

NOVASTACK® 35-HDP

Part No. 20697-0**E-01#-#, 20698-0**E-01#

Test Report

Product Specification no. PRS-2187

7	T24034	June 19, 2024	Y.Fukumoto	-	S.Suzuki
6	T22065	April 25, 2022	H.Lu	Y.Shimizu	M.Takemoto
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4					
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. 目的

依照 PRS-2187 对 NOVASTACK 35-HDP 连接器的性能进行评价。

2. 试样

- (1) NOVASTACK 35-HDP PLUG ASS'Y (P/N: 20697-0**E-01#-#)
- (2) NOVASTACK 35-HDP RECEPTACLE ASS'Y (P/N: 20698-0**E-01#)

3. 试验顺序

所有评价均按照表 1 的试验顺序实施。

4. 结果

参照表 2-1~2-4、图 1~26。试验条件详情参照 PRS-2187。n 数代表测量数据。

5. 结论

所有资料均满足产品标准 (PRS-2187) 的必要条件。

Table 1 试验顺序与试样数

试验项目	分组												
	A	B	C	D	E	F	G	H	J	K	L	M	
接触电阻	2, 6		1, 3, 5	1, 5	1, 3	1, 5	1, 5, 7	1, 3	1, 3				
绝缘电阻				2, 6		2, 6	2, 8						
耐电压				3, 7		3, 7	3, 9						
温度上升												1	
插入力	1, 5												
拔出力	3, 7												
耐久性	4						4 (10cycles)						
端子保持力		1, 3											
振动			2										
冲击			4										
热冲击				4									
高温寿命		2			2								
湿度(稳定状态)						4							
湿度(循环)							6						
盐水喷雾								2					
气体 (H ₂ S)									2				
可焊性										1			
焊锡耐热性											1		
试样数	5 pcs.	20 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	5 pcs.

※电缆表中的编号表示试验顺序。

Table 2-1. 试验结果

分组	测量内容		标准		单位	数量	n	数据					判定		
								AVE.	MAX.	MIN.	S	X±3s			
A	耐久性														
	接触电阻														
	Signal contact	初始	40	MAX.	mΩ	5	210	15.223	17.22	14.15	0.690	17.293	Pass		
		试验后 30 次后	ΔR 40	MAX.				0.324	3.78	-2.91	1.568	5.028	Pass		
	Power contact	初始	20	MAX.			20	2.985	3.78	2.47	0.403	4.194	Pass		
		试验后 30 次后	ΔR 20	MAX.				0.115	0.61	-0.57	0.327	1.096	Pass		
	GND	初始	20	MAX.			10	9.095	10.17	8.50	0.468	10.499	Pass		
		试验后 30 次后	ΔR 20	MAX.				1.162	1.78	0.38	0.434	2.464	Pass		
	插入力														
	16P	初始	32.0	MAX.			N	5	-	21.498	22.35	20.78	-	-	Pass
		试验后 30 次后								9.630	10.36	9.04	-	-	Pass
	28P	初始	32.0	MAX.					-	28.318	29.54	27.35	-	-	Pass
		试验后 30 次后								11.012	12.12	10.24	-	-	Pass
	34P	初始	38.0	MAX.					-	30.988	31.80	30.17	-	-	Pass
		试验后 30 次后			12.738	13.33				12.54	-	-	Pass		
	42P	初始	46.0	MAX.	-	32.592			33.71	31.51	-	-	Pass		
		试验后 30 次后				14.194			14.66	13.42	-	-	Pass		
	56P	初始	60.0	MAX.	-	39.758			42.40	38.37	-	-	Pass		
		试验后 30 次后				19.596			21.23	18.08	-	-	Pass		
	62P	初始	66.0	MAX.	-	45.920			47.20	44.10	-	-	Pass		
		试验后 30 次后				21.840			23.00	21.30	-	-	Pass		
	拔出力														
	16P	初始	3.2	MIN.	N	5	-	10.180	10.42	9.99	-	-	Pass		
		试验后 30 次后						6.456	6.81	5.89	-	-	Pass		
	28P	初始	3.2	MIN.			-	14.360	15.21	13.54	-	-	Pass		
		试验后 30 次后						10.226	11.32	9.43	-	-	Pass		
	34P	初始	3.8	MIN.			-	15.122	15.91	14.34	-	-	Pass		
		试验后 30 次后						10.824	11.39	9.99	-	-	Pass		
	42P	初始	4.6	MIN.			-	15.988	17.88	15.13	-	-	Pass		
		试验后 30 次后						9.942	10.40	9.30	-	-	Pass		
56P	初始	6.0	MIN.	-			20.800	21.63	20.45	-	-	Pass			
	试验后 30 次后						13.340	13.93	12.94	-	-	Pass			
62P	初始	6.6	MIN.	-			18.940	19.60	18.00	-	-	Pass			
	试验后 30 次后						18.060	19.30	16.50	-	-	Pass			
B	端子保持力														
	Plug														
	Signal contact	初始	0.6	MIN.	N	-	20	2.52 MIN.					Pass		
		试验后						2.07 MIN.					Pass		
	Power contact	初始	3.80 MIN.					Pass							
		试验后	3.92 MIN.					Pass							
	Receptacle														
	Signal contact	初始	0.1	MIN.	N	-	20	0.42 MIN.					Pass		
		试验后						0.34 MIN.					Pass		
	Power contact	初始	0.53 MIN.					Pass							
试验后		0.48 MIN.					Pass								

*外观标准：没有损害功能的异常

Table 2-2. 试验结果

分组	测量内容		标准		单位	数量	n	数据					判定							
								AVE.	MAX.	MIN.	S	X±3s								
C	震动 → 冲击																			
	接触电阻																			
	Signal contact	初始	40	MAX.	mΩ	5	210	15.200	17.04	13.96	0.685	17.255	Pass							
		震动后	ΔR	40				MAX.	-0.500	0.32	-1.31	0.474	0.922	Pass						
		冲击后							-0.505	0.44	-1.39	0.393	0.674	Pass						
	Power contact	初始	20	MAX.				mΩ	5	20	2.783	3.31	2.18	0.362	3.869	Pass				
		震动后	ΔR	20							MAX.	0.166	0.72	-0.20	0.268	0.970	Pass			
		冲击后										0.324	0.87	-0.29	0.363	1.413	Pass			
	GND	初始	20	MAX.	mΩ	5	10				8.145	9.28	7.38	0.585	9.900	Pass				
		震动后	ΔR	20							MAX.	0.149	0.55	-0.20	0.281	0.992	Pass			
		冲击后										0.163	0.77	-0.27	0.288	1.027	Pass			
	供电瞬断																			
外观		试验中	1	MAX.				μs	5	-	无瞬断					Pass				
外观		试验后	*					-	5	-	无瞬断					Pass				
D	热冲击																			
	接触电阻																			
	Signal contact	初始	40	MAX.	mΩ	5	210	15.962	18.86	13.46	1.198	19.556	Pass							
		试验后	ΔR	40				MAX.	0.769	4.46	-2.70	1.376	4.897	Pass						
	Power contact	初始							20	MAX.	mΩ	5	20	2.680	3.48	1.67	0.537	4.291	Pass	
		试验后	ΔR	20				MAX.	0.420	1.09				-0.15	0.308	1.344	Pass			
	GND	初始							20	MAX.				mΩ	5	10	8.865	9.38	8.45	0.356
		试验后	ΔR	20				MAX.	-0.067	0.61							-0.84	0.413	1.172	Pass
	绝缘电阻																			
	耐电压		初始	1000	MIN.	MΩ	5	-	1.77 × 10 ⁵ Min.								Pass			
	耐电压		试验后	500	MIN.				1.43 × 10 ⁵ Min.								Pass			
	外观		试验后	**		-	5	-	无异常								Pass			
外观		试验后	*		-	5	-	无异常					Pass							
E	高温寿命																			
	接触电阻																			
	Signal contact	初始	40	MAX.	mΩ	5	210	15.949	18.73	13.20	1.215	19.594	Pass							
		试验后	ΔR	40				MAX.	0.529	3.44	-2.26	1.110	3.859	Pass						
	Power contact	初始							20	MAX.	mΩ	5	20	2.718	3.33	2.21	0.363	3.807	Pass	
		试验后	ΔR	20				MAX.	-0.095	0.76				-0.80	0.437	1.216	Pass			
	GND	初始							20	MAX.				mΩ	5	10	8.208	8.67	7.46	0.441
		试验后	ΔR	20				MAX.	-0.098	0.75							-0.75	0.465	1.297	Pass
	外观				试验后	*			-	5							-	无异常		

*外观标准：没有损害功能的异常

**耐电压标准：没有沿面放电、閃燃、绝缘体故障的异常

Table 2-3. 试验结果

分组	测量内容	标准	单位	数量	n	数据					判定								
						AVE.	MAX.	MIN.	S	X±3s									
F	湿度(稳定状态)																		
	接触电阻																		
	Signal contact	初始	40	MAX.	mΩ	5	210	16.158	18.74	13.94	1.143	19.587	Pass						
		试验后	ΔR	40				MAX.	0.865	3.37	-1.63	1.103	4.174	Pass					
	Power contact	初始	20	MAX.				mΩ	5	20	2.786	3.62	2.18	0.393	3.965	Pass			
		试验后	ΔR	20							MAX.	0.190	1.13	-0.84	0.582	1.936	Pass		
	GND	初始	20	MAX.							mΩ	5	10	8.295	8.78	7.56	0.378	9.429	Pass
		试验后	ΔR	20										MAX.	-0.186	0.30	-0.91	0.420	1.074
	绝缘电阻																		
		初始	1000	MIN.	MΩ	5	-							1.28 × 10 ⁵ Min.					Pass
		试验后	500	MIN.				1.04 × 10 ⁵ Min.						Pass					
	耐电压																		
		试验后	**		-	5	-	无异常					Pass						
	外观																		
	试验后	*		-	5	-	无异常					Pass							
G	湿度(循环)																		
	接触电阻																		
	Signal contact	初始	40	MAX.	mΩ	5	210	15.793	17.74	13.74	0.842	18.319	Pass						
		耐久插拔10次后	ΔR	40				MAX.	-0.719	1.60	-2.52	0.786	1.639	Pass					
		试验后							0.493	2.51	-1.63	0.881	3.136	Pass					
	Power contact	初始	20	MAX.			mΩ	5	20	2.982	3.70	2.33	0.426	4.260	Pass				
		耐久插拔10次后	ΔR	20						MAX.	-0.041	1.29	-1.08	0.643	1.888	Pass			
		试验后									0.114	1.36	-1.18	0.626	1.992	Pass			
	GND	初始	20	MAX.					mΩ	5	10	8.164	8.86	7.40	0.399	9.361	Pass		
		耐久插拔10次后	ΔR	20								MAX.	-0.070	1.04	-1.31	0.709	2.057	Pass	
		试验后											0.134	1.33	-0.46	0.559	1.811	Pass	
	绝缘电阻																		
		初始	1000	MIN.	MΩ	5					-	1.15 × 10 ⁵ Min.					Pass		
		试验后	500	MIN.								1.04 × 10 ⁵ Min.					Pass		
耐电压																			
	试验后	**		-	5	-	无异常					Pass							
外观																			
	试验后	*		-	5	-	无异常					Pass							
H	盐水喷雾																		
	接触电阻																		
	Signal contact	初始	40	MAX.	mΩ	5	210	15.093	17.07	13.23	0.890	17.763	Pass						
		试验后	ΔR	40				MAX.	0.201	3.68	-3.49	1.670	5.211	Pass					
	Power contact	初始	20	MAX.			mΩ	5	20	2.952	3.36	2.46	0.255	3.717	Pass				
		试验后	ΔR	20						MAX.	-0.037	0.98	-0.53	0.382	1.109	Pass			
	GND	初始	20	MAX.					mΩ	5	10	8.050	8.70	7.55	0.404	9.262	Pass		
		试验后	ΔR	20								MAX.	0.036	0.77	-0.61	0.444	1.368	Pass	
外观																			
	试验后	*		-	5	-					无异常					Pass			

*外观标准: 没有损害功能的异常

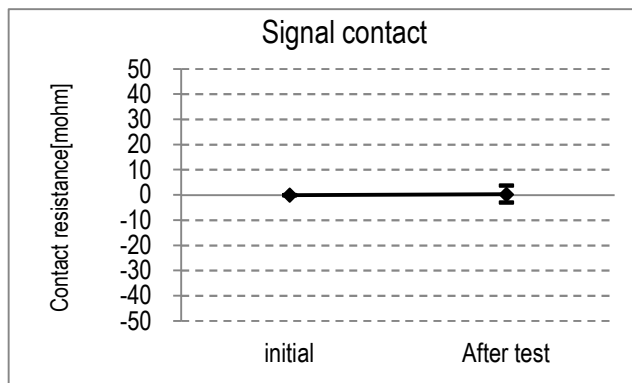
**耐电压标准: 没有沿面放电、閃燃、绝缘体故障的异常

Table 2-4. 试验结果

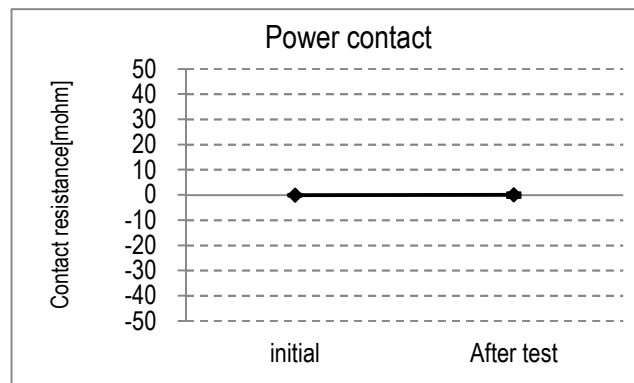
分组	测量内容	标准	单位	数量	n	数据					判定			
						AVE.	MAX.	MIN.	S	X±3s				
J	气体 (H2S)													
	接触电阻													
	Signal contact	初始	40	MAX.	mΩ	5	210	15.721	17.80	13.61	0.920	18.481	Pass	
		试验后	ΔR 40	MAX.				0.599	3.41	-2.34	1.115	3.944	Pass	
	Power contact	初始	20	MAX.			20	2.961	3.84	2.24	0.345	3.996	Pass	
		试验后	ΔR 20	MAX.				-0.124	0.92	-1.06	0.550	1.526	Pass	
	GND	初始	20	MAX.			10	8.001	8.52	7.50	0.335	9.006	Pass	
试验后		ΔR 20	MAX.	0.303				0.96	-0.28	0.418	1.557	Pass		
外观														
	试验后	*		-	5	-	无异常					Pass		
K	可焊性													
	焊锡湿润面积													
	试验后	95	MIN.	%	10	-	95 MIN.					Pass		
L	焊锡耐热性													
	外观													
	试验后	*		-	10	-	无异常					Pass		
M	温度上升													
	16P (Signal:0.30A,Power:2.20A)					ΔT	30	MAX.	℃	5	-	8.9 Max.		Pass
	28P (Signal:0.30A,Power:2.20A)											8.7 Max.		Pass
	34P (Signal:0.30A,Power:2.20A)											8.7 Max.		Pass
	42P (Signal:0.29A,Power:2.20A)											8.5 Max.		Pass
	56P (Signal:0.22A,Power:2.20A)											6.9 Max.		Pass
	62P (Signal:0.19A,Power:2.20A)											5.8 Max.		Pass

*外观标准: 没有损害功能的异常

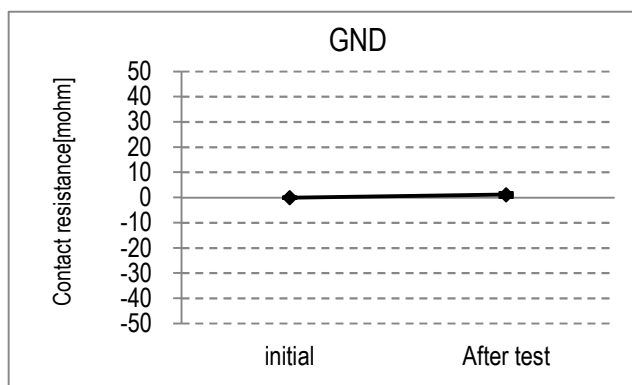
A Group / Durability



Graph-1. A change of signal contact resistance



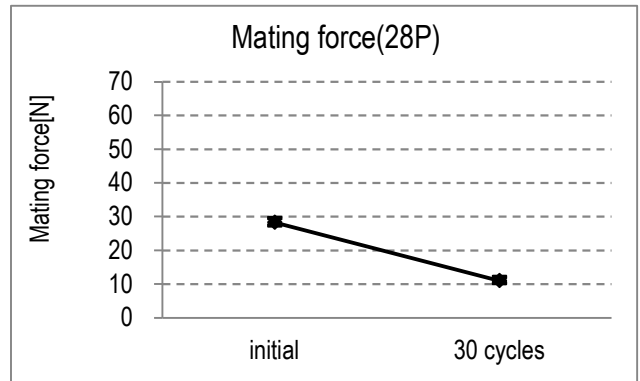
Graph-2. A change of power contact resistance



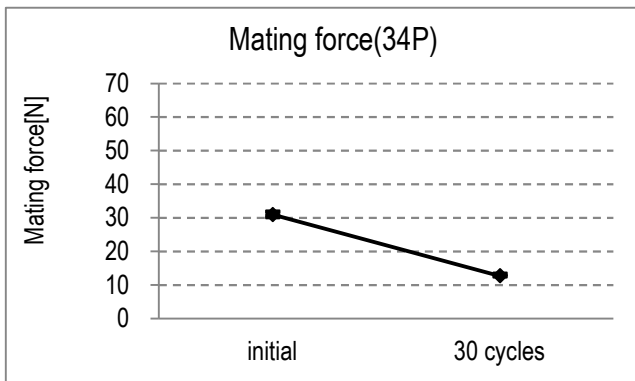
Graph-3. A change of GND contact resistance



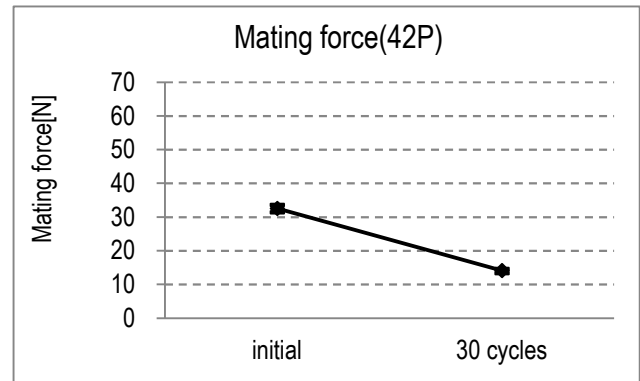
Graph-4-1. A change of mating force 16P



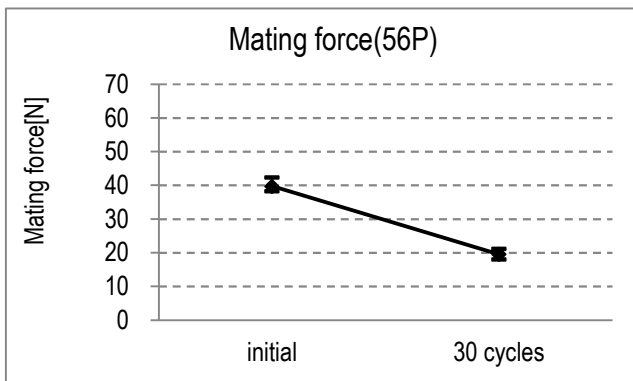
Graph-4-2. A change of mating force 28P



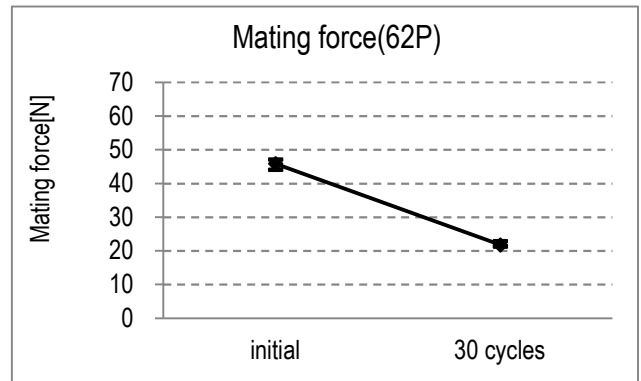
Graph-4-3. A change of mating force 34P



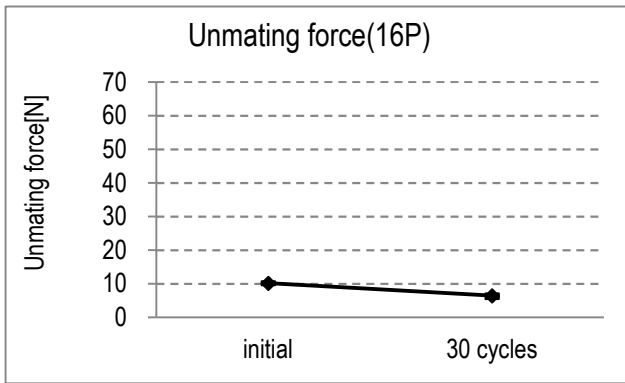
Graph-4-4. A change of mating force 42P



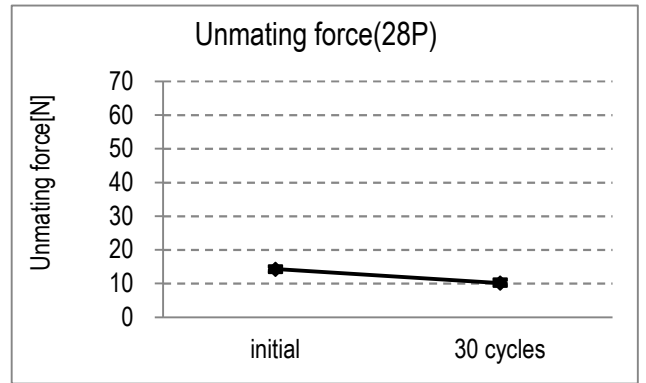
Graph-4-5. A change of mating force 56P



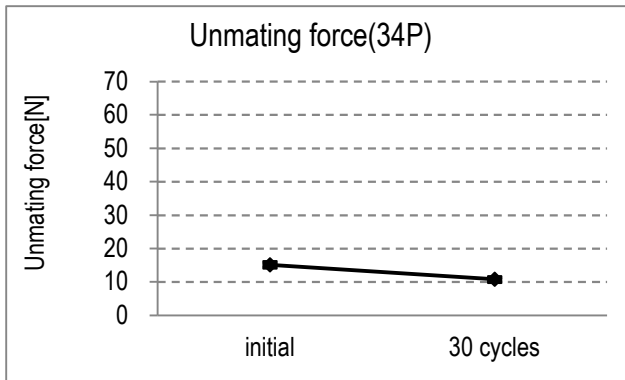
Graph-4-6. A change of mating force 62P



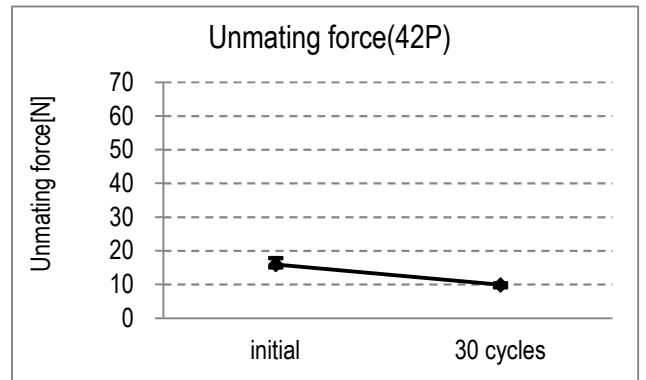
Graph-5-1. A change of unmating force 16P



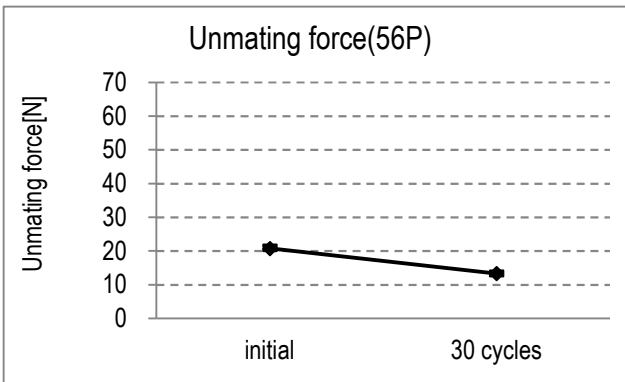
Graph-5-2. A change of unmating force 28P



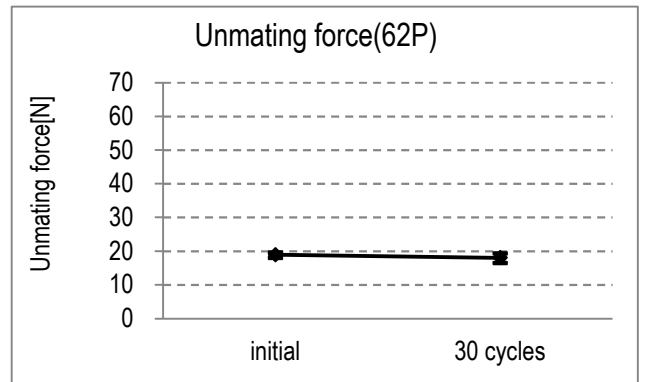
Graph-5-3. A change of unmating force 34P



Graph-5-4. A change of unmating force 42P

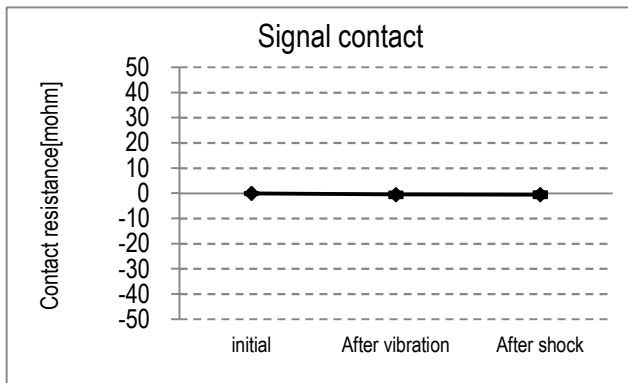


Graph-5-5. A change of unmating force 56P

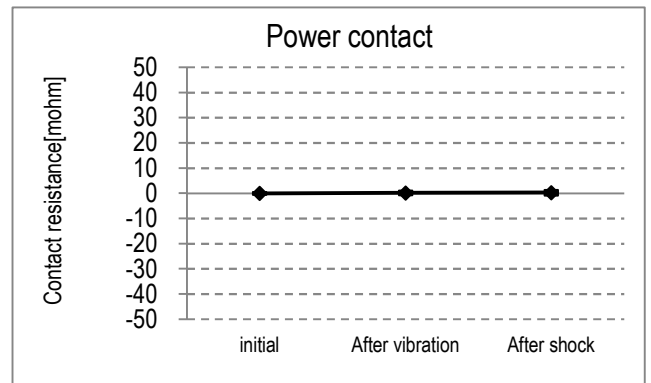


Graph-5-6. A change of unmating force 62P

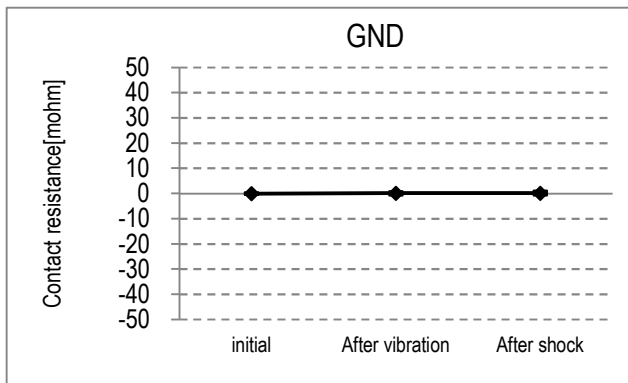
C Group / Vibration → Shock



Graph-6. A change of signal contact resistance

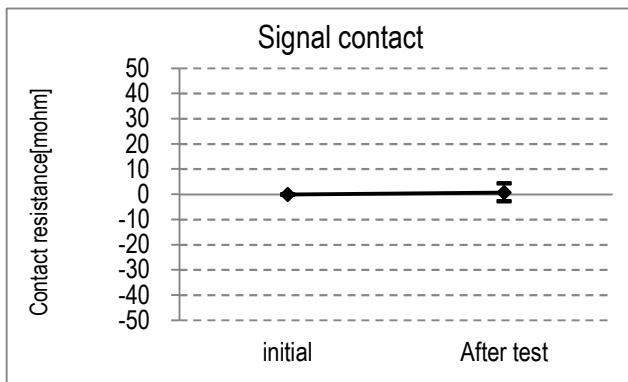


Graph-7. A change of power contact resistance

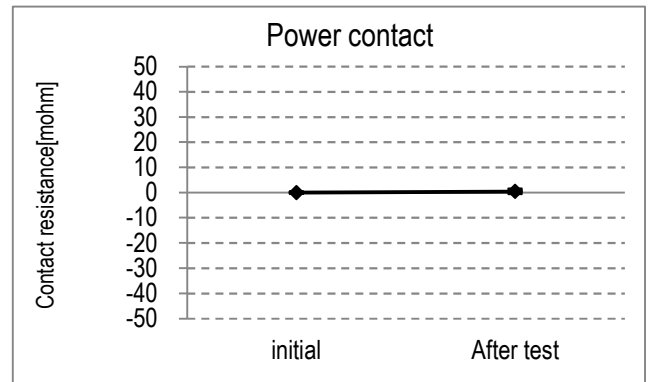


Graph-8. A change of GND contact resistance

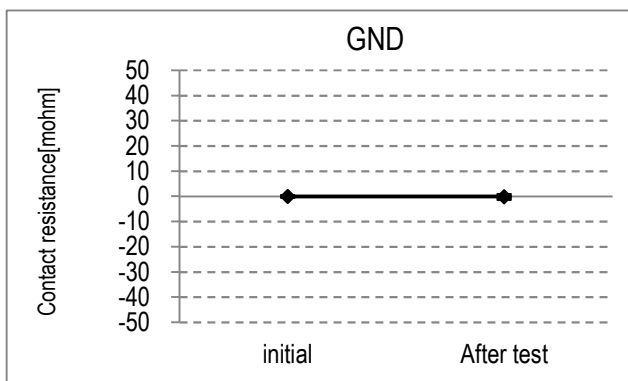
D Group / Thermal Shock



Graph-9. A change of signal contact resistance

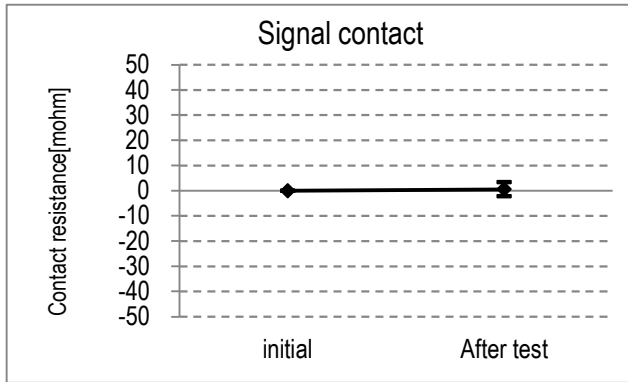


Graph-10. A change of power contact resistance

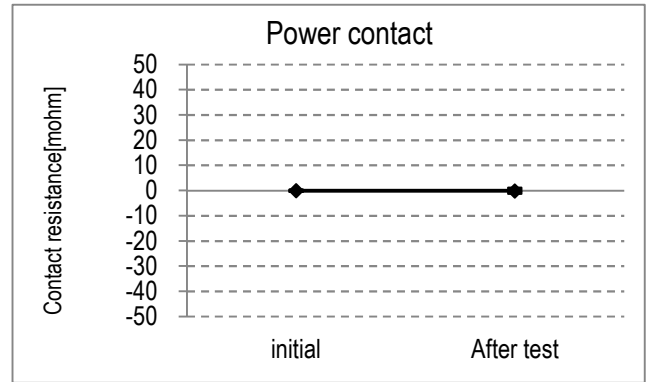


Graph-11. A change of GND contact resistance

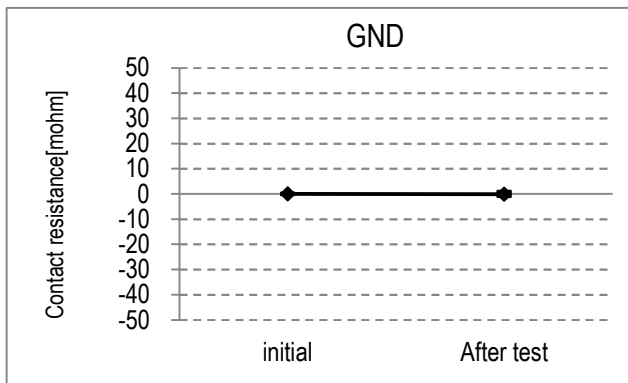
E Group / High Temperature Life



Graph-12. A change of signal contact resistance

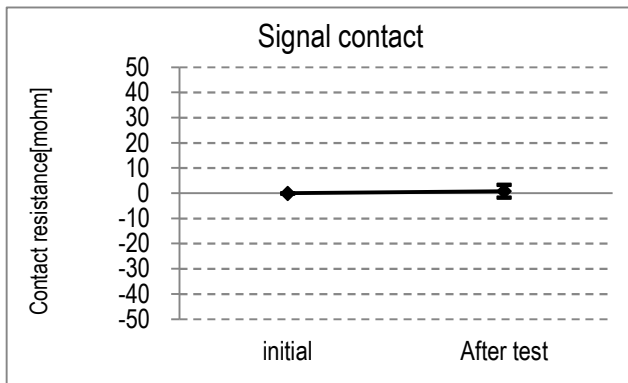


Graph-13. A change of power contact resistance

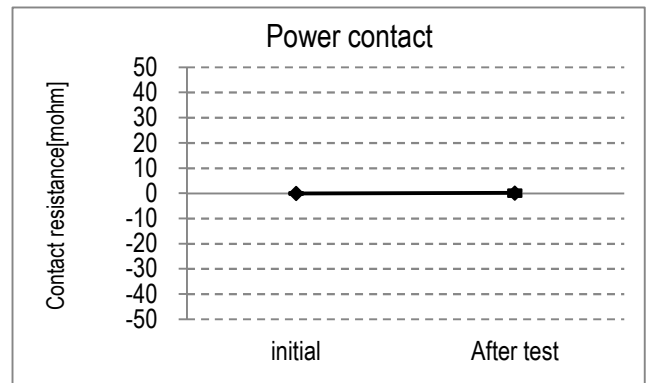


Graph-14. A change of GND contact resistance

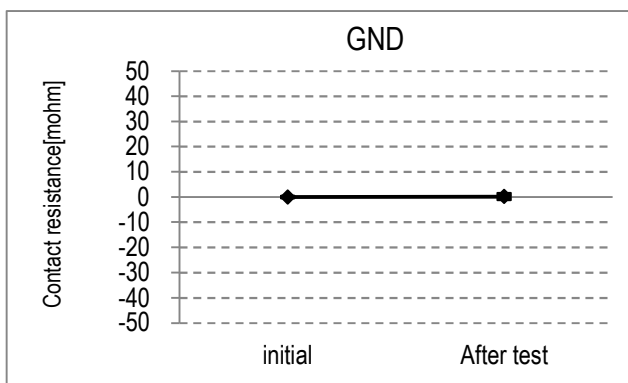
F Group / Humidity (Steady State)



Graph-15. A change of signal contact resistance

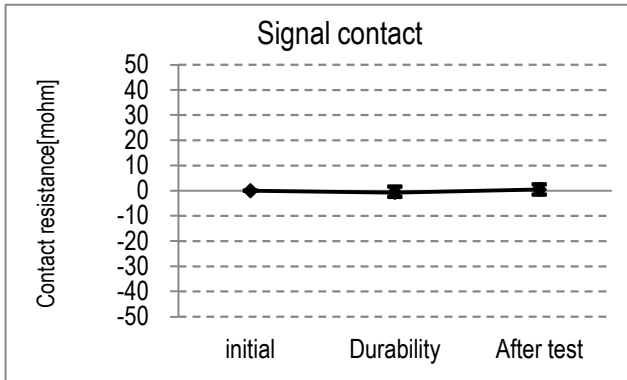


Graph-16. A change of power contact resistance

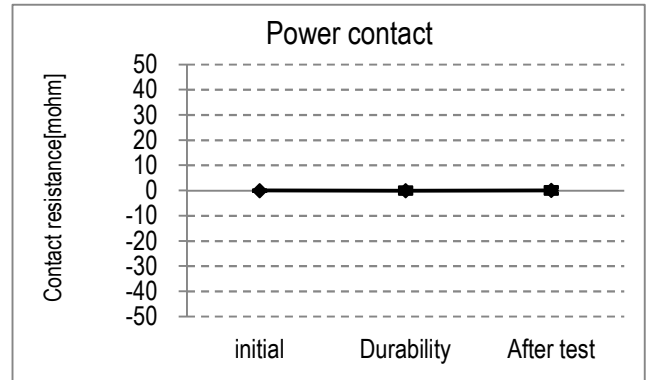


Graph-17. A change of GND contact resistance

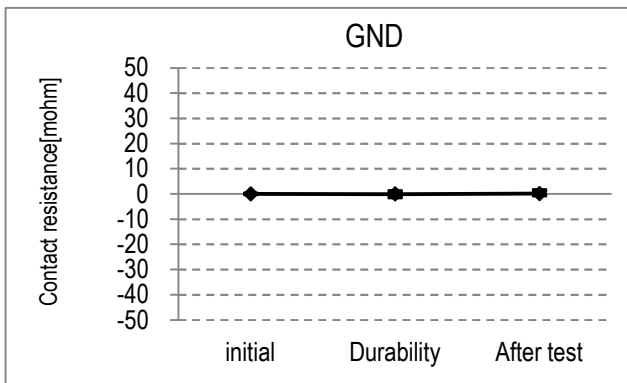
G Group / Humidity (Cycling)



Graph-18. A change of signal contact resistance

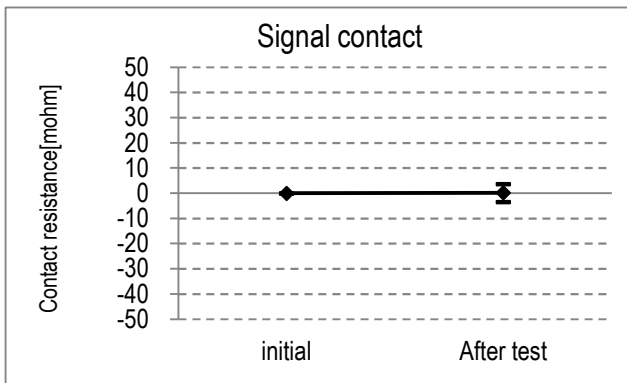


Graph-19. A change of power contact resistance

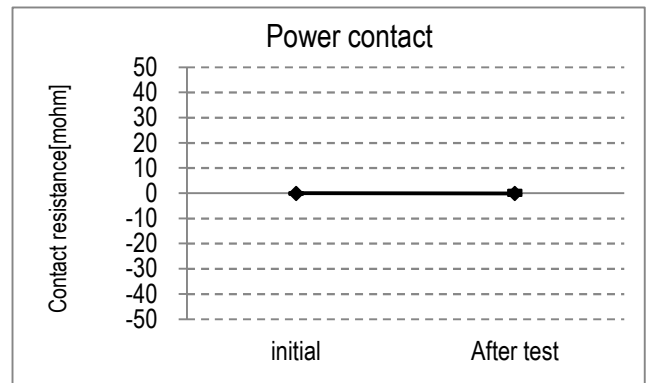


Graph-20. A change of GND contact resistance

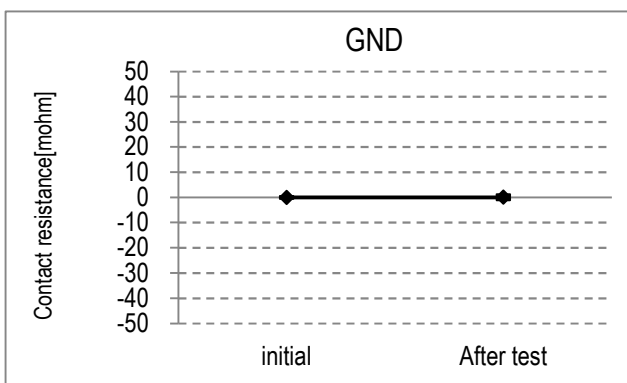
H Group / Salt Water Spray



Graph-21. A change of signal contact resistance

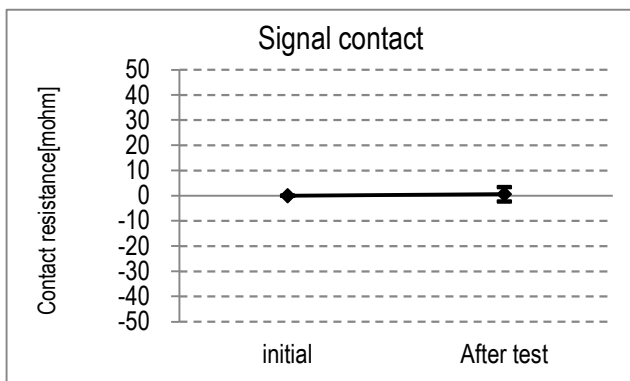


Graph-22. A change of power contact resistance

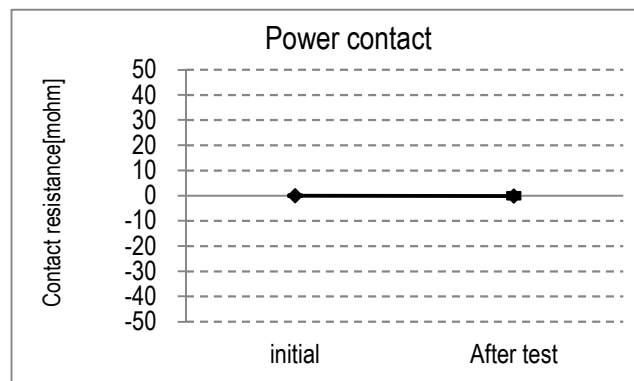


Graph-23. A change of GND contact resistance

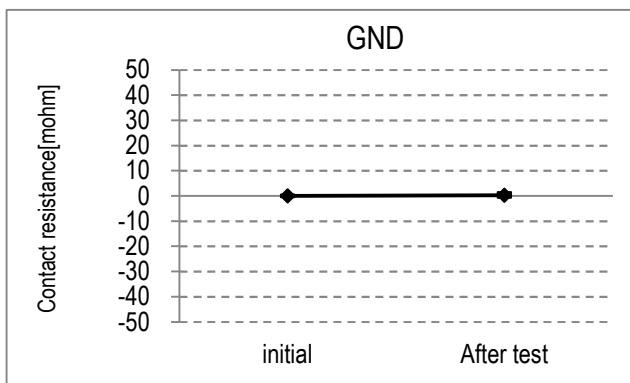
J Group / Gas



Graph-24. A change of signal contact resistance



Graph-25. A change of power contact resistance



Graph-26. A change of GND contact resistance