

ELASTOMERIC CONNECTORS

the smart solution for
high-volume interconnections
in compact design



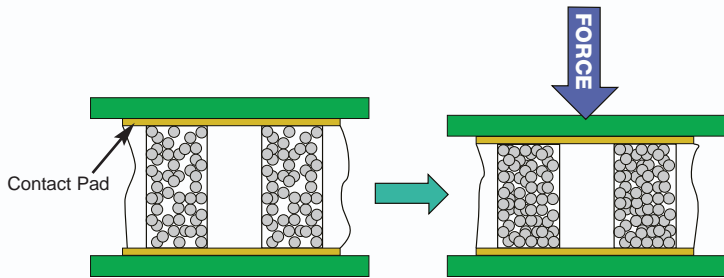


ELASTOMERIC TECHNOLOGIES

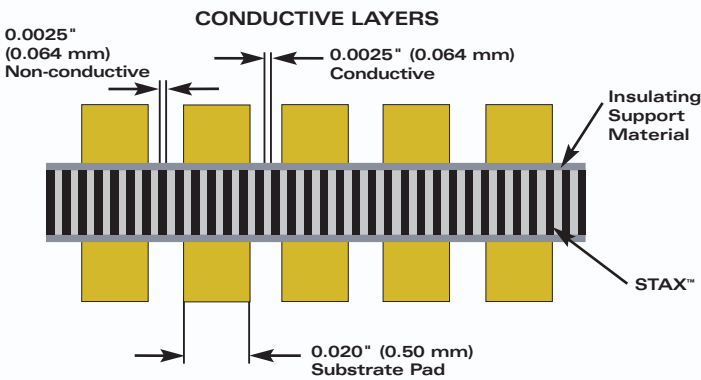
A NICE SIMPLE, RELIABLE CONNECTION

How do elastomeric connectors work?

STAX™ elastomers are zero insertion force connectors that do not require soldering. They provide a compliant surface-to-surface compression connector when deflected between opposing mirror-image pad patterns. STAX elastomeric connectors are composed of alternating layers of conductive and non-conductive silicone rubber. Silicone rubber is the base material because it has excellent aging properties, chemical stability, electrical reliability and superior performance in shock and vibration. It also provides a gasket-like seal to protect the contact surfaces.



The conductive layers consist of tiny metallic particles dispersed in silicone rubber. Within each of the conductive layers, the metallic particles create thousands of conductive paths. Therefore, each conductive layer provides multiple points of contact at the substrate interface. While the conductive layers ensure contact between mating pads, the non-conductive layers isolate the conductive layers from each another. The alternating STAX construction – 200 conductive layers per inch (25.4mm) – allows multiple conductive layers to make contact to a single contact pad while the non-conductive layers electrically isolate adjacent contact pads. These multiple layers coupled with the thousands of conductive paths ensure reliable electrical connection.

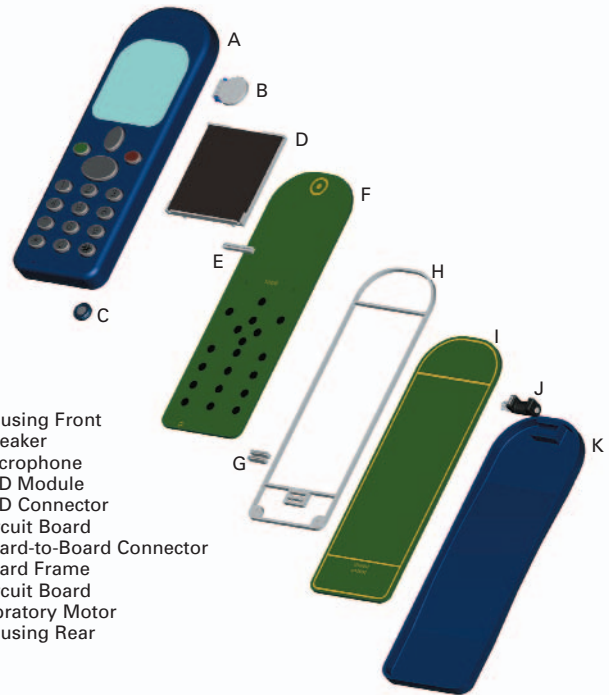


Why use elastomeric instead of mechanical connectors?

Today's densely packed portable and handheld assemblies call for creative approaches to system packaging and design, requiring design engineers to improve product performance and reliability while reducing size, weight and cost. STAX elastomeric connectors meet the size restrictions necessary for portable handheld devices while simplifying manufacturing methods and reducing their cost. They are ideal for densely packaged portable and handheld devices, as shown in the cell phone exploded view.

Compared to elastomeric connectors, mechanical connectors may be difficult to implement due to tight tolerances, design constraints, or co-planarity issues. They are also often too fragile where vibration and shock are factors. In addition, due to

the challenging platform development issues in today's marketplace, tooling associated with custom mechanical connectors can significantly increase production costs and lead time. But since no tooling is required with elastomeric connectors, you get a custom component at off-the-shelf pricing.



- A. Housing Front
- B. Speaker
- C. Microphone
- D. LCD Module
- E. LCD Connector
- F. Circuit Board
- G. Board-to-Board Connector
- H. Board Frame
- I. Circuit Board
- J. Vibratory Motor
- K. Housing Rear

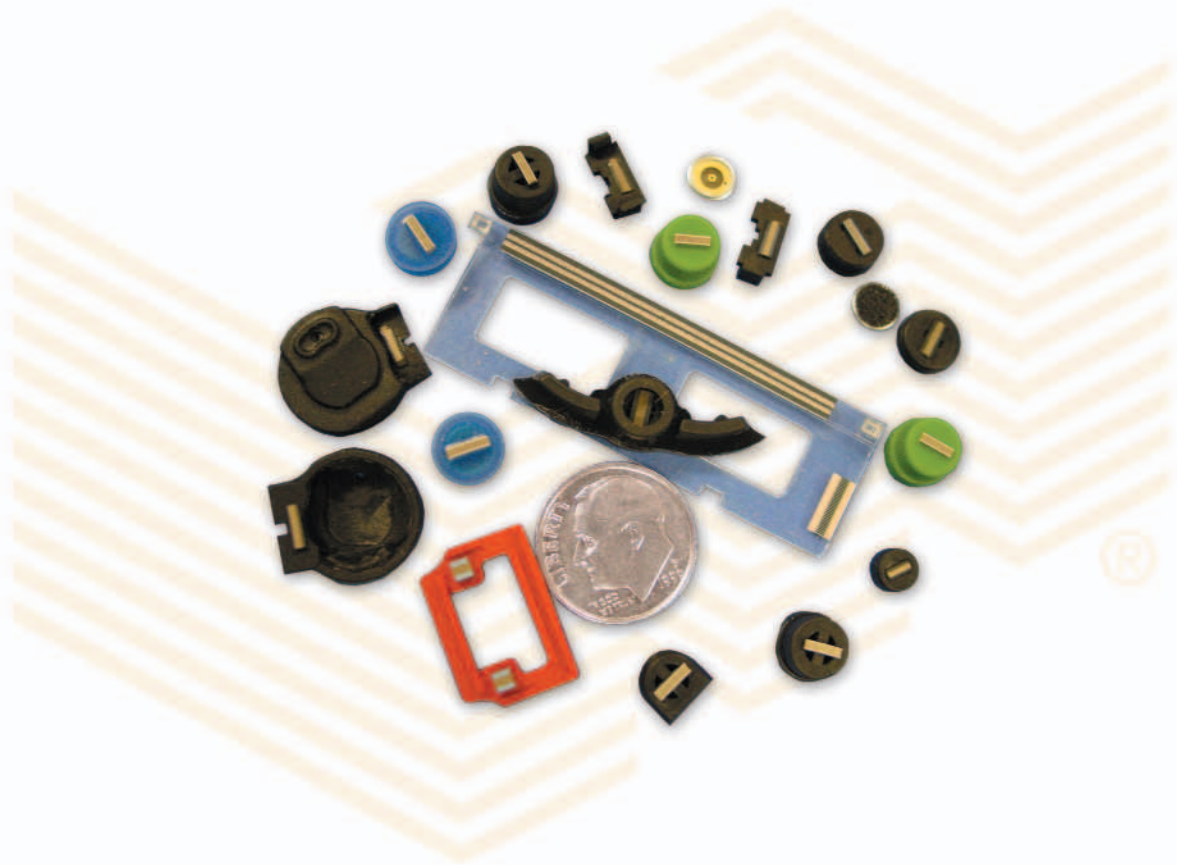
Where are elastomeric connectors used?

The variety of applications where STAX elastomeric connectors can be used is virtually limited only by one's imagination. STAX connectors can be used to make parallel board-to-board, co-planar, and even right-angle connections. The creation of value-added solutions for such applications as microphone, speaker, vibration motor and interboard connections have increased their versatility. All that is needed to incorporate them is to provide deflection force and contact pad alignment. In many cases, the alignment can be done as part of a value added solution. Frequently, deflection force can be provided by the fastening techniques already in use.

The cost per line goes down with decreasing pitch and board separation (less material means lower cost). This is in contrast to mechanical connectors, which become more costly to manufacture and more fragile with decreasing pitch and height. Elastomeric connectors become more cost-effective at board separations of about 0.200" (5 mm) or less and pad pitches below 0.050" (1.27 mm).

MAKING YOUR CONNECTOR CHOICE

BOARD SEPARATION ↑ 0.200" (5 mm)	Mechanical connectors typically cannot meet pitch requirements or are too fragile.	Mechanical Connectors: Price Low Elastomeric Connectors: Price High
	(Ideal range for Elastomers) Elastomeric Connectors: Price Low Mechanical Connectors: Price High	Mechanical connectors typically cannot meet height requirements below 0.100" (2.5 mm)
	0.050" (1.3 mm) → PAD PITCH	

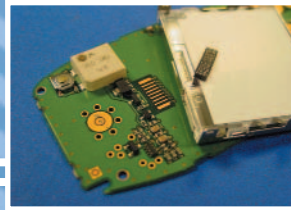
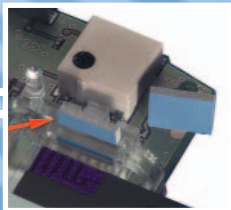


STAX™ LCD Interconnections

Low resistance STAX™ elastomeric connectors are the best means of connecting to Chip-On-Glass (COG), Chip-On-Flex (COF), and other display devices.

- Allows for automatic placement of light guide sub-assembly
- Retaining slot for STAX™ connectors may be incorporated into light guide
- Gasket-like contact interface to Indium Tin Oxide (ITO) traces on LCD
- Inhibits movement during vibration and prevents abrasion of contact surfaces
- Glass-to-board separations of as little as 0.25 mm
- Multiple connectors can be molded into a silicone rubber shock absorbing assembly

COG



COF



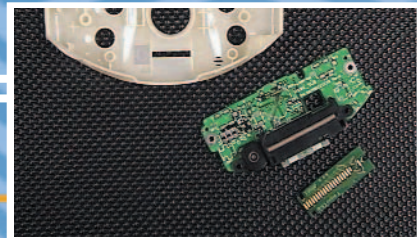
Digital



STAX™ Board-to-Board Solution

For board stacking applications where the freedom of design and availability of product without the limitations of pin count, specific mated height, or overall size is desired. There is no need to compromise the end product at the design stage to accommodate available connectors.

- Elastomer solutions rival PCB space requirements of fine-pitch mechanical connectors
- High contact density can be achieved through use of multiple conductive rows
- 1 Amp+ per contact
- Save 40% over most mechanical connectors

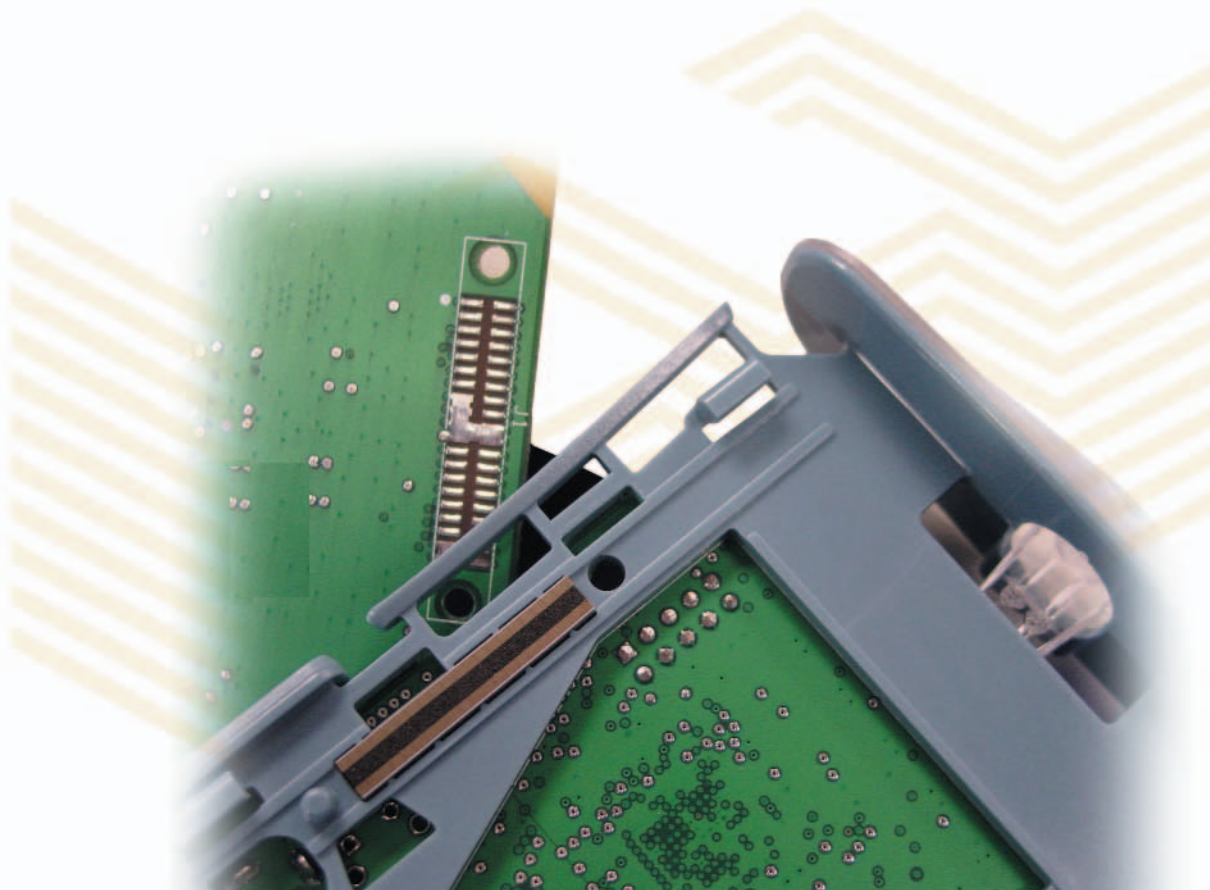


STAX™ Speaker Interconnects

STAX™ elastomeric connectors are an efficient means of providing a speaker connector in mobile phone handsets and other hand-held communication devices.

- Available in pocket connection or clip-on connection configurations
- Elastomer can be located by pick-and-place
- Enables a low height solution
- Reduces obsolete inventory issues
- Economical and robust solution



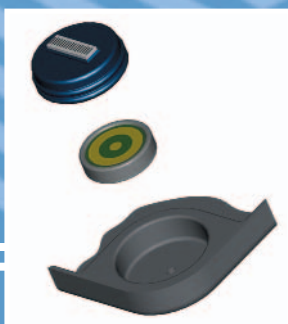
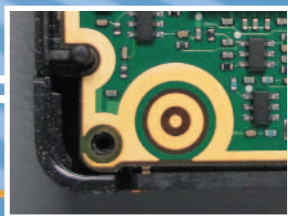


Elastiboot™ Microphone Connectors

Elastiboot™ connectors are composed of a STAX™ elastomer in-molded into an acoustic boot. This allows for automated insertion of a boot assembly consisting of microphone, boot and elastomeric connector.

- Seals microphone from air and vibration
- Elastiboot connectors minimize part count and vendor base
- Reduces overall height of microphone installation
- Dedicated contact technology eliminates shorting potential
- Complete installation/design manual available from Tyco

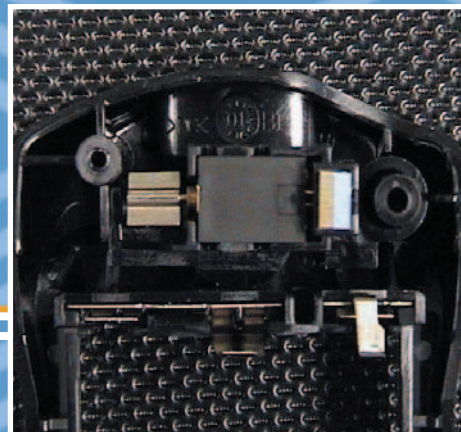
Mic nominal diameter	Mic nominal thickness	Overall depth including mic-to-board separation
4.0 mm	1.85 mm	2.95 +/- 0.20 mm
6.0 mm	1.1 mm	2.20 +/- 0.20 mm
6.0 mm	1.3 mm	2.40 +/- 0.20 mm
6.0 mm	1.5 mm	2.60 +/- 0.20 mm
6.0 mm	2.2 mm	4.10 +/- 0.25 mm



STAX™ Connectors for Vibratory Motors

Vibratory motors can be standardized to allow for customization of only the elastomeric connector to service many varied applications.

- Parallel or right angle connection
- Allows for low height connection
- Eliminates fretting corrosion
- Enables single piece assembly



Tyco Patented Solution



Bohdan "Bob" Wozniak
Business Development Manager
Elastomeric Division / WG

tyco
Electronics

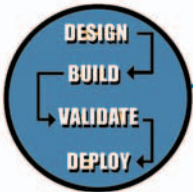
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WHY A TYCO ELASTOMER?



Simple Implementation

- As easy as making a sandwich
- Single-piece compression connection
- No soldering required



Unrivalled Support

- Complete product implementation support from concept through volume production
- Seamless transition from product development site to global manufacturing locations
- Global network of sales & support



Economical

- Save 40% over comparable mechanical connectors
- Reduce end product manufacturing costs
- 1-piece vs. 2-piece
- No tooling



Reliable

- Connectors pass MIL-STD-1344, IEC-68-2 and EIA-364 testing
- Product supplied on more than 400 million portable electronic devices
- Superior shock and vibration resistance



Quick & Easy

- Quick delivery of application review
- Quick prototyping – as little as 48 hrs.
- Quick ramp-up to production – as little as 2 weeks
- Computer controlled smart machinery allows for dimensional flexibility
- The flexibility of a custom connector with off-the-shelf convenience
- Evaluate the connector in your actual application





**ELASTOMERIC
TECHNOLOGIES**

TYCO – A GLOBAL COMPANY

Tyco is committed to:
1. Integrity 2. Teamwork
3. Excellence 4. Accountability

Tyco has combined the historical leadership in the interconnect industry of AMP with forward-looking companies like ASG, Elcon, Elo TouchSystems, HTS, M/A-COM and Raychem to form Tyco Electronics, the largest passive components supplier in the world. These are the resources behind Elastomeric Technologies™ connectors.

Together, we are ready to exploit positive, dynamic change to its fullest, to be a stronger competitor and your preferred supplier. Through both internal development of new solutions for tomorrow's electronics challenges and the acquisition of new companies and technologies, we will deliver even more capability and value to our customers. Our expertise in material science, product design and process engineering allows us to develop, manufacture and sell high performance, first-to-market products. Our global network of technical and sales representatives provides expert application and engineering assistance, hands-on field training and continuing support throughout the world.

Tyco Electronics can provide seamless transition from design to finished product anywhere in the world. Coupled with newly consolidated resources such as research, development & engineering, corporate infrastructure, and integrated manufacturing & delivery, Tyco Electronics is ready to bring you the advantages of shorter lead times, reduced time-to-market, greater economy and a broader product line.

For even more information, visit us on the web at www.elastomerictech.com. There you'll be able to view additional details on our elastomeric connector technology and the various applications for which these connectors are ideal. Posted regularly are new product information, downloadable data sheets, and FAQs. You can even contact us from the site with info on your specific application or to receive our informative newsletter.

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