

025 (0.64II) Series Connector, SMD Horizontal

1. INTRODUCTION

1.1. Purpose

Testing was performed on the 025 (0.64II) Series Connector, SMD Horizontal to determine if it meets the requirements of Product Specification 108-51121.

1.2. Scope

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

1.3. Conclusion

025 (0.64II) Series Connector, SMD Horizontal meets the requirements of Product Specification 108-51121.

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
*1) X-2237122-X	4P 1Row 025 (0.64) Cap SMT (Male)
*1) X-2237126-X	4P 1Row 0.64II Plug Assembly (Female)
*2) Sumitomo Wire Systems Co. Ltd.	0.64II Receptacle Contact
*2) Yazaki Parts Co. Ltd.	0.64II Receptacle Contact

Figure 1

*1) Note: The model number (part number) is configured with a single digit number with a dash in the list parent number. For more information on the dash with a number for each parent numbers refer to the drawing or catalog for the customer. It should be noted that if the prefix is zero, zero and dash are omitted.

*2) Note: See customer drawing about 0.64II receptacle contact part number. Inquire contact maker about the contact specifications.

1.6. Reference Test Report No.

- TR-51007

2. TEST CONTENTS

Item No	Test Description	Requirement	Judgement
3.5.1	Appearance	No deleterious deformation	Acceptable
MECHANICAL			
3.5.2	Terminal Retaining Force (Primary Latch)	25N Min	Acceptable
	Terminal Retaining Force (Complete Latch)	70N Min	Acceptable
3.5.3	Insertion Removal Feel	No deleterious catch or the like	Acceptable
3.5.4	Insertion Force of Terminal into Housing	10N Max per terminal	Acceptable
3.5.5	Housing Removal Force	5N Max	Acceptable
3.5.6	Connector Insertion Force	70N Max	Acceptable
3.5.7	Connector Removal Force	70N Max	Acceptable
3.5.8	Locking Strength	100N Min	Acceptable
3.5.9	Unlocking Strength	5N to 70N	Acceptable
3.5.10	Connector Pry Resistance	No deformation, reverse or erroneous engagement of the male terminal due to prying interference. 5mΩ Max	Acceptable
3.5.11	Connector Engagement Sound	55dB Min	Acceptable
3.5.12	Solderability (Reflow Soldering)	Fillet shall be formed around the contact	Acceptable
3.5.13	Retention Force of Tab	20N Min	Acceptable
3.5.14	Resistance to Soldering Heat	No cracks, deformation, discoloration that are problematic in function shall appear.	Acceptable

Figure 2 (Cont.)

Item No	Test Description	Requirement	Judgement	
ELECTRICAL				
3.5.15	Low Voltage Current Resistance	5mΩ Max (Initial) 10mΩ Max (Final)	Acceptable	
3.5.16	Voltage Drop	5mΩ Max (Initial) 10mΩ Max (Final)	Acceptable	
		Wire Size (mm ²)		I _{max} all poles (A)
		0.3		4.5
		0.5		5
3.5.17	Temperature Rise under Energization	Provide terminal temperature rise characteristics, basic curve and derating curve	Acceptable	
		Wire Size (mm ²)		I _{max} one pole (A)
		0.3		8
		0.5		11
3.5.18	Insulation Resistance	100MΩ Min (Initial) 100MΩ Min (Final)	Acceptable	
3.5.19	Withstand Voltage	No dielectric breakdown or flashover	Acceptable	
3.5.20	Leak Current	1mA Max	Acceptable	

Figure 2 (Cont.)

Item No	Test Description	Requirement	Judgement	
ENVIRONMENTAL RESISTANCE				
3.5.21	Repeated Insertion / Removal Durability	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.22	Dropping Impact	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.23	Heat Resistance	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.24	Cold Resistance	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.25	Thermal Shock	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.26	Combined Environment	Satisfy requirements of test item on the "3.6 product qualification" No resistance fluctuation greater than 7Ω for 1μsec shall occur	Acceptable	
		Wire Size (mm ²)		I _{max} all poles (A)
		0.3		4.5
		0.5		5
3.5.27	High Temperature Operation	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	
3.5.28	Temperature / Humidity Cycle Test	Satisfy requirements of test item on the "3.6 product qualification"	Acceptable	

Figure 2 (End)

3. PRODUCT QUALIFICATION TEST ITEM

Test or Examination	Initial	3.5.21	3.5.22	3.5.23	3.5.24	3.5.25	3.5.26	3.5.27	3.5.28
		Repeated Insertion / Removal Durability	Dropping Impact	Heat Resistance	Cold Resistance	Thermal Shock	Combined Environment	High Temperature Operation	Temperature / Humidity Cycle Test
3.5.1 Appearance	O	O	O	O	O	O	O	O	O
3.5.2 Terminal Retaining Force	O			O	O	O			O
3.5.3 Insertion Removal Feel	O								
3.5.4 Insertion Force of Terminal into Housing	O								
3.5.5 Housing Removal Force	O								
3.5.6 Connector Insertion Force	O								
3.5.7 Connector Removal Force	O								
3.5.8 Locking Strength	O			O					
3.5.9 Unlocking Strength	O								
3.5.10 Connector Pry Resistance	O								
3.5.11 Connector Engagement Sound	O								
3.5.12 Solderability (Reflow Soldering)	O								
3.5.13 Retention Force of Tab	O								
3.5.14 Resistance to Soldering Heat	O								
3.5.15 Low Voltage Current Resistance	O	O		O	O	O	O		O
3.5.16 Voltage Drop	O	O		O	O	O	O		O
3.5.17 Temperature Rise under Energization	O			O			O		
3.5.18 Insulation Resistance	O						O		O
3.5.19 Withstand Voltage	O						O		O
3.5.20 Leak Current							O		O

Figure 3



NOTE
O = Tested

4. SUMMARY OF TEST RESULT

Item No	Test Items	Specification	Judge			
INITIAL						
3.5.1	Appearance	Key 1	Initial	No deleterious deformation	OK	
		Key 2	Initial		OK	
3.5.2	Terminal Retaining Force	Primary Latch	Key 2	Initial	25N Min	OK
		Complete Latch	Key 2	Initial	70N Min	OK
3.5.3	Insertion / Removal Feel	Key 1	Initial	No deleterious catch or the like	OK	
		Key 2	Initial		OK	
3.5.4	Insertion force of terminal into housing	CAVUS 0.3mm ²	Key 2	Initial	10N Max	OK
3.5.5	Housing Removal Force	Key 1	Initial	5N Max	OK	
		Key 2	Initial	5N Max	OK	
3.5.6	Connector Insertion Force	Key 1	Initial	70N Max	OK	
		Key 2	Initial	70N Max	OK	
3.5.7	Connector Removal Force	Key 1	Initial	70N Max	OK	
		Key 2	Initial	70N Max	OK	
3.5.8	Locking Strength 	Key 1	(1)	Initial	100N Min	OK
			(2)	Initial	100N Min	OK
			(3)	Initial	100N Min	OK
			(4)	Initial	100N Min	OK
			(5)	Initial	100N Min	OK
		Key 2	(1)	Initial	100N Min	OK
			(2)	Initial	100N Min	OK
			(3)	Initial	100N Min	OK
			(4)	Initial	100N Min	OK
			(5)	Initial	100N Min	OK
3.5.9	Unlocking force	Key 2	Initial	5N Min 70N Max	OK	

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
INITIAL							
3.5.10	Connector pry resistance	Key 1		Initial	No deformation, reverse or erroneous fitting of the male terminal due to prying interference	OK	
		Male Key 1/ Female Key 2		Initial		OK	
		Key 2		Initial		OK	
		Male Key 2/ Female Key 1		Initial		OK	
		Low-voltage current resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK
Key 2	Initial			5mΩ Max	OK		
3.5.11	Connector engagement sound	Key 1		Initial	55dB Min	OK	
		Key 2		Initial	55dB Min	OK	
3.5.12	Solderability (Reflow Soldering)			Initial	Fillet shall be formed around the contact	OK	
3.5.13	Retention Force of Tab			Initial	20N Min	OK	
3.5.14	Resistance to Soldering Heat			Initial	No cracks, deformation, discoloration that are problematic in function shall appear.	OK	
3.5.15	Low-Voltage Current Resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK	
			Key 2	Initial	5mΩ Max	OK	
3.5.16	Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK	
			Key 2	Initial	5mΩ Max	OK	
		12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK	
			Key 2	Initial	5mΩ Max	OK	
3.5.17	Temperature Rise under Energization	One of poles	11A	Key 1	Initial	See terminal rise characteristics in TR-51007	OK
			5A		Initial		
		All poles	8A	Key 2	Initial		
			4.5A		Initial		

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
INITIAL							
3.5.18	Insulation Resistance	Key 1	Terminal-Terminal	Initial	100MΩ Min	OK	
			Terminal-Housing	Initial	100MΩ Min	OK	
		Key 2	Terminal-Terminal	Initial	100MΩ Min	OK	
			Terminal-Housing	Initial	100MΩ Min	OK	
3.5.19	Withstand Voltage	Key 1	Terminal-Terminal	Initial	No Dielectric breakdown or flashover	OK	
			Terminal-Housing	Initial		OK	
		Key 2	Terminal-Terminal	Initial		OK	
			Terminal-Housing	Initial		OK	
ENVIRONMENTAL RESISTANCE							
3.5.21	Repeated Insertion / Removal Durability	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Low-voltage current resistance	20mV 10mA	Key 1	Final	10mΩ Max	OK
				Key 2	Final	10mΩ Max	OK
		Voltage Drop	14V 1A	Key 1	Final	10mΩ Max	OK
				Key 2	Final	10mΩ Max	OK
			12V I _{max} (5A)	Key 1	Final	10mΩ Max	OK
				Key 2	Final	10mΩ Max	OK
3.5.22	Dropping Impact	Appearance		Key 2	Final	No deleterious deformation	OK

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
ENVIRONMENTAL RESISTANCE							
3.5.23	Heat Resistance	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Terminal Retaining Force	Primary Latch	Key 2	Final	25N Min	OK
				Key 2	Final		70N Min
		Locking Strength	(1)	Key 1	Final	100 Min	
			(1)	Key 2	Final	100 Min	OK
		Low-voltage current resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
			12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		12V I _{max} (4.5A)	Key 2	Initial	5mΩ Max	OK	
				Final	10mΩ Max	OK	
Temperature Rise Under Energization			Key 1	Final	See terminal rise characteristics in TR-51007	OK	
			Key 2	Final			

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
ENVIRONMENTAL RESISTANCE							
3.5.24	Cold Resistance	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Terminal retaining force	Primary Latch	Key 2	Final	25N Min	OK
				Complete Latch	Key 2	Final	70N Min
		Low-voltage current resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
			12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		12V I _{max} (4.5A)	Key 2	Initial	5mΩ Max	OK	
				Final	10mΩ Max	OK	

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
ENVIRONMENTAL RESISTANCE							
3.5.25	Thermal Shock	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Terminal retaining force	Primary Latch	Key 2	Final	25N Min	OK
				Complete Latch	Key 2	Final	70N Min
		Low-voltage current resistance	20 mV 10mA	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
			12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		12V I _{max} (4.5A)	Key 2	Initial	5mΩ Max	OK	
				Final	10mΩ Max	OK	

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
ENVIRONMENTAL RESISTANCE							
3.5.26	Combined Environment	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Low-voltage current resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
				Key 2	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
			Key 2	Initial	5mΩ Max	OK	
				Final	10mΩ Max	OK	
			12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK
					Final	10mΩ Max	OK
		12V I _{max} (4.5A)	Key 2	Initial	5mΩ Max	OK	
				Final	10mΩ Max	OK	
		Temperature Rise Under Energization		Key 1	Final	See terminal rise characteristics in TR-51007	OK
		Key 2	Final				
Insulation Resistance (DC500V)	T-T	Key 1	Final	100MΩ Min	OK		
	T-H		Final	100MΩ Min	OK		
Withstand Voltage	T-T	Key 1	Final	No dielectric breakdown or flashover	OK		
	T-H		Final		OK		
Leak Current	Non Water Proof	Key 1	During	1mA Max	OK		
3.5.27	High Temperature Operation	Appearance		Key 2	Final	No deleterious deformations. scratches, flashes, rust or the like	OK

Figure 4 (Cont.)

Item No	Test Items				Specification	Judge	
ENVIRONMENTAL RESISTANCE							
3.5.28	Temp / Humid Cycle Test	Appearance		Key 1	Final	No deleterious deformation	OK
				Key 2	Final		OK
		Terminal retaining force	Primary Latch	Key 2	Final	25N Min	OK
				Key 2	Final		
		Complete Latch		Key 2	Final	5mΩ Max	OK
				Key 2	Final		
		Low-voltage current resistance	20mV 10mA	Key 1	Initial	5mΩ Max	OK
					Final		
				Key 2	Initial	5mΩ Max	OK
					Final		
		Voltage Drop	14V 1A	Key 1	Initial	5mΩ Max	OK
					Final		
				Key 2	Initial	5mΩ Max	OK
					Final		
			12V I _{max} (5A)	Key 1	Initial	5mΩ Max	OK
					Final		
			12V I _{max} (4.5A)	Key 2	Initial	5mΩ Max	OK
					Final		
		Insulation Resistance (DC500V)	T-T	Key 1	Final	100MΩ Min	OK
			T-H		Final		
			T-T	Key 2	Final	100MΩ Min	OK
			T-H		Final		
		Withstand Voltage	T-T	Key 1	Final	No dielectric breakdown or flashover	OK
T-H	Final		OK				
	T-T	Key 2		Final	OK		
	T-H		Final	OK			
Leak Current	Non Water Proof	Key 1	During		1mA Max	OK	

Figure 4 (End)