Development

TP:gb/js



Contech Research

SCOPE

To perform Environmental (Thermal Shock/Cyclic Humidity) testing on BGA Sockets as manufactured and submitted by the test sponsor

APPLICABLE DOCUMENTS

1. Unless otherwise specified, the following documents of issue in effect at the time of testing performed form a part of this report to the extent as specified herein. The requirements of sub-tier specifications and/or standards apply only when specifically referenced in this report.
2. Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

1. The following test samples were submitted by the test sponsor, _____ for the evaluation to be performed by Contech Research, Inc.

<u>Description</u>	<u>Part Number</u>
BGA Sockets Gold Plated Contacts	BCZ-256-1230-16AA01
BGA Sockets Tin-Lead Plated Contacts (Greased)	BCZ-256-1230-16AA09

2. Unless otherwise indicated, all materials were certified by the manufacturer to be in accordance with the applicable product specification.
3. Contacts were fabricated from the materials submitted for evaluation using standard production techniques normal for the product involved.
4. Applicable qualified mating devices were supplied by the test sponsor.
5. The BGA Sockets were surface mounted, via hot air convection, to test boards and cleaned ultrasonically.
6. Test headers were mounted and wave soldered to the test boards at designated locations. These headers are used to interconnect the test units to the computerized data acquisition system.



TEST SAMPLES AND PREPARATION - Continued:

7. Lubrication (Monsanto OS138) was applied to each mating device prior to test.
8. The BGA devices were assembled to each socket and "locked" in place via a 2 cam system.
9. In performing initial and all subsequent low level circuit resistance measurements, the test sample was placed in a holding fixture with no stress or pressure being applied to the contact interface. Receptacle connectors were mated to the applicable header connectors on the test board. The connectors were interconnected to a DAM/power supply, scanner system and data acquisition system.
10. Low level circuit resistance was measured across daisy chained contact positions and were automatically monitored each measurement operation.
11. Figure #1 indicates the position locations within the mating device. Said positions are shown through the mating device.
12. The positions monitored were distributed as equally as possible throughout each connector row. Corner and middle positions in each pattern were monitored.
13. Unless otherwise specified in the test procedures used, no further preparation was used.



TEST SELECTION

See Test Plan Flow Diagram, Figure #2, for test sequences used.

SAMPLE CODING

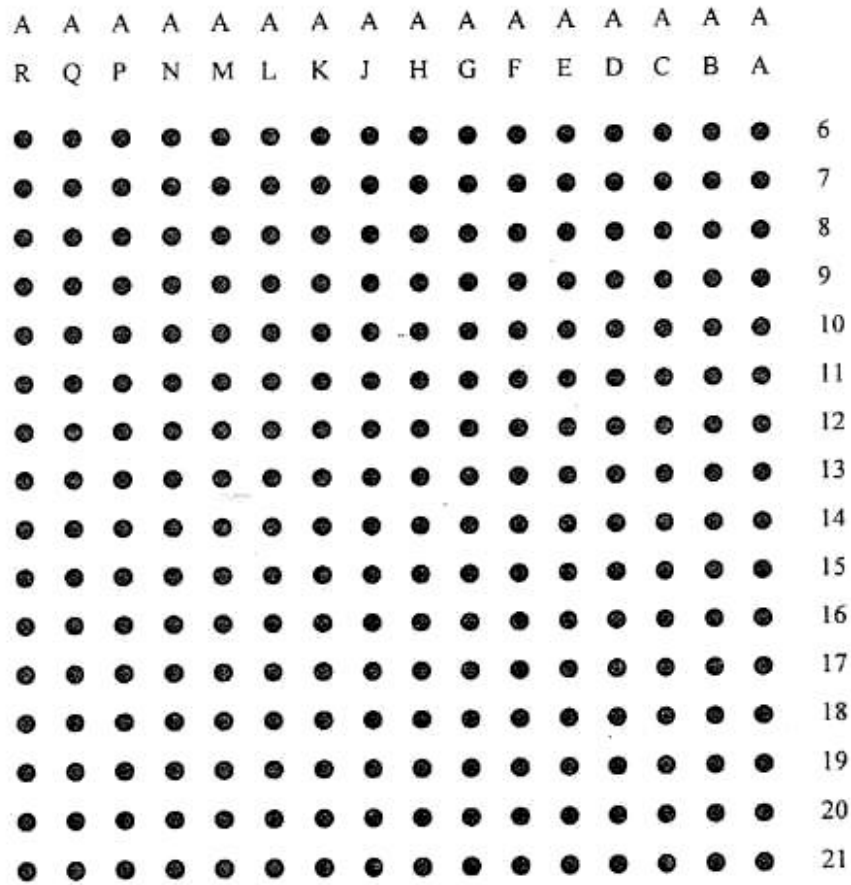
1. All samples were coded. Mated test samples remained with each other throughout the test group/sequences for which they were designated. Coding was performed in a manner which remained legible for the test duration.
2. The test samples were coded in the following manner:

Part Number BCZ-256-1230-16AA01: Gold Plated
Sample ID#: 24

Part Number BCZ-256-1270-16AA09: Tin-Lead Plated (Greased)
Sample ID#: 34

Figure #1

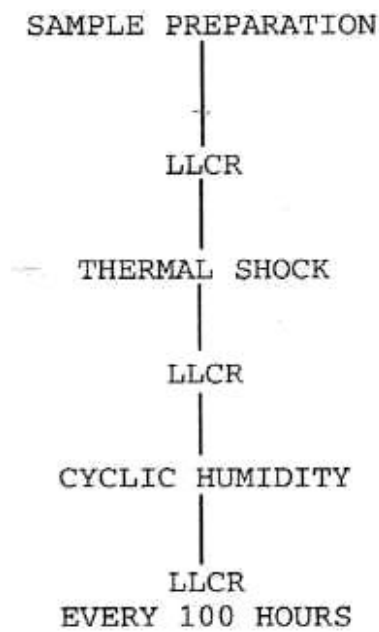
Position Locations



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FIGURE #2

TEST PLAN FLOW DIAGRAM



DATA SUMMARY

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
LLCR		
-16AA01 Gold Contacts	Record	118.0 mΩ Max.
-16AA09 Tin-Lead Contacts (Greased)	Record	99.3 mΩ Max.
THERMAL SHOCK		
-16AA01 Gold Contacts	No Damage	Passed
-16AA09 Tin-Lead Contacts (Greased)	No Damage	Passed
LLCR		
-16AA01 Gold Contacts	Record	+9.0 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+8.7 mΩ Max.Chg.
Cyclic Humidity		
-16AA01 Gold Contacts	No Damage	Passed
-16AA09 Tin-Lead Contacts (Greased)	No Damage	Passed
LLCR (100 Hours)		
-16AA01 Gold Contacts	Record	+15.1 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+11.8 mΩ Max.Chg.
LLCR (200 Hours)		
-16AA01 Gold Contacts	Record	+15.7 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+12.1 mΩ Max.Chg.

DATA SUMMARY - Continued

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
LLCR (300 Hours)		
-16AA01 Gold Contacts	Record	+16.7 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+11.9 mΩ Max.Chg.
LLCR (400 Hours)		
-16AA01 Gold Contacts	Record	+17.9 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+21.3 mΩ Max.Chg.
LLCR (500 Hours)		
-16AA01 Gold Contacts	Record	+18.9 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+21.7 mΩ Max.Chg.
LLCR (600 Hours)		
-16AA01 Gold Contacts	Record	+19.3 mΩ Max.Chg.
-16AA09 Tin-Lead Contacts (Greased)	Record	+16.6 mΩ Max.Chg.

