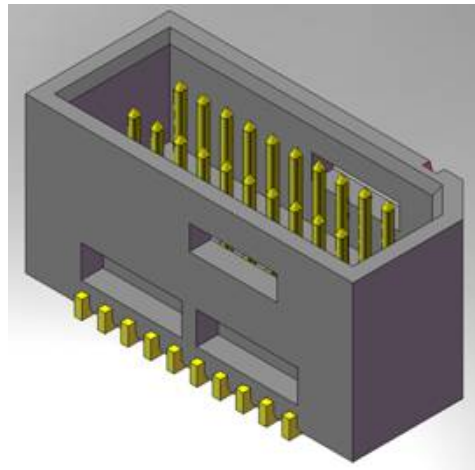
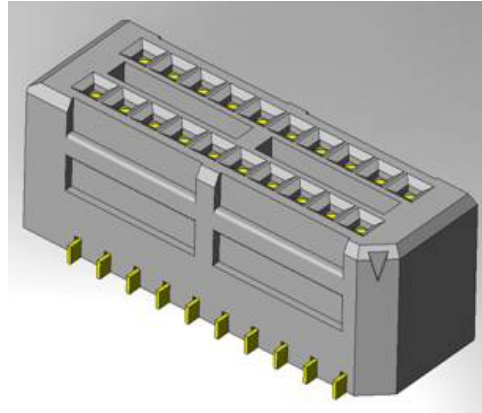




Project Number: Design Qualification Test Report		Tracking Code: 140409_Report_Rev_1	
Requested by: Tori Meek		Date: 5/17/2011	Product Rev: N/A
Part #: SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D		Lot #: N/A	Tech: Tony Wagoner Eng: Eric Mings
Part description: SEMS\TEMS			Qty to test: 24
Test Start: 4/25/2011	Test Completed: 4/25/2011		



DESIGN QUALIFICATION TEST REPORT

SEMS\TEMS

SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D

SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D

SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D

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

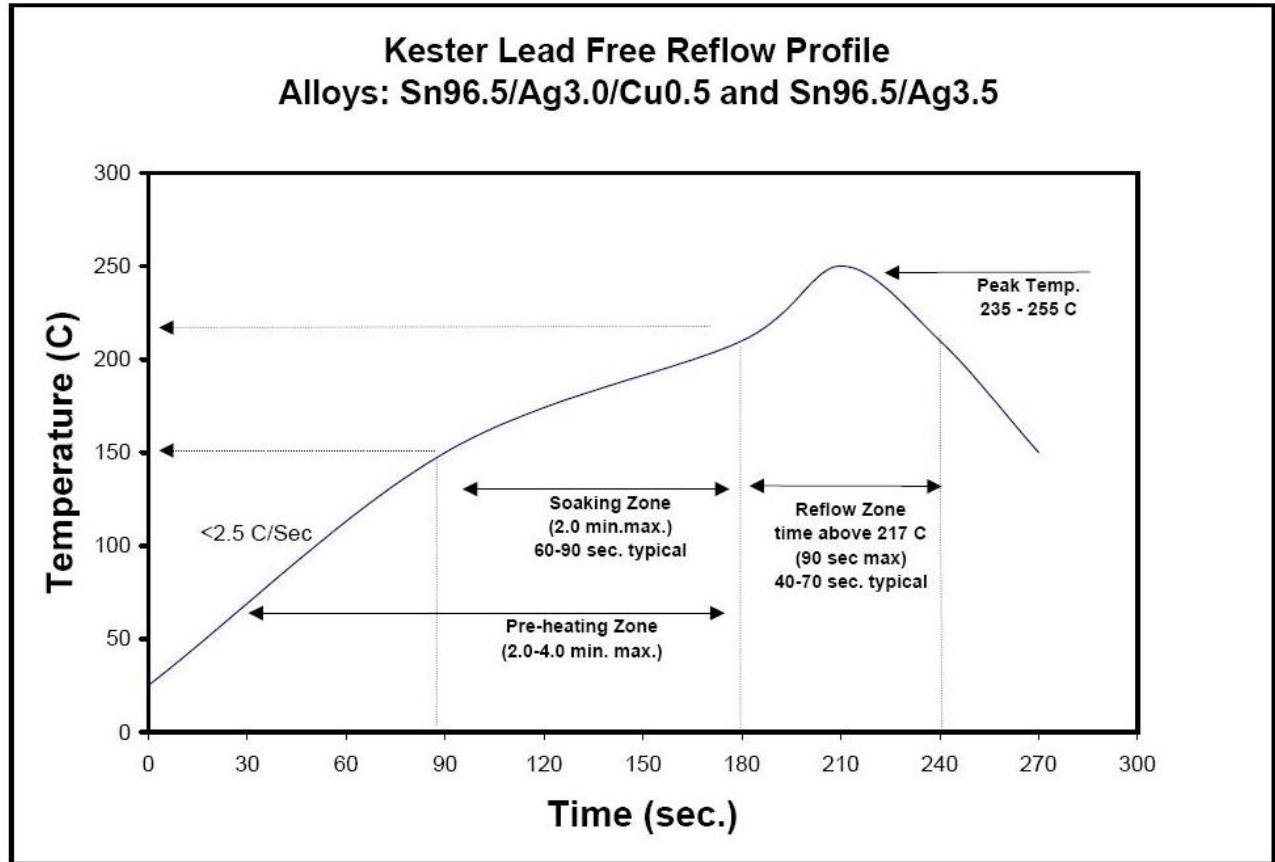
To perform the following tests: Design qualification test. Please see test plan.

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) Any additional preparation will be noted in the individual test sequences.
- 4) Solder Information: Lead Free
- 5) Re-Flow Time/Temp: See accompanying profile.

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)

FLOWCHARTS**Durability/Mating/Unmating/Gaps**

	140409	140410	140411
TEST	GROUP A1	GROUP A2	GROUP A2
	SEMS-105-02-03.0-H-D TEMS-105-02-03.0-H-D	SEMS-125-02-03.0-H-D TEMS-125-02-07.0-H-D	SEMS-150-02-03.0-H-D TEMS-150-02-07.0-H-D
STEP	8 Boards (smallest position submitted)	8 Boards (middle position submitted)	8 Boards (largest position submitted)
01	Forces - Mating / Unmating	Forces - Mating / Unmating	Forces - Mating / Unmating
02	25 Cycles	25 Cycles	25 Cycles
03	Forces - Mating / Unmating	Forces - Mating / Unmating	Forces - Mating / Unmating
04	25 Cycles (50 Total)	25 Cycles (50 Total)	25 Cycles (50 Total)
05	Forces - Mating / Unmating	Forces - Mating / Unmating	Forces - Mating / Unmating
06	25 Cycles (75 Total)	25 Cycles (75 Total)	25 Cycles (75 Total)
07	Forces - Mating / Unmating	Forces - Mating / Unmating	Forces - Mating / Unmating
08	25 Cycles (100 Total)	25 Cycles (100 Total)	25 Cycles (100 Total)
09	Forces - Mating / Unmating	Forces - Mating / Unmating	Forces - Mating / Unmating

Mating / Unmating Forces = EIA-364-13

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

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.

RESULTS**Mating – Unmating Forces****140409****SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D**

- **Initial**
 - **Mating**
 - **Min ----- 0.84 Lbs**
 - **Max----- 1.19 Lbs**
 - **Unmating**
 - **Min ----- 0.22 Lbs**
 - **Max----- 0.36 Lbs**
- **After 25 Cycles**
 - **Mating**
 - **Min ----- 0.74 Lbs**
 - **Max----- 1.20 Lbs**
 - **Unmating**
 - **Min ----- 0.21 Lbs**
 - **Max----- 0.38 Lbs**
- **After 50 Cycles**
 - **Mating**
 - **Min ----- 0.75 Lbs**
 - **Max----- 1.20 Lbs**
 - **Unmating**
 - **Min ----- 0.25 Lbs**
 - **Max----- 0.39 Lbs**
- **After 75 Cycles**
 - **Mating**
 - **Min ----- 0.79 Lbs**
 - **Max----- 1.22 Lbs**
 - **Unmating**
 - **Min ----- 0.26 Lbs**
 - **Max----- 0.41 Lbs**
- **After 100 Cycles**
 - **Mating**
 - **Min ----- 0.81 Lbs**
 - **Max----- 1.22 Lbs**
 - **Unmating**
 - **Min ----- 0.29 Lbs**
 - **Max----- 0.45 Lbs**

Mating – Unmating Forces**140410****SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D**

- **Initial**
 - **Mating**
 - **Min** ----- 3.05 Lbs
 - **Max** ----- 3.99Lbs
 - **Unmating**
 - **Min** ----- 0.92 Lbs
 - **Max** ----- 1.53 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min** ----- 3.54 Lbs
 - **Max** ----- 4.89 Lbs
 - **Unmating**
 - **Min** ----- 1.32 Lbs
 - **Max** ----- 2.07 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min** ----- 3.73 Lbs
 - **Max** ----- 4.93 Lbs
 - **Unmating**
 - **Min** ----- 1.47 Lbs
 - **Max** ----- 2.15 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min** ----- 3.78 Lbs
 - **Max** ----- 4.90 Lbs
 - **Unmating**
 - **Min** ----- 1.63 Lbs
 - **Max** ----- 2.42 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min** ----- 3.95 Lbs
 - **Max** ----- 5.11 Lbs
 - **Unmating**
 - **Min** ----- 1.82 Lbs
 - **Max** ----- 2.66 Lbs

Mating – Unmating Forces**140411****SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D**

- **Initial**
 - **Mating**
 - **Min** ----- 7.07 Lbs
 - **Max** ----- 7.67 Lbs
 - **Unmating**
 - **Min** ----- 0.87 Lbs
 - **Max** ----- 2.59 Lbs
- **After 25 Cycles**
 - **Mating**
 - **Min** ----- 7.64 Lbs
 - **Max** ----- 9.28 Lbs
 - **Unmating**
 - **Min** ----- 1.99 Lbs
 - **Max** ----- 3.91 Lbs
- **After 50 Cycles**
 - **Mating**
 - **Min** ----- 7.56 Lbs
 - **Max** ----- 9.57 Lbs
 - **Unmating**
 - **Min** ----- 2.25 Lbs
 - **Max** ----- 4.12 Lbs
- **After 75 Cycles**
 - **Mating**
 - **Min** ----- 7.70 Lbs
 - **Max** ----- 9.62 Lbs
 - **Unmating**
 - **Min** ----- 2.44 Lbs
 - **Max** ----- 4.60 Lbs
- **After 100 Cycles**
 - **Mating**
 - **Min** ----- 7.87 Lbs
 - **Max** ----- 9.80 Lbs
 - **Unmating**
 - **Min** ----- 2.63 Lbs
 - **Max** ----- 4.59 Lbs

DATA SUMMARIES**MATING/UNMATING:****140409****SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	3.74	0.84	0.97	0.22	3.30	0.74	0.93	0.21
Maximum	5.31	1.19	1.60	0.36	5.35	1.20	1.71	0.38
Average	4.42	0.99	1.20	0.27	4.09	0.92	1.22	0.27
St Dev	0.49	0.11	0.22	0.05	0.64	0.14	0.26	0.06
Count	8	8	8	8	8	8	8	8
	50 Cycles				75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	3.35	0.75	1.09	0.25	3.53	0.79	1.14	0.26
Maximum	5.33	1.20	1.73	0.39	5.43	1.22	1.83	0.41
Average	4.13	0.93	1.30	0.29	4.23	0.95	1.42	0.32
St Dev	0.62	0.14	0.22	0.05	0.58	0.13	0.21	0.05
Count	8	8	8	8	8	8	8	8
	100 Cycles							
	Mating		Unmating					
	Newton	Force (Lbs)	Newton	Force (Lbs)				
Minimum	3.61	0.81	1.27	0.29				
Maximum	5.40	1.22	2.01	0.45				
Average	4.29	0.96	1.58	0.36				
St Dev	0.57	0.13	0.23	0.05				
Count	8	8	8	8				

MATING/UNMATING:**140410****SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	13.56	3.05	4.07	0.92	15.73	3.54	5.88	1.32
Maximum	17.76	3.99	6.80	1.53	21.73	4.89	9.22	2.07
Average	15.88	3.57	5.16	1.16	19.43	4.37	7.24	1.63
St Dev	1.52	0.34	1.03	0.23	2.04	0.46	1.11	0.25
Count	8	8	8	8	8	8	8	8
	50 Cycles				75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)	Newton's	Force (Lbs)
Minimum	16.61	3.73	6.52	1.47	16.83	3.78	7.26	1.63
Maximum	21.92	4.93	9.56	2.15	21.77	4.90	10.76	2.42
Average	19.63	4.41	7.54	1.69	20.07	4.51	8.21	1.85
St Dev	1.87	0.42	0.98	0.22	1.66	0.37	1.14	0.26
Count	8	8	8	8	8	8	8	8
	100 Cycles							
	Mating		Unmating					
	Newton's	Force (Lbs)	Newton's	Force (Lbs)				
Minimum	17.55	3.95	8.09	1.82				
Maximum	22.73	5.11	11.83	2.66				
Average	20.71	4.66	9.06	2.04				
St Dev	1.70	0.38	1.23	0.28				
Count	8	8	8	8				

MATING/UNMATING:**140411****SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D**

	Initial				25 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	31.45	7.07	3.87	0.87	33.98	7.64	8.85	1.99
Maximum	34.12	7.67	11.52	2.59	41.28	9.28	17.39	3.91
Average	32.87	7.39	6.86	1.54	36.50	8.21	11.28	2.54
St Dev	0.91	0.20	2.21	0.50	2.15	0.48	2.68	0.60
Count	8	8	8	8	8	8	8	8
	50 Cycles				75 Cycles			
	Mating		Unmating		Mating		Unmating	
	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)	Newton	Force (Lbs)
Minimum	33.63	7.56	10.01	2.25	34.25	7.70	10.85	2.44
Maximum	42.57	9.57	18.33	4.12	42.79	9.62	20.46	4.60
Average	36.47	8.20	12.59	2.83	37.27	8.38	13.83	3.11
St Dev	2.68	0.60	2.46	0.55	2.53	0.57	2.85	0.64
Count	8	8	8	8	8	8	8	8
	100 Cycles							
	Mating		Unmating					
	Newton	Force (Lbs)	Newton	Force (Lbs)				
Minimum	35.01	7.87	11.70	2.63				
Maximum	43.59	9.80	20.42	4.59				
Average	38.16	8.58	14.78	3.32				
St Dev	2.55	0.57	2.57	0.58				
Count	8	8	8	8				

Part description: SEMS\TEMS

DATA**MATING/UNMATING:****140409****SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D**

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	1.01	0.25	0.97	0.23	0.95	0.25	0.96	0.26	0.98	0.29
2	0.97	0.22	0.90	0.22	0.92	0.25	0.95	0.30	0.96	0.34
3	1.03	0.24	0.94	0.26	0.95	0.28	0.94	0.33	0.95	0.33
4	0.93	0.24	0.91	0.26	0.93	0.28	0.93	0.30	0.94	0.34
5	1.07	0.24	0.95	0.21	0.97	0.25	1.00	0.29	1.04	0.34
6	1.19	0.29	1.20	0.31	1.20	0.31	1.22	0.32	1.22	0.35
7	0.89	0.32	0.75	0.32	0.76	0.33	0.81	0.36	0.82	0.41
8	0.84	0.36	0.74	0.38	0.75	0.39	0.79	0.41	0.81	0.45

140410**SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D**

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	3.23	1.53	4.12	2.07	4.15	2.15	4.47	2.42	4.57	2.66
2	3.73	1.08	4.63	1.67	4.77	1.70	4.82	1.97	4.95	2.13
3	3.05	1.13	3.54	1.32	3.73	1.55	3.78	1.70	3.95	1.89
4	3.75	1.13	4.72	1.60	4.59	1.68	4.71	1.78	4.87	1.91
5	3.37	0.95	4.09	1.50	4.10	1.48	4.26	1.64	4.37	1.83
6	3.99	1.06	4.76	1.60	4.93	1.74	4.90	1.78	5.11	1.97
7	3.49	0.92	4.21	1.38	4.23	1.47	4.37	1.63	4.52	1.82
8	3.95	1.50	4.89	1.88	4.80	1.80	4.80	1.86	4.91	2.09

140411**SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D**

Sample#	Initial		25 Cycles		50 Cycles		75 Cycles		100 Cycles	
	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	7.50	1.23	8.08	2.10	8.25	2.60	8.40	2.83	8.47	3.01
2	7.14	1.43	7.94	2.68	7.93	2.90	8.12	3.16	8.32	3.48
3	7.50	1.53	7.98	2.31	8.02	2.67	8.41	3.03	8.78	3.42
4	7.35	0.87	8.18	1.99	8.18	2.25	8.56	2.44	8.73	2.63
5	7.07	1.76	7.64	2.62	7.56	2.81	7.70	3.07	7.87	3.28
6	7.34	1.44	8.18	2.29	7.82	2.66	8.03	2.84	8.20	3.08
7	7.67	1.48	8.36	2.39	8.27	2.64	8.20	2.91	8.46	3.10
8	7.54	2.59	9.28	3.91	9.57	4.12	9.62	4.60	9.80	4.59

Tracking Code: 140409_Report_Rev_1

Part #: SEMS-105-02-03.0-H-D\TEMS-105-02-03.0-H-D
SEMS-125-02-03.0-H-D\TEMS-125-02-07.0-H-D
SEMS-150-02-03.0-H-D\TEMS-150-02-07.0-H-D

Part description: SEMS\TEMS

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: TCT-07

Description: Automated Test Stand

Manufacturer: Chatillon/Lloyd

Model: LF Plus

Serial #: LF1310

Accuracy: See Manual

... Last Cal: 07/15/2010, Next Cal: 07/15/2011