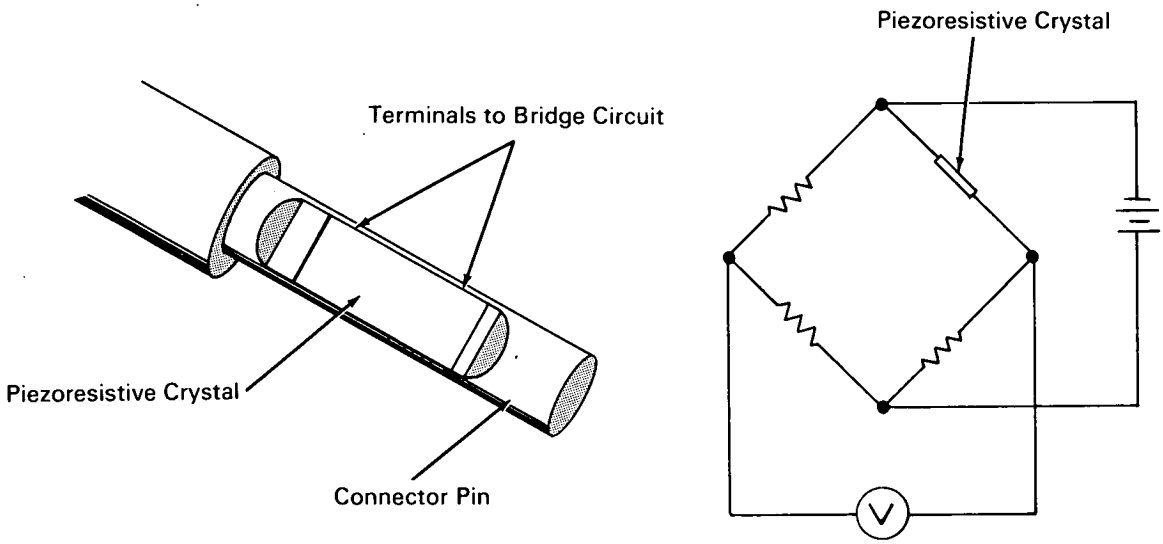
NASA TECH BRIEF

Piezoresistive Gage Tests Pin-Connector Sockets



The problem: Inspection testing of the electrical contact characteristics of pin-connector sockets that employ retainer springs or snaps to exert contact force on the mating pins. The spring must exert sufficient force to ensure proper electrical contact between socket and pin.

The solution: A test method using a test pin (the same size as a connector pin) on which a piezoresistive semiconductor (e.g., silicon) crystal is rigidly mounted and connected as one leg of a bridge circuit.

How it's done: The piezoresistive crystal is rigidly mounted in a recess on the test pin. When the pin is inserted into a socket to be tested, the force exerted by the retainer spring causes the pin and crystal to deflect slightly. The change in the resistance of the crystal due to the deflection is directly proportional to the force exerted by the retainer spring. A voltmeter in the bridge circuit is calibrated to give a direct reading of this force. For inspection testing, a lower tolerance limit is marked on the voltmeter face to indicate acceptance or rejection of the sockets.

Notes:

1. This testing method can be applied to a multiple-connector socket by using a connector with multiple test pins. The outputs of the pins would be fed into a programed sequencing switch for automatic acceptance or rejection of the socket.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Jet Propulsion Laboratory
   4800 Oak Grove Drive
   Pasadena, California, 91103
   Reference: B65-10128

(continued overleaf)

Patent status: NASA encourages the immediate commercial use of this invention. It is owned by NASA and inquiries about obtaining royalty-free rights for its commercial use may be made to NASA, Code AGP, Washington, D.C., 20546.

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