Abstracts

SiGe bipolar junction transistors for microwave power applications

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High-efficiency silicon germanium (SiGe) bipolar junction transistors have been developed for 5-10 V, 1.88 GHz power amplifier applications. Class A-B biased common base parts have demonstrated a power gain G/sub p/=16 dB, one-dB compression point P/sub 1dB/=25 dBm and power-added-efficiency PAE(P/sub 1dB/)=53% at V/sub c/=5 V and >1 W output power with >15 dB gain and >50% PAE at V/sub c/=10 V. Common-emitter measurements (V/sub c/=7 V) have demonstrated an output power of 28 dBm with greater than 60% collector efficiency. Under two-tone operation, the devices have achieved an output power of 23 dBm with 37% PAE at a third-order-intermodulation distortion of IM3=30 dBc. These results represent a significant improvement over conventional Si BJT's.

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