ABSTRACT

A bipolar complementary metal oxide semiconductor device has a c-well fabricated using profile engineering (a multi-energy implant using accurate dosages and energies determined by advance simulation) to provide a higher c-well implant dose while creating a narrow region with relatively low concentration in the collector depletion range to avoid low base-collector breakdown. This achieves a much lower collector series resistance to pull-up a frequency response, a collector sheet resistance which can be as low as 150 Ω/sq., and f_T may be increased to 20 GHz or higher.

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