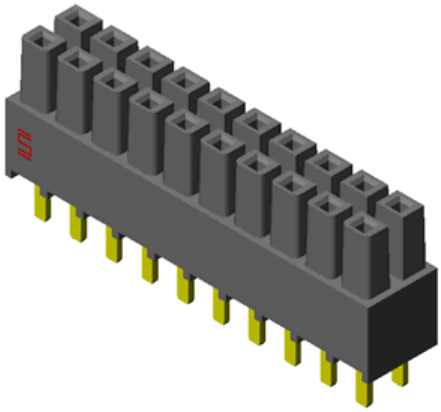
Project Number: na	Tracking Code: TC0430--0491		
Requested by: Mark Shireman	Date: 7/22/2004	Product Rev: na	
Part #: IPS1-125-01-S-D	Lot #: na	Tech: Troy Cook	Eng: John Tozier
Part description: Isolated Power Socket			Qty to test: 10
Test Start: 07/30/2004	Test Completed: 8/26/2004		



IR / DWV with Environmental Stressing

PART DESCRIPTION

IPS1-125-01-S-D

Mated with IPT1-125-01-S-D

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to IS0 10012-l and ANSI/NCSL 2540-1, as applicable.

SCOPE

To perform the following tests: IR / DWV with environmental stressing.

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.

FLOWCHARTS

TEST STEP	GROUP A1 Ambient	GROUP B1 Ambient	GROUP B2 Thermal	GROUP B3 Humidity
01	IR	DWV/Working Voltage	Thermal	Humidity
02	Data Review		DWV/Working Voltage	DWV/Working Voltage
03	Thermal			
04	IR			
05	Data Review			
06	Humidity			
07	IR			

Thermal Aging = EIA-364-17, Test Condition
Time Condition 4, 105 deg C;'B' (250 hours)
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

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

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) Connectors are mated and pre-conditioned at ambient.

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) Connectors are mated and pre-conditioned at ambient.

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.

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. Rate of Application 500 V/Sec
        iii. 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).

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

RESULTS

Insulation Resistance minimums, IR

- **Initial**
  - **Mated ---------- 25,000 Meg Ω ---------- Pass**
  - **Unmated**
    - **IPS1 ---------- 15,000 Meg Ω**
    - **IPT1 ---------- 15,000 Meg Ω**
- **Thermal**
  - **Mated ---------- 50,000 Meg Ω**
  - **Unmated**
    - **IPS1 ---------- 50,000 Meg Ω**
    - **IPT1 ---------- 25,000 Meg Ω**
- **Humidity**
  - **Mated ---------- 25,000 Meg Ω**
  - **Unmated**
    - **IPS1 ---------- 15,000 Meg Ω**
    - **IPT1 ---------- 25,000 Meg Ω**

Dielectric Withstanding Voltage minimums, DWV

- **Initial**
  - **Breakdown**
    - **Mated ---------- 3100 VAC**
  - **Unmated**
    - **IPS1 ---------- 3100 VAC**
    - **IPT1 ---------- 3800 VAC**
  - **DWV**
    - **Mated ---------- 2325 VAC**
  - **Unmated**
    - **IPS1 ---------- 2325 VAC**
    - **IPT1 ---------- 2850 VAC**
  - **Working voltage**
    - **Mated ----------775 VAC**
  - **Unmated**
    - **IPS1 ----------775 VAC**
    - **IPT1 ----------950 VAC**
- **Thermal**
  - **Breakdown**
    - **Mated ---------- 3200 VAC**
  - **Unmated**
    - **IPS1 ---------- 3200 VAC**
    - **IPT1 ---------- 3700 VAC**
  - **DWV**
    - **Mated ---------- 2400 VAC**
  - **Unmated**
    - **IPS1 ---------- 2400 VAC**
    - **IPT1 ---------- 2775 VAC**
  - **Working voltage**
    - **Mated ----------800 VAC**
  - **Unmated**
    - **IPS1 ----------800 VAC**
    - **IPT1 ----------925 VAC**
- **Humidity**
  - **Breakdown**
    - **Mated ---------- 2800 VAC**

- **Unmated**
  - **IPS1 ---------- 3500 VAC**
  - **IPT1 ---------- 3900 VAC**
- **DWV**
  - **Mated ---------- 2100 VAC**
- **Unmated**
  - **IPS1 ---------- 1875 VAC**
  - **IPT1 ---------- 2925 VAC**
- **Working voltage**
  - **Mated ----------700 VAC**
- **Unmated**
  - **IPS1 ----------625 VAC**
  - **IPT1 ----------975 VAC**

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA SUMMARIES

INSULATION RESISTANCE (IR):

Electrification Time ***Two (2) minutes***

	Initial, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
	Insulation Resistance	Insulation Resistance	Insulation Resistance
Average	25000	21667	21667
Min	25000	15000	15000
Max	25000	25000	25000

Electrification Time ***Two (2) minutes***

	Thermal, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
	Insulation Resistance	Insulation Resistance	Insulation Resistance
Average	66667	50000	41667
Min	50000	50000	25000
Max	100000	50000	50000

Electrification Time ***Two (2) minutes***

	Humidity, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
	Insulation Resistance	Insulation Resistance	Insulation Resistance
Average	25000	21667	25000
Min	25000	15000	25000
Max	25000	25000	25000

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA SUMMARIES Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

	Voltage Rate *500 VAC Per Sec.*								
	Test Voltage *Until Breakdown Occurs*								
				IPS1			IPT1		
	Initial, VAC Mated			Initial, VAC Unmated			Initial, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	3180	2385	795	3160	2370	790	3960	2970	990
Min	3100	2325	775	3100	2325	775	3800	2850	950
Max	3300	2475	825	3200	2400	800	4100	3075	1025

	Voltage Rate *500 VAC Per Sec.*								
	Test Voltage *Until Breakdown Occurs*								
				IPS1			IPT1		
	Thermal, VAC Mated			Thermal, VAC Unmated			Thermal, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	3320	2490	830	3280	2460	820	4000	3000	1000
Min	3200	2400	800	3200	2400	800	3700	2775	925
Max	3400	2550	850	3500	2625	875	4400	3300	1100

	Voltage Rate *500 VAC Per Sec.*								
	Test Voltage *Until Breakdown Occurs*								
				IPS1			IPT1		
	Humidity, VAC Mated			Humidity, VAC Unmated			Humidity, VAC Unmated		
	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage	Breakdown Voltage	DWV	Working Voltage
Average	3167	2375	792	2733	2050	683	4000	3000	1000
Min	2800	2100	700	2500	1875	625	3900	2925	975
Max	3500	2625	875	2900	2175	725	4100	3075	1025

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA

INSULATION RESISTANCE (IR):

Test Date:	7/30/2004
Operator:	Troy Cook
Temperature (C):	23
Humidity (RH):	58%
Equipment ID:	HPM-01

Electrification Time ***Two (2) minutes***

	Initial, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
Sample #	Insulation Resistance	Insulation Resistance	Insulation Resistance
1	25000	25000	15000
2	25000	25000	25000
3	25000	15000	25000

Test Date:	8/10/2004
Operator:	Troy Cook
Temperature (C):	24
Humidity (RH):	55%
Equipment ID:	HPM-01

Electrification Time ***Two (2) minutes***

	Thermal, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
Sample #	Insulation Resistance	Insulation Resistance	Insulation Resistance
1	100000	50000	50000
2	50000	50000	50000
3	50000	50000	25000

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA Continued

INSULATION RESISTANCE (IR):

Test Date:	8/26/2004
Operator:	Troy Cook
Temperature (C):	23
Humidity (RH):	55%
Equipment ID:	HPM-01

Electrification Time ***Two (2) minutes***

	Humidity, Meg Ohms		
		IPS1	IPT1
	Mated	Unmated	Unmated
Sample #	**Insulation Resistance**	**Insulation Resistance**	**Insulation Resistance**
1	25000	15000	25000
2	25000	25000	25000
3	25000	25000	25000

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Test Date:	7/30/2004
Operator:	Troy Cook
Temperature (C):	23
Humidity (RH):	58%
Equipment ID:	HPM-01
Contact Part #:	N/A
Used In:	IPS1/IPT1

	Voltage Rate ***500 VAC Per Sec.***								
	Test Voltage ***Until Breakdown Occurs***								
				IPS1			**IPT1**		
	Initial, VAC Mated			**Initial, VAC Unmated**			**Initial, VAC Unmated**		
Sample #	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**
1	3200	2400	800	3100	2325	775	3900	2925	975
2	3200	2400	800	3200	2400	800	3800	2850	950
3	3100	2325	775	3100	2325	775	4100	3075	1025
4	3300	2475	825	3200	2400	800	4100	3075	1025
5	3100	2325	775	3200	2400	800	3900	2925	975

Test Date:	8/10/2004
Operator:	Troy Cook
Temperature (C):	24
Humidity (RH):	54%
Equipment ID:	HPM-01
Contact Part #:	N/A
Used In:	IPS1/IPT1

	Voltage Rate ***500 VAC Per Sec.***								
	Test Voltage ***Until Breakdown Occurs***								
				IPS1			**IPT1**		
	Thermal, VAC Mated			**Thermal, VAC Unmated**			**Thermal, VAC Unmated**		
Sample #	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**
1	3200	2400	800	3300	2475	825	4200	3150	1050
2	3300	2475	825	3500	2625	875	4400	3300	1100
3	3300	2475	825	3200	2400	800	3700	2775	925
4	3400	2550	850	3200	2400	800	4000	3000	1000
5	3400	2550	850	3200	2400	800	3700	2775	925

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

DATA Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Test Date:	8/16/2004
Operator:	Troy Cook
Temperature (C):	23
Humidity (RH):	41%
Equipment ID:	HPM-01
Contact Part #:	N/A
Used In:	IPS1/IPT1

Test Conditions	**YES**	**NO**
Adjacent Contacts	X	
Mated	X	X
PC Mounted		X

	Voltage Rate *500 VAC Per Sec.*								
	Test Voltage *Until Breakdown Occurs*								
				IPS1			**IPT1**		
	Humidity, VAC Mated			**Humidity, VAC Unmated**			**Humidity, VAC Unmated**		
Sample #	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**	**Breakdown Voltage**	**DWV**	**Working Voltage**
1	3200	2400	800	2500	1875	625	4000	3000	1000
2	3500	2625	875	2900	2175	725	4100	3075	1025
3	2800	2100	700	2800	2100	700	3900	2925	975

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: THL-02
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: 6/02/04, Next Cal: 6/02/05

Equipment #: PS-01
Description: System Power Supply
Manufacturer: Hewlett Packard
Model: HP 6033A
Serial #: (HP) 3329A-07330
Accuracy: See Manual
… Last Cal: 6/12/03, Next Cal: 6/12/04

Equipment #: MO-02
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0780546
Accuracy: See Manual
… Last Cal: 6/12/03, Next Cal: 6/12/04

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 6/12/03, Next Cal: 6/12/04

Equipment #: TC090601-103/105
Description: IC Thermocouple-103/105
Manufacturer: Samtec
Serial #: TC090601-103/105
Accuracy: +/- 1 degree C

Equipment #: HPM-01
Description: Hipot Megommeter
Manufacturer: Hipotronics
Model: H306B-A
Serial #: M9905004
Accuracy: 2 % Full Scale Accuracy
… Last Cal: 6/12/03, Next Cal: 6/12/04

Tracking Code: TC0430--0491	Part #: IPS1-125-01-S-D
Part description: Isolated Power Socket	

Equipment #: OV-03
Description: Cascade Tek Forced Air Oven
Manufacturer: Cascade Tek
Model: TFO-5
Serial #: 0500100
Accuracy: Temp. Stability: +/-.1C/C change in ambient Temp. Stability: +/-.1C/C change in ambient
… Last Cal: 6/20/03, Next Cal: 6/30/04

Equipment #: THC-01
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 4/22/2004, Next Cal: 5/22/2005