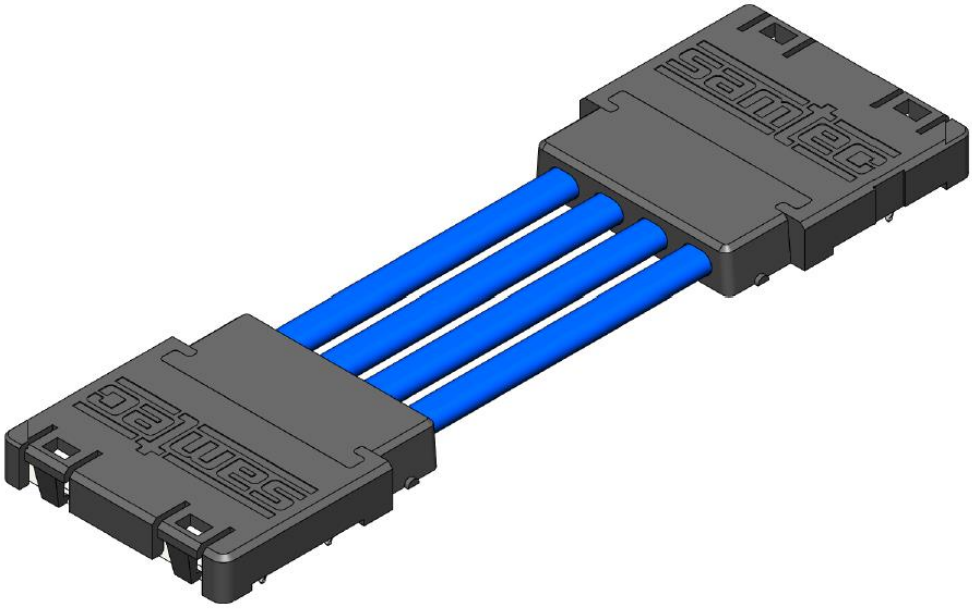
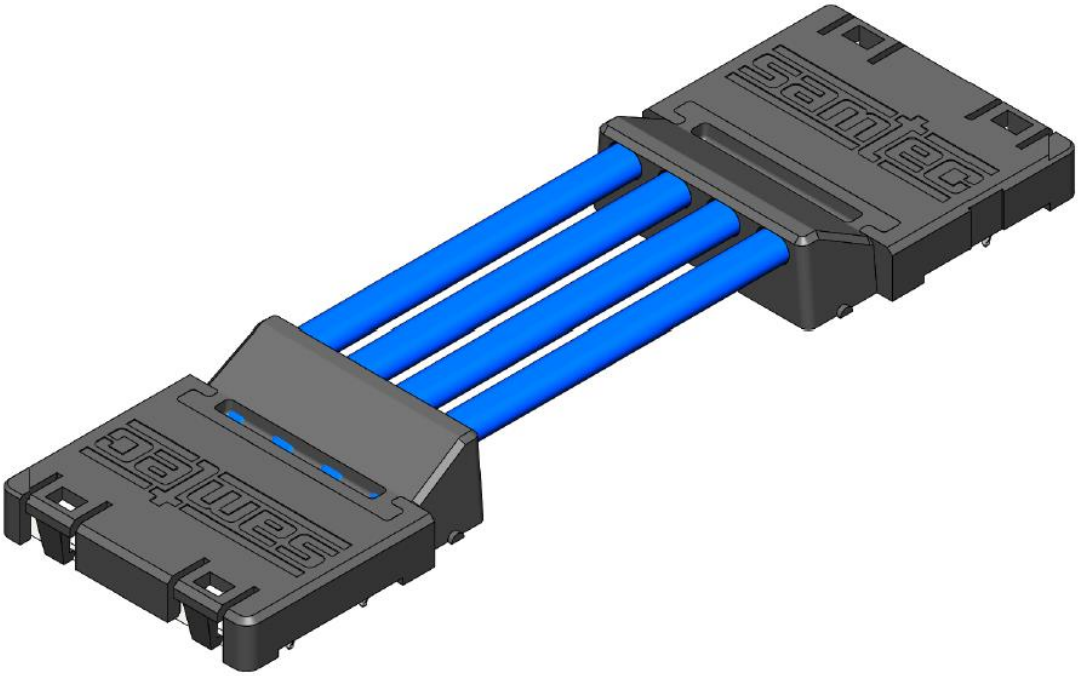
Series: DCH 2.00 mm (.0787”) High-Speed Press-Fit Twinax Cable Assembly

DCH, Straight Strain Relief Series



DCH, Thirty Degree Strain Relief Series



See www.samtec.com for more information.

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Series: DCH 2.00 mm (.0787") High-Speed Press-Fit Twinax Cable Assembly

1.0 SCOPE

1.1 This specification covers performance, testing and quality requirements for Samtec DCH Series 2.00 mm (.0787") High-Speed Press-Fit Twinax Cable Assembly.

2.0 DETAILED INFORMATION

2.1 Product prints, footprints, catalog pages, test reports and other specific, detailed information can be found at http://www.samtec.com/?DCH.

3.0 TESTING

3.1 **Current Rating:** 3.0 A (1 pin powered per row); 10.7 A (Ground – 1 bank powered)

3.2 **Voltage Rating:** 230 VAC

3.3 **Operating Temperature Range:** -25°C to +105°C

3.4 **Operating Humidity Range:** up to 95% (Per EIA-364-31)

3.5 **Electrical:**

ITEM	TEST CONDITION	REQUIREMENT
Withstanding Voltage	EIA-364-20 (No Flashover, Sparkover, or Breakdown)	695 VAC
Insulation Resistance	EIA-364-21 (1000 MΩ minimum)	5,000 mΩ
Contact Resistance (LLCR)	EIA-364-23	Δ 1 mΩ maximum (Samtec defined)/ No damage

3.6 **Mechanical:**

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Random Vibration	EIA-364-28 Condition V, Letter B 7.56 G 'RMS', 50 to 2000 Hz, 2 hours per axis, 3 axis total , PSD 0.04	Visual Inspection: No Damage LLCR: Δ 1 mΩ maximum	PASS
Mechanical Shock	EIA-364-27 100 G, 6 milliseconds, sawtooth wave, 11.3 fps, 3 shocks/direction, 3 axis (18 total shocks)	Visual Inspection: No Damage LLCR: Δ 1 mΩ maximum	PASS

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3.7 Environmental:

ITEM	TEST CONDITION	REQUIREMENT	STATUS
Thermal Shock	EIA-364-32 Thermal Cycles: 100 (30 minute dwell) Hot Temp: 85°C Cold Temp: -55°C Hot/Cold Transition: Immediate	Visual Inspection: No Damage LLCR: Δ 1 mΩ DWV: 695 VAC IR: >45,000 MΩ	PASS
Thermal Aging (Temp Life)	EIA-364-17 Test Condition 4 @ 105°C Condition B for 250 hours	Visual Inspection: No Damage LLCR: Δ 1 mΩ DWV: 695 VAC IR: >45,000 MΩ	PASS
Cyclic Humidity	EIA-364-31 Test Temp: 25°C to 65°C Relative Humidity: 90 to 95% Test Duration: 240 hours	Visual Inspection: No Damage LLCR: Δ 1 mΩ DWV: 695 VAC IR: >45,000 MΩ	PASS
Gas Tight	EIA-364-36 Gas Exposure: Nitric Acid Vapor Duration: 60 min. Drying Temp.: 50°C +/- 3°C Measurements: Within 1 hour of Exposure	LLCR: Δ 1 mΩ	PASS

4.0 HIGH SPEED PERFORMANCE

4.1 Channel Simulation - Channel Performance Metric (CPM)

56 Gbps PAM-4

Note: CPM is a channel simulation based approach to understanding connector performance. For further information on CPM please visit Introducing Channel Performance.

CPM is simulated using a Samtec specific channel. Connector performance may improve based on specific applications. Please email SIG Frontline SIGFrontline@samtec.com to determine performance in your system.

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4.2 Empirical Testing – Based on 7dB insertion loss

Assembly	Frequency @ 7dB IL
DCH 0.25m length, -4 wiring	27.5 GHz

Note: The cable assembly bandwidth is based on -7dB insertion loss point of the mated cable assembly. The -7dB point can be used to estimate usable system bandwidth in a typical two-level signaling environment.

4.3 System Impedance: 100 Ohm for differential pair

5.0 APPLICATION PROCEDURE

5.1 Connector Insertion Tooling

The DCH cable assembly is intended to be applied utilizing a "flat rock" insert tools.

If a connector's ground tails are longer than the thickness of the printed circuit board that the connector is being applied to (ground tail length specification is 1.60 ± 0.15mm) a special bottom support tool will be necessary. This tool could be a PCB with oversized holes or a custom tool designed by the user.

5.2 PCB specifications

PCB geometry and materials to comply with appropriate connector footprint drawing.

There is no maximum PCB thickness but the footprint PTH details must be held for the depth at which the compliant pin will be inserted.

PCBs less than 1mm are not recommended for mechanical reasons, there may additional SI limiting factors
Any PCB PTH may be used up to three insertions.

Connectors are only good for one insertion.

5.3 Recommended Insertion Press Settings

DCH cable assemblies have a maximum insertion force of 12 Newton per press-fit terminal.

For all connector types except for the EBDM-RA, SAMTEC recommends using a 75 degree force gradient press profile to ensure that the connectors are fully seated, while at the same time are not damaged by over pressing the connectors onto the board. A typical 75 degree press profile would look like figure 1 below. The recommended insertion rate is 0.050"/sec or lower for the entire time the ram is in contact with the connector press tool.

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Note: SAMTEC RECOMMENDS THAT ONLY ONE CONNECTOR ASSEMBLY BE INSERTED AT A TIME. If more than one connector is inserted at the same time then extra care must be taken to ensure that the push surface of the tool is parallel to the component surface of the board.

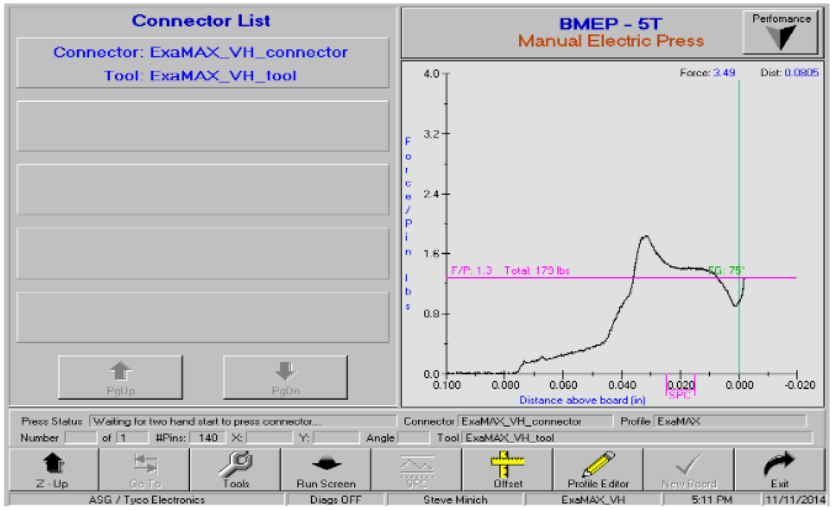

Figure 1: Example of 75 Degree Force Gradient Press Profile

5.4 Board Insertion Procedure for DCH cable assembly

- Begin by holding the cable assembly at a slight angle so that the tips of the outside column press fit tails, left or right, can be inserted into either the first or last column of via holes on the PCB. See figure 2.

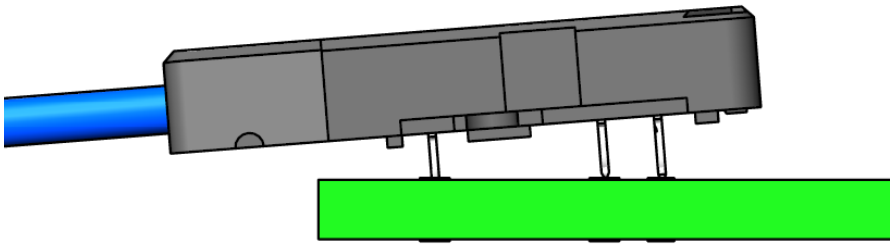

Figure 2: Right Column EONs Being Aligned With PCB Vias

- Once the end column EON tips have been inserted, rotate the cable assembly towards the board to insert the rest of the EON tips into their corresponding vias. The top surface of the cable assembly should be parallel with the top surface of PCB after all of the tips have been properly inserted. Refer to figure 3.

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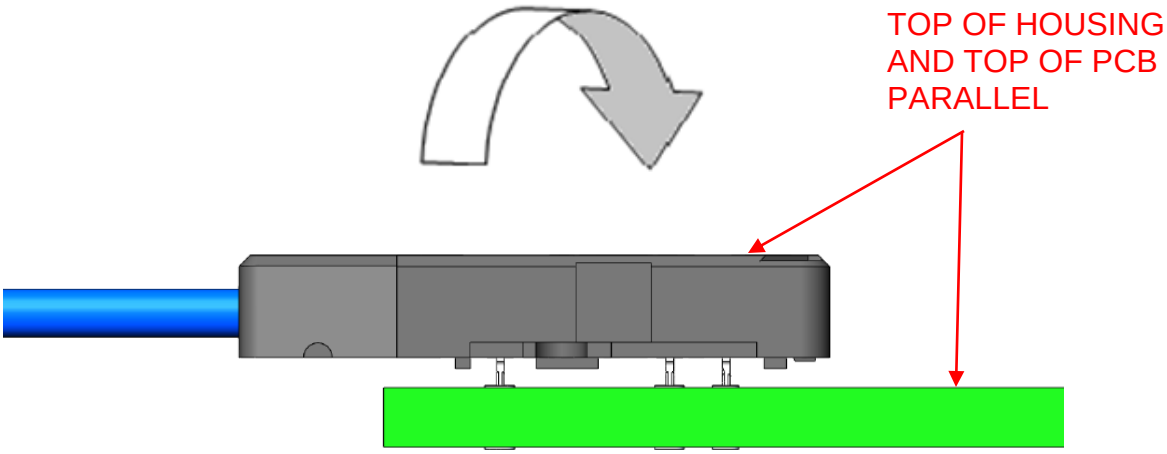

Figure 3: Cable Assembly Rotated Parallel to Top of PCB and EONs Aligned

- Using a flat rock surface (or Samtec press tool CAT-PT-DCH-08) and an insertion press, apply force to the flat area of cable assembly as shown in figure 4.

75 degree Force Gradient (12 N MAX per pin)

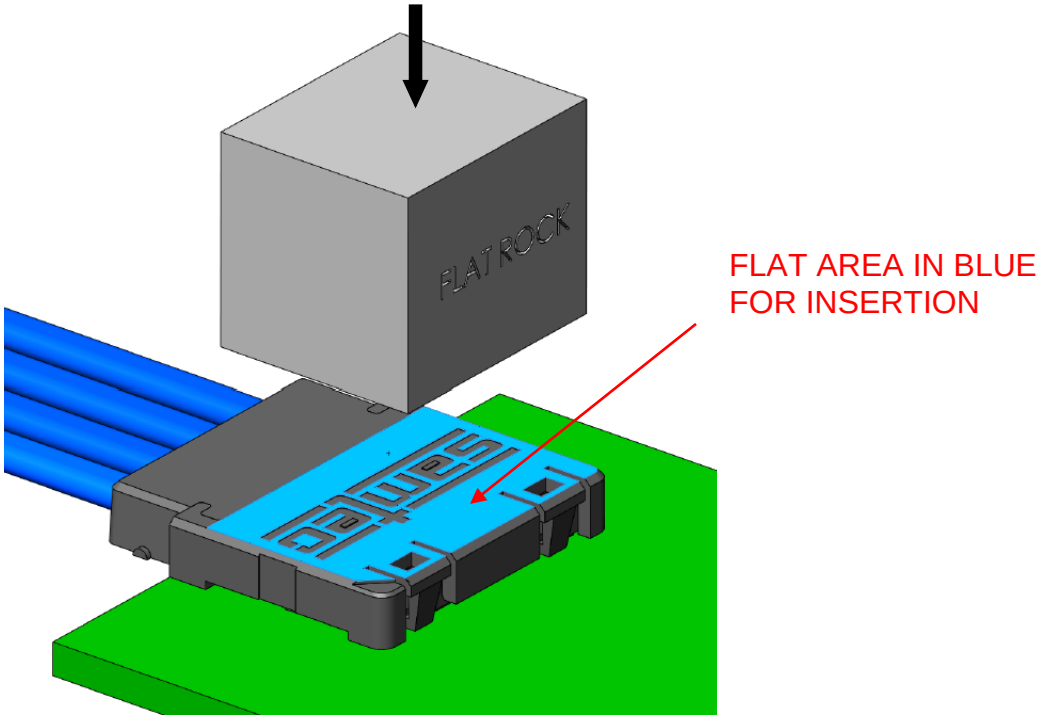

Figure 4: Flat Rock Tool Application to Seat Cable Assembly

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5.5 The post-application inspection should consist of several simple checks to assure that the connector is applied properly and is not damaged.

- Visually assure that all press-fit tails are seated in the proper PCB holes and that none have been crushed during application.
- Visually check that the standoffs on the bottom of each assembly are seated flush and parallel with the PCB surface (see Figure X). Once fully seated, there may be some minor gaps (<0.1 mm) due to component tolerances.

6.0 ADDITIONAL RESOURCES

6.1 For additional mechanical testing or product information, contact our Customer Engineering Support Group at **CES@samtec.com**

6.2 For additional information on high speed performance testing, contact our Signal Integrity Group at **SIG@samtec.com**

6.3 For additional processing information, contact our Interconnect Processing Group at **IPG@samtec.com.**

6.4 For RoHS, REACH or other environmental compliance information, contact our Product Environmental Compliance Group at **PEC@samtec.com**

USE OF PRODUCT SPECIFICATION SHEET

This Product Specification Sheet ("PSS") is a brief summary of information related to the Product identified. As a summary, it should only be used for the limited purpose of considering the purchase/use of Product. For specific, detailed information, including but not limited to testing and Product footprint, refer to Section 2.0 of this document and the links there provided to test reports and prints. This PSS is the property of Samtec, Inc. ("Samtec") and contains proprietary information of Samtec, our various licensors, or both. Samtec does not grant express or implied rights or license under any patent, copyright, trademark or other proprietary rights and the use of the PSS for building, reverse engineering or replication is strictly prohibited. By using the PSS, the user agrees to not infringe, directly or indirectly, upon any intellectual property rights of Samtec and acknowledges that Samtec, our various licensors, or both own all intellectual property therein. The PSS is presented "AS IS". While Samtec makes every effort to present excellent information, the PSS is only provided as a guideline and does not, therefore, warrant it is without error or defect or that the PSS contains all necessary and/or relevant information about the Product. The user agrees that all access and use of the PSS is at its own risk. **NO WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY KIND WHATSOEVER ARE PROVIDED.**