Grip family

1. SCOPE

1.1. Content

This specification covers performances, tests and quality requirements of the: “Push Grip” and “Flex Grip” Connector with part number 2324697-y and 2337895-y, applied according application specification 114-133106 and 114-133XXX.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon successful qualification testing.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents and forms constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 114-133106: Application Specification (for Push Grip)
- 501-TBD: Qualification Test Report Push Grip (pending)
- C-2324697: Customer Drawing Push Grip

2.2. Forms

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2.3. Industry Documents

- UL 486C
- IEC 60998-2-2:2004

2.4. Reference Document

- 109-197 Test Specification (TE Test Specification vs EIA and IEC Test Methods)
- ZMVV.E13288 Wire Connectors and Soldering Lugs, UL file

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Ratings

- 2324697-y:

  Suitable for 2.5 mm² (14 AWG) to 0.5 mm² (20 AWG).

  2.5 mm² (14 AWG) to 0.5 mm² (20 AWG) solid / tinned.
  2.5 mm² (14 AWG) & 1.5 mm² (16 AWG) stranded, 18 strands or less.
  1 mm² (- AWG) & 0.75 (18 AWG) mm² stranded, 7 strands or less.

- 2337895-y:

  Suitable for 4 mm² (12 AWG) to 0.5 mm² (20 AWG).

  4 mm² (12 AWG) to 0.5 mm² (20 AWG) solid / tinned.
  4 mm² (12 AWG) & 1.5 mm² (16 AWG) stranded, 18 strands or less.
  1 mm² (- AWG) & 0.75 (18 AWG) mm² stranded, 7 strands or less.

Part number	Voltage	Current*	Temperature
2324697-y	450 V (IEC) 600 V (UL)	20 A maximum	-40 °C to 105 °C Maximum ambient temperature 75 °C
2337895-y	450 V (IEC) 600 V (UL)	?? A maximum	??

* Current is limited by the wire's current carrying capacity!

3.3. Test Requirements and Procedures Summary

Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Visual examination of product	Meets requirements of product drawing. The product shall not have visible marks of damage, break, or defect before and after the execution of the tests.	Visual, dimensional and functional inspection, according to the Quality Inspection Plan.
ELECTRICAL		
Contact resistance	Maximum resistance: 100 mΩ. Open voltage: 20 mV maximum Current 100 mA maximum	EIA-364-23, Option 1
Insolation resistance	500 MΩ minimum	IEC 60512-3-1 Test 3a
Temperature rise	ΔT < 30 ºC 0.2 mm² (24 AWG) 6 A → t.b.d A 0.34 mm² (22 AWG) 8 A → t.b.d A 0.5 mm² (20 AWG) 10 A → t.b.d A 0.75 mm² (18 AWG) 15 A → t.b.d A 1 mm² (- AWG) 17 A → t.b.d A 1.5 mm² (16 AWG) 19 A → t.b.d A 2.5 mm² (14 AWG) 24 A → t.b.d A	EIA 364-70, Method 2

Dielectric strength	No flashover or breakdown shall occur during the test	UL 486C § 9.5 3500 V ac for 1 minute after 1 minute rapidly increase to 8000 V ac.
MECHANICAL		
Cable pull force (axial)	0.2 mm^2 (24 AWG) minimum 25 N 0.34 mm^2 (22 AWG) minimum 40 N 0.5 mm^2 (20 AWG) minimum 50 N 0.75 mm^2 (18 AWG) minimum 50 N 1 mm^2 (- AWG) minimum 60 N 1.5 mm^2 (16 AWG) minimum 70 N 2.5 mm^2 (14 AWG) minimum 120 N	UL 486C § 9.3.4
Cable pull force (90 °)	0.2 mm^2 (24 AWG) minimum 25 N 0.34 mm^2 (22 AWG) minimum 40 N 0.5 mm^2 (20 AWG) minimum 50 N 0.75 mm^2 (18 AWG) minimum 50 N 1 mm^2 (- AWG) minimum 60 N 1.5 mm^2 (16 AWG) minimum 70 N 2.5 mm^2 (14 AWG) minimum 120 N	UL 486C § 9.3.4
Vibration test	No visual damage. Discontinuity <1 µsec	IEC 60068-2-6 Duration: 4 hours for each axis (x, y, z). Frequency: 10-200-10 Hz Peak to peak amplitude 1,0 mm Speed: 1 octave/min. Acceleration: 5 g
Impact	No visual damage Maximum resistance after testing not exceeding 100 mΩ.	One time dropped from 5 meters on concrete floor
ENVIRONMENTAL		
Cold	No visual damage Maximum resistance after testing Not exceeding 100 mΩ.	IEC 60068-2-1 Temperature: -40 ºC Duration: 2h
Dry heat	No visual damage Maximum resistance after testing Not exceeding 100 mΩ.	IEC 60068-2-2 Temperature: 100 ºC Duration: 2h
Damp heat	No visual damage Maximum resistance after testing Not exceeding 100 mΩ.	IEC 60068-2-3 Temperature: 40 ± 2 °C Relative humidity: 93 3/-2 % Duration: 4 days
Thermal shock	No visual damage Maximum resistance after testing Not exceeding 100 mΩ.	IEC 60068-2-14, Test Na TA = -40 ºC; TB = 100 ºC 100 cycles, 30 min/30 min
Thermal cycling with current load cyclic	T_a = 20 °C (t = 30 min. including transition) T_b = 50 ºC (t = 30 min. including transition) Number of cycles: 192 Temperature transition rate: 5 ºC/min. Total cycle duration: 1 h Current: 1,5 A for 45 min / 0 A for 15 min.	IEC 60068-2-14, test Nb IEC 60512-9-5 Test 9e

NOTE

Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.

3.4. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP (a)			
	A	B	C	D
	TEST SEQUENCE (b)			
Visual examination of product	1,8	1,17	1, 9	1, 7
Contact resistance	2, 5, 7	2, 6, 8, 10, 12, 16	2, 4, 6, 8	2, 4, 6
Insolation resistance		3, 13		
Temperature rise		5, 15		
Dielectric strength	3, 6	4, 14		
Cable pull force (axial)			7	
Cable pull force (90 °)				5
Vibration test	4			
Impact			5	
Cold		7		
Dry heat		9		
Damp heat		11		
Thermal shock			3	
Thermal cycling with current load cyclic				3

NOTE

(a) Minimum samples: 5 of each part number per test group:

2324697-2 Test group A, C & D with the smallest and largest wire size, test group B should be done with all wires sizes with holes for thermos sensors and 5 samples without for the smallest and largest wire to do the Dielectric strength testing and Insulation Resistance.

2-2834245-1 Test group A, C & D with the smallest and largest wire size, test group B should be done with all wires sizes.

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