SOLUTIONS

APPLICATION SHEET ANCRCT-5

Low Cost Fan Control with Hysteresis

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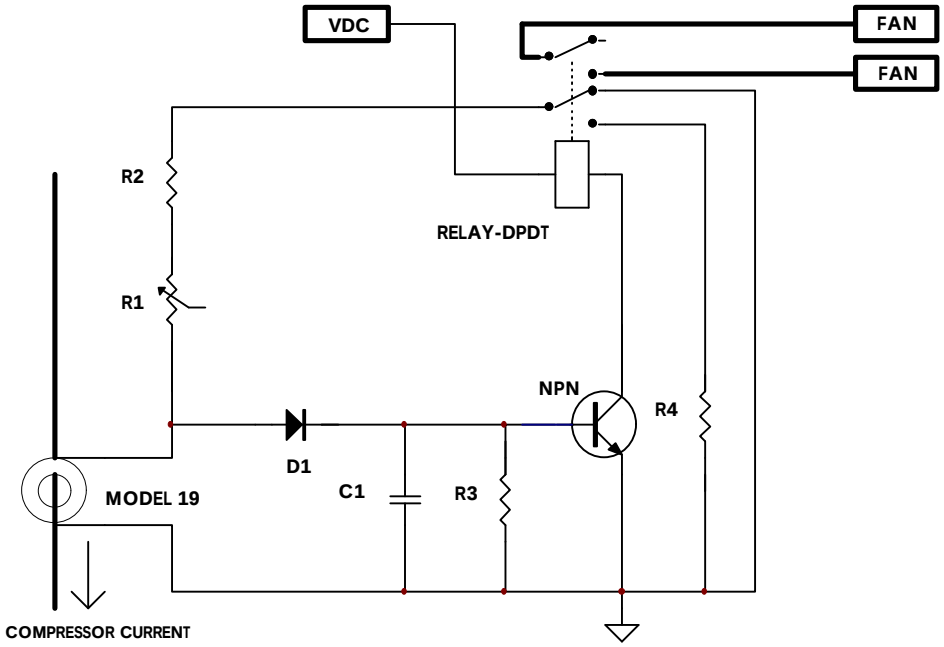
This application can be used to control many different devices. In this example, a compressor current is sensed, and when it reaches a selected set point, the circuit turns on a relay, which controls a fan motor. The circuit is generated with a minimum number of parts, and includes hysteresis.



APPLICATION AND LIMITATIONS

- The CT secondary current is applied to the resistors R1 and R2, which generates an AC voltage that is half wave rectified by D1, and then turns on the NPN transistor. The transistor then turns on the DPDT relay, which energizes the fan motor with one pole of the relay. The other pole of the relay is used to insert R4 into the series R1 and R2 resistance. This immediately raises the voltage at the anode of D1, thus creating the necessary hysteresis.
- C1 provides energy storage to keep the transistor in the on state during half wave inputs. R3 discharges C1 to aid in turn off.
- The transistor should be selected keeping in mind the current gain factor, Hfe, and the turn on voltage, Vbe. This should be weighed against the amount of secondary current received from the Model 19. Typically, a Darlington transistor is chosen for the appropriate gain.
- This design can also be applied using a bilateral silicon switch, instead of the relay shown. The transistor activation can be used to turn on two bilateral switches, one to control a motor, and the other to provide the hysteresis.