

SESSION I

PLENARY

Keynote Address: GaAs Manufacturing: Myth and Reality

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GaAs Integrated Circuits have been in volume manufacturing for nearly 10 years. Shipments from the three largest dedicated US commercial manufacturers exceeded \$250 million in 1997 and total shipments worldwide are estimated to have exceeded \$700 million. Over the last five years, the markets for these products have changed from cost insensitive applications such as the DOD and supercomputers to volume and cost sensitive applications such as cellular phones, disk drives and satellite receivers. Yet, despite the tremendous improvement in yields, productivity and cost, claims are still made, often unchallenged, that GaAs is not cost effective and is about to be replaced by the next R&D wonder technology that is just a year, decade or millennium away.

While it is a fair statement that GaAs is not, nor is likely to ever be, at the same cost as a mature CMOS process, no one manufacturing GaAs appears to be competing with mature CMOS. This paper will discuss the actual cost structure of a GaAs manufacturing facility. Cost comparisons will be made with CMOS, bipolar silicon, silicon/germanium and GaAs HBTs. Fab costs will be extended to device costs of three types of IC: power amps, MSI circuit (pad limited) and VLSI. Key parameters that impact cost will be discussed to determine future trends. Competitiveness based on cost in several markets will be discussed.

The current myths about GaAs will be enumerated and evaluated. The performance and cost hurdles faced by proposed new technologies will be discussed.