A thyristor is a solid-state semiconductor device with four layers of alternating N and P-type material. It acts exclusively as a bistable switch, conducting when the gate receives a current trigger, and continuing to conduct while the voltage across the device is not reversed (forward-biased). A three-lead thyristor is designed to control the larger current of its two leads by combining that current with the smaller current of its other lead, known as its control lead. In contrast, a two-lead thyristor is designed to switch on if the potential difference between its leads is sufficiently large (breakdown voltage).

Some sources define silicon-controlled rectifier (SCR) and thyristor as synonymous.[1] Other sources define thyristors as a larger set of devices with at least four layers of alternating N and P-type material.

The first thyristor devices were released commercially in 1956. Because thyristors can control a relatively large amount of power and voltage with a small device, they find wide application in control of electric power, ranging from light dimmers and electric motor speed control to high-voltage direct current power transmission. Thyristors may be used in power-switching circuits, relay replacement circuits, inverter circuits, oscillator circuits, level-detector circuits, chopper circuits, light-dimming circuits, low-cost timer circuits, logic circuits, speed control circuits, phase-control circuits, etc. Originally, thyristors relied only on current reversal to turn them off, making them difficult to apply for direct current; newer device types can be turned on and off through the control gate signal. The latter is known as a gate turn-off thyristor, or GTO thyristor. A thyristor is not a proportional device like a transistor. In other words, a thyristor can only be fully on or off, while a transistor can lie in between on and off states. This makes a thyristor unsuitable as an analog amplifier, but useful as a switch.