E-SPRING CONTACT* P.N. 336076-3

1. INTRODUCTION

1.1 Purpose

Testing was performed on E-SPRING CONTACT Receptacle to determine its conformance to the requirements of AMP Product Specification 108-22128 Rev. G.

1.2 Scope

This report covers the electrical, mechanical and environmental performance of the E-SPRING CONTACT Receptacle manufactured by the Tyco Electronics AMP España S. A. The testing was performed between January 31, 2003 and September 9, 2003.

1.3 Conclusion

The E-SPRING CONTACT Receptacle P.N. 336076-3 meets the electrical, mechanical, and environmental performance requirements of AMP Product Specification 108-22128 Rev. G.

1.4 Product Description

The E-SPRING CONTACT is a receptacle for FASTON 6.35 tabs.
The contact material is brass tin plated. Tests tabs are brass according IEC 760.

1.5 Test Samples

The test samples were randomly selected from normal current production lots, and the following part numbers were used for test:

Test Group	Total Qty	Part Number	Description
1, 2, 3, 4	82	336076-3	E-SPRING CONTACT Receptacle. / 1.25 mm^2
1, 2, 3, 4	102	336076-3	E-SPRING CONTACT Receptacle. / 1.5 mm^2
4	10	336076-3	E-SPRING CONTACT Receptacle. / 1.75 mm^2
4	20	336076-3	E-SPRING CONTACT Receptacle. / 2.0 mm^2
1, 2, 3, 4, 6	106	336076-3	E-SPRING CONTACT Receptacle. / 2.50 mm^2
5	48	336076-3	E-SPRING CONTACT Receptacle.

Samples have been crimped with one and/or two standard size wires (0.5, 0.75, 1.0, 1.5 and 2.5 mm^2).

1.6 Qualification Test Sequence

TEST OR EXAMINATION	Test Group					
	1	2	3	4	5	6
	Test Sequence					
Product examination	1	1	1 - 5	1	1	1
Termination Resistance	2		2 - 4			
Temperature rise vs. Current		2				
Current Cycling			3			
Derating Curve						2
Crimp Tensile				2		
Insertion Forces					2	
Withdrawal Forces					3	

DR	DATE	APVD	DATE
A. Ruesca **	15/Sep/2003	J. Pelai **	15/Sep/2003

Rev. A, Issue New Release

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2. SUMMARY OF TESTING

2.1 Examination of product – All Groups

All samples submitted for testing were selected from normal current production lots. They were inspected and accepted by the product Assurance Department.

2.2 Termination Resistance – Groups 1, 3

All initial termination resistance measurements at specified current were less than:
0.85 mOhm for 1.25 mm^2 wire.
0.75 mOhm for 1.50 mm^2 wire.
0.63 mOhm for 2.50 mm^2 wire.
All final termination resistance measurements at specified current were less than:
1.1 mOhm for 1.25 mm^2 wire.
1.0 mOhm for 1.50 mm^2 wire.
0.8 mOhm for 2.50 mm^2 wire.

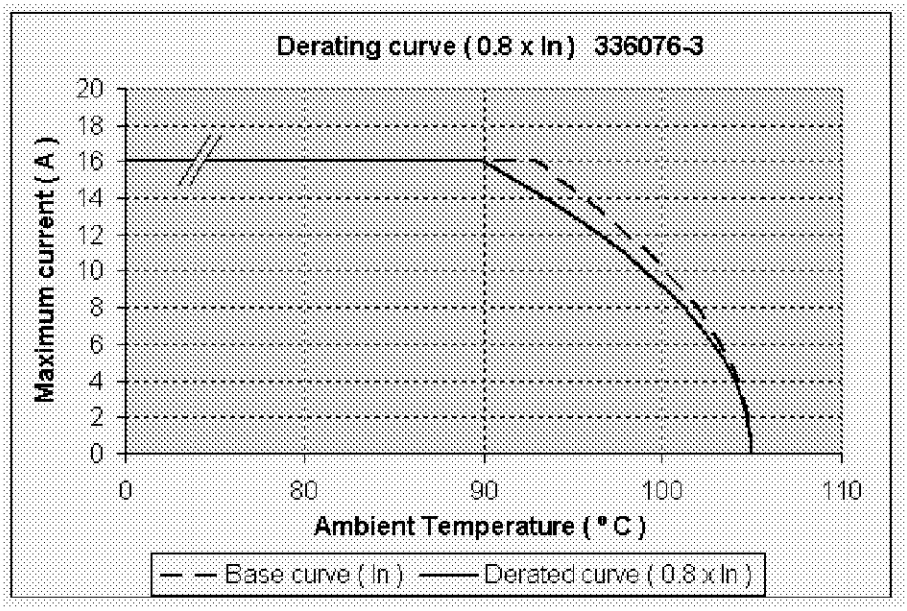
2.3 Temperature Rise vs. Current – Group 2

All samples had a temperature rise of less than 30° C above ambient initially when specific current was applied.

2.4 Current Cycling – Group 3

No evidence of physical damage was visible to test samples, after 500 cycles of cycling the current on and off. All samples had a temperature rise of less than 85° C above ambient and had less than 15° C change in temperature rise between 24^{th} and 500^{th} cycle when 200 % of specific current was applied. All samples had contact resistance values below the maximum limit required after 24^{th} and 500^{th} cycles.

2.5 Derating Curve – Group 6



$I\ max \approx 4.6 \sqrt{(105 - Ta)}$ $I\ max\ (derated) \approx 3.7 \sqrt{(105 - Ta)}$

I max = lower or equal than 16 A.

2.6 Crimp Tensile – Group 4

All tensile values were greater than 60 N for 0.50 mm^2, 80 N for 0.75 mm^2 , 110 N for 1.0 mm^2 and 150 N for 1.50 mm^2, and 230 N for 2.5 mm^2

2.7 Insertion forces- Group 5

All insertion forces were less than 35 N.

2.8 Withdrawal forces – Group 5

All withdrawal forces were higher than 45 N and lower than 80 N for the first operation and higher than 20 N for the sixth, eighth and tenth withdrawal.

3. TESTS METHODS

3.1 Examination of product (Reference Standard: IEC 60512, test 1a, 1b)

Product drawings and inspections plans were used to examine the samples. They were examined visually and functionally.

3.2 Termination Resistance (Reference Standard: IEC 60512, test 2b and IEC 760)

Termination resistance measurements were made using a four terminal technique (Figure 1).

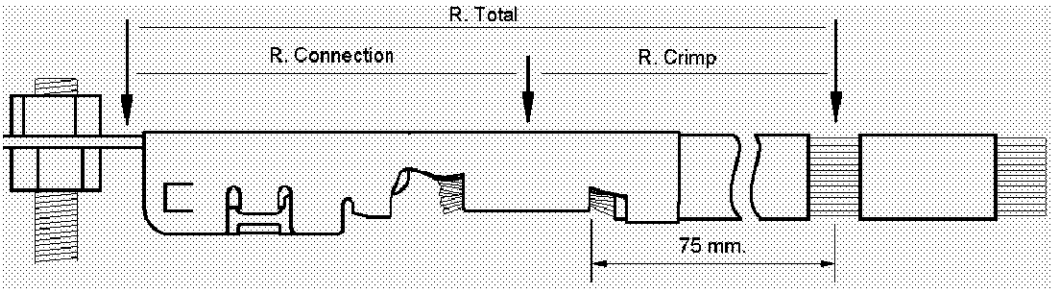


Figure 1

3.3 Temperature Rise vs. Current (Reference Standard: IEC 60512, test 5a and IEC 760)

Terminal temperature was measured while energised at test current. Temperature of the samples was measured after 30 minutes for stabilisation. The ambient temperature was subtracted from measured temperature of the specimen to find the temperature rise.

3.4 Current Cycling (Reference Standard: IEC 60512, test 9b and IEC 760)

The terminals were cycled on and off at 200% of specified current. Testing consisted of 500 cycles, with each cycle having current for 45 minutes and current off for 15 minutes. Temperature measurements were taken at 24 and 500 cycles.

3.5 Derating Curve (Reference Standard: IEC 60512 test 5b)

The contact temperature at several current steps was measured. The maximum allowed temperature minus the measured temperature increase was plotted vs. current.

3.6 Crimp Tensile (Reference Standard: IEC 60512 test 16b and IEC 760)

An axial load was applied to each sample at a rate of 50 mm per minute.

3.7 Insertion forces (Reference Standard: IEC 60512 test 13b and IEC 760)

Insertion forces were measured by inserting a test tab into the receptacle at a rate of 10 mm per minute.

3.8 Withdrawal forces (Reference Standard: IEC 60512 test 13b and IEC 760)

Withdrawal forces were measured by withdrawing a test tab from the receptacle at a rate of 10 mm per minute.