



High Density+ Card Edge Power Connector

—5.08mm pitch Power, 1.0mm pitch Signal

1. **SCOPE.**

1.1 Content.

This specification defines the performance, tests and quality requirements for the TE Connectivity (TE) High Density+ Card Edge Power Connector with 5.08mm pitch power contact design.

1.2 Qualification.

When tests are performed on subject product, procedures specified in this specification shall be used. All inspections shall be performed using 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.**

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

2.1. TE Documents

- 501-128092: Qualification Test Report
- 109-1: General Requirements for Test Specifications
- 102-950: Quality Specification (Qualification of Separable Interface Connectors)

2.2. Industry Documents

- EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications
- IEC-60512 Electronic Equipment-Test and Measurements

2.3. Reference Document

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

3. **REQUIREMENTS.**

3.1. Design and Construction:

Products shall be of design, construction and physical dimensions as 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:

- Operating Voltage: See Table 1

Table 1

Module Type	Contact	
	Centerline Spacing(mm)	Max Operating Voltage Between Contacts(V)
Power	5.08	100
Signal	1.0	60

- Current Rating: See Table 2

Table 2

Type	Contact Pitch(mm)	#Adjacent Contacts Energized/Amperes				
		4	8	14	16	20
Power	5.08	50A	34A	33A	30A	28A

Contacts in 2 rows-i.e., 8 contacts are 4 contacts per side, 20 contacts are 10 per side. Current rating based on testing with 6-layer, 2-oz per layer TE test board.

- Temperature: -55°C to 105°C.

3.4. Test Requirements and Procedures Summary

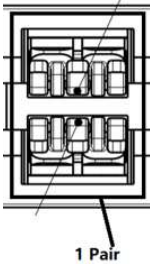
The product is designed to meet electrical, mechanical and environmental performance requirements specified in this paragraph. Unless otherwise specified, all tests are performed at ambient environmental conditions.

Test Description	Requirement	Procedure
Initial examination of product	Meets requirements of product drawing.	EIA-364-18 Visual and dimensional (C of C) inspection per product drawing.

ELECTRICAL		
Low Level Contact Resistance	Signal contact: 30 mΩ max. Power contact: 0.8 mΩ max.	EIA-364-23 Subject specimens to 100 mA maximum and 20 mV maximum open circuit voltage
Contact resistance (power contact only)	At 25A for power, 0.6 mΩ Max	EIA-364-06
Insulation Resistance	5000 MΩ minimum between all power conductors, 500 MΩ minimum between all signal conductors;	EIA-364-21 500+/-10% VDC, 2 minutes hold. Test between adjacent contacts
Dielectric Withstanding Voltage	One-minute hold with no breakdown or flashover	EIA-364-20, Condition I. 1200 V for power contact and 400V for signal contact at sea level. Test between adjacent contacts.

Temperature rise vs current	Temperature rise: 30°C max. over ambient temperature	EIA-364-70, Method 1. Stabilize at a single current level until 3 readings at 5-minute intervals are within 1°C See table 2
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MECHANICAL

Vibration, sinusoidal	No discontinuities of 1 microsecond or longer duration. See Note	EIA-364-28, Test condition I, Subject mated specimens to 10-55-10 Hz Traversed in 1 minutes at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes;
Mechanical shock	No discontinuities of 1 microsecond or longer duration. See Note	EIA-364-27, Test Condition 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
Mating force	<p>15N max—Power contact pair (Vertical and Right-angle type)</p> <p>20N max—Power contact pair (Straddle mount type)</p>  <p>Power contact pair →</p> <p>1.15N max—Signal contact pair</p> <p>Total mating force: 82N Max(only for 2381935-*)</p>	EIA-364-13, Method A. Measure force necessary to mate specimens at a maximum rate of 12.7 mm per minute
Un-mating force	<p>1.5N min—Power contact pair</p> <p>0.12N min—Signal contact pair</p>	EIA-364-13, Method A. Measure force necessary to mate specimens at a maximum rate of 12.7 mm per minute
Durability	<p>200 cycles See Note</p> <p>250cycles (only for 2381935-*)</p>	EIA-364-9, Mate and un-mate specimens for 200 cycles(250cycles only for 2381935-*) at a maximum rate of 500 cycles per hour
Contact retention force	<p>15N min. per power pin</p> <p>3N min. per signal pin</p>	EIA-364-29 Measure force necessary to remove individual contact from the housing at a maximum rate of 12.7mm per minute
Solderability	Solderable area shall have a minimum of 95% solder coverage. See Note.	TE Spec. 109-11-11, Test Method A.

ENVIRONMENTAL

Thermal shock	See Note	EIA-364-32, Method A, Test condition I, Subject specimens to 5cycles between -55 and 105°C with 30 minute dwells at temperature extremes and 1 minute maximum transition between temperatures
Temperature life	See Note	EIA-364-17, Method A, Test condition 4, Test condition C. Subject mated specimens to 105°C for 250 hours
Humidity/temperature cycling.	See Note	EIA-364-31, Method III. Subject mated specimens to 10 cycles (10 days) between 25 and 65°C at 90 to 95% RH
Mixed flowing gas	See Note	EIA-364-65, Class IIA (4 gas). Subject mated specimens to environmental Class IIA for 14 days--(7 days unmated, LLCR, followed by 7 days mated)



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.

3.5. Product Qualification and Requalification Test Sequence.

Test Description	Test group (a)						
	1	2	3	4	5	6	7
	Test sequence (b)						
Initial examination of product	1	1	1	1	1	1	1
Low level contact resistance	3,7	2,6		2,5	2,5		
Contact resistance (power contact)		3,7		3,6			
Insulation resistance			2,6				
Dielectric Withstanding Voltage			3,7				
Temperature rise vs current		4					
Vibration, sinusoidal	5						
Mechanical shock	6						
Mating force	2						
Un-mating force	8						
Durability	4						
Contact retention force						2	
Solderability							2
Thermal shock			4		3		
Humidity/temperature cycling.			5		4		
Temperature life				4(c)			
Mixed flowing gas		5(c)					
Final examination	9	8	8	6	6	3	3

Note

(a) See para. 4.1.A.

- (b) Numbers indicate sequence in which tests are performed.
- (c) Precondition specimens with 10 durability cycles

4. **QUALITY ASSURANCE PROVISIONS.**

4.1. Qualification testing.

A. Sample selection

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

B. Test sequence

Qualification inspection shall be verified by testing samples as specified in para. 3.5.

4.2. Requalification testing.

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

4.3. Acceptance.

Acceptance is based upon verification that product meets requirements of para. 3.4. Failures attributed to equipment, test set-up, applied customer components or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for requalification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality conformance inspection.

Applicable Tyco 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.