High Density Microwave Packaging for T/R Modules

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This paper describes the development of low cost 3-D packaging of transmit/receive (T/R) modules for an active array radar at X-band. The development focused on the design, manufacture and interconnection of multi-layer aluminum nitride (AIN) substrates. The substrates are electrically joined together with solderless interconnects. All GaAs and most silicon chips have been flipped for achieving low cost assembly and higher reliability. The major microwave transmission line is conductor backed coplanar line CBCPW which interfaces with the coplanar line used on the flipped microwave chip. The interconnect technology is applicable to commercial high speed data lines that are concerned about preserving the fast rise time of the signal.

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