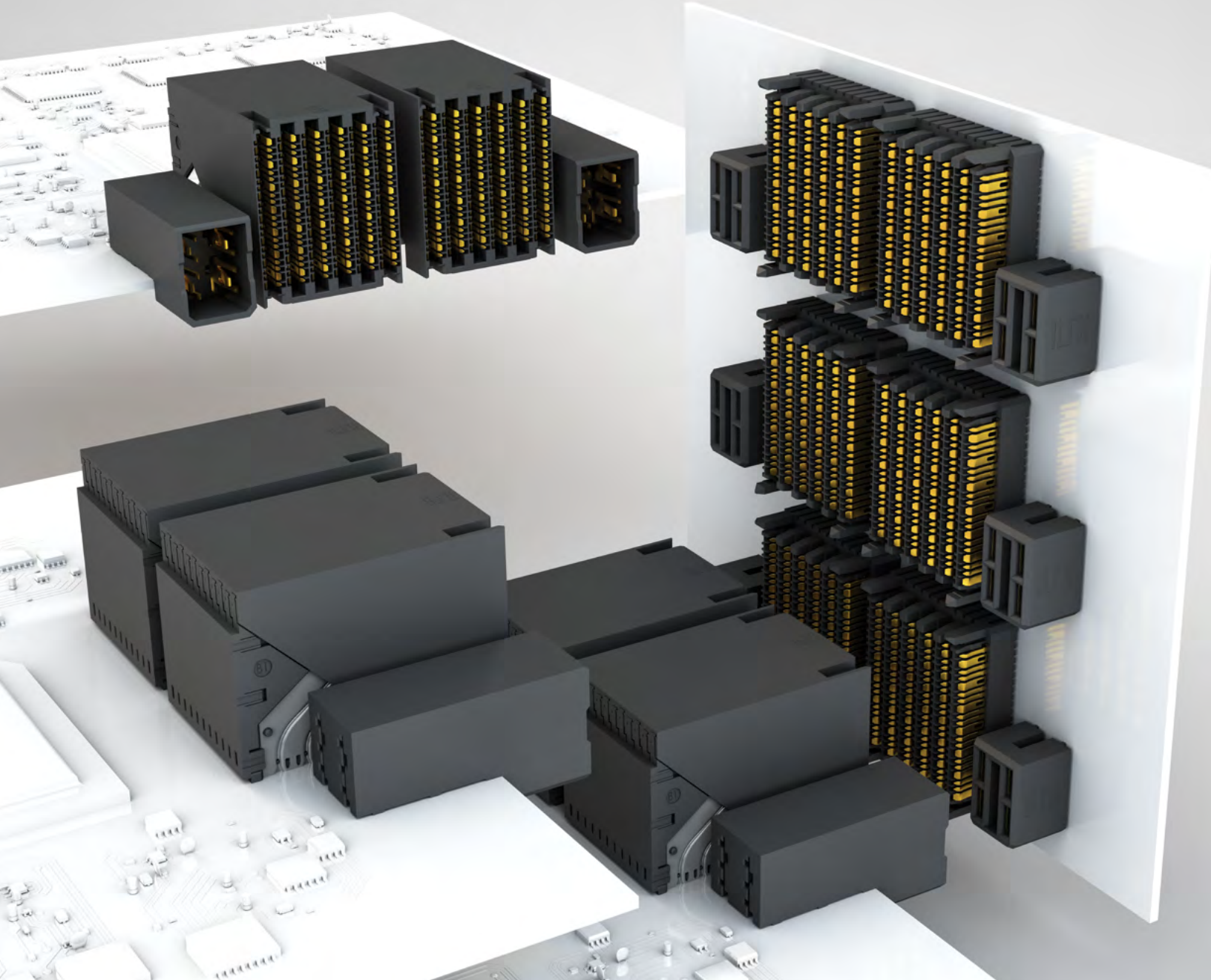


ExaMAX[®]

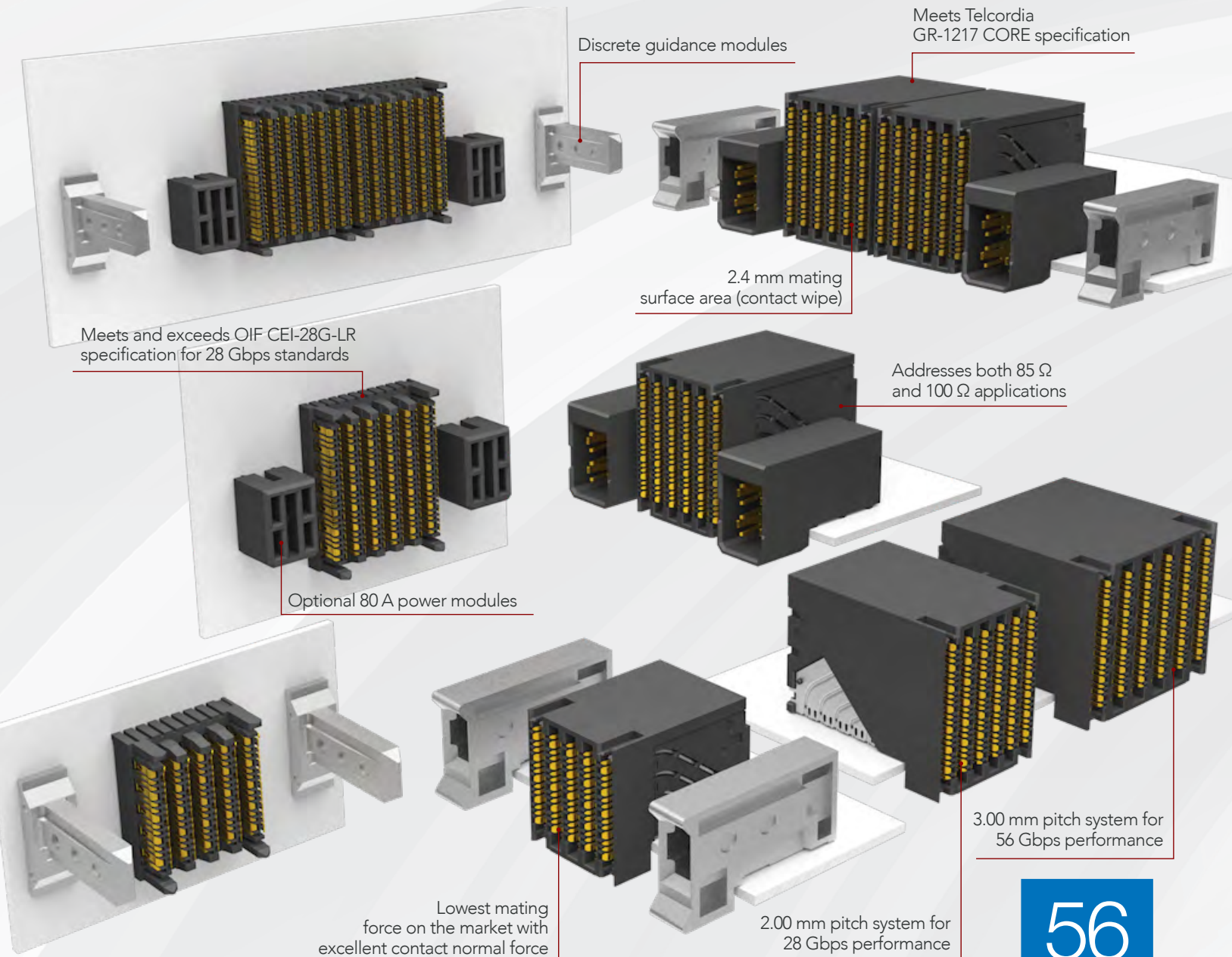
HIGH-SPEED BACKPLANE SYSTEMS



ExaMAX[®]

HIGH-SPEED BACKPLANE SYSTEMS

ExaMAX[®] high-speed backplane systems deliver 28 Gbps of electrical performance while offering an easy migration path to 56 Gbps. A choice of 28 Gbps performance on a 2.00 mm column pitch, or 56 Gbps performance on a 3.00 mm column pitch, gives designers the option of optimizing density or minimizing board layer count for high-speed backplane applications.



56
Gbps

28
Gbps

*ExaMAX[®] is a trademark of AFCI

OPTIMIZED FOR DENSITY AND PERFORMANCE

Meets industry specifications such as PCI Express®, Intel OPI & VPI, SAS, SATA, Fibre Channel, InfiniBand™ and Ethernet

Enables 28 Gbps electrical performance on 2.00 mm column pitch and 56 Gbps on 3.00 mm column pitch

Exceeds OIF CEI-28G-LR specification for 28 Gbps standards

Individual signal wafers in a staggered, differential pair design:

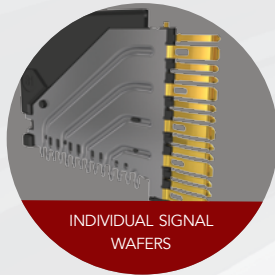
- 72-pair design: 6-pair x 12 column
- 40-pair design: 4-pair x 10 column

Wafer incorporates a one-piece embossed ground structure:

- Increased isolation significantly reduces crosstalk
- Ground placement engineered for 92 Ω impedance and addresses both 85 Ω and 100 Ω applications

Balanced differential pairs are arranged in columns with zero skew

Press-fit tails provide a reliable electrical connection between the connector and the board



INDIVIDUAL SIGNAL WAFERS



STAGGERED DIFFERENTIAL PAIR DESIGN

HIGH RELIABILITY DESIGN FOR RUGGED APPLICATIONS

Industry's lowest mating force with excellent contact normal force

Two reliable points of contact, even when subjected to angled mating

Meets Telcordia GR-1217 CORE specification

2.4 mm contact wipe

Beam-on-beam contact interface minimizes residual stub

Hermaphroditic mating interface:

- Ensures stub-free mating
- Provides reliable mating and alignment

Thick wall housings available to maximize robustness

Blind mate capable, with built-in macro and micro guidance modules that hold maximum weight in a space-saving design, and allow for self-capture, self-alignment and mating without damage

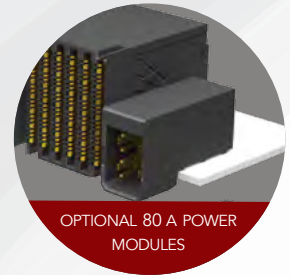
High power modules deliver bulk current to mating power components at 80 A per module



TWO RELIABLE POINTS OF CONTACT



GUIDANCE MODULES FOR BLIND MATING



OPTIONAL 80 A POWER MODULES

TECHNOLOGY CENTERS

ADVANCED INTERCONNECT DESIGN

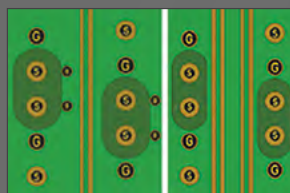
Systems engineered for maximum density and performance

Targeted performance for return loss compliance in 85 Ω & 100 Ω systems

Future-proof design for easy migration to 56 Gbps systems

Unique contact geometry results in lowest mating force on the market

Single track routing on 2.00 mm pitch; single or double track on 3.00 mm pitch



TERASPEED® CONSULTING

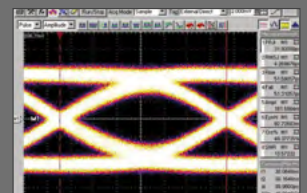
Advanced support for full system and cost optimization

PCB layout and trace routing strategies for optimized performance

Design assistance from consulting review to full turn-key design

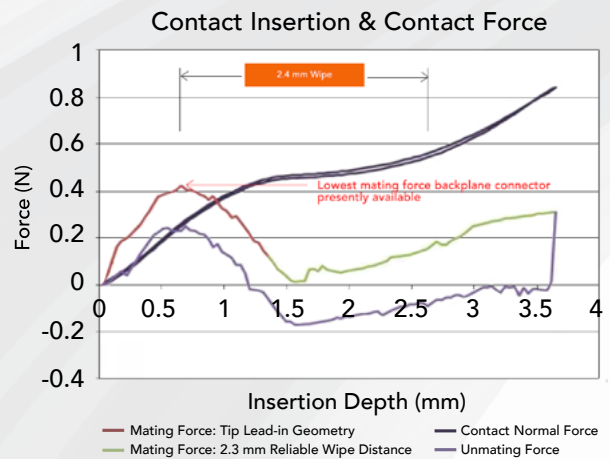
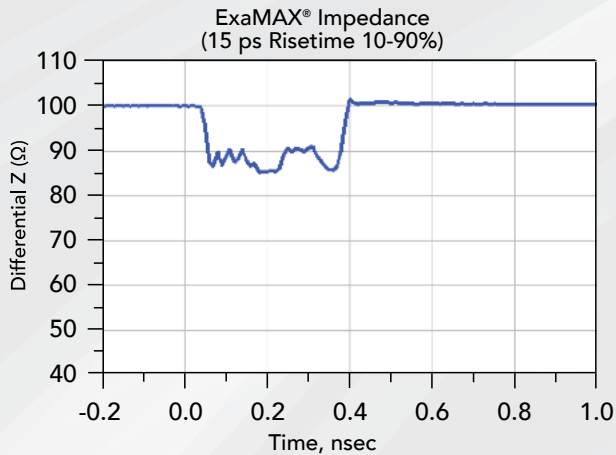
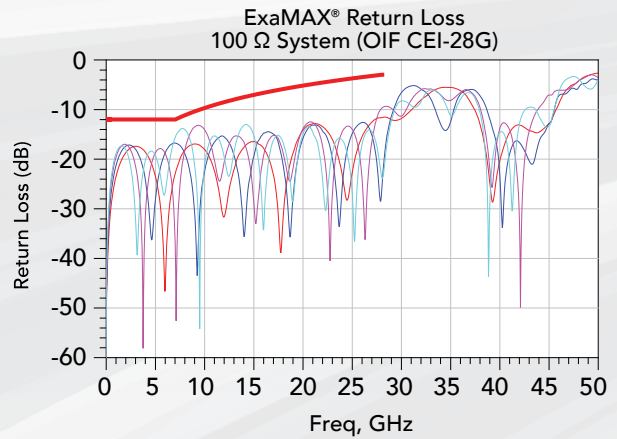
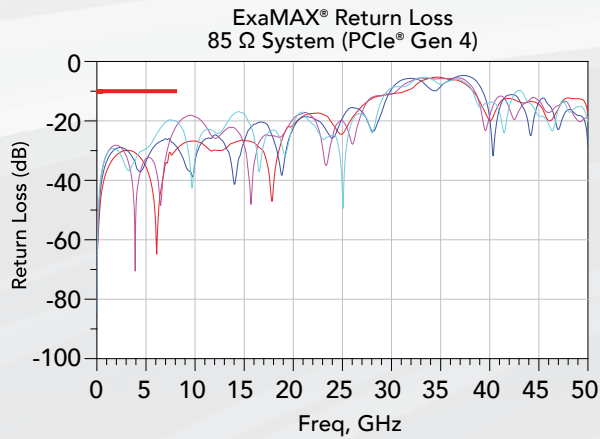
PCB materials expertise for optimized cost and performance

Full system Signal / Power Integrity analysis and design



ExaMAX® PERFORMANCE CHARTS

ExaMAX® high-speed backplane systems achieve return loss compliance in both 85 Ω and 100 Ω systems, the result of targeting the middle ground performance specification of 92 Ω, as well as specific attention to controlling reflections at all geometric transitions in the connector. By minimizing internal reflections, ExaMAX® is able to meet return loss specifications in 85 Ω and 100 Ω systems, as demonstrated in the figures below.



*PCIe® is a registered trademark of PCI-SIG®.

ExaMAX® PERFORMANCE SPECIFICATIONS

The ExaMAX® contact system achieves two reliable points of contact at all times and minimizes residual stub for improved signal integrity performance, while providing low mating force and excellent contact normal force. Signal wafers incorporate a one-piece, embossed ground structure which improves crosstalk performance.

2.00 mm column pitch: 28 Gbps

3.00 mm column pitch: 56 Gbps

Skew: 0 sec, equalized through differential pair

NEXT / FEXT: < 4% @ 100 psec (20-80%)

Normal force: 30 g (end of life)

Mating force: 0.36 N max per contact

Unmating force: 0.12 N min per contact

Current rating: 0.5 A per signal contact
(0 < 30 °C temp rise above ambient)

-55 °C to +85 °C operating temperature

MFG: Class IIA 4-gas; Cycles: 200

Manufacturing friendly 0.36 mm PTH for signals and 0.50 mm for grounds

BACKPLANE ROADMAP

Samtec currently offers a 2.00 mm pitch traditional ExaMAX® system in 72-pair and 40-pair designs. Current add-on features include 80 A power modules and discrete guidance modules for blind mating. These current offerings make up half of the systems in the ExaMAX® high-speed backplane roadmap, making it easy to start building into new and existing applications.

TRADITIONAL ExaMAX® WITH ADDITIONAL FEATURES

- 4 and 6-pair designs
- 6-16 columns
- Staging
- Guidance
- Thick walls for a more rugged solution
- Keying for proper mating



ExaMAX® COPLANAR

- 4 and 6-pair designs
- 6-16 columns
- Bypass the backplane with a direct connection between the front and rear cards



ExaMAX® DIRECT MATE ORTHOGONAL

- 4 and 6-pair designs
- 6-16 columns
- Shorter signal path for improved signal integrity performance
- Requires fewer connectors by eliminating the mid-plane board
- Improves system airflow



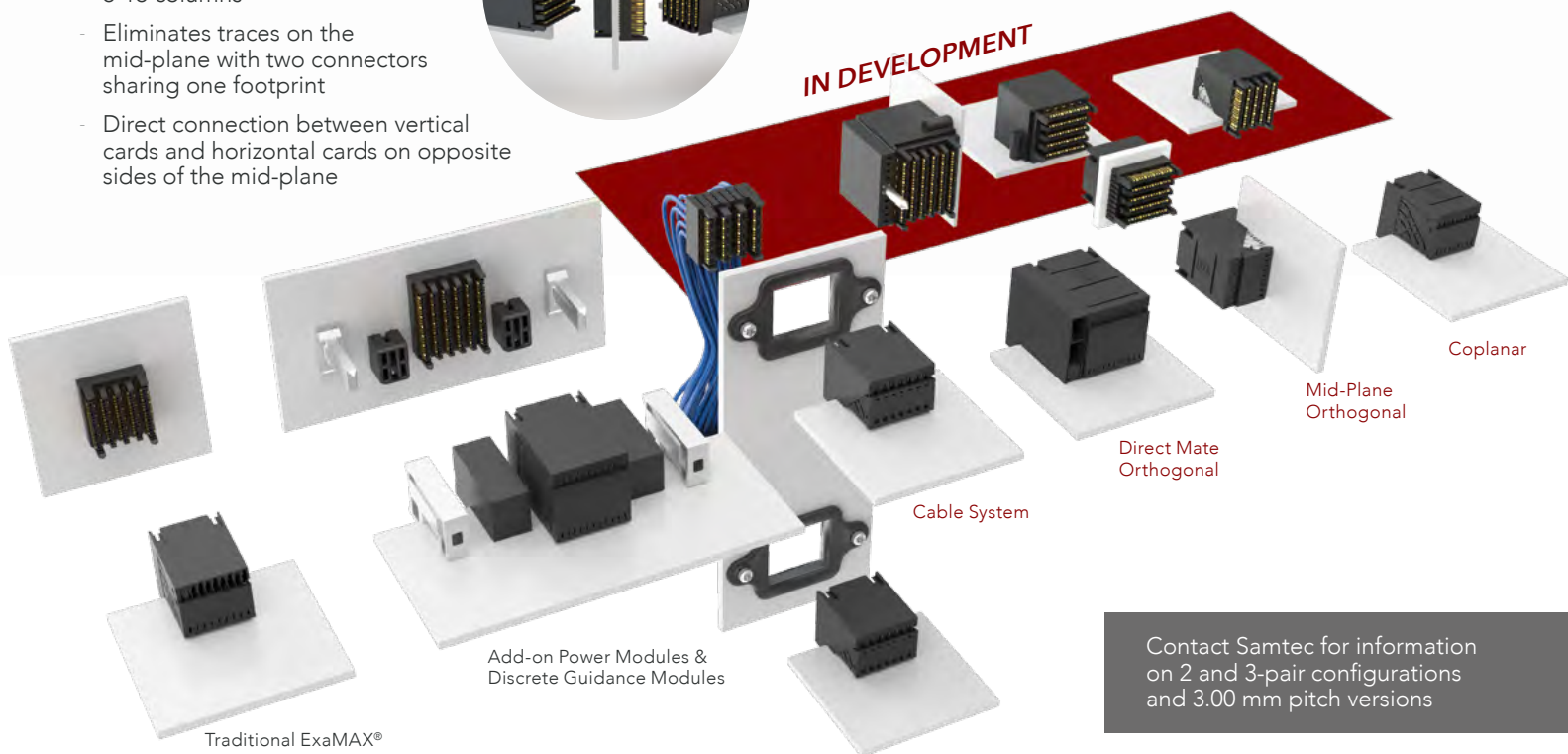
ExaMAX® CABLE SYSTEM

- 4 and 6-pair designs
- 6-16 columns
- Cable-to-board press-fit, cable to vertical ExaMAX®, cable to right-angle ExaMAX® and cable-to-cable applications
- Supports new high frequency system architectures
- Enables fly over and fly under applications for fewer layer counts
- Intermateable with all ExaMAX® connectors
- Industry leading Eye Speed® cable provides increased flexibility and routability



ExaMAX® MID-PLANE ORTHOGONAL

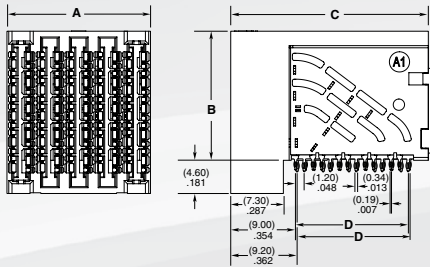
- 4 and 6-pair designs
- 6-16 columns
- Eliminates traces on the mid-plane with two connectors sharing one footprint
- Direct connection between vertical cards and horizontal cards on opposite sides of the mid-plane



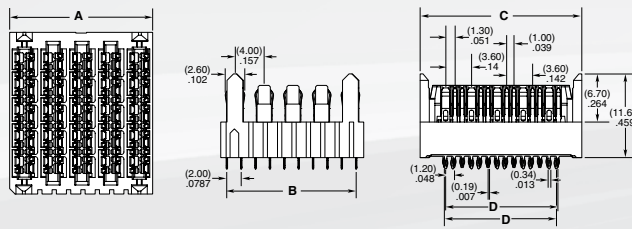
Contact Samtec for information on 2 and 3-pair configurations and 3.00 mm pitch versions

ExaMAX® HEADER & RIGHT-ANGLE RECEPTACLE

EBTF-RA

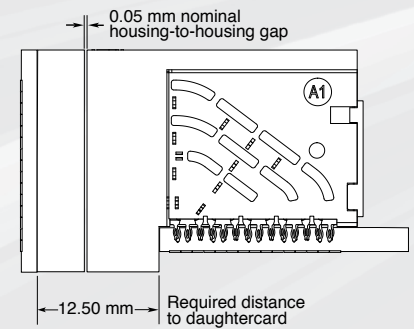


EBTM



NO. OF PAIRS PER COLUMN	A	B	C	D
-4	(19.90) .783	(17.90) .705	(28.00) 1.102	(15.60) .614
-6	(23.90) .941	(25.10) .988	(35.60) 1.402	(22.80) .898

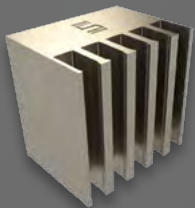
NO. OF PAIRS PER COLUMN	A	B	C	D
-4	(19.90) .783	(18.00) .709	(22.50) .886	(15.60) .614
-6	(23.90) .941	(22.00) .866	(29.70) 1.169	(22.80) .898



EBTF-RA / EBTM PART NUMBERS

EBTF	No. of Pairs Per Column -4 = 4 Pairs per Column -6 = 6 Pairs per Column	Columns -10 = Ten Rows (-4 only) -12 = Twelve Rows (-6 only)	Column Pitch -2.0 = 2.00 mm (.0787")	Plating -5 = 30 μ" (0.76 μm) Gold in contact area, Matte Tin on tail	RA	1
EBTM	No. of Pairs Per Column -4 = 4 Pairs per Column -6 = 6 Pairs per Column	Columns -10 = Ten Rows (-4 only) -12 = Twelve Rows (-6 only)	Column Pitch -2.0 = 2.00 mm (.0787")	Plating -5 = 30 μ" (0.76 μm) Gold in contact area, Matte Tin on tail	VT	1

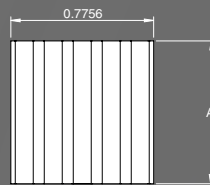
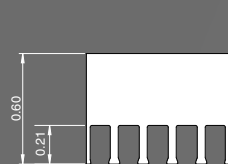
APPLICATION TOOLING



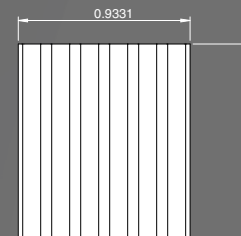
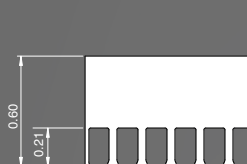
For vertical connectors only. Right-angle connectors do not require special insertion tooling, they are designed for "flat rock" insertion.

Part Number: CAT-PT-EBTM-X-XX-2.0-VT

4 x 10 Tool

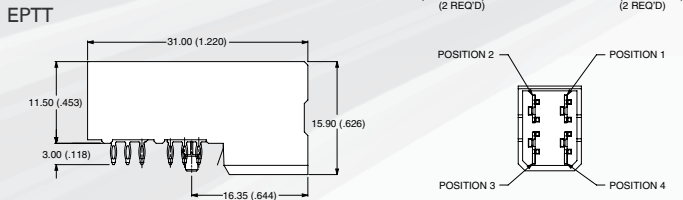
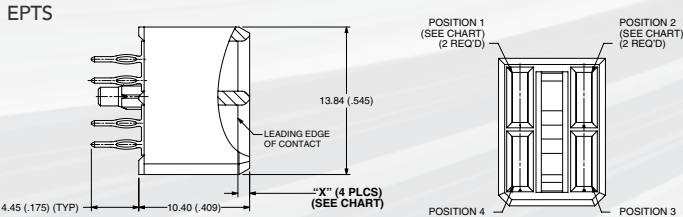


6 x 12 Tool



PAIRS PER COLUMN	A
-04	.776
-06	1.059

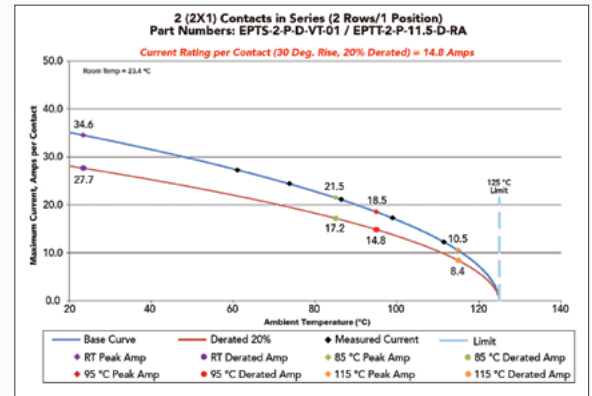
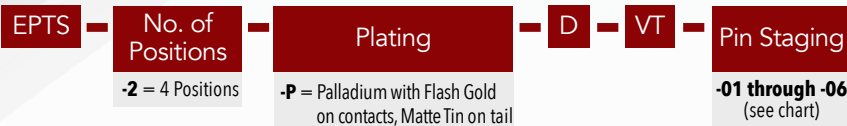
ExaMAX® HIGH POWER MODULES



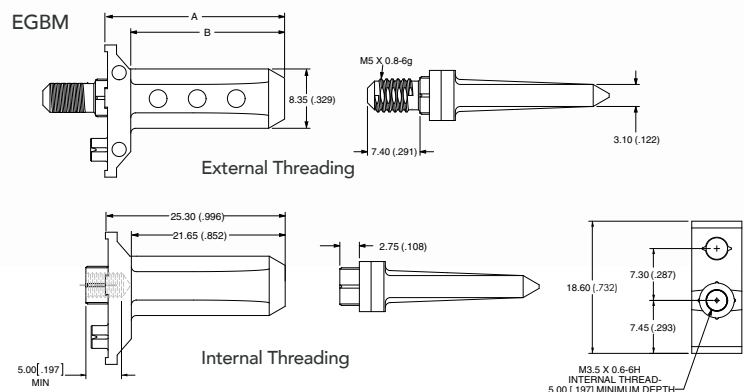
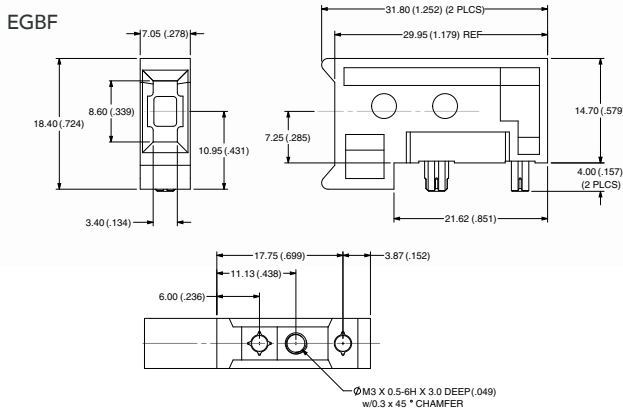
EPTS CONTACT LENGTH CALLOUT & "X" SETBACK DIMENSION

PIN STAGING	POSITION 1	POSITION 2	POSITION 3	POSITION 4
-01	LONG	LONG	LONG	LONG
	1.10			
-02	LONG	LONG	SHORT	SHORT
	1.10		2.60	
-03	LONG	SHORT	SHORT	LONG
	1.10		2.60	
-04	LONG	SHORT	SHORT	SHORT
	1.10		2.60	
-05	SHORT	SHORT	SHORT	LONG
	2.60		1.10	
-06	SHORT	SHORT	SHORT	SHORT
	2.60			

EPTS / EPTT PART NUMBERS

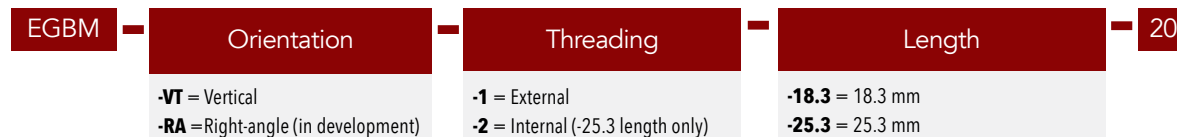


ExaMAX® DISCRETE GUIDANCE MODULES



LENGTH	A	B
-18.3	18.30 (0.720)	14.65 (0.577)
-25.3	25.30 (0.996)	21.65 (0.852)

EGBF / EGBM PART NUMBERS



EXPERIENCE ExaMAX® IN 3D

Samtec's augmented reality app highlights the intricate design of the ExaMAX® high-speed backplane system.

1. Download the free Samtec Reality App from the App Store
2. Open the App
3. Point your device's camera at the target to the right



WORLDWIDE LOCATIONS

33 Locations • 4,000+ Associates



UNITED STATES • NORTHERN CALIFORNIA • SOUTHERN CALIFORNIA • SOUTH AMERICA • UNITED KINGDOM • GERMANY • FRANCE • ITALY • NORDIC/BALTIC
BENELUX • ISRAEL • INDIA • AUSTRALIA / NEW ZEALAND • SINGAPORE • JAPAN • SHANGHAI • SHENZHEN • TAIWAN • HONG KONG • KOREA

samtec
SUDDEN SERVICE
www.samtec.com

JUNE 2016