

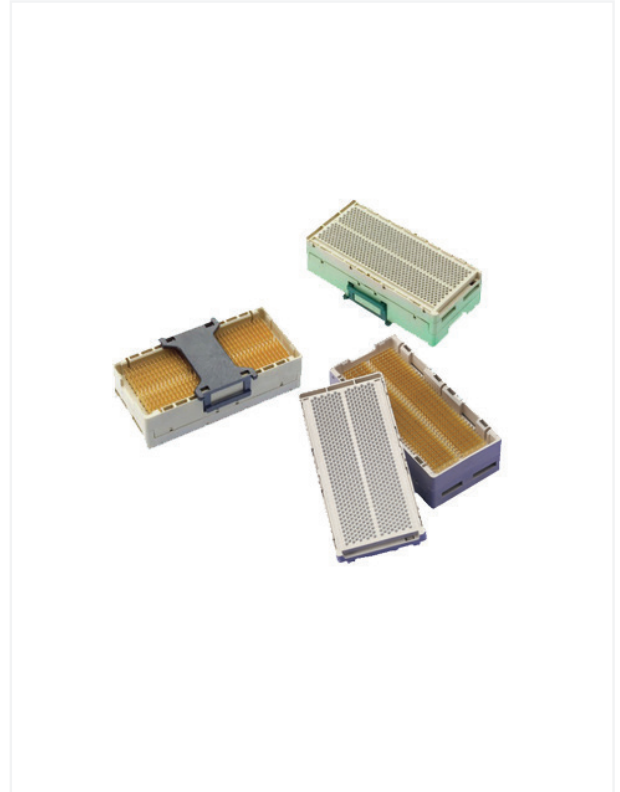
# GIG-ARRAY® CONNECTOR SYSTEM

## OVERVIEW

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
- 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



## TECHNICAL INFORMATION

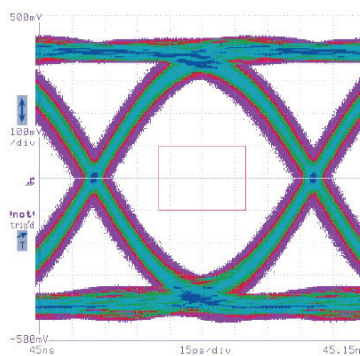
### MATERIALS

- 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

### 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:  $<3 @ 100 \text{ ps}$  (10-90%) risetime

### EYE PATTERN



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

Mask Opening:  
25% Amplitude  
40% Period

### 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

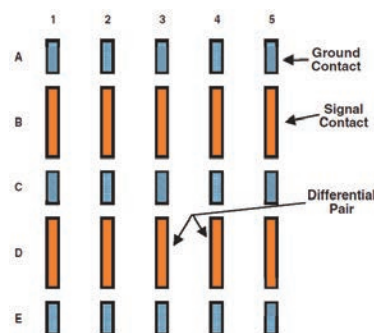
### SPECIFICATIONS

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

### PACKAGING

- Trays

### CONTACT STRIPLINE STRUCTURE

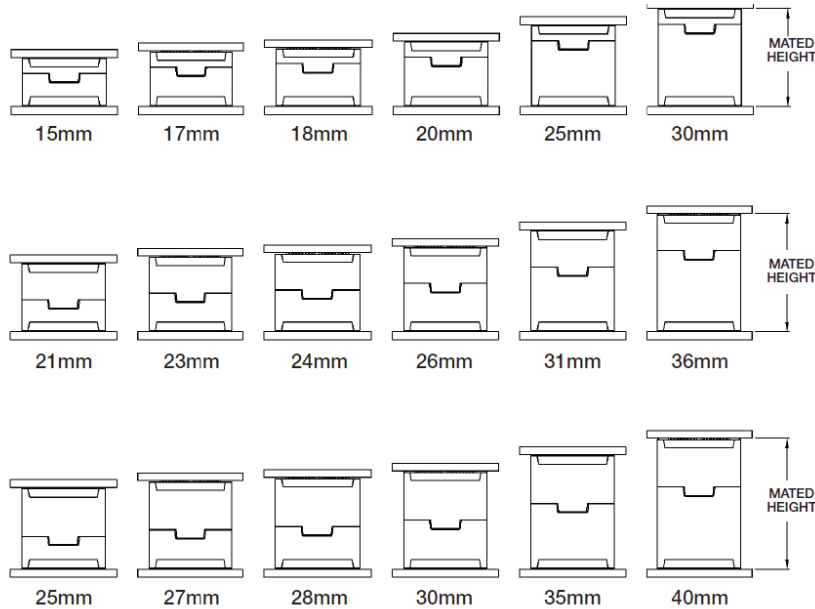


#### Disclaimer

Please note that the above information is subject to change without notice.

## GIG-ARRAY® MATED HEIGHTS

### BASE PART NUMBER SELECTOR



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

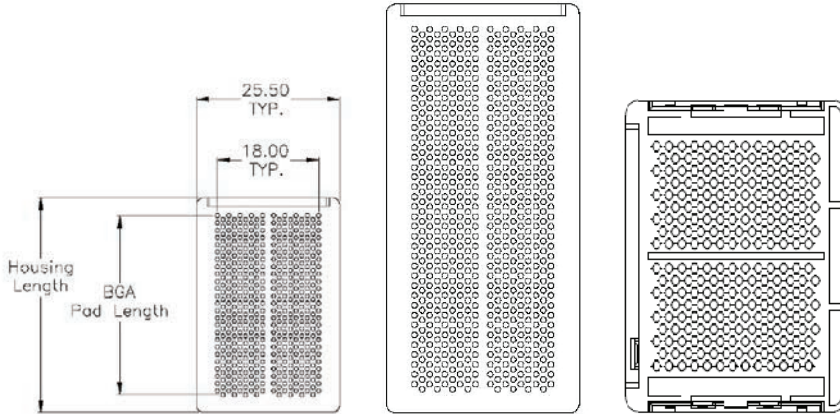
296 Positions*		Plug Height**					
		10mm 55720	12mm 10026804	13mm 10060911	15mm 55700	20mm 55727	25mm 10054784
Receptacle Height**	5mm 55701	15mm	17mm	18mm	20mm	25mm	30mm
	11mm 10081497	21mm	23mm	24mm	26mm	31mm	36mm
	15mm 10060913	25mm	27mm	28mm	30mm	35mm	40mm

104 Positions*		Plug Height**	
		15mm 10098180	20mm 10122145
Receptacle Height**	5mm 10014370	20mm	25mm

\*Signal contacts only, ground contacts not included  
 \*\*Base part number listed under connector height



## GIG-ARRAY® CONNECTOR SIZES



Description	200 Positions*	296 Positions*	104 Positions*
Housing length	38.2mm	53.75mm	22.6mm
BGA Pad Length	31.85mm	47.45mm	16.25mm
Number of Signal Contacts	200	296	104
Number of Ground Contacts	250	370	130
Number of BGA Balls	450	666	234
Fully Shielded Differential Pairs	64	96	32
Continuous Differential Pairs	96	96	48

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

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## GIG-ARRAY® INTERCONNECT PART SYSTEM

### PLUGS

Number Of Positions	Description	Contact Area Finish (in microinches)	Part Numbers
			RoHS Compliant Pb-Free BGA
200	10mm	40µin. GXT	55737-001LF
	12mm	40µin. GXT	10026802-001LF
	13mm	40µin. GXT	0060910-001LF
	15mm	40µin. GXT	55738-001LF
	20mm	40µin. GXT	55739-001LF
	25mm	40µin. GXT	10054783-001LF
296	10mm	40µin. GXT	55720-001LF
	12mm	40µin. GXT	10026804-001LF
	13mm	40µin. GXT	10060911-001LF
	15mm	40µin. GXT	55700-001LF
	20mm	40µin. GXT	55727-001LF
	25mm	40µin. GXT	10054784-001LF
104	15mm	40µin. GXT	10098180-001LF
	20mm	40µin. GXT	10122145-001LF

### RECEPTACLES

Number Of Positions	Description	Contact Area Finish (in microinches)	Part Numbers
			RoHS Compliant Pb-Free BGA
200	5mm	40µin. GXT	55740-001LF
	11mm	40µin. GXT	10081496-001LF
	15mm	40µin. GXT	10060912-001LF
296	5mm	40µin. GXT	55701-001LF
	11mm	40µin. GXT	10081497-001LF
	15mm	40µin. GXT	10060913-001LF
104	5mm	40µin. GXT	10014370-001LF

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