

8P Sealed Mini Fuse and Relay Housing Assembly with Cover

1. Scope:

To define and perform validation tests as per the sequence provided in this specification on the specified product part numbers.

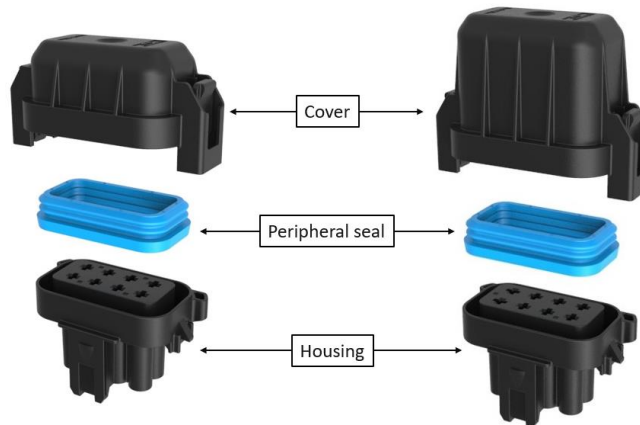
2. Part Numbers:

- 2319023-1, -2: 8 Pos. Sealed Mini fuse and Relay Housing Assembly
- 2319021-1, -2: Cover, 8 Pos. Mini Fuse and Relay Housing Assembly
- 1-968882-1, -3: AMP MCP 2.8 Receptacle terminal (Pre-Tinned/Silver)
- 1-1719506-1, -3: AMP MCP 2.8 Receptacle terminal (Pre-Tinned/Silver)
- 828905-1, 828904-1: Single Wire Seals

3. Applicable Documents:

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

- 109-5000: AMP Test Specification, General Requirements for Test Methods
- 109-197: AMP Test Specifications vs EIA and IEC Test Methods
- 114-18148-1: Application Specification, Crimping Contacts
- SAE/USCAR-2 Revision 6
- EIA Specifications
- IEC 60529



Prepared by	Checked by	Approved by
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4. Sample Definition:

- Sample size: Sample for each Test group as specified in the testing sequence (Table 1).

5. Requirements:

5.1 Design and Construction:

Product shall be of the design, construction and physical dimensions on the applicable product drawing.

5.2 Materials:

- I. Contact: CuNiSi, (Pre-Tin, Silver)
- II. Housing and Cover: Molded Poly Butyl Terephthalate Confirming to UL-94 V0
- III. Accessories and Hardware:
 - Wire Seal: Silicon
 - Housing Peripheral Seal: Self Lubricated Silicon

5.3 Ratings:

- I. Temperature Rating: -40°C to + 125°C

6. Performance and Test Descriptions

The product is made to design to meet electrical, mechanical and environmental performance requirements specified. All tests are performed at ambient temperature unless otherwise specified.

7. Test Requirements and Procedures Summary

Para	Test Items	Requirements	Procedures
7.1	Visual Examination	Product shall be conforming to the requirements of applicable product drawing and application Specification	Visually, dimensionally and functionally inspected as per applicable inspection plan.
Mechanical Tests			
7.2	Terminal Retention Force	Minimum retention force of 60N	Test conducted as per EIA-364-29C. Apply Axial load on the wires which are crimped until the primary lock gets damaged.
7.3	Cover Locking Mechanism Strength	Shall withstand disengagement force of 85 N for 1minute without depressing latches.	Test conducted as per EIA-364-98. The force mechanism shall be set to exert an axial force of 85N for 1minute in the retention direction of the cover.

7.4	Connector Mounting feature mechanical strength	Clip retention force is 89N minimum, except 1011-310-0205 is 50N minimum.	Test conducted as per USCAR-2, 5.4.11. Assemble the connector to a fixture and apply a downward force with a probe at a constant rate of 50mm/min in the directions as specified in the specification.																					
Mounting Clips Retention forces (For Clip details refer Application specification)																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="300 520 662 562">Part Number</th> <th data-bbox="662 520 1019 562">Material</th> <th data-bbox="1019 520 1360 562">Retention Force</th> </tr> </thead> <tbody> <tr> <td data-bbox="300 562 662 636">1027-003-1200</td> <td data-bbox="662 562 1019 747" rowspan="3" style="text-align: center;">Stainless steel</td> <td data-bbox="1019 562 1360 747" rowspan="3" style="text-align: center;">89N</td> </tr> <tr> <td data-bbox="300 636 662 688">1027-005-1200</td> </tr> <tr> <td data-bbox="300 688 662 747">1027-004-1200</td> </tr> <tr> <td data-bbox="300 747 662 800">1011-026-0205</td> <td data-bbox="662 747 1019 800" style="text-align: center;">PA6/6 GF13-15</td> <td data-bbox="1019 747 1360 856" rowspan="2" style="text-align: center;">89N</td> </tr> <tr> <td data-bbox="300 800 662 856">1011-030-0205</td> <td data-bbox="662 800 1019 856" style="text-align: center;">Nylon 6/6</td> </tr> <tr> <td data-bbox="300 856 662 915">1011-310-0205</td> <td data-bbox="662 856 1019 915" style="text-align: center;">Nylon 6/6</td> <td data-bbox="1019 856 1360 915" style="text-align: center;">50N</td> </tr> <tr> <td data-bbox="300 915 662 974">1027-008-1200</td> <td data-bbox="662 915 1019 1087" rowspan="3" style="text-align: center;">Steel</td> <td data-bbox="1019 915 1360 1087" rowspan="3" style="text-align: center;">89N</td> </tr> <tr> <td data-bbox="300 974 662 1031">1027-009-1200</td> </tr> <tr> <td data-bbox="300 1031 662 1087">1027-017-1200</td> </tr> </tbody> </table>				Part Number	Material	Retention Force	1027-003-1200	Stainless steel	89N	1027-005-1200	1027-004-1200	1011-026-0205	PA6/6 GF13-15	89N	1011-030-0205	Nylon 6/6	1011-310-0205	Nylon 6/6	50N	1027-008-1200	Steel	89N	1027-009-1200	1027-017-1200
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7.5	Connector Cover Durability	No visible hinge cracking.	Mount and unmount cover 50 times at ambient room temperature.																					
7.6	Vibration and Mechanical Shock	No discontinuities of 10 microseconds or longer duration.	<u>Vibration</u> : V1 profile, Eight hours in each of 3 mutually perpendicular planes. <u>Mechanical shock</u> : EIA-364-27, Method H. Subject specimens to 30 G's half sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. Component population limited to fuses and relays.																					

Electrical Tests			
7.7	Connection Resistance	Max voltage drop should be 100 mV.	Test conducted as per SAE J2030 Rev 2009-06
7.8	Dielectric Withstand Voltage	Two-minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 500 volts DC, Test between adjacent contacts.
7.9	Insulation Resistance	Insulation resistance- 100MΩ min. at 500VDC	EIA-364-21E. Measure by applying test potential between the adjacent contacts, and between the contacts and ground in the mated connectors.
7.10	Temperature Rise	T Rise and Derating Curve will be shown below after the test is performed.	Test conducted as per DIN EN 60512-5-1/2. Fully equipped housings energized at the rated current of the fuse at room temperature environment before excessive thermal degradation and or resistance begins to occur.

Receptacle: CuSn, Silver plated
 Wire Size: 0.35mm², FLRY
 Housing: PBT GF15
 Cover: PBT
 Fuse: 30A
 Relay: 12V(ISO Micro Relay)

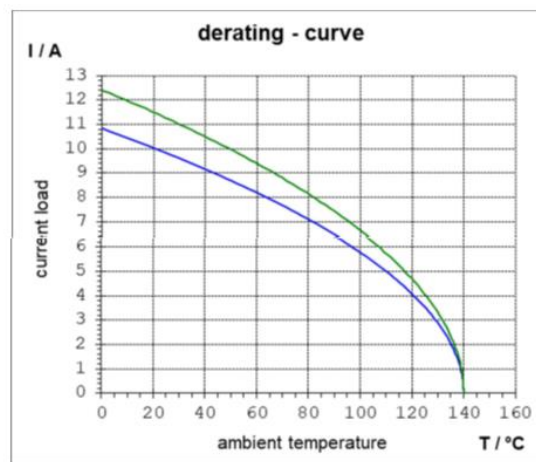
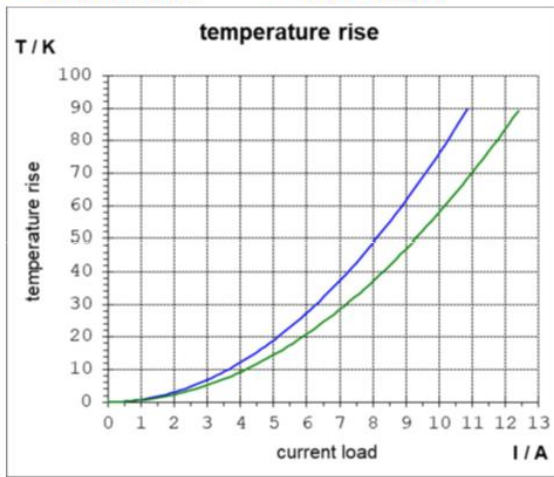


Test setup

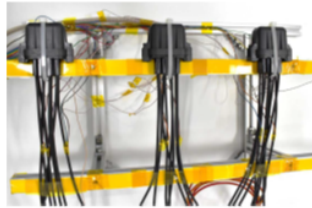


Thermocouple at Rec. Contact

— Relay contacts — Fuse contacts



Receptacle: CuSn, Silver plated
 Wire Size: 3mm², FLRY
 Housing: PBT GF15
 Cover: PBT
 Fuse: 30A
 Relay: 24V(ISO Micro Relay)

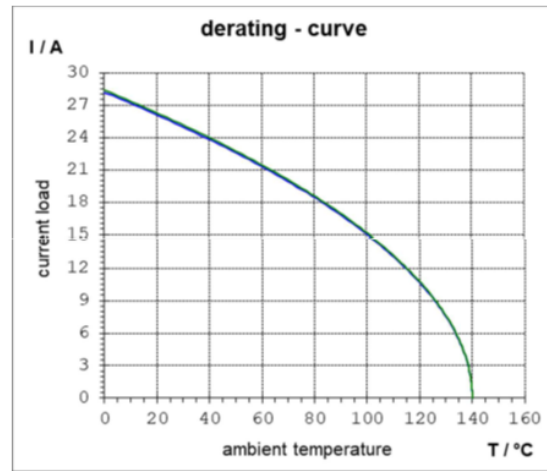
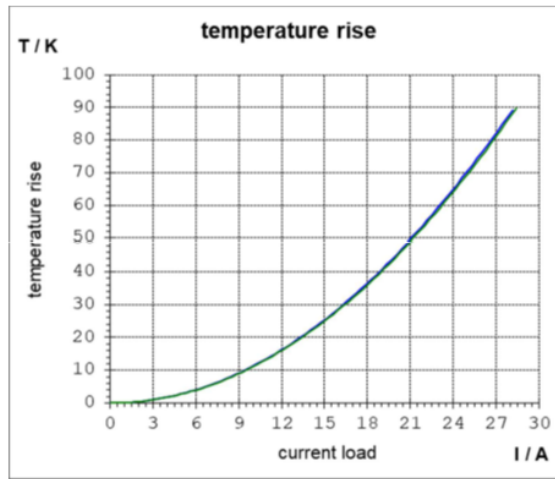


Test setup



Thermocouple at Rec. Contact

— Relay contacts — Fuse contacts



Environmental Tests

7.11	Humidity Temperature Cycling	7.8 to be performed before and after this test.	Conduct the humidity temperature cycling as per EIA 364-32F, Test Condition Method IV.
7.12	IPX7	No water ingress.	Test conducted as per IEC 60529. Fully equipped assemblies to be immersed in an enclosure of water at the depth of 1m for duration of 30 minutes.
7.13	IP6X	No dust ingress	Test conducted as per IEC 60529. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 μm and the nominal width of a gap between wires 75 μm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.

7.14	Thermal Shock	-	Test conducted as per EIA-364-32F. Tmin= -40 Deg C Tmax= +125 Deg C Dwell Time= 30 min. Transfer time= 5 min. Cycles = 10
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8. Test Sequence:

Test or Examination	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Sequence 5	Sequence 6	Sequence 7
Samples Size	3	3	3	5	5	5	5 In each direction
Visual examination	1,3	1,7	1,7	1,4	1,5	1,6	1,3
Contact Retention Force				2			
Random Vibration		3					
Mechanical Shock		5					
Durability						5	
Cover locking mechanism strength				3,5			
Mounting Feature Mechanical strength							2,4
Connection resistance (Dry Circuit Test)		2,4,6				2,4	
Insulation Resistance			3,6				
Temperature Rise	2						
Dielectric Withstanding Voltage					2,4		
135% Short Circuit Test						3	
Degrees of Protection IPX7			4				
Degrees of Protection IP6X			5				
Voltage Drop							
Thermal Shock			2				
Humidity-Temperature Cycling					3		

Table 1