TAB 9.5x0.8mm

PRODUCT SPECIFICATION
FOR
TAB 9.5X0.8 FLAT CONTACT

Table of Contents

1. INTRODUCTION

1.1 Content

This specification describes the design, the characteristics, the versions, the tests and the quality requirements of the 9.5x0.8 mm Flat Contact.

1.2 Product Numbers

The various versions of the contact system are shown in the table of the product numbers (Table 2)

2. APPLICABLE DOCUMENTS

The following mentioned documents are part of this specification if especially referred to them. In the case of a conflict between this specification and the specified documents, this specification has priority.

2.1 TE Connectivity Specifications

A. TE Spec. 114-94179 Application specification for the 9.5 x 0.8 mm Flat Contact

B. TE Spec. 108-94150 Product specification for the MCON-9.5 FOR 0.8mm TAB

C. TE Spec. 108-18630 Product specification for the MCP 9.5 FLAT TYPE RECEPTACLE

2.2 Other Standards

A. DIN 1 777/01.86 Dimensions and permissible deviations

B. DIN 17 224/02.82 spring wire and spring clip made of stainless steel

C. DIN 17 666/12.83 Low-alloy copper alloys

D. DIN 17 670 Strips and plates made of copper and wrought copper alloys
Part 1/12.83: Characteristics
Part 2/06.69: Technical conditions of delivery

E. IEC 60512 Measuring methods and testing procedures for electromechanical components

F. IEC 60068 Basic environmental testing procedures

G. IEC 60068 Part 2: Solderless connections

H. DIN 72 551/01.92 Part 6: unshielded Low-voltage cable (FLR)

J. DIN ISO 6722/02.93 Part 3: Electrical Wires (FLK)

K. PROD 9507: DAF standard for electric cables, single conductor

3. DESCRIPTION

3.1 Design and construction

The design and dimensions of the 9.5 x 0.8 mm Flat Contact are shown in the product drawings and are inspected in accordance with the TE Quality Guide-lines. The 9.5 x 0.8 mm Flat Contact is made of a stamped and formed body. The front part of this contact, with a width of 9.5mm and a thickness of 0.8mm, is the contact area. The body of the contact is assembled with a steel cantilever spring. Two locking lances which lock the contact in his chamber are provided on this cantilever spring. A short and wide connection between the crimp and the contact body ensures a low contact resistance.

The suitable mating parts are Flat Socket Contacts, for example MCON-9.5, MCP 9.5 or MPT.

3.2 Materials

A. Basic material: - wrought copper alloy to TE specifications
B. Contact plating: - tin
C. Cantilever spring: - stainless steel

4. REQUIREMENTS

4.1 General Conditions

All tests executed with the contact system must comply with the inspection plan in this specification.

- Wire cross section: see Product Numbers
- Storage temperature: -40℃ to 130℃
- Wires: FLR to DIN 72 551 Part 6; FLK to DIN ISO 6722 Part3
- Crimp with specified TE crimping tools
- Crimp-Quality to TE Specifications
- Maximum permissible voltage to IEC 664/IEC 664A (DIN VDE 0110)
- Necessary mating parts should be made of low-alloy wrought copper alloys.
- The housings used must comply with TE Specifications
- The test parts must have no visible damages
- The test parts must be in accordance to the current Rev. of the drawing
- For the tests are only parts out of series allowed
- For all tests a statistical sufficient quantity of parts is required
- Electrical and mechanical requirements and the environmental behaviour depending on the mating part (for example MCP 9.5)

4.2 PERFORMANCE

Current carrying capacity	max. 100 A Depending on the mating part, see 4.3.1 Contact in free air (spacing 40mm), wire size 10,0 mm2, at room temperature. Test acc. to IEC 60512-3/DIN 41 640 Part3
Maximum mating cycles	10 for tin-plated contacts
Temperatur range	-40℃ to 130℃ for tin-plated contacts

4.3 TEST REQUIREMENTS AND PROCEDURE SUMMARY

4.3.1 **ELECTRICAL REQUIREMENTS**		
TEST DESCRIPTION	**REQUIREMENTS**	**PROCEDURE**
Contact resistance		Depending on the mating part, for example MCON-9.5 (see TE-Spec. 108-94150) or MCP 9.5 (see TE-Spec. 108-18630)
Crimp resistance	See Table 1	The crimp resistance is measured on contacts terminated with TE crimp tools in accordance with TE Spec. 114-94179. Test acc. to DIN IEC 60512-5-1 / -5-2 (see Fig.1)
Current carrying capacity		Depending on the mating part, for example MCON-9.5 (see TE-Spec. 108-94150) or MCP 9.5 (see TE-Spec. 108-18630)
Current ratings depending as a function of the ambient temperature		Depending on the mating part, for example MCON-9.5 (see TE-Spec. 108-94150) or MCP 9.5 (see TE-Spec. 108-18630)

4.3.2	MECHANICAL REQUIREMENTS	
TEST DESCRIPTION	**REQUIREMENTS**	**PROCEDURE**
Mating force		Depending on the mating part, for example MCON-9.5 (see TE-Spec. 108-94150) or MCP 9.5 (see TE-Spec. 108-18630)
Unmating force		
Crimp extraction force	See Table 1	Measure the extraction force at a rate of 25mm/min. in accordance to DIN IEC 352 Part 2.
Contact retention force in the housing	Contact retention force in the cavity without second contact retention F_1 > 150 N Retention force of the second contact retention without function of the locking lance F_2 > 100 N	Measure the retention forces at a rate of 25mm/min Execute the test in a steel cavity Contact retention force in plastic housing: see housing specification

Crimp extraction forces and crimp resistance		
Test description	**Wire range [mm²]**	**Test data**
Crimp extraction force	>10 - 16	> 1500 N
Crimp resistance	>10 - 16	$R_c \leq$ 0.1 mΩ

Table 1

4.3.3 Environmentals

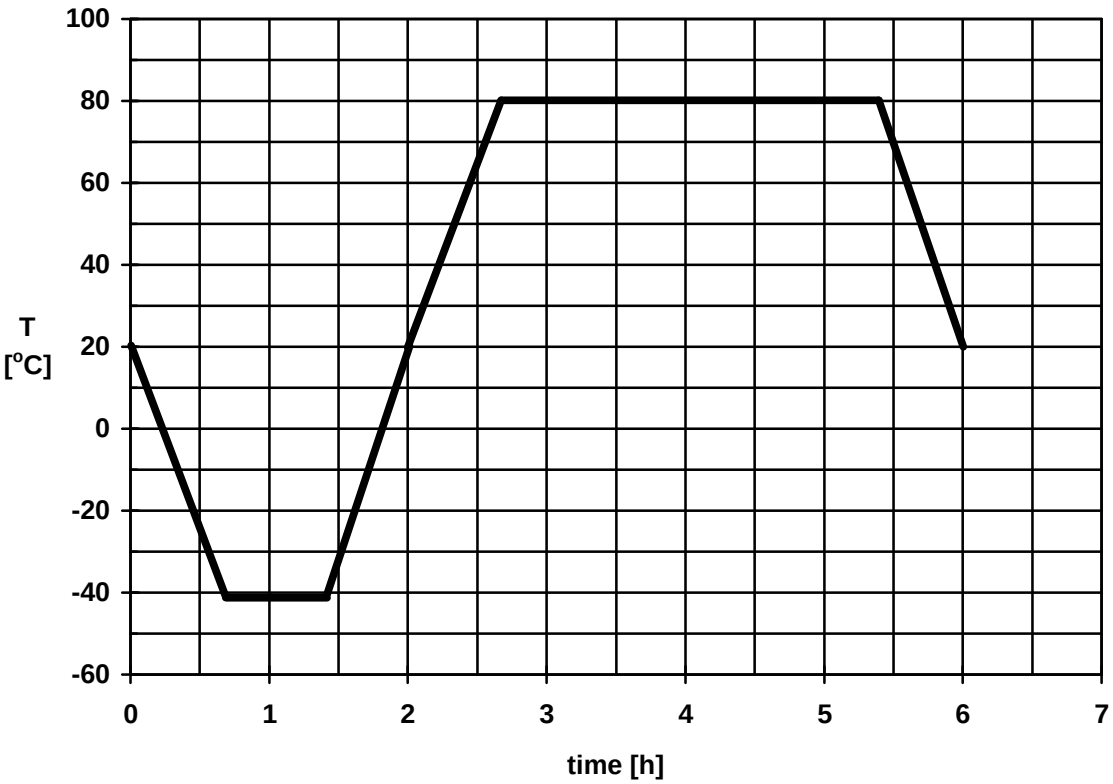
Test Description	Requirements	Procedure
Electrical stress test	At the end of the entire test, the total contact resistance (contact + crimp resistance) shall not be more than 200% for tin-plated contacts higher than the initial value	Condition and sequence of the test: see 4.4 Temperature: -40℃ to 80℃ per 6h; see diagram 1 Current during the warm phase: see derating curve at 80℃ ambient temperature (see diagram 3)
Salt fog in changing climate	At the end of the entire test, the total contact resistance of tin plated contacts shall not be more than 200% higher than the initial value At the end of the entire test, the total contact resistance of contacts plated with noble metals shall not be more than 100% higher than the initial value.	Condition of testing Samples installed in a complete housing. Measure in mated condition with housings snapped in. Sequence of testing see 4.4
Environmental simulation	The contact resistance of tin plated contacts shall not be more than 400% higher than the initial value. The contact resistance of contacts plated with noble metals shall not be more than 200% higher than the initial value.	Condition of testing Samples installed in complete housing. Measure in mated state with housings snapped in. Sequence of testing see 4.4
Dynamical-mechanical load	The contact resistance of contacts plated with tin shall not be more than 400% higher than the initial value. There should be no mechanical damage. Maximum duration of disconnection: t ≤ 1 µs	Condition of testing Monitor for discontinuities during the entire duration of the test. Samples installed in complete housing. Measure in mated state with housing engaged. Sequence of testing see 4.4 Test acc. to IEC 60068

4.4 Sequence of the performed tests

Test or Examination	Test Sequence			
	Test Group: Electrical Stress	**Test Group: Dynamical-mechanical load**	**Test Group: Salt fog in changing climate**	**Test group: Environmental simulation**
Visual inspection	1.|	1. | 6.	1. | 5.	1. | 8. |
Contact resistance to IEC 60512-2-2 / DIN 41 640 Part4	2. | 6.	2. | 5.	2. | 4.	2. | 5. | 7. 11. |
Thermal shock to IEC 60068-2-14, Na Duration: 144 Cycles / temperature: -40℃ to 130℃ 15 min per temperature step				3. |
Temperature cycling to IEC 60068-2-14, Nb Duration: 20 cycles; temp.: -40 to 120℃ per 3h per step				4. |
Salt mist to IEC 60068-2-11, Ka				9. |
Salt mist in changing climates to IEC 60068-2-52, Kb Severity; 1/duration: 1 cycle			3. |	
Industrial atm. IEC 60068-2-60, Test Ke/4 21d				10. |
Humidity temperature cycling acc. to IEC 60068-2-30, Db Duration: 5 cycles maximum temperature 55℃	4. |			
Storage in dry temperature acc. to IEC 60068-2-2, Bb Duration: 120h/temperature 120℃				6. |
Vibration test f: 10 to 1000 Hz Amplitude 0.75mm below fü = 58 Hz above fü: 5g (fü= transition frequency) Duration: frequency cycles per spatial axis 10 Sweep rate: 1 octave per minute		3. |		
Continual shocks, t = 6 ms, a = 50g Total number of shocks: 18 per spatial axis		4. |		
Temperature / current changing test 30 test cycles (1 test cycle:- 40℃ to + 80℃ per 6h, see diagram 1)	3. | 5.|			

Diagram 1

temperature- / current cycle

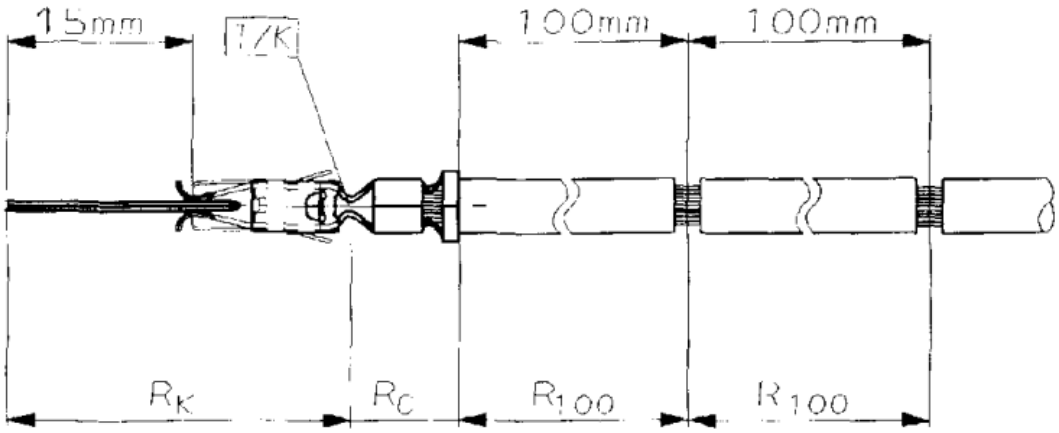


Product overview table 2:

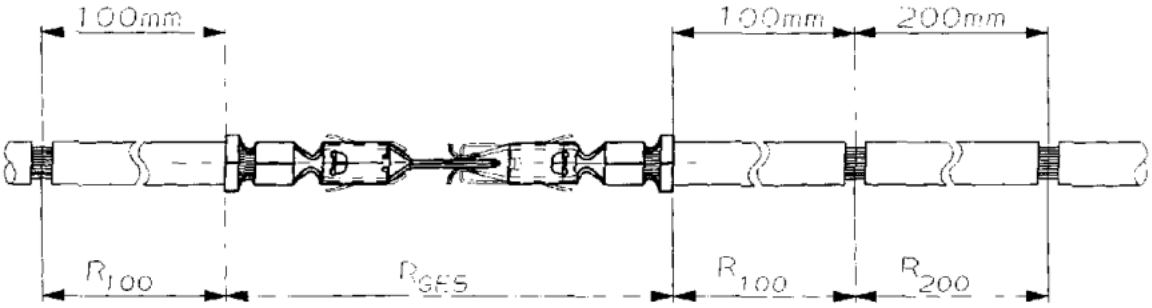
Standard contact:

Wire sizes diameter [mm²]	Insulation diameter		Material and surface	Part No.			
	FLK [mm]	FLR [mm]		Strip variant	Loose piece	Crimping tool	Hand tool/ die
>10 -16	7.0-8.1	-	-1	2177213	-	1893357-1	-

Notes: Contact Dash-No´s: -1 CuSn0.15, pretinned



R_K - contact resistance
R_C - crimp resistance
R_{100} - resistance of 100mm wire length



R_{GES} - total contact resistance
R_{100} - resistance of 100mm wire length
R_{200} - resistance of 200mm wire length

Fig. 1

Measurement setup for crimp and contact resistance

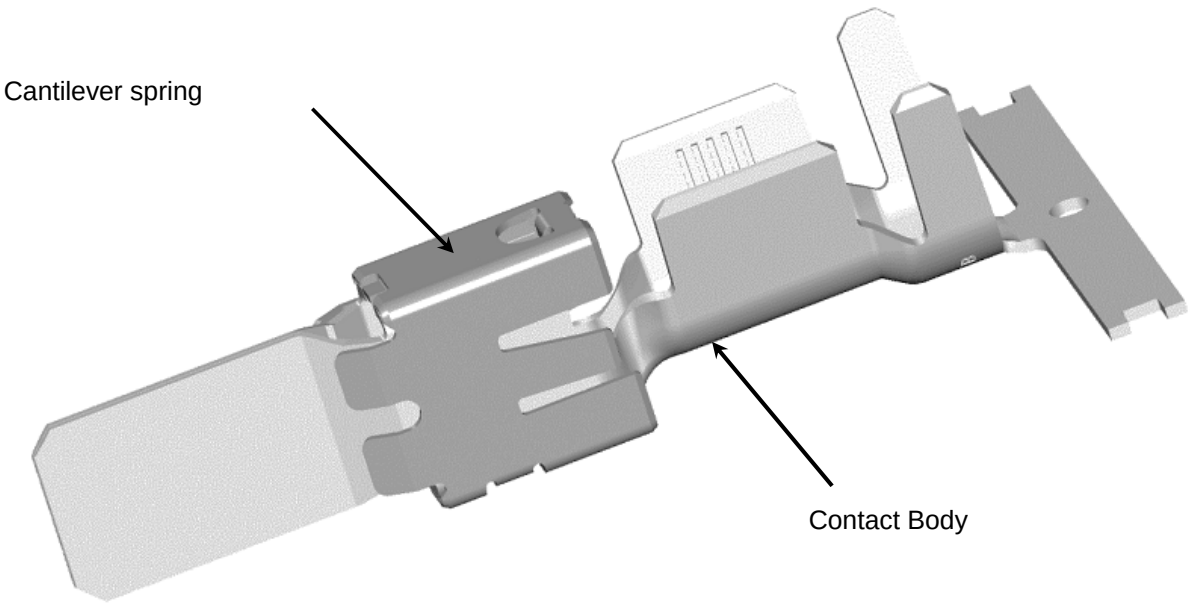


Fig. 2

Contact design and construction

Revision history:

Revision	Description	Name	Date
A	First release	Pavlicek	21-OCT-13