Our competitive advantage lies in key burn-in socket elements. Not touch the bottom of the ball. These contacts are available for Pb/Sn and Pb-free.

Three primary BGA contact designs have been developed to satisfy customer requirements for reliable electrical and mechanical interconnect. These contacts leave small “witness marks” on the solder ball and do not touch the bottom of the ball. These contacts are available for Pb/Sn and Pb-free.

The contacts, which open to allow package insertion, touch the solder ball above the equator when closed. These contacts are typically used for 0.5 mm pitch and above.

For finer pitch packages, 0.5 mm and below, Boyd developed a series of buckling beam contacts which can be used in the design of both throughhole and compression mount sockets.

**Platform Design**

Boyd’s burn-in sockets are designed with “Flexibility of Design” in mind. This allows easier modification for different package sizes. A platform design approach is utilized where a base socket can accommodate a variety of different package sizes. The adapter, which personalizes the socket for a specific customer's package, is designed as a separate part.

**Platform Benefits**

- Changing the adapter provides a fast, low cost method of supplying new sockets for each new package size without the expense and time of tooling an entire socket.
- The availability of different bases within a socket family allows the Interconnection team to work with our customers to select the smallest footprint, maximizing burn-in board capacity and oven through-put.
- The socket uses the same proven, qualified contact technology – improving reliability and confidence in the performance of the socket.
**Featured Product 1.0mm AND 0.8 BGA Burn-In Sockets**

Providing customers with solutions, Boyd creates burn-in sockets for the semiconductor electronics industry to ensure the quality and reliability of the packaged device. Our engineers work with customers to provide a burn-in socket which maximizes the customers’ burn-in system capacity for the lowest overall cost of ownership. Specific features of a Boyd socket are described below:

### Design Features
- Open top, auto-load, cover actuated socket.
- Contact protrusions pierce oxide to give reliable contact.
- Dual beam contacts touch each solder ball individually and independently.
- Socket latches ensure proper seating of IC package during loading.
- Low actuation force: Contacts minimize damage to the solder ball.

### Mechanical Characteristics
Contact System: Normally closed
Contact Force: Between 10 to 20 g/pin
Actuation Force: 3 to 5 kg (I/O independent)
Temperature Range: -55 C to 150 C
Package Insertion Force: Zero insertion force
Contact Point: Side of solder ball
Durability: 10,000 cycles min.

### Electrical Characteristics
Current Rating: 1 A/pin
Inductance: 6nH (approx.) at 50 MHz
Contact Resistance: 50 mΩ max. initial, 1 Ω max. after 10,000 cycles
Insulation Resistance: 1000 mΩ at 500 VDC Dielectric
Withstanding Voltage: For 1 minute at 700 VAC

<table>
<thead>
<tr>
<th>Max Package Size</th>
<th>Socket Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>27 x 27 mm</td>
<td>46 x 46 mm</td>
</tr>
<tr>
<td>19 x 19 mm</td>
<td>31 x 31 mm</td>
</tr>
<tr>
<td>22 x 14 mm</td>
<td>31 x 23 mm</td>
</tr>
</tbody>
</table>

**1.0 mm Pitch BGA**

**Product Availability:**

**0.8 mm Pitch BGA**

**Product Availability:**

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Featured Product 0.5 mm AND 0.4 mm Burn-In Sockets

Accommodating package sizes from 15 x 15 to 4 x 4 mm, Boyd’s burn-in socket portfolio for 0.5 mm and 0.4 mm pitch BGA packages is available in both compression mount and through-hole.

- Assembled in controlled environment
- Available for range of package thicknesses
- Through-hole and compression mount
- Proven contact
- Small socket outline
- Interchangeable adapter

Buckling Beam Contact

Boyd’s Interconnection 0.5 mm and 0.4 mm pitch burn-in sockets employ a vertically actuated “compression” style contact that interfaces with individual solder balls. The contact-to-ball, interface at two locations per ball, gives minimum spherical deformation while providing a reliable electrical connection. The contact systems used accommodate both Pb and Pb-free balls.

0.5 mm Pitch

<table>
<thead>
<tr>
<th>Max Package Size</th>
<th>Socket Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 x 15 mm</td>
<td>40 x 40 mm</td>
</tr>
<tr>
<td>14 x 14 mm</td>
<td>30 x 25 mm</td>
</tr>
<tr>
<td>10 x 10 mm</td>
<td>30 x 30 mm</td>
</tr>
<tr>
<td>11 x 10 mm</td>
<td>26 x 20 mm</td>
</tr>
</tbody>
</table>

0.4 mm Pitch

<table>
<thead>
<tr>
<th>Max Package Size</th>
<th>Socket Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 x 14 mm</td>
<td>40 x 25 mm</td>
</tr>
</tbody>
</table>

Pinch Style Contact

Boyd’s Interconnection 0.5 mm and 0.4 mm pitch also offers a small 26 x 19.5 mm outline through-hole socket for smaller 0.5 mm packages. This socket can accept packages up to 11 x 17 mm and utilizes a dual pinch style contact, eliminating any witness marks on the bottom of the ball.

Design Features

- Open top auto-load actuated socket
- Small socket outlines available from 26 mm x 19.5 mm to 40 mm x 40 mm
- Low Actuation Force: From 1.2 kg depending on pin count
- Contact Life exceeds 10,000 actuations
- No contact on bottom of ball

Mechanical Characteristics

Contact System: Dual buckling beam and dual pinch
Package Insertion Force: Zero insertion force
Contact Force: 10-14 g/pin range
Temperature Range: -55ºC to 150ºC
Contact Point: Side of solder ball

Electrical Characteristics

Current Rating: 0.25 A/pin @ 125ºC
Insulation Resistance: 1000 mΩ at 500 VDC
Dielectric Withstanding Voltage: For 60 seconds at 500 VDC
Inductance: 6nH (approx.) at 50 MHz
Contact Resistance: 150 mΩ max initially; 1 Ω max after 10K cycles.

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