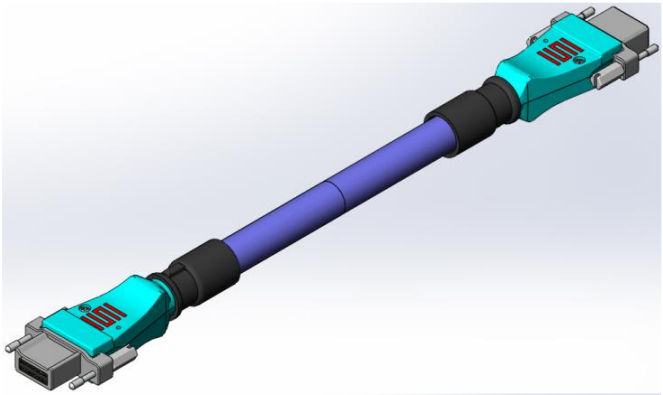
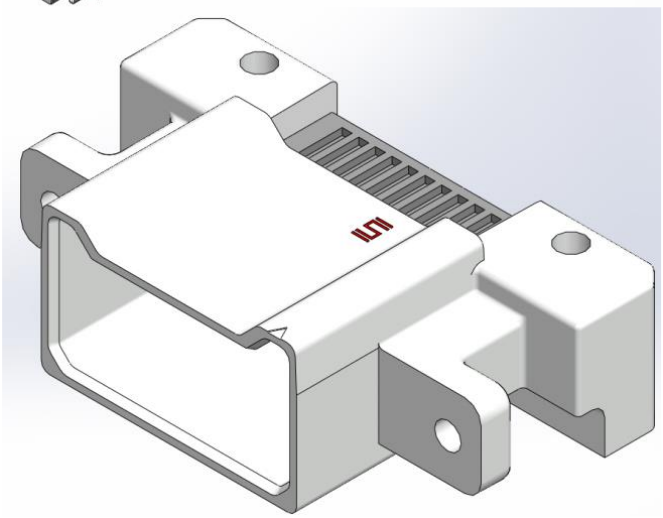
Project Number: Design Qualification Test Report	Tracking Code: CR-1076001_Report_Rev_1
Requested by: Emmanuel Davis	Date: 5/21/2024
Part #: B1SDT-**1**0-28-H-12.0-E1/P1M-**1**0-01-S-D-RA	
Part description: B1SDT/P1M	Tech: Richard Ison, Daniel Haydon
Test Start: 4/10/2024	Test Completed: 4/22/2024





DESIGN QUALIFICATION TEST REPORT

B1SDT/P1M
B1SDT-10-28-H-12.0-E1/P1M-30-01-S-D-RA

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
5/21/2024	**1**	**Initial test**	**KH**

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.

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SCOPE

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

APPLICABLE DOCUMENTS

Standards: EIA Publication 364, VITA 47.1

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 DWV/IR testing were cleaned according to CO-SC-WI-3029.
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 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) Samtec Test PCBs used: PCB-112865-TST-XX, PCB-112866-TST-XX, PCB-112867-TST-XX, PCB-112883-TST-XX.

FLOWCHARTS

Mating/Unmating/Basic

Group 1 B1SDT-10-28-H-12.0-E1 P1M-10-01-S-D-RA 8 Assemblies Double Ended 10 Pos		Group 2 B1SDT-30-28-H-12.0-E1 P1M-30-01-S-D-RA 8 Assemblies Doubled Ended 30 Pos	
Step	**Description**	**Step**	**Description**
1.	Contact Gaps	1.	Contact Gaps
2.	Mating/Unmating Force (1)	2.	Mating/Unmating Force (1)
3.	Cycles Quantity = 25 Cycles	3.	Cycles Quantity = 25 Cycles
4.	Mating/Unmating Force (1)	4.	Mating/Unmating Force (1)
5.	Cycles Quantity = 25 Cycles	5.	Cycles Quantity = 25 Cycles
6.	Mating/Unmating Force (1)	6.	Mating/Unmating Force (1)
7.	Cycles Quantity = 25 Cycles	7.	Cycles Quantity = 25 Cycles
8.	Mating/Unmating Force (1)	8.	Mating/Unmating Force (1)
9.	Cycles Quantity = 25 Cycles	9.	Cycles Quantity = 25 Cycles
10.	Mating/Unmating Force (1)	10.	Mating/Unmating Force (1)

(1) Mating/Unmating Force = EIA-364-13

FLOWCHARTS Continued

Mechanical Shock/Random Vibration/LLCR

Group 1	Group 2	Group 3	Group 4
B1SDT-10-28-H-12.0-E1	B1SDT-30-28-H-12.0-E1	B1SDT-10-28-H-12.0-E1	B1SDT-30-28-H-12.0-E1
P1M-10-02-S-D-RA	P1M-30-02-S-D-RA	P1M-10-01-S-D-RA	P1M-30-01-S-D-RA
8 Assemblies	8 Assemblies	8 Assemblies	8 Assemblies
VITA 47.1	VITA 47.1	VITA 47.1	VITA 47.1

Step	Description
1.	LLCR (1)
2.	Mechanical Shock (2) - Non Standard
3.	Random Vibration (3) - Non Standard *Note: 1) 5 Hz to 100 Hz, PSD increasing at 3dB/octave 2) 100 Hz to 1000 Hz 0.10 g^2/Hz 3) 1000 Hz to 2000 HzPSD decreasing at 3dB/octave*
4.	LLCR (1) Max Delta = 15 mOhm

(The same steps apply to each of Groups 1–4.)

(1) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

(2) Mechanical Shock = Other
40G, 11 milliseconds, Half Sine Number of Shocks = 3 Per Direction, Per Axis, 18 Total Operating Shock Class OS2

(3) Random Vibration = Other
12 G 'RMS', 5Hz to 2000Hz, 1 Hours/Axis Vibration Class V3 VITA 47.1

Mechanical Shock/Random Vibration/Event Detection

Group 1	Group 2	Group 3	Group 4
B1SDT-10-28-H-12.0-E1	B1SDT-30-28-H-12.0-E1	B1SDT-10-28-H-12.0-E1	B1SDT-30-28-H-12.0-E1
P1M-10-02-S-D-RA	P1M-30-02-S-D-RA	P1M-10-01-S-D-RA	P1M-30-01-S-D-RA
8 Assemblies	8 Assemblies	8 Assemblies	8 Assemblies
VITA 47.1	VITA 47.1	VITA 47.1	VITA 47.1

Step	Description
1.	Nanosecond Event Detection (Mechanical Shock) (1) - Non Standard
2.	Nanosecond Event Detection (Random Vibration) (2) - Non Standard

(The same steps apply to each of Groups 1–4.)

(1) Nanosecond Event Detection (Mechanical Shock) = Other
Use EIA-364-87 for Nanosecond Event Detection:
Test Condition = F (50 nanoseconds at 10 ohms)
40G, 11 milliseconds, Half Sine

(2) Nanosecond Event Detection (Random Vibration) = Other
Use EIA-364-87 for Nanosecond Event Detection:
Test Condition = F (50 nanoseconds at 10 ohms)
Random Vibration: 12 G 'RMS', 5Hz to 2000Hz, 1 Hours/Axis, Vibration Class V3 VITA 47.1

FLOWCHARTS Continued

Cable Pull

Group 1 B1SDT-10-28-H-12.0-E1 P1M-10-01-S-D-RA 5 Assemblies 90 Degrees - Lateral		Group 2 B1SDT-10-28-H-12.0-E1 P1M-10-01-S-D-RA 5 Assemblies 0 Degrees		Group 3 B1SDT-30-28-H-12.0-E1 P1M-30-01-S-D-RA 5 Assemblies 90 Degrees - Lateral		Group 4 B1SDT-30-28-H-12.0-E1 P1M-30-01-S-D-RA 5 Assemblies 0 Degrees	
Step	**Description**	**Step**	**Description**	**Step**	**Description**	**Step**	**Description**
1.	Cable Pull (1)	1.	Cable Pull (1)	1.	Cable Pull (1)	1.	Cable Pull (1)

(1) Cable Pull = EIA-364-38
Measure and Record Force Required to Failure
Failure = Discontinuity >1 microsecond at 10 ohms

Cable Flex

Group 1 B1SDT-10-28-H-12.0-E1 P1M-10-01-S-D-RA 8 Assemblies Circular Cable		Group 2 B1SDT-30-28-H-12.0-E1 P1M-30-01-S-D-RA 8 Assemblies Circular Cable	
Step	**Description**	**Step**	**Description**
1.	IR (3)	1.	IR (3)
2.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*	2.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*
3.	Cable Flex (1)	3.	Cable Flex (1)
4.	Visual Inspection	4.	Visual Inspection
5.	IR (3)	5.	IR (3)
6.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*	6.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*
7.	Rotate Cable 90°	7.	Rotate Cable 90°
8.	Cable Flex (1)	8.	Cable Flex (1)
9.	Visual Inspection	9.	Visual Inspection
10.	IR (3)	10.	IR (3)
11.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*	11.	DWV at Test Voltage (2) *Note: Test Voltage = 600 VAC*

(1) Cable Flex = EIA-364-41
Circular Jacket Cable - to be tested 90° each direction (180° total)
Flat Cable - to be tested 70° each direction (140° total)
Monitor continuity during flex testing
Failure = Discontinuity >1 microsecond at 10 ohms

(2) DWV at Test Voltage = EIA-364-20
Test Condition = 1 (Sea Level)
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds

(3) IR = EIA-364-21
Test Condition = 500 Vdc, 2 Minutes Max

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

MECHANICAL SHOCK (Specified Pulse):

1) Reference document: Other, *Mechanical Shock Test Procedure for Electrical Connectors*
2) Test Condition: OS2
3) Peak Value: 40 G
4) Duration: 11 Milliseconds
5) Wave Form: Half Sine
6) Velocity: 12.3 ft/s
7) Number of Shocks: 3 Per Direction, Per Axis, 18 Total

VIBRATION:

1) Reference document: VITA 47.1, *Vibration Test Procedure for Electrical Connectors*
2) Test Condition V3
3) Power Spectral Density: 0.10 G^2 / Hz
4) G 'RMS': 12
5) Frequency: 5 to 2000 Hz
6) Duration: 1.0 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

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.

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. <= +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 +1000 mOhms: ----------Unstable
    f. >+1000 mOhms:----------Open Failure

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

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 1000 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. 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).

ATTRIBUTE DEFINITIONS Continued

The following is a brief, simplified description of attributes.

CABLE PULL:

1) Secure cable near center and pull-on connector.
    a. At 0°, in-line with cable
    b. At 90°, in-line with cable

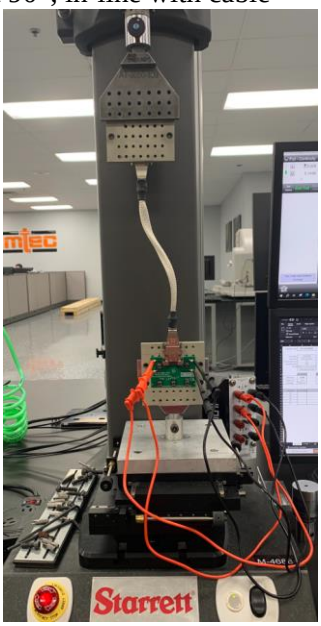

Fig. 1
0° Connector pull.

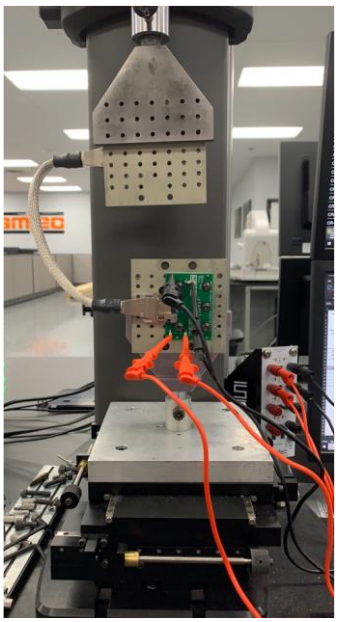

Fig. 2
90° Connector pull.

CABLE Flex:

1) Oscillate and monitor electrical continuity for open circuit indication.
    a. ± 90°Flex Mode, bend up to 200 cycles. load on 12 oz.

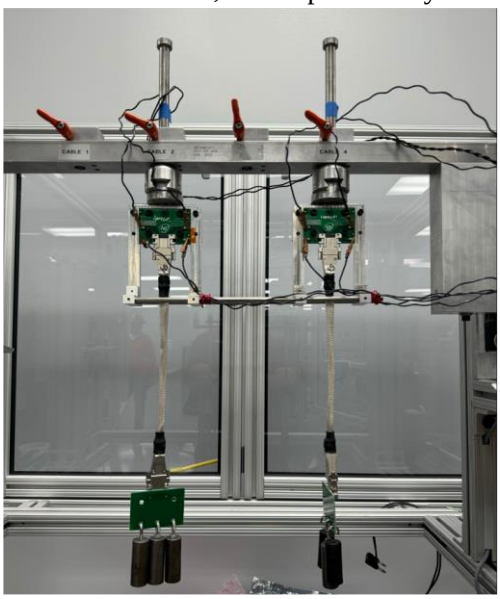

Fig. 3
(Standard setup)

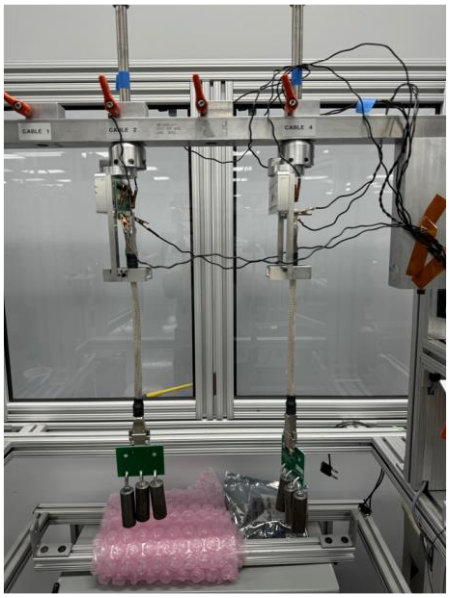

Fig. 4
(Transverse setup)

RESULTS

Mating – Unmating Forces

Mating/Unmating Basic (B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA)

- **Initial**
  - **Mating**
    - **Min ---------- 2.79 lbs**
    - **Max---------- 5.51 lbs**
  - **Unmating**
    - **Min ---------- 2.39 lbs**
    - **Max---------- 4.87 lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 2.97 lbs**
    - **Max---------- 6.55 lbs**
  - **Unmating**
    - **Min ---------- 2.48 lbs**
    - **Max---------- 5.09 lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 3.19 lbs**
    - **Max---------- 7.13 lbs**
  - **Unmating**
    - **Min ---------- 2.59 lbs**
    - **Max---------- 5.54 lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 3.39 lbs**
    - **Max---------- 7.06 lbs**
  - **Unmating**
    - **Min ---------- 2.68 lbs**
    - **Max---------- 6.01 lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 3.56 lbs**
    - **Max---------- 7.40 lbs**
  - **Unmating**
    - **Min ---------- 2.74 lbs**
    - **Max---------- 6.67 lbs**

RESULTS Continued

Mating/Unmating Basic (B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA)

- **Initial**
  - **Mating**
    - **Min ---------- 9.04 lbs**
    - **Max----------10.28 lbs**
  - **Unmating**
    - **Min ---------- 8.15 lbs**
    - **Max----------10.19 lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 9.40 lbs**
    - **Max----------11.34 lbs**
  - **Unmating**
    - **Min ---------- 8.08 lbs**
    - **Max---------- 9.59 lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ----------10.03 lbs**
    - **Max----------12.23 lbs**
  - **Unmating**
    - **Min ---------- 8.44 lbs**
    - **Max----------10.23 lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ----------10.32 lbs**
    - **Max----------12.76 lbs**
  - **Unmating**
    - **Min ---------- 8.99 lbs**
    - **Max----------10.92 lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ----------10.74 lbs**
    - **Max----------13.15 lbs**
  - **Unmating**
    - **Min ---------- 9.32 lbs**
    - **Max----------11.65 lbs**

RESULTS Continued

Cable Pull force:

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

- **0° Pull**
  - **Min----------34.60 lbs**
  - **Max ----------44.47 lbs**
- **90° Pull-Lateral**
  - **Min----------18.51 lbs**
  - **Max ----------22.08 lbs**
- **90° Pull-Vertical**
  - **Min----------22.42 lbs**
  - **Max ----------26.03 lbs**

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

- **0° Pull**
  - **Min----------42.85 lbs**
  - **Max ----------65.63 lbs**
- **90° Pull-Lateral**
  - **Min----------47.22 lbs**
  - **Max ----------51.93 lbs**
- **90° Pull-Vertical**
  - **Min----------44.92 lbs**
  - **Max ----------58.03 lbs**

RESULTS Continued

Cable Flex:

Insulation Resistance minimums, IR

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 100 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Rotate Cable 90˚

- **After 200 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 100 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Rotate Cable 90˚

- **After 200 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

Pin to Pin

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 100 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Rotate Cable 90˚

- **After 200 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Row to Row

- **Initial**
  - **Mated----------45000 Meg Ω ---------- Passed**
- **After 100 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

Rotate Cable 90˚

- **After 200 flex cycles**
  - **Mated----------45000 Meg Ω ---------- Passed**

RESULTS Continued

Dielectric Withstanding Voltage minimums, DWV

- **Test Voltage ----------600 VAC**

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

Pin to Pin

- **Initial DWV ----------Passed**
- **After 100 Flex cycles DWV ----------Passed**

Rotate Cable 90˚

- **After 200 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 100 Flex cycles DWV ----------Passed**

Rotate Cable 90˚

- **After 200 Flex cycles DWV ----------Passed**

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

Pin to Pin

- **Initial DWV ----------Passed**
- **After 100 Flex cycles DWV ----------Passed**

Rotate Cable 90˚

- **After 200 Flex cycles DWV ----------Passed**

Row to Row

- **Initial DWV ----------Passed**
- **After 100 Flex cycles DWV ----------Passed**

Rotate Cable 90˚

- **After 200 Flex cycles DWV ----------Passed**

RESULTS Continued

LLCR Shock & Vibration (128 LLCR test points)

Group1: B1SDT-10-28-H-12.0-E1/ P1M-10-02-S-D-RA

- **Initial ---------- 71.44 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------128 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Mechanical Shock & Random Vibration:

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

LLCR Shock & Vibration (192 LLCR test points)

Group2: B1SDT-30-28-H-12.0-E1/ P1M-30-02-S-D-RA

- **Initial ---------- 73.81 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------192 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Mechanical Shock & Random Vibration:

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

RESULTS Continued

LLCR Shock & Vibration (128 LLCR test points)

Group3: B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

- **Initial ---------- 71.98 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------128 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Mechanical Shock & Random Vibration:

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

LLCR Shock & Vibration (192 LLCR test points)

Group4: B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

- **Initial ---------- 72.92 mOhms Max**
- **Shock &Vibration**
  - **<= +5.0 mOhms----------191 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 +1000 mOhms----------0 Points ---------- Unstable**
  - **>+1000 mOhms----------0 Points ---------- Open Failure**

Mechanical Shock & Random Vibration:

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

DATA SUMMARIES

MATING/UNMATING:

Mating/Unmating Basic Group1(B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA)

	Initial				25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	12.41	2.79	10.63	2.39	13.21	2.97	11.03	2.48
Maximum	24.51	5.51	21.66	4.87	29.13	6.55	22.64	5.09
Average	18.49	**4.16**	15.80	**3.55**	20.63	**4.64**	16.14	**3.63**
St Dev	5.62	1.26	4.78	1.07	7.05	1.58	4.99	1.12
Count	8	8	8	8	8	8	8	8

	50 Cycles				75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	14.19	3.19	11.52	2.59	15.08	3.39	11.92	2.68
Maximum	31.71	7.13	24.64	5.54	31.40	7.06	26.73	6.01
Average	22.21	**4.99**	17.34	**3.90**	23.02	**5.18**	18.47	**4.15**
St Dev	7.83	1.76	5.80	1.30	7.71	1.73	6.55	1.47
Count	8	8	8	8	8	8	8	8

	100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	15.83	3.56	12.19	2.74
Maximum	32.92	7.40	29.67	6.67
Average	23.76	**5.34**	19.71	**4.43**
St Dev	8.08	1.82	7.45	1.67
Count	8	8	8	8

DATA SUMMARIES Continued

Mating/Unmating Basic Group2 (B1SDT-30-28-H-12.0-E1/P1M-30-01-S-D-RA)

	Initial				25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	40.21	9.04	36.25	8.15	41.81	9.40	35.94	8.08
Maximum	45.73	10.28	45.33	10.19	50.44	11.34	42.66	9.59
Average	42.97	**9.66**	40.75	**9.16**	45.93	**10.33**	38.93	**8.75**
St Dev	2.23	0.50	3.40	0.76	2.76	0.62	2.09	0.47
Count	8	8	8	8	8	8	8	8

	50 Cycles				75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	44.61	10.03	37.54	8.44	45.90	10.32	39.99	8.99
Maximum	54.40	12.23	45.50	10.23	56.76	12.76	48.57	10.92
Average	49.16	**11.05**	41.24	**9.27**	51.37	**11.55**	43.65	**9.81**
St Dev	2.97	0.67	2.51	0.56	3.20	0.72	2.82	0.63
Count	8	8	8	8	8	8	8	8

	100 Cycles			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	47.77	10.74	41.46	9.32
Maximum	58.49	13.15	51.82	11.65
Average	53.25	**11.97**	46.00	**10.34**
St Dev	3.18	0.72	3.27	0.74
Count	8	8	8	8

DATA SUMMARIES Continued

Cable Pull Force:

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

0° Pull

	Force (lbs)
Minimum	**34.60**
Maximum	44.47
Average	39.02

90° Pull-Lateral

	Force (lbs)
Minimum	**18.51**
Maximum	22.08
Average	19.81

90° Pull-Vertical

	Force (lbs)
Minimum	**22.42**
Maximum	26.03
Average	24.80

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

0° Pull

	Force (lbs)
Minimum	**42.85**
Maximum	65.63
Average	56.19

90° Pull-Lateral

	Force (lbs)
Minimum	**47.22**
Maximum	51.93
Average	49.45

90° Pull-Vertical

	Force (lbs)
Minimum	**44.92**
Maximum	58.03
Average	50.82

DATA SUMMARIES Continued

Cable Flex:

Insulation Resistance minimums, IR

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

Pin to Pin	
Mated	
Minimum	
Initial	45000
After Standard Flex 100 Cycles	45000
After Transverse Flex 200 Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After Standard Flex 100 Cycles	45000
After Transverse Flex 200 Cycles	45000

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

Pin to Pin	
Mated	
Minimum	
Initial	45000
After Standard Flex 100 Cycles	45000
After Transverse Flex 200 Cycles	45000

Row to Row	
Mated	
Minimum	
Initial	45000
After Standard Flex 100 Cycles	45000
After Transverse Flex 200 Cycles	45000

DATA SUMMARIES Continued

Dielectric Withstanding Voltage minimums, DWV

Voltage Rating Summary	
Minimum	**B1SDT/P1M**
Test Voltage	600

B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

Pin to Pin	
Initial Test Voltage	Passed
After Standard Flex 100 Cycles	Passed
After Transverse Flex 200 Cycles	Passed

Row to Row	
Initial Test Voltage	Passed
After Standard Flex 100 Cycles	Passed
After Transverse Flex 200 Cycles	Passed

B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

Pin to Pin	
Initial Test Voltage	Passed
After Standard Flex 100 Cycles	Passed
After Transverse Flex 200 Cycles	Passed

Row to Row	
Initial Test Voltage	Passed
After Standard Flex 100 Cycles	Passed
After Transverse Flex 200 Cycles	Passed

DATA SUMMARIES Continued

LLCR Shock &Vibration:

1). A total of 128 points were measured.
2). EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.*
3). 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 +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

Group1:B1SDT-10-28-H-12.0-E1/ P1M-10-02-S-D-RA

	LLCR Measurement Summaries by Pin Type			
Date	2024/4/10	2024/4/17		
Room Temp (Deg C)	22	23		
Rel Humidity (%)	51	51		
Technician	Daniel Haydon	Daniel Haydon		
mOhm values	Actual **Initial**	**Delta** **Shock-Vib**		
	Pin Type: Signal 1			
Average	69.26	0.29		
St. Dev.	0.96	0.22		
Min	67.34	0		
Max	71.44	1.23		
Summary Count	128	128		
Total Count	128	128		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**128**	**0**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
Test Condition	(F) 40G, 11 milliseconds, Half Sine
Shock Events	0
Test Condition	(F) V-B, 12 G RMS, 5HZ - 2000HZ
Vibration Events	0
Total Events	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) 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 +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

Group2:B1SDT-30-28-H-12.0-E1/ P1M-30-02-S-D-RA

	LLCR Measurement Summaries by Pin Type	
Date	2024/4/18	2024/4/19
Room Temp (Deg C)	22	22
Rel Humidity (%)	43	42
Technician	Richard Ison	Richard Ison
mOhm values	Actual **Initial**	**Delta** **Shock-Vib**
	Pin Type: Signal 1	
Average	70.51	0.32
St. Dev.	1.33	0.26
Min	67.47	0
Max	73.81	1.32
Summary Count	192	192
Total Count	192	192

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**192**	**0**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
Test Condition	(F) 40G, 11 milliseconds, Half Sine
Shock Events	0
Test Condition	(F) V-B, 12 G RMS, 5HZ - 2000HZ
Vibration Events	0
Total Events	0

DATA SUMMARIES Continued

LLCR Shock &Vibration:

1) A total of 128 points were measured.
2) EIA-364-23, Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets.
3) 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 +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

Group3:B1SDT-10-28-H-12.0-E1/ P1M-10-01-S-D-RA

	LLCR Measurement Summaries by Pin Type			
Date	2024/4/10	2024/4/17		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	51	48		
Technician	Daniel Haydon	Daniel Haydon		
mOhm values	Actual **Initial**	**Delta** **Shock-Vib**		
	Pin Type: Signal 1			
Average	69.61	0.42		
St. Dev.	0.9	0.23		
Min	67.64	0.01		
Max	71.98	1.36		
Summary Count	128	128		
Total Count	128	128		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**128**	**0**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
Test Condition	(F) 40G, 11 milliseconds, Half Sine
Shock Events	0
Test Condition	(F) V-B, 12 G RMS, 5HZ - 2000HZ
Vibration Events	0
Total Events	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) 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 +1000 mOhms ----------Unstable
   f. >+1000 mOhms: ----------Open Failure

Group4:B1SDT-30-28-H-12.0-E1/ P1M-30-01-S-D-RA

	LLCR Measurement Summaries by Pin Type	
Date	2024/4/18	2024/4/22
Room Temp (Deg C)	22	22
Rel Humidity (%)	45	37
Technician	Richard Ison	Daniel Haydon
mOhm values	Actual **Initial**	**Delta** **Shock-Vib**
	Pin Type: Signal 1	
Average	69.62	0.53
St. Dev.	1.14	0.62
Min	66.67	0.02
Max	72.92	6.4
Summary Count	192	192
Total Count	192	192

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**191**	**1**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	60
Test Condition	(F) 40G, 11 milliseconds, Half Sine
Shock Events	0
Test Condition	(F) V-B, 12 G RMS, 5HZ - 2000HZ
Vibration Events	0
Total Events	0

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: TCT-04
Description: Dillon Quantrol TC21 25-1000 mm/min series test stand
Manufacturer: Dillon Quantrol
Model: TC2 I series test stand
Serial #: 04-1041-04
Accuracy: Speed Accuracy: +/- 5% of indicated speed; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 05/29/2023, Next Cal: 05/29/2024

Equipment #: MO-11
Description: Switch/Multimeter
Manufacturer: Keithley
Model: 3706
Serial #: 120169
Accuracy: See Manual
… Last Cal: 09/11/2023, Next Cal: 09/11/2024

Equipment #: HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 019808
Accuracy:
… Last Cal: 05/15/2023, Next Cal: 05/15/2024

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 09/11/2023, Next Cal: 09/11/2024

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 04/22/2023, Next Cal: 04/22/2024

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/18/2023, Next Cal: 07/18/2024

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 10/31/2023, Next Cal: 10/31/2024