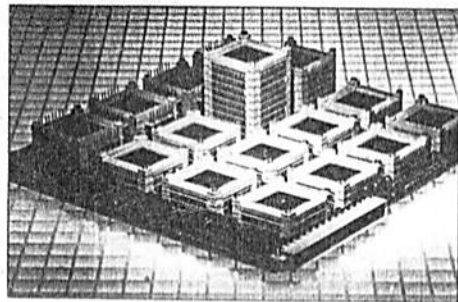




## Electronic packaging system interconnects small PCBs, MCMs, and VLSI circuits



Chiprack, from Harwin, Inc., is an electronics packaging system for packaging and interconnecting small PCBs, MCMs, or VLSI circuits. There are two types of structures in a Chiprack system. The first type incorporates carriers or substrates onto which the electronic circuitry is mounted. These may be fabricated in the full range of packaging and component support

materials ranging from encapsulating and resins FR4 PCB-type materials and multilayer ceramics. The carriers may be of any shape or size, but typically are either square or rectangular with side lengths between 40 and 100 mm.

In the second type of structure, Chiprack connectors are designed to both stack and interconnect the

carriers. The upper surface of one carrier is directly connected to the lower surface of an adjacent by means of connectors. The connector contacts present all signals passing between the carriers to the inside and outside. The exterior of an interconnected stack looks like a row of edge connectors for interconnection purposes and behaves as a convoluted heat sink

for heat dissipation. Construction of an electronic product is simply a matter of arranging the carriers and connectors into a stack and clamping or fixing the resultant assembly. Prototype connectors are clamped together by means of torque bars to permit frequent assembly and disassembly, whereas production connectors will snap together, permitting highly mechanized assembly rates. The form of the resultant product is a small stack of densely packed carriers held in positive registration and complexly interconnected by the Chiprack carriers.

Chiprack offers several advantages. Assembly of a product is similar to building with Lego toys. Carriers are simply stacked into a working product. Assembly characteristics make inexpensive hard-tooled automated assembly possible, as opposed to expensive software for sequential placement. Carriers are held in precise registration during assembly.

Products may be designed and tested as a series of modules facilitating the evolution of partitioned circuitry into MCMs or ASICs. Testing is simplified because of the constant footprint of the carriers. Faulty systems are easily taken apart for re-test and re-assembly.

Non-soldered Chiprack products may be dismantled for alteration or enhanced by the addition of carriers and/or the re-organization of existing carriers. The form factor suits particular applications. Volume reductions of up to 80% on equivalent DIL/PCB construction have been demonstrated. Three-dimensional freedom enables complex communications in three-dimensional arrays. Point-to-point optic fiber channels may be incorporated. The short regular signal paths found in the Chiprack system can lead to performance advantages in high-speed systems.

Two main market interest categories have been identified in single-stack applications: applications based on form factor/density of packaging, and applications centered on modularity and assembly characteristics. Almost all interest in the multiple-stack/array category has been in connection with the construction of multiprocessor or parallel processing systems.

Contact Bob Charles, Harwin, Inc., 173 Main St., Bridgeport, CT 06606. (214) 250-2666.

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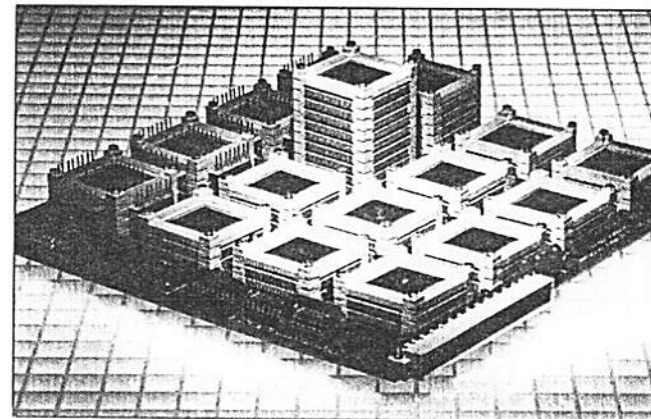
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# FEATURED PRODUCT



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