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HIGH IMPEDANCE POWER SUPPLY

ABSTRACT

An electrical power supply for a two-wire power and communications network is disclosed (Fig 1, 10, 12, 14-20).

A constant current source is desirable which also exhibits high input impedance at the frequency of operation of the two-wire communication network. The invention disclosed uses a novel combination of the current mirror principle and a negative feedback loop in order to achieve the requisite regulation of current and high input impedance.

Current mirror circuit (Q1, Q4) has a current flow control portion (Q4) and two current paths, where in the first current path there is a current reference (Z3) and in the second current path there is a current sensing means (R6). A feedback circuit is provided from the current flow control portion (Q4) of the current mirror circuit (Q1, Q4) to both the first and second current paths, where the feedback circuit regulates the current in the current sensing means (R6) so that the total voltage drop across the current sensing means (R6) and the feed back circuit is matched to the voltage drop across the current reference means (Z3).

Additional current carrying paths (R3, Q3, I_3) can be added to the constant current power supply to increase the total current provided by the power supply into the two-wire power and communications network.

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