Abstracts

Reliability of InP-Based HBT IC Technology for High-Speed, Low-Power Applications (1995 [MCS])

M. Hafizi, W.E. Stanchina, F. Williams, Jr. and J.F. Jensen. "Reliability of InP-Based HBT IC Technology for High-Speed, Low-Power Applications (1995 [MCS])." 1995 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 95.1 (1995 [MCS]): 111-114.

We report on the reliability of an InP-based heterojunction bipolar transistor IC technology for very high-speed and low power applications. We have performed extensive accelerated lifetest experiments under bias and temperature stress and found mean-time-to failures (MTTF) in excess of 10/sup 7/ hours at 125 °C junction temperatures. We have also exposed our devices to a hydrogen ambient, particularly important for integrated circuits in hermetically sealed packages. We did not observe any difference in the characteristics of devices with or without exposure to hydrogen ambient. In addition we have performed extensive lifetest experiments on tantalum-nitride (TaN) thin-film resistors (TFR) used in our IC process. Our TFR reliability performance exceeded the active device reliability, as required in a reliable IC process.

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