EVAFLEX® 5-VS TYPE R

【WITH SHIELD FFC】

Part No. 20893-0**E-02

Test Report

Product Specification no. PRS-2527

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Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of EVAFLEX 5-VS TYPE R Connector in accordance with PRS-2527.

2. Specimen

(1) EVAFLEX 5-VS TYPE R
30P : P/N 20893-030E-02
40P : P/N 20893-040E-02
50P : P/N 20893-050E-02

(2) FFC : Made by BANDO DENSEN Co., Ltd, SHIELD FFC
FFC Thickness : t=0.33±0.03mm, (Actual measurement:0.332~0.335mm)

3. Test Sequence

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

4. Result

See Table 2 to 4, Graph 1 to 11. For the details of the testing conditions and requirements, see PRS-2527.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2527.

Table 1. Test Sequence and Sample Quantity

Test Item	Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
Contact Resistance			2,6			1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3		
Insulation Resistance									2,6	2,8				
D. W. Voltage									3,7	3,9				
Temp. Life	1													
Differential Impedance		1												
Mating Force			1,5											
Un-mating Force			3,7											
Durability			4							4 10cyc				
Contact Retention Force				1										
FFC Retention Force					1									
Vibration						2								
Shock						4								
Thermal Shock							2							
High Temperature Life								2						
Humidity (Steady State)									4					
Humidity (Cycling)										6				
Salt Water Spray											2			
H_2S Gas												2		
Solder ability													1	
Soldering Heat Resistance														1
Sample QTY.	5	5	5	20	5	5	5	5	5	5	5	5	10	10

※Numbers indicate sequence in which tests are performed.

Table 2. Test Result

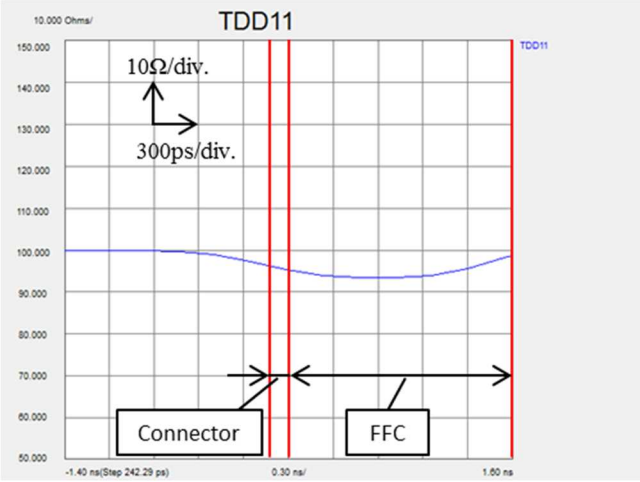
Test Item	Measurements			Spec.	Set	n	Data					Judge
							AVG (X)	MAX.	MIN	s	X±3s	
A Group Temperature Rise			0.3A/Pin(50P)	ΔT=30K(℃) MAX.	5	-	ΔT=10.7K(℃) MAX.					○
B Group Differential Impedance			MAX. Side	100±10Ω	5	-	95.838	96.33	95.44	0.365	96.933	○
			MIN. Side			-	95.184	95.48	94.80	0.264	94.392	○
C Group Durability	Contact Resistance (mΩ)		Initial	60mΩ MAX.	5	200	6.352	11.24	3.26	1.662	11.338	○
			I/W 30cycles	ΔR=40mΩMAX.	5	200	0.247	3.34	-2.60	1.264	4.039	○
	30P	Insertion Force (N)	Initial	18.0N MAX. (0.6N/Pos.×30P)	5	-	12.906	13.52	12.37	0.533	14.505	○
			I/W 30cycles		5	-	9.408	10.09	9.07	0.413	10.647	○
		Withdrawal Force (N)	Initial	3.0N MIN. (0.1N/Pos.×30P)	5	-	11.412	11.69	11.01	0.265	10.617	○
			I/W 30cycles		5	-	9.166	10.01	8.17	0.675	7.141	○
	40P	Insertion Force (N)	Initial	24.0N MAX. (0.6N/Pos.×40P)	5	-	16.440	17.14	16.02	0.482	17.886	○
			I/W 30cycles		5	-	12.120	13.19	10.89	0.938	14.934	○
		Withdrawal Force (N)	Initial	4.0N MIN. (0.1N/Pos.×40P)	5	-	13.296	13.85	12.51	0.577	11.565	○
			I/W 30cycles		5	-	11.472	11.86	11.06	0.314	10.530	○
	50P	Insertion Force (N)	Initial	30.0N MAX. (0.6N/Pos.×50P)	5	-	18.430	19.14	17.19	0.752	20.686	○
			I/W 30cycles		5	-	13.764	14.71	13.17	0.612	15.600	○
		Withdrawal Force (N)	Initial	5.0N MIN. (0.1N/Pos.×50P)	5	-	14.330	15.03	13.40	0.618	12.476	○
			I/W 30cycles		5	-	12.442	13.75	11.69	0.786	10.084	○
D Group Contact Retention Force				0.3N MIN.	-	20	1.110	1.35	0.85	0.149	0.663	○
E Group FFC Retention Force	30P	FFC Retention Force		15.0N MIN.	5	-	37.834	38.57	36.11	1.041	34.711	○
		Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
	40P	FFC Retention Force		18.0N MIN.	5	-	38.690	39.36	37.48	0.852	36.134	○
		Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
	50P	FFC Retention Force		21.0N MIN.	5	-	39.368	39.89	38.29	0.707	37.247	○
		Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○

Table 3. Test Result

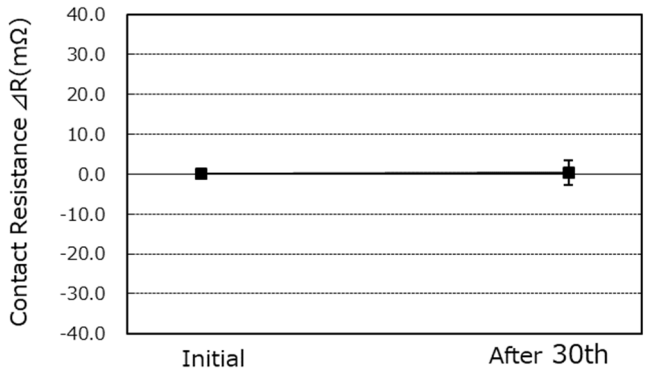
Test Item	Measurements		Spec.	Set	n	Data					Judge
						AVG (X)	MAX.	MIN	s	X±3s	
F Group Vibration ↓ Shock	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.517	10.07	3.35	1.464	10.909	○
		After Vibration	ΔR=40mΩMAX.	5	200	-0.486	3.05	-3.93	1.569	4.221	○
		After Shock		5	200	-0.529	3.40	-4.75	1.708	4.595	○
	Discontinuity	During Vibration	1μs MAX.	5	-	No discontinuity					○
		During Shock		5	-	No discontinuity					○
	Appearance	After Vibration	No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
		After Shock		5	-	No abnormality					○
G Group Thermal Shock	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.849	11.07	3.57	1.458	11.223	○
		After Testing	ΔR=40mΩMAX.	5	200	2.261	9.45	-3.70	2.635	10.166	○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
H Group High Temperature Life	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.396	10.39	3.01	1.754	11.658	○
		After Testing	ΔR=40mΩMAX.	5	200	1.413	13.80	-3.82	4.185	13.968	○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
J Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.350	10.02	3.51	1.434	10.652	○
		After Testing	ΔR=40mΩMAX.	5	200	-0.262	4.14	-4.54	1.611	4.571	○
	Insulation Resistance C/T – C/T	Initial	100MΩ MIN.	5	5	1.2×10^5MΩ MIN.					○
		After Testing	100MΩ MIN.	5	5	1.0×10^5MΩ MIN.					○
	Insulation Resistance C/T - Shell	Initial	100MΩ MIN.	5	5	6.5×10^5MΩ MIN.					○
		After Testing	100MΩ MIN.	5	5	6.0×10^4MΩ MIN.					○
	Dielectric Strength C/T – C/T	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	5	No abnormality					○
		After Testing		5	5	No abnormality					○
	Dielectric Strength C/T – Shell	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	5	No abnormality					○
		After Testing		5	5	No abnormality					○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○

Table 4. Test Result

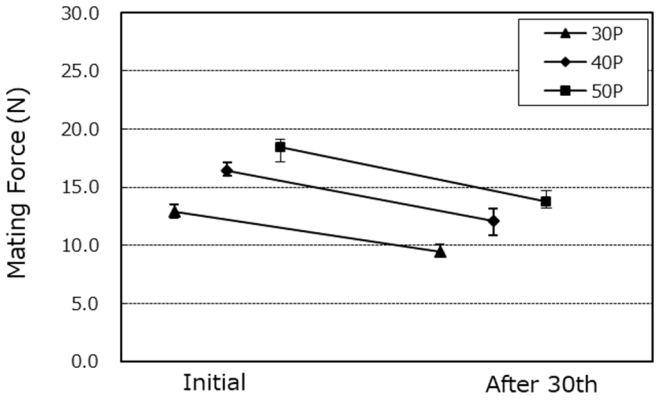
Test Item	Measurements		Spec.	Set	n	Data					Judge
						AVG (X)	MAX.	MIN	s	X±3s	
K Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.325	10.27	3.43	1.419	10.582	○
		After Durability	ΔR=40mΩMAX.	5	200	0.091	2.98	-2.85	1.220	3.751	○
		After Testing	ΔR=40mΩMAX.	5	200	0.235	3.05	-2.66	1.220	3.895	○
	Insulation Resistance C/T – C/T	Initial	100MΩ MIN.	5	5	3.0×10^5MΩ MIN.					○
		After Testing	100MΩ MIN.	5	5	5.0×10^4MΩ MIN.					○
	Insulation Resistance C/T - Shell	Initial	100MΩ MIN.	5	5	6.0×10^5MΩ MIN.					○
		After Testing	100MΩ MIN.	5	5	5.0×10^4MΩ MIN.					○
	Dielectric Strength C/T – C/T	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	5	No abnormality					○
		After Testing		5	5	No abnormality					○
	Dielectric Strength C/T – Shell	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	5	No abnormality					○
		After Testing		5	5	No abnormality					○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
L Group Salt Water Spray	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.451	9.36	3.18	1.501	10.954	○
		After Testing	ΔR=40mΩMAX.	5	200	0.757	4.48	-2.78	1.477	5.188	○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
M Group H_2S Gas	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	200	6.608	11.08	3.34	1.537	11.219	○
		After Testing	ΔR=40mΩMAX.	5	200	1.775	6.38	-2.99	1.933	7.574	○
	Appearance		No abnormality adversely affecting the performance shall occur	5	-	No abnormality					○
N Group Solderability	Appearance		More than 95% of the dipped surface shall be evenly wet.	10	-	100%					○
P Group Soldering Heat Resistance	Appearance		No abnormality adversely affecting the performance shall occur	10	-	No abnormality					○



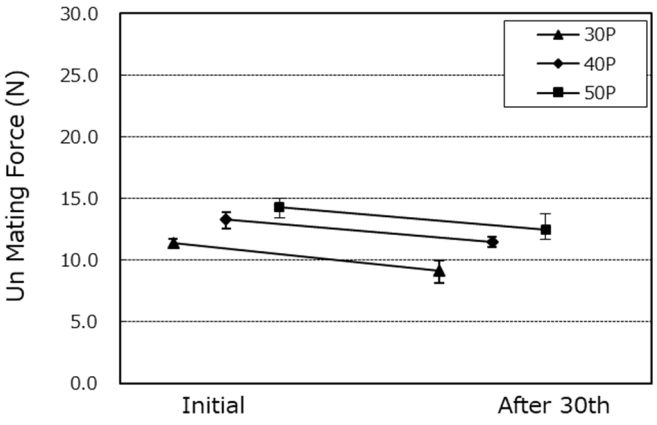
Graph.1 Differential Impedance



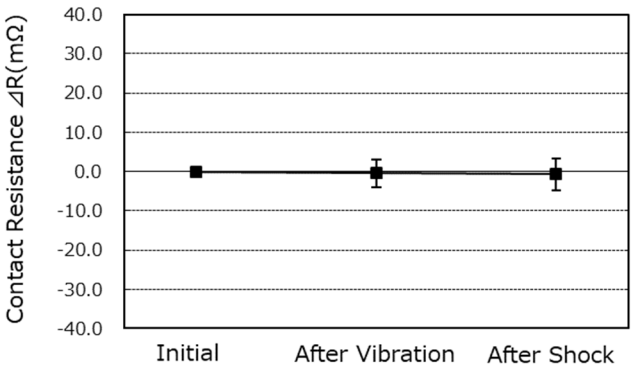
Graph.2 A change of contact resistance: Durability



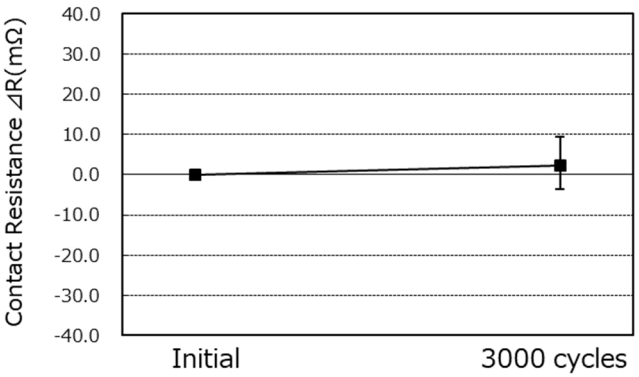
Graph.3 A change of mating force: Durability



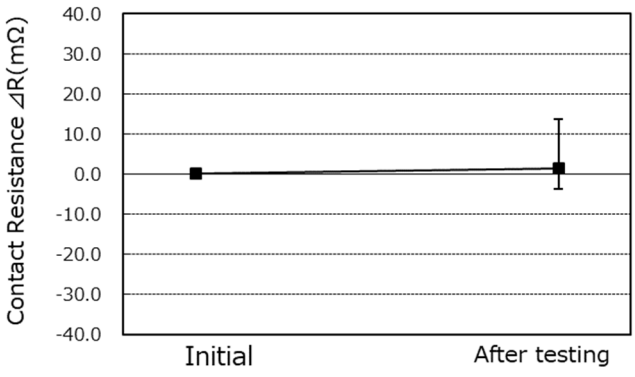
Graph.4 A change of un mating force: Durability



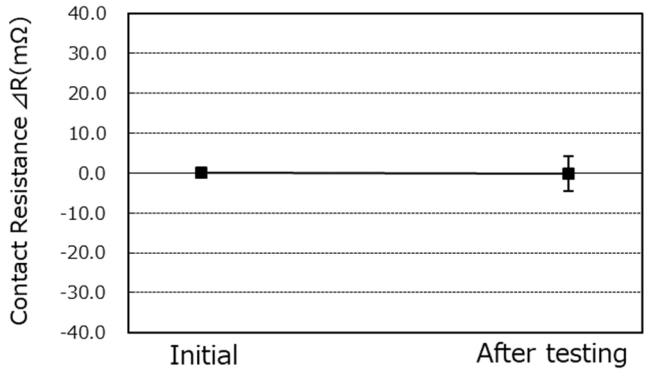
Graph.5 A change of contact resistance: Vibration and Shock



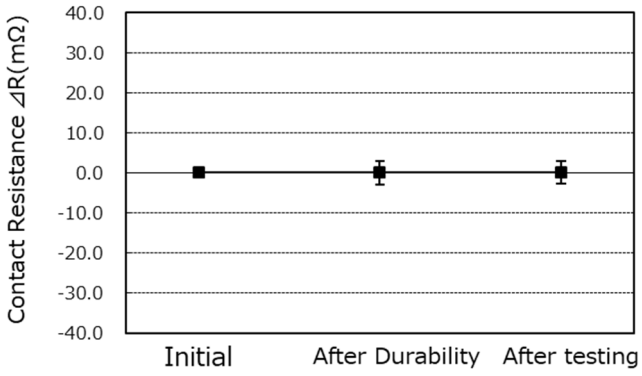
Graph.6 A change of contact resistance:
Thermal Shock



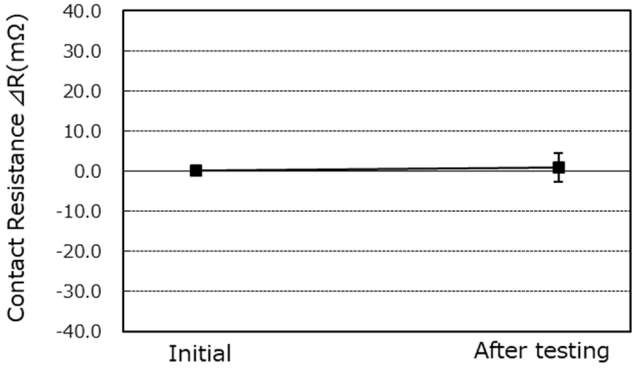
Graph.7 A change of contact resistance:
High temperature life



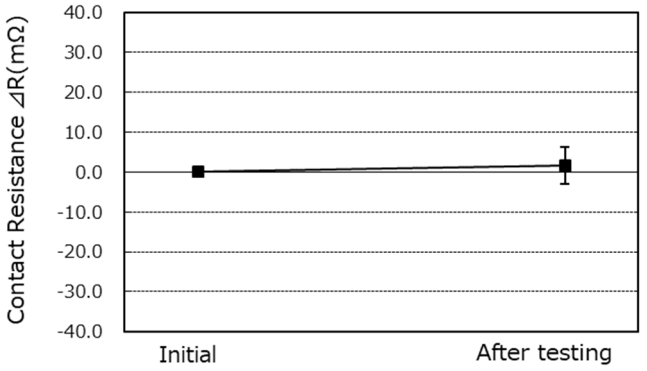
Graph.8 A change of contact resistance:
Humidity (Steady State)



Graph.9 A change of contact resistance:
Humidity (Cycle)



Graph.10 A change of contact resistance:
Salt water Spray



Graph.11 A change of contact resistance:
Gas (H_2S)