

#### 025 (0.64III) Series Connector, SMD Horizontal

#### 1. INTRODUCTION

1.1. Purpose

Testing was performed on the 025 (0.64III) Series Connector, SMD Horizontal to determine if it meets the requirements of Product Specification 108-51110 Rev A2.

1.2. Scope

This report covers the results of electrical, mechanical and environmental performance requirements testing of 025 (0.64III) Series Connector, SMD Horizontal.

1.3. Conclusion

025 (0.64III) Series Connector, SMD Horizontal meets the requirements of Product Specification 108-51110 Rev A2.

1.4. Product Description

This connector has been designed for use of automotive wire to board connector.

1.5. Test Samples

Samples were taken randomly from current production. The following samples where used (Fig. 1)

Part Number	Part Description
2237145-1	8P 1 Row 025 (0.64) Cap SMT (Male)
2291172-1	8P 025 (0.64) Cap SMT (Male)
2237149-2	8P 025 (0.64) Cap SMT (Male)
2291173-1	12P 025 (0.64) Cap SMT (Male)
2291174-1	16P 025 (0.64) Cap SMT (Male)
2237067-1	24P 025 (0.64) Cap SMT (Male)
2237147-1	8P 1 Row 0.64III Plug Assy (Female)
1717103-1	8P 0.64III Plug Assy (Female)
1717106-1	12P 0.64III Plug Assy (Female)
1746872-1	12P 0.64III Plug Assy Short Body (Female)
1717109-1	16P 0.64III Plug Assy (Female)
2237049-1	16P 0.64III Plug Assy (Female)
2237152-1	16P 0.64III Plug Assy Short Body (Female)
1717112-1	24P 0.64III Plug Assy (Female)
1674311-1	0.64III Receptacle Contact (AVSS 0.5mm <sup>2</sup> )

Figure 1

- 1.6. Reference Test Report No
  - TR-51005
  - TR-51006

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# 2. TEST CONTENTS

Item No	Test Description	Requirement	Judgement					
3.5.1	Confirmation of Product	Meet requirements of product drawing and TE Specification 114-5329	Acceptable					
		ELECTRICAL						
3.5.2	Termination Resistance (Low Level)	8 mΩ Max (Initial) 16 mΩ Max (Final)	Acceptable					
3.5.3	Termination Resistance (Specified Current)	8 mΩ Max (Initial) 16 mΩ Max (Final)	Acceptable					
3.5.4	Dielectric Withstanding Voltage	No creeping discharge or flashover shall occur	Acceptable					
3.5.5	Insulation Resistance	100 MΩ Min (Initial) 100 MΩ Min (Final)	Acceptable					
3.5.6	Current Leakage	3mA Max	Acceptable					
3.5.7	Temperature Rise	60°C Max	Acceptable					
3.5.8	Over Current Loading	No ignition is allowed during the test	Acceptable					
	MECHANICAL							
3.5.9	Vibration (High Frequency)	No electrical discontinuity greater than 1µsec shall occur. Satisfy requirements of test item on the test sequence	Acceptable					
3.5.10	Shock	No electrical discontinuity greater than 1µsec shall occur	Acceptable					
3.5.11	Connector Mating Force	70N Max	Acceptable					
3.5.12	Connector Unmating Force	70N Max	Acceptable					
3.5.13	Connector Locking Strength	100N Min	Acceptable					
3.5.14	Contact Insertion Force	10N Max per contact	Acceptable					
3.5.15	Contact Retention Force (Latch Only)	30N Min	Acceptable					
3.5.16	Contact Retention Force (Secondary Lock)	100N Min	Acceptable					
3.5.17	Resistance to "Kojiri"	Satisfy requirements of test item on the test sequence	Acceptable					
3.5.18	Solderability (Reflow Soldering)	Fillet shall be formed around the contact	Acceptable					
3.5.19	Handling Ergonomics	No abnormalities allowed in manual mating/unmating handling	Acceptable					
3.5.20	Retention Force of Tab	20N Min	Acceptable					
3.5.21	Resistance to Soldering Heat	No cracks, deformation, discoloration that are problematic in function shall appear.	Acceptable					



Item No	Test Description	Requirement	Judgement
	•	ENVIRONMENTAL	-
3.5.22	Thermal Shock	Satisfy requirements of test item on the test sequence Monitor resistance-variation during the test	Acceptable
3.5.23	Humidity (Steady State)	Satisfy requirements of test item on the test sequence Current Leakage: 3mA Max	Acceptable
3.5.24	Industrial Gas (SO2)	Satisfy requirements of test item on the test sequence	Acceptable
3.5.25	Temperature Life (Heat Aging)	Satisfy requirements of test item on the test sequence	Acceptable
3.5.26	Resistance to Cold	Satisfy requirements of test item on the test sequence	Acceptable
3.5.27	Humidity Temperature Cycling	Satisfy requirements of test item on the test sequence Monitor resistance-variation during the test	Acceptable
3.5.28	Dust Bombardment	Satisfy requirements of test item on the test sequence	Acceptable
3.5.29	Compound Environment Resistance	Satisfy requirements of test item on the test sequence No electrical discontinuity greater than 1µsec shall occur Monitor resistance-variation during the test	Acceptable
3.5.30	Condensation	Satisfy requirements of test item on the test sequence Monitor current leakage during the test	Acceptable

Figure 2 (End)



# 3. PRODUCT QUALIFICATION TEST ITEM

									Test (	Group	)						
Test or Examination			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
								Tes	t Seq	uence	e (a)						
3.5.1	Confirmation of Product	1	1,5	1,6	1,4	1,5	1,5	1,6	1,5	1,6	1,4	1,5	1,6	1,7	1,4	1,3	1,3
3.5.2	Termination Resistance (Low Level)		2,6	2,7		2,6	2,6	2,7	2,6	2,7		2,6	2,7	2,8			
3.5.3	Termination Resistance (Specified Current)	3	3,7	3,8		3,7	3,7	3,8	3,7	3,8		3,7	3,8	3,9			
3.5.4	Dielectric Withstanding Voltage	7						10				9					
3.5.5	Insulation Resistance	6						9				8			5		
3.5.6	Current Leakage							5							3		
3.5.7	Temperature Rise	4								4,9				4,10			
3.5.8	Over Current Loading		4														
3.5.9	Vibration (High Frequency)			5										6			
3.5.10	Shock				3												
3.5.11	Connector Mating Force	8															
3.5.12	2 Connector Unmating Force																
3.5.13	Connector Locking Strength						9	11		11	5	11					
3.5.14	Contact Insertion Force																
3.5.15	5 Contact Retention Force (Latch Lock)																
3.5.16	6 Contact Retention Force (Secondary Lock)						10	12		12	6	12					
3.5.17	Resistance to "Kojiri"					4											
3.5.18	8 Solderability (Reflow Soldering)																2
3.5.19	Handling Ergonomics	5					8			10	3	10					
3.5.20	Retention Force of Tab	14														4	
3.5.21	Resistance to Soldering Heat															2	
3.5.22	Thermal Shock						4										
3.5.23	Humidity (Steady State)							4									
3.5.24	Industrial SO2 Gas								4								
3.5.25	Temperature Life (Heat Aging)			4	2					5			4				
3.5.26	Resistance to Cold										2						
3.5.27	Humidity Temperature Cycling											4					
3.5.28	Dust Bombardment			l				l	l				5				
3.5.29	Compound Environment Resistance													5			
3.5.30	Condensation														2		





NOTE

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



### 4. SUMMARY OF TEST RESULT

Group		Test Item	S		Spec	Judae
1	3.5.1	Confirmation of Product	-	Initial	Meet requirements of	OK
					product drawing	
	3.5.2	Termination Resistance (Lo	w Level)	Initial	8 mΩ Max	OK
	3.5.3	Termination Resistance (St	pecified Current)	Initial	8 mΩ Max	OK
	3.5.4	Dielectric Withstanding	Cont. – Cont.	Initial	No creeping discharge	OK
	0.011	Voltage	Cont – HSG	Initial	or flashover	OK
	355	Insulation Resistance	Cont – Cont	Initial	Over 1000 MO	OK
	0.010		Cont – HSG	Initial	Over 1000 MO	OK
	357	Temperature Rise	All poles	Initial	60°C Max	OK
	3.5.11	Connector Mating Force		Initial	70N Max	OK
	3.5.12	Connector Unmating Force		Initial	70N Max	OK
	3513	Connector Locking Strengt	า	Initial	100N Min	OK
	3.5.14	Contact Insertion Force	•	Initial	10N Max	OK
	3 5 15	Contact Retention Force	Latch	Initial	30N Min	OK
	3.5.16	Contact Retention Force	Secondary	Initial	100N Min	OK
	3519	Handling Ergonomics	cocondary	Initial	No abnormalities in	OK
	0.0.10			initial	manual	
					mating/unmating	
					handling	
	3.5.20	Retention Force of Tab		Initial	20N Min	OK
2	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.2	Termination Resistance	16.5A, 3600s	Initial	8 mΩ Max	OK
		(Low Level)	,	Final	16 mΩ Max	OK
			20.2A, 200s	Initial	8 mΩ Max	OK
			,	Final	16 mΩ Max	OK
			22.5A, 5s	Initial	8 mΩ Max	OK
			,	Final	16 mΩ Max	OK
			30.0, 1s	Initial	8 mΩ Max	OK
			,	Final	16 mΩ Max	OK
	3.5.3	Termination Resistance	16.5A, 3600s	Initial	8 mΩ Max	OK
		(Specified Current)	,	Final	16 mΩ Max	OK
			20.2A, 200s	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
			22.5A, 5s	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
			30.0, 1s	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.8	Over Current Loading	·	During	No ignition	OK
3	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.2	Termination Resistance (Lo	w Level)	Initial	8 mΩ Max	OK
			·	Final	16 mΩ Max	OK
	3.5.3	Termination Resistance (Sp	pecified Current)	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	-	Electrical Discontinuity Mor	nitor	During	No electrical	OK
				_	discontinuity greater	
					than 1µsec	
4	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	-	Electrical Discontinuity Mor	nitor	During	No electrical	OK
					discontinuity greater	
					than 1usec	1

Figure 4 (Cont.)

Group		Test Items			Spec	Judae
5	351	Confirmation of Product		Initial	Meet requirements of	OK
Ū	0.0.1			Final	product drawing	OK
	352	Termination Besistance (Low		Initial	8 mO Max	OK
	0.0.2			Final		OK
	252	Termination Resistance (Sp	political Current)	Initial		OK
	3.5.5	Termination Resistance (Spe	ecilieu Current)	Final	16 mO Max	OK
6	251	Confirmation of Product		Initial	Moot requirements of	
0	3.5.1	Committation of Product		Final	product drawing	
	250	Termination Desistance (Lay		Fillal		OK
	3.5.2	Termination Resistance (Low	v Level)	Final		OK
	050		a sifi a d. Ourres rat)	Fillal		OK
	3.5.3	Termination Resistance (Spe	ecilied Current)	Final		OK
	0.5.40			Final	16 mΩ Max	OK
	3.5.13	Connector Locking Strength		Final		OK
	3.5.16	Contact Retention Force	Secondary	Final	100N Min	OK
	3.5.19	Handling Ergonomics		Final	No abnormalities in	OK
					manual	
					mating/unmating	
				- <u>-</u> .	nandling	01/
	-	Resistance Variation Monito	r	During	Reference	OK
7	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.2	Termination Resistance (Low	v Level)	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.3	Termination Resistance (Spe	ecified Current)	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.4	Dielectric Withstanding	Cont. – Cont.	Final	No creeping discharge	OK
		Voltage	Cont. – HSG	Final	or flashover	OK
	3.5.5	Insulation Resistance	Cont. – Cont.	Final	Over 1000 MΩ	OK
			Cont. – HSG	Final		OK
	3.5.6	Current Leakage		During	3mA Max	OK
	3.5.13	Connector Locking Strength		Final	100N Min	OK
	3.5.16	Contact Retention Force	Secondary	Final	100N Min	OK
8	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.2	Termination Resistance (Low	v Level)	Initial	8 mΩ Max	OK
			,	Final	16 mΩ Max	OK
	3.5.3	Termination Resistance (Spe	ecified Current)	Initial	8 mΩ Max	OK
			,	Final	16 mΩ Max	OK
9	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
_				Final	product drawing	OK
	3.5.2	Termination Resistance (Low	v Level)	Initial	8 mO Max	OK
				Final	16 mΩ Max	OK
	3.5.3	Termination Resistance (Spe	ecified Current)	Initial	8 mO Max	OK
	0.010			Final	16 mO Max	OK
	3.5.7	Temperature Rise	All poles	Initial	60°C Max	OK
	0.0.7	i emperatore i nee		Final	60°C Max	OK
	3513	Connector Locking Strength		Final	100N Min	OK
	3516	Contact Retention Force	Secondary	Final	100N Min	OK
	3519	Handling Ergonomics	Secondary	Final	No abnormalities in	
	0.0.10			1 11 10	manual	
					mating/unmating	
					handling	

Figure 4 (Cont.)

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Group		Tost Itoms			Spaa	ludgo
10 10	251	Confirmation of Product		Initial	Moot requirements of	
10	3.5.1	Committation of Product		Final	Neet requirements of	
	0 5 10	Compositor Looking Otropath		Final		OK
	3.5.13	Connector Locking Strength	O a a a ra d a ma	Final		OK
	3.5.16	Contact Retention Force	Secondary	Final		OK
	3.5.19	Handling Ergonomics		Final	No abnormalities in	OK
					manual	
					mating/unmating	
	0.5.4	O aufirmantian of Duarkant		La Maria I	nanoling	
	3.5.1	Confirmation of Product		Final	Meet requirements of	OK
	250	Termination Registence (Low		Initial		
	3.J.Z	Termination Resistance (LOV	v Level)	Final	16 mO Max	OK
	252	Termination Resistance (Sp	noified Current)	Initial	8 mQ Max	OK
	3.5.5	Termination Resistance (Spe	cilled Culterit)	Final	16 mO Max	
	254	Dielectric Withstanding	Cont Cont	Final	No crooping discharge	OK
	3.5.4	Voltago	Cont. $-$ Cont.	Final	or flashovor	
	255		Cont Cont	Final	Over 1000 MO	OK
	3.5.5	Insulation Resistance	Cont. $-$ Cont.	Final	0001100010122	
	2 5 1 2	Connector Locking Strength	Cont. – HSG	Final	100NLMin	
	3.5.15	Contract Potention Force	Secondary	Final		
	2.5.10		Secondary	Final	No appormalitios in	
	5.5.19			rinai	manual	ON
					mating/upmating	
					handling	
	-	Besistance Variation Monitor		During	Beference	OK
12	12 3.5.1 Confirmation of Proc			Initial	Meet requirements of	OK
	0.0.1			Final	product drawing	OK
	3.5.2	Termination Resistance (Low	v Level)	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.3	Termination Resistance (Spe	ecified Current)	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
13	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
_				Final	product drawing	OK
	3.5.2	Termination Resistance	Direction: Z	Initial	8 mΩ Max	OK
		(Low Level)		Final	16 mΩ Max	OK
			Direction: X	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
			Direction: Y	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.3	Termination Resistance	Direction: Z	Initial	8 mΩ Max	OK
		(Specified Current)		Final	16 mΩ Max	OK
			Direction: X	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
			Direction: Y	Initial	8 mΩ Max	OK
				Final	16 mΩ Max	OK
	3.5.7	Temperature Rise	Direction: Z	Initial	60°C Max	OK
		All poles		Final	60°C Max	OK
			Direction: X	Initial	60°C Max	OK
				Final	60°C Max	OK
			Direction: Y	Initial	60°C Max	OK
				Final	60°C Max	OK
	-	Electrical Discontinuity Monit	or	During	No electrical	OK
					discontinuity greater	
					than 1µsec	
	-	Resistance Variation Monitor	•	Durina	Reference	OK

Figure 4 (Cont.)



Group		Test Items		Spec	Judge	
14	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.5	Insulation Resistance	Cont. – Cont.	Final	Over 1000 MΩ	OK
			Cont. – HSG	Final		OK
	3.5.6	Current Leakage		During	3mA Max	OK
15	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.20	Retention Force of Tab		Final	20N Min	OK
16	3.5.1	Confirmation of Product		Initial	Meet requirements of	OK
				Final	product drawing	OK
	3.5.18	Solderability (Reflow Solderi	ng)	Final	Fillet shall be formed	OK
					around the contact	

Figure 4 (End)