Abstracts

Broadband GaN HEMT push-pull microwave power amplifier

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We report a broadband, linear, push-pull amplifier that utilizes GaN-based HEMTs grown on SiC substrates. The high power density capabilities of these devices can be enhanced by the high efficiency achievable with push-pull operation. Good amplifier performance is facilitated by use of a new low-loss balun that is implemented with three symmetric coupled lines and which showed insertion loss of less than 0.5 dB per balun. The bias was injected through the baluns, thereby simplifying the amplifier design and reducing loss associated with dc decoupling capacitors. Using two 1.5 mm HEMTs with 0.35-/spl mu/m gate length, a push-pull amplifier produced a small-signal gain of 8 dB at 5 GH2, a 3 dB bandwidth of 3.5-10.5 GHz, and a PAE of 25%.

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