c A single-electron transistor is usually made by keeping two tunnel junctions in series. The transistor consists of a source electrode and a source drain, which is joined with the help of a tunneling island that is also capacitively connected to a gate. The electrons can travel to another electrode only through the insulator. There are two categories of single-electron transistors: metallic and semiconducting. The former makes use of a metallic island, and its electrodes using a shadow mask are mostly evaporated onto an insulator. The latter, in contrast, depends on severing the two-dimensional electron gas that forms at the interface of the semiconductors for the junction.

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## https://upload.wikimedia.org/wikipedia/commons/5/57/SET_schematic2.jpg I The -V Characteristics for the symmetric junction circuit of single electron transistor where C1=C2 and R1=R2. It is clear from the I-V characteristics of the SET that for |V|< e/C∑, the current is zero. This state is called Coulomb blockade that suppresses the tunneling of single electron in case of low bias condition. Now, if the externally applied junction voltage V is increased up to a level that is above the threshold voltage by charging energy, this effect of Coulomb blockade can be removed and the current flows. In this situation, the junction behaves like a resistor. The sequential entrance and leaving of an electron from one junction to another

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