

# 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 compliant

## FOR MORE INFORMATION

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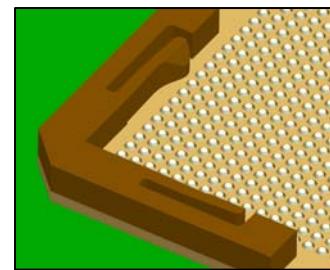
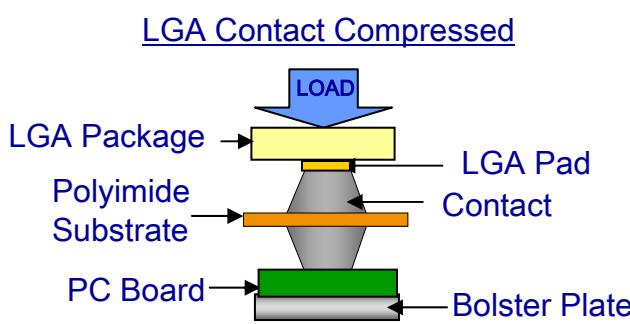
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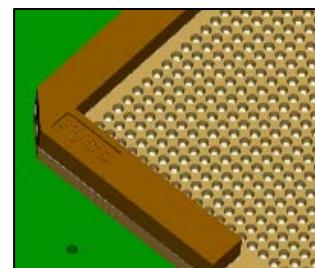
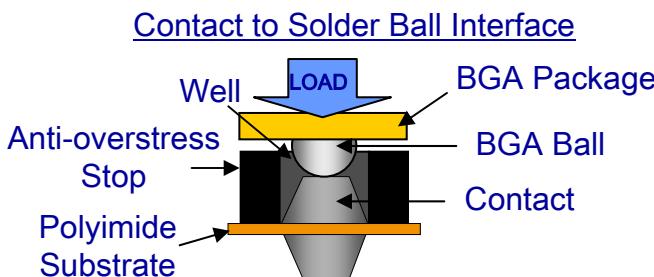
## PRODUCT CHARACTERISTICS

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.



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.



Close up of BGA corner frame and contacts

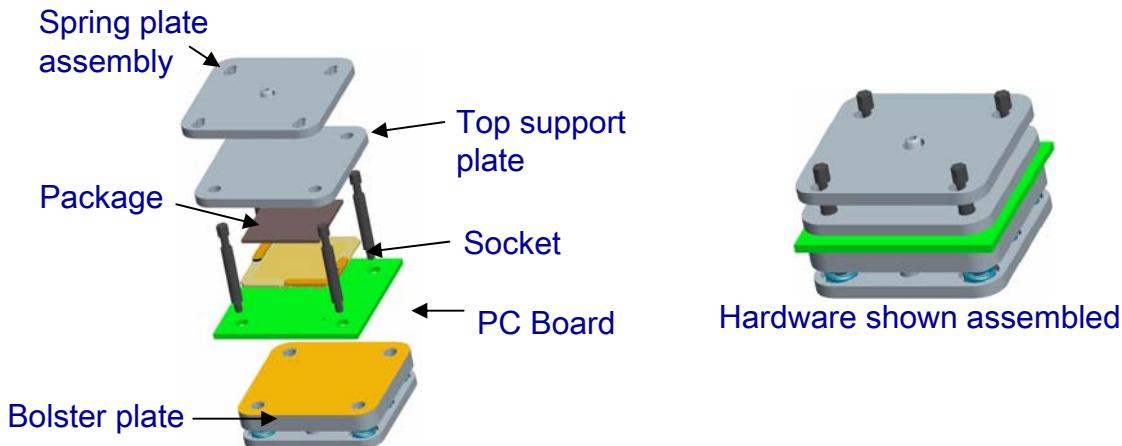
The Matrix series sockets are available as fully arrayed sockets up to 40 x 40 contacts, 1600 I/O. Consult Tyco Electronics for custom socket and hardware solutions.

## 0.5mm LGA/BGA Sockets

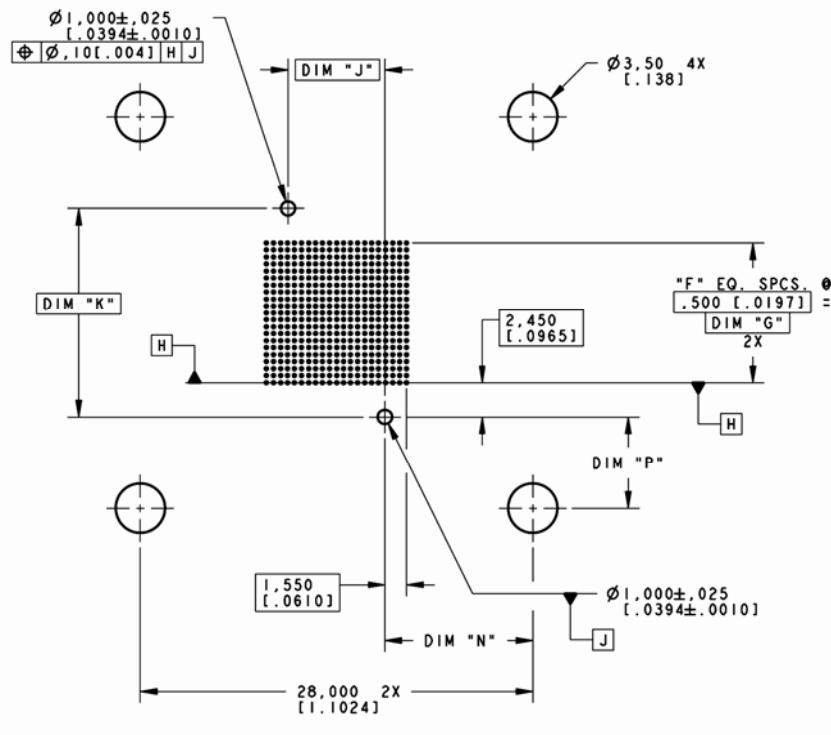
## PRODUCT CHARACTERISTICS

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All sockets are compression mount and require a hardware system to generate the necessary forces. Tyco Electronics offers a complete hardware solution for each socket size. Below is a typical socket and hardware stack-up. The spring plate assembly provides a universal compression load and the bolster plate eliminates PCB bow.



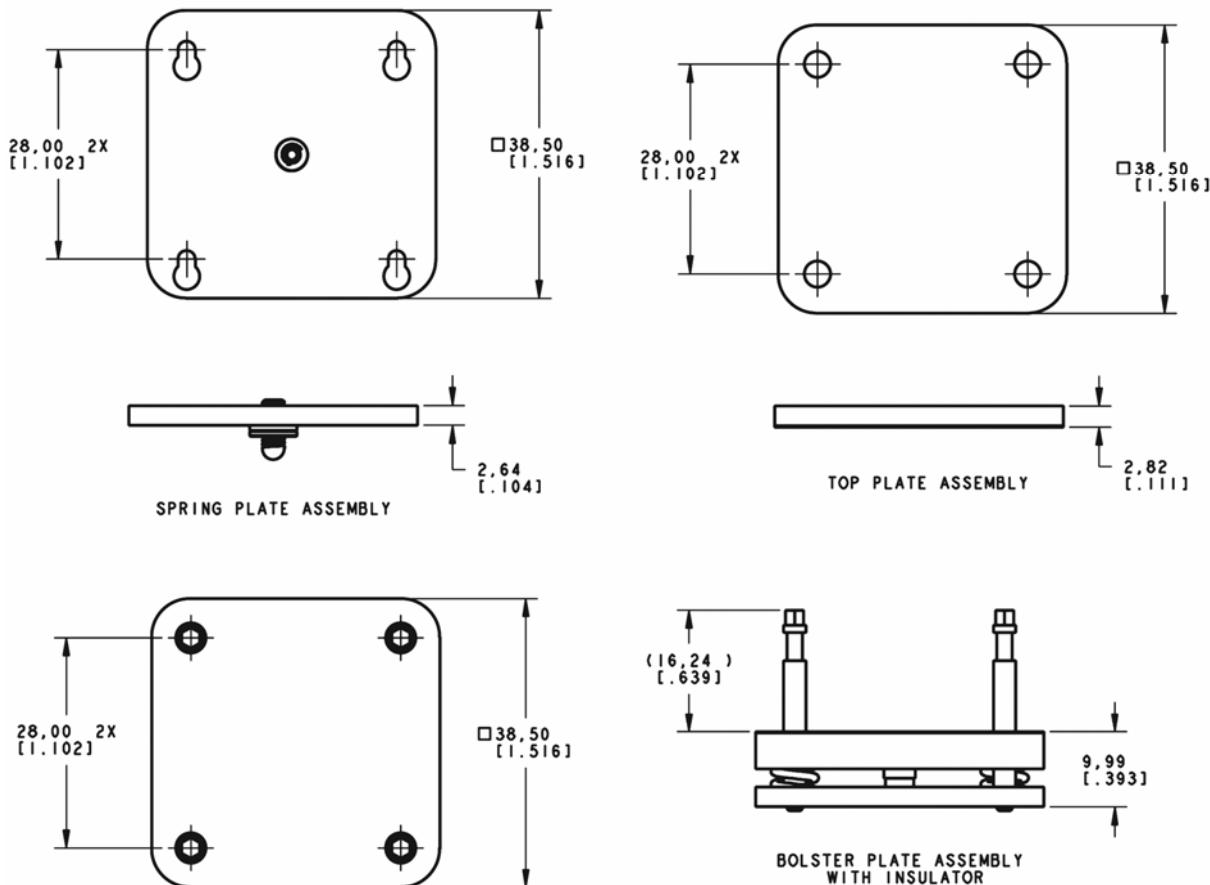
Each hardware kit contains enough hardware for one socket - a spring plate, a top plate, and a bolster plate with insulator.



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## PRODUCT DIMENSIONS

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## MATRIX BGA HARDWARE

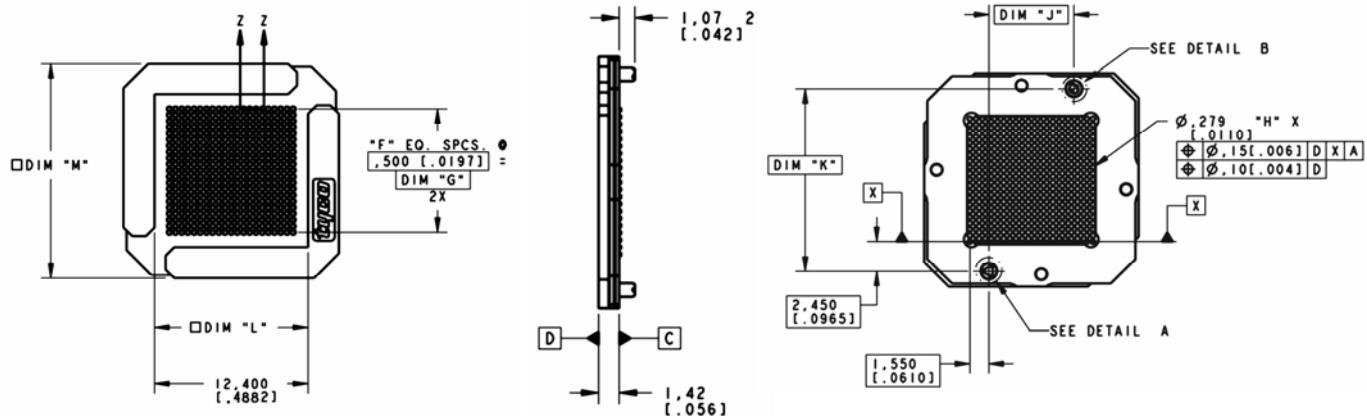
HARDWARE KIT PART NO.	SOCKET PART NO.
1921223-1	1921125-1
1921223-2	1921125-2, 1921125-3, 1921125-4, 1921125-5
1921223-3	1921125-6, 1921125-7, 1921125-8, 1921125-9
1921223-4	1-1921125-0, 1-1921125-1, 1-1921125-2, 1-1921125-3
1921223-5	1-1921125-4, 1-1921125-5, 1-1921125-6
1921223-6	1-1921125-7, 1-1921125-8,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

Note: All part numbers are RoHS compliant.

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## 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
I-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
I-1921125-1	31 X 31	30	961	15,000 [.5906]	11,900 [.4685]	19,900 [.7835]	17,40 [.665]	22,4 [.88]	8,050 [.3169]	4,050 [.1594]	53.0 ±13 LBS
I-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
I-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
I-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
I-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
I-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
I-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
I-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
I-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.

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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.

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

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. **Compliant – Part numbers in this catalog are RoHS Compliant, unless marked otherwise.** These products comply with European Union Directive. Part numbers in this catalog are identified as:

**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.

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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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