

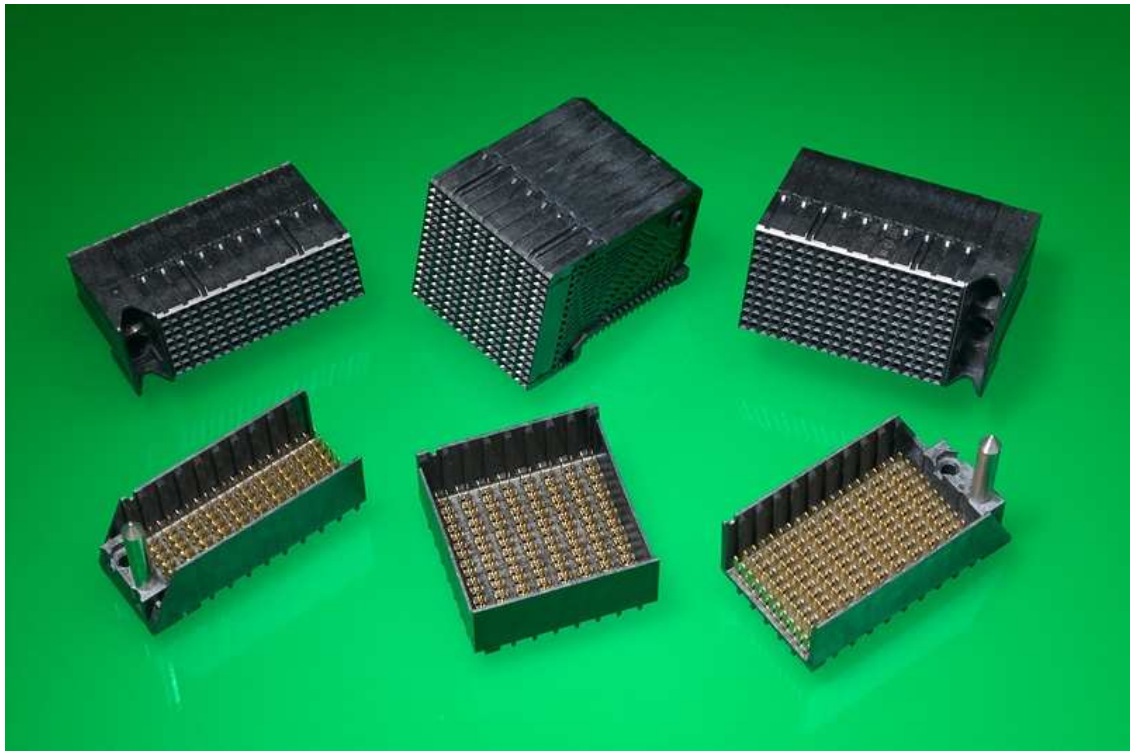


# PRODUCT SPECIFICATION

## PRODUCT SPECIFICATION FOR



## INTERCONNECT SYSTEMS



REVISION: <b>E</b>	ECR/ECN INFORMATION: EC No: <b>UCP2012-2378</b> DATE: <b>2012/01/16</b>	TITLE: <b>PRODUCT SPECIFICATION FOR Trac INTERCONNECT SYSTEMS</b>	SHEET No. <b>1 of 13</b>
DOCUMENT NUMBER: <b>PS-75710-999</b>	CREATED / REVISED BY: <b>M. CARRANZA</b>	CHECKED BY: <b>R. PRICE</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:

- \* 75705 I-Trac 11 Row Backplane Signal Module
- \* 75710 I-Trac 11 Row Daughtercard Signal Module
- \* 75991 I-Trac 11 Row Custom Backplane Signal Module
- \* 76274 I-Trac 11 Row Custom Daughtercard Signal Module
- \* 76680 I-Trac 11 Row NXT Daughtercard Signal Module
- \* 75910 I-Trac 11 Row Right Angle Male Signal Module
- \* 76910 I-Trac 11 Row Right Angle Male Signal Module
  
- \* 76015 I-Trac 7 Row Backplane Signal Module
- \* 76020 I-Trac 7 Row Daughtercard Signal Module
- \* 76029 I-Trac 7 Row Custom Backplane Signal Module
- \* 76275 I-Trac 7 Row Custom Daughtercard Signal Module
  
- \* 76011 I-Trac 7 Row Right Angle Male Signal Module
  
- \* 76035 I-Trac 15 Row Backplane Signal Module
- \* 76040 I-Trac 15 Row Daughtercard Signal Module
- \* 76030 I-Trac 15 Row Custom Backplane Signal Module
- \* 76276 I-Trac 15 Row Custom Daughtercard Signal Module
- \* 76033 I-Trac 15 Row Daughtercard Signal Module w/Power

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

## 2.0 PRODUCT DESCRIPTION

### 2.1 PRODUCT NAMES

I-Trac

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## 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

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

## 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.

- I-Trac Backplane and Daughtercard sales drawings and PCB footprint layout – refer to the individual product sales drawings (<http://www.molex.com/product/itrac.html>)
- I-Trac Backplane and Daughtercard Installation and Repair Tooling part numbers and instructions – refer to the ATS-622018699 Manual (<http://www.molex.com/product/itrac.html>)
- PCB routing information – refer to the I-Trac Routing Guide (<http://www.molex.com/product/itrac.html>)
- Electrical Characterization information – refer to the Electrical Characterization Guide (<http://www.molex.com/product/itrac.html>)

## 4.0 RATINGS

### 4.1 CURRENT AND TEMPERATURE RATING

Voltage:	120 VAC RMS/DC max
Signal Contact:	1 Amp per contact
Maximum operating temperature:	85°C
Non-operating temperature:	-55°C to 85°C

### 4.2 ELECTRICAL RATINGS

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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	750 Volts RMS

### 4.3 SIGNAL CONTACT MATED BULK RESISTANCE

ROW	7 ROW		11 ROW		15 ROW	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	21.6	8.2	22.1	8.6	22.1	8.6
B	23.7	8.9	24.3	9.2	24.3	9.2
C	25.9	9.6	26.5	9.7	26.5	9.7
D	28.1	10.5	28.7	10.6	28.7	10.6
E	30.3	10.8	30.9	11.2	30.9	11.2
F	32.6	11.6	33.1	11.7	33.1	11.7
G	34.8	12.1	35.4	12.1	35.4	12.1
H			37.6	12.6	37.6	12.6
J			39.8	12.7	39.8	12.7
K			42.0	13.8	42.0	13.8
L			44.2	14.6	44.2	14.6
M					46.7	15.1
N					49.2	15.4
O					51.7	16.1
P					54.2	16.5

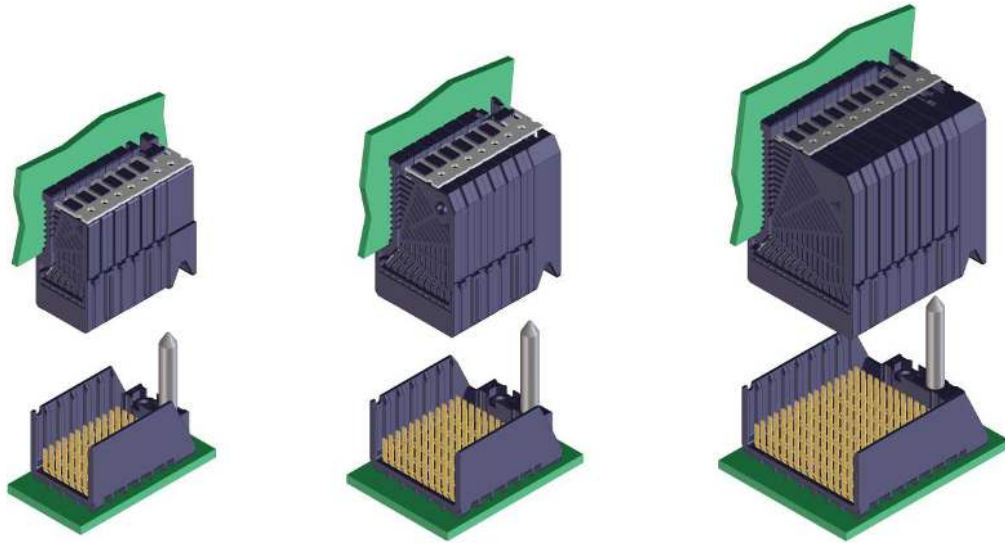
#### NOTES:

1. Electrical lengths are measured from DC compliant to BP compliant.
2. The resistance values are typical measured values.

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ROW	7 ROW – COPLANAR		11 ROW – COPLANAR	
	Electrical Lengths [mm]	Bulk Resistance [mΩ]	Electrical Lengths [mm]	Bulk Resistance [mΩ]
A	33.3	11.4	34.4	12.2
B	37.6	11.8	38.8	12.4
C	42.0	12.9	43.2	13.9
D	46.5	13.9	47.7	14.9
E	50.9	15.0	52.0	16.2
F	55.3	15.6	56.5	17.4
G	59.9	17.3	61.0	18.4
H			65.4	19.6
J			69.8	20.5
K			74.2	21.7
L			78.7	24.5

**NOTES:**

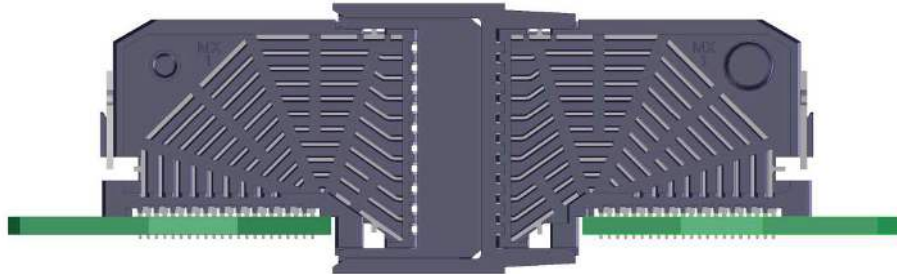
3. Electrical lengths are measured from DC (RAF) compliant to RAM compliant.
4. The resistance values are typical measured values

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# PRODUCT SPECIFICATION

RIGHT ANGLE FEMALE-RIGHT ANGLE MALE COPLANAR:



## 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, 750VAC 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

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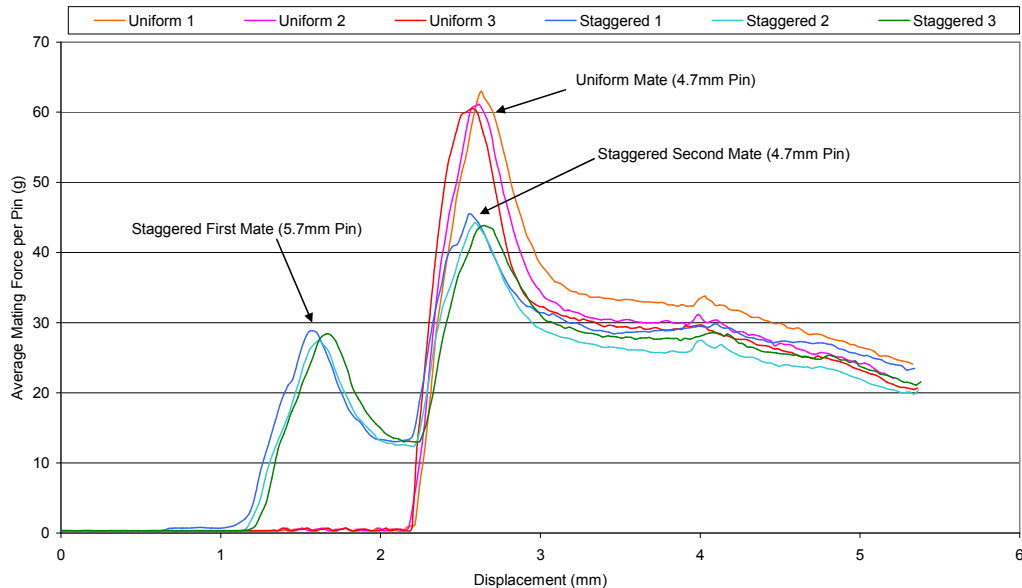


# PRODUCT SPECIFICATION

## 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
MECHANICAL SHOCK	Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP27 with 10 ns event detection	10 milliohm max change in LLCR
NORMAL FORCE	Apply perpendicular force to terminal at rate of 25+/-6mm per minute	Signal: 45 g min (EOL)
MATING FORCE PER PIN	Mate daughtercard and backplane assembly per EIA-364-TP13	45 - 70 g
UNMATING FORCE PER PIN	Unmate daughtercard and backplane assembly per EIA-364-TP13	25 g minimum

Uniform (4.7mm) vs Staggered (4.7 & 5.7mm) Pin Mating Profiles  
(Measured using 11 Row x 6 Column (132 pin) modules)



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## 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 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 TEST SEQUENCE

Group 1 Temperature Life	Group 2 Thermal Shock	Group 3 Humidity w/Thermal Shock	Group 4 Vibration & Mechanical shock	Group 5 Mixed flowing Gas
LLCR	LLCR	LLCR	LLCR	LLCR
T-Life 85°C for 500 hours (mated)	Thermal Shock per GR-1217-CORE R6-57 -55°C to 85°C 5 cycles min	Prewear - 100 cycles	Prewear - 100 cycles	T-Life 85°C for 500 hours (mated)
LLCR	LLCR	Dust Application	LLCR	LLCR
		LLCR	Dust Application	LLCR
		Thermal Cycle per GR-1217-CORE R6-64 +25°C to +65°C 500 hrs min w/humidity	LLCR	Prewear - 100 cycles
		LLCR	Vibration per GR-1217-CORE R9-12 3 shock pulses each direction 10 nanosecond detect	LLCR
		Postwear - 100 cycles	LLCR	MFG - 10 days Unmated w/LLCR every 5 days
		LLCR	Mechanical Shock per GR-1217-CORE R9-12, 3 shock pulses each direction 10 nanosecond detect	MFG - 10 days Mated w/LLCR every 5 days
Supplemental			LLCR	Disturbance - 1 cycle w/LLCR
Press Profile for each connector	Mate/Unmate Forces		LLCR	Postwear - 100 cycles
			Postwear - 100 cycles	LLCR
			LLCR	

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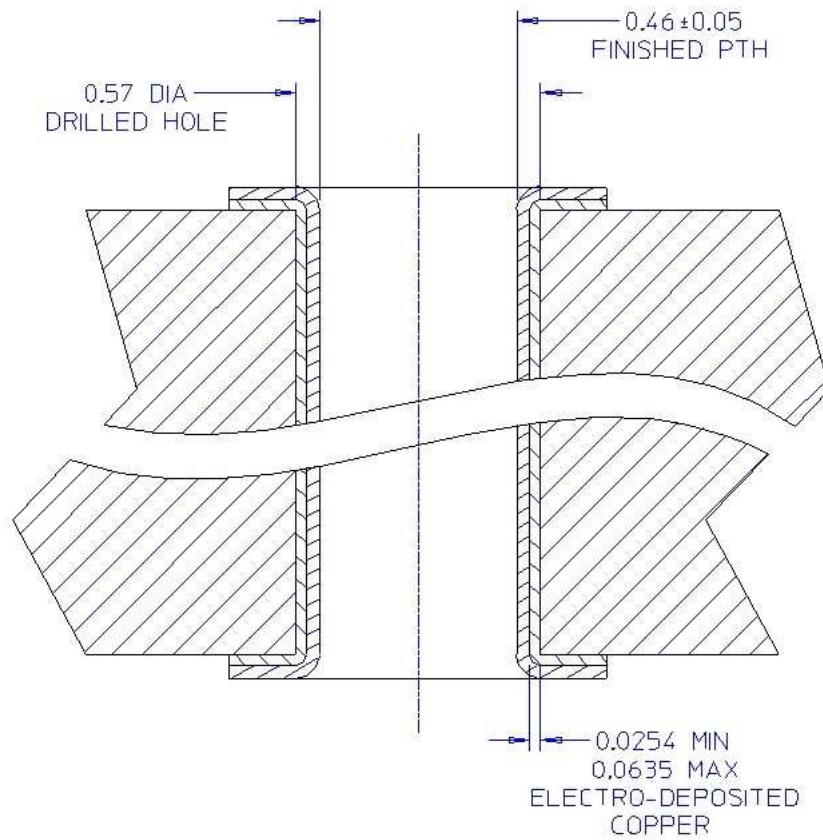


# PRODUCT SPECIFICATION

## 6.0 CONNECTOR INSTALLATION

### 6.1 Printed Circuit Board Specifications

Recommended Backplane PCB Thickness: 1.6mm minimum  
 Recommended Daughtercard PCB Thickness: 1.6mm minimum  
 Primary Drilled Hole Size: 0.57 mm (#74 Drill)



**HOLE PLATING DETAIL**  
 Daughtercard or Backplane  
 Signal Contacts

### 6.2 Torque Specification for Mounting Screws

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Backplane and Daughtercard Screws: 2.5 in-lbs.

## 6.3 Connector Positioning

The I-Trac Vertical and Right Angle Connector Modules are typically pre-applied by hand to the PC Board. Care should be taken to handle the connectors by the housing and not by the contacts.

## 6.4 Connector Seating

Molex recommends the tooling as described in the I-Trac Installation and Repair Tooling Manual, # ATS-622018699. If the installation is to be done with Customer supplied tooling, extra care needs to be taken. Proper support of the PC Board and even seating force needs to be applied to the connector to prevent deformation. A press stop needs to be employed at the proper height so not to overseat and deform the connector and allow the correct connector to PC Board clearance. This applies specifically to the Right Angle Daughtercard Connectors.

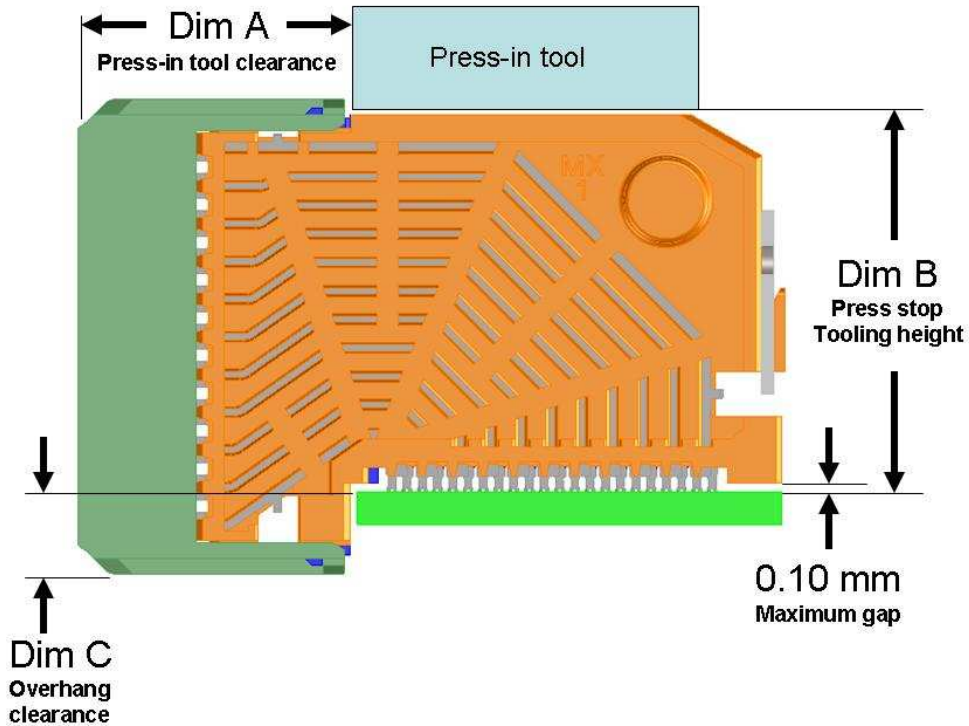
## 6.5 Connector Seating Height

Description	Dim. A Press-in Tool Clearance	Dim. B Press Stop Tooling Height	Dim. C Overhang Clearance
7 Row DC	13.50 mm	12.65 mm	3 mm
11 Row DC	13.50 mm	18.20 mm	5 mm
15 Row DC	13.50 mm	25.60 mm	5 mm

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## 6.6 COMPLIANT PIN PERFORMANCE

### 6.6.1 Insertion Force for Various Plating Types

COMPONENT	MAX
I-Trac Backplane Signal Pin	8 lbs
I-Trac Daughtercard Signal Pin	4 lbs

Note: Data reflects maximum expected values for insertion 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. These max values are intended for press sizing only.

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## 6.6.2 Retention Force for Various Plating Types

COMPONENT	MIN
I-Trac Backplane Signal Pin	1.0 lb
I-Trac Daughtercard Signal Pin	1.0 lb

Note: Data reflects minimum expected 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

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