

Project: Driver and controller for a thermoelectric cooler

Student	Kfir Atiach ID 32354854	
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Supervisor: Prof. Sam Ben-Yaakov
Year: 2005

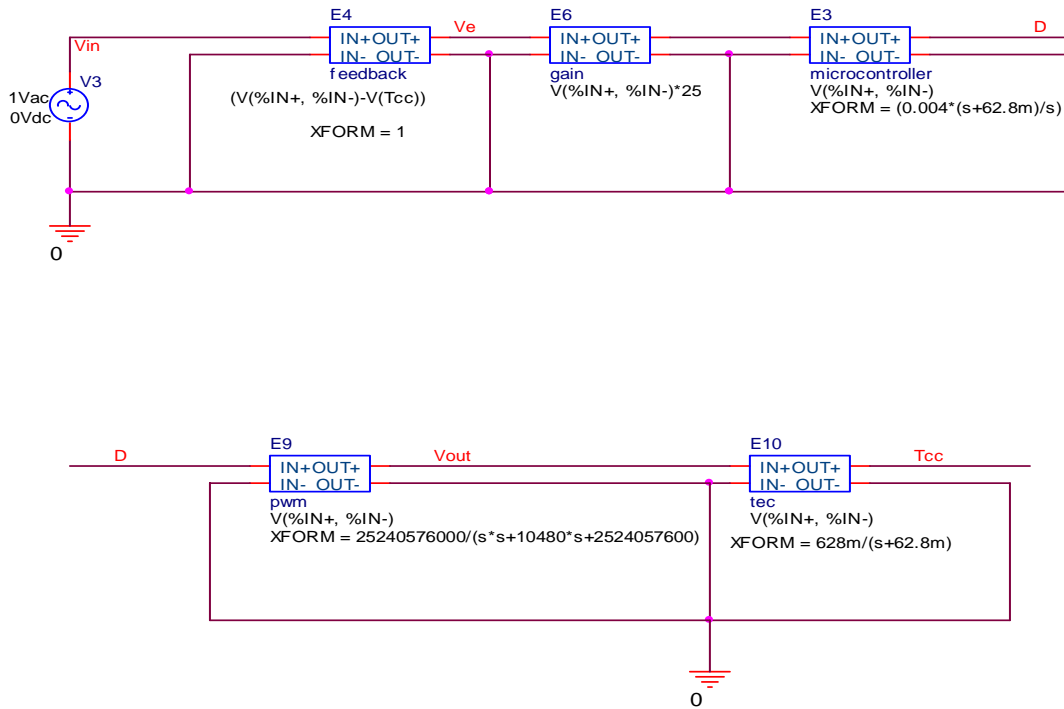
Abstract

Accurate and stable temperature is a desirable quality in some technologies, for example laser technology. Most solutions for achieving this goal are based on a single direction of controlling the temperature – heating or cooling. Obviously, these one-directional control Methods are not the most efficient solutions.

Based on one of the three thermoelectric phenomena – the Peltier effect – bi-directional control is achieved. The TEC (which is a Thermoelectric Cooler) uses this effect. The direction of the current through the TEC determines the control mode of the TEC; while one direction through the TEC makes it cooler on one side and hotter on the second side, the second direction makes it hotter on one side and cooler on the second side. The intensity of the current determines the temperature on the both sides of the TEC.

Controlling the intensity and the direction of the current through the TEC using PWM supervision is the goal of my system.

A Spice simulation of the system



Simulation – ac sweep of the system

