

MINIFLEX® 3-BFN

Part No. 20527-0**E-01

Test Report

Product Specification no. PRS-1512

7	T21141	November 8, 2021	S.Shigekoshi	M.Muro	H.Ikari
6	T19141	October 9, 2019	S.Shigekoshi	M.Muro	H.Ikari
5	T16026	February 23, 2016	M.I		Y.S
4	T16013	February 11, 2016	M.I		Y.S
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MINIFLEX 3-BFN Connector in accordance with PRS-1512.

2. Specimen

(1))Connector : MINIFLEX 3-BFN Conn. ... P/N: 20527-0**E-01
MINIFLEX 3-BFN ID TYPE Conn. ... P/N: 20541-0**E-01

(2) FPC : Made by Taiyo Industrial Co.,Ltd.

FPC Thickness : $t=0.20\pm0.03$ (Actual measurement : 0.19~0.20mm)

3. Test Sequence

All the evaluations were performed in accordance with Table 1. Test Sequence.

4. Result

See Table 2-1 to 2-9, Graph 1 to 17. For the details of the testing conditions and requirements, see PRS-1512.

The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-1512.

Table1 Test Sequence

Test Items	Group															
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R
C/T Resistance	2,7			1,3, 5	1,3	1,3	1,3	1,5	1,5	1,3	1,3	1,3	1,3			
D.W.Voltage								2,6	2,6							
Insulation Resistance								3,7	3,7							
Temp. rising																1
Act Locking Force	1,5															
Act Un-locking Force	3,6															
FPC Retention Force		1,3														
Durability	4	2														
C/T Retention Force			1													
Vibration				2												
Shock				4												
Fretting corrosion					2											
Thermal Shock						2										
High Temp. Life							2									
High Temp & High Hum energizing								4								
High Temp & High Hum Life									4							
Cold Temp. Life										2						
Gas (H ₂ S)											2					
Gas (SO ₂)												2				
Salt Water Spray													2			
Solderability														1		
Soldering Heat Resist.															1	

Table2-1 Test Result

Test Item	Measurement			Spec	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Contact Resistance (mΩ)	※U	Initial	60mΩ MAX.	5	165	23.942	29.97	19.00	3.532	34.538	○
			After 20th	Δ R=40mΩ MAX.			0.197	3.55	-3.46	1.649	5.144	○
		※L	Initial	60mΩ MAX.	5	165	15.021	18.91	11.01	2.237	21.732	○
			After 20th	Δ R=40mΩ MAX.			1.146	4.68	-1.71	1.392	5.322	○
	Act Locking Force (N)	13P	Initial	3.9N MAX. (0.3N/Pos. ×13P)	5	5	1.824 (0.140)	1.92 (0.15)	1.70 (0.13)	0.094 (0.007)	2.106 (0.162)	○
			After 20th				1.456 (0.112)	1.54 (0.12)	1.34 (0.10)	0.083 (0.006)	1.705 (0.131)	○
		15P	Initial	4.5N MAX. (0.3N/Pos. ×15P)	5	5	2.084 (0.139)	2.21 (0.15)	2.00 (0.13)	0.083 (0.006)	2.333 (0.156)	○
			After 20th				1.674 (0.112)	1.72 (0.11)	1.52 (0.10)	0.087 (0.006)	1.935 (0.129)	○
		17P	Initial	5.1N MAX. (0.3N/Pos. ×17P)	5	5	2.424 (0.143)	2.65 (0.16)	2.26 (0.13)	0.152 (0.009)	2.880 (0.169)	○
			After 20th				1.940 (0.114)	2.04 (0.12)	1.79 (0.11)	0.099 (0.006)	2.237 (0.132)	○
		19P	Initial	5.7N MAX. (0.3N/Pos. ×19P)	5	5	2.738 (0.144)	2.90 (0.15)	2.62 (0.14)	0.102 (0.005)	3.044 (0.160)	○
			After 20th				2.160 (0.114)	2.28 (0.12)	2.07 (0.11)	0.105 (0.006)	2.475 (0.130)	○
		21P	Initial	6.3N MAX. (0.3N/Pos. ×21P)	5	5	3.024 (0.144)	3.25 (0.15)	2.86 (0.14)	0.152 (0.007)	3.480 (0.166)	○
			After 20th				2.366 (0.113)	2.54 (0.12)	2.19 (0.10)	0.127 (0.006)	2.747 (0.131)	○
		23P	Initial	6.9N MAX. (0.3N/Pos. ×23P)	5	5	3.388 (0.147)	3.56 (0.15)	3.21 (0.14)	0.148 (0.006)	3.832 (0.167)	○
			After 20th				2.534 (0.110)	2.59 (0.11)	2.47 (0.10)	0.055 (0.003)	2.699 (0.120)	○
		25P	Initial	7.5N MAX. (0.3N/Pos. ×25P)	5	5	3.708 (0.148)	3.86 (0.15)	3.55 (0.14)	0.116 (0.005)	4.056 (0.162)	○
			After 20th				3.074 (0.123)	3.25 (0.13)	2.85 (0.11)	0.170 (0.007)	3.584 (0.143)	○
		27P	Initial	8.1N MAX. (0.3N/Pos. ×27P)	5	5	4.034 (0.149)	4.22 (0.16)	3.88 (0.14)	0.135 (0.005)	4.439 (0.164)	○
			After 20th				3.252 (0.120)	3.52 (0.13)	2.92 (0.11)	0.288 (0.011)	4.116 (0.152)	○
		29P	Initial	8.7N MAX. (0.3N/Pos. ×29P)	5	5	4.064 (0.140)	4.23 (0.15)	3.93 (0.14)	0.109 (0.004)	4.391 (0.151)	○
			After 20th				3.160 (0.109)	3.29 (0.11)	3.07 (0.11)	0.103 (0.004)	3.469 (0.120)	○

※U : Upper Contact L : Lower Contact

Table 2-2 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Act Locking Force (N)	31P	Initial	9.3N MAX. (0.3N/Pos. ×31P)	5	5	4.720 (0.152)	4.96 (0.16)	4.57 (0.15)	0.171 (0.006)	5.233 (0.169)	○
			After 20th				3.800 (0.123)	3.96 (0.13)	3.53 (0.11)	0.163 (0.005)	4.289 (0.138)	○
		33P	Initial	9.9N MAX. (0.3N/Pos. ×33P)	5	5	4.868 (0.148)	5.26 (0.16)	4.55 (0.14)	0.273 (0.008)	5.687 (0.172)	○
			After 20th				3.712 (0.112)	3.97 (0.12)	3.59 (0.11)	0.155 (0.005)	4.177 (0.127)	○
		35P	Initial	10.5N MAX. (0.3N/Pos. ×35P)	5	5	5.164 (0.148)	5.55 (0.16)	4.90 (0.14)	0.339 (0.010)	6.181 (0.177)	○
			After 20th				4.266 (0.122)	4.48 (0.13)	4.03 (0.12)	0.181 (0.005)	4.809 (0.137)	○
		37P	Initial	11.1N MAX. (0.3N/Pos. ×37P)	5	5	5.416 (0.146)	5.83 (0.17)	5.11 (0.15)	0.269 (0.007)	6.223 (0.168)	○
			After 20th				4.568 (0.123)	4.96 (0.13)	4.30 (0.12)	0.259 (0.007)	5.345 (0.144)	○
		39P	Initial	11.7N MAX. (0.3N/Pos. ×39P)	5	5	5.960 (0.153)	6.19 (0.16)	5.79 (0.15)	0.164 (0.004)	6.452 (0.165)	○
			After 20th				4.718 (0.121)	4.90 (0.13)	4.54 (0.12)	0.158 (0.004)	5.192 (0.133)	○
		41P	Initial	12.3N MAX. (0.3N/Pos. ×41P)	5	5	6.040 (0.147)	6.31 (0.15)	5.75 (0.14)	0.208 (0.005)	6.664 (0.163)	○
			After 20th				5.158 (0.126)	5.64 (0.14)	4.75 (0.12)	0.323 (0.008)	6.127 (0.149)	○
	Act Un-locking Force (N)	13P	Initial	0.26N MIN. (0.02N/Pos. ×13P)	5	5	1.216 (0.094)	1.29 (0.10)	1.12 (0.09)	0.064 (0.005)	1.024 (0.079)	○
			After 20th				1.124 (0.086)	1.31 (0.10)	0.98 (0.08)	0.127 (0.010)	0.743 (0.057)	○
		15P	Initial	0.26N MIN. (0.02N/Pos. ×13P)	5	5	1.422 (0.095)	1.47 (0.10)	1.39 (0.09)	0.034 (0.002)	1.320 (0.088)	○
			After 20th				1.316 (0.088)	1.4 (0.09)	1.24 (0.08)	0.075 (0.005)	1.091 (0.073)	○
		17P	Initial	0.34N MIN. (0.02N/Pos. ×17P)	5	5	1.526 (0.090)	1.69 (0.10)	1.35 (0.08)	0.144 (0.008)	1.094 (0.064)	○
			After 20th				1.420 (0.084)	1.60 (0.09)	1.18 (0.07)	0.162 (0.010)	0.934 (0.055)	○
		19P	Initial	0.38N MIN. (0.02N/Pos. ×19P)	5	5	1.696 (0.089)	1.71 (0.09)	1.68 (0.09)	0.011 (0.001)	1.663 (0.088)	○
			After 20th				1.596 (0.084)	1.65 (0.09)	1.53 (0.08)	0.047 (0.002)	1.455 (0.077)	○
		21P	Initial	0.42N MIN. (0.02N/Pos. ×21P)	5	5	1.826 (0.087)	1.99 (0.09)	1.65 (0.08)	0.144 (0.007)	1.394 (0.066)	○
			After 20th				1.680 (0.080)	1.90 (0.09)	1.48 (0.07)	0.168 (0.008)	1.176 (0.056)	○

Table 2-3 Test Result

Test Item	Measurement			Spec.	Set	n	Data					Judge
							AVE.(X)	MAX.	MIN.	s	X±3s	
A Group Durability	Act Un-locking Force (N)	23P	Initial	0.46N MIN. (0.02N/Pos. ×23P)	5	5	2.002 (0.087)	2.08 (0.09)	1.93 (0.08)	0.065 (0.003)	1.807 (0.079)	○
			After 20th				1.884 (0.082)	2.01 (0.09)	1.76 (0.08)	0.097 (0.004)	1.593 (0.069)	○
		25P	Initial	0.50N MIN. (0.02N/Pos. ×25P)	5	5	2.068 (0.083)	2.22 (0.09)	1.85 (0.07)	0.167 (0.007)	1.567 (0.063)	○
			After 20th				1.972 (0.079)	2.17 (0.09)	1.78 (0.07)	0.160 (0.006)	1.492 (0.060)	○
		27P	Initial	0.54N MIN. (0.02N/Pos. ×27P)	5	5	2.338 (0.087)	2.59 (0.10)	2.14 (0.08)	0.175 (0.006)	1.813 (0.067)	○
			After 20th				2.132 (0.079)	2.37 (0.09)	1.86 (0.07)	0.230 (0.009)	1.442 (0.053)	○
		29P	Initial	0.58N MIN. (0.02N/Pos. ×29P)	5	5	2.556 (0.088)	2.80 (0.10)	2.43 (0.08)	0.149 (0.005)	2.109 (0.073)	○
			After 20th				2.174 (0.075)	2.44 (0.08)	1.95 (0.07)	0.184 (0.006)	1.622 (0.056)	○
		31P	Initial	0.62N MIN. (0.02N/Pos. ×31P)	5	5	2.546 (0.082)	2.64 (0.09)	2.49 (0.08)	0.058 (0.002)	2.372 (0.077)	○
			After 20th				2.442 (0.079)	2.56 (0.08)	2.23 (0.07)	0.152 (0.005)	1.986 (0.064)	○
		33P	Initial	0.66N MIN. (0.02N/Pos. ×33P)	5	5	2.766 (0.084)	3.12 (0.09)	2.46 (0.07)	0.282 (0.009)	1.920 (0.058)	○
			After 20th				2.240 (0.068)	2.37 (0.07)	2.13 (0.06)	0.103 (0.003)	1.931 (0.059)	○
		35P	Initial	0.70N MIN. (0.02N/Pos. ×35P)	5	5	2.838 (0.081)	2.95 (0.08)	2.62 (0.07)	0.131 (0.004)	2.445 (0.070)	○
			After 20th				2.582 (0.074)	2.80 (0.08)	2.42 (0.07)	0.155 (0.004)	2.117 (0.060)	○
		37P	Initial	0.74N MIN. (0.02N/Pos. ×37P)	5	5	2.898 (0.078)	2.99 (0.08)	2.77 (0.07)	0.094 (0.003)	2.616 (0.071)	○
			After 20th				2.686 (0.073)	2.89 (0.08)	2.48 (0.07)	0.174 (0.005)	2.164 (0.058)	○
		39P	Initial	0.78N MIN. (0.02N/Pos. ×39P)	5	5	2.964 (0.076)	3.11 (0.08)	2.74 (0.07)	0.158 (0.004)	2.490 (0.064)	○
			After 20th				2.820 (0.072)	2.94 (0.08)	2.75 (0.07)	0.074 (0.002)	2.598 (0.067)	○
		41P	Initial	0.82N MIN. (0.02N/Pos. ×41P)	5	5	3.132 (0.076)	3.28 (0.08)	3.00 (0.07)	0.118 (0.003)	2.778 (0.068)	○
			After 20th				2.862 (0.070)	3.10 (0.08)	2.72 (0.07)	0.155 (0.004)	2.397 (0.058)	○

Table 2-4 Test Result

Test Item	Measurement		Spec.	Set	n	Data					Judge
						AVE.(X)	MAX.	MIN.	s	X±3s	
B Group FPC Retention Force(N)	13P	Initial	1.69N MIN. (0.13N/Pos. ×13P)	5	5	4.794 (0.369)	5.05 (0.39)	4.65 (0.36)	0.151 (0.012)	4.341 (0.334)	○
		After 20th	1.30N MIN. (0.10N/Pos. ×13P)			4.358 (0.335)	4.53 (0.35)	4.12 (0.32)	0.170 (0.013)	3.848 (0.296)	○
	15P	Initial	1.95N MIN. (0.13N/Pos. ×15P)	5	5	5.466 (0.364)	5.74 (0.38)	5.16 (0.34)	0.246 (0.016)	4.728 (0.315)	○
		After 20th	1.50N MIN. (0.10N/Pos. ×15P)			5.036 (0.336)	5.16 (0.34)	4.90 (0.33)	0.094 (0.006)	4.754 (0.317)	○
	17P	Initial	2.21N MIN. (0.13N/Pos. ×17P)	5	5	6.104 (0.359)	6.46 (0.38)	5.61 (0.33)	0.331 (0.019)	5.111 (0.301)	○
		After 20th	1.70N MIN. (0.10N/Pos. ×17P)			5.598 (0.329)	5.95 (0.35)	5.30 (0.31)	0.289 (0.017)	4.731 (0.278)	○
	19P	Initial	2.47N MIN. (0.13N/Pos. ×19P)	5	5	6.700 (0.353)	6.96 (0.37)	6.47 (0.34)	0.218 (0.011)	6.046 (0.318)	○
		After 20th	1.90N MIN. (0.10N/Pos. ×19P)			6.412 (0.337)	6.54 (0.34)	6.24 (0.33)	0.118 (0.006)	6.058 (0.319)	○
	21P	Initial	2.73N MIN. (0.13N /Pos. ×21P)	5	5	7.728 (0.368)	8.13 (0.39)	7.46 (0.36)	0.277 (0.013)	6.897 (0.328)	○
		After 20th	2.10N MIN. (0.10N /Pos. ×21P)			6.896 (0.328)	7.38 (0.35)	6.54 (0.31)	0.387 (0.018)	5.735 (0.273)	○
	23P	Initial	2.99N MIN. (0.13N/Pos. ×23P)	5	5	7.834 (0.341)	8.14 (0.35)	7.66 (0.33)	0.192 (0.008)	7.258 (0.316)	○
		After 20th	2.30N MIN. (0.10N/Pos. ×23P)			7.354 (0.320)	7.71 (0.34)	7.17 (0.31)	0.245 (0.011)	6.619 (0.288)	○
	25P	Initial	3.25N MIN. (0.13N /Pos. ×25P)	5	5	8.894 (0.356)	9.16 (0.37)	8.71 (0.35)	0.180 (0.007)	8.354 (0.334)	○
		After 20th	2.50N MIN. (0.10N /Pos. ×25P)			8.028 (0.321)	8.29 (0.33)	7.86 (0.31)	0.178 (0.007)	7.494 (0.300)	○
	27P	Initial	3.51N MIN. (0.13N /Pos. ×27P)	5	5	9.768 (0.362)	10.21 (0.38)	9.38 (0.35)	0.345 (0.013)	8.733 (0.323)	○
		After 20th	2.70N MIN. (0.10N /Pos. ×27P)			8.742 (0.324)	9.14 (0.34)	8.37 (0.31)	0.342 (0.013)	7.716 (0.286)	○

Table 2-5 Test Result

Test Item	Measurement		Spec.	Set	n	Data					Judge
						AVE.(X)	MAX.	MIN.	s	X±3s	
B Group FPC Retention Force(N)	29P	Initial	3.77N MIN. (0.13N/Pos. ×29P)	5	5	10.546 (0.364)	10.78 (0.37)	10.28 (0.35)	0.198 (0.007)	9.952 (0.343)	○
		After 20th	2.90N MIN. (0.10N/Pos. ×29P)			8.802 (0.304)	8.97 (0.31)	8.68 (0.30)	0.149 (0.005)	8.355 (0.288)	○
	31P	Initial	4.03N MIN. (0.13N/Pos. ×31P)	5	5	10.628 (0.343)	11.44 (0.37)	10.17 (0.33)	0.501 (0.016)	9.125 (0.294)	○
		After 20th	3.10N MIN. (0.10N/Pos. ×31P)			9.776 (0.315)	10.26 (0.33)	9.52 (0.31)	0.29 (0.009)	8.906 (0.287)	○
	33P	Initial	4.29N MIN. (0.13N /Pos. ×33P)	5	5	11.502 (0.349)	11.68 (0.35)	11.20 (0.34)	0.200 (0.006)	10.902 (0.330)	○
		After 20th	3.30N MIN. (0.10N /Pos. ×33P)			9.998 (0.303)	10.34 (0.31)	9.32 (0.28)	0.400 (0.012)	8.798 (0.267)	○
	35P	Initial	4.55N MIN. (0.13N/Pos. ×35P)	5	5	11.724 (0.335)	12.22 (0.35)	11.40 (0.33)	0.334 (0.010)	10.722 (0.306)	○
		After 20th	3.50N MIN. (0.10N/Pos. ×35P)			11.000 (0.314)	11.27 (0.32)	10.67 (0.30)	0.221 (0.006)	10.337 (0.295)	○
	37P	Initial	4.81N MIN. (0.13N/Pos. ×37P)	5	5	12.574 (0.340)	13.47 (0.36)	11.85 (0.32)	0.634 (0.017)	10.672 (0.288)	○
		After 20th	3.70N MIN. (0.10N/Pos. ×37P)			11.538 (0.312)	11.79 (0.32)	11.30 (0.31)	0.196 (0.005)	10.950 (0.296)	○
	39P	Initial	5.07N MIN. (0.13N /Pos. ×39P)	5	5	13.634 (0.350)	14.13 (0.36)	13.25 (0.34)	0.366 (0.009)	12.536 (0.321)	○
		After 20th	3.90N MIN. (0.10N /Pos. ×39P)			12.814 (0.329)	13.29 (0.34)	12.56 (0.32)	0.324 (0.008)	11.842 (0.304)	○
	41P	Initial	5.33N MIN. (0.13N/Pos. ×41P)	5	5	14.010 (0.342)	14.76 (0.36)	13.06 (0.32)	0.649 (0.016)	12.063 (0.294)	○
		After 20th	4.10N MIN. (0.10N/Pos. ×41P)			12.556 (0.306)	13.16 (0.32)	12.20 (0.30)	0.365 (0.009)	11.461 (0.280)	○
C Group Retention Force		C/T	0.3N MIN.	5	30	1.159	1.30	1.01	0.091	0.886	○

Table 2-6 Test Result

Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	S	X±3s	
D Group Vibration Shock	Contact Resistance (mΩ)	※U	Initial	60m Ω MAX.	5	165	23.713	29.96	19.01	3.557	34.384	○
			After Vibration	Δ R=40m Ω MAX.			0.178	3.77	-3.63	1.645	5.113	○
			After Shock				0.372	3.80	-3.40	1.649	5.319	○
		※L	Initial	60m Ω MAX.	5	165	15.064	18.93	11.02	2.316	22.012	○
			After Vibration	Δ R=40m Ω MAX.			1.145	4.87	-1.73	1.441	5.468	○
			After Shock				1.072	4.52	-1.75	1.426	5.350	○
	Discontinuity		In Vibration	1 μ sec. MAX.	10	10	No Discontinuity					○
			In Shock				No Discontinuity					○
	Appearance		After Vibration	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
			After Shock				No Abnormality					○
E Group Fretting corrosion	Contact Resistance (mΩ)	U	初期 Initial	60m Ω MAX.	5	165	23.707	29.98	19.05	3.403	33.916	○
			試験後 After Test	Δ R=40m Ω MAX.			0.528	3.54	-3.70	1.656	5.496	○
		L	初期 Initial	60m Ω MAX.	5	165	14.889	18.98	11.00	2.225	21.564	○
			試験後 After Test	Δ R=40m Ω MAX.			1.287	4.64	-1.85	1.366	5.385	○
	Discontinuity		In Test	1 μ sec. MAX.	10	10	No Discontinuity					○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
	F Group Thermal Shock	Contact Resistance (mΩ)	U	Initial	60m Ω MAX.	5	165	23.939	29.95	19.01	3.441	34.262
After Test				Δ R=40m Ω MAX.	0.212			3.72	-3.69	1.698	5.306	○
L			Initial	60m Ω MAX.	5	165	14.958	18.89	11.01	2.365	22.053	○
			After Test	Δ R=40m Ω MAX.			1.285	4.56	-1.68	1.295	5.170	○
Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○	

※U : Upper Contact L : Lower Contact

Table 2-7 Test Result

Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	S	X±3s	
G Group High Temp. Life	Contact Resistance (mΩ)	※U	Initial	60mΩ MAX.	5	165	23.763	29.95	19.01	3.549	34.410	○
			After Test	Δ R=40mΩ MAX.			0.659	4.07	-3.73	1.718	5.813	○
		※L	Initial	60mΩ MAX.	5	165	15.080	18.83	11.01	2.283	21.929	○
			After Test	Δ R=40mΩ MAX.			1.030	4.45	-1.93	1.417	5.281	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
H Group High Temp. & High Hum. energizing	Contact Resistance (mΩ)	U	Initial	60mΩ MAX.	5	165	23.835	29.84	19.01	3.529	34.422	○
			After Test	Δ R=40mΩ MAX.			0.590	4.46	-2.72	1.689	5.657	○
		L	Initial	60mΩ MAX.	5	165	14.819	18.86	11.01	2.343	21.848	○
			After Test	Δ R=40mΩ MAX.			1.327	4.71	-1.62	1.375	5.452	○
	D.W.Voltage	U	Initial	No Abnormality	5	160	No Abnormality					○
			After Test				No Abnormality					○
		L	Initial		5	160	No Abnormality					○
			After Test				No Abnormality					○
	Insulation Resistance (MΩ)	U	Initial	100MΩ MIN	5	160	MIN. 5.0×10 ⁵ MΩ					○
			After Test				MIN. 1.0×10 ⁵ MΩ					○
		L	Initial		5	160	MIN. 4.0×10 ⁵ MΩ					○
			After Test				MIN. 2.5×10 ⁵ MΩ					○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○

※U : Upper Contact L : Lower Contact

Table 2-8 Test Result

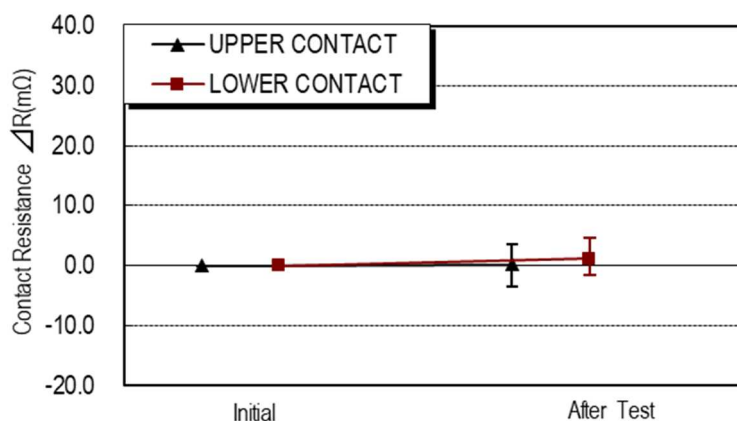
Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	S	X±3s	
J Group High Temp. & High Hum. Life	Contact Resistance (mΩ)	※U	Initial	60mΩ MAX.	5	165	23.815	29.98	19.01	3.637	34.726	○
			After Test	Δ R=40mΩ MAX.			0.550	4.76	-3.65	1.774	5.872	○
		※L	Initial	60mΩ MAX.	5	165	15.024	19.00	11.13	2.349	22.071	○
			After Test	Δ R=40mΩ MAX.			1.182	4.93	-1.69	1.426	5.460	○
	D.W.Voltage	U	Initial	No Abnormality	5	160	No Abnormality					○
			After Test				No Abnormality					○
		L	Initial		5	160	No Abnormality					○
			After Test				No Abnormality					○
	Insulation Resistance (MΩ)	U	Initial	100MΩ MIN	5	160	MIN. 5.0×10 ⁴ MΩ					○
			After Test				MIN. 1.5×10 ⁴ MΩ					○
		L	Initial		5	160	MIN. 5.0×10 ⁴ MΩ					○
			After Test				MIN. 1.0×10 ⁴ MΩ					○
	Appearance			After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality				
K Group Cold Temp. Life	Contact Resistance (mΩ)	U	Initial	60mΩ MAX.	5	165	23.890	29.95	19.11	3.535	34.495	○
			After Test	Δ R=40mΩ MAX.			0.474	4.64	-3.69	1.817	5.925	○
		L	Initial	60mΩ MAX.	5	165	14.985	18.93	11.14	2.242	21.711	○
			After Test	Δ R=40mΩ MAX.			1.265	4.75	-1.74	1.413	5.504	○
	Appearance			After Test	No abnormality adversely affecting the performance shall occur.	5	5	No Abnormality				
L Group Gas(H ₂ S)	Contact Resistance (mΩ)	U	Initial	60mΩ MAX.	5	165	23.680	29.97	19.03	3.533	34.279	○
			After Test	Δ R=40mΩ MAX.			0.750	4.78	-3.51	1.673	5.769	○
		L	Initial	60mΩ MAX.	5	165	14.918	19.00	11.14	2.400	22.118	○
			After Test	Δ R=40mΩ MAX.			1.256	4.51	-1.75	1.473	5.675	○
	Appearance			After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality				

※U : Upper Contact L : Lower Contact

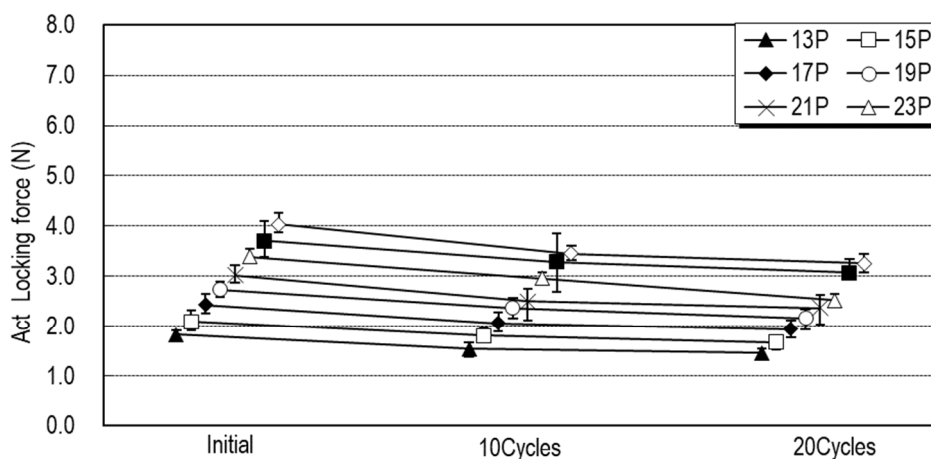
Table 2-9 Test Result

Test Item	Measurement			Spec.	Set	N	Data					Judge
							AVE.(X)	MAX.	MIN.	S	X±3s	
M Group Gas (SO ₂)	Contact Resistance (mΩ)	※U	Initial	60mΩ MAX.	5	165	23.770	29.84	19.02	3.579	34.507	○
			After Test	Δ R=40mΩ MAX.			0.535	4.48	-3.33	1.735	5.740	○
		※L	Initial	60mΩ MAX.	5	165	14.972	18.95	11.03	2.249	21.719	○
			After Test	Δ R=40mΩ MAX.			1.155	4.51	-1.61	1.380	5.295	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
N Group Salt Water Spray	Contact Resistance (mΩ)	U	Initial	60mΩ MAX.	5	165	23.753	30.00	19.00	3.486	34.211	○
			After Test	Δ R=40mΩ MAX.			0.508	4.78	-3.40	1.797	5.899	○
		L	Initial	60mΩ MAX.	5	165	14.965	18.99	11.03	2.149	21.412	○
			After Test	Δ R=40mΩ MAX.			1.278	4.71	-1.45	1.411	5.511	○
	Appearance		After Test	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					○
P Group	Zerox Time (sec.)		C/T	3sec. MAX	5	5	MAX. 0.1sec.					○
Solderability	Appearance		C/T	Wetness : 95% MIN.	5	5	95%MIN.was wet.					○
Q Group Soldering Heat Resistance	Reflow twice			No Abnormality	5	5	No Abnormality					○
	Soldering iron											
R Group Temp. rising	0.3A/Contact			Δ T=30K MAX.	5	5	No Problem. MAX.ΔT=10.6K					○

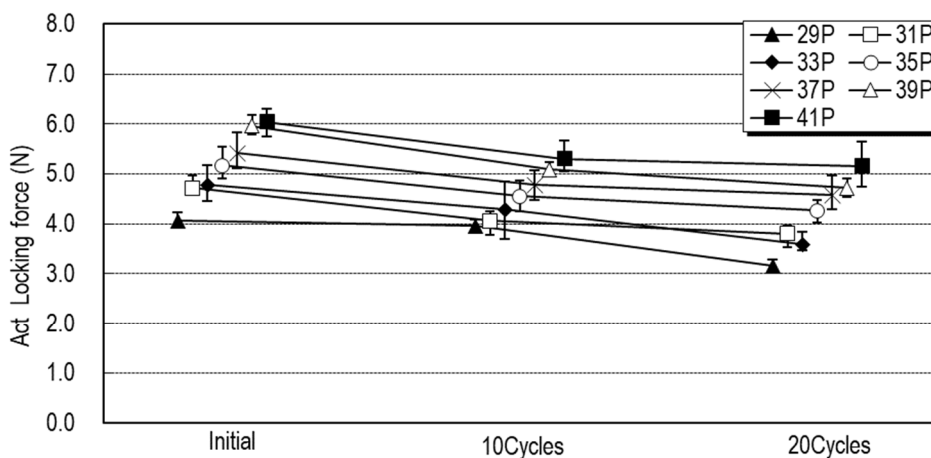
※U : Upper Contact L : Lower Contact



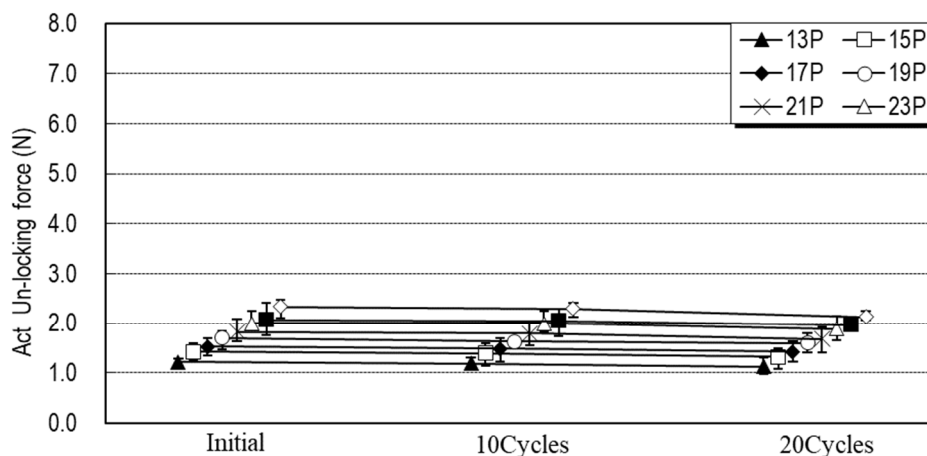
Graph.1 change of contact resistance
A group : Durability



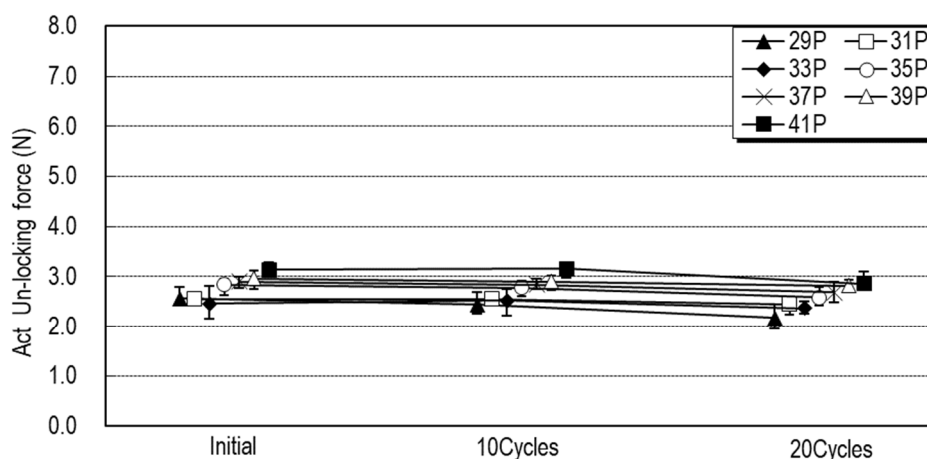
Graph.2 Change of Locking force
(13P~27P)
A group : Durability



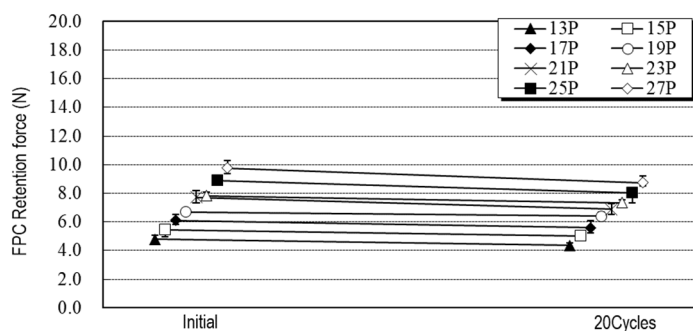
Graph.3 A change of Locking force
(29P~41P)
A group : Durability



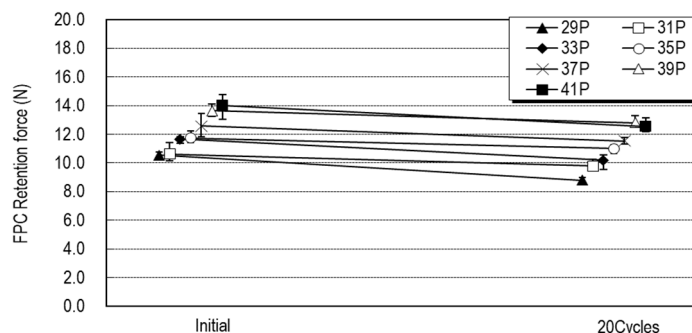
Graph.4 A change of Act Un-locking force
(13P~27P)
A group : Durability



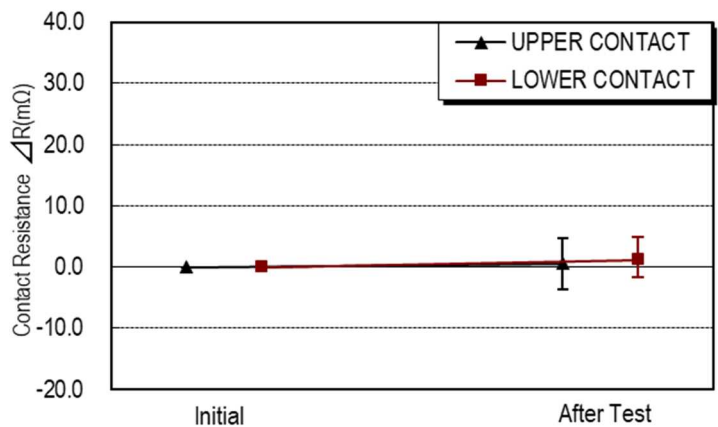
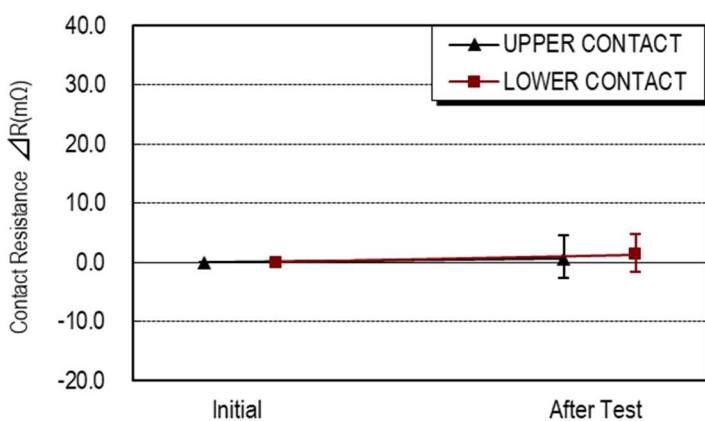
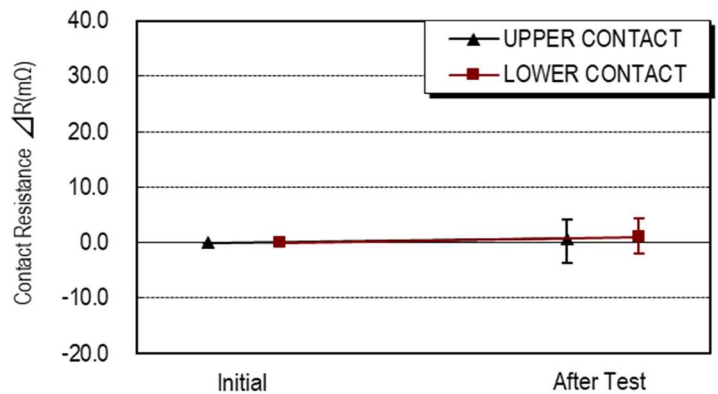
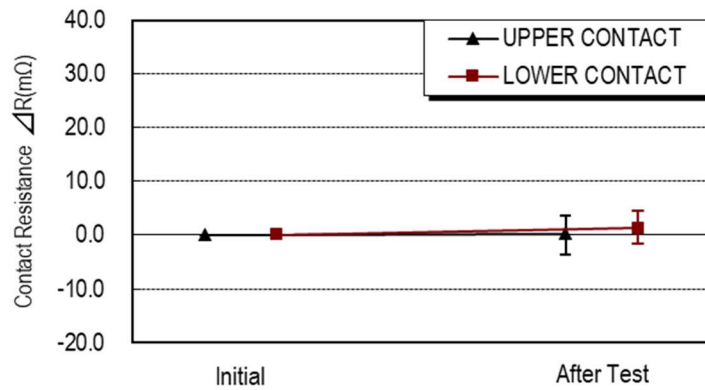
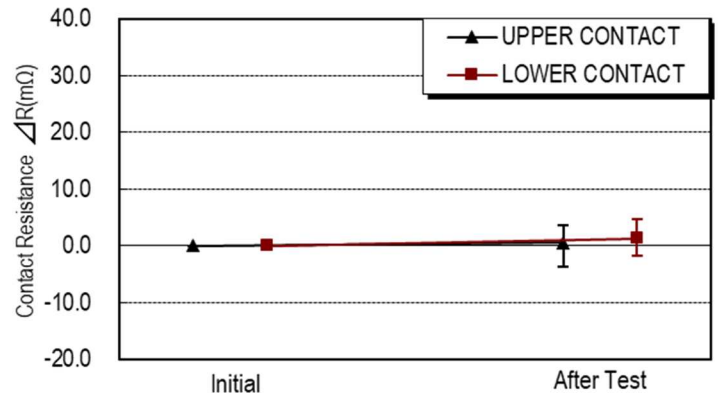
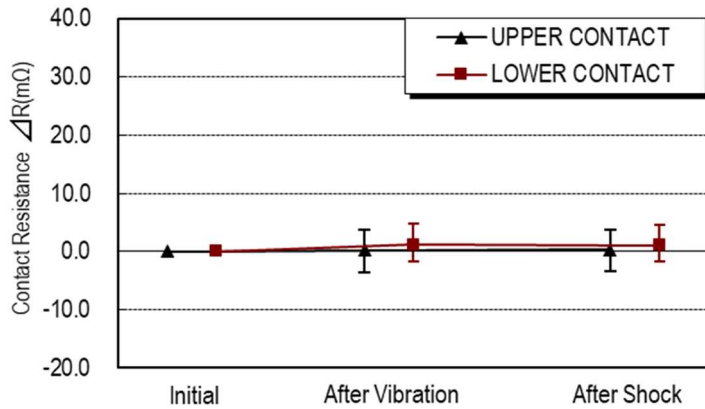
Graph.5 A change of Act Un-locking force
(29P~41P)
A group : Durability

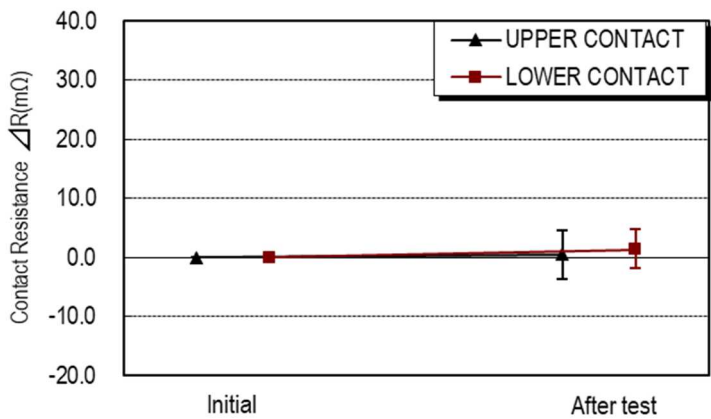


Graph.6 A change of FPC Retention force
(13P~27P)
B group : FPC Retention force

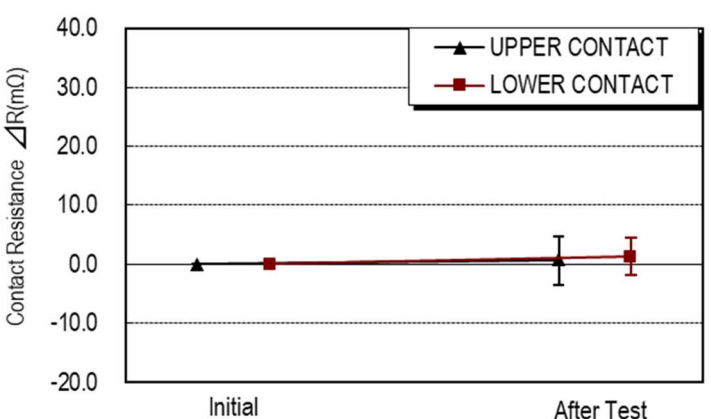


Graph.7 A change of FPC Retention force
(29P~41P)
B group : FPC Retention force

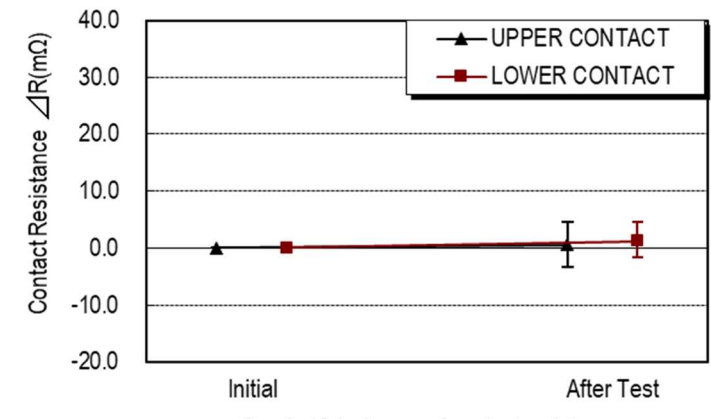




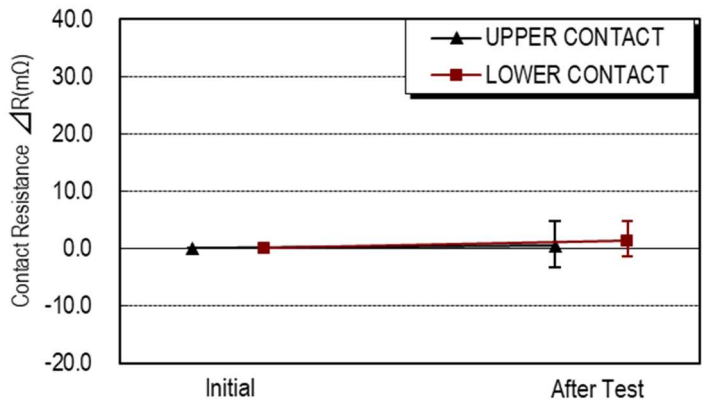
Graph.14 A change of contact resistance
K group : Cold Temp. Life



Graph.15 A change of contact resistance
L group : Gas(H₂S)



Graph.16 A change of contact resistance
M group : Gas(SO₂)



Graph.17 A change of contact resistance
N group : Salt Water Spray