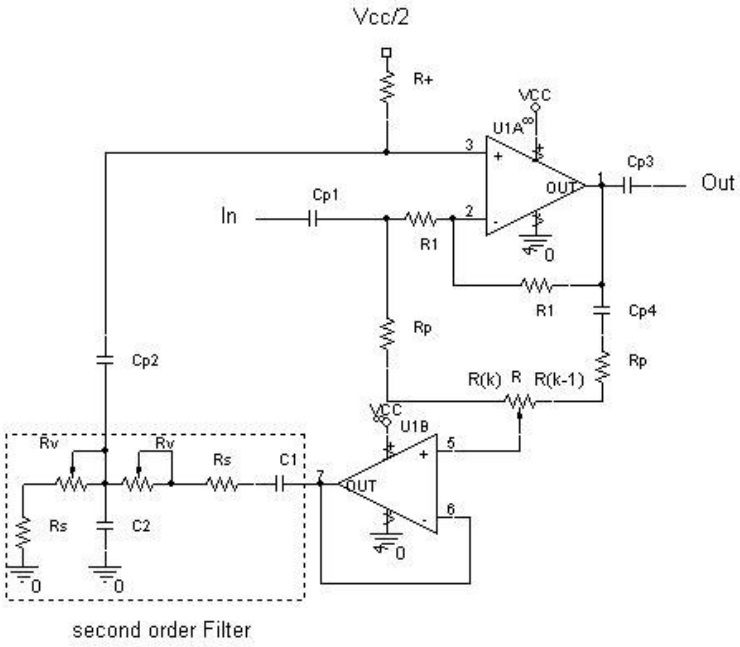
2nd October 2008, 05:18 PM #1

Aggression
diyAudio Member

Join Date: Oct 2008

Analysis on semi parametric eq's

Well i was looking for some design ecuations for semi parametric mid control in high gain pedals like boos MT2 or Zoom tri metal. the information obtained was very poor, so finally i decided to do the job for myself. Here are the schematic:



second order Filter

And here are the design ecuations:

Second Order Filter

$$f_0 = \frac{1}{2\pi R_T \sqrt{C_1 C_2}} \text{ where } R_T = R_V + R_S$$

$$Q_0 = \frac{\sqrt{C_1 C_2}}{2C_1 + C_2}$$

Gain at f_0

$$G(f_0) = \frac{C_1}{2C_1 + C_2}$$

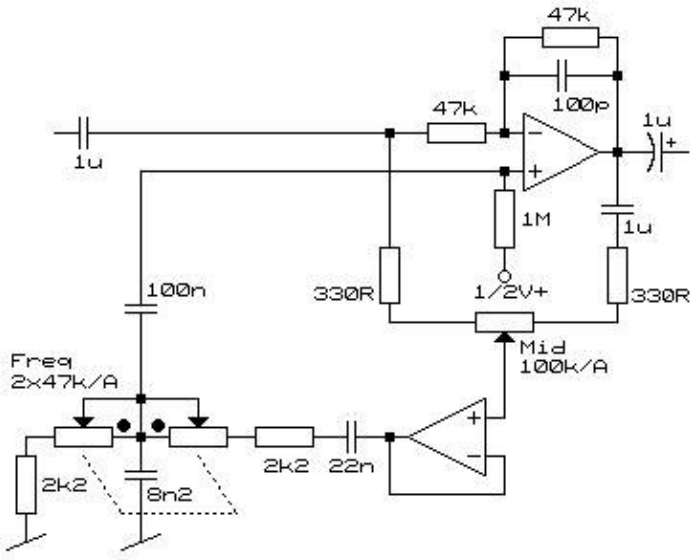
Max center frequency attenuation/Amplification

$$MaxAtt = 20\log\left(\frac{2R_P + R - 2(R + R_P)G(f_0)}{2R_P + R - 2R_P G(f_0)}\right)$$

$$MaxAmp = 20\log\left(\frac{2R_P + R - 2R_P G(f_0)}{2R_P + R - 2(R + R_P)G(f_0)}\right)$$

All de Cp1 and Cp3 in the circuit must be in the order of uF, and Cp2 hundreds of nF, to guarantee the bass passing.

I've simulated the semi parametric mids control for the boss MT2, and the results confirm the data obtained with the ecuations. The frequency range is 240.84Hz to 5.38kHz, The Q is 0.257, and the attenuation/amplification is about 36.61dB.



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