Sliding Power Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for Sliding Power Connector.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 3 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

- 114-128067: Application Specification (Sliding Power Connector)
- 501-128066: Qualification Test Report (Sliding Power Connector)

2.2. Industry Documents

- EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Document

- 109-197: Test Specification (TE Test Specification vs EIA and IEC Test Methods)

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

Voltage	Current	Temperature
300V, AC or DC	75A	-40 to 125°C

Figure 1

3.3. Test Requirements and Procedures Summary

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

TEST DESCRIPTION	REQUIREMENT	PROCEDURE
Initial examination of product	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional inspection per product drawing.
Final examination of product	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Low level contact resistance	1 milliohm maximum initial per circuit with shortest bus bar pcb in the circuit; 3 milliohms maximum final per circuit with shortest bus bar pcb in the circuit.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Contact resistance and Voltage drop at rated current	1 milliohm maximum per circuit and 0.05 volt maximum per circuit with shortest bus bar pcb in the circuit.	EIA-364-6. Subject specimens to rated current of 75 amperes.
Insulation resistance	1000 megohms minimum.	EIA-364-21. 500 volts DC, 2 minute hold. Test between adjacent contacts of mated specimens.
Dielectric withstanding voltage	One minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 1500 volts DC at sea level. Test between adjacent contacts of mated specimens.
Temperature rise vs current	30°C maximum temperature rise at rated current.	EIA-364-70, Method 1. Stabilize at rated current of 75 amperes until 3 readings at 5 minute intervals are within 1°C. Test with single energized contact and with all adjacent power contacts energized.
MECHANICAL		
Random vibration	No discontinuities of 1 microsecond or longer duration.	EIA-364-28, Test Condition VII, Condition Letter E. Subject mated specimens to 4.90 G's rms between 20 to 500 Hz. Fifteen minutes in each of 3 mutually perpendicular planes.
Mechanical shock	No discontinuities of 1 microsecond or longer duration.	EIA-364-27, Method A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Durability (preconditioning)	See Note.	EIA-364-9. Mate and unmate specimens with moving distance of 700mmX2 for 20 cycles of regular plugging at a rate of 200mm per second.
Durability	See Note.	EIA-364-9. Mate and unmate specimens with moving distance of 700mmX2 for 100 cycles for regular plugging at a rate of 200mm per second.
Compliant pin insertion	70N maximum per pin.	EIA-364-5. Measure force necessary to correctly apply a specimen to a printed circuit board at a maximum rate of 25.4mm per minute.
Compliant pin retention	6.7N minimum per pin.	EIA-364-29. Measure force necessary to remove a correctly applied specimen from its printed circuit board at a maximum rate of 25.4mm per minute.
Radial holes distortion	0.07mm maximum radial distortion; 0.008mm minimum copper holes wall remaining.	EIA-364-96. Measure at 0.2mm to 0.5mm depth.
Screw torque for Housing	Screw to be locked in with torque of 0.40N*m; Screw not to be slipping with torque of 0.60N*m.	Lock with screw of Ø3.0x8 and PCB of 2.2mm thickness.
ENVIRONMENTAL		
Thermal shock	See Note.	EIA-364-32. Subject mated specimens to 36 cycles between -40°C and 125°C.
Humidity-temperature cycling	See Note.	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25°C and 65°C at 80 to 100% RH.
Temperature life (preconditioning)	See Note.	EIA-364-17, Method A, Test Condition 5. Subject mated specimens to 125°C for 120 hours.

Temperature life	See Note.	EIA-364-17, Method A, Test Condition 5. Subject mated specimens to 125°C for 504 hours.
Mixed flowing gas	See Note.	EIA-364-65, Class IIA. Subject specimens with mated condition to environmental Class IIA for 336 hours.

Figure 2

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 3.

3.4. Product Qualification and Requalification Test Sequence

TEST OR EXAMINATION	TEST GROUP					
	1	2	3	4	5	6
	TEST SEQUENCE (a)					
Initial examination of product	1	1	1	1	1	1
Low level contact resistance	2,5		2,5,7			
Contact resistance and Voltage drop at rated current				8		
Insulation resistance		2,6				
Dielectric withstanding voltage		3,7				
Temperature rise vs current				2,7		
Random vibration				5		
Mechanical shock				6		
Durability (preconditioning)	3		3			
Durability				4		
Compliant pin insertion						2
Compliant pin retention						5
Radial holes distortion						3
Screw torque for housing					2	
Thermal shock		4				
Humidity-temperature cycling		5		3		
Temperature life (preconditioning)			4			
Temperature life	4					4
Mixed flowing gas			6			
Final examination of product	6	8	8	9	3	6

Figure 3

NOTE
(a) Numbers indicate sequence in which tests are performed.

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production. Test Groups 1 through 5 shall consist of 5 mated pair connectors. Test Group 6 shall consist of 10 Eye-of-the-Needles (cutout EON from the contact) tails tested on printed circuit boards.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 3.

4.2. Requalification Testing

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

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 2. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.