WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a transistor; and

a first circuit,

wherein the transistor includes a first gate and a second gate,

wherein the first gate and the second gate overlap with each other with a semiconductor layer positioned therebetween,

wherein the first circuit includes a temperature sensor and a comparator,

wherein the temperature sensor is configured to obtain temperature information, and

wherein the first circuit is configured to apply, to the second gate, a voltage depending on the temperature information.

2. The semiconductor device according to claim 1,

wherein the semiconductor layer includes a metal oxide.

3. The semiconductor device according to claim 1, further comprising a second circuit,

wherein the second circuit is configured to apply a negative voltage to the second gate.

4. The semiconductor device according to claim 3,

wherein the second circuit is configured to hold the negative voltage.

5. The semiconductor device according to claim 4,

wherein the second circuit includes a transistor including a metal oxide in a channel formation region.

6. A semiconductor device comprising:

a transistor; and

a first circuit,

wherein the transistor includes a first gate and a second gate,

wherein the first gate and the second gate overlap with each other with a semiconductor layer positioned therebetween,

wherein the first circuit includes a temperature sensor and a capacitor,

wherein the temperature sensor is configured to obtain temperature information, and

wherein the first circuit is configured to apply a voltage to the second gate through the capacitor, the voltage depending on the temperature information.

7. The semiconductor device according to claim 6,

wherein the first circuit includes a comparator.

8. The semiconductor device according to claim 6,

wherein the semiconductor layer includes a metal oxide.

9. The semiconductor device according to claim 6, further comprising a second circuit,

wherein the second circuit is configured to apply a negative voltage to the second gate.

10. The semiconductor device according to claim 9,

wherein the second circuit is configured to hold the negative voltage.

11. The semiconductor device according to claim 10,

wherein the second circuit includes a transistor including a metal oxide in a channel formation region.

12. A semiconductor device comprising:

a first transistor;

a first circuit;

a voltage generation circuit; and

a second circuit,

wherein the first transistor includes a first gate and a second gate,

wherein the first gate and the second gate overlap with each other with a semiconductor layer positioned therebetween,

wherein the first circuit includes a temperature sensor and a capacitor,

wherein the voltage generation circuit is electrically connected to the second gate of the first transistor through the second circuit;

wherein the temperature sensor is configured to obtain temperature information,

wherein the first circuit is configured to apply a voltage to the second gate through the capacitor, the voltage depending on the temperature information, and

wherein the second circuit includes a second transistor including an oxide semiconductor in a channel formation region.

13. The semiconductor device according to claim 12,

wherein the first circuit includes a comparator.

14. The semiconductor device according to claim 12,

wherein the semiconductor layer in the first transistor includes a metal oxide.

15. The semiconductor device according to claim 12,

wherein the second circuit is configured to apply a negative voltage to the second gate.

16. The semiconductor device according to claim 15,

wherein the second circuit is configured to hold the negative voltage.