Voltage/current controlled filter

The circuit shows a controllable filter, having a -12dB/octave roll off. Frequency range is 15Hz to 15kHz, this frequency being controlled by either a voltage or current. Voltage to current conversion is achieved with a logarithmic characteristic (IC₁); thus the filter frequency moves in octaves/voit rather than in Hz/volt. The CA3080 operational transconductance amplifiers are used to produce variable resistors. If just manual control of the cut off frequency is required, only the bottom half of the circuit is used by shorting points X-Y and connecting them to the wiper of a 10kΩ log potentiometer between -12V and ground. If voltage control of the cut off frequency is required, the top half of the circuit is used. By using a transistor array, good matching and temperature stability is obtained. The separate transistor (pins 4, 5, 6) provides an offset bias voltage of the correct value and also a voltage to compensate for any temperature changes. The CA3080's may be selected for minimum d.c. offset; change with respect to frequency control, or the offset may be nulled by R₁.

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