



Project Number: Design Qualification Test Report		Tracking Code: 110153_Report_Rev_2	
Requested by: Kevin Meredith		Date: 3/4/2011	Product Rev: v
Part #: SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP, SEAF-50-05.0-S-10-2-A		Lot #: na	Tech: Aaron McKim Eng: Eric Mings
Part description: SEAR\SEAF			Qty to test: 80
Test Start: 11/18/2010	Test Completed: 12/22/2010		



**DESIGN QUALIFICATION TEST REPORT**

**SEAR\SEAF**

**SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP, SEAF-50-05.0-S-10-2-A**

## CERTIFICATION

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

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### SCOPE

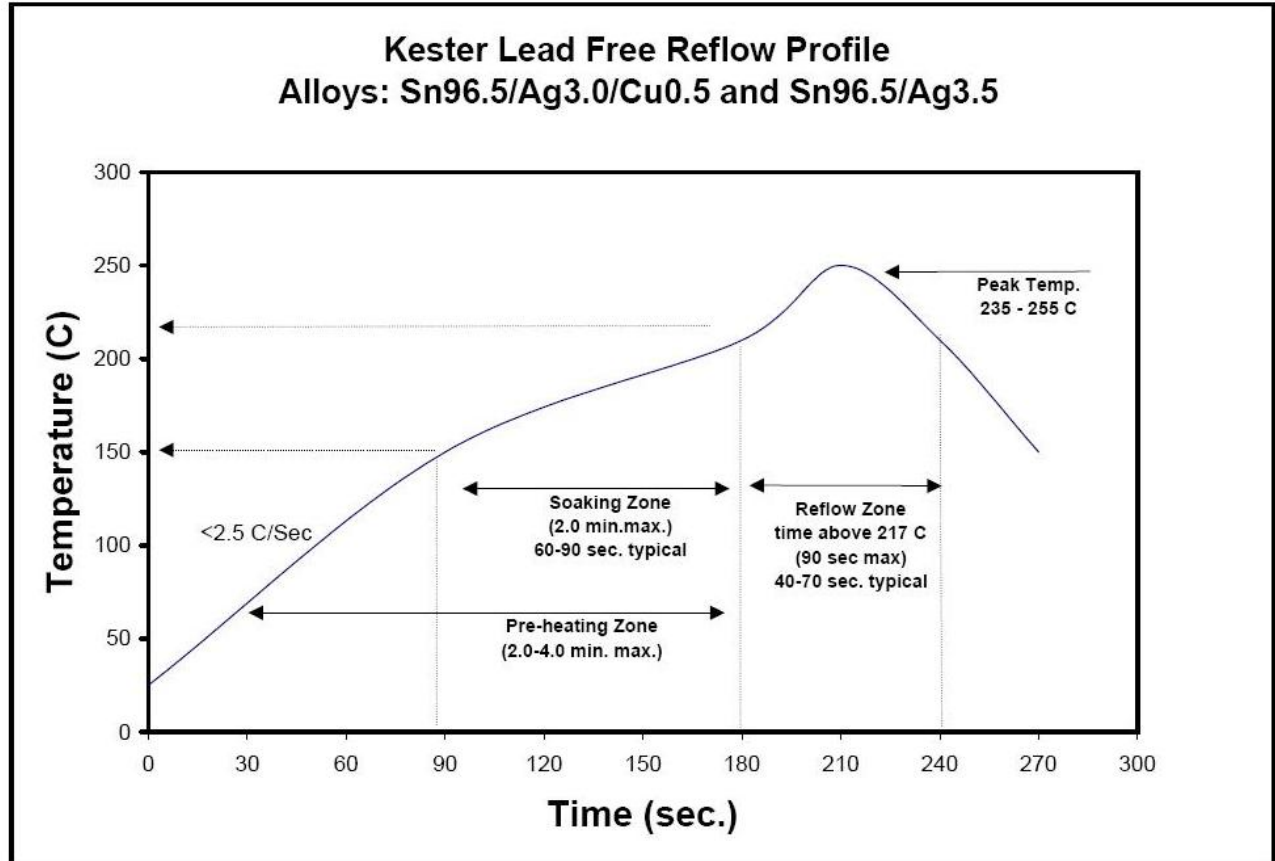
To perform the following tests: Design Qualification test. Please see test plan.

### APPLICABLE DOCUMENTS

Standards: EIA Publication 364

### TEST SAMPLES AND PREPARATION

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead Free
- 9) Re-Flow Time/Temp: See accompanying profile.
- 10) Samtec Test PCBs used: PCB-102759-TST\PCB-102760-TST

**TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)**

**FLOWCHARTS****Gas Tight**

<b>TEST STEP</b>	<b>GROUP A1 192 Points</b>
<b>01</b>	LLCR-1
<b>02</b>	Gas Tight
<b>03</b>	LLCR-2

Gas Tight = EIA-364-36A

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

**FLOWCHARTS Continued****Durability/Mating/Unmating/Gaps**

<b>TEST STEP</b>	<b>GROUP A1 10 Boards (largest position submitted) SEAR-50-30.0-10-085</b>	<b>GROUP A2 10 Boards (largest position submitted) SEAR-50-10.0-10-085</b>	<b>GROUP A3 10 Boards (Small position submitted) SEAR-40-20.0-08-085</b>
<b>01</b>	Contact Gaps	Forces - Mating / Unmating each end	Forces - Mating / Unmating each end
<b>02</b>	LLCR-1	25 Cycles for both connectors	25 Cycles for both connectors
<b>03</b>	Forces - Mating / Unmating	Forces - Mating / Unmating each end	Forces - Mating / Unmating each end
<b>04</b>	10 Cycles (Stationary SEAF not cycled, see picture)	25 Cycles for both connectors (total 50)	25 Cycles for both connectors (total 50)
<b>05</b>	Forces - Mating / Unmating	Forces - Mating / Unmating each end	Forces - Mating / Unmating each end
<b>12</b>	Clean w/Compressed Air	25 Cycles for both connectors (total 75)	25 Cycles for both connectors (total 75)
<b>13</b>	Contact Gaps	Forces - Mating / Unmating each end	Forces - Mating / Unmating each end
<b>14</b>	LLCR-2	25 Cycles for both connectors (total 100)	25 Cycles for both connectors (total 100)
<b>15</b>	Thermal Shock (Mated and Undisturbed)	Forces - Mating / Unmating each end	Forces - Mating / Unmating each end
<b>16</b>	LLCR-3		
<b>17</b>	Cyclic Humidity (Mated and Undisturbed)		
<b>18</b>	LLCR-4		
<b>19</b>	Forces - Mating / Unmating		

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

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

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

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

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

**Mating / Unmating Forces = EIA-364-13**

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

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

**LLCR = EIA-364-23, LLCR**

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

**FLOWCHARTS Continued****Thermal Aging**

<b>TEST STEP</b>	<b>GROUP A1 10 Boards Thermal Aging (Mated)</b>
<b>01</b>	Contact Gaps
<b>02</b>	Forces - Mating / Unmating
<b>03</b>	LLCR-1
<b>04</b>	Thermal Aging (Mated and Undisturbed)
<b>05</b>	LLCR-2
<b>06</b>	Forces - Mating / Unmating
<b>07</b>	Contact Gaps

**Thermal Aging = EIA-364-17, Test Condition 4 (105°C)  
Time Condition 'B' (250 Hours)**

**Mating / Unmating Forces = EIA-364-13**

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

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

**LLCR = EIA-364-23, LLCR**

**20 mV Max, 100 mA Max**

**Use Keithley 580 or 3706 in 4 wire dry circuit mode**

**FLOWCHARTS Continued****IR & DWV**

<b>TEST STEP</b>	<b>GROUP A1  2 Mated Sets  Break Down Pin-to-Pin</b>	<b>GROUP A2 2 Unmated of Part # Being Tested  Break Down Pin-to-Pin</b>	<b>GROUP A3  2 Unmated of Mating Part #  Break Down Pin-to-Pin</b>	<b>GROUP B1  2 Mated Sets  Pin-to-Pin</b>
<b>01</b>	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
<b>02</b>				Thermal Shock (Mated and Undisturbed)
<b>03</b>				IR & DWV at test voltage (on both mated sets and on each connector unmated)
<b>04</b>				Cyclic Humidity (Mated and Undisturbed)
<b>05</b>				IR & DWV at test voltage (on both mated sets and on each connector unmated)

DWV on Group B1 to be performed at Test Voltage

DWV test voltage is equal to 75% of the lowest break down voltage from Groups A1, A2 or A3

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

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

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

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

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

IR = EIA-364-21

DWV = EIA-364-20, Test Condition 1

**FLOWCHARTS Continued****DIFFERENTIAL PAIRS (ARRAY)****Current Carrying Capacity - Array**

TEST STEP	GROUP A1 3 Mated Assemblies 1 Vertical Row of DP Pairs Powered	GROUP A2 3 Mated Assemblies 2 Adjacent Vertical Rows of DP Pairs Powered	GROUP A3 3 Mated Assemblies 3 Adjacent Vertical Rows of DP Pairs Powered	GROUP A4 3 Mated Assemblies 4 Adjacent Vertical Rows of DP Pairs Powered	GROUP A5 3 Mated Assemblies All DP Pairs Powered
01	CCC	CCC	CCC	CCC	CCC

**GROUND PINS (ARRAY)**

TEST STEP	GROUP B1 3 Mated Assemblies 1 Vertical Row of GND Pins Powered
01	CCC

(TIN PLATING) - Tabulate calculated current at RT, 65°C, 75°C and 95°C  
after derating 20% and based on 105°C

(GOLD PLATING) - Tabulate calculated current at RT, 85°C, 95°C and 115°C  
after derating 20% and based on 125°C

CCC, Temp rise = EIA-364-70



**FLOWCHARTS Continued****Mechanical Shock / Vibration / LLCR**

TEST STEP	GROUP A1 192 Points
01	LLCR-1
02	Shock
03	Vibration
04	LLCR-2

Mechanical Shock = EIA 364-27 Half Sine,

100 g's, 6 milliSeconds (Condition "C") each axis

Vibration = EIA 364-28, Random Vibration

7.56 g RMS, Condition VB --- 2 hours/axis

LLCR = EIA-364-23, LLCR

20 mV Max, 100 mA Max

Use Keithley 580 or 3706 in 4 wire dry circuit mode

**Shock / Vibration / nanoSecond Event Detection**

TEST STEP	GROUP A1 60 Points
01	Event Detection, Shock
02	Event Detection, Vibration

Mechanical Shock = EIA 364-27 Half Sine,

100 g's, 6 milliSeconds (Condition "C") each axis

Vibration = EIA 364-28, Random Vibration

7.56 g RMS, Condition VB --- 2 hours/axis

Event detection requirement during Shock / Vibration is 50 nanoseconds minimum

**ATTRIBUTE DEFINITIONS**

The following is a brief, simplified description of attributes.

**THERMAL SHOCK:**

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

**THERMAL:**

- 1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*.
- 2) Test Condition 4 at 105° C.
- 3) Test Time Condition B for 250 hours.
- 4) All test samples are pre-conditioned at ambient.
- 5) All test samples are exposed to environmental stressing in the mated condition.

**HUMIDITY:**

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

**MECHANICAL SHOCK (Specified Pulse):**

- 1) Reference document: EIA-364-27, *Mechanical Shock Test Procedure for Electrical Connectors*
- 2) Test Condition C
- 3) Peak Value: 100 G
- 4) Duration: 6 Milliseconds
- 5) Wave Form: Half Sine
- 6) Velocity: 12.3 ft/s
- 7) Number of Shocks: 3 Shocks / Direction, 3 Axis (18 Total)

**VIBRATION:**

- 1) Reference document: EIA-364-28, *Vibration Test Procedure for Electrical Connectors*
- 2) Test Condition V, Letter B
- 3) Power Spectral Density: 0.04 G<sup>2</sup> / Hz
- 4) G 'RMS': 7.56
- 5) Frequency: 50 to 2000 Hz
- 6) Duration: 2.0 Hours per axis (3 axis total)

**NANOSECOND-EVENT DETECTION:**

- 1) Reference document: EIA-364-87, *Nanosecond-Event Detection for Electrical Connectors*
- 2) Prior to test, the samples were characterized to assure the low nanosecond event being monitored will trigger the detector.
- 3) After characterization it was determined the test samples could be monitored for 50 nanosecond events

**ATTRIBUTE DEFINITIONS Continued**

The following is a brief, simplified description of attributes

**CONTACT GAPS:**

- 1) Gaps above the surrounding plastic surface were measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).
- 2) Typically, all contacts on the connector are measured.

**MATING/UNMATING:**

- 1) Reference document: EIA-364-13, *Mating and Unmating Forces Test Procedure for Electrical Connectors*.
- 2) The full insertion position was to within 0.003" to 0.004" of the plug bottoming out in the receptacle to prevent damage to the system under test.
- 3) One of the mating parts is secured to a floating X-Y table to prevent damage during cycling.

**CONTACT GAPS:**

- 3) Gaps above the surrounding plastic surface were measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).
- 4) Typically, all contacts on the connector are measured.

**LLCR:**

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

**ATTRIBUTE DEFINITIONS Continued**

The following is a brief, simplified description of attributes

**GAS TIGHT:**

To provide method for evaluating the ability of the contacting surfaces in preventing penetration of harsh vapors which might lead to oxide formation that may degrade the electrical performance of the contact system.

- 1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure
- 4) Procedure:
  - a. Reference document: EIA-364-36, *Test Procedure for Determination of Gas-Tight Characteristics for Electrical Connectors, Sockets and/or Contact Systems*.
  - b. Test Conditions:
    - i. Class II--- Mated pairs of contacts assembled to their plastic housings.
    - ii. Reagent grade Nitric Acid shall be used of sufficient volume to saturate the test chamber
    - iii. The ratio of the volume of the test chamber to the surface area of the acid shall be 10:1.
    - iv. The chamber shall be saturated with the vapor for at least 15 minutes before samples are added.
    - v. Exposure time, 55 to 65 minutes.
    - vi. The samples shall be no closer to the chamber walls than 1 inches and no closer to the surface of the acid than 3 inches.
    - vii. The samples shall be dried after exposure for a minimum of 1 hour.
    - viii. Drying temperature  $50^{\circ}$  C
    - ix. The final LLCR shall be conducted within 1 hour after drying.

**INSULATION RESISTANCE (IR):**

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.

- 1) PROCEDURE:
  - a. Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Electrification Time 2.0 minutes
    - iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
- 2) MEASUREMENTS:
- 3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

**ATTRIBUTE DEFINITIONS Continued**

The following is a brief, simplified description of attributes

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

To determine if the sockets can operate at its rated voltage and withstand momentary over potentials due to switching, surges, and other similar phenomenon. Separate samples are used to evaluate the effect of environmental stresses so not to influence the readings from arcing that occurs during the measurement process.

- 1) PROCEDURE:
  - a. Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Barometric Test Condition 1
    - iii. Rate of Application 500 V/Sec
    - iv. Test Voltage (VAC) until breakdown occurs
- 2) MEASUREMENTS/CALCULATIONS
  - a. The breakdown voltage shall be measured and recorded.
  - b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
  - c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

**TEMPERATURE RISE (Current Carrying Capacity, CCC):**

- 1) EIA-364-70, *Temperature Rise versus Current Test Procedure for Electrical Connectors and Sockets*.
- 2) When current passes through a contact, the temperature of the contact increases as a result of  $I^2R$  (resistive) heating.
- 3) The number of contacts being investigated plays a significant part in power dissipation and therefore temperature rise.
- 4) The size of the temperature probe can affect the measured temperature.
- 5) Copper traces on PC boards will contribute to temperature rise:
  - a. Self heating (resistive)
  - b. Reduction in heat sink capacity affecting the heated contacts
- 6) A de-rating curve, usually 20%, is calculated.
- 7) Calculated de-rated currents at three temperature points are reported:
  - a. Ambient
  - b. 80° C
  - c. 95° C
  - d. 115° C
- 8) Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
- 9) The thermocouple (or temperature measuring probe) will be positioned at a location to sense the maximum temperature in the vicinity of the heat generation area.
- 10) A computer program, *TR 803.exe*, ensures accurate stability for data acquisition.
- 11) Hook-up wire cross section is larger than the cross section of any connector leads/PC board traces, jumpers, etc.
- 12) Hook-up wire length is longer than the minimum specified in the referencing standard.

**RESULTS****Temperature Rise, CCC at a 20% de-rating**

- CCC for a 30°C Temperature Rise ----- 1.4A per contact with 20 adjacent signal contacts powered
- CCC for a 30°C Temperature Rise ----- 1.0A per contact with 40 adjacent signal contacts powered
- CCC for a 30°C Temperature Rise ----- 0.8A per contact with 60 adjacent signal contacts powered
- CCC for a 30°C Temperature Rise ----- 0.7A per contact with 80 adjacent signal contacts powered
- CCC for a 30°C Temperature Rise ----- 0.4A per contact with all adjacent signal contacts powered
- CCC for a 30°C Temperature Rise ----- 5.4A per contact with 10 adjacent ground contacts powered
- CCC for a 30°C Temperature Rise ----- 0.4A per contact with all adjacent power(part-1) contacts powered
- CCC for a 30°C Temperature Rise ----- 0.4A per contact with all adjacent power(part-2) contacts powered
- CCC for a 30°C Temperature Rise ----- 0.4A per contact with all adjacent power(part-3) contacts powered

**Contact Gaps****Mating\Unmating Durability**

- **Initial**
  - Min ----- 0.0354 mm
  - Max ----- 0.0423 mm
- **After 10 Cycles**
  - Min ----- 0.0368 mm
  - Max ----- 0.0428 mm

**Thermal Aging**

- **Initial**
  - Min ----- 0.0348 mm
  - Max ----- 0.0423 mm
- **After Thermal**
  - Min ----- 0.0398mm
  - Max ----- 0.0444 mm

**RESULTS Continued****Mating – Unmating Forces****Mating\Unmating Durability**

SEAR-50-30.0-10-085\ SEAF-50-05.0-S-10-2-A

- **Initial**
  - **Mating**
    - **Min** -----25.76 Lbs
    - **Max** -----39.38 Lbs
  - **Unmating**
    - **Min** -----15.25 Lbs
    - **Max** -----22.38 Lbs
- **After 10 Cycles**
  - **Mating**
    - **Min** -----24.82 Lbs
    - **Max** -----38.01 Lbs
  - **Unmating**
    - **Min** -----16.72 Lbs
    - **Max** -----24.88 Lbs
- **Humidity**
  - **Mating**
    - **Min** -----22.43 Lbs
    - **Max** -----35.50 Lbs
  - **Unmating**
    - **Min** -----16.15 Lbs
    - **Max** -----23.43 Lbs

**RESULTS Continued****Mating – Unmating Forces****Mating\Unmating Durability**

SEAR-50-10.0-10-085\ SEAF-50-05.0-S-10-2-A-PP

**Post**

- **Initial**
  - **Mating**
    - **Min** -----47.55 Lbs
    - **Max** -----66.29 Lbs
  - **Unmating**
    - **Min** -----26.19 Lbs
    - **Max** -----40.13 Lbs
- **After 25 Cycles**
  - **Mating**
    - **Min** -----45.56 Lbs
    - **Max** -----60.63 Lbs
  - **Unmating**
    - **Min** -----31.28 Lbs
    - **Max** -----41.96 Lbs
- **After 50 Cycles**
  - **Mating**
    - **Min** -----52.82 Lbs
    - **Max** -----61.61 Lbs
  - **Unmating**
    - **Min** -----30.96 Lbs
    - **Max** -----45.08 Lbs
- **After 75 Cycles**
  - **Mating**
    - **Min** -----53.23 Lbs
    - **Max** -----67.76 Lbs
  - **Unmating**
    - **Min** -----30.04 Lbs
    - **Max** -----47.21 Lbs
- **After 100 Cycles**
  - **Mating**
    - **Min** -----53.15 Lbs
    - **Max** -----66.77 Lbs
  - **Unmating**
    - **Min** -----33.78 Lbs
    - **Max** -----48.40 Lbs



**RESULTS Continued****Mating – Unmating Forces****Mating\Unmating Durability**

SEAR-50-10.0-10-085\ SEAF-50-05.0-S-10-2-A-RP

**Non Post**

- **Initial**
  - **Mating**
    - **Min** -----35.87 Lbs
    - **Max** -----39.00 Lbs
  - **Unmating**
    - **Min** -----39.73 Lbs
    - **Max** -----45.01 Lbs
- **After 25 Cycles**
  - **Mating**
    - **Min** -----30.73 Lbs
    - **Max** -----35.78 Lbs
  - **Unmating**
    - **Min** -----39.63 Lbs
    - **Max** -----43.73 Lbs
- **After 50 Cycles**
  - **Mating**
    - **Min** -----30.09 Lbs
    - **Max** -----35.64 Lbs
  - **Unmating**
    - **Min** -----40.70 Lbs
    - **Max** -----45.06 Lbs
- **After 75 Cycles**
  - **Mating**
    - **Min** -----30.80 Lbs
    - **Max** -----35.07 Lbs
  - **Unmating**
    - **Min** -----39.78 Lbs
    - **Max** -----45.24 Lbs
- **After 100 Cycles**
  - **Mating**
    - **Min** -----30.78 Lbs
    - **Max** -----34.18 Lbs
  - **Unmating**
    - **Min** -----40.38 Lbs
    - **Max** -----44.51 Lbs

**RESULTS Continued****Mating – Unmating Forces****Mating\Unmating Durability**

SEAR-40-20.0-08-085\ SEAF-40-05.0-S-08-2-A-PP

**Post**

- **Initial**
  - **Mating**
    - **Min** -----35.77 Lbs
    - **Max** -----44.03 Lbs
  - **Unmating**
    - **Min** -----35.24 Lbs
    - **Max** -----45.86 Lbs
- **After 25 Cycles**
  - **Mating**
    - **Min** -----37.44 Lbs
    - **Max** -----42.62 Lbs
  - **Unmating**
    - **Min** -----41.39 Lbs
    - **Max** -----49.90 Lbs
- **After 50 Cycles**
  - **Mating**
    - **Min** -----36.95 Lbs
    - **Max** -----42.09 Lbs
  - **Unmating**
    - **Min** -----41.37 Lbs
    - **Max** -----50.77 Lbs
- **After 75 Cycles**
  - **Mating**
    - **Min** -----36.76 Lbs
    - **Max** -----41.84 Lbs
  - **Unmating**
    - **Min** -----39.80 Lbs
    - **Max** -----51.16 Lbs
- **After 100 Cycles**
  - **Mating**
    - **Min** -----36.34 Lbs
    - **Max** -----41.63 Lbs
  - **Unmating**
    - **Min** -----39.25 Lbs
    - **Max** -----51.54 Lbs

**RESULTS Continued****Mating – Unmating Forces****Mating\Unmating Durability**

SEAR-40-20.0-08-085\ SEAF-40-05.0-S-08-2-A

**Non Post**

- **Initial**
  - **Mating**
    - **Min** -----26.75 Lbs
    - **Max** -----36.64 Lbs
  - **Unmating**
    - **Min** -----20.43 Lbs
    - **Max** -----43.41 Lbs
- **After 25 Cycles**
  - **Mating**
    - **Min** -----28.14 Lbs
    - **Max** -----36.11 Lbs
  - **Unmating**
    - **Min** -----26.88 Lbs
    - **Max** -----49.93 Lbs
- **After 50 Cycles**
  - **Mating**
    - **Min** -----27.80 Lbs
    - **Max** -----35.79 Lbs
  - **Unmating**
    - **Min** -----27.65 Lbs
    - **Max** -----51.99 Lbs
- **After 75 Cycles**
  - **Mating**
    - **Min** -----28.06 Lbs
    - **Max** -----35.09 Lbs
  - **Unmating**
    - **Min** -----27.58 Lbs
    - **Max** -----52.76 Lbs
- **After 100 Cycles**
  - **Mating**
    - **Min** -----28.07 Lbs
    - **Max** -----34.99 Lbs
  - **Unmating**
    - **Min** -----27.43 Lbs
    - **Max** -----53.21 Lbs

**RESULTS Continued****Mating – Unmating Forces****Thermal Aging**

- **Initial**
  - **Mating**
    - **Min** -----22.20 Lbs
    - **Max** -----44.53 Lbs
  - **Unmating**
    - **Min** -----12.12 Lbs
    - **Max** -----26.17 Lbs
- **After Thermal**
  - **Mating**
    - **Min** -----21.94 Lbs
    - **Max** -----33.13 Lbs
  - **Unmating**
    - **Min** -----10.38 Lbs
    - **Max** -----25.84 Lbs

**RESULTS Continued****Insulation Resistance minimums, IR****Pin to Pin**

- **Initial**
  - Mated-----10000Meg  $\Omega$  ----- Pass
  - Unmated -----10000Meg  $\Omega$  ----- Pass
- **Thermal**
  - Mated-----10000Meg  $\Omega$  ----- Pass
  - Unmated -----10000Meg  $\Omega$  ----- Pass
- **Humidity**
  - Mated-----10000Meg  $\Omega$  ----- Pass
  - Unmated -----15000Meg  $\Omega$  ----- Pass

**Row to Row**

- **Initial**
  - Mated-----10000Meg  $\Omega$  ----- Pass
  - Unmated -----10000Meg  $\Omega$  ----- Pass
- **Thermal**
  - Mated-----10000Meg  $\Omega$  ----- Pass
  - Unmated -----10000Meg  $\Omega$  ----- Pass
- **Humidity**
  - Mated-----50000Meg  $\Omega$  ----- Pass
  - Unmated -----10000Meg  $\Omega$  ----- Pass

**Dielectric Withstanding Voltage minimums, DWV****Pin to Pin**

- **Minimums**
  - Breakdown Voltage-----960 VAC
  - Test Voltage -----720 VAC
  - Working Voltage -----240 VAC

**Row to Row**

- **Minimums**
  - Breakdown Voltage-----1400 VAC
  - Test Voltage -----1050 VAC
  - Working Voltage -----350 VAC

**Pin to Pin**

- Initial DWV -----Passed
- Thermal DWV -----Passed
- Humidity DWV -----Passed

**Row to Row**

- Initial DWV -----Passed
- Thermal DWV -----Passed
- Humidity DWV -----Passed

**RESULTS Continued****LLCR Mating\Unmating Durability (160 signal, 32 ground LLCR test points)****Signal Pin**

- **Initial**----- 51.4mOhms Max
- **Durability, 10 Cycles**
  - <= +5.0 mOhms ----- 160 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - <= +5.0 mOhms ----- 158 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - <= +5.0 mOhms ----- 157 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 1 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

Remark: one point open after thermal ageing due to the bad solder joint.

**Ground Pin**

- **Initial**----- 6.4mOhms Max
- **Durability, 10 Cycles**
  - <= +5.0 mOhms ----- 31 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
- **Thermal**
  - <= +5.0 mOhms ----- 31 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
- **Humidity**
  - <= +5.0 mOhms ----- 31 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**RESULTS Continued****LLCR Thermal aging (160 signal, 32 ground LLCR test points)****Signal Pin**

- **Initial** ----- 50.5mOhms Max
- **Thermal**
  - **<= +5.0 mOhms** ----- 160 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 0 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**Ground Pin**

- **Initial** ----- 6.6mOhms Max
- **Thermal**
  - **<= +5.0 mOhms** ----- 32 Points ----- Stable
  - **+5.1 to +10.0 mOhms** ----- 0 Points ----- Minor
  - **+10.1 to +15.0 mOhms** ----- 0 Points ----- Acceptable
  - **+15.1 to +50.0 mOhms** ----- 0 Points ----- Marginal
  - **+50.1 to +2000 mOhms** ----- 0 Points ----- Unstable
  - **>+2000 mOhms** ----- 0 Points ----- Open Failure

**RESULTS Continued****LLCR Gas Tight (160 signal, 32 ground LLCR test points)****Signal Pin**

- **Initial**----- 19.8 mOhms Max
- **Gas-Tight**
  - <= +5.0 mOhms ----- 157 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 3 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**Ground Pin**

- **Initial**----- 6.2 mOhms Max
- **Gas-Tight**
  - <= +5.0 mOhms ----- 31 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 1 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**LLCR Mechanical Shock & Random Vibration (160 signal 32 ground LLCR test points)****Signal Pin**

- **Initial**----- 49.2 mOhms Max
- **Shock & Vibration**
  - <= +5.0 mOhms ----- 158 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 2 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**Ground Pin**

- **Initial**----- 6.2 mOhms Max
- **Shock & Vibration**
  - <= +5.0 mOhms ----- 32 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**Mechanical Shock & Random Vibration:**

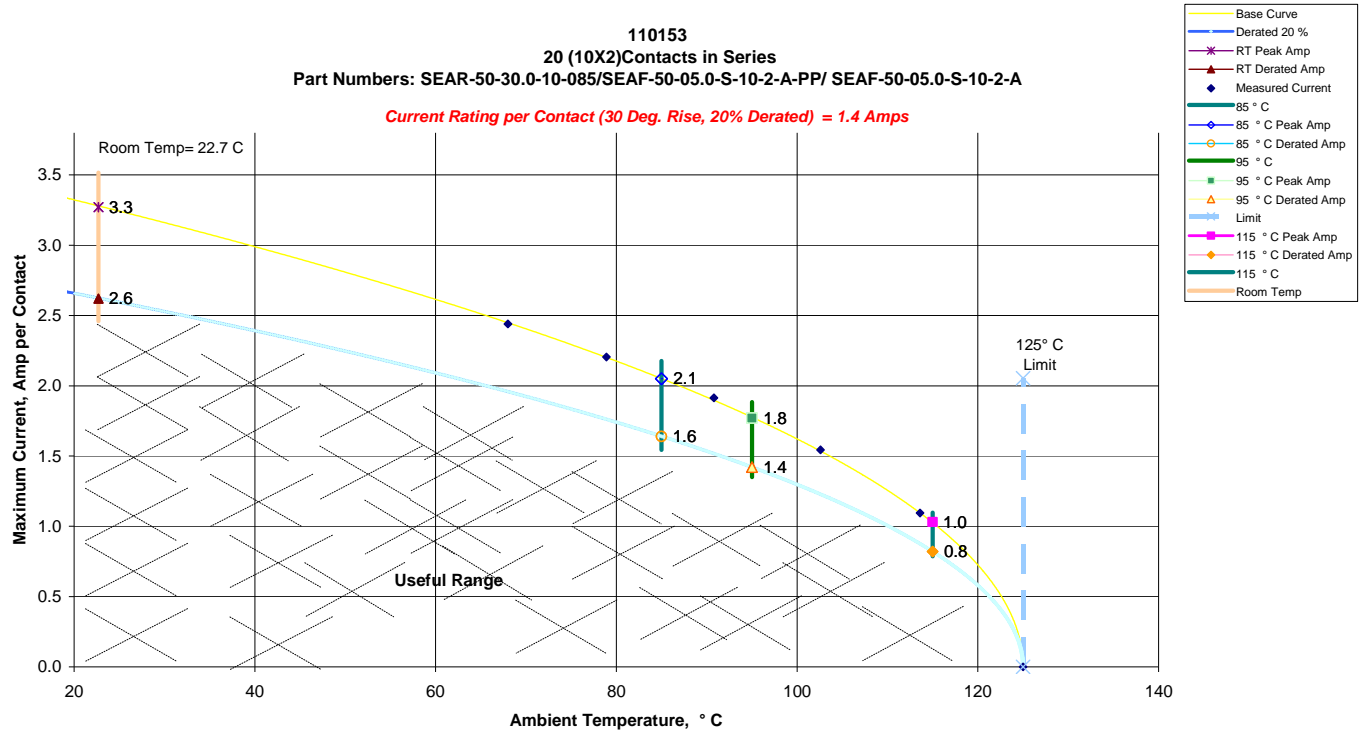
- **Shock**
  - **No Damage**----- Passed
  - **50 Nanoseconds**----- Passed
- **Vibration**
  - **No Damage**----- Passed
  - **50 Nanoseconds**----- Passed



### DATA SUMMARIES

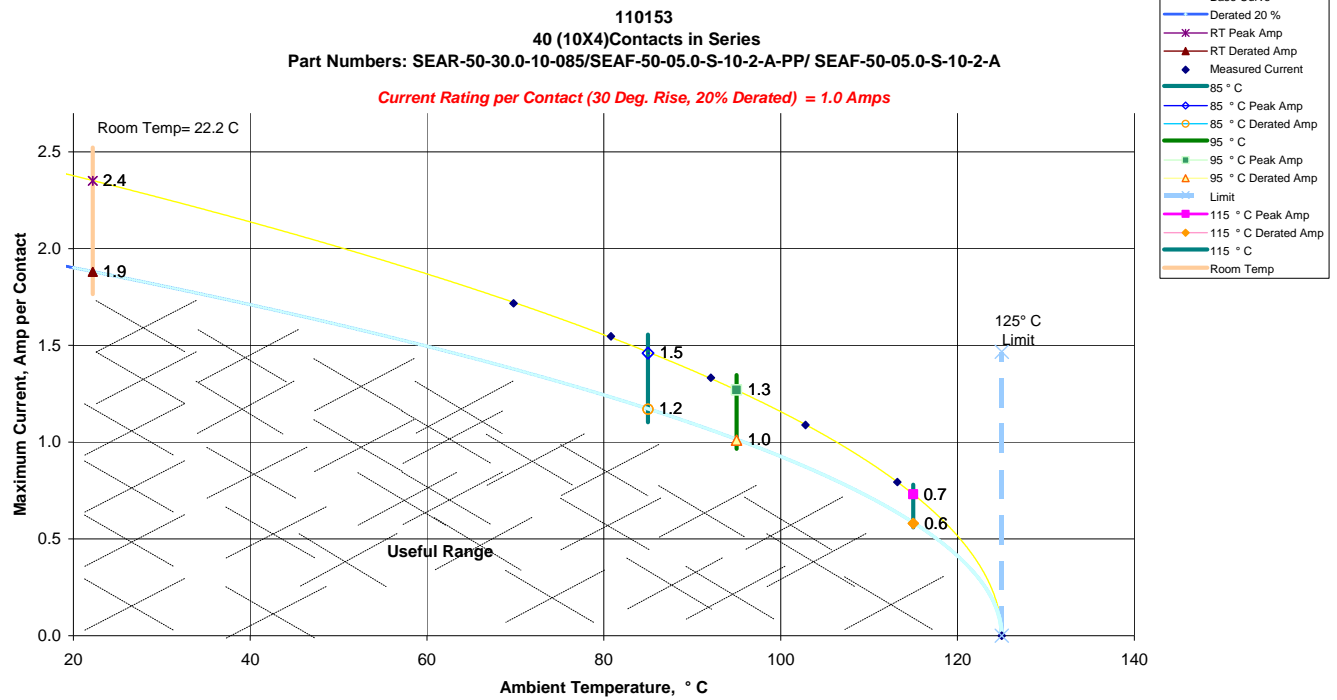
#### TEMPERATURE RISE (Current Carrying Capacity, CCC):

- 1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
- 2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
- 3) Temperature readings recorded are those for which three successive readings, 15 minutes apart, differ less than 1° C (computer controlled data acquisition).
- 4) Adjacent contacts were powered:
  - a. Linear configuration with 20 adjacent conductors /signal contacts powered



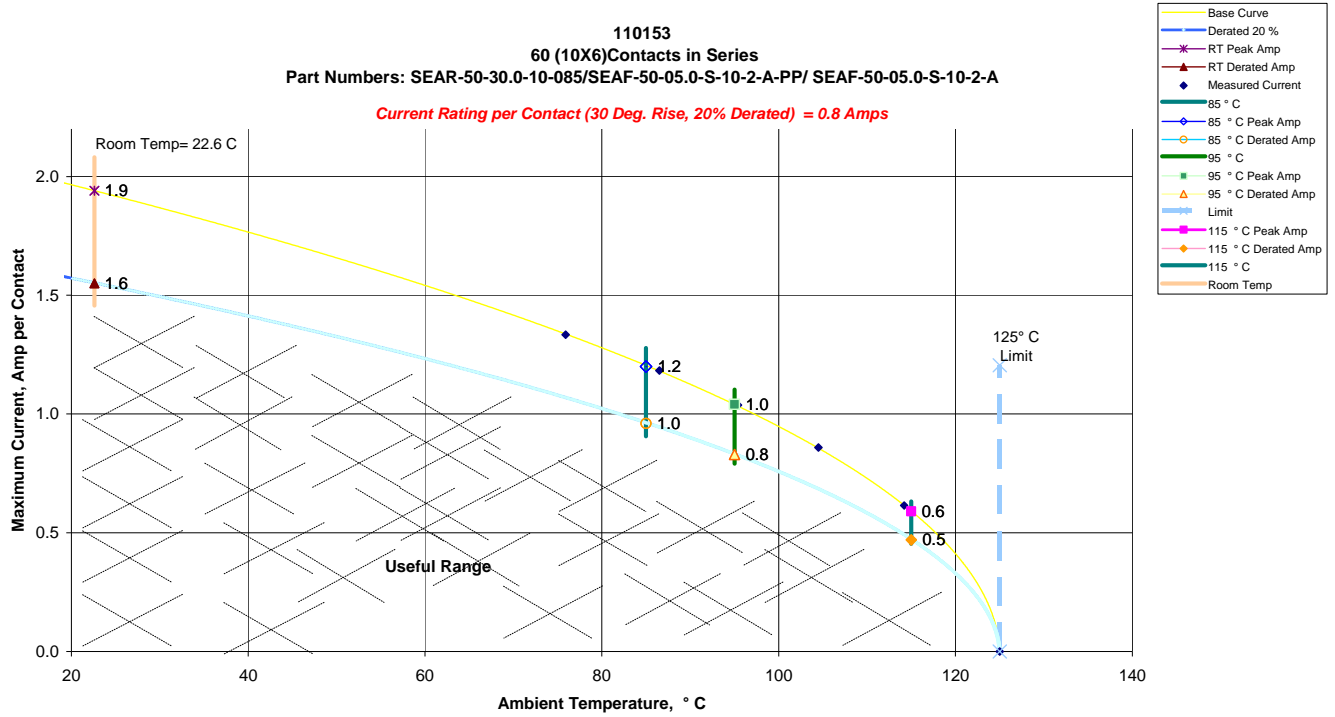
**DATA SUMMARIES Continued**

b. Linear configuration with 40 adjacent conductors /signal contacts powered



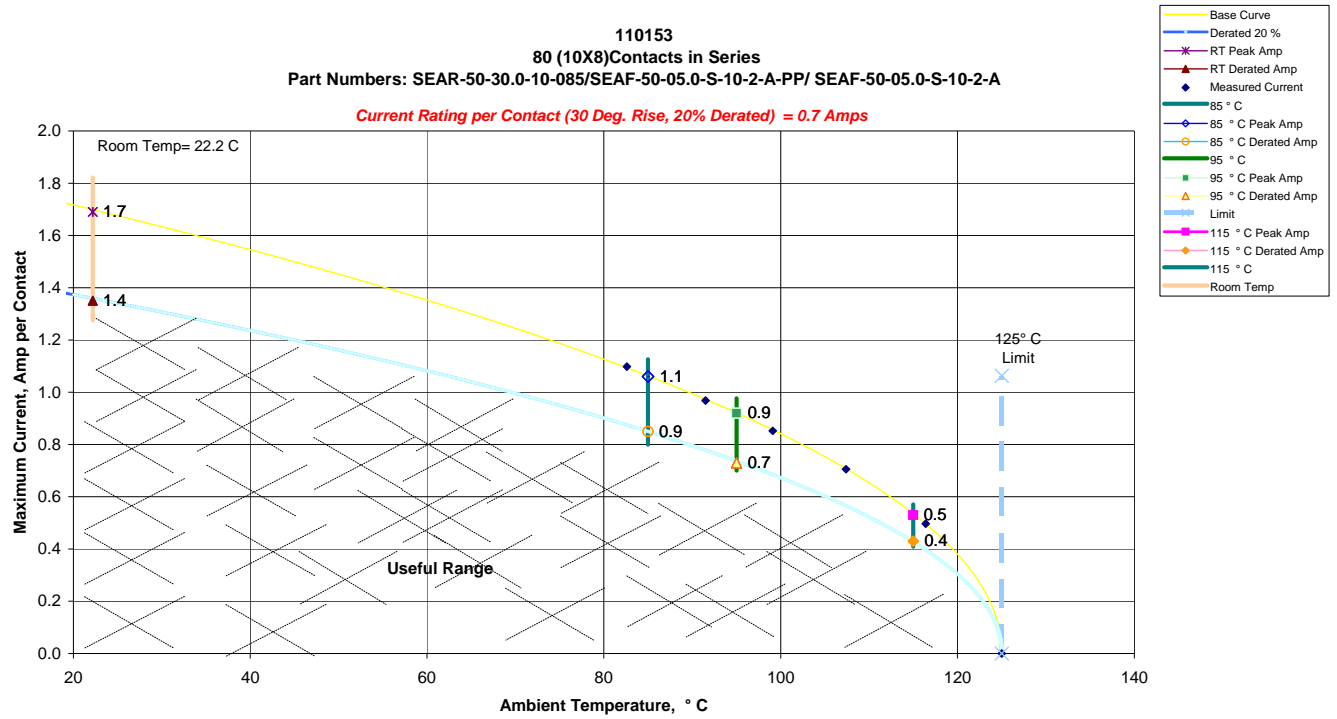
### DATA SUMMARIES Continued

c. Linear configuration with 60 adjacent conductors/signal contacts powered



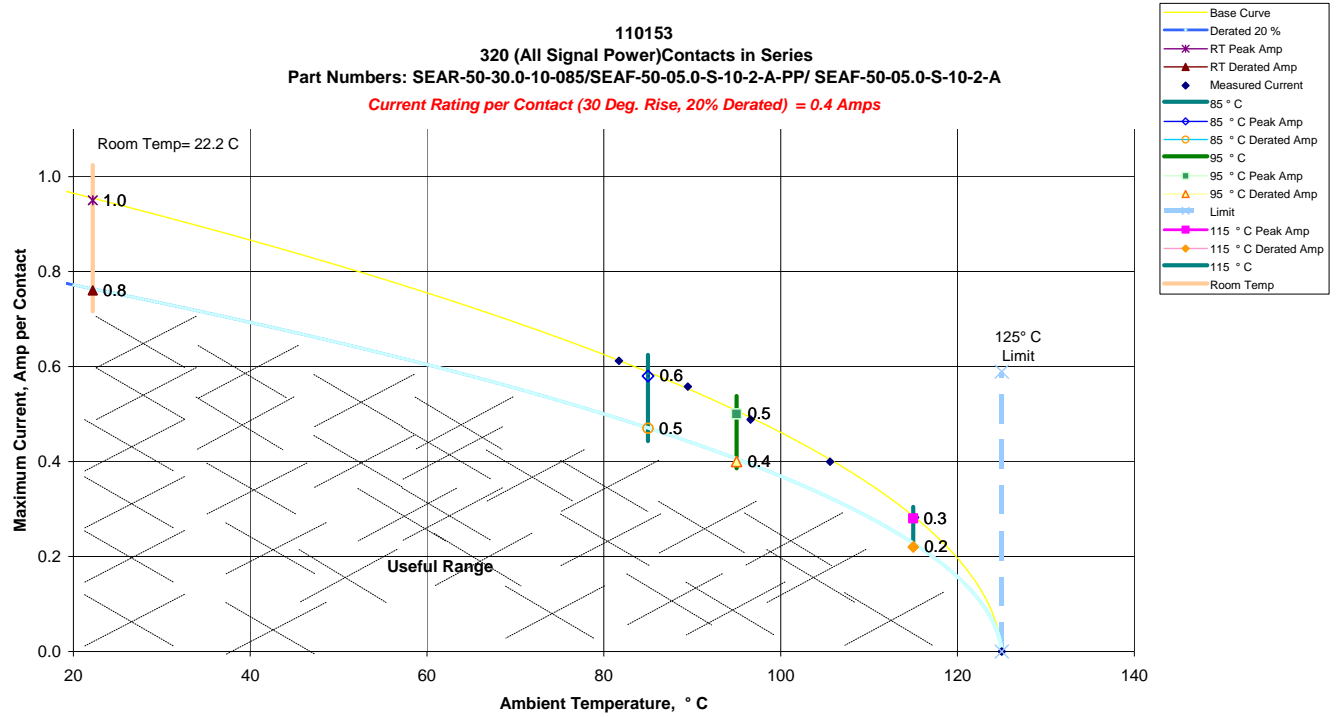
### DATA SUMMARIES Continued

d. Linear configuration with 80 adjacent conductors/signal contacts powered



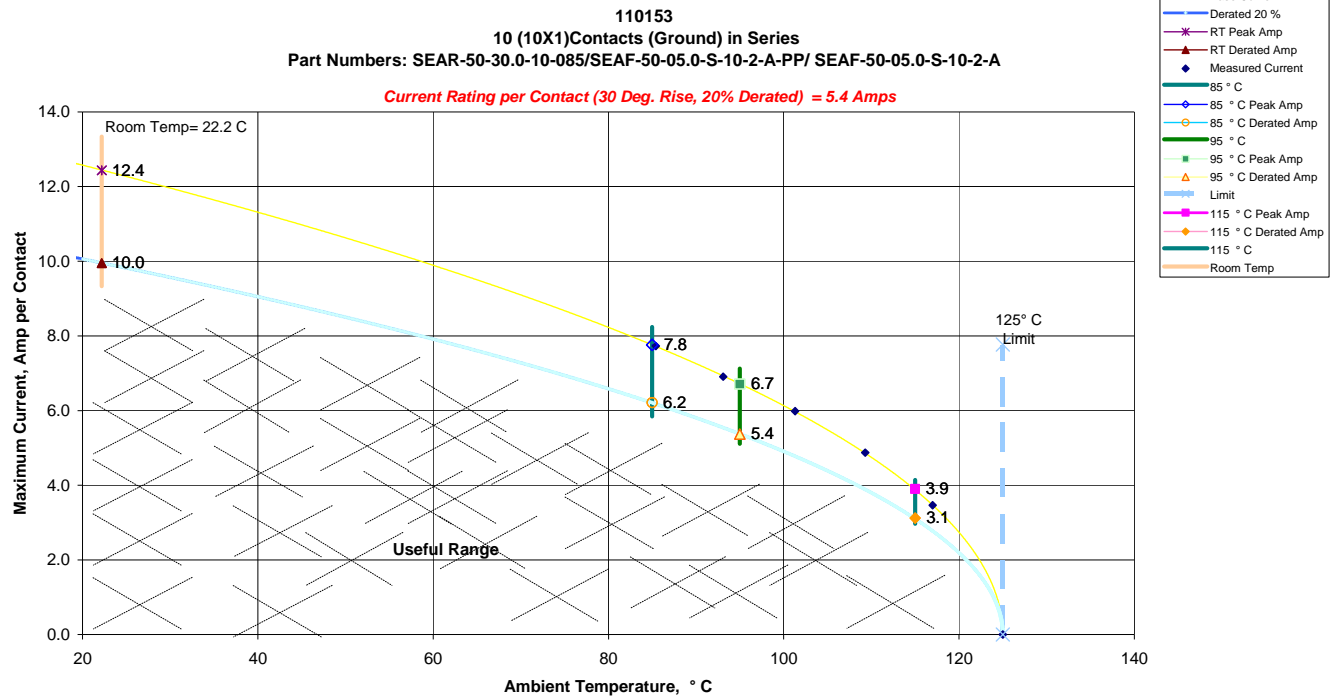
### DATA SUMMARIES Continued

e. Linear configuration with all adjacent conductors/signal contacts powered



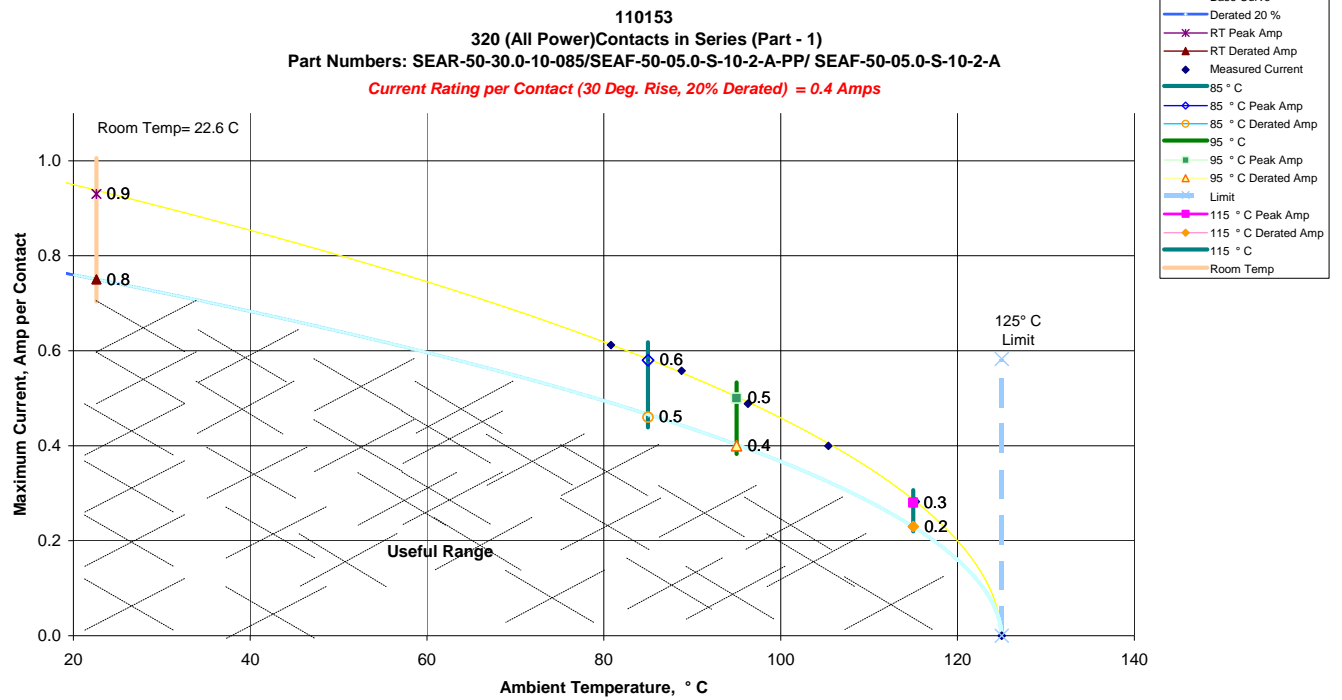
### DATA SUMMARIES Continued

f. Linear configuration with 10 adjacent conductors/ground contacts powered



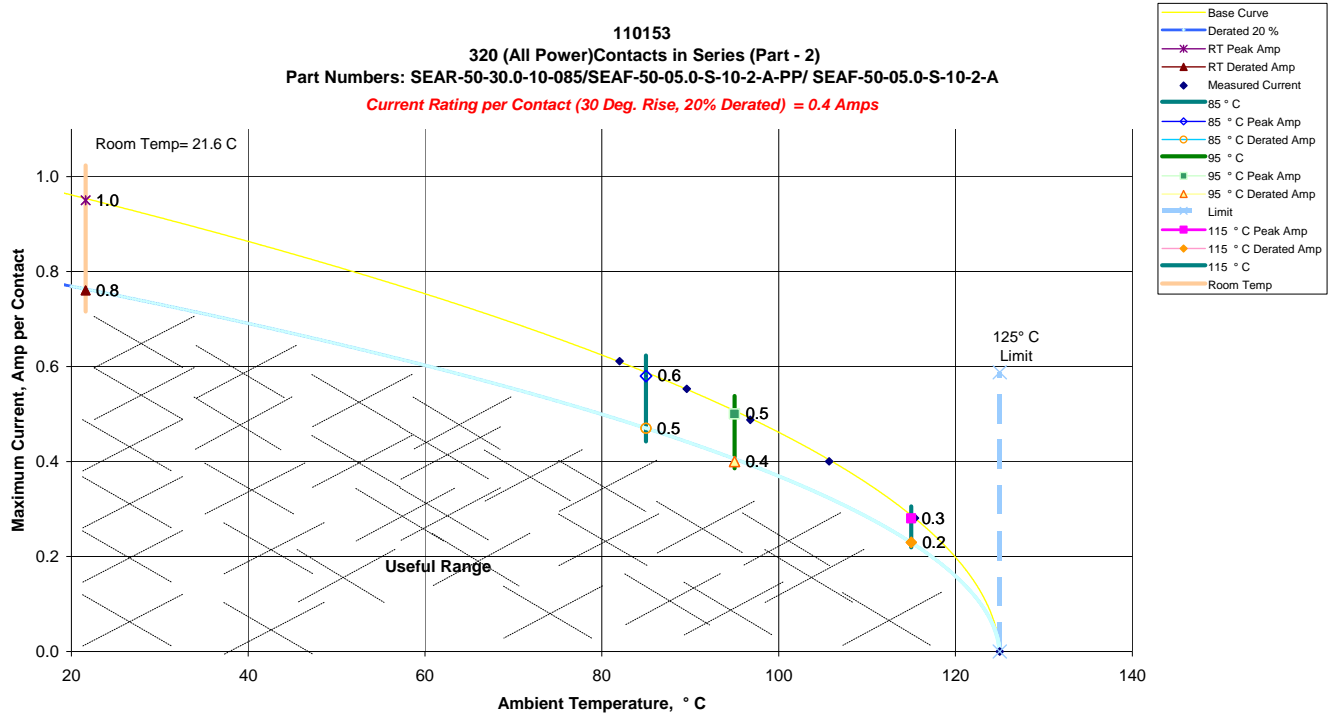
**DATA SUMMARIES Continued**

g. Linear configuration with all adjacent conductors/power(part-1) contacts powered



**DATA SUMMARIES Continued**

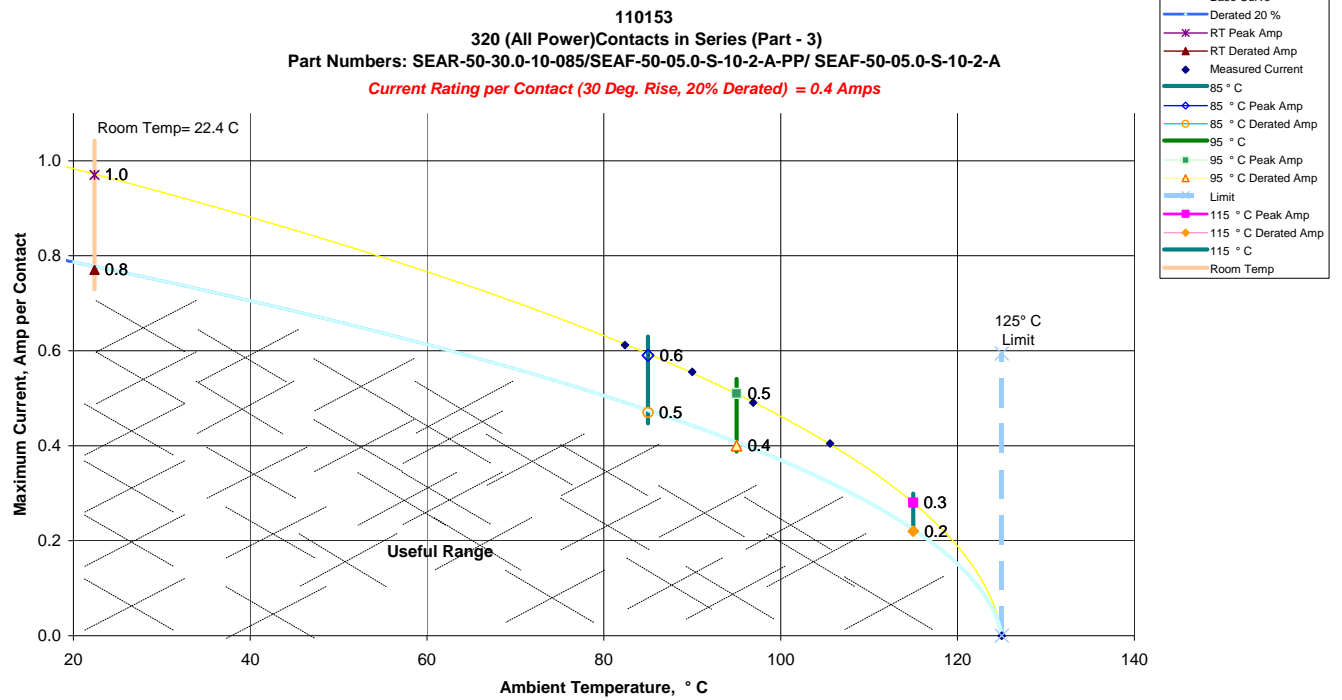
h. Linear configuration with all adjacent conductors/power(part-2) contacts powered





### DATA SUMMARIES Continued

i. Linear configuration with all adjacent conductors/power(part-3) contacts powered



**DATA SUMMARIES Continued****CONTACT GAPS:****Mating\Unmating Durability**

Initial		After 10 Cycles	
Units:	inches	Units:	inches
<i>Minimum</i>	0.0354	<i>Minimum</i>	0.0368
<i>Maximum</i>	0.0423	<i>Maximum</i>	0.0428
<i>Average</i>	0.0382	<i>Average</i>	0.0395
<i>St. Dev.</i>	0.0012	<i>St. Dev.</i>	0.0010
<i>Count</i>	400	<i>Count</i>	400

**Thermal Aging**

Initial		After Thermal	
Units:	mm	Units:	mm
<i>Minimum</i>	0.0348	<i>Minimum</i>	0.0398
<i>Maximum</i>	0.0423	<i>Maximum</i>	0.0444
<i>Average</i>	<b>0.0380</b>	<i>Average</i>	<b>0.0418</b>
<i>St. Dev.</i>	0.0013	<i>St. Dev.</i>	0.0009
<i>Count</i>	400	<i>Count</i>	400

**MATING/UNMATING:****Thermal Aging**

	Initial				After Thermals			
	Mating		Unmating		Mating		Unmating	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	98.73	22.20	53.91	12.12	97.61	21.94	46.15	10.38
Maximum	198.05	44.53	116.42	26.17	147.38	33.13	114.93	25.84
<b>Average</b>	149.28	<b>33.56</b>	91.23	<b>20.51</b>	119.83	<b>26.94</b>	83.19	<b>18.70</b>
St Dev	33.89	7.62	22.09	4.97	18.47	4.15	23.10	5.19
Count	8	8	8	8	8	8	8	8

**DATA SUMMARIES Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-50-30.0-10-085\ SEAF-50-05.0-S-10-2-A

	Initial				After 10 cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	114.59	25.76	67.82	15.25	110.42	24.82	74.38	16.72
Maximum	175.14	39.38	99.54	22.38	169.07	38.01	110.68	24.88
<b>Average</b>	130.67	<b>29.38</b>	81.55	<b>18.33</b>	131.47	<b>29.56</b>	91.29	<b>20.52</b>
St Dev	19.74	4.44	12.07	2.71	20.31	4.57	13.22	2.97
Count	8	8	8	8	8	8	8	8
	After Humidity							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	99.77	22.43	71.82	16.15				
Maximum	157.90	35.50	104.23	23.43				
<b>Average</b>	131.74	<b>29.62</b>	82.45	<b>18.54</b>				
St Dev	20.78	4.67	12.58	2.83				
Count	8	8	8	8				

**DATA SUMMARIES Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-50-10.0-10-085\ SEAF-50-05.0-S-10-2-A-PP

Post

	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	211.48	47.55	116.49	26.19	207.08	46.56	139.12	31.28
Maximum	294.84	66.29	178.50	40.13	269.69	60.63	186.62	41.96
<b>Average</b>	254.25	<b>57.16</b>	145.28	<b>32.66</b>	252.30	<b>56.72</b>	159.26	<b>35.80</b>
St Dev	27.58	6.20	18.49	4.16	20.62	4.64	17.30	3.89
Count	10	10	10	10	10	10	10	10
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	234.94	52.82	137.70	30.96	236.78	53.23	133.60	30.04
Maximum	274.02	61.61	200.51	45.08	301.41	67.76	209.99	47.21
<b>Average</b>	256.15	<b>57.59</b>	165.10	<b>37.12</b>	257.26	<b>57.84</b>	169.43	<b>38.09</b>
St Dev	12.32	2.77	20.31	4.57	18.44	4.15	25.16	5.66
Count	10	10	10	10	10	10	10	10
	After 100 Cycles							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	236.41	53.15	150.25	33.78				
Maximum	297.00	66.77	215.30	48.40				
<b>Average</b>	257.57	<b>57.91</b>	175.47	<b>39.45</b>				
St Dev	17.78	4.00	24.14	5.43				
Count	10	10	10	10				

**DATA SUMMARIES Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-50-10.0-10-085\ SEAF-50-05.0-S-10-2-A-RP

Non Post

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	159.55	35.87	176.72	39.73	136.70	30.73	176.27	39.63
Maximum	173.47	39.00	200.20	45.01	159.15	35.78	194.51	43.73
<b>Average</b>	165.64	<b>37.24</b>	188.76	<b>42.44</b>	149.79	<b>33.68</b>	185.13	<b>41.62</b>
St Dev	5.54	1.24	7.29	1.64	7.87	1.77	6.23	1.40
Count	10	10	10	10	10	10	10	10
	50 Cycles				75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	133.84	30.09	181.03	40.70	137.00	30.80	176.94	39.78
Maximum	158.53	35.64	200.43	45.06	155.99	35.07	201.23	45.24
<b>Average</b>	147.96	<b>33.26</b>	189.81	<b>42.67</b>	146.05	<b>32.84</b>	186.94	<b>42.03</b>
St Dev	8.07	1.81	6.26	1.41	6.30	1.42	7.70	1.73
Count	10	10	10	10	10	10	10	10
	100 Cycles							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	136.91	30.78	179.61	40.38				
Maximum	152.03	34.18	197.98	44.51				
<b>Average</b>	145.48	<b>32.71</b>	186.77	<b>41.99</b>				
St Dev	5.18	1.17	5.56	1.25				
Count	10	10	10	10				

**DATA SUMMARIES Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-40-20.0-08-085\ SEAF-40-05.0-S-08-2-A-PP

**Post**

	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	159.11	35.77	156.75	35.24	166.53	37.44	184.11	41.39
Maximum	195.85	44.03	203.99	45.86	189.57	42.62	221.95	49.90
<b>Average</b>	178.29	<b>40.08</b>	185.99	<b>41.82</b>	175.31	<b>39.41</b>	200.15	<b>45.00</b>
St Dev	11.18	2.51	14.43	3.24	7.92	1.78	12.16	2.73
Count	10	10	10	10	10	10	10	10
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	164.36	36.95	184.01	41.37	163.51	36.76	177.03	39.80
Maximum	187.22	42.09	225.81	50.77	186.10	41.84	227.56	51.16
<b>Average</b>	173.09	<b>38.92</b>	202.30	<b>45.48</b>	172.34	<b>38.75</b>	203.08	<b>45.66</b>
St Dev	7.00	1.57	13.53	3.04	6.57	1.48	15.06	3.39
Count	10	10	10	10	10	10	10	10
	After 100 Cycles							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	161.63	36.34	174.56	39.25				
Maximum	185.17	41.63	229.25	51.54				
<b>Average</b>	172.15	<b>38.70</b>	203.66	<b>45.79</b>				
St Dev	6.65	1.49	15.66	3.52				
Count	10	10	10	10				

**DATA SUMMARIES Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-40-20.0-08-085\ SEAF-40-05.0-S-08-2-A

Non Post

	Initial				After 25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	118.98	26.75	90.87	20.43	125.17	28.14	119.56	26.88
Maximum	162.97	36.64	193.09	43.41	160.62	36.11	222.09	49.93
<b>Average</b>	139.90	<b>31.45</b>	116.19	<b>26.12</b>	140.57	<b>31.60</b>	142.65	<b>32.07</b>
St Dev	12.31	2.77	30.05	6.76	9.69	2.18	29.86	6.71
Count	10	10	10	10	10	10	10	10
	After 50 Cycles				After 75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	123.65	27.80	122.99	27.65	124.81	28.06	122.68	27.58
Maximum	159.19	35.79	231.25	51.99	156.08	35.09	234.68	52.76
<b>Average</b>	138.77	<b>31.20</b>	145.70	<b>32.76</b>	137.72	<b>30.96</b>	146.51	<b>32.94</b>
St Dev	9.30	2.09	31.85	7.16	8.45	1.90	32.79	7.37
Count	10	10	10	10	10	10	10	10
	After 100 Cycles							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	124.86	28.07	122.01	27.43				
Maximum	155.64	34.99	236.68	53.21				
<b>Average</b>	137.07	<b>30.82</b>	146.85	<b>33.02</b>				
St Dev	8.48	1.91	33.48	7.53				
Count	10	10	10	10				

**DATA SUMMARIES Continued****INSULATION RESISTANCE (IR):****Pin to Pin**

	Pin to Pin		
	Mated	Unmated	Unmated
Minimum	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
<b>Initial</b>	100000	100000	100000
<b>Thermal</b>	100000	100000	100000
<b>Humidity</b>	10000	15000	100000

**Row to Row**

	Row to Row		
	Mated	Unmated	Unmated
Minimum	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
<b>Initial</b>	100000	100000	100000
<b>Thermal</b>	100000	100000	100000
<b>Humidity</b>	50000	100000	100000

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Voltage Rating Summary	
Minimum	SEAR/SEAF
<b>Break Down Voltage</b>	960
<b>Test Voltage</b>	720
<b>Working Voltage</b>	240

Pin to Pin	
<b>Initial Test Voltage</b>	Passed
<b>After Thermal Test Voltage</b>	Passed
<b>After Humidity Test Voltage</b>	Passed

Row to Row	
<b>Initial Test Voltage</b>	Passed
<b>After Thermal Test Voltage</b>	Passed
<b>After Humidity Test Voltage</b>	Passed



**DATA SUMMARIES Continued****LLCR Mating\Unmating Durability:**

- 1) A total of 160 signal 32 ground points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

**Signal Pin**

Date	2010-11-18	2010-11-30	2010-12-6	2010-12-20
Room Temp C	23	23	22	23
RH	31%	42%	27%	26%
Name	Troy Cook	Troy Cook	Troy Cook	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta 10 Cycles</b>	<b>Delta Thermal Shock</b>	<b>Delta Humidity</b>
Average	44.5	-0.3	-1.0	-0.6
St. Dev.	3.4	0.7	1.1	3.0
Min	36.1	-3.2	-4.4	-3.6
Max	51.4	4.2	8.5	34.6
Count	160	160	159	159

**How many samples are being tested?**

**8**

**How many contacts are on each board?**

**20**

	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>10 Cycles</b>	160	0	0	0	0	0
<b>Thermal Shock</b>	158	1	0	0	0	1
<b>Humidity</b>	157	1	0	1	0	1

**DATA SUMMARIES Continued****Ground Pin**

Date	2010-11-18	2010-11-30	2010-12-6	2010-12-20
Room Temp C	23	23	22	23
RH	31%	42%	27%	26%
Name	Troy Cook	Troy Cook	Troy Cook	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta 10 Cycles</b>	<b>Delta Thermal Shock</b>	<b>Delta Humidity</b>
Average	5.4	0.2	0.1	0.1
St. Dev.	0.4	0.9	1.0	1.0
Min	4.7	-0.6	-0.9	-1.0
Max	6.4	5.1	5.1	5.1
Count	32	32	32	32

How many samples are being tested?

8

How many contacts are on each board?

4

	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>10 Cycles</b>	31	1	0	0	0	0
<b>Thermal Shock</b>	31	1	0	0	0	0
<b>Humidity</b>	31	1	0	0	0	0

### DATA SUMMARIES Continued

**LLCR Thermal Age:**

- 5) A total of 160 signal 32 ground points were measured.
- 6) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 7) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 8) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

**Signal Pin**

Date	2010-11-22	2010-12-6
Room Temp C	23	23
RH	42%	27%
Name	Troy Cook	David Lieber
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Thermal Age</b>
Average	43.2	-0.5
St. Dev.	2.4	0.6
Min	38.0	-3.6
Max	50.5	0.8
Count	160	160

<b>How many samples are being tested?</b>	<b><u>8</u></b>
<b>How many contacts are on each board?</b>	<b><u>20</u></b>

	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>Thermal Age</b>	160	0	0	0	0	0

**DATA SUMMARIES Continued****Ground Pin**

Date	2010-11-22	2010-12-6
Room Temp C	23	23
RH	42%	27%
Name	Troy Cook	David Lieber
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Thermal Age</b>
Average	5.5	0.0
St. Dev.	0.5	0.4
Min	4.6	-1.0
Max	6.6	0.5
Count	32	32

How many samples are being tested?

8

How many contacts are on each board?

24

	Stable	Minor	Acceptable	Marginal	Unstable	Open
Thermal Age	32	0	0	0	0	0

**DATA SUMMARIES Continued**

**GAS TIGHT:**

- 1) A total of 160 signal 32 ground points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

**Signal Pin**

Date	2010-11-9	2010-11-9
Room Temp C	23	23
RH	27%	27%
Name	David Lieber	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Gas Tight</b>
Average	42.9	-0.3
St. Dev.	2.4	1.0
Min	36.5	-6.1
Max	49.8	6.1
Count	160	160

<b>How many samples are being tested?</b>	<b><u>8</u></b>
<b>How many contacts are on each board?</b>	<b><u>20</u></b>

	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>Gas Tight</b>	157	3	0	0	0	0

**DATA SUMMARIES Continued****Ground Pin**

Date	2010-11-9	2010-11-9
Room Temp C	23	23
RH	27%	27%
Name	David Lieber	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Gas Tight</b>
Average	5.3	0.3
St. Dev.	0.4	1.7
Min	4.6	-0.3
Max	6.2	9.6
Count	32	32

**How many samples are being tested?**

**8**

**How many contacts are on each board?**

**4**

	Stable	Minor	Acceptable	Marginal	Unstable	Open
Gas Tight	31	1	0	0	0	0

**DATA SUMMARIES Continued**

**LLCR Shock & Vibration:**

- 1) A total of 192 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
  - a. <= +5.0 mOhms: ----- Stable
  - b. +5.1 to +10.0 mOhms:----- Minor
  - c. +10.1 to +15.0 mOhms: ----- Acceptable
  - d. +15.1 to +50.0 mOhms: ----- Marginal
  - e. +50.1 to +2000 mOhms ----- Unstable
  - f. >+2000 mOhms:----- Open Failure

**Signal Pin**

Date	2010-11-9	2010-11-30
Room Temp C	23	23
RH	27%	39%
Name	David Lieber	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Shock/Vibration</b>
Average	42.8	-0.9
St. Dev.	2.1	1.1
Min	38.3	-8.1
Max	49.2	2.8
Count	160	160

<b>How many samples are being tested?</b>	<b><u>8</u></b>
<b>How many contacts are on each board?</b>	<b><u>20</u></b>

	<b>Stable</b>	<b>Minor</b>	<b>Acceptable</b>	<b>Marginal</b>	<b>Unstable</b>	<b>Open</b>
<b>Shock/Vibration</b>	158	2	0	0	0	0

**DATA SUMMARIES Continued**

**Ground Pin**

Date	2010-11-9	2010-11-30
Room Temp C	23	23
RH	27%	39%
Name	David Lieber	Troy Cook
<b>mOhm values</b>	<b>Actual Initial</b>	<b>Delta Shock/Vibration</b>
Average	5.2	-0.2
St. Dev.	0.4	0.3
Min	4.7	-1.4
Max	6.2	0.4
Count	32	32

<b>How many samples are being tested?</b>	<b><u>8</u></b>
<b>How many contacts are on each board?</b>	<b><u>4</u></b>

	Stable	Minor	Acceptable	Marginal	Unstable	Open
<b>Shock/Vibration</b>	32	0	0	0	0	0



Part description: SEAR\SEAF

**DATA****INSULATION RESISTANCE (IR):**

<b>Initial Insulation Resistance</b>			
<b>Measured In Meg Ohms</b>			
<b>Pin to Pin</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	100000	100000	100000
110153-022	100000	100000	100000
<b>Row to Row</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	100000	100000	100000
110153-022	100000	100000	100000

<b>Thermal Insulation Resistance</b>			
<b>Measured In Meg Ohms</b>			
<b>Pin to Pin</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	100000	100000	100000
110153-022	100000	100000	100000
<b>Row to Row</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	100000	100000	100000
110153-022	100000	100000	100000

<b>Humidity Insulation Resistance</b>			
<b>Measured In Meg Ohms</b>			
<b>Pin to Pin</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	10000	15000	100000
110153-022	10000	15000	100000
<b>Row to Row</b>			
	<b>Mated</b>	<b>A Unmated</b>	<b>B</b>
	X	X	X
<b>Sample#</b>	<b>SEAR/SEAF</b>	<b>SEAR</b>	<b>SEAF</b>
110153-021	50000	100000	100000
110153-022	50000	100000	100000

**DATA Continued****DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Initial Breakdown Voltage				
Test Voltage <i>Until Breakdown Occurs</i>				
Pin to Pin				
Mated		A	Unmated	B
X				
Sample#	SEAR/SEAF	SEAR	SEAF	UnM Samp#
110153-017	1020	1020	1120	110153-019
110153-018	1160	960	1160	110153-020
Row to Row				
Mated		A	Unmated	B
X				
Sample#	SEAR/SEAF	SEAR	SEAF	UnM Samp#
110153-017	1400	1500	1400	110153-019
110153-018	1400	1400	1500	110153-020

Initial DWV				
Test Voltage= 720				
Pin to Pin				
Mated		A	Unmated	B
Sample#	SEAR/SEAF	SEAR	SEAF	
110153-021	720	720	720	
110153-022	720	720	720	
Row to Row				
Mated		A	Unmated	B
Sample#	SEAR/SEAF	SEAR	SEAF	
110153-021	720	720	720	
110153-022	720	720	720	

Thermal Test Voltage				
Test Voltage= 720				
Pin to Pin				
Mated		A	Unmated	B
Sample#	SEAR/SEAF	SEAR	SEAF	
110153-021	720	720	720	
110153-022	720	720	720	
Row to Row				
Mated		A	Unmated	B
Sample#	SEAR/SEAF	SEAR	SEAF	
110153-021	720	720	720	
110153-022	720	720	720	

**DATA Continued****DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

Humidity Test Voltage			
Test Voltage= 720			
Pin to Pin			
	Mated	A	Unmated B
Sample#	SEAR/SEAF	SEAR	SEAF
110153-021	720	720	720
110153-022	720	720	720
Row to Row			
	Mated	A	Unmated B
Sample#	SEAR/SEAF	SEAR	SEAF
110153-021	720	720	720
110153-022	720	720	720

**DATA Continued****CONTACT GAPS:****Mating\Unmating Durability**

Initial								
Units: inches								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8
1	0.0395	0.0386	0.0402	0.0395	0.0416	0.0400	0.0390	0.0402
2	0.0390	0.0390	0.0385	0.0396	0.0401	0.0398	0.0392	0.0394
3	0.0390	0.0405	0.0376	0.0388	0.0393	0.0423	0.0379	0.0396
4	0.0385	0.0395	0.0403	0.0415	0.0413	0.0393	0.0407	0.0409
5	0.0389	0.0386	0.0382	0.0387	0.0391	0.0386	0.0372	0.0389
6	0.0394	0.0391	0.0397	0.0391	0.0399	0.0391	0.0390	0.0396
7	0.0391	0.0384	0.0392	0.0396	0.0411	0.0400	0.0383	0.0396
8	0.0390	0.0393	0.0394	0.0394	0.0399	0.0403	0.0382	0.0392
9	0.0390	0.0396	0.0408	0.0408	0.0412	0.0388	0.0393	0.0417
10	0.0377	0.0395	0.0375	0.0380	0.0385	0.0389	0.0367	0.0392
11	0.0390	0.0391	0.0398	0.0396	0.0401	0.0401	0.0384	0.0389
12	0.0382	0.0384	0.0382	0.0393	0.0399	0.0401	0.0388	0.0381
13	0.0400	0.0407	0.0378	0.0389	0.0388	0.0417	0.0369	0.0384
14	0.0381	0.0386	0.0391	0.0411	0.0417	0.0387	0.0401	0.0408
15	0.0372	0.0396	0.0376	0.0380	0.0384	0.0389	0.0364	0.0389
16	0.0379	0.0366	0.0383	0.0382	0.0404	0.0373	0.0382	0.0377
17	0.0381	0.0381	0.0386	0.0386	0.0391	0.0387	0.0387	0.0390
18	0.0364	0.0371	0.0375	0.0377	0.0377	0.0371	0.0376	0.0377
19	0.0370	0.0381	0.0385	0.0385	0.0393	0.0376	0.0368	0.0389
20	0.0358	0.0372	0.0367	0.0376	0.0376	0.0370	0.0377	0.0380
21	0.0371	0.0382	0.0388	0.0376	0.0394	0.0374	0.0378	0.0374
22	0.0378	0.0366	0.0392	0.0390	0.0386	0.0385	0.0395	0.0390
23	0.0375	0.0380	0.0376	0.0371	0.0388	0.0382	0.0370	0.0378
24	0.0365	0.0382	0.0374	0.0393	0.0385	0.0370	0.0380	0.0378
25	0.0364	0.0372	0.0386	0.0377	0.0380	0.0374	0.0357	0.0392
26	0.0366	0.0370	0.0377	0.0383	0.0391	0.0375	0.0383	0.0379
27	0.0373	0.0377	0.0386	0.0381	0.0394	0.0377	0.0380	0.0383
28	0.0372	0.0377	0.0369	0.0375	0.0379	0.0377	0.0378	0.0378
29	0.0370	0.0372	0.0382	0.0387	0.0390	0.0375	0.0377	0.0389
30	0.0360	0.0367	0.0377	0.0378	0.0370	0.0361	0.0365	0.0383
31	0.0376	0.0377	0.0383	0.0371	0.0384	0.0381	0.0381	0.0380
32	0.0376	0.0371	0.0380	0.0382	0.0383	0.0384	0.0377	0.0386
33	0.0385	0.0382	0.0374	0.0374	0.0379	0.0390	0.0371	0.0380
34	0.0363	0.0378	0.0376	0.0387	0.0390	0.0380	0.0379	0.0395
35	0.0367	0.0375	0.0383	0.0376	0.0393	0.0374	0.0361	0.0387
36	0.0371	0.0356	0.0368	0.0374	0.0369	0.0371	0.0377	0.0370
37	0.0374	0.0380	0.0393	0.0386	0.0391	0.0383	0.0383	0.0392
38	0.0364	0.0369	0.0367	0.0371	0.0372	0.0375	0.0374	0.0374
39	0.0370	0.0375	0.0389	0.0389	0.0398	0.0372	0.0376	0.0392
40	0.0363	0.0366	0.0363	0.0371	0.0374	0.0361	0.0358	0.0369
41	0.0373	0.0369	0.0370	0.0363	0.0371	0.0381	0.0369	0.0372
42	0.0373	0.0371	0.0394	0.0386	0.0382	0.0372	0.0392	0.0393

Part description: SEAR\SEAF

43	0.0374	0.0366	0.0370	0.0360	0.0380	0.0371	0.0364	0.0376
44	0.0371	0.0372	0.0382	0.0384	0.0383	0.0368	0.0382	0.0378
45	0.0367	0.0363	0.0370	0.0369	0.0370	0.0369	0.0357	0.0373
46	0.0377	0.0356	0.0373	0.0377	0.0370	0.0369	0.0372	0.0374
47	0.0380	0.0385	0.0401	0.0390	0.0401	0.0386	0.0390	0.0400
48	0.0364	0.0364	0.0365	0.0370	0.0370	0.0360	0.0369	0.0362
49	0.0384	0.0387	0.0395	0.0397	0.0394	0.0389	0.0381	0.0400
50	0.0354	0.0365	0.0363	0.0368	0.0367	0.0355	0.0359	0.0378
After 10 Cycles								
Units: inches								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8
1	0.0407	0.0397	0.0415	0.0409	0.0428	0.0414	0.0406	0.0415
2	0.0393	0.0398	0.0397	0.0405	0.0410	0.0411	0.0406	0.0406
3	0.0399	0.0413	0.0390	0.0398	0.0405	0.0426	0.0395	0.0406
4	0.0392	0.0406	0.0406	0.0419	0.0422	0.0403	0.0414	0.0417
5	0.0399	0.0394	0.0402	0.0399	0.0410	0.0401	0.0395	0.0403
6	0.0396	0.0401	0.0408	0.0403	0.0412	0.0407	0.0407	0.0408
7	0.0397	0.0394	0.0404	0.0403	0.0417	0.0413	0.0399	0.0408
8	0.0396	0.0400	0.0402	0.0405	0.0404	0.0410	0.0400	0.0407
9	0.0398	0.0406	0.0412	0.0410	0.0422	0.0398	0.0401	0.0422
10	0.0384	0.0395	0.0389	0.0391	0.0398	0.0402	0.0389	0.0410
11	0.0392	0.0400	0.0406	0.0408	0.0411	0.0410	0.0404	0.0403
12	0.0391	0.0391	0.0391	0.0398	0.0407	0.0415	0.0402	0.0389
13	0.0402	0.0411	0.0393	0.0403	0.0396	0.0420	0.0388	0.0398
14	0.0386	0.0396	0.0400	0.0414	0.0422	0.0398	0.0403	0.0413
15	0.0384	0.0404	0.0387	0.0390	0.0398	0.0398	0.0386	0.0405
16	0.0394	0.0381	0.0404	0.0397	0.0418	0.0391	0.0398	0.0391
17	0.0390	0.0392	0.0397	0.0394	0.0401	0.0396	0.0398	0.0399
18	0.0378	0.0383	0.0388	0.0389	0.0389	0.0387	0.0393	0.0391
19	0.0380	0.0389	0.0395	0.0395	0.0405	0.0394	0.0384	0.0402
20	0.0379	0.0386	0.0391	0.0389	0.0390	0.0397	0.0392	0.0399
21	0.0384	0.0394	0.0403	0.0394	0.0409	0.0391	0.0393	0.0387
22	0.0388	0.0383	0.0403	0.0393	0.0401	0.0396	0.0400	0.0399
23	0.0385	0.0394	0.0389	0.0382	0.0394	0.0396	0.0390	0.0394
24	0.0379	0.0389	0.0383	0.0403	0.0400	0.0389	0.0395	0.0394
25	0.0382	0.0382	0.0403	0.0392	0.0386	0.0402	0.0382	0.0410
26	0.0380	0.0383	0.0395	0.0396	0.0407	0.0389	0.0398	0.0392
27	0.0383	0.0387	0.0398	0.0394	0.0401	0.0396	0.0394	0.0398
28	0.0380	0.0389	0.0382	0.0387	0.0388	0.0391	0.0393	0.0392
29	0.0379	0.0388	0.0392	0.0396	0.0400	0.0391	0.0388	0.0396
30	0.0379	0.0382	0.0398	0.0388	0.0386	0.0392	0.0382	0.0404
31	0.0386	0.0387	0.0400	0.0388	0.0404	0.0392	0.0394	0.0391
32	0.0386	0.0387	0.0394	0.0394	0.0398	0.0399	0.0394	0.0398
33	0.0390	0.0392	0.0380	0.0380	0.0388	0.0396	0.0390	0.0395
34	0.0376	0.0388	0.0385	0.0395	0.0393	0.0399	0.0393	0.0405
35	0.0382	0.0389	0.0402	0.0388	0.0401	0.0397	0.0386	0.0404
36	0.0381	0.0372	0.0397	0.0390	0.0398	0.0390	0.0394	0.0390
37	0.0376	0.0389	0.0403	0.0398	0.0403	0.0395	0.0390	0.0402
38	0.0374	0.0381	0.0382	0.0387	0.0388	0.0394	0.0392	0.0389

Part description: SEAR\SEAF

<b>39</b>	0.0374	0.0388	0.0405	0.0397	0.0412	0.0387	0.0388	0.0403
<b>40</b>	0.0378	0.0382	0.0387	0.0386	0.0398	0.0385	0.0380	0.0392
<b>41</b>	0.0385	0.0384	0.0391	0.0380	0.0400	0.0394	0.0392	0.0392
<b>42</b>	0.0381	0.0386	0.0399	0.0397	0.0396	0.0385	0.0401	0.0405
<b>43</b>	0.0373	0.0376	0.0382	0.0379	0.0388	0.0386	0.0388	0.0388
<b>44</b>	0.0385	0.0388	0.0401	0.0392	0.0402	0.0386	0.0395	0.0396
<b>45</b>	0.0386	0.0380	0.0393	0.0386	0.0395	0.0389	0.0381	0.0392
<b>46</b>	0.0393	0.0368	0.0393	0.0384	0.0401	0.0389	0.0390	0.0391
<b>47</b>	0.0384	0.0395	0.0407	0.0403	0.0407	0.0401	0.0401	0.0412
<b>48</b>	0.0374	0.0375	0.0382	0.0383	0.0384	0.0381	0.0383	0.0375
<b>49</b>	0.0390	0.0402	0.0414	0.0410	0.0411	0.0403	0.0391	0.0407
<b>50</b>	0.0369	0.0380	0.0399	0.0382	0.0395	0.0380	0.0381	0.0393

**DATA Continued****Thermal Aging**

Initial								
Units: mm								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8
1	0.0394	0.0407	0.0402	0.0401	0.0423	0.0406	0.0405	0.0406
2	0.0392	0.0392	0.0395	0.0383	0.0394	0.0387	0.0407	0.0397
3	0.0375	0.0407	0.0402	0.0378	0.0393	0.0380	0.0406	0.0398
4	0.0401	0.0396	0.0402	0.0404	0.0417	0.0414	0.0407	0.0420
5	0.0373	0.0389	0.0392	0.0383	0.0373	0.0374	0.0400	0.0393
6	0.0396	0.0398	0.0393	0.0385	0.0416	0.0391	0.0397	0.0395
7	0.0382	0.0395	0.0399	0.0383	0.0395	0.0388	0.0398	0.0392
8	0.0382	0.0408	0.0412	0.0374	0.0393	0.0389	0.0391	0.0403
9	0.0389	0.0400	0.0396	0.0393	0.0408	0.0407	0.0402	0.0418
10	0.0370	0.0390	0.0392	0.0378	0.0383	0.0372	0.0397	0.0388
11	0.0377	0.0390	0.0395	0.0382	0.0388	0.0377	0.0403	0.0391
12	0.0384	0.0385	0.0396	0.0385	0.0390	0.0386	0.0397	0.0392
13	0.0374	0.0413	0.0410	0.0378	0.0375	0.0367	0.0405	0.0382
14	0.0402	0.0382	0.0388	0.0393	0.0401	0.0409	0.0387	0.0404
15	0.0363	0.0382	0.0395	0.0372	0.0380	0.0364	0.0385	0.0387
16	0.0380	0.0366	0.0377	0.0375	0.0389	0.0382	0.0382	0.0389
17	0.0387	0.0381	0.0371	0.0385	0.0394	0.0388	0.0388	0.0388
18	0.0375	0.0364	0.0373	0.0369	0.0383	0.0373	0.0376	0.0369
19	0.0370	0.0376	0.0370	0.0365	0.0384	0.0371	0.0370	0.0388
20	0.0361	0.0363	0.0368	0.0379	0.0381	0.0376	0.0368	0.0390
21	0.0374	0.0371	0.0370	0.0374	0.0384	0.0371	0.0373	0.0382
22	0.0387	0.0371	0.0379	0.0387	0.0390	0.0384	0.0377	0.0386
23	0.0372	0.0371	0.0369	0.0367	0.0375	0.0365	0.0381	0.0383
24	0.0379	0.0371	0.0378	0.0377	0.0378	0.0379	0.0361	0.0391
25	0.0357	0.0370	0.0367	0.0362	0.0375	0.0359	0.0372	0.0393
26	0.0386	0.0367	0.0374	0.0375	0.0386	0.0383	0.0371	0.0381
27	0.0374	0.0379	0.0367	0.0379	0.0396	0.0378	0.0378	0.0390
28	0.0375	0.0367	0.0379	0.0371	0.0384	0.0374	0.0383	0.0391
29	0.0374	0.0379	0.0366	0.0369	0.0374	0.0374	0.0377	0.0386
30	0.0370	0.0365	0.0365	0.0374	0.0383	0.0375	0.0356	0.0383
31	0.0383	0.0381	0.0375	0.0372	0.0395	0.0381	0.0381	0.0382
32	0.0385	0.0364	0.0378	0.0388	0.0393	0.0387	0.0375	0.0389
33	0.0366	0.0381	0.0371	0.0365	0.0373	0.0362	0.0386	0.0379
34	0.0378	0.0374	0.0370	0.0376	0.0388	0.0381	0.0368	0.0381
35	0.0357	0.0371	0.0379	0.0363	0.0370	0.0364	0.0376	0.0389
36	0.0367	0.0363	0.0371	0.0373	0.0376	0.0375	0.0366	0.0365
37	0.0381	0.0380	0.0364	0.0387	0.0390	0.0389	0.0380	0.0391
38	0.0371	0.0369	0.0366	0.0367	0.0375	0.0371	0.0360	0.0364
39	0.0367	0.0385	0.0378	0.0378	0.0386	0.0383	0.0370	0.0392
40	0.0354	0.0357	0.0368	0.0364	0.0371	0.0363	0.0357	0.0380
41	0.0368	0.0374	0.0366	0.0360	0.0375	0.0373	0.0377	0.0371
42	0.0383	0.0371	0.0375	0.0393	0.0401	0.0399	0.0375	0.0382
43	0.0361	0.0372	0.0365	0.0363	0.0374	0.0364	0.0362	0.0367

Part description: SEAR\SEAF

44	0.0385	0.0370	0.0385	0.0389	0.0388	0.0389	0.0363	0.0398
45	0.0351	0.0360	0.0356	0.0348	0.0366	0.0352	0.0366	0.0370
46	0.0376	0.0361	0.0377	0.0371	0.0386	0.0379	0.0361	0.0367
47	0.0383	0.0381	0.0373	0.0383	0.0401	0.0389	0.0380	0.0398
48	0.0362	0.0368	0.0364	0.0373	0.0377	0.0370	0.0358	0.0367
49	0.0385	0.0381	0.0376	0.0390	0.0392	0.0383	0.0382	0.0398
50	0.0366	0.0368	0.0370	0.0368	0.0376	0.0362	0.0356	0.0371
After Thermal								
Units: mm								
Pos.#	B1	B2	B3	B4	B5	B6	B7	B8
1	0.0428	0.0444	0.0439	0.0433	0.0444	0.0434	0.0441	0.0429
2	0.0435	0.0426	0.0428	0.0421	0.0425	0.0419	0.0438	0.0424
3	0.0431	0.0422	0.0428	0.0417	0.0420	0.0418	0.0434	0.0415
4	0.0425	0.0441	0.0429	0.0435	0.0437	0.0438	0.0442	0.0439
5	0.0424	0.0419	0.0430	0.0415	0.0416	0.0417	0.0438	0.0415
6	0.0423	0.0434	0.0428	0.0419	0.0437	0.0424	0.0430	0.0424
7	0.0425	0.0425	0.0431	0.0421	0.0425	0.0418	0.0438	0.0415
8	0.0429	0.0418	0.0435	0.0417	0.0420	0.0424	0.0428	0.0415
9	0.0425	0.0432	0.0428	0.0426	0.0428	0.0433	0.0437	0.0432
10	0.0421	0.0412	0.0423	0.0415	0.0418	0.0422	0.0427	0.0419
11	0.0423	0.0433	0.0423	0.0421	0.0426	0.0413	0.0430	0.0420
12	0.0416	0.0425	0.0429	0.0421	0.0419	0.0417	0.0430	0.0412
13	0.0437	0.0419	0.0434	0.0417	0.0415	0.0407	0.0438	0.0404
14	0.0417	0.0431	0.0425	0.0426	0.0428	0.0432	0.0426	0.0425
15	0.0418	0.0411	0.0427	0.0414	0.0420	0.0413	0.0427	0.0418
16	0.0422	0.0424	0.0416	0.0416	0.0422	0.0418	0.0416	0.0418
17	0.0420	0.0424	0.0414	0.0424	0.0430	0.0423	0.0422	0.0415
18	0.0416	0.0410	0.0411	0.0413	0.0418	0.0410	0.0418	0.0401
19	0.0419	0.0413	0.0410	0.0406	0.0421	0.0411	0.0409	0.0415
20	0.0408	0.0410	0.0415	0.0411	0.0419	0.0419	0.0410	0.0415
21	0.0425	0.0417	0.0416	0.0418	0.0418	0.0414	0.0413	0.0412
22	0.0413	0.0416	0.0417	0.0422	0.0423	0.0419	0.0422	0.0412
23	0.0416	0.0410	0.0407	0.0413	0.0411	0.0402	0.0419	0.0406
24	0.0413	0.0412	0.0413	0.0406	0.0410	0.0413	0.0409	0.0412
25	0.0415	0.0409	0.0413	0.0406	0.0413	0.0400	0.0410	0.0413
26	0.0418	0.0417	0.0416	0.0418	0.0415	0.0420	0.0413	0.0413
27	0.0414	0.0426	0.0413	0.0420	0.0423	0.0419	0.0415	0.0420
28	0.0417	0.0410	0.0417	0.0413	0.0417	0.0407	0.0419	0.0414
29	0.0411	0.0412	0.0407	0.0406	0.0406	0.0410	0.0413	0.0407
30	0.0411	0.0416	0.0412	0.0408	0.0418	0.0422	0.0410	0.0408
31	0.0419	0.0420	0.0421	0.0413	0.0426	0.0415	0.0418	0.0410
32	0.0414	0.0420	0.0413	0.0420	0.0426	0.0422	0.0415	0.0413
33	0.0422	0.0410	0.0411	0.0407	0.0410	0.0404	0.0419	0.0403
34	0.0412	0.0414	0.0407	0.0409	0.0420	0.0417	0.0402	0.0407
35	0.0418	0.0413	0.0427	0.0403	0.0413	0.0415	0.0415	0.0414
36	0.0413	0.0419	0.0413	0.0415	0.0416	0.0422	0.0410	0.0407
37	0.0420	0.0425	0.0413	0.0419	0.0425	0.0426	0.0423	0.0420
38	0.0417	0.0407	0.0399	0.0411	0.0411	0.0411	0.0403	0.0398
39	0.0411	0.0422	0.0412	0.0422	0.0422	0.0427	0.0412	0.0412



Part description: SEAR\SEAF

<b>40</b>	0.0408	0.0417	0.0420	0.0409	0.0416	0.0414	0.0412	0.0414
<b>41</b>	0.0407	0.0424	0.0408	0.0404	0.0416	0.0415	0.0410	0.0402
<b>42</b>	0.0419	0.0428	0.0415	0.0424	0.0425	0.0430	0.0423	0.0409
<b>43</b>	0.0413	0.0407	0.0398	0.0408	0.0417	0.0411	0.0402	0.0398
<b>44</b>	0.0411	0.0422	0.0419	0.0425	0.0424	0.0430	0.0412	0.0414
<b>45</b>	0.0408	0.0409	0.0409	0.0400	0.0408	0.0414	0.0412	0.0408
<b>46</b>	0.0415	0.0424	0.0416	0.0415	0.0424	0.0415	0.0410	0.0405
<b>47</b>	0.0420	0.0422	0.0415	0.0415	0.0424	0.0421	0.0423	0.0420
<b>48</b>	0.0413	0.0413	0.0404	0.0413	0.0422	0.0411	0.0402	0.0398
<b>49</b>	0.0419	0.0422	0.0416	0.0425	0.0428	0.0423	0.0423	0.0414
<b>50</b>	0.0416	0.0414	0.0412	0.0413	0.0408	0.0414	0.0412	0.0408

**DATA Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A

Sample#	Initial		After 10 Cycles		After Humidity	
	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	26.39	17.99	25.72	21.72	31.26	17.52
2	25.76	16.71	25.64	18.47	29.26	16.57
3	26.54	15.25	24.82	17.86	24.71	16.50
4	30.45	16.55	31.88	20.06	22.43	16.15
5	26.91	16.05	26.95	16.72	27.05	16.26
6	29.39	19.95	32.21	20.06	35.50	23.43
7	30.20	21.79	31.22	24.43	34.94	21.45
8	39.38	22.38	38.01	24.88	31.79	20.42

SEAR-50-10.0-10-085\SEAF-50-05.0-S-10-2-A-PP

**Post**

Sample#	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	62.88	40.13	60.63	40.40	61.54	45.08	61.15	47.21	61.27	48.40
2	66.29	32.98	46.56	32.06	56.15	30.96	53.23	30.04	53.15	33.78
3	47.55	30.26	54.69	31.28	55.93	38.97	58.00	41.57	60.08	44.17
4	56.37	34.82	58.87	40.45	58.77	41.12	57.71	39.61	56.62	41.27
5	59.49	38.30	60.56	41.96	61.61	42.21	67.76	45.67	66.77	46.67
6	57.14	31.21	60.56	36.12	58.82	34.70	57.61	35.12	57.37	34.04
7	59.24	31.24	58.23	32.34	57.11	34.77	56.49	36.06	56.76	36.62
8	51.62	26.19	53.37	33.48	55.05	34.69	55.68	36.23	55.36	35.49
9	62.26	32.20	60.26	33.90	58.09	32.29	56.99	30.91	57.89	34.75
10	48.77	29.30	53.48	36.06	52.82	36.40	53.75	38.50	53.80	39.30

**Non Post**

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	35.87	43.04	35.78	41.16	35.58	42.24	34.60	42.14	33.22	41.71
2	38.55	42.51	32.03	42.51	31.69	45.06	31.24	40.23	30.78	40.97
3	36.57	45.01	30.73	40.23	30.09	44.60	30.80	41.52	31.83	40.38
4	38.51	41.73	33.51	41.14	33.28	40.88	33.69	39.78	33.27	41.56
5	38.30	43.37	33.67	40.35	32.23	42.43	32.25	40.17	32.76	41.34
6	35.93	39.73	35.78	39.63	34.70	42.47	32.35	41.59	31.98	42.73
7	39.00	41.88	34.97	41.97	33.65	42.55	35.07	43.34	31.37	40.91
8	37.30	41.74	35.14	43.73	35.64	43.57	33.88	45.24	33.58	43.07
9	36.43	40.73	33.50	41.78	34.01	42.24	32.49	43.51	34.18	44.51

Tracking Code: 110153_Report_Rev_1	Part #: SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP, SEAF-50-05.0-S-10-2-A
Part description: SEAR\SEAF	

10	35.94	44.63	31.66	43.70	31.77	40.70	31.98	42.77	34.09	42.71
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**DATA Continued****MATING/UNMATING:****Mating\Unmating Durability**

SEAR-40-20.0-08-085\ SEAF-40-05.0-S-08-2-A-PP

Post

Sample#	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	39.16	42.79	37.44	44.60	36.95	45.35	36.76	45.39	36.34	45.41
2	37.46	41.16	37.58	43.55	37.28	44.68	37.22	45.03	37.02	45.48
3	40.08	44.80	39.02	48.53	38.74	49.61	38.67	50.22	38.69	50.42
4	38.87	35.24	39.83	41.39	39.61	42.36	39.07	42.56	38.80	42.85
5	44.03	45.86	41.91	49.90	40.63	50.77	40.17	51.16	40.24	51.54
6	40.18	41.44	39.50	43.76	39.00	44.17	39.22	44.31	39.10	44.43
7	39.97	40.78	38.55	44.94	38.11	45.00	37.88	46.45	38.07	47.10
8	35.77	42.88	37.61	42.71	37.68	41.37	37.92	39.80	38.33	39.25
9	42.34	44.95	40.07	47.37	39.06	47.87	38.71	47.44	38.82	46.63
10	42.97	38.25	42.62	43.24	42.09	43.65	41.84	44.19	41.63	44.77

Non Post

Sample#	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles		After 100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	30.43	21.35	30.61	28.55	30.70	29.02	30.45	29.18	30.27	29.13
2	30.75	21.25	30.59	27.26	30.75	27.85	30.49	27.58	30.21	27.63
3	29.81	24.23	30.48	29.29	30.28	29.39	30.00	30.01	29.89	29.83
4	36.64	43.41	36.11	49.93	35.79	51.99	35.09	52.76	34.99	53.21
5	34.03	27.51	33.18	32.65	32.24	33.66	31.98	33.74	31.81	33.86
6	26.75	20.43	28.14	26.88	27.80	27.65	28.06	27.62	28.07	27.43
7	31.32	25.76	31.72	33.13	31.22	33.67	31.20	33.96	31.36	34.17
8	33.59	27.81	32.34	32.41	31.59	32.86	31.27	32.99	30.90	33.13
9	31.83	27.94	32.84	32.39	32.21	32.50	31.97	32.44	31.83	32.53
10	29.37	21.52	30.01	28.22	29.41	28.97	29.12	29.11	28.83	29.23

**DATA Continued****MATING/UNMATING:  
Thermal Aging**

<u>Sample#</u>	<b>Initial</b>		<b>After Thermals</b>	
	<u>Mating</u>	<u>Unmating</u>	<u>Mating</u>	<u>Unmating</u>
1	35.05	18.65	25.63	14.75
2	44.53	22.51	22.18	10.38
3	42.90	24.11	27.58	16.39
4	29.61	21.22	27.62	21.25
5	32.09	26.17	32.31	25.84
6	35.38	24.53	33.13	24.38
7	26.74	12.12	25.13	20.38
8	22.20	14.76	21.94	16.25

**DATA Continued****LLCR:  
Mating\Unmating Durability  
Signal Pin**

Board	mOhm values	Actual	Delta	Delta	Delta
	Position	Initial	10 Cycles	Thermal Shock	Humidity
1	P1	42.8	0.3	-1.2	-1.6
1	P2	43.3	-0.5	-1.5	-1.9
1	P3	44.7	-0.4	-1.4	-1.5
1	P4	44.1	-0.5	-1.3	-1.2
1	P5	44.6	0.0	-1.1	-1.3
1	P8	47.4	-1.8	-3.6	-3.6
1	P9	46.9	-0.6	-1.0	-1.2
1	P10	49.7	-0.1	-1.2	-1.2
1	P11	50.7	-0.5	-0.8	-0.8
1	P12	48.4	-0.4	-1.4	-1.4
1	P13	49.5	-0.4	-0.6	-0.8
1	P15	48.7	0.4	-0.5	-0.4
1	P16	48.5	0.3	-0.4	-0.3
1	P17	44.9	-0.4	-1.4	-1.6
1	P18	47.7	-0.2	-0.1	-0.5
1	P19	49.3	0.2	-0.9	-1.0
1	P21	44.4	-1.0	-1.1	-1.4
1	P22	44.8	-0.6	-0.9	-1.3
1	P23	42.8	-0.2	-0.5	-0.7
1	P24	43.3	-0.8	-1.0	-1.4
2	P1	45.9	-0.4	-0.9	-0.5
2	P2	46.9	0.0	-1.0	-0.3
2	P3	46.9	-0.9	-1.4	-0.8
2	P4	48.1	0.1	-0.2	0.7
2	P5	48.0	-0.6	-0.8	-0.5
2	P8	43.5	-0.6	-0.6	0.1
2	P9	46.9	-0.2	-1.0	0.3
2	P10	45.7	-0.3	-1.4	-0.4
2	P11	46.8	-0.6	-1.4	2.5
2	P12	49.0	-0.4	-2.2	-0.7
2	P13	46.4	0.0	-0.9	1.2
2	P15	47.5	-0.2	-1.6	-0.2
2	P16	46.6	0.2	-0.9	-0.3
2	P17	44.4	-0.6	-0.8	-0.7
2	P18	45.1	-0.3	-0.9	-0.4
2	P19	46.0	0.0	-0.7	-0.4
2	P21	47.2	-0.2	-0.6	0.7
2	P22	46.9	-0.8	-0.9	-0.4
2	P23	48.3	0.1	-0.7	0.1
2	P24	49.1	-0.4	-0.6	0.5
3	P1	46.8	-0.6	-0.3	-1.1

Part description: SEAR\SEAF

3	P2	47.0	0.1	-0.3	-2.6
3	P3	48.8	-0.8	-0.1	-2.3
3	P4	49.6	-0.1	0.0	-0.7
3	P5	49.2	0.5	8.5	7.5
3	P8	44.5	-0.4	-0.3	-1.1
3	P9	47.9	-0.4	0.0	-0.9
3	P10	42.5	-0.4	0.0	-0.6
3	P11	48.4	-0.6	-0.4	-1.3
3	P12	42.9	-0.3	-1.5	-1.9
3	P13	47.5	-0.6	-0.2	-1.6
3	P15	47.2	-0.1	-0.3	-1.0
3	P16	47.8	-0.2	-0.4	-1.5
3	P17	45.8	-0.2	-0.3	-1.1
3	P18	49.2	-0.7	-0.6	-1.2
3	P19	46.4	-0.5	-1.0	-1.2
3	P21	50.5	0.0	1.0	-1.4
3	P22	50.5	-0.8	-0.1	-1.5
3	P23	49.5	-0.2	0.7	-1.0
3	P24	50.0	0.2	-0.2	-1.4
4	P1	43.1	-1.0	-2.3	-1.7
4	P2	45.2	-1.9	-3.0	-2.3
4	P3	44.5	-0.6	-1.9	-1.5
4	P4	46.2	-0.7	-1.7	-0.8
4	P5	46.7	-0.8	-1.6	-0.6
4	P8	44.6	-1.2	-1.7	-0.5
4	P9	49.4	-0.7	-1.8	-0.7
4	P10	50.5	-0.1	-1.2	-0.1
4	P11	45.3	-0.2	-0.6	4.1
4	P12	48.5	-0.3	-1.6	-0.2
4	P13	46.3	-0.2	-0.8	1.0
4	P15	46.9	-0.1	-1.0	0.9
4	P16	45.4	-0.3	-0.7	0.5
4	P17	43.8	-0.2	-1.2	0.1
4	P18	46.7	0.4	-0.9	-0.1
4	P19	45.3	0.5	-0.3	0.7
4	P21	47.0	-1.7	-2.9	-1.9
4	P22	47.1	-2.0	-3.1	-2.0
4	P23	46.4	-1.3	-2.2	-1.2
4	P24	48.4	-3.2	-4.4	-3.6
5	P1	43.9	-1.4	-2.6	-2.5
5	P2	45.1	-1.5	-2.8	-2.8
5	P3	44.6	-1.5	-2.8	34.6
5	P4	46.8	-3.1	-3.8	-3.0
5	P5	45.9	-1.2	-2.3	-1.0
5	P8	45.8	-0.2	-1.4	-1.2
5	P9	44.0	0.4	-1.7	-1.9
5	P10	45.3	-0.7	-1.8	-1.7
5	P11	43.7	0.0	-1.4	-0.8
5	P12	48.5	-0.2	-1.3	-1.4

Part description: SEAR\SEAF

5	P13	43.7	-0.1	-1.3	-0.6
5	P15	44.7	0.3	-0.8	-0.7
5	P16	44.4	-0.2	-1.3	-1.1
5	P17	46.2	-0.6	-1.0	-1.3
5	P18	42.7	-0.1	-0.3	-0.1
5	P19	43.9	-0.5	-1.5	-0.8
5	P21	42.3	-0.5	-1.3	-1.3
5	P22	43.4	-1.0	-2.1	-2.0
5	P23	43.9	-1.3	-2.3	-2.4
5	P24	44.8	-1.1	-2.2	-2.3
6	P1	36.8	1.3	0.4	0.2
6	P2	39.5	0.3	-1.0	-1.3
6	P3	41.2	1.3	-1.6	-1.7
6	P4	40.8	0.4	-0.4	-0.4
6	P5	40.5	0.6	-0.1	-0.2
6	P8	44.2	0.1	-0.4	-0.7
6	P9	43.4	0.5	-0.8	-1.0
6	P10	45.4	0.3	-0.3	-0.2
6	P11	42.9	-0.1	-1.1	-2.6
6	P12	44.4	0.1	-0.8	-0.9
6	P13	42.1	-0.2	-0.9	-0.6
6	P15	42.7	-0.4	-0.6	-0.7
6	P16	43.0	-0.1	-0.5	-0.6
6	P17	42.5	0.1	-0.5	-0.5
6	P18	41.4	-0.1	-0.3	-0.5
6	P19	42.1	-0.1	-0.4	-0.5
6	P21	41.0	0.3	-0.8	-0.8
6	P22	41.6	0.4	-0.5	-0.6
6	P23	41.6	0.2	-1.0	-1.1
6	P24	41.3	0.2	-0.7	-0.8
7	P1	36.1	-0.3	-0.9	-0.7
7	P2	36.8	0.3	-0.7	-0.4
7	P3	37.1	-0.4	-1.2	-1.0
7	P4	38.5	-1.6	-1.7	-1.5
7	P5	38.4	-0.4	-0.7	-0.5
7	P8	42.7	-0.3	-1.0	-0.7
7	P9	46.4	-0.5	-1.0	-0.3
7	P10	42.0	0.2	-0.6	-0.2
7	P11	39.9	0.9	-0.8	-0.3
7	P12	40.0	-0.1	-0.6	-0.2
7	P13	40.8	-0.1	-0.8	0.1
7	P15	41.8	-0.1	-0.9	-0.6
7	P16	41.7	0.3	-0.8	-0.2
7	P17	43.8	0.0	-1.0	-0.3
7	P18	43.8	0.0	-0.4	-0.1
7	P19	41.2	-0.3	-0.9	-0.2
7	P21	40.1	-0.1	-1.1	-0.4
7	P22	40.1	-0.1	-1.1	-0.9
7	P23	41.0	-0.9	-2.0	-2.0



Part description: SEAR\SEAF

7	P24	39.9	-0.1	-1.5	-1.4
8	P1	36.7	-0.4	-1.2	-1.6
8	P2	36.7	0.4	-1.3	-2.0
8	P3	39.5	-0.8	-2.0	-2.7
8	P4	36.6	-0.1	-0.6	-1.1
8	P5	39.1	0.5	-1.1	-1.7
8	P8	45.9	-0.4	-0.9	-1.4
8	P9	43.0	-0.3	-0.7	-1.6
8	P11	41.6	0.3	-0.5	-1.0
8	P12	43.8	0.4	-0.5	-1.2
8	P13	41.5	0.5	-1.1	-1.0
8	P15	41.3	-0.3	-1.0	-0.8
8	P16	42.4	-0.5	-1.8	-1.8
8	P17	45.0	0.2	-0.9	-1.2
8	P18	40.5	0.3	0.4	0.1
8	P19	40.1	-0.3	-0.5	-0.6
8	P21	41.2	-1.1	-2.3	-2.6
8	P22	41.2	0.1	-1.6	-2.2
8	P23	39.7	0.0	-1.0	-1.3
8	P24	40.2	-0.4	-2.0	-2.3

**Ground Pin**

Board	Position	mOhm values	Actual	Delta	Delta	Delta
		Initial	10 Cycles	Thermal Shock	Humidity	
1	P6	6.1	6.1	0.0	-0.9	-1.0
1	P7	5.4	5.4	0.1	-0.5	-0.1
1	P14	5.1	5.1	0.2	-0.2	-0.2
1	P20	4.9	4.9	0.1	-0.3	-0.2
2	P6	5.7	5.7	0.1	0.1	0.3
2	P7	5.6	5.6	0.1	0.1	0.2
2	P14	5.4	5.4	0.0	-0.7	0.5
2	P20	5.6	5.6	-0.1	-0.1	0.4
3	P6	5.7	5.7	0.0	0.5	-0.1
3	P7	5.5	5.5	-0.1	0.7	0.2
3	P14	5.5	5.5	0.0	-0.1	-0.7
3	P20	5.2	5.2	0.3	0.0	-0.3
4	P6	5.3	5.3	0.1	-0.4	0.0
4	P7	5.8	5.8	0.1	-0.6	-0.4
4	P14	4.7	4.7	0.2	-0.1	0.8
4	P20	5.3	5.3	-0.2	-0.5	-0.2
5	P6	5.3	5.3	0.1	0.2	0.5
5	P7	6.4	6.4	-0.1	0.0	0.0
5	P14	5.3	5.3	0.2	0.2	0.2
5	P20	6.0	6.0	-0.5	-0.2	-0.4
6	P6	5.4	5.4	0.3	0.0	-0.1
6	P7	5.2	5.2	0.4	0.7	0.8
6	P14	5.2	5.2	0.1	0.0	0.1
6	P20	5.1	5.1	5.1	5.1	5.1

Part description: SEAR\SEAF

7	P6	5.4	0.0	0.0	0.0
7	P7	6.0	-0.6	0.0	-0.3
7	P14	5.1	0.0	-0.3	-0.1
7	P20	5.0	-0.2	-0.1	0.0
8	P6	5.5	0.4	0.3	0.1
8	P7	5.7	0.2	0.0	-0.1
8	P14	4.9	0.2	-0.2	-0.2
8	P20	5.2	0.0	-0.3	-0.4

**DATA Continued****Thermal Aging  
Signal Pin**

	mOhm values	Actual	Delta
Board	Position	Initial	Thermal Age
1	P1	43.9	-1.6
1	P2	42.9	-1.2
1	P3	46.2	-1.2
1	P4	45.0	-0.3
1	P5	45.9	-0.3
1	P8	41.5	-1.2
1	P9	42.1	-0.7
1	P10	43.7	0.2
1	P11	42.0	-0.2
1	P12	43.1	-0.2
1	P13	41.9	-0.1
1	P15	41.9	-0.4
1	P16	42.0	-0.8
1	P17	41.4	-1.4
1	P18	39.9	0.3
1	P19	40.1	-0.8
1	P21	45.3	-0.6
1	P22	45.4	-0.8
1	P23	44.6	-0.9
1	P24	45.9	-1.0
2	P1	40.1	-0.9
2	P2	40.6	-0.2
2	P3	40.9	-0.1
2	P4	43.1	-0.8
2	P5	43.5	-0.9
2	P8	44.9	-0.7
2	P9	42.9	-0.8
2	P10	43.3	-0.5
2	P11	43.7	-0.4
2	P12	43.1	-1.1
2	P13	43.1	-0.7
2	P15	43.1	-0.3
2	P16	42.7	-0.1
2	P17	47.2	-1.3
2	P18	45.0	-2.2
2	P19	42.5	0.2
2	P21	44.5	-0.8
2	P22	44.7	-0.8
2	P23	44.8	-0.8
2	P24	44.7	-1.3
3	P1	42.0	-0.3
3	P2	41.7	0.0

Part description: SEAR\SEAF

3	P3	42.4	-0.3
3	P4	42.2	-0.4
3	P5	43.6	-0.3
3	P8	40.5	-0.7
3	P9	44.9	-1.1
3	P10	44.1	-0.7
3	P11	39.8	-0.1
3	P12	43.8	-0.7
3	P13	40.2	-0.3
3	P15	39.9	0.3
3	P16	41.3	-1.1
3	P17	40.7	-0.7
3	P18	44.0	-0.4
3	P19	39.5	-0.4
3	P21	43.2	-0.2
3	P22	43.5	0.3
3	P23	44.4	-0.3
3	P24	43.6	-0.2
4	P1	38.3	-0.3
4	P2	41.1	-0.6
4	P3	42.3	-0.8
4	P4	42.7	-0.4
4	P5	43.4	-0.2
4	P8	41.9	-1.4
4	P9	45.7	-0.7
4	P10	41.8	-0.6
4	P11	42.9	0.0
4	P12	43.7	-0.6
4	P13	43.2	0.0
4	P15	43.2	0.8
4	P16	42.2	0.3
4	P17	42.2	-2.3
4	P18	43.6	-0.5
4	P19	40.9	-0.1
4	P21	45.1	-0.9
4	P22	45.0	-0.7
4	P23	44.0	-0.6
4	P24	44.7	-0.7
5	P1	38.0	-0.6
5	P2	39.4	-0.3
5	P3	40.3	-0.3
5	P4	40.5	-0.4
5	P5	41.0	0.0
5	P8	42.7	-0.7
5	P9	41.7	-0.3
5	P10	42.0	-0.2
5	P11	40.0	-0.1
5	P12	39.0	-0.1
5	P13	40.1	-0.2

Part description: SEAR\SEAF

5	P15	39.4	-0.3
5	P16	39.6	-0.2
5	P17	41.8	-0.8
5	P18	40.0	0.7
5	P19	38.8	0.1
5	P21	42.0	-0.3
5	P22	41.5	-0.5
5	P23	41.7	-0.7
5	P24	42.1	-0.9
6	P1	41.9	-3.6
6	P2	42.4	-0.8
6	P3	42.2	-0.3
6	P4	42.2	-0.1
6	P5	41.8	-0.2
6	P8	40.5	-0.8
6	P9	42.1	-0.6
6	P10	42.1	-0.9
6	P11	41.4	0.0
6	P12	41.8	-0.8
6	P13	42.5	0.5
6	P15	41.7	0.1
6	P16	42.6	0.5
6	P17	40.7	-0.7
6	P18	41.5	0.1
6	P19	40.9	-0.4
6	P21	41.3	-0.6
6	P22	42.4	-0.6
6	P23	42.5	-0.7
6	P24	42.3	-0.7
7	P1	42.6	-0.6
7	P2	42.1	0.1
7	P3	43.3	-1.6
7	P4	43.2	-0.3
7	P5	42.8	0.0
7	P8	42.8	-0.7
7	P9	43.0	-0.3
7	P10	44.9	-1.1
7	P11	44.4	0.5
7	P12	45.5	-0.6
7	P13	43.5	0.2
7	P15	44.4	0.3
7	P16	44.8	0.1
7	P17	41.3	-0.2
7	P18	43.5	0.0
7	P19	43.6	-0.1
7	P21	44.0	-0.3
7	P22	44.4	-0.2
7	P23	43.9	0.0
7	P24	43.8	-0.2

Part description: SEAR\SEAF

8	P1	46.8	-0.3
8	P2	47.9	-0.1
8	P3	46.5	0.0
8	P4	45.6	0.6
8	P5	44.6	0.4
8	P8	46.3	-0.4
8	P9	45.3	-0.8
8	P10	50.5	-0.4
8	P11	47.1	-0.2
8	P12	48.8	-0.7
8	P13	48.1	-0.5
8	P15	50.4	-1.9
8	P16	48.5	-1.6
8	P17	46.2	-0.5
8	P18	46.7	-1.1
8	P19	46.3	-0.4
8	P21	49.6	-0.4
8	P22	49.5	0.3
8	P23	47.4	0.0
8	P24	49.5	-0.1

**Ground Pin**

	mOhm values	Actual	Delta
Board	Position	Initial	Thermal Age
1	P6	5.9	-0.5
1	P7	5.5	-0.5
1	P14	6.5	-1.0
1	P20	5.2	-0.3
2	P6	5.2	0.0
2	P7	6.4	0.5
2	P14	4.6	-0.1
2	P20	5.5	-0.2
3	P6	5.3	0.2
3	P7	5.3	0.5
3	P14	4.9	0.2
3	P20	5.1	0.2
4	P6	5.4	0.1
4	P7	5.8	0.0
4	P14	6.0	0.5
4	P20	5.2	-0.4
5	P6	4.8	0.2
5	P7	4.9	0.3
5	P14	5.0	0.2
5	P20	5.7	-0.4
6	P6	5.1	0.3
6	P7	5.4	0.4
6	P14	5.6	0.0
6	P20	5.6	-0.2

Tracking Code: 110153\_Report\_Rev\_1

Part #: SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP,  
SEAF-50-05.0-S-10-2-A

Part description: SEAR\SEAF

7	P6	5.3	0.4
7	P7	5.3	0.1
7	P14	5.1	0.2
7	P20	5.7	-0.3
8	P6	6.6	0.5
8	P7	6.2	0.2
8	P14	5.6	-0.4
8	P20	6.0	0.2

**DATA Continued****GAS TIGHT:  
Signal Pin**

	<b>mOhm values</b>	<b>Actual</b>	<b>Delta</b>
<b>Board</b>	<b>Position</b>	<b>Initial</b>	<b>Gas Tight</b>
1	P1	42.5	-0.8
1	P2	42.2	-0.6
1	P3	42.1	-0.5
1	P4	41.5	-0.1
1	P5	42.1	-0.2
1	P8	41.0	0.0
1	P9	42.0	0.0
1	P10	43.9	0.0
1	P11	42.4	-0.2
1	P12	43.0	0.0
1	P13	42.7	-0.2
1	P15	42.3	-0.2
1	P16	41.9	-0.2
1	P17	40.9	0.2
1	P18	40.8	0.0
1	P19	43.5	-1.0
1	P21	41.0	-0.1
1	P22	43.1	-0.7
1	P23	42.6	-0.6
1	P24	42.8	-0.4
2	P1	39.9	0.1
2	P2	39.7	-0.4
2	P3	39.3	-0.2
2	P4	36.5	-0.8
2	P5	41.9	-5.5
2	P8	40.9	6.1
2	P9	40.3	0.0
2	P10	44.0	-1.2
2	P11	38.8	-0.1
2	P12	39.0	-0.7
2	P13	39.1	0.0
2	P15	41.6	-0.2
2	P16	39.9	-0.1
2	P17	46.3	-0.5
2	P18	41.7	0.4
2	P19	41.5	-0.5
2	P21	46.4	-6.1
2	P22	41.5	-0.3
2	P23	45.2	-4.8
2	P24	41.4	-0.7
3	P1	41.4	-0.4
3	P2	42.7	-1.3
3	P3	41.8	-0.4



Part description: SEAR\SEAF

3	P4	43.9	0.0
3	P5	42.9	0.4
3	P8	42.3	-0.1
3	P9	40.1	-0.2
3	P10	44.8	-0.2
3	P11	41.1	-0.6
3	P12	44.2	-1.0
3	P13	40.6	-0.4
3	P15	41.9	-0.4
3	P16	42.1	-0.2
3	P17	40.5	0.0
3	P18	40.5	0.0
3	P19	41.2	0.2
3	P21	44.4	-0.2
3	P22	44.8	-0.2
3	P23	44.2	-0.3
3	P24	44.0	-0.2
4	P1	44.9	-1.7
4	P2	44.7	-0.8
4	P3	43.8	-0.7
4	P4	46.0	-1.4
4	P5	44.4	-0.6
4	P8	43.9	-0.1
4	P9	41.5	0.0
4	P10	43.3	-0.1
4	P11	42.2	-0.1
4	P12	41.7	0.0
4	P13	41.3	-0.1
4	P15	42.0	0.1
4	P16	41.8	0.1
4	P17	41.1	0.1
4	P18	38.0	0.2
4	P19	40.3	0.0
4	P21	43.3	-0.5
4	P22	45.0	-0.6
4	P23	46.3	-2.2
4	P24	44.8	-0.8
5	P1	46.3	-0.3
5	P2	45.3	0.1
5	P3	43.6	0.0
5	P4	45.3	0.0
5	P5	46.1	-0.1
5	P8	40.5	-0.2
5	P9	40.6	0.0
5	P10	45.0	-0.1
5	P11	41.6	-0.1
5	P12	43.3	-0.1
5	P13	41.7	0.1
5	P15	41.3	0.0

Part description: SEAR\SEAF

5	P16	41.0	0.0
5	P17	40.2	0.0
5	P18	39.7	0.2
5	P19	42.6	-0.3
5	P21	44.6	0.0
5	P22	44.6	-0.5
5	P23	44.9	0.1
5	P24	45.3	-0.1
6	P1	38.3	-0.5
6	P2	40.8	-0.5
6	P3	41.4	0.2
6	P4	41.7	-0.1
6	P5	42.1	-0.1
6	P8	46.5	-0.2
6	P9	41.3	-0.1
6	P10	48.2	0.1
6	P11	42.9	-0.9
6	P12	48.0	-0.2
6	P13	43.3	-1.5
6	P15	44.6	-0.3
6	P16	43.2	-0.5
6	P17	47.7	0.0
6	P18	39.9	0.0
6	P19	41.6	-0.6
6	P21	42.4	-0.4
6	P22	41.3	-0.3
6	P23	42.8	-0.5
6	P24	42.9	-0.4
7	P1	40.8	-1.1
7	P2	40.5	-0.6
7	P3	40.8	-0.1
7	P4	39.4	0.1
7	P5	38.8	0.2
7	P8	44.5	0.2
7	P9	45.5	0.1
7	P10	43.2	0.3
7	P11	42.1	0.1
7	P12	40.4	0.2
7	P13	41.0	-0.1
7	P15	42.2	-0.2
7	P16	42.5	-0.5
7	P17	43.7	0.2
7	P18	44.5	0.2
7	P19	42.3	0.1
7	P21	40.7	-0.3
7	P22	41.7	-0.3
7	P23	40.4	-0.7
7	P24	40.8	-0.5
8	P1	42.5	-0.2

Part description: SEAR\SEAF

8	P2	43.1	-1.0
8	P3	44.6	-0.8
8	P4	43.4	-1.0
8	P5	45.8	-0.6
8	P8	45.9	-0.5
8	P9	49.1	-0.6
8	P10	49.8	-0.3
8	P11	46.7	-0.3
8	P12	47.3	1.1
8	P13	46.7	-0.1
8	P15	47.5	-0.3
8	P16	45.8	-0.4
8	P17	45.1	-0.7
8	P18	47.9	-0.1
8	P19	47.4	-0.7
8	P21	46.2	-0.3
8	P22	48.4	-1.5
8	P23	45.5	-0.1
8	P24	45.2	0.2

**Ground Pin**

	mOhm values	Actual	Delta
Board	Position	Initial	Gas Tight
1	P6	5.3	-0.1
1	P7	6.1	-0.3
1	P14	5.4	-0.1
1	P20	4.9	-0.1
2	P6	5.9	0.0
2	P7	5.5	0.0
2	P14	5.2	9.6
2	P20	4.9	1.8
3	P6	4.6	0.0
3	P7	5.1	-0.1
3	P14	4.8	-0.1
3	P20	4.8	-0.1
4	P6	5.3	-0.1
4	P7	5.6	-0.1
4	P14	5.2	0.0
4	P20	5.2	0.0
5	P6	5.1	0.0
5	P7	5.7	0.0
5	P14	5.2	0.0
5	P20	5.1	-0.1
6	P6	5.2	0.0
6	P7	5.7	0.0
6	P14	5.4	0.0
6	P20	5.2	-0.2
7	P6	5.4	0.0

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Part #: SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP,  
SEAF-50-05.0-S-10-2-A

Part description: SEAR\SEAF

7	P7	5.7	0.1
7	P14	5.2	0.0
7	P20	5.5	0.0
8	P6	5.7	-0.1
8	P7	6.2	0.2
8	P14	5.5	-0.2
8	P20	5.3	0.3

**DATA Continued****LLCR Shock/Vibration:  
Signal Pin**

	<b>mOhm values</b>	<b>Actual</b>	<b>Delta</b>
<b>Board</b>	<b>Position</b>	<b>Initial</b>	<b>Shock/Vibration</b>
1	P1	40.3	-2.0
1	P2	39.4	-1.0
1	P3	41.3	-1.2
1	P4	40.9	-0.5
1	P5	40.9	-0.4
1	P8	42.5	-0.8
1	P9	40.3	-2.0
1	P10	44.5	-1.7
1	P11	44.8	-1.3
1	P12	44.9	-1.0
1	P13	44.0	-0.8
1	P15	45.4	-1.6
1	P16	45.2	-1.4
1	P17	44.0	-1.4
1	P18	40.8	-1.5
1	P19	43.8	-1.1
1	P21	40.9	-1.3
1	P22	41.2	-1.3
1	P23	41.7	-1.3
1	P24	42.0	-1.4
2	P1	43.8	-0.4
2	P2	44.8	-1.5
2	P3	44.2	-0.1
2	P4	42.4	-0.8
2	P5	43.0	-0.9
2	P8	45.2	-1.6
2	P9	40.4	-0.8
2	P10	39.5	-0.3
2	P11	41.8	-1.1
2	P12	40.6	-0.8
2	P13	41.0	-0.6
2	P15	40.6	-0.9
2	P16	41.3	-0.4
2	P17	45.1	-0.6
2	P18	39.4	-1.1
2	P19	40.9	-2.0
2	P21	43.4	-1.3
2	P22	43.5	-0.9
2	P23	43.8	-0.2
2	P24	43.2	-0.1
3	P1	43.0	-2.0
3	P2	42.4	-1.8
3	P3	44.4	-2.3

Part description: SEAR\SEAF

3	P4	45.8	-4.5
3	P5	43.8	-2.4
3	P8	45.4	-1.8
3	P9	43.8	-3.2
3	P10	46.1	-5.8
3	P11	41.6	-1.2
3	P12	43.3	-3.3
3	P13	43.1	-2.0
3	P15	41.5	-0.8
3	P16	40.3	-0.5
3	P17	41.8	-0.8
3	P18	40.6	-1.5
3	P19	41.6	-1.2
3	P21	42.5	-1.8
3	P22	43.9	-2.1
3	P23	44.4	-1.7
3	P24	44.0	-1.2
4	P1	40.8	0.0
4	P2	42.7	-0.2
4	P3	42.2	-0.4
4	P4	44.9	-1.2
4	P5	43.2	-0.6
4	P8	41.1	-0.9
4	P9	46.7	-1.3
4	P10	43.4	-0.2
4	P11	42.3	-0.9
4	P12	44.8	-0.6
4	P13	42.3	-1.2
4	P15	42.7	-0.7
4	P16	42.3	-0.1
4	P17	39.4	-0.4
4	P18	45.1	-0.9
4	P19	42.8	-1.3
4	P21	44.2	-1.0
4	P22	45.1	-0.8
4	P23	44.6	0.0
4	P24	44.4	0.5
5	P1	40.4	-0.2
5	P2	40.5	0.1
5	P3	40.6	-0.7
5	P4	40.7	-1.2
5	P5	40.8	-1.3
5	P8	44.9	0.5
5	P9	41.0	-0.4
5	P10	41.5	0.5
5	P11	45.3	-0.7
5	P12	41.1	-0.6
5	P13	44.0	-0.9
5	P15	45.3	-0.2

Part description: SEAR\SEAF

5	P16	46.0	-0.5
5	P17	43.2	-1.4
5	P18	38.4	0.1
5	P19	45.6	-1.1
5	P21	49.2	-8.1
5	P22	40.1	-0.5
5	P23	40.1	0.3
5	P24	41.0	0.0
6	P1	39.0	-0.9
6	P2	40.4	-0.5
6	P3	39.8	-1.0
6	P4	41.7	-0.4
6	P5	41.8	-0.9
6	P8	38.3	0.2
6	P9	43.4	-0.1
6	P10	40.3	-0.3
6	P11	43.6	-0.4
6	P12	40.9	-0.1
6	P13	42.7	0.5
6	P15	44.0	-1.2
6	P16	44.0	-0.3
6	P17	39.9	-0.7
6	P18	42.8	-0.3
6	P19	43.3	-0.6
6	P21	41.5	-0.8
6	P22	42.9	-1.0
6	P23	42.6	-0.5
6	P24	42.4	-0.5
7	P1	43.3	0.3
7	P2	43.1	0.2
7	P3	44.3	-0.7
7	P4	44.2	-1.4
7	P5	43.6	-0.8
7	P8	41.9	-1.1
7	P9	44.4	-1.3
7	P10	42.0	-0.7
7	P11	44.5	-0.4
7	P12	42.3	-1.1
7	P13	44.6	0.1
7	P15	44.8	-0.6
7	P16	44.5	-0.7
7	P17	40.8	-1.3
7	P18	44.3	-1.3
7	P19	42.8	-1.0
7	P21	45.3	-1.1
7	P22	45.3	-1.3
7	P23	45.2	0.3
7	P24	44.6	0.1
8	P1	46.1	-0.4

Part description: SEAR\SEAF

8	P2	42.3	2.8
8	P3	45.8	-0.8
8	P4	45.7	-0.6
8	P5	45.2	-0.7
8	P8	44.0	0.4
8	P9	42.2	-0.7
8	P10	41.8	-0.7
8	P11	38.6	1.1
8	P12	41.2	-0.5
8	P13	38.8	-0.3
8	P15	39.9	-0.7
8	P16	39.4	-0.7
8	P17	44.8	-1.1
8	P18	42.9	-0.7
8	P19	38.7	-0.2
8	P21	45.2	1.5
8	P22	45.7	-0.2
8	P23	46.6	-0.2
8	P24	45.0	0.0

**Ground Pin**

	mOhm values	Actual	Delta
Board	Position	Initial	Shock/Vibration
1	P6	4.7	-0.1
1	P7	4.9	0.1
1	P14	5.0	-0.4
1	P20	4.9	-0.1
2	P6	5.1	-0.1
2	P7	6.2	-0.5
2	P14	5.3	-0.3
2	P20	5.3	-0.3
3	P6	5.1	-0.3
3	P7	5.5	-0.5
3	P14	4.9	-0.2
3	P20	6.2	-1.4
4	P6	5.0	0.0
4	P7	4.7	0.2
4	P14	4.8	-0.2
4	P20	5.0	-0.4
5	P6	5.1	0.1
5	P7	5.7	-0.2
5	P14	5.1	-0.1
5	P20	5.2	-0.4
6	P6	4.9	-0.2
6	P7	5.0	0.0
6	P14	5.2	-0.6
6	P20	4.9	0.1
7	P6	5.7	-0.2



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Part #: SEAR-50-30.0-10-085\SEAF-50-05.0-S-10-2-A-PP,  
SEAF-50-05.0-S-10-2-A

Part description: SEAR\SEAF

7	P7	5.6	0.2
7	P14	5.4	-0.1
7	P20	5.2	-0.3
8	P6	5.1	0.1
8	P7	5.3	-0.2
8	P14	4.7	0.4
8	P20	5.7	-0.5

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** MO-01**Description:** Micro-Ohmmeter**Manufacturer:** Keithley**Model:** 580**Serial #:** 0772740**Accuracy:** See Manual

... Last Cal: 04/30/2010, Next Cal: 04/30/2011

**Equipment #:** MO-04**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0798688**Accuracy:** See Manual

... Last Cal: 04/30/2010, Next Cal: 04/30/2011

**Equipment #:** PS-07**Description:** Power Supply**Manufacturer:** Agilent**Model:** AT-6031A**Serial #:** 2721A00648**Accuracy:** See Manual See Manual

... Last Cal: 08/21/2009, Next Cal: 08/21/2010

**Equipment #:** OV-5**Description:** Forced Air Oven, 5 Cu. Ft., 120 V**Manufacturer:** Sheldon Mfg.**Model:** CE5F**Serial #:** 02008008**Accuracy:** +/- 5 deg. C

... Last Cal: 02/16/2010, Next Cal: 02/16/2011

**Equipment #:** TCT-04**Description:** Dillon Quantrol TC2 Test Stand**Manufacturer:** Dillon Quantrol**Model:** TC2**Serial #:** 04-1041-04**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Displacement: +/- 5 micrometers.

... Last Cal: 05/21/2010, Next Cal: 05/21/2011

**Equipment #:** MV-06**Description:** 6" x 6" Video Measuring Machine**Manufacturer:** Micro-Vu**Model:** M3010898**Serial #:** V9343**Accuracy:** See Manual

... Last Cal: 01/12/2010, Next Cal: 01/12/2011

**Equipment #:** THC-02**Description:** Temperature/Humidity Chamber**Manufacturer:** Thermotron**Model:** SE-1000-6-6**Serial #:** 31808**Accuracy:** See Manual

... Last Cal: 02/16/2010, Next Cal: 02/16/2011

**Equipment #:** HPM-01**Description:** Hipot Megommeter**Manufacturer:** Hipotronics**Model:** H306B-A**Serial #:** M9905004**Accuracy:** 2 % Full Scale Accuracy

... Last Cal: 11/30/2009, Next Cal: 11/30/2010

**Equipment #:** ACLM-01**Description:** Accelerometer**Manufacturer:** PCB Piezotronics**Model:** 352C03**Serial #:** 115819**Accuracy:** See Manual

... Last Cal: 07/09/2010, Next Cal: 07/09/2011

**Equipment #:** ED-03**Description:** Event Detector**Manufacturer:** Analysis Tech**Model:** 32EHD**Serial #:** 1100604**Accuracy:** See Manual

... Last Cal: 06/04/2010, Next Cal: 06/04/2011