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signall powered dynamic compressor

This dynamic range compressor will provide approximately 20 dB of compression over the input voltage range 100 mV to 10 V. An unusual feature of the circuit is that it requires no power supply, the control voltage for the voltage-controlled attenuator being derived from the input signal.

A portion of the input signal is rectified by D1 and D2 and used to charge capacitors Cl and C2. These provide a control voltage to the diode attenuator comprising R3, R5, R6, D3 and D4. The diodes operate on the non-linear portion of their forward conduction curve. At low input signal levels the output signal appears with little attenuation. As the signal level increases so does the rectified voltage on Cl and C2. The control current through the diodes increases and their dynamic resistance decreases, thus attenuating the output signal.

The attack time of the compressor is fixed and depends on the time constant consisting of Cl or C2, R2 and the output impedance of the circuit feeding the compressor, which should be as low as possible. The decay time of the compressor can be varied to a small extent by PI. The input impedance of the circuit that the compressor output feeds should be as high as possible.

The circuit works best with germanium diodes, since these have a low forward voltage threshold and a much smoother and more extended 'knee' than silicon types. The accompanying graph shows the response of the compressor using both silicon and germanium diodes, and it is obvious which are better!

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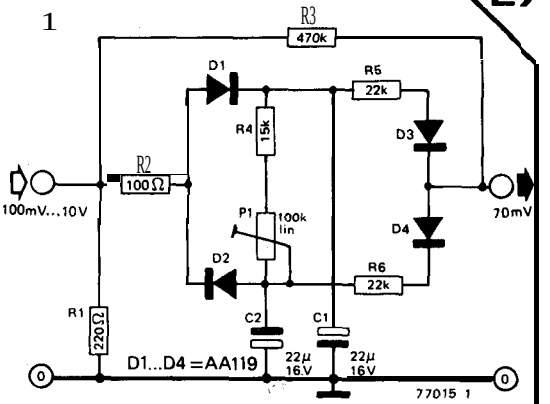

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