

An 8-GHz Bandwidth 1-GS/s GaAs HBT Dual Track-and-Hold

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A track-and-hold is a critical sub-circuit of a wideband pipelined ADC. A 1-GS/s fully differential dual track-and-hold circuit fabricated in an 80-GHz f_T/f_{max} GaAs HBT production process exhibits an input bandwidth of 8.6 GHz (0.5 V_{pp}) and 9.3 GHz (small signal). Total harmonic distortion is -59 dB for 1-V_{pp} 1-GHz input, and -42 dB for 0.5-V_{pp} 5-GHz input. The chip occupies 0.9 mm x 1.8 mm active area and consumes 2.2 W from ± 5 V.