1. SCOPE

1.1 Content

This specification covers the performance, tests and quality requirements for 2.8, 6.3, 7.9 and 9.5 mm Fastin-Faston terminals. These terminals are suitable for automotive and consumer goods applications.

1.2 Qualification

When tests are performed on the subjected product line, the procedure specified in TE 109-197 specification shall be used. All be performed using the applicable inspection plan and product drawing.

2. 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 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.

2.1 TE Documents

- 109-1 : General Requirements for Testing.
- 109-197 : Cross reference between TE Specification and EIA and IEC Test Methods
- 114-2025 / 114-2065 / 114-2071: Application specification - crimp height must be in accordance to the dimension specified on the relevant applicator log.

3. REQUIREMENTS

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

3.2 Material

- Terminals : Brass tin or silver plated Phosphor Bronze, tin or silver plated
- Housing : According to product drawing.

3.3 Ratings

a) Maximum operating temperature (ambient temperature plus temperature rise due to electric current flow)

- Brass or Phosphor Bronze without finish – 90°C
- Brass or Phosphor Bronze tin plated – 100°C
- Brass or Phosphor Bronze silver plated – 130°C

b) Current : see table 1 for applicable maximum current (ambient temperature 23°C, single contact).

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ECOC : LE10

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3.4 Performance and test description

Contacts shall be designed to meet the electrical, mechanical and environmental performance requirements specified in the test requirements / procedures summary.

3.5 Test requirements and procedures summary

TEST DESCRIPTION	REQUIREMENTS	PROCEDURE
Examination of product	Meets requirements of product drawing and TE specification (item 2.1, C)	Visual, dimension and functional per applicable quality inspection plan.
Electrical		
Voltage drop, detachable connection	7 mV maximum measured one hour after current been applied	Measure, voltage drop of contacts acc. To figure 2, I = 6A for 2,8 Fastin-faston terminals I = 10A for 4,6 / 6,3 / 9,5 Fastin-faston terminals.
Voltage drop: non detachable connection Wire (mm²) 0,25 0,5 0,75 1,0 1,5 2,5 4,0 6,0	Voltage drop (one hour after current had been applied) (m V) 9,0 7,0 6,5 6,0 5,0 4,0 2,5 1,5	Measure, voltage drop of contacts acc. To figure 3, I = 6A for 2,8 Fastin-faston terminals I = 10A for 6,3 / 7,9 / 9,5 Fastin-faston terminals
Temperature rise vs. current	Contacts temperature should not exceed values specified on item 3.3	Subject mated contacts to currents acc. To table 1 during 1 hour for reference see AMP 109-45

Figure 1

Contact Type	Material	Maximum current (A) Wire (mm²)						
		0,5	0,75	1,0	1,5	2,5	4,0	6,0
2,8	Cu Zn Cu Sn	6	8	8	-	-	-	-
6,3	Cu Zn Cu Sn	6	8	11	14	16	25	25
7,9	Cu Zn Cu Sn	6	8	11	14	20	28	28
9,5	Cu Zn Cu Sn	-	-	-	-	-	28	32

Current overloaded	Voltage drop < 2,0 initial requirements	Apply 1.5 x current specified on table 1 during one hour

Table 1 – current – limit

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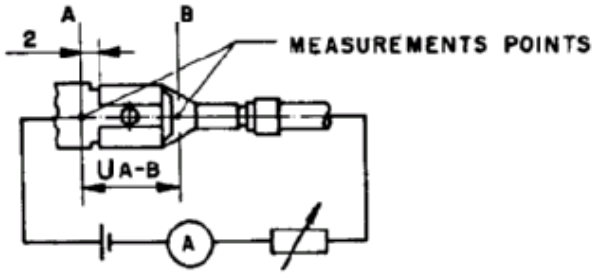
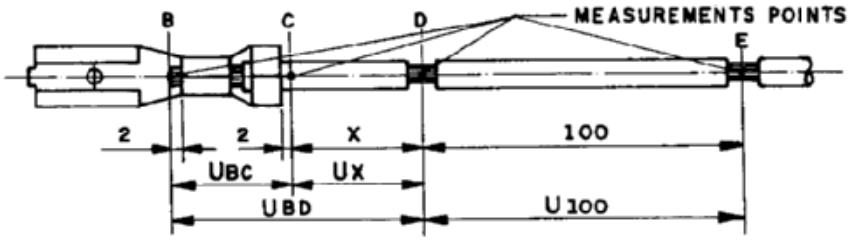


Figure 2
Voltage drop detachable connection



Voltage drop, non detachable connection

Ubc = Ubn - Ux (mV)

$$Ux = U100 - \frac{x}{100} \text{ (mV)}$$

U100 = voltage drop of 100mm wire length.
X = wire length (mm)

Mechanical			
Test Description	**Requirements**		**Procedure**
Mating force	Insertion force acc. to product drawing		Terminal Fastin-Faston rec. to be mated with plain-tab (dimensions acc. to din 46.244) Tab material shall have 60 Rockwell B minimum hardens. Insertion speed rate 25,4mm / min.
Unmating force	Unmating force should be according to product drawing (1st and 10 th.).		Unmating conditions: same as mating.
Crimping tensile	Wire	Newton min.	Determine crimping tensile at a rate of 25mm / min AMP spec. 109-16
		2,8	6,3 / 7,9 / 9,5
	0,25	40	40
	0,5	80	80
	0,75	85	120
	1,0	120	160
	1,5	-	200
	2,5	-	250
	4,0	-	350
	6,0	-	400
Vibration	Mechanical and electrical performances within the initial requirements		Subject recep. Mated with tab to 10-100-10Hz at 10g acceleration; 2 hours in X, Y, and Z directions rate 1 octave / min, amplitude of oscillation 0,75 mm

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Cont.

Thermal shock	Voltage drop <2 x initial requirements	5 cycles: - 2h at 100°C - 2h at 100 ± 2°C - 2h at 40 ± 2°C and 90-95%humidity - 2h at –30° 12°C
Humidity - temperature cycling	After test, samples should be tested per current cycling procedure	Subject mated contacts to test acc. to DIN IEC 68 part 2 and X
Current cycling	Voltage drop<2 x initial requirements	Subject mated contacts to 500 cycles (one hour each) acc. to figure 4.
Environmental		
Test Description	**Requirements**	**Procedure**
Temperature life	Voltage drop < 2.0 x initial requirements	200 hours at 90°C(mated contacts) ref. spec. AMP 109-43
Salt spray	Voltage drop < 1,25 x requirements	96 hours acc. to109-24
Additional test (automotive) sulfur dioxide exposure	Voltage drop < 1,5 x initial requirements	Subject mated contact to 6 cycles of 24 hours acc. to DIN 50018

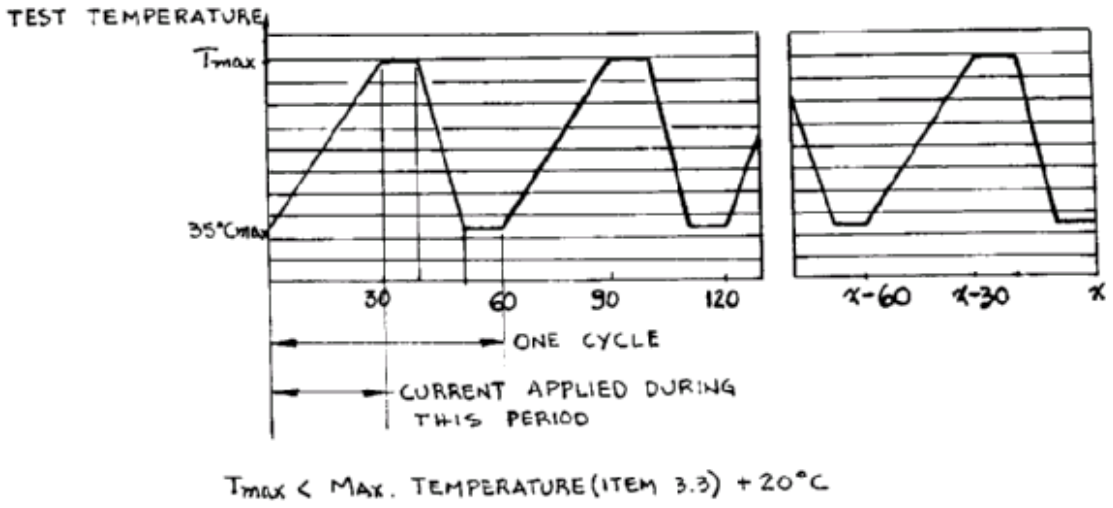

Figure 4
Typical cycle for cycling test

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3.6 Test Sequence

Group	Testing type	Sequence	Test
1	Mechanic	1	Mating force Unmating force Crimping tensile
2	Electric-thermal	1 2 3 4 5 6 7	Voltage drop-detachable connection Voltage drop-non connection Temperature rise Vs current Humidity-temperature cycling Current cycling Voltage drop-detachable connection Voltage drop non-detachable connection
3	Corrosion	1 2 3 4 5 6	Voltage drop-detachable connection Voltage drop-non detachable connection Salt spray Sulfur dioxide exposure Voltage drop-detachable connection Voltage drop-non detachable connection
4	Vibration	1 2 3 4 5	Voltage drop-detachable connection Voltage drop-non detachable connection Vibration Voltage drop-detachable connection Voltage drop-non detachable connection
5	Electric Overload	1 2 3 4 5	Voltage drop-detachable connection Voltage drop-non detachable connection Current overload Voltage drop-detachable connection Voltage drop-non detachable connection
6	Temperature line	1 2 3 4 5 6 7 8	Insertion force / extraction force Voltage drop-detachable connection Voltage drop-non detachable connection Temperature line Voltage drop-detachable connection Voltage drop-non detachable connection Insertion force / extraction force Crimping tensile
7	Thermal shock	1 2 3 4 5 6 7 8	Insertion force / extraction force Voltage drop-detachable connection Voltage drop-non detachable connection Thermal shock Voltage drop-detachable connection Voltage drop-non detachable connection Insertion force / extraction force Crimping tensile

Revision Record					
Rev.	**Date**	**Description**	**Edited**	**Checked**	**Approved**
A	25-May-2012	General revision	C.Cassali	H.Canteri	W.Stefani

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