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DIELECTRIC LABORATORIES

UX Space Qualification

Date:	February 27, 2012
Report Number:	022712-01
QA Engineer:	Brian Nagle

Purpose

Dielectric Laboratories Inc. is expanding the capabilities of its High K X7R dielectric to determine if it is suitable for hi-reliability and appropriate for space applications. In order to determine this several lots have been submitted for electrical, mechanical and environmental stress testing.

The testing was run under the guidance of ETP 1616.

Part Number	Lot Number	Shop Floor
D25UX321M2MD	S9091.1501	173676
D25UX281M2MD	S9091.1301	173670
D25UX181M2MD	S9091.1701	173777
D25UX191M2MD	S9091.1601	173679
D25UX201M2MD	S9091.1101	173665
D25UX251M2MD	S9091.1201	173668
D25UX301M2MD	S9091.1401	173672

Electrical Test Methods

Capacitance	MIL-STD-202, Method 305
Dissipation Factor	
Insulation Resistance	MIL-STD-202, Method 302
Dielectric Withstanding Voltage	MIL-STD-202, Method 301

Mechanical Test Methods

Temperature Cycling	MIL-STD-883, Method 1010
Mechanical Shock	MIL-STD-883, Method 2002
Constant Acceleration	MIL-STD-883, Method 2001
Wire Bond Evaluation	MIL-STD-883, Method 2011
Ball Shear	ASTM F 1269
Die Shear	MIL-STD-883, Method 2019

Environmental Test Methods

Low Voltage Humidity	MIL-STD-202, Method 103
Life	MIL-STD-202, Method 108

D25UX321M2MD (S9091.1501)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	289.3pF
• Dissipation Factor	
○ Average	1.65%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	9.349g
• Ball Shear	ASTM F 1269
○ Average	67.23g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1813.0g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 295.18pF
  - Post Capacitance — 297.16pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 296.84pF
  - 1000-hour Capacitance — 292.33pF
  - 2000-hour Capacitance — 295.36pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.12%
  - Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.15 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	275.528	<2.5%	>1X10^3	>62.5VDC
2	288.513	<2.5%	>1X10^3	>62.5VDC
3	260.703	<2.5%	>1X10^3	>62.5VDC
4	308.649	<2.5%	>1X10^3	>62.5VDC
5	289.454	<2.5%	>1X10^3	>62.5VDC
6	307.445	<2.5%	>1X10^3	>62.5VDC
7	302.636	<2.5%	>1X10^3	>62.5VDC
8	296.519	<2.5%	>1X10^3	>62.5VDC
9	266.797	<2.5%	>1X10^3	>62.5VDC
10	296.750	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 256.000 pF to 384.000 pF

Test Group	Wire pull	Lot Number	S9091.1501
Operator	Karen Turner	DLI P/N	D25UX321M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	3.416 g
Minimum load	5.221 g	Upper spec limit	4.000 g
Maximum load	11.949 g	Cpk	-0.902
Mean	9.349 g		
StdDev	1.978 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	8	10.306 g	1.262 g
4	Failure in bond at substrate, pac	5	7.817 g	2.045 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	5.221 g	Pass	4	Failure in bond at sub	
2	8.354 g	Pass	4	Failure in bond at sub	
3	11.949 g	Pass	1	Wire break neckdowr	
4	10.807 g	Pass	1	Wire break neckdowr	
5	10.448 g	Pass	1	Wire break neckdowr	
6	6.431 g	Pass	4	Failure in bond at sub	
7	10.499 g	Pass	4	Failure in bond at sub	
8	11.514 g	Pass	1	Wire break neckdowr	
9	7.876 g	Pass	1	Wire break neckdowr	
10	9.540 g	Pass	1	Wire break neckdowr	
11	10.459 g	Pass	1	Wire break neckdowr	
12	9.855 g	Pass	1	Wire break neckdowr	
13	8.582 g	Pass	4	Failure in bond at sub	

Test Group	Ball Shear	Lot Number	S9091.1501
Operator	Karen Turner	DLI P/N	D25UX321M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	60.46 g
Minimum load	61.98 g	Upper spec limit	80.00 g
Maximum load	70.01 g	Lower spec limit	20.00 g
Mean	67.23 g	Cpk	1.888
StdDev	2.26 g	Cp	4.434

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	67.23 g	2.26 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	68.54 g	Pass	2	ball shear	
2	66.02 g	Pass	2	ball shear	
3	70.01 g	Pass	2	ball shear	
4	67.76 g	Pass	2	ball shear	
5	65.64 g	Pass	2	ball shear	
6	68.57 g	Pass	2	ball shear	
7	64.97 g	Pass	2	ball shear	
8	61.98 g	Pass	2	ball shear	
9	67.66 g	Pass	2	ball shear	
10	66.00 g	Pass	2	ball shear	
11	69.53 g	Pass	2	ball shear	
12	69.59 g	Pass	2	ball shear	
13	67.69 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1501
Operator	Karen Turner	DLI P/N	D25UX321M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	8	Mean - 3*StdDev	1261.7 g
Minimum load	1524.8 g	Lower spec limit	500.0 g
Maximum load	2068.7 g	Cpk	2.382
Mean	1813.0 g		
StdDev	183.8 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	8
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1937.8 g	220.4 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	2078.9 g	OVR		ungraded	
2	1692.6 g	Pass	0	ungraded	
3	1759.3 g	Pass	0	ungraded	
4	2214.4 g	OVR		ungraded	
5	1859.4 g	Pass	0	ungraded	
6	1907.3 g	Pass	0	ungraded	
7	2138.7 g	OVR		ungraded	
8	2049.0 g	OVR		ungraded	
9	2068.7 g	Pass	0	ungraded	
10	2015.1 g	Pass	0	ungraded	
11	2207.1 g	OVR		ungraded	
12	1676.3 g	Pass	0	ungraded	
13	1524.8 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.15 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

PRE HUMIDITY MEASUREMENTS		POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	303.290	305.194	0.628	>3X10^2	>62.5VDC	PASS
2	278.593	280.208	0.580	>3X10^2	>62.5VDC	PASS
3	291.023	292.870	0.635	>3X10^2	>62.5VDC	PASS
4	273.431	275.061	0.596	>3X10^2	>62.5VDC	PASS
5	312.036	314.297	0.725	>3X10^2	>62.5VDC	PASS
6	288.661	290.569	0.661	>3X10^2	>62.5VDC	PASS
7	321.320	323.985	0.829	>3X10^2	>62.5VDC	PASS
8	293.117	295.066	0.665	>3X10^2	>62.5VDC	PASS
9	285.163	286.929	0.619	>3X10^2	>62.5VDC	PASS
10	313.352	315.543	0.699	>3X10^2	>62.5VDC	PASS
11	294.745	296.676	0.655	>3X10^2	>62.5VDC	PASS
12	287.467	289.028	0.543	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 256.000 pF to 384.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.15 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	289.548	>3X10^2	>3X10^1	286.462	-1.066	<2.5%	PASS
2	267.423	>3X10^2	>3X10^1	263.792	-1.358	<2.5%	PASS
3	303.263	>3X10^2	>3X10^1	299.228	-1.331	<2.5%	PASS
4	277.926	>3X10^2	>3X10^1	274.057	-1.392	<2.5%	PASS
5	288.032	>3X10^2	>3X10^1	284.134	-1.353	<2.5%	PASS
6	278.795	>3X10^2	>3X10^1	274.465	-1.553	<2.5%	PASS
7	304.282	>3X10^2	>3X10^1	299.646	-1.524	<2.5%	PASS
8	298.813	>3X10^2	>3X10^1	294.810	-1.340	<2.5%	PASS
9	268.605	>3X10^2	>3X10^1	264.580	-1.498	<2.5%	PASS
10	304.731	>3X10^2	>3X10^1	300.912	-1.253	<2.5%	PASS
11	300.709	>3X10^2	>3X10^1	297.820	-0.961	<2.5%	PASS
12	277.039	>3X10^2	>3X10^1	273.088	-1.426	<2.5%	PASS
13	338.239	>3X10^2	>3X10^1	329.181	-2.678	<2.5%	PASS
14	305.874	>3X10^2	>3X10^1	301.234	-1.517	<2.5%	PASS
15	284.995	>3X10^2	>3X10^1	280.324	-1.639	<2.5%	PASS
16	300.647	>3X10^2	>3X10^1	293.966	-2.222	<2.5%	PASS
17	299.026	>3X10^2	>3X10^1	293.317	-1.909	<2.5%	PASS
18	318.948	>3X10^2	>3X10^1	312.258	-2.098	<2.5%	PASS
19	299.659	>3X10^2	>3X10^1	294.639	-1.675	<2.5%	PASS
20	295.913	>3X10^2	>3X10^1	291.587	-1.462	<2.5%	PASS
21	314.523	>3X10^2	>3X10^1	309.825	-1.494	<2.5%	PASS
22	310.066	>3X10^2	>3X10^1	305.808	-1.373	<2.5%	PASS
23	282.240	>3X10^2	>3X10^1	278.421	-1.353	<2.5%	PASS
24	306.756	>3X10^2	>3X10^1	302.454	-1.402	<2.5%	PASS
25	308.000	>3X10^2	>3X10^1	302.282	-1.856	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 256.000 pF to 384.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.15 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	289.548	>3X10^2	>3X10^1	287.790	-0.607	<2.5%	PASS
2	267.423	>3X10^2	>3X10^1	265.697	-0.645	<2.5%	PASS
3	303.263	>3X10^2	>3X10^1	300.852	-0.795	<2.5%	PASS
4	277.926	>3X10^2	>3X10^1	276.708	-0.438	<2.5%	PASS
5	288.032	>3X10^2	>3X10^1	286.920	-0.386	<2.5%	PASS
6	278.795	>3X10^2	>3X10^1	277.356	-0.516	<2.5%	PASS
7	304.282	>3X10^2	>3X10^1	302.809	-0.484	<2.5%	PASS
8	298.813	>3X10^2	>3X10^1	297.699	-0.373	<2.5%	PASS
9	268.605	>3X10^2	>3X10^1	267.115	-0.555	<2.5%	PASS
10	304.731	>3X10^2	>3X10^1	303.061	-0.548	<2.5%	PASS
11	300.709	>3X10^2	>3X10^1	299.553	-0.384	<2.5%	PASS
12	277.039	>3X10^2	>3X10^1	275.470	-0.566	<2.5%	PASS
13	338.239	>3X10^2	>3X10^1	334.529	-1.097	<2.5%	PASS
14	305.874	>3X10^2	>3X10^1	304.894	-0.320	<2.5%	PASS
15	284.995	>3X10^2	>3X10^1	283.534	-0.513	<2.5%	PASS
16	300.647	>3X10^2	>3X10^1	298.513	-0.710	<2.5%	PASS
17	299.026	>3X10^2	>3X10^1	297.211	-0.607	<2.5%	PASS
18	318.948	>3X10^2	>3X10^1	317.113	-0.575	<2.5%	PASS
19	299.659	>3X10^2	>3X10^1	299.315	-0.115	<2.5%	PASS
20	295.913	>3X10^2	>3X10^1	294.410	-0.508	<2.5%	PASS
21	314.523	>3X10^2	>3X10^1	312.926	-0.508	<2.5%	PASS
22	310.066	>3X10^2	>3X10^1	308.743	-0.427	<2.5%	PASS
23	282.240	>3X10^2	>3X10^1	280.620	-0.574	<2.5%	PASS
24	306.756	>3X10^2	>3X10^1	305.383	-0.448	<2.5%	PASS
25	308.000	>3X10^2	>3X10^1	305.667	-0.757	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 256.000 pF to 384.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX281M2MD (S9091.1301)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	264.5pF
• Dissipation Factor	
○ Average	1.47%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	10.401g
• Ball Shear	ASTM F 1269
○ Average	68.37g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1602.0g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 265.62pF
  - Post Capacitance — 266.35pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 264.70pF
  - 1000-hour Capacitance — 261.89pF
  - 2000-hour Capacitance — 263.89pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.47 %
  - Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.13 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	275.346	<2.5%	>1X10^3	>62.5VDC
2	281.746	<2.5%	>1X10^3	>62.5VDC
3	232.724	<2.5%	>1X10^3	>62.5VDC
4	245.199	<2.5%	>1X10^3	>62.5VDC
5	232.710	<2.5%	>1X10^3	>62.5VDC
6	273.087	<2.5%	>1X10^3	>62.5VDC
7	292.988	<2.5%	>1X10^3	>62.5VDC
8	264.158	<2.5%	>1X10^3	>62.5VDC
9	274.776	<2.5%	>1X10^3	>62.5VDC
10	271.734	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 204.000 pF to 336.000 pF

Test Group	Wire pull	Lot Number	S9091.1301
Operator	Karen Turner	DLI P/N	D25UX281M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	5.754 g
Minimum load	7.038 g	Upper spec limit	4.000 g
Maximum load	12.320 g	Cpk	-1.377
Mean	10.401 g		
StdDev	1.549 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	9	10.649 g	1.248 g
2	Wire break at point other than n	1	12.158 g	0.000 g
4	Failure in bond at substrate, pac	3	9.069 g	1.917 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	8.193 g	Pass	1	Wire break neckdowr	
2	11.585 g	Pass	1	Wire break neckdowr	
3	10.049 g	Pass	1	Wire break neckdowr	
4	10.847 g	Pass	4	Failure in bond at sub	
5	9.700 g	Pass	1	Wire break neckdowr	
6	11.854 g	Pass	1	Wire break neckdowr	
7	12.320 g	Pass	1	Wire break neckdowr	
8	10.780 g	Pass	1	Wire break neckdowr	
9	12.158 g	Pass	2	Wire break at point ot	
10	7.038 g	Pass	4	Failure in bond at sub	
11	9.321 g	Pass	4	Failure in bond at sub	
12	10.819 g	Pass	1	Wire break neckdowr	
13	10.544 g	Pass	1	Wire break neckdowr	

Test Group	Ball Shear	Lot Number	S9091.1301
Operator	Karen Turner	DLI P/N	D25UX281M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	57.64 g
Minimum load	62.61 g	Upper spec limit	80.00 g
Maximum load	75.03 g	Lower spec limit	20.00 g
Mean	68.37 g	Cpk	1.084
StdDev	3.58 g	Cp	2.797

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	68.37 g	3.58 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	62.61 g	Pass	2	ball shear	
2	69.20 g	Pass	2	ball shear	
3	75.03 g	Pass	2	ball shear	
4	69.42 g	Pass	2	ball shear	
5	71.76 g	Pass	2	ball shear	
6	70.17 g	Pass	2	ball shear	
7	68.15 g	Pass	2	ball shear	
8	71.69 g	Pass	2	ball shear	
9	69.56 g	Pass	2	ball shear	
10	67.25 g	Pass	2	ball shear	
11	66.37 g	Pass	2	ball shear	
12	63.84 g	Pass	2	ball shear	
13	63.79 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1301
Operator	Karen Turner	DLI P/N	D25UX281M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	11	Mean - 3*StdDev	683.4 g
Minimum load	1219.9 g	Lower spec limit	500.0 g
Maximum load	2133.0 g	Cpk	1.200
Mean	1602.0 g		
StdDev	306.2 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	11
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1683.0 g	342.8 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	2084.9 g	OVR		ungraded	
2	1599.1 g	Pass	0	ungraded	
3	1980.5 g	Pass	0	ungraded	
4	1219.9 g	Pass	0	ungraded	
5	1265.1 g	Pass	0	ungraded	
6	1546.1 g	Pass	0	ungraded	
7	1299.0 g	Pass	0	ungraded	
8	1825.3 g	Pass	0	ungraded	
9	1451.3 g	Pass	0	ungraded	
10	1450.6 g	Pass	0	ungraded	
11	2133.0 g	Pass	0	ungraded	
12	2172.1 g	OVR		ungraded	
13	1852.0 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.13 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	280.437	281.135	0.249	>3X10^2	>62.5VDC	PASS
2	258.638	259.277	0.247	>3X10^2	>62.5VDC	PASS
3	301.407	302.425	0.338	>3X10^2	>62.5VDC	PASS
4	239.050	239.760	0.297	>3X10^2	>62.5VDC	PASS
5	232.504	233.190	0.295	>3X10^2	>62.5VDC	PASS
6	287.119	287.785	0.232	>3X10^2	>62.5VDC	PASS
7	286.978	287.803	0.287	>3X10^2	>62.5VDC	PASS
8	243.651	244.446	0.326	>3X10^2	>62.5VDC	PASS
9	282.593	283.537	0.334	>3X10^2	>62.5VDC	PASS
10	280.452	281.021	0.203	>3X10^2	>62.5VDC	PASS
11	246.500	247.217	0.291	>3X10^2	>62.5VDC	PASS
12	248.167	248.806	0.257	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 204.000 pF to 336.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.13 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	274.645	>3X10^2	>3X10^1	273.912	-0.267	<2.5%	PASS
2	272.268	>3X10^2	>3X10^1	271.392	-0.322	<2.5%	PASS
3	265.782	>3X10^2	>3X10^1	263.274	-0.944	<2.5%	PASS
4	257.163	>3X10^2	>3X10^1	254.107	-1.188	<2.5%	PASS
5	239.801	>3X10^2	>3X10^1	237.800	-0.834	<2.5%	PASS
6	253.773	>3X10^2	>3X10^1	252.119	-0.652	<2.5%	PASS
7	293.838	>3X10^2	>3X10^1	290.535	-1.124	<2.5%	PASS
8	307.882	>3X10^2	>3X10^1	303.619	-1.385	<2.5%	PASS
9	249.887	>3X10^2	>3X10^1	247.151	-1.095	<2.5%	PASS
10	253.017	>3X10^2	>3X10^1	246.797	-2.458	<2.5%	PASS
11	244.192	>3X10^2	>3X10^1	241.152	-1.245	<2.5%	PASS
12	283.352	>3X10^2	>3X10^1	281.124	-0.786	<2.5%	PASS
13	283.352	>3X10^2	>3X10^1	281.142	-0.780	<2.5%	PASS
14	248.226	>3X10^2	>3X10^1	246.842	-0.558	<2.5%	PASS
15	232.565	>3X10^2	>3X10^1	230.863	-0.732	<2.5%	PASS
16	260.233	>3X10^2	>3X10^1	257.432	-1.076	<2.5%	PASS
17	311.665	>3X10^2	>3X10^1	306.773	-1.570	<2.5%	PASS
18	262.294	>3X10^2	>3X10^1	257.700	-1.751	<2.5%	PASS
19	265.872	>3X10^2	>3X10^1	262.036	-1.443	<2.5%	PASS
20	230.751	>3X10^2	>3X10^1	227.825	-1.268	<2.5%	PASS
21	298.945	>3X10^2	>3X10^1	295.578	-1.126	<2.5%	PASS
22	259.178	>3X10^2	>3X10^1	256.553	-1.013	<2.5%	PASS
23	263.987	>3X10^2	>3X10^1	261.877	-0.799	<2.5%	PASS
24	269.559	>3X10^2	>3X10^1	266.533	-1.123	<2.5%	PASS
25	234.982	>3X10^2	>3X10^1	233.145	-0.782	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 204.000 pF to 336.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.13 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	274.645	>3X10^2	>3X10^1	274.897	0.092	<2.5%	PASS
2	272.268	>3X10^2	>3X10^1	272.675	0.149	<2.5%	PASS
3	265.782	>3X10^2	>3X10^1	265.374	-0.154	<2.5%	PASS
4	257.163	>3X10^2	>3X10^1	255.982	-0.459	<2.5%	PASS
5	239.801	>3X10^2	>3X10^1	239.994	0.080	<2.5%	PASS
6	253.773	>3X10^2	>3X10^1	254.142	0.145	<2.5%	PASS
7	293.838	>3X10^2	>3X10^1	294.010	0.059	<2.5%	PASS
8	307.882	>3X10^2	>3X10^1	307.556	-0.106	<2.5%	PASS
9	249.887	>3X10^2	>3X10^1	249.201	-0.275	<2.5%	PASS
10	253.017	>3X10^2	>3X10^1	248.893	-1.630	<2.5%	PASS
11	244.192	>3X10^2	>3X10^1	241.759	-0.996	<2.5%	PASS
12	283.352	>3X10^2	>3X10^1	282.860	-0.174	<2.5%	PASS
13	283.352	>3X10^2	>3X10^1	283.358	0.002	<2.5%	PASS
14	248.226	>3X10^2	>3X10^1	248.573	0.140	<2.5%	PASS
15	232.565	>3X10^2	>3X10^1	232.631	0.028	<2.5%	PASS
16	260.233	>3X10^2	>3X10^1	259.966	-0.103	<2.5%	PASS
17	311.665	>3X10^2	>3X10^1	311.252	-0.133	<2.5%	PASS
18	262.294	>3X10^2	>3X10^1	259.068	-1.230	<2.5%	PASS
19	265.872	>3X10^2	>3X10^1	264.920	-0.358	<2.5%	PASS
20	230.751	>3X10^2	>3X10^1	229.644	-0.480	<2.5%	PASS
21	298.945	>3X10^2	>3X10^1	298.504	-0.148	<2.5%	PASS
22	259.178	>3X10^2	>3X10^1	258.455	-0.279	<2.5%	PASS
23	263.987	>3X10^2	>3X10^1	262.201	-0.677	<2.5%	PASS
24	269.559	>3X10^2	>3X10^1	266.838	-1.009	<2.5%	PASS
25	234.982	>3X10^2	>3X10^1	234.390	-0.252	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 204.000 pF to 336.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX181M2MD (S9091.1701)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	161.74pF
• Dissipation Factor	
○ Average	1.83%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	10.435g
• Ball Shear	ASTM F 1269
○ Average	66.27g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1456.9g

Environmental

• Low Voltage Humidity	MIL-STD-202, Method 103
○ Pre Capacitance	173.76pF
○ Post Capacitance	174.51pF
○ Insulation Resistance	$>3 \times 10^2$ M
○ Dielectric Withstanding	> 62.5-volts

• Life	MIL-STD-202, Method 108
○ Pre Capacitance	165.73pF
○ 1000-hour Capacitance	166.07pF
○ 2000-hour Capacitance	165.42pF
○ Insulation Resistance (25°C)	$>3 \times 10^2$ M
○ Insulation Resistance (125°C)	$>3 \times 10^1$ M
○ Dissipation Factor	1.71%
○ Dielectric Withstanding	> 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.17 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	177.133	<2.5%	>1X10^3	>62.5VDC
2	147.939	<2.5%	>1X10^3	>62.5VDC
3	161.480	<2.5%	>1X10^3	>62.5VDC
4	163.752	<2.5%	>1X10^3	>62.5VDC
5	156.128	<2.5%	>1X10^3	>62.5VDC
6	162.647	<2.5%	>1X10^3	>62.5VDC
7	160.164	<2.5%	>1X10^3	>62.5VDC
8	146.711	<2.5%	>1X10^3	>62.5VDC
9	162.188	<2.5%	>1X10^3	>62.5VDC
10	179.271	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 144.000 pF to 216.000 pF

Test Group	Wire pull	Lot Number	S9091.1701
Operator	Karen Turner	DLI P/N	D25UX181M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	4.854 g
Minimum load	5.748 g	Upper spec limit	4.000 g
Maximum load	12.273 g	Cpk	-1.153
Mean	10.435 g		
StdDev	1.860 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	7	11.016 g	0.549 g
2	Wire break at point other than n	3	11.953 g	0.283 g
4	Failure in bond at substrate, pac	3	7.561 g	1.658 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	11.846 g	Pass	2	Wire break at point ol	
2	11.632 g	Pass	1	Wire break neckdowr	
3	7.932 g	Pass	4	Failure in bond at sub	
4	11.400 g	Pass	1	Wire break neckdowr	
5	5.748 g	Pass	4	Failure in bond at sub	
6	12.273 g	Pass	2	Wire break at point ol	
7	11.738 g	Pass	2	Wire break at point ol	
8	11.292 g	Pass	1	Wire break neckdowr	
9	10.891 g	Pass	1	Wire break neckdowr	
10	9.001 g	Pass	4	Failure in bond at sub	
11	9.930 g	Pass	1	Wire break neckdowr	
12	10.924 g	Pass	1	Wire break neckdowr	
13	11.040 g	Pass	1	Wire break neckdowr	

Test Group	Ball Shear	Lot Number	S9091.1701
Operator	Karen Turner	DLI P/N	D25UX181M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	55.24 g
Minimum load	61.55 g	Upper spec limit	80.00 g
Maximum load	74.61 g	Lower spec limit	20.00 g
Mean	66.27 g	Cpk	1.245
StdDev	3.68 g	Cp	2.720

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	66.27 g	3.68 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	66.37 g	Pass	2	ball shear	
2	63.20 g	Pass	2	ball shear	
3	63.38 g	Pass	2	ball shear	
4	74.61 g	Pass	2	ball shear	
5	67.63 g	Pass	2	ball shear	
6	66.04 g	Pass	2	ball shear	
7	65.91 g	Pass	2	ball shear	
8	65.03 g	Pass	2	ball shear	
9	65.17 g	Pass	2	ball shear	
10	70.19 g	Pass	2	ball shear	
11	61.55 g	Pass	2	ball shear	
12	62.18 g	Pass	2	ball shear	
13	70.22 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1701
Operator	Karen Turner	DLI P/N	D25UX181M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	12	Mean - 3*StdDev	964.9 g
Minimum load	1285.2 g	Lower spec limit	500.0 g
Maximum load	1722.7 g	Cpk	1.945
Mean	1456.9 g		
StdDev	164.0 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	12
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1504.2 g	231.9 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	1722.7 g	Pass	0	ungraded	
2	1291.8 g	Pass	0	ungraded	
3	1609.4 g	Pass	0	ungraded	
4	2072.2 g	OVR		ungraded	
5	1610.9 g	Pass	0	ungraded	
6	1285.2 g	Pass	0	ungraded	
7	1389.0 g	Pass	0	ungraded	
8	1342.0 g	Pass	0	ungraded	
9	1318.8 g	Pass	0	ungraded	
10	1414.7 g	Pass	0	ungraded	
11	1314.9 g	Pass	0	ungraded	
12	1706.4 g	Pass	0	ungraded	
13	1476.9 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.17 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	212.632	213.561	0.437	>3X10^2	>62.5VDC	PASS
2	149.517	150.126	0.407	>3X10^2	>62.5VDC	PASS
3	155.395	156.109	0.459	>3X10^2	>62.5VDC	PASS
4	151.887	152.598	0.468	>3X10^2	>62.5VDC	PASS
5	158.720	159.511	0.498	>3X10^2	>62.5VDC	PASS
6	173.817	174.606	0.454	>3X10^2	>62.5VDC	PASS
7	194.619	195.483	0.444	>3X10^2	>62.5VDC	PASS
8	186.119	186.981	0.463	>3X10^2	>62.5VDC	PASS
9	185.311	186.143	0.449	>3X10^2	>62.5VDC	PASS
10	160.304	160.877	0.357	>3X10^2	>62.5VDC	PASS
11	150.956	151.436	0.318	>3X10^2	>62.5VDC	PASS
12	205.832	206.697	0.420	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 144.000 pF to 216.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.17 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	198.447	>3X10^2	>3X10^1	199.546	0.554	<2.5%	PASS
2	167.930	>3X10^2	>3X10^1	168.591	0.394	<2.5%	PASS
3	165.816	>3X10^2	>3X10^1	166.529	0.430	<2.5%	PASS
4	159.702	>3X10^2	>3X10^1	159.577	-0.078	<2.5%	PASS
5	154.962	>3X10^2	>3X10^1	154.943	-0.012	<2.5%	PASS
6	157.016	>3X10^2	>3X10^1	157.646	0.401	<2.5%	PASS
7	164.609	>3X10^2	>3X10^1	165.390	0.474	<2.5%	PASS
8	159.476	>3X10^2	>3X10^1	160.112	0.399	<2.5%	PASS
9	166.663	>3X10^2	>3X10^1	167.121	0.275	<2.5%	PASS
10	178.880	>3X10^2	>3X10^1	177.553	-0.742	<2.5%	PASS
11	166.493	>3X10^2	>3X10^1	167.155	0.398	<2.5%	PASS
12	180.174	>3X10^2	>3X10^1	180.447	0.152	<2.5%	PASS
13	157.978	>3X10^2	>3X10^1	158.188	0.133	<2.5%	PASS
14	167.328	>3X10^2	>3X10^1	167.123	-0.123	<2.5%	PASS
15	162.776	>3X10^2	>3X10^1	162.343	-0.266	<2.5%	PASS
16	155.640	>3X10^2	>3X10^1	156.288	0.416	<2.5%	PASS
17	159.487	>3X10^2	>3X10^1	160.199	0.446	<2.5%	PASS
18	151.932	>3X10^2	>3X10^1	151.971	0.026	<2.5%	PASS
19	162.718	>3X10^2	>3X10^1	162.788	0.043	<2.5%	PASS
20	195.133	>3X10^2	>3X10^1	195.683	0.282	<2.5%	PASS
21	163.107	>3X10^2	>3X10^1	163.815	0.434	<2.5%	PASS
22	163.477	>3X10^2	>3X10^1	162.804	-0.412	<2.5%	PASS
23	180.739	>3X10^2	>3X10^1	181.858	0.619	<2.5%	PASS
24	151.844	>3X10^2	>3X10^1	152.452	0.400	<2.5%	PASS
25	150.966	>3X10^2	>3X10^1	151.616	0.431	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 144.000 pF to 216.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.17 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	198.447	>3X10^2	>3X10^1	199.050	0.304	<2.5%	PASS
2	167.930	>3X10^2	>3X10^1	168.123	0.115	<2.5%	PASS
3	165.816	>3X10^2	>3X10^1	166.155	0.204	<2.5%	PASS
4	159.702	>3X10^2	>3X10^1	158.585	-0.699	<2.5%	PASS
5	154.962	>3X10^2	>3X10^1	154.680	-0.182	<2.5%	PASS
6	157.016	>3X10^2	>3X10^1	157.348	0.211	<2.5%	PASS
7	164.609	>3X10^2	>3X10^1	165.175	0.344	<2.5%	PASS
8	159.476	>3X10^2	>3X10^1	159.934	0.287	<2.5%	PASS
9	166.663	>3X10^2	>3X10^1	167.040	0.226	<2.5%	PASS
10	178.880	>3X10^2	>3X10^1	176.248	-1.471	<2.5%	PASS
11	166.493	>3X10^2	>3X10^1	166.862	0.222	<2.5%	PASS
12	180.174	>3X10^2	>3X10^1	178.009	-1.202	<2.5%	PASS
13	157.978	>3X10^2	>3X10^1	157.290	-0.436	<2.5%	PASS
14	167.328	>3X10^2	>3X10^1	165.618	-1.022	<2.5%	PASS
15	162.776	>3X10^2	>3X10^1	161.383	-0.856	<2.5%	PASS
16	155.640	>3X10^2	>3X10^1	155.749	0.070	<2.5%	PASS
17	159.487	>3X10^2	>3X10^1	159.827	0.213	<2.5%	PASS
18	151.932	>3X10^2	>3X10^1	152.012	0.053	<2.5%	PASS
19	162.718	>3X10^2	>3X10^1	162.806	0.054	<2.5%	PASS
20	195.133	>3X10^2	>3X10^1	195.585	0.232	<2.5%	PASS
21	163.107	>3X10^2	>3X10^1	163.523	0.255	<2.5%	PASS
22	163.477	>3X10^2	>3X10^1	161.942	-0.939	<2.5%	PASS
23	180.739	>3X10^2	>3X10^1	180.320	-0.232	<2.5%	PASS
24	151.844	>3X10^2	>3X10^1	151.097	-0.492	<2.5%	PASS
25	150.966	>3X10^2	>3X10^1	151.078	0.074	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 144.000 pF to 216.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX191M2MD (S9091.1601)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	173.65pF
• Dissipation Factor	
○ Average	2.02%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	9.242g
• Ball Shear	ASTM F 1269
○ Average	67.43g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1260.2g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 183.27pF
  - Post Capacitance — 184.01pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 179.72pF
  - 1000-hour Capacitance — 178.72pF
  - 2000-hour Capacitance — 179.53pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.98%
  - Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.16 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	184.295	<2.5%	>1X10^3	>62.5VDC
2	192.560	<2.5%	>1X10^3	>62.5VDC
3	180.252	<2.5%	>1X10^3	>62.5VDC
4	167.677	<2.5%	>1X10^3	>62.5VDC
5	160.559	<2.5%	>1X10^3	>62.5VDC
6	156.376	<2.5%	>1X10^3	>62.5VDC
7	175.034	<2.5%	>1X10^3	>62.5VDC
8	173.645	<2.5%	>1X10^3	>62.5VDC
9	179.336	<2.5%	>1X10^3	>62.5VDC
10	166.753	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 152.000 pF to 216.000 pF

Test Group	Wire pull	Lot Number	S9091.1601
Operator	Karen Turner	DLI P/N	D25UX191M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	1.662 g
Minimum load	4.266 g	Upper spec limit	4.000 g
Maximum load	12.015 g	Cpk	-0.692
Mean	9.242 g		
StdDev	2.527 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	5	10.927 g	1.285 g
2	Wire break at point other than n	1	11.719 g	0.000 g
4	Failure in bond at substrate, pac	7	7.685 g	2.334 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	8.566 g	Pass	4	Failure in bond at sub	
2	7.600 g	Pass	4	Failure in bond at sub	
3	4.851 g	Pass	4	Failure in bond at sub	
4	11.719 g	Pass	2	Wire break at point ot	
5	10.491 g	Pass	4	Failure in bond at sub	
6	4.266 g	Pass	4	Failure in bond at sub	
7	8.708 g	Pass	1	Wire break neckdowr	
8	11.514 g	Pass	1	Wire break neckdowr	
9	11.245 g	Pass	1	Wire break neckdowr	
10	12.015 g	Pass	1	Wire break neckdowr	
11	11.153 g	Pass	1	Wire break neckdowr	
12	8.377 g	Pass	4	Failure in bond at sub	
13	9.642 g	Pass	4	Failure in bond at sub	

Test Group	Ball Shear	Lot Number	S9091.1601
Operator	Karen Turner	DLI P/N	D25UX191M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	60.53 g
Minimum load	62.85 g	Upper spec limit	80.00 g
Maximum load	71.27 g	Lower spec limit	20.00 g
Mean	67.43 g	Cpk	1.823
StdDev	2.30 g	Cp	4.349

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	67.43 g	2.30 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	68.95 g	Pass	2	ball shear	
2	68.82 g	Pass	2	ball shear	
3	65.11 g	Pass	2	ball shear	
4	71.27 g	Pass	2	ball shear	
5	62.85 g	Pass	2	ball shear	
6	65.99 g	Pass	2	ball shear	
7	69.96 g	Pass	2	ball shear	
8	68.75 g	Pass	2	ball shear	
9	67.64 g	Pass	2	ball shear	
10	67.31 g	Pass	2	ball shear	
11	65.64 g	Pass	2	ball shear	
12	68.62 g	Pass	2	ball shear	
13	65.65 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1601
Operator	Karen Turner	DLI P/N	D25UX191M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	470.6 g
Minimum load	798.6 g	Lower spec limit	500.0 g
Maximum load	1678.5 g	Cpk	0.963
Mean	1260.2 g		
StdDev	263.2 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1260.2 g	263.2 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	1340.6 g	Pass	0	ungraded	
2	1204.8 g	Pass	0	ungraded	
3	893.1 g	Pass	0	ungraded	
4	1331.0 g	Pass	0	ungraded	
5	1219.4 g	Pass	0	ungraded	
6	798.6 g	Pass	0	ungraded	
7	1588.1 g	Pass	0	ungraded	
8	1678.5 g	Pass	0	ungraded	
9	1331.6 g	Pass	0	ungraded	
10	1583.0 g	Pass	0	ungraded	
11	1008.1 g	Pass	0	ungraded	
12	1255.7 g	Pass	0	ungraded	
13	1150.7 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.16 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	195.768	196.599	0.424	>3X10^2	>62.5VDC	PASS
2	177.789	178.421	0.355	>3X10^2	>62.5VDC	PASS
3	192.765	193.726	0.499	>3X10^2	>62.5VDC	PASS
4	167.714	168.439	0.432	>3X10^2	>62.5VDC	PASS
5	194.222	195.239	0.524	>3X10^2	>62.5VDC	PASS
6	190.822	191.626	0.421	>3X10^2	>62.5VDC	PASS
7	170.592	171.234	0.376	>3X10^2	>62.5VDC	PASS
8	207.815	208.789	0.469	>3X10^2	>62.5VDC	PASS
9	179.999	180.705	0.392	>3X10^2	>62.5VDC	PASS
10	192.766	193.365	0.311	>3X10^2	>62.5VDC	PASS
11	168.477	168.972	0.294	>3X10^2	>62.5VDC	PASS
12	160.469	160.907	0.273	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 152.000 pF to 216.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.16 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	177.554	>3X10^2	>3X10^1	177.416	-0.078	<2.5%	PASS
2	165.687	>3X10^2	>3X10^1	165.449	-0.144	<2.5%	PASS
3	197.307	>3X10^2	>3X10^1	196.819	-0.247	<2.5%	PASS
4	167.182	>3X10^2	>3X10^1	166.358	-0.493	<2.5%	PASS
5	169.640	>3X10^2	>3X10^1	169.050	-0.348	<2.5%	PASS
6	165.518	>3X10^2	>3X10^1	164.547	-0.587	<2.5%	PASS
7	190.649	>3X10^2	>3X10^1	189.583	-0.559	<2.5%	PASS
8	163.066	>3X10^2	>3X10^1	162.351	-0.438	<2.5%	PASS
9	173.035	>3X10^2	>3X10^1	172.102	-0.539	<2.5%	PASS
10	188.526	>3X10^2	>3X10^1	187.469	-0.561	<2.5%	PASS
11	172.230	>3X10^2	>3X10^1	171.786	-0.258	<2.5%	PASS
12	170.097	>3X10^2	>3X10^1	169.761	-0.198	<2.5%	PASS
13	212.865	>3X10^2	>3X10^1	209.723	-1.476	<2.5%	PASS
14	181.686	>3X10^2	>3X10^1	180.843	-0.464	<2.5%	PASS
15	200.357	>3X10^2	>3X10^1	199.181	-0.587	<2.5%	PASS
16	176.554	>3X10^2	>3X10^1	175.322	-0.698	<2.5%	PASS
17	178.654	>3X10^2	>3X10^1	177.302	-0.757	<2.5%	PASS
18	187.490	>3X10^2	>3X10^1	186.035	-0.776	<2.5%	PASS
19	163.498	>3X10^2	>3X10^1	162.863	-0.388	<2.5%	PASS
20	172.627	>3X10^2	>3X10^1	171.713	-0.529	<2.5%	PASS
21	215.866	>3X10^2	>3X10^1	213.066	-1.297	<2.5%	PASS
22	167.952	>3X10^2	>3X10^1	167.028	-0.550	<2.5%	PASS
23	200.761	>3X10^2	>3X10^1	200.206	-0.276	<2.5%	PASS
24	173.090	>3X10^2	>3X10^1	171.963	-0.651	<2.5%	PASS
25	161.210	>3X10^2	>3X10^1	160.255	-0.592	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 152.000 pF to 216.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.16 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	177.554	>3X10^2	>3X10^1	177.477	-0.043	<2.5%	PASS
2	165.687	>3X10^2	>3X10^1	165.564	-0.074	<2.5%	PASS
3	197.307	>3X10^2	>3X10^1	197.243	-0.032	<2.5%	PASS
4	167.182	>3X10^2	>3X10^1	167.084	-0.059	<2.5%	PASS
5	169.640	>3X10^2	>3X10^1	169.681	0.024	<2.5%	PASS
6	165.518	>3X10^2	>3X10^1	165.588	0.042	<2.5%	PASS
7	190.649	>3X10^2	>3X10^1	190.535	-0.060	<2.5%	PASS
8	163.066	>3X10^2	>3X10^1	162.884	-0.112	<2.5%	PASS
9	173.035	>3X10^2	>3X10^1	172.846	-0.109	<2.5%	PASS
10	188.526	>3X10^2	>3X10^1	187.597	-0.493	<2.5%	PASS
11	172.230	>3X10^2	>3X10^1	172.199	-0.018	<2.5%	PASS
12	170.097	>3X10^2	>3X10^1	170.204	0.063	<2.5%	PASS
13	212.865	>3X10^2	>3X10^1	211.272	-0.748	<2.5%	PASS
14	181.686	>3X10^2	>3X10^1	181.676	-0.006	<2.5%	PASS
15	200.357	>3X10^2	>3X10^1	200.411	0.027	<2.5%	PASS
16	176.554	>3X10^2	>3X10^1	176.544	-0.006	<2.5%	PASS
17	178.654	>3X10^2	>3X10^1	178.565	-0.050	<2.5%	PASS
18	187.490	>3X10^2	>3X10^1	187.383	-0.057	<2.5%	PASS
19	163.498	>3X10^2	>3X10^1	163.541	0.026	<2.5%	PASS
20	172.627	>3X10^2	>3X10^1	172.581	-0.027	<2.5%	PASS
21	215.866	>3X10^2	>3X10^1	214.151	-0.794	<2.5%	PASS
22	167.952	>3X10^2	>3X10^1	167.702	-0.149	<2.5%	PASS
23	200.761	>3X10^2	>3X10^1	200.764	0.001	<2.5%	PASS
24	173.090	>3X10^2	>3X10^1	173.024	-0.038	<2.5%	PASS
25	161.210	>3X10^2	>3X10^1	161.192	-0.011	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 152.000 pF to 216.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX201M2MD (S9091.1101)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	187.94pF
• Dissipation Factor	
○ Average	1.98%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	10.658g
• Ball Shear	ASTM F 1269
○ Average	67.85g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1382.1g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 193.48pF
  - Post Capacitance — 194.24pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 193.83pF
  - 1000-hour Capacitance — 192.00pF
  - 2000-hour Capacitance — 193.34pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.87%
  - Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.11 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	188.660	<2.5%	>1X10^3	>62.5VDC
2	178.595	<2.5%	>1X10^3	>62.5VDC
3	214.237	<2.5%	>1X10^3	>62.5VDC
4	190.322	<2.5%	>1X10^3	>62.5VDC
5	173.832	<2.5%	>1X10^3	>62.5VDC
6	169.824	<2.5%	>1X10^3	>62.5VDC
7	213.953	<2.5%	>1X10^3	>62.5VDC
8	177.340	<2.5%	>1X10^3	>62.5VDC
9	201.559	<2.5%	>1X10^3	>62.5VDC
10	171.105	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 160.000 pF to 240.000 pF

Test Group	Wire pull	Lot Number	S9091.1101
Operator	Karen Turner	DLI P/N	D25UX201M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	3.964 g
Minimum load	4.034 g	Upper spec limit	4.000 g
Maximum load	12.921 g	Cpk	-0.995
Mean	10.658 g		
StdDev	2.232 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	8	10.669 g	0.766 g
2	Wire break at point other than n	4	12.293 g	0.602 g
4	Failure in bond at substrate, pac	1	4.034 g	0.000 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	12.547 g	Pass	2	Wire break at point of	
2	4.034 g	Pass	4	Failure in bond at sub	
3	12.921 g	Pass	2	Wire break at point of	
4	11.431 g	Pass	1	Wire break neckdowr	
5	9.418 g	Pass	1	Wire break neckdowr	
6	10.187 g	Pass	1	Wire break neckdowr	
7	12.196 g	Pass	2	Wire break at point of	
8	9.924 g	Pass	1	Wire break neckdowr	
9	11.241 g	Pass	1	Wire break neckdowr	
10	10.648 g	Pass	1	Wire break neckdowr	
11	10.971 g	Pass	1	Wire break neckdowr	
12	11.506 g	Pass	2	Wire break at point of	
13	11.535 g	Pass	1	Wire break neckdowr	

Test Group	Ball Shear	Lot Number	S9091.1101
Operator	Karen Turner	DLI P/N	D25UX201M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	55.78 g
Minimum load	61.29 g	Upper spec limit	80.00 g
Maximum load	73.36 g	Lower spec limit	20.00 g
Mean	67.85 g	Cpk	1.007
StdDev	4.02 g	Cp	2.486

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	67.85 g	4.02 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	69.71 g	Pass	2	ball shear	
2	71.38 g	Pass	2	ball shear	
3	66.95 g	Pass	2	ball shear	
4	73.36 g	Pass	2	ball shear	
5	67.49 g	Pass	2	ball shear	
6	70.80 g	Pass	2	ball shear	
7	69.12 g	Pass	2	ball shear	
8	62.34 g	Pass	2	ball shear	
9	62.46 g	Pass	2	ball shear	
10	69.55 g	Pass	2	ball shear	
11	72.64 g	Pass	2	ball shear	
12	64.96 g	Pass	2	ball shear	
13	61.29 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1101
Operator	Karen Turner	DLI P/N	D25UX201M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	558.6 g
Minimum load	958.0 g	Lower spec limit	500.0 g
Maximum load	1956.0 g	Cpk	1.071
Mean	1382.1 g		
StdDev	274.5 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1382.1 g	274.5 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	1956.0 g	Pass	0	ungraded	
2	1424.4 g	Pass	0	ungraded	
3	1150.3 g	Pass	0	ungraded	
4	958.0 g	Pass	0	ungraded	
5	1103.8 g	Pass	0	ungraded	
6	1267.2 g	Pass	0	ungraded	
7	1105.3 g	Pass	0	ungraded	
8	1716.3 g	Pass	0	ungraded	
9	1524.6 g	Pass	0	ungraded	
10	1460.0 g	Pass	0	ungraded	
11	1416.6 g	Pass	0	ungraded	
12	1329.1 g	Pass	0	ungraded	
13	1555.5 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.11 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	195.432	195.932	0.256	>3X10^2	>62.5VDC	PASS
2	197.781	198.579	0.403	>3X10^2	>62.5VDC	PASS
3	165.321	165.952	0.382	>3X10^2	>62.5VDC	PASS
4	210.161	211.094	0.444	>3X10^2	>62.5VDC	PASS
5	172.735	173.467	0.424	>3X10^2	>62.5VDC	PASS
6	212.435	213.324	0.418	>3X10^2	>62.5VDC	PASS
7	177.187	177.951	0.431	>3X10^2	>62.5VDC	PASS
8	200.021	200.848	0.413	>3X10^2	>62.5VDC	PASS
9	195.922	196.800	0.448	>3X10^2	>62.5VDC	PASS
10	195.346	195.935	0.302	>3X10^2	>62.5VDC	PASS
11	202.555	203.290	0.363	>3X10^2	>62.5VDC	PASS
12	196.864	197.730	0.440	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 160.000 pF to 240.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.11 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	203.261	>3X10^2	>3X10^1	202.117	-0.563	<2.5%	PASS
2	182.345	>3X10^2	>3X10^1	182.025	-0.175	<2.5%	PASS
3	185.518	>3X10^2	>3X10^1	183.678	-0.992	<2.5%	PASS
4	183.134	>3X10^2	>3X10^1	181.846	-0.703	<2.5%	PASS
5	167.843	>3X10^2	>3X10^1	166.714	-0.673	<2.5%	PASS
6	217.847	>3X10^2	>3X10^1	216.977	-0.399	<2.5%	PASS
7	215.222	>3X10^2	>3X10^1	212.493	-1.268	<2.5%	PASS
8	191.566	>3X10^2	>3X10^1	190.336	-0.642	<2.5%	PASS
9	181.525	>3X10^2	>3X10^1	180.015	-0.832	<2.5%	PASS
10	187.365	>3X10^2	>3X10^1	185.537	-0.976	<2.5%	PASS
11	207.618	>3X10^2	>3X10^1	205.223	-1.154	<2.5%	PASS
12	194.941	>3X10^2	>3X10^1	193.497	-0.741	<2.5%	PASS
13	210.375	>3X10^2	>3X10^1	208.851	-0.724	<2.5%	PASS
14	185.949	>3X10^2	>3X10^1	183.026	-1.572	<2.5%	PASS
15	168.889	>3X10^2	>3X10^1	166.488	-1.422	<2.5%	PASS
16	180.306	>3X10^2	>3X10^1	178.778	-0.847	<2.5%	PASS
17	191.922	>3X10^2	>3X10^1	189.781	-1.116	<2.5%	PASS
18	204.858	>3X10^2	>3X10^1	201.182	-1.794	<2.5%	PASS
19	175.731	>3X10^2	>3X10^1	174.238	-0.850	<2.5%	PASS
20	217.603	>3X10^2	>3X10^1	215.605	-0.918	<2.5%	PASS
21	211.994	>3X10^2	>3X10^1	209.324	-1.259	<2.5%	PASS
22	198.789	>3X10^2	>3X10^1	196.128	-1.339	<2.5%	PASS
23	212.013	>3X10^2	>3X10^1	210.342	-0.788	<2.5%	PASS
24	190.793	>3X10^2	>3X10^1	188.993	-0.943	<2.5%	PASS
25	178.369	>3X10^2	>3X10^1	176.892	-0.828	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 160.000 pF to 240.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.11 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	203.261	>3X10^2	>3X10^1	202.235	-0.505	<2.5%	PASS
2	182.345	>3X10^2	>3X10^1	182.712	0.201	<2.5%	PASS
3	185.518	>3X10^2	>3X10^1	184.733	-0.423	<2.5%	PASS
4	183.134	>3X10^2	>3X10^1	183.281	0.080	<2.5%	PASS
5	167.843	>3X10^2	>3X10^1	167.850	0.004	<2.5%	PASS
6	217.847	>3X10^2	>3X10^1	217.951	0.048	<2.5%	PASS
7	215.222	>3X10^2	>3X10^1	214.535	-0.319	<2.5%	PASS
8	191.566	>3X10^2	>3X10^1	191.686	0.063	<2.5%	PASS
9	181.525	>3X10^2	>3X10^1	180.662	-0.475	<2.5%	PASS
10	187.365	>3X10^2	>3X10^1	187.209	-0.083	<2.5%	PASS
11	207.618	>3X10^2	>3X10^1	207.753	0.065	<2.5%	PASS
12	194.941	>3X10^2	>3X10^1	194.850	-0.047	<2.5%	PASS
13	210.375	>3X10^2	>3X10^1	210.327	-0.023	<2.5%	PASS
14	185.949	>3X10^2	>3X10^1	185.340	-0.328	<2.5%	PASS
15	168.889	>3X10^2	>3X10^1	168.526	-0.215	<2.5%	PASS
16	180.306	>3X10^2	>3X10^1	179.604	-0.389	<2.5%	PASS
17	191.922	>3X10^2	>3X10^1	190.718	-0.627	<2.5%	PASS
18	204.858	>3X10^2	>3X10^1	203.088	-0.864	<2.5%	PASS
19	175.731	>3X10^2	>3X10^1	175.897	0.094	<2.5%	PASS
20	217.603	>3X10^2	>3X10^1	217.939	0.154	<2.5%	PASS
21	211.994	>3X10^2	>3X10^1	211.531	-0.218	<2.5%	PASS
22	198.789	>3X10^2	>3X10^1	196.513	-1.145	<2.5%	PASS
23	212.013	>3X10^2	>3X10^1	210.965	-0.494	<2.5%	PASS
24	190.793	>3X10^2	>3X10^1	189.698	-0.574	<2.5%	PASS
25	178.369	>3X10^2	>3X10^1	177.978	-0.219	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 160.000 pF to 240.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX251M2MD (S9091.1201)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	248.93pF
• Dissipation Factor	
○ Average	1.85%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	10.231g
• Ball Shear	ASTM F 1269
○ Average	68.24g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1714.0g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 254.54pF
  - Post Capacitance — 256.05pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 249.33pF
  - 1000-hour Capacitance — 250.65pF
  - 2000-hour Capacitance — 248.92pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.92%
  - Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.12 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	209.306	<2.5%	>1X10^3	>62.5VDC
2	256.616	<2.5%	>1X10^3	>62.5VDC
3	289.963	<2.5%	>1X10^3	>62.5VDC
4	246.505	<2.5%	>1X10^3	>62.5VDC
5	258.042	<2.5%	>1X10^3	>62.5VDC
6	225.338	<2.5%	>1X10^3	>62.5VDC
7	235.086	<2.5%	>1X10^3	>62.5VDC
8	251.811	<2.5%	>1X10^3	>62.5VDC
9	226.708	<2.5%	>1X10^3	>62.5VDC
10	289.971	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 200.000 pF to 300.000 pF

Test Group	Wire pull	Lot Number	S9091.1201
Operator	Karen Turner	DLI P/N	D25UX251M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	4.265 g
Minimum load	5.905 g	Upper spec limit	4.000 g
Maximum load	12.080 g	Cpk	-1.044
Mean	10.231 g		
StdDev	1.989 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	9	10.695 g	1.704 g
2	Wire break at point other than n	1	11.626 g	0.000 g
4	Failure in bond at substrate, pac	3	8.376 g	2.237 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	11.010 g	Pass	1	Wire break neckdowr	
2	10.883 g	Pass	1	Wire break neckdowr	
3	10.744 g	Pass	1	Wire break neckdowr	
4	11.318 g	Pass	1	Wire break neckdowr	
5	12.038 g	Pass	1	Wire break neckdowr	
6	11.626 g	Pass	2	Wire break at point ol	
7	5.905 g	Pass	4	Failure in bond at sub	
8	10.265 g	Pass	4	Failure in bond at sub	
9	6.355 g	Pass	1	Wire break neckdowr	
10	8.958 g	Pass	4	Failure in bond at sub	
11	12.080 g	Pass	1	Wire break neckdowr	
12	10.741 g	Pass	1	Wire break neckdowr	
13	11.087 g	Pass	1	Wire break neckdowr	

Test Group	Ball Shear	Lot Number	S9091.1201
Operator	Karen Turner	DLI P/N	D25UX251M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	55.09 g
Minimum load	61.82 g	Upper spec limit	80.00 g
Maximum load	75.66 g	Lower spec limit	20.00 g
Mean	68.24 g	Cpk	0.894
StdDev	4.38 g	Cp	2.281

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	68.24 g	4.38 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	69.56 g	Pass	2	ball shear	
2	73.39 g	Pass	2	ball shear	
3	67.67 g	Pass	2	ball shear	
4	65.42 g	Pass	2	ball shear	
5	62.01 g	Pass	2	ball shear	
6	75.66 g	Pass	2	ball shear	
7	70.86 g	Pass	2	ball shear	
8	65.56 g	Pass	2	ball shear	
9	68.25 g	Pass	2	ball shear	
10	65.23 g	Pass	2	ball shear	
11	67.54 g	Pass	2	ball shear	
12	61.82 g	Pass	2	ball shear	
13	74.20 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1201
Operator	Karen Turner	DLI P/N	D25UX251M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	11	Mean - 3*StdDev	755.1 g
Minimum load	1208.4 g	Lower spec limit	500.0 g
Maximum load	2075.9 g	Cpk	1.266
Mean	1714.0 g		
StdDev	319.6 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	11
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1770.2 g	323.0 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	1777.4 g	Pass	0	ungraded	
2	1886.8 g	Pass	0	ungraded	
3	2028.5 g	Pass	0	ungraded	
4	2030.9 g	OVR		ungraded	
5	1208.4 g	Pass	0	ungraded	
6	1414.7 g	Pass	0	ungraded	
7	2127.9 g	OVR		ungraded	
8	1819.2 g	Pass	0	ungraded	
9	2075.9 g	Pass	0	ungraded	
10	1232.8 g	Pass	0	ungraded	
11	1874.6 g	Pass	0	ungraded	
12	1504.7 g	Pass	0	ungraded	
13	2030.5 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.12 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	259.895	261.895	0.770	>3X10^2	>62.5VDC	PASS
2	247.800	249.413	0.651	>3X10^2	>62.5VDC	PASS
3	234.729	236.171	0.614	>3X10^2	>62.5VDC	PASS
4	254.346	255.916	0.617	>3X10^2	>62.5VDC	PASS
5	286.137	287.901	0.616	>3X10^2	>62.5VDC	PASS
6	263.062	264.893	0.696	>3X10^2	>62.5VDC	PASS
7	236.811	238.061	0.528	>3X10^2	>62.5VDC	PASS
8	283.385	285.243	0.656	>3X10^2	>62.5VDC	PASS
9	263.170	264.695	0.579	>3X10^2	>62.5VDC	PASS
10	251.736	252.912	0.467	>3X10^2	>62.5VDC	PASS
11	245.020	246.274	0.512	>3X10^2	>62.5VDC	PASS
12	228.431	229.251	0.359	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 200.000 pF to 300.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.12 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	237.167	>3X10^2	>3X10^1	239.255	0.880	<2.5%	PASS
2	243.000	>3X10^2	>3X10^1	245.145	0.883	<2.5%	PASS
3	284.984	>3X10^2	>3X10^1	287.753	0.972	<2.5%	PASS
4	276.022	>3X10^2	>3X10^1	278.188	0.785	<2.5%	PASS
5	247.105	>3X10^2	>3X10^1	248.727	0.656	<2.5%	PASS
6	271.870	>3X10^2	>3X10^1	273.833	0.722	<2.5%	PASS
7	254.627	>3X10^2	>3X10^1	256.239	0.633	<2.5%	PASS
8	222.995	>3X10^2	>3X10^1	224.056	0.476	<2.5%	PASS
9	280.144	>3X10^2	>3X10^1	282.496	0.840	<2.5%	PASS
10	253.544	>3X10^2	>3X10^1	255.291	0.689	<2.5%	PASS
11	219.805	>3X10^2	>3X10^1	220.986	0.537	<2.5%	PASS
12	230.353	>3X10^2	>3X10^1	230.731	0.164	<2.5%	PASS
13	228.592	>3X10^2	>3X10^1	229.589	0.436	<2.5%	PASS
14	215.222	>3X10^2	>3X10^1	215.853	0.293	<2.5%	PASS
15	243.509	>3X10^2	>3X10^1	244.030	0.214	<2.5%	PASS
16	275.000	>3X10^2	>3X10^1	276.104	0.401	<2.5%	PASS
17	212.371	>3X10^2	>3X10^1	212.869	0.235	<2.5%	PASS
18	235.633	>3X10^2	>3X10^1	236.656	0.434	<2.5%	PASS
19	233.413	>3X10^2	>3X10^1	234.050	0.273	<2.5%	PASS
20	269.104	>3X10^2	>3X10^1	270.623	0.564	<2.5%	PASS
21	209.685	>3X10^2	>3X10^1	210.322	0.304	<2.5%	PASS
22	297.622	>3X10^2	>3X10^1	299.420	0.604	<2.5%	PASS
23	270.265	>3X10^2	>3X10^1	271.546	0.474	<2.5%	PASS
24	249.232	>3X10^2	>3X10^1	250.092	0.345	<2.5%	PASS
25	272.110	>3X10^2	>3X10^1	272.295	0.068	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 200.000 pF to 300.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.12 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	237.167	>3X10^2	>3X10^1	237.300	0.056	<2.5%	PASS
2	243.000	>3X10^2	>3X10^1	243.215	0.088	<2.5%	PASS
3	284.984	>3X10^2	>3X10^1	285.333	0.122	<2.5%	PASS
4	276.022	>3X10^2	>3X10^1	275.889	-0.048	<2.5%	PASS
5	247.105	>3X10^2	>3X10^1	246.804	-0.122	<2.5%	PASS
6	271.870	>3X10^2	>3X10^1	271.995	0.046	<2.5%	PASS
7	254.627	>3X10^2	>3X10^1	254.377	-0.098	<2.5%	PASS
8	222.995	>3X10^2	>3X10^1	222.459	-0.240	<2.5%	PASS
9	280.144	>3X10^2	>3X10^1	280.213	0.025	<2.5%	PASS
10	253.544	>3X10^2	>3X10^1	253.262	-0.111	<2.5%	PASS
11	219.805	>3X10^2	>3X10^1	219.480	-0.148	<2.5%	PASS
12	230.353	>3X10^2	>3X10^1	229.574	-0.338	<2.5%	PASS
13	228.592	>3X10^2	>3X10^1	228.078	-0.225	<2.5%	PASS
14	215.222	>3X10^2	>3X10^1	214.384	-0.389	<2.5%	PASS
15	243.509	>3X10^2	>3X10^1	242.364	-0.470	<2.5%	PASS
16	275.000	>3X10^2	>3X10^1	274.270	-0.265	<2.5%	PASS
17	212.371	>3X10^2	>3X10^1	211.684	-0.323	<2.5%	PASS
18	235.633	>3X10^2	>3X10^1	235.344	-0.123	<2.5%	PASS
19	233.413	>3X10^2	>3X10^1	233.167	-0.105	<2.5%	PASS
20	269.104	>3X10^2	>3X10^1	268.846	-0.096	<2.5%	PASS
21	209.685	>3X10^2	>3X10^1	208.935	-0.358	<2.5%	PASS
22	297.622	>3X10^2	>3X10^1	297.470	-0.051	<2.5%	PASS
23	270.265	>3X10^2	>3X10^1	269.518	-0.276	<2.5%	PASS
24	249.232	>3X10^2	>3X10^1	248.548	-0.274	<2.5%	PASS
25	272.110	>3X10^2	>3X10^1	270.606	-0.553	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 200.000 pF to 300.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

D25UX301M2MD (S9091.1401)

Initial Electrical

• Capacitance	MIL-STD-202, Method 305
○ Average	280.23pF
• Dissipation Factor	
○ Average	2.03%
• Insulation Resistance	MIL-STD-202, Method 302
○ > 10^3 MΩ	
• Dielectric Withstanding Voltage	MIL-STD-202, Method 301
○ > 62.5 Volts	

Mechanical

• Temperature Cycling	MIL-STD-883, Method 1010
○ No degradation	
• Mechanical Shock	MIL-STD-883, Method 2002
○ No degradation	
• Constant Acceleration	MIL-STD-883, Method 2001
○ No degradation	
• Wire Bond Evaluation	MIL-STD-883, Method 2011
○ Average	10.47g
• Ball Shear	ASTM F 1269
○ Average	66.74g
• Die Shear	MIL-STD-883, Method 2019
○ Average	1330.5g

Environmental

- Low Voltage Humidity — MIL-STD-202, Method 103
  - Pre Capacitance — 281.45pF
  - Post Capacitance — 283.69pF
  - Insulation Resistance — $>3 \times 10^2$ M
  - Dielectric Withstanding — > 62.5-volts

- Life — MIL-STD-202, Method 108
  - Pre Capacitance — 277.03pF
  - 1000-hour Capacitance — 274.12pF
  - 2000-hour Capacitance — 276.75pF
  - Insulation Resistance (25°C) — $>3 \times 10^2$ M
  - Insulation Resistance (125°C) — $>3 \times 10^1$ M
  - Dissipation Factor — 1.97%

Dielectric Withstanding — > 62.5-volts

ELEMENT EVALUATION VARIABLES TEST DATA

LOT - S9091.14 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 10

VARIABLES TEST DATA				
UNIT	C(pF)	DF	IR(Megohms)	DWV
1	267.381	<2.5%	>1X10^3	>62.5VDC
2	284.884	<2.5%	>1X10^3	>62.5VDC
3	244.565	<2.5%	>1X10^3	>62.5VDC
4	303.008	<2.5%	>1X10^3	>62.5VDC
5	293.727	<2.5%	>1X10^3	>62.5VDC
6	288.902	<2.5%	>1X10^3	>62.5VDC
7	274.323	<2.5%	>1X10^3	>62.5VDC
8	267.800	<2.5%	>1X10^3	>62.5VDC
9	267.120	<2.5%	>1X10^3	>62.5VDC
10	310.592	<2.5%	>1X10^3	>62.5VDC

LIMITS:

IR@ 25 Vdc: 1X10^3 Megohms Min. DF 2.5% Max.
DWV 62.5Vdc Min.
C 240.000 pF to 360.000 pF

Test Group	Wire pull	Lot Number	S9091.1401
Operator	Karen Turner	DLI P/N	D25UX301M2M
Test speed	98.40mil/s	0	
Test load	4.00g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved	0	
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	2.271 g
Minimum load	4.008 g	Upper spec limit	4.000 g
Maximum load	14.107 g	Cpk	-0.789
Mean	10.470 g		
StdDev	2.733 g		
Lower control limit	4.000 g		

Pass / Fail Analysis

Pass / Fail limit	4.000 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
1	Wire break neckdown (a-1)	7	12.008 g	1.317 g
2	Wire break at point other than n	1	12.753 g	0.000 g
4	Failure in bond at substrate, pac	5	7.860 g	2.418 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	11.796 g	Pass	1	Wire break neckdowr	
2	14.107 g	Pass	1	Wire break neckdowr	
3	4.008 g	Pass	4	Failure in bond at sub	
4	8.184 g	Pass	4	Failure in bond at sub	
5	9.408 g	Pass	4	Failure in bond at sub	
6	11.791 g	Pass	1	Wire break neckdowr	
7	7.417 g	Pass	4	Failure in bond at sub	
8	10.280 g	Pass	4	Failure in bond at sub	
9	10.472 g	Pass	1	Wire break neckdowr	
10	12.753 g	Pass	2	Wire break at point ot	
11	13.486 g	Pass	1	Wire break neckdowr	
12	11.024 g	Pass	1	Wire break neckdowr	
13	11.381 g	Pass	1	Wire break neckdowr	

Test Group	Ball Shear	Lot Number	S9091.1401
Operator	Karen Turner	DLI P/N	D25UX301M2M
Test speed	19.70mil/s	0	
Shear height	0.58mil	0	
Test load	10.0g	0	
Machine	Series 4000 - 19355019	0	
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	13	Mean - 3*StdDev	54.41 g
Minimum load	61.65 g	Upper spec limit	80.00 g
Maximum load	73.13 g	Lower spec limit	20.00 g
Mean	66.74 g	Cpk	1.076
StdDev	4.11 g	Cp	2.434

Pass / Fail Analysis

Pass / Fail limit	10.00 g
Tests above preset	13
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
2	ball shear	13	66.74 g	4.11 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	68.85 g	Pass	2	ball shear	
2	70.51 g	Pass	2	ball shear	
3	73.08 g	Pass	2	ball shear	
4	65.11 g	Pass	2	ball shear	
5	67.56 g	Pass	2	ball shear	
6	73.13 g	Pass	2	ball shear	
7	61.80 g	Pass	2	ball shear	
8	61.65 g	Pass	2	ball shear	
9	63.13 g	Pass	2	ball shear	
10	69.72 g	Pass	2	ball shear	
11	66.76 g	Pass	2	ball shear	
12	64.09 g	Pass	2	ball shear	
13	62.25 g	Pass	2	ball shear	

Test Group	Die shear D25	Lot Number	S9091.1401
Operator	Karen Turner	DLI P/N	D25UX301M2M
Test speed	19.67mil/s		
Shear height	1.00mil		
Test load	500g		
Machine	Series 4000 - 19355019		
Date saved	Sample not saved		
Sample number	Sample not saved		
Total number of tests	13		

Destructive Tests Summary

Number of tests	12	Mean - 3*StdDev	263.9 g
Minimum load	611.9 g	Lower spec limit	500.0 g
Maximum load	1779.1 g	Cpk	0.779
Mean	1330.5 g		
StdDev	355.6 g		

Pass / Fail Analysis

Pass / Fail limit	500.0 g
Tests above preset	12
Tests below preset	0
Tests over range	0

Grade Detail

Grade	Description	Number	Mean	StdDev
0	ungraded	13	1394.4 g	411.0 g

Test Detail

Test	Force	Type	Grade	Description	Comment
1	2160.8 g	OVR		ungraded	
2	1532.8 g	Pass	0	ungraded	
3	611.9 g	Pass	0	ungraded	
4	1099.2 g	Pass	0	ungraded	
5	1656.8 g	Pass	0	ungraded	
6	1011.7 g	Pass	0	ungraded	
7	1063.8 g	Pass	0	ungraded	
8	1537.1 g	Pass	0	ungraded	
9	1709.2 g	Pass	0	ungraded	
10	1779.1 g	Pass	0	ungraded	
11	1096.0 g	Pass	0	ungraded	
12	1569.7 g	Pass	0	ungraded	
13	1299.5 g	Pass	0	ungraded	

VARIABLES TEST DATA LOW VOLTAGE HUMIDITY

LOT - S9091.14 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 12

	PRE HUMIDITY MEASUREMENTS	POST HUMIDITY MEASUREMENT				
UNIT	C(pF)	C(pF)	Delta C	IR(MEG)	DWV	VISUAL
1	250.858	252.876	0.804	>3X10^2	>62.5VDC	PASS
2	259.601	261.700	0.809	>3X10^2	>62.5VDC	PASS
3	279.674	282.171	0.893	>3X10^2	>62.5VDC	PASS
4	289.316	290.239	0.319	>3X10^2	>62.5VDC	PASS
5	287.881	290.543	0.925	>3X10^2	>62.5VDC	PASS
6	285.576	288.059	0.869	>3X10^2	>62.5VDC	PASS
7	261.355	263.277	0.735	>3X10^2	>62.5VDC	PASS
8	291.764	294.193	0.833	>3X10^2	>62.5VDC	PASS
9	286.493	289.016	0.881	>3X10^2	>62.5VDC	PASS
10	324.873	327.834	0.911	>3X10^2	>62.5VDC	PASS
11	268.146	270.048	0.709	>3X10^2	>62.5VDC	PASS
12	291.858	294.243	0.817	>3X10^2	>62.5VDC	PASS

LIMITS:

IR@ 25 Vdc: 3X10^2 Megohms Min.
DWV 62.5Vdc Min.
C 240.000 pF to 360.000 pF

DELTA: C± 10% Initial Value

VARIABLES TEST DATA LIFE 1000 HOURS

LOT - S9091.14 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		1000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	270.643	>3X10^2	>3X10^1	268.264	-0.879	<2.5%	PASS
2	312.849	>3X10^2	>3X10^1	305.979	-2.196	<2.5%	PASS
3	283.476	>3X10^2	>3X10^1	281.526	-0.688	<2.5%	PASS
4	324.666	>3X10^2	>3X10^1	318.667	-1.848	<2.5%	PASS
5	315.844	>3X10^2	>3X10^1	312.013	-1.213	<2.5%	PASS
6	315.101	>3X10^2	>3X10^1	311.452	-1.158	<2.5%	PASS
7	268.297	>3X10^2	>3X10^1	265.613	-1.000	<2.5%	PASS
8	291.271	>3X10^2	>3X10^1	288.514	-0.947	<2.5%	PASS
9	291.565	>3X10^2	>3X10^1	289.370	-0.753	<2.5%	PASS
10	299.947	>3X10^2	>3X10^1	296.945	-1.001	<2.5%	PASS
11	264.072	>3X10^2	>3X10^1	261.876	-0.832	<2.5%	PASS
12	256.484	>3X10^2	>3X10^1	253.888	-1.012	<2.5%	PASS
13	261.128	>3X10^2	>3X10^1	259.025	-0.805	<2.5%	PASS
14	312.246	>3X10^2	>3X10^1	306.483	-1.846	<2.5%	PASS
15	312.443	>3X10^2	>3X10^1	308.021	-1.415	<2.5%	PASS
16	273.314	>3X10^2	>3X10^1	269.859	-1.264	<2.5%	PASS
17	270.449	>3X10^2	>3X10^1	267.850	-0.961	<2.5%	PASS
18	264.074	>3X10^2	>3X10^1	261.875	-0.833	<2.5%	PASS
19	292.403	>3X10^2	>3X10^1	288.887	-1.202	<2.5%	PASS
20	286.051	>3X10^2	>3X10^1	283.289	-0.966	<2.5%	PASS
21	294.226	>3X10^2	>3X10^1	291.681	-0.865	<2.5%	PASS
22	280.320	>3X10^2	>3X10^1	278.597	-0.615	<2.5%	PASS
23	283.336	>3X10^2	>3X10^1	280.742	-0.916	<2.5%	PASS
24	305.699	>3X10^2	>3X10^1	302.517	-1.041	<2.5%	PASS
25	266.590	>3X10^2	>3X10^1	264.489	-0.788	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 1000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 1000 HOURS
C 240.000 pF to 360.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

VARIABLES TEST DATA LIFE 2000 HOURS

LOT - S9091.14 SAMPLE PLAN - SEE BELOW SAMPLE SIZE - 25

0 HOURS MEASUREMENTS		2000 HOURS LIFE TEST MEASUREMENTS					
UNIT	C(pF)	IR(MΩ)	HOT IR	C(pF)	Delta C	DF	VISUAL
1	270.643	>3X10^2	>3X10^1	270.578	-0.024	<2.5%	PASS
2	312.849	>3X10^2	>3X10^1	309.287	-1.139	<2.5%	PASS
3	283.476	>3X10^2	>3X10^1	284.067	0.208	<2.5%	PASS
4	324.666	>3X10^2	>3X10^1	322.755	-0.589	<2.5%	PASS
5	315.844	>3X10^2	>3X10^1	316.143	0.095	<2.5%	PASS
6	315.101	>3X10^2	>3X10^1	316.346	0.395	<2.5%	PASS
7	268.297	>3X10^2	>3X10^1	268.408	0.041	<2.5%	PASS
8	291.271	>3X10^2	>3X10^1	291.744	0.162	<2.5%	PASS
9	291.565	>3X10^2	>3X10^1	292.507	0.323	<2.5%	PASS
10	299.947	>3X10^2	>3X10^1	299.012	-0.312	<2.5%	PASS
11	264.072	>3X10^2	>3X10^1	264.034	-0.014	<2.5%	PASS
12	256.484	>3X10^2	>3X10^1	256.061	-0.165	<2.5%	PASS
13	261.128	>3X10^2	>3X10^1	262.430	0.499	<2.5%	PASS
14	312.246	>3X10^2	>3X10^1	309.762	-0.796	<2.5%	PASS
15	312.443	>3X10^2	>3X10^1	312.682	0.076	<2.5%	PASS
16	273.314	>3X10^2	>3X10^1	273.236	-0.029	<2.5%	PASS
17	270.449	>3X10^2	>3X10^1	270.947	0.184	<2.5%	PASS
18	264.074	>3X10^2	>3X10^1	264.767	0.262	<2.5%	PASS
19	292.403	>3X10^2	>3X10^1	292.263	-0.048	<2.5%	PASS
20	286.051	>3X10^2	>3X10^1	286.592	0.189	<2.5%	PASS
21	294.226	>3X10^2	>3X10^1	294.905	0.231	<2.5%	PASS
22	280.320	>3X10^2	>3X10^1	281.010	0.246	<2.5%	PASS
23	283.336	>3X10^2	>3X10^1	281.307	-0.716	<2.5%	PASS
24	305.699	>3X10^2	>3X10^1	304.216	-0.485	<2.5%	PASS
25	266.590	>3X10^2	>3X10^1	264.365	-0.835	<2.5%	PASS

LIMITS: IRt@ 25 Vdc: 3X10^1 Megohms Min. @ 2000 HOURS
IR@ 25 Vdc: 3X10^2 Megohms Min. @ 2000 HOURS
C 240.000 pF to 360.000 pF

DELTA: C± 10% Initial Value
DF 2.5% Max.

Assessment:

The lots submitted for space grade testing met all requirements and as such DLI sales can begin to offer UX material as a space grade material. when a customer is requesting a quotation for a space application the order should be quoted toMIL-PRF-38534 Class K.