

Abstracts

A 36 W CW AlGaIn/GaN-power HEMT using surface-charge-controlled structure

T. Kikkawa, M. Nagahara, T. Kimura, S. Yokokawa, S. Kato, M. Yokoyama, Y. Tateno, K. Horino, K. Domen, Y. Yamaguchi, N. Hara and K. Joshin. "A 36 W CW AlGaIn/GaN-power HEMT using surface-charge-controlled structure." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 1815-1818 vol.3.

We describe high power 36 W CW operation at 30 V using AlGaIn/GaN HEMTs on SiC. Surface-charge-controlled structure, consisting of n-type doped thin GaN cap layer on AlGaIn/GaN HEMT structure, is used to obtain high gate-drain breakdown voltage and to reduce current collapse. By optimizing threshold voltage of this structure, we obtained a maximum drain current of 1 A/mm and a gate-drain breakdown voltage over 200 V. A 24-mm-wide-gate chip showed output power of 45.6 dBm (36 W) at 2.2 GHz with a liner gain of 9.7 dB.

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