Introduction

- Company Overview
  - Over 8,000 products
  - High Performance Adapters and Sockets
  - Many Custom Designs
  - Engineering – Electrical and Mechanical
  - ISO9001:2015 Registration

- Adapter Technology Overview
  - Pluggable BGA adapter system (Giga-snaP™)
  - Surface mount package emulators
  - Package convertors & Fix adapters
  - Prototype, probe & analysis adapters
  - Receptacles, extenders, rotators and socket plugs
  - Electronic modules
Pluggable BGA Adapter System (Giga-snaP™)

BGA device soldered on top module & base module soldered on PCB

2000 pin count BGA system plugged together & shown separately

0.5mm pitch BGA Pluggable adapter system

Features | Benefits
--- | ---
Short contact | High bandwidth applications
Gold plated clips & terminals | Low contact resistance
Chip size footprint | Easy to place inductors, capacitors, resistors, etc for tuning and increasing bandwidth. Ideal for IC prototype and system testing and field upgradeable system designs
Epoxy over-mold & Matched CTE | No solder wicking & No substrate warping
Low insertion/extraction force | Easy operation to plug and remove module system

Capabilities
- 0.5mm to 1.27mm pitch
- 2x2mm to 45x45mm device
- 2000 pin count
- Shortest signal path (2-7GHz)
- Low insertion force (15-25g)
- Co-planarity <100µm
- Tape & reel
- RoHS compatible

DDR memory BGA adapter system

Daughter card interface system or Board-to-board connector system
Surface Mount Package Emulators

**Features** | **Benefits**
--- | ---
Short contact | High bandwidth applications
Gold plated clips & terminals | Low contact resistance
Chip size footprint | Easy to place inductors, capacitors, resistors, etc for tuning and increasing bandwidth. Ideal for IC prototype and system testing and field upgradeable system designs
Side castellation | Easy hand soldering and reflow soldering
Low insertion/extraction force | Easy operation to plug and remove module system

**Capabilities**
- 0.4mm to 1.27mm pitch
- 2x2mm to 50x50mm device
- QFN, QFP, SOIC, PLCC
- 500 pin count
- Gull-wing options
- Leadless options
- RoHS compatible
Package Convertors & Fix Adapters

BGA device mounted to QFP footprint on mother board

QFP device mounted to PLCC Footprint on target board with shortest trace length

Features | Benefits
---|---
Shortest signal routing | Minimal loss for high bandwidth applications
Gold plated interconnection | Low contact resistance
Chip size footprint | No additional real estate needed. Ideal for replacing obsolete IC and field upgradeable system designs
Shaped solder | Solders same as IC it replaces. No change in assembly process
Conventional PCB material | CTE match and high temperature applications

Capabilities
• 0.4mm to 2.54mm pitch
• 2x2mm to 50x50mm device
• BGA, LGA, QFN, SOIC, PLCC, QFP, DIP, PGA, etc
• 2000 pin count
• RoHS compatible
• Tray, Panel, Tape & Reel options

SOIC to DIP convertor using blind hole technology

BGA convertor in scored panel

SOIC device mounted to PLCC footprint using solder column technology for high volume production

BGA to BGA conversion with complex signal swap due to device enhancement without additional real estate
Prototype, Probe & Analysis Adapters

Power PC BGA device interfaced to Logic analyzer and motherboard for functional analysis

0.5mm pitch 21x21 array 289 position BGA solder balls to AMP 104068 connectors using rigid flex PCB with socket fixture

Features | Benefits
--- | ---
Shortest signal routing | Minimal loss for high bandwidth applications
Gold plated interconnection | Low contact resistance
Chip size footprint | No additional real estate needed. Ideal for IC prototype and system analysis testing
Conventional PCB material | CTE match and high temperature applications
Flexible top side traces | Probing solution without additional interconnect

Capabilities
- 0.4mm to 1.27mm pitch
- 2x2mm to 50x50mm device
- BGA, LGA, QFN, SOIC, PLCC, QFP, DIP, PGA, etc
- 2000 pin count
- RoHS compatible
- Agilent, Tektronix compatible
- Rigid & flex options

Allow QFN device to be socketed to motherboard with signals brought out to test pins

60 pin, 0.8mm pitch BGA rigid-flex probing adapter with AMP mictor and BGA surface mount foot

BGA proto adapter with Clamshell pogo pin socket

Flex emulator – 125 position AMP Z pack connector to 80 position female interface
Receptacles, Extenders, Rotators & Socket Plugs

- Gold plated interconnection: Low contact resistance
- Small footprint: No additional real estate needed. Ideal for IC prototype and daughter card interface
- Conventional PCB material: CTE match and high temperature applications
- Flexible top side traces: Probing solution without additional interconnect
- Differential and impedance matched signal routing: High speed applications with accommodation of space constraints

**Capabilities**
- 0.5mm to 2.54mm pitch
- 2x2mm to 50x50mm device
- BGA, LGA, QFN, QFP, SOIC
- 2000 pin count
- RoHS compatible
- Rigid & flex options
- Custom fixtures in days

Rigid PCB extender alleviates height constraints
Flex PCB extender allows communication between device to moving head
Circular receptacle
Array receptacle
PLCC socket plugs
Receptacles for burn-in sockets

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Electronic Modules

Multi chip module with components on both side

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<th>Features</th>
<th>Benefits</th>
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<td>Conventional PCB material</td>
<td>CTE match and high temperature applications</td>
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<td>Conductive filled via</td>
<td>Excellent thermal dissipation and high current applications</td>
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<td>Optimized plated thru hole with filled via</td>
<td>Low inductance and high speed applications</td>
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<td>Fiducial, Kapton dot</td>
<td>Optical alignment, pick &amp; place assembly</td>
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<td>Shaped solder (QFN, QFP)</td>
<td>Easy assembly (industry standard reflow profile)</td>
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Capabilities
- 0.25mm to 2.54mm pitch
- 3 mil trace/space
- Laser micro vias
- Embedded caps & resistors
- Lead free options
- Tray, Tape & Reel options
- Turnkey solutions

Daughter card module Interfaced to QFP footprint
Dual technology (SMT & thru hole) assembly
BGA device, SOIC device & discrete

QFP device, discrete & connector
SoC module with high density connector
Custom Capability

- Custom adapter designs in 2 days
- Match customer’s PCB footprint
- Custom adapter manufacturing in 10 days
- In-house automated optical inspection
- Stencil print, Pick & Place, Reflow
- Adapter signal integrity simulation
- Innovative adapter technologies
- In-house machining
- Quick turn production