

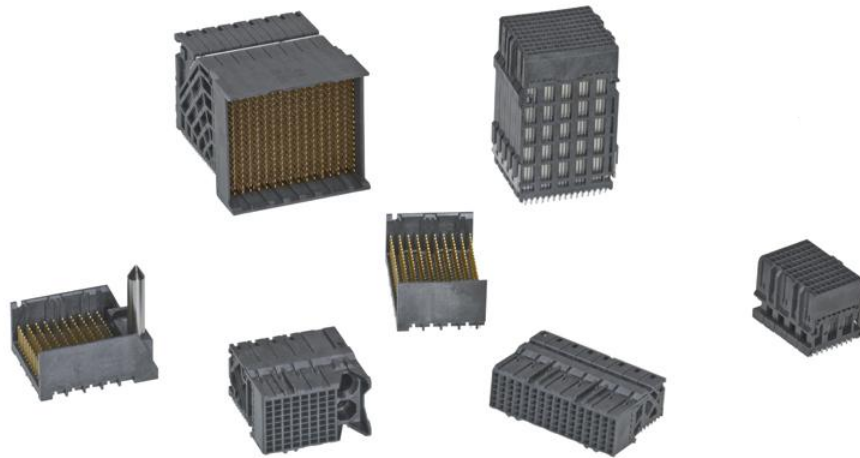


PRODUCT SPECIFICATION

PRODUCT SPECIFICATION FOR



100 OHM INTERCONNECT SYSTEMS



<u>REVISION:</u> R1	<u>ECR/ECN INFORMATION:</u> EC No: UCP2016-1683 DATE: 2015/10/20	<u>TITLE:</u> PRODUCT SPECIFICATION FOR IMPACT 100 OHM INTERCONNECT SYSTEMS	<u>SHEET No.</u> 1 of 13
<u>DOCUMENT NUMBER:</u> PS-76060-999	<u>CREATED / REVISED BY:</u> J.GONZALEZ	<u>CHECKED BY:</u> T. ELO	<u>APPROVED BY:</u> T. ELO



PRODUCT SPECIFICATION

1.0 SCOPE

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

Series	Description
76455	100 Ohm, 2-Pair, Vertical Header
171290	100 Ohm, 2-Pair, Vertical Header, MAPS Gold
76453	100 Ohm, 2-Pair, Vertical Header, Custom
171291	100 Ohm, 2-Pair, Vertical Header, Custom, MAPS Gold
76450	100 Ohm, 2-Pair, Right Angle Header
170026	100 Ohm, 2-Pair, Right Angle Header, Custom
76460	100 Ohm, 2-Pair, Right Angle Daughtercard
172101	100 Ohm, 2-Pair, Right Angle Daughtercard, MAPS Gold
170470	100 Ohm, 2-Pair, Right Angle Header, MAPS Gold
76165	100 Ohm, 3-Pair, Vertical Header
171292	100 Ohm, 3-Pair, Vertical Header, MAPS Gold
76162	100 Ohm, 3-Pair, Vertical Header, Custom
171293	100 Ohm, 3-Pair, Vertical Header, Custom, MAPS Gold
76855	100 Ohm, 3-Pair, Vertical Orthogonal Header
76856	100 Ohm, 3-Pair, Vertical Orthogonal Header, Custom
76410	100 Ohm, 3-Pair, Right Angle Header
170027	100 Ohm, 3-Pair, Right Angle Header, Custom
170550	100 Ohm, 3-Pair, Right Angle Orthogonal Direct Header
171573	100 Ohm, 3-Pair, Right Angle Orthogonal Direct Header
76170	100 Ohm, 3-Pair, Right Angle Daughtercard
170467	100 Ohm, 3-Pair, Right Angle Daughtercard, MAPS Gold
76860	100 Ohm, 3-Pair, Right Angle Orthogonal Daughtercard
171010	100 Ohm, 3-Pair, Right Angle Daughtercard, Custom
170350	100 Ohm, 3-Pair, Right Angle Daughtercard, Custom
170415	100 Ohm, 3-Pair, Vertical Mezzanine Receptacle
76155	100 Ohm, 4-Pair, Vertical Header
171294	100 Ohm, 4-Pair, Vertical Header, MAPS Gold
76152	100 Ohm, 4-Pair, Vertical Header, Custom
171295	100 Ohm, 4-Pair, Vertical Header, Custom, MAPS Gold
76849	100 Ohm, 4-Pair, Vertical Orthogonal Routable Header
76845	100 Ohm, 4-Pair, Vertical Orthogonal Header
76846	100 Ohm, 4-Pair, Vertical Orthogonal Header, Custom

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PRODUCT SPECIFICATION

76500	100 Ohm, 4-Pair, Right Angle Header
Series	Description
170028	100 Ohm, 4-Pair, Right Angle Header, Custom
76730	100 Ohm, 4-Pair, Right Angle Orthogonal Direct Header
171574	100 Ohm, 4-Pair, Right Angle Orthogonal Direct Header
172055	100 Ohm, 4-Pair, Right Angle Orthogonal Routable Header, Custom
76160	100 Ohm, 4-Pair, Right Angle Daughtercard
172103	100 Ohm, 4-Pair, Right Angle Daughtercard, MAPS Gold
76850	100 Ohm, 4-Pair, Right Angle Orthogonal Daughtercard
76055	100 Ohm, 5-Pair, Vertical Header
171296	100 Ohm, 5-Pair, Vertical Header, MAPS Gold
76163	100 Ohm, 5-Pair, Vertical Header, Custom
171297	100 Ohm, 5-Pair, Vertical Header, Custom, MAPS Gold
76989	100 Ohm, 5-Pair, Vertical Orthogonal Routable Header
76985	100 Ohm, 5-Pair, Vertical Orthogonal Header
76986	100 Ohm, 5-Pair, Vertical Orthogonal Header, Custom
76725	100 Ohm, 5-Pair, Right Angle Orthogonal Direct Header
171575	100 Ohm, 5-Pair, Right Angle Orthogonal Direct Header
76060	100 Ohm, 5-Pair, Right Angle Daughtercard
172104	100 Ohm, 5-Pair, Right Angle Daughtercard, MAPS Gold
76990	100 Ohm, 5-Pair, Right Angle Orthogonal Daughtercard
76530	100 Ohm, 5-Pair, Vertical Mezzanine Receptacle
76145	100 Ohm, 6-Pair, Vertical Header
171298	100 Ohm, 6-Pair, Vertical Header, MAPS Gold
76142	100 Ohm, 6-Pair, Vertical Header, Custom
171299	100 Ohm, 6-Pair, Vertical Header, Custom, MAPS Gold
76289	100 Ohm, 6-Pair, Vertical Orthogonal Routable Header
76285	100 Ohm, 6-Pair, Vertical Orthogonal Header
76286	100 Ohm, 6-Pair, Vertical Orthogonal Header, Custom
76735	100 Ohm, 6-Pair, Right Angle Orthogonal Direct Header
171576	100 Ohm, 6-Pair, Right Angle Orthogonal Direct Header
76560	100 Ohm, 6-Pair, Right Angle Header
170030	100 Ohm, 6-Pair, Right Angle Header, Custom
171960	100 Ohm, 6-Pair, Right Angle Orthogonal Routable Header, Custom
76150	100 Ohm, 6-Pair, Right Angle Daughtercard
172105	100 Ohm, 6-Pair, Right Angle Daughtercard, MAPS Gold
76290	100 Ohm, 6-Pair, Right Angle Orthogonal Daughtercard

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PRODUCT SPECIFICATION

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

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
AS-76060-9997	IMPACT™ Design Guide
AS-76060-9999	IMPACT™ Screw Design Guide

3.2 COMMERCIAL STANDARDS

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

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PRODUCT SPECIFICATION

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	500 VAC

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PRODUCT SPECIFICATION

4.3 SIGNAL CONTACT MATED BULK RESISTANCE

SIGNAL CONTACT MATED BULK RESISTANCE OF DAUGHTERCARD

ROW	LEFT WAFLET		RIGHT WAFLET	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	GND	6.9	16.4	10.5
B	19.0	11.9	17.9	11.6
C	19.9	12.5	GND	7.5
D	GND	8.3	21.6	13.1
E	25.2	13.9	23.4	13.7
F	26.0	14.9	GND	8.9
G	GND	8.6	27.7	16.9
H	31.4	16.5	29.5	17.1
J	32.0	17.6	GND	11.0
K	GND	10.5	33.8	19.7
L	37.4	19.0	35.6	19.7
M	38.1	19.1	GND	11.1
N	GND	10.4	40.0	21.3
O	43.6	20.9	41.8	21.7
P	44.4	21.8	GND	11.3
R	GND	11.0	46.1	22.7
S	49.9	23.1	47.9	24.0
T	50.6	22.4	GND	13.7

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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PRODUCT SPECIFICATION

SIGNAL CONTACT MATED BULK RESISTANCE OF RIGHT ANGLE MALE

ROW	LEFT WAFLET		RIGHT WAFLET	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	GND	8.3	22.7	14.5
B	28.2	16.6	25.8	16.0
C	29.5	17.6	GND	9.8
D	GND	10.2	33.1	18.8
E	40.4	21.7	36.7	20.0
F	41.8	22.7	GND	11.1
G	GND	11.9	45.1	24.5
H	52.7	27.8	49.2	25.5
J	54.0	28.8	GND	13.5
K	GND	14.2	57.4	30.3
L	64.9	32.4	61.4	31.0
M	66.2	32.7	GND	14.8
N	GND	15.5	69.8	35.0
O	77.4	37.1	73.7	35.8
P	78.7	37.8	GND	16.0
R	GND	16.6	82.4	39.8
S	90.2	41.7	86.4	40.5
T	91.3	39.9	GND	17.3

NOTES:

1. Electrical lengths are measured from RAM compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional coplanar RAM to DC.

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PRODUCT SPECIFICATION

90 DEGREE ORIENTATION SIGNAL CONTACT MATED BULK RESISTANCE OF THE ORTHOGONAL DIRECT

ROW	LEFT WAFLET		RIGHT WAFLET	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	GND	7.9	62.9	21.4
B	68.2	34.2	62.6	21.6
C	68.4	35.8	GND	8.6
D	GND	8.7	68.1	23.9
E	74.4	36.8	68.1	23.6
F	74.5	38.1	GND	9.3
G	GND	9.5	74.2	26.7
H	80.6	39.9	74.2	26.5
J	80.5	41.1	GND	10.4
K	GND	10.6	80.3	29.7
L	86.6	42.0	80.3	29.2
M	86.6	43.1	GND	11.2
N	GND	11.4	86.5	31.9
P	92.8	44.5	86.5	31.6
Q	92.9	45.9	GND	11.8
R	GND	12.2	92.6	34.4
S	99.1	46.7	92.6	33.6
T	99.1	46.6	GND	12.4

NOTES:

1. Electrical lengths are measured from DC compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional 90 Degree mating orientation angle DC to DC.

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PRODUCT SPECIFICATION

270 DEGREE ORIENTATION SIGNAL CONTACT MATED BULK RESISTANCE OF THE ORTHOGONAL DIRECT

ROW	LEFT WAFLET		RIGHT WAFLET	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	GND	8.9	34.0	35.0
B	34.0	22.3	36.4	35.2
C	36.4	23.7	GND	9.3
D	GND	8.7	39.2	37.6
E	40.2	24.6	41.9	37.1
F	42.5	26.3	GND	9.7
G	GND	9.6	45.3	40.1
H	46.4	27.4	48.0	40.1
J	48.5	29.4	GND	10.7
K	GND	10.6	51.4	42.7
L	52.4	29.6	54.1	43.0
M	54.6	30.8	GND	11.4
N	GND	11.3	57.6	45.4
P	58.6	31.7	60.3	45.1
Q	60.9	33.4	GND	12.0
R	GND	12.1	63.7	47.5
S	64.9	33.5	66.4	47.4
T	67.1	33.8	GND	12.9

NOTES:

1. Electrical lengths are measured from DC compliant to DC compliant.
2. The resistance values are actual measured values.
3. This chart represents values for conventional 270 Degree mating orientation angle DC to DC.

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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-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

* Testing does not represent the full sequence of testing and does not qualify the connector for an interrupt Rating per UL 1977.

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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	35 g max (average over entire assembly)
UNMATING FORCE PER PIN	Unmate daughtercard and backplane assembly per EIA-364-TP13	15 g (min as produced) 8 g (min 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	Class IIA exposure 10 days unmated 10 days mated per EIA-364-TP65A	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.
 Refer to routing guide AS-76060-990 for detailed plated through-hole requirements.

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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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