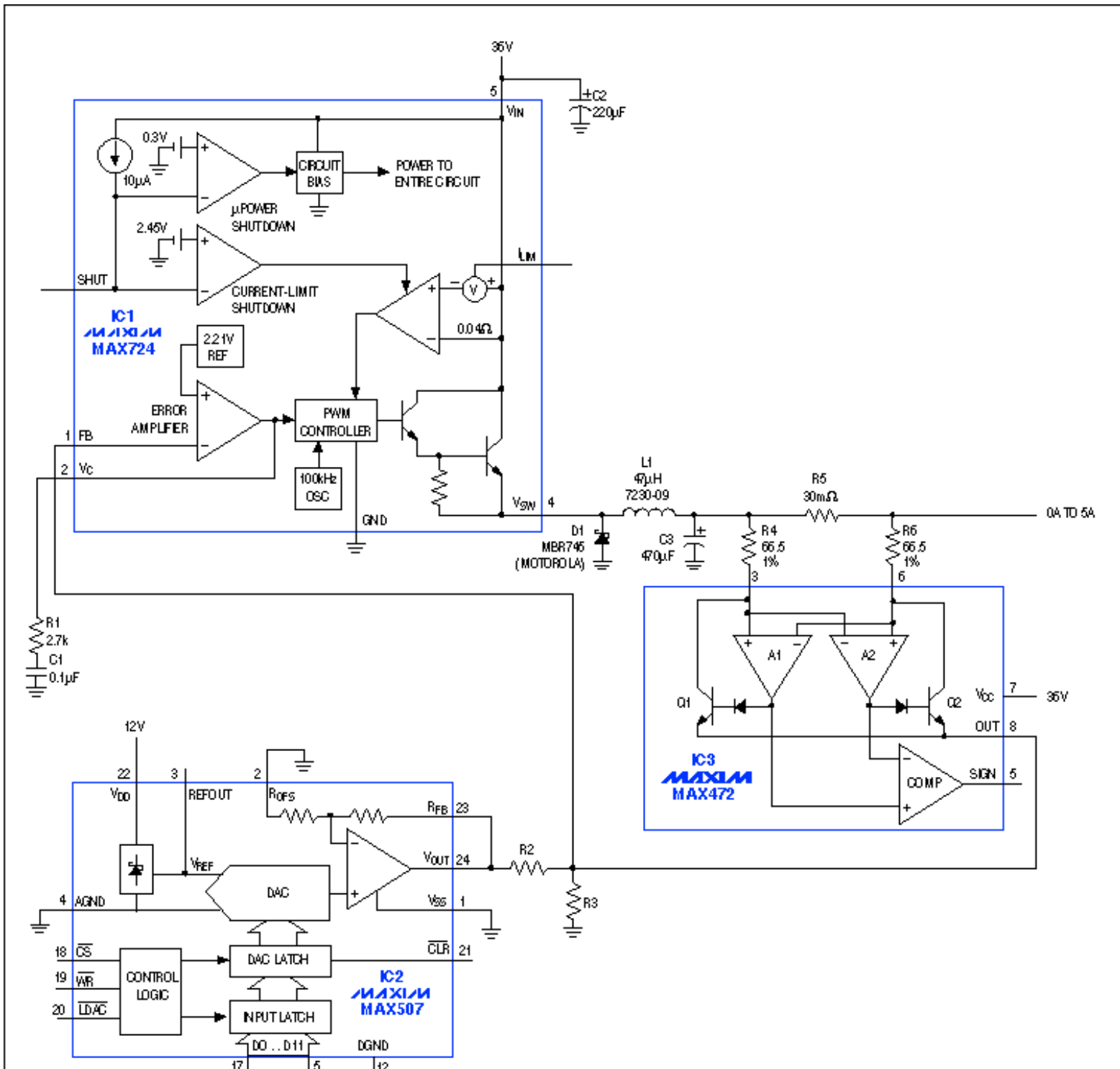


Programmable Current Source Delivers 0A To 5A

This application note describes a circuit for building a digitally programmable current source using a digital-to-analog converter, switch-mode step-down DC-DC converter and a current sense amplifier. The circuit creates a high-efficiency current source that can deliver 0A to 5A with 12-bit resolution.

The variable current source of **Figure 1** generates 0A to 5A with a compliance range of 4V to 30V. It offers two advantages: the 12-bit D/A converter (IC2) makes it digitally programmable, and the switch-mode step-down regulator (IC1) is more efficient than the alternative current source with linear pass transistor. Applications include battery charging and dc motor control.



The desired range for ISOURCE defines values for R2 and R3: $V_{DAC} = 10V$ for the low value of ISOURCE, and $V_{DAC} = 0V$ for the high value of ISOURCE. Substituting these two sets of values in the equation yields two equations, to be solved simultaneously for the values of R2 and R3.

More Information

MAX472: [QuickView](#) -- [Full \(PDF\) Data Sheet](#) -- [Free Samples](#)

MAX507: [QuickView](#) -- [Full \(PDF\) Data Sheet](#) -- [Free Samples](#)

MAX724: [QuickView](#) -- [Full \(PDF\) Data Sheet](#) -- [Free Samples](#)