METHOD TO FORM SMALLER CHANNEL WITH CMOS DEVICE BY ISOTROPIC ETCHING OF THE GATE MATERIALS

Abstract

A method to form a MOS transistor with a narrow channel regions and a wide top (second) gate portion. A gate dielectric layer and a first gate layer are formed over a substrate. A second gate portion is formed over the first gate layer. Spacers are formed on the sidewalls of the second gate portion. In a critical step, we isotropically etch the first gate layer to undercut the second gate portion to form a first gate portion so that the first gate portion has a width less than the second gate portion. The spacers are removed. Lightly doped drains, sidewall spacers and source/drain regions are formed to complete the device.

Figure 4