



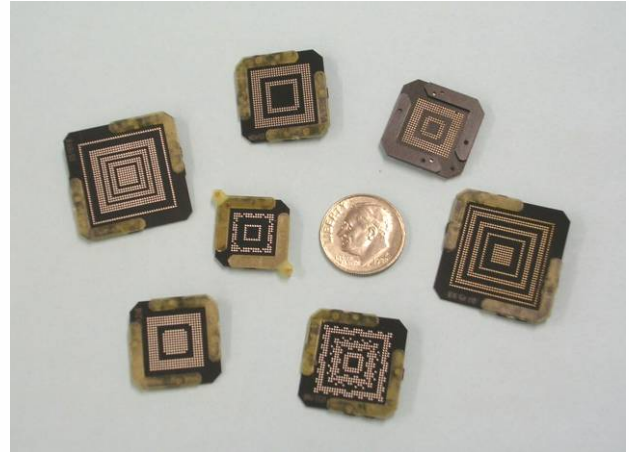
*Electronics*



## 0.5 mm LGA/BGA Sockets

### DESCRIPTION

Tyco Electronics' polymer interconnect technology optimizes socketing of 0.5 mm pitch LGA or BGA devices. This highly conductive polymer contact provides electrically transparent signal transfer.



### APPLICATIONS

- Silicon validation
- Customer reference designs
- System test and bring up
- Wafer test

### KEY FEATURES

- Solderless contact polymer contact allows for easy socket replacement
- Light compression load of 25 grams/contact limits stress on the substrate
- Flexible manufacturing process allows for asymmetrical contact patterns
- Standard array sizes available up to 40 x 40 contacts (1600 I/O)
- Compact design minimizes real estate required
- BGA sockets accommodate multiple ball sizes
- RoHs complaint

### FOR MORE INFORMATION

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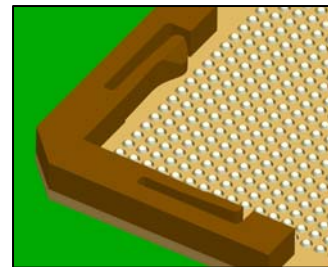
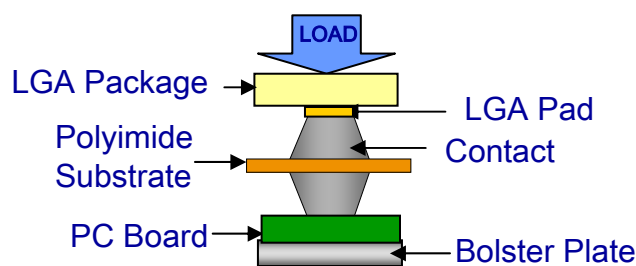
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# 0.5mm LGA/BGA Sockets

## PRODUCT CHARACTERISTICS

The innovative polymer material system provides a highly conductive interconnect. This proprietary material consists of a high temperature polymer compound that has been embedded with metallized particles. The material is formed into contacts. The contacts are held in place by a thin polyimide substrate. When mechanically compressed, the contacts' electrical characteristics are optimized.

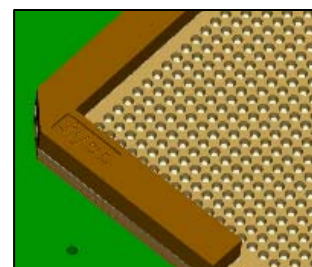
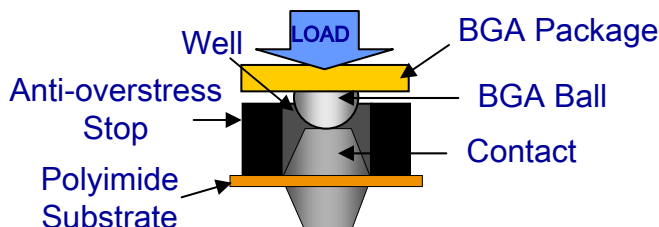
### LGA Contact Compressed



Close up of LGA corner frame and contacts

The unique design of the BGA socket uses an anti-overstress feature which protects the contact and also provides a "well" for the ball to rest in. This "well" acts as an alignment feature which centers the BGA ball to the MPI column. Corner frames provide for gross alignment of the package to the socket.

### Contact to Solder Ball Interface



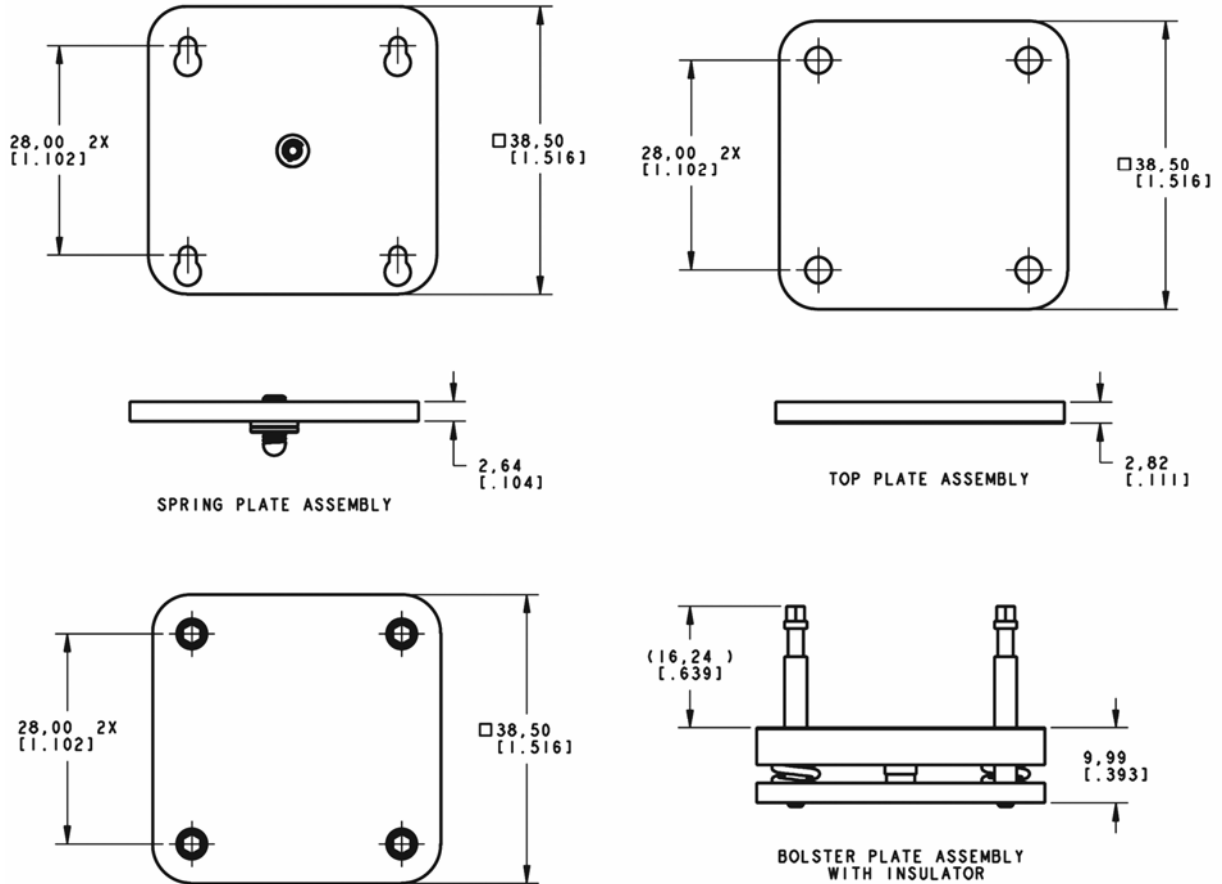
Close up of BGA corner frame and contacts

The Matrix series sockets are available as fully arrayed sockets up to 40 x 40 contacts, 1600 I/O. Consult Tyco Electronics for custom socket and hardware solutions.



# 0.5mm LGA/BGA Sockets

## PRODUCT DIMENSIONS



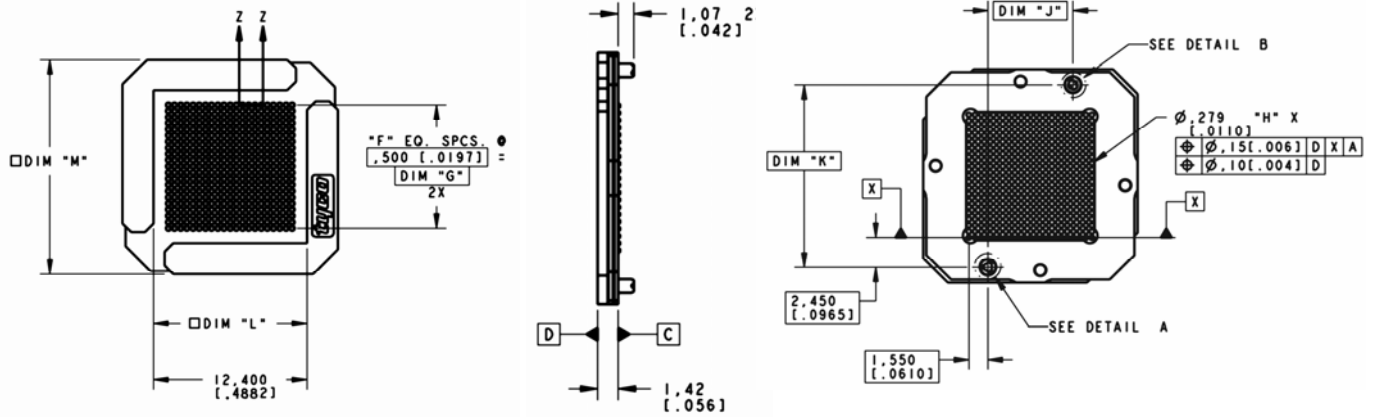
### MATRIX BGA HARDWARE

HARDWARE KIT PART NO.	SOCKET PART NO.
1921223-1	1921125-1
1921223-2	1921125-2, 1921125-3, 1921125-4, 1921125-5
1921223-3	1921125-6, 1921125-7, 1921125-8, 1921125-9
1921223-4	1-1921125-0, 1-1921125-1, 1-1921125-2, 1-1921125-3
1921223-5	1-1921125-4, 1-1921125-5, 1-1921125-6
1921223-6	1-1921125-7, 1-1921125-8, 1-1921125-9, 2-1921125-0

Note: All part numbers are RoHS compliant.

# 0.5mm LGA/BGA Sockets

## PRODUCT DIMENSIONS



PART NO.	GRID	"F" NO. OF SPACES	"H" NO. OF CONTACTS	DIM G	DIM J	DIM K	DIM L	DIM M	DIM N	DIM P	LOAD
1921125-1	21 X 21	20	441	10,000 [.3937]	6,900 [.2717]	14,900 [.5866]	12,40 [.488]	17,4 [.69]	10,550 [.4154]	6,550 [.2579]	24.3 ±6 LBS
1921125-2	22 X 22	21	484	10,500 [.4134]	7,400 [.2913]	15,400 [.6063]	12,90 [.508]	17,9 [.70]	10,300 [.4055]	6,300 [.2480]	26.7 ±7 LBS
1921125-3	23 X 23	22	529	11,000 [.4331]	7,900 [.3110]	15,900 [.6260]	13,40 [.528]	18,4 [.72]	10,050 [.3957]	6,050 [.2382]	29.2 ±7 LBS
1921125-4	24 X 24	23	576	11,500 [.4528]	8,400 [.3307]	16,400 [.6457]	13,90 [.547]	18,9 [.74]	9,800 [.3858]	5,800 [.2283]	31.7 ±8 LBS
1921125-5	25 X 25	24	625	12,000 [.4724]	8,900 [.3504]	16,900 [.6654]	14,40 [.567]	19,4 [.76]	9,550 [.3760]	5,550 [.2185]	34.5 ±9 LBS
1921125-6	26 X 26	25	676	12,500 [.4921]	9,400 [.3701]	17,400 [.6850]	14,90 [.587]	19,9 [.78]	9,300 [.3661]	5,300 [.2087]	37.3 ±9 LBS
1921125-7	27 X 27	26	729	13,000 [.5118]	9,900 [.3898]	17,900 [.7047]	15,40 [.606]	20,4 [.80]	9,050 [.3563]	5,050 [.1988]	40.2 ±10 LBS
1921125-8	28 X 28	27	784	13,500 [.5315]	10,400 [.4094]	18,400 [.7244]	15,90 [.626]	20,9 [.82]	8,800 [.3465]	4,800 [.1890]	43.2 ±11 LBS
1921125-9	29 X 29	28	841	14,000 [.5512]	10,900 [.4291]	18,900 [.7441]	16,40 [.646]	21,4 [.84]	8,550 [.3366]	4,550 [.1791]	46.4 ±11 LBS
1-1921125-0	30 X 30	29	900	14,500 [.5709]	11,400 [.4488]	19,400 [.7638]	16,90 [.665]	21,9 [.86]	8,300 [.3268]	4,300 [.1693]	49.6 ±12 LBS
1-1921125-1	31 X 31	30	961	15,000 [.5906]	11,900 [.4685]	19,900 [.7835]	17,40 [.685]	22,4 [.88]	8,050 [.3169]	4,050 [.1594]	53.0 ±13 LBS
1-1921125-2	32 X 32	31	1024	15,500 [.6102]	12,400 [.4882]	20,400 [.8032]	17,90 [.705]	22,9 [.90]	7,800 [.3071]	3,800 [.1496]	56.4 ±14 LBS
1-1921125-3	33 X 33	32	1089	16,000 [.6299]	12,900 [.5079]	20,900 [.8228]	18,40 [.724]	23,4 [.92]	7,550 [.2972]	3,550 [.1398]	60 ±15 LBS
1-1921125-4	34 X 34	33	1156	16,500 [.6496]	13,400 [.5276]	21,400 [.8425]	18,90 [.744]	23,9 [.94]	7,300 [.2874]	3,300 [.1299]	63.7 ±16 LBS
1-1921125-5	35 X 35	34	1225	17,000 [.6693]	13,900 [.5472]	21,900 [.8622]	19,40 [.764]	24,4 [.96]	7,050 [.2776]	3,050 [.1201]	67.5 ±17 LBS
1-1921125-6	36 X 36	35	1296	17,500 [.6890]	14,400 [.5669]	22,400 [.8819]	19,90 [.783]	24,9 [.98]	6,800 [.2677]	2,800 [.1102]	71.4 ±18 LBS
1-1921125-7	37 X 37	36	1369	18,000 [.7087]	14,900 [.5866]	22,900 [.9016]	20,40 [.803]	25,4 [1.00]	6,550 [.2579]	2,550 [.1004]	75.5 ±19 LBS
1-1921125-8	38 X 38	37	1444	18,500 [.7283]	15,400 [.6063]	23,400 [.9213]	20,90 [.823]	25,9 [1.02]	6,300 [.2480]	2,300 [.0906]	79.6 ±20 LBS
1-1921125-9	39 X 39	38	1521	19,000 [.7480]	15,900 [.6260]	23,900 [.9409]	21,40 [.843]	26,4 [1.04]	6,050 [.2382]	2,050 [.0807]	83.8 ±21 LBS
2-1921125-0	40 X 40	39	1600	19,500 [.7677]	16,400 [.6457]	24,400 [.9606]	21,90 [.862]	26,9 [1.06]	5,800 [.2283]	1,800 [.0709]	88.2 ±22 LBS

Note: All part numbers are RoHS compliant.

# 0.5mm LGA/BGA Sockets

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## PRODUCT SPECIFICATIONS

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### Material:

**Contact:** Proprietary compound of Polymer and Silver

**Insulator:** Polyimide

**Frame:** Thermoplastic, 94V-O or Polyimide

**Insulator to Frame Adhesive:** Acrylic

### Mechanical:

**Compression Force:** 25 grams per contact average

**Durability:** 40 cycles

**PCB Thickness Range:** .062" to .125"

### Electrical:

**Contact Resistance:** 50 milliohms max

**Capacitance:** <0.01pF and 1 MHz

**Inductance:** <0.40 nH at 1.0 KHz

**Power Rating:** 2 amps per contact max.

**Insulation Resistance:** 500 megohms  
at 250 VDC

**Dielectric Withstanding Voltage:** 250 VAC

### Environmental:

**Operating Temperature:** 0°C to 105°C

**Maximum Temperature:** 105°C

**Mixed Flowing Gas:** EIA-364-65A

**Thermal Shock:** EIA-364-32

-55°C to 85°C, 10 cycles

**Accelerated Temperature Cycling:**

EIA-540

0°C to 100°C, 1000 cycles

**Humidity:** EIA-364-31

25°C to 85°C, 85% RH

**Shock:** EIA-364-27, 5g, 1/2 sine

**Vibration:** EIA-364-28

7.3g rms, 50 to 2000 Hz

**Temperature Life:** EIA-364-17, 125°C,  
1000 hours

Note: All tests performed with gold plated surfaces.

# 0.5mm LGA/BGA Sockets

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## Restriction on the use of Hazardous Substances (RoHS)

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**RoHS 2002/95/EC** as amended 1 January 2006 restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

For purposes of this Datasheet, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

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**"5 of 6 Compliant"** – A "●" symbol identifies these part numbers. These products do not fully comply with the European Union Directive 2002/95/EC because they contain lead in solderable interfaces (they do not contain any of the other five restricted substances above allowable limits). However, these products may be suitable for use in RoHS applications where there is an application-based exception for lead in solders, such as the server, storage, or networking infrastructure exemption.

Note - Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced below.

### Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

Cross-Reference from Non-compliant to Compliant Products  
Ability to browse RoHS Compliant Products in our on-line catalog  
Downloadable Technical Data  
Customer Information Presentation  
More detailed information regarding the definitions used above



So whatever your questions when it comes to RoHS, we've got the answers at [www.tycoelectronics.com/leadfree](http://www.tycoelectronics.com/leadfree).

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