DYNAMIC D2970 Connector

1. INTRODUCTION

1.1 Purpose

This document provides the qualification summery of Dynamic D2970 Connector.

1.2 Scope

This specification covers the electrical, mechanical, and environmental performance of Dynamic D2970 Connector.

1.3 Conclusion

Based on the test results, all meet the requirements according to Product Specification 108-140223.

1.4 Product Description

Name	Remarks
DYNAMIC D2970 PUSH-IN TYPE RECEPTACLE ASSEMBLY	
DYNAMIC D2970 PUSH-IN TYPE HEADER ASSEMBLY	

1.5 Test Samples

Samples were taken randomly from current production. The following samples were used

Product Part Number	Description	Test Group
2336488-3	D2970 REC 3POSN 1ROW Sn BOX	1,2,4,5,8,12
2336488-4	D2970 REC 4POSN 1ROW Sn BOX	1,2,3,4,6.7,9
2336490-3	D2970 HDR 90 DEGREE 3POSN 1ROW Sn	1,4,5,8,11,12
2336490-4	D2970 HDR 90 DEGREE 4POSN 1ROW Sn	1,4,6,7,9,10,11

1.6 Test Wires

The following wires were used

Wire size	Test Group	
AWG14/2.5SQ	3,5,7	
AWG16/1.5SQ	3	
1SQ	3	
AWG18/0.75SQ	3	
AWG20/0.5SQ	3,4,9	
AWG22/0.34SQ	3	
AWG24/0.2SQ	3,6,8	
AWG26/0.13SQ with ferrule	3	

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| Indicates Change

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1.7 Qualification Test Sequence and Test result

TEST OR EXAMINATION	TEST GROUP												
	1	2	3	4	5	6	7	8	9	10	11	12	
	TEST SEQUENCE (a)												
Initial examination of product	1	1	1	1	1	1	1	1	1	1	1	1	
Contact Resistance				2,6		2,6	2,5	2,5	2,4				
Temperature Rise Test					2								
Dielectric Withstand Voltage Test						7		6					
Insulation Resistance						8		7					
Durability of marking	2												
Polarisation and coding	3												
Pull out force of terminations			2										
Mechanical strength impact		2											
Mating and Un-mating force				3,5									
Mechanical Operation				4									
Vibration, Low Frequency							3						
Shock							4						
Housing Locking Strength	4												
Cold						3							
Dry Heat						4							
Damp Heat, cyclic								3					
Rapid Change of temperature								4					
Corrosion						5							
Salt Spray									3				
Solderability										2			
Resistance to Soldering Heat											2		
Glow Wire Test												2	
Final examination of product	5	3	3	7	3	9	6	8	5	3	3		
Judgement	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	Passed	

Figure 2

NOTE
(a) Numbers indicate sequence in which tests are performed.

2. SUMMARY OF TEST RESULTS:

Test Group	Test Item	Set	N	Test Result	Requirement	Judge ment
1	Initial examination of products	10	10	No physical damage	Meets requirements of product drawing	Passed
	Durability of marking		10	Marking is readable	Marking shall be readable	Passed
	Polarisation and coding		10	No physical damage	require provision against incorrect mating	Passed
	Housing Locking Strength		10	No damage likely to impair function	No damage likely to impair function	Passed
	Final examination of products		10	No physical damage	No damage likely to impair function	Passed
2	Initial examination of products	3	3	No physical damage	Meets requirements of product drawing	Passed
	Mechanical strength impact		3	No damage likely to impair function	No damage likely to impair function	Passed
	Final examination of products		3	No damage likely to impair function	No damage likely to impair function	Passed
3	Initial examination of products	-	110	No physical damage	Meets requirements of product drawing	Passed
	Pull out force of terminations		110	No physical damage Refer to Fig. 4	No damage likely to impair function	Passed
	Final examination of products		110	No physical damage	No damage likely to impair function	Passed
4	Initial examination of products	10	10	No physical damage	Meets requirements of product drawing	Passed
	Contact Resistance		35	Max. 0.77 / Min. 0.42 / Ave. 0.6	Max.10mΩ	Passed
	Mating and Un-mating force		35	Max. / Min. / Ave. Mating: 4.3 / 3.4 / 3.7 Un-mating: 2.8 / 1.2 / 2.3	Mating:15N Max/POSN Un-mating:0.5~15N/POSN	Passed
	Mechanical Operation		35	No damage likely to impair function	No damage likely to impair function	Passed
	Mating and Un-mating force		35	Max. / Min. / Ave. Mating: 5.0 / 3.2 / 3.7 Un-mating: 3.7 / 2.2 / 2.9	Mating:15N Max/POSN Un-mating:0.5~15N/POSN	Passed
	Contact Resistance		35	Max. 1.78 / Min. 0.94 / Ave. 1.30	Max.20mΩ	Passed
	Final examination of products		10	No physical damage	No damage likely to impair function	Passed

5	Initial examination of products	24	24	No physical damage			Meets requirements of product drawing	Passed
	Temperature Rise Test		24	Refer to Fig.5			Refer to Fig.5	Passed
	Visual and dimensional examination		24	No physical damage			No damage likely to impair function	Passed
6	Initial examination of products	5	5	No physical damage			Meets requirements of product drawing	Passed
	Contact Resistance		20	Max.	Min.	Ave.	Max.10mΩ	Passed
				1.94	1.25	1.57		
	Cold		5	No physical damage			No damage likely to impair function	Passed
	Dry Heat		5	No physical damage			No damage likely to impair function	Passed
	Corrosion		5	No physical damage			No damage likely to impair function	Passed
	Contact Resistance		20	Max.	Min.	Ave.	Max.20mΩ	Passed
				1.95	1.03	1.46		
	Dielectric Withstand Voltage Test		15	No breakdown or flashover			No breakdown or flashover	Passed
	Insulation Resistance		15	$>10^{14}\Omega$			Not less than 100MΩ	Passed
	Final examination of products		5	No physical damage			No damage likely to impair function	Passed
7	Initial examination of products	3	3	No physical damage			Meets requirements of product drawing	Passed
	Contact Resistance		12	Max.	Min.	Ave.	Max.10mΩ	Passed
				1.07	0.57	0.86		
	Vibration, Random		3	No breakdown or flashover			No damage likely to impair function No discontinuities greater than t>1μs	Passed
	Shock		3	No breakdown or flashover			No damage likely to impair function No discontinuities greater than t>1μs	Passed
	Contact Resistance		12	Max.	Min.	Ave.	Max.20mΩ	Passed
				2.49	1.13	1.43		
	Final examination of products		3	No physical damage			No damage likely to impair function	Passed

8	Initial examination of products	7	7	No physical damage			Meets requirements of product drawing	Passed
	Contact Resistance		21	Max.	Min.	Ave.	Max.10mΩ	Passed
				1.26	0.97	1.15		
	Damp Heat, cyclic		7	No physical damage			No damage likely to impair function	Passed
	Rapid Change of temperature (Temperature Cycle)		7	No physical damage			No damage likely to impair function	Passed
	Contact Resistance		21	Max.	Min.	Ave.	Max.20mΩ	Passed
				1.15	0.89	1.04		
	Dielectric Withstand Voltage Test		14	No breakdown or flashover			No breakdown or flashover	Passed
	Insulation Resistance		14	$>10^{13}\Omega$			Not less than 100MΩ	Passed
	Final examination of products		7	No physical damage			No damage likely to impair function	Passed
9	Initial examination of products	3	3	No physical damage			Meets requirements of product drawing	Passed
	Contact Resistance		12	Max.	Min.	Ave.	Max.10mΩ	Passed
				0.83	0.67	0.75		
	Salt Spray		3	No physical damage			No damage likely to impair function	Passed
	Contact Resistance		12	Max.	Min.	Ave.	Max.20mΩ	Passed
				2.79	1.03	1.77		
	Final examination of products		3	No physical damage			No damage likely to impair function	Passed
10	Initial examination of products	3	3	No physical damage			Meets requirements of product drawing	Passed
	Solderability		12	Wet solder coverage 95% Min			Wet solder coverage 95% Min	Passed
	Final examination of products		3	No physical damage			No damage likely to impair function	Passed
11	Initial examination of products	6	6	No physical damage			Meets requirements of product drawing	Passed
	Resistance to Soldering Heat		6	No damage likely to impair function			No damage likely to impair function	Passed
	Final examination of products		6	No physical damage			No damage likely to impair function	Passed

12	Initial examination of products	5	5	No physical damage	Meets requirements of product drawing	Passed
	Glow Wire Test		5	T_E=0	a) T_E=0 Or b) T_E<=60s and No burn of light tissue paper	Passed

Figure 3

Wire Type	AWG	SQ	N	UL1059	IEC60947-7-1	Judgement	Reference Broken force
Solid/ Stranded/ Ferrule with Stranded	24	0.2	5	13.4	10	Passed	20N
	22	0.34	5	20	15	Passed	40N
	20	0.5	5	30	20	Passed	38N
	18	0.75	5	30	30	Passed	52N
	-	1	5	-	35	Passed	98N
	16	1.5	5	40	40	Passed	57N
	14	2.5	5	50	50	Passed	117N
Ferrule with Stranded	26	0.13	5	8.9	-	Passed	25N

Figure 4

3Position

AWG	#26		#24		#22		#20		#18		-		#16		#14	
Metric	0.13		0.2		0.34		0.5		0.75		1.0		1.5		2.5	
Target	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result
Result	1	1.7	2	3.1	2	3.0	4	5.0	6	8.0	8	9.6	8	10.1	8	6.2
	2	5.2	4	10.5	3	5.0	5	7.6	8	14.5	12	19.6	12	21.8	16	22.4
	3	9.5	6	22.5	5	10.1	6	10.8	10	21.8	16	33.7	16	37.5	20	34.0
	8	48.9	10	46.4	9	31.1	9	23.1	16	45.7	20	50.4	20	46.2	24	45.9
Judgement	Passed															

4Position

AWG	#26		#24		#22		#20		#18		-		#16		#14	
Metric	0.13		0.2		0.34		0.5		0.75		1.0		1.5		2.5	
Target	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result	A	Result
Result	1	2.2	2	5.2	2	2.2	4	5.0	6	10.2	8	10.2	8	9.3	8	6.3
	2	6.0	4	15.3	3	4.7	5	7.7	8	14.8	12	22.0	12	20.3	12	14.0
	3	11.3	6	29.1	5	12.4	6	10.9	10	21.0	16	38.3	16	34.8	16	24.6
	8	55.7	9	59.1	9	38.2	9	23.1	16	50.2	20	57.8	20	50.7	20	37.7
Judgement	Passed															

Figure 5

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TE Connectivity:

1-962915-1 2-292161-3 3430B2F51RTDF SBCHE154R7K 1743455-2 175977-2 2377783-2 650075-000 CPF0402B37K4E1 MPT100C18RF 3-1393225-0 SBCHE64R7K 1969656-1 2310537-1 TE50BR39J 1-794222-0 1903112-2 2380312-2 3631B101LL 936348-1 CRGCQ2010J3K3 1393431-1 141991-2 2005330-1 917696-1 ROX05SJ18R SMW73R0JT U5254-000005-030PA 2834055-1 RH73H2A40MKTN