1. A method of making a transistor, comprising:

applying a photoresist over a gate, the gate including an oxide layer formed over a substrate and a conductive material formed over the oxide layer;

using the photoresist as a mask, etching the gate to remove a portion of the conductive material; and

using the photoresist and conductive material as a mask, implanting an impurity region into the substrate such that the impurity region is self-aligned to the gate.

2. The method of claim 1, further comprising forming the oxide layer such that a first side of the oxide layer is thinner than a second side of the oxide layer.

3. The method of claim 2, wherein the first side has a thickness of less than about 100Å, and the second side has a thickness that it at least fie times the thickness of the first side.

4. The method of claim 1, wherein the photoresist is less than about 0.5μm thick.

5. The method of claim 1, wherein implanting an impurity region includes bombarding the substrate with atoms at an angle that is less than 90° from a main surface of the substrate.

6. The method of claim 1, wherein implanting an impurity regions continues until a doping concentration of the substrate is between about $1x10^{13}$ atoms/cm^2 and $5x10^{18}$ atoms/cm^2.

7. A method of making a transistor, comprising:

etching a first side of a gate, the gate including an oxide layer formed over a substrate and a conductive material formed over the oxide layer, the etching removing a first portion of the conductive material;

implanting an impurity region into the substrate such that the impurity region is self-aligned; and

etching a second side of the gate to remove a second portion of the conductive material.

8. The method of claim 7, further comprising forming the oxide layer such that a first side of the oxide layer is thinner than a second side of the oxide layer.

9. The method of claim 8, wherein the first side has a thickness of less than about 100Å, and the second side has a thickness that it at least five times the thickness of the first side.

10. The method of claim 7, wherein implanting an impurity region includes bombarding the substrate with atoms at an that is less than 90° from a main surface of the substrate.

11. The method of claim 7, wherein implanting an impurity regions continues until a doping concentration of the substrate is between about $1x10^{13}$ atoms/cm^2 and $5x10^{18}$ atoms/cm^2.

12. A method of making a transistor, comprising:

applying a first photoresist over a gate, the gate including an oxide layer formed over a substrate and a conductive material formed over the oxide layer;

using the first photoresist as a mask, etching a first side of the gate to remove a first portion of the conductive material;

implanting an impurity region into the substrate such that the impurity region is self-aligned;

applying a second photoresist over the gate and; and

using the second photoresist as a mask, etching a second side of the gate to remove a second portion of the conductive material.

13. A method of making a integrated circuit, comprising:

forming a plurality of LDMOS transistors on a substrate, each LDMOS transistor including a gate oxide layer comprising a first side closer to a source side of the LDMOS transistor and a second side closer to the drain side of the LDMOS transistor, the first side

having a thickness of less than about 100Å, and the second side having a thickness equal to or greater than 125Å;

forming a plurality of CMOS transistor on the substrate, wherein each CMOS transistor includes a gate oxide layer, and wherein forming the gate oxide layer of the CMOS transistor occurs simultaneously with forming the first side of the gate oxide layer of the LDMOS transistor.

14. The method of claim 13, wherein the gate of oxide layer of the CMOS transistor is formed with the same thickness as the first side of the gate oxide layer of the LDMOS transistor.

15. The method of claim 13, wherein the thickness of the second side is at least five times the thickness of the first side.

16. The method of claim 13, wherein the thickness of the first side is about 70Å or less.

17. The method of claim 16, wherein the thickness of the first side is about 35Å or less.

18. The method of claim 13, wherein forming the plurality of LDMOS transistors includes depositing an LDMOS gate conductor and forming the plurality of CMOS transistor includes depositing a CMOS gate conductor, and the LDMOS gate conductor and CMOS gate conductor are deposited simulataneously.

19. The method of claim 13, wherein LDMOS gate conductor and CMOS gate conductor comprise polysilicon.

20. The method of claim 13, wherein the gate oxide layer of the CMOS gate is a substantially uniform thickness.

CLAIMS

1. A method of making a transistor, comprising:

defining a gate oxide region by patterning an oxide layer formed over a substrate to create a source-side edge and a drain-side edge of the gate oxide region;

applying a first photoresist over a gate, the gate including the gate oxide region of the oxide layer having the source-side edge and the drain-side edge over the substrate and a conductive material formed over the gate oxide region;

using the first photoresist as a mask, performing a first etching of a first side of the gate to remove a first portion of the conductive material;

using the first photoresist and the conductive material as a mask after the first etching, implanting an impurity region into the substrate such that the impurity region is self-aligned to the gate, wherein the implantation occurs at least in a portion of the substrate that is not covered by the gate oxide region;

applying a second photoresist over the gate after implanting; and

using the second photoresist as a mask, performing a second etching of a second side of the gate to remove a second portion of the conductive material.

2. The method of claim 1, further comprising forming the gate oxide region of the oxide layer such that a first side of the gate oxide region of the oxide layer is thinner than a second side of the gate oxide region of the oxide layer.

3. The method of claim 2, wherein the first side of the gate oxide region of the oxide layer has a thickness of less than about 100Å, and the second side of the gate oxide region of the oxide layer has a thickness that is at least five times the thickness of the first side.

4. The method of claim 1, wherein the photoresist is less than about 0.5μm thick.

5. The method of claim 1, wherein implanting an impurity region includes bombarding the substrate with atoms at an angle that is less than 90° from a main surface of the substrate.

6. The method of claim 1, wherein implanting an impurity region continues until a doping concentration of the substrate is between about $1x10^{13}$ atoms/cm^2 and $5x10^{18}$ atoms/cm^2.

7. A method of making a transistor, comprising:

defining a gate oxide region by patterning an oxide layer formed over a substrate to create a source-side edge and a drain-side edge of the gate oxide region;

performing a first etching of a first side of a gate, the gate including the gate oxide region of the oxide layer having the source-side edge and the drain-side edge over the substrate and a conductive material formed over the gate oxide region, the first etching removing a first portion of the conductive material;

implanting an impurity region into the substrate after the first etching such that the impurity region is self-aligned, wherein the implantation occurs at least in a portion of the substrate that is not covered by the gate oxide region; and

performing a second etching of a second side of the gate after implanting to remove a second portion of the conductive material.

8. The method of claim 7, further comprising forming the gate oxide region of the oxide layer such that a first side of the gate oxide region of the oxide layer is thinner than a second side of the gate oxide region of the oxide layer.

9. The method of claim 8, wherein the first side of the gate oxide region of the oxide layer has a thickness of less than about 100Å, and the second side of the gate oxide region of the oxide layer has a thickness that is at least five times the thickness of the first side.

10. The method of claim 7, wherein implanting an impurity region includes bombarding the substrate with atoms at an angle that is less than 90° from a main surface of the substrate.

11. The method of claim 7, wherein implanting an impurity region continues until a doping concentration of the substrate is between about $1x10^{13}$ atoms/cm^2 and $5x10^{18}$ atoms/cm^2.

12. A method of making a transistor, comprising:

defining a gate oxide region by patterning an oxide layer formed over a substrate to create a source-side edge and a drain-side edge of the gate oxide region;

applying a first photoresist over a gate, the gate including the gate oxide region of the oxide layer having the source-side edge and the drain-side edge over the substrate and a conductive material formed over the gate oxide region;

using the first photoresist as a mask, performing a first etching of a first side of the gate to remove a first portion of the conductive material;

implanting, after the first etching, an impurity region into the substrate such that the impurity region is self-aligned, wherein the implantation occurs at least in a portion of the substrate that is not covered by the gate oxide region;

applying a second photoresist over the gate after implanting; and

using the second photoresist as a mask, performing a second etching of a second side of the gate to remove a second portion of the conductive material.

13. The method of claim 1, wherein the first side of the gate is a source side and the second side of the gate is a drain side.

14. The method of claim 13, wherein the source-side edge of the gate oxide region is farther from the drain-side edge of the gate oxide region than an edge of the first photoresist.

15. The method of claim 13, wherein the drain-side edge of the gate oxide region is farther from the source-side edge of the gate oxide region than an edge of the second photoresist.