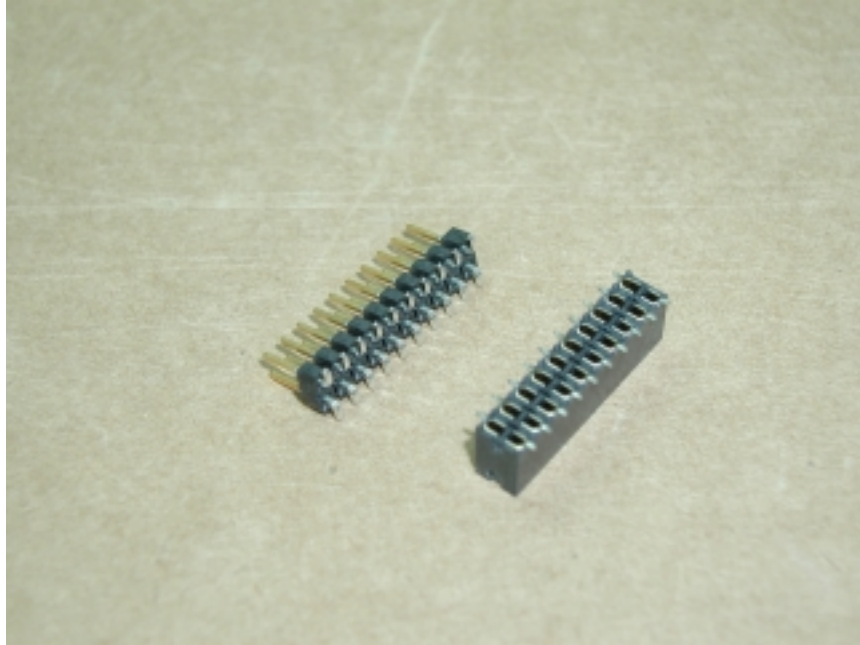




Project Number: 027C		Tracking Code: 0121-027C-0434	
Requested by: WILL OUYANG		Date: 5/21/01	Product Rev: AP/ BH RESPECTIVELY
Part #: SSM-110-S-DV, TSM-110-01-S-DV	Lot #: 5/17/01, 5/18/01 repsectively.	Tech: T. Cook; J. Wantland	Eng: J. Tozier
Part description: 0.100 C.L. CONNECTOR ASSEMBLY.			Qty to test: 2
Test Start: 5/30/01	Test Completed: 8/6/01		



SUMMARY REPORT

PART DESCRIPTION

SSM-110-S-DV, TSM-110-01-S-DV



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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: CCC/IR/DWV

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 were cleaned according to TLP-0001:
 - a) Sample test boards are to be ultrasonically cleaned after test lead attachment, preparation and/or soldering using the following process.
 - b) Immerse the sample test boards into the Branson 3510 cleaner which contains Kyzen Ionox HC1 (or equivalent) cleaning solution with the following conditions:
 - i) Temperature: 60 Degrees C +/- 5 Degrees C
 - ii) Frequency: 40 KHz
 - iii) Immersion Time: 8 to 12 Minutes
 - c) Sample test boards are then slowly removed and placed into the Branson 3510 cleaner which contains DI water with the following conditions:
 - i) Temperature: 60 Degrees C +/- 5 Degrees C
 - ii) Frequency: 40 KHz
 - iii) Immersion Time: 8 to 12 Minutes
 - d) Sample test boards are then removed and placed in a a beaker, on a hot plate with a magnetic stirrer containing DI water warmed to 55 +/- 5 Degrees C for 1 to 2 minutes (Use 55 C as target)
 - e) Upon removal, the sample test boards are then rinsed for 1 to 2 minutes in room temperature free flowing DI water.
 - f) After the final rinse, the sample test boards are to be dried in an air-circulating oven for 10 to 15 minutes at 50 +/- 2 Degrees C (Use 52 C as target)
 - g) Sample test boards are then allowed to set and recover to room ambient condition prior to testing.
- 4) Any further preparation will be noted in the individual test procedures.



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FLOWCHART

TEST STEP	GROUP 5 1 Connector
01	IR
02	DWV
03	Thermal Aging
04	IR
05	DWV
06	Cyclic Humidity
07	IR
08	DWV
09	Working Voltage

GROUP 7 1 Connector
5 Contacts in series
Std Temp Rise Test

Temperature derated 20%
 (Base on 125 degrees C)
 Tabulate at RT, 60
 and 80 degrees

Thermal Aging = EIA-364-17, 125 deg C,
 Condition 'B' except for 300 hours,

Cyclic Humidity =10 days with 1 cycles/day,
 +25 @ 92%RH to +65 @ 92%RH (EIA-364-31A)



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ATTRIBUTE DEFINITION

Following is a brief, simplified description of each attribute measured.

THERMAL AGING

- 1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*, 125 degrees C, Condition B but for 300 hours.
- 2) Connectors are mated.

CYCLIC HUMIDITY

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*, Method III, Test Condition B excluding Steps 7a , 7b [10 days, +25 deg C to + 65 deg C, 90% to 95% RH].

TEMPERATURE RISE:

- 1) When current passes through a contact, the temperature of the contact increases as a result of I^2R (resistive) heating.
- 2) The number of contacts being investigated plays a significant part in power dissipation and therefore temperature rise.
- 3) The size of the temperature probe can affect the measured temperature.
- 4) Copper traces on PC boards will contribute to temperature rise:
 - a) Self heating (resistive)
 - b) Reduction in heat sink capacity affecting the heated contacts
- 5) EIA-364-70, *Temperature Rise versus Current Test Procedure for Electrical Connectors and Sockets*.
- 6) A de-rating curve, usually 20%, is calculated.
- 7) Calculated de-rated currents at three temperature points are reported:
 - a) Ambient
 - b) 60° C
 - c) 80° 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, *TR803.tst*, ensures accurate stability for data acquisition.

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.

- 1) PROCEDURE:
 - a) Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.



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- b) Test Conditions:
 - i) Between Adjacent Contacts
 - ii) Mated or Unmated
 - iii) Mounted or Unmounted
 - iv) Rate of Application 500 V/Sec
 - v) 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).

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
 - ii) Mated or Unmated
 - iii) Mounted or Unmounted
 - iv) Electrification Time 2.0 minutes
 - v) Test Voltage (VDC) corresponding to calibration settings for measuring resistances
- 2) MEASUREMENTS:
 - a) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.



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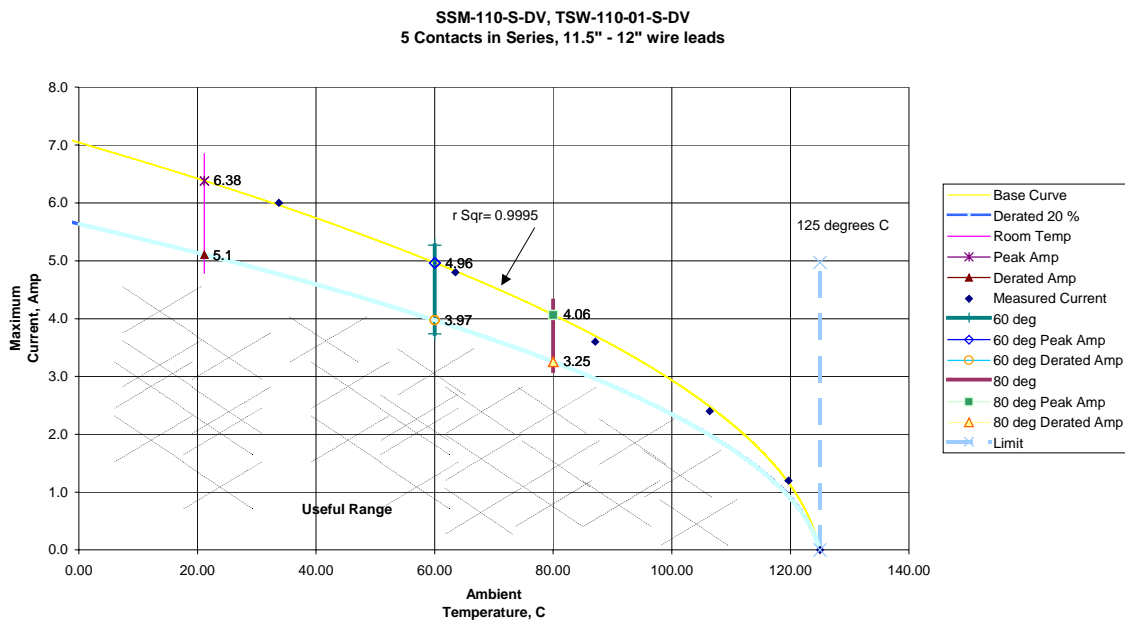
TEST PROCEDURES / RESULTS

TEMPERATURE RISE:

- 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 degree (computer controlled data acquisition).
- 4) Five (5) contacts were energized.

The thermocouple was sandwiched between the two mating parts to achieve maximum temperature. The third position of five energized contacts was chosen as the location. The equipment test was run in the constant current mode.

Interconnecting jumper wires that allowed six contacts to be energized were of same cross sectional area and material as the contacts they connected. The small solder tail on the sockets prevent effective heat sinking of the lead-in wire (16 AWG) and will self-heat under high current. These facts contribute to increasing the socket temperature, thus lowering the CCC in this part (see parallel test TC0121-027C-0435).





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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.

1) PROCEDURE:

- a) Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
- b) Test Conditions:
 - i) Between Adjacent Contacts
 - ii) Mated
 - iii) Unmounted
 - iv) Rate of Application 500 V/Sec
 - v) 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).

	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
Initial	2100	1575	525
After Thermal	1900	1425	475
After Humidity	2500	1875	625



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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
 - ii) Mated
 - iii) Unmounted
 - iv) Electrification Time 2.0 minutes
 - v) Test Voltage (VDC) corresponding to calibration settings for measuring resistances

2) MEASUREMENTS:

- a) When the specified test voltage is applied (500 VDC), the insulation resistance shall not be less than 5000 megohms

3) RESULTS:

	Insulation Resistance megohms	Actual megohms
Initial	exceeded 5,000	over 100,000
After Thermal	exceeded 5,000	over 100,000
After Humidity	exceeded 5,000	over 50,000



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EQUIPMENT AND CALIBRATION SCHEDULES

Description: Temperature/Humidity Chart Recorder

Manufacturer: Dickson

Model: THDX

Serial #: 00120351

Accuracy: Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%), +/- 3% RH (61 - 95%).

... Last Cal: 6/15/01, Next Cal: 6/15/02

Description: System Power Supply

Manufacturer: Hewlett Packard

Model: HP 6033A

Serial #: (HP) 3329A-07330

Accuracy: See Manual

... Last Cal: 6/14/01, Next Cal: 6/14/02

Description: Multimeter /Data Acquisition System

Manufacturer: Keithley

Model: 2700

Serial #: 0780546

Accuracy: See Manual

... Last Cal: 6/14/01, Next Cal: 6/14/02

Description: Hipot Megommeter

Manufacturer: Hipotronics

Model: H306B-A

Serial #: M9905004

Accuracy: 2 % Full Scale Accuracy

... Last Cal: 6/14/01, Next Cal: 6/14/02

Description: Cascade Tek Forced Air Oven

Manufacturer: Cascade Tek

Model: TFO-5

Serial #: 0500100

Accuracy: Temp. Stability: +/- .1C/C change in ambient

... Last Cal: 6/14/01, Next Cal: 6/14/02



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Description: Temperature/Humidity Chamber

Manufacturer: Thermotron

Model: SE-1000-6-6

Serial #: 0500100

Accuracy: see manual

... Last Cal: 3/27/01, Next Cal: 3/27/02

Description: Temperature/Humidity Chamber

Manufacturer: Thermotron

Model: SM-8-7800

Serial #: 30676

Accuracy: see manual

... Last Cal: 6/14/01, Next Cal: 6/30/02

Description: Digital Thermometer

Manufacturer: Barnant 90

Model: 600-2840

Serial #: 621994

Accuracy: .25% reading +/- 1.0 degree Celsius

... Last Cal: 6/25/01, Next Cal: 6/25/02