

ABSTRACTINTEGRATED CIRCUIT INDUCTOR

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There is provided a process for forming an inductor on a silicon substrate, with a pit filled with a low dielectric constant material to reduce the loss of energy to the substrate, and using a dual damascene structure to reduce the resistance by providing relatively thick metal for the inductor. A deep inductor trench is obtained simultaneously during the via etching. The depth of the inductor can thus be adjusted by via over-etch percentage since there is no metal stopping layer underneath it. The pit is obtained after completion of the pre-metal deposition, or the first inter-metal dielectric chemical mechanical polishing by masking the inductor area and etching down to a prescribed depth into the silicon substrate.

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There is thus provided a fully CMOS compatible process to insert a pit underneath the inductor and to eliminate an additional thick metal layer to form the inductor.



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