RELIABILITY REPORT
DomiLED
InGaN White: DDW-LJG (F1P5)

Title: DomiLED InGaN White DDW-LJG (F1P5) Product Qualification

Sample History: All parts were built and tested in DOMINANT Opto Technologies Sdn. Bhd.

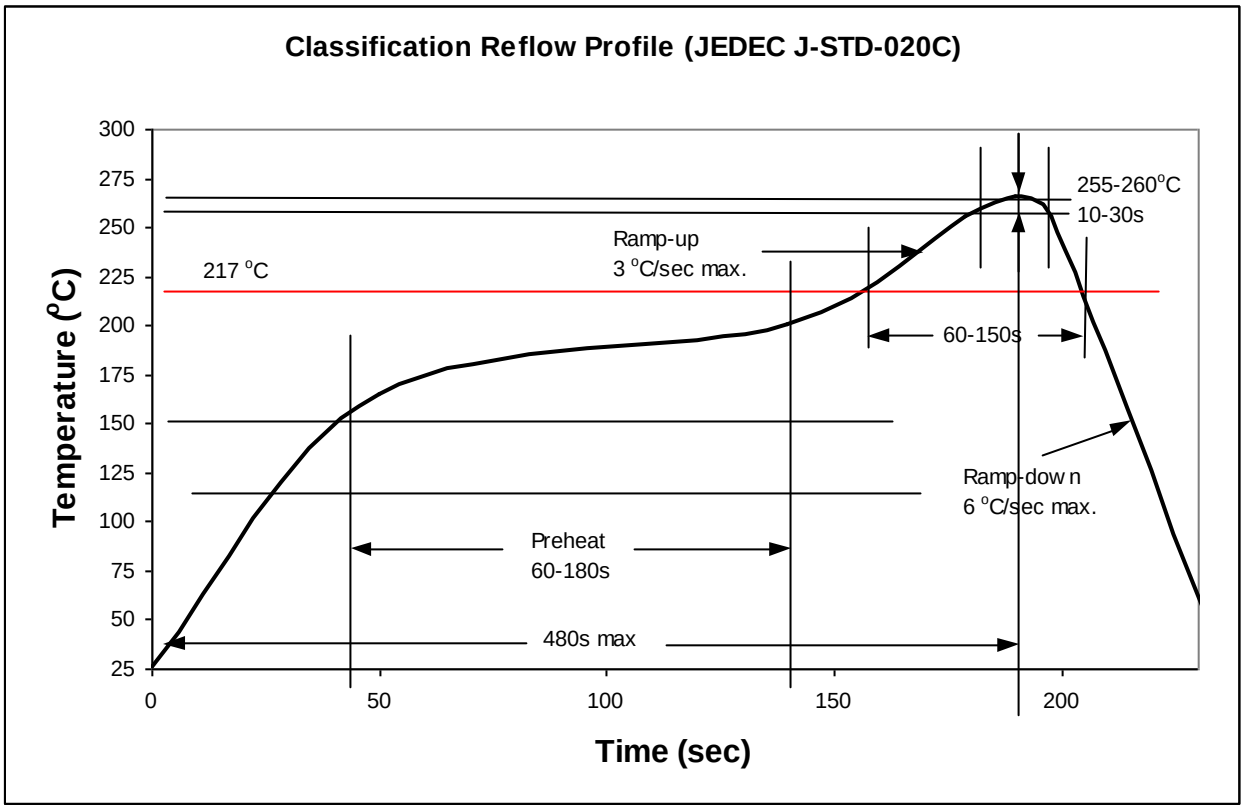
Qualification Plan: All units are to be pre-conditioned before proceeding to the respective test

	Conditions
• Pre-conditioning as per JEDEC Level II requirement (JESD22-A113) • IR re-flow soldering on FR4 board	• Bake @ 125°C, 24 hrs • Storage @ 85°C/60% RH, 168 hrs • 3xIR re-flow soldering at 260°C/10 sec. min. (JEDEC)

Failure Criteria:

• Electrical Failures	• Vf shift >= 20% • Ir > 2x standard limits
• Light Output Degradation	• % Iv shift <= ±50%
• Visual Failures	• Broken or damaged package or lead • Solderability < 95% wetting • Dimension out of tolerance
• Corrosion Test	• Visible black spots on metallic surface
• Pull Test	• Pull Strength < 3gf • Reference: MIL-STD-750

Recommended Pb Free IR-Reflow Soldering Profile



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Reliability Test Matrix:

IR/Convection Re-Flow Process at Peak Temperature 260°C for 10 seconds

Pre-conditioning @ 85°C/60% RH for 168 hours

Device: DDW-LJG

Result: No. of failure(s)

No	Test Type	Stress Condition	S/S	Test Point	Vf	Iv
1	Ambient Life Test (ALT) JESD22-A108	a) IR re-flow soldering • Ta = 25°C • If = 30mA	80	0 hrs 168 hrs 504 hrs 1000hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
2	High Temperature Operating Life Test (HTOL) JESD22-A108	a) IR re-flow soldering • Ta = 70°C • If = 30mA	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
3	Intermittent Operating Life Test (IOL) MIL-STD-750 (Method 1037)	a) Pre-conditioning b) IR re-flow soldering • Ta = 25°C, • If = 30mA (2 mins On, 2 mins Off)	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
4	Wet High Temperature Reverse Biased Test (WHTRB) JESD22-A101	a) Pre-conditioning b) IR re-flow soldering • Ta = 85°C, 85% RH • VR = 4V	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
5	Wet High Temperature Operating Life Test (WHTOL) JESD22-A101	a) Pre-conditioning b) IR re-flow soldering • Ta = 85°C/85% RH • If = 1mA	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
6	Low Temperature Storage Test (LTS) JESD22-A119	a) IR re-flow soldering • Ta = -40°C	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
7	High Temperature Storage Test (HTS) JESD22-A103	a) IR re-flow soldering • Ta = 100°C	80	0 hrs 168 hrs 504 hrs 1000 hrs	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80

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Result: No. of failure(s)

No	Test Type	Stress Condition	S/S	Test Point	Vf	Iv
8	Thermal Shock Test (TSK) JESD22-A106	a) Pre-conditioning b) IR re-flow soldering • -40°C to 100°C, 15 min dwell, < 10 sec transfer	80	0 X 100 X 500 X 1000 X	0/80 0/80 0/80 0/80	0/80 0/80 0/80 0/80
8a	Temperature Cycling Hot Test (TCHT) JESD22-A104 MIL-STD-750 Method 2037	• 125°C Test after test 8. • Decap and wire pull on all wires from 5 devices.	80	-	Pass	Pass
8b	Wire Bond Integrity (WBI) MIL-STD-750 Method 2037	a) IR re-flow soldering • Ta = 125°C b) Decap and wire pull on all wires from 5 devices	5	500hrs	-	-
9	Resistance to Soldering Heat Test (RTSH) MIL-STD-202G JESD22-A111	a) Pre-conditioning • T solder = 260°C, • 1X (dipping)	30	0 X 1 X	0/30 0/30	0/30 0/30
10	Electrostatic Discharge (ESD) – HBM AEC Q101-001, Q101-005 JESD22-A114	a) 1500Ω 100pF, ± 1000V b) 1500Ω 100pF, ± 2000V	30 30	-	Pass	Pass
11	Electrostatic Discharge (ESD) – MM AEC Q101-001, Q101-005 JESD22-A115	a) 0Ω 200pF, ± 100V b) 0Ω 200pF, ± 200V	30 30	-	Pass	Pass
12	Electrostatic Discharge (ESD) – CDM AEC Q101-001, Q101-005 JESD22-C101	a) ±1000V	30	-	Pass	Pass

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Result: No. of failure(s)

No	Test Type	Stress Condition	S/S	Test Point	Vf	Iv
13	Terminal Strength Test MIL-STD-750 Method 2036	Force: 10N for 10 seconds	30	-	Pass	Pass
14	Destructive Physical Analysis (DPA) AEC-Q101-004	• AEC-Q101-004	2	-	Pass	Pass

Conclusions : All qualified test are according to AEC-Q101 REV D standard.

All qualification samples passed.

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Corrosion Test

Device: Representative

Result: No. of failure(s)

No	Test Type	Stress Condition	S/S	Test Point	Vf	Iv
1	Hydrogen Sulphide Test (H2S) IEC 60068-2-43	a) IR re-flow soldering • H_2S 15PPM, 40°C/90%RH	3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
			3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
			3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
2	Flowing Mixed Gas Test (FMG) IEC 60068-2-60	a) IR re-flow soldering • Method 4 • 25°C, 75% RH	3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
				504 hrs	0/3	0/3
			3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
				504 hrs	0/3	0/3
			3	0 hrs	0/3	0/3
				168 hrs	0/3	0/3
				336 hrs	0/3	0/3
				504 hrs	0/3	0/3

Conclusions: All qualification samples passed.

Note: Current part contain Ag plated surface. Although the part passed the stipulated test, DOMINANT do not assure that the part will be corrosion resistant under all environments.

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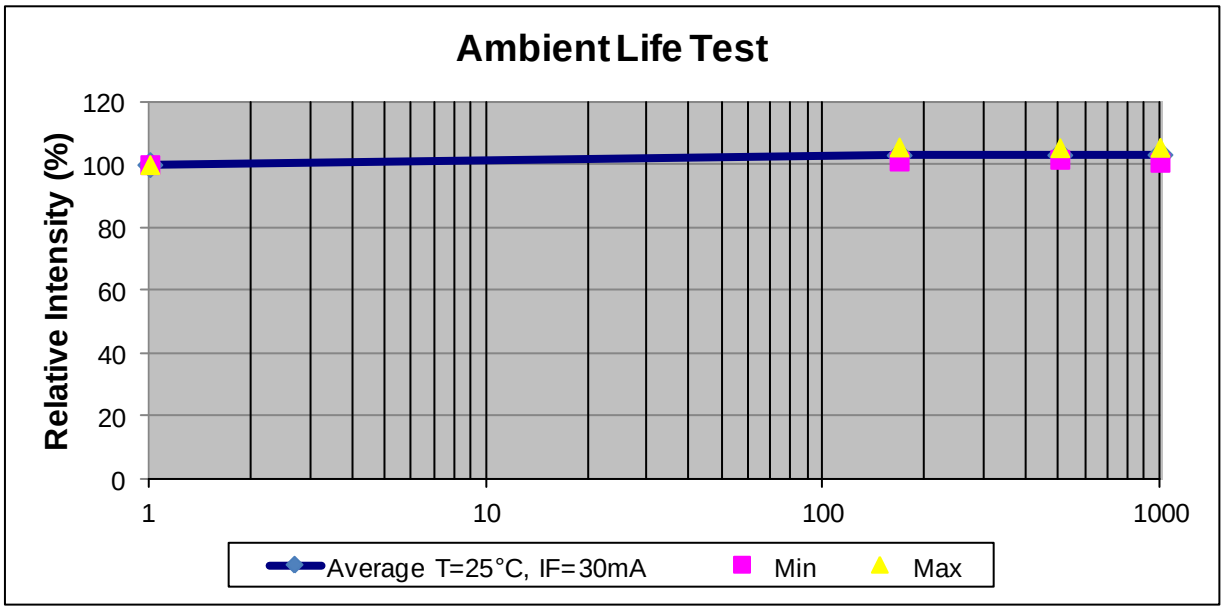
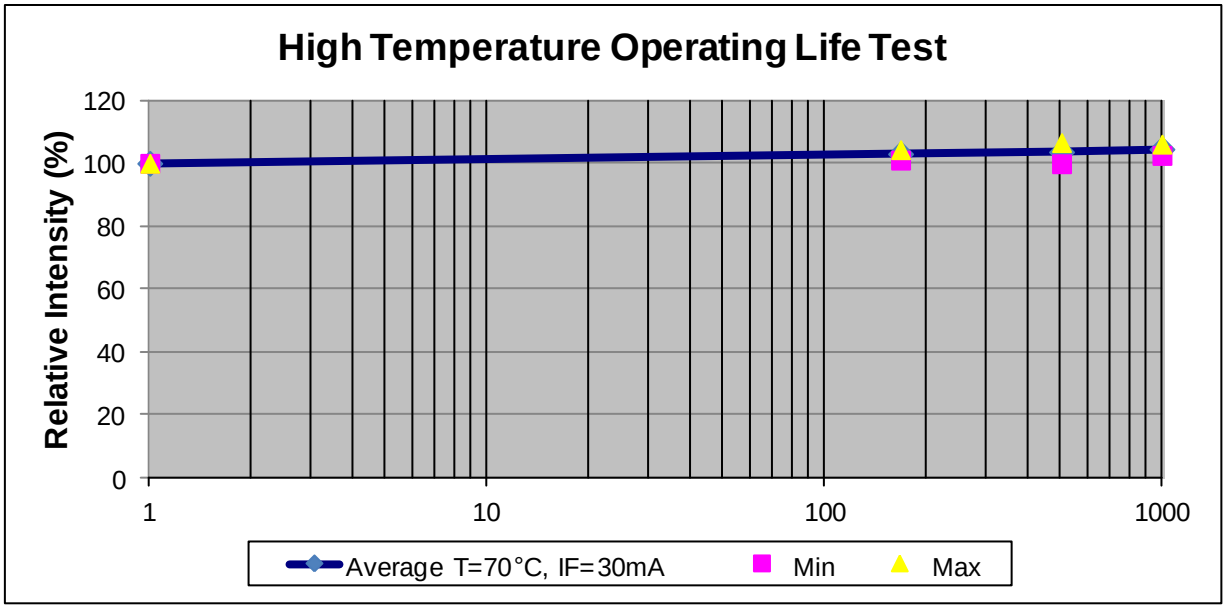
Iv Degradation Data



Note:

168hrs max = 5.621% 504hrs max = 5.396% 1000hrs max = 5.511%

168hrs min = 1.150% 504hrs min = 1.689% 1000hrs min = 0.745%



Note:

168hrs max = 4.338% 504hrs max = 6.587% 1000hrs max = 6.102%

168hrs min = 1.019% 504hrs min = -0.127% 1000hrs min = 2.514%

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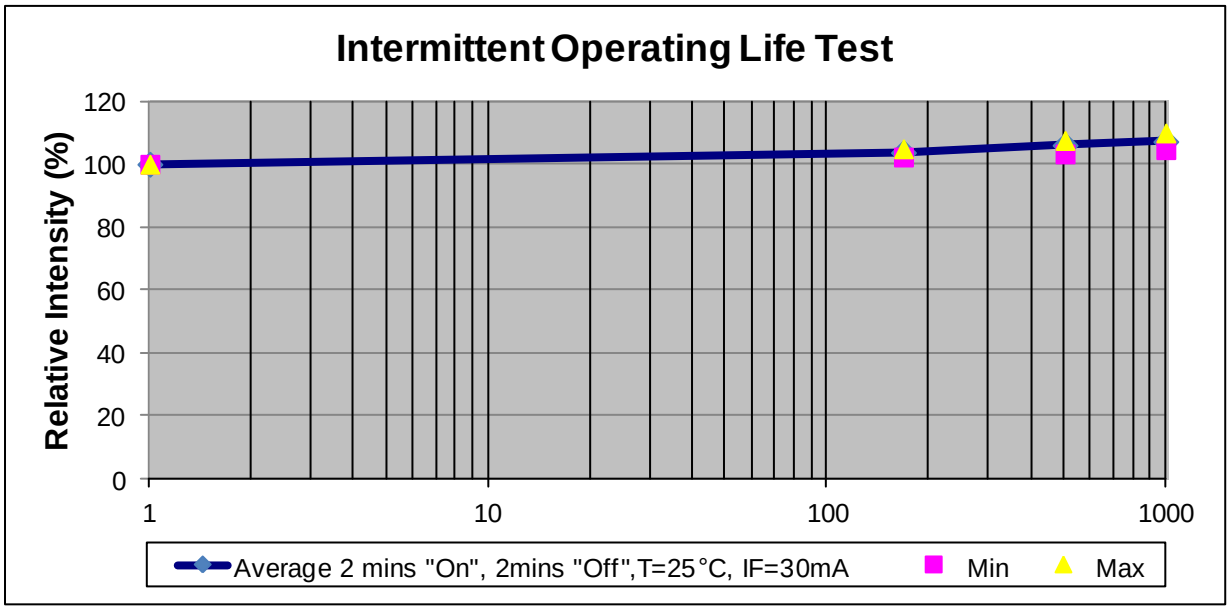
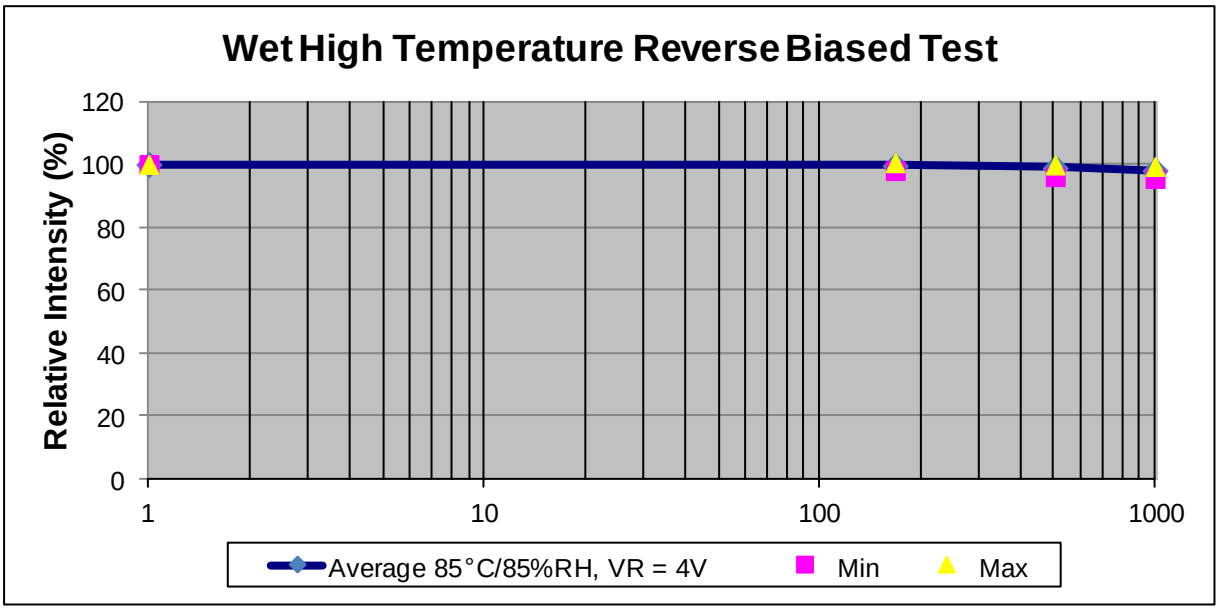


Note:

168hrs max = 4.916%	504hrs max = 7.564%	1000hrs max = 9.956%
168hrs min = 2.310%	504hrs min = 3.301%	1000hrs min = 4.650%



Note:

168hrs max = 0.566%	504hrs max = -0.170%	1000hrs max = -0.639%
168hrs min = -1.930%	504hrs min = -3.863%	1000hrs min = -4.455%

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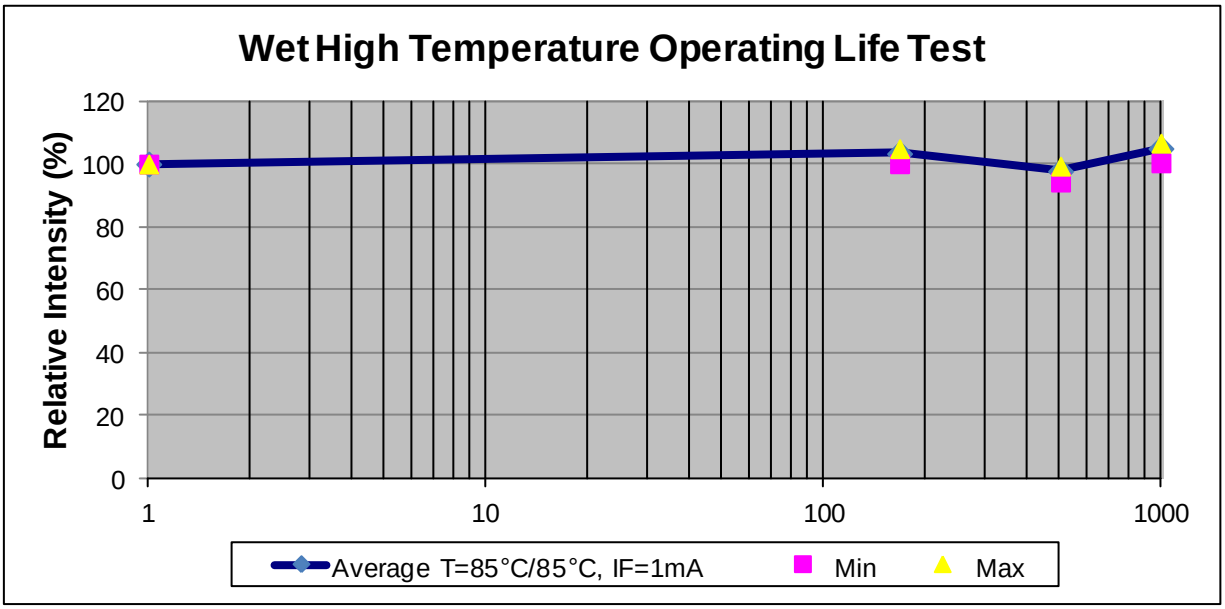
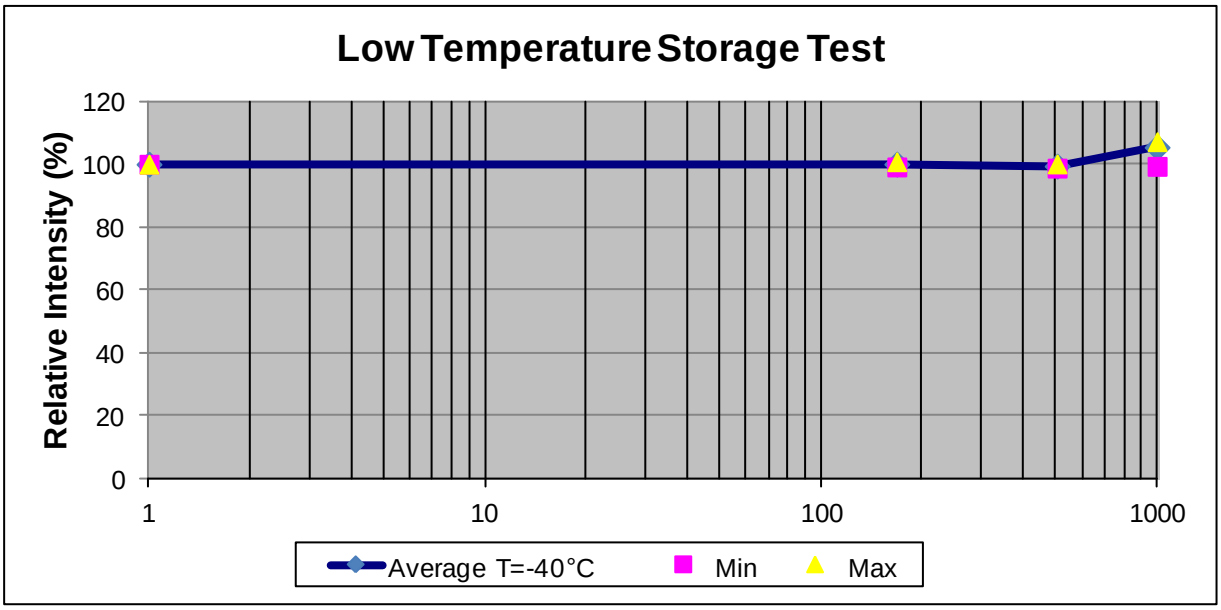


Note:

168hrs max = 4.896%	504hrs max = -0.656%	1000hrs max = 6.667%
168hrs min = 0.109%	504hrs min = -5.718%	1000hrs min = 0.399%



Note:

168hrs max = 0.789%	504hrs max = 0.101%	1000hrs max = 7.181%
168hrs min = -0.859%	504hrs min = -1.229%	1000hrs min = -0.670%

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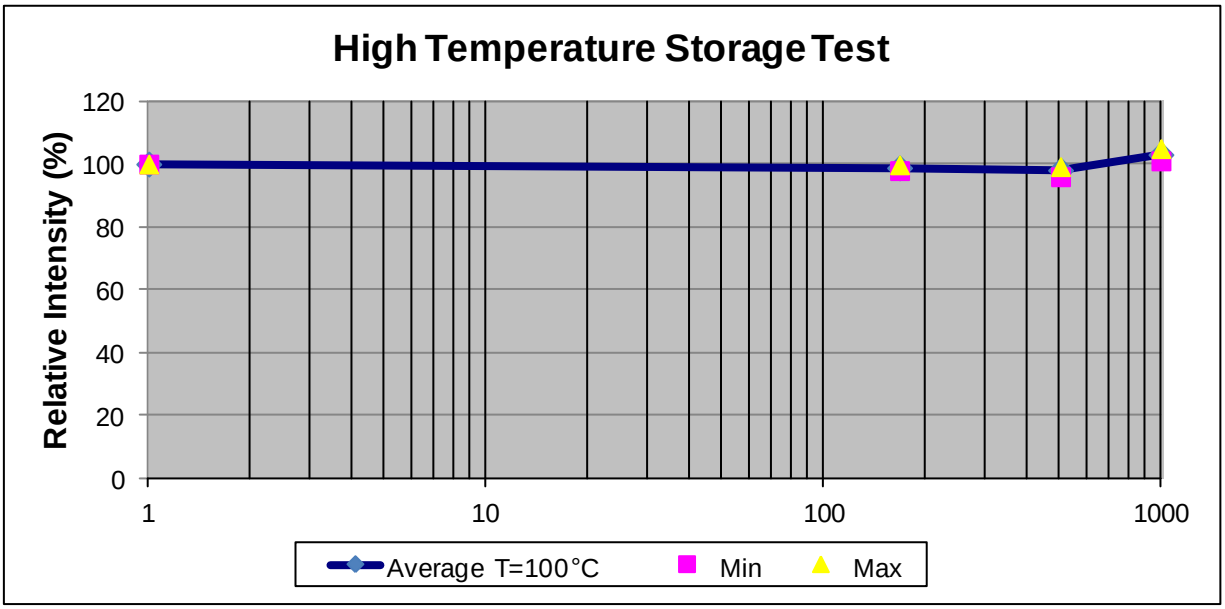
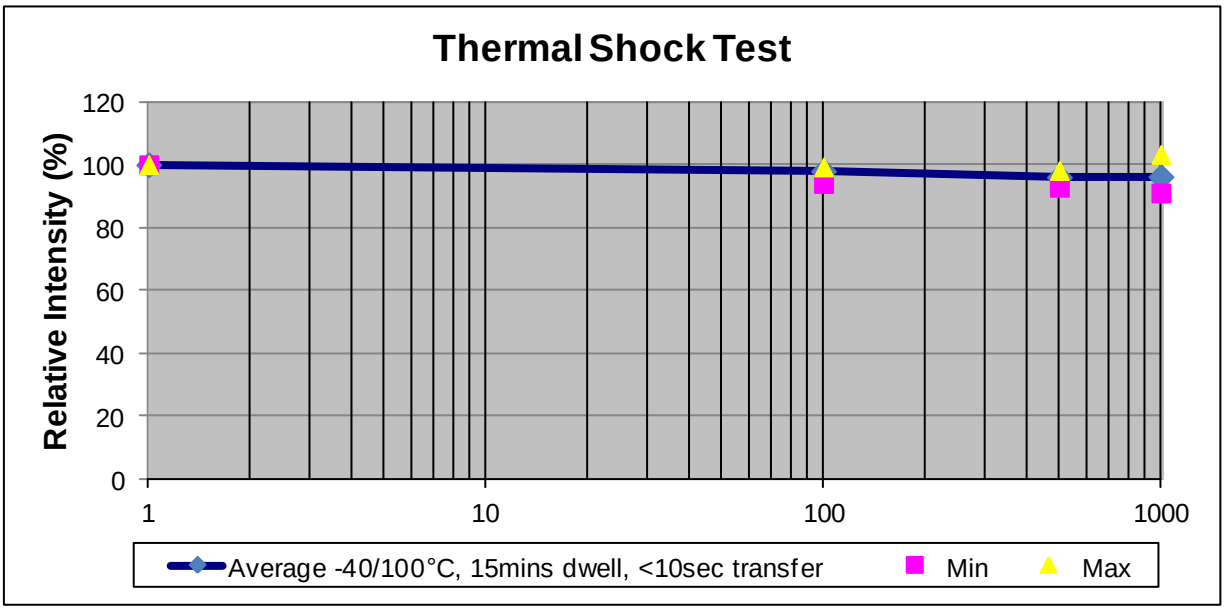


Note:

168hrs max = -0.238% 504hrs max = -0.816% 1000hrs max = 4.920%

168hrs min = -2.073% 504hrs min = -4.029% 1000hrs min = 1.019%



Note:

100X max = -0.697% 500X max = -1.823% 1000X max = 3.285%

100X min = -5.949% 500X min = -7.153% 1000X min = -8.970%

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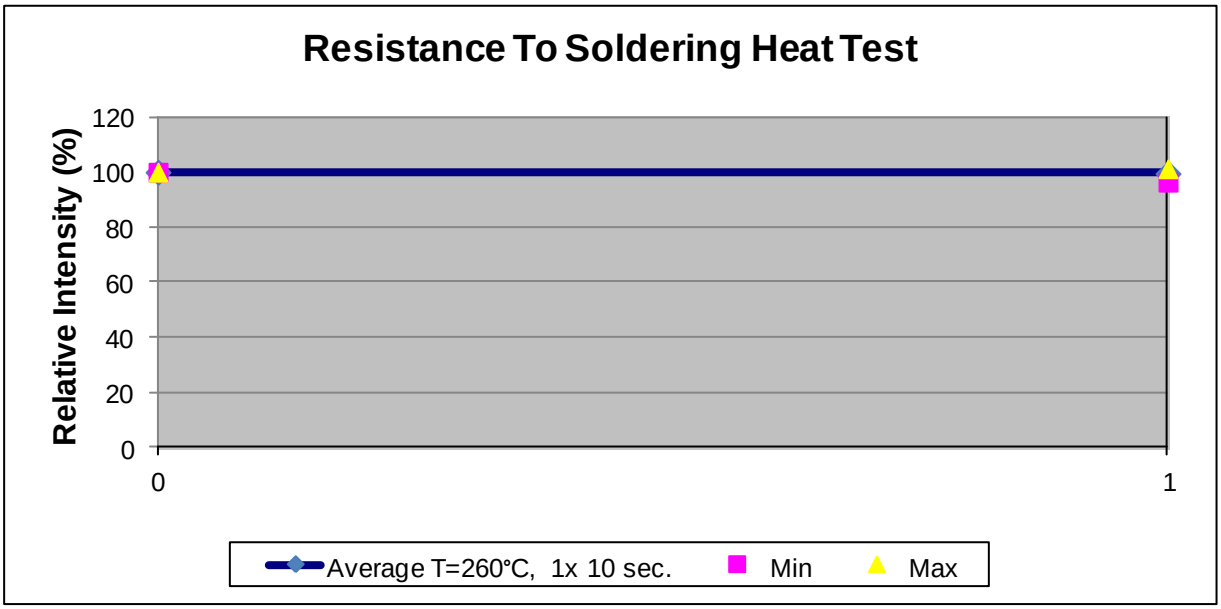
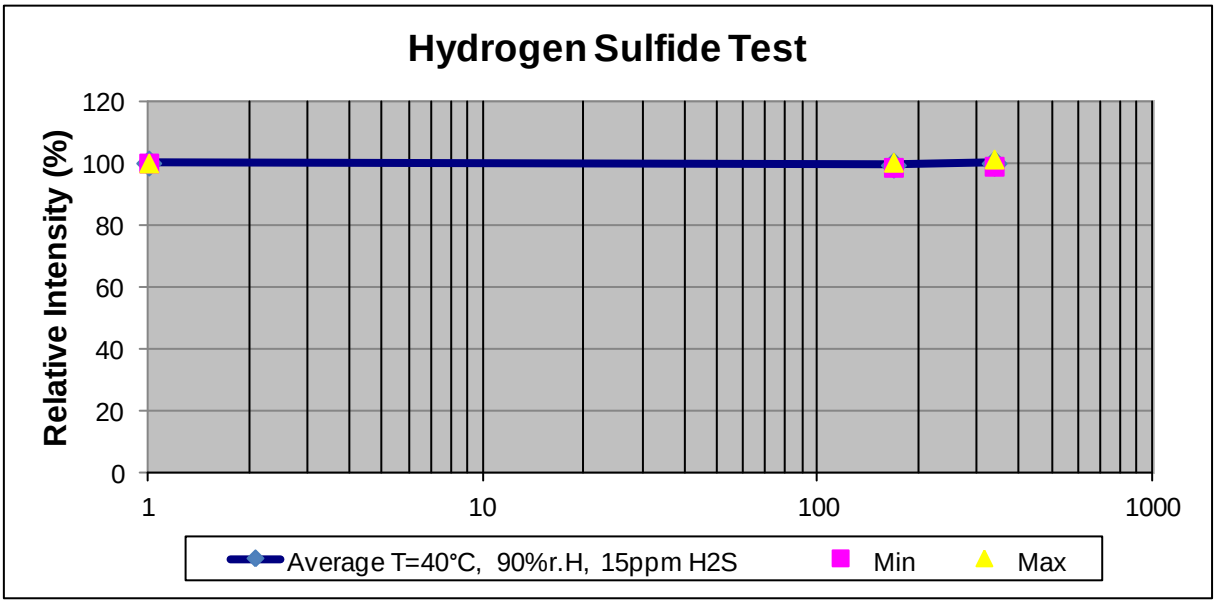


Note:

1X max = 1.259%

1X min = -3.596%



Note:

168hrs max = 0.250% 336hrs max = 1.280%

168hrs min = -1.378% 336hrs min = -1.026%

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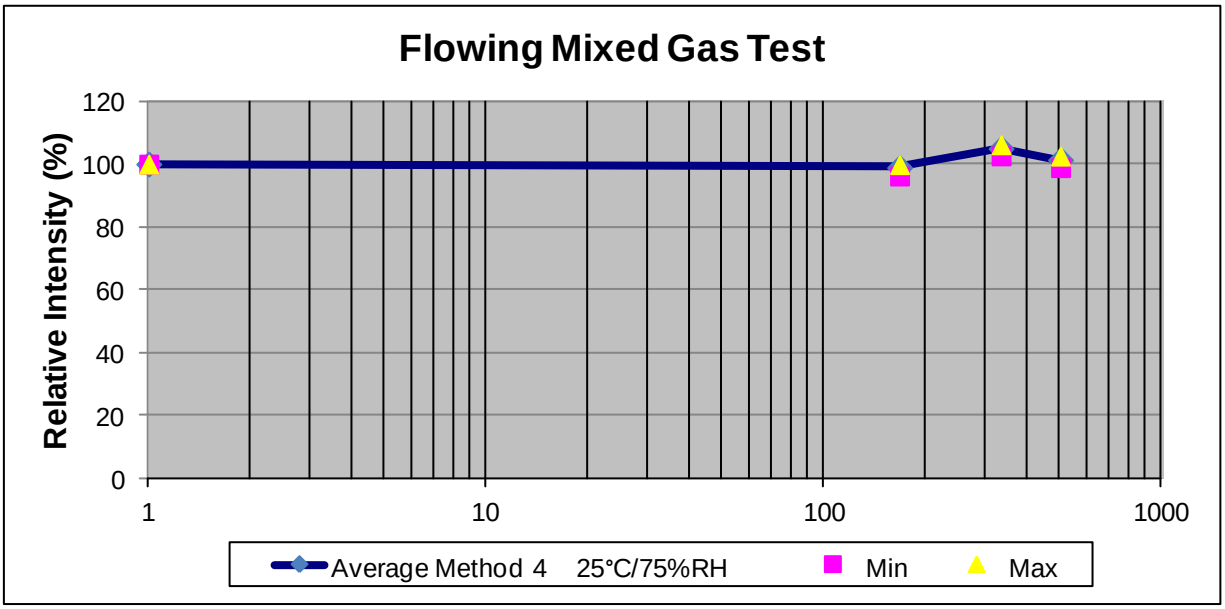

Note:

168hrs max = -0.185%	336hrs max = 6.129%	504hrs max = 2.538%
168hrs min = -3.794%	336hr min = 2.615%	504hrs min = -1.129%

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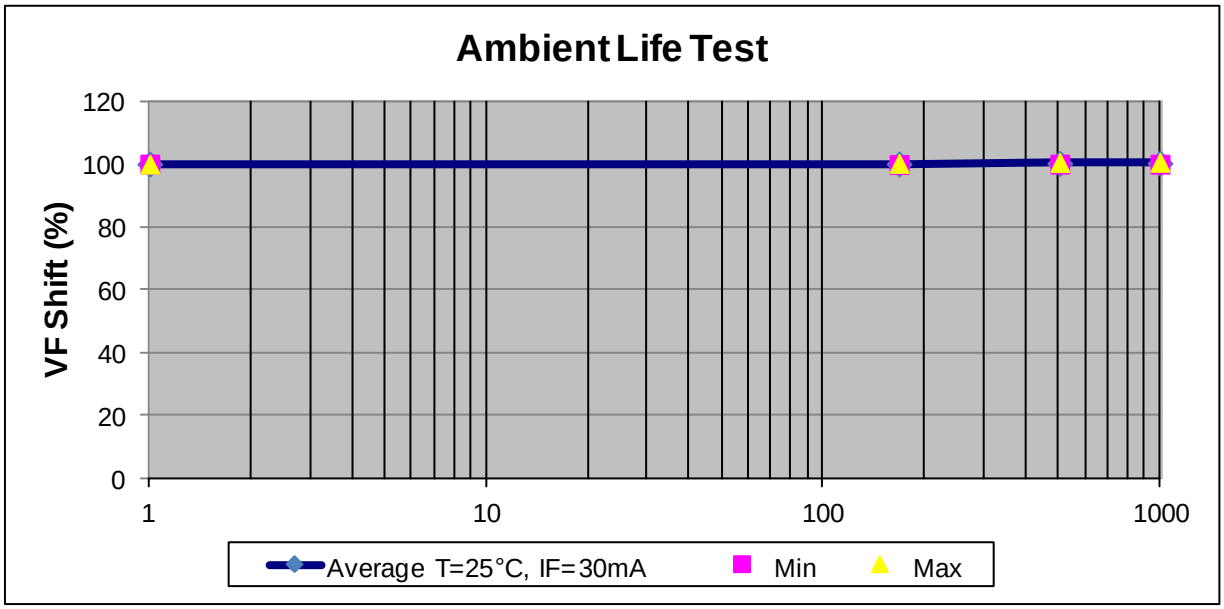
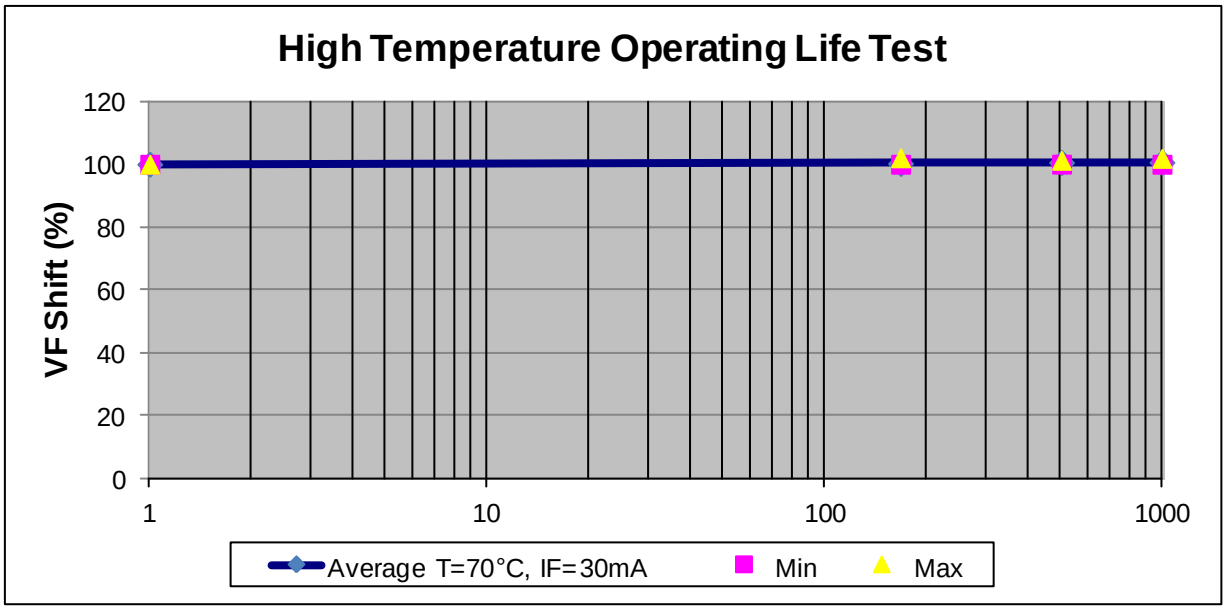
Vf Shift Data



Note:

168hrs max = 0.206%	504hrs max = 0.477%	1000hrs max = 0.548%
168hrs min = -0.137%	504hrs min = 0.000%	1000hrs min = -0.034%



Note:

168hrs max = 2.044%	504hrs max = 1.238%	1000hrs max = 1.855%
168hrs min = 0.000%	504hrs min = 0.034%	1000hrs min = 0.000%

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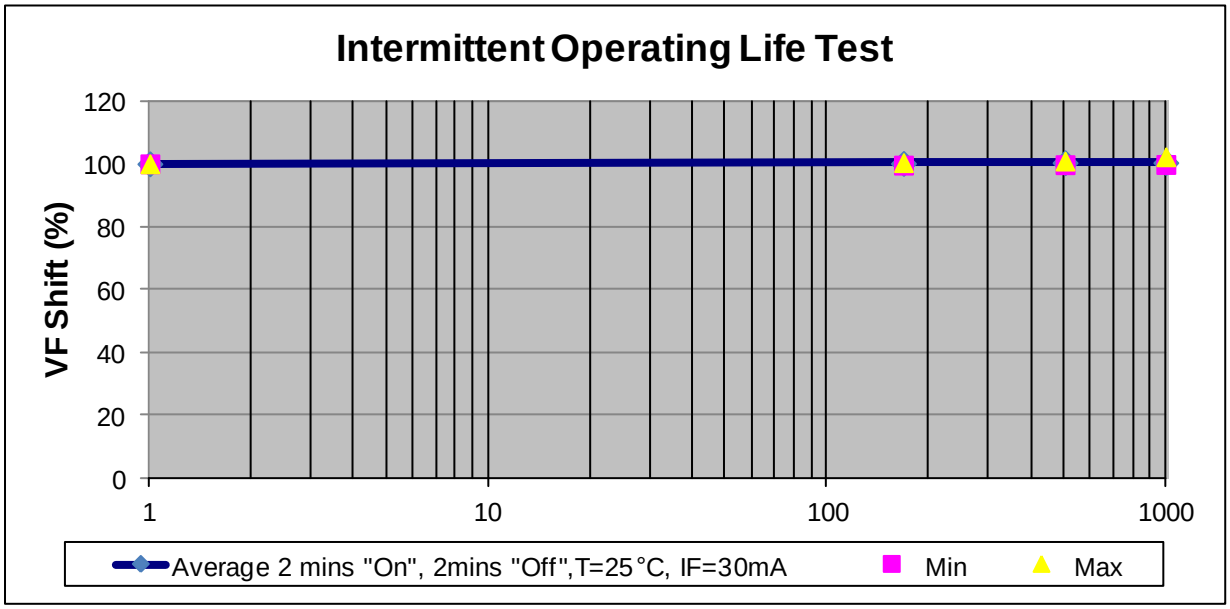
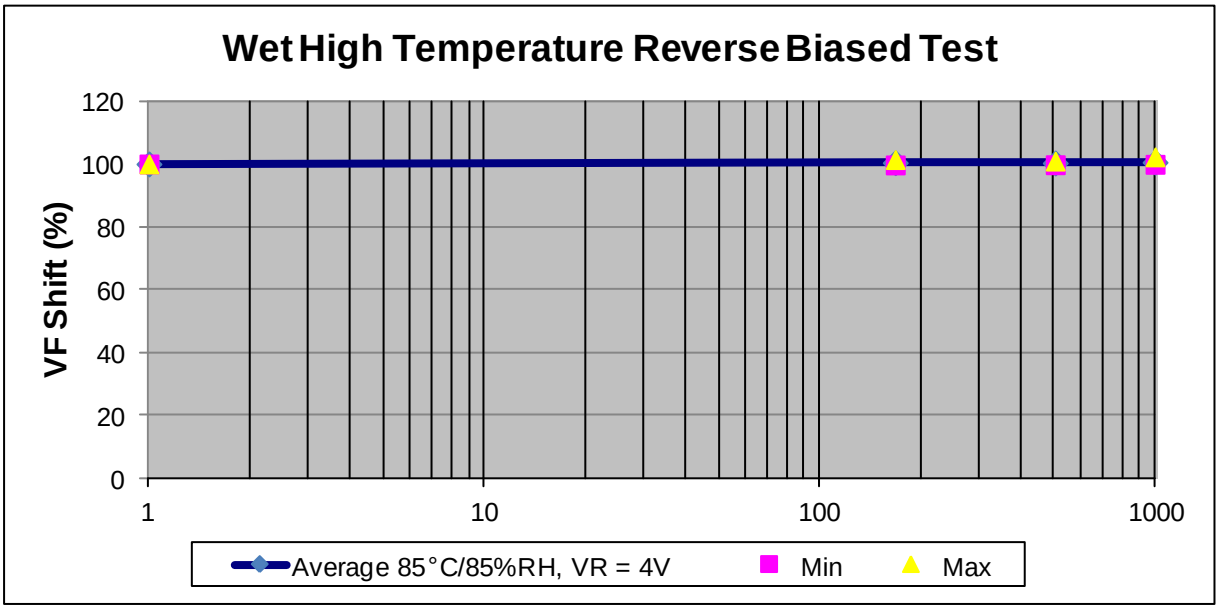


Note:

168hrs max = 0.376% 504hrs max = 0.888% 1000hrs max = 2.243%

168hrs min = -0.409% 504hrs min = -0.273% 1000hrs min = -0.204%



Note:

168hrs max = 1.402% 504hrs max = 0.921% 1000hrs max = 2.256%

168hrs min = -0.306% 504hrs min = -0.238% 1000hrs min = -0.102%

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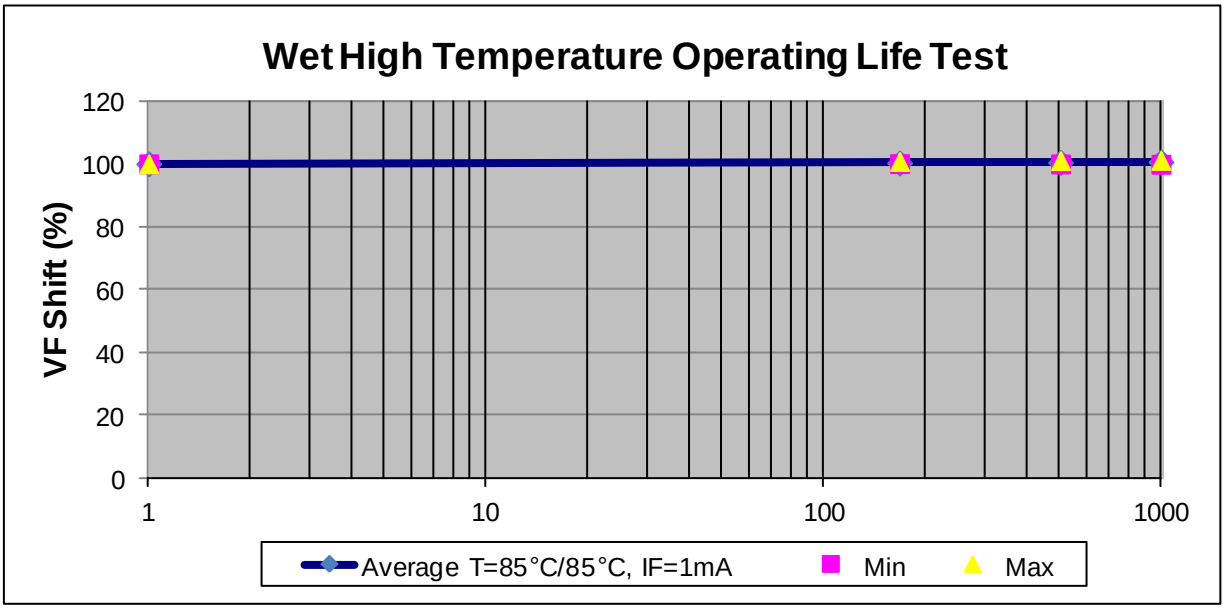
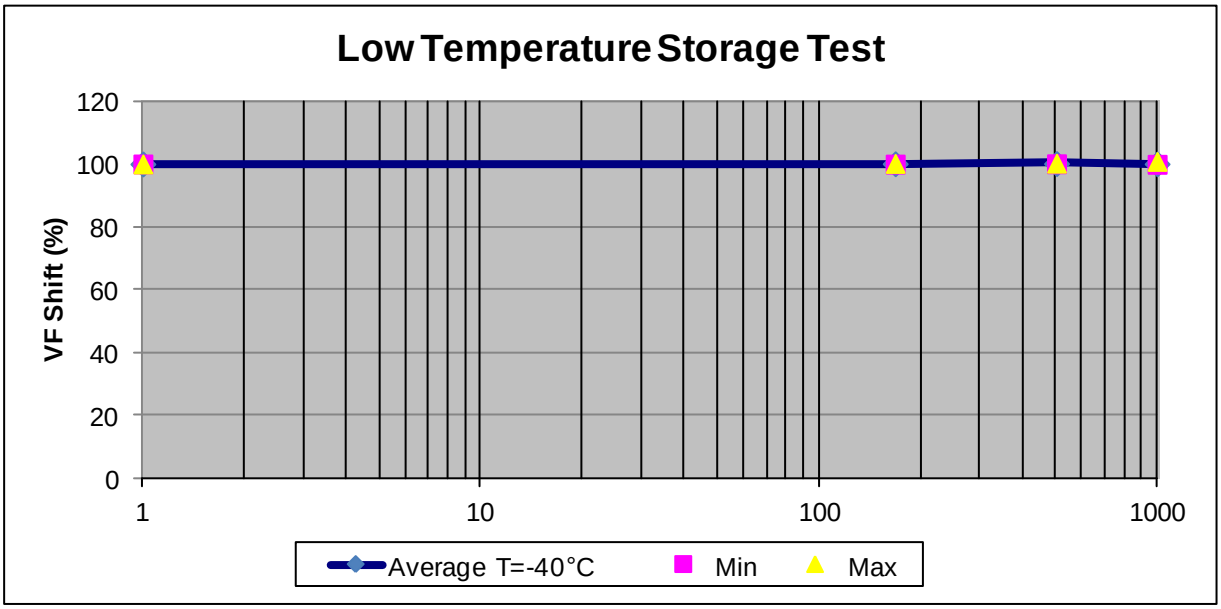


Note:

168hrs max = 0.750%	504hrs max = 1.022%	1000hrs max = 1.093%
168hrs min = 0.068%	504hrs min = -0.034%	1000hrs min = -0.136%



Note:

168hrs max = 0.171%	504hrs max = 0.239%	1000hrs max = 0.821%
168hrs min = -0.034%	504hrs min = 0.068%	1000hrs min = -0.102%

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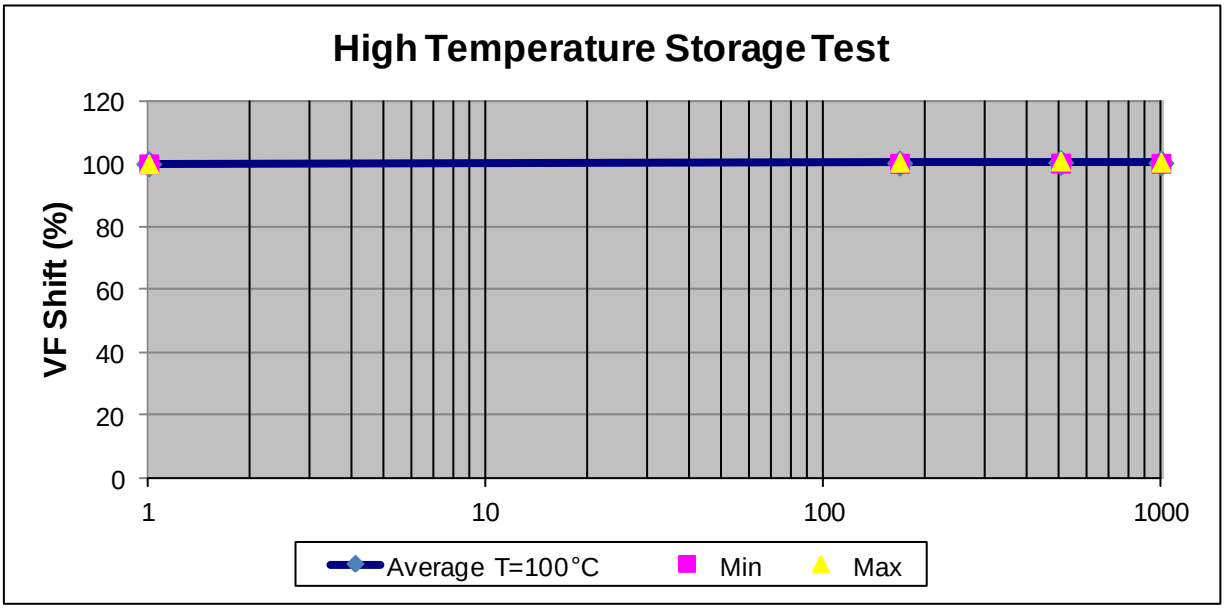
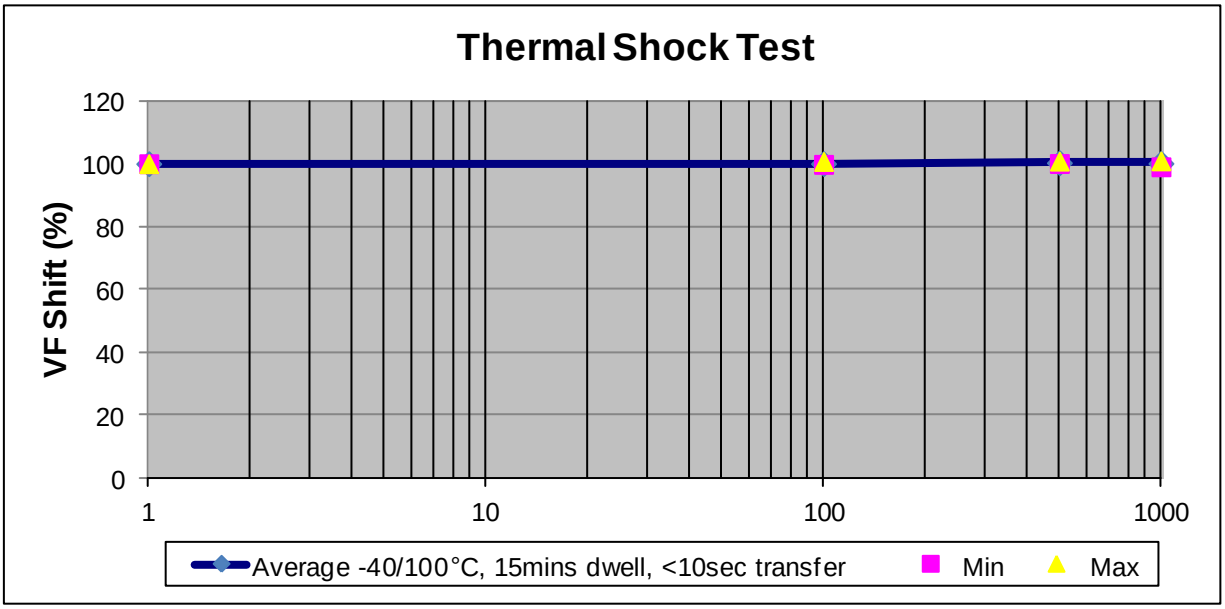


Note:

168hrs max = 0.517% 504hrs max = 0.889% 1000hrs max = 0.517%

168hrs min = 0.170% 504hrs min = 0.239% 1000hrs min = 0.170%



Note:

100X max = 0.717% 500X max = 0.819% 1000X max = 0.894%

100X min = -0.205% 500X min = 0.068% 1000X min = -0.987%

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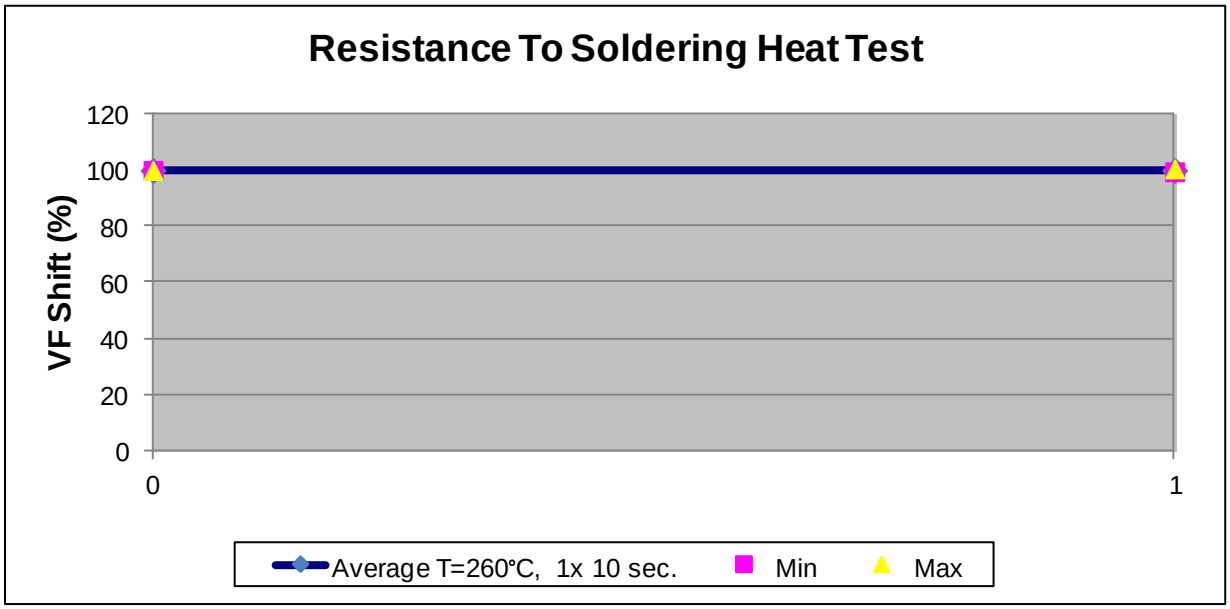
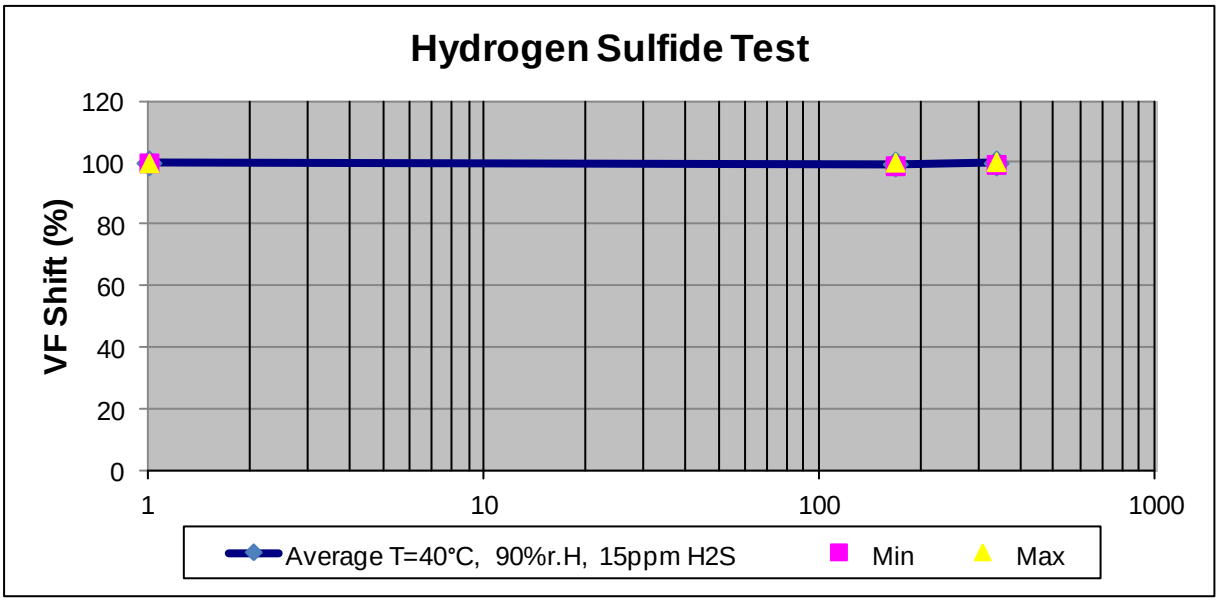


Note:

1X max = 0.576%

1X min = -0.472%



Note:

168hrs max = 0.236% 336hrs max = 0.404%

168hrs min = -0.909% 336hrs min = -0.505%

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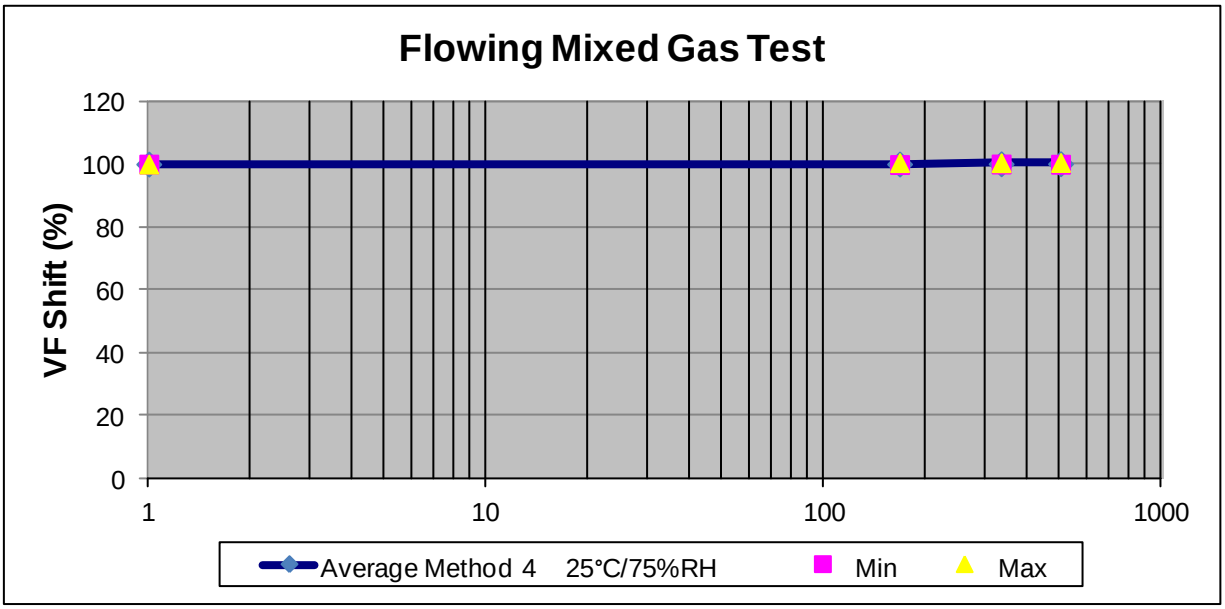

Note:

168hrs max = 0.472%	336hrs max = 0.439%	504hrs max = 0.506%
168hrs min = -0.135%	336hr min = 0.033%	504hrs min = -0.034%

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Corrosion Test

H2S

Before	After 336 hours

Observation: No black spots observed on metallic surface.

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FMG

Before	After 504 hours

Observation: No black spots observed on metallic surface.

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Reliability Test Data:

Ambient Life Test

T=25°C, IF=30mA

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.925	2106.55	2.927	0.07	2186.93	3.82	2.933	0.27	2201.03	4.49	2.935	0.34	2197.9	4.34
2	2.942	2114.16	2.944	0.07	2200.46	4.08	2.952	0.34	2204.2	4.26	2.955	0.44	2193.63	3.76
3	2.934	2125.37	2.936	0.07	2190.02	3.04	2.942	0.27	2190.53	3.07	2.944	0.34	2182.04	2.67
4	2.926	2191.26	2.931	0.17	2270.2	3.60	2.939	0.44	2277.82	3.95	2.941	0.51	2266.8	3.45
5	2.92	2194.92	2.923	0.10	2248.31	2.43	2.93	0.34	2253.29	2.66	2.931	0.38	2230.19	1.61
6	2.928	2075.26	2.925	-0.10	2151.36	3.67	2.933	0.17	2154.37	3.81	2.929	0.03	2152.06	3.70
7	2.914	2030.69	2.911	-0.10	2094.03	3.12	2.917	0.10	2090.99	2.97	2.915	0.03	2089.37	2.89
8	2.937	2084.6	2.938	0.03	2201.78	5.62	2.944	0.24	2197.08	5.40	2.944	0.24	2199.48	5.51
9	2.929	2124.04	2.93	0.03	2190.5	3.13	2.934	0.17	2193.45	3.27	2.933	0.14	2182.44	2.75
10	2.936	2127.79	2.938	0.07	2180.81	2.49	2.945	0.31	2182.48	2.57	2.946	0.34	2155.84	1.32
11	2.921	2059.04	2.922	0.03	2131	3.49	2.927	0.21	2134.97	3.69	2.925	0.14	2150.59	4.45
12	2.928	2080.5	2.93	0.07	2155.12	3.59	2.936	0.27	2151.58	3.42	2.937	0.31	2166.75	4.15
13	2.935	2123.36	2.935	0.00	2192.97	3.28	2.942	0.24	2195.08	3.38	2.941	0.20	2200.07	3.61
14	2.91	2036.4	2.909	-0.03	2101.9	3.22	2.914	0.14	2098.98	3.07	2.912	0.07	2091.92	2.73
15	2.943	2128.93	2.943	0.00	2188.21	2.78	2.949	0.20	2198.95	3.29	2.951	0.27	2191.42	2.94
16	2.92	2077.07	2.919	-0.03	2151.33	3.58	2.924	0.14	2158.59	3.92	2.925	0.17	2176.33	4.78
17	2.927	2085.26	2.926	-0.03	2159.56	3.56	2.932	0.17	2156.47	3.41	2.933	0.20	2157.92	3.48
18	2.934	2132.81	2.934	0.00	2197.81	3.05	2.94	0.20	2192.59	2.80	2.943	0.31	2184.59	2.43
19	2.925	2110.1	2.926	0.03	2172.53	2.96	2.931	0.21	2178.11	3.22	2.929	0.14	2160.54	2.39
20	2.912	2132.62	2.908	-0.14	2157.14	1.15	2.917	0.17	2168.63	1.69	2.917	0.17	2148.51	0.75
21	2.919	2208.71	2.925	0.21	2282.26	3.33	2.932	0.45	2281.46	3.29	2.935	0.55	2284.65	3.44
22	2.922	2068.44	2.922	0.00	2143.93	3.65	2.926	0.14	2140.03	3.46	2.928	0.21	2138.04	3.36
23	2.938	2144.29	2.939	0.03	2213.97	3.25	2.945	0.24	2213.32	3.22	2.947	0.31	2205.46	2.85
24	2.926	2069.5	2.927	0.03	2138.94	3.36	2.933	0.24	2150.12	3.90	2.938	0.41	2141.32	3.47
25	2.932	2123.04	2.934	0.07	2180.87	2.72	2.94	0.27	2192.01	3.25	2.94	0.27	2205.21	3.87
26	2.922	2081.6	2.921	-0.03	2163.18	3.92	2.924	0.07	2157.34	3.64	2.925	0.10	2188.67	5.14
27	2.94	2118.85	2.942	0.07	2187.84	3.26	2.947	0.24	2181.14	2.94	2.95	0.34	2207	4.16
28	2.919	2170.7	2.92	0.03	2228.66	2.67	2.925	0.21	2221.04	2.32	2.932	0.45	2235.27	2.97
29	2.938	2118.99	2.941	0.10	2187.3	3.22	2.944	0.20	2183.1	3.03	2.945	0.24	2192.62	3.47
30	2.94	2143.6	2.942	0.07	2197.27	2.50	2.946	0.20	2204.05	2.82	2.949	0.31	2214.52	3.31
31	2.93	2120.39	2.93	0.00	2193.51	3.45	2.937	0.24	2209.03	4.18	2.935	0.17	2220.07	4.70
32	2.923	2185.64	2.925	0.07	2258.58	3.34	2.934	0.38	2251.13	3.00	2.933	0.34	2238.51	2.42
33	2.923	2112.6	2.924	0.03	2174.36	2.92	2.931	0.27	2185.28	3.44	2.93	0.24	2176.05	3.00
34	2.941	2164.36	2.94	-0.03	2224.06	2.76	2.948	0.24	2225.42	2.82	2.947	0.20	2207.64	2.00
35	2.941	2156.69	2.94	-0.03	2210.63	2.50	2.948	0.24	2215.66	2.73	2.949	0.27	2206.41	2.31
36	2.923	2179.09	2.927	0.14	2259.95	3.71	2.934	0.38	2264.55	3.92	2.935	0.41	2264.54	3.92
37	2.916	2091.81	2.916	0.00	2153.22	2.94	2.92	0.14	2148.79	2.72	2.92	0.14	2131.46	1.90
38	2.937	2118.49	2.938	0.03	2178.89	2.85	2.945	0.27	2187.3	3.25	2.945	0.27	2171.32	2.49
39	2.931	2112.78	2.93	-0.03	2177.76	3.08	2.936	0.17	2185.48	3.44	2.935	0.14	2172.51	2.83
40	2.934	2107.68	2.934	0.00	2163.48	2.65	2.94	0.20	2170.01	2.96	2.94	0.20	2137.93	1.44

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.933	2175.45	2.939	0.20	2263.25	4.04	2.947	0.48	2270.58	4.37	2.949	0.55	2257.56	3.77
42	2.925	2188.18	2.929	0.14	2267.99	3.65	2.936	0.38	2262.41	3.39	2.938	0.44	2249.94	2.82
43	2.926	2139.51	2.929	0.10	2211.17	3.35	2.935	0.31	2216.29	3.59	2.933	0.24	2226.14	4.05
44	2.921	2103.43	2.921	0.00	2165.03	2.93	2.925	0.14	2160.19	2.70	2.926	0.17	2166.64	3.01
45	2.934	2100.86	2.936	0.07	2164.56	3.03	2.942	0.27	2140.41	1.88	2.943	0.31	2174.84	3.52
46	2.94	2132.25	2.942	0.07	2199.85	3.17	2.946	0.20	2208.11	3.56	2.948	0.27	2225.3	4.36
47	2.944	2139.29	2.949	0.17	2201.13	2.89	2.954	0.34	2202.43	2.95	2.955	0.37	2201.43	2.90
48	2.936	2153.06	2.938	0.07	2206.17	2.47	2.944	0.27	2200.28	2.19	2.945	0.31	2200.85	2.22
49	2.936	2137.08	2.938	0.07	2198.87	2.89	2.945	0.31	2212.51	3.53	2.945	0.31	2219.9	3.88
50	2.934	2141.11	2.938	0.14	2186.01	2.10	2.943	0.31	2187.71	2.18	2.945	0.37	2187.63	2.17
51	2.933	2131.44	2.934	0.03	2194.19	2.94	2.939	0.20	2196.6	3.06	2.942	0.31	2216.22	3.98
52	2.931	2127.97	2.93	-0.03	2182.01	2.54	2.935	0.14	2185.19	2.69	2.937	0.20	2192	3.01
53	2.941	2152.35	2.943	0.07	2213.66	2.85	2.948	0.24	2220.92	3.19	2.95	0.31	2236.95	3.93
54	2.939	2129.94	2.939	0.00	2195.96	3.10	2.945	0.20	2202.94	3.43	2.947	0.27	2215.69	4.03
55	2.913	2056.06	2.91	-0.10	2096.74	1.98	2.913	0.00	2097.29	2.01	2.912	-0.03	2079.97	1.16
56	2.946	2154.14	2.948	0.07	2216.22	2.88	2.952	0.20	2212.06	2.69	2.955	0.31	2219.6	3.04
57	2.915	2143.15	2.915	0.00	2201.33	2.71	2.92	0.17	2191.06	2.24	2.928	0.45	2189.55	2.17
58	2.92	2107.26	2.918	-0.07	2156.92	2.36	2.923	0.10	2168.65	2.91	2.923	0.10	2188.87	3.87
59	2.921	2105.33	2.92	-0.03	2152.99	2.26	2.924	0.10	2156.69	2.44	2.925	0.14	2175.48	3.33
60	2.942	2147.67	2.942	0.00	2195.64	2.23	2.948	0.20	2209.43	2.88	2.95	0.27	2237.36	4.18
61	2.904	2102.3	2.906	0.07	2162.04	2.84	2.912	0.28	2152.35	2.38	2.912	0.28	2189.1	4.13
62	2.941	2139.54	2.946	0.17	2211.05	3.34	2.951	0.34	2210.47	3.32	2.955	0.48	2237.96	4.60
63	2.923	2124.88	2.927	0.14	2202.38	3.65	2.932	0.31	2202.11	3.63	2.934	0.38	2221.96	4.57
64	2.924	2098.89	2.927	0.10	2154.21	2.64	2.932	0.27	2146.6	2.27	2.932	0.27	2159.87	2.91
65	2.922	2103.96	2.924	0.07	2157.46	2.54	2.928	0.21	2174.58	3.36	2.929	0.24	2183.66	3.79
66	2.927	2129.92	2.926	-0.03	2195.93	3.10	2.929	0.07	2192.14	2.92	2.933	0.20	2221.78	4.31
67	2.945	2147.91	2.947	0.07	2214.49	3.10	2.952	0.24	2200.34	2.44	2.957	0.41	2226.5	3.66
68	2.917	2040.51	2.916	-0.03	2100.95	2.96	2.92	0.10	2090.75	2.46	2.924	0.24	2113.22	3.56
69	2.934	2113.95	2.938	0.14	2190.05	3.60	2.945	0.37	2184.91	3.36	2.943	0.31	2187.2	3.47
70	2.937	2118.79	2.941	0.14	2207.58	4.19	2.948	0.37	2205.22	4.08	2.946	0.31	2196.97	3.69
71	2.91	2050.36	2.909	-0.03	2120.59	3.43	2.913	0.10	2118.48	3.32	2.913	0.10	2125.41	3.66
72	2.926	2131.72	2.929	0.10	2189.12	2.69	2.934	0.27	2191.54	2.81	2.936	0.34	2186.29	2.56
73	2.936	2150.58	2.937	0.03	2213.69	2.93	2.943	0.24	2213.62	2.93	2.945	0.31	2210.87	2.80
74	2.937	2142.66	2.938	0.03	2198.47	2.60	2.944	0.24	2196.53	2.51	2.943	0.20	2186.65	2.05
75	2.923	2109.46	2.922	-0.03	2158.67	2.33	2.928	0.17	2173	3.01	2.928	0.17	2168.67	2.81
76	2.93	2118.33	2.931	0.03	2183.3	3.07	2.934	0.14	2181.28	2.97	2.935	0.17	2181.16	2.97
77	2.929	2124.42	2.93	0.03	2187.65	2.98	2.933	0.14	2180.98	2.66	2.935	0.20	2184.46	2.83
78	2.938	2142.71	2.94	0.07	2198.46	2.60	2.944	0.20	2194.11	2.40	2.948	0.34	2175.11	1.51
79	2.907	2047.47	2.906	-0.03	2103.98	2.76	2.91	0.10	2112.47	3.17	2.911	0.14	2105.06	2.81
80	2.932	2145.88	2.933	0.03	2197.05	2.38	2.941	0.31	2211.04	3.04	2.938	0.20	2194.34	2.26
Average				0.038		3.048		0.230		3.120		0.266		3.213
Min				-0.137		1.150		0.000		1.689		-0.034		0.745
Max				0.206		5.621		0.477		5.396		0.548		5.511

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High Temperature Operating Life Test

T=70°C, IF=30mA

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.917	2032.04	2.917	0.00	2078.94	2.31	2.933	0.55	2111.14	3.89	2.926	0.31	2124.55	4.55
2	2.911	2163.86	2.916	0.17	2232.95	3.19	2.93	0.65	2241.65	3.59	2.931	0.69	2265.91	4.72
3	2.92	2151.61	2.925	0.17	2221.83	3.26	2.935	0.51	2216.65	3.02	2.942	0.75	2277.78	5.86
4	2.937	2106.31	2.94	0.10	2152.31	2.18	2.955	0.61	2189.15	3.93	2.954	0.58	2221.12	5.45
5	2.915	2134.46	2.92	0.17	2173.71	1.84	2.932	0.58	2210.88	3.58	2.933	0.62	2250.11	5.42
6	2.917	2057.19	2.921	0.14	2113.03	2.71	2.927	0.34	2130.78	3.58	2.929	0.41	2166.13	5.30
7	2.925	2169.96	2.933	0.27	2216.8	2.16	2.942	0.58	2224.21	2.50	2.953	0.96	2274.06	4.80
8	2.911	2118.46	2.915	0.14	2177.09	2.77	2.92	0.31	2168.68	2.37	2.965	1.86	2220.5	4.82
9	2.915	2178.76	2.921	0.21	2246.6	3.11	2.931	0.55	2240.71	2.84	2.939	0.82	2291.12	5.16
10	2.936	2126.72	2.94	0.14	2148.4	1.02	2.948	0.41	2156.46	1.40	2.951	0.51	2220.48	4.41
11	2.924	2093.44	2.932	0.27	2172.75	3.79	2.94	0.55	2185.09	4.38	2.938	0.48	2199.37	5.06
12	2.914	2168.23	2.918	0.14	2220.34	2.40	2.932	0.62	2188.16	0.92	2.932	0.62	2259.69	4.22
13	2.911	2136.57	2.915	0.14	2197.76	2.86	2.926	0.52	2210.14	3.44	2.926	0.52	2217.42	3.78
14	2.935	2125.79	2.995	2.04	2208.24	3.88	2.951	0.55	2214.15	4.16	2.955	0.68	2236.09	5.19
15	2.923	2175.43	2.932	0.31	2241.92	3.06	2.939	0.55	2228.98	2.46	2.945	0.75	2251.87	3.51
16	2.924	2101.52	2.927	0.10	2160.06	2.79	2.935	0.38	2170.01	3.26	2.935	0.38	2200.03	4.69
17	2.934	2107.76	2.941	0.24	2162.37	2.59	2.952	0.61	2153.85	2.19	2.956	0.75	2202.81	4.51
18	2.921	2092.62	2.924	0.10	2163.37	3.38	2.928	0.24	2159.09	3.18	2.929	0.27	2171.05	3.75
19	2.93	2195.13	2.941	0.38	2281.06	3.91	2.953	0.78	2274.17	3.60	2.954	0.82	2290.2	4.33
20	2.936	2115.83	2.945	0.31	2201.26	4.04	2.953	0.58	2208.26	4.37	2.955	0.65	2228.6	5.33
21	2.919	2159.5	2.925	0.21	2212.71	2.46	2.936	0.58	2218.68	2.74	2.939	0.69	2225.75	3.07
22	2.932	2115.55	2.94	0.27	2168.46	2.50	2.946	0.48	2181.88	3.14	2.949	0.58	2187.33	3.39
23	2.923	2157.1	2.931	0.27	2244.84	4.07	2.944	0.72	2244.47	4.05	2.949	0.89	2268.2	5.15
24	2.907	2129.26	2.921	0.48	2173.58	2.08	2.924	0.58	2161.27	1.50	2.928	0.72	2204.27	3.52
25	2.931	2114	2.942	0.38	2203.23	4.22	2.946	0.51	2206.47	4.37	2.952	0.72	2237.64	5.85
26	2.923	2186.16	2.934	0.38	2265.5	3.63	2.942	0.65	2270.5	3.86	2.95	0.92	2295.8	5.02
27	2.936	2115.68	2.944	0.27	2173.5	2.73	2.952	0.54	2205.17	4.23	2.956	0.68	2227.95	5.31
28	2.936	2123.91	2.941	0.17	2205.06	3.82	2.949	0.44	2218.65	4.46	2.949	0.44	2253.52	6.10
29	2.925	2182.93	2.933	0.27	2255.19	3.31	2.944	0.65	2265.39	3.78	2.947	0.75	2278.81	4.39
30	2.93	2120.27	2.941	0.38	2169.29	2.31	2.948	0.61	2192.13	3.39	2.949	0.65	2212.79	4.36
31	2.926	2120.39	2.935	0.31	2184.82	3.04	2.94	0.48	2201.61	3.83	2.943	0.58	2212.01	4.32
32	2.905	2022.59	2.909	0.14	2070.29	2.36	2.915	0.34	2097.67	3.71	2.916	0.38	2117.37	4.69
33	2.92	2075.12	2.921	0.03	2138.28	3.04	2.931	0.38	2168.34	4.49	2.931	0.38	2185.26	5.31
34	2.923	2099.75	2.927	0.14	2156.18	2.69	2.935	0.41	2163.4	3.03	2.936	0.44	2187.8	4.19
35	2.922	2187.55	2.93	0.27	2255.03	3.08	2.941	0.65	2269.03	3.72	2.944	0.75	2288.54	4.62
36	2.931	2109.42	2.937	0.20	2174.59	3.09	2.945	0.48	2195.3	4.07	2.946	0.51	2217.75	5.14
37	2.928	2125.98	2.932	0.14	2179.57	2.52	2.962	1.16	2190.54	3.04	2.94	0.41	2216.51	4.26
38	2.922	2108.37	2.923	0.03	2149.36	1.94	2.935	0.44	2178.77	3.34	2.937	0.51	2193.99	4.06
39	2.918	2177.76	2.926	0.27	2248.87	3.27	2.937	0.65	2262.23	3.88	2.943	0.86	2290.75	5.19
40	2.929	2109.92	2.935	0.20	2180.75	3.36	2.94	0.38	2194.34	4.00	2.948	0.65	2222.8	5.35

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.931	2109.91	2.938	0.24	2178.58	3.25	2.946	0.51	2196.99	4.13	2.948	0.58	2206.41	4.57
42	2.908	2048.46	2.912	0.14	2075.23	1.31	2.944	1.24	2183.4	6.59	2.92	0.41	2125.97	3.78
43	2.92	2159.45	2.927	0.24	2229.16	3.23	2.937	0.58	2252.48	4.31	2.941	0.72	2268.72	5.06
44	2.91	2060.62	2.913	0.10	2139.51	3.83	2.92	0.34	2151.44	4.41	2.922	0.41	2184.81	6.03
45	2.935	2104.89	2.944	0.31	2183.03	3.71	2.952	0.58	2196.97	4.37	2.955	0.68	2225.85	5.75
46	2.921	2102.95	2.926	0.17	2177.58	3.55	2.934	0.45	2183.23	3.82	2.935	0.48	2209.47	5.07
47	2.923	2102.44	2.928	0.17	2154.11	2.46	2.935	0.41	2187.05	4.02	2.937	0.48	2211.74	5.20
48	2.912	2069.77	2.914	0.07	2133.73	3.09	2.922	0.34	2146.26	3.70	2.922	0.34	2187.42	5.68
49	2.928	2118.47	2.933	0.17	2193.97	3.56	2.942	0.48	2201.59	3.92	2.943	0.51	2247.7	6.10
50	2.918	2190.42	2.931	0.45	2266.15	3.46	2.938	0.69	2283.22	4.24	2.941	0.79	2323.05	6.06
51	2.926	2196.96	2.935	0.31	2257.66	2.76	2.947	0.72	2266.93	3.18	2.948	0.75	2291.3	4.29
52	2.914	2151.94	2.923	0.31	2201.4	2.30	2.934	0.69	2235.48	3.88	2.936	0.75	2257.78	4.92
53	2.927	2191.57	2.934	0.24	2260.39	3.14	2.947	0.68	2272.2	3.68	2.947	0.68	2282.56	4.15
54	2.91	2087.15	2.915	0.17	2159.75	3.48	2.922	0.41	2170.32	3.98	2.922	0.41	2179.44	4.42
55	2.92	2180.14	2.932	0.41	2242.69	2.87	2.943	0.79	2248.72	3.15	2.946	0.89	2250.14	3.21
56	2.925	2159.44	2.937	0.41	2246.51	4.03	2.95	0.85	2261.06	4.71	2.951	0.89	2261.79	4.74
57	2.922	2127	2.931	0.31	2218.59	4.31	2.942	0.68	2244.86	5.54	2.944	0.75	2231.15	4.90
58	2.926	2102.8	2.932	0.21	2173.34	3.35	2.941	0.51	2178.65	3.61	2.94	0.48	2215.18	5.34
59	2.931	2087.46	2.937	0.20	2155.1	3.24	2.947	0.55	2173.35	4.11	2.945	0.48	2178.8	4.38
60	2.92	2188.12	2.928	0.27	2229.07	1.87	2.941	0.72	2253.19	2.97	2.94	0.68	2260.52	3.31
61	2.917	2185.63	2.93	0.45	2280.44	4.34	2.939	0.75	2276.95	4.18	2.939	0.75	2280.49	4.34
62	2.909	2141.69	2.914	0.17	2189.46	2.23	2.925	0.55	2212.4	3.30	2.924	0.52	2203.85	2.90
63	2.933	2126.05	2.938	0.17	2183.38	2.70	2.949	0.55	2203.53	3.64	2.947	0.48	2236.64	5.20
64	2.912	2083.78	2.916	0.14	2154.26	3.38	2.924	0.41	2178.38	4.54	2.912	0.00	2179.84	4.61
65	2.915	2166.39	2.923	0.27	2227.45	2.82	2.934	0.65	2261.77	4.40	2.932	0.58	2257.6	4.21
66	2.936	2097.96	2.941	0.17	2171.08	3.49	2.951	0.51	2188.85	4.33	2.948	0.41	2188.68	4.32
67	2.933	2110.28	2.942	0.31	2189.14	3.74	2.951	0.61	2199.75	4.24	2.951	0.61	2213.96	4.91
68	2.916	2094.49	2.921	0.17	2156.86	2.98	2.929	0.45	2173.44	3.77	2.927	0.38	2186.39	4.39
69	2.922	2091.11	2.925	0.10	2161.64	3.37	2.933	0.38	2181.7	4.33	2.931	0.31	2187.86	4.63
70	2.901	2118.2	2.907	0.21	2173.32	2.60	2.918	0.59	2200.85	3.90	2.917	0.55	2199.6	3.84
71	2.916	2058.96	2.918	0.07	2123.03	3.11	2.927	0.38	2143.21	4.09	2.929	0.45	2145.82	4.22
72	2.933	2131.33	2.939	0.20	2182.21	2.39	2.95	0.58	2197.89	3.12	2.954	0.72	2205.18	3.46
73	2.923	2097.32	2.927	0.14	2137.94	1.94	2.935	0.41	2146.01	2.32	2.941	0.62	2153.02	2.66
74	2.933	2109.21	2.939	0.20	2188.02	3.74	2.946	0.44	2195.4	4.09	2.951	0.61	2192.91	3.97
75	2.922	2168.92	2.924	0.07	2217.19	2.23	2.939	0.58	2242.34	3.39	2.942	0.68	2233.2	2.96
76	2.929	2112.14	2.935	0.20	2183.4	3.37	2.944	0.51	2190.07	3.69	2.945	0.55	2172.49	2.86
77	2.93	2087.5	2.936	0.20	2163.04	3.62	2.945	0.51	2163.68	3.65	2.949	0.65	2158.01	3.38
78	2.928	2119.2	2.934	0.20	2184.53	3.08	2.945	0.58	2188.08	3.25	2.948	0.68	2172.47	2.51
79	2.929	2090.31	2.935	0.20	2136.86	2.23	2.946	0.58	2161.05	3.38	2.948	0.65	2146.42	2.68
80	2.93	2125.39	2.935	0.17	2181.88	2.66	2.931	0.03	2122.69	-0.13	2.947	0.58	2200.18	3.52
Average				0.238		2.995		0.549		3.614		0.611		4.508
Min				0.000		1.019		0.034		-0.127		0.000		2.514
Max				2.044		4.338		1.238		6.587		1.855		6.102

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Intermittent Operating Life Test

2 mins "On", 2mins "Off", IF=30mA

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.95	2184.96	2.955	0.17	2274.24	4.09	2.957	0.24	2335.59	6.89	2.958	0.27	2361.41	8.08
2	2.912	2163.07	2.917	0.17	2239.66	3.54	2.919	0.24	2292.9	6.00	2.927	0.52	2326.87	7.57
3	2.935	2168	2.923	-0.41	2247.54	3.67	2.927	-0.27	2295.06	5.86	2.929	-0.20	2309.05	6.51
4	2.92	2198.85	2.926	0.21	2273.19	3.38	2.939	0.65	2325.88	5.78	2.933	0.45	2336.5	6.26
5	2.917	2178.59	2.922	0.17	2262.36	3.85	2.935	0.62	2302.64	5.69	2.929	0.41	2310.72	6.06
6	2.94	2223.45	2.938	-0.07	2297.69	3.34	2.943	0.10	2352.24	5.79	2.946	0.20	2374.59	6.80
7	2.935	2139.54	2.945	0.34	2237.23	4.57	2.948	0.44	2288.47	6.96	2.949	0.48	2312.53	8.09
8	2.933	2032.2	2.935	0.07	2128.93	4.76	2.939	0.20	2169.2	6.74	2.939	0.20	2186.99	7.62
9	2.932	2129.51	2.94	0.27	2211.56	3.85	2.943	0.38	2247.84	5.56	2.944	0.41	2263.39	6.29
10	2.928	2166.6	2.936	0.27	2263.73	4.48	2.939	0.38	2300.91	6.20	2.942	0.48	2316.98	6.94
11	2.933	2148.6	2.935	0.07	2237.8	4.15	2.945	0.41	2294.02	6.77	2.948	0.51	2314.75	7.73
12	2.908	2101.45	2.914	0.21	2174	3.45	2.917	0.31	2225.43	5.90	2.917	0.31	2240.41	6.61
13	2.926	2139.26	2.934	0.27	2219.18	3.74	2.937	0.38	2261.09	5.69	2.938	0.41	2276.48	6.41
14	2.926	2134.51	2.931	0.17	2206.23	3.36	2.934	0.27	2244.81	5.17	2.933	0.24	2261.72	5.96
15	2.944	2098.14	2.947	0.10	2176.28	3.72	2.953	0.31	2222.99	5.95	2.951	0.24	2242.99	6.90
16	2.918	2095.37	2.923	0.17	2168.37	3.48	2.927	0.31	2219.72	5.93	2.926	0.27	2251.59	7.46
17	2.925	2191.08	2.931	0.21	2271.03	3.65	2.936	0.38	2318.66	5.82	2.936	0.38	2346.32	7.09
18	2.921	2176.51	2.923	0.07	2253.14	3.52	2.928	0.24	2299.92	5.67	2.929	0.27	2331.94	7.14
19	2.941	2087.92	2.944	0.10	2173.45	4.10	2.953	0.41	2217.02	6.18	2.949	0.27	2233.69	6.98
20	2.938	2057.47	2.94	0.07	2147.17	4.36	2.946	0.27	2184.57	6.18	2.946	0.27	2203.82	7.11
21	2.92	2187.05	2.927	0.24	2273.44	3.95	2.933	0.45	2324.83	6.30	2.932	0.41	2360.53	7.93
22	2.913	2020.06	2.913	0.00	2095.15	3.72	2.916	0.10	2136.95	5.79	2.916	0.10	2175.73	7.71
23	2.918	2113.66	2.921	0.10	2183.4	3.30	2.926	0.27	2220.71	5.06	2.925	0.24	2250.45	6.47
24	2.914	2034.56	2.914	0.00	2119.25	4.16	2.918	0.14	2154.57	5.90	2.916	0.07	2181.31	7.21
25	2.946	2072.55	2.948	0.07	2164.38	4.43	2.954	0.27	2197.95	6.05	2.954	0.27	2226.21	7.41
26	2.929	2209.15	2.934	0.17	2300.16	4.12	2.955	0.89	2314.68	4.78	2.955	0.89	2354.6	6.58
27	2.932	2093.84	2.933	0.03	2163.11	3.31	2.938	0.20	2209.41	5.52	2.938	0.20	2243.17	7.13
28	2.93	2177.95	2.934	0.14	2251.34	3.37	2.937	0.24	2295.93	5.42	2.938	0.27	2321.94	6.61
29	2.925	2182.36	2.931	0.21	2264.45	3.76	2.936	0.38	2311.6	5.92	2.936	0.38	2325.52	6.56
30	2.904	2074.94	2.905	0.03	2151.48	3.69	2.914	0.34	2197.05	5.88	2.912	0.28	2202.91	6.17
31	2.931	2188.02	2.938	0.24	2283.63	4.37	2.947	0.55	2350.39	7.42	2.944	0.44	2386.83	9.09
32	2.936	2093.88	2.943	0.24	2162.53	3.28	2.948	0.41	2220.97	6.07	2.949	0.44	2261.22	7.99
33	2.936	2058.3	2.937	0.03	2130.49	3.51	2.942	0.20	2175.84	5.71	2.942	0.20	2207.11	7.23
34	2.941	2096.85	2.944	0.10	2175.33	3.74	2.95	0.31	2218.23	5.79	2.949	0.27	2229.29	6.32
35	2.923	2006.82	2.922	-0.03	2084.72	3.88	2.929	0.21	2130.86	6.18	2.927	0.14	2143.43	6.81
36	2.928	2171.13	2.939	0.38	2252.75	3.76	2.943	0.51	2319.06	6.81	2.944	0.55	2346.35	8.07
37	2.916	2145.75	2.925	0.31	2241.31	4.45	2.93	0.48	2303.75	7.36	2.931	0.51	2329.6	8.57
38	2.935	2115.69	2.941	0.20	2192	3.61	2.945	0.34	2234.71	5.63	2.947	0.41	2266.79	7.14
39	2.918	2178.12	2.927	0.31	2254.84	3.52	2.931	0.45	2311.24	6.11	2.932	0.48	2335.93	7.25
40	2.909	2111.32	2.915	0.21	2206.13	4.49	2.92	0.38	2237.93	6.00	2.92	0.38	2259.6	7.02

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.93	2177.08	2.94	0.34	2277.31	4.60	2.945	0.51	2341.76	7.56	2.949	0.65	2393.84	9.96
42	2.934	2141.6	2.944	0.34	2228.45	4.06	2.955	0.72	2291.42	7.00	2.95	0.55	2327.38	8.67
43	2.903	2086.67	2.908	0.17	2171.08	4.05	2.912	0.31	2222.31	6.50	2.912	0.31	2255.77	8.10
44	2.938	2123.62	2.943	0.17	2204.37	3.80	2.95	0.41	2247.05	5.81	2.955	0.58	2267.14	6.76
45	2.931	2161.7	2.938	0.24	2249.7	4.07	2.944	0.44	2298.76	6.34	2.945	0.48	2322.49	7.44
46	2.942	2092.36	2.946	0.14	2164.23	3.43	2.952	0.34	2225.81	6.38	2.951	0.31	2249.63	7.52
47	2.942	2109.11	2.948	0.20	2187.96	3.74	2.953	0.37	2241.29	6.27	3.008	2.24	2280.17	8.11
48	2.927	2149.55	2.934	0.24	2240.42	4.23	2.938	0.38	2291.98	6.63	2.939	0.41	2323.61	8.10
49	2.919	2171.08	2.923	0.14	2257.49	3.98	2.928	0.31	2307.61	6.29	2.949	1.03	2289.28	5.44
50	2.915	2076.43	2.917	0.07	2158.17	3.94	2.922	0.24	2195.97	5.76	2.923	0.27	2219.61	6.90
51	2.925	2202.45	2.934	0.31	2291.56	4.05	2.94	0.51	2355.79	6.96	2.939	0.48	2391.19	8.57
52	2.944	2104.98	2.947	0.10	2177.17	3.43	2.953	0.31	2228	5.84	2.953	0.31	2263.37	7.52
53	2.94	2090.34	2.942	0.07	2167.17	3.68	2.949	0.31	2214.42	5.94	2.949	0.31	2246.46	7.47
54	2.934	2101.51	2.934	0.00	2177.38	3.61	2.942	0.27	2227.24	5.98	2.941	0.24	2255.79	7.34
55	2.913	2112.09	2.918	0.17	2203.3	4.32	2.925	0.41	2251.57	6.60	2.923	0.34	2281.33	8.01
56	2.932	2219.31	2.936	0.14	2293.45	3.34	2.953	0.72	2292.58	3.30	2.951	0.65	2322.51	4.65
57	2.94	2116.63	2.939	-0.03	2184.22	3.19	2.948	0.27	2239.51	5.81	2.948	0.27	2266.05	7.06
58	2.936	2098.85	2.936	0.00	2169.59	3.37	2.944	0.27	2221.54	5.85	2.944	0.27	2245.25	6.98
59	2.922	2061.27	2.921	-0.03	2129.47	3.31	2.927	0.17	2181.22	5.82	2.927	0.17	2197.05	6.59
60	2.941	2097.05	2.942	0.03	2181.39	4.02	2.949	0.27	2233.81	6.52	2.949	0.27	2248.28	7.21
61	2.937	2079.26	2.94	0.10	2154.74	3.63	2.945	0.27	2209.75	6.28	2.945	0.27	2255.86	8.49
62	2.917	2152.61	2.92	0.10	2208.24	2.58	2.925	0.27	2264.79	5.21	2.925	0.27	2308.46	7.24
63	2.927	2165.18	2.931	0.14	2215.2	2.31	2.937	0.34	2269.86	4.83	2.938	0.38	2304.42	6.43
64	2.936	2170.51	2.938	0.07	2236.92	3.06	2.946	0.34	2291.87	5.59	2.944	0.27	2314.35	6.63
65	2.929	2158.73	2.931	0.07	2239.51	3.74	2.938	0.31	2296.7	6.39	2.938	0.31	2320.31	7.48
66	2.947	2101.13	2.949	0.07	2167.04	3.14	2.956	0.31	2231.49	6.20	2.955	0.27	2263.04	7.71
67	2.934	2140.47	2.94	0.20	2198.29	2.70	2.952	0.61	2269.81	6.04	2.947	0.44	2293.15	7.13
68	2.919	2156.5	2.921	0.07	2227.92	3.31	2.925	0.21	2292.36	6.30	2.926	0.24	2311.67	7.20
69	2.944	2084.81	2.946	0.07	2166.78	3.93	2.953	0.31	2217.82	6.38	2.954	0.34	2238.96	7.39
70	2.948	2067.24	2.95	0.07	2168.87	4.92	2.957	0.31	2221	7.44	2.956	0.27	2231.39	7.94
71	2.919	2191.31	2.928	0.31	2260.12	3.14	2.934	0.51	2326.52	6.17	2.935	0.55	2356.79	7.55
72	2.927	2188.35	2.932	0.17	2248.81	2.76	2.938	0.38	2304.38	5.30	2.938	0.38	2330.48	6.49
73	2.932	2087.26	2.933	0.03	2145.13	2.77	2.939	0.24	2194.91	5.16	2.938	0.20	2217.35	6.23
74	2.926	2166.95	2.928	0.07	2237.75	3.27	2.934	0.27	2288.38	5.60	2.934	0.27	2301.8	6.22
75	2.914	2180.71	2.916	0.07	2260.55	3.66	2.923	0.31	2321.82	6.47	2.921	0.24	2335.53	7.10
76	2.903	2183.6	2.911	0.28	2275.55	4.21	2.919	0.55	2337.06	7.03	2.92	0.59	2376.35	8.83
77	2.925	2065.97	2.925	0.00	2124.74	2.84	2.931	0.21	2174.47	5.25	2.932	0.24	2209.51	6.95
78	2.912	2135.47	2.915	0.10	2206.31	3.32	2.921	0.31	2263.15	5.98	2.921	0.31	2283.18	6.92
79	2.943	2105.65	2.945	0.07	2181.71	3.61	2.952	0.31	2230.02	5.91	2.951	0.27	2249.62	6.84
80	2.912	2128.99	2.915	0.10	2211.65	3.88	2.921	0.31	2258.37	6.08	2.92	0.27	2274.94	6.86
Average				0.132		3.706		0.345		6.040		0.373		7.211
Min				-0.409		2.310		-0.273		3.301		-0.204		4.650
Max				0.376		4.916		0.888		7.564		2.243		9.956

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Wet High Temperature Reverse Biased Test

Ta =85°C/85%RH, VR=4V

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.961	2201.87	2.969	0.27	2184.09	-0.81	2.977	0.54	2175.8	-1.18	2.97	0.30	2163.65	-1.74
2	2.931	2100.16	2.934	0.10	2075.51	-1.17	2.934	0.10	2060.93	-1.87	2.941	0.34	2046.08	-2.58
3	2.93	2126.12	2.934	0.14	2126.7	0.03	2.934	0.14	2102.95	-1.09	2.943	0.44	2089.17	-1.74
4	2.926	2241.72	2.937	0.38	2238.06	-0.16	2.938	0.41	2220.91	-0.93	2.949	0.79	2198.07	-1.95
5	2.946	2213.96	2.976	1.02	2204.04	-0.45	2.952	0.20	2173.93	-1.81	2.958	0.41	2169.16	-2.02
6	2.938	2171.48	2.944	0.20	2151.98	-0.90	2.946	0.27	2121.26	-2.31	2.952	0.48	2117.78	-2.47
7	2.942	2240.09	2.956	0.48	2227	-0.58	2.948	0.20	2215.47	-1.10	2.946	0.14	2197.8	-1.89
8	2.934	2252.62	2.945	0.37	2253.1	0.02	2.944	0.34	2230.77	-0.97	2.953	0.65	2215.11	-1.67
9	2.948	2176.88	2.95	0.07	2188.84	0.55	2.953	0.17	2168.16	-0.40	2.964	0.54	2162.98	-0.64
10	2.948	2200.74	2.952	0.14	2192.41	-0.38	2.953	0.17	2180.14	-0.94	2.957	0.31	2163.51	-1.69
11	2.943	2283.41	2.961	0.61	2259.61	-1.04	2.953	0.34	2258.33	-1.10	2.961	0.61	2238.97	-1.95
12	2.906	2173.8	2.939	1.14	2178.09	0.20	2.916	0.34	2162.67	-0.51	2.933	0.93	2076.96	-4.45
13	2.95	2128.81	2.981	1.05	2135.29	0.30	2.951	0.03	2125.19	-0.17	2.96	0.34	2111.02	-0.84
14	2.931	2216.79	2.969	1.30	2185.87	-1.39	2.938	0.24	2170.49	-2.09	2.946	0.51	2157.11	-2.69
15	2.941	2207.57	2.956	0.51	2200.93	-0.30	2.952	0.37	2182.28	-1.15	2.957	0.54	2143.72	-2.89
16	2.939	2147.64	2.97	1.05	2141.69	-0.28	2.943	0.14	2121.8	-1.20	2.949	0.34	2116.44	-1.45
17	2.933	2167.65	2.951	0.61	2148.07	-0.90	2.944	0.38	2127.73	-1.84	2.982	1.67	2115.31	-2.41
18	2.95	2198.86	2.96	0.34	2189.28	-0.44	2.962	0.41	2113.92	-3.86	2.982	1.08	2153.32	-2.07
19	2.935	2239.33	2.945	0.34	2251.78	0.56	2.947	0.41	2221.3	-0.81	2.952	0.58	2215.52	-1.06
20	2.943	2171.2	2.949	0.20	2157.77	-0.62	2.946	0.10	2128.04	-1.99	2.952	0.31	2123.4	-2.20
21	2.927	2232.47	2.939	0.41	2208.32	-1.08	2.939	0.41	2209.25	-1.04	2.946	0.65	2164.85	-3.03
22	2.936	2262.05	2.947	0.37	2261.27	-0.03	2.946	0.34	2221.98	-1.77	2.964	0.95	2201.29	-2.69
23	2.95	2112	2.954	0.14	2122.89	0.52	2.952	0.07	2107.29	-0.22	2.964	0.47	2091.29	-0.98
24	2.949	2167.07	2.948	-0.03	2164.18	-0.13	2.95	0.03	2156.22	-0.50	2.957	0.27	2128.74	-1.77
25	2.939	2224.68	2.945	0.20	2211.1	-0.61	2.948	0.31	2201.5	-1.04	2.951	0.41	2181.84	-1.93
26	2.957	2189.27	2.966	0.30	2185.2	-0.19	2.977	0.68	2178.83	-0.48	2.973	0.54	2151.3	-1.73
27	2.92	2189.94	2.929	0.31	2173.27	-0.76	2.93	0.34	2156.51	-1.53	2.933	0.45	2121.53	-3.12
28	2.956	2190.55	2.969	0.44	2187.52	-0.14	2.961	0.17	2166	-1.12	2.962	0.20	2140.35	-2.29
29	2.914	2128.26	2.937	0.79	2110.56	-0.83	2.926	0.41	2098.68	-1.39	2.928	0.48	2069.03	-2.78
30	2.95	2204.3	2.958	0.27	2206.38	0.09	2.961	0.37	2197.7	-0.30	2.966	0.54	2177.5	-1.22
31	2.962	2170.97	2.961	-0.03	2144.7	-1.21	2.963	0.03	2138.37	-1.50	2.982	0.68	2122.36	-2.24
32	2.933	2215.87	2.938	0.17	2219.58	0.17	2.941	0.27	2205.08	-0.49	2.945	0.41	2191.06	-1.12
33	2.914	2182.69	2.928	0.48	2171.66	-0.51	2.929	0.51	2158.02	-1.13	2.933	0.65	2150.33	-1.48
34	2.939	2159.53	2.944	0.17	2128.92	-1.42	2.954	0.51	2138.63	-0.97	2.95	0.37	2117.98	-1.92
35	2.934	2265.27	2.945	0.37	2258.6	-0.29	2.949	0.51	2251.79	-0.60	2.953	0.65	2231.75	-1.48
36	2.931	2200.7	2.948	0.58	2182.56	-0.82	2.934	0.10	2173.96	-1.22	2.94	0.31	2149.71	-2.32
37	2.936	2229.71	2.943	0.24	2210.86	-0.85	2.95	0.48	2195.64	-1.53	2.952	0.54	2152.59	-3.46
38	2.958	2150.15	2.985	0.91	2131.66	-0.86	2.973	0.51	2127.71	-1.04	2.977	0.64	2113.45	-1.71
39	2.939	2277.16	2.961	0.75	2262.44	-0.65	2.95	0.37	2256.42	-0.91	2.952	0.44	2233.93	-1.90
40	2.931	2247.71	2.951	0.68	2248.31	0.03	2.944	0.44	2230.87	-0.75	2.946	0.51	2208.33	-1.75

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.936	2229.32	2.966	1.02	2219.1	-0.46	2.944	0.27	2201.14	-1.26	2.952	0.54	2176.61	-2.36
42	2.958	2145.79	2.955	-0.10	2147.56	0.08	2.961	0.10	2127.58	-0.85	2.963	0.17	2118.24	-1.28
43	2.925	2138.02	2.958	1.13	2130.16	-0.37	2.943	0.62	2114.92	-1.08	2.954	0.99	2094.15	-2.05
44	2.925	2221.76	2.966	1.40	2212.75	-0.41	2.946	0.72	2205.54	-0.73	2.952	0.92	2197.8	-1.08
45	2.924	2261.17	2.931	0.24	2249.29	-0.53	2.932	0.27	2221.73	-1.74	2.941	0.58	2217.07	-1.95
46	2.934	2244.46	2.959	0.85	2241.06	-0.15	2.949	0.51	2231.66	-0.57	2.954	0.68	2215.47	-1.29
47	2.959	2181.17	2.993	1.15	2172.42	-0.40	2.963	0.14	2160.81	-0.93	2.967	0.27	2147.01	-1.57
48	2.952	2222.11	2.979	0.91	2179.23	-1.93	2.979	0.91	2167.58	-2.45	2.957	0.17	2157.98	-2.89
49	2.939	2144.03	2.98	1.40	2137.42	-0.31	2.941	0.07	2112.75	-1.46	2.946	0.24	2109.24	-1.62
50	2.93	2231.71	2.931	0.03	2220.1	-0.52	2.935	0.17	2195.63	-1.62	2.945	0.51	2180.89	-2.28
51	2.925	2116.95	2.958	1.13	2107.31	-0.46	2.927	0.07	2106.75	-0.48	2.944	0.65	2073.88	-2.03
52	2.937	2272	2.948	0.37	2261.76	-0.45	2.95	0.44	2256.01	-0.70	2.966	0.99	2227.88	-1.94
53	2.95	2184.45	2.952	0.07	2176.29	-0.37	2.954	0.14	2175.66	-0.40	2.956	0.20	2160.35	-1.10
54	2.928	2106.26	2.923	-0.17	2097.51	-0.42	2.925	-0.10	2089.58	-0.79	2.928	0.00	2058.67	-2.26
55	2.942	2167.31	2.941	-0.03	2159.65	-0.35	2.946	0.14	2163.26	-0.19	2.948	0.20	2117.96	-2.28
56	2.926	2226.4	2.935	0.31	2227.75	0.06	2.947	0.72	2208.76	-0.79	2.992	2.26	2195.23	-1.40
57	2.917	2216.72	2.924	0.24	2216.39	-0.01	2.929	0.41	2198.41	-0.83	2.932	0.51	2178.79	-1.71
58	2.933	2260.26	2.944	0.38	2255.49	-0.21	2.941	0.27	2243.8	-0.73	2.967	1.16	2224.84	-1.57
59	2.944	2160.12	2.945	0.03	2149.49	-0.49	2.949	0.17	2153.11	-0.32	2.951	0.24	2116.87	-2.00
60	2.914	2190.58	2.911	-0.10	2198.2	0.35	2.917	0.10	2184.47	-0.28	2.92	0.21	2164.97	-1.17
61	2.927	2203.66	2.936	0.31	2206.05	0.11	2.937	0.34	2143.17	-2.74	2.939	0.41	2179.02	-1.12
62	2.915	2116.07	2.922	0.24	2088.91	-1.28	2.928	0.45	2077.35	-1.83	2.932	0.58	2047.21	-3.25
63	2.95	2177.56	2.953	0.10	2162.46	-0.69	2.947	-0.10	2161.9	-0.72	2.953	0.10	2140.13	-1.72
64	2.933	2172.78	2.941	0.27	2160.99	-0.54	2.932	-0.03	2132.13	-1.87	2.938	0.17	2120.9	-2.39
65	2.933	2244.49	2.941	0.27	2239.7	-0.21	2.96	0.92	2210.03	-1.54	2.945	0.41	2199.86	-1.99
66	2.94	2205.54	2.943	0.10	2209.61	0.18	2.947	0.24	2194.66	-0.49	2.951	0.37	2165.6	-1.81
67	2.933	2247.61	2.938	0.17	2225.47	-0.99	2.95	0.58	2229.38	-0.81	2.961	0.95	2201.36	-2.06
68	2.934	2226.15	2.937	0.10	2232.78	0.30	2.94	0.20	2218.52	-0.34	2.946	0.41	2196.17	-1.35
69	2.94	2105.86	2.931	-0.31	2078.62	-1.29	2.933	-0.24	2065.27	-1.93	2.937	-0.10	2057.39	-2.30
70	2.953	2180	2.95	-0.10	2171.41	-0.39	2.953	0.00	2137.58	-1.95	2.961	0.27	2140.9	-1.79
71	2.942	2254.55	2.939	-0.10	2245.67	-0.39	2.948	0.20	2243.78	-0.48	2.951	0.31	2215.06	-1.75
72	2.94	2254.39	2.945	0.17	2249.41	-0.22	2.951	0.37	2233.73	-0.92	2.954	0.48	2208.3	-2.04
73	2.962	2157.12	2.965	0.10	2169.33	0.57	2.966	0.14	2136.56	-0.95	2.967	0.17	2113.73	-2.01
74	2.936	2238.93	2.943	0.24	2226.96	-0.53	2.947	0.37	2205.12	-1.51	2.983	1.60	2196.38	-1.90
75	2.909	2192.33	2.913	0.14	2170.33	-1.00	2.917	0.28	2175.13	-0.78	2.922	0.45	2151.02	-1.88
76	2.944	2267.38	2.96	0.54	2269.1	0.08	2.961	0.58	2200	-2.97	2.966	0.75	2188.73	-3.47
77	2.928	2257.2	2.943	0.51	2255	-0.10	2.941	0.44	2241.87	-0.68	2.946	0.61	2219.31	-1.68
78	2.934	2233.53	2.942	0.27	2235.38	0.08	2.95	0.55	2214.78	-0.84	2.951	0.58	2183.7	-2.23
79	2.919	2197.92	2.927	0.27	2188.8	-0.41	2.932	0.45	2180.56	-0.79	2.936	0.58	2169.33	-1.30
80	2.922	2150.77	2.93	0.27	2128.67	-1.03	2.934	0.41	2119.87	-1.44	2.937	0.51	2102.13	-2.26
Average				0.396		-0.406		0.306		-1.133		0.532		-1.968
Min				-0.306		-1.930		-0.238		-3.863		-0.102		-4.455
Max				1.402		0.566		0.921		-0.170		2.256		-0.639

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Wet High Temperature Operating Life Test

T=85°C/85%RH, IF = 1mA

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.945	2129.45	2.951	0.20	2205.21	3.56	2.959	0.48	2098.99	-1.43	2.961	0.54	2261.97	6.22
2	2.935	2164.87	2.957	0.75	2167.24	0.11	2.965	1.02	2070.53	-4.36	2.967	1.09	2232.76	3.14
3	2.94	2062.66	2.943	0.10	2143.16	3.90	2.948	0.27	2033.24	-1.43	2.953	0.44	2192.31	6.29
4	2.93	2128.53	2.94	0.34	2226.04	4.58	2.951	0.72	2100.35	-1.32	2.951	0.72	2210.34	3.84
5	2.904	2089.99	2.914	0.34	2160.15	3.36	2.925	0.72	2046.71	-2.07	2.926	0.76	2205.91	5.55
6	2.936	2139.4	2.946	0.34	2212.03	3.39	2.954	0.61	2096.32	-2.01	2.957	0.72	2255.34	5.42
7	2.928	2115.15	2.94	0.41	2198.26	3.93	2.949	0.72	2074.97	-1.90	2.949	0.72	2215.94	4.77
8	2.924	2123.92	2.934	0.34	2190.66	3.14	2.939	0.51	2085.69	-1.80	2.944	0.68	2244.97	5.70
9	2.934	2092.54	2.938	0.14	2156.4	3.05	2.941	0.24	2043.01	-2.37	2.947	0.44	2203.98	5.33
10	2.932	2087.74	2.937	0.17	2158.47	3.39	2.941	0.31	2046.87	-1.96	2.947	0.51	2209.02	5.81
11	2.929	2148.02	2.94	0.38	2217.49	3.23	2.947	0.61	2098.86	-2.29	2.952	0.79	2257.28	5.09
12	2.92	2125.17	2.927	0.24	2198.15	3.43	2.932	0.41	2074.42	-2.39	2.936	0.55	2218.61	4.40
13	2.915	2119.78	2.925	0.34	2181.49	2.91	2.929	0.48	2075.83	-2.07	2.935	0.69	2236.85	5.52
14	2.92	2124.66	2.929	0.31	2175.17	2.38	2.936	0.55	2068.31	-2.65	2.939	0.65	2233.74	5.13
15	2.921	2130.86	2.93	0.31	2199.25	3.21	2.94	0.65	2086.72	-2.07	2.943	0.75	2217.68	4.07
16	2.93	2180.51	2.941	0.38	2243.22	2.88	2.95	0.68	2125.6	-2.52	2.949	0.65	2278.77	4.51
17	2.939	2063.32	2.944	0.17	2153.01	4.35	2.95	0.37	2029.2	-1.65	2.953	0.48	2158.12	4.59
18	2.943	2085.6	2.948	0.17	2168.25	3.96	2.955	0.41	2061.29	-1.17	2.957	0.48	2218.65	6.38
19	2.932	2153.48	2.942	0.34	2209.02	2.58	2.95	0.61	2099.14	-2.52	2.951	0.65	2267.61	5.30
20	2.922	2115.92	2.932	0.34	2166.47	2.39	2.937	0.51	2054.91	-2.88	2.941	0.65	2218.82	4.86
21	2.921	2066.68	2.925	0.14	2142.68	3.68	2.928	0.24	2026.02	-1.97	2.932	0.38	2185.96	5.77
22	2.913	2009.73	2.917	0.14	2100.77	4.53	2.92	0.24	1970.96	-1.93	2.924	0.38	2139.99	6.48
23	2.932	2037.34	2.941	0.31	2112.53	3.69	2.948	0.55	2023.97	-0.66	2.95	0.61	2173.16	6.67
24	2.939	2089.3	2.946	0.24	2166.94	3.72	2.951	0.41	2070.52	-0.90	2.954	0.51	2228.56	6.67
25	2.921	1990.85	2.926	0.17	2061.53	3.55	2.93	0.31	1963.03	-1.40	2.933	0.41	2107.29	5.85
26	2.93	2147.63	2.94	0.34	2217.43	3.25	2.945	0.51	2104.98	-1.99	2.948	0.61	2270.81	5.74
27	2.931	2154.13	2.94	0.31	2234.71	3.74	2.947	0.55	2110.4	-2.03	2.958	0.92	2162.72	0.40
28	2.936	2133.91	2.942	0.20	2207.02	3.43	2.947	0.37	2094.99	-1.82	2.939	0.10	2223.08	4.18
29	2.929	2142.55	2.939	0.34	2209.72	3.14	2.941	0.41	2085.19	-2.68	2.95	0.72	2249.69	5.00
30	2.932	2072.01	2.937	0.17	2149.26	3.73	2.943	0.38	2032.03	-1.93	2.928	-0.14	2089.21	0.83
31	2.941	2071.65	2.947	0.20	2151.11	3.84	2.955	0.48	2046.03	-1.24	2.946	0.17	2206.11	6.49
32	2.94	2080.62	2.944	0.14	2163.61	3.99	2.952	0.41	2056.46	-1.16	2.954	0.48	2187.45	5.13
33	2.938	2094.54	2.943	0.17	2178.08	3.99	2.949	0.37	2062.05	-1.55	2.951	0.44	2210.98	5.56
34	2.917	2032.93	2.92	0.10	2096.64	3.13	2.929	0.41	1982.42	-2.48	2.929	0.41	2122.98	4.43
35	2.934	2154.68	2.943	0.31	2219.06	2.99	2.95	0.55	2108.11	-2.16	2.956	0.75	2272.3	5.46
36	2.912	2011.49	2.917	0.17	2069.93	2.91	2.923	0.38	1965.17	-2.30	2.925	0.45	2118.29	5.31
37	2.912	2084.51	2.922	0.34	2141.57	2.74	2.929	0.58	2032.38	-2.50	2.932	0.69	2194.41	5.27
38	2.93	2093.13	2.934	0.14	2156.57	3.03	2.939	0.31	2031.53	-2.94	2.94	0.34	2192.62	4.75
39	2.921	2182.65	2.929	0.27	2249.33	3.06	2.936	0.51	2104.54	-3.58	2.941	0.68	2270.08	4.01
40	2.924	2121.92	2.935	0.38	2187.34	3.08	2.94	0.55	2071.81	-2.36	2.945	0.72	2251.89	6.13

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.914	2094.72	2.924	0.34	2152.69	2.77	2.928	0.48	2031.16	-3.03	2.936	0.75	2226.21	6.28
42	2.932	2137.82	2.942	0.34	2200.1	2.91	2.942	0.34	2065.65	-3.38	2.952	0.68	2248.88	5.20
43	2.928	2145.67	2.937	0.31	2218.47	3.39	2.94	0.41	2079.79	-3.07	2.96	1.09	2253.89	5.04
44	2.929	2164.89	2.94	0.38	2222.1	2.64	2.946	0.58	2096.49	-3.16	2.952	0.79	2284.28	5.51
45	2.925	2146.49	2.937	0.41	2213.63	3.13	2.943	0.62	2095.93	-2.36	2.955	1.03	2211.64	3.04
46	2.919	2127.2	2.928	0.31	2185.66	2.75	2.93	0.38	2062.53	-3.04	2.939	0.69	2259.79	6.23
47	2.934	2149.38	2.945	0.37	2219.03	3.24	2.95	0.55	2086.68	-2.92	2.962	0.95	2269.04	5.57
48	2.924	2140.12	2.934	0.34	2205.39	3.05	2.938	0.48	2066.54	-3.44	2.95	0.89	2185.77	2.13
49	2.933	2069.43	2.937	0.14	2138.11	3.32	2.943	0.34	2029.23	-1.94	2.947	0.48	2195.01	6.07
50	2.934	2086.69	2.938	0.14	2147.2	2.90	2.944	0.34	2038.41	-2.31	2.949	0.51	2210.21	5.92
51	2.926	2148.25	2.936	0.34	2201.9	2.50	2.942	0.55	2086.15	-2.89	2.948	0.75	2253.55	4.90
52	2.935	2119.73	2.946	0.37	2181.36	2.91	2.952	0.58	2060.81	-2.78	2.956	0.72	2208.82	4.20
53	2.909	2091.72	2.917	0.28	2185.77	4.50	2.923	0.48	2051.6	-1.92	2.93	0.72	2203.64	5.35
54	2.93	2076.84	2.938	0.27	2140.15	3.05	2.941	0.38	2015.78	-2.94	2.946	0.55	2165.33	4.26
55	2.922	1997.35	2.924	0.07	2072.41	3.76	2.931	0.31	1959.96	-1.87	2.932	0.34	2108.16	5.55
56	2.919	2111.75	2.928	0.31	2179.35	3.20	2.935	0.55	2064.3	-2.25	2.944	0.86	2163.81	2.47
57	2.933	2138.01	2.942	0.31	2217.72	3.73	2.95	0.58	2098.82	-1.83	2.955	0.75	2261.34	5.77
58	2.93	2120.28	2.94	0.34	2207.72	4.12	2.946	0.55	2071.55	-2.30	2.951	0.72	2232.43	5.29
59	2.93	2172.81	2.939	0.31	2256.69	3.86	2.948	0.61	2135.81	-1.70	2.952	0.75	2277.03	4.80
60	2.909	2039.46	2.915	0.21	2105.32	3.23	2.922	0.45	1991.63	-2.35	2.924	0.52	2134.18	4.64
61	2.945	2078.28	2.95	0.17	2166.3	4.24	2.951	0.20	2054.69	-1.14	2.96	0.51	2184.68	5.12
62	2.942	2069.33	2.945	0.10	2170.65	4.90	2.951	0.31	2044.19	-1.21	2.955	0.44	2190.85	5.87
63	2.926	2104.84	2.935	0.31	2168.85	3.04	2.942	0.55	2056.34	-2.30	2.946	0.68	2208.51	4.93
64	2.936	2149.2	2.945	0.31	2206.84	2.68	2.952	0.54	2091.19	-2.70	2.956	0.68	2244.88	4.45
65	2.932	2161.49	2.943	0.38	2232.28	3.28	2.952	0.68	2109.65	-2.40	2.96	0.95	2197.52	1.67
66	2.936	2077.7	2.941	0.17	2157.57	3.84	2.947	0.37	2041.36	-1.75	2.95	0.48	2185	5.16
67	2.933	2028.38	2.937	0.14	2119.06	4.47	2.944	0.38	1990.13	-1.89	2.946	0.44	2126.28	4.83
68	2.928	2143.28	2.934	0.20	2191.53	2.25	2.939	0.38	2081.2	-2.90	2.944	0.55	2245.65	4.78
69	2.926	2149.9	2.934	0.27	2197.45	2.21	2.94	0.48	2093.48	-2.62	2.943	0.58	2252.69	4.78
70	2.93	2182.75	2.946	0.55	2211.88	1.33	2.954	0.82	2057.94	-5.72	2.958	0.96	2207.31	1.13
71	2.939	2131.7	2.946	0.24	2190.78	2.77	2.953	0.48	2076.73	-2.58	2.956	0.58	2225.13	4.38
72	2.938	2053.39	2.942	0.14	2135.55	4.00	2.948	0.34	2016.41	-1.80	2.952	0.48	2165.01	5.44
73	2.922	2026.4	2.925	0.10	2099.07	3.59	2.928	0.21	1984.39	-2.07	2.933	0.38	2147.05	5.95
74	2.918	2037.65	2.921	0.10	2091.34	2.63	2.924	0.21	1987.15	-2.48	2.927	0.31	2142.69	5.15
75	2.932	2092.29	2.935	0.10	2152.44	2.87	2.936	0.14	2035.09	-2.73	2.944	0.41	2207.94	5.53
76	2.943	2072.56	2.948	0.17	2156.71	4.06	2.952	0.31	2039.04	-1.62	2.958	0.51	2208.49	6.56
77	2.926	2136.31	2.935	0.31	2218.74	3.86	2.94	0.48	2091.92	-2.08	2.946	0.68	2214.96	3.68
78	2.922	2040.46	2.925	0.10	2115.25	3.67	2.921	-0.03	1984.45	-2.74	2.932	0.34	2167.02	6.20
79	2.94	2061.68	2.945	0.17	2151.49	4.36	2.942	0.07	2010.83	-2.47	2.953	0.44	2184.42	5.95
80	2.908	2101.7	2.917	0.31	2187.59	4.09	2.918	0.34	2039.74	-2.95	2.929	0.72	2188.47	4.13
Average				0.261		3.325		0.452		-2.276		0.603		4.949
Min				0.068		0.109		-0.034		-5.718		-0.136		0.399
Max				0.750		4.896		1.022		-0.656		1.093		6.667

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Low Temperature Storage Test

T= -40°C

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.949	2135.45	2.951	0.07	2137.07	0.08	2.952	0.10	2110.28	-1.18	2.949	0.00	2250	5.36
2	2.935	2162.16	2.937	0.07	2164.18	0.09	2.937	0.07	2136.16	-1.20	2.937	0.07	2281.88	5.54
3	2.92	2166.7	2.922	0.07	2167.55	0.04	2.924	0.14	2149.15	-0.81	2.921	0.03	2283.73	5.40
4	2.916	2135.45	2.917	0.03	2135.44	0.00	2.92	0.14	2124.98	-0.49	2.917	0.03	2253.39	5.52
5	2.947	2145.15	2.948	0.03	2139.52	-0.26	2.951	0.14	2131.21	-0.65	2.947	0.00	2243.43	4.58
6	2.936	2106.91	2.937	0.03	2113.97	0.34	2.94	0.14	2094.89	-0.57	2.937	0.03	2248.09	6.70
7	2.947	2133.9	2.949	0.07	2137.82	0.18	2.95	0.10	2114.04	-0.93	2.947	0.00	2268.82	6.32
8	2.933	2113.01	2.937	0.14	2128.96	0.75	2.939	0.20	2114.45	0.07	2.936	0.10	2247.14	6.35
9	2.92	2063.87	2.921	0.03	2062.45	-0.07	2.923	0.10	2051.24	-0.61	2.92	0.00	2174.1	5.34
10	2.93	2134.23	2.931	0.03	2120.31	-0.65	2.933	0.10	2117.15	-0.80	2.929	-0.03	2230.36	4.50
11	2.93	2173.38	2.932	0.07	2182.69	0.43	2.933	0.10	2156.08	-0.80	2.934	0.14	2299.76	5.81
12	2.91	2102.76	2.912	0.07	2107.13	0.21	2.913	0.10	2084.66	-0.86	2.913	0.10	2232.34	6.16
13	2.939	2118.64	2.94	0.03	2119.42	0.04	2.944	0.17	2107.08	-0.55	2.94	0.03	2245.69	6.00
14	2.928	2138.27	2.931	0.10	2137.53	-0.03	2.933	0.17	2123.42	-0.69	2.929	0.03	2246.12	5.04
15	2.929	2200.41	2.931	0.07	2196.03	-0.20	2.932	0.10	2185.14	-0.69	2.93	0.03	2290.62	4.10
16	2.941	2134.64	2.942	0.03	2145.18	0.49	2.944	0.10	2126.18	-0.40	2.941	0.00	2268.57	6.27
17	2.939	2135.29	2.94	0.03	2141.92	0.31	2.942	0.10	2119.37	-0.75	2.945	0.20	2120.99	-0.67
18	2.928	2162.43	2.931	0.10	2160.12	-0.11	2.932	0.14	2148.08	-0.66	2.929	0.03	2286.52	5.74
19	2.929	2179.8	2.93	0.03	2176.31	-0.16	2.936	0.24	2165.33	-0.66	2.932	0.10	2295.22	5.29
20	2.933	2144.14	2.933	0.00	2138.21	-0.28	2.937	0.14	2132.03	-0.56	2.933	0.00	2241.2	4.53
21	2.915	2152.07	2.914	-0.03	2169.05	0.79	2.918	0.10	2151.17	-0.04	2.917	0.07	2306.61	7.18
22	2.93	2107.3	2.932	0.07	2113.9	0.31	2.934	0.14	2092.29	-0.71	2.929	-0.03	2238.71	6.24
23	2.919	2187.11	2.922	0.10	2186.66	-0.02	2.923	0.14	2170.02	-0.78	2.921	0.07	2301.34	5.22
24	2.926	2100.52	2.927	0.03	2097.66	-0.14	2.929	0.10	2088.14	-0.59	2.925	-0.03	2211.89	5.30
25	2.936	2119.29	2.937	0.03	2111.81	-0.35	2.939	0.10	2107.77	-0.54	2.936	0.00	2221.18	4.81
26	2.933	2193.11	2.935	0.07	2203.06	0.45	2.936	0.10	2180.15	-0.59	2.937	0.14	2319.52	5.76
27	2.942	2122.39	2.945	0.10	2131.87	0.45	2.945	0.10	2106.71	-0.74	2.943	0.03	2251.77	6.10
28	2.933	2137.11	2.934	0.03	2140.89	0.18	2.935	0.07	2122.82	-0.67	2.932	-0.03	2264.5	5.96
29	2.939	2157.12	2.941	0.07	2159.44	0.11	2.941	0.07	2147.31	-0.45	2.938	-0.03	2270.53	5.26
30	2.943	2154.41	2.945	0.07	2142	-0.58	2.945	0.07	2135.23	-0.89	2.943	0.00	2249.8	4.43
31	2.924	2169.88	2.927	0.10	2178.77	0.41	2.928	0.14	2158.62	-0.52	2.928	0.14	2316.12	6.74
32	2.942	2109.37	2.944	0.07	2120.18	0.51	2.944	0.07	2092.81	-0.79	2.942	0.00	2244.17	6.39
33	2.931	2216.09	2.934	0.10	2218.72	0.12	2.934	0.10	2196.57	-0.88	2.932	0.03	2330.45	5.16
34	2.927	2123.16	2.928	0.03	2119.07	-0.19	2.929	0.07	2105.76	-0.82	2.926	-0.03	2225.57	4.82
35	2.92	2132.8	2.922	0.07	2114.47	-0.86	2.924	0.14	2106.59	-1.23	2.92	0.00	2220.03	4.09
36	2.935	2135.2	2.934	-0.03	2128.3	-0.32	2.939	0.14	2125.45	-0.46	2.935	0.00	2277.56	6.67
37	2.921	2130.19	2.923	0.07	2142.62	0.58	2.925	0.14	2119.22	-0.51	2.922	0.03	2274.12	6.76
38	2.931	2113.54	2.932	0.03	2124.24	0.51	2.934	0.10	2109.75	-0.18	2.93	-0.03	2246.18	6.28
39	2.937	2145.36	2.939	0.07	2147.28	0.09	2.941	0.14	2138.27	-0.33	2.937	0.00	2262.53	5.46
40	2.939	2133.12	2.941	0.07	2118.94	-0.66	2.942	0.10	2113.95	-0.90	2.939	0.00	2232.02	4.64

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.929	2203.05	2.932	0.10	2216.52	0.61	2.932	0.10	2194.14	-0.40	2.933	0.14	2355.38	6.91
42	2.932	2151.37	2.935	0.10	2161.42	0.47	2.934	0.07	2134.22	-0.80	2.933	0.03	2287.75	6.34
43	2.918	2095.06	2.921	0.10	2103.23	0.39	2.921	0.10	2085.19	-0.47	2.918	0.00	2212.59	5.61
44	2.918	2176.96	2.92	0.07	2180.82	0.18	2.922	0.14	2168.97	-0.37	2.921	0.10	2294.98	5.42
45	2.927	2209.32	2.93	0.10	2196.93	-0.56	2.932	0.17	2186.39	-1.04	2.929	0.07	2315.54	4.81
46	2.944	2120.92	2.945	0.03	2125.3	0.21	2.947	0.10	2106.91	-0.66	2.943	-0.03	2244.61	5.83
47	2.937	2134.06	2.937	0.00	2126.5	-0.35	2.94	0.10	2120.39	-0.64	2.938	0.03	2266.59	6.21
48	2.94	2144.09	2.942	0.07	2142.82	-0.06	2.943	0.10	2128.01	-0.75	2.94	0.00	2255.04	5.17
49	2.931	2189.13	2.933	0.07	2185.32	-0.17	2.934	0.10	2176.22	-0.59	2.931	0.00	2302.66	5.19
50	2.932	2199.1	2.936	0.14	2189.74	-0.43	2.937	0.17	2185.78	-0.61	2.936	0.14	2298.42	4.52
51	2.924	2054.1	2.926	0.07	2058.65	0.22	2.928	0.14	2047.31	-0.33	2.924	0.00	2186.01	6.42
52	2.939	2141.04	2.941	0.07	2136.43	-0.22	2.943	0.14	2125.85	-0.71	2.939	0.00	2272.09	6.12
53	2.925	2163.31	2.928	0.10	2161.38	-0.09	2.93	0.17	2152.88	-0.48	2.926	0.03	2274.64	5.15
54	2.938	2098.41	2.939	0.03	2088.48	-0.47	2.941	0.10	2087.38	-0.53	2.937	-0.03	2207.81	5.21
55	2.936	2178.22	2.939	0.10	2164.84	-0.61	2.942	0.20	2161.05	-0.79	2.939	0.10	2268.06	4.12
56	2.935	2106.95	2.936	0.03	2123.18	0.77	2.938	0.10	2105.74	-0.06	2.933	-0.07	2257.53	7.15
57	2.941	2138.16	2.942	0.03	2143.76	0.26	2.944	0.10	2124.47	-0.64	2.939	-0.07	2274.15	6.36
58	2.93	2091.23	2.931	0.03	2096.19	0.24	2.932	0.07	2078.62	-0.60	2.927	-0.10	2199.85	5.19
59	2.933	2189.88	2.937	0.14	2199.66	0.45	2.938	0.17	2185.54	-0.20	2.936	0.10	2308.21	5.40
60	2.932	2165.85	2.935	0.10	2168.63	0.13	2.937	0.17	2156.13	-0.45	2.934	0.07	2260.53	4.37
61	2.922	2081.22	2.924	0.07	2068.97	-0.59	2.925	0.10	2074.85	-0.31	2.921	-0.03	2222.85	6.81
62	2.945	2129.7	2.945	0.00	2137.75	0.38	2.948	0.10	2120.55	-0.43	2.942	-0.10	2264.85	6.35
63	2.922	2102.6	2.923	0.03	2103.42	0.04	2.925	0.10	2090.97	-0.55	2.92	-0.07	2219.05	5.54
64	2.92	2156.11	2.92	0.00	2164.71	0.40	2.922	0.07	2158.28	0.10	2.919	-0.03	2282.12	5.84
65	2.936	2188.16	2.939	0.10	2184.14	-0.18	2.942	0.20	2177.84	-0.47	2.939	0.10	2290.83	4.69
66	2.926	2150.36	2.929	0.10	2153.45	0.14	2.931	0.17	2131.55	-0.87	2.926	0.00	2274.16	5.76
67	2.928	2129.72	2.93	0.07	2133.9	0.20	2.931	0.10	2112.47	-0.81	2.927	-0.03	2262.76	6.25
68	2.936	2134.87	2.937	0.03	2132.62	-0.11	2.939	0.10	2122.02	-0.60	2.934	-0.07	2252.92	5.53
69	2.933	2194.69	2.937	0.14	2192.42	-0.10	2.938	0.17	2184.56	-0.46	2.936	0.10	2303.12	4.94
70	2.912	2118.11	2.916	0.14	2105.1	-0.61	2.917	0.17	2102.79	-0.72	2.915	0.10	2205.01	4.10
71	2.919	2184.8	2.92	0.03	2190.69	0.27	2.922	0.10	2174.73	-0.46	2.919	0.00	2319.55	6.17
72	2.922	2094.82	2.923	0.03	2098.93	0.20	2.925	0.10	2081.86	-0.62	2.946	0.82	2089.61	-0.25
73	2.923	2121.96	2.925	0.07	2120.08	-0.09	2.927	0.14	2107.64	-0.67	2.922	-0.03	2231.79	5.18
74	2.917	2175.13	2.919	0.07	2170.79	-0.20	2.92	0.10	2161	-0.65	2.919	0.07	2285.5	5.07
75	2.937	2195.63	2.94	0.10	2181.36	-0.65	2.942	0.17	2176.48	-0.87	2.94	0.10	2286.54	4.14
76	2.94	2136.39	2.943	0.10	2147.09	0.50	2.945	0.17	2127.82	-0.40	2.941	0.03	2271.91	6.34
77	2.942	2153.69	2.944	0.07	2165.39	0.54	2.946	0.14	2150.34	-0.16	2.941	-0.03	2294.02	6.52
78	2.944	2145.61	2.947	0.10	2146.69	0.05	2.949	0.17	2131.93	-0.64	2.945	0.03	2261.23	5.39
79	2.942	2142.18	2.946	0.14	2144.01	0.09	2.947	0.17	2130.48	-0.55	2.944	0.07	2245.78	4.84
80	2.929	2197.95	2.934	0.17	2184.88	-0.59	2.934	0.17	2183.44	-0.66	2.933	0.14	2294.7	4.40
Average				0.067		0.040		0.125		-0.604		0.036		5.403
Min				-0.034		-0.859		0.068		-1.229		-0.102		-0.670
Max				0.171		0.789		0.239		0.101		0.821		7.181

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High Temperature Storage Test

T= 100°C

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.922	2095.92	2.931	0.31	2071.65	-1.16	2.935	0.44	2057.32	-1.84	2.932	0.34	2179.96	4.01
2	2.93	2216.43	2.938	0.27	2183.26	-1.50	2.945	0.51	2160.53	-2.52	2.942	0.41	2288.89	3.27
3	2.941	2147.1	2.949	0.27	2124.52	-1.05	2.953	0.41	2095.76	-2.39	2.952	0.37	2215.41	3.18
4	2.931	2101.66	2.939	0.27	2082.57	-0.91	2.944	0.44	2061.59	-1.91	2.942	0.38	2163.22	2.93
5	2.937	2100.48	2.946	0.31	2070.83	-1.41	2.951	0.48	2050.51	-2.38	2.947	0.34	2145.39	2.14
6	2.948	2131.37	2.955	0.24	2109.3	-1.04	2.96	0.41	2090.11	-1.94	2.958	0.34	2224.58	4.37
7	2.928	2151.87	2.934	0.20	2128.82	-1.07	2.939	0.38	2106.12	-2.13	2.938	0.34	2238.06	4.01
8	2.941	2149.94	2.947	0.20	2124.16	-1.20	2.952	0.37	2100.9	-2.28	2.951	0.34	2228.55	3.66
9	2.924	2136.99	2.931	0.24	2108.97	-1.31	2.936	0.41	2082.05	-2.57	2.934	0.34	2192.58	2.60
10	2.942	2143.37	2.949	0.24	2104.57	-1.81	2.955	0.44	2089.16	-2.53	2.951	0.31	2191.27	2.23
11	2.924	2098.02	2.932	0.27	2069.17	-1.38	2.936	0.41	2049.17	-2.33	2.934	0.34	2175.12	3.67
12	2.944	2145.94	2.95	0.20	2123.62	-1.04	2.956	0.41	2100.74	-2.11	2.952	0.27	2225.39	3.70
13	2.921	2065.86	2.927	0.21	2034.57	-1.51	2.932	0.38	2011.34	-2.64	2.928	0.24	2125.08	2.87
14	2.925	2116.18	2.931	0.21	2083.73	-1.53	2.936	0.38	2062.11	-2.56	2.933	0.27	2172.74	2.67
15	2.928	2133.11	2.935	0.24	2093.72	-1.85	2.939	0.38	2066.17	-3.14	2.936	0.27	2164.02	1.45
16	2.944	2133.12	2.952	0.27	2109.85	-1.09	2.957	0.44	2082.25	-2.38	2.953	0.31	2204.25	3.33
17	2.943	2131.03	2.95	0.24	2108.56	-1.05	2.956	0.44	2088.81	-1.98	2.951	0.27	2200.84	3.28
18	2.926	2133.94	2.931	0.17	2106.28	-1.30	2.935	0.31	2081.25	-2.47	2.931	0.17	2195.84	2.90
19	2.91	2086.22	2.917	0.24	2062.26	-1.15	2.922	0.41	2041.79	-2.13	2.918	0.27	2149.82	3.05
20	2.933	2155.34	2.939	0.20	2118.55	-1.71	2.943	0.34	2112.15	-2.00	2.939	0.20	2199.42	2.05
21	2.93	2193.8	2.938	0.27	2165.77	-1.28	2.945	0.51	2150.09	-1.99	2.942	0.41	2283.03	4.07
22	2.938	2137.37	2.946	0.27	2116.27	-0.99	2.951	0.44	2092.01	-2.12	2.947	0.31	2223.38	4.02
23	2.928	2091.51	2.937	0.31	2079.3	-0.58	2.942	0.48	2059.34	-1.54	2.938	0.34	2174.47	3.97
24	2.921	2066.39	2.93	0.31	2050.29	-0.78	2.935	0.48	2030.13	-1.75	2.931	0.34	2144.68	3.79
25	2.917	2063.19	2.924	0.24	2026.82	-1.76	2.929	0.41	2007.41	-2.70	2.926	0.31	2107.52	2.15
26	2.902	2095.32	2.909	0.24	2066.78	-1.36	2.914	0.41	2058.81	-1.74	2.913	0.38	2180.25	4.05
27	2.93	2129.02	2.936	0.20	2100.83	-1.32	2.94	0.34	2085.32	-2.05	2.938	0.27	2196.99	3.19
28	2.945	2117.41	2.951	0.20	2091.93	-1.20	2.955	0.34	2073.38	-2.08	2.952	0.24	2180.93	3.00
29	2.931	2099.07	2.936	0.17	2077.45	-1.03	2.942	0.38	2061.61	-1.78	2.939	0.27	2160.41	2.92
30	2.921	2050.37	2.926	0.17	2017.73	-1.59	2.932	0.38	2005.01	-2.21	2.929	0.27	2092.19	2.04
31	2.926	2163.81	2.931	0.17	2152.59	-0.52	2.939	0.44	2138.23	-1.18	2.933	0.24	2270.28	4.92
32	2.933	2204.11	2.939	0.20	2188.79	-0.70	2.948	0.51	2161.96	-1.91	2.94	0.24	2279.3	3.41
33	2.94	2154.43	2.946	0.20	2137.7	-0.78	2.952	0.41	2116.02	-1.78	2.946	0.20	2220.27	3.06
34	2.925	2102.1	2.931	0.21	2083.39	-0.89	2.937	0.41	2062.74	-1.87	2.932	0.24	2165.26	3.00
35	2.938	2137.21	2.946	0.27	2102.18	-1.64	2.949	0.37	2093.45	-2.05	2.946	0.27	2183.16	2.15
36	2.915	2070	2.922	0.24	2044.14	-1.25	2.925	0.34	2036.48	-1.62	2.924	0.31	2149.74	3.85
37	2.93	2206.03	2.936	0.20	2177.2	-1.31	2.94	0.34	2165.36	-1.84	2.938	0.27	2269.56	2.88
38	2.919	2062.95	2.926	0.24	2033.59	-1.42	2.928	0.31	1979.83	-4.03	2.926	0.24	2117.87	2.66
39	2.915	2072.76	2.921	0.21	2041.73	-1.50	2.924	0.31	2027.66	-2.18	2.922	0.24	2114.9	2.03
40	2.934	2136.95	2.942	0.27	2101.93	-1.64	2.946	0.41	2095.12	-1.96	2.944	0.34	2180.01	2.02

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Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV	1000 hrs	Delta VF	1000 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.937	2130.37	2.945	0.27	2105.65	-1.16	2.95	0.44	2098.53	-1.49	2.947	0.34	2209.07	3.69
42	2.932	2189.19	2.94	0.27	2169.1	-0.92	2.947	0.51	2161.56	-1.26	2.944	0.41	2283.36	4.30
43	2.93	2199.75	2.938	0.27	2176.54	-1.06	2.944	0.48	2171.06	-1.30	2.942	0.41	2275.13	3.43
44	2.944	2126.78	2.951	0.24	2102.58	-1.14	2.957	0.44	2098.56	-1.33	2.953	0.31	2186	2.78
45	2.945	2137.33	2.952	0.24	2100.5	-1.72	2.958	0.44	2093.64	-2.04	2.954	0.31	2170.6	1.56
46	2.916	2055.42	2.924	0.27	2031.09	-1.18	2.928	0.41	2024.55	-1.50	2.926	0.34	2128.22	3.54
47	2.924	2216.41	2.932	0.27	2195.78	-0.93	2.939	0.51	2186.92	-1.33	2.936	0.41	2302.62	3.89
48	2.933	2137.95	2.942	0.31	2116.19	-1.02	2.947	0.48	2108.19	-1.39	2.942	0.31	2200.55	2.93
49	2.913	2158.86	2.922	0.31	2129.03	-1.38	2.929	0.55	2123.25	-1.65	2.924	0.38	2210.65	2.40
50	2.905	2123.69	2.916	0.38	2087.25	-1.72	2.923	0.62	2084.72	-1.84	2.919	0.48	2174.08	2.37
51	2.943	2147.42	2.948	0.17	2118.96	-1.33	2.953	0.34	2113.57	-1.58	2.95	0.24	2212.33	3.02
52	2.925	2128.4	2.931	0.21	2104.99	-1.10	2.933	0.27	2088.54	-1.87	2.933	0.27	2202.94	3.50
53	2.932	2192.15	2.939	0.24	2168.1	-1.10	2.939	0.24	2147.74	-2.03	2.941	0.31	2257.53	2.98
54	2.925	2184.11	2.932	0.24	2155.52	-1.31	2.935	0.34	2141.83	-1.94	2.934	0.31	2247.04	2.88
55	2.936	2189.16	2.946	0.34	2147.38	-1.91	2.954	0.61	2138.34	-2.32	2.948	0.41	2216.91	1.27
56	2.928	2110.05	2.938	0.34	2105.02	-0.24	2.943	0.51	2090.83	-0.91	2.939	0.38	2206.21	4.56
57	2.92	2101.3	2.934	0.48	2096.07	-0.25	2.938	0.62	2084.15	-0.82	2.934	0.48	2193.91	4.41
58	2.901	2027.97	2.916	0.52	2020.34	-0.38	2.92	0.65	2008.8	-0.95	2.915	0.48	2102.59	3.68
59	2.914	2088.41	2.929	0.51	2075.63	-0.61	2.933	0.65	2064.77	-1.13	2.928	0.48	2149.78	2.94
60	2.923	2143.13	2.938	0.51	2118.36	-1.16	2.949	0.89	2112.06	-1.45	2.938	0.51	2206.29	2.95
61	2.944	2142.84	2.953	0.31	2116.65	-1.22	2.956	0.41	2116.73	-1.22	2.952	0.27	2220.25	3.61
62	2.938	2127.31	2.943	0.17	2106.3	-0.99	2.948	0.34	2096.22	-1.46	2.943	0.17	2204.39	3.62
63	2.939	2104.49	2.946	0.24	2082.33	-1.05	2.951	0.41	2077.28	-1.29	2.946	0.24	2171.14	3.17
64	2.933	2140.78	2.939	0.20	2114.34	-1.24	2.945	0.41	2102.47	-1.79	2.941	0.27	2197.34	2.64
65	2.925	2203.49	2.935	0.34	2164.62	-1.76	2.943	0.62	2151.59	-2.36	2.936	0.38	2233.69	1.37
66	2.926	2145.21	2.931	0.17	2110.57	-1.61	2.936	0.34	2107.27	-1.77	2.932	0.21	2208.17	2.93
67	2.912	2047.49	2.918	0.21	2026.73	-1.01	2.923	0.38	2004.46	-2.10	2.919	0.24	2111.27	3.12
68	2.927	2189.73	2.933	0.20	2167.48	-1.02	2.94	0.44	2148.35	-1.89	2.933	0.20	2252.57	2.87
69	2.929	2178.55	2.936	0.24	2153.29	-1.16	2.942	0.44	2140.91	-1.73	2.938	0.31	2222.48	2.02
70	2.909	2152.75	2.92	0.38	2117.37	-1.64	2.925	0.55	2104.76	-2.23	2.921	0.41	2184.41	1.47
71	2.942	2144.39	2.948	0.20	2122.56	-1.02	2.953	0.37	2112.36	-1.49	2.951	0.31	2205.59	2.85
72	2.933	2196.41	2.938	0.17	2178.17	-0.83	2.945	0.41	2157.85	-1.76	2.942	0.31	2265.37	3.14
73	2.927	2135.35	2.934	0.24	2115.92	-0.91	2.939	0.41	2099.28	-1.69	2.936	0.31	2199.86	3.02
74	2.918	2064.11	2.927	0.31	2041.78	-1.08	2.931	0.45	2013.93	-2.43	2.928	0.34	2117.04	2.56
75	2.933	2193.55	2.943	0.34	2158.04	-1.62	2.948	0.51	2145.92	-2.17	2.945	0.41	2236.62	1.96
76	2.914	2080.51	2.92	0.21	2056.26	-1.17	2.925	0.38	2048.93	-1.52	2.922	0.27	2152.69	3.47
77	2.917	2059.04	2.923	0.21	2034.04	-1.21	2.928	0.38	2018.09	-1.99	2.925	0.27	2123.67	3.14
78	2.929	2134.67	2.936	0.24	2112.22	-1.05	2.941	0.41	2099.68	-1.64	2.938	0.31	2199.58	3.04
79	2.925	2127.22	2.932	0.24	2101.75	-1.20	2.94	0.51	2075.33	-2.44	2.934	0.31	2180.24	2.49
80	2.904	2122.28	2.916	0.41	2078.28	-2.07	2.923	0.65	2054.75	-3.18	2.919	0.52	2143.9	1.02
Average				0.261		-1.201		0.438		-1.936		0.319		3.015
Min				0.170		-2.073		0.239		-4.029		0.170		1.019
Max				0.517		-0.238		0.889		-0.816		0.517		4.920

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Thermal Shock Test

-40/100°C, 15mins dwell, <10sec transfer

Unit no.	0x	0x	100x	Delta VF	100x	Delta IV	500x	Delta VF	500x	Delta IV	1000x	Delta VF	1000x	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.952	2133.1	2.949	-0.10	2084.34	-2.29	2.958	0.20	2036.04	-4.55	2.942	-0.34	2051.82	-3.81
2	2.946	2071.09	2.942	-0.14	2031.84	-1.90	2.951	0.17	1995.9	-3.63	2.949	0.10	2008.71	-3.01
3	2.926	2146.08	2.932	0.21	2098.93	-2.20	2.942	0.55	2051.33	-4.42	2.933	0.24	2057.73	-4.12
4	2.946	2047.55	2.943	-0.10	2005.4	-2.06	2.953	0.24	1983.03	-3.15	2.949	0.10	1990.28	-2.80
5	2.926	2112.52	2.926	0.00	2052.08	-2.86	2.935	0.31	2019.83	-4.39	2.929	0.10	2028.23	-3.99
6	2.935	2109.74	2.94	0.17	2081.2	-1.35	2.947	0.41	2033.76	-3.60	2.941	0.20	2051.05	-2.78
7	2.93	2126.18	2.937	0.24	2069.88	-2.65	2.945	0.51	2039.68	-4.07	2.938	0.27	2052.79	-3.45
8	2.938	2077.17	2.936	-0.07	2025.47	-2.49	2.944	0.20	2002.86	-3.58	2.94	0.07	2018.2	-2.84
9	2.937	2156.64	2.936	-0.03	2080.14	-3.55	2.949	0.41	2064.49	-4.27	2.939	0.07	2075.57	-3.76
10	2.929	2105.07	2.928	-0.03	2042.84	-2.96	2.932	0.10	2011.67	-4.44	2.928	-0.03	2029.69	-3.58
11	2.927	2121.14	2.932	0.17	2083.33	-1.78	2.939	0.41	2043.2	-3.67	2.934	0.24	2046.45	-3.52
12	2.92	2211.74	2.935	0.51	2080.16	-5.95	2.941	0.72	2053.53	-7.15	2.935	0.51	2066.63	-6.56
13	2.926	2133.15	2.93	0.14	2056.13	-3.61	2.937	0.38	2032.76	-4.71	2.93	0.14	2033.25	-4.68
14	2.938	2124.62	2.934	-0.14	2070.5	-2.55	2.942	0.14	2038.26	-4.06	2.936	-0.07	2049.4	-3.54
15	2.933	2118.15	2.936	0.10	2059.88	-2.75	2.942	0.31	2016.37	-4.81	2.938	0.17	2033.99	-3.97
16	2.933	2083.96	2.927	-0.20	2042.78	-1.98	2.936	0.10	2014.69	-3.32	2.945	0.41	1991.27	-4.45
17	2.938	2151.9	2.938	0.00	2106.13	-2.13	2.949	0.37	2053.16	-4.59	2.909	-0.99	1958.87	-8.97
18	2.932	2054.83	2.93	-0.07	2019.22	-1.73	2.938	0.20	1983.33	-3.48	2.933	0.03	2024	-1.50
19	2.943	2052.74	2.94	-0.10	2022.5	-1.47	2.951	0.27	1991.03	-3.01	2.937	-0.20	2080.68	1.36
20	2.908	2073.91	2.905	-0.10	2026.46	-2.29	2.912	0.14	1955.93	-5.69	2.934	0.89	1991.84	-3.96
21	2.919	2132.66	2.923	0.14	2093.39	-1.84	2.93	0.38	2043.39	-4.19	2.923	0.14	2025.01	-5.05
22	2.917	2000.37	2.914	-0.10	1962.06	-1.92	2.924	0.24	1926.61	-3.69	2.918	0.03	1927.47	-3.64
23	2.923	2140.31	2.932	0.31	2079.49	-2.84	2.94	0.58	2036.58	-4.85	2.932	0.31	2032.82	-5.02
24	2.942	2081.84	2.937	-0.17	2055.31	-1.27	2.948	0.20	2025.89	-2.69	2.942	0.00	2012.02	-3.35
25	2.913	2059.59	2.918	0.17	2029.49	-1.46	2.932	0.65	1985.58	-3.59	2.918	0.17	1982.14	-3.76
26	2.928	2036.51	2.925	-0.10	2012.32	-1.19	2.934	0.20	1979.96	-2.78	2.927	-0.03	2016.19	-1.00
27	2.934	2115	2.931	-0.10	2093.02	-1.04	2.939	0.17	2053.74	-2.90	2.934	0.00	2080.57	-1.63
28	2.939	2072.64	2.936	-0.10	2042.67	-1.45	2.945	0.20	2007.7	-3.13	2.941	0.07	2015.96	-2.73
29	2.93	2160.37	2.931	0.03	2124.54	-1.66	2.941	0.38	2067.61	-4.29	2.934	0.14	2081.96	-3.63
30	2.941	2121.51	2.938	-0.10	2089.54	-1.51	2.943	0.07	2033.99	-4.13	2.938	-0.10	2063.23	-2.75
31	2.934	2145.41	2.939	0.17	2129.26	-0.75	2.947	0.44	2070.03	-3.51	2.941	0.24	2085.2	-2.81
32	2.94	2075.49	2.937	-0.10	2049.93	-1.23	2.945	0.17	2021.94	-2.58	2.942	0.07	2033.63	-2.02
33	2.92	2175.37	2.927	0.24	2125.4	-2.30	2.935	0.51	2083.66	-4.22	2.928	0.27	2091.71	-3.85
34	2.919	2080.14	2.917	-0.07	2041	-1.88	2.926	0.24	1999.02	-3.90	2.917	-0.07	2019.46	-2.92
35	2.935	2139.06	2.933	-0.07	2099.52	-1.85	2.944	0.31	2057.82	-3.80	2.937	0.07	2045.48	-4.37
36	2.925	2143.47	2.926	0.03	2074.88	-3.20	2.933	0.27	2033.71	-5.12	2.927	0.07	2038.82	-4.88
37	2.932	2115.9	2.932	0.00	2054.42	-2.91	2.939	0.24	2021.47	-4.46	2.934	0.07	2031.96	-3.97
38	2.927	2171.36	2.935	0.27	2088.32	-3.82	2.943	0.55	2057.96	-5.22	2.936	0.31	2067.92	-4.76
39	2.949	2068.76	2.945	-0.14	2014.6	-2.62	2.962	0.44	1994.01	-3.61	2.952	0.10	2001.99	-3.23
40	2.945	2053.83	2.942	-0.10	2039.52	-0.70	2.95	0.17	1987.75	-3.22	2.948	0.10	1996.37	-2.80

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Unit no.	0x	0x	100x	Delta VF	100x	Delta IV	500x	Delta VF	500x	Delta IV	1000x	Delta VF	1000x	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
41	2.939	2056.1	2.936	-0.10	2033.46	-1.10	2.945	0.20	1985.92	-3.41	2.942	0.10	2030.32	-1.25
42	2.927	2113.3	2.926	-0.03	2083.64	-1.40	2.929	0.07	2030.02	-3.94	2.927	0.00	2029.79	-3.95
43	2.944	2062.02	2.942	-0.07	2038.8	-1.13	2.951	0.24	2000.33	-2.99	2.947	0.10	2005.21	-2.76
44	2.93	2160.54	2.951	0.72	2117.76	-1.98	2.941	0.38	2058.37	-4.73	2.936	0.20	2068.57	-4.26
45	2.925	1996.67	2.923	-0.07	1962.05	-1.73	2.931	0.21	1911.63	-4.26	2.929	0.14	1920.09	-3.84
46	2.927	2169.06	2.936	0.31	2109.68	-2.74	2.941	0.48	2036.41	-6.12	2.935	0.27	2054.02	-5.30
47	2.922	2160.72	2.926	0.14	2136.54	-1.12	2.934	0.41	2087.06	-3.41	2.928	0.21	2091.96	-3.18
48	2.947	2080.36	2.942	-0.17	2042.84	-1.80	2.953	0.20	2013.55	-3.21	2.929	-0.61	2148.69	3.28
49	2.927	2130.24	2.933	0.20	2053.15	-3.62	2.936	0.31	2019.41	-5.20	2.931	0.14	2020.79	-5.14
50	2.93	2017.31	2.927	-0.10	1998.91	-0.91	2.936	0.20	1957.41	-2.97	2.933	0.10	1948.6	-3.41
51	2.932	2115.7	2.93	-0.07	2089.93	-1.22	2.937	0.17	2033.16	-3.90	2.933	0.03	2010.39	-4.98
52	2.934	2140.44	2.939	0.17	2115.11	-1.18	2.943	0.31	2057.24	-3.89	2.936	0.07	2039.28	-4.73
53	2.931	2148.84	2.933	0.07	2131.72	-0.80	2.941	0.34	2056.53	-4.30	2.933	0.07	2034.73	-5.31
54	2.929	2129.91	2.932	0.10	2104.7	-1.18	2.942	0.44	2024.95	-4.93	2.936	0.24	2024.84	-4.93
55	2.948	2064.84	2.942	-0.20	2018.49	-2.24	2.952	0.14	1998.69	-3.20	2.95	0.07	1987.35	-3.75
56	2.923	2066.12	2.918	-0.17	2040.76	-1.23	2.926	0.10	1987.73	-3.79	2.92	-0.10	1964.24	-4.93
57	2.908	2076.62	2.912	0.14	2017.68	-2.84	2.916	0.28	1978.14	-4.74	2.91	0.07	1947.64	-6.21
58	2.91	2041.27	2.913	0.10	1993.96	-2.32	2.92	0.34	1950.72	-4.44	2.915	0.17	1909.02	-6.48
59	2.933	2098.73	2.93	-0.10	2054.76	-2.10	2.939	0.20	2008.91	-4.28	2.931	-0.07	1975.41	-5.88
60	2.93	2153.36	2.937	0.24	2116.62	-1.71	2.945	0.51	2076.96	-3.55	2.94	0.34	2063.15	-4.19
61	2.927	2104.6	2.926	-0.03	2067.63	-1.76	2.932	0.17	2027.21	-3.68	2.927	0.00	1995.49	-5.18
62	2.946	2084.57	2.942	-0.14	2058.18	-1.27	2.951	0.17	2046.57	-1.82	2.947	0.03	2018.41	-3.17
63	2.93	2179.41	2.938	0.27	2117.06	-2.86	2.944	0.48	2070.19	-5.01	2.938	0.27	2049.03	-5.98
64	2.925	2128.82	2.931	0.21	2091.65	-1.75	2.937	0.41	2040.84	-4.13	2.932	0.24	2006.65	-5.74
65	2.93	2055.41	2.927	-0.10	2021.63	-1.64	2.936	0.20	1993.4	-3.02	2.932	0.07	1979.29	-3.70
66	2.934	2078.65	2.931	-0.10	2047.78	-1.49	2.939	0.17	2039.92	-1.86	2.938	0.14	2091.7	0.63
67	2.923	2155.73	2.93	0.24	2131.12	-1.14	2.933	0.34	2073.27	-3.83	2.927	0.14	2055.35	-4.66
68	2.948	2078.26	2.943	-0.17	2043.91	-1.65	2.955	0.24	2016.65	-2.96	2.95	0.07	1993.36	-4.09
69	2.931	2158.96	2.939	0.27	2090.1	-3.19	2.955	0.82	2055.47	-4.79	2.947	0.55	2037.94	-5.61
70	2.931	2134.72	2.93	-0.03	2091.86	-2.01	2.935	0.14	2039.58	-4.46	2.932	0.03	2041.73	-4.36
71	2.925	2054.98	2.926	0.03	2020.44	-1.68	2.932	0.24	1995.95	-2.87	2.929	0.14	1982.19	-3.54
72	2.918	2144.92	2.923	0.17	2091.23	-2.50	2.926	0.27	2053.38	-4.27	2.921	0.10	2022.27	-5.72
73	2.947	2085.37	2.942	-0.17	2048.05	-1.79	2.954	0.24	2029.3	-2.69	2.947	0.00	2028.38	-2.73
74	2.939	2050.95	2.936	-0.10	2015.4	-1.73	2.947	0.27	1983.11	-3.31	2.943	0.14	1986.21	-3.16
75	2.947	2022.45	2.946	-0.03	2004.19	-0.90	2.954	0.24	1963.26	-2.93	2.948	0.03	1973.49	-2.42
76	2.926	2058.22	2.926	0.00	2009.41	-2.37	2.934	0.27	1988.28	-3.40	2.929	0.10	1999.72	-2.84
77	2.943	2093.24	2.94	-0.10	2034	-2.83	2.949	0.20	2009.47	-4.00	2.945	0.07	1997.52	-4.57
78	2.92	2134.24	2.921	0.03	2077.54	-2.66	2.928	0.27	2039.86	-4.42	2.92	0.00	2047.1	-4.08
79	2.912	2162.05	2.92	0.27	2072.39	-4.15	2.926	0.48	2031.69	-6.03	2.92	0.27	2047.1	-5.32
80	2.93	2154.85	2.931	0.03	2096.85	-2.69	2.943	0.44	2057.76	-4.51	2.935	0.17	2054.27	-4.67
Average				0.029		-2.055		0.302		-3.946		0.100		-3.802
Min				-0.205		-5.949		0.068		-7.153		-0.987		-8.970
Max				0.717		-0.697		0.819		-1.823		0.894		3.285

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Temperature Cycling Hot Test (TCHT)

Wire Pull Test (Specification Limit as per MIL-STD-750: minimum 3gf)

N-pad

Unit #	Result (gf)	CODE	Remark
#1	17.41	3	PASS
#2	16.04	3	PASS
#3	17.34	3	PASS
#4	16.36	3	PASS
#5	17.14	3	PASS
Average	16.86		
Std Dev	0.62		
Max	17.41		
Min	16.04		

P-pad

Unit #	Result (gf)	CODE	Remark
#1	22.30	3	PASS
#2	21.94	3	PASS
#3	22.67	3	PASS
#4	21.90	2	PASS
#5	21.61	2	PASS
Average	22.08		
Std Dev	0.41		
Max	22.67		
Min	21.61		

Conclusion: Based on this wire pull result, this part number/lot has Passed the Wire Pull test.

Coding break types in the wire pull test:

Code 1: Lifted 1st ball bond
Code 2: Broken neck
Code 3: Break at mid span of wire
Code 4: Break at heel of stitch bond
Code 5: Lifted stitch bond

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Wire Bond Integrity (WBI)

Wire Pull Test (Specification Limit as per MIL-STD-750: minimum 3gf)

N-pad

Unit #	Result (gf)	CODE	Remark
#1	14.29	2	PASS
#2	18.66	3	PASS
#3	14.00	2	PASS
#4	17.36	2	PASS
#5	17.98	3	PASS
Average	16.46		
Std Dev	2.16		
Max	18.66		
Min	14.00		

P-pad

Unit #	Result (gf)	CODE	Remark
#1	16.70	3	PASS
#2	13.66	2	PASS
#3	16.70	3	PASS
#4	15.51	2	PASS
#5	15.44	3	PASS
Average	15.60		
Std Dev	1.25		
Max	16.70		
Min	13.66		

Conclusion: Based on this wire pull result, this part number/lot has Passed the Wire Pull test.

Coding break types in the wire pull test:

Code 1: Lifted 1st ball bond
Code 2: Broken neck
Code 3: Break at mid span of wire
Code 4: Break at heel of stitch bond
Code 5: Lifted stitch bond

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Resistance To Soldering Heat Test

T= 260°C

Unit no.	0 X	0 X	1 x	Delta VF	1 X	Delta IV
	VF	IV	VF	%	IV	%
1	2.955	2253.72	2.955	0.00	2257.7	0.18
2	2.96	2248.24	2.961	0.03	2207.96	-1.79
3	2.949	2252.38	2.947	-0.07	2246.1	-0.28
4	2.963	2255.59	2.975	0.40	2185.55	-3.11
5	2.953	2274.23	2.97	0.58	2258.36	-0.70
6	2.96	2261.41	2.951	-0.30	2180.08	-3.60
7	2.929	2197.69	2.927	-0.07	2171.19	-1.21
8	2.956	2276.77	2.96	0.14	2221.46	-2.43
9	2.933	2213.35	2.925	-0.27	2189.22	-1.09
10	2.963	2258.01	2.952	-0.37	2252.63	-0.24
11	2.958	2233.03	2.953	-0.17	2249.57	0.74
12	2.956	2270.47	2.954	-0.07	2284.48	0.62
13	2.955	2269.76	2.949	-0.20	2241.12	-1.26
14	2.946	2234.77	2.953	0.24	2249.95	0.68
15	2.955	2275.78	2.969	0.47	2300.28	1.08
16	2.955	2289.02	2.954	-0.03	2312.74	1.04
17	2.962	2263.64	2.963	0.03	2279.48	0.70
18	2.956	2268.3	2.955	-0.03	2271.17	0.13
19	2.947	2244.7	2.941	-0.20	2216.38	-1.26
20	2.937	2249.4	2.938	0.03	2242.65	-0.30
21	2.966	2292.45	2.952	-0.47	2311.34	0.82
22	2.958	2285.38	2.957	-0.03	2249.12	-1.59
23	2.947	2228.99	2.951	0.14	2213.03	-0.72
24	2.965	2281.26	2.969	0.13	2309.97	1.26
25	2.952	2266.85	2.956	0.14	2257.57	-0.41
26	2.93	2202.26	2.933	0.10	2218.32	0.73
27	2.946	2240.53	2.944	-0.07	2209.35	-1.39
28	2.965	2272.31	2.959	-0.20	2259.56	-0.56
29	2.965	2245.35	2.956	-0.30	2203.39	-1.87
30	2.943	2211.23	2.945	0.07	2230.64	0.88
Average				-0.012		-0.498
Min				-0.472		-3.596
Max				0.576		1.259

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Hydrogen Sulphide Test

40°C/90%RH, 15ppm

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	336 hrs	Delta VF	336 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%
1	2.971	1499.68	2.966	-0.168	1479.02	-1.378	2.975	0.135	1491.06	-0.575
2	2.971	1453.82	2.950	-0.707	1439.57	-0.980	2.960	-0.370	1472.43	1.280
3	2.971	1458.23	2.962	-0.303	1447.18	-0.758	2.972	0.034	1443.27	-1.026
4	2.971	1480.15	2.978	0.236	1462.02	-1.225	2.977	0.202	1465.54	-0.987
5	2.971	1434.47	2.974	0.101	1419.79	-1.023	2.981	0.337	1420.44	-0.978
6	2.971	1467.23	2.944	-0.909	1470.33	0.211	2.956	-0.505	1478.63	0.777
7	2.971	1501.76	2.951	-0.673	1489.57	-0.812	2.958	-0.438	1492.74	-0.601
8	2.971	1502.35	2.954	-0.572	1497.86	-0.299	2.964	-0.236	1507.37	0.334
9	2.971	1468.99	2.962	-0.303	1472.66	0.250	2.983	0.404	1486.01	1.159
Average				-0.367		-0.668		-0.049		-0.069
Min				-0.909		-1.378		-0.505		-1.026
Max				0.236		0.250		0.404		1.280

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Flowing Mixed Gas Test

Method 4 25°C/75%RH

Unit no.	0 hrs	0 hrs	168 hrs	Delta VF	168 hrs	Delta IV	336 hrs	Delta VF	336 hrs	Delta IV	504 hrs	Delta VF	504 hrs	Delta IV
	VF	IV	VF	%	IV	%	VF	%	IV	%	VF	%	IV	%
1	2.995	1700.36	2.991	-0.13	1680.96	-1.14	2.996	0.03	1794.39	5.53	2.996	0.03	1743.51	2.54
2	2.942	1661.79	2.941	-0.03	1650.82	-0.66	2.945	0.10	1738.08	4.59	2.948	0.20	1698.92	2.23
3	2.949	1663.41	2.946	-0.10	1652.13	-0.68	2.951	0.07	1758.2	5.70	2.948	-0.03	1695.93	1.96
4	2.966	1679.12	2.962	-0.13	1672.46	-0.40	2.968	0.07	1782.04	6.13	2.965	-0.03	1712.51	1.99
5	2.945	1666.17	2.945	0.00	1651.61	-0.87	2.946	0.03	1745.49	4.76	2.948	0.10	1704.37	2.29
6	2.942	1667.21	2.944	0.07	1639.82	-1.64	2.944	0.07	1730.92	3.82	2.946	0.14	1656.24	-0.66
7	2.948	1668.98	2.948	0.00	1657.3	-0.70	2.949	0.03	1757.69	5.32	2.949	0.03	1679.54	0.63
8	2.963	1682.18	2.977	0.47	1618.35	-3.79	2.976	0.44	1726.17	2.62	2.978	0.51	1663.18	-1.13
9	2.969	1663.95	2.97	0.03	1660.87	-0.19	2.97	0.03	1764.66	6.05	2.97	0.03	1699.43	2.13
Average				0.019		-1.119		0.098		4.946		0.109		1.332
Min				-0.135		-3.794		0.033		2.615		-0.034		-1.129
Max				0.472		-0.185		0.439		6.129		0.506		2.538

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Electrostatic Discharge (ESD) Testing Report

Human Body Model (HBM)

Sample	± 1000V	± 2000V
#01	PASS	PASS
#02	PASS	PASS
#03	PASS	PASS
#04	PASS	PASS
#05	PASS	PASS
#06	PASS	PASS
#07	PASS	PASS
#08	PASS	PASS
#09	PASS	PASS
#10	PASS	PASS
#11	PASS	PASS
#12	PASS	PASS
#13	PASS	PASS
#14	PASS	PASS
#15	PASS	PASS
#16	PASS	PASS
#17	PASS	PASS
#18	PASS	PASS
#19	PASS	PASS
#20	PASS	PASS
#21	PASS	PASS
#22	PASS	PASS
#23	PASS	PASS
#24	PASS	PASS
#25	PASS	PASS
#26	PASS	PASS
#27	PASS	PASS
#28	PASS	PASS
#29	PASS	PASS
#30	PASS	PASS

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Electrostatic Discharge (ESD) Testing Report

Machine Model (MM)

Sample	± 100V	± 200V
#01	PASS	PASS
#02	PASS	PASS
#03	PASS	PASS
#04	PASS	PASS
#05	PASS	PASS
#06	PASS	PASS
#07	PASS	PASS
#08	PASS	PASS
#09	PASS	PASS
#10	PASS	PASS
#11	PASS	PASS
#12	PASS	PASS
#13	PASS	PASS
#14	PASS	PASS
#15	PASS	PASS
#16	PASS	PASS
#17	PASS	PASS
#18	PASS	PASS
#19	PASS	PASS
#20	PASS	PASS
#21	PASS	PASS
#22	PASS	PASS
#23	PASS	PASS
#24	PASS	PASS
#25	PASS	PASS
#26	PASS	PASS
#27	PASS	PASS
#28	PASS	PASS
#29	PASS	PASS
#30	PASS	PASS

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Electrostatic Discharge (ESD) Testing Report

Charged Device Model (CDM)

Sample	± 250V	± 500V	± 1000V
#01	PASS	PASS	PASS
#02	PASS	PASS	PASS
#03	PASS	PASS	PASS
#04	PASS	PASS	PASS
#05	PASS	PASS	PASS
#06	PASS	PASS	PASS
#07	PASS	PASS	PASS
#08	PASS	PASS	PASS
#09	PASS	PASS	PASS
#10	PASS	PASS	PASS
#11	PASS	PASS	PASS
#12	PASS	PASS	PASS
#13	PASS	PASS	PASS
#14	PASS	PASS	PASS
#15	PASS	PASS	PASS
#16	PASS	PASS	PASS
#17	PASS	PASS	PASS
#18	PASS	PASS	PASS
#19	PASS	PASS	PASS
#20	PASS	PASS	PASS
#21	PASS	PASS	PASS
#22	PASS	PASS	PASS
#23	PASS	PASS	PASS
#24	PASS	PASS	PASS
#25	PASS	PASS	PASS
#26	PASS	PASS	PASS
#27	PASS	PASS	PASS
#28	PASS	PASS	PASS
#29	PASS	PASS	PASS
#30	PASS	PASS	PASS

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Destructive Physical Analysis (DPA) Report

WHTRB

1.0 DPA DETAILS

Ref. #	DPA170200
Package	DomiLED
Part Number	DDW-LJG
Reliability Test	WHTRB

2.0 ANALYSIS RESULT

Optical Inspection

2.1 Units were proceed for optical inspection. Results were shown in fig below.

Fig 1a: Unit #1: Top view

Fig 1b: Unit #2: Top view

Chemical Decapsulation

2.2 Both units were then proceed for chemical decapsulation & results were shown in fig below.

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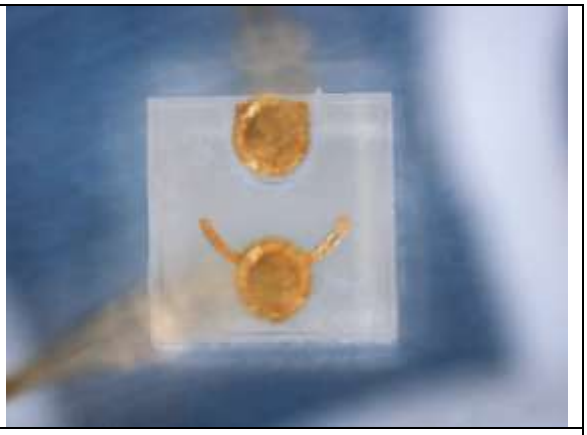
Unit #1

	
Fig 2a: Top view	Fig 2b: Close up view to die
Fig 2c: Close up view to ball bonding at N-Pad	Fig 2d: Close up view to ball bonding at P-Pad
Fig 2e: Close up view to stitch bonding at anode lead frame pad	Fig 2f: Close up view to stitch bonding at cathode lead frame pad

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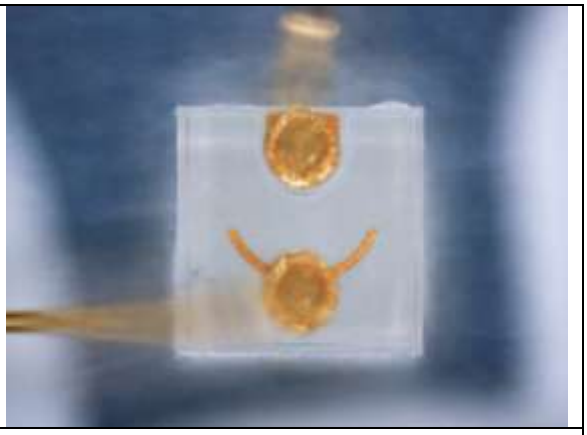
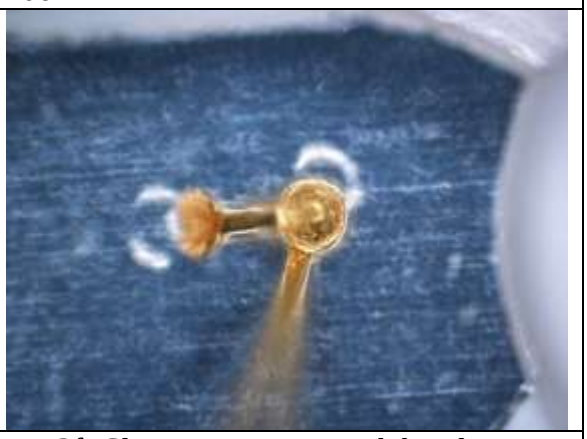
Unit #2

	
Fig 3a: Top view	Fig 3b: Close up view to die
Fig 3c: Close up view to ball bonding at N-Pad	Fig 3d: Close up view to ball bonding at P-Pad
	
Fig 3e: Close up view to stitch bonding at anode lead frame pad	Fig 3f: Close up view to stitch bonding at cathode lead frame pad

3.0 OBSERVATION & CONCLUSION

3.1 No abnormality was observed during initial optical inspection & after chemical decapsulation.

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TSK

1.0 DPA DETAILS

Ref. #	DPA170199
Package	DomiLED
Part Number	DDW-LJG
Reliability Test	TSK

2.0 ANALYSIS RESULT

Optical Inspection

2.1 Units were proceed for optical inspection. Results were shown in fig below.

Fig 1a: Unit #1: Top view

Fig 1b: Unit #2: Top view

Chemical Decapsulation

2.2 Both units were then proceed for chemical decapsulation & results were shown in fig below.

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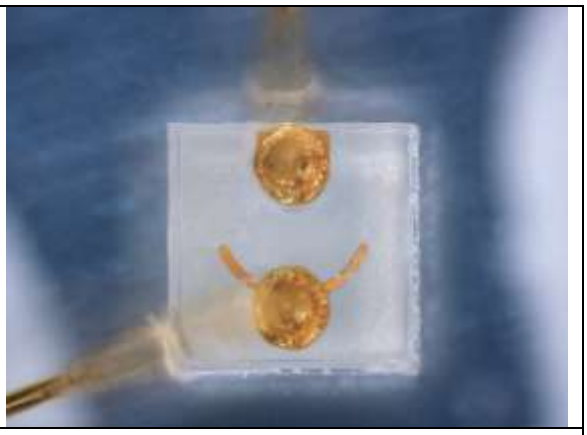
Unit #1

	
Fig 2a: Top view	Fig 2b: Close up view to die

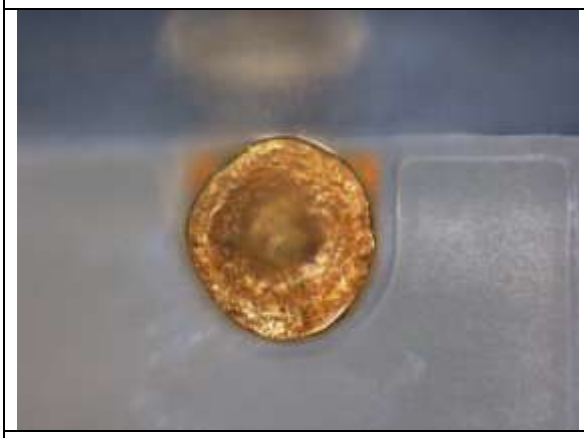
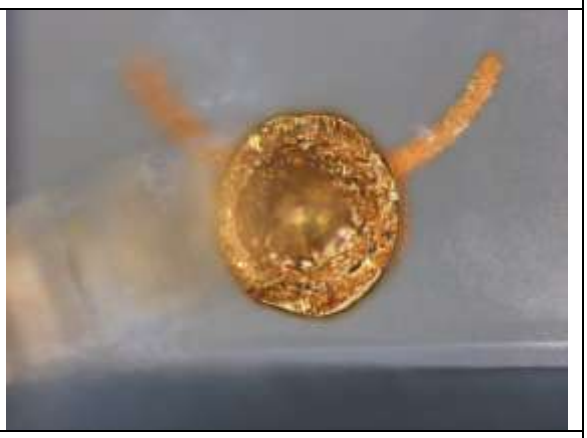
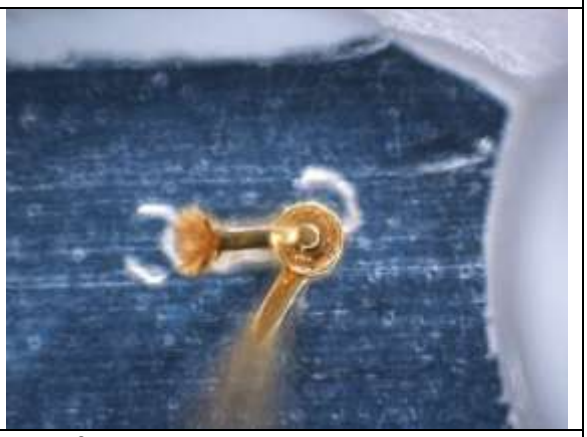

	

Fig 2c: Close up view to ball bonding at N-Pad	Fig 2d: Close up view to ball bonding at P-Pad
	
Fig 2e: Close up view to stitch bonding at anode lead frame pad	Fig 2f: Close up view to stitch bonding at cathode lead frame pad

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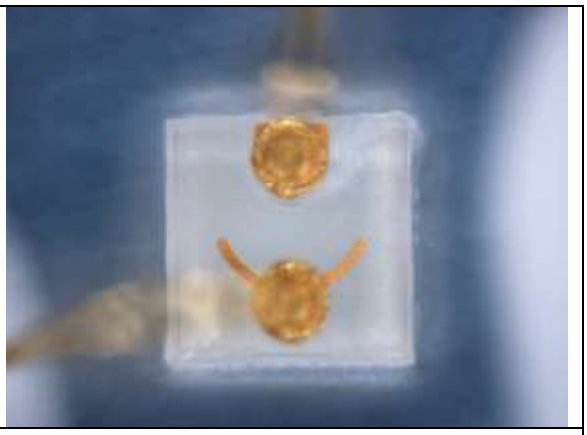
Unit #2

	
Fig 3a: Top view	Fig 3b: Close up view to die

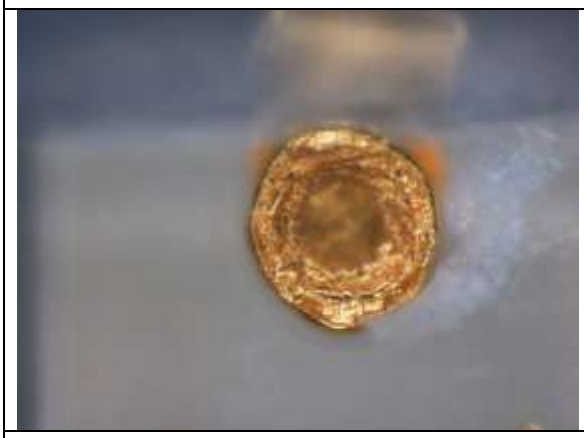



Fig 3c: Close up view to ball bonding at N-Pad	Fig 3d: Close up view to ball bonding at P-Pad
Fig 3e: Close up view to stitch bonding at anode lead frame pad	Fig 3f: Close up view to stitch bonding at cathode lead frame pad

3.0 OBSERVATION & CONCLUSION

3.1 No abnormality was observed during initial optical inspection & after chemical decapsulation.

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