

Fold-back current limiter

This design has been found useful when supplying series regulated circuits from a wide range of input voltages. By choosing suitable values for the current limiting components, R_1 , R_2 , R_3 and R_L , fold-back current limiting characteristics can be achieved that will protect the series regulating transistor from over dissipation when $V_i - V_o$ is high, and allow higher values of load current to flow when $V_i - V_o$ is low. Current limiting takes place when Tr_1 conducts. With the values shown and the V_{be} of Tr_1 assumed to be 0.65 volts, the current limiting characteristics will be similar to those in the graph.

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$$I_L = \frac{1}{R_L} \left\{ \left(\frac{1+R_1}{R_2} + \frac{R_1}{R_3} \right) V_{be} + \left(\frac{R_1}{R_2} + \frac{R_1}{R_3} \right) V_o - \frac{R_1 V_i}{R_3} \right\}$$

