



Test Plan Header

Test Plan Number: 1. 2634

Test Plan Level: PV

Objective: Validate Capacity Assembly line for 2 way connector

Product Description : MX064 2 way single row sealed connector

Customer:

Product (Vehicle(s)):

Year of Introduction (Model Year(s)):

Customer Approval:

Engineering Manager Approval: Jun Deng

Reliability Engineering Lab Manager: DingQiang Wang

DVP&R Prepared By: Fiona Chen

DVP&R Date (Original): 03-May-2016

Reporting Engineer: Fiona Chen

Phone #:

Test Engineer:

UUT Table

| Unit Under Test Type | Test Sample Description | Manufacturer | Part Number | Part Rev. | Customer Part # |
|----------------------|------------------------------------|--------------|-------------|-----------|-----------------|
| Units Under Test | 0.64 2 way connector key A w/o CPA | Molex | 31402-2100 | - | - |
| Other Parts for Test | RSU6 Sensor Key A Assembly | Molex | 47741-0001 | - | - |
| | Female Receptacle Terminal | Tyco | 1393366-1 | - | - |

Test Plan and Report

| Test Description | Test Item | Item Description | Test Type | Test Sequence | Test Requirement | ¶ | Test Remarks | Test Sample Description | Qty | Date | Test Results | | | | Met/Not met | Other Measurements | Results Notes |
|---|-----------|----------------------|-----------|--|--|-------|--------------|-----------------------------------|-----|------|--------------|--------|--------|--|-------------|--------------------|---------------|
| | | | | | | | | | | | Min | Max | Avg | Acceptance Criteria | | | |
| USCAR-2 REV5, November 2007 -> 5.9.5G / Connector to Connector Mating / Unmating - Non-Assist | CM1 | Connector Mechanical | PV | General Notes | Conditions: Refer to the General Notes for Pre-Test Information. -> Requirement: Refer to the General Notes for Pre-Test Information. | 5.1 | | | | | | | | Refer to the General Notes for Pre-Test Information. | MET | | |
| | | | | Pre-Test Visual Inspection | Conditions: Refer to the General Notes for Pre-Test Visual Inspections. -> Requirement: Refer to the General Notes for Pre-Test Visual Inspections. | 5.1.8 | | 0.64 2way connector key A w/o CPA | 20 | | | | | Refer to the General Notes for Pre-Test Visual Inspections. | MET | | |
| | | | | Conn to Conn (non-assist) - Mating Force | Conditions: Completely assemble (but do not mate) all connector halves (both male and female) using all applicable components such as terminals, wedges, and seals. Increase the connector (Engaging) Mating Force at a constant rate, until complete mating occurs. -> Requirement: 1. Mating (Engaging) Force shall meet the requirements of SAE/USCAR-25; and Figure 5.4.2.3. | 5.4.2 | | | | | 12.82 | 16.51 | 14.27 | ≤22N | MET | | |
| | | | | Conn to Conn (non-assist) - Retention Force, w/o Terminals | Conditions: With primary connector lock enabled (CPA disabled), increase Retention Force uniformly until complete separation occurs. This test will be conducted without terminals or wires on the 5 samples. -> Requirement: 2. Retention (Un-mating Force) Force must be ≥ 110 N with primary connector lock fully engaged. A CPA device, if provided, must NOT be engaged. | 5.4.2 | | | | | 159.53 | 172.56 | 166.59 | ≥ 110 N | MET | | |
| | | | | Conn to Conn (non-assist) - Unmating Force | Conditions: With primary connector lock disabled, increase (Disengage) Unmating Force uniformly until complete separation of the connector halves occurs. This test will be conducted with terminals or wires on the 5 samples. -> Requirement: 3. Unmating Force must be ≤ 75 N with the primary connector lock completely disengaged/ disabled. | 5.4.2 | | | | | 9.92 | 11.34 | 10.53 | ≤ 75 N | MET | | |
| | | | | Post Test Visual Inspection | Conditions: Refer to the General Notes for Post-Test Visual Inspections. -> Requirement: Refer to the General Notes for Post-Test Visual Inspections. | 5.1.8 | | | | | | | | Refer to the General Notes for Post-Test Visual Inspections. | MET | | |
| USCAR-2 REV5, November 2007 -> | CS1 | Sealed Connector | PV | General Notes | Conditions: Refer to the General Notes for Pre-Test Information. -> Requirement: Refer to the General Notes for Pre-Test Information. | 5.1 | | | | | | | | Refer to the General Notes for Pre-Test Information. | MET | | |



| Test Description | Test Item | Item Description | Test Type | Test Sequence | Test Requirement | ¶ | Test Remarks | Test Sample Description | Qty | Date | Test Results | | | | Met/Not met | Other Measurements | Results Notes |
|--------------------------------------|-----------|------------------|-----------|--|---|------------|--------------|-----------------------------------|-----|------|--------------|-----|----------------------|---|-------------|--------------------|---------------|
| | | | | | | | | | | | Min | Max | Avg | Acceptance Criteria | | | |
| 5.9.9W / Pressure/Vacuum Stand Alone | | Environmental | | Pre-Test Visual Inspection | Conditions: Refer to the General Notes for Pre-Test Visual Inspections. -> Requirement: Refer to the General Notes for Pre-Test Visual Inspections. | 5.1.8 | | 0.64 2way connector key A w/o CPA | 10 | | | | | Refer to the General Notes for Pre-Test Visual Inspections. | MET | | |
| | | | | Connector and/or Terminal Cycling | Conditions: Completely mate and un-mate each connector or terminal pair 10 times. Re-mate connectors or terminals one last time for testing. -> Requirement: None | 5.1.7 | | | | | | | None | MET | | | |
| | | | | Isolation Resistance | Conditions: Connect Megohmmeter, set to 500 VDC, see figure 5.5.1.3, so adjacent cavities have opposite polarization to apply test voltage to both connector halves. -> Requirement: The resistance between every combination of two adjacent terminals in the CUT must exceed 100 MΩ at 500 VDC. This includes terminals that may be separated by one or more vacant terminal cavities. | 5.5.1 | | | | | | | ≥ 100 MΩ at 500 VDC. | MET | | | |
| | | | | Pressure Leak - At (+48 kPa) Test Pressure | Conditions: Submerge samples in a saltwater solution with dye. Bend all conductors in the same direction, 90° to the back of each connector half and secure them. Slowly increase the air pressure to (+48 kPa) for 15 seconds minimum. -> Requirement: 1. Upon reaching the specified positive internal pressure and holding for 15 seconds, there must be no bubbles visible exiting any test sample. | 5.6.6 | | | | | | | | MET | | | |
| | | | | Vacuum Leak - At (-48 kPa) Test Vacuum | Conditions: After observing for 15 seconds at full pressure, decrease the air pressure to a vacuum of (-48 kPa) for 15 seconds minimum. -> Requirement: Record the indicated data for this test element below in the appropriate Data Line(s). | 5.6.6 | | | | | | | | MET | | | |
| | | | | Isolation Resistance | Conditions: Connect Megohmmeter, set to 500 VDC, see figure 5.5.1.3, so adjacent cavities have opposite polarization to apply test voltage to both connector halves. -> Requirement: The resistance between every combination of two adjacent terminals in the CUT must exceed 100 MΩ at 500 VDC. This includes terminals that may be separated by one or more vacant terminal cavities. | 5.5.1 | | | | | | | ≥ 100 MΩ at 500 VDC. | MET | | | |
| | | | | Pressure/ Vacuum Test - 70 Hour Heat Soak | Conditions: Using Temp Class Table 5.1.4.1, heat soaks the samples in chamber for 70 hours. Then remove and allow them to cool to room temperature. -> Requirement: None | 5.6.6.3-10 | | | | | | | | None | MET | | |
| | | | | Pressure Leak - At (+28kPa) Test Pressure | Conditions: Submerge samples in a saltwater solution with dye. Bend all conductors in the same direction, 90° to the back of each connector half and secure them. Slowly increase the air pressure to (+28 kPa) for 15 seconds minimum. -> Requirement: 1. Upon reaching the specified positive internal pressure and holding for 15 seconds, there must be no bubbles visible exiting any test sample. | 5.6.6 | | | | | | | | MET | | | |
| | | | | Vacuum Leak - At (-28kPa) Test Vacuum | Conditions: After observing for 15 seconds at full pressure, decrease the air pressure to a vacuum of (-28 kPa) for 15 seconds minimum. -> Requirement: Record the indicated data for this test element below in the appropriate Data Line(s). | 5.6.6 | | | | | | | | MET | | | |
| | | | | Isolation Resistance | Conditions: Connect Megohmmeter, set to 500 VDC, see figure 5.5.1.3, so adjacent cavities have opposite polarization to apply test voltage to both connector halves. -> Requirement: The resistance between every combination of two adjacent terminals in the CUT must exceed 100 MΩ at 500 VDC. This includes terminals that may be separated by one or more vacant terminal cavities. | 5.5.1 | | | | | | | ≥ 100 MΩ at 500 VDC | MET | | | |
| | | | | Post Test Visual Inspection | Conditions: Refer to the test element Conditioning shown above. -> Requirement: Record the indicated data for the test element Acceptance Criteria shown above. | 5.1.8 | | | | | | | | MET | | | |