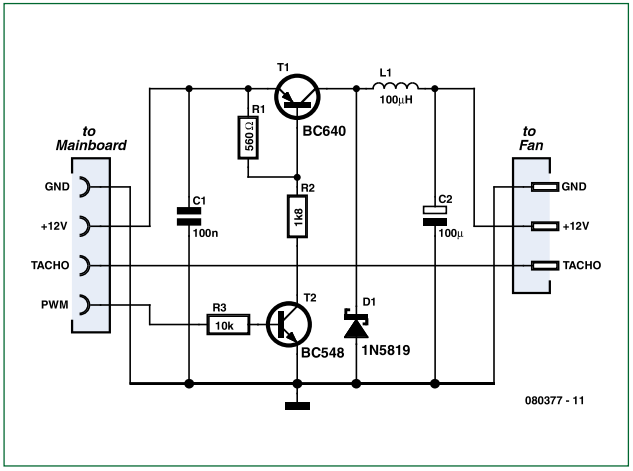
Three-from-four fan control

Rainer Reusch (Germany)

Most PC-motherboards have multiple connectors for plugging in the cooling fans. These are increasingly frequently the four-way connectors. These connectors are mechanically and electrically compatible with the more common three-way connectors, which carry the power supply and tacho signal. On the fourth connection the motherboard supplies a pulsewidth modulated TTL signal, which is used to control the speed of the fan. A separate potentiometer or a temperature dependent speed controller to reduce the noise of the fan is now really history. But the availability of fans with a four-way plug is still rather limited and these fans are generally also more expensive. With the small, additional circuit that is proposed here, it nevertheless becomes possible to use these cheap and ubiquitous fans with their three-way connectors.



The transistor T1, the Schottky diode, the inductor and the capacitor C2 are, just like the 'old-fashioned' speed control circuit, connected in series with the fan. A reasonably clean power supply voltage for the three-wire fan is generated from this PWM signal — and with good efficiency, we may add. The tacho signal generated by the fan is routed directly back to the motherboard.

Building the circuit is not difficult. The capacitors must have a voltage rating of at least 16 V and the inductor has to be able to handle a minimum of 200 mA. Obtaining the right four-way plug with the necessary crimp contacts could be a bit of a problem however. As an alternative you could use the sockets that are designed to mate with the common pin-headers (2.54 mm pitch). If you decide to use these you will have to be careful and make sure you do not plug the connector in the wrong way around!

(080377-I)