Thyristor, Triac

Thyristors are controllable diodes that can be turned on and off, unlike standard diodes used in rectification. A thyristor consists of four layers and includes an additional gate terminal compared to a regular diode.
A TYN 604 thyristor is capable of handling up to 600 volts and 4 amps. When a positive voltage is applied to the gate, the LED lights up; however, it does not stay lit due to insufficient current. To maintain conduction after initial activation, a latching current (around 50 milliamps) must be reached; below this threshold (30 milliamps), the thyristor turns off. To turn off the thyristor effectively, one must interrupt the current flow using another component like a MOSFET. Thyristors remain conductive until they reach a critical turn-off time (approximately 37 microseconds). When tested with larger loads (e.g., light bulbs drawing around 2 amps), significant heat generation occurs due to voltage drop across the device.