

K-band and high-power/efficiency/breakdown GaInAs/InP composite channel HEMTs

J.B. Shealy, M. Matloubian, T. Liu, R. Virk, J. Pusi and C. Ngo. "K-band and high-power/efficiency/breakdown GaInAs/InP composite channel HEMTs." 1997 Microwave and Guided Wave Letters 7.9 (Sep. 1997 [MGWL]): 261-263.

The authors report the power performance of Ga/sub 0.47/In/sub 0.53/As/InP composite channel InP HEMT's at 18 GHz. Devices with 0.15- μm gate length exhibit a peak transconductance of 720 mS/mm and full channel current of 500 mA/mm while achieving a two-terminal (three-terminal) breakdown voltage of 13.3 V (10.4 V) at 1 mA/mm. Devices with 450- μm gate width exhibit 0.75-W/mm output power with 53% power-added efficiency (PAE) and 11.9-dB gain. The highest efficiency achieved was 57% at 5.0 V (V/sub ds/) for 600- μm -wide devices producing an output power density of 0.5 W/mm. Further, devices with 900- μm gate width exhibit 0.59-W/mm output power with 53% PAE and 10.5-dB gain.

 [Return to main document.](#)