Abstracts

70% high efficient C-band 27 W hetero-structure FET for space application

H. Minamide, M. Kohno, N. Yoshida, K. Yajima, K. Mori, T. Ogata and T. Sonoda. "70% high efficient C-band 27 W hetero-structure FET for space application." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 621-623 vol.2.

A highly reliable and 70% highly efficient C-band 27 W internally-matched GaAs FET with a total gate width of 18.9 mm /spl times/ 4 has been developed for space applications. The newly developed Hetero-structure FET (HFET) successfully reduces the gate leakage current even for RF overdrive region, which is indispensable to improve the power-added efficiency and reliability, simultaneously. The bias conditions and the 2/sup nd/ harmonic tuning for both the input and output matching circuits are also optimized to increase high efficiency. No failure in reliability tests was observed under RF operation based on the European Space Agency Specification (ESA) and RF overdrive at 5dB compression. These excellent results promise that the newly developed HFET can replace the conventional traveling-wave tube amplifiers (TWTAs) for space applications.

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