



Project Number: 027C		Tracking Code: 0120-027C-0433	
Requested by: WILL OUYANG		Date: 5/16/2001	Product Rev: F/B respectively
Part #: QTH-060-01-F-D-A, QSH-060-01-F-D-A		Lot #: 05/16/01	Tech: T. Cook Eng: J.Tozier
Part description: 0.5mm DOUBLE ROW HIGH SPEED CONNECTORS			Qty to test: 4
Test Start: 5/16/01	Test Completed: 5/23/01		

CERTIFICATION

This is to certify that the evaluation described herein was designed and executed by Samtec, under the independent auditing and/or supervision of D-Scope-Tech, Inc.

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NC SL 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

If Possible

TEST STEP	GROUP 2 Boards	GROUP 2 Boards 6 Contacts in series Std Pin-out	GROUP 2 Boards 2 Contacts in series Ground Plane	GROUP 2 Boards 2 Contacts in series Diff-Pair
01	IR	Std Temp Rise Test	Std Temp Rise Test	Std Temp Rise Test
02	DWV			



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ATTRIBUTE DEFINITION

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

TEMPERATURE RISE:

When current passes through a contact, the temperature of the contact increases as a result of I^2R (resistive) heating.

1. EIA-364-70, *Temperature Rise versus Current Test Procedure for Electrical Connectors and Sockets*.
2. A de-rating curve, usually 20%, is calculated.
3. The de-rated current at three temperature points are recorded:
 - A. Ambient
 - B. 60° C
 - C. 80° C
4. Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
5. A computer program, *TR605.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.

PROCEDURE:

1. Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
2. Test Conditions:
 - a. Between Adjacent Contacts
 - b. Mated or Unmated
 - c. Mounted or Unmounted
 - d. Rate of Application 500 V/Sec
 - e. Test Voltage (VAC) until breakdown occurs

MEASUREMENTS/CALCULATIONS

1. The breakdown voltage shall be measured and recorded.
2. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
3. 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.



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PROCEDURE:

1. Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors.*
2. Test Conditions:
 - f. Between Adjacent Contacts
 - g. Mated or Unmated
 - h. Mounted or Unmounted
 - i. Electrification Time 2.0 minutes
 - j. Test Voltage (VDC) corresponding to calibration settings for measuring resistances.

MEASUREMENTS/CALCULATIONS

1. 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

INSULATION RESISTANCE (IR)

PROCEDURE:

1. The test was performed in accordance with EIA 364, TP21.
2. Test Conditions:

- | | | |
|------------------------------|---|-------------------|
| a) Between Adjacent Contacts | : | Yes |
| b) Mated Condition | : | Mated and Unmated |
| c) Mounting Condition | : | Mounted |
| d) Electrification Time | : | 2.0 Minutes |

REQUIREMENTS:

1. When the specified test voltage is applied (VAC), the insulation resistance shall not be less than 5000 megohms.

RESULTS:

- | | |
|--|------------------------|
| 1. Sample#1 (QSH Only/Contacts): | Passed. > 10K megohms. |
| 2. Sample#2 (QSH-QTH mated/Contacts): | Passed. > 10K megohms. |
| 3. Sample#3 (QSH Only/Ground Plane): | Passed. > 10K megohms. |
| 4. Sample#4 QSH-QTH mated/Ground Plane): | Passed. > 10K megohms. |

DIELECTRICWITHSTANDING VOLTAGE (DWV)

PROCEDURE:

1. Test Conditions:

a. Between Adjacent Contacts	:	Yes
b. Mated Condition	:	Mated and Unmated
c. Mounting Condition	:	Mounted
d. Rate of Application	:	500 Volts/Sec.
e. Test Voltage (VAC)	:	Until breakdown occurs



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	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
a) Sample#1 (QSH Only/Contacts):	1,040	780	260
b) Sample#2 (QSH Only/Ground Planes)	2,800	2,100	700
c) Sample#3 (QSH-QTH mated Contacts only)	500	375	125
d) Sample#4 (QSH-QTH mated Ground planes only)	3,000	2,250	750

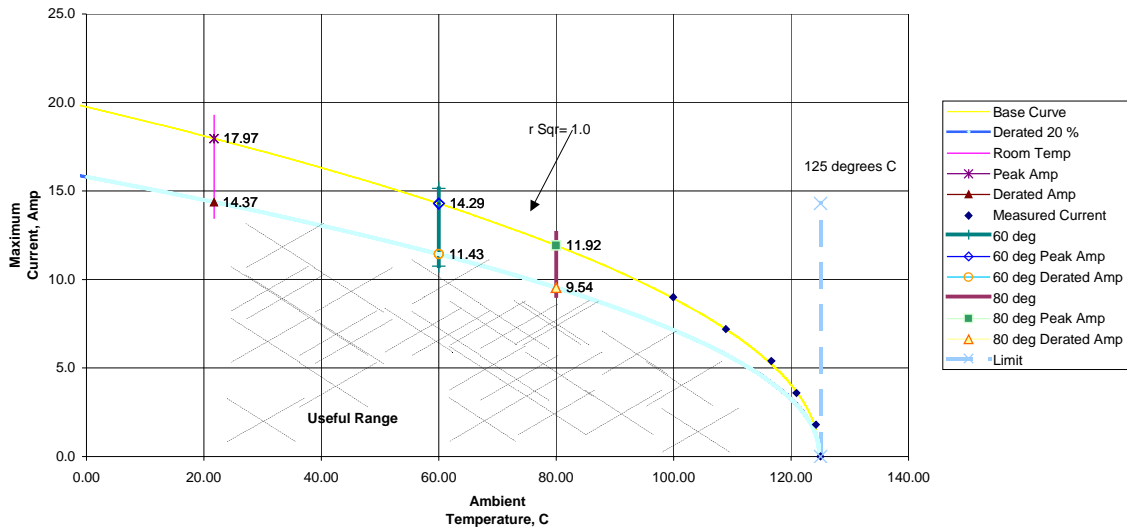


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TEMPERATURE RISE

1. High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
2. Temperature readings reported are those for which three successive readings, 15 minutes apart, differ less than 1 degree (computer controlled data acquisition).
3. Ground Plane (GP) and Contacts were run as two separate tests.

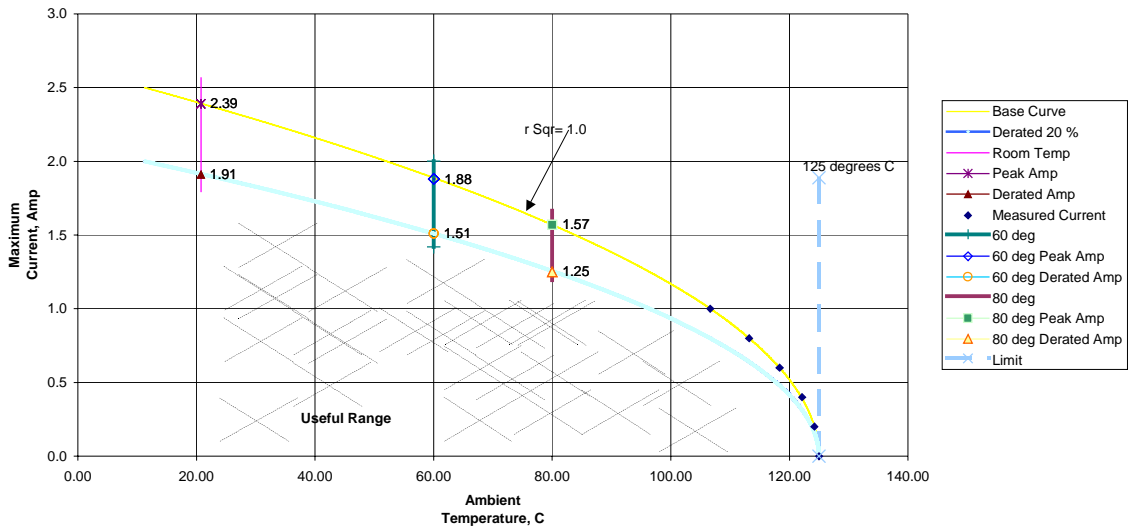
TC0120-027C-0433
QTH-060-01-F-D-A
2 Bank Ground Plane Contacts in Parallel





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TC0120-027C-0433
QTH-060-01-F-D-A
6 Contacts in Series





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EQUIPMENT AND CALIBRATION SCHEDULES

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

Description: System Power Supply

Manufacturer: Hewlett Packard

Model: HP 6033A

Serial #: (HP) 3329A-07330

Accuracy: See Manual

... Last Cal: 6/14/2001, Next Cal: 6/14/02

Description: Multimeter /Data Acquisition System

Manufacturer: Keithley

Model: 2700

Serial #: 0780546

Accuracy: See Manual

... Last Cal: 6/14/2001, Next Cal: 6/14/02

Description: Hipot Megommeter

Manufacturer: Hipotronics

Model: H306B-A

Serial #: M9905004

Accuracy: 2 % Full Scale Accuracy

... Last Cal: 6/14/2001, Next Cal: 6/14/02