
CST-100 Type II .100 Inch Centerline Crimp-Snap Connectors

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for TE Connectivity (TE) CST-100 Type II .100 Inch Centerline Crimp-Snap Connectors. The CST-100 Type II product is a wire-to-board connection consisting of crimp-snap contacts seated in a housing that mates to .025 inch square post headers on .100 inch centerline and is designed to be terminated to 22 to 26 AWG wire.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 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 was completed in May02. The Qualification Test Report number for this testing is 501-542. Additional testing was completed on 10Jul09 and 27Jul10. This documentation is on file at and available from Engineering Practices and Standards (EPS).

2. APPLICABLE DOCUMENTS

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 conflict between the requirements of this specification and the 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

- 102-950: Quality Specification (Qualification of Separable Interface Connectors)
- 109 Series: Test Specifications as indicated in Figure 1
- 114-13036: Application Specification (CST-100 II Connectors)
- 501-542: Qualification Test Report (CST-100 Type II .100 Inch Centerline Crimp-Snap Connectors)

2.2. Industry Standard

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

2.3. Reference Document

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

3. REQUIREMENTS

3.1. Design and Construction

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

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- Voltage: 250 volts AC
- Current: See Figure 3
- Temperature: -55 to 105°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing and Application Specification 114-13036.	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.	10 milliohms maximum final.	EIA-364-23. Subject specimens to 100 milliamperes maximum and 20 millivolts maximum open circuit voltage.
Insulation resistance.	1000 megohms minimum initial. 100 megohms minimum final.	EIA-364-21. Test between adjacent contacts.
Withstanding voltage.	One minute hold with no breakdown or flashover. 1.3 milliamperes maximum leakage current.	EIA-364-20. 1000 volts AC at sea level. Test between adjacent contacts.
Temperature rise vs current.	30°C maximum temperature rise at specified current.	EIA-364-70. Stabilize at a single current level until 3 readings at 5 minute intervals are within 1°C. See Figure 3.
MECHANICAL		
Sinusoidal vibration.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-28, Condition I. Subject mated specimens to 10-55-10 Hz traversed in 1 minute with 1.5 mm [0.06 in] maximum total excursion. 2 hours in each of 3 mutually perpendicular planes. See Figure 4.

Figure 1 (continued)

Test Description	Requirement	Procedure								
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Condition A. Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. See Figure 4.								
Durability.	See Note.	EIA-364-9. Manually mate and unmate specimens with friction lock headers for 15 cycles at a maximum rate of 10 cycles per minute.								
Mating force.	8.9 N [2 lbf] maximum per contact. See Figure 5.	EIA-364-13, Condition A. Measure force necessary to mate specimens with friction lock headers a distance of 5.1 mm [.200 in] from point of initial contact at a maximum rate of 12.7 mm [0.5 in] per minute.								
Unmating force.	3.6 N [.80 lbf] minimum per contact. See Figure 5.	EIA-364-13, Condition A. Measure force necessary to unmate specimens from friction lock headers at a maximum rate of 12.7 mm [0.5 in] per minute.								
Contact insertion force.	17.8 N [4 lbf] maximum initial per contact.	TE Spec 109-41. Measure force necessary to insert contact into housing at a maximum rate of 25 mm [.984 in] per minute.								
Contact extraction force.	23 N [5 lbf] minimum final per contact.	TE Spec 109-41. Measure force necessary to extract contact from housing at a maximum rate of 50 mm [1.968 in] per minute.								
Crimp tensile.	<table border="1"> <thead> <tr> <th>Wire Size (AWG)</th> <th>Crimp Tensile (N [lbf] minimum)</th> </tr> </thead> <tbody> <tr> <td>22</td> <td>48.9 [11]</td> </tr> <tr> <td>24</td> <td>44.5 [10]</td> </tr> <tr> <td>26</td> <td>31.1 [7]</td> </tr> </tbody> </table>	Wire Size (AWG)	Crimp Tensile (N [lbf] minimum)	22	48.9 [11]	24	44.5 [10]	26	31.1 [7]	EIA-364-8. Measure crimp tensile at a maximum rate of 25.4 mm [1 in] per minute.
Wire Size (AWG)	Crimp Tensile (N [lbf] minimum)									
22	48.9 [11]									
24	44.5 [10]									
26	31.1 [7]									
ENVIRONMENTAL										
Thermal shock.	See Note.	EIA-364-32. Subject specimens to 10 cycles between -55 and 105°C.								
Humidity/temperature cycling.	See Note.	EIA-364-31. Subject specimens to 10, 24 hour cycles between 25 and 65°C at 95% RH.								

Figure 1 (continued)

Test Description	Requirement	Procedure
Temperature life.	See Note.	EIA-364-17. Subject mated specimens to 105°C for 792 hours.

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 2.

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)					
	1	2	3	4	5	6
	Test Sequence (b)					
Initial examination of product	1	1	1	1	1	1
Low level contact resistance	2,4,7	2,5,7,10				
Insulation resistance			2,5	3,7		
Withstanding voltage			3,6	4,8		
Temperature rise vs current		3,11				
Sinusoidal vibration	5	8(c)				
Mechanical shock	6	9				
Durability	3					
Mating force					2	
Unmating force					3	
Contact insertion force				2		
Contact extraction force				9		
Crimp tensile						2
Thermal shock			4	5		
Humidity/temperature cycling		4(d)				
Temperature life		6		6		
Final examination of product	8	12	7	10	4	3

NOTE

- (a) See paragraph 4.1.A.
- (b) Numbers indicate sequence in which tests are performed.
- (c) Discontinuities shall not be measured. Energize at 18°C level for 100% loadings per Quality Specification 102-950.
- (d) Precondition specimens with 10 durability cycles.

Figure 2

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 and 2 shall each consist of: 6, 28 position assemblies; 60 terminals crimped to 22 AWG wire; and 60 terminals crimped to 26 AWG wire. Test groups 3 and 4 shall each consist of: 5, 28 position assemblies and 100 terminals crimped to 22 AWG wire. Test group 5 shall consist of: 5, 28 position assemblies; 5, 3 position assemblies; 5, 10 position assemblies; 5, 18 position assemblies; and 295 terminals crimped to 22 AWG wire. Test group 6 shall consist of 25 specimens of each wire size. Specimens for additional testing in test group 1 shall consist of 48, 6 position assemblies with the following plating configurations for CST-100 II contact to header: 15 $\mu\text{in Au}$ to 15 $\mu\text{in Au}$; 15 $\mu\text{in Au}$ to 15 $\mu\text{in PdNi}$; 15 $\mu\text{in PdNi}$ to 15 $\mu\text{in Au}$; 15 $\mu\text{in PdNi}$ to 15 $\mu\text{in PdNi}$; 30 $\mu\text{in Au}$ to 30 $\mu\text{in Au}$; 30 $\mu\text{in Au}$ to 30 $\mu\text{in PdNi}$; 30 $\mu\text{in PdNi}$ to 30 $\mu\text{in Au}$; and 30 $\mu\text{in PdNi}$ to 30 $\mu\text{in PdNi}$.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

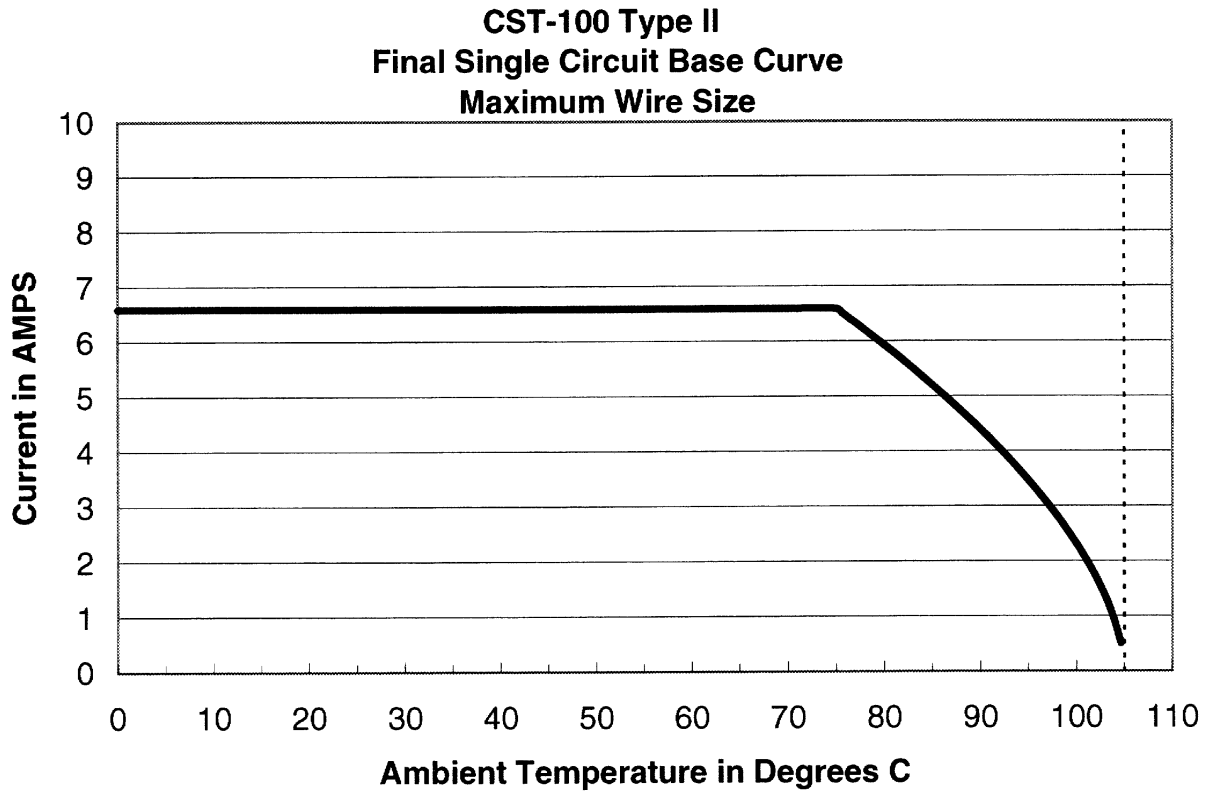
If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. 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.



--- Maximum Operating Temperature

6.59 AMPS PRODUCES A 30 DEGREE C T-RISE

Figure 3A
Current Carrying Capability

Percent Connector Loading	Wire Size AWG		
	26	24	22
Single Contact	0.821	0.902	1.000
50	0.602	0.662	0.734
100	0.450	0.495	0.548

NOTE To determine acceptable current carrying capacity for the percentage connector loading and wire gage indicated, use the Multiplication Factor (F) from the above chart and multiply it times the Base Rated Current for a single circuit at maximum ambient operating temperature as shown in Figure 3A.

Figure 3B
Current Rating

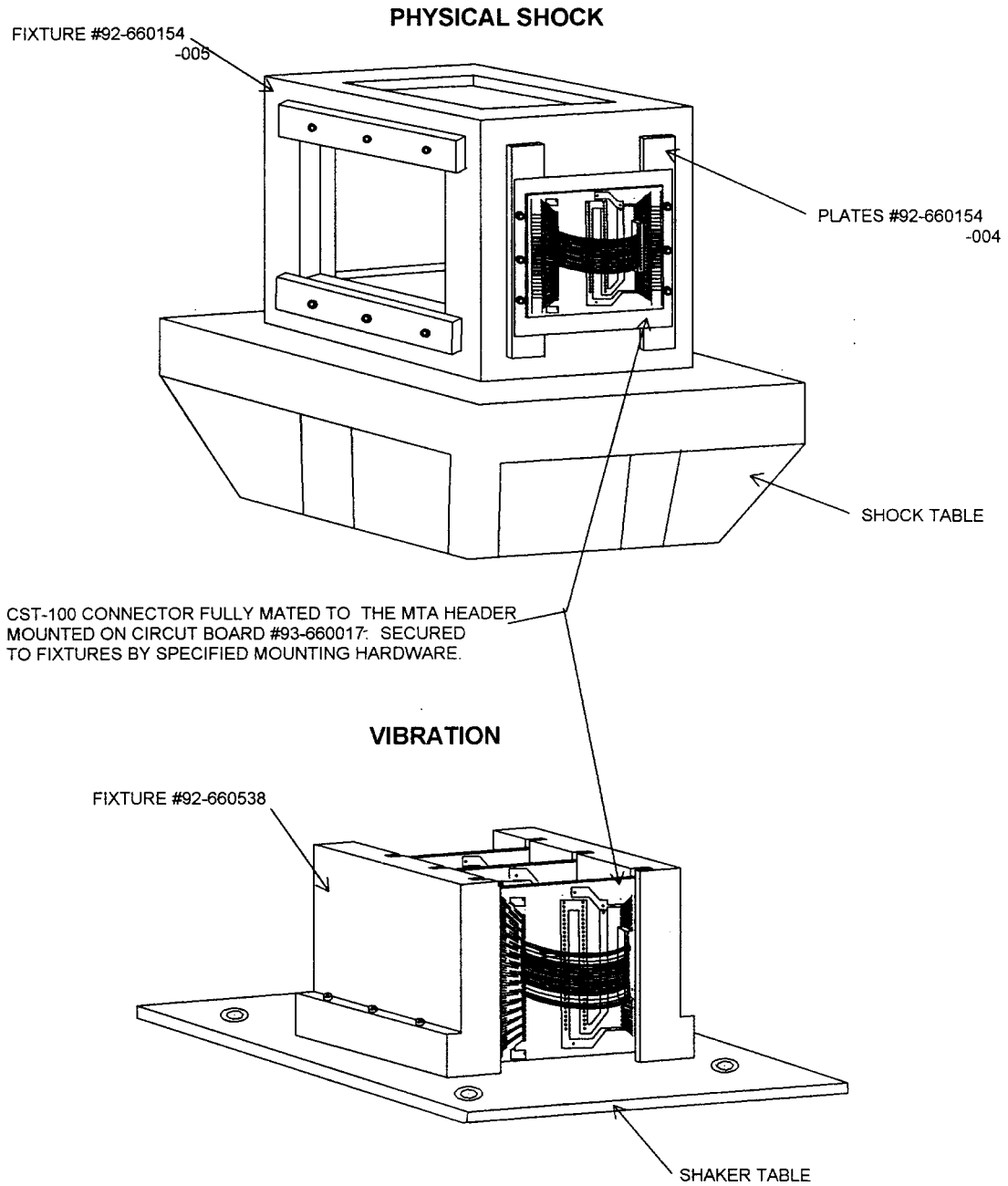


Figure 4
Vibration & Physical Shock Mounting Fixture

Specimen Size (positions)	Mating Force (N [lbf] maximum per contact)	Unmating Force (N [lbf] minimum per contact)
3	6.61 [1.49]	7.24 [1.63]
10	4.25 [0.96]	4.60 [1.03]
18	4.54 [1.02]	4.42 [0.99]
28	3.36 [0.98]	4.53 [1.01]

NOTE

Force measured using MTA .100 Friction Lock Headers.

Figure 5
Mating/Unmating Force