

APRIL 7, 2003

TEST REPORT #203073, REV.1.1

QSS/QST CONNECTOR TESTING

PART NUMBER

QSS-100-01-L-D-RA

QTS-100-01-L-D-RA

SAMTEC, INC.



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

REVISION HISTORY

| DATE | REV. NO. | DESCRIPTION | ENG. |
|----------|----------|----------------------------|------|
| 4/7/2003 | 1.0 | Initial Issue | TP |
| 5/20/03 | 1.1 | Editorial Changes Pg. 3, 4 | TP |



CERTIFICATION

This is to certify that the QTS-RA/QSS-RA evaluation described herein was designed and executed by personnel of Contech Research, Inc. It was performed with the concurrence of Samtec, Inc. of New Albany, IN who was the test sponsor.

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, except in full, shall be forwarded to any agency, customer, etc., without the written approval of the test sponsor and Contech Research.



Thomas Peel
President and
Director of Test Program Development
Contech Research, Inc.

TP:js



SCOPE

To perform qualification testing on the QSS/QTS-RA connector as manufactured and submitted by the test sponsor Samtec, Inc.

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. Samtec Specifications: TC0245-0036
3. Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

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

| <u>Description</u> | <u>Part Number</u> |
|----------------------|--------------------|
| a) QSS-RA Connectors | QSS-100-01-L-D-RA |
| b) QTS-RA Connectors | QTS-100-01-L-D-RA |

2. A "stabilizing medium" was assembled between the test samples.
3. Test samples were supplied assembled and terminated to test boards by the test sponsor.
4. Figure #1 illustrates the test board layout used for mounting test samples.
5. The test samples were tested in their 'as received' condition.
6. Unless otherwise specified in the test procedures used, no further preparation was used.

TEST SELECTION

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



TEST SELECTION - Continued

2. Test set ups and/or procedures which are standard or common are not detailed or documented herein provided they are certified as being performed in accordance with the applicable (industry or military) test methods, standards and/or drawings as specified in the detail specification.

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:

Sequence A : Group A - A-A-1,A-A-2
 : Group B1 - A-B1-1,A-B1-2
 : Group B2 - A-B2-1,A-B2-2
 : Group B3 - A-B3-1,A-B3-2

Sequence B : Group A - B-A-1,B-A-2,B-A-3,B-A-4,
 B-A-5,B-A-6,B-A-7,B-A-8

Sequence C : Group A - C-A-1,C-A-2,C-A-3

Sequence D : Group A - D-A-1,D-A-2,D-A-3,D-A-4,D-A-5,
 D-A-6,D-A-7,D-A-8

Sequence E : Group A - E-A-1,E-A-2,E-A-3

Sample ID Key

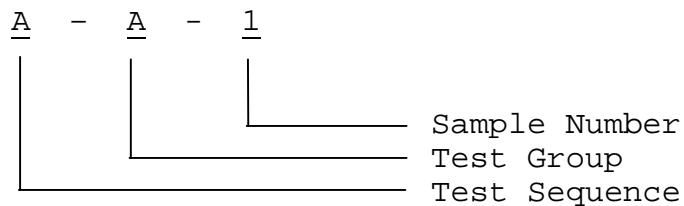
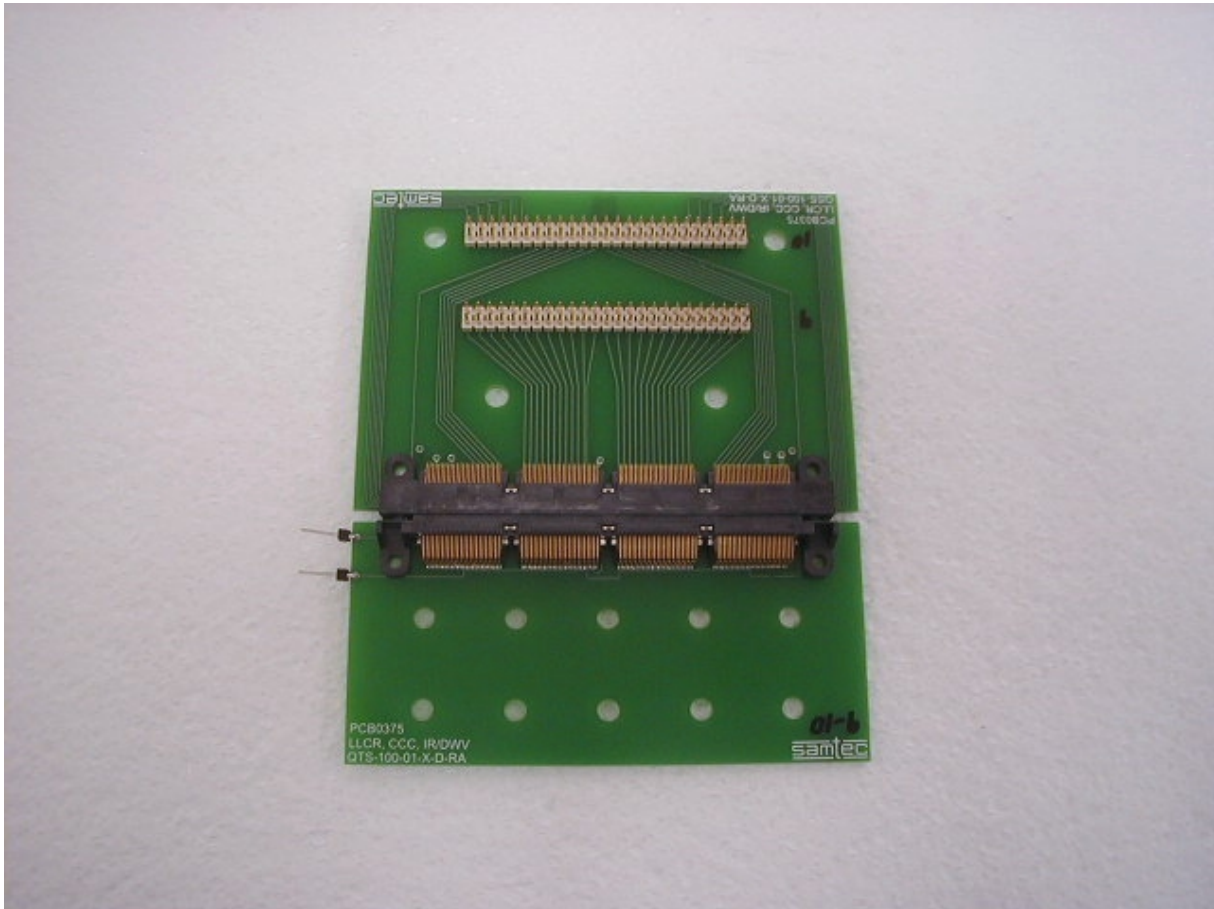


FIGURE #1

TYPICAL TEST SAMPLE/TEST BOARD



1478 - 01



1478 - 02

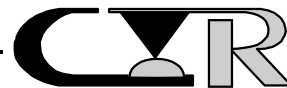
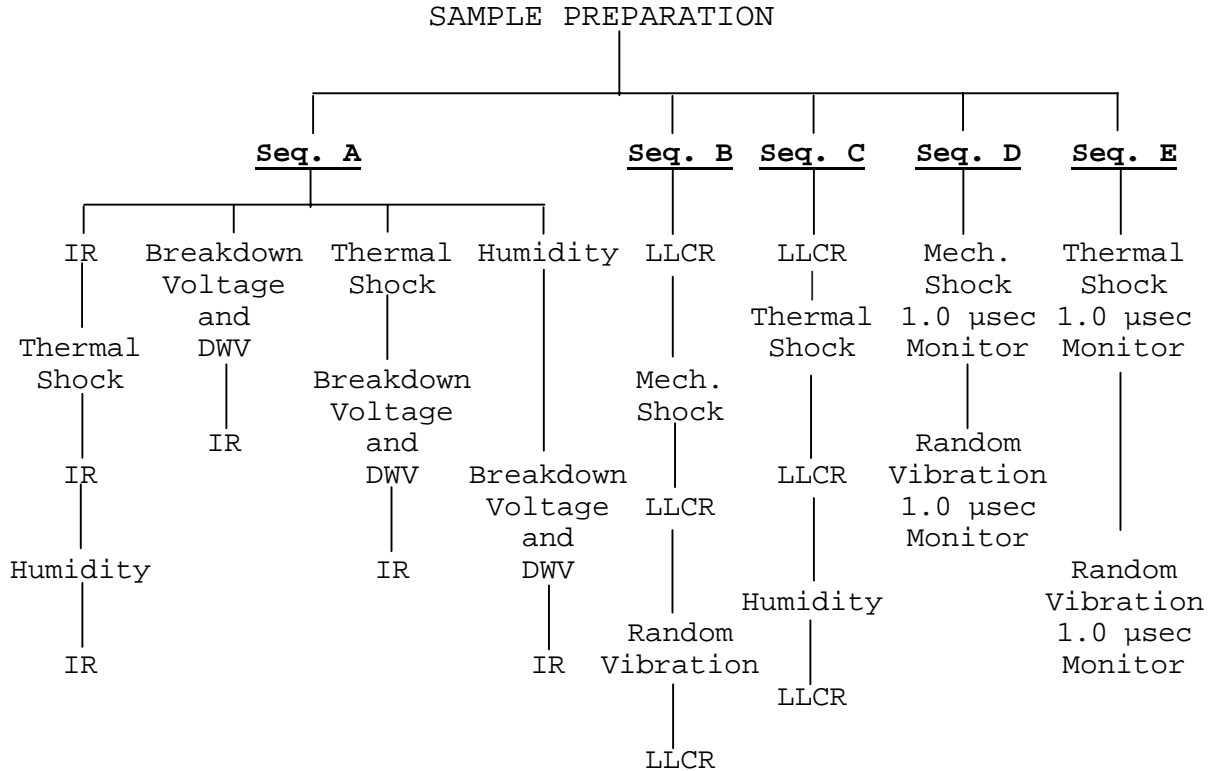


FIGURE #2

TEST PLAN FLOW DIAGRAM



Group A Group B1 Group B2 Group B3 Group A Group A Group A Group A

IR : Insulation Resistance
 DWV : Dielectric Withstanding Voltage
 LLCR : Low Level Circuit Resistance



DATA SUMMARY

| <u>TEST</u> | <u>REQUIREMENT</u> | <u>RESULTS</u> |
|-----------------------------------|---------------------------|-----------------------|
| <u>SEQUENCE A</u> | | |
| <u>Group A</u> | | |
| Insulation Resistance | 1000 Megohms Min. | >15000 Megohms |
| Thermal Shock | No Damage | Passed |
| Insulation Resistance | 1000 Megohms Min. | >15000 Megohms |
| Humidity | No Damage | Passed |
| Insulation Resistance | 1000 Megohms Min. | >50000 Megohms |
| <u>Group B1</u> | | |
| Breakdown Voltage | Record Voltage | 1100 VAC |
| DWV @ 75% of Breakdown Voltage | 75% of VAC | 825 VAC |
| <u>Group B2</u> | | |
| Thermal Shock | No Damage | Passed |
| Breakdown Voltage | Record Voltage | 1200 VAC |
| DWV @ 75% of Breakdown Voltage | 75% of VAC | 900 VAC |
| <u>Group B3</u> | | |
| Humidity | No Damage | Passed |
| Breakdown Voltage | Record Voltage | 1000 VAC |
| DWV @ 75% of Breakdown Voltage | 75% of VAC | 750 VAC |
| <u>SEQUENCE B</u> | | |
| <u>Group A</u> | | |
| LLCR | Record | 41.3 mΩ Max. |
| Mechanical Shock | No Damage | Passed |
| LLCR | Record | +14.0 mΩ Max.Chg. |
| Random Vibration | No Damage | Passed |
| LLCR | Record | +14.0 mΩ Max.Chg. |



DATA SUMMARY - Continued:

| <u>TEST</u> | <u>REQUIREMENT</u> | <u>RESULTS</u> |
|--------------------------|------------------------------|----------------------------|
| <u>SEQUENCE C</u> | | |
| <u>Group A</u> | | |
| LLCR Thermal Shock | Record No Damage | 40.3 mΩ Max. Passed |
| LLCR Humidity | Record No Damage | +2.7 mΩ Max.Chg. Passed |
| LLCR | Record | +6.7 mΩ Max.Chg. |
| <u>SEQUENCE D</u> | | |
| <u>Group A</u> | | |
| Mechanical Shock | No Damage 1.0 Microsecond | Passed Passed |
| Random Vibration | No Damage 1.0 Microsecond | Passed Passed |
| <u>SEQUENCE E</u> | | |
| <u>Group A</u> | | |
| Thermal Shock | No Damage 1.0 Microsecond | Passed Passed |
| Random Vibration | No Damage 1.0 Microsecond | Passed Passed |



EQUIPMENT LIST

| ID# | Next Cal | Last Cal | Equipment Name | Manufacturer | Model # | Serial # | Accuracy | Freq. Cal |
|------|----------|----------|---------------------------------|---------------------|-------------|-------------|---------------|-----------|
| 27 | | | Temp. Humid. Chamber | Blue M Co. | FR-256PC-1 | F2-249 | See Cal Cert | Each Test |
| 30 | 3/7/04 | 3/7/03 | Discontinuity Monitor | Assoc. Test Lab | DM-600-01 | 382-1 | See Cal Cert | 12mon |
| 192 | | | Vertical Thermal Shock | Cincinnati Sub-Zero | VTS-1-5-3 | 88-11094 | See Cal Cert | Each Test |
| 281 | | | Vibration Power Amp | Ling Dynamics | DPA 10K | 156 | N/A | N/A |
| 282 | | | Vibration Shaker Table | Ling Dynamics | V-730 | 163 | N/A | N/A |
| 321 | 1/29/04 | 1/29/03 | AC-DC Hipot/Megometer | Hipotronics Co. | H300B | DS16-201 | See Cal Cert | 12 mon. |
| 465 | 6/21/03 | 6/21/02 | Precision Resistor | Victoreen Co. | 5000 Megohm | N/A | ± 1 % | 12 mon. |
| 466 | 6/21/03 | 6/21/02 | Precision Resistor | Victoreen Co. | 50,000 mego | N/A | ± 1 % | 12 mon. |
| 545 | 9/23/03 | 9/23/02 | Event Detector | Anatech | 32/64 EHD | 941206 | See Cal Cert | 12mon |
| 553 | 12/6/03 | 12/6/02 | 12 channel Power Unit | PCB Co. | 483A | 1303 | See Cal Cert | 12mon |
| 599 | | | Printer | Brother | HL-630 | B66729516 | N/A | N/A |
| 620 | 10/16/03 | 10/16/02 | Accelerometer | PCB | A353B15 | 34197 | See Cal. Cert | 12mon |
| 681 | | | Computer | ARC Co. | P166 | N/A | N/A | N/A |
| 684 | 6/14/03 | 6/14/02 | Accelerometer | PCB. Co. | 353B04 | 47648 | See Cal Cert. | 12mon |
| 874 | | | Computer | M&P | Vectra | | N/A | N/A |
| 1045 | 6/14/03 | 6/14/02 | Microohm Meter | Keithley | 580 | 708216 | See Cal Cert | 12mon |
| 1166 | 3/21/03 | 3/7/02 | Sine/Rndm Vib Control Digitizer | Hewlett Packard | E1432A | US39342279 | See Cal Cert | 12mon |
| 1167 | | | Interface | Hewlett Packard | E8491B | US390100753 | N/A | N/A |
| 1168 | | | Mainframe | Hewlett Packard | E8408A | US39000357 | N/A | N/A |
| 1169 | | | Computer | ARC | PC133 | none | N/A | N/A |
| 1271 | | | Amplifier | Unholtz Dickie | SA15 | 3483 | See Manual | N/A |
| 1272 | | | Shaker Table | Unholtz Dickie | S202PB | 263 | N/A | N/A |
| 1360 | 4/8/03 | 10/8/02 | Data Aquisition Multimeter | Keithley | 2700 | 0914136 | See Cal Cert | 6mon |
| 1361 | 4/8/03 | 10/8/02 | Multiplexer Card | Keithley | 7708 | | See Cal Cert | 6mon |
| 1366 | | | Main Frame | Aiglent H.P. | 8408A | | N/A | N/A |
| 1367 | | | Interface | Aiglent H.P. | E8491A | | N/A | N/A |
| 1368 | 10/17/03 | 10/17/02 | Sine/Rnd Control digitizer | Aiglent H.P. | E1432A | US35470169 | See Manual | 12mon |

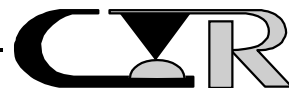


TEST RESULTS

SEQUENCE A

Group A

1478 - 01



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-A-1,A-A-2, TECHNICIAN: MHB
A-A-3

START DATE: 3/15/03 COMPLETE DATE: 3/15/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 30%

EQUIPMENT ID#: 321, 465, 466

INSULATION RESISTANCE (IR)

PURPOSE:

To determine the resistance of insulation materials to leakage of current through or on the surface of these materials when a DC potential is applied.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 21.
2. Test Conditions:
 - a) Between Adjacent Contacts : Yes
 - b) Between Rows : Yes
 - c) Mated Condition : Mated
 - d) Mounting Condition : Mounted
 - e) Electrification Time : 2.0 Minutes
 - f) Test Voltage : 500 VDC
3. The test voltage was applied to designated test points on the board.

REQUIREMENTS:

When the specified test voltage is applied, the insulation resistance shall not be less than 1000 megohms.

RESULTS:

The insulation resistance exceeded 15000 megohms.



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-A-1,A-A-2, TECHNICIAN: MHB
A-A-3

START DATE: 3/15/03 COMPLETE DATE: 3/19/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 30%

EQUIPMENT ID#: 192, 321, 465, 466, 1360, 1361

THERMAL SHOCK

PURPOSE:

To determine the resistance of a given electrical connector to exposure at extremes of high and low temperatures and the shock of alternate exposures to these extremes, simulating the worst probable conditions of storage, transportation and application.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 32, with the following conditions:
2. Test Conditions:
 - a) Number of Cycles : 100 Cycles
 - b) Hot Extreme : +85 +3°C/-0°C
 - c) Cold Extreme : -55 +0°C/-3°C
 - d) Time at Temperature : 30 Minutes
 - e) Mating Conditions : Mated
 - f) Mounting Conditions : Mounted
 - g) Transfer Time : Instantaneous
3. The total number of cycles was performed continuously.
4. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.
5. All subsequent variable testing was performed in accordance with the procedures previously indicated.

REQUIREMENTS: See next page.



REQUIREMENTS:

1. There shall be no evidence of physical damage or deterioration of the test samples so exposed.
2. The insulation resistance shall exceed 1000 megohms.

RESULTS:

1. There was no evidence of visual or physical damage to the test samples as tested.
2. The insulation resistance was in excess of 15000 megohms.



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-A-1,A-A-2, TECHNICIAN: MHB
A-A-3

START DATE: 3/21/03 COMPLETE DATE: 3/31/03

ROOM AMBIENT: 21°C RELATIVE HUMIDITY: 41%

EQUIPMENT ID#: 27, 321, 465, 466, 1360, 1361

HUMIDITY (THERMAL CYCLING)

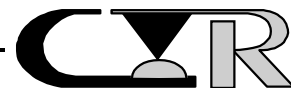
PURPOSE:

1. The purpose of this test is to permit evaluation of the properties of materials used in connectors as they are influenced or deteriorated by the effects of high humidity and heat conditions. Measurements made under high humidity conditions may reflect the peculiar conditions under which the readings were made, and should be compared only to initial readings when careful analysis indicates that such a comparison is valid and applicable.
2. This test obtains added effectiveness in employment of temperature cycling that provides a breathing action, inducing corrosion processes, and the introduction of moisture into partially sealed test samples. This condition imposes a vapor pressure on the samples which constitutes the major force behind the moisture migration and penetration.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 31, Method III (omit Step 7a, 7b) with the following conditions:
2. Test Conditions:
 - a) Relative Humidity : 90% to 95%
 - b) Temperature Conditions : 25°C to 65°C
 - c) Cold Cycle : No
 - d) Polarizing Voltage : No
 - e) Mating Conditions : Mated
 - f) Mounting Conditions : Mounted
 - g) Duration : 240 hours

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PROCEDURE - Continued

3. All subsequent variable testing was performed in accordance with the procedures previously indicated.
4. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.

REQUIREMENTS:

1. There shall be no evidence of physical deterioration of the test samples as tested.
2. The final insulation resistance shall not be less than 1000 megohms.

RESULTS:

1. The test samples as tested showed no evidence of physical deterioration.
2. The final insulation resistance exceeded 50000 megohms.

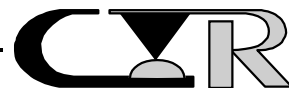


TEST RESULTS

SEQUENCE A

Group B1

1478 - 01



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-B1-1,A-B1-2, TECHNICIAN: MHB
A-B1-3

START DATE: 3/15/03 COMPLETE DATE: 3/15/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 30%

EQUIPMENT ID#: 321

DIELECTRIC WITHSTANDING VOLTAGE (SEA LEVEL)

PURPOSE:

To determine the voltage at which dielectric breakdown occurs.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 20.
2. Test Conditions:
 - a) Between Adjacent Contacts : Yes
 - b) Between Rows : Yes
 - c) Mated Condition : Mated
 - d) Mounting Condition : Mounted
 - e) Hold Time : 60 Seconds
 - f) Rate of Application : 500 volts/sec.
3. The voltage was applied to specific test points on the board.
4. Sample ID# A-B1-3 was used to determine the breakdown voltage. Sample ID #'s A-B1-1 and A-B1-2 were subsequently tested at 75% of the breakdown voltage.

REQUIREMENTS:

1. The voltage at which dielectric breakdown occurs shall be measured and recorded.



REQUIREMENTS: Continued

2. When 75% of the breakdown voltage is applied to previously untested samples, there shall be no evidence of breakdown, arcing, etc.

RESULTS:

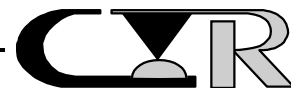
1. The voltage at which dielectric breakdown occurred
1100 VAC.
2. No dielectric breakdown occurred on the separate test samples when tested at 75% of the breakdown voltage. The test voltage was 825 VAC.



TEST RESULTS

SEQUENCE A

Group B2



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-B2-1,A-B2-2, TECHNICIAN: MHB
A-B2-3

START DATE: 3/15/03 COMPLETE DATE: 3/19/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 30%

EQUIPMENT ID#: 192, 321, 1360, 1361

THERMAL SHOCK

PURPOSE:

To determine the resistance of a given electrical connector to exposure at extremes of high and low temperatures and the shock of alternate exposures to these extremes, simulating the worst probable conditions of storage, transportation and application.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 32, with the following conditions:
2. Test Conditions:
 - a) Number of Cycles : 100 Cycles
 - b) Hot Extreme : +85 +3°C/-0°C
 - c) Cold Extreme : -(55 +0°C/-3°C
 - d) Time at Temperature : 30 Minutes
 - e) Mating Conditions : Mated
 - f) Mounting Conditions : Mounted
 - g) Transfer Time : Instantaneous
3. The total number of cycles was performed continuously.
4. All subsequent variable testing was performed in accordance with the procedures as previously indicated.
5. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.



PROCEDURE: Continued

6. The final dielectric breakdown test and dielectric withstanding voltage test was performed in accordance with EIA 364, Test Procedure 20 and the procedures previously indicated.
7. Sample ID# A-B2-3 was used to determine the breakdown voltage. Sample ID# A-B2-1 and A-B2-2 were subsequently tested at 75% of the breakdown voltage.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. The dielectric breakdown voltage shall be measured and recorded.
3. When 75% of the breakdown voltage is applied to previously untested samples, there shall be no evidence of breakdown, arcing, etc.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. The voltage at which dielectric breakdown occurred was 1200 VAC.
3. No dielectric breakdown occurred on the separate test samples when tested at 75% of the breakdown voltage. The test voltage was 900 VAC.

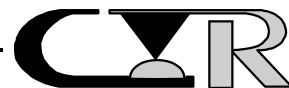


TEST RESULTS

SEQUENCE A

Group B3

1478 - 01



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# A-B3-1,A-B3-2, TECHNICIAN: MHB
A-B3-3

START DATE: 3/21/03 COMPLETE DATE: 3/31/03

ROOM AMBIENT: 21°C RELATIVE HUMIDITY: 41%

EQUIPMENT ID#: 27, 321, 1360, 1361

HUMIDITY (THERMAL CYCLING)

PURPOSE:

1. The purpose of this test is to permit evaluation of the properties of materials used in connectors as they are influenced or deteriorated by the effects of high humidity and heat conditions. Measurements made under high humidity conditions may reflect the peculiar conditions under which the readings were made, and should be compared only to initial readings when careful analysis indicates that such a comparison is valid and applicable.
2. This test obtains added effectiveness in employment of temperature cycling that provides a breathing action, inducing corrosion processes, and the introduction of moisture into partially sealed test samples. This condition imposes a vapor pressure on the samples which constitutes the major force behind the moisture migration and penetration.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 31 Method III (omit Step 7a,7b), with the following conditions:



PROCEDURE: Continued

2. Test Conditions:

- a) Relative Humidity : 90% to 95%
- b) Temperature Conditions : 25°C to 65°C
- c) Cold Cycle : No
- d) Polarizing Voltage : No
- e) Mating Conditions : Mated
- f) Mounting Conditions : Mounted
- g) Duration : 240 hours

- 3. The final dielectric breakdown test and dielectric withstanding voltage test was performed in accordance with EIA 364, Test Procedure 20 and the procedures as previously indicated.
- 4. Sample ID# A-B3-3 was used to determine the breakdown voltage. Sample ID #'s A-B3-1 and A-B3-2 were subsequently tested at 75% of the breakdown voltage.
- 5. The voltage was applied to specific test points on the board.

REQUIREMENTS:

- 1. There shall be no evidence of physical deterioration of the test samples as tested.
- 2. The voltage at which dielectric breakdown occurs shall be measured and recorded.
- 3. When 75% of the breakdown voltage is applied to previously untested samples, there shall be no evidence of breakdown, arcing, etc.

RESULTS:

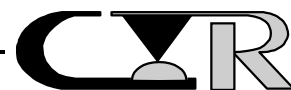
- 1. The test samples as tested showed no evidence of physical deterioration.
- 2. The voltage at which dielectric breakdown occurred was 1000 VAC.
- 3. No dielectric breakdown occurred on the separate test samples when tested at 75% of the breakdown voltage. The test voltage was 750 VAC.



TEST RESULTS

SEQUENCE B

Group A



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# B-A1-1, B-A1-2, TECHNICIAN: MHB
B-A1-3, B-A1-4, B-A1-5,
B-A1-6, B-A1-7, B-A1-8

START DATE: 3/17/03 COMPLETE DATE: 3/17/03

ROOM AMBIENT: 21°C RELATIVE HUMIDITY: 34%

EQUIPMENT ID#: 681, 1045

LOW LEVEL CIRCUIT RESISTANCE (LLCR)

PURPOSE:

1. To evaluate contact resistance characteristics of the contact systems under conditions where applied voltages and currents do not alter the physical contact interface and will detect oxides and films which degrade electrical stability. It is also sensitive to and may detect the presence of fretting corrosion induced by mechanical or thermal environments as well as any significant loss of contact pressure.
2. This attribute was monitored after each preconditioning and/or test exposure in order to determine said stability of the contact systems as they progress through the applicable test sequences.
3. The electrical stability of the system is determined by comparing the initial resistance value to that observed after a given test exposure. The difference is the change in resistance occurring whose magnitude establishes the stability of the interface being evaluated.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 23, with the following conditions:



PROCEDURE - Continued:

2. Test Conditions:

- a) Test Current : 10 milliamps
- b) Open Circuit Voltage : 20 millivolts

3. The points of application are shown in Figure #3.

REQUIREMENTS:

Low level circuit resistance shall be measured and recorded.

RESULTS:

1. The following is a summary of the data observed:

LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

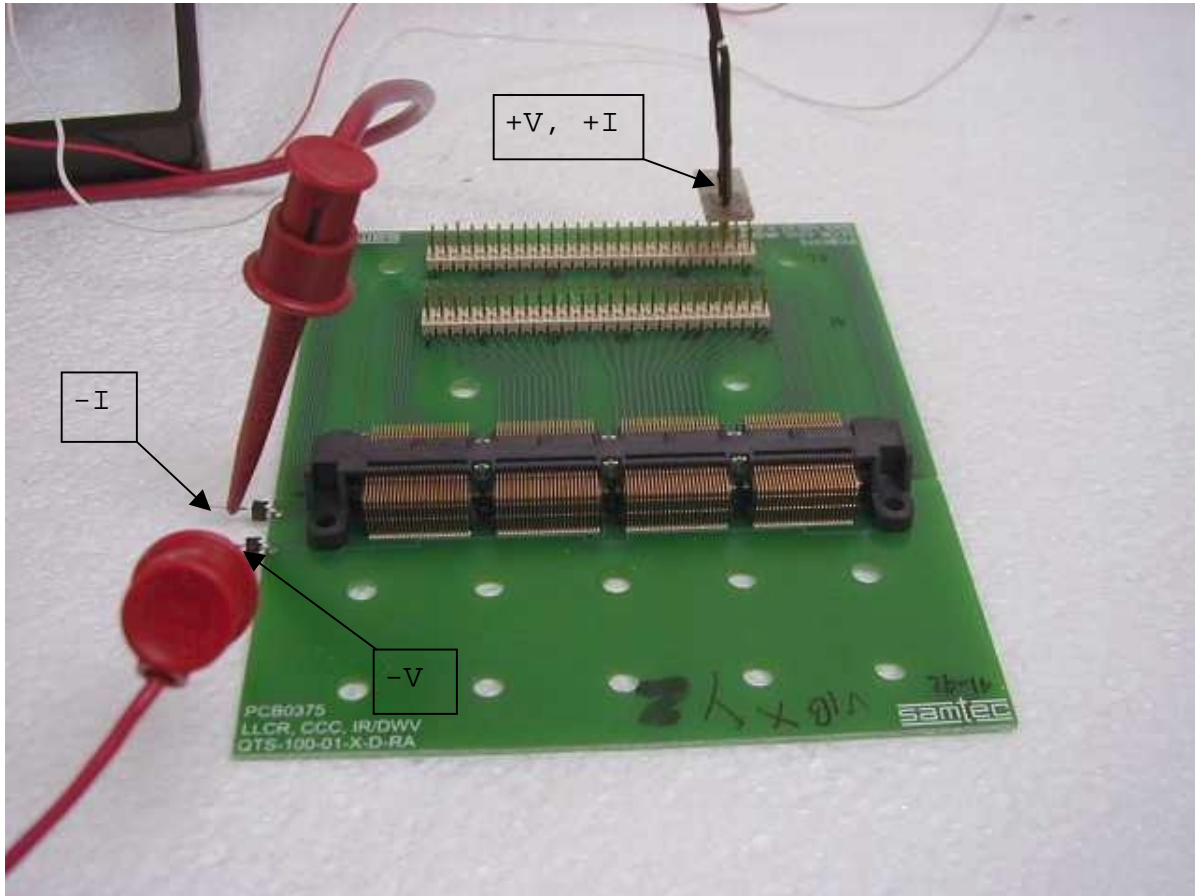
| <u>Sample ID#</u> | <u>Avg.</u> | <u>Max.</u> | <u>Min.</u> |
|-------------------|-------------|-------------|-------------|
| B-A1-1 | 37.0 | 39.5 | 32.3 |
| B-A1-2 | 37.4 | 40.3 | 31.8 |
| B-A1-3 | 37.4 | 41.0 | 32.1 |
| B-A1-4 | 36.9 | 39.4 | 31.7 |
| B-A1-5 | 37.5 | 40.5 | 31.0 |
| B-A1-6 | 36.4 | 39.3 | 30.8 |
| B-A1-7 | 37.1 | 39.8 | 31.3 |
| B-A1-8 | 37.9 | 41.3 | 31.9 |

2. See data files 20307301 through 20307308 for individual data points.



FIGURE #3

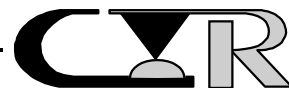
TYPICAL LLCR SET UP



1478 - 01



1478 - 02



PROJECT NO.: 203073

SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA
QTS-100-01-L-D-RA

PART DESCRIPTION: QSS/QTS-RA
Connectors

SAMPLE SIZE: ID# B-A1-1, B-A1-2, B-A1-3, B-A1-4, B-A1-5,
B-A1-6, B-A1-7, B-A1-8

TECHNICIAN: MHB

START DATE: 3/19/03

COMPLETE DATE: 3/20/03

ROOM AMBIENT: 20°C

RELATIVE HUMIDITY: 32%

EQUIPMENT ID#: 553, 681, 684, 1045, 1166, 1167, 1168, 1169,
1271, 1272,

MECHANICAL SHOCK (SPECIFIED PULSE)

PURPOSE:

To determine the mechanical and electrical integrity of connectors for use with electronic equipment subjected to shocks such as those expected from handling, transportation, etc.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 27.
2. Test Conditions:
 - a) Peak Value : 100 G
 - b) Duration : 6 Milliseconds
 - c) Wave Form : Sawtooth
 - d) Velocity : 11.3 feet per second
 - e) No. of Shocks : 3 Shocks/Direction, 3 Axis (18 Total)
3. A stabilizing medium was used such that the mated test samples did not separate during the test.
4. Figure #4 illustrates the test sample fixturing utilized during the test.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.



REQUIREMENTS: Continued

2. The change in low level circuit resistance be measured and recorded.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. The following is a summary of the data observed:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

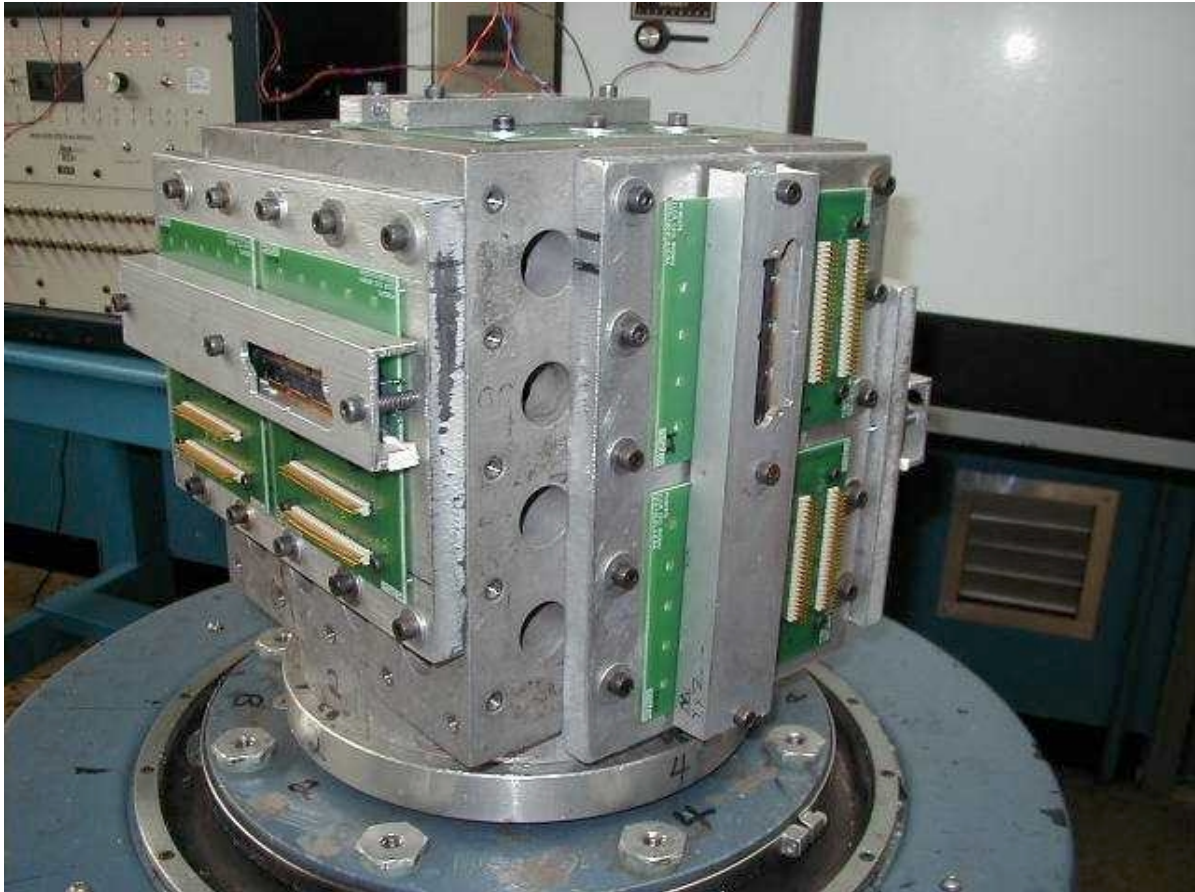
| <u>Sample ID#</u> | <u>Avg. Change</u> | <u>Max. Change</u> |
|-------------------|------------------------|------------------------|
| B-A1-1 | +0.2 | +4.7 |
| B-A1-2 | +0.3 | +1.5 |
| B-A1-3 | +0.7 | +14.0 |
| B-A1-4 | +0.1 | +1.4 |
| B-A1-5 | +0.1 | +1.3 |
| B-A1-6 | +0.2 | +1.2 |
| B-A1-7 | +0.3 | +1.8 |
| B-A1-8 | +0.0 | +1.7 |

3. See data files 20307301 through 2030708 for individual data points.
4. The Mechanical Shock characteristics are shown in Figures #5 (Calibration Pulse) and #6 (Test Pulse). Each figure displays the shock pulse contained within the upper and lower limits as defined by the appropriate test specification.



FIGURE #4

**TYPICAL MECHANICAL SHOCK
RANDOM VIBRATION SET-UP**



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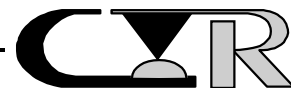


FIGURE #5

Classical Shock

Channel 1

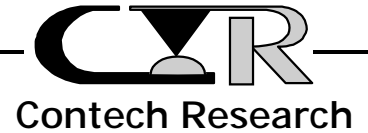
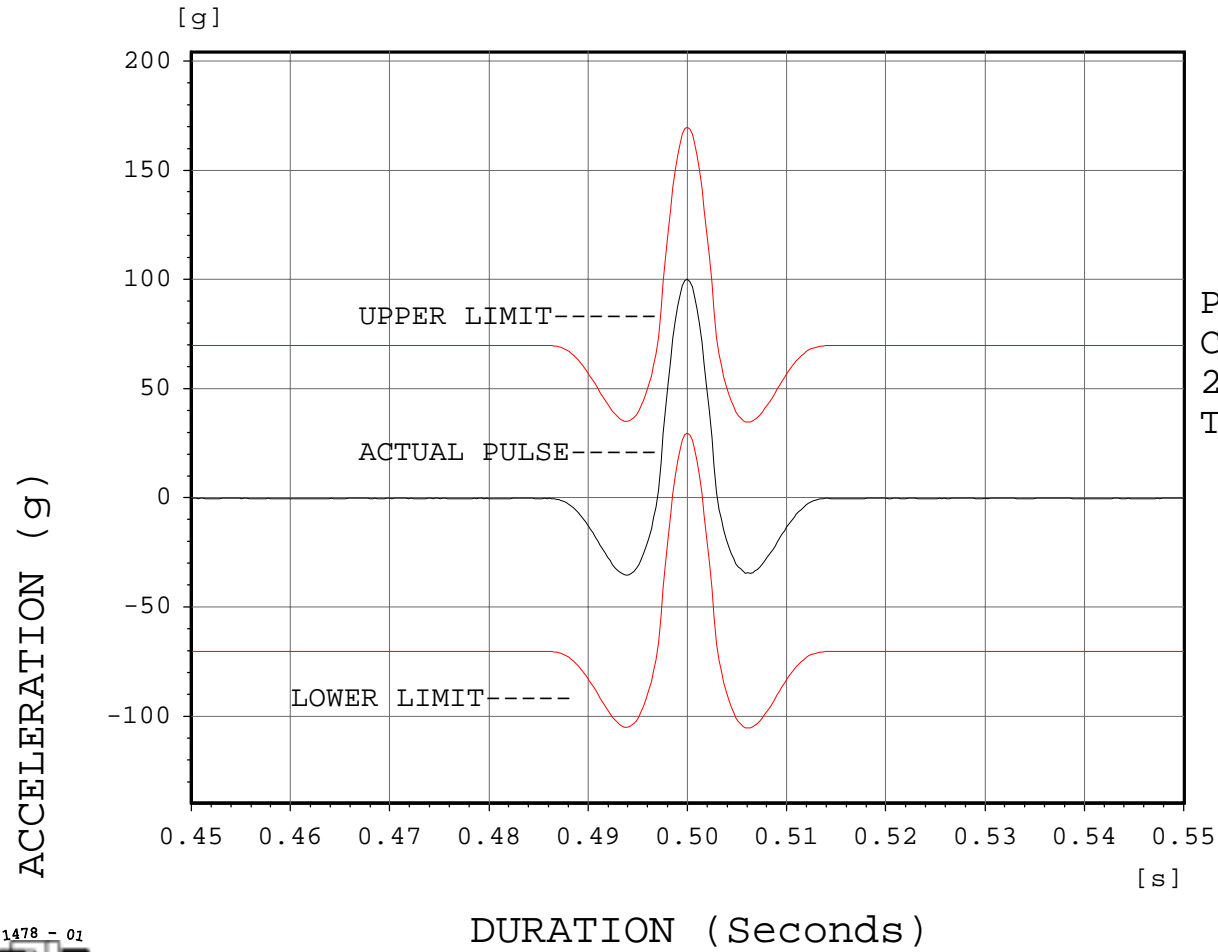
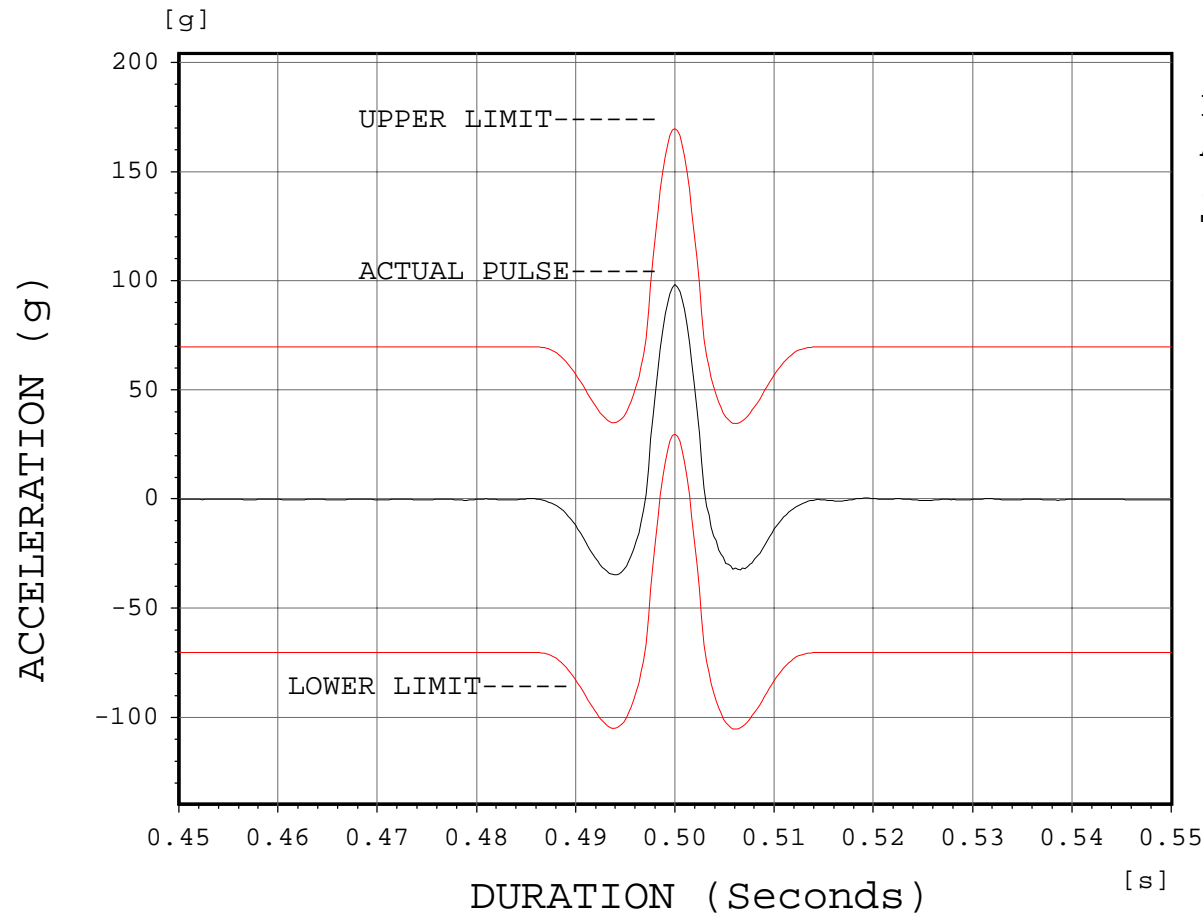


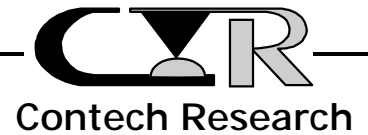
FIGURE #6

Classical Shock

Channel 1



Project 203073
Actual Wave
19Mar03
Tech: /MHB



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# B-A1-1, B-A1-2, TECHNICIAN: MHB
B-A1-3, B-A1-4, B-A1-5,
B-A1-6, B-A1-7, B-A1-8

START DATE: 3/21/03 COMPLETE DATE: 3/21/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 32%

EQUIPMENT ID#: 553, 620, 681, 1045, 1166, 1167, 1168, 1169,
1271, 1272

VIBRATION, RANDOM

PURPOSE:

1. To establish the mechanical integrity of the test samples exposed to external mechanical stresses.
2. To determine if the contact system is susceptible to fretting corrosion.
3. To determine if the electrical stability of the system has degraded when exposed to a vibratory environment.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 28, Test Condition V, Letter B.
2. Test Conditions:
 - a) G 'RMS' : 7.56
 - b) Frequency : 50 to 2000 Hz
 - c) Duration : 2.0 hours per axis, 3-axis total
3. A stabilizing medium was used such that the mated test samples did not separate during the test.
4. Figure #4 illustrates the test sample fixturing utilized during the test.
5. All subsequent variable testing was performed in accordance with procedures previously indicated.



REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. The change in low level circuit resistance shall be measured and recorded.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. The following is a summary of the observed data:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

| <u>Sample ID#</u> | <u>Avg. Change</u> | <u>Max. Change</u> |
|-------------------|------------------------|------------------------|
| B-A1-1 | +0.2 | +4.7 |
| B-A1-2 | +0.3 | +1.6 |
| B-A1-3 | +0.8 | +14.0 |
| B-A1-4 | +0.0 | +1.1 |
| B-A1-5 | +0.1 | +1.4 |
| B-A1-6 | +0.2 | +1.2 |
| B-A1-7 | +0.5 | +2.6 |
| B-A1-8 | +0.2 | +4.0 |

3. See data files 20307301 through 2030708 for individual data points.



LLCR DATA FILES

DATA FILE NUMBERS

20307301

20307302

20307303

20307304

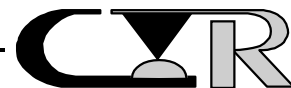
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20307306

20307307

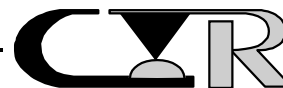
20307308

1478 - 01



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|------|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307301 | |
| Description: Sample ID# B-A1-1 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 21 | | | | |
| R.H. % | 34 | 32 | 40 | | | | |
| Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| | 1 | 38.1 | 0.3 | 0.0 | | | |
| | 2 | 38.7 | -0.3 | 0.0 | | | |
| | 3 | 39.2 | -0.2 | -0.2 | | | |
| | 4 | 38.6 | -0.2 | -0.3 | | | |
| | 5 | 39.3 | 0.0 | -0.4 | | | |
| | 6 | 38.4 | -0.1 | 0.4 | | | |
| | 7 | 39.4 | -0.1 | -0.3 | | | |
| | 8 | 39.2 | 0.0 | -0.4 | | | |
| | 9 | 38.5 | 0.4 | 1.1 | | | |
| | 10 | 38.9 | 4.7 | 4.7 | | | |
| | 11 | 38.8 | 1.6 | 1.6 | | | |
| | 12 | 38.7 | 0.8 | 1.2 | | | |
| | 13 | 38.7 | 0.4 | 0.3 | | | |
| | 14 | 37.6 | 0.5 | 0.6 | | | |
| | 15 | 37.7 | 1.1 | 1.2 | | | |
| | 16 | 38.5 | 0.4 | 0.4 | | | |
| | 17 | 38.5 | 2.0 | 1.8 | | | |
| | 18 | 39.5 | 1.5 | 1.6 | | | |
| | 19 | 39.1 | 0.3 | 0.0 | | | |
| | 20 | 38.7 | 0.4 | 0.2 | | | |
| | 21 | 38.4 | -0.1 | -0.1 | | | |
| | 22 | 39.4 | -0.3 | -0.2 | | | |
| | 23 | 39.0 | -0.1 | 0.0 | | | |
| | 24 | 38.9 | -0.1 | -0.1 | | | |
| | 25 | 38.8 | 0.0 | 0.0 | | | |
| | 26 | 33.3 | -0.4 | -0.5 | | | |
| | 27 | 33.0 | -0.5 | -0.4 | | | |
| | 28 | 32.6 | 0.2 | 0.0 | | | |
| | 29 | 32.3 | -0.2 | -0.3 | | | |
| | 30 | 32.7 | 0.0 | 0.3 | | | |
| | 31 | 32.3 | 0.0 | 0.0 | | | |
| | 32 | 32.5 | -0.7 | -0.7 | | | |
| | 33 | 38.5 | -0.3 | -0.5 | | | |
| | 34 | 38.6 | 0.4 | -0.2 | | | |
| | 35 | 38.6 | -0.3 | -0.2 | | | |

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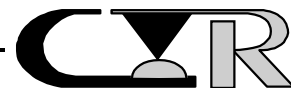


| | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|
| | | | | | | | |
| | Temp °C | 21 | 20 | 21 | | | |
| | R.H. % | 34 | 32 | 40 | | | |
| | Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | |
| | | | | | | | |
| | 36 | 38.4 | -0.3 | -0.2 | | | |
| | 37 | 38.2 | -0.4 | -0.1 | | | |
| | 38 | 38.2 | 0.0 | 0.0 | | | |
| | 39 | 38.4 | 0.0 | 0.0 | | | |
| | 40 | 38.6 | -0.1 | 0.0 | | | |
| | 41 | 38.2 | 0.2 | 0.0 | | | |
| | 42 | 38.0 | 0.0 | 0.1 | | | |
| | 43 | 38.4 | 0.7 | 0.2 | | | |
| | 44 | 32.9 | -0.7 | -0.8 | | | |
| | 45 | 32.5 | -0.2 | -0.2 | | | |
| | 46 | 33.0 | 0.6 | 0.7 | | | |
| | 47 | 32.3 | -0.5 | -0.4 | | | |
| | 48 | 32.8 | -0.5 | -0.5 | | | |
| | 49 | 32.8 | -0.1 | -0.1 | | | |
| | 50 | 33.5 | -0.7 | -0.5 | | | |
| | | | | | | | |
| | MAX | 39.5 | 4.7 | 4.7 | | | |
| | MIN | 32.3 | -0.7 | -0.8 | | | |
| | AVG | 37.0 | 0.2 | 0.2 | | | |
| | STD | 2.7 | 0.9 | 0.9 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



| | | | | | | | |
|-----------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307302 | |
| Description: | Sample ID# B-A1-2 | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 21 | | | | |
| R.H. % | 34 | 32 | 40 | | | | |
| Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| 1 | 39.6 | -0.1 | -0.1 | | | | |
| 2 | 38.6 | 0.3 | 0.2 | | | | |
| 3 | 39.7 | 0.1 | 0.2 | | | | |
| 4 | 39.2 | 0.7 | 1.3 | | | | |
| 5 | 39.2 | 0.9 | 0.9 | | | | |
| 6 | 40.0 | 0.7 | 1.0 | | | | |
| 7 | 39.7 | 0.6 | 0.7 | | | | |
| 8 | 39.7 | 0.8 | 0.7 | | | | |
| 9 | 40.2 | 0.3 | 0.4 | | | | |
| 10 | 40.3 | 0.6 | 0.5 | | | | |
| 11 | 40.0 | 0.7 | 0.6 | | | | |
| 12 | 39.6 | -0.1 | -0.5 | | | | |
| 13 | 39.8 | 0.0 | -0.5 | | | | |
| 14 | 39.0 | -0.3 | 0.0 | | | | |
| 15 | 39.9 | -1.0 | -0.8 | | | | |
| 16 | 39.8 | -0.9 | -0.7 | | | | |
| 17 | 39.3 | -0.1 | 0.7 | | | | |
| 18 | 39.8 | -0.3 | -0.3 | | | | |
| 19 | 39.8 | -0.3 | -0.4 | | | | |
| 20 | 39.5 | -0.2 | -0.1 | | | | |
| 21 | 39.0 | 0.3 | 0.1 | | | | |
| 22 | 40.0 | -0.2 | -0.4 | | | | |
| 23 | 38.9 | 0.0 | 0.1 | | | | |
| 24 | 38.9 | -0.5 | -0.5 | | | | |
| 25 | 38.9 | -0.4 | -0.4 | | | | |
| 26 | 32.4 | 0.8 | 1.6 | | | | |
| 27 | 32.9 | -0.5 | 0.7 | | | | |
| 28 | 33.1 | 0.5 | 0.2 | | | | |
| 29 | 31.8 | 1.1 | 1.2 | | | | |
| 30 | 32.3 | 0.9 | 1.0 | | | | |
| 31 | 32.5 | 0.5 | 0.1 | | | | |
| 32 | 31.8 | 0.7 | 0.7 | | | | |
| 33 | 39.8 | 1.5 | 0.1 | | | | |
| 34 | 39.2 | 1.1 | 0.9 | | | | |
| 35 | 39.6 | 1.0 | 0.0 | | | | |

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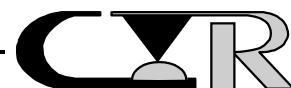


| | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|
| | | | | | | | |
| | Temp °C | 21 | 20 | 21 | | | |
| | R.H. % | 34 | 32 | 40 | | | |
| | Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | |
| | | | | | | | |
| | 36 | 39.1 | 1.0 | -0.1 | | | |
| | 37 | 38.6 | 0.5 | 0.8 | | | |
| | 38 | 38.7 | 0.6 | 0.7 | | | |
| | 39 | 38.6 | 0.7 | 0.8 | | | |
| | 40 | 39.3 | 0.5 | 0.5 | | | |
| | 41 | 39.4 | 0.3 | 0.2 | | | |
| | 42 | 38.9 | 0.1 | 0.0 | | | |
| | 43 | 39.2 | 0.3 | 0.3 | | | |
| | 44 | 31.8 | 0.9 | 0.8 | | | |
| | 45 | 31.8 | 0.7 | 0.7 | | | |
| | 46 | 32.5 | 1.2 | 1.2 | | | |
| | 47 | 32.2 | -0.7 | -0.7 | | | |
| | 48 | 32.4 | 0.4 | 0.2 | | | |
| | 49 | 32.9 | 0.0 | 0.0 | | | |
| | 50 | 32.6 | 1.1 | 1.1 | | | |
| | | | | | | | |
| | MAX | 40.3 | 1.5 | 1.6 | | | |
| | MIN | 31.8 | -1.0 | -0.8 | | | |
| | AVG | 37.4 | 0.3 | 0.3 | | | |
| | STD | 3.2 | 0.6 | 0.6 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



| | | | | | | | |
|-----------------------|---------------------------|---------|------------------------------|------|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307303 | |
| Description: | Sample ID# B-A1-3 | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 21 | | | | |
| R.H. % | 34 | 32 | 40 | | | | |
| Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| | 1 | 39.0 | 0.0 | 0.1 | | | |
| | 2 | 38.8 | -0.2 | -0.2 | | | |
| | 3 | 39.2 | -0.1 | 0.1 | | | |
| | 4 | 39.0 | 0.6 | 0.5 | | | |
| | 5 | 39.1 | 0.5 | 0.6 | | | |
| | 6 | 40.0 | -0.5 | -0.5 | | | |
| | 7 | 40.0 | -0.3 | -0.2 | | | |
| | 8 | 38.9 | 0.0 | -0.1 | | | |
| | 9 | 39.0 | 0.4 | 0.5 | | | |
| | 10 | 41.0 | 0.7 | 0.9 | | | |
| | 11 | 40.4 | -0.2 | -0.1 | | | |
| | 12 | 40.0 | -0.3 | -0.2 | | | |
| | 13 | 39.0 | 0.9 | 0.9 | | | |
| | 14 | 38.7 | 0.2 | 0.3 | | | |
| | 15 | 38.1 | 0.1 | 0.3 | | | |
| | 16 | 39.6 | 0.7 | 1.2 | | | |
| | 17 | 38.7 | 0.7 | 0.8 | | | |
| | 18 | 39.3 | -0.3 | -0.1 | | | |
| | 19 | 39.6 | 0.3 | 0.4 | | | |
| | 20 | 38.8 | -0.1 | -0.1 | | | |
| | 21 | 38.7 | 0.3 | 0.3 | | | |
| | 22 | 39.4 | 0.1 | 0.2 | | | |
| | 23 | 38.8 | 0.1 | 0.1 | | | |
| | 24 | 38.8 | 0.3 | 0.2 | | | |
| | 25 | 39.0 | -0.1 | -0.1 | | | |
| | 26 | 32.6 | 0.5 | 0.5 | | | |
| | 27 | 33.8 | 0.8 | 1.0 | | | |
| | 28 | 32.2 | 3.0 | 3.4 | | | |
| | 29 | 32.1 | 1.1 | 1.3 | | | |
| | 30 | 33.0 | -1.0 | -1.0 | | | |
| | 31 | 32.5 | 1.2 | 0.4 | | | |
| | 32 | 32.1 | 2.1 | 2.4 | | | |
| | 33 | 39.1 | -0.4 | -0.1 | | | |
| | 34 | 38.9 | -0.1 | 0.1 | | | |
| | 35 | 39.3 | 0.1 | 0.0 | | | |

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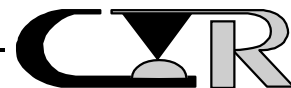


| | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|
| | | | | | | | |
| | Temp °C | 21 | 20 | 21 | | | |
| | R.H. % | 34 | 32 | 40 | | | |
| | Date: | 17Mar03 | 20Mar03 | 21Mar03 | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | |
| | | | | | | | |
| | 36 | 38.7 | 0.4 | 1.1 | | | |
| | 37 | 38.5 | 0.8 | 1.1 | | | |
| | 38 | 38.6 | 0.4 | 0.5 | | | |
| | 39 | 39.3 | -0.1 | 0.1 | | | |
| | 40 | 39.2 | -0.3 | -0.3 | | | |
| | 41 | 39.2 | 0.0 | 0.3 | | | |
| | 42 | 39.1 | -0.1 | 0.0 | | | |
| | 43 | 39.0 | 0.0 | -0.1 | | | |
| | 44 | 32.4 | 3.0 | 2.9 | | | |
| | 45 | 33.1 | -0.4 | -0.4 | | | |
| | 46 | 32.5 | 1.1 | 1.1 | | | |
| | 47 | 32.9 | 5.6 | 5.6 | | | |
| | 48 | 33.9 | 7.3 | 8.0 | | | |
| | 49 | 32.7 | 1.7 | 1.2 | | | |
| | 50 | 33.0 | 0.0 | -0.1 | | | |
| | | | | | | | |
| | MAX | 41.0 | 7.3 | 8.0 | | | |
| | MIN | 32.1 | -1.0 | -1.0 | | | |
| | AVG | 37.4 | 0.6 | 0.7 | | | |
| | STD | 3.0 | 1.5 | 1.5 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|------|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307304 | |
| Description: Sample ID# B-A1-4 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 22 | | | | |
| R.H. % | 34 | 32 | 39 | | | | |
| Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| | 1 | 38.7 | 0.1 | -0.2 | | | |
| | 2 | 38.7 | -0.2 | -0.2 | | | |
| | 3 | 38.4 | 0.3 | 0.1 | | | |
| | 4 | 38.4 | 0.0 | -0.1 | | | |
| | 5 | 38.4 | 0.6 | 0.4 | | | |
| | 6 | 39.4 | -0.4 | -0.5 | | | |
| | 7 | 38.9 | 0.1 | 0.0 | | | |
| | 8 | 38.3 | 0.6 | 0.5 | | | |
| | 9 | 38.3 | 0.4 | 0.2 | | | |
| | 10 | 38.7 | 0.2 | 0.2 | | | |
| | 11 | 39.1 | -0.5 | -0.5 | | | |
| | 12 | 38.4 | 0.1 | 0.1 | | | |
| | 13 | 38.6 | 0.2 | 0.2 | | | |
| | 14 | 38.4 | -0.3 | -0.4 | | | |
| | 15 | 38.7 | 0.0 | 0.0 | | | |
| | 16 | 38.9 | -0.5 | -0.6 | | | |
| | 17 | 38.4 | 0.1 | 0.1 | | | |
| | 18 | 38.5 | -0.1 | -0.1 | | | |
| | 19 | 38.9 | -0.2 | -0.2 | | | |
| | 20 | 38.6 | -0.3 | -0.4 | | | |
| | 21 | 38.7 | 0.0 | -0.1 | | | |
| | 22 | 38.2 | 0.1 | 0.1 | | | |
| | 23 | 38.1 | 0.4 | 0.3 | | | |
| | 24 | 38.5 | -0.1 | -0.2 | | | |
| | 25 | 38.6 | -0.2 | -0.2 | | | |
| | 26 | 31.7 | -0.1 | 0.1 | | | |
| | 27 | 32.1 | 0.1 | 0.2 | | | |
| | 28 | 32.2 | 0.2 | 0.3 | | | |
| | 29 | 32.7 | -0.9 | -1.1 | | | |
| | 30 | 32.7 | -0.6 | -0.8 | | | |
| | 31 | 32.1 | -0.8 | -0.8 | | | |
| | 32 | 32.4 | -0.3 | -0.2 | | | |
| | 33 | 38.4 | -0.2 | -0.1 | | | |
| | 34 | 38.7 | -0.1 | 0.1 | | | |
| | 35 | 38.9 | -0.3 | -0.5 | | | |

1478 - 01

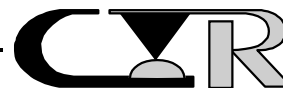


| | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|
| | | | | | | | |
| | Temp °C | 21 | 20 | 22 | | | |
| | R.H. % | 34 | 32 | 39 | | | |
| | Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | |
| | | | | | | | |
| | 36 | 38.5 | 0.5 | 0.4 | | | |
| | 37 | 38.3 | 0.4 | 0.4 | | | |
| | 38 | 38.4 | -0.1 | -0.1 | | | |
| | 39 | 38.6 | 0.1 | 0.1 | | | |
| | 40 | 38.3 | 0.5 | 0.5 | | | |
| | 41 | 38.9 | 0.3 | 0.1 | | | |
| | 42 | 38.9 | -0.2 | 0.1 | | | |
| | 43 | 38.4 | 0.5 | 0.8 | | | |
| | 44 | 32.6 | 0.7 | 0.5 | | | |
| | 45 | 32.3 | 0.6 | 0.1 | | | |
| | 46 | 33.2 | 0.2 | 0.2 | | | |
| | 47 | 33.6 | -0.1 | -0.2 | | | |
| | 48 | 32.1 | 0.3 | 0.3 | | | |
| | 49 | 32.8 | 1.4 | 1.1 | | | |
| | 50 | 32.6 | 1.3 | 1.1 | | | |
| | | | | | | | |
| | MAX | 39.4 | 1.4 | 1.1 | | | |
| | MIN | 31.7 | -0.9 | -1.1 | | | |
| | AVG | 36.9 | 0.1 | 0.0 | | | |
| | STD | 2.8 | 0.4 | 0.4 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



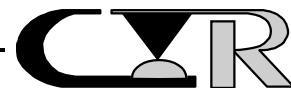
| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307305 | |
| Description: Sample ID# B-A1-5 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 22 | | | | |
| R.H. % | 34 | 32 | 39 | | | | |
| Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| 1 | 39.0 | -0.3 | -0.3 | | | | |
| 2 | 39.6 | 0.2 | 0.2 | | | | |
| 3 | 40.2 | 0.3 | 0.4 | | | | |
| 4 | 40.0 | 0.5 | 0.5 | | | | |
| 5 | 39.4 | 1.1 | 1.0 | | | | |
| 6 | 40.4 | 0.7 | 0.6 | | | | |
| 7 | 40.3 | 0.2 | 0.2 | | | | |
| 8 | 40.3 | 0.5 | 0.5 | | | | |
| 9 | 40.0 | -0.3 | -0.4 | | | | |
| 10 | 40.5 | 0.0 | 0.0 | | | | |
| 11 | 39.5 | 0.2 | 0.3 | | | | |
| 12 | 39.8 | -0.2 | -0.3 | | | | |
| 13 | 40.1 | -1.0 | -0.8 | | | | |
| 14 | 39.3 | -0.1 | 0.0 | | | | |
| 15 | 39.6 | 0.7 | 0.7 | | | | |
| 16 | 40.0 | 1.3 | 1.4 | | | | |
| 17 | 39.6 | -0.1 | -0.1 | | | | |
| 18 | 40.4 | -0.4 | -0.5 | | | | |
| 19 | 39.6 | 0.3 | 0.3 | | | | |
| 20 | 39.9 | 0.1 | 0.1 | | | | |
| 21 | 40.2 | -0.5 | -0.5 | | | | |
| 22 | 39.7 | 0.0 | 0.2 | | | | |
| 23 | 39.1 | 0.7 | 0.7 | | | | |
| 24 | 38.6 | -0.1 | -0.1 | | | | |
| 25 | 38.1 | 0.3 | 0.3 | | | | |
| 26 | 31.0 | 0.5 | 0.1 | | | | |
| 27 | 31.3 | 1.0 | 1.0 | | | | |
| 28 | 31.9 | -0.1 | 0.7 | | | | |
| 29 | 31.8 | -0.8 | -0.4 | | | | |
| 30 | 31.5 | -0.5 | -0.5 | | | | |
| 31 | 31.7 | -0.6 | -0.8 | | | | |
| 32 | 31.3 | -0.1 | 0.2 | | | | |
| 33 | 40.1 | 0.0 | 0.1 | | | | |
| 34 | 40.2 | -0.2 | 0.3 | | | | |
| 35 | 39.7 | -0.1 | 0.0 | | | | |

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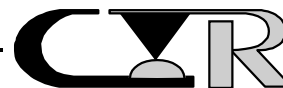
| | Temp °C | 21 | 20 | 22 | | | | |
|--|----------|---------|---------|-----------|--|--|--|--|
| | R.H. % | 34 | 32 | 39 | | | | |
| | Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | | |
| | | | | | | | | |
| | 36 | 40.0 | 0.7 | 1.0 | | | | |
| | 37 | 39.2 | -0.4 | -0.4 | | | | |
| | 38 | 39.2 | -0.2 | -0.1 | | | | |
| | 39 | 38.8 | 0.3 | 0.2 | | | | |
| | 40 | 39.1 | -0.1 | -0.1 | | | | |
| | 41 | 38.8 | 0.5 | 0.3 | | | | |
| | 42 | 39.0 | 0.2 | 0.3 | | | | |
| | 43 | 38.9 | 0.5 | 0.5 | | | | |
| | 44 | 32.0 | -0.1 | -0.1 | | | | |
| | 45 | 32.6 | -0.8 | -0.8 | | | | |
| | 46 | 33.2 | -1.9 | -1.8 | | | | |
| | 47 | 32.0 | 1.0 | 1.0 | | | | |
| | 48 | 32.5 | 0.2 | 0.1 | | | | |
| | 49 | 33.0 | -0.9 | -1.1 | | | | |
| | 50 | 32.1 | 0.6 | 0.3 | | | | |
| | | | | | | | | |
| | MAX | 40.5 | 1.3 | 1.4 | | | | |
| | MIN | 31.0 | -1.9 | -1.8 | | | | |
| | AVG | 37.5 | 0.1 | 0.1 | | | | |
| | STD | 3.5 | 0.6 | 0.6 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |

1478 - 01



| | | | | | | | | |
|-----------------------|---------------------------|---------|------------------------------|------|-----------|---------------|--|--|
| | | | | | | | | |
| | | | Low Level Contact Resistance | | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | | |
| Customer: | Samtec | | | | Subgroup: | Seq B | | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307306 | | |
| Description: | Sample ID# B-A1-6 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | | |
| | | | | | | | | |
| | | | Delta values | | | | | |
| | | | units: milliohms | | | | | |
| | | | | | | | | |
| Temp °C | 21 | 20 | 22 | | | | | |
| R.H. % | 34 | 32 | 39 | | | | | |
| Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | | |
| | | | | | | | | |
| | 1 | 38.5 | -0.2 | -0.2 | | | | |
| | 2 | 38.1 | 0.5 | 0.7 | | | | |
| | 3 | 38.3 | 0.3 | 0.5 | | | | |
| | 4 | 38.0 | 1.2 | 1.2 | | | | |
| | 5 | 38.1 | 0.5 | 0.5 | | | | |
| | 6 | 38.2 | 0.0 | 0.0 | | | | |
| | 7 | 37.8 | 0.8 | 0.9 | | | | |
| | 8 | 37.9 | 0.6 | 0.8 | | | | |
| | 9 | 38.2 | 1.0 | 1.1 | | | | |
| | 10 | 37.7 | 0.8 | 0.9 | | | | |
| | 11 | 37.9 | 0.2 | 0.1 | | | | |
| | 12 | 38.4 | 0.8 | 0.8 | | | | |
| | 13 | 38.4 | 0.3 | 0.4 | | | | |
| | 14 | 37.7 | 0.4 | 0.3 | | | | |
| | 15 | 37.8 | 0.1 | 0.1 | | | | |
| | 16 | 37.9 | 0.5 | 0.5 | | | | |
| | 17 | 38.1 | 0.5 | 0.6 | | | | |
| | 18 | 38.4 | 0.1 | 0.2 | | | | |
| | 19 | 38.1 | 0.4 | 0.5 | | | | |
| | 20 | 38.4 | 0.4 | 0.4 | | | | |
| | 21 | 38.5 | 0.4 | 0.4 | | | | |
| | 22 | 38.5 | 0.6 | 0.7 | | | | |
| | 23 | 38.4 | -0.1 | 0.1 | | | | |
| | 24 | 38.4 | 0.1 | 0.2 | | | | |
| | 25 | 38.5 | -0.1 | -0.1 | | | | |
| | 26 | 30.9 | 0.9 | 0.8 | | | | |
| | 27 | 30.8 | 0.0 | 0.3 | | | | |
| | 28 | 31.8 | 0.7 | 0.7 | | | | |
| | 29 | 31.2 | 0.2 | 0.9 | | | | |
| | 30 | 31.2 | -0.5 | -0.3 | | | | |
| | 31 | 31.3 | -0.8 | -0.8 | | | | |
| | 32 | 31.0 | -0.3 | 0.0 | | | | |
| | 33 | 38.5 | 0.0 | 0.2 | | | | |
| | 34 | 39.3 | -0.6 | -0.6 | | | | |
| | 35 | 38.2 | 0.2 | -0.2 | | | | |

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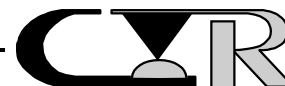


| | Temp °C | 21 | 20 | 22 | | | | |
|--|----------|---------|---------|-----------|--|--|--|--|
| | R.H. % | 34 | 32 | 39 | | | | |
| | Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | | |
| | | | | | | | | |
| | 36 | 38.4 | 0.1 | 0.5 | | | | |
| | 37 | 38.2 | -0.4 | -0.3 | | | | |
| | 38 | 38.5 | 0.3 | 0.2 | | | | |
| | 39 | 38.5 | 0.2 | 0.2 | | | | |
| | 40 | 38.7 | -0.3 | -0.5 | | | | |
| | 41 | 38.7 | 0.4 | 0.5 | | | | |
| | 42 | 38.6 | -0.3 | -0.1 | | | | |
| | 43 | 38.5 | 0.1 | 0.3 | | | | |
| | 44 | 31.2 | 0.3 | -0.2 | | | | |
| | 45 | 32.0 | -0.4 | -0.4 | | | | |
| | 46 | 31.8 | 0.0 | 0.0 | | | | |
| | 47 | 33.0 | -1.5 | -1.2 | | | | |
| | 48 | 31.7 | -0.3 | -0.2 | | | | |
| | 49 | 31.8 | 0.2 | 0.0 | | | | |
| | 50 | 31.3 | -0.2 | -0.3 | | | | |
| | | | | | | | | |
| | MAX | 39.3 | 1.2 | 1.2 | | | | |
| | MIN | 30.8 | -1.5 | -1.2 | | | | |
| | AVG | 36.4 | 0.2 | 0.2 | | | | |
| | STD | 3.1 | 0.5 | 0.5 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307307 | |
| Description: Sample ID# B-A1-7 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 22 | | | | |
| R.H. % | 34 | 32 | 39 | | | | |
| Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| 1 | 39.1 | 1.0 | 1.4 | | | | |
| 2 | 38.8 | 1.1 | 1.2 | | | | |
| 3 | 39.4 | 0.0 | 0.1 | | | | |
| 4 | 38.8 | 0.7 | 0.7 | | | | |
| 5 | 39.4 | 0.5 | 0.5 | | | | |
| 6 | 39.1 | 1.1 | 1.1 | | | | |
| 7 | 39.3 | 1.8 | 2.0 | | | | |
| 8 | 39.4 | 0.6 | 1.3 | | | | |
| 9 | 39.4 | 0.9 | 2.6 | | | | |
| 10 | 38.7 | 1.5 | 1.8 | | | | |
| 11 | 39.8 | 0.1 | 0.0 | | | | |
| 12 | 39.4 | 0.1 | 0.1 | | | | |
| 13 | 39.1 | -0.1 | 0.1 | | | | |
| 14 | 38.9 | -0.2 | -0.2 | | | | |
| 15 | 39.1 | -0.5 | -0.6 | | | | |
| 16 | 39.5 | 0.4 | 0.3 | | | | |
| 17 | 39.0 | -0.2 | -0.3 | | | | |
| 18 | 38.7 | 0.1 | 0.0 | | | | |
| 19 | 39.7 | -0.7 | -0.6 | | | | |
| 20 | 39.2 | 0.3 | 0.1 | | | | |
| 21 | 38.4 | 0.8 | 0.7 | | | | |
| 22 | 39.6 | -0.2 | 0.3 | | | | |
| 23 | 38.6 | 0.3 | 0.8 | | | | |
| 24 | 38.3 | 0.4 | 0.0 | | | | |
| 25 | 38.4 | -0.1 | -0.2 | | | | |
| 26 | 32.3 | 0.4 | 0.3 | | | | |
| 27 | 32.4 | 0.0 | 0.0 | | | | |
| 28 | 31.8 | 0.8 | 0.8 | | | | |
| 29 | 31.7 | 0.0 | 0.0 | | | | |
| 30 | 32.4 | -0.1 | -0.1 | | | | |
| 31 | 32.8 | 0.5 | 0.6 | | | | |
| 32 | 32.0 | 0.2 | 0.3 | | | | |
| 33 | 39.0 | 0.6 | 0.6 | | | | |
| 34 | 39.0 | 0.7 | 0.6 | | | | |
| 35 | 38.9 | 0.6 | 0.5 | | | | |

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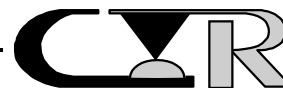


| | | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|--|
| | | | | | | | | |
| | Temp °C | 21 | 20 | 22 | | | | |
| | R.H. % | 34 | 32 | 39 | | | | |
| | Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | | |
| | | | | | | | | |
| | 36 | 39.2 | 0.8 | 0.7 | | | | |
| | 37 | 38.6 | 0.9 | 1.0 | | | | |
| | 38 | 38.4 | 0.0 | 0.1 | | | | |
| | 39 | 38.4 | 0.2 | 0.5 | | | | |
| | 40 | 38.6 | 0.1 | 0.2 | | | | |
| | 41 | 38.7 | 0.2 | 0.3 | | | | |
| | 42 | 38.7 | -0.1 | 0.1 | | | | |
| | 43 | 38.6 | 0.2 | 0.2 | | | | |
| | 44 | 31.3 | 1.0 | 0.9 | | | | |
| | 45 | 32.5 | -0.2 | 0.1 | | | | |
| | 46 | 32.9 | -0.1 | -0.1 | | | | |
| | 47 | 32.8 | -0.1 | 0.0 | | | | |
| | 48 | 32.4 | 0.4 | 0.9 | | | | |
| | 49 | 32.6 | 0.2 | 0.2 | | | | |
| | 50 | 31.9 | 0.3 | 0.2 | | | | |
| | | | | | | | | |
| | MAX | 39.8 | 1.8 | 2.6 | | | | |
| | MIN | 31.3 | -0.7 | -0.6 | | | | |
| | AVG | 37.1 | 0.3 | 0.5 | | | | |
| | STD | 3.1 | 0.5 | 0.6 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq B | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307308 | |
| Description: Sample ID# B-A1-8 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 21 | 20 | 22 | | | | |
| R.H. % | 34 | 32 | 39 | | | | |
| Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | | |
| Pos. ID | Initial | M.Shock | Vibration | | | | |
| 1 | 39.5 | 0.9 | 1.3 | | | | |
| 2 | 39.4 | 1.0 | 1.6 | | | | |
| 3 | 40.0 | 0.5 | 0.5 | | | | |
| 4 | 39.9 | 0.2 | 0.5 | | | | |
| 5 | 39.5 | 1.7 | 1.6 | | | | |
| 6 | 40.3 | 1.0 | 1.0 | | | | |
| 7 | 40.2 | 0.5 | 0.5 | | | | |
| 8 | 40.5 | 0.7 | 1.3 | | | | |
| 9 | 40.8 | -0.4 | -0.1 | | | | |
| 10 | 40.0 | 0.2 | 0.3 | | | | |
| 11 | 40.4 | -0.7 | -0.6 | | | | |
| 12 | 40.9 | -1.0 | -1.1 | | | | |
| 13 | 39.1 | 0.5 | 0.5 | | | | |
| 14 | 40.3 | -0.2 | -0.2 | | | | |
| 15 | 40.0 | 0.1 | 0.0 | | | | |
| 16 | 40.7 | -0.3 | -0.4 | | | | |
| 17 | 40.2 | 0.1 | -0.1 | | | | |
| 18 | 40.2 | -0.3 | -0.4 | | | | |
| 19 | 40.2 | 0.3 | 0.0 | | | | |
| 20 | 40.0 | 0.5 | 0.4 | | | | |
| 21 | 40.4 | 0.1 | 0.0 | | | | |
| 22 | 40.1 | -0.1 | 0.0 | | | | |
| 23 | 39.9 | -0.3 | -0.3 | | | | |
| 24 | 39.7 | 0.4 | 0.4 | | | | |
| 25 | 38.7 | 0.1 | -0.1 | | | | |
| 26 | 33.3 | -0.3 | 4.0 | | | | |
| 27 | 32.5 | -0.1 | 0.3 | | | | |
| 28 | 31.9 | 1.5 | 2.0 | | | | |
| 29 | 32.3 | -0.3 | -0.2 | | | | |
| 30 | 32.6 | -0.5 | -0.3 | | | | |
| 31 | 31.9 | -0.4 | 0.0 | | | | |
| 32 | 31.9 | 0.5 | 1.2 | | | | |
| 33 | 41.3 | -1.4 | -1.0 | | | | |
| 34 | 40.7 | -1.2 | -0.9 | | | | |
| 35 | 40.5 | -1.0 | -1.1 | | | | |

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| | | | | | | | |
|--|----------|---------|---------|-----------|--|--|--|
| | | | | | | | |
| | Temp °C | 21 | 20 | 22 | | | |
| | R.H. % | 34 | 32 | 39 | | | |
| | Date: | 17Mar03 | 20Mar03 | 24Mar03 | | | |
| | Pos. ID | Initial | M.Shock | Vibration | | | |
| | | | | | | | |
| | 36 | 41.2 | -1.2 | -0.4 | | | |
| | 37 | 40.7 | -0.1 | 0.1 | | | |
| | 38 | 38.9 | -0.1 | 0.0 | | | |
| | 39 | 39.3 | 0.1 | 0.1 | | | |
| | 40 | 39.5 | 0.5 | 0.5 | | | |
| | 41 | 39.5 | 0.1 | 0.3 | | | |
| | 42 | 39.2 | 1.1 | 0.9 | | | |
| | 43 | 39.4 | 0.1 | 0.2 | | | |
| | 44 | 32.8 | -0.8 | -0.8 | | | |
| | 45 | 32.9 | 0.4 | 0.4 | | | |
| | 46 | 32.6 | -0.1 | -0.1 | | | |
| | 47 | 32.6 | -1.0 | -0.9 | | | |
| | 48 | 32.3 | -0.3 | -0.1 | | | |
| | 49 | 32.7 | -0.1 | -0.1 | | | |
| | 50 | 33.1 | -0.2 | -0.4 | | | |
| | | | | | | | |
| | MAX | 41.3 | 1.7 | 4.0 | | | |
| | MIN | 31.9 | -1.4 | -1.1 | | | |
| | AVG | 37.9 | 0.0 | 0.2 | | | |
| | STD | 3.5 | 0.7 | 0.9 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



TEST RESULTS

SEQUENCE C

Group A

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PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# C-A1-1, C-A1-2, TECHNICIAN: MHB
C-A1-3, C-A1-4, C-A1-5,
C-A1-6, C-A1-7, C-A1-8

START DATE: 3/14/03 COMPLETE DATE: 3/14/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 29%

EQUIPMENT ID#: 681, 1045

LOW LEVEL CIRCUIT RESISTANCE (LLCR)

PURPOSE:

1. To evaluate contact resistance characteristics of the contact systems under conditions where applied voltages and currents do not alter the physical contact interface and will detect oxides and films which degrade electrical stability. It is also sensitive to and may detect the presence of fretting corrosion induced by mechanical or thermal environments as well as any significant loss of contact pressure.
2. This attribute was monitored after each preconditioning and/or test exposure in order to determine said stability of the contact systems as they progress through the applicable test sequences.
3. The electrical stability of the system is determined by comparing the initial resistance value to that observed after a given test exposure. The difference is the change in resistance occurring whose magnitude establishes the stability of the interface being evaluated.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 23, with the following conditions:



PROCEDURE - Continued:

2. Test Conditions:

- a) Test Current : 10 milliamps
- b) Open Circuit Voltage : 20 millivolts

3. The points of application are shown in Figure #3.

REQUIREMENTS:

Low level circuit resistance shall be measured and recorded.

RESULTS:

1. The following is a summary of the data observed:

LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

| <u>Sample ID#</u> | <u>Avg.</u> | <u>Max.</u> | <u>Min.</u> |
|-------------------|-------------|-------------|-------------|
| C-A1-1 | 36.6 | 39.6 | 31.4 |
| C-A1-2 | 36.8 | 39.9 | 31.8 |
| C-A1-3 | 37.1 | 40.1 | 31.9 |
| C-A1-4 | 37.1 | 39.7 | 31.7 |
| C-A1-5 | 37.4 | 40.3 | 31.6 |
| C-A1-6 | 36.9 | 39.9 | 31.2 |
| C-A1-7 | 36.7 | 39.1 | 31.4 |
| C-A1-8 | 36.7 | 39.0 | 31.4 |

2. See data files 20307309 through 20307316 for individual data points.



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# C-A1-1, C-A1-2, TECHNICIAN: MHB
C-A1-3, C-A1-4, C-A1-5,
C-A1-6, C-A1-7, C-A1-8

START DATE: 3/15/03 COMPLETE DATE: 3/19/03

ROOM AMBIENT: 21°C RELATIVE HUMIDITY: 32%

EQUIPMENT ID#: 192, 321, 465, 466, 681, 1045, 1360, 1361

THERMAL SHOCK

PURPOSE:

To determine the resistance of a given electrical connector to exposure at extremes of high and low temperatures and the shock of alternate exposures to these extremes, simulating the worst probable conditions of storage, transportation and application.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 32, with the following conditions:
2. Test Conditions:
 - a) Number of Cycles : 100 Cycles
 - b) Hot Extreme : +85 +3°C/-0°C
 - c) Cold Extreme : -55 +0°C/-3°C
 - d) Time at Temperature : 30 Minutes
 - e) Mating Conditions : Mated
 - f) Mounting Conditions : Mounted
 - g) Transfer Time : Instantaneous
3. The total number of cycles was performed continuously.
4. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.
5. All subsequent variable testing was performed in accordance with the procedures previously indicated.

REQUIREMENTS: See next page.



REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. The change in low level circuit resistance shall be measured and recorded.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. The following is a summary of the observed data:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

| <u>Sample ID#</u> | <u>Avg. Change</u> | <u>Max. Change</u> |
|-------------------|------------------------|------------------------|
| C-A1-1 | +0.0 | +0.7 |
| C-A1-2 | -0.1 | +0.9 |
| C-A1-3 | +0.3 | +1.2 |
| C-A1-4 | +0.2 | +0.9 |
| C-A1-5 | +0.0 | +1.2 |
| C-A1-6 | -0.2 | +0.6 |
| C-A1-7 | -0.2 | +0.1 |
| C-A1-8 | +0.8 | +2.7 |

3. See data files 20307309 through 20307316 for individual data points.



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# C-A1-1, C-A1-2, TECHNICIAN: MHB
C-A1-3, C-A1-4, C-A1-5,
C-A1-6, C-A1-7, C-A1-8

START DATE: 3/21/03 COMPLETE DATE: 3/31/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 40%

EQUIPMENT ID#: 27, 681, 1045, 1360, 1361

HUMIDITY (THERMAL CYCLING)

PURPOSE:

To evaluate the impact on electrical stability of the contact system when exposed to any environment which may generate thermal/moisture type failure mechanisms such as:

- a) Fretting corrosion due to wear resulting from micromotion, induced by thermal cycling. Humidity accelerates the oxidation process.
- b) Oxidation of wear debris or from particulates from the surrounding atmosphere which may have become entrapped between the contacting surfaces.
- c) Failure mechanisms resulting from a wet oxidation process.

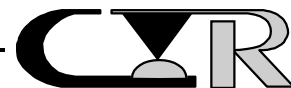
PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 31, Method II with the following conditions:

2. Test Conditions:

- a) Preconditioning (24 hours) : 50°C ± 5°C
- b) Relative Humidity : 90% to 95%
- c) Temperature Conditions : 25°C to 65°C
- d) Cold Cycle : No
- e) Polarizing Voltage : No
- f) Mating Conditions : Mated
- g) Mounting Conditions : Mounted
- h) Duration : 240 hours

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PROCEDURE: Continued

3. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.
4. All subsequent variable testing was performed in accordance with the procedures previously indicated.

REQUIREMENTS:

1. There shall be no evidence of physical deterioration of the test samples as tested.
2. The change in low level circuit resistance shall be measured and recorded.

RESULTS:

1. The test samples as tested showed no evidence of physical deterioration.
2. The following is a summary of the data observed:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

| <u>Sample ID#</u> | <u>Avg. Change</u> | <u>Max. Change</u> |
|-------------------|------------------------|------------------------|
| C-A1-1 | +0.8 | +4.1 |
| C-A1-2 | +0.0 | +0.9 |
| C-A1-3 | +0.2 | +2.5 |
| C-A1-4 | +0.1 | +1.0 |
| C-A1-5 | +0.0 | +1.0 |
| C-A1-6 | +0.0 | +0.9 |
| C-A1-7 | +0.1 | +1.0 |
| C-A1-8 | +1.7 | +6.7 |

3. See data files 20307309 through 20307316 for individual data points.



LLCR DATA FILES

DATA FILE NUMBERS

20307309

20307310

20307311

20307312

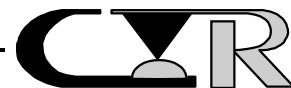
20307313

20307314

20307315

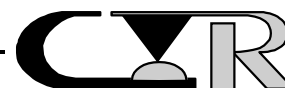
20307316

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| | | | | | | | |
|-----------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307309 | |
| Description: | Sample ID# C-A1-1 | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.0 | -0.2 | 1.6 | | | | |
| 2 | 38.4 | -0.4 | 2.2 | | | | |
| 3 | 38.0 | -0.2 | 3.8 | | | | |
| 4 | 38.3 | -0.1 | 1.2 | | | | |
| 5 | 37.7 | -0.1 | 1.1 | | | | |
| 6 | 38.5 | -0.1 | 1.0 | | | | |
| 7 | 38.7 | 0.7 | 2.7 | | | | |
| 8 | 38.2 | 0.5 | 3.3 | | | | |
| 9 | 38.1 | 0.0 | 3.7 | | | | |
| 10 | 39.1 | -0.1 | 1.1 | | | | |
| 11 | 39.5 | -0.3 | 4.1 | | | | |
| 12 | 38.3 | -0.3 | 0.7 | | | | |
| 13 | 38.3 | -0.3 | -0.2 | | | | |
| 14 | 38.9 | -0.3 | -0.2 | | | | |
| 15 | 38.0 | -0.2 | 0.3 | | | | |
| 16 | 38.6 | -0.2 | 0.2 | | | | |
| 17 | 38.6 | 0.0 | 0.1 | | | | |
| 18 | 38.8 | 0.0 | 0.0 | | | | |
| 19 | 39.6 | -0.1 | 0.2 | | | | |
| 20 | 38.4 | -0.1 | -0.1 | | | | |
| 21 | 38.5 | -0.1 | 0.0 | | | | |
| 22 | 38.6 | 0.0 | -0.1 | | | | |
| 23 | 39.2 | -0.3 | -0.4 | | | | |
| 24 | 37.8 | 0.1 | 0.3 | | | | |
| 25 | 37.4 | 0.3 | 0.4 | | | | |
| 26 | 32.2 | -0.1 | 0.2 | | | | |
| 27 | 32.2 | 0.1 | 1.2 | | | | |
| 28 | 32.4 | 0.1 | 3.4 | | | | |
| 29 | 32.4 | 0.0 | 0.3 | | | | |
| 30 | 31.9 | 0.0 | 0.7 | | | | |
| 31 | 31.7 | -0.3 | 0.2 | | | | |
| 32 | 31.4 | 0.0 | 2.5 | | | | |
| 33 | 38.3 | -0.1 | 0.6 | | | | |
| 34 | 38.8 | -0.2 | 1.1 | | | | |
| 35 | 39.3 | -0.6 | 0.5 | | | | |

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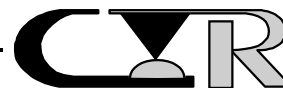


| | Temp °C | 20 | 21 | 20 | | | | |
|--|----------|---------|---------|----------|--|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | | |
| | | | | | | | | |
| | 36 | 38.3 | -0.1 | 1.7 | | | | |
| | 37 | 37.9 | 0.1 | 0.5 | | | | |
| | 38 | 38.0 | 0.0 | -0.1 | | | | |
| | 39 | 38.5 | 0.0 | 0.4 | | | | |
| | 40 | 38.3 | 0.2 | 0.1 | | | | |
| | 41 | 38.4 | 0.1 | -0.2 | | | | |
| | 42 | 38.4 | 0.3 | -0.1 | | | | |
| | 43 | 38.2 | 0.6 | 0.2 | | | | |
| | 44 | 31.7 | 0.2 | 0.2 | | | | |
| | 45 | 31.7 | -0.1 | 0.0 | | | | |
| | 46 | 31.6 | 0.0 | 0.1 | | | | |
| | 47 | 32.0 | 0.1 | 0.0 | | | | |
| | 48 | 31.7 | 0.1 | 0.1 | | | | |
| | 49 | 31.9 | 0.2 | 0.0 | | | | |
| | 50 | 31.8 | 0.1 | 0.2 | | | | |
| | | | | | | | | |
| | MAX | 39.6 | 0.7 | 4.1 | | | | |
| | MIN | 31.4 | -0.6 | -0.4 | | | | |
| | AVG | 36.6 | 0.0 | 0.8 | | | | |
| | STD | 3.0 | 0.2 | 1.2 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |



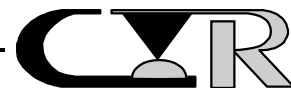
| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307310 | |
| Description: Sample ID# C-A1-2 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.1 | 0.3 | 0.9 | | | | |
| 2 | 38.0 | -0.5 | 0.2 | | | | |
| 3 | 38.2 | -0.2 | 0.8 | | | | |
| 4 | 38.7 | -0.2 | 0.6 | | | | |
| 5 | 38.3 | -0.1 | 0.1 | | | | |
| 6 | 38.8 | 0.3 | 0.2 | | | | |
| 7 | 38.8 | 0.2 | 0.3 | | | | |
| 8 | 38.9 | -0.4 | -0.1 | | | | |
| 9 | 39.5 | -0.4 | -0.4 | | | | |
| 10 | 38.1 | -0.1 | 0.1 | | | | |
| 11 | 38.6 | 0.0 | 0.1 | | | | |
| 12 | 38.9 | 0.0 | 0.1 | | | | |
| 13 | 38.2 | -0.7 | -0.3 | | | | |
| 14 | 39.6 | -1.6 | -1.5 | | | | |
| 15 | 38.9 | -0.6 | -0.4 | | | | |
| 16 | 39.9 | 0.1 | -0.1 | | | | |
| 17 | 39.1 | -0.9 | -0.8 | | | | |
| 18 | 38.6 | 0.2 | 0.4 | | | | |
| 19 | 38.6 | 0.3 | 0.4 | | | | |
| 20 | 38.9 | -0.2 | 0.1 | | | | |
| 21 | 38.5 | 0.0 | 0.3 | | | | |
| 22 | 39.0 | 0.1 | -0.1 | | | | |
| 23 | 38.3 | 0.1 | -0.1 | | | | |
| 24 | 37.9 | 0.0 | -0.1 | | | | |
| 25 | 38.1 | -0.2 | -0.2 | | | | |
| 26 | 32.2 | -0.1 | 0.1 | | | | |
| 27 | 32.6 | -0.3 | -0.3 | | | | |
| 28 | 32.2 | -0.3 | -0.3 | | | | |
| 29 | 31.9 | 0.4 | 0.4 | | | | |
| 30 | 32.7 | -0.4 | -0.4 | | | | |
| 31 | 32.7 | -0.5 | -0.5 | | | | |
| 32 | 32.1 | -0.6 | -0.5 | | | | |
| 33 | 38.5 | 0.2 | 0.3 | | | | |
| 34 | 38.4 | 0.1 | 0.5 | | | | |
| 35 | 39.0 | -0.4 | 0.0 | | | | |

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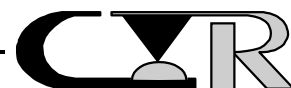
| | Temp °C | 20 | 21 | 20 | | | | |
|--|----------|---------|---------|----------|--|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | | |
| | | | | | | | | |
| | 36 | 38.0 | 0.1 | -0.1 | | | | |
| | 37 | 38.1 | 0.0 | 0.1 | | | | |
| | 38 | 38.3 | -0.3 | -0.1 | | | | |
| | 39 | 38.3 | 0.0 | 0.1 | | | | |
| | 40 | 38.2 | 0.1 | 0.2 | | | | |
| | 41 | 38.8 | 0.7 | -0.3 | | | | |
| | 42 | 38.2 | 0.8 | 0.3 | | | | |
| | 43 | 38.5 | 0.9 | 0.8 | | | | |
| | 44 | 32.3 | -0.6 | -0.3 | | | | |
| | 45 | 32.0 | -0.1 | -0.2 | | | | |
| | 46 | 32.6 | 0.4 | 0.3 | | | | |
| | 47 | 31.8 | -0.1 | -0.2 | | | | |
| | 48 | 32.5 | 0.0 | -0.1 | | | | |
| | 49 | 32.1 | -0.2 | -0.2 | | | | |
| | 50 | 32.2 | -0.1 | -0.3 | | | | |
| | | | | | | | | |
| | MAX | 39.9 | 0.9 | 0.9 | | | | |
| | MIN | 31.8 | -1.6 | -1.5 | | | | |
| | AVG | 36.8 | -0.1 | 0.0 | | | | |
| | STD | 2.9 | 0.4 | 0.4 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |

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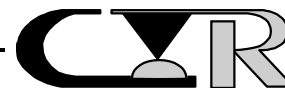
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|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307311 | |
| Description: Sample ID# C-A1-3 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.6 | 0.0 | -0.2 | | | | |
| 2 | 40.1 | 0.2 | -0.2 | | | | |
| 3 | 38.8 | 0.2 | -0.1 | | | | |
| 4 | 38.9 | 0.3 | 0.1 | | | | |
| 5 | 38.2 | -0.2 | -0.4 | | | | |
| 6 | 38.3 | 1.2 | 0.8 | | | | |
| 7 | 38.4 | 0.1 | -0.3 | | | | |
| 8 | 37.9 | 0.7 | 0.6 | | | | |
| 9 | 38.7 | 0.4 | 0.3 | | | | |
| 10 | 39.1 | 0.2 | 0.0 | | | | |
| 11 | 39.0 | 0.1 | 0.0 | | | | |
| 12 | 39.2 | -0.2 | -0.2 | | | | |
| 13 | 38.3 | 0.0 | 0.3 | | | | |
| 14 | 38.8 | 0.2 | 0.0 | | | | |
| 15 | 38.8 | 0.3 | 0.1 | | | | |
| 16 | 38.6 | 1.2 | 0.9 | | | | |
| 17 | 39.0 | 0.5 | -0.2 | | | | |
| 18 | 38.4 | -0.4 | -0.7 | | | | |
| 19 | 39.5 | 1.0 | 0.8 | | | | |
| 20 | 38.7 | 0.1 | -0.4 | | | | |
| 21 | 38.7 | 1.0 | 0.5 | | | | |
| 22 | 39.1 | 0.7 | 0.4 | | | | |
| 23 | 38.6 | 0.5 | 0.2 | | | | |
| 24 | 38.4 | 0.5 | 2.5 | | | | |
| 25 | 38.3 | 0.1 | 0.3 | | | | |
| 26 | 33.2 | 0.2 | 0.1 | | | | |
| 27 | 32.9 | 0.5 | 0.3 | | | | |
| 28 | 33.4 | 0.6 | 0.3 | | | | |
| 29 | 32.9 | 0.5 | 0.3 | | | | |
| 30 | 31.9 | 0.9 | 0.8 | | | | |
| 31 | 32.0 | 0.3 | 0.1 | | | | |
| 32 | 31.9 | 0.7 | 0.1 | | | | |
| 33 | 38.7 | 0.5 | 0.4 | | | | |
| 34 | 38.2 | 0.7 | 1.4 | | | | |
| 35 | 39.2 | 0.9 | 1.6 | | | | |

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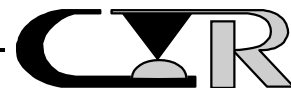
| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307312 | |
| Description: Sample ID# C-A1-4 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.1 | -0.2 | 0.5 | | | | |
| 2 | 38.8 | 0.1 | -0.2 | | | | |
| 3 | 39.0 | 0.4 | -0.1 | | | | |
| 4 | 38.8 | 0.3 | -0.2 | | | | |
| 5 | 39.3 | 0.4 | 0.0 | | | | |
| 6 | 39.2 | 0.3 | 0.2 | | | | |
| 7 | 39.2 | 0.1 | -0.1 | | | | |
| 8 | 39.1 | 0.4 | -0.2 | | | | |
| 9 | 39.5 | -0.1 | -0.3 | | | | |
| 10 | 39.7 | -0.2 | -0.5 | | | | |
| 11 | 38.6 | 0.0 | -0.1 | | | | |
| 12 | 39.5 | -0.2 | -0.1 | | | | |
| 13 | 39.3 | -0.2 | -0.1 | | | | |
| 14 | 39.4 | -0.3 | -0.1 | | | | |
| 15 | 39.3 | 0.9 | 1.0 | | | | |
| 16 | 39.2 | 0.5 | 0.7 | | | | |
| 17 | 39.1 | 0.2 | 0.6 | | | | |
| 18 | 38.8 | 0.4 | 0.1 | | | | |
| 19 | 39.1 | 0.1 | 0.0 | | | | |
| 20 | 38.8 | 0.2 | -0.2 | | | | |
| 21 | 39.6 | -0.1 | -0.2 | | | | |
| 22 | 39.0 | 0.0 | 0.3 | | | | |
| 23 | 39.0 | 0.2 | 0.3 | | | | |
| 24 | 38.6 | -0.1 | 0.0 | | | | |
| 25 | 38.8 | 0.1 | 0.1 | | | | |
| 26 | 32.2 | 0.8 | 0.4 | | | | |
| 27 | 31.7 | 0.9 | 0.8 | | | | |
| 28 | 32.8 | 0.1 | -0.2 | | | | |
| 29 | 32.6 | 0.2 | -0.3 | | | | |
| 30 | 32.6 | 0.0 | -0.5 | | | | |
| 31 | 32.0 | -0.1 | 0.2 | | | | |
| 32 | 32.0 | 0.5 | -0.1 | | | | |
| 33 | 38.9 | 0.0 | 0.1 | | | | |
| 34 | 39.1 | -0.1 | -0.4 | | | | |
| 35 | 39.0 | 0.1 | 0.3 | | | | |

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| | Temp °C | 20 | 21 | 20 | | | | |
|--|----------|---------|---------|----------|--|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | | |
| | | | | | | | | |
| | 36 | 39.1 | 0.1 | -0.3 | | | | |
| | 37 | 38.4 | 0.5 | 0.2 | | | | |
| | 38 | 38.5 | 0.1 | -0.1 | | | | |
| | 39 | 38.7 | 0.1 | 0.1 | | | | |
| | 40 | 38.6 | 0.5 | 0.4 | | | | |
| | 41 | 38.7 | 0.7 | 0.0 | | | | |
| | 42 | 39.2 | 0.2 | 0.0 | | | | |
| | 43 | 38.0 | 0.7 | 0.9 | | | | |
| | 44 | 32.3 | 0.0 | 0.4 | | | | |
| | 45 | 32.1 | -0.5 | -0.5 | | | | |
| | 46 | 33.4 | 0.0 | 0.3 | | | | |
| | 47 | 32.5 | 0.2 | 0.0 | | | | |
| | 48 | 32.4 | 0.3 | 0.5 | | | | |
| | 49 | 32.0 | 0.0 | -0.1 | | | | |
| | 50 | 32.3 | 0.4 | 0.2 | | | | |
| | | | | | | | | |
| | MAX | 39.7 | 0.9 | 1.0 | | | | |
| | MIN | 31.7 | -0.5 | -0.5 | | | | |
| | AVG | 37.1 | 0.2 | 0.1 | | | | |
| | STD | 3.0 | 0.3 | 0.4 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |

1478 - 01



| Low Level Contact Resistance | | | | | |
|----------------------------------|---------------------------|---------|----------|-----------|---------------|
| Project: | 203073 | | | Spec: | EIA 364 TP 23 |
| Customer: | Samtec | | | Subgroup: | Seq C |
| Product: | Series QTS/QSS connectors | | | File #: | 20307313 |
| Description: Sample ID# C-A1-5 | | | | | |
| Open circuit voltage: | 20mv | | | Current: | 100ma |
| Delta values units: milliohms | | | | | |
| Temp °C | 20 | 21 | 20 | | |
| R.H. % | 29 | 32 | 40 | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | |
| Pos. ID | Initial | T.Shock | Humidity | | |
| 1 | 39.2 | -0.4 | -0.4 | | |
| 2 | 39.4 | -0.2 | -0.2 | | |
| 3 | 39.6 | -0.1 | -0.2 | | |
| 4 | 40.1 | -0.1 | -0.1 | | |
| 5 | 39.8 | -0.1 | -0.1 | | |
| 6 | 40.1 | -0.1 | -0.1 | | |
| 7 | 40.1 | 0.0 | -0.1 | | |
| 8 | 39.7 | 0.5 | 0.4 | | |
| 9 | 39.1 | 0.1 | 0.4 | | |
| 10 | 39.4 | 0.0 | 0.3 | | |
| 11 | 38.9 | 0.2 | 0.6 | | |
| 12 | 39.7 | 0.0 | 0.1 | | |
| 13 | 39.3 | -0.3 | -0.3 | | |
| 14 | 38.8 | -0.3 | -0.3 | | |
| 15 | 39.2 | 0.0 | -0.1 | | |
| 16 | 40.3 | -0.2 | -0.2 | | |
| 17 | 40.2 | -0.3 | -0.2 | | |
| 18 | 40.1 | 0.1 | 0.2 | | |
| 19 | 39.8 | 0.1 | -0.1 | | |
| 20 | 39.7 | 0.1 | 1.0 | | |
| 21 | 38.6 | 0.3 | 0.2 | | |
| 22 | 38.3 | -0.1 | -0.1 | | |
| 23 | 39.1 | -0.3 | -0.3 | | |
| 24 | 39.0 | -0.4 | -0.5 | | |
| 25 | 38.7 | -0.1 | -0.1 | | |
| 26 | 32.2 | -0.4 | -0.3 | | |
| 27 | 32.7 | 0.4 | 0.3 | | |
| 28 | 32.4 | 0.1 | 0.0 | | |
| 29 | 32.2 | 0.1 | 0.4 | | |
| 30 | 32.6 | 0.2 | 0.6 | | |
| 31 | 32.4 | -0.1 | 0.0 | | |
| 32 | 32.6 | 0.3 | 0.8 | | |
| 33 | 39.7 | 0.0 | -0.2 | | |
| 34 | 39.2 | -0.3 | 0.2 | | |
| 35 | 39.3 | 0.6 | 0.3 | | |

1478 - 01

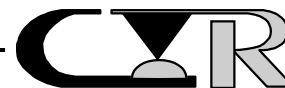


| | Temp °C | 20 | 21 | 20 | | | | |
|--|----------|---------|---------|----------|--|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | | |
| | | | | | | | | |
| | 36 | 39.6 | -0.1 | -0.1 | | | | |
| | 37 | 39.2 | -0.2 | -0.2 | | | | |
| | 38 | 38.7 | -0.1 | 0.1 | | | | |
| | 39 | 39.2 | -0.5 | -0.6 | | | | |
| | 40 | 38.6 | -0.1 | -0.1 | | | | |
| | 41 | 39.3 | -0.1 | -0.3 | | | | |
| | 42 | 38.5 | 0.1 | 0.2 | | | | |
| | 43 | 38.7 | 0.6 | 0.4 | | | | |
| | 44 | 32.8 | -0.3 | -0.5 | | | | |
| | 45 | 31.6 | 0.1 | 0.2 | | | | |
| | 46 | 33.5 | -0.5 | -0.5 | | | | |
| | 47 | 32.2 | -0.4 | -0.6 | | | | |
| | 48 | 31.8 | 1.2 | 1.0 | | | | |
| | 49 | 32.7 | 0.2 | 0.1 | | | | |
| | 50 | 31.6 | -0.1 | 0.4 | | | | |
| | | | | | | | | |
| | MAX | 40.3 | 1.2 | 1.0 | | | | |
| | MIN | 31.6 | -0.5 | -0.6 | | | | |
| | AVG | 37.4 | 0.0 | 0.0 | | | | |
| | STD | 3.2 | 0.3 | 0.4 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307314 | |
| Description: Sample ID# C-A1-6 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.5 | -0.2 | 0.0 | | | | |
| 2 | 38.9 | 0.0 | 0.6 | | | | |
| 3 | 38.8 | -0.3 | -0.2 | | | | |
| 4 | 39.3 | -0.6 | -0.7 | | | | |
| 5 | 39.5 | -0.5 | -0.1 | | | | |
| 6 | 39.3 | 0.4 | 0.4 | | | | |
| 7 | 38.7 | -0.1 | -0.2 | | | | |
| 8 | 38.7 | -0.1 | -0.2 | | | | |
| 9 | 39.1 | -0.2 | -0.3 | | | | |
| 10 | 39.9 | -0.6 | -0.3 | | | | |
| 11 | 38.7 | 0.0 | -0.2 | | | | |
| 12 | 39.0 | -0.4 | -0.2 | | | | |
| 13 | 38.9 | 0.1 | -0.2 | | | | |
| 14 | 38.4 | 0.0 | -0.1 | | | | |
| 15 | 38.5 | -0.2 | -0.3 | | | | |
| 16 | 38.7 | -0.2 | -0.4 | | | | |
| 17 | 38.1 | 0.1 | 0.1 | | | | |
| 18 | 38.5 | -0.3 | -0.2 | | | | |
| 19 | 38.8 | -0.3 | -0.1 | | | | |
| 20 | 38.8 | -0.3 | -0.3 | | | | |
| 21 | 38.6 | -0.2 | 0.2 | | | | |
| 22 | 39.3 | -0.4 | -0.1 | | | | |
| 23 | 38.6 | 0.0 | 0.0 | | | | |
| 24 | 38.5 | -0.3 | -0.1 | | | | |
| 25 | 38.7 | -0.4 | -0.4 | | | | |
| 26 | 32.6 | -0.6 | -0.7 | | | | |
| 27 | 31.9 | -0.3 | -0.3 | | | | |
| 28 | 32.0 | 0.2 | 0.2 | | | | |
| 29 | 31.5 | 0.2 | 0.2 | | | | |
| 30 | 32.2 | -0.1 | -0.1 | | | | |
| 31 | 31.2 | -0.3 | -0.3 | | | | |
| 32 | 32.2 | -0.4 | -0.3 | | | | |
| 33 | 38.7 | -0.1 | 0.9 | | | | |
| 34 | 38.7 | -0.2 | 0.9 | | | | |
| 35 | 38.8 | 0.0 | 0.4 | | | | |

1478 - 01

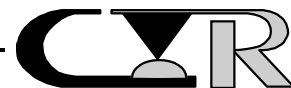


| | Temp °C | 20 | 21 | 20 | | | |
|--|----------|---------|---------|----------|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | |
| | | | | | | | |
| | 36 | 38.9 | -0.4 | -0.1 | | | |
| | 37 | 38.7 | -0.3 | -0.2 | | | |
| | 38 | 38.4 | -0.1 | 0.1 | | | |
| | 39 | 38.6 | -0.1 | -0.3 | | | |
| | 40 | 38.8 | 0.0 | 0.0 | | | |
| | 41 | 38.5 | 0.0 | 0.1 | | | |
| | 42 | 38.7 | -0.2 | 0.2 | | | |
| | 43 | 38.8 | -0.3 | 0.2 | | | |
| | 44 | 31.5 | -0.6 | -0.5 | | | |
| | 45 | 32.4 | -0.7 | 0.1 | | | |
| | 46 | 32.3 | 0.1 | 0.9 | | | |
| | 47 | 33.0 | -0.5 | -0.1 | | | |
| | 48 | 32.4 | 0.3 | 0.2 | | | |
| | 49 | 32.2 | 0.3 | 0.4 | | | |
| | 50 | 32.1 | 0.6 | 0.5 | | | |
| | | | | | | | |
| | MAX | 39.9 | 0.6 | 0.9 | | | |
| | MIN | 31.2 | -0.7 | -0.7 | | | |
| | AVG | 36.9 | -0.2 | 0.0 | | | |
| | STD | 3.1 | 0.3 | 0.4 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



| | | | | | | | |
|-----------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307315 | |
| Description: | Sample ID# C-A1-7 | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.4 | -0.2 | -0.2 | | | | |
| 2 | 38.2 | -0.2 | 0.0 | | | | |
| 3 | 38.4 | -0.2 | -0.2 | | | | |
| 4 | 38.2 | 0.0 | -0.1 | | | | |
| 5 | 38.5 | -0.2 | 0.0 | | | | |
| 6 | 38.4 | -0.2 | 0.0 | | | | |
| 7 | 38.9 | -0.1 | -0.1 | | | | |
| 8 | 39.1 | 0.0 | 0.2 | | | | |
| 9 | 38.8 | -0.3 | -0.2 | | | | |
| 10 | 38.3 | -0.2 | 0.3 | | | | |
| 11 | 38.4 | -0.2 | -0.1 | | | | |
| 12 | 38.7 | -0.2 | 0.1 | | | | |
| 13 | 38.7 | -0.3 | -0.1 | | | | |
| 14 | 38.7 | -0.1 | 0.1 | | | | |
| 15 | 38.4 | 0.1 | 0.6 | | | | |
| 16 | 38.5 | -0.2 | 0.1 | | | | |
| 17 | 38.5 | -0.1 | 0.5 | | | | |
| 18 | 38.3 | -0.2 | 0.0 | | | | |
| 19 | 38.7 | -0.2 | 0.3 | | | | |
| 20 | 38.6 | -0.2 | -0.2 | | | | |
| 21 | 38.7 | -0.3 | 0.0 | | | | |
| 22 | 38.5 | -0.1 | -0.1 | | | | |
| 23 | 38.4 | -0.2 | -0.1 | | | | |
| 24 | 38.4 | 0.1 | 0.6 | | | | |
| 25 | 38.3 | -0.1 | 0.4 | | | | |
| 26 | 31.7 | -0.3 | -0.1 | | | | |
| 27 | 32.4 | -0.3 | 0.1 | | | | |
| 28 | 32.5 | 0.0 | 0.5 | | | | |
| 29 | 33.0 | -0.2 | 0.1 | | | | |
| 30 | 33.1 | -0.4 | 0.2 | | | | |
| 31 | 32.1 | -0.4 | 0.2 | | | | |
| 32 | 32.1 | -0.1 | 0.0 | | | | |
| 33 | 38.8 | -0.2 | -0.1 | | | | |
| 34 | 38.9 | -0.1 | -0.2 | | | | |
| 35 | 38.3 | -0.1 | 0.2 | | | | |

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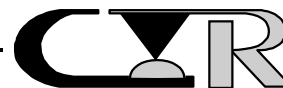


| | Temp °C | 20 | 21 | 20 | | | |
|--|----------|---------|---------|----------|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | |
| | | | | | | | |
| | 36 | 38.2 | 0.0 | -0.1 | | | |
| | 37 | 37.9 | -0.1 | 0.2 | | | |
| | 38 | 38.3 | -0.3 | -0.3 | | | |
| | 39 | 38.0 | -0.2 | 0.2 | | | |
| | 40 | 38.4 | -0.3 | 0.1 | | | |
| | 41 | 38.4 | 0.0 | 0.4 | | | |
| | 42 | 38.4 | -0.3 | 0.0 | | | |
| | 43 | 37.9 | 0.1 | 0.4 | | | |
| | 44 | 31.4 | -0.1 | 0.9 | | | |
| | 45 | 32.7 | -0.8 | -0.1 | | | |
| | 46 | 31.8 | -0.6 | 1.0 | | | |
| | 47 | 32.1 | -0.3 | 0.5 | | | |
| | 48 | 32.2 | -0.3 | -0.2 | | | |
| | 49 | 31.9 | -0.2 | 0.3 | | | |
| | 50 | 32.1 | -0.3 | -0.4 | | | |
| | | | | | | | |
| | MAX | 39.1 | 0.1 | 1.0 | | | |
| | MIN | 31.4 | -0.8 | -0.4 | | | |
| | AVG | 36.7 | -0.2 | 0.1 | | | |
| | STD | 2.8 | 0.2 | 0.3 | | | |
| | Open | 0 | 0 | 0 | | | |
| | Tech | MHB | MHB | MHB | | | |
| | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | |
| | | 1045 | 1045 | 1045 | | | |



| | | | | | | | |
|--------------------------------|---------------------------|---------|------------------------------|--|-----------|---------------|--|
| | | | | | | | |
| | | | Low Level Contact Resistance | | | | |
| Project: | 203073 | | | | Spec: | EIA 364 TP 23 | |
| Customer: | Samtec | | | | Subgroup: | Seq C | |
| Product: | Series QTS/QSS connectors | | | | File #: | 20307316 | |
| Description: Sample ID# C-A1-8 | | | | | | | |
| Open circuit voltage: | 20mv | | | | Current: | 100ma | |
| | | | Delta values | | | | |
| | | | units: milliohms | | | | |
| Temp °C | 20 | 21 | 20 | | | | |
| R.H. % | 29 | 32 | 40 | | | | |
| Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| Pos. ID | Initial | T.Shock | Humidity | | | | |
| 1 | 38.3 | 0.0 | 0.6 | | | | |
| 2 | 38.2 | 0.4 | 1.0 | | | | |
| 3 | 38.3 | 0.5 | 1.3 | | | | |
| 4 | 38.2 | 1.1 | 0.9 | | | | |
| 5 | 38.5 | 0.0 | 1.7 | | | | |
| 6 | 38.4 | 0.1 | 1.8 | | | | |
| 7 | 38.8 | 0.7 | 1.1 | | | | |
| 8 | 39.0 | 0.2 | 1.1 | | | | |
| 9 | 38.8 | 0.9 | 1.2 | | | | |
| 10 | 38.2 | 0.5 | 1.9 | | | | |
| 11 | 38.4 | 1.6 | 2.3 | | | | |
| 12 | 38.7 | 0.6 | 2.0 | | | | |
| 13 | 38.6 | 0.0 | 1.6 | | | | |
| 14 | 38.7 | -0.3 | 0.9 | | | | |
| 15 | 38.4 | 0.3 | 1.3 | | | | |
| 16 | 38.5 | 0.4 | 1.9 | | | | |
| 17 | 38.5 | -0.1 | 1.2 | | | | |
| 18 | 38.3 | 0.8 | 2.2 | | | | |
| 19 | 38.7 | 1.2 | 1.5 | | | | |
| 20 | 38.6 | 1.1 | 1.0 | | | | |
| 21 | 38.7 | 1.4 | 1.9 | | | | |
| 22 | 38.5 | 2.7 | 1.9 | | | | |
| 23 | 38.4 | 1.2 | 1.4 | | | | |
| 24 | 38.4 | 0.8 | 1.2 | | | | |
| 25 | 38.3 | 0.1 | 0.4 | | | | |
| 26 | 31.8 | 0.0 | 6.7 | | | | |
| 27 | 32.4 | 0.4 | 1.9 | | | | |
| 28 | 32.6 | 0.3 | 1.9 | | | | |
| 29 | 32.9 | 0.0 | 1.0 | | | | |
| 30 | 33.1 | 0.1 | 1.9 | | | | |
| 31 | 32.1 | 0.3 | 1.5 | | | | |
| 32 | 32.0 | 0.4 | 3.4 | | | | |
| 33 | 38.7 | 0.3 | 1.4 | | | | |
| 34 | 38.9 | 0.8 | 2.0 | | | | |
| 35 | 38.3 | 0.7 | 3.8 | | | | |

1478 - 01



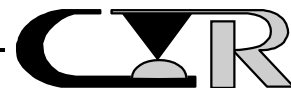
| | Temp °C | 20 | 21 | 20 | | | | |
|--|----------|---------|---------|----------|--|--|--|--|
| | R.H. % | 29 | 32 | 40 | | | | |
| | Date: | 14Mar03 | 19Mar03 | 31Mar03 | | | | |
| | Pos. ID | Initial | T.Shock | Humidity | | | | |
| | | | | | | | | |
| | 36 | 38.1 | 0.2 | 1.1 | | | | |
| | 37 | 37.8 | 0.6 | 1.1 | | | | |
| | 38 | 38.3 | 0.4 | 1.0 | | | | |
| | 39 | 37.9 | 0.8 | 1.5 | | | | |
| | 40 | 38.3 | 1.2 | 1.3 | | | | |
| | 41 | 38.3 | 1.2 | 1.8 | | | | |
| | 42 | 38.4 | 1.4 | 1.3 | | | | |
| | 43 | 37.9 | 1.9 | 1.9 | | | | |
| | 44 | 31.4 | 1.4 | 2.1 | | | | |
| | 45 | 32.6 | 1.2 | 1.3 | | | | |
| | 46 | 31.7 | 2.7 | 2.5 | | | | |
| | 47 | 32.1 | 2.2 | 2.3 | | | | |
| | 48 | 32.2 | 1.9 | 1.6 | | | | |
| | 49 | 31.7 | 1.7 | 1.2 | | | | |
| | 50 | 32.0 | 1.2 | 1.3 | | | | |
| | | | | | | | | |
| | MAX | 39.0 | 2.7 | 6.7 | | | | |
| | MIN | 31.4 | -0.3 | 0.4 | | | | |
| | AVG | 36.7 | 0.8 | 1.7 | | | | |
| | STD | 2.8 | 0.7 | 0.9 | | | | |
| | Open | 0 | 0 | 0 | | | | |
| | Tech | MHB | MHB | MHB | | | | |
| | | | | | | | | |
| | Equip ID | 681 | 681 | 681 | | | | |
| | | 1045 | 1045 | 1045 | | | | |



TEST RESULTS

SEQUENCE D

Group A



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# D-A-1, D-A-2, D-A-3 TECHNICIAN: MHB

START DATE: 3/20/03 COMPLETE DATE: 3/20/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 32%

EQUIPMENT ID#: 30, 545, 553, 684, 1166, 1167, 1168, 1169,
1271, 1272,

MECHANICAL SHOCK (SPECIFIED PULSE)

PURPOSE:

To determine the mechanical and electrical integrity of connectors for use with electronic equipment subjected to shocks such as those expected from handling, transportation, etc.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 27, Test Condition C.
2. Test Conditions:
 - a) Peak Value : 100 G
 - b) Duration : 6 Milliseconds
 - c) Wave Form : Half-Sine
 - d) Velocity : 12.3 feet Per Second
 - e) No. of Shocks : 3 Shocks/Direction, 3 Axis (18 Total)
3. Figure #4 illustrates the test sample fixturing utilized during the test.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. There shall be no contact interruption greater than 1.0 microsecond.



RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. There was no contact interruption greater than 1.0 microsecond.
3. The Mechanical Shock characteristics are shown in Figures #7 (Calibration Pulse) and #8 (Test Pulse). Each figure displays the shock pulse contained within the upper and lower limits as defined by the appropriate test specification.

1478 - 01

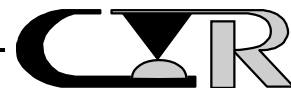
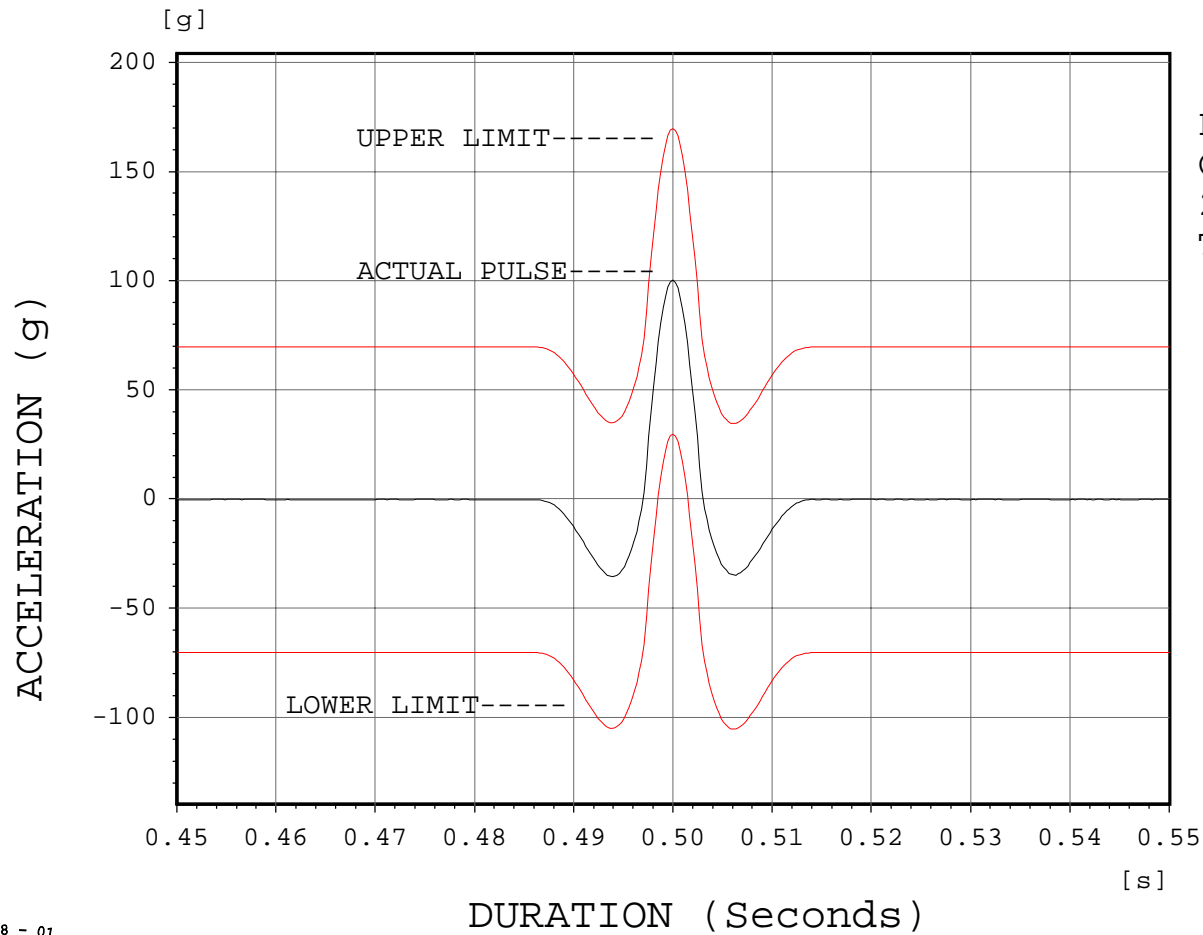


FIGURE #7

Channel 1

Classical Shock



Project 203073
Cal Wave 1
20Mar03
Tech: /MHB

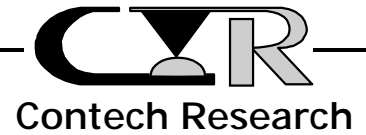
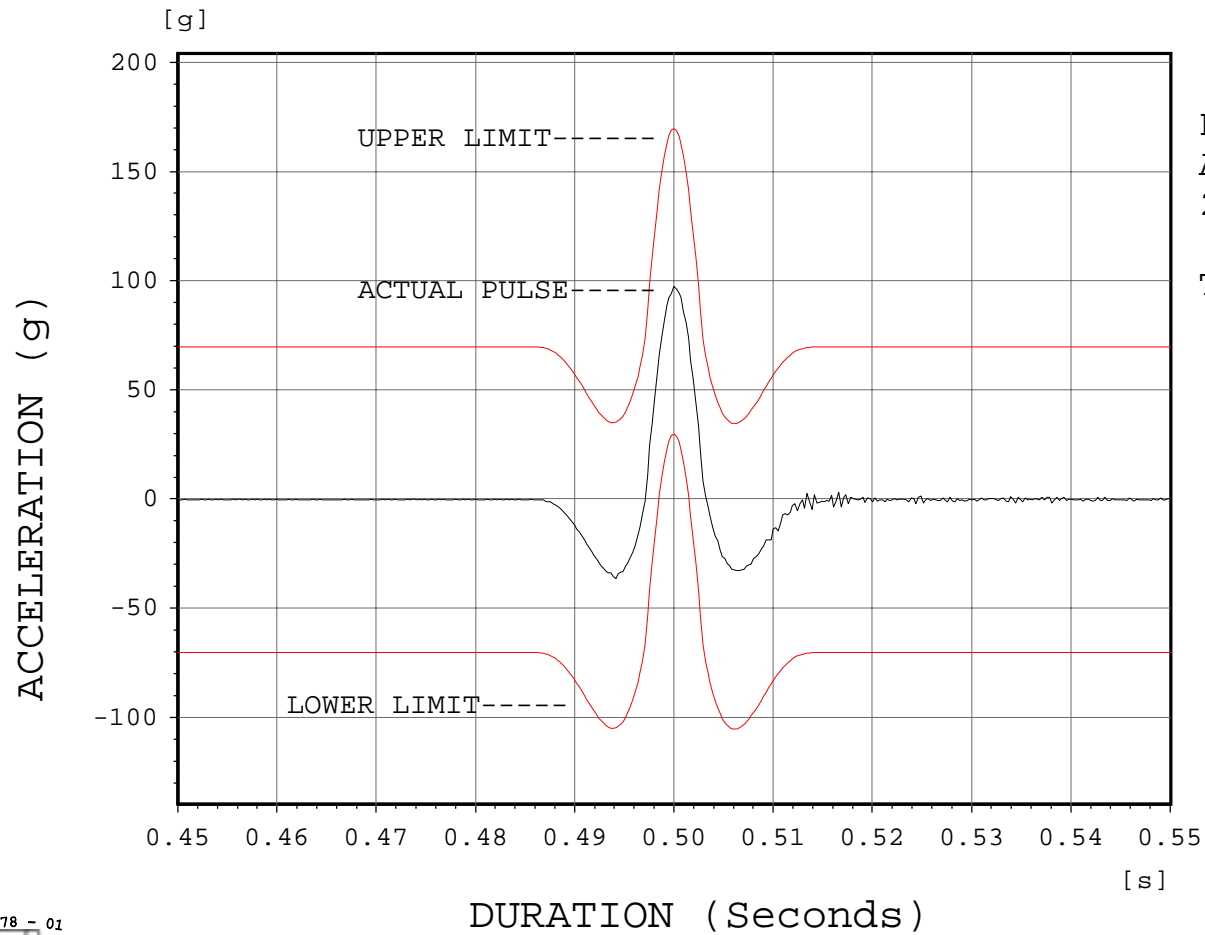


FIGURE #8

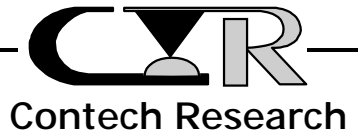
Classical Shock

Channel 1



Project 203073
Actual Wave
20Mar03

Tech: /MHB



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# D-A-1, D-A-2, D-A-3 TECHNICIAN: MHB

START DATE: 3/21/03 COMPLETE DATE: 3/24/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 33%

EQUIPMENT ID#: 30, 545, 553, 620, 1166, 1167, 1168, 1169,
1271, 1272,

VIBRATION, RANDOM

PURPOSE:

1. To determine if electrical discontinuities at the level specified exist.
2. To determine if the contact system is susceptible to fretting corrosion.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 28, Test Condition, Letter B.
2. Test Conditions:
 - a) G 'RMS' : 7.56
 - b) Frequency : 50 to 2000 HZ
 - c) Duration : 2.0 Hours Per Axis,
3 Axis Total
3. Figure #4 illustrates the test sample fixturing utilized during the test.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. There shall be no contact interruption greater than 1.0 microsecond.

RESULTS: See next page.



RESULTS:

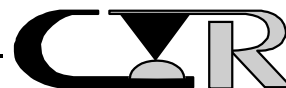
1. There was no evidence of physical damage to the test samples as tested.
2. There was no interruption greater than 1.0 microsecond.



TEST RESULTS

SEQUENCE E

Group A



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# E-A1-1,E-A1-2, TECHNICIAN: MHB
E-A1-3

START DATE: 3/15/03 COMPLETE DATE: 3/19/03

ROOM AMBIENT: 20°C RELATIVE HUMIDITY: 30%

EQUIPMENT ID#: 30, 192, 1360, 1361

THERMAL SHOCK

PURPOSE:

To determine the resistance of a given electrical connector to exposure at extremes of high and low temperatures and the shock of alternate exposures to these extremes, simulating the worst probable conditions of storage, transportation and application.

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 32, with the following conditions:
2. Test Conditions:
 - a) Number of Cycles : 100 Cycles
 - b) Hot Extreme : +85 +3°C/-0°C
 - c) Cold Extreme : -55 +0°C/-3°C
 - d) Time at Temperature : 30 Minutes
 - e) Mating Conditions : Mated
 - f) Mounting Conditions : Mounted
 - g) Transfer Time : Instantaneous
3. The total number of cycles was performed continuously.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.



REQUIREMENTS: Continued

2. There shall be no contact interruption greater than 1.0 microsecond.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. There was no contact interruption greater than 1.0 microsecond.



PROJECT NO.: 203073 SPECIFICATION: TC036-0094

PART NO.: QSS-100-01-L-D-RA PART DESCRIPTION: QSS/QTS-RA
QTS-100-01-L-D-RA Connectors

SAMPLE SIZE: ID# E-A-1, E-A-2, TECHNICIAN: MHB
E-A-3

START DATE: 3/24/03 COMPLETE DATE: 3/24/03

ROOM AMBIENT: 22°C RELATIVE HUMIDITY: 39%

EQUIPMENT ID#: 30, 281, 282, 553, 599, 684, 874, 1366,
1367, 1368

VIBRATION, RANDOM

PURPOSE:

1. To establish the mechanical integrity of the test samples exposed to external mechanical stresses.
2. To determine if the contact system is susceptible to fretting corrosion.
3. To determine if the electrical stability of the system has degraded when exposed to a vibratory environment.
4. To determine if electrical discontinuities at the level specified exist.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 28, Test Condition V, Letter B.
2. Test Conditions:
 - a) G 'RMS' : 7.56
 - b) Frequency : 50 to 2000 Hz
 - c) Duration : 2.0 hours per axis, 3-axis total
3. A stabilizing medium was used such that the mated test samples did not separate during the test.
4. Figure #4 illustrates the test sample fixturing utilized during the test.



PROCEDURE: Continued

5. All subsequent variable testing was performed in accordance with procedures previously indicated.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.
2. There shall be no contact interruption greater than 1.0 microsecond.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.
2. There was no interruption greater than 1.0 microsecond.

