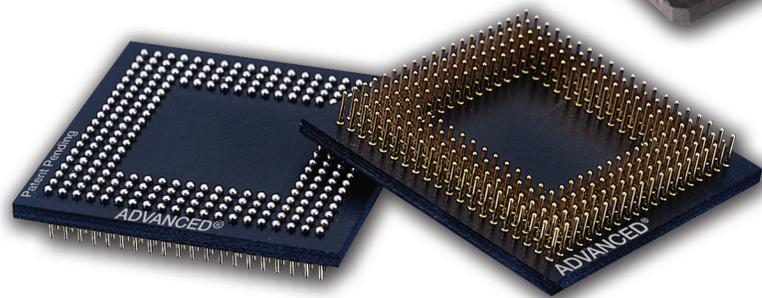
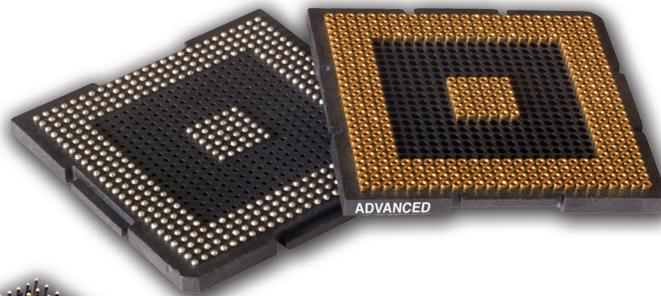
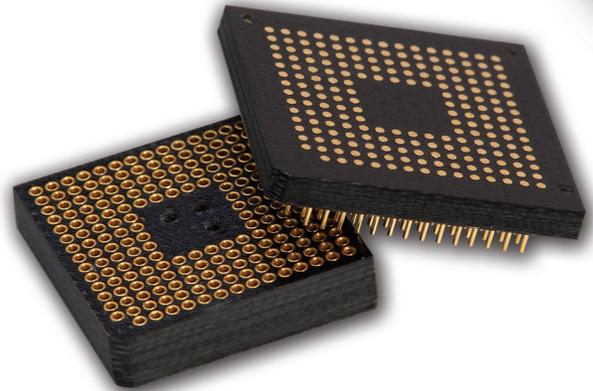


BGA Socketing Systems

Test | Development | Validation | Production

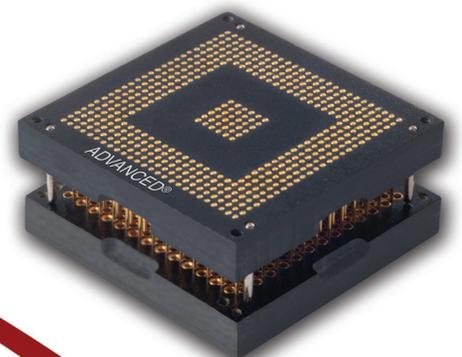


Micro-BGA Socketing Systems

BGA Socket Adapter Systems

Flip-Top™ BGA Sockets

BGA Interposers



ADVANCED
INTERCONNECTIONS®

BGA Socket Adapter Systems



Features

- Advanced's field-proven screw-machined terminals with multi-finger contacts, arranged in an interstitial male/female pin pattern are gold plated for gold/gold interconnect.
- Small overall size & same footprint as device - only 2.00mm larger than device.
- No external hold-downs required.
- Unique alignment pins protect pin field and aid in hand placement with optional stand-offs available.
- Sockets and Adapters are provided with protective covers which facilitate automated pick & place.
- Superior electrical performance - very low signal attenuation.

Specifications

Terminals:

Brass - Copper Alloy (C36000)

Contacts:

Beryllium Copper (C17200)

Solder Ball:

Lead-free:
 0.50mm Pitch: 96.5Sn/3.0Ag/0.5Cu
 0.65mm Pitch: 95.5Sn/4.0Ag/0.5Cu
 Tin/Lead: 63Sn/37Pb

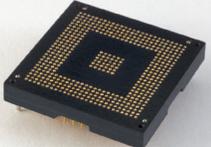
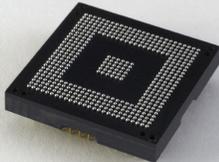
Plating:

G - Gold over Nickel
 Note: Alignment pins are Nickel plated

Micro-BGA Socket Adapter System

0.50mm and 0.65mm Pitch

Table of Models

	Description: Standard Adapter (A) Material: FR-4 Fiberglass Epoxy Board Note: Mates with Standard Socket for BGA device socketing.	Insulator Size: BGA device body +.079/(2.00)
	Description: SMT Adapter (A) Material: FR-4 Fiberglass Epoxy Board Note: Mates with Standard Socket for LGA socketing or Board to Board applications.	Insulator Size: LGA device body +.079/(2.00)
	Description: Standard Socket (S) Material: FR-4 Fiberglass Epoxy Board Note: Mates with either Standard Adapter or SMT Adapter.	Insulator Size: BGA/LGA device body +.079/(2.00)

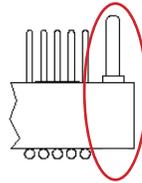
Note: Mated Height 0.214/(5.44)* approx.

(*will vary based on reflow profile, paste volume, and PC board pad size)

Options

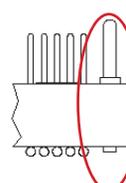
Alignment Pin Options

Note: Alignment pins are Nickel plated.



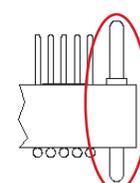
No Code

Alignment pin in each corner.



Code 1

Four alignment pins (top) with four stand-offs (bottom).



Code 2

Dual alignment pins (4 on top; 3 on bottom with stand-off in A1).

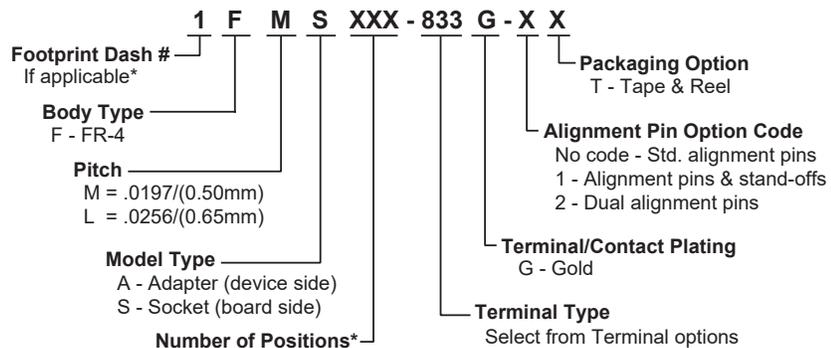
Packaging Options



Tape and Reel Packaging

- Conforms to EIA-481 Standard.
- Pick-up caps included.
- Add T to end of part number when ordering.

How To Order



Note: If no packaging code is indicated, parts are supplied in standard trays. Sockets and adapters are supplied with pre-attached protective covers. One extraction tool (P/N 8794) is included with each order. Additional extraction tools may be ordered separately.

Micro-BGA Socket Adapter System

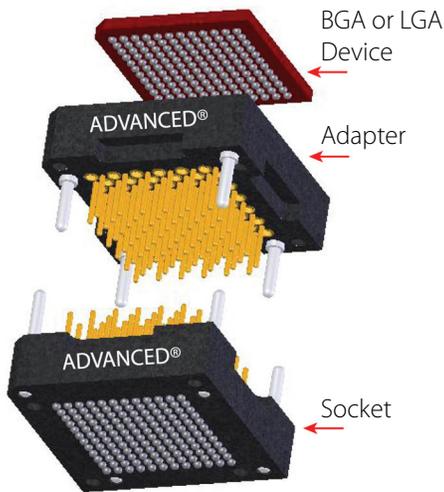
0.50mm and 0.65mm Pitch

Standard Terminals

Type -834	Tin/Lead: Type -832	Tin/Lead: Type -832
	Lead-free: Type -833	Lead-free: Type -833
<p>Standard Adapter</p>	<p>SMT Adapter</p>	<p>Standard Socket</p>

Note: Solder ball diameter is 0.012/(0.30mm) on 0.50mm pitch models and 0.014/(0.36mm) on 0.65mm pitch models.

How It Works



- Adapter matches footprint of BGA/LGA device and plugs into mating socket using unique male/female terminals in an interstitial pattern.
- Socket matches footprint of BGA/LGA device. Use alignment pins to align Device/Adapter assembly during insertion into board-mounted Socket.
- Generic reflow profiles available online.
- One extraction tool (P/N 8794) is supplied with each order.



Performance

Superior Electrical Performance

Even with adjacent Aggressor excitation, our socket system provides a Differential Data path of +/- 175mV @ 100psec and a Single-ended Data path of +/- 125mV @ 140psec.

Proprietary hybrid design ensures that adjacent terminal electromagnetic coupling is trivial; greatly reducing NeXT & FeXT, while creating a pseudo-matched impedance environment; stabilizing the Insertion & Return Loss response rates.

	0.50mm Pitch	0.65mm Pitch
Differential Insertion Loss	-0.40dB @ 1.0 GHz -0.55dB @ 1.9 GHz	-0.25dB @ 3.5 GHz
Differential Return Loss	-15.0dB @ 1.0 GHz -10.0dB @ 1.9 GHz	-14.0dB @ 3.5 GHz

Insertion/Extraction Force

35g avg. Insertion & 30g Withdrawal (per pin)

Additional electrical performance, signal integrity data, and models available online.

For details relating to proprietary information protected by patents, see Pat. www.advanced.com/patents. Specifications subject to change without notice. inch/(mm)

BGA Socket Adapter Systems



Design your own BGA Adapter or Socket using our online tools or submit your device mechanical specs and we will provide the matching part numbers.

BGA Footprint Finder

www.advanced.com/bga

- Thousands of footprints available online
- Search by pitch, device size, etc.
- Select matching image for footprint dash number

Build-A-Part™ Product Configurator

www.advanced.com/bap

- Build a complete part number online
- Built-in footprint selector
- Download a product drawing (PDF)
- Check Stock
- Request a Quote
- Print a Spec Sheet



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BGA Data Book (Rev. 17-2) | Page 3

BGA Socket Adapter Systems



Features

- Soldering BGA Device to adapter subjects BGA to less thermal stress than soldering BGA directly to a PCB due to the adapter's lower mass.
- Uses same footprint as BGA device.
- Custom adapters available for heat sink attachment.
- Gold plated screw-machined terminals for superior durability.
- Unique SMT Adapter provides reliable solution for mounting or socketing LGA or re-worked BGA devices.
- SMT Adapters mate with our BGA Sockets for LGA to BGA conversion or SMT Board to Board applications.

Specifications

Terminals:
Brass - Copper Alloy (C36000)

Solder Ball:
Lead-free: 95.5Sn/4.0Ag/0.5Cu
Tin/Lead: 63Sn/37Pb

Plating:
G - Gold over Nickel

Ball Grid Array (BGA) Adapters 0.80mm, 1.00mm, and 1.27mm Pitch

Table of Models

	<p>Description: Standard Adapter (A) Material: FR-4 Fiberglass Epoxy Board Note: Mates with Standard Socket (S)</p>	<p>Insulator Size: BGA device body +.079/(2.00)</p>
	<p>Description: Extraction Slot Adapter (AX) Material: FR-4 Fiberglass Epoxy Board Note: Mates with Extraction Socket (SB)</p>	<p>Insulator Size: BGA device body +.157/(4.00)</p>

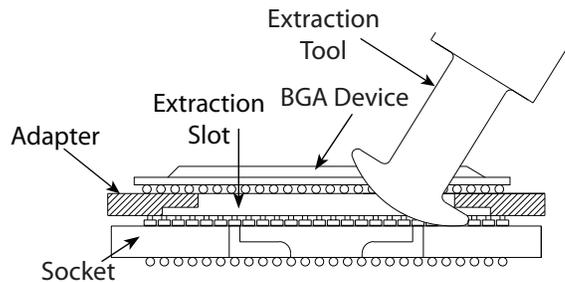
Note: For use with LGA or reworked BGA devices, select surface mount (SMT) terminals which feature solder balls on device side. SMT Adapter terminals may also be used for surface mount board to board applications.

Options

Extraction Tool

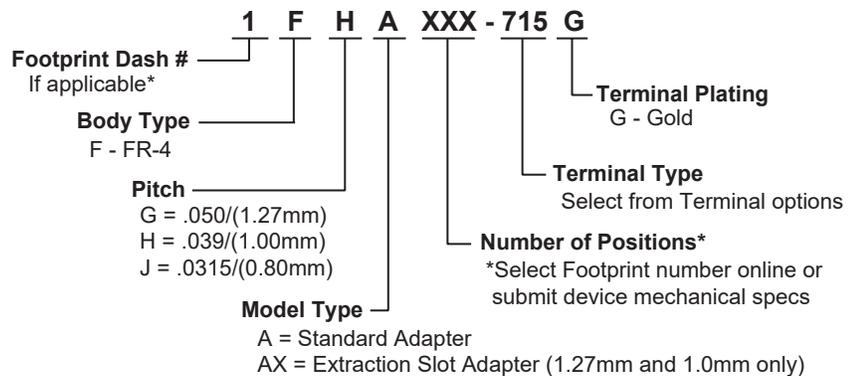


P/N 8125



- Insert "T" bar end of tool into extraction slot adapter.
- Slide tool to end of slot and pry adapter from socket.
- Repeat in additional slots until adapter is separated from socket.
- Works with Molded or FR-4 sockets.

How To Order



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Page 4 | BGA Data Book (Rev. 17-2)

Consult factory for custom 0.75mm pitch designs.

For SMT Adapters, select Model Type A or AX and appropriate SMT Terminal Type from page 5.

Ball Grid Array (BGA) Adapters

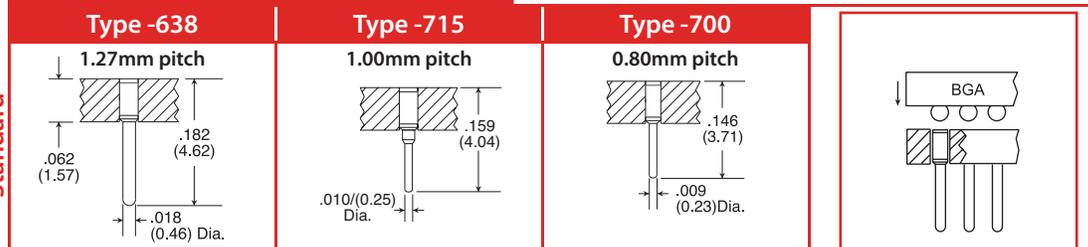
For use with mating BGA Adapter Sockets

BGA Socket Adapter Systems

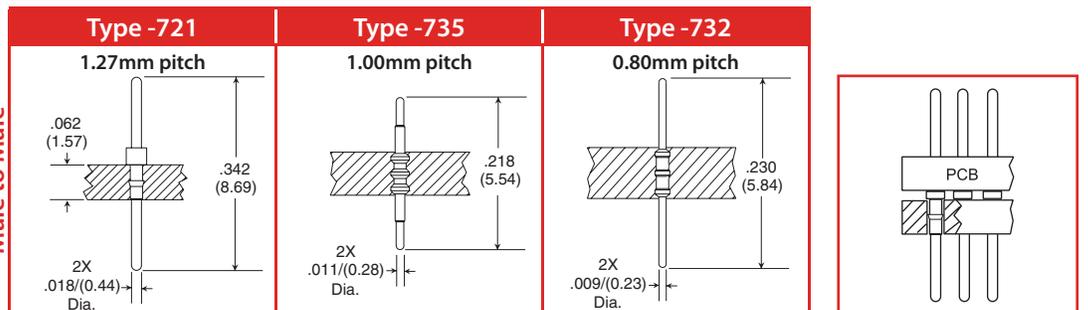
Standard Terminals

Consult factory for additional terminals.

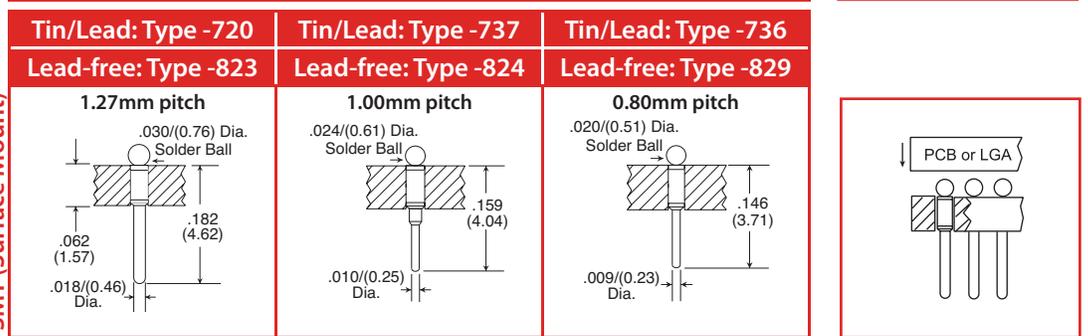
Standard



Male to Male



SMT (Surface Mount)



Design your own BGA Adapter or Socket using our online tools or submit your device mechanical specs and we will provide the matching part numbers.

BGA Footprint Finder

www.advanced.com/bga

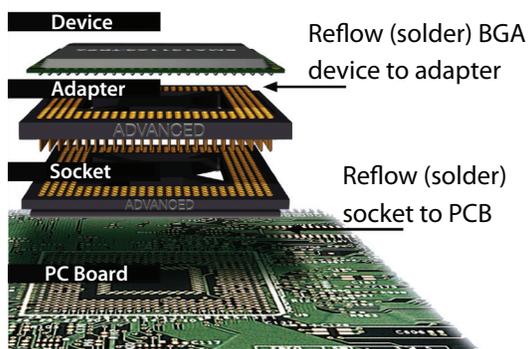
- Thousands of footprints available online
- Search by pitch, device size, etc.
- Select matching image for footprint dash number

Build-A-Part™ Product Configurator

www.advanced.com/bap

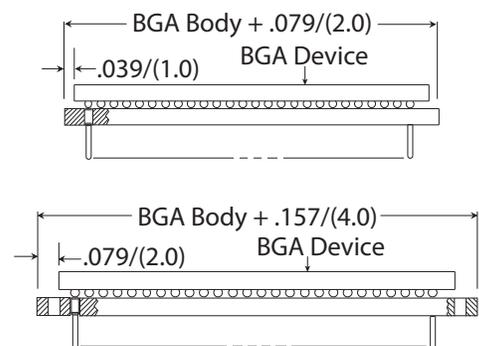
- Build a complete part number online
- Built-in footprint selector
- Download a product drawing (PDF)
- Check Stock
- Request a Quote
- Print a Spec Sheet

How It Works



- Either Tin/Lead or Lead-free device packages can be attached to our RoHS Compliant Adapters.
- PC boards can be processed with Tin/Lead BGA sockets in standard profiles, or Lead-free BGA sockets in RoHS Compliant, high temperature profiles.
- Generic reflow profiles available online

Dimensional Information



Standard Adapter (A)

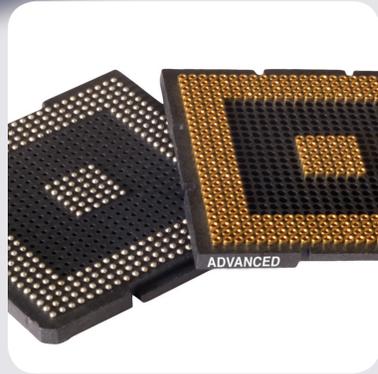
- Mates with Standard Socket (S)
- Adapter size equals BGA Device body + .079/(2.00)

Extraction Slot Adapter (AX)

- Slots allow AIC extraction tool (sold separately) to easily remove device/adapter assembly from socket
- Mates with Extraction Socket (SB)
- Adapter size equals BGA Device body + .157/(4.00)



BGA Socket Adapter Systems



Features

- Advanced® exclusive solder ball terminals offer superior SMT processing.
- Same footprint as BGA device.
- Proven long-term performance in vigorous temperature cycling applications - solder ball terminal absorbs CTE mismatch.
- Closed bottom socket terminal for 100% anti-wicking of solder.
- Gold contacts allow gold/gold interconnections to Adapter pins.
- Low insertion force socket with multi-finger high reliability Beryllium Copper contacts.
- Coplanarity consistently better than the .006/(0.152mm) industry standard.
- Custom designs available.

Specifications

Terminals:
Brass - Copper Alloy (C36000)

Contacts:
Beryllium Copper (C17200)

Solder Ball:
Lead-free: 95.5Sn/4.0Ag/0.5Cu
Tin/Lead: 63Sn/37Pb

Plating:
G - Gold over Nickel

Ball Grid Array (BGA) Adapter Sockets 0.80mm, 1.00mm, and 1.27mm Pitch

Table of Models

	Description: Standard Socket (S) Material: High Temp. Liquid Crystal Polymer (LCP)* or FR-4	Insulator Size: Same size as BGA device body
	Description: Extraction Socket (SB) Material: High Temp. Liquid Crystal Polymer (LCP)* or FR-4	Insulator Size: 1.27mm Pitch: BGA device body +.079/(2.00) 1.00mm Pitch: BGA device body +.138/(3.50)

RGS/RGSB replaces MGS/MGSB.

* Some sizes may only be available in FR-4. See How To Order section or consult factory.

Options



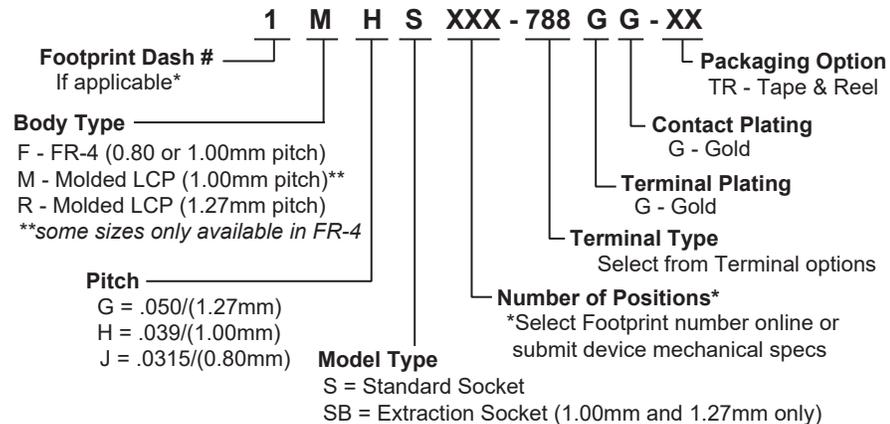
Tape and Reel Packaging

- Conforms to EIA-481 Standard.
- Pick-up tape included.
- Add -TR to end of part number when ordering.
- Custom packaging available.
- If -TR is not specified, standard tray packs are used.

Extraction Tool

- Extraction tool (P/N 8125) is available separately.
- Works with Extraction Slot Adapters.

How To Order



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Page 6 | BGA Data Book (Rev. 17-2)

Ball Grid Array (BGA) Adapter Sockets

For use with mating BGA Adapters

BGA Socket Adapter Systems

Standard Terminals

SMT (Surface Mount)

Thru-Hole

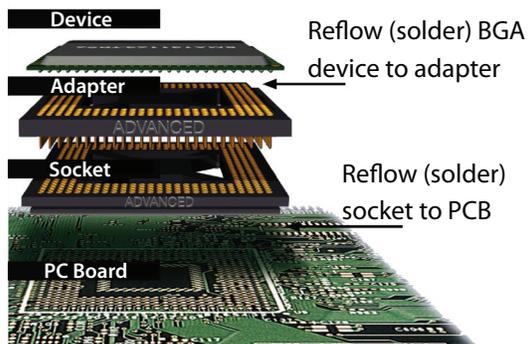
Tin/Lead: Type -636	Tin/Lead: Type -790	Tin/Lead: Type -716	Tin/Lead: Type -702
Lead-free: Type -819	Lead-free: Type -788	Lead-free: Type -816	Lead-free: Type -828
1.27mm pitch <p>.117 (2.97) .095 (2.41) .030 Dia. (0.76)</p>	1.00mm pitch <p>.105 (2.67) .088 (2.24) .024 Dia. (0.61)</p>	1.00mm pitch <p>.105 (2.67) .09 (2.29) .024 Dia. (0.61)</p>	0.80mm pitch <p>.125 (3.18) .020 Dia. (0.51)</p>
Tin/Lead: Type -673	Tin/Lead: Type -789	Tin/Lead: Type -769	Tin/Lead: Type -731
1.27mm pitch <p>.117 (2.97) .095 (2.41) .128 (3.25) .018 Dia. (0.46)</p>	1.00mm pitch <p>.105 (2.67) .088 (2.24) .125 (3.18) .011 Dia. (0.28)</p>	1.00mm pitch <p>.105 (2.67) .09 (2.29) .125 (3.18) .011 Dia. (0.28)</p>	0.80mm pitch <p>.125 (3.18) .080 (2.03) .011 Dia. (0.28)</p>

Additional standard and custom terminals available. See Terminals section or consult factory.



Design your own BGA Adapter or Socket using our online tools or submit your device mechanical specs and we will provide the matching part numbers.

How It Works



- Either Tin/Lead or Lead-free device packages can be attached to our RoHS Compliant Adapters.
- PC boards can be processed with Tin/Lead BGA sockets in standard profiles or Lead-free BGA sockets in RoHS Compliant, high temperature profiles.
- Generic Reflow Profiles available online.

BGA Footprint Finder

www.advanced.com/bga

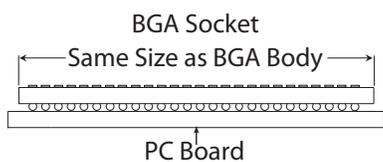
- Thousands of footprints available online
- Search by pitch, device size, etc.
- Select matching image for footprint dash number

Build-A-Part™ Product Configurator

www.advanced.com/bap

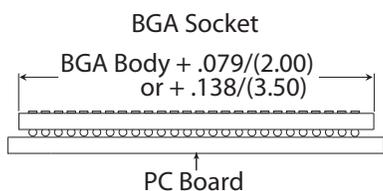
- Build a complete part number online
- Built-in footprint selector
- Download a product drawing (PDF)
- Check Stock
- Request a Quote
- Print a Spec Sheet

Dimensional Information



Standard Socket (S)

- Mates with Standard Adapter (A)
- Socket size same as BGA device body
- Use with SMT Adapter for LGA and reworked BGA device socketing (or board to board applications)



Extraction Slot (SB)

- Mates with Extraction Slot Adapter (AX)
- Socket size equals BGA body + .079/(2.00) for 1.27mm pitch or BGA body + .138/(3.50) for 1.00mm pitch
- Protects valuable PCB during device/adapter extraction - tool never touches PCB
- Available in 1.00 and 1.27mm pitch only



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Flip-Top™ BGA Sockets 0.50mm Pitch



Features

- Model shown accommodates BGA packages up to 12mm sq. (22 x 22 rows) with larger sizes available upon request.
- Precision machined spring probes offer high bandwidth with very low insertion loss.
- Compact size (small keepout zone) enables use on design boards.

Specifications

Guide Box:

High Temp. Glass Filled Thermoplastic (PPS)
Screws: 18-8 Stainless Steel

Base Socket:

FR-4 Glass Epoxy, U.L. Rated 94V-0

Lid, Latch, Heat Sink & Support Plate:
Anodized Aluminum

Spring Probe Terminals:

Crown-point Plunger: Tool Steel, Gold Plated
Spring: Stainless Steel, Gold Plated
Terminal: Brass (C36000), Gold Plated

Solder Ball (Board Interface)

Lead-free: 96.5Sn/3.0Ag/0.5Cu (SAC305)
Tin/Lead: 63Sn/37Pb



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Page 8 | BGA Data Book (Rev. 17-2)

Table of Models

		For Device Packages Up to 12 mm ²
	Description: SMT Standard (FRM) Note 1: See Application Spec. for recommended adhesive (epoxy) instructions.	Body Size 0.79/(20mm) W x 1.06/(27mm) L Height 0.68/(17.4mm)* approx. (*will vary based on reflow profile, paste volume, etc.) Consult factory for QFN and LGA devices.
	Description: SMT/Screw Mount (FRM) Note 2: Screws provided for additional strain relief when needed; reflow still required.	
	Description: SMT Plus (FRM) Note 3: Additional solder balls provided for strain relief in low pin count SMT applications.	

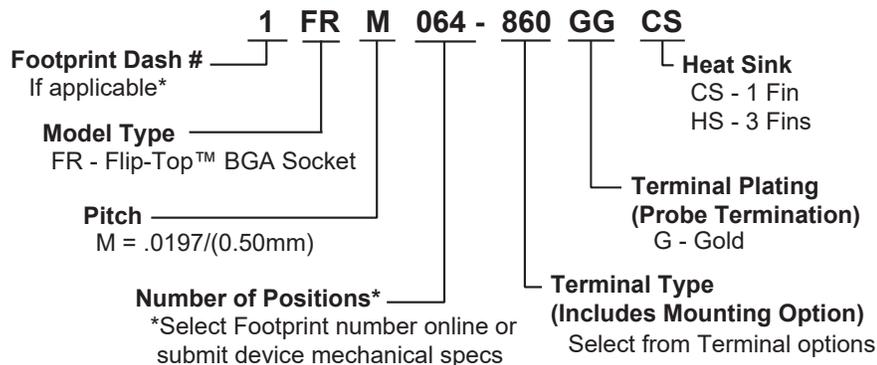
Consult factory for 0.65mm and 0.80mm pitch models.

Terminals**

**Select based on mounting style.

Tin/Lead: Type -861	Tin/Lead: Type -865	Tin/Lead: Type -863
Lead-free: Type -860	Lead-free: Type -864	Lead-free: Type -862
<p>SMT Standard Mount</p>	<p>SMT/Screw Mount</p>	<p>SMT Plus Mount</p>

How To Order

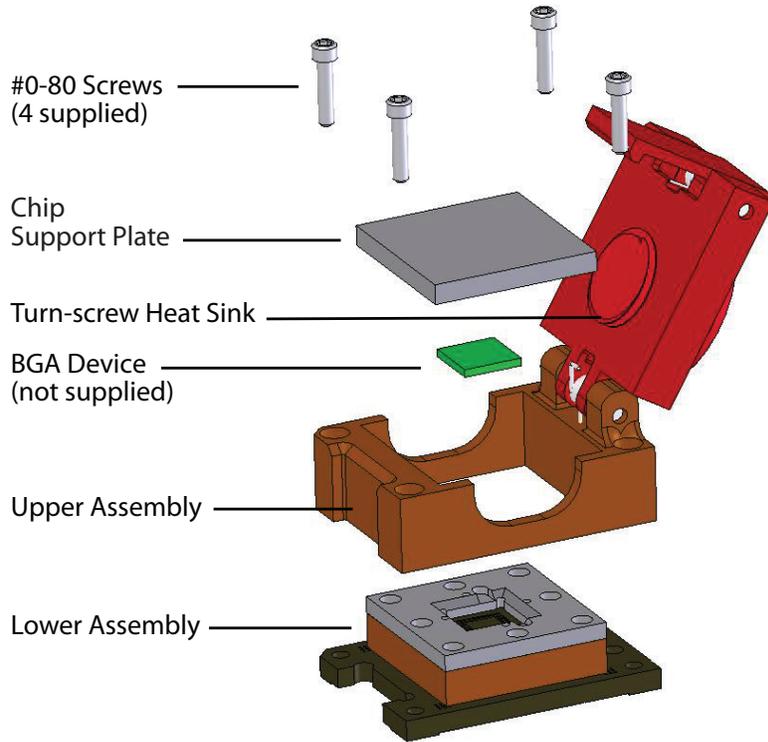


- 4-point crown tip spring probes accurately align device solder balls, leaving only minimal witness marks to preserve the solder ball integrity.
- Device mechanical specifications are required prior to ordering to ensure accuracy of device-specific chip support plate.
- Sockets are packaged in foam-lined cartons.

Flip-Top™ BGA Sockets

0.50mm Pitch

How It Works



Step 1: Solder lower assembly to PC board, apply epoxy if required.

Step 2: Attach upper assembly using four supplied screws.

Step 3: Insert BGA device by hand or with the aid of a vacuum pen (recommended).

Step 4: Place device-specific chip support plate (supplied) over device, close lid, and screw down heat sink actuator for device engagement.

Performance

Durability

Actuation cycles: 500 minimum

Current Carrying Capacity

2.8 Amps Max.

Probe Contact Force

18 g (per position)

Probe Contact Resistance

80 mOhms

	Differential	Single-Ended
Return Loss*	-10db @ 2.6 GHz -15db @ 1.3 GHz	-10db @ 8.0 GHz -15db @ 3.5 GHz
Insertion Loss*	-0.6db @ 2.6 GHz -0.2db @ 1.3 GHz	-2.1db @ 8.0 GHz -0.9db @ 3.5 GHz

*Complete Signal Integrity (SI) simulation report available.

BGA Test Sockets



Design your own BGA Adapter or Socket using our online tools or submit your device mechanical specs and we will provide the matching part numbers.

BGA Footprint Finder

www.advanced.com/bga

- Thousands of footprints available online
- Search by pitch, device size, etc.
- Select matching image for footprint dash number

Build-A-Part™ Product Configurator

www.advanced.com/bap

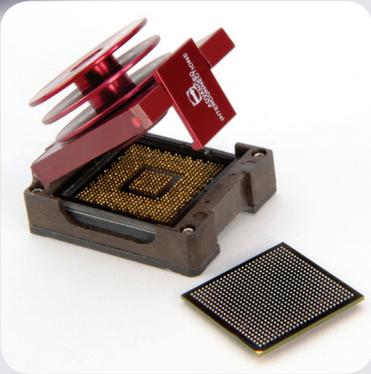
- Build a complete part number online
- Built-in footprint selector
- Download a product drawing (PDF)
- Check Stock
- Request a Quote
- Print a Spec Sheet



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BGA Data Book (Rev. 17-2) | Page 9

BGA Test Sockets



Features

- Designed to save space on new and existing PC boards in test, development, programming and production applications.
- No external hold-downs or soldering of BGA device required.
- AIC exclusive solder ball terminals offer superior processing.
- Uses same footprint as BGA device.
- Available with integral, finned heat sink or coin screw clamp assembly.

Specifications

Terminals:

Brass - Copper Alloy (C36000)

Contacts:

Beryllium Copper (C17200)

Plating:

G - Gold over Nickel

Terminal Support:

Polyimide Film

Spring Material:

Stainless Steel

Lid, Latch, Heat Sink/Coin Screw and Support Plate Material:

Aluminum

Solder Ball:

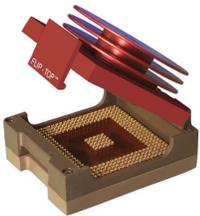
Lead-free: 95.5Sn/4.0Ag/0.5Cu
Standard: 63Sn/37Pb



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Page 10 | BGA Data Book (Rev. 17-2)

Flip-Top™ BGA Sockets 1.27mm and 1.00mm Pitch

Table of Models

	<p>Description: 1.27mm pitch Socket (FRG) Material: Guide Box: Molded PPS Base: High Temp. Liquid Crystal Polymer (LCP)</p>	<p>Socket Size: 3.00mm wider and 10.00mm longer than BGA device (for packages larger than 15.00mm square).*</p>
	<p>Description: 1.00mm pitch Socket (FRH) Material: Guide Box: Molded PPS Base: FR-4 Glass Filled Epoxy</p>	<p>Socket Size: 3.00mm wider and 10.00mm longer than BGA device (for packages larger than 15.00mm square).*</p>

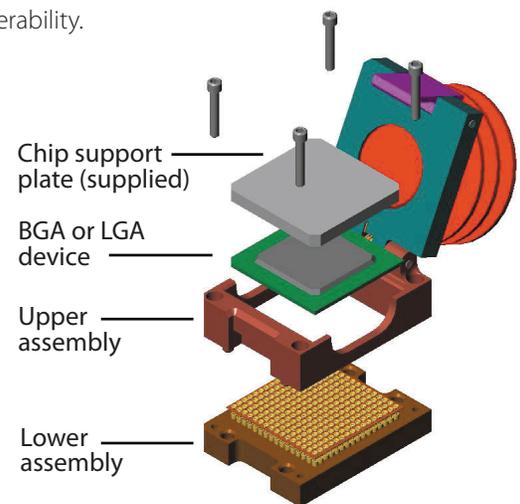
* For device packages smaller than 15.00mm square, the socket size is X = .709/(18.00) and Y = .984/(25.00).

How It Works

SMT models are shipped un-assembled to ease solderability.

Thru-hole models are shipped fully assembled.

1. Lower assembly (base) is soldered to PC board with no external hold-down mechanism. Thru-hole models may be soldered to PC board or plugged into a mating socket.
2. Upper assembly inserts easily to lower assembly by aligning guide posts and installing four (supplied) screws.
3. Finned heat sink or coin screw is screwed down to flush with bottom of lid.
4. Lid opens easily by pressing latch.

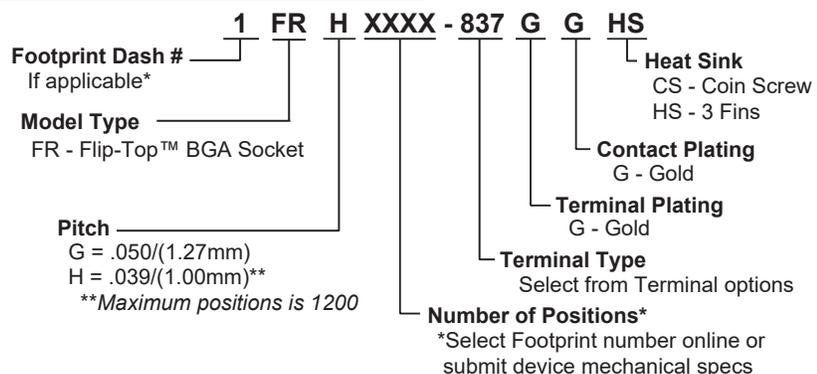


Generic Reflow Profiles available online.

5. BGA device is inserted by aligning A1 position with chamfered corner of Flip-Top™ socket. Place support plate on top of device, close lid, engage heat sink or coin screw, and socket is ready for use.

Detailed Installation and General Usage Instructions are provided with product.

How To Order



*For device packages smaller than 15.00mm square, the socket size is X = .709/(18.00) and Y = .984/(25.00).

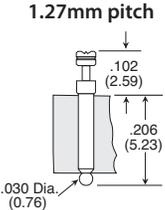
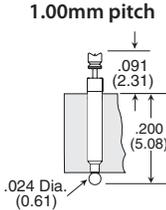
For details relating to proprietary information protected by patents, see Pat. www.advanced.com/patents. Specifications subject to change without notice. inch/(mm)

Flip-Top™ BGA Sockets

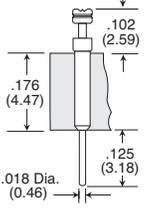
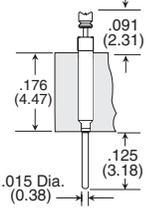
1.27mm and 1.00mm Pitch

Terminals (for test, development, and production applications)

SMT (Surface Mount)

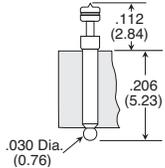
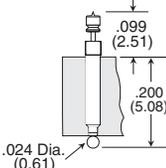
Tin/Lead: Type -690	Tin/Lead: Type -752
Lead-free: Type -821	Lead-free: Type -837
1.27mm pitch 	1.00mm pitch 

Thru-Hole

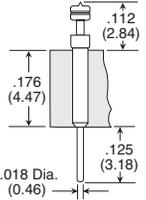
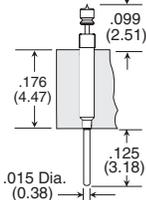
Type -708	Type -754
1.27mm pitch 	1.00mm pitch 

SMT (Surface Mount)

Terminals (for LGA or de-balled BGA device applications)

Tin/Lead: Type -713	Tin/Lead: Type -762
Lead-free: Type -822	Lead-free: Type -838
1.27mm pitch 	1.00mm pitch 

Thru-Hole

Type -712	Type -763
1.27mm pitch 	1.00mm pitch 

BGA Test Sockets



Design your own BGA Adapter or Socket using our online tools or submit your device mechanical specs and we will provide the matching part numbers.

BGA Footprint Finder

www.advanced.com/bga

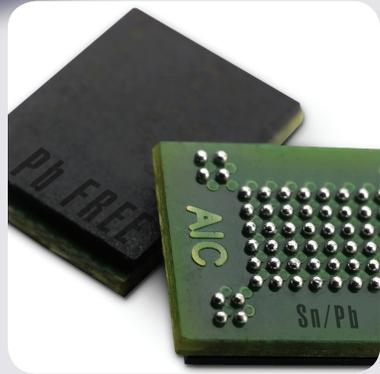
- Thousands of footprints available online
- Search by pitch, device size, etc.
- Select matching image for footprint dash number

Build-A-Part™ Product Configurator

www.advanced.com/bap

- Build a complete part number online
- Built-in footprint selector
- Download a product drawing (PDF)
- Check Stock
- Request a Quote
- Print a Spec Sheet





Features

When BGA devices are transitioned to Lead-free packages, OEMs with RoHS exempt applications are faced with costly PC board redesign and/or the added cost and time delays associated with re-qualifying the board soldering profile. BGA Interposers and Socket Adapter Systems from Advanced are cost-effective methods for converting Lead-free BGA device packages for use on boards processed with traditional Tin/Lead solder reflow profiles.

- Reduces costs associated with device package transition or obsolescence.
- Solutions available for both RoHS compliant and exempt applications.
- Industry proven screw-machined terminals with solder balls provide the high reliability required in medical, military, telecom, and automotive applications.
- Same footprint as BGA device.
- Device attach services available in-house.
- Tape and Reel packaging available.

Specifications

Solder Ball:

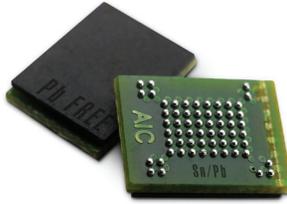
Lead-free: 95.5Sn/4.0Ag/0.5Cu
Standard: 63Sn/37Pb



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Page 12 | BGA Data Book (Rev. 17-2)

BGA Interposers

Table of Models



Description: Interposers are application specific
Material: FR-4 Fiberglass Epoxy Board

Custom BGA Interposer

BGA Interposers from Advanced Interconnections are a cost effective method for converting Lead-free BGA device packages for use on boards processed with lower temperature, Tin/Lead solder profiles.

Designed for RoHS exempt applications, Interposers solve BGA device transition, obsolescence, and solderability issues associated with the higher temperature requirements to process Lead-free BGA packages.

How It Works

Advanced's turn-key solution consists of Lead-free BGA device attach to an Interposer adapter board in a high temperature reflow process, followed by mounting of eutectic (63/37) Tin/Lead solder balls on the bottom of the Interposer. The compact Interposer assembly is shipped ready for use on existing PC boards, eliminating the need to change Tin/Lead solder profiles or subject other components to higher processing temperatures.

