

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 ²) |

Figure 1

1.6. Reference Test Report No

- TR-51005
- TR-51006

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 (SO ₂) | 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 or Examination | | Test Group | | | | | | | | | | | | | | | |
|---------------------|--|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | Test Sequence (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 | 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 | Connector Unmating Force | 9 | | | | | | | | | | | | | | | |
| 3.5.13 | Connector Locking Strength | 10 | | | | | 9 | 11 | | 11 | 5 | 11 | | | | | |
| 3.5.14 | Contact Insertion Force | 11 | | | | | | | | | | | | | | | |
| 3.5.15 | Contact Retention Force (Latch Lock) | 12 | | | | | | | | | | | | | | | |
| 3.5.16 | Contact Retention Force (Secondary Lock) | 13 | | | | | 10 | 12 | | 12 | 6 | 12 | | | | | |
| 3.5.17 | Resistance to "Kojiri" | | | | | 4 | | | | | | | | | | | |
| 3.5.18 | 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 SO ₂ 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 | | | | | | | | | | | | 5 | | | | |
| 3.5.29 | Compound Environment Resistance | | | | | | | | | | | | | 5 | | | |
| 3.5.30 | Condensation | | | | | | | | | | | | | | 2 | | |

Figure 3


NOTE

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

4. SUMMARY OF TEST RESULT

| Group | Test Items | | | Spec | Judge | |
|--------|----------------------------------|--|---------------|---|--|----|
| 1 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | 3.5.4 | Dielectric Withstanding Voltage | Cont. – Cont. | Initial | No creeping discharge or flashover | OK |
| | | | Cont. – HSG | Initial | | OK |
| | 3.5.5 | Insulation Resistance | Cont. – Cont. | Initial | Over 1000 MΩ | OK |
| | | | Cont. – HSG | Initial | Over 1000 MΩ | OK |
| | 3.5.7 | 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 |
| | 3.5.13 | Connector Locking Strength | | 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 |
| 3.5.19 | Handling Ergonomics | | Initial | No abnormalities in manual mating/unmating handling | OK | |
| 3.5.20 | Retention Force of Tab | | Initial | 20N Min | OK | |
| 2 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | 16.5A, 3600s | Initial | 8 mΩ Max | OK |
| | | | | 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 (Specified Current) | 16.5A, 3600s | Initial | 8 mΩ Max | OK |
| | | | | 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 product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| - | Electrical Discontinuity Monitor | | During | No electrical discontinuity greater than 1μsec | OK | |
| 4 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | - | Electrical Discontinuity Monitor | | During | No electrical discontinuity greater than 1μsec | OK |

Figure 4 (Cont.)

| Group | Test Items | | | Spec | Judge | |
|--------|------------------------------|--|---------------|---|--------------------------------------|----|
| 5 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| 6 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.13 | Connector Locking Strength | | Final | 100N Min | OK |
| | 3.5.16 | Contact Retention Force | Secondary | Final | 100N Min | OK |
| 3.5.19 | Handling Ergonomics | | Final | No abnormalities in manual mating/unmating handling | OK | |
| - | Resistance Variation Monitor | | During | Reference | OK | |
| 7 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.4 | Dielectric Withstanding Voltage | Cont. – Cont. | Final | No creeping discharge or flashover | OK |
| | | | Cont. – HSG | Final | | 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 product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| 9 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.7 | Temperature Rise | All poles | Initial | 60°C Max | OK |
| | | | | Final | 60°C Max | OK |
| 3.5.13 | Connector Locking Strength | | Final | 100N Min | OK | |
| 3.5.16 | Contact Retention Force | Secondary | Final | 100N Min | OK | |
| 3.5.19 | Handling Ergonomics | | Final | No abnormalities in manual mating/unmating handling | OK | |

Figure 4 (Cont.)

| Group | Test Items | | | Spec | Judge | |
|--------------|----------------------------------|--|---------------|---|--------------------------------------|----|
| 10 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.13 | Connector Locking Strength | | Final | 100N Min | OK |
| | 3.5.16 | Contact Retention Force | Secondary | Final | 100N Min | OK |
| 3.5.19 | Handling Ergonomics | | Final | No abnormalities in manual mating/unmating handling | OK | |
| 11 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.4 | Dielectric Withstanding Voltage | Cont. – Cont. | Final | No creeping discharge or flashover | OK |
| | | | Cont. – HSG | Final | | OK |
| | 3.5.5 | Insulation Resistance | Cont. – Cont. | Final | Over 1000 MΩ | OK |
| | | | Cont. – HSG | Final | | OK |
| | 3.5.13 | Connector Locking Strength | | Final | 100N Min | OK |
| 3.5.16 | Contact Retention Force | Secondary | Final | 100N Min | OK | |
| 3.5.19 | Handling Ergonomics | | Final | No abnormalities in manual mating/unmating handling | OK | |
| - | Resistance Variation Monitor | | During | Reference | OK | |
| 12 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | | Initial | 8 mΩ Max | OK |
| | | | | Final | 16 mΩ Max | OK |
| | 3.5.3 | Termination Resistance (Specified Current) | | Initial | 8 mΩ Max | OK |
| Final | | | | 16 mΩ Max | OK | |
| 13 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.2 | Termination Resistance (Low Level) | Direction: Z | Initial | 8 mΩ Max | OK |
| | | | | 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 (Specified Current) | Direction: Z | Initial | 8 mΩ Max | OK |
| | | | | 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 All poles | Direction: Z | Initial | 60°C Max | OK |
| | | | | 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 Monitor | | During | No electrical discontinuity greater than 1μsec | OK | |
| - | Resistance Variation Monitor | | During | Reference | OK | |

Figure 4 (Cont.)

| Group | Test Items | | | Spec | Judge | |
|-------|-----------------|----------------------------------|---------------|---------|---|----|
| 14 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | 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 product drawing | OK |
| | | | | Final | | OK |
| | 3.5.20 | Retention Force of Tab | | Final | 20N Min | OK |
| 16 | 3.5.1 | Confirmation of Product | | Initial | Meet requirements of product drawing | OK |
| | | | | Final | | OK |
| | 3.5.18 | Solderability (Reflow Soldering) | | Final | Fillet shall be formed around the contact | OK |

Figure 4 (End)