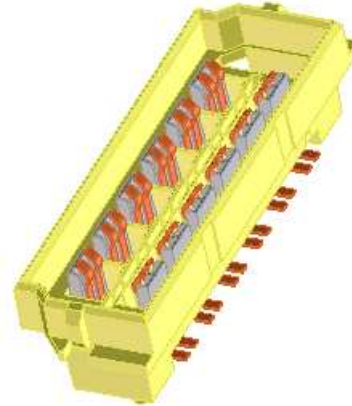
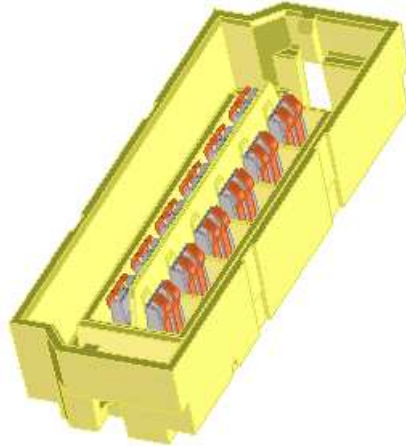




# HIGH SPEED MEZZANINE PRODUCT SPECIFICATION

## HIGH SPEED MEZZANINE BOARD TO BOARD CONNECTOR



**75005 Receptacle Assembly**

**75003 Plug Assembly**

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# HIGH SPEED MEZZANINE PRODUCT SPECIFICATION

## 1.0 Scope

This specification is intended to define the mechanical, electrical, and environmental requirements for the High Speed Mezzanine connector system. The interface consists of a differential pair of signal lines over molded in plastic surrounded by a plated plastic housing. The signal contacts are on 1.2mm pitch, with the differential pairs being on 3.51mm pitch.

## 2.0 Product Description

### 2.1 Product Name and Part Numbers:

High Speed Mezzanine Connector

#### Plug Assemblies

Series 75003

#### Receptacle Assemblies

Series 75005

### 2.2 Dimensions, Materials, Platings, and Markings:

(See appropriate sales drawings for information)

### 2.3 UL/CSA Certification:

UL: E29179

CSA: LR19980

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

SD-75003-001	High Speed Mezzanine Plug Sales Drawing
SD-75005-001	High Speed Mezzanine Receptacle Sales Drawing
AS-75005-001	High Speed Mezzanine Application Specification
TS-75005-001	High Speed Mezzanine Test Summary
ES-75005-001	Molex Plated Plastics Cosmetic Specification
EIA-364-1000.01	EIA Environmental Test Methodology for Electrical Connectors
ASTM D 3359-78	Adhesion Tape Test

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## 4.0 RATINGS

Operating Voltage: 30 V DC  
 Operating Temperature: -55°C to 85°C  
 Current: 1.5 A Max  
 Per Contact  
 Product Life: 10 years  
 Durability: 25 cycles

Impedance: 100 Ohms +/- 10%  
 @ 77 picoseconds  
 Propagation Delay: 40 picoseconds  
 Near-End Cross Talk (NEXT): 0.9% @ 77 ps (10/90%)  
 (1 Adjacent Line Driven)  
 Near-End Cross Talk (NEXT): 1.8% @ 77 ps (10/90%)  
 (2 Adjacent Lines Driven)  
 Bandwidth: 9 GHz at 2db down

## 5.0 REQUIREMENTS

### 5.1 Qualification

Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

### 5.2 Electrical Performance

- 5.2.1 Contact Resistance(Low Level): Shall not exceed 25 mOhms when mated(and terminated) with a maximum voltage and current of 50 mV and 100 mA. Test per EIA-364-23A.
- 5.2.2 Dielectric Withstanding Voltage: There shall be no breakdown when 500 Volts AC is applied to a mated connector between adjacent terminals and ground for a duration of 1 minute. Test per EIA-364-20, Method A, Test Condition I.
- 5.2.3 Insulation Resistance: Apply 500 Volts +/- 10% DC to mated connectors the insulation resistance should be 1000 MegaOhms minimum. Test per EIA-364-21.

### 5.3 Mechanical Performance

5.3.1 Mating and Unmating Force: See Table. Test per EIA-364-13.

# of Ckts	# Differential Pairs	Mating Force (N) Max	Unmating Force (N) Min
12	6	22.63	24.85
24	12	31.24	33.47
48	24	48.47	50.69
72	36	65.70	67.92

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- 5.3.2 Durability: Mate and unmate for 25 cycles at 500 cycles per hour, without physical damage or exceeding a change in contact resistance of 10 mOhms. Test per EIA-364-09.
- 5.3.3 Durability (Preconditioning): Mate and unmate for 5 cycles at 500 cycles per hour, without physical damage or exceeding a change in contact resistance of 10 mOhms. Test per EIA-364-09.
- 5.3.4 Reseating: Mate and unmate for 3 cycles, without physical damage.
- 5.3.4 Vibration: There shall be no evidence of physical damage or a change in contact resistance of 10 mOhms when mated specimens are subjected to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes(X-Y-Z). Test per EIA-364-28, Test Condition VII, Condition D.
- 5.3.6 Retention Force (Chicklet to Housing): Specimens shall remain mated when a force of 3.33N is applied. The load shall be applied in the axial direction. Test per EIA-364-38.
- 5.3.7 Axial Force (Soldered Housing to Board): Specimens shall remain attached to the board when a minimum force of 26.69 N per ground peg is applied. See Table. Assumes 50% peg coverage with solder fillet at the top, per AS-75005-001.
- 5.3.8 Side Load Force (Soldered Housing to Board): Specimens shall remain attached to the board when a minimum force of 17.79 N per ground peg is applied. See Table. Assumes 50% peg coverage with solder fillet at the top, per AS-75005-001.

# of Ckts	# Differential Pairs	Axial Force (N) Min	Side Load Force (N) Min
12	6	53.38	35.58
24	12	80.07	53.37
48	24	160.14	106.74
72	36	240.21	160.11

## 5.4 Environmental Performance

- 5.4.1 Thermal Shock: There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are subjected to 10 cycles between -55°C and 85°C with 30 minute dwell times. Test per EIA-364-32, Condition 1.

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- 5.4.2 Temperature Life: There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are subjected to 85°C for 1000 hours. Test per EIA-364-17, Method A, Test Condition 4.
- 5.4.3 Temperature Life (preconditioning): There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are subjected to 85°C for 250 hours. Test per EIA-364-17, Method A, Test Condition 4.
- 5.4.4 Cyclic Humidity: There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are subjected to 24 cycles between 25°C at 80% RH and 65°C at 50 RH, with a 0.5 hour ramp time between extremes and a 1.0 hour dwell time at extremes. Test per EIA-364-31.
- 5.4.5 Thermal Disturbance: There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are cycled between 15°C and 85°C for 10 cycles . Temperature ramp should be 2°C per minute minimum with 5 minute dwell minimum.
- 5.4.6 Mixed Flowing Gas: There shall be no change in contact resistance greater than 10mOhms from initial when mated and unmated specimens are subjected to environmental Class II for 7 days. Test per EIA-364-65, for unmated specimens use Option 2.
- 5.4.7 Thermal Cycling: There shall be no change in contact resistance greater than 10mOhms from initial when mated specimens are cycled between 15°C and 85°C at a minimum ramp of 2°C per minute. With a dwell time of at least 5 minutes. Humidity is not controlled, cycle 500 times.
- 5.4.8 Temperature Rise: Apply an increasing current and monitor temperature until a DT of 30°C over the ambient temperature is achieved. Test at the current at which a DT of 30°C was achieved as follows: 96 hours steady state, 240 hours current cycling (45 minutes on, 15 minutes off, repeat), 96 Hours steady state. Upon completion of the test, if the temperature is below the DT of 30°C, then the current at which the test was run becomes the rated current.
- 5.4.9 Plating Adhesion: Plating will show no flaking, peeling, or other adhesion failure after being exposed to the following environmental sequences and then being subjected to a cross cut tape test. The test will be performed as follows: one exposure to IR or convection oven reflow temperatures, 5 cycles between -55°C and 85°C with 30 minute dwell at extremes, and 20 cycles of 4-4-16 (4 hours at 75°C +/- 2.5°C and 92.5% RH +/- 2.5%, 4 hours at 75°C +/- 2.5°C and 47.5% RH +/- 2.5%, 16 hours at 25°C +/- 2.5°C and 47.5% RH +/- 2.5%). Test adhesion per ASTM D 3359-78 Method B.

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## 6.0 TEST SEQUENCES

Test or Examination	EIA-364-1000.01 Test Group Sequences				
	1	2	3	4	5
LLCR or Contact Resistance (5.2.1)	1, 4, 6	1, 4, 6, 8	1, 4, 6	1, 4, 6, 8,10	1, 4, 6, 8
Dielectric Withstanding Voltage (5.2.2)					
Durability (5.3.2)					
Durability (preconditioning) (5.3.3)	2	2	2	2	2
Reseating (5.3.4)	5	7		9	7
Vibration (5.3.5)			5		
Thermal Shock (5.4.1)		3			
Temperature Life (5.4.2)	3				
Temperature Life (preconditioning) (5.4.3)			3	3	3
Humidity - Temp. Cycling (5.4.4)		5			
Thermal Disturbance (5.4.5)				7	
Thermal Cycling (5.4.7)					5
Mixed Flowing Gas (FMG) (5.4.6)				5	

Test or Examination	Additional Test Sequences					
	A	B	C	D	E	F
Dielectric Withstanding Voltage (5.2.2)	1					
Insulation Resistance (5.2.3)	2, 5					
Thermal Shock (5.4.1)	3					
Humidity - Temp. Cycling (5.4.4)	4					
Temperature Rise (5.4.8)		1				
Mating Force (5.3.1)			1			
Unmating Force (5.3.1)			2			
Retention Force - Chicklet to Housing (5.3.6)				1		
Axial Force - Soldered Housing (5.3.7)					1	
Side Load Force - Soldered Housing (5.3.8)					2	
Plating Adhesion (5.4.9)						1

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## 6.1 Qualification Testing

- 6.1.1 Specimen Selection: Samples for testing shall be representative of normal production lots.
- 6.1.2 EIA Data: Sample groups shall consist of a minimum of 5, 12 pair, mated connectors.

## 6.2 Requalification Testing

If changes significantly affecting form fit or function are made to the product or manufacturing process, the product shall go through requalification testing as determined by product, quality, and reliability engineering.

## 6.3 Acceptance

Acceptance is based on verification that the product meets the requirements listed in section five, Requirements. Failures attributed to equipment, test setup, or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification.

## 7.0 PACKAGING

Refer to Sales Drawing for Tube and Tape and Reel packaging information.

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