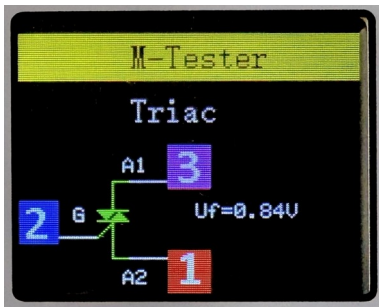
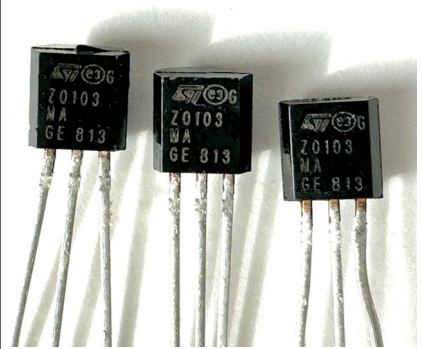
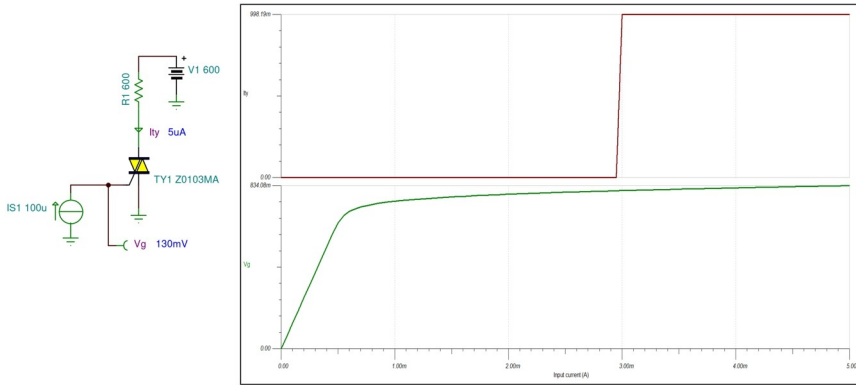


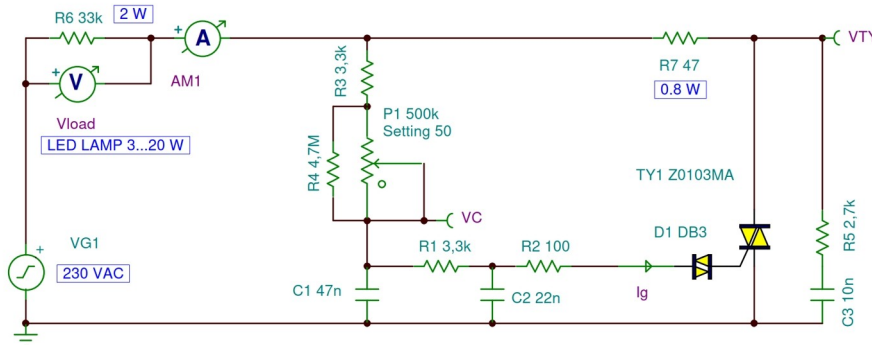
Z0103MA Sensitive Gate TRIAC Macro Model

DC Transfer Characteristics

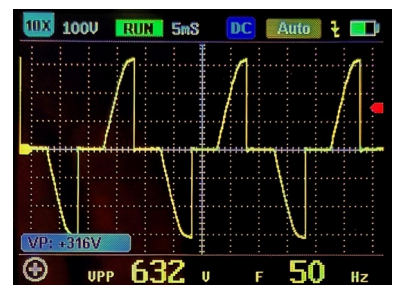
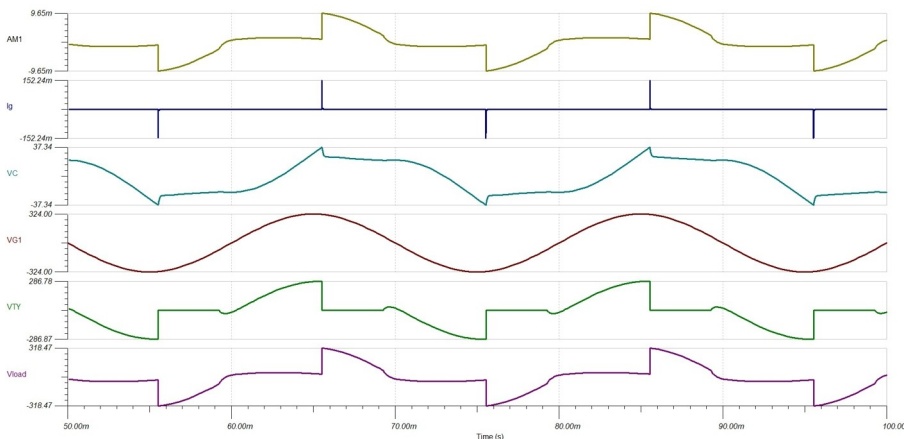


Designed for use in solid state relays, MPU interface, TTL logic and any other light industrial or consumer application. Sensitive gate triggering in four trigger modes (quadrants) for all possible combinations of trigger sources. These devices are typically used in applications such as home appliances (electrovalve, pump, door lock, small lamp control).

TRIAC Dimmable LED Lamp Driver



One half of the 230 VAC in the schematic is grounded for simulation purposes only.



Measured VTY Voltage



The conventional TRIAC dimmer was originally designed to handle hundreds of watts induced by incandescent bulbs. A LED bulb consuming less than 20 W should interact with those dimmers composed of high-power devices. To manage the interaction without flicker, some requirements for dimmer operation need to be considered. The latching and holding currents are different from dimmer models. We choose a TRIAC where the holding current is minimal. A small extra load (33 kΩ) is still required to operate the device with a single 3 W LED bulb. The load characteristic of the LED bulb is capacitive, so a current-limiting resistor is needed between the TRIAC and the LED bulb

(47 Ω). This resistor will limit the power that can be controlled, a higher current TRIAC will need a smaller resistor, but the resistor cannot be omitted here. Without the series resistor, large voltage and current spike occurs due to the quickly charged energy in the capacitor (in the LED bulb) at dimmer firing.

Basic Optical TRIAC Driver Circuit

