



DID YOU KNOW? IT'S EASY TO IMPLEMENT THE NTCS IN ELECTRONIC DESIGN AND SIMULATION SOFTWARE

Vishay BCcomponents NTCS surface-mount NTC thermistors are ubiquitous in many temperature sensing and compensation circuits. Whether it's for LED overcurrent, Li-Po / Li-ion temperature protection, optoelectronic devices, or temperature control of EV inverter power modules, NTCS devices are perfect solutions for a wide range of applications. The electrical characteristics of the thermistors' different R values (from 2 kΩ to 470 kΩ) can be computed in Excel spreadsheets with the help of the software "My_Vishay_NTC_Curve," which can be downloaded at <https://www.vishay.com/thermistors/ntc-curve-list/>. When the output voltage generated by the thermistor must be linearized or must follow defined requirements, the user can compute a fully fixed resistor / thermistor network that will best fit the requirements (<https://www.vishay.com/thermistors/resistor-thermistor-netsim/resistor-thermistor-net-sim-tool/>).

PSpice and LTSpice models are also available online, and a special "temperature driven as a voltage" model can be obtained by sending a request to edesign.ntc@vishay.com. Complete models (including unwanted self-heating effects) can be integrated in electronic simulations in Cadence PSpice, LTSpice XVII, Multisim, and TINA TI — to name but a few — in order to optimize complex automotive applications. Online videos are also available (<https://www.youtube.com/watch?v=VqlaMhJpT6E>).

Figure 1 represents a temperature sensing and regulating circuit based on a simple 555 timer. Figure 2 shows the resulting temperature of a system regulated within a limit cycle. External noise factors can be taken into account during transient simulation.

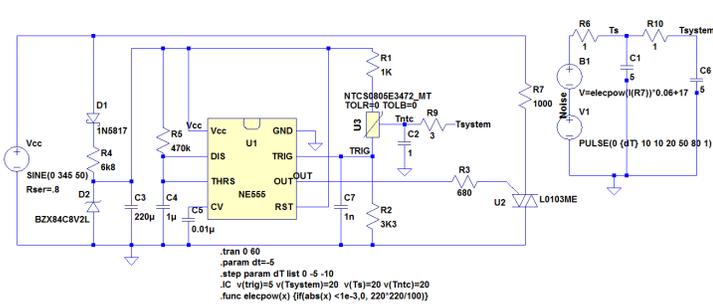


Figure 1. LTSpice simulation of a NE555 with NTCS

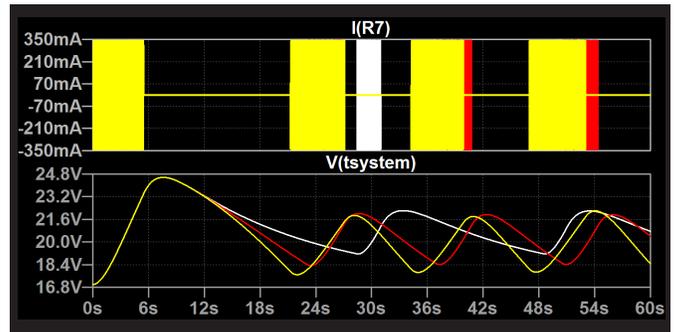


Figure 2. Transient simulation of system temperature