Abstracts

Loss-Compensated Distributed Baseband Amplifier IC's for Optical Transmission Systems

S. Kimura, Y. Imai, Y. Umeda and T. Enoki. "Loss-Compensated Distributed Baseband Amplifier IC's for Optical Transmission Systems." 1996 Transactions on Microwave Theory and Techniques 44.10 (Oct. 1996, Part I [T-MTT]): 1688-1693.

We describe a distributed baseband amplifier using a new loss compensation technique for the drain artificial line. The new loss compensation circuit improves a high-frequency performance of the amplifier and makes the gain bandwidth product of the amplifier larger than that of conventional ones. We also use dc matching terminations and dumping resistors for the gate and drain artificial lines to obtain flat gain from frequencies as low as 0 Hz. One IC fabricated using 0.1 µm-gate-length InAlAs/InGaAs/InP HEMT's has a gain of 16 dB over a 0-to-50 GHz band, resulting in a gain bandwidth product of about 300 GHz. Another IC has a gain of 10 dB over a 0-to-90 GHz band. These are the highest gain bandwidth product and the widest band reported for baseband amplifier IC's applicable to optical transmission systems.

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