A voltage regulator circuit that provides the current necessary to drive an output driver during transients and maintain low output impedance, while having a much better dropout voltage than a single source follower gain stage includes: an output driver 22; a source follower 34 for controlling the output driver; a localized feedback gain loop coupled to the source follower 34; and an amplifier 24 for controlling the source follower 34.

14 Claims, 6 Drawing Sheets