Abstracts

Microwave Nanosecond Pulse Burnout Properties of GaAs MESFET's (Dec. 1979 [T-MTT])

J.J. Whalen, M.C. Calcatera and M.L. Thorn. "Microwave Nanosecond Pulse Burnout Properties of GaAs MESFET's (Dec. 1979 [T-MTT])." 1979 Transactions on Microwave Theory and Techniques 27.12 (Dec. 1979 [T-MTT] (1979 Symposium Issue)): 1026-1031.

Microwave nanosecond pulse burnout data have been measured at 9.3 GHz for three commercially available 1-µm gate MESFET's. Values for the incident pulse power required to cause burnout are concentrated in the ranges 4-10 W for 10-ns pulses, 12-25 W for 3-ns pulses, and 15-30 W for 1.5-ns pulses. The corresponding values for the absorbed microwave pulse energy required to cause burnout are concentrated in the ranges 0.3 to 0.6 ergs for 10-ns pulses, 0.2-0.4 ergs for 3-ns pulses, and 0.2-0.35 ergs for 1.5-ns pulses. Two dominant failure modes in overstresed MESFET's have been observed. One is a gate-to-source low-resistance path (5-25 Omega) which frequently is correlated with metal migration (mainly gold) from the source metallization to the gate metallization. This failure mode was dominant when MESFET's failed at lower power Ievels as at 10 ns. The other dominant failure mode is a reduction in I/sub DSS/ or a drain-to-source short which is correlated with massive damage in the channel region between the source and gate metallizations. This failure mode was dominant when MESFET's failed at high power levels as at 1.5 ns.

❑ Return to main document.