Abstracts

A 10 Gb/s package for digital ICs

J.B. Hacker, T.C. Banwell and D.T. Kong. "A 10 Gb/s package for digital ICs." 1997 MTT-S International Microwave Symposium Digest 2. (1997 Vol. II [MWSYM]): 473-476.

Experimental research prototype packages with 26 10 Gb/s I/O ports were designed for two GaAs telecom ICs. The prototypes are based upon a commercially available ceramic microwave package with an exterior size of 0.450" square, and an interior cavity size of 0.250" square. The copper-tungsten base provides excellent heat dissipation and rigidity while providing a close thermal expansion match to GaAs. A 5 mil alumina substrate is used to carry microstrip transmission line circuits from the package edge to the die mounted at the package center. A low-inductance ground ring surrounds the die cavity in the package to provide flexible low-noise grounding of the die without compromising signal integrity on the high-speed lines. Measurements show the package has usable bandwidth to 35 GHz and crosstalk is better than -35 dB for adjacent high-speed signal paths. The results demonstrate that packaging need not be the limiting factor for complex high-speed digital integrated circuits.

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