Abstracts

Reliability Analysis of Microwave GaAs/AlGaAs HBTs with Beryllium and Carbon Doped Base

F.M. Yamada, A.K. Oki, D.C. Streit, Y. Saito, D.K. Umemoto, L.T. Tran, S. Bui, J.R. Velebir and G.W. McIver. "Reliability Analysis of Microwave GaAs/AlGaAs HBTs with Beryllium and Carbon Doped Base." 1992 MTT-S International Microwave Symposium Digest 92.2 (1992 Vol. II [MWSYM]): 739-742.

The reliability characteristics of microwave GaAs/AlGaAs Npn Heterojunction Bipolar Transistors (HBTs) with beryllium (Be) and carbon (C) doped base layer has been investigated and compared by means of constant stress lifetest. Three groups of Be doped devices using a newly developed MBE profile exhibit a median-time-to-failure (MTTF) of up to 1.8x10/sup 8/ hours at 125°C junction temperature based on the lifetest characteristics of dc current gain, Beta. The C doped devices displays a MTTF of 4.2x10/sup 5/ hours under the same conditions. An equivalent failure rate of <0.1 FITs and 119 FITs at 10/sup 5/ hours were calculated for Be and C doped devices, respectively. Data on HBT stability are essential for microwave circuit applications.

❑ Return to main document.