

Performance Specification: SIM VTAC HSD

REVIEW/REVISION DATE	REVISION CHANGE	REVIEWED/REVISED BY	APPROVED BY
12-15-14	Original Release	C. Church	Engineering Team
1-27-15	Content Edits	L. Dunton	Engineering Team
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3-14-18	Updated 3.5 & Added 3.8	C. Church	Engineering Team
2-26-20	Reformat/Style Change	F. Childress	K. Kenyon

1. Scope

1.1 Content

This specification covers the performance, tests and quality requirements for the VTAC HSD insert and connector system. The VTAC HSD insert is a separable electrical connection device utilizing 8 contacts housed within a hermaphroditic protective shroud. The individual inserts are to be used with connector modules with .125 inch centerline spacing.

1.2 Qualification Testing

All inspections shall be performed using applicable inspection plans and product drawings. Upon completion of qualification testing, the test results are documented in a Product Qualification Test Report.

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2. Applicable Documents

2.1 Content

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

2.2 Documents

A. EIA Standards

- EIA 364-5
- EIA 364-06
- EIA 364-13
- EIA 364-20
- EIA 364-21
- EIA 364-29
- EIA 364-70
- EIA 364-108

B. Product Drawings

Housing

- 510170101
- 510171101
- 510143001
- 510144001

Contacts

- 610151101
- 610151103
- 610151104
- 610151107

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3. Requirements

3.1 Design & Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawings.

3.2 Materials

A. Contacts

Alloy 7025

B. Insert Shroud

30% Glass Filled LCP

C. Potting Compound (Used in welded VTAC inserts)

OM 678

D. Housings

Zamak 3

3.3 Ratings

A. Voltage

600 Volt Max. DC or Peak AC, use of wire M22759/11

B. Temperature

-40°C to 125°C¹

-55°C to 125°C²

3.4 Performance & Test Description

Product is designed to meet electrical, mechanical, and environmental requirements specified in Table 3-1. Unless otherwise specified, all tests should be performed at free air, room temperature, and ambient environmental conditions.

¹ Rating applies to VTAC products that use potting compound OM 678, which has a -40°C lower limit.

² Rating applies to VTAC products that do not require the use of potting compound OM 678.

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3.5 Test Requirements & Procedures Summary

TABLE 3-1	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
PRELIMINARY	Examination of Product	Meets requirements of product drawing ³	Visual, dimensional, and functional examination per applicable quality inspection plan
ELECTRICAL	Contact Resistance	30 Ω Maximum	EIA-364-06
	Insulation Resistance	1000 Ω minimum	EIA-364-21: Test between adjacent contacts assembled in housing at 500VDC
	Dielectric Withstanding Voltage	1050 VDC test voltage at sea level	EIA-364-20: Test between adjacent contacts at 0.5 mA
	Crosstalk	-30dB to 6.25 GHz -40dB to 6.25 GHz	Cross talk between adjacent differential pair within the same insert Cross talk between differential pair in adjacent inserts
	Impedance	100Ω ±10Ω Per Differential Pair	--
	Insertion Loss	-1dB to 6.25 GHz	--
MECHANICAL	Durability	See test sequence: Table 3-2	EIA-364-09: Mate and un-mate sample for 150,000 cycles
	Retention Force: Receiver Contact	Contact shall not dislodge from module	EIA-364-29: Apply axial load of 5 lbs to contact
	Retention Force: ITA Contact		
	Insertion Force: Receiver Contact	Force to insert contacts into module ≤ 1.5 lbf	EIA-364-05
	Insertion Force: ITA Contact		
	Mating Force	0.75 lbf Max per insert	EIA-364-13: Measure force necessary to mate samples at a normal rate of engagement of the ITA
	Unmating Force	≤ 1 lbf per insert	EIA-364-13: Measure force necessary to un-mate samples at a normal rate of disengagement of the ITA

³ Shall meet visual requirement, show no physical damage and shall meet requirement of additional tests as specified in Test Sequence in Table 3-2.

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3.5 Test Requirements & Procedures Summary

TABLE 3-1	TEST DESCRIPTION	REQUIREMENT	PROCEDURE
ENVIRONMENTAL	Vibration	Sine 15 g's, 10-2000 Hz Random 11.6 g's, 50-2000 Hz	Mil-STD-1344, Method 2005.1
	Shock	50 g /11 ms, ½ Sine Wave	Mil-STD-1344, Method 2004, Test Condition A

3.6 Product Qualification and Requalification Test Sequence

TABLE 3-2	TEST GROUP		
	I	II	III
Characteristic Impedance	2, 11		
Contact Resistance		4, 10	
Cross Talk Between Pairs (Adjacent Inserts)	4, 13		
Cross Talk Between Pairs (Same Insert)	5, 14		
Dielectric Withstanding Voltage		5, 11	
Durability	8, 15	7	
Examination of Product	1, 16	1, 13	1
Insert Insertion Force			2
Insert Retention			3
Insertion Loss	3, 12		
Insulation Resistance		6, 12	
Mating Force	6, 9	2, 8	
Un-mating Force	7, 10	3, 9	

Numbers indicate the sequence in which the tests are preformed. For test group sample selection see 4.1

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3.7 Contact Resistance Measurement Setup

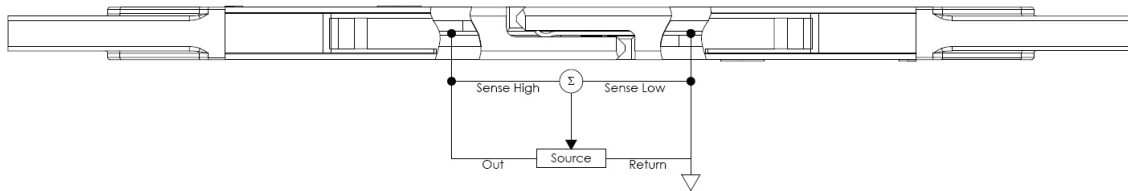


Figure 1: Contact resistance measurement setup

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4. Quality Assurance Provisions

4.1 Qualification Testing

A. Sample Selection

Samples shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing samples as specified in Table 3-2.

4.2 Requalification Testing

If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate re-qualification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

4.3 Acceptance

Acceptance is based on verification that product meets requirements of Table 3-1. Failures attributed to equipment, test set-up or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before re-submittal.

4.4 Quality Conformance Inspection

A Certificate of Conformance (C of C) dimensional inspection must be completed for all samples prior to Qualification testing. The applicable quality inspection plan will specify sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with applicable product drawing and this specification.