

86

using LEDs as reference diodes

elektor july/august 1977

Depending on type and the current flowing, the forward voltage drop of an LED may lie between 1.4 and 2 volts. The temperature coefficient of this voltage is about $-1.5 \text{ mV}/^\circ\text{C}$.

As this is virtually the same as the temperature coefficient of the base-emitter voltage of a silicon transistor, it is very easy to construct a constant current source with almost zero temperature coefficient, as shown in the accompanying circuit.

The current is approximately $\frac{U_{\text{LED}} - U_{\text{BE}}}{R}$.

Since the temperature coefficients of the LED and the transistor are almost the same they cancel out and the current is almost independent of temperature.

