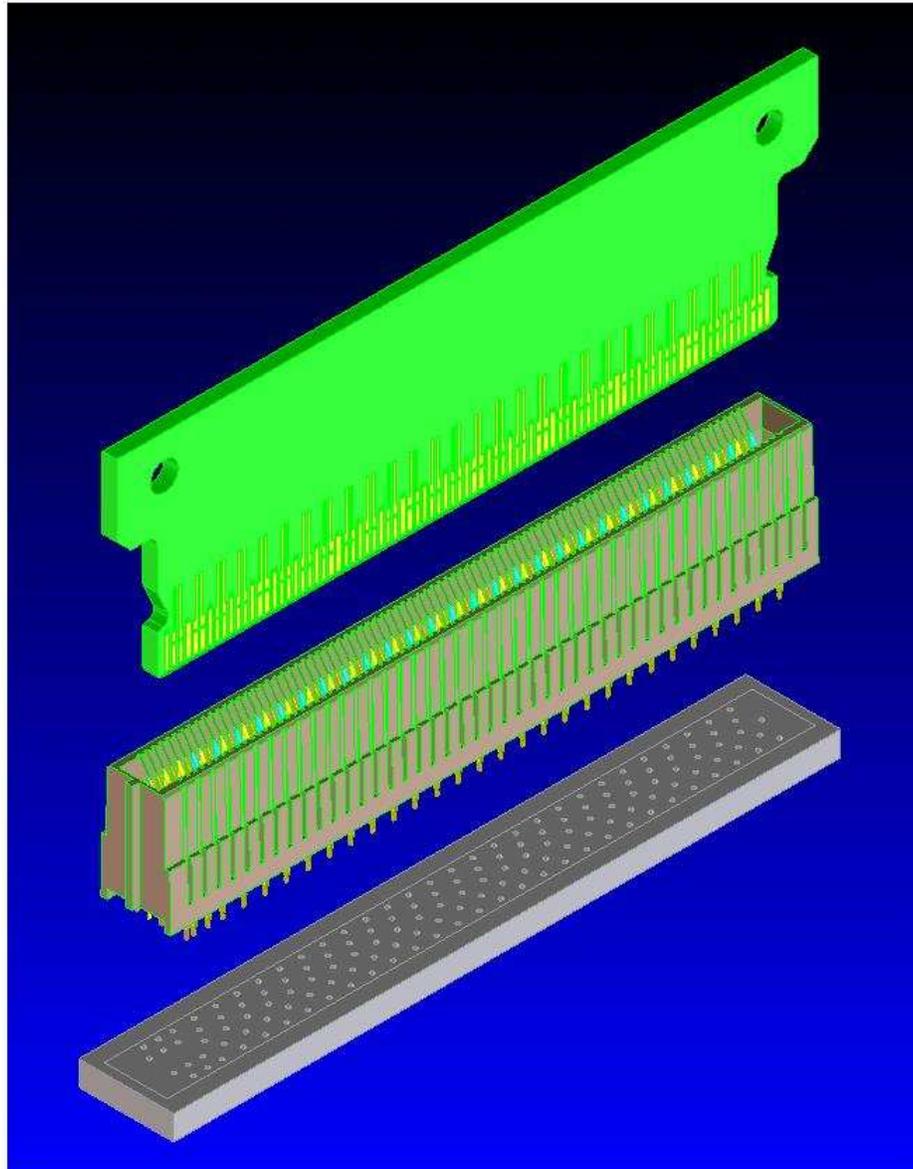




PRODUCT SPECIFICATION

PRODUCT SPECIFICATION FOR 12.5 Gb/s *EdgeLine*[®] EDGE CARD INTERCONNECT SYSTEM



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PRODUCT SPECIFICATION

1.0 SCOPE

This specification defines the performance requirements and test methods for the following families of products:

- 75594 Micro TCA Edge Card Connector (0.75 mm pitch, 170 circuits)
- 76421 0.80 mm pitch High Speed Edge Conn. for .093" mating card (108 ckt)
- 76691 0.80 mm pitch High Speed Edge Connector for .062" mating card
- 76693 0.80 mm pitch High Speed Edge Connector for .093" mating card

The EdgeLine® high speed interconnect system consists of a PCB Edge Receptacle Connector. The edge card header is a "Z-pluggable" compliant pin mounted connector. The compliant pin is based on Molex's Backplane connector family for proven reliability.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAMES

12.5 Gbs High Speed Edge Card

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for detailed information regarding dimensions, materials, plating, and markings.

2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179

CSA Certificate Number: 1827355 (LR 19980)

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawings and other sections of this specification for referenced documents and specifications.

Document No.: TS-75594-002 SI Guideline / Fixture Definition

Document No.: AS-75594-001 Application Specification

Document No.: TS-75594-001 Test Summary

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PRODUCT SPECIFICATION

4.0 RATINGS

4.1 CURRENT

Power Contacts: 1.52 Amps

4.2 VOLTAGE

All Contacts: 250VAC

4.3 OPERATING TEMPERATURE RANGE:

-40°C to +105°C

4.4 CHARACTERISTIC IMPEDANCE:

100 Ohms - differential signal pairs

4.5 DIGITAL BANDWIDTH:

Differential signal pairs - 12.5 Gbit/s

4.6 PRODUCT PERFORMANCE:

No additional requirements

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PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
CONTACT RESISTANCE (LOW LEVEL)	Mated, 100mA max, 20mV per EIA-364-TP-23	60 mohms initial maximum 10 mohms maximum change
INSULATION RESISTANCE	Mated card with test voltage of 500 VDC per IEC 60512-2, Test 3a	10 Mohms minimum
DIELECTRIC WITHSTANDING VOLTAGE	Mated card with test voltage of 80 Vrms	No breakdown or flashover
CURRENT CARRYING	All contacts energized Derating Curve = 80% Per IEC60512-3, Test 5b Power/Ground = 1.52 Amp Diff. Pairs = 0.1 Amp General Lines = 0.3 Amp	Temperature in connector not to exceed 100 deg C

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PRODUCT SPECIFICATION

5.2 HIGH SPEED ELECTRICAL PERFORMANCE

ITEM	TEST CONDITION	Performance
DIFFERENTIAL IMPEDANCE	Produced from frequency domain measurement F _{max} =20 GHz (36 ps, 10%-90%) Includes 30 mm trace on each side	80-110 Ohms
DIFFERENTIAL RETURN LOSS	Includes 30 mm trace on each side	15 dB @ 4 GHz 10 dB @ 5 GHz 7 dB @ 7 GHz 5 dB @ 12 GHz
DIFFERENTIAL ATTENUATION	Includes Backplane vias	1dB @ 5.5 GHz 3 dB @ 11 GHz
DIFFERENTIAL CROSSTALK (NEXT)	Produced from frequency domain measurement F _{max} =20 GHz (36 ps, 10%-90%) Includes 30 mm trace on each side and Backplane vias	3.3%
PROPAGATION DELAY (Skew)	Includes traces and pads	6ps maximum within differential pair

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PRODUCT SPECIFICATION

5.3 MECHANICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
MECHANICAL OPERATION	200 Cycles, mated and unmated per IEC 60512-5 Test 9a	No damage which would impair operation
MATING FORCE	Mate Connector with nominal PCB per IEC 60512-7, Test 13a	0.58 N max. per terminal 0.52 N. avg. per terminal
UNMATING FORCE	Unmate Connector with nominal PCB per IEC 60512-7, Test 13a	0.16 N max. per terminal 0.15 N. avg. per terminal
Card Slot Maximum Bottoming Force / Static Load Retention	Apply 200 N for 1 minute	Connector shall withstand insertion-bottoming force without damage that would impair normal operation
VIBRATION (SINUSOIDAL)	Mated, 10-500Hz, 50m/s ² , (5 g), 3 axis, 8 sweeps/direction per EIA-361-28C, Cond. II	No disturbance greater than 1 microsecond
MECHANICAL SHOCK	Mated, 300m/s ² , (30 g), 11ms, 3 axis, per EIA-364-27, Cond. 1	No disturbance greater than 1 microsecond
COMPLIANT PIN REMOUNTING OPERATION	Mount and remount 3 different connectors in same PCB hole pattern	Carrier Board pcb vias are not damaged, 15 milliohm change max

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PRODUCT SPECIFICATION

5.4 ENVIRONMENTAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
THERMAL SHOCK	Mated, 5 cycles from -55°C to 85°C, 30 minute dwell per EIA-364-35C	10 milliohm max change in LLCR
TEMPERATURE LIFE	Mated, +105°C for 1000 hours per EIA-364-17, Cond. 4	10 milliohm max change in LLCR
CYCLIC HUMIDITY	Mated, 50 cycles, 500 hours, from +25°C to +65°C per EIA-364-TP-31B, Method III	10 milliohm max change in LLCR
DUST	Unmated connectors plus Module PCBs Dust concentration of 300g/m ³ Per EIA-364-91	10 milliohm max change in LLCR
MIXED FLOWING GAS	10 days unmated, 10 days mated, per EIA-364-TP-65A, Class IIIA with disturbance	10 milliohm max change in LLCR
STEADY STATE HUMIDITY	60 VDC, 40 deg C @ 93% R.H for 10 days	10 milliohm max change in LLCR

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PRODUCT SPECIFICATION

6.0 TEST SEQUENCE

6.1 Test Plan

52 connectors are required for this test plan. The test plan is based on the Telecordia GR-1217 (Bellcore) test plan and qualification.

GROUP A Mixed Flowing Gas	GROUP B Mechanical Endurance and Dust	GROUP C Thermal Shock and Moisture	GROUP D High Temperature	GROUP E Electrical Load Temp Rise	GROUP F Signal Integrity Validation	GROUP G Mechanical (misc. / not sequential)
General Exam	General Exam	General Exam	General Exam	General Exam	General Exam	General Exam
Engaging / Separating Force	Engaging / Separating Force	Engaging / Separating Force	Mechanical Operation	Electrical Load and Temperature	Mechanical Operation	Contact Normal Force
Insulation Tests	Insulation Tests	Insulation Tests	Insulation Tests	General Exam	Damp Heat Steady State	Assembly Insertion into PCB
Voltage Stress Tests	Voltage Stress Tests	Voltage Stress Tests	Voltage Stress Tests		Differential Impedance / Propagation Delay (Skew)	Press-fit Terminal Retention to PCB
Contact Resistance	Contact Resistance	Contact Resistance	Contact Resistance		Cross-Talk	Card Slot Bottoming Force-Static Load
Mechanical Operation	Mechanical Operation	Mechanical Operation	High Temp Life		Attenuation	
High Temperature	Dust	Dust	Static Load Retention		Return Loss	
Mixed Flowing Gas	Vibration	Thermal Shock	Mechanical Operation			
Mechanical Operation	Shock	Damp Heat / Cyclic	Insulation Tests			
Engaging / Separating Force	Mechanical Operation	Mechanical Operation	Voltage stress Tests			
General Exam	Engaging / Separating Force	Insulation tests	General Exam			
	Insulation Tests	Voltage Stress Tests				
	Voltage Stress Tests	General Exam				
	General Exam					

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PRODUCT SPECIFICATION

6.2 COMPLIANT PIN PERFORMANCE

6.2.1 Insertion Force for various Plating Types (Typical)

COMPONENT	Immersion Sn (Max)
Signal/Ground and Power Pins	8 lbs

6.2.2 Retention Force for various Plating Types (Typical)

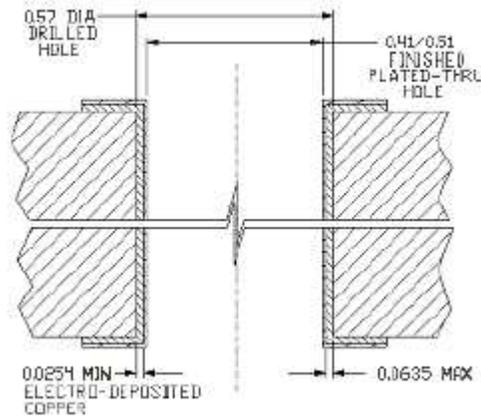
COMPONENT	Immersion Sn
Signal/Ground and Power Pins	1.5 lbs

Note: Insertion and retention values are as expected when tested in the plated through holes drilled and plated as described in Section 6.3. Plating surface finish and PCB materials will impact actual values.

Radial hole deformation: 1.5 mils maximum Axial hole deformation: 1.0 mils maximum

6.3 Printed Circuit Board Specifications

Recommended Signal/Ground and Power Hole Size: 0.57 mm (#74 Drill)



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