High Speed Backplane Products

Amphenol

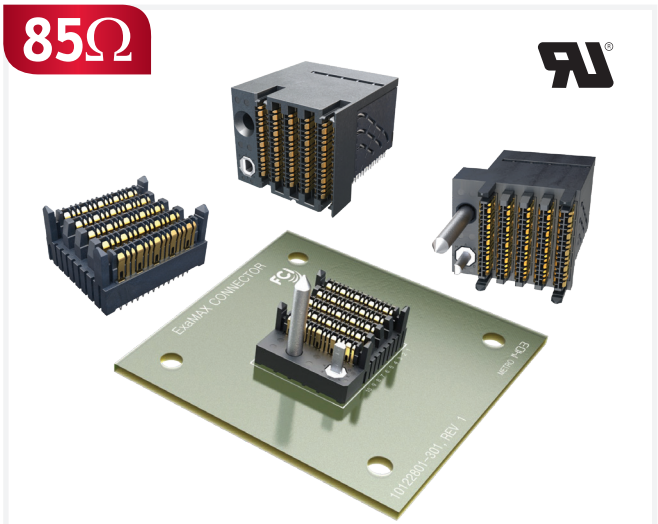
ExaMAX® 85Ω High Speed Backplane Connector System

Supports Intel QPI and UPI Industry Specification; 25 to 56Gb/s data rates

SUPPORTS MANY INDUSTRY STANDARD SPECIFICATIONS; MIGRATION PATH TO HIGHER BANDWIDTH APPLICATIONS

ExaMAX® 85Ω backplane connector system meets industry specifications requiring higher bandwidth applications from 25Gb/s to 56Gb/s. The optimized connector design delivers superior signal integrity performance resulting in low crosstalk noise and low insertion loss while minimizing channel performance variation for every differential pair. Each signal wafer incorporates an innovative one-piece, embossed ground structure to improve crosstalk performance through 56Gb/s. The simple, functional design contributes to a very cost-effective solution.

- The innovative beam-on-beam contact interface minimizes residual stub for improved signal integrity performance while providing exceptionally low mating forces
- ExaMAX® optimizes design flexibility by integrating high speed differential signals, low speed signals and power in one connector
- ExaMAX® product family is offered in industry standard packaging options including traditional backplane, coplanar board, orthogonal midplane and orthogonal direct mate, mezzanine and cable to board



TARGET MARKETS

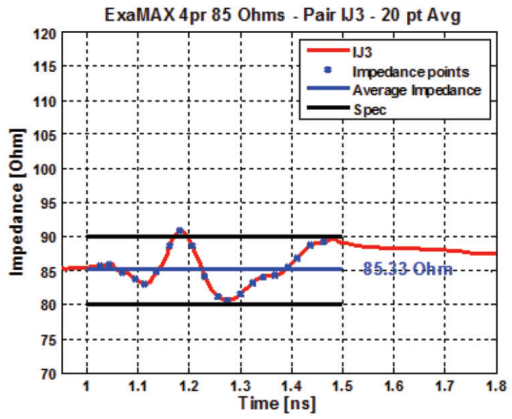
FEATURES

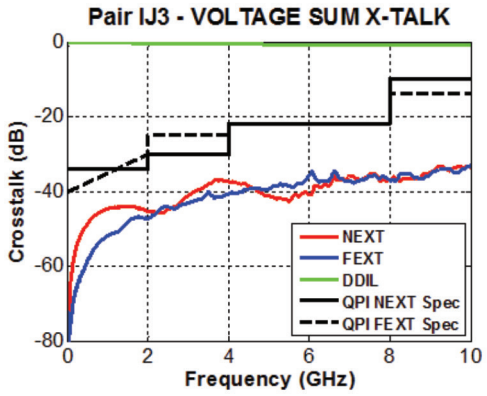
BENEFITS

FEATURES	BENEFITS
▪ 85Ω impedance performance	▪ Meets Industry specifications such as Intel QPI, Intel UPI, and PCI Express ▪ Minimizes impedance discontinuities
▪ Scalable performance from 25Gb/s to 56Gb/s	▪ Supports system upgrade without costly redesigns
▪ Unique beam-on-beam interface and skew equalized leadframes	▪ Provides low crosstalk while eliminating insertion loss resonances ▪ Reduces mating force up to 65% compared to traditional blade and beam designs
▪ Hermaphroditic mating interface protects mating beams	▪ Durable, reliable mating interface design eliminates crushed pins
▪ Modular, hard metric connector block design	▪ 2mm pitch for high density application ▪ 3mm pitch enables quad routing and lower PCB cost
▪ Zero skew	▪ Optimizes PCB routing
▪ Additional signal pin per column	▪ Integrates high and low speed signals in the same connector
▪ High speed signal PCB hole: 0.36mm (finished hole) ▪ Ground pin PCB hole: 0.5mm (finished hole)	▪ Optimizes electrical performance and aspect ratio
▪ 12 to 72 differential pair node connector	▪ Wide product range for various packaging options
▪ Integrated guide design	▪ Improves mating performance using minimal board space

TECHNICAL INFORMATION

SIGNAL INTEGRITY PERFORMANCE





MATERIAL

- Contacts: High performance copper alloy
- Plating(s): Performance-based plating at separable interface (Telcordia GR-1217-CORE) tin over nickel on press-fit tails
- Housings: High performance thermoplastic, UL94-V0

MECHANICAL PERFORMANCE

- Long mating wipe of > 2mm
- X and Y capture a generous 1.1mm
- Mating Force: 0.38N max. per contact
- Unmating Force: 0.10N min. per contact
- Average press-fit Insertion Force: 12N max. per contact

ELECTRICAL PERFORMANCE

- Contact Resistance: 20mV max., 100mA current
- Insulation Resistance: 1000MΩ at 500VDC
- Dielectric Withstanding Voltage: 500VDC
- Current Rating (with 30° C T-rise above ambient)
  - Signal contact: 0.5A/Contact (both signal and ground contacts can carry current)

APPROVALS AND CERTIFICATIONS

- Telcordia GR-1217-CORE Central Office qualification passed
- UL E66906

ENVIRONMENTAL

- Operating Temperature Range: -55°C to +85°C

SPECIFICATION

- Amphenol Product Specification: GS-12-1096
- Amphenol Packaging Specification: GS-20-0361

INDUSTRY SPECIFICATIONS

Industry Specifications	Speed Performance
PCI Express (PCIe®) Gen 1/2/3/4/5	2.5Gb/s to 32Gb/s
CEI-56G-MR-PAM4 Long Reach Interface	56Gb/s PAM4
Intel 85Ω Performance (Intel QPI & UPI)	10Gb/s to 12Gb/s
Serial Attached SCSI (SAS) 1.1/2.1/3.0/4.0	3Gb/s to 24Gb/s
SATA Revision 1.x/2.x/3.x	1.5Gb/s to 6Gb/s
Fibre Channel (FC) Gen 1/Gen 2/Gen 3/ Gen 4/Gen 5	1.0625Gb/s to 14.025Gb/s
InfiniBand (IB) SDR/DDR/QDR/FDR/EDR	2.5Gb/s to 25Gb/s
Ethernet 1Gbe/10Gbe/40Gbe/ 100Gbe/25Gbe	1.25Gb/s to 25.78125Gb/s

TARGET MARKETS/APPLICATIONS

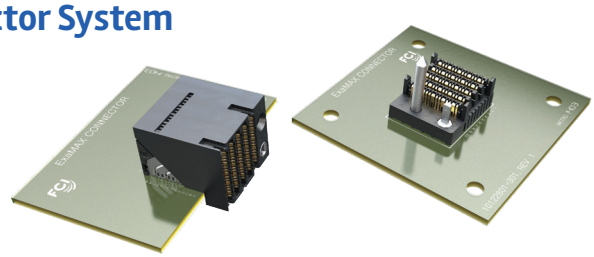
Hubs
Optical Transport
Router
Switches
Wireless Infrastructure

External Storage System
Server
Supercomputer

Emulation Equipment
Industrial & Instrumentation
Test Equipment

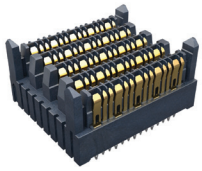
EXAMAX® 85Ω TRADITIONAL MOTHER-DAUGHTER BOARD

PART NUMBERS



NO GUIDE

Product Variation			Mating Connector System	
			No Guide Pin	
Pairs	Columns	Differential Pairs	Vertical Header (VH)	Right Angle Receptacle (RAR)
4	6	24	10141612-101LF	10133891-101LF
	8	32	10135222-101LF	10135216-101LF
	10	40	10141614-101LF	10135218-101LF
	12	48	10133901-101LF	10133895-101LF
6	6	36	10135233-101LF	10135221-101LF
	8	48	0135234-101LF	10135224-101LF
	10	60	10135235-101LF	10135237-101LF
	12	72	10135236-101LF	10135238-101LF



Vertical Header (No Guide)

Right Angle Receptacle (No Guide)

LEFT GUIDE

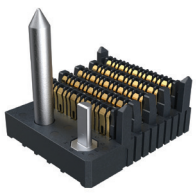
Product Variation			Mating Connector System	
			Left Guide Pin	
Pairs	Columns	Differential Pairs	Vertical Header (VH)	Right Angle Receptacle (RAR)
4	6	24	10141612-12JLF	10133891-12JLF
	8	32	10135222-12JLF	10135216-12JLF
	10	40	10141614-12JLF	10135218-12JLF
	12	48	10133901-12JLF	10133895-12JLF
6	6	36	10135233-12JLF	10135221-12JLF
	8	48	10135234-12JLF	10135224-12JLF
	10	60	10135235-12JLF	10135237-12JLF
	12	72	10135236-12JLF	10135238-12JLF

Vertical Header (Left Guide)

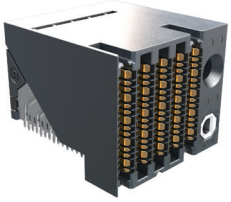
Right Angle Receptacle (Left Guide)

RIGHT GUIDE

Product Variation			Mating Connector System	
			Right Guide Pin	
Pairs	Columns	Differential Pairs	Vertical Header (VH)	Right Angle Receptacle (RAR)
4	6	24	10141612-11JLF	10133891-101LF
	8	32	10135222-11JLF	10135216-11JLF
	10	40	10141614-11JLF	10135218-11JLF
	12	48	10133901-11JLF	10133895-11JLF
6	6	36	10135233-11JLF	10135221-11JLF
	8	48	10135234-11JLF	10135224-11JLF
	10	60	10135235-11JLF	10135237-11JLF
	12	72	10135236-11JLF	10135238-11JLF



Vertical Header (Right Guide)



Right Angle Receptacle (Right Guide)

EXAMAX® 85Ω COPLANAR

PART NUMBERS

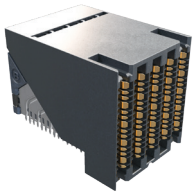
Standard Coplanar

Inverse Coplanar

NO GUIDE

Product Variation			Mating Connector System	
			No Guide Pin	
Pairs	Columns	Differential Pairs	Right Angle Header (RAH)	Right Angle Receptacle (RAR)
4	6	24	10135662-101LF	10133891-101LF
	8	32	10136159-101LF	10135216-101LF
	10	40	10136160-101LF	10135218-101LF
	12	48	10135664-101LF	10133895-101LF
6	6	36	10136161-101LF	10135221-101LF
	8	48	10136162-101LF	10135224-101LF
	10	60	10136163-101LF	10135237-101LF
	12	72	10136164-101LF	10135238-101LF

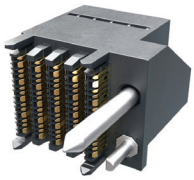
Right Angle Header (No Guide)



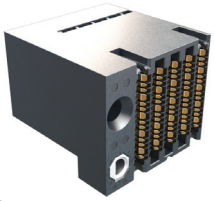
Right Angle Receptacle (No Guide)

LEFT GUIDE

Product Variation			Mating Connector System	
			Left Guide Pin	
Pairs	Columns	Differential Pairs	Right Angle Header (RAH)	Right Angle Receptacle (RAR)
4	6	24	10135662-12JLF	10133891-12JLF
	8	32	10136159-12JLF	10135216-12JLF
	10	40	10136160-12JLF	10135218-12JLF
	12	48	10135664-12JLF	10133895-12JLF
6	6	36	10136161-12JLF	10135221-12JLF
	8	48	10136162-12JLF	10135224-12JLF
	10	60	10136163-12JLF	10135237-12JLF
	12	72	10136164-12JLF	10135238-12JLF



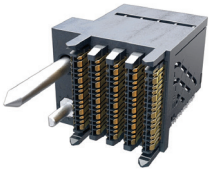
Right Angle Header (Left Guide)



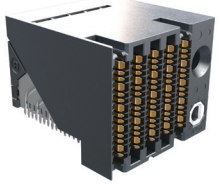
Right Angle Receptacle (Left Guide)

RIGHT GUIDE

Product Variation			Mating Connector System	
			Right Guide Pin	
Pairs	Columns	Differential Pairs	Right Angle Header (RAH)	Right Angle Receptacle (RAR)
4	6	24	10135662-11JLF	10133891-11JLF
	8	32	10136159-11JLF	10135216-11JLF
	10	40	10136160-11JLF	10135218-11JLF
	12	48	10135664-11JLF	10133895-11JLF
6	6	36	10136161-11JLF	10135221-11JLF
	8	48	10136162-11JLF	10135224-11JLF
	10	60	10136163-11JLF	10135237-11JLF
	12	72	10136164-11JLF	10135238-11JLF



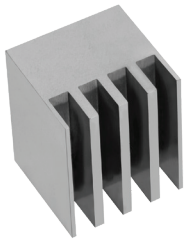
Right Angle Header (Right Guide)



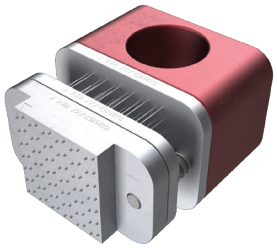
Right Angle Receptacle (Right Guide)

TOOLING INFORMATION

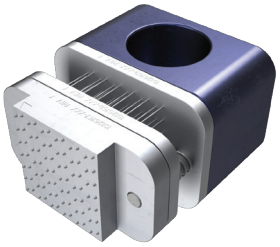
PART NUMBERS



Insertion Tool



Vertical and Right Angle Header Removal Tool



Right Angle Receptacle Removal Tool

APPLICATION TOOLS FOR RIGHT ANGLE RECEPTACLE WITH 2mm COLUMN PITCH

Pairs	Columns	Differential Pairs	Insertion Tool	Removal Tool
4	6	24	Flat Rock, No Tool	10126151-006
	8	32		10126151-008
	10	40		10126151-010
	12	48		10126151-012
6	6	36	Flat Rock, No Tool	10126156-006
	8	48		10126156-008
	10	60		10126156-010
	12	72		10126156-012

APPLICATION TOOLS FOR VERTICAL HEADER WITH 2mm COLUMN PITCH

Pairs	Columns	Differential Pairs	Insertion Tool	Removal Tool
4	6	24	10125491-006	10126131-006
	8	32	10125491-008	10126131-008
	10	40	10125491-010	10126131-010
	12	48	10125491-012	10126131-012
6	6	36	10125493-006	10126136-006
	8	48	10125493-008	10126136-008
	10	60	10125493-010	10126136-010
	12	72	10125493-012	10126136-012

APPLICATION TOOLS FOR RIGHT ANGLE HEADER WITH 2mm COLUMN PITCH

Pairs	Columns	Differential Pairs	Insertion Tool	Removal Tool
4	6	24	Flat Rock, No Tool	10126131-006
	8	32		10126131-008
	10	40		10126131-010
	12	48		10126131-012
6	6	36	Flat Rock, No Tool	10126136-006
	8	48		10126136-008
	10	60		10126136-010
	12	72		10126136-012

EXAMAX® PROTECTIVE CAPS

PART NUMBERS

Header Protective Cap

Receptacle Protective Cap

Product Variation			Protective Caps	
Pairs	Columns	Differential Pairs	Header	Receptacle
4	6	24	10138303-006	10138300-006
	8	32	10138303-008	10138300-008
	10	40	10138303-010	10138300-010
	12	48	10138303-012	10138300-012
6	6	36	10138304-006	10137670-006
	8	48	10138304-008	10137670-008
	10	60	10138304-010	10137670-010
	12	72	10138304-012	10137670-012

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