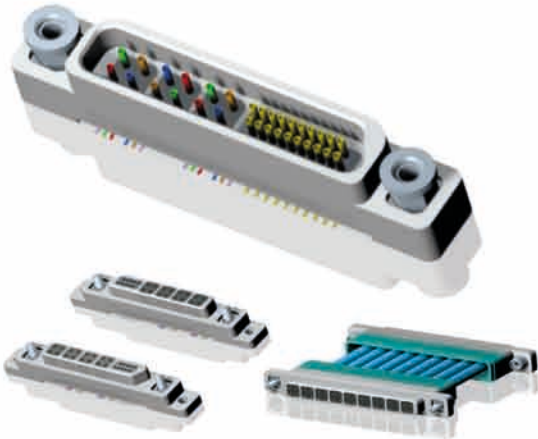


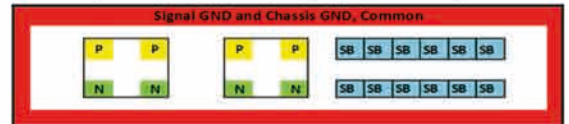


microQUAD

Micro-D 1394 IEEE 1394, Ethernet MIL-DTL-83513 CONNECTORS



The AirBorn microQuad product line is designed to meet requirements for Signal Integrity IEEE 1394 Ethernet applications, while still delivering reliability customers have come to expect from AirBorn. MicroQuad delivers flexibility in design by offering vertical and right angle board mounts plus cable I/O configurations. MicroQuad is designed to handle high-speed LVDS like IEEE 1394, Ethernet 100 Ω differential Quadrex. The MIL-DTL-83513 (Micro-D) qualified contact system and metal shells ensure ruggedness and durability. This versatile product ranges from one to ten high-speed modules and up to fifty signal contacts.



FEATURES and BENEFITS

- Field-tested – four independent fine, gold plated contact system offers superior performance and reliability
- Versatile product offering including both genders of vertical, right angle board, and cable
- Rugged metal shells and hoods
- Shell-to-shell EMI interface gasket
- Shell ground independent of signal pair grounds
- Balanced lengths within pairs limit skew
- 9 sideband connections included



MATERIALS

Differential Impedance Per Quad Module	100 Ω and 110 Ω
Wire Size: for both Quad and Signal	Stranded 24 AWG, 26 AWG, 28 AWG, or 30 AWG
Signal Contact Rating	3-amperes maximum
Test Voltage	600 V, RMS, 60 Hz
Operating Temperature	-55°C to +125°C
Insulation Resistance	5000 megohms minimum @ 500 VDC
Durability	500 connector mating cycles
Vibration	Tested in accordance with MIL-STD-1344, Method 2005, Condition IV
Shock	Tested in accordance with MIL-STD-1344, Method 2004, Condition E
Salt Spray	Mated connectors tested in accordance with MIL-STD-1344, Method 1001, Test Condition B
Humidity	Mated connectors tested in accordance with MIL-STD-1344, Method 1002, Type II (except steps 7a and 7b)
Thermal Shock	Tested to the temperature extremes of MIL-STD-1344, Method 1003, Test Condition A (except step 3, temperature shall be 125°C)
Contact Resistance	0.065 Volt maximum drop @ 2.5 amps (0.026)
Contact Engaging Force	6.0 ounce maximum, with 0.0221 diameter test sleeve
Contact Separating Force	0.5 ounce minimum, with 0.023 diameter test sleeve
Contact Separating Force	0.5 ounce minimum, with 0.023 diameter test sleeve



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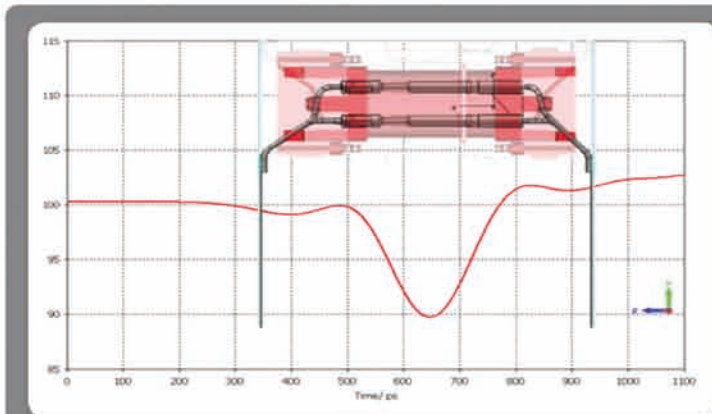
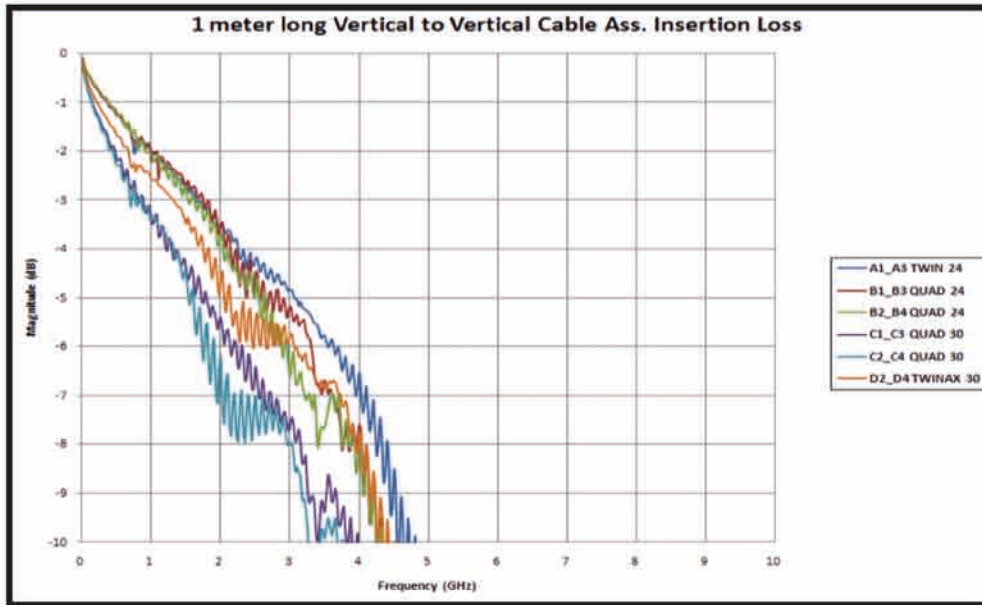
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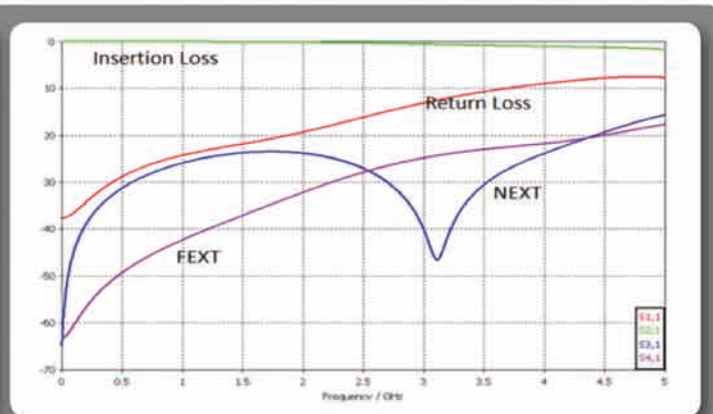
www.airborn.com

PATENT PENDING

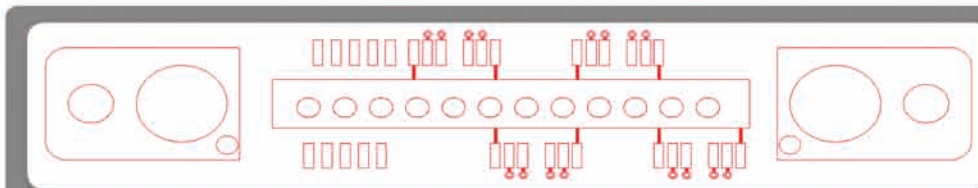
SI PERFORMANCE FOR MATED PAIRS



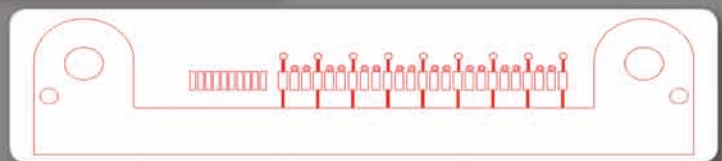
IMPEDANCE PROFILE



5 PARAMETERS



TYPICAL PCB FOOTPRINT FOR VERTICAL CONNECTOR



TYPICAL PCB FOOTPRINT FOR RIGHT ANGLE CONNECTOR

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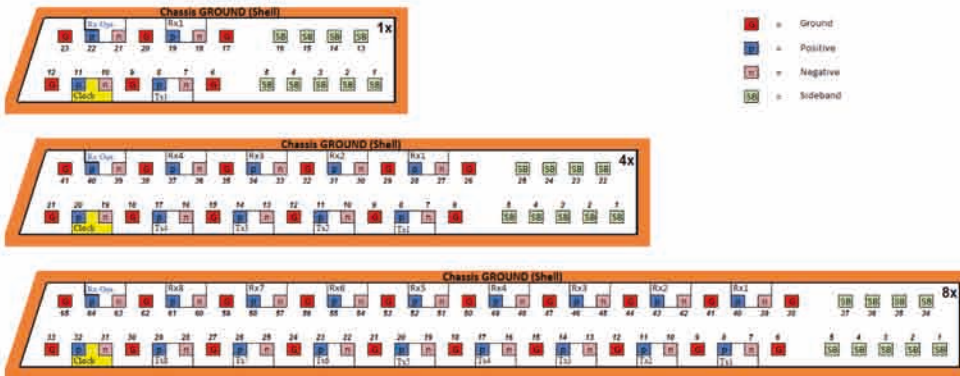
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PATENT PENDING



microSI

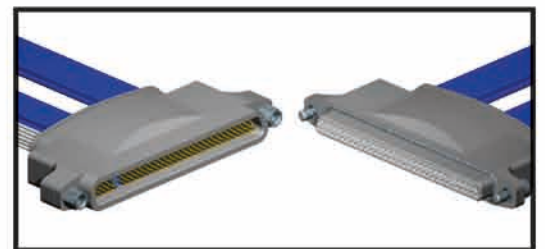
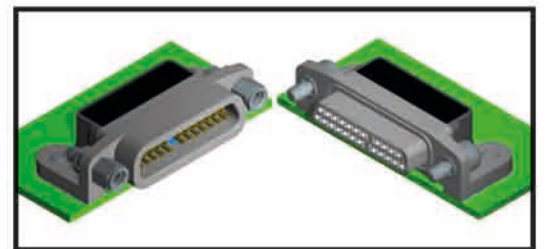
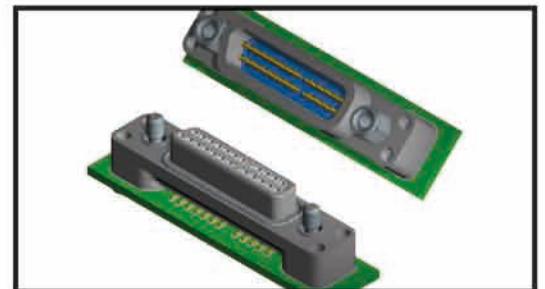
VERTICAL, RIGHT ANGLE AND CABLE



The AirBorn microSI product line is designed to meet requirements for signal integrity applications while still delivering the reliability customers have come to expect from AirBorn. The AirBorn microSI delivers flexibility in design by offering vertical board-mount, right angle board-mount, and cable I/O configurations supporting 1X, 4X, and 8X 100 Ω differential serial buses. Its balanced design limits skew within pairs. The MIL-DTL-83513 (Micro-D) qualified contact system and metal shells ensure ruggedness and durability.

FEATURES AND BENEFITS

- High-speed Micro-D optimized up to 10 GB/s
- Configured for serial buses 1x, 4x and 8x
- Field tested – four independent fine, gold plated contact system offers superior performance and reliability
- Versatile product offering including both genders of vertical board, right angle board, and cable
- Rugged metal shells and hoods
- Shell-to-shell EMI interface gasket
- Shell ground independent of signal pair grounds
- Balanced lengths within pairs limit skew
- 9 sideband connections included



AirBorn International Ltd

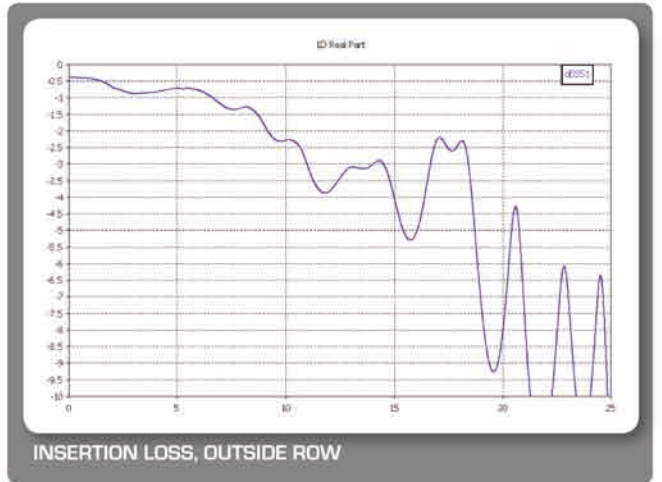
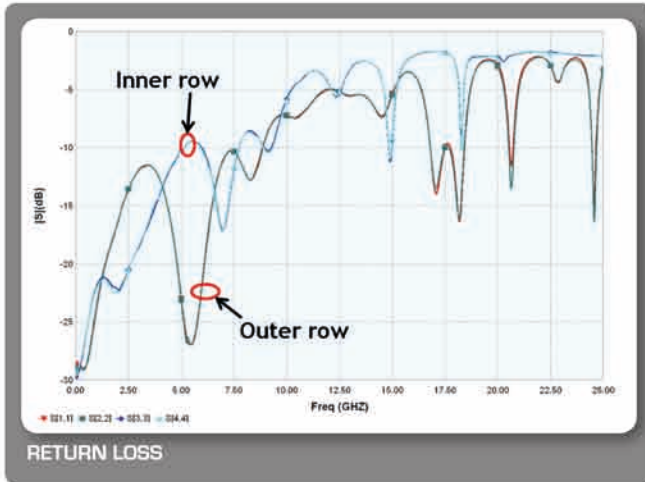
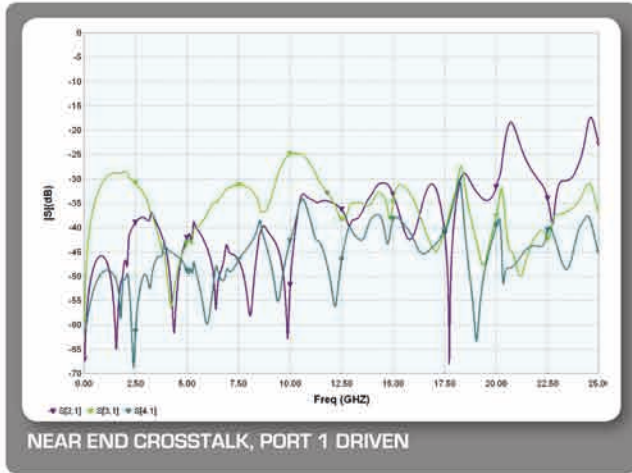
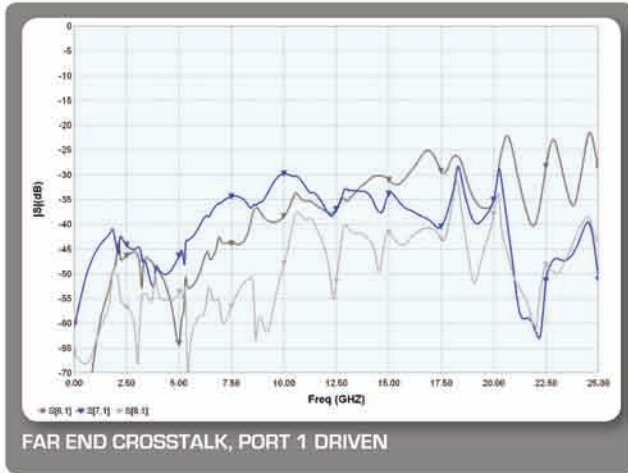
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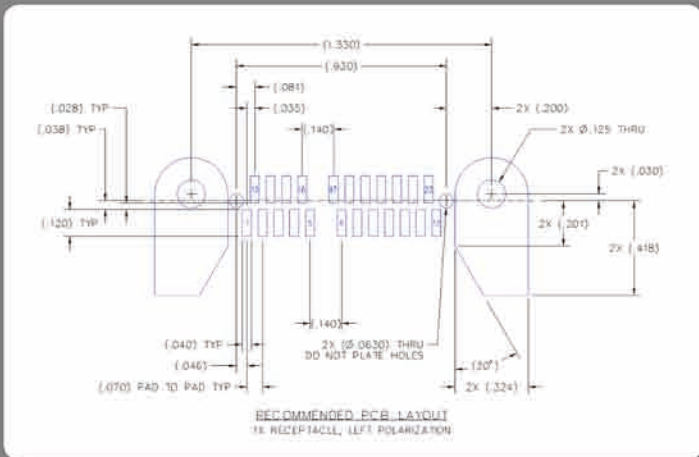
www.airborn.com

PATENT PENDING

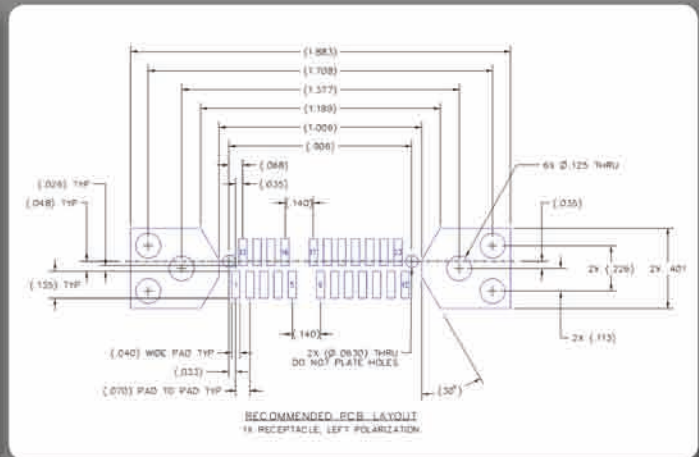
SI PERFORMANCE SUMMARY FOR MATED RIGHT ANGLE SET



1x PCB FOOTPRINT



RIGHT ANGLE



VERTICAL

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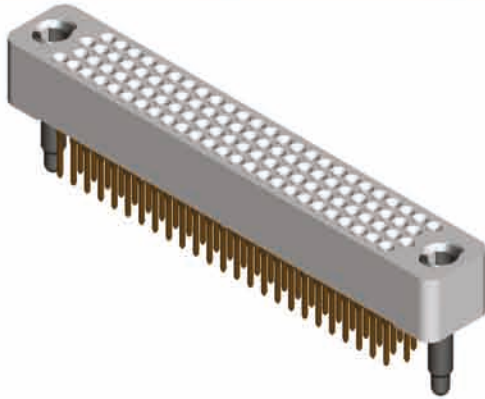
PATENT PENDING



IRRC

IRRCII

STACKABLE, PRESS-FIT, COMPLIANT PIN/SOCKET



A high-density, press-fit mounted connector using patented stacking contacts consisting of a female/compliant/male configuration used in board-to-board stacking applications. Aligned field connector contact configurations for improved signal integrity are also available.

FEATURES and BENEFITS

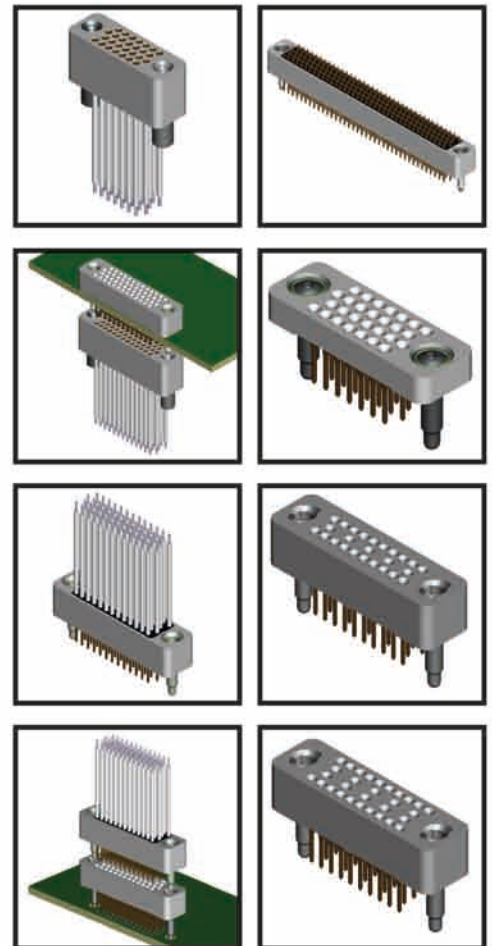
- This is a COTS connector with less than four weeks' lead time
- RRCII is optimized for signal routing; both single-ended and differential
- Board-to-board offering plus cable-to-board and flex-to-board; both high-speed and power
- Reliable "eye-of-the-needle"-compliant section design eliminates soldering
- BeCu contacts (special high-conductivity, high-temperature alloy)
- Contacts with different tail lengths can be selectively loaded in any pattern per customer requirement
- Long "wipe", high "normal force", redundant "crossed cylinder" contact interface design provides a very reliable electrical connection

MATERIALS

Contact	BeCu per ASTM B768 (BeCu C17410 brush alloy 174)
Contact Finish	Gold per MIL-G-45204 over nickel per IAW QQ-N-290
Molded Insulator	Glass-filled polyphenylene sulfide (PPS) per MIL-M-24519
Hardware	Stainless steel per ASTM A582, passivated per ASTM-967
Guide Pin/Socket	BeCu per ASTM B196/197, nickel plated per QQ-N-290

PERFORMANCE

Current Rating	3.0 amperes
Operating Temperature	-65° C to +125° C
Insulation Resistance	5,000 megaohms minimum @ 500 VDC
Durability	500 connector mating cycles
Contact Resistance	.3 to 5 milliohms (contact length dependent)
Contact Engagement Force	.4.0 oz (113 g) max. w/0.0246" dia. test pin
Contact Separation Force	.0.5 oz (14 g) min. w/0.0226" dia. test pin
Compliant Insertion Force	.22.5 lb (10.21 Kg) max. per contact
Compliant Removal Force	.4.5 lb (2.04 Kg) min. per contact



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PATENT PENDING

SI PERFORMANCE FOR MATED PAIRS and TYPICAL PCB FOOTPRINT

PIN COUNT

7 pins/row = 28 total pins
13 pins/row = 52 total pins
19 pins/row = 76 total pins
25 pins/row = 100 total pins
32 pins/row = 128 total pins
38 pins/row = 152 total pins
50 pins/row = 200 total pins
63 pins/row = 252 total pins
75 pins/row = 300 total pins

RCII 3-ROW

1 Bank
2 Banks
3 Banks
4 Banks

RCII 4-ROW

1 Bank
2 Banks
3 Banks
4 Banks

RC 4-ROW

RC 4-ROW

RCII 3-ROW

RCII 3-ROW

RCII 4-ROW

RCII 4-ROW

PCB FOOTPRINT

RC 4-Row

1	2	3	4	5	6	7
GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND

RCII 3-Row

Total # of pins per bank = 25 pins

1	2	3	4	5	6	7	8	9	10
GND	P	N	GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND	P	N	GND

RCII 4-Row

Total # of pins per bank = 30 pins

1	2	3	4	5	6	7	8	9	10
GND	P	N	GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND	P	N	GND
GND	P	N	GND	P	N	GND	P	N	GND

TYPICAL PIN-OUT

RC 4 Row, Differential 100 ohm		
Signal Integrity Performance (Connectors only)		
1	Diff. Insertion Loss	5 GHz @ -3dB
2	Diff. Return Loss	2.0 GHz @ -8dB
3	NEXT	4.0 GHz @ -25dB
4	FEXT	4.0 GHz @ -35dB

RC II 3 and 4 Row, Single Ended 50 ohm		
Signal Integrity Performance (Connectors only)		
1	S.E. Insertion Loss	6 GHz @ -3dB
2	S.E. Return Loss	4.0 GHz @ -20dB
3	NEXT	4.0 GHz @ -35dB
4	FEXT	4.0 GHz @ -30dB

RC II 3 & 4 Row, Differential 100 ohm		
Signal Integrity Performance (Connectors only)		
1	Diff. Insertion Loss	6 GHz @ -3dB
2	Diff. Return Loss	4.6 GHz @ -20dB
3	NEXT	4.0 GHz @ -50dB
4	FEXT	4.0 GHz @ -48dB

SI PERFORMANCE DATA

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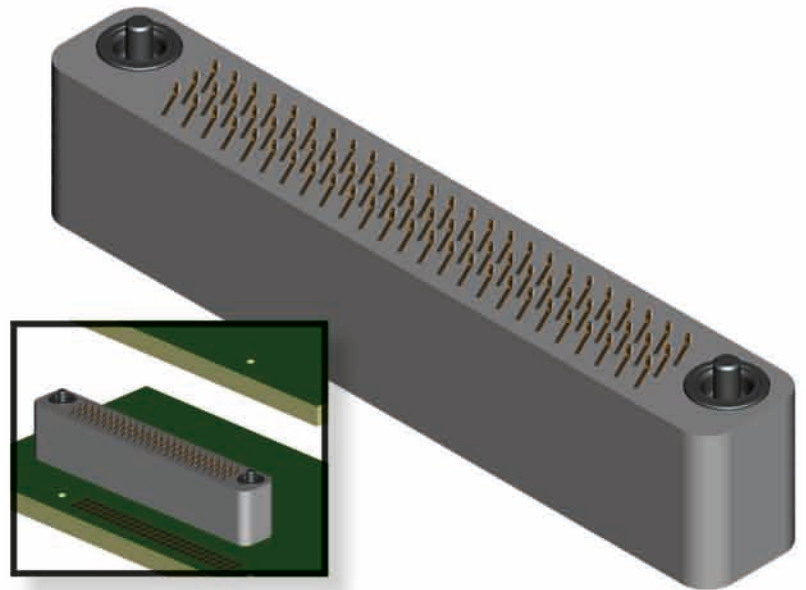
www.airborn.com

PATENT PENDING



0.05" 1.27mm VERTICAL COMPRESSION (Z-AXIS) LGA CONNECTOR

A high-density LGA (solderless) open-field, vertically-compressed connector utilizing a patented z-axis contact system configured for between-boards compression applications.

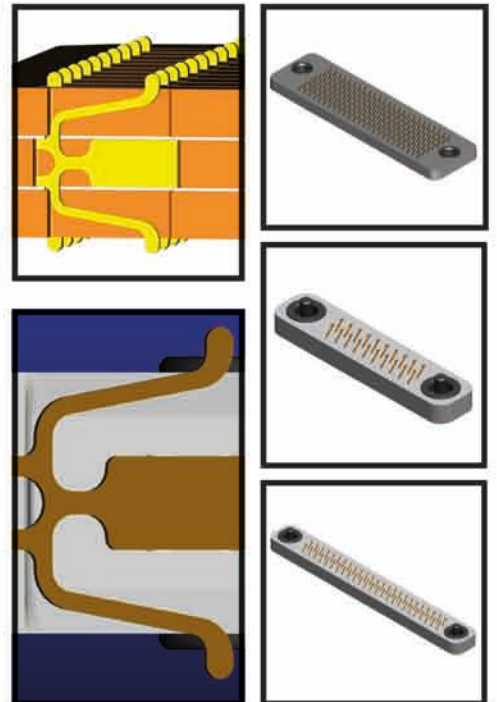


MATERIALS

Contact	BeCu C17200 per ASTM B194 (brush alloy 190)
Contact Finish	Gold per ASTM B488 over nickel per SAE AMS-QQ-N-290
Molded Insulator	Glass-filled polyphenylene sulfide (PPS) per MIL-M-24519
Hardware	Stainless steel per ASTM A582/582M, Passivated per SAE AMS-2700

PERFORMANCE

Contact Compression	-0.01"/side (nominal) for 0.100" and 0.150" connector heights -0.015"/side (nominal) for 0.200", 0.250", 0.300" and 0.350" connector heights
Compression Force	At a nom. of 0.01, compression force is 30 to 40 grams At a nom. of 0.015, compression force is 40 to 50 grams
Contact Co-Planarity	0.006 max
Contact Wipe	0.007" for 0.100" and 0.150" connector heights 0.015" for 0.200", 0.250", 0.300" and 0.350" connector heights
Current Rating	0.5 amperes
Contact Resistance	25 milliohms typical (contact height dependent)
Operating Temperature	-65° C to +125° C
Insulation Resistance	5,000 megaohms minimum @ 100 VDC
Dielectric Withstanding Voltage	250 VDC @ sea level, 100 VDC @ 70,000 ft.
Durability	Min.50 mating cycles – currently testing for 1000 cycles



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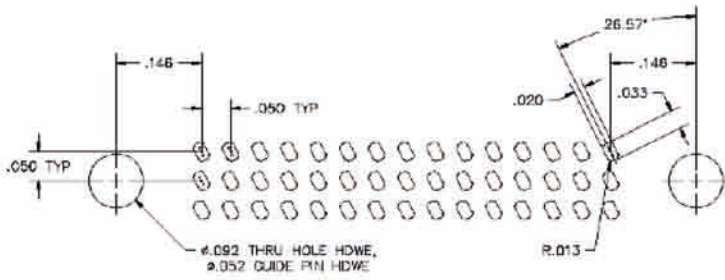
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PATENT PENDING



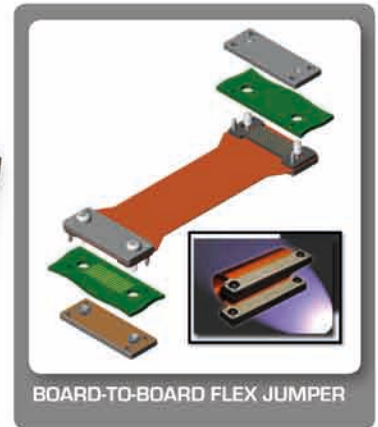
TYPICAL 0.750" STACK HEIGHT SI PERFORMANCE – BOTH SE and DIF



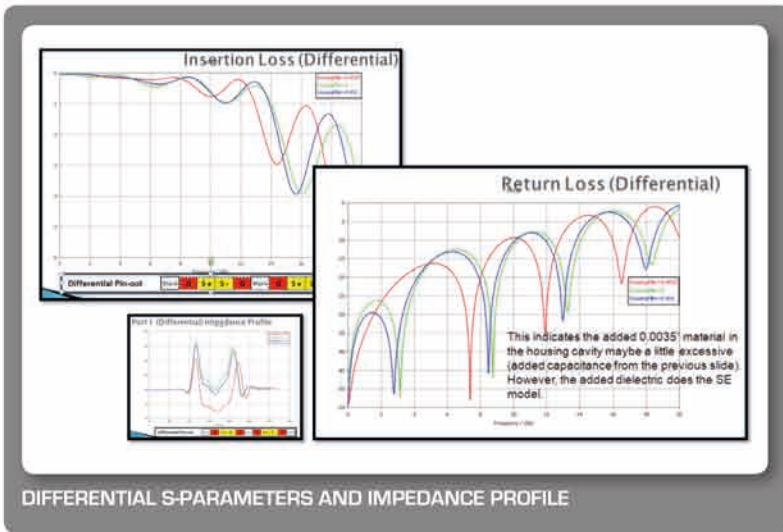
RECOMMENDED BOARD LAYOUT, TYP



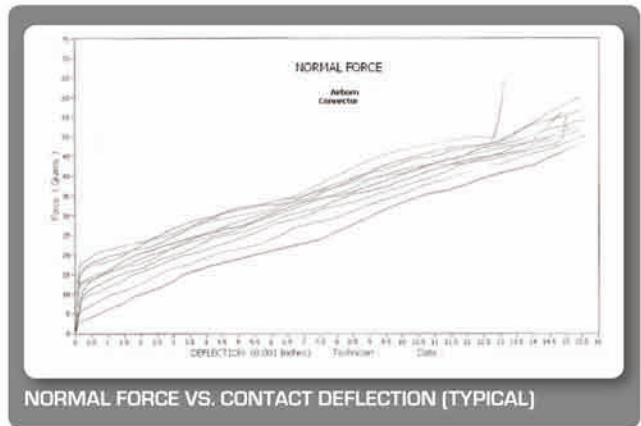
BOARD-TO-BOARD FLEX STACKER



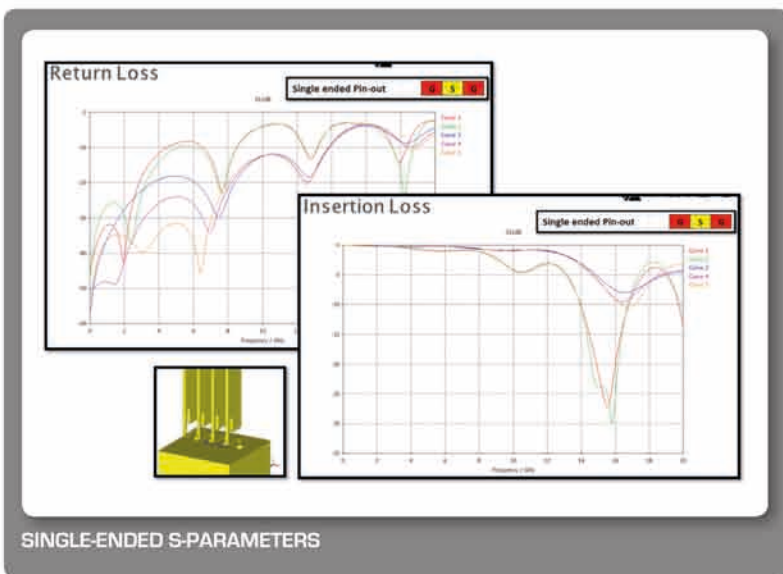
BOARD-TO-BOARD FLEX JUMPER



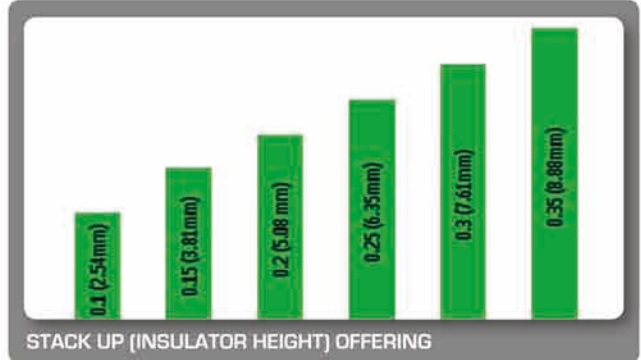
DIFFERENTIAL S-PARAMETERS AND IMPEDANCE PROFILE



NORMAL FORCE VS. CONTACT DEFLECTION (TYPICAL)



SINGLE-ENDED S-PARAMETERS



STACK UP (INSULATOR HEIGHT) OFFERING

	10 pin / Row	15 pin / Row	20 pin / Row	25 pin / Row
2 Row	X	X	X	X
3 Row	X	X	X	X
4 Row	X	X	X	X
5 Row	X	X	X	X
6 Row	X	X	X	X
7 Row	X	X	X	X

TOTAL NUMBER OF PINS OFFERING

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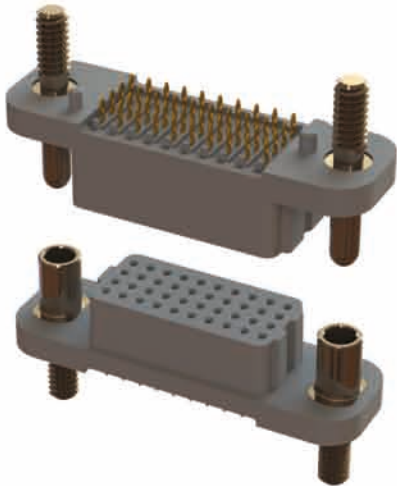
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PATENT PENDING



verSI

verSI, 1.27mm (0.050")



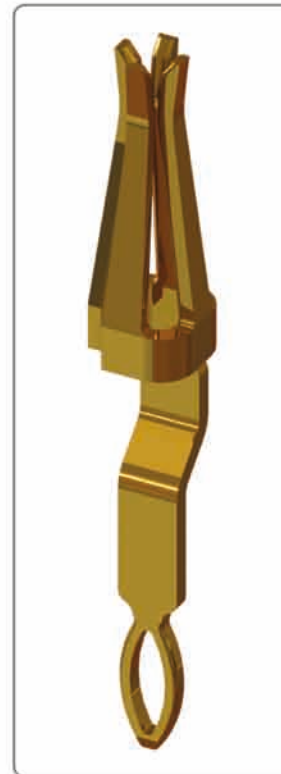
OPEN-PIN FIELD CONNECTOR FAMILY

The AirBorn verSI (verSI = versatile connectors with high-speed Signal Integrity) open-pin field product line is designed to meet the requirements for high-speed/signal integrity applications while still delivering the reliability customers have come to expect from AirBorn. The AirBorn verSI product family delivers flexibility in design by offering vertical board-mount, right angle board-mount, cable I/O, and flex circuit mounting with 40 to 500 contacts. Vertical board-mount plugs and mating vertical receptacles also support board-to-board stacking applications. Board spacing ranges from 8mm to 25mm. EMI hoods are available for best-in-class ruggedness and durability. Bolt-down pads allow for superior robustness and worry-free mating and unmating.

The AirBorn verSI offers several board termination types including paste-in-hole, thru hole, and compliant pin press fit technology, which eliminates the need for costly X-ray inspection.

FEATURES and BENEFITS

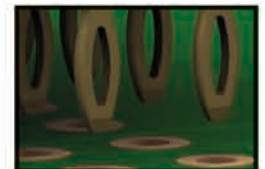
- Four points of contact offers superior performance and reliability
- Versatile product offering including vertical, right angle, and cable
- Rugged and EMI shrouds available
- Low mating forces – less than 40 grams
- Contact termination options:
 1. Press-fit
 2. Paste-in-hole
 3. Thru-hole
- Stack heights available from 8mm to 25mm in 1mm increments
- Open-pin field design allows for flexibility in termination schemes (single-ended, differential pair, power and ground or both)
- 100 Ω differential impedance matching with G_S+_S-_G signal layout



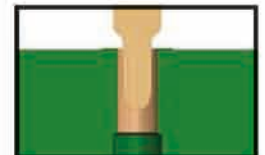
VSF VERTICAL CONNECTOR



FLEX JUMPERS



PRESS-FIT TERMINATIONS



PASTE-IN-HOLE

AirBorn International Ltd

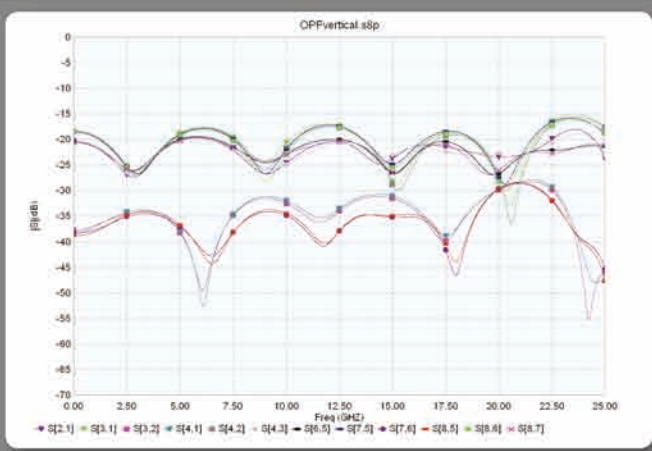
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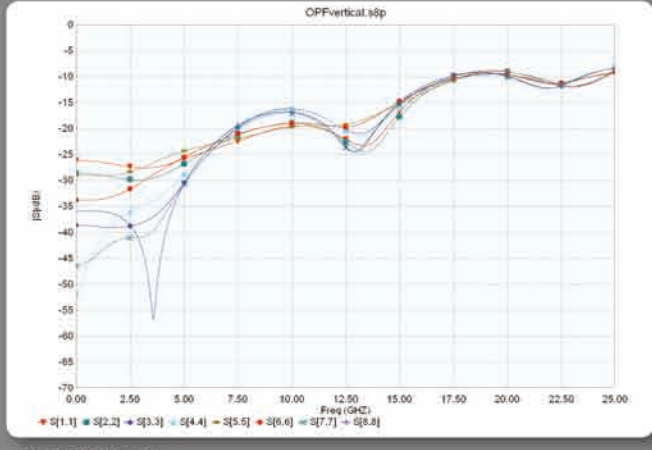
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PATENT PENDING

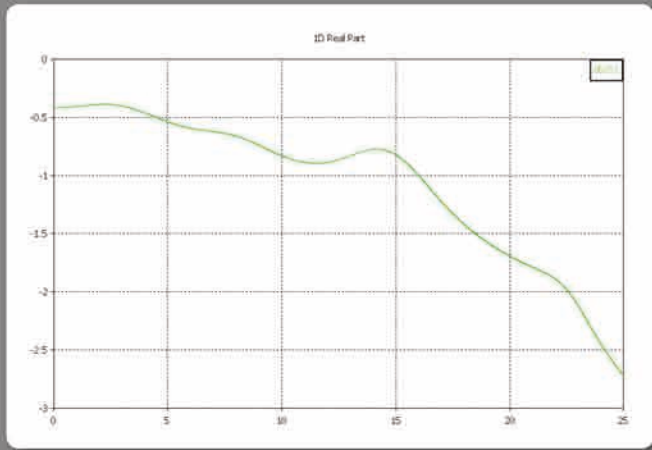
TYPICAL APPLICATION and SI PERFORMANCE FOR MATED PAIR



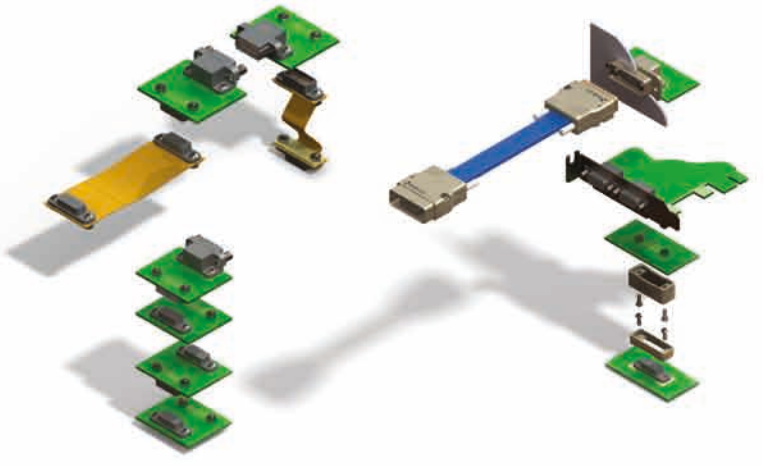
FAR/NEAR END CROSSTALK



RETURN LOSS

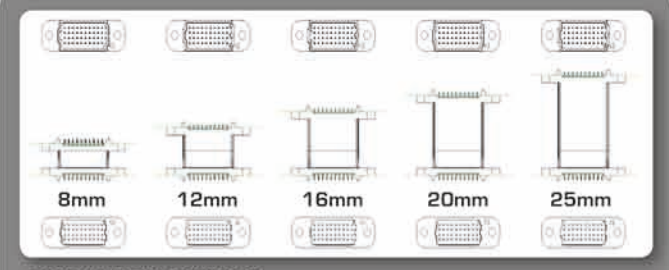


INSERTION LOSS

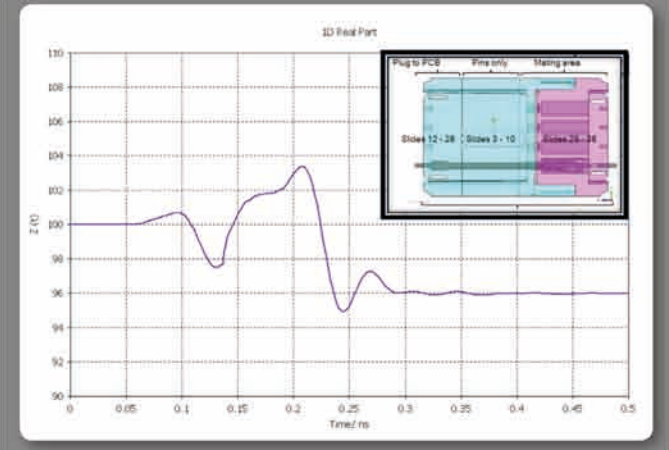


verSI					
	10 pin / Row	20 pin / Row	30 pin / Row	40 pin / Row	50 pin / Row
4 Row	X	X	X	X	X
5 Row	X	X	X	X	X
6 Row	X	X	X	X	X
8 Row	X	X	X	X	X
10 Row	X	X	X	X	X

ARRAY OPTIONS



STACK HEIGHT OPTIONS



DIFFERENTIAL IMPEDANCE PROFILE

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PATENT PENDING