

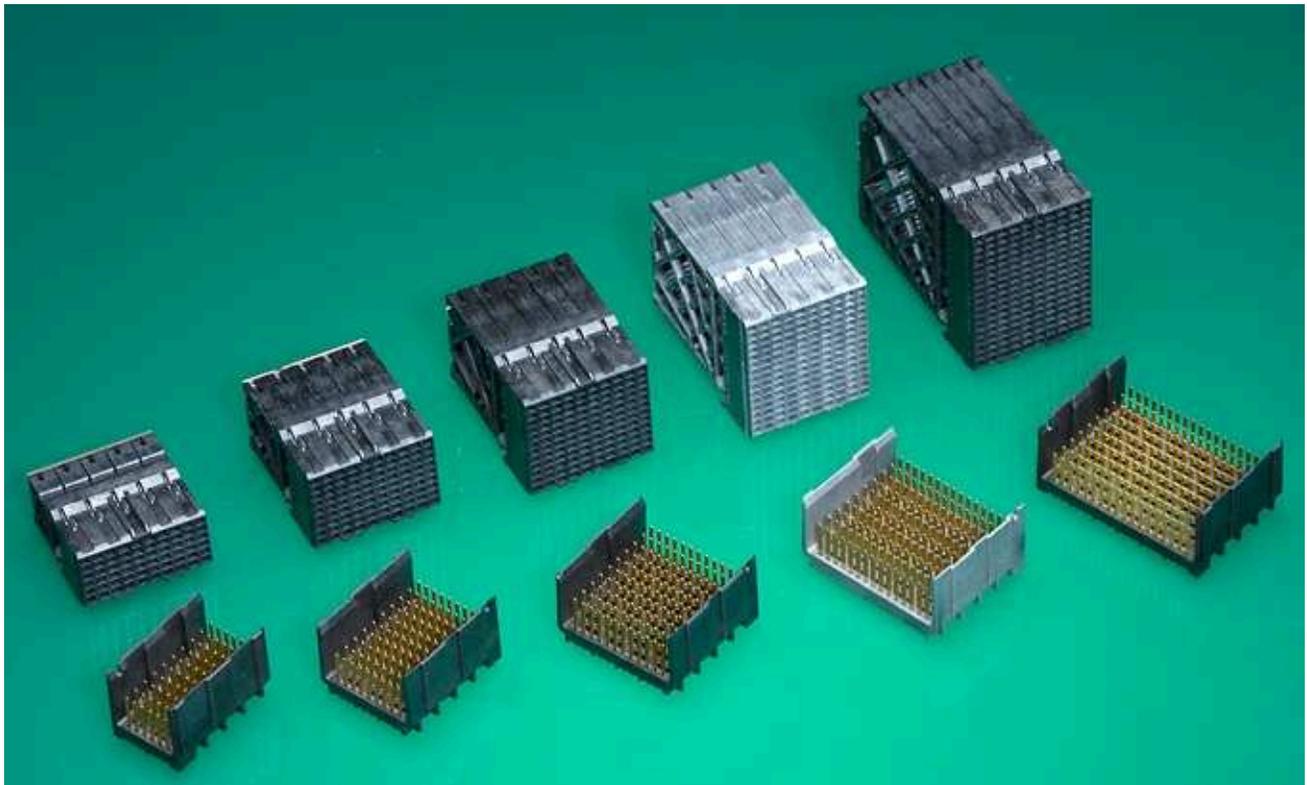


# PRODUCT SPECIFICATION

## PRODUCT SPECIFICATION FOR



## 85 OHM INTERCONNECT SYSTEMS



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DOCUMENT NUMBER: <b>PS-170540-999</b>	CREATED / REVISED BY: <b>D.VARVARA</b>	CHECKED BY: <b>T.ELO</b>	APPROVED BY: <b>R. NELSON</b>



# PRODUCT SPECIFICATION

## 1.0 SCOPE

This specification covers the performance requirements and test methods for the following products listed by series numbers:

	Description
171065	2 Pair Vertical Header
171062	2 Pair Vertical Header, Custom
170511	2 Pair Vertical Header, MAPS
170512	2 Pair Vertical Header, Custom, MAPS
171070	2 Pair Right Angle Daughtercard
170513	3 Pair Vertical Header, MAPS
170525	3 Pair Vertical Header
170514	3 Pair Vertical Header, Custom, MAPS
170522	3 Pair Vertical Header, Custom
170530	3 Pair Right Angle Daughtercard
170515	4 Pair Vertical Header, MAPS
170516	4 Pair Vertical Header, Custom, MAPS
170332	4 Pair Vertical Header, Custom
170335	4 Pair Vertical Header
170395	4 Pair Vertical Orthogonal Header
76495	4 Pair Right Angle Header
170340	4 Pair Right Angle Daughtercard
170400	4 Pair Right Angle Orthogonal Daughtercard
170390	4 Pair Vertical Mezzanine Receptacle
170517	5 Pair Vertical Header, MAPS
170472	5 Pair Vertical Header, Custom
170475	5 Pair Vertical Header
170518	5 Pair Vertical Header, Custom, MAPS
170405	5 Pair Vertical Orthogonal Header
170480	5 Pair Right Angle Daughtercard
170410	5 Pair Right Angle Orthogonal Daughtercard
170519	6 Pair Vertical Header, MAPS
170535	6 Pair Vertical Header
170520	6 Pair Vertical Header, Custom, MAPS
170532	6 Pair Vertical Header, Custom
170540	6 Pair Daughtercard Signal Module
171412	6 Pair Vertical Orthogonal Header

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171415	6 Pair Vertical Othogonal Header, Custom
171420	6 Pair Right Angle Othogonal Daughtercard

The IMPACT interconnect system consists of modular groupings of broad-edge coupled signals with optional integrated guidance. These connectors are two-piece devices, which connect two printed circuit boards. The right angle receptacle connectors (daughtercard), header pin connectors (backplane), right angle male connectors (RAM), and vertical female connectors (mezzanine) are through-hole devices with eye-of-the-needle compliant pin terminals.

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAMES

IMPACT™

### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, platings and markings.

The Backplane header pins and RAM pins are lubricated in the contact area with an approved lubricant per industry standard Telcordia GR-1217-CORE, Section 5.3

### 2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179

CSA Project Number: 09-015-CSA

## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

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

### 3.1 MOLEX DOCUMENTS

AS-76060-990	IMPACT Routing Guide
AS-76850-990	IMPACT Orthogonal Routing Guide
TS-76145-002	IMPACT 0.39mm Compliant Pin Performance
TS-76145-003	IMPACT Environmental Performance Summary

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## 3.2 COMMERCIAL STANDARDS

EIA-364-B	Electrical Connector Test Procedure
GR-1217-CORE	Generic Requirements for Separable Electrical Connectors used In Telecommunications Hardware

## 4.0 RATINGS

### 4.1 CURRENT AND TEMPERATURE RATING

Agency Voltage:	29.9 VAC RMS/DC max
Non-Agency Voltage:	150 VAC RMS/DC max
Signal Contact:	0.75 Amp per contact
Temperature:	-55°C to 85°C

### 4.2 ELECTRICAL RATINGS

Description	Value
Mating interface contact resistance change	10mΩ maximum
Compliant pin to plated through hole resistance	1mΩ maximum
Insulation resistance	1000 MegaΩ
Dielectric Withstanding Voltage	250 VAC

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## 4.3 SIGNAL CONTACT MATED BULK RESISTANCE

ROW	LEFT WAFLET		RIGHT WAFLET	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	GND		16.4	6.97
B	19.0	8.81	17.9	8.27
C	19.9	10.03	GND	
D	GND		21.6	9.86
E	25.2	11.17	23.4	10.78
F	26.0	11.46	GND	
G	GND		27.7	12.01
H	31.4	13.71	29.5	12.22
J	32.0	14.86	GND	
K	GND		33.8	14.29
L	37.4	15.36	35.6	14.61
M	38.1	16.32	GND	
N	GND		40.0	16.52
O	43.6	17.32	41.8	16.99
P	44.4	18.67	GND	
R	GND		46.1	18.83
S	49.9	18.57	47.9	19.48
T	50.6	17.91	GND	

### NOTES:

1. Electrical lengths are measured from DC compliant to BP compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional right angle DC to vertical BP.

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## 5.0 PERFORMANCE

### 5.1 ELECTRICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
CONTACT RESISTANCE (LOW LEVEL)	Mated, 100mA max, 20mV per EIA-364-TP23	10 milliohm maximum change
INSULATION RESISTANCE	Unmated, 500VDC per EIA-364-TP21	1000 megaohms minimum
DIELECTRIC WITHSTANDING VOLTAGE	Unmated, 500VAC per EIA-364-TP20	No breakdown or flashover
SIGNAL CONTINUITY	Mated per EIA-364-TP87	No interrupts greater than 10 nanoseconds
COMPLIANT PIN INTERFACE RESISTANCE	Contact inserted into PCB per EIA-364-TP23	1 milliohm maximum
OVERLOAD TEST *	25 cycles, 12VDC, 0.5A per UL 1977, Section 15*	Pass

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## 5.2 MECHANICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
DURABILITY	200 Cycles minimum, mated and unmated per EIA-364-TP09	10 milliohm max change in LLCR
VIBRATION	Mated, 10-500Hz, 10g's, 8 hr, 3 axis per EIA-364-TP28 with 10 ns event detection	10 milliohm max change in LLCR, zero events detected
MECHANICAL SHOCK	Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP27 with 10 ns event detection	10 milliohm max change in LLCR, zero events detected
MATING FORCE PER PIN	Mate daughtercard and backplane assembly per EIA-364-TP13	40 g maximum per pin
UNMATING FORCE PER PIN	Unmate daughtercard and backplane assembly per EIA-364-TP13	8 g minimum EOL

## 5.3 ENVIRONMENTAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
THERMAL SHOCK	Mated, 5 cycles from -55°C to 85°C per EIA-364-TP32	10 milliohm max change in LLCR
TEMPERATURE LIFE	Mated, 85°C for 500 hours min per EIA-364-TP17	10 milliohm max change in LLCR
HUMIDITY CYCLING	Relative humidity 90 to 95% for 500 hrs per EIA-364-TP31	10 milliohm max change in LLCR
DUST	Unmated per EIA-364-TP91	10 milliohm max change in LLCR
MIXED FLOWING GAS	10 days unmated 10 days mated per EIA-364-TP65	10 milliohm max change in LLCR

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## 5.4 COMPLIANT PIN PERFORMANCE

### 5.4.1 Insertion Force for Various Plating Types

COMPONENT	MAX
IMPACT Backplane Signal Pin	6 lbs
IMPACT Daughtercard Signal Pin	4 lbs

Note: These max values are intended for press sizing only. The peak force value will occur prior to the final seating of the connector. Plating surface finish and PCB materials will impact actual values.

### 5.4.2 Retention Force for Various Plating Types

COMPONENT	MIN
IMPACT Backplane Signal Pin	0.8 lb
IMPACT Daughtercard Signal Pin	0.8 lb

Note: Data reflects minimum average values for retention forces when tested in plated through holes drilled and plated as described in Section 5.4.3. Plating surface finish and PCB materials will impact actual values.

Radial hole deformation: 1.5 mils max

Axial hole deformation: 1.0 mil max

### 5.4.3 Printed Circuit Board Specifications

Refer to the appropriate Sales Drawing for the recommended pcb thickness. For detailed plated pcb hole requirements refer to routing guides AS-76060-990 for Standard product and AS-76850-990 for Ortho product.

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## 5.4.4 Torque Specification for Mounting Screws

PRODUCT TYPE	SCREW TYPE	BOARD THICKNESS	RECOMMENDED TORQUE
BACKPLANE HEADERS 2P THRU 6P	2-56 Machine Screw	6.5mm MAX	2.0 in-lbs
DAUGHTERCARD RECEPTACLES 4P THRU 6P	2-32 Self-Tapping Screw	4.4mm MAX	2.0 in-lbs
DAUGHTERCARD RECEPTACLES 2P	2-32 Self-Tapping Screw	1.8 to 2.4mm	1.0 in-lbs
DAUGHTERCARD RECEPTACLES STANDARD 3P	2-32 Self-Tapping Screw	1.9 to 2.5mm	1.5 in-lbs
DAUGHTERCARD RECEPTACLES ORTHO 3P	2-32 Self-Tapping Screw	2.4mm MAX	1.0 in-lbs
MEZZANINE RECEPTACLES 3P THRU 5P	2-32 Self-Tapping Screw	4.4mm MAX	2.0 in-lbs
RAM HEADERS 4P THRU 6P	2-32 Self-Tapping Screw	4.4mm MAX	2.0 in-lbs
RAM HEADERS 2P	2-32 Self-Tapping Screw	4.0mm MAX	1.0 in-lbs
RAM HEADERS 3P	2-32 Self-Tapping Screw	4.4mm MAX	1.5 in-lbs

\*\* Note: The thread forming screws used for the daughtercard guidance modules will require varying torque to seat the screw dependent upon the screw engagement in the module. The screw length and the pcb thickness will both impact the screw engagement into the module. It is recommended that the torque applied be the minimum necessary to fully seat the screw for the specific application. For applications in which the board thickness exceeds the listed recommendations, testing should be conducted to confirm that 1.0 in-lbs of torque can successfully be applied.

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## 6.0 TEST SEQUENCE

Group 1 Temperature Life	Group 2 Thermal Shock	Group 3 Humidity w/ Thermal Cycle	Group 4 Vibration & Mechanical Shock (w/o Mass Loading)	Group 5 Mixed Flowing Gas
Mating / Unmating Force	Mating / Unmating Force	LLCR	LLCR	LLCR
LLCR	LLCR	Prewear - 100 cycles	Prewear - 100 cycles	T-Life (85°C for 300 hrs) (mated)
T-Life (85°C for 500 hrs) (mated)	Thermal Shock per GR-1217-CORE R6-57, -55°C to 85°C 5 cycles min	Dust Application	LLCR	LLCR
LLCR	LLCR	LLCR	Dust Application	Prewear - 98 cycles
Mating / Unmating Force	Mating / Unmating Force	Thermal Cycle per GR-1217-CORE R6-64, +25°C to +65°C 500 hrs min, w/ humidity	(mount connector for vibration)	LLCR
		LLCR	LLCR	MFG - Unmated 5 days w/ LLCR
		LLCR	Vibration per GR-1217-Core R9-9, 8hrs each axis, 10 nanosecond event detect	MFG - Unmated 5 days w/ LLCR
		Postwear - 100 cycles	LLCR	MFG - Mated 5 days w/ LLCR
		LLCR	Mechanical shock per GR-1217-CORE R9-12, 3 shock pulses each direction, 10 nanosecond detect	MFG - Mated 5 days w/ LLCR
			LLCR	Disturb 0.1 mm w/ LLCR
			Postwear - 100 cycles	Postwear - 98 cycles
			LLCR	LLCR

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