Abstracts

GaAs HBT PIN Diode Attenuators and Switches (1993 [MCS])

K.W. Kobayashi, A.K. Oki, D.K. Umemoto, S. Claxton and D.C. Streit. "GaAs HBT PIN Diode Attenuators and Switches (1993 [MCS])." 1993 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 93.1 (1993 [MCS]): 151-154.

We report on an AIGaAs/GaAs HBT 2-stage pin diode attenuator from 1-10 GHz and an X-band 1-pole 2-throw X-band pin diode switch. The 2-stage pin attenuator has over 50 dB dynamic range at 2 GHz and a maximum IP3 of 9 dBm. The minimum insertion loss is 1.7 dB per stage and has a flat response to 10 GHz. The X-band switch has an insertion loss of 0.82 dB and an off-isolation of 25 dB. The bandwidth is greater than 35 % and the IP3 is greater than 34.5 dBm. Both of these circuits consists of PIN diodes constructed from the base-collector MBE layers of our base-line HBT process. This work demonstrates the monolithic integration of pin diode switch and attenuation functions in an HBT technology without additional process or MBE material growth.

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