

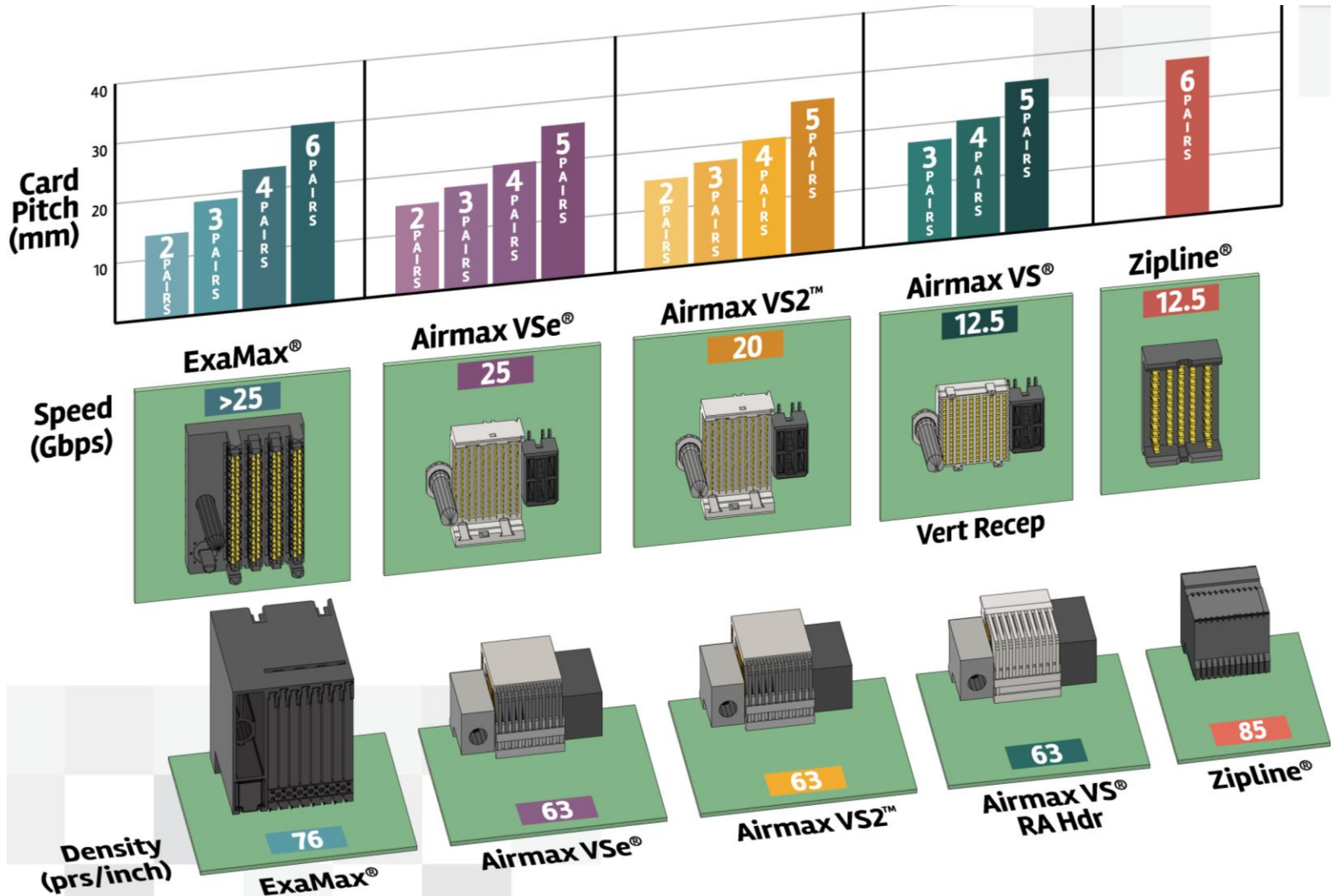


AirMAX[®] 6–25 Gbps Connector System

Product Presentation



High Speed Backplane Connector Portfolio

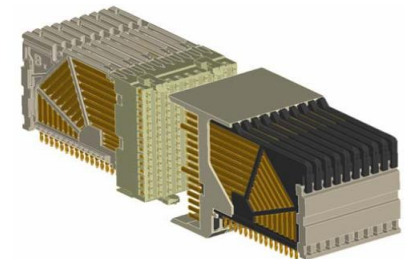
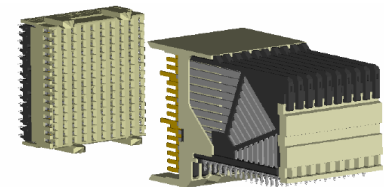
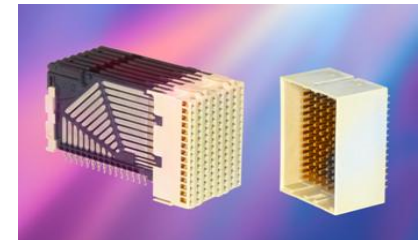


AirMax[®] Connector Family



Designed to provide high speed, high density interconnect:

- 10 year history of high volume production
 - Many industry standard applications
 - Hard metric form factor
 - Closely coupled diff pairs eliminate need for shielding
 - Reduce cost and complexity of the connector
- Full Product Platform – Multiple Sources
 - Right angle DC to vertical backplane
 - Both genders available
 - Right Angle Receptacle to Vertical Male Header
 - Right Angle Header to Vertical Receptacle
 - 3-4-5 pairs per column
 - Coplanar
 - Orthogonal
 - Cable connectors



Industry Standard Adoption



- AirMax Connector Family is designed for use in the following Applications

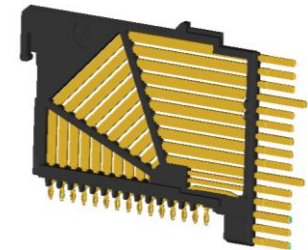
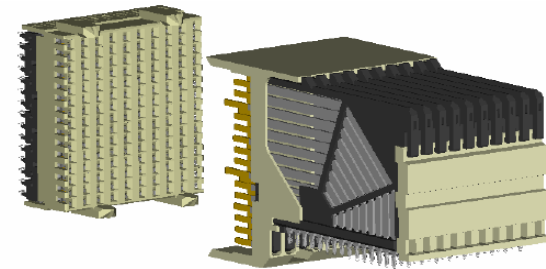
	AirMax VS [®]	AirMax VS2 [™]	AirMax VSe [®]
PCIe Gen 1 2.5G	✓	✓	✓
PCIe Gen 2 5.0G	✓	✓	✓
PCIe Gen 3 8.0G	✓	✓	✓
PCIe Gen 4 16.0G		✓	✓
CompactPCI Serial 12.5G	✓	✓	✓
SAS 2.1 6G	✓	✓	✓
SAS 3.0 12G	✓	✓	✓
SAS 4.0 24G			✓
SBB 1.0 3G	✓	✓	✓
SBB 2.0 6G	✓	✓	✓
SBB 2.5 12G		✓	✓
SSI Modular Blade Server 12.5G	✓	✓	✓
IEEE 802.3ap/ba 10G	✓	✓	✓
IEEE 802.3bj 25G			✓
OIF LR 25G			✓
QPI 8G (85ohm parts only)	✓		

- PCIe refers to PCI Express for Serial I/O interconnects
- Compact PCI Serial** is the standard for PCI-based Industrial Computer systems
- SAS refers to the Serial Attached SCSI standard for Serial Data transfer mostly used for storage
- SBB** is the Storage Bridge Bay standard for disk enclosures.
- SSI Modular Blade Server Platform** defines modular designed blade servers optimized for space and energy
- OIF 25G is the specification from the Optical Internetworking Forum for 25Gb/s Backplanes
- Items in bold have specifically called out AirMax part numbers.**

IMLA Concept

Insert Molded Leadframe Assembly

- Efficient way to manufacture and protect leadframes
- Pitch between IMLAs can vary; 2 mm, 3 mm
- Space between IMLAs is just air
- Front Housing provides guidance, spacing for IMLAs, protects pins
- Rear plastic organizers unitize the block
- Standard blocks can be mounted on the card to get the number of signals you need
- Standard guidance and power modules can be placed as needed
- This concept allows OEMs, CMs, and distributors to stock a few parts and satisfy a broad range of customers



Air Dielectric Concept

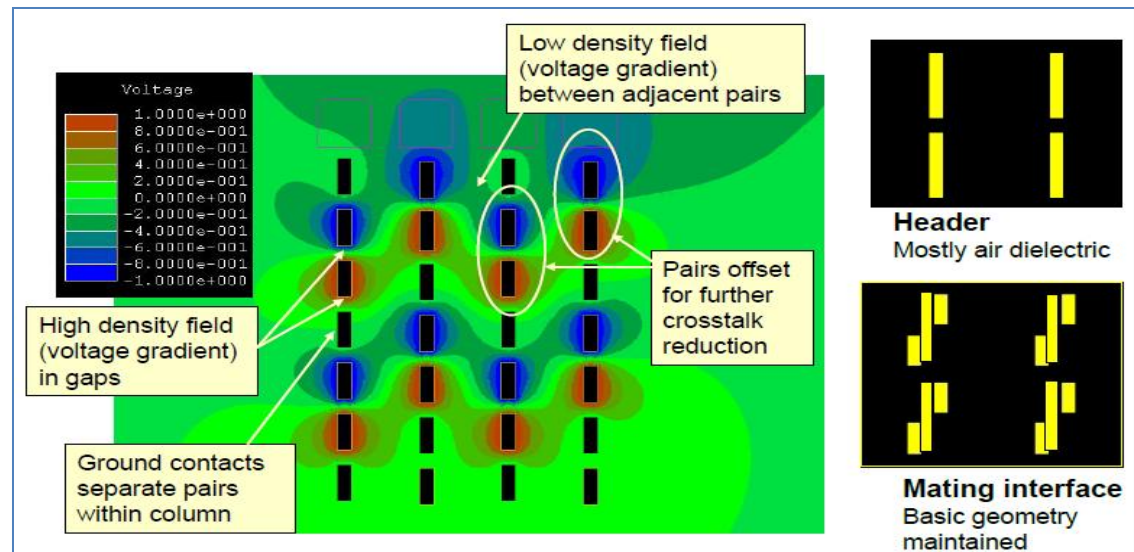
Breakthrough in Electronic Design – High Speed Performance without Shields

- Earlier connectors were open pin field connectors – surround signal pins with ground pins – OK to 3.125 Gbps
- AirMAX introduced concept of closely coupled differential pairs that no longer need an immediate ground reference.
 - This was a breakthrough in thinking – DesignCon Award 2006
 - Eliminated the cost and complexity associated with shields



Illustration showing electrical fields

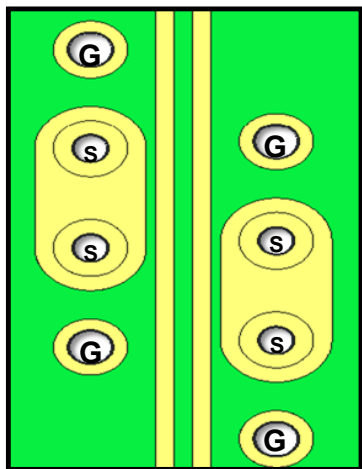
- Open pinfield
- Closely coupled air dielectric
- Shielded interconnect



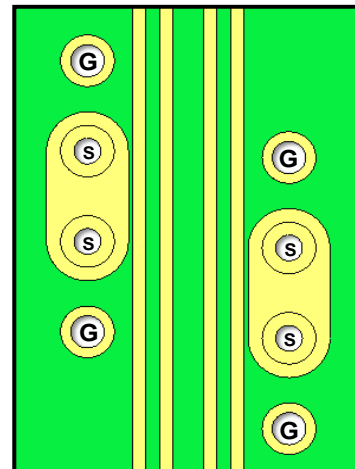
IMLAs Can be on Various Pitches

Design flexibility to optimize PCB routing

- 2.0 mm pitch allows for easy routing, fits with previous hard metric connectors like Millipacs and Metral
 - Enabled telco and computer manufacturers to easily upgrade system boards by replacing an existing low speed module with a high speed AirMax version
- 3.0 mm pitch allows quad routing – with 2 pairs routed between IMLAs.
 - This can halve the layer count for daughter cards and backplanes, dramatically reducing cost for systems
 - By the way, a wider IMLA pitch also improves SI



	mils	mm
Trace width	8	0.203
Trace –to- trace separation	8	0.203
Trace-to-antipad separation	3	0.076
Signal via drill Ø	17.7	0.45
Signal via finish Ø	15.7	0.4
Signal via pad Ø	31.5	0.80
Ground via drill Ø	23.6	0.60
Ground via finish Ø	20	0.50
Antipad width	49	1.245
Row pitch	55.1	1.4
Column pitch	79	2.0



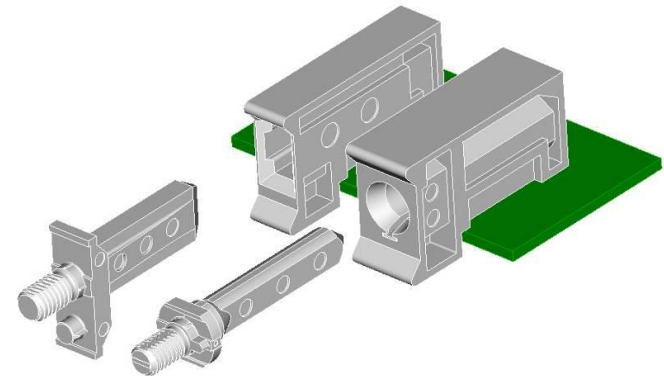
	mils	mm
Trace width	8	0.203
Trace –to- trace separation	8	0.203
Trace-to-antipad separation	2	0.051
Signal via drill Ø	17.7	0.45
Signal via finish Ø	15.7	0.4
Signal via pad Ø	31.5	0.80
Ground via drill Ø	23.6	0.60
Ground via finish Ø	20	0.50
Antipad width	48	1.219
Row pitch	55.1	1.4
Column pitch	79	2.997

Guidance / Power Modules Round out Family

Building blocks on your distributors shelf

- Power modules with 20 amp contacts
 - Multiple mating levels for power sequencing
 - 1x2, 2x2 and 2x3 versions
 - Application Spec GS-20-023 has details

- Rugged Guide Modules
 - 10.8 mm wide module with ESD and coding
 - 7.8 mm wide module just guidance
 - Versions to carry up to 28 lbs each
 - Application spec GS-20-045



Three AirMax Versions backward mateable



Can upgrade system speed by with advanced daughtercard connectors

- AirMax VS[®] – Original AirMax version
 - Virtual shield
 - Open pin field design for maximum flexibility
 - 2 mm and 3 mm IMLA pitch
 - 12.5 Gbps
 - Air dielectric
 - Full Family Tooled
- AirMax VSe[®] – Enhanced Electrical 25 G
 - Reduced via size 0.36 mm
 - Dual beams optimized for 25 Gig
 - Dedicated grounds
- AirMax VS2[™] – Improved mechanically and electrically
 - Up to 20 Gbps performance
 - Preferred in new designs – Mates to AirMax VS connectors
- Can Mix and match modules on a board to match system speed requirements

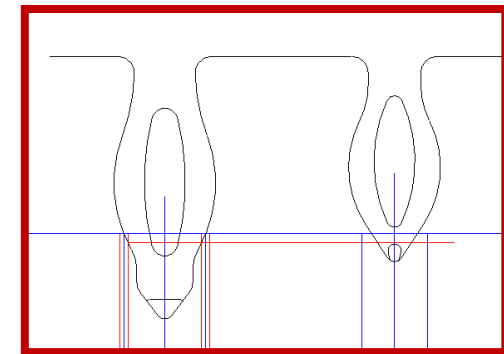
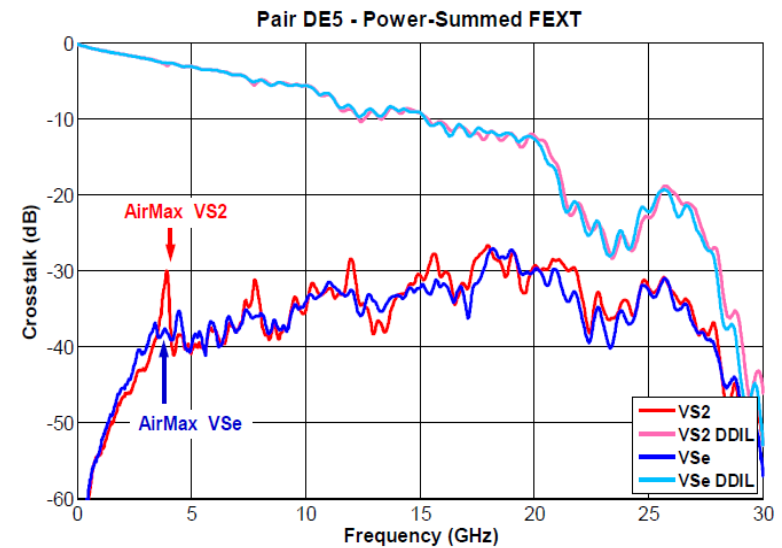


AirMax VSe® Connectors



Enhanced for Improved Performance

- Same open pin field design as AirMax VS®
- Product design Optimized for Performance
 - Uses Electrically Conductive Bar (ECB) to extend electrical performance up to **25 Gbps**
 - Same mechanical features as AirMax VS2
- Small press fit for 0.36 mm holes
- Extra row of vias improve SI performance
- Mating compatible with AirMax VS2™
- GXT™ Plating
- Compliant with Telcordia 1217 Core central office specs



Ø 0.5 mm

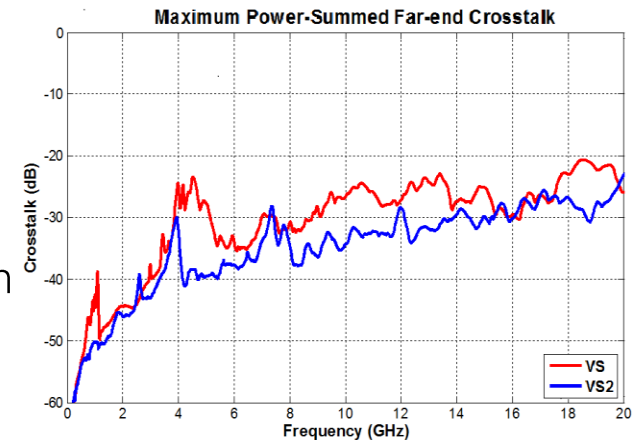
Ø 0.4 mm

AirMax VSe[®] Connectors



Enhanced for Optimized Cost & Improved Performance

- Same open pinfield design as AirMax VS Products
- Electrical and Mechanical Performance Benefits
 - Signal integrity: 20 Gb/sec performance
 - Fully compliant with IEEE 802.3 ap/ba
 - Improved mechanical properties and EON True Position
- Cost Benefits
 - Engineered to absolutely minimize manufacturing cost
 - Uses the most cost effective raw materials and manufacturing processes available
 - Plated with GXT+ for better cost and compliance with Telcordia 1217 – Core central office
 - Allows use of simple “Flat Rock” application tooling
- Easy Implementation
 - Identical footprint to AirMax VS products – No need to redesign existing PCB layouts
 - Forward mating compatible with AirMax VSe connectors for future system upgrades to 25 Gb/s





THANK YOU

