

NOVASTACK® 35-HDP

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

Test Report

Product Specification no. PRS-2187

4	T21002	February 4, 2021	M.Muro	-	H.Ikari
3	T18145	December 28, 2018	R.Shioya	Y.Baba	T.Hirakawa
2	T16160	October 7, 2016	T.Kurachi	-	J.Tateishi
1	T16068	March 3, 2016	T.Kurachi	-	J.Tateishi
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. 目的

NOVASTACK 35-HDP コネクタの性能を PRS-2187 に基づいて評価する。

2. 試料

- (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. 試験順序

全ての評価は表 1 の試験順序に従って行った。

4. 結果

表 2-1～2-3、グラフ 1～26 参照。試験条件の詳細は PRS-2187 参照。n 数は測定データを意味する。

5. 結論

全ての資料が製品規格（PRS-2187）の必要条件を満足した。

Table 1 試験順序と試料数

試験項目	グループ												
	A	B	C	D	E	F	G	H	J	K	L	M	
接触抵抗	2,6		1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3				
絶縁抵抗						2,6	2,8						
耐電圧						3,7	3,9						
温度上昇												1	
挿入力	1,5												
抜去力	3,7												
耐久性	4						4 (10cycles)						
端子保持力		1,3											
振動			2										
衝撃			4										
熱衝撃				2									
高温寿命		2			2								
湿度(定常状態)						4							
湿度(サイクリング)							6						
塩水噴霧								2					
ガス(H ₂ S)									2				
半田付け性										1			
半田耐熱性											1		
試料数	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.

※グループ表中の番号は、試験順序を示す。

Table 2-1. 試験結果

Group	Contents of measurement		Spec.	Unit	Q'ty	n	Data					Judge.				
							AVE.	MAX.	MIN.	S	X±3s					
A	Durability															
	Contact resistance															
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.223	17.22	14.15	0.690	17.293	OK			
		After 30 cycles	ΔR 40	MAX.				0.324	3.78	-2.91	1.568	5.028	OK			
	Power contact	Initial	20	MAX.				20	2.985	3.78	2.47	0.403	4.194	OK		
		After 30 cycles	ΔR 20	MAX.					0.115	0.61	-0.57	0.327	1.096	OK		
	GND	Initial	20	MAX.					10	9.095	10.17	8.50	0.468	10.499	OK	
		After 30 cycles	ΔR 20	MAX.						1.162	1.78	0.38	0.434	2.464	OK	
	Mating force															
	28P	Initial	32.0	MAX.			N			5	-	28.318	29.54	27.35	-	-
		After 30 cycles						11.012				12.12	10.24	-	-	OK
	34P	Initial	38.0	MAX.				-			30.988	31.80	30.17	-	-	OK
		After 30 cycles							12.738		13.33	12.54	-	-	OK	
	42P	Initial	46.0	MAX.				-	32.592		33.71	31.51	-	-	OK	
		After 30 cycles			14.194	14.66			13.42		-	-	OK			
	56P	Initial	60.0	MAX.	-	39.758		42.40	38.37		-	-	OK			
		After 30 cycles				19.596		21.23	18.08		-	-	OK			
	62P	Initial	66.0	MAX.	-	45.920		47.20	44.10		-	-	OK			
		After 30 cycles				21.840		23.00	21.30		-	-	OK			
	Unmating force															
	28P	Initial	3.2	MIN.	N	5		-	14.360		15.21	13.54	-	-	OK	
		After 30 cycles					10.226		11.32	9.43	-	-	OK			
	34P	Initial	3.8	MIN.			-	15.122	15.91	14.34	-	-	OK			
		After 30 cycles						10.824	11.39	9.99	-	-	OK			
	42P	Initial	4.6	MIN.			-	15.988	17.88	15.13	-	-	OK			
		After 30 cycles						9.942	10.40	9.30	-	-	OK			
	56P	Initial	6.0	MIN.			-	20.800	21.63	20.45	-	-	OK			
After 30 cycles		13.340						13.93	12.94	-	-	OK				
62P	Initial	6.6	MIN.	-			18.940	19.60	18.00	-	-	OK				
	After 30 cycles						18.060	19.30	16.50	-	-	OK				
B	Contact retention force															
	Plug															
	Signal contact	Initial	0.6	MIN.	N	-	20	2.52 MIN.					OK			
		After test						2.07 MIN.					OK			
	Power contact	Initial						3.80 MIN.					OK			
		After test						3.92 MIN.					OK			
	Receptacle															
	Signal contact	Initial	0.1	MIN.	N	-	20	0.42 MIN.					OK			
		After test						0.34 MIN.					OK			
	Power contact	Initial						0.53 MIN.					OK			
After test		0.48 MIN.						OK								
C	Vibration → Shock															
	Contact resistance															
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.200	17.04	13.96	0.685	17.255	OK			
		After vibration	ΔR 40	MAX.				-0.500	0.32	-1.31	0.474	0.922	OK			
		After shock						-0.505	0.44	-1.39	0.393	0.674	OK			
	Power contact	Initial						20	MAX.	20	2.783	3.31	2.18	0.362	3.869	OK
		After vibration	ΔR 20	MAX.				0.166	0.72		-0.20	0.268	0.970	OK		
	After shock	0.324						0.87	-0.29		0.363	1.413	OK			
	GND	Initial					20	MAX.	10		8.145	9.28	7.38	0.585	9.900	OK
		After vibration	ΔR 20	MAX.			0.149	0.55			-0.20	0.281	0.992	OK		
		After shock					0.163	0.77			-0.27	0.288	1.027	OK		
	Electrical discontinuity															
		During test	1	MAX.			μs	5		-	No discontinuity					OK
Appearance																
	After test	No abnormality	-	5	-	No abnormality					OK					

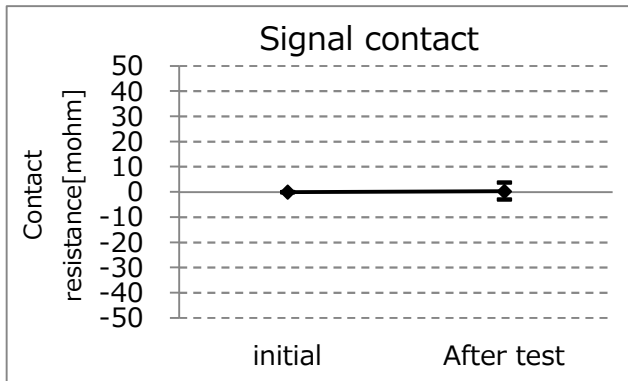
Table 2-2. 試験結果

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.		
						AVE.	MAX.	MIN.	S	X±3s			
D	Thermal shock												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.962	18.86	13.46	1.198	19.556	OK
		After test	ΔR	40				MAX.	0.769	4.46	-2.70	1.376	4.897
	Power contact	Initial	20	MAX.			20	2.680	3.48	1.67	0.537	4.291	OK
		After test	ΔR	20				MAX.	0.420	1.09	-0.15	0.308	1.344
	GND	Initial	20	MAX.			10	8.865	9.38	8.45	0.356	9.933	OK
		After test	ΔR	20				MAX.	-0.067	0.61	-0.84	0.413	1.172
	Appearance												
		After test	No abnormality	-	5	-	No abnormality					OK	
E	High temperature life												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.949	18.73	13.20	1.215	19.594	OK
		After test	ΔR	40				MAX.	0.529	3.44	-2.26	1.110	3.859
	Power contact	Initial	20	MAX.			20	2.718	3.33	2.21	0.363	3.807	OK
		After test	ΔR	20				MAX.	-0.095	0.76	-0.80	0.437	1.216
	GND	Initial	20	MAX.			10	8.208	8.67	7.46	0.441	9.531	OK
		After test	ΔR	20				MAX.	-0.098	0.75	-0.75	0.465	1.297
	Appearance												
		After test	No abnormality	-	5	-	No abnormality					OK	
F	Humidity(steady state)												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	16.158	18.74	13.94	1.143	19.587	OK
		After test	ΔR	40				MAX.	0.865	3.37	-1.63	1.103	4.174
	Power contact	Initial	20	MAX.			20	2.786	3.62	2.18	0.393	3.965	OK
		After test	ΔR	20				MAX.	0.190	1.13	-0.84	0.582	1.936
	GND	Initial	20	MAX.			10	8.295	8.78	7.56	0.378	9.429	OK
		After test	ΔR	20				MAX.	-0.186	0.30	-0.91	0.420	1.074
	Insulation resistance												
		Initial	1000	MIN.	MΩ	5	-	1.28 × 10 ⁵ Min.					OK
	After test	500	MIN.	1.04 × 10 ⁵ Min.					OK				
Dielectric Withstanding Voltage													
	After test	No abnormality	-	5	-	No abnormality					OK		
Appearance													
	After test	No abnormality	-	5	-	No abnormality					OK		
G	Humidity(cycling)												
	Contact resistance												
	Signal contact	Initial	40	MAX.	mΩ	5	210	15.793	17.74	13.74	0.842	18.319	OK
		After 10cycle						-0.719	1.60	-2.52	0.786	1.639	OK
		After test	ΔR	40				MAX.	0.493	2.51	-1.63	0.881	3.136
	Power contact	Initial	20	MAX.			20	2.982	3.70	2.33	0.426	4.260	OK
		After 10cycle						-0.041	1.29	-1.08	0.643	1.888	OK
		After test	ΔR	20				MAX.	0.114	1.36	-1.18	0.626	1.992
	GND	Initial	20	MAX.			10	8.164	8.86	7.40	0.399	9.361	OK
		After 10cycle						-0.070	1.04	-1.31	0.709	2.057	OK
After test		ΔR	20	MAX.				0.134	1.33	-0.46	0.559	1.811	OK
Insulation resistance													
	Initial	1000	MIN.	MΩ	5	-	1.15 × 10 ⁵ Min.					OK	
	After test	500	MIN.				1.04 × 10 ⁵ Min.					OK	
Dielectric Withstanding Voltage													
	After test	No abnormality	-	5	-	No abnormality					OK		
Appearance													
	After test	No abnormality	-	5	-	No abnormality					OK		

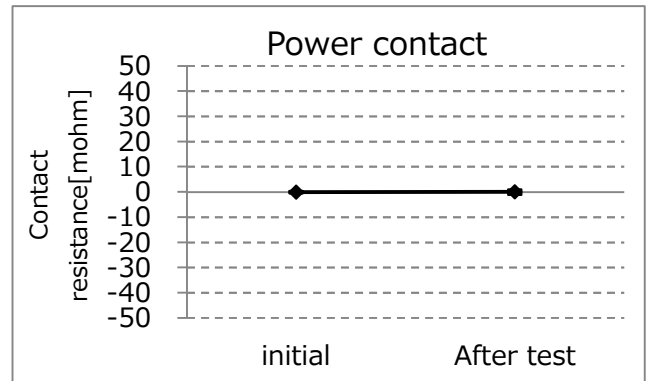
Table 2-3. 試験結果

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
H	Salt water spray											
	Contact resistance											
	Signal contact	Initial	40 MAX.	mΩ	5	210	15.093	17.07	13.23	0.890	17.763	OK
		After test	ΔR 40 MAX.				0.201	3.68	-3.49	1.670	5.211	OK
	Power contact	Initial	20 MAX.			20	2.952	3.36	2.46	0.255	3.717	OK
		After test	ΔR 20 MAX.				-0.037	0.98	-0.53	0.382	1.109	OK
	GND	Initial	20 MAX.			10	8.050	8.70	7.55	0.404	9.262	OK
		After test	ΔR 20 MAX.				0.036	0.77	-0.61	0.444	1.368	OK
Appearance												
	After test	No abnormality	-			5	-	No abnormality				
J	Gas											
	Contact resistance											
	Signal contact	Initial	40 MAX.	mΩ	5	210	15.721	17.80	13.61	0.920	18.481	OK
		After test	ΔR 40 MAX.				0.599	3.41	-2.34	1.115	3.944	OK
	Power contact	Initial	20 MAX.			20	2.961	3.84	2.24	0.345	3.996	OK
		After test	ΔR 20 MAX.				-0.124	0.92	-1.06	0.550	1.526	OK
	GND	Initial	20 MAX.			10	8.001	8.52	7.50	0.335	9.006	OK
		After test	ΔR 20 MAX.				0.303	0.96	-0.28	0.418	1.557	OK
Appearance												
	After test	No abnormality	-			5	-	No abnormality				
K	Solder ability											
	Solder wetting area											
	After test	95 MIN.	%	10	-	95 MIN.					OK	
L	Resistance to reflow soldering heat											
	Appearance											
	After test	No abnormality	-	10	-	No abnormality					OK	
M	Temperature rising											
	28P (Signal:0.30A,Power:2.20A)	ΔT 30 MAX.	℃	5	-	8.7 Max.					OK	
	34P (Signal:0.30A,Power:2.20A)					8.7 Max.					OK	
	42P (Signal:0.29A,Power:2.20A)					8.5 Max.					OK	
	56P (Signal:0.22A,Power:2.20A)					6.9 Max.					OK	
62P (Signal:0.19A,Power:2.20A)	5.8 Max.					OK						

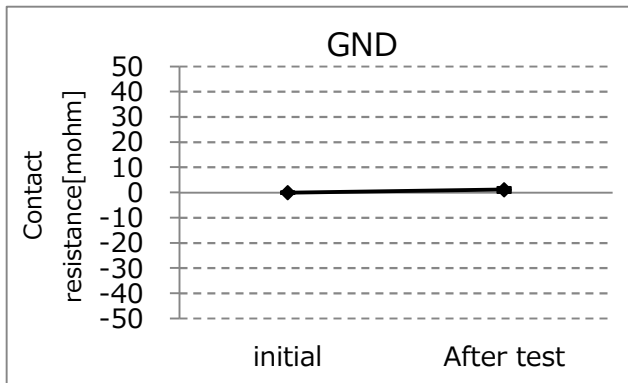
C Group / Durability



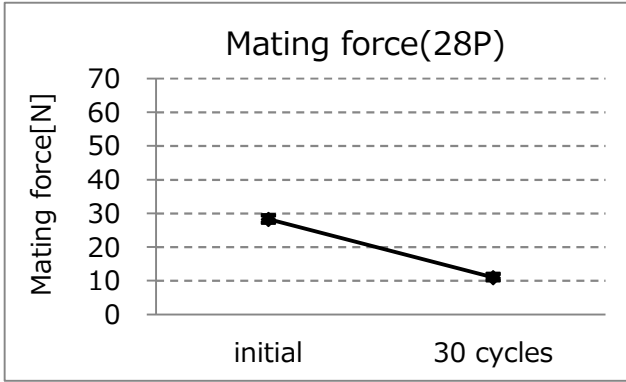
Graph-1. A change of signal contact resistance



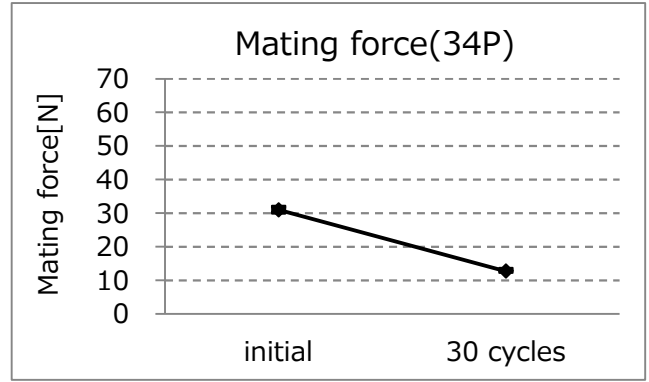
Graph-2. A change of power contact resistance



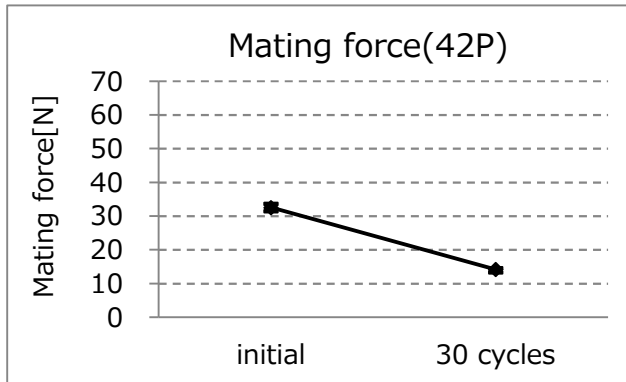
Graph-3. A change of GND contact resistance



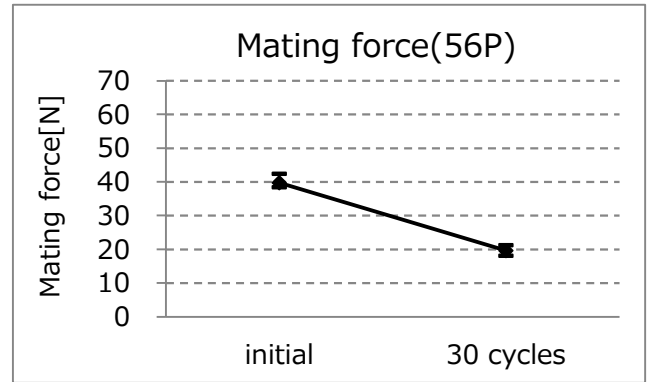
Graph-4-1. A change of mating force 28P



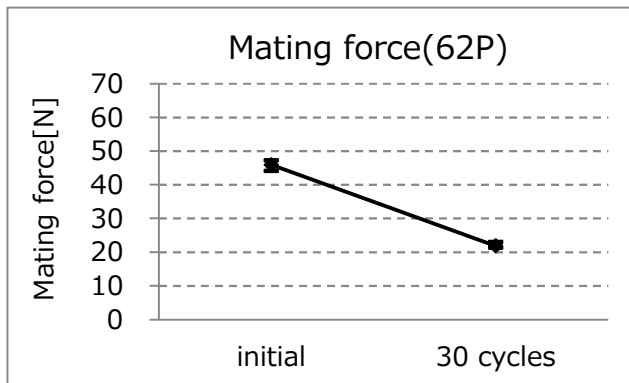
Graph-4-2. A change of mating force 34P



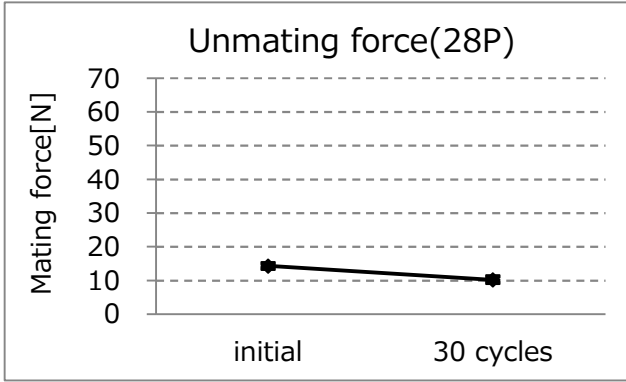
Graph-4-3. A change of mating force 42P



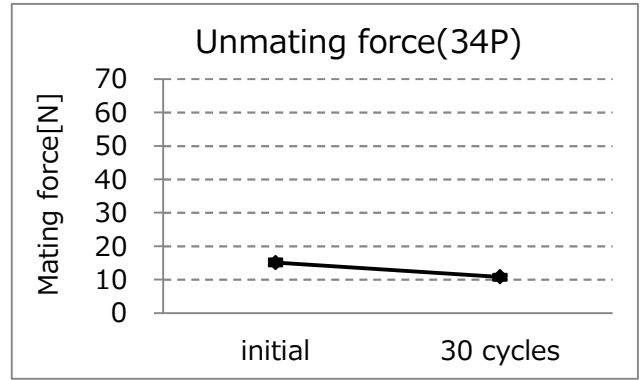
Graph-4-4. A change of mating force 56P



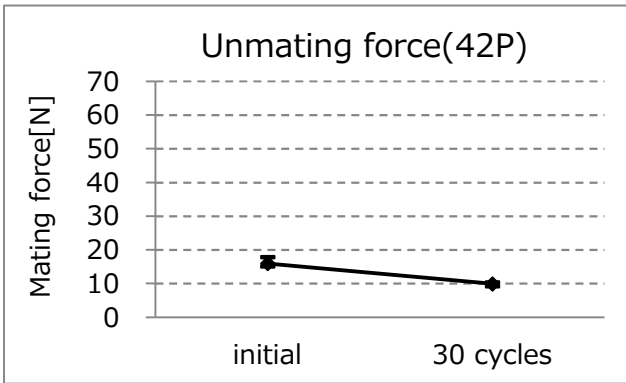
Graph-4-5. A change of mating force 62P



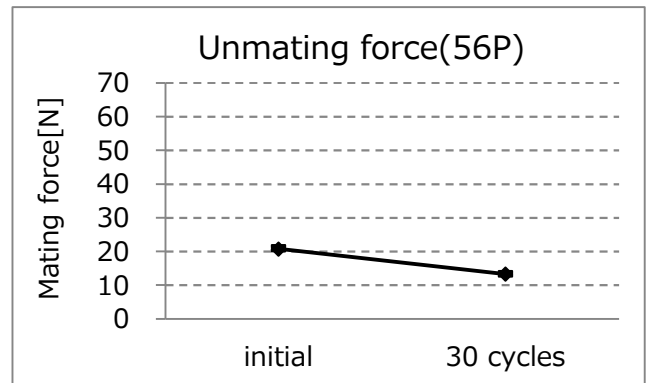
Graph-5-1. A change of unmating force 28P



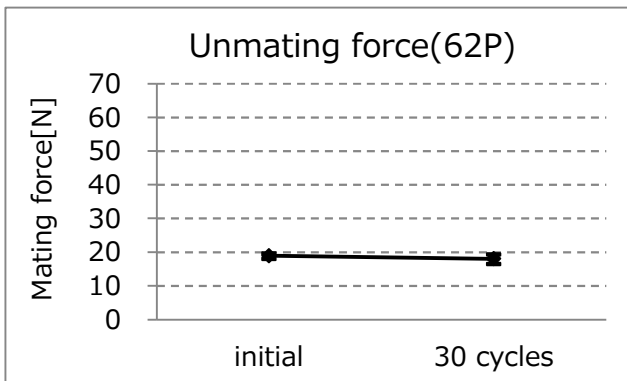
Graph-5-2. A change of unmating force 34P



Graph-5-3. A change of unmating force 42P

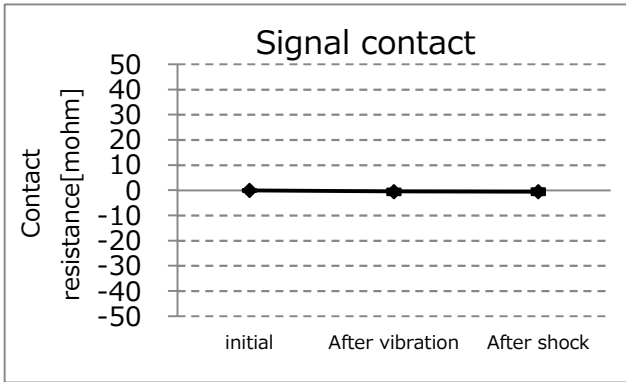


Graph-5-4. A change of unmating force 56P

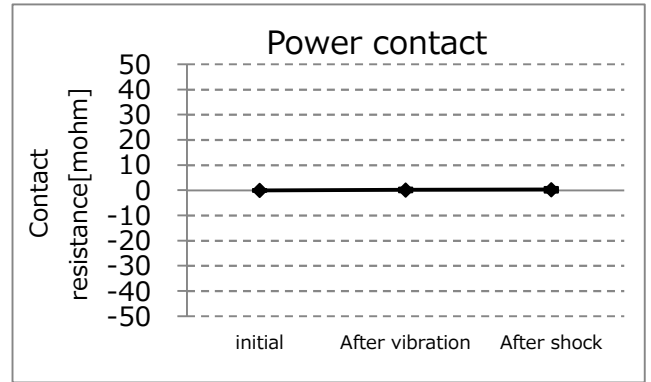


Graph-5-5. A change of unmating force 62P

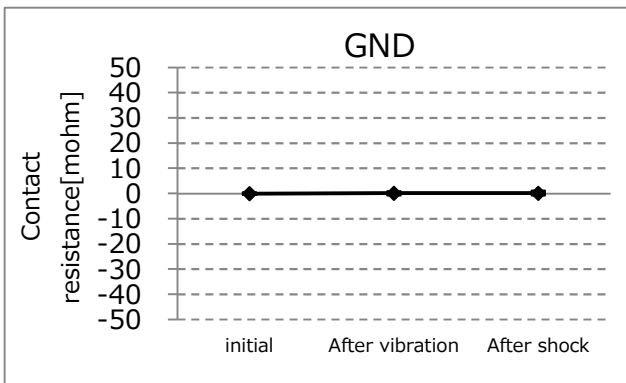
C Group / Vibration → Shock



Graph-6. A change of signal contact resistance

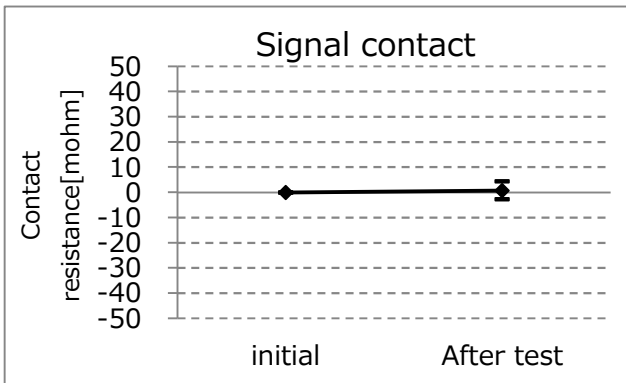


Graph-7. A change of power contact resistance

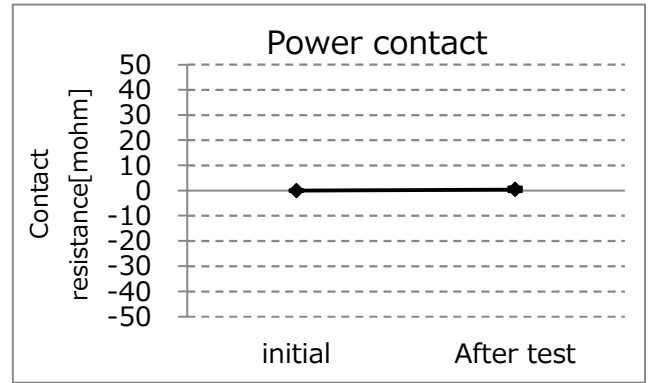


Graph-8. A change of GND contact resistance

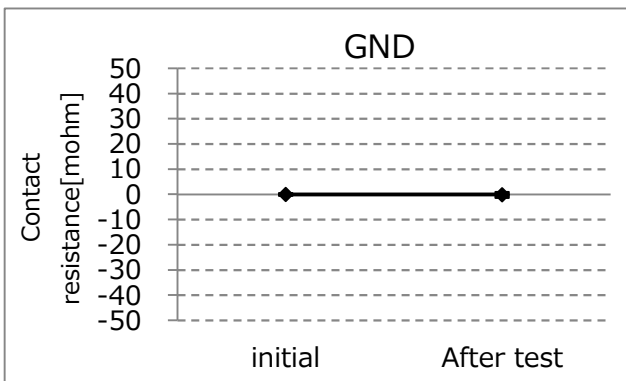
D Group / Thermal Shock



Graph-9. A change of signal contact resistance

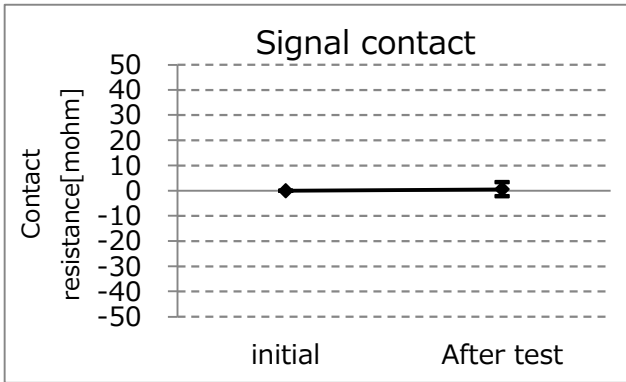


Graph-10. A change of power contact resistance

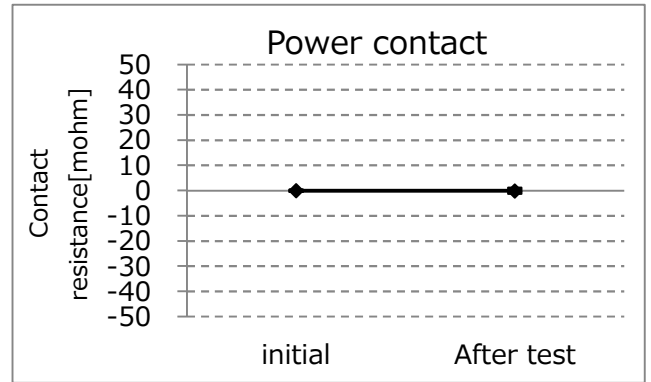


Graph-11. A change of GND contact resistance

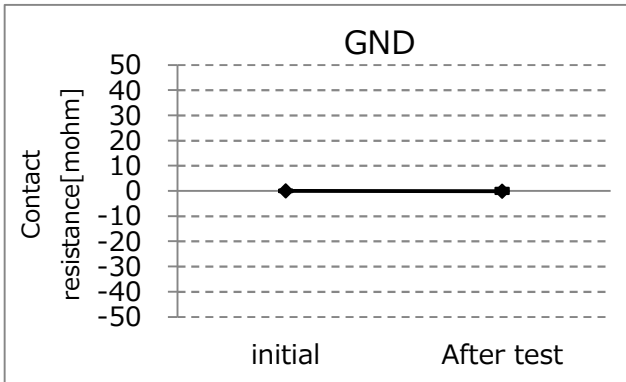
E Group / High Temperature Life



Graph-12. A change of signal contact resistance

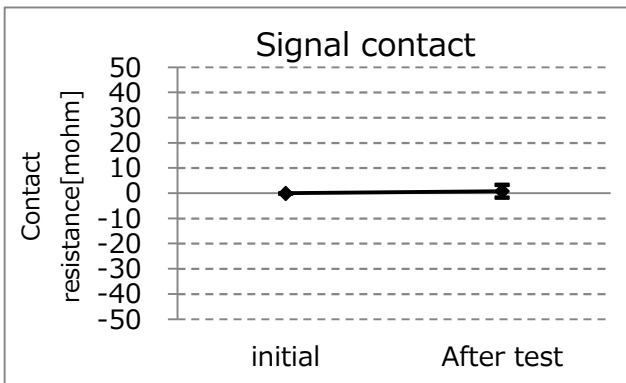


Graph-13. A change of power contact resistance

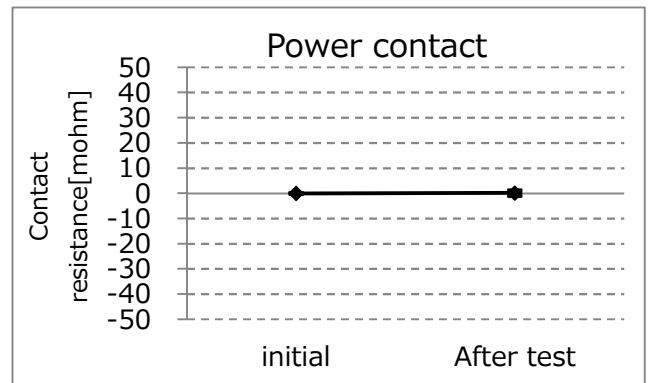


Graph-14. A change of GND contact resistance

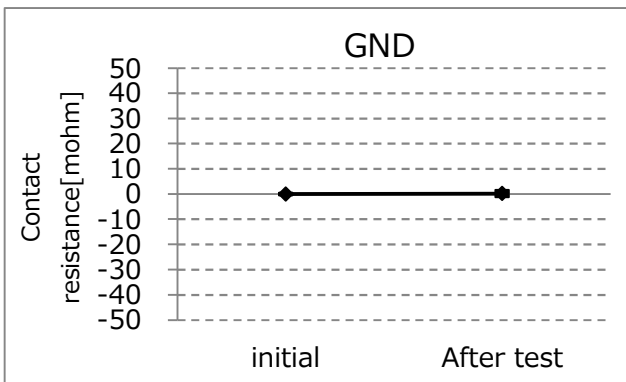
F Group / Humidity (Steady State)



Graph-15. A change of signal contact resistance

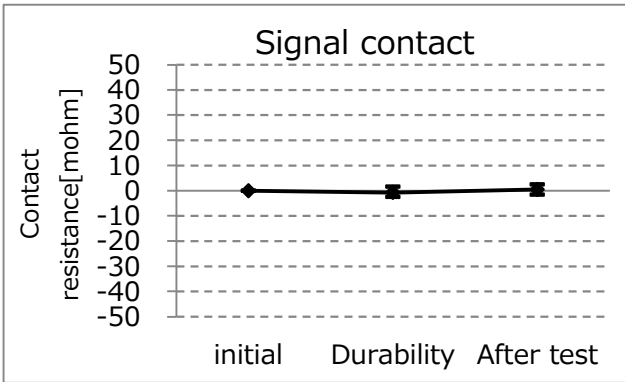


Graph-16. A change of power contact resistance

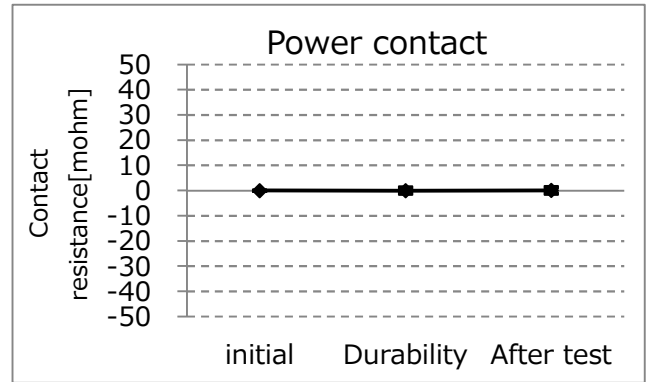


Graph-17. A change of GND contact resistance

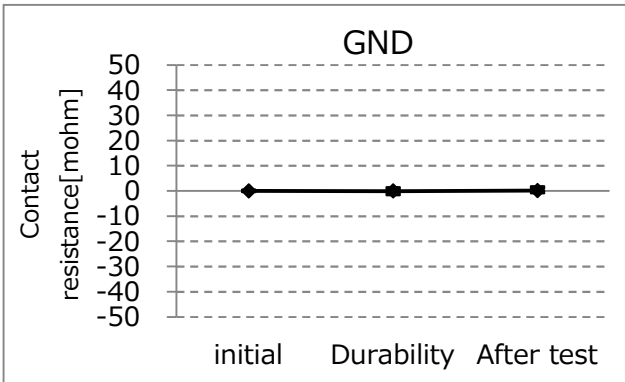
G Group / Humidity (Cycling)



Graph-18. A change of signal contact resistance

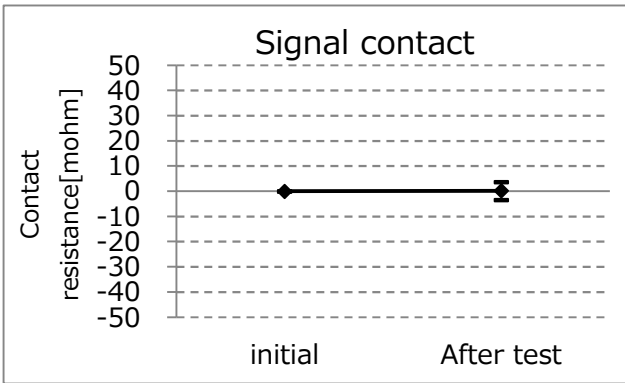


Graph-19. A change of power contact resistance

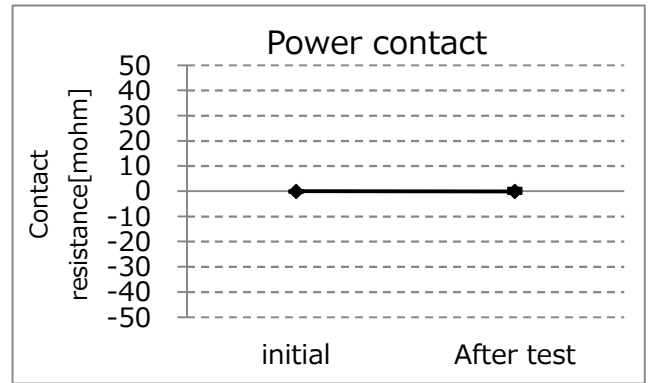


Graph-20. A change of GND contact resistance

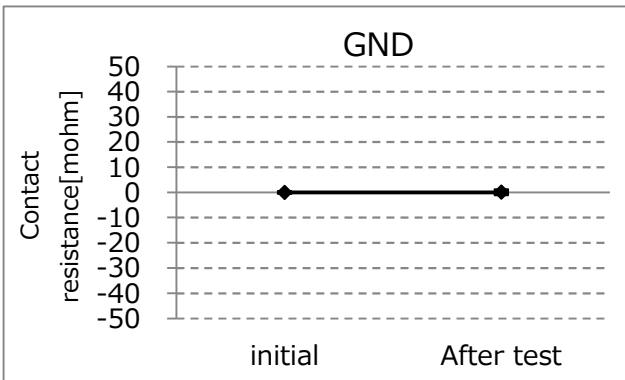
H Group / Salt Water Spray



Graph-21. A change of signal contact resistance

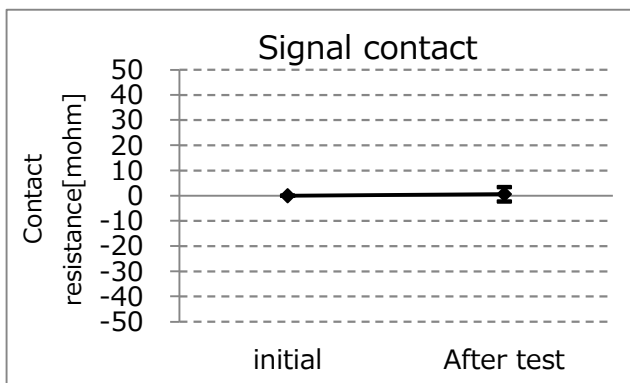


Graph-22. A change of power contact resistance

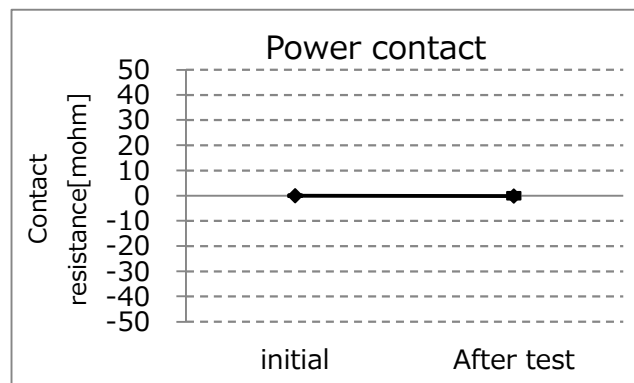


Graph-23. A change of GND contact resistance

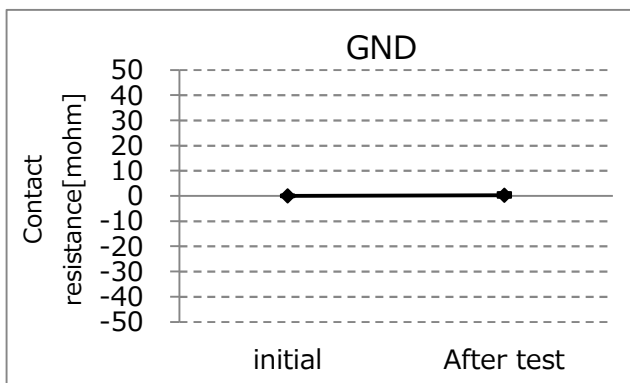
J Group / Gas



Graph-24. A change of signal contact resistance



Graph-25. A change of power contact resistance



Graph-26. A change of GND contact resistance