

Abstracts

A D-LDD (double lightly-doped drain) structure H-MESFET for MMIC applications (1997 [RFIC])

Y. Yamane, K. Onodera, T. Nittono, K. Nishimura, K. Yamasaki and A. Kanda. "A D-LDD (double lightly-doped drain) structure H-MESFET for MMIC applications (1997 [RFIC])." 1997 Radio Frequency Integrated Circuits (RFIC) Symposium 97. (1997 [RFIC]): 211-214.

This paper proposes a new D-LDD (Double Lightly-Doped Drain) structure for InGaP-InGaAs H-MESFETs (Heterostructure-MESFET). A D-LDD H-MESFET has three kinds of low resistant layers in the drain region, while a conventional H-MESFET has two layers. This structure improves MAG accompanied by R_d reduction with minimized gate-breakdown-voltage degradation and C_{gd} increase. These trade-offs between R_d and breakdown voltage are discussed in detail. Consequently, a typical MAG at 50 GHz exhibits 8.9 dB S21 in a MESFET and 7.7 dB S21 in a 1-stage amplifier. The high-frequency circuit operation proves that this technology is one of the most promising for MMIC applications.

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