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NASA TECH BRIEF

Lyndon B. Johnson Space Center

Improved Circuit-Board Interconnectors

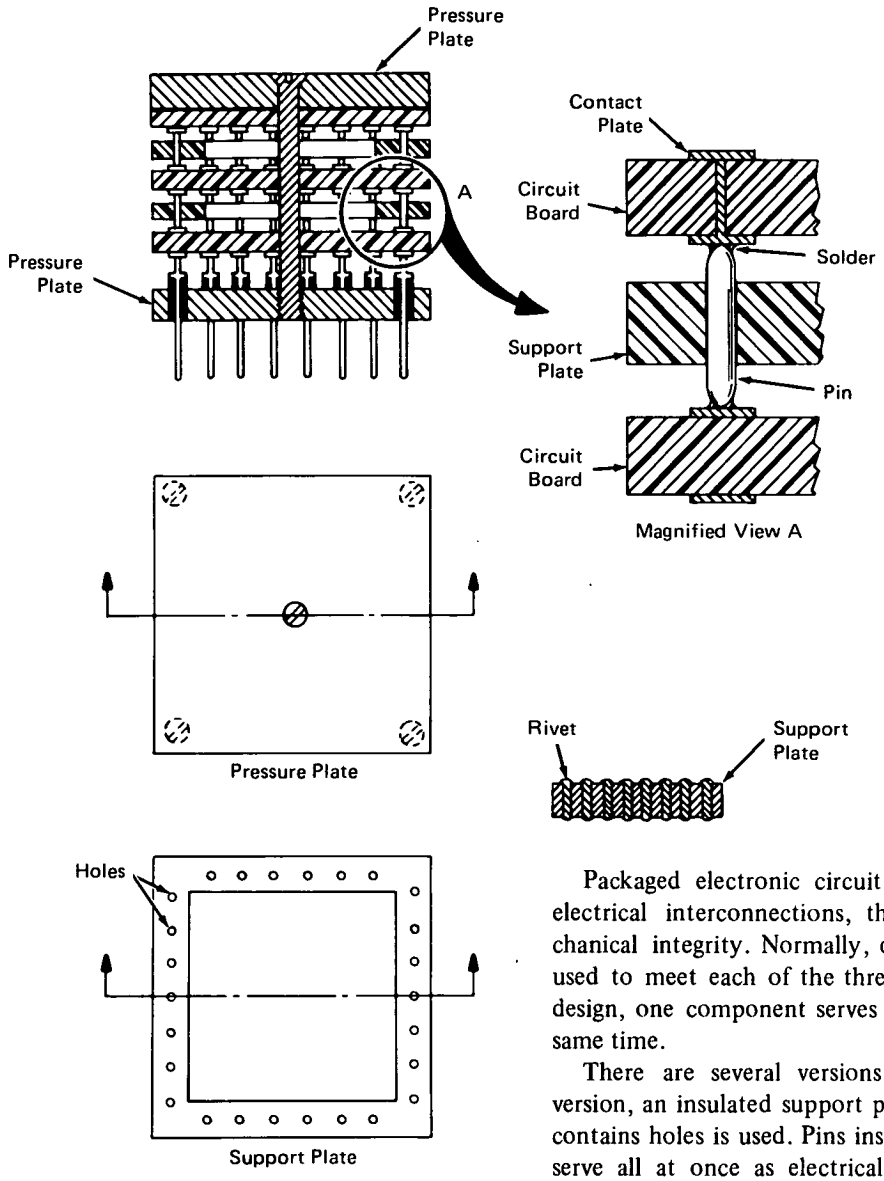

Figure 1. Electronic Packaging Using Pin or Rivet Contacts

Packaged electronic circuit boards must have good electrical interconnections, thermal control, and mechanical integrity. Normally, different components are used to meet each of the three requirements. In a new design, one component serves all three functions at the same time.

There are several versions of this design. In one version, an insulated support plate (see Figure 1) which contains holes is used. Pins inserted through these holes serve all at once as electrical contacts, thermal sinks, and mechanical supports. The geometrical shape of the

(continued overleaf)

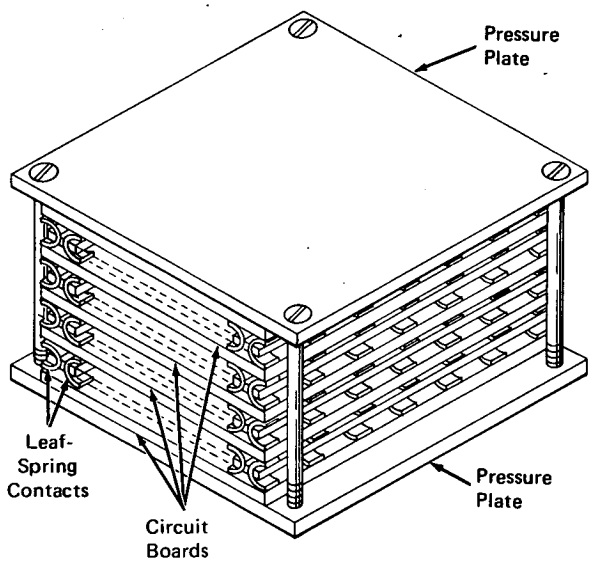

Figure 2. Electronic Packaging Using Leaf-Spring Contacts

plate and the way the pins are arranged may be different from those shown, depending on design requirements. The pin-studded plates are inserted between the circuit boards in a vertical stack. Each pin is in contact with the two contact plates of the circuit boards directly above and below it. The contact points may be soldered to form a firmer mechanical structure. The entire assembly is sandwiched between two pressure plates and is held together by screws. The bottom plate contains longer pins for connection into a circuit chassis.

An alternate support plate configuration uses rivets instead of the pins (Figure 1). The hemispherical rivet heads provide increased contact pressure and reduced length. Similarly, contact spheres (not shown) can be used instead of the rivets.

Another configuration, as shown in Figure 2, includes leaf-spring contacts instead of the pins or the rivets. The configuration is similar to the one described. However, the screws do not have to be driven through the circuit boards, because the combined action of the leaf springs keeps the boards in place.

Note:

No further documentation is available. Specific questions, however, may be directed to:

Technology Utilization Officer
Johnson Space Center
Code AT3
Houston, Texas 77058
Reference: B74-10239

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457(f)], to the Charles Stark Draper Laboratory, Inc., Cambridge, Massachussets, 02139.

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Charles Stark Draper Laboratory, Inc.
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