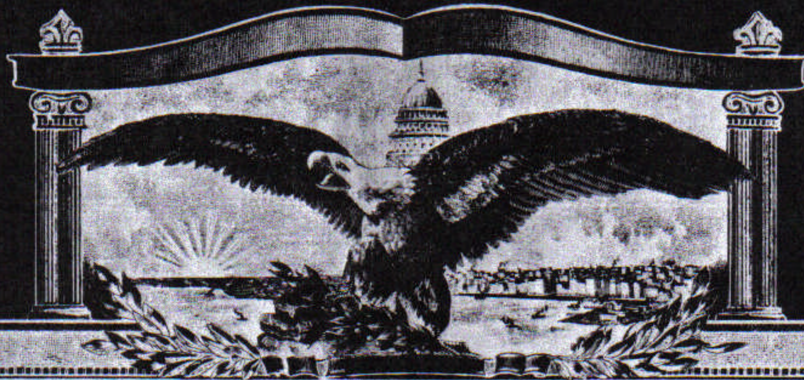


UNITED STATES PATENT

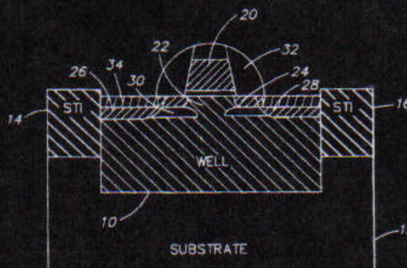
The United States of America

Granted on February 13, 2001

US 6,187,643 B1

SIMPLIFIED SEMICONDUCTOR DEVICE MANUFACTURING USING LOW ENERGY HIGH TILT ANGLE AND HIGH ENERGY POST-GATE ION IMPLANTATION (POGI)

John O. Borland, S. Hamilton, Mass., assignor to Varian Semiconductor Equipment Associates, Inc., Gloucester, Mass.



Methods are provided for fabrication of a circuit on a substrate. After formation of gate electrodes, side-wall spacers are formed on the sides of the gate electrodes. Source/drain extensions and source/drain regions of p-type devices are implanted through openings in a first mask. Source/drain extensions and source/drain regions of n-type devices are implanted through openings in a second mask. The source/drain extensions are implanted at low energy and at a high tilt angle with respect to a normal to the substrate surface.

The Commissioner of Patents and Trademarks has received an application for a patent for a new and useful invention. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law. Therefore, this

UNITED STATES PATENT

Grants to the persons having title, the right to exclude others from making, using or selling the invention throughout the United States of America for the term of the patent.

Q. Todd Dickinson — Commissioner of Patents and Trademarks

Ollie M. Person — Attest:

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