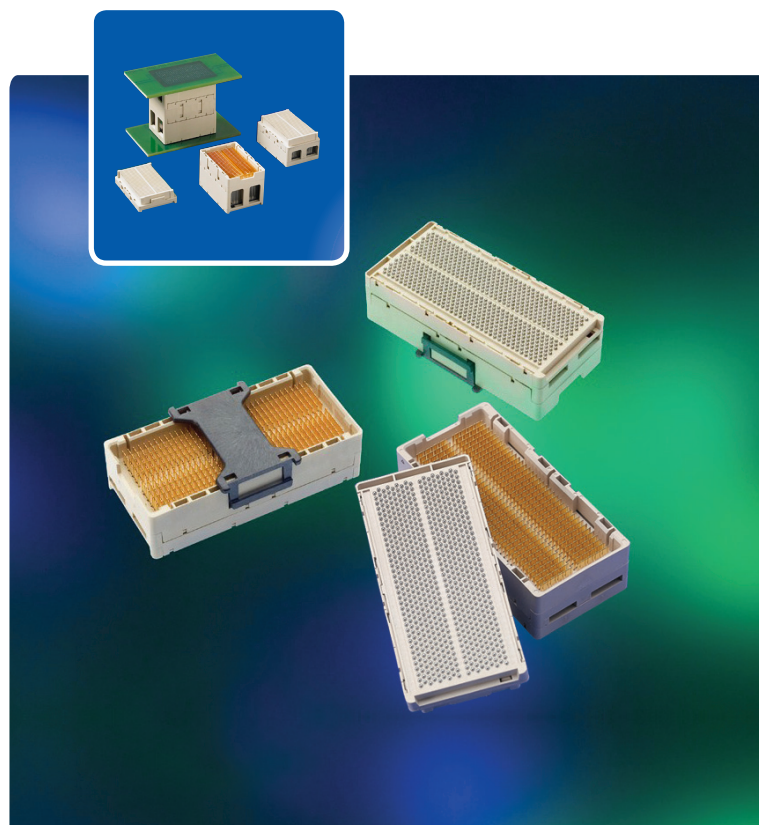


# GIG-ARRAY® CONNECTOR SYSTEM

## DESCRIPTION

The GIG-ARRAY® connector is designed to meet the needs of up to 10Gb/s applications requiring up to 296 signal pins per connector. FCI's long tradition as a BGA connector innovator assures expertise and reliability in the GIG-ARRAY® BGA design. The combination of multiple stack heights (15mm to 40mm) and multiple sizes (200 signals to 296 signals) utilizing a 100-Ohm differential matched impedance design allows for optimal design flexibility while yielding less than 1% cross-talk performance.

FCI has produced BGA mezzanine connectors since 1996, shipping over 10 billion BGA contact interfaces demonstrating FCI's extensive experience as the premier BGA interconnect innovator and supplier. FCI's patented BGA design is supported by fully automated quality control systems featuring 100% inspections of assembly coplanarity, solder sphere size and location, as well as critical-to-function terminal component attributes. Multiple in-line vision systems, quality control product audits, and statistical process controls are all a part of our state-of-the-art manufacturing facility.



## FEATURES & BENEFITS

- RoHS compliant (Lead-Free) options are available
- Optimized design for utilization in high-density, high-speed mezzanine applications
- Ball Grid Array (BGA) termination for process friendly attachment
- 1mm x 0.65mm BGA interface pitch optimizes routing and electrical performance
- Stack Heights available from 15mm to 40mm provide mezzanine design flexibility
- Connector sizes of 200 and 296 signals providing 62 signal contacts per linear cm (158 signal contacts per linear inch) allow for optimization of board space and signal requirements
- 100 Ohm differential pair matched impedance assures consistent high speed performance
- Up to 10 Gb/s differential pair performance
- Very low cross-talk (VLC) design of less than 1% allows for required signal integrity performance
- Dual beam signal contacts provide two points of contact increasing product reliability
- Polarized design assures proper mating of the connector

## TARGET MARKETS / APPLICATIONS

- Communications
  - Transmission
  - Access
  - Switching
  - Optics
  - Networking
- Data
  - Servers
  - Storage
- I & I
  - Industrial controls & equipment

## MATERIALS

- Housing: Liquid crystal polymer
- Contact: High-strength copper alloy
- Plating: GXT over Ni
- Solder sphere
  - SnPb: 63Sn/37Pb, 0.76mm diameter
  - Pb-Free: 95.5Sn/4Ag/0.5Cu, 0.76mm diameter

## MECHANICAL PERFORMANCE

- Durability: 25 cycles
- Contact wipe: 2.00mm nominal
- Telcordia GR-1217-CORE
- IPC-SM-785 Solder Joint Reliability
- Passed 6000 cycle solder joint reliability

## SPECIFICATIONS

- Product specification: GS-12-192
- Application specification: GS-20-016

## PACKAGING

- Trays

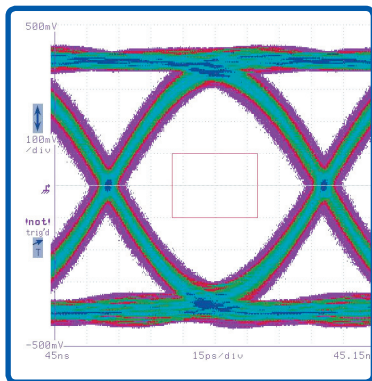
## ELECTRICAL PERFORMANCE

- Current rating (with  $\leq 30^{\circ}\text{C}$  temperature rise above ambient)
  - 1A/contact with all contacts powered in 3 adjacent wafers
  - 3.5A/contact for 3 contacts in the same area
- Contact resistance
  - $\leq 20\ \text{m}\Omega$  for 15mm mated height
  - $\leq 31\ \text{m}\Omega$  for 28mm mated height
  - $\leq 40\ \text{m}\Omega$  for 40mm mated height
- Dielectric withstanding voltage: 500V AC
- Propagation delay
  - 55 ps for 15mm mated height
  - 115 ps for 28mm mated height
  - 160 ps for 40mm mated height
- Differential impedance
  - $100\Omega +10/-15\Omega$
  - $100\Omega +15/-10\Omega$  for 40mm mated height
- Multi-active differential NEXT:  $<3\%$  @ 100 ps (10-90%) risetime

## MORE DATA

- Spice files, signal integrity data, drawings and more available at: [www.fci.com/highspeed](http://www.fci.com/highspeed)

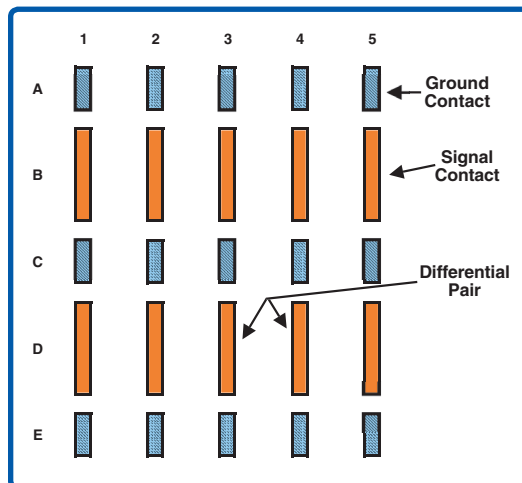
## EYE-PATTERN



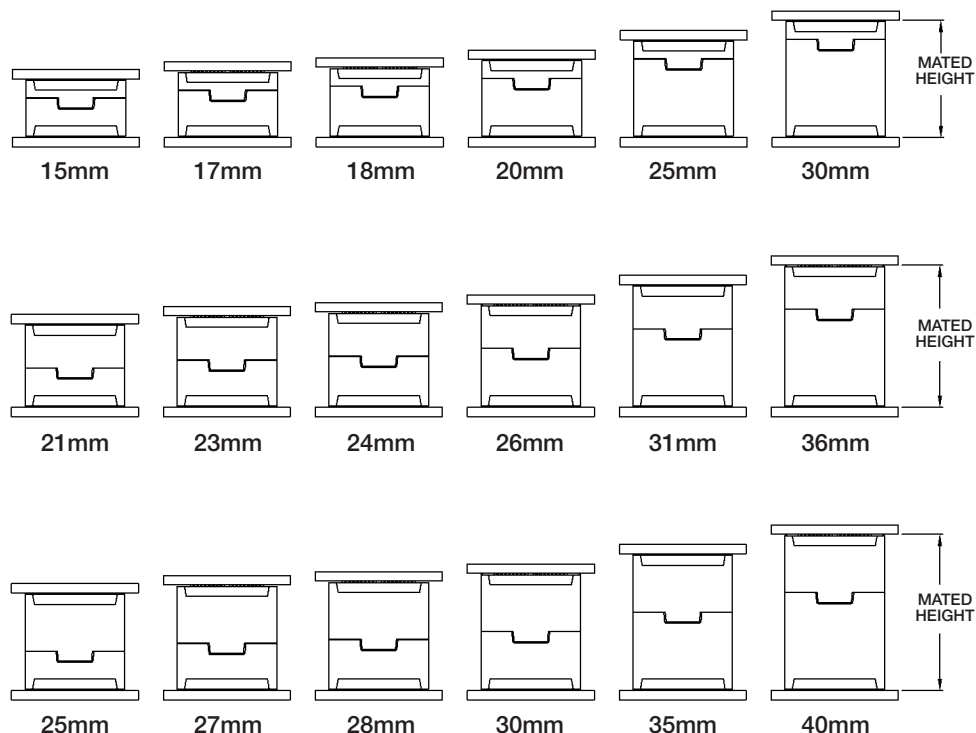
20mm GIG-ARRAY® Measured Eye Pattern at 10 Gb/s

Mask Opening:  
 25% Amplitude  
 40% Period

## CONTACT STRIPLINE STRUCTURE



## GIG-ARRAY® MATED HEIGHTS - BASE PART NUMBER SELECTOR



200 Positions*		Plug Height**					
		10mm	12mm	13mm	15mm	20mm	25mm
		<b>55737</b>	<b>10026802</b>	<b>10060910</b>	<b>55738</b>	<b>55739</b>	<b>10054783</b>
Receptacle Height**	5mm	15 mm	17mm	18mm	20mm	25mm	30mm
	<b>55740</b>						
	11mm	21mm	23mm	24mm	26mm	31mm	
36mm	<b>10081496</b>						
	15mm	25 mm	27mm	28mm	30mm	35mm	40mm
		<b>10060912</b>					

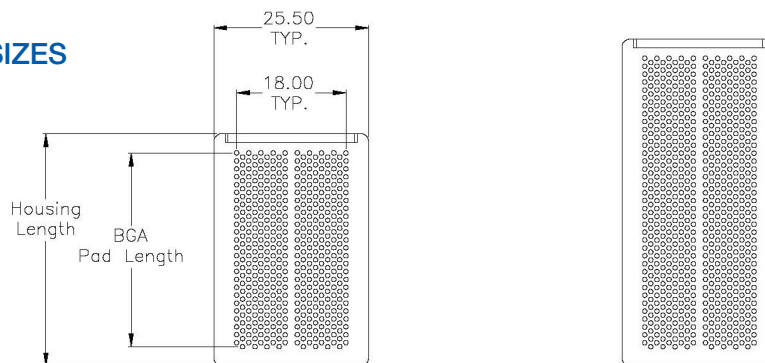
296 Positions*		Plug Height**					
		10mm	12mm	13mm	15mm	20mm	25mm
		<b>55720</b>	<b>10026804</b>	<b>10060911</b>	<b>55700</b>	<b>55727</b>	<b>10054784</b>
Receptacle Height**	5mm	15 mm	17mm	18mm	20mm	25mm	30mm
	<b>55701</b>						
	11mm	21mm	23mm	24mm	26mm	31mm	36mm
	<b>10081497</b>						
	15mm	25 mm	27mm	28mm	30mm	35mm	40mm
		<b>10060913</b>					

\*Signal contacts only, ground contacts not included

\*\*Base part number listed under connector height

Use web link [www.fci.com/gigarray](http://www.fci.com/gigarray) to obtain product drawings and additional technical information

GIG-ARRAY® CONNECTOR SIZES



Description	200 Positions*	296 Positions*
Housing Length	38.15 mm	53.75 mm
BGA Pad Length	31.85 mm	47.45 mm
Number of Signal Contacts	200	296
Number of Ground Contacts	250	370
Number of BGA Balls	450	666
Fully Shielded Differential Pairs	64	96
Continuous Differential Pairs	96	144

GIG-ARRAY® INTERCONNECT PART SYSTEM

PLUGS

Number of Positions*	Description	Contact Area Finish (in microinches)	Part Numbers	
			SnPb BGA	RoHS Compliant Pb-Free BGA
200	10mm	40 µin GXT	55737-001	55737-001LF
	12mm	40 µin GXT	10026802-001	10026802-001LF
	13mm	40 µin GXT	10060910-001	10060910-001LF
	15mm	40 µin GXT	55738-001	55738-001LF
	20mm	40 µin GXT	55739-001	55739-001LF
	25mm	40 µin GXT	10054783-001	10054783-001LF
296	10mm	40 µin GXT	55720-001	55720-001LF
	12mm	40 µin GXT	10026804-001	10026804-001LF
	13mm	40 µin GXT	10060911-001	10060911-001LF
	15mm	40 µin GXT	55700-001	55700-001LF
	20mm	40 µin GXT	55727-001	55727-001LF
	25mm	40 µin GXT	10054784-001	10054784-001LF

RECEPTACLES

Number of Positions*	Description	Contact Area Finish (in microinches)	Part Numbers	
			SnPb BGA	RoHS Compliant Pb-Free BGA
200	5mm	40 µin GXT	55740-001	55740-001LF
	11mm	40 µin GXT	10081496-001	10081496-001LF
	15mm	40 µin GXT	10060912-001	10060912-001LF
296	5mm	40 µin GXT	55701-001	55701-001LF
	11mm	40 µin GXT	10081497-001	10081497-001LF
	15mm	40 µin GXT	10060913-001	10060913-001LF

\*Signal contacts only, ground contacts not included  
 All connectors are supplied with a pre-installed pickup cap.

Use web link [www.fciconnect.com/gigarray](http://www.fciconnect.com/gigarray) to obtain product drawings and additional technical information

For more information please contact: [elxcommunications@fci.com](mailto:elxcommunications@fci.com)