

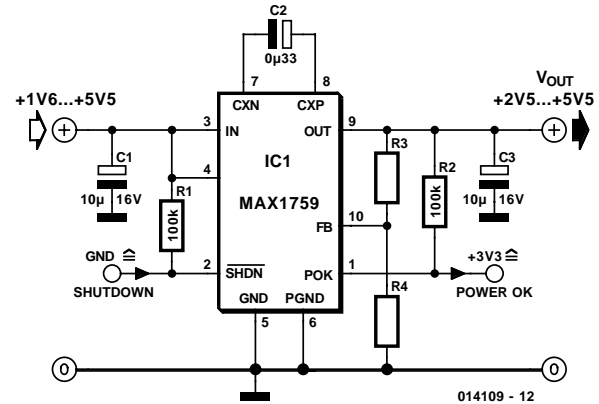
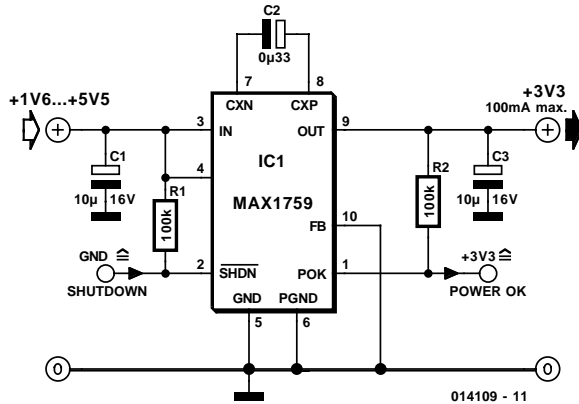
Step-Up/Step-Down Switching Regulator

015

If you wish to convert a range of possible input voltages into an output voltage that lies somewhere in the middle of that range, a regulator that can automatically switch between step-up and step-down modes is required. Such a device is the MAX1759 from Maxim (www.maxim-ic.com),

which can take in an input voltage between +1.6 V and +5.5 V and generate an output between +2.5 V and +5.5 V. It is based around a switched capacitor (C2).

A further special feature of the MAX1759 is the automatic detection of the potential divider R3/R4. This allows it to



produce an externally settable output voltage between +2.5 V and +5.5 V, as given by the following formula:

$$V_{OUT} = 1.235 \text{ V} (1 + R3/R4)$$

The resistors should be chosen with values of the order of 100 kΩ.

If the feedback input FB is tied to ground, the MAX1759

switches over to an internal voltage reference giving a fixed output voltage of 3.3 V.

The open-drain 'power OK' output POK goes low when the regulator control loop is not stabilised, and is pulled high when the output voltage is stable and at the desired value.